User Guide

Version 5.3.0

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FortiSIEM - User's Guide

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Overview

FortiSIEM is an advanced Security Information and Event Management (SIEM) solution that combines advanced log and traffic analysis with performance/availability monitoring, change analysis and accurate knowledge of the infrastructure to provide accurate threat detection, remediation, incident response and compliance reporting.

FortiSIEM can be deployed as a hardware appliance, a virtual appliance or as a cluster of virtual appliances to scale-out to large infrastructure deployments.

Scale-Out Architecture

FortiSIEM scales seamlessly from small enterprises to large and geographically distributed enterprises and service providers.

For smaller deployments, FortiSIEM can be deployed a single all-in-one hardware or virtual appliance that contains full functionality of the product. The virtual appliance can run on most common hypervisors including VMware ESX, Microsoft Hyper-V, and RedHat KVM and can be deployed on premise or in Amazon AWS Cloud. For larger environments needing greater event handling throughput and storage, FortiSIEM can be deployed in cluster mode. There are three types of FortiSIEM nodes – Collector, Worker and Supervisor

Collectors are used to scale data collection from various geo-separated network environments potentially behind a firewall. Collectors communicate to the devices, collect the data, parse the data and then send to the Worker nodes over a compressed secure HTTP(S) channel. Supervisor and Worker nodes reside inside the data center and perform data analysis functions using distributed co-operative algorithms. For scalable event storage, FortiSIEM provides two solutions – FortiSIEM NoSQL event database with data residing on a NFS Server and Elasticsearch.

As the compute or storage needs grow, you can add Collector nodes, Worker nodes, disks on the NFS server and Elasticsearch Data Nodes.

FortiSIEM also provides Windows Agents that enable log collection from a large number of Windows Servers. Windows Agents can be configured to send events to Collectors in a highly available load balanced manner.

Multi-tenancy

FortiSIEM allows you to manage multiple groups of devices and users (Organizations) within a single FortiSIEM installation. Devices and IP addresses can overlap between Organizations. FortiSIEM provides strict logical separation between organizations at an application layer. Users of one Organization cannot see another Organization’s data including devices, users and logs. But users belonging to Manage Service Provider Organization can only see all Organizations.

Infrastructure Discovery and Automated CMDB

For complete situational awareness, user needs to know the network and server infrastructure in depth. FortiSIEM's inbuilt discovery engine can explore an IT infrastructure (on premise and cloud, physical and virtual), discover and categorize network devices, servers, users and applications in depth. A wide range of information is discovered including hardware information, serial numbers and licenses, installed software, running applications and services, and device configurations. Some special topological relationships can be discovered, for example - WLAN Access Points to WLAN Controllers, VMware guests to physical hosts. This rich information populates an integrated configuration management database (CMDB), which is kept up to date through scheduled re-discoveries.

A novel aspect of FortiSIEM discovery is that the system automatically discovers what can be monitored and which log can be pulled using the provided credentials. This approach reduces human error, since FortiSIEM learns the true network configuration state.

High Performance Log Collection and Flexible Parsing

FortiSIEM has flexible distributed log collection and parsing architecture. For logs pushed to FortiSIEM (such as Syslog), the devices can load balance the logs across various Workers or Collectors. For logs pulled by FortiSIEM (such as Windows WMI or Cloud services via REST API), the pulling functionality is automatically load balanced across Workers and Collectors. Logs are immediately parsed at the point at which they are received – this distributed processing speeds up log collection and analysis.

FortiSIEM has a patented XML based log parsing language that is both flexible and computationally efficient. Flexibility comes from the fact that users can easily write their own parsers (XML files) or edit system provided ones using the FortiSIEM GUI. The parser XML files are compiled at run-time and executed as an efficient code – this makes log parsing very efficient almost as efficient as writing code in native programming languages.

Performance and Availability Monitoring

Zero-day malware can create performance issues on a server - a malware can take up large memory, a ransomware scanning and encrypting files can slow the performance of other applications. By shutting down certain services and creating excessive network traffic, a malware can cause availability issues. To properly detect and remediate security issues, an investigator needs to know the performance and availability trends of critical infrastructure services. Powered by its discovery capabilities, FortiSIEM can seamlessly collect a rich variety of performance and availability metrics to help the investigator hunt for threats. FortiSIEM can also alert when the metrics are outside of normal profile and can correlate such violations with security issues to create high fidelity alerts.

Network Configuration and File Integrity Monitoring

Unauthorized or inadvertent changes to key system configuration files (such as httpd.conf) or router/firewall configuration can lead to security issues. Malware can modify key system files. Bad actors (for example, insider

threats) can steal forbidden files. It is important to maintain control of key files and directories.

FortiSIEM provides mechanisms for tracking and detecting key file changes. It can monitor start-up and running configuration of network devices via SSH. It can monitor configuration files on servers. FortiSIEM agents can efficiently monitor large server infrastructures. An alert is created when the file changes from one version to another or deviates from a blessed hardened configuration.

Custom Device and Application Support

While FortiSIEM provides turnkey support for a large number of devices and applications, users can build their own full-fledged support from the GUI. System log parsers, performance monitors and configuration change detectors can be modified. New device and application types can be defined and new log parsers; performance monitors and configuration change detectors can be defined.

User Identity and Location Tracking

By combining DHCP logs, VPN logs, WLAN logs, Domain Controller logon events, FortiSIEM is able to maintain an audit trail for IP address to user and geo-location mappings over time. While IP address to User mapping is important for look-up purposes by its own right, this feature enables FortiSIEM to detect stolen credentials as they tend to get used from distant locations over a short period of time.

External Threat Intelligence Integration

External websites can provide cyber threat information in terms of:

- Malware IP
- Malware Domain
- Malware hash
- Malware URL
- Anonymity Networks

FortiSIEM has a flexible framework to connect to a wide variety of threat sources (both free and paid), efficiently download this information and find matches in real-time in the environment it is running. Some threat sources can have a large number (millions) of bad IPs and URLs. FortiSIEM's distributed search and rule engines finds matches with such large sets of data at a very high event rate.

Distributed Event Correlation and Threat Detection – the Rule Engine

FortiSIEM has a distributed event correlation engine that can detect complex threats in near real-time. Threats are users or machine behavioral anomalies and can be specified in terms of event patterns sequenced over time. A threat can be alternatively looked at as a SQL query evaluated in a streaming mode. FortiSIEM has an inbuilt profiling engine that can handle threats defined using statistical thresholds - mean and standard deviation.

What makes FortiSIEM rule engine powerful is (a) the ability to include any data in a rule, for example: performance and change metrics along with security logs, (b) distributed in-memory computation (patent-pending) involving Supervisor and Worker nodes for near real-time performance with high event rates, (c) the ability for the rule to generate a dynamic watch list which can be use recursively in a new rule to create a nested rule hierarchy, (d) use of CMDB Objects in Rule definition, and (e) unified XML based language for rules and reports which makes it easy to convert a report into a rule and vice-versa.

Several machine learning based UEBA models are part of FortiSIEM inbuilt rule library – (a) detect simultaneous logins from two different countries, (b) detect simultaneous logins from two improbable geo-locations, (c) login behavior anomaly – log on to servers and at times that one does not typically log on etc., (d) detecting traffic to dynamically generated domains.

FortiSIEM has a large number of in-built behavioral anomaly rules that work out of the box but can be adapted by the user to their own environment. A framework is provided where the user can write new rules via GUI, test them with real events and then deploy in the system.

Device and User Risk Scoring

By combining with asset criticality, user role and importance, incident severity, frequency of occurrence and vulnerabilities found, FortiSIEM assigns a risk score to users and machines. This score is displayed in a dashboard with drill-down capabilities to identify the underlying factors.

Incident Response and Mitigation

FortiSIEM provides a number of mitigation scripts that can run an action when an incident happens. The scripts can be invoked automatically when an incident happens or can be invoked on-demand. Some examples are blocking an IP or a MAC, deactivating a user from active directory, removing an infected file, putting a user into a watch list, restarting a process or rebooting a server and so on. You can also write own mitigation scripts and deploy on a running system.

Search, Threat Hunting, Compliance Reports and Dashboards

FortiSIEM provides a flexible and unified search framework. User can search data based on keywords or in a structured way using FortiSIEM parsed attributes. In real-time mode, the matched data streaming in from devices is displayed. In Historical mode, events in event database are searched. Supervisor and Worker nodes perform search in a distributed manner.

A large number of inbuilt reports (search templates) are provided, based on the device type, and functionality such as availability, performance, change and security.

Two novel aspects of FortiSIEM search are event unification and drill-down or threat hunting capabilities. With event unification, all data is analyzed and presented the same way, whether it is presentation aspects (real-time search, reports, rules) or context (performance and availability metrics, change events or security logs). Using drill-down, you can start from a specific context, such as Top Authentication Failed Users, and select attributes to further analyze data and iteratively, get to the root cause of a problem. As an example, the investigation of 'Top

Authentication Failed users' could be followed by picking a specific user from the list and selecting Destination IP, Ports to see which machines the user communicated with, followed by selecting the raw logs for real evidence.

FortiSIEM contains a wide selection of compliance reports out of the box – PCI, COBIT, SOX, ISO, ISO 27001, HIPAA, GLBA, FISMA, NERC, GPG13, SANS Critical Control, NIST800-53, NIST800-171.

FortiSIEM provides a wide variety of dashboards for user to visualize the data it collects and the incidents that have triggered - Summary dashboards, Widget dashboards, Business Service dashboard, Incident dashboard, Identity and Location dashboard.

Internal Ticketing System and Two-way Third-party Ticketing Integration

FortiSIEM has a built-in ticketing system for managing incidents via tickets. It supports the full ticket life cycle of opening, escalating, closing, reopening and creating cases with attachments for evidence.

FortiSIEM can also integrates with third-party ticketing systems. When an incident occurs in FortiSIEM, a ticket can be created in the external ticketing system and linked to an existing device or a new device can be created in the external system. You can customize various FortiSIEM incident fields to external ticketing system field. When the ticket is closed in the external ticketing system, the ticket is closed in FortiSIEM.

Several third-party external ticketing systems are supported out of the box, for example, ServiceNow, Salesforce, ConnectWise and Remedy. An API is provided so that other integrations can be built.

Business Service Analytics

A Business Service enables you to prioritize incidents and view performance/availability metrics and from a business service perspective. A business service is defined within FortiSIEM as a smart container of relevant devices and applications serving a common business purpose. Once defined, all monitoring and analysis are presented from a business service perspective.

FortiSIEM enables you to easily define and maintain a business service. Since FortiSIEM automatically discovers the applications running on the servers as well as the network connectivity and the traffic flow, you can easily choose the applications and respective servers and be intelligently guided to choose the rest of components of the business service.

What's New

The following sections provide release specific information about new features, enhancements, and resolved issues:

What's New in 5.3.0

This document describes new and enhanced features, and known issues for the FortiSIEM 5.3.0 release.

Pre-upgrade Notes

- The GUI settings for Archive are lost during the upgrade to 5.3.0. In earlier releases, the user mounted the archive and defined the local mount point in FortiSIEM. In this release, however, the user provides the archive host and exported directory and FortiSIEM performs the mount operation. This action unifies both the online and archive database mounting operations. If you were archiving in version 5.2.8 or earlier, then complete the following steps to recover the archive settings.

a. Upgrade the Super and all Workers to FortiSIEM version 5.3.0.
b. Unmount the archive.
c. Delete the `/etc/fstab` entry of archive setting.
d. Define the archive in **ADMIN > Setup > Storage > Archive** . Make sure that the Archive host and exported directories are identical to the settings before the archive.
e. Click **Test and Save**. FortiSIEM will now archive new events to the same location as before the upgrade.
f. Delete all of the Workers in **Admin > License > Nodes**.
g. Re-add all of the Workers in **Admin > License > Nodes**.

- To remediate a vulnerability in an external module, Flex login via LDAP is disabled.

- Because of changes to the Geo database from release 5.2.x to 5.3.0, some State/Province and City names might not match if they were set for CMDB Devices. For example, the French Province Auvergne in the 5.2.x Geo database changed to Auvergne-Rhone-Alpes in 5.3.0. If you set a device location to Auvergne in 5.2.x, then you must re-edit the location and set it to Auvergne-Rhone-Alpes.

New Features

Search With Display Conditions

Currently, when you run an aggregated search in FortiSIEM, there is no way to limit the search results. For example, suppose you want to display hosts with an average CPU utilization more than 90%, or users with more than 10 login failures in 1 hour. This release enables you to define display conditions using Boolean logic to limit the search results, just like the HAVING in SQL. This feature works for all supported event databases: FortiSIEM EventDB, Elasticsearch, and HDFS.

For details, see Specifying Search Conditions for Aggregated Search.

Nested Search

This release allows you to use the results of one search in another search using IN or NOT IN operators, just like the SQL Subquery functionality. Suppose you want to show all Servers belonging to a specific Business Service that did not report any login event in last 1 hour - a very useful feature for compliance. To do this, you first define a search that reports all Servers belong to a specific Business Service that sent at least 1 event in last 1 hour. Then, define another CMDB search to exclude the devices in the result of the first search. Another example is to report new Windows/Linux processes for today that were not seen in the last 2 days - a very useful query for threat hunting scenarios.

To accomplish this, this release unifies CMDB and Event searches to be run from the ANALYTICS tab. When you define the filter condition in the outer search, you can specify an attribute IN/ NOT IN the results of the inner search.

Three scenarios are supported:

Outer Query	Inner Query	Use Case
CMDB	Event	Show all servers that did not report any event in the last 1 hour.
Event	Event	Show all successful logins for excessive failed login users. Show new Windows/Linux processes for today that were not seen in the last 2 days
Event	CMDB	Show all failed logins from externally authenticated FortiSIEM admins.

Both FortiSIEM EventDB and Elasticsearch are supported for nested searches. Since Elasticsearch does not natively support nested search functionality, FortiSIEM has built its own nested search functionality on top of Elasticsearch. Nested searches can be run in adhoc mode from the GUI or can be scheduled. Currently HDFS does not support nested search.

For details on how to set up and run a nested search, see Using Nested Queries.

Use Fortinet GeoIP Database

This releases replaces the existing GeoIP database with Fortinet GeoIP database. All of the Geo IP features work in the same way with the new database.

Incident Title Using Attributes

For each rule, you can now define a title containing the incident attributes, for example: “Brute force login from 10.1.1.1 user Bob to Finance Server”. This enables you to quickly summarize an incident without looking into various fields such as Incident Source, Incident Target, and Incident Details. For built-in rules, titles are pre-defined. For custom rules, you must define them after installation. Incident Titles can be used as an Incident attribute in any part of the GUI where an Incident is displayed.

For details on how to define an Incident Title, see Defining an Incident Title.

Searchable Archive and Support for HDFS

When the online event database reaches capacity, events are either purged or archived to make room for new events. The current archive solution has the limitation that one must restore the data from the archive into the online event database—this process is tedious and can consume precious online event database storage. This release enables searching the Archive database from the GUI and also provides two new Archive options for Elasticsearch - FortiSIEM EventDB on NFS and HDFS.

In this release, the following scenarios are supported:

Event DB		Retention		Historical Search		Rules and Real Time Search
Online	**Archive**	**Online**	**Archive**	**Online**	**Archive**	
FortiSIEM EventDB (local or NFS)	NFS	Policy-based and Space-based	Policy-based and Space-based	Super and Workers	Super and Workers	Super and Workers
Elasticsearch	FortiSIEM EventDB (NFS)	Space-based	Policy-based and Space-based	Super and Elasticsearch	Super and Workers	Super and Workers
Elasticsearch	HDFS	Space-based	Space-based	Super and Elasticsearch	Super and Spark Cluster	Super and Workers

The user can set up Archive options from the GUI. For details, see Configuring Storage.

The user can search the Archive event database directly from the FortiSIEM GUI, in the same way as the Online event database. Except for the EventDB scenario, the user can simply choose the event source to be archived in the Filter Dialog.

Ability to Collect Specific Windows Logs via WMI

This release enables you to choose specific Windows (Security, System, and Application) events to be collected via WMI. Choosing only the needed event types enables you to save processing and storage space.

For details on how to collect specific Windows logs via WMI, see Windows WMI Filter.

Rule and Scheduled Report Activation Workflow

Currently any user that has access to the Resources and Analytics tabs can activate a Rule or schedule a Report. A loosely written rule or report can consume serious system resources. This release introduces an audit mechanism in this process via RBAC. The capability to activate a Rule and schedule a report is now part of a Role definition. A user that does not have this capability must request approval and can execute only if approved.

- For details on setting Report scheduling and Rule activation capabilities as part of a Role, see Adding a New Role.
- For details on Report scheduling using workflows, see Scheduling Reports Using a Workflow,
- For details on Rule activation using workflow, see Activating a Rule Using a Workflow.

Customizable Entity Risk Score for User Selected Rules

This release enables you to choose the rules for the calculation of Entity Risk score. Currently, risk score is based on rules.

For details, see Setting Risk Filters.

Key Enhancements

The 5.3.0 release provides these key enhancements:

- CASE Enhancements
- Agent Based FIM Extensions

CASE Enhancements

This release contains several CASE enhancements:

- A timeline view to capture activities on a Case and on related incidents.
- A separate Evidence tab is created to capture the attachments and the triggering events.
- Mean Time to Resolution (MTTR) metric for Closed Cases.
- Enhanced search functionality similar to CMDB and Incidents.
- Bi-directional one-click drill down from Incidents to Cases and vice versa.

Agent Based FIM Extensions

This release includes several enhancements for File Integrity Monitoring (FIM) when using Windows and Linux Agents:

- Detect File Permission and Ownership changes.
- Ability to push monitored files from agents to the FortiSIEM Supervisor where an audit trail of file changes are kept in SVN. The user can then examine the differences between the files.
- Ability to detect file changes from a baseline.

For Windows Agents, see the table of FIM settings in Adding Windows Agent Monitor Templates.

For Linux Agents, see the table of FIM settings in Adding Linux Agent Monitor Templates.

Faster Analytics Using CMDB Objects

In the current architecture, when a search is performed using a CMDB Object, each Worker gets the CMDB Object values from the Supervisor node. The Worker nodes cache the values. When there is a change (for example, caused by discovery or user change), Workers again get the values from the App Server. For a large FortiSIEM cluster with many Worker nodes and large CMDB Objects, the Supervisor's performance may be impacted, preventing GUI users from logging in.

In this release, Redis distributed database technology is introduced to improve the above performance issue. The Supervisor runs as the Redis Master, while each Worker runs as a Redis Slave. The Supervisor only publishes changes to the Redis Master. Redis rapidly synchronizes CMDB Objects within the FortiSIEM Cluster. The Worker node processes (Rule and Report Workers, etc.) retrieve CMDB Objects from the local Redis, thereby relieving the Supervisor node from providing CMDB Objects from PostGreSQL.

Query Only Workers

This release enables users to have Workers that will only handle Query requests. There are now two types of Worker nodes:

- Query Worker - these worker only handle query requests, adhoc queries from the GUI, and scheduled reports.
- Event Worker - these workers handle all other event processing jobs, including receiving events from Collectors or devices, and storing them into the event database, rule, inline query, real time query, etc.

Reserving Worker nodes for queries allows more system resources to be dedicated to queries and make them run faster.

- For more information on configuring an Event Worker, see Event Worker Settings.
- For more information on configuring a Query Worker, see Query Worker Settings.

Ability for a Super/Global User to Share Dashboards With Any Organization

Currently, a user can share a dashboard only with users belonging to the same organization. Thus, a Super/Global user cannot create shared dashboards with specific Organization users. This release removes this restriction. When Super/Global user shares a dashboard with users of various organizations, FortiSIEM will populate the dashboard with data belonging to specific organizations. Thus, users of a specific Organization will see their own data.

Show Agent License Usage

Users can now see Windows and Linux Agent usage by navigating to **ADMIN > License > Agent Usage**.

Automated CVE-Based Checks for IPS Events

In this release, automated CVE-based checks are performed to detect IPS false positives. If the IPS Events have associated CVEs, but Scanner reports do not show that the target host is not vulnerable to those CVEs, then the Incident severity is downgraded. However, if scanner reports indeed show that the target host is vulnerable to any of those CVEs, then severity is increased and a Case is created.

For more information, see Performing CVE-Based IPS False Positive Analysis.

Incident Dashboard Enhancements

There are several enhancements for **INCIDENTS** tab:

- Ability to save Incident List View Search filters and then load them on demand from a drop down. See Searching Incidents.
- Two additional Incident List Views: List by Device and List by Incidents to facilitate incident investigation. See Viewing Incidents.
- Performance improvement: All the queries under **INCIDENTS** tab, except the Attack View Trend Graph and Trigger event queries, now use data in PostGreSQL database and run faster.

Widget Dashboard Enhancements

There are several enhancements for Widget dashboards in the **DASHBOARD** tab.

- Ability to select all relevant fields in the filter
- Display Bar trend graphs for integer values
- Ability to save column widths for the Table View
- Improved representation in the Donut chart
- Ability to show up to 10K entries in the Table View
- Ability to maximize a widget inline
- Ability to revert color settings for a single line view

Custom PDF Enhancements

- The user can choose to create the PDF in Landscape mode. This provides better readability for table-formatted reports with many columns.
- When a Table is split across more than one page, each page has its own table header for better readability.

New Device Support

The current release includes support for the following devices:

- FortiTester
- Cisco Viptela
- MobileIron
- Duo
- Indegy Industrial Cybersecurity Suite
- Netwrix
- Darktrace DCIP
- Hirschmann SCADA Firewalls and Switches

Existing Device Support Bug Fixes and Enhancements

The current release includes these enhancements for existing devices:

ID	Severity	Summary
616714	Minor	All Account Lockout Rules do not consistently update the Watch List.
611209	Minor	MITRE ATT&CK Categories of a couple of rules are incorrect.
611208	Minor	Phishing attack found but not remediated refers to an incorrect Event Type Group.
610287	Minor	Malware found in a mail rule does not map incident parameters correctly.
605005	Minor	Incident Target is not set for Malware hash match rule.
601979	Minor	FortiGate configuration change events appears under the wrong category.
599966	Minor	JunOS Events appear in the wrong Event Type Group.
598477	Minor	Duplicate Sysmon Event Types appear in the CMDB.
592949	Minor	Windows Application Audit log cleared has incorrect logic.
582647	Minor	Update Snort Signatures.
480266	Minor	No phEventCategory attribute is defined for the PH_SYSTEM_DEVICE_NO_EVENTS event type.
616600	Minor	Enhance Multiple FortiGate Web Filter Log URL Parsing Issues.
611928	Minor	High Severity IPS Exploit rule is triggering on denied events instead of permit events.

ID	Severity	Summary
599406	Minor	Spelling error in Event Type: Win-System-Service-Control-Manager-7045 description in CMDB.
616625	Minor	WinOSWmiParser does not parse DNS Server events coming in through FortiSIEM Windows Agent.
611660	Minor	Sophos XG Firewalls Parser needs enhancement.
610178	Minor	Ironportweb parser needs enhancement to handle new log format.
609981	Minor	SecurityOnionBroParser parser needs updates.
604691	Minor	FortiGate - infoURL is incorrectly parsed.
603930	Minor	Enhance CheckPoint Parser to recognize anti-malware events.
601471	Minor	Fortigate Azure Events are not parsed correctly.
599203	Minor	Meraki Parser does not parse "pattern" for deny or allow.
598691	Minor	Enhance Windows Defender ATP support must be extended to include event types.
598657	Minor	FortiGate VPN/NAT Event has incorrect Event Categories.
598590	Minor	Parse geo location information enhancement from F5 syslog.
598586	Minor	FortiGate Parser enhancement for interface hostname.
597526	Minor	Windows DNS Auditing: there are incorrect and missing Event Types.
596694	Minor	Event Type PAN-IDP-31914 classified as a log on failure, but the vendor does not classify this as a failure.
596569	Minor	SonicOS firewall parser has been fixed to add additional parsing.
596030	Minor	Rule Definition - Event Dropped by License - Value uses peak event drop. It will never stop triggering incidents once started.
595830	Minor	FortiGate parser statically parses "LCD" as a user.
595707	Minor	Watchguard Parser does not parse configuration change event.
594262	Minor	Netscaler Event does not parse the user name and client IP.
594239	Minor	Meraki FW parser does not parse IDS Events.
590452	Minor	Parser incorrectly parses the domain name from FortiSIEM generated host names.
585663	Minor	HuaweiVRPParser -does not parse IP/Port attributes.
580810	Minor	Add Zyxel USG60 FW Event Support.
580645	Minor	When receiving syslog over TLS, the parser does not handle chained certs.
578200	Minor	Some ASA-106010 events are not parsed correctly.
576849	Minor	Certain Palo Alto Networks Firewall Event attributes are not parsed.
576099	Minor	Certain Unix logs are not parsed correctly.

ID	Severity	Summary
575859	Minor	Enhance PulseSecure Parser to handle all syslog headers.
575319	Minor	Windows Correlog parser needs to be extended.
574843	Minor	Windows Detailed DNS Agent Log - destination IP not parsed.
574280	Minor	Need to update WinOSWmiParser.
566111	Minor	SFLOW parser does not pick up all elements in the flow sample.
561293	Minor	JunOS parser sets an incorrect eventAction attribute for RT_FLOW_ SESSION_DENY events.
553480	Minor	WinOSWmi parser does not parse MS-SQL login events from an external client.
551497	Minor	RSA Authentication Server draft parser and log samples.
551006	Minor	Cisco ASA parser does not parse duration field if time is past 1 day.
548960	Minor	Enhance MS_OFFICE365_AlertTriggered_Succeeded event to include user and rule.
544277	Minor	Add Support for Symantec Security Analytics Platform.
541957	Minor	Cisco WLC2 parser does not parse user name, SSID , or AP.
521472	Minor	Add support for MikroTik Firewall events.
505270	Minor	Enhance translation for Windows es-CO language.
502441	Minor	Need to parse CLIENT field for MSSQL Events.
493496	Minor	Enhance Bind DNS log parser to include named-sdb.
603560	Minor	Box.com parser does not parse the field ip_address as Source IP.
603129	Minor	JunOS Parser does not parse the user for event type JUNOS_SSHD_ LOGIN_FAILED.
592942	Minor	Enhance Windows Sysmon parsing to include more event types.
589900	Minor	Add parser for Azure Event Hub Events.
561431	Minor	Enhance McAfee EPO syslog parser.
555569	Minor	Add CEF syslog format for Trend Micro Apex Central (office scan).
535868	Minor	Add support for Cisco Firepower and NGIPS.
609086	Enhancement	Windows Event parser needs enhancements to parse additional attributes from logs.
607029	Enhancement	Watchguard parser needs enhancement to parse the user from firewall events.
601327	Enhancement	Need ESET Parser to handle JSON formatted events.
597523	Enhancement	SophosWebFilter Parser needs an extension to handle the new event format.
597149	Enhancement	Extend FortiGate Parser to parse more event types.

ID	Severity	Summary
594189	Enhancement	Office 365 Parser needs some validations for parsing some attributes.
579907	Enhancement	Rename winOSParser to an appropriate name like winSyslogParser.
577988	Enhancement	Need to enhance SentinelOne Parser to support for syslog relays.
575277	Enhancement	Enhance Juniper new event type RT_IDP variant.
550100	Enhancement	Enhance Symantec Endpoint Protection parsing.
610632	Enhancement	Enhance IPS rules to include McAfee Stonesoft IPS.
596053	Enhancement	Get OKTA Events with new System Log API.
586639	Enhancement	GitLab Integration: support token authentication.
531794	Enhancement	Need to support Tenable SecurityCenter without Tenable IO.
580253	Enhancement	Cisco IOSXE 5760 WLC cannot discover Access Points.
575002	Enhancement	Support Windows 2019 discovery and performance monitoring.
540965	Enhancement	Oracle Weblogic 12c monitoring fails as it requires the Java client to use wlthint3client.jar.

Other Bug Fixes and Enhancements

The current release includes the following bug fixes and enhancements.

- Bug Fixes
- Other Enhancements

Bug Fixes

The current release includes fixes for these bugs.

ID	Severity	Module	Summary
612884	Major	Analytics	Rule Worker and Query Worker can consume large resident memory under some situations.
616680	Major	Data Purger	Archive Purge may remove more data than necessary because policy check and low disk check run in parallel.
599845	Major	GUI	Online retention policy cannot be saved for Enterprise clients.
617150	Minor	App Server	CMDB Device Update Method becomes MANUAL if the user changes the Device Status from Pending to Approved or vice-versa.
610780	Minor	App Server	The event PH_DEV_MON_LOG_DEVICE_DELAY_HIGH is not generated for LOG only discovered devices.
604530	Minor	App Server	Do not allow REST API to fetch FortiSIEM System Config.

ID	Severity	Module	Summary
599093	Minor	App Server	Windows Performance Monitoring via WMI/SNMP may not work if FortiSIEM Agent is not installed first and reports a new device type that is not recognized by the system.
595355	Minor	App Server	Analytic search queries are not working for certain languages like Korean or Russian.
593726	Minor	App Server	Discovery Modifies "Last Successful" Timer for performance monitoring jobs.
588826	Minor	App Server	Update monitoring through the API is not working.
587796	Minor	App Server	Certificates covering many domains will cause Java SSL connection to throw an error on "hostname does not match".
587458	Minor	App Server	Reports cannot be emailed out to more than 1 CMDB User.
581924	Minor	App Server	Duplicate device is created if the device is first discovered by WMI or SNMP and then the FortiSIEM Windows Agent is added.
571793	Minor	App Server	PH_SYS_COLLECTOR_TRAIL table in postGreSQL becomes too large - need to truncate the table and perform space management.
571480	Minor	App Server	DUO 2FA creates extra users when creating an account for authentication.
555268	Minor	App Server	REST API: Enhancement: Discovery status needs to return the progress percentage.
552712	Minor	App Server	If the agent is installed on top of an approved device, the agent will change the device status to unmanaged --> pending but never back to approved after the template association.
552111	Minor	App Server	An empty report is emailed, even if "Do Not Send Scheduled Email if Report is empty" is checked.
548378	Minor	App Server	AD Group Mapping: if you disable Check Certificate first, then re-enable it, then you need to restart the app server for it to take effect.
524274	Minor	App Server	Scheduled PDF reports emails no longer contain a record count per report.
459758	Minor	App Server	PH_MAX_DEVICES_EXCEEDED reports license is exceeded when the total usage equals but has not yet exceeded the total number of licensed device.
513033	Minor	App Server	Original Device Discovery does not merge the device type after rediscovery because of the lack of a Cisco Generic device type.
613131	Minor	Data Manager	If index_per_customer flag is false, the phDataManager still writes events to different organization's index in Elasticsearch, instead of writing to one index.
608304	Minor	Data Manager	Data purger may consume large amounts of memory even if build_event_statistics=false.

ID	Severity	Module	Summary
594711	Minor	Discovery	LDAP Discovery cannot discover users or groups when DN is configured to lowest level.
593163	Minor	Discovery	For FortiGate via SSH, prompts containing [ ] are not handled.
612698	Minor	Event Pulling	Pulling vulnerability scan reports from Qualys take a long time if there are large number of reports.
612305	Minor	Event Pulling	Crowdstrike API log pulling uses a fixed endpoint firehose.crowdstrike.com even when credential definition points to a different API endpoint.
611979	Minor	Event Pulling	FortiGuard IOC update via proxy fails when the Supervisor cannot resolve the FortiGuard endpoint.
610179	Minor	Event Pulling	Tenable Security Center can support only one account.
605231	Minor	Event Pulling	Any device credential without a user name, password or apiToken can cause some back end modules to crash.
603118	Minor	Event Pulling	Incorrect FireSight Error message, "unable to get certificate", displays for possible password failures.
571470	Minor	Event Pulling	FortiSIEM suddenly stops collecting events from CheckPoint SmartCenter.
497122	Minor	Event Pulling	Missing memory Name attribute for PH_DEV_MON_SYS_ MEM_UTIL event.
616673	Minor	GUI	Browser memory grows very fast when running Dashboard Slideshow.
612256	Minor	GUI	User is allowed to query events with Equal operator and multiple values.
610750	Minor	GUI	If you click run for 37+ organizations in the Dashboard widget, the configuration will not save.
609498	Minor	GUI	Pressing ENTER key in the Rule or Report Description will result in a SPACE and not a line return.
606710	Minor	GUI	Auto refresh on Incident Overview tab is not working in Fortisiem 5.2.5 and 5.2.6.
606092	Minor	GUI	CMDB Report does not report the Last Domain Logon and Password Last Set Values correctly.
600202	Minor	GUI	User cannot add user created business service groups to Settings > Discovery > CMDB Groups.
596814	Minor	GUI	Enabled parsers may not be distributed to workers.
595760	Minor	GUI	Event Type Search for PH_DEV_MON_NET_ shows NETAPP events.
595401	Minor	GUI	Malware hash IOC import via the CSV file requires the botnet name -- the hash should be enough

ID	Severity	Module	Summary
595214	Minor	GUI	Enterprise /online retention policy saved as "all organizations". There is no option to change.
595186	Minor	GUI	If the user disables Online Retention Policy, then the information is not saved in the database.
594437	Minor	GUI	New Resources > Default Password for SNMP requires a User Name.
593644	Minor	GUI	Incident Display Column changes are applied "per org" instead of "per user".
591648	Minor	GUI	Parser test does not show message value in HTML5 but shows in Flex.
589908	Minor	GUI	User sees "No Write Permission" when editing their own password, but password changes anyway.
588863	Minor	GUI	Windows Agent CMDB Display Inconsistencies - Method column does not display AGENT if the server has also been discovered by WMI; Status column behavior is incorrect when the agent is disabled then re-enabled.
588846	Minor	GUI	The "Run as Query" button does not populate filter conditions in the analytics page if the rule has more than seven filter conditions.
587919	Minor	GUI	If you set the Target of a CMDB Report to "Report", it displays the Rule Category field.
587346	Minor	GUI	User cannot choose Scatter plot "Size" attribute to be anything other than the X or Y attribute. A third attribute is the main use case.
587092	Minor	GUI	Super/Local Licensed Count shows unallocated device count.
582511	Minor	GUI	Unable to add networks to an organization if "Include IP/IP Range" is specified under Org setup.
575582	Minor	GUI	Organization Name does not display in a Report unless the Organization ID is also in the Report.
572878	Minor	GUI	Install Patches "installed time" does not display in HTML5, but is available and reflected in flex for the same device.
572867	Minor	GUI	GUI does not render with readable columns under CMDB > Devices > Quick Info.
563711	Minor	GUI	When viewing the page on a larger, external monitor, the UI does not display the data in the last column.
552721	Minor	GUI	Pull Events / Discovery tabs display "Discovered by supervisor". It is actually a list of all enterprise devices only.

ID	Severity	Module	Summary
498942	Minor	GUI	If Built in Admin User from an organization is removed, FortiSIEM picks up a random full admin to be organization administrator. The user should never be able to delete the Built in Admin User.
479356	Minor	GUI	Users should not be able to choose themselves as the manager on H5.
475953	Minor	GUI	External Lookup for Domain is grayed out.
609243	Minor	GUI	RegEx filtering with "\" produces an Extra "\" after the expression is saved.
587670	Minor	GUI	In the cloned parser XML, two spaces are changed to one in some xml functions.
599215	Minor	Identity location	In certain cases with multi- tenant collectors, Identity and Location Report for one organization may display data for another organization.
541960	Minor	Performance Monitoring	Large disks are not monitored correctly for utilization using SNMP.
498682	Minor	Performance Monitoring	River Bed Peer monitoring fails.
540487	Minor	Performance Monitoring	ASR 9k large memory capacity router reports 100% memory usage.
604928	Minor	Query	Operators HourOfDay and DayOfWeek are not working when using Elasticsearch.
582062	Minor	Query	Elasticsearch query does not work with network groups with low and high values.
620383	Minor	Query	Elasticsearch scrolled queries cause the Elasticsearch node to run out of memory.
620428	Minor	Query	The Elasticsearch index sends fail messages because the utf8 characters in events are not escaped the first time.
626036	Minor	Query	The ElasticSearch precision_threshold causes the Elasticsearch node to run out of memory on COUNT DISTINCT queries.
563753	Minor	VULN	FortiSIEM should force users to change default password on first time GUI/CLI login.
557076	Minor	VULN	jQuery 1 has a new CVE, CVE-2019-11358 disclosed on 2019-04-19.

Other Enhancements

The current release includes these additional enhancements:

ID	Severity	Module	Summary
609317	Enhancement	App Server	Setting PHOENIX_MERGE_BY_HOSTNAME_ONLY attribute in phoenix_config.txt to true results in duplicate devices.
600891	Enhancement	App Server	Allow super global user to share a dashboard with any user.
579895	Enhancement	App Server	Merging message is misleading when not merging based on IP.
544876	Enhancement	App Server	Long tables spanning multiple pages in PDF Report Export need to be broken up into multiple tables with their own headers.
509857	Enhancement	App Server	Landscape mode is needed to print tables with many columns in PDF report.
477152	Enhancement	App Server	Add Audit logs for FortiSIEM user role change.
434850	Enhancement	App Server	Use Vulnerabilities reported against devices with IPS Events to determine attack success.
616057	Enhancement	Data Purger	Separate thresholds for online and archive.
591511	Enhancement	Event Pulling	FortiSIEM needs to use "show running-config view full" command over SSH to collect configuration.
609828	Enhancement	GUI	Need to allowIP ranges when setting up Virtual IPs used for CMDB Device merging.
601457	Enhancement	GUI	Show the root cause of the Sudden Login Distribution Change rule with a visual chart.
582246	Enhancement	GUI	User cannot create a new object easily without pointing to a group first.
573534	Enhancement	GUI	FortiSIEM GUI sends the login name and password in plain text inside HTTP(S). GUI needs to hash the password.
559179	Enhancement	GUI	Ability to assign an Incident to "In Progress".
552984	Enhancement	GUI	PDF export does not have columns sized correctly when there are too many columns.
497502	Enhancement	GUI	Tunnel pop up vanishes too quickly, needs to have confirmation button.
609469	Enhancement	H5_Admin	Event Org Mapping with Reporting IP as the event attribute does not allow a comma separated IP list.
609166	Enhancement	Performance Monitoring	Restore Job stat logs in DEBUG mode.
617283	Enhancement	System	Tune Linux socket buffers and socket listen queue to higher values to accommodate both large and small customers.
608249	Enhancement	System	Add "Query Only" Worker List to only perform Queries.

New Reports

The following reports are new for this release:

- FIM Reports
- Audit Reports

FIM Reports

- Agent FIM: Windows File/Directory Created/Deleted/Renamed
- Agent FIM: Windows File/Directory Ownership Changes
- Agent FIM: Windows File/Directory Permission Changes
- Agent FIM: Windows File/Directory Archive Bit Changes
- Agent FIM: Windows File Content Modified in SVN
- Agent FIM: Windows File Content Modified
- Agent FIM: Windows File Change from Baseline
- Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity
- Agent FIM: Linux File/Directory Ownership or Permission Changes
- Agent FIM: Linux ASCII File Content Modification
- Agent FIM: Linux File Content Modified
- Agent FIM: Linux File Change from Baseline
- Agent FIM: Linux File Content Modified in SVN

Audit Reports

- FortiSIEM CMDB Device Addition via Discovery
- FortiSIEM CMDB Device Addition/Deletion By User
- FortiSIEM CMDB Device Modification via Discovery
- FortiSIEM Device Modifications
- FortiSIEM CMDB Device Discovery Merge History
- FortiSIEM Scheduled Malware IOC Update History
- FortiSIEM Admin User Added
- FortiSIEM Admin User Deleted
- FortiSIEM Admin User Password Modified
- FortiSIEM User Default Role Changed
- FortiSIEM User Organization Role Enabled/Disabled/Changed
- FortiSIEM Role Created/Deleted
- FortiSIEM SSH Tunnel Open/Close History
- FortiSIEM User Initiated Performance Monitoring Job Status Changes
- FortiSIEM Discovery Removed/Not-scheduled Performance Monitoring Jobs
- FortiSIEM Performance Monitoring Job Execution Failures
- FortiSIEM CMDB Device Status Changes
- FortiSIEM Device License exceeded - Device Set to Unmanaged
- FortiSIEM Rule Activation Approval Activity

- FortiSIEM Rule Deactivation Approval Activity
- FortiSIEM Report Schedule Approval Activity
- FortiSIEM CMDB Device Added or Deleted
- FortiSIEM CMDB Device Status Change
- FortiSIEM Rule Added/Deleted
- FortiSIEM Rule Modified
- FortiSIEM Report Added/Deleted
- FortiSIEM Report Modified
- FortiSIEM Rule Activated/Deactivated
- FortiSIEM Reports Completed
- FortiSIEM Reports Scheduled
- FortiSIEM Reports Stopped
- Slowest FortiSIEM Event Reports
- FortiSIEM Dashboard Folder Added/Deleted
- FortiSIEM Dashboard Folder Shared
- FortiSIEM Incident Notification Policy Added/Deleted
- FortiSIEM Incident Notification Policy Executed
- FortiSIEM CMDB Discovery Execution
- FortiSIEM On-demand Remediation Executed
- FortiSIEM Case Created/Updated/Closed
- FortiSIEM Incident Cleared By User
- FortiSIEM Incident Cleared By System
- Successful Online Event Database Archive Actions
- Successful Online Event Database Purge Actions
- Successful Archive Event Database Purge Actions
- Successful Archive EventDB Policy-based-Purge Actions
- Successful Archive EventDB Low-Space-Purge Actions
- Failed Event Database Archive or Purge Actions

New/Modified Rules

The following rules are new or have been modified for this release:

- Lateral Movement Detected
- Agent FIM - Linux File Content Modified
- Agentless FIM - Audited file or directory created
- Agentless FIM - Audited file or directory deleted
- Agentless FIM - Audited file or directory ownership or permission changed
- Audited file or directory content modified in SVN
- Agentless FIM - Audited target file content modified
- Agent FIM - Linux File Ownership or Permission Changed
- Agent FIM - Linux Directory Ownership or Permission Changed
- Agent FIM - Windows File or Directory Created
- Agent FIM - Windows File or Directory Deleted

- Agent FIM - Linux File or Directory Created
- Agent FIM - Linux File or Directory Deleted
- Agent FIM - Windows File Content Modified
- Agent FIM - Windows File Permission Changed
- Agent FIM - Windows File Ownership Changed
- Agent FIM - Windows File or Directory Archive Bit Changed
- Agent FIM - Windows File Changed From Baseline
- Agent FIM - Linux File Changed From Baseline
- FortiSIEM Online Event Database Archiving Failed
- FortiSIEM Archive Directory Unavailable
- FortiSIEM Online Event Database Archiving Completed
- FortiSIEM Online Event Database Successfully Purged
- Low Available System Archive Space
- FortiSIEM Archive Event Database Purging Started
- FortiSIEM Archive Purging Completed
- FortiSIEM Archive Purging Failed

Vulnerabilities Fixed

FortiSIEM 5.3.0 is no longer vulnerable to the following CVE-Reference:

- CVE-2015-0279

Known Issues

Remediation Steps for CVE-2021-44228

One FortiSIEM module (3rd party ThreatConnect SDK) uses Apache log4j version 2.8 for logging purposes, and hence is vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 5.2.6-5.4.0.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
3. Restart all Java Processes by running: "`killall -9 java`"

What's New in 5.2.8

Bug Fixes

This release fixes the following issues:

Bug ID	Severity	Module	Summary
607041	Minor	API	Incident detail does not return values for Incident queries run via REST API.
608164	Minor	App Server	Windows agent cannot be installed in two or more servers with the same Windows GUID.
607154	Minor	Data Management	phDataPurger module may hit a deadlock during archiving.
600897	Minor	Data Management	DataPurger can consume large memory on large MSPs with high event rates.
607893	Minor	Event Pulling	Rapid 7 Vulnerability Scan – Duplicate vulnerability events may be generated from earlier scans.

Bug ID	Severity	Module	Summary
605231	Minor	Event Pulling	3 modules - phParser, phAgentManager, and phCheckpoint may crash when some other credentials (e.g. Cisco FireAMP) are set.
605589	Minor	Event Pulling	Rapid 7 Vulnerability Scan – Event pulling may fail and/or take a long time when there are many devices with vulnerabilities.
607545	Minor	GUI	Online Retention Policy enable/disable checkbox not saved.
561378	Minor	System	Collectors cannot communicate to Supervisor/Worker via Proxy.
606828	Enhancement	API	Allow Incident Severity to be set via REST API.
596053	Enhancement	Event Pulling	Use newer System Log API for Okta event pulling.

Known Issues

Remediation Steps for CVE-2021-44228

One FortiSIEM module (3rd party ThreatConnect SDK) uses Apache log4j version 2.8 for logging purposes, and hence is vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 5.2.6-5.4.0.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
3. Restart all Java Processes by running: "`killall -9 java`"

What's New in 5.2.7

- Bug Fixes
- Known Issues

Bug Fixes

This release fixes the following vulnerability.

FortiSIEM installations have a hardcoded SSH key for a specific user (name: tunneluser) that allows anyone to authenticate as tunneluser to the Supervisor over SSH ports 22 and 19999.

Upgrade Notes

1. This release ONLY provides an upgrade for all platforms.
2. If you want to install FortiSIEM 5.2.7, then follow these steps
   a. Install 5.2.6 or earlier.
   b. Choose the final event database storage: local disk, FortiSIEM EventDB on NFS or Elasticsearch.
   c. Then upgrade to 5.2.7.

Known Issues

Remediation Steps for CVE-2021-44228

One FortiSIEM module (3rd party ThreatConnect SDK) uses Apache log4j version 2.8 for logging purposes, and hence is vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 5.2.6-5.4.0.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
3. Restart all Java Processes by running: "`killall -9 java`"

What's New in 5.2.6

This document describes new and enhanced features for the FortiSIEM 5.2.6 release.

Pre-upgrade notes

1. This release provides an upgrade for all platforms.
2. This release provides Full Install for ESX only. If you want to fresh install 5.2.6 for a platform other than ESX, then follow these steps
   a. Install 5.2.5 for that platform.
   b. Choose the final event database storage: local disk, FortiSIEM EventDB on NFS or Elasticsearch.
   c. Then upgrade to 5.2.6.
3. Previous FortiSIEM releases provided a way for Collectors to download upgrade images from an external website using username and password. If you used this functionality, then Collector upgrade to 5.2.6 may fail. In this case, follow these steps for upgrade:
   If you are running 5.1.2 or earlier:
   a. Clean up Collector Image Server Credentials if still visible from GUI
      i. Go to **Admin > General Settings > System > Collector Image Server**
      ii. Delete Username and Password
      iii. Click **Save**
   b. Upgrade Super, Worker(s), Collectors. Note that Collector upgrade can be done from the Supervisor. See Upgrade the Collector Image from the Supervisor in the Upgrade Guide.

   If you are running 5.2.1 or later:

a. Run the `cleanupdownloadsetting.sql` script - this will clean up the Collector Image Server Credentials if they were set. To run the script:
   i. Log in to FortiSIEM Super
   ii. Download the file from this URL: https://filestore.fortinet.com/docs.fortinet.com/upload/cleanupdownloadsetting.sql and save it in the `/tmp` folder.
   iii. Run this SQL command: `psql -U phoenix -d phoenixdb -f /tmp/cleanupdownloadsetting.sql`.
b. Upgrade Super, Worker(s), Collectors. Note that Collector upgrade can be done from the Supervisor. See Upgrade the Collector Image from the Supervisor in the Upgrade Guide.

4. If you are running FortiSIEM 5.2.5, then you are familiar with the changes in 5.2.5 - simply follow the regular upgrade process in the Upgrade Guide. Note that Collector upgrade can be done from the Supervisor.
5. If you are running a version of FortiSIEM earlier than 5.2.5, then read the Pre-deployment notes for 5.2.5 first. You can upgrade directly to 5.2.6 but you must be aware of the changes introduced in 5.2.5, for example:
   - The location where you pick up FortiSIEM Images has changed.
   - Elasticsearch query behavior has changed from case-sensitive to case-insensitive.
   - There are special instructions for upgrading Report Server.
   - If you change the GUI Locale, you must reschedule your reports for that Locale.
   - When to add Organizations using Elasticsearch.
   - Redis has changed from running in cluster mode master-slave mode. This is informational.

New Features

This release adds the following features:

Attack Dashboard

MITRE has provided a taxonomy of Security Attack kill chains (https://attack.mitre.org/matrices/enterprise/). In the FortiSIEM 5.2.5 release, MITRE ATT&CK categories were added as FortiSIEM Incident Security subcategories, and FortiSIEM Security Rules were associated with MITRE ATT&CK categories. This release provides a specific Security Incident dashboard, called the Attack Dashboard, that clearly shows the MITRE ATT&CK categories associated with each host based on the triggered incidents. This dashboard enables Security Analysts to quickly focus on hosts that have advanced further in the Attack Kill Chain and mitigate the issues. See Attack View.

Run on Amazon Elasticsearch Service

This release allows FortiSIEM users to enable AWS-managed Elasticsearch (https://aws.amazon.com/elasticsearch-service/). The supported Elasticsearch version is 6.8. See Setting Event Storage.

Collector Upgrade from Supervisor

In FortiSIEM 5.2.5, the user is required to install their own webserver to distribute upgrade images to the Collector nodes. This release simplifies the process by enabling the Supervisor as the webserver. Collectors can download upgrade images from the Supervisor. See Upgrade the Collector Image From the Supervisor in the Upgrade Guide.

Key Enhancements

The following are the key enhancements to the current release:

Show User Roles for AD Group Mappings

Release 5.2.5 allowed FortiSIEM administrators to map Active Directory Groups to FortiSIEM roles. If the user belongs to multiple LDAP groups, then the user is assigned the union of all mapped FortiSIEM roles. A composite FortiSIEM role is not always easy to understand. This release explicitly shows the user's permissions in **CMDB > User > Access Control**. See Viewing User Roles for AD Group Mappings.

Ability to Filter on Any Attribute in Widget Dashboard Search

In FortiSIEM 5.2.5, the user is allowed search for the following attributes in the Widget Dashboard: Host, IP, User, and Device/App Properties. This restriction is relaxed in this release. Now the user can search on any field that appears in at least one widget on a widget dashboard. See Searching in a Widget Dashboard.

Ability to Calculate Much Larger COUNT DISTINCT

In FortiSIEM 5.2.5 and earlier, COUNT DISTINCT queries returned a maximum of 16K. This release extends the number to much higher numbers, using the HyperLogLog algorithm. We have tested up to 1 million with 3% error rate. Higher counts are possible at the expense of higher error rates. See the tables in Creating Rules.

Ability to Download FortiGuard IOC via Proxy

This release allows FortiSIEM to download FortiGuard IOC via a Proxy server (such as Squid) using tunnel mode. See Working With FortiGuard IOCs.

Optimize CASES Tab User Experience

In this release, the CASES tab is displayed in multiple pages, with only one page loading at a time. This makes the CASES page much faster to display. Search is also rendered more efficiently.

New Device Support

The current release includes support for the following devices:

- Cyberoam Firewall
- EPIC EMR/EHR System
- FortiEDR (enSilo)
- FortiNAC
- Microsoft Network Policy Server (RAS VPN)
- Trend Micro Deep Discovery

Important Bug and Data Fixes

All issues listed in Known Issues in Release 5.2.5 have been fixed in 5.3.0.

The current release includes the following bug and data fixes.

- Bug Fixes
- Data Fixes
- Vulnerabilities Fixed

Bug Fixes

The current release includes fixes for these bugs.

ID	Severity	Module	Summary
583870	Minor	App Server	Action history not readable when updating incident attributes through API
529612	Minor	App Server	Users need Admin access to email scheduled reports
545405	Minor	App Server	Malware Domain import from CSV file unnecessarily requires IP address
572905	Minor	App Server	Collector Registration cannot handle "&" or [space] in password
548701	Minor	App Server	Dynamic-reports folder builds up and need to be purged
592278	Minor	App Server	Super attempts outbound connectivity to old images-cdn.fortisiem.fortinet.com site to get updates
592325	Minor	App Server	Only users with Admin privileges can change UI Settings
550599	Minor	App Server	Old Device Maintenance schedules causing high App Server CPU
552111	Minor	App Server	Scheduled report email is sent even if "Do Not Send Scheduled Email if Report is empty" is checked
552712	Minor	App Server	Windows Agent changes device status if already discovered
577845	Minor	App Server	User is not allowed interface if interface mask is discovered as 255.255.255.255
581697	Minor	App Server	Full Admin cannot edit credentials defined by an user
585859	Minor	App Server	REST API: FortiSIEM Agent Status not correct - Disconnected returned as Running Inactive
581924	Minor	App Server	Duplicate device is created if device first discovered by WMI or SNMP and then an Agent is added
584853	Minor	App Server	Sometimes unable to run reports caused by database table ph_drq_report_inst not getting cleaned up
584644	Minor	App Server	Agent availability events (Installed/Running/Stopped/Started/Uninstalled/Non-responsive) not being generated
587252	Enhancement	App Server	Integer based attributes do not display the user friendly descriptions in bundle reports
586662	Enhancement	App Server	PH_REPORT_ACTION_STATUS log shows EMAIL database id instead of user name
572872	Minor	GUI	Malware Hash Update from file does not work
470730	Minor	GUI	Rule Exception for Org CMDB report will expose customer information across orgs
575354	Minor	GUI	Dashboard CMDB widget does not map the integer value for "Storage Type" to the corresponding String Value

ID	Severity	Module	Summary
542982	Minor	GUI	Rule Editor does not properly save expressions in aggregate condition editor after user edits the expression
526824	Minor	GUI	Kafka info is lost after an event forwarding rule via kafka is enabled
568068	Minor	GUI	Analytic Reporting Only shows top 5 results on Trend charts, no matter what rows are checked in the table
513726	Minor	GUI	Storage setup - Testing shows errors if disk is mounted or formatted
582511	Minor	GUI	Unable to add networks to organization if "Include IP/IP Range" is specified Under Org setup
544787	Minor	GUI	Case created due date follows desktop time
576921	Minor	GUI	Windows Agent Host to Template association Rank resets to first page when moving items up the list
512274	Minor	GUI	Event Type Table column headers in Device Support and Resources tabs do not match Analytics Query results
588865	Minor	GUI	Dashboard > Widget Dashboard > Choropleth widget drill down does not show right logs
572875	Minor	GUI	Notification Policy Time Zone Change Reverts back to default when reoccurance has no end date
588712	Minor	GUI	An Org user appears to be able to apply Rule Exceptions to all organizations
544011	Minor	GUI	GUI shows large TCP/UDP port numbers as estimated values
583966	Minor	GUI	External Lookup does not pickup IPs from the external lookup request unless you specify <IP> in the URL.
536763	Minor	GUI	Some logged in user on User Activity tab do not show username and role
586077	Minor	GUI	Dashboard drill down does not work correctly for IP Port and Protocol
586546	Minor	GUI	Unable to create ticket from multiple incidents
586640	Minor	GUI	Default Time Range (10 days) on Incident Explorer Dashboard is too long and cannot be modified
582603	Minor	GUI	Widget dashboard > Filters do not appear in some cases
588879	Minor	GUI	Incident > Explorer view pivot on triggering event IP fails
587670	Minor	GUI	Parser clone function sometimes changes two spaces to one space in the parser XML
587473	Minor	GUI	GUI incorrectly showing the subcategory of another rule

ID	Severity	Module	Summary
593144	Minor	GUI	If there is a rule with undefined sub-category, then Incidents > List View > Search > Categories does not show values
580784	Enhancement	GUI	Make LDAP Group to Role more transparent
586736	Enhancement	GUI	Analytics tab - SAVE and LOAD of Filter/Display tabs are more intuitive
583411	Enhancement	GUI	Content of last column in Tables wraps under the first column
588669	Enhancement	GUI	Not possible to choose Incident Subcategory and Incident Resolution in Custom Email template.
491770	Enhancement	GUI	Login Page lists CUST/ORG ID as part of the login, but takes only Name
585060	Enhancement	GUI	Case management page times out when there are large number of Cases
589991	Enhancement	Linux Agent	Linux Agent to Support CentOS 8+
592736	Enhancement	Linux Agent	FIM does not capture file/directory permission and ownership changes
524355	Minor	Log Pulling	Azure Audit - Stops pulling events but no errors in phoenix.log
491789	Minor	Parser/Code	phParser gets stuck against bad CMR records or CDR records -- cannot bypass causing files to back up
575519	Minor	Parser/Code	FortiSIEM does not resolve IP of Fortigates when Fortigate hostname is changed
580645	Minor	Parser/Code	phParser does not support the ability to connect against certificates that have chain certs
597921	Minor	Parser	Windows Defender ATP does not have correct Reporting IP
524276	Minor	Performance Monitoring	Excessive logging: PH_DEV_MON_SYS_STATUS from Meraki
562841	Minor	Performance Monitoring	Fortisiem SSH into fortigate every 3minute though the monitors are disabled
582062	Minor	Query Engine	Elasticsearch queries do not work with network groups with low and high IP addresses specified
582282	Minor	Query Engine	Elasticsearch queries do not work if disable/delete an Malware IP entry from GUI
582145	Minor	Query Engine	Elasticsearch queries do not work for URL IN a single Malware URL item (group works however)
543218	Minor	Query Engine	ReportMaster does not always clean up inline report files

ID	Severity	Module	Summary
593636	Minor	Query Engine	Queriues containing "Reporting IP IN Biz Service" is not working for Event DB
598441	Major	System	Supervisor Upgrade to 5.2.5 fails when upgrade is performed in the month of December
585536	Minor	System	Swap partition is not created for Super, Worker, and Collector.
586951	Minor	System	RedisCluster_6669 is down after upgrade from 521 to 525 in Elasticsearch based deployments
582939	Enhancement	System	FortiGuard IOC integration is not working via Proxy Server
569343	Minor	System	FortiSIEM Collector doesn't validate Supervisor/Worker HTTPS certificate
519974	Minor	Windows Agent	Not receiving username and domain details for File Integrity monitoring events via Windows Agent. Only fixed for Italian.

Data Fixes

The current release includes fixes for these data and parser/data bugs.

ID	Severity	Module	Summary
528749	Minor	Data	Malware found by Firewall but not remediated references wrong event type group
528725	Enhancement	Data	Additional Office 365 User login succeeded report
535710	Minor	Parser/Data	Wrong user name parseing in FortiGate log cause incorrect Identity and Location dashboard
580973	Enhancement	Parser/Data	AWS VPC doesn't work without accountName
487754	Enhancement	Parser/Data	PAN OS Events parser needs to be enhanced to parse more event types
551006	Enhancement	Parser/Data	Cisco ASA Parser does not parse duration field if time is past 1 day
480346	Enhancement	Parser/Data	Juniper JunOS logs are not parsed because vendor introduced a new format
495878	Enhancement	Parser/Data	Symantec AV - new events are being parsed as symantec av generic
492246	Enhancement	Parser/Data	PAN OS CORRELATION Event not able to be parsed
537118	Enhancement	Parser/Data	FortiGate Parser parse right event type information for LogID(0000000020)
575143	Enhancement	Parser/Data	Meraki Events not parsing all the way -- due to new event types

ID	Severity	Module	Summary
496607	Enhancement	Parser/Data	FortiMail - not parsing client IP value
492448	Enhancement	Parser/Data	Barracuda Web Filter Parser format change
529083	Enhancement	Parser/Data	Update SymantecAVParser to include log description in event
492489	Enhancement	Parser/Data	SonicOS sonicwall parser needs to be enhanced to parse more event types
493500	Enhancement	Parser/Data	Cisco ASA Parser bug to provide port on pre and post natted events
542444	Enhancement	Parser/Data	Fortisiem not detecting the "lsass" service logs from Ubuntu
576088	Enhancement	Parser/Data	SonicOS parser needd to be updated to include web category
592870	Enhancement	Parser/Data	CloudTrail Parser does not parse account information to an event attribute
549320	Enhancement	Parser/Data	Fortigate Parser Apprisk is not utilizing the correct case
556324	Enhancement	Parser/Data	WinOSWmiParser fails to extract attributes correctly on EventCode 4624
557631	Enhancement	Parser/Data	Mysql DB parser does not parse message field completely, due to comma separated values
582689	Enhancement	Parser/Data	If FGT IPS event is denied, dropped, blocked - set event severity to medium
590121	Enhancement	Parser/Data	PulseSecure parser does not handle priority field in syslog header
577186	Enhancement	Parser/Data	BUG - Tipping Point Parser update request
577082	Enhancement	Parser/Data	FortiWeb 6.1.1 Parser Enhancements
576860	Enhancement	Parser/Data	FortiMail parser enhancement, several event attributes not parsed
582975	Enhancement	Parser/Data	SymantecSAPParser need to be extended
575859	Enhancement	Parser/Data	PulseSecure parser needs to be extended
574890	Enhancement	Parser/Data	FortiGate IPS Event Severity needs to be fixed to address firewall action
590127	Enhancement	Parser/Data	FortiOS GTP logs not sufficiently parsed
573605	Enhancement	Parser/Data	Verify FGT Parser is collecting all attributes and update as needed.
573569	Enhancement	Parser/Data	FortiADC logs parser needs to be extended
572910	Enhancement	Parser/Data	PAN firewall parser to support USERID and HIPMATCH events

ID	Severity	Module	Summary
590451	Enhancement	Parser/Data	Fortigate Parser does not parse Objectpath, Object name, Configuration
570577	Enhancement	Parser/Data	Windows parser to handle escape character when parsing account names
592163	Enhancement	Parser/Data	Office365 Parser does not parse target user field from event
587917	Enhancement	Parser/Data	Incorrect parsing logic in WinOSWmiParser
583269	Enhancement	Parser/Data	User information in GitLab-Authentication-Failure not parsed
582231	Enhancement	Parser/Data	Elasticsearch query does not work with netflow group for FortiGate-NetFlow

Vulnerabilities Fixed

FortiSIEM 5.2.6 is no longer vulnerable to the following CVE-References:

- CVE-2019-17653
- CVE-2019-16153
- CVE-2019-17651

Known Issues

Remediation Steps for CVE-2021-44228

One FortiSIEM module (3rd party ThreatConnect SDK) uses Apache log4j version 2.8 for logging purposes, and hence is vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 5.2.6-5.4.0.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
3. Restart all Java Processes by running: "`killall -9 java`"

What's New in 5.2.5

This document describes the requirements for the FortiSIEM 5.2.5 release.

Note that this release includes 5.2.4 release features. For more information on 5.2.4 features, look here.

Pre-deployment Notes

The location where you pick up FortiSIEM Images has changed—the website https://images-cdn.fortisiem.fortinet.com/ is no longer available. You must obtain FortiSIEM Images from the Fortinet support site: https://support.fortinet.com/.

1. Follow the instructions in Downloading FortiSIEM Products to get the FortiSIEM images.
2. Follow the fresh install instructions in Getting Started.
3. Follow the upgrade instructions in the Upgrade Guide.

Elasticsearch and upgrades to 5.2.5:

In 5.2.5, Elasticsearch query behavior changed from case-sensitive to case-insensitive, to enable users to search log data without knowing the case. To support this enhancement, Elasticsearch event data format has changed in 5.2.5. After the 5.2.5 upgrade, data will be written in the new format starting new day UTC time. FortiSIEM can only query data in the new format, so event queries will not work with older data until they are re-indexed. For details, see "Migrating Elasticsearch data from 5.2.1 or earlier to 5.2.5" in the Upgrade Guide.

Report Server upgrade to 5.2.5 is not working. If you are running Report Server, then follow these steps to upgrade to 5.2.5:

1. Upgrade Super, Worker, Collector, and Report Server as described in the Upgrade Guide.
2. Archive the Report Server event database. Run this command: `/opt/phoenix/deployment/reportdb_archiver.sh`
3. The report db backup is under `/data/archive/reportdb/reportdb_2019-09-09T14-33-26`.
4. Delete the Report Server from Super.
5. Add the Report Server back to Super.
6. Restore Report Server event database from Archive. Run this command: `/opt/phoenix/deployment/reportdb_restore.sh/data/archive/reportdb/reportdb_2019-09-09T14-33-26`.

Rescheduling Reports After Changing GUI Locale

If you change the GUI Locale after upgrading to 5.2.5, then you must reschedule all of your scheduled reports for the new Locale.

Adding Organizations Using Elasticsearch

Dynamic Shard management becomes active on a new day in the Coordinated Universal Time (UTC) timezone. This affects the 5.2.5 upgrade and the addition of new customers in Managed Service Provider (MSP) environments. This means that if you are in the Pacific Standard Timezone (PST):

- It is better to upgrade to 5.2.5 slightly after 4 PM, which is the beginning of a new day (4 PM PST = 0 AM UTC).
- If you are adding an Organization to the system, it is better to add the customer slightly after 4 PM local time.

Swap not set up on fresh install

To add back the swap partition, run the following command on Super, Worker, Report Server and Collector nodes:

```
mv -f /etc/fstab /etc/fstab.bak.525; (cat /etc/fstab.bak.525 | grep -Ev
'^UUID=.*\sswap'; blkid | grep swap | sed -E 's/.*UUID="(\S+)" TYPE.*/UUID=\1 swap
swap defaults 0 0/') > /etc/fstab; swapon -a; free -h
```

Redis running in master-slave mode

Starting with release 5.2.5, Redis mode has changed from cluster to master-slave to better suit FortiSIEM's needs

New Features

New Chart Types for Data Visualization

This release adds more visualization charts in the widget dashboard and analytics: Choropleth Map (Region Map), Sankey Diagram, Chord Diagram, Clustered Bubble Chart and Sunburst Diagram. These charts are available from the Widget Dashboard and Analytics. See FortiSIEM Charts and Views.

Incident Explorer View

This release adds a dynamic Incident dashboard that helps users to correlate actors (IP, Host, User) across multiple incidents, without creating multiple reports in separate tabs. The Incident Explorer View displays incident trends, actor, and incident details on the same page. The user can choose an actor and see all of the incidents concerning the actor. The user can then select a time range to narrow down the number of incidents. Time ranges, actors, and incidents can be chosen in any order. Each time a selection is made, the rest of the dashboard updates to reflect that selection. See Incident Explorer View.

Enhanced CMDB Search

In previous releases, the user could search the CMDB by entering a string to match the contents of a set of fields. In this release, the user can search on a field-by-field basis and on multiple fields at once. The possible values are

shown so that the user can select them. Custom device attributes are included in search fields as well. See Searching for Devices.

Dynamic CMDB Group from Custom Properties

Dynamic CMDB Groups can now be created from device properties. See Grouping Devices by Custom Properties.

Support for Dependent Properties in CMDB Import

This release enables users to model an external CMDB inside the FortiSIEM CMDB by adding the concepts of Site and Application to Device. Conceptually:

- an Application runs on one or more Sites and
- a Site contains many Devices

To model this in the FortiSIEM CMDB, users must create the following items (in **ADMIN > Device Support > Custom Property**):

- a set of Site properties with one Site property being a Key
- a set of App properties with one App property being a Key

The user must then create a CMDB file containing Device, Site, and App Properties and import it via Device Inbound Integration in **ADMIN > Settings > Integration**.

The user can use these Device, Site, and App properties in Analytics, Rules, CMDB Reports, and Dashboards.

User Interface

In addition to English, the FortiSIEM GUI is localized to the following languages:

- Chinese - Simplified
- Chinese - Taiwan
- Chinese - Hong Kong
- French
- Italian
- Japanese
- Korean
- Portuguese
- Spanish
- Russian
- Romanian

The user can specify the language for the GUI in the UI Settings tab of the User Profile dialog box. For more information, see "Language" in the table beneath UI Settings here.

Elasticsearch Support Features

This release contains the following Elasticsearch enhancements:

- Elasticsearch 6.8 Support
- Dynamic Shard management

- REST client Support
- Ability to view and stop long running queries

Elasticsearch 6.8 support enables customers to use HTTP(S) REST clients under basic license, frozen indices, and others.

Prior releases used a fixed number of shards per index, per day. If EPS is very high, then the index may become very large. On the other hand, for the MSSP case using one index per customer, a large number of customers can create too many shards. Both cases can cause Elasticsearch performance to degrade.

This release adds dynamic shard management to maintain optimal Elasticsearch performance.

This is based on the following checks: (a) Size of a shard is less than 40GB, (b) total number of Shards is less than the total number of Hot Nodes times the number of vCPU per node, (c) Index is half full. By using Elasticsearch aliasing techniques when each of these conditions are violated, FortiSIEM keeps the number of shards under operational limits. Additionally, when the number of segments is more than twice the number of shards, then FortiSIEM forces a segment merge to reduce Elasticsearch memory usage.

In addition to Transport Client, Elasticsearch Queries can now use REST-based HTTP(S). This can be configured during Elasticsearch setup.

Long running Elasticsearch queries can now be stopped from the FortiSIEM GUI.

For more information on HTTP(S) REST and shards, see Configuring Storage.

Linux/Windows Agent Features

- **Signed Agent binaries**: Both Linux and Windows Agent binaries are now cryptographically signed by Fortinet.
- **Ability to specify host name**: The user can specify a host name during Agent installation. The Agent will register to the Supervisor with that host name. CMDB will show that host name. See "Installing Windows Agent" in the Windows Agent 3.1.2 Installation Guide and "Installing Linux Agent" in the Linux Agent Installation Guide.
- **Virtual Collector Support**: Agents can send events to a Virtual Collector (such as an F5 Load balancer) located between Agents and Collectors. Virtual Collectors can be defined in the Agent definition on the Supervisor.
- **Linux Agent – detects process creation similar to the Windows Sysmon agent**: FortiSIEM Linux Agent is extended to detect processes being created on a host along with parent process and file hash. The event type is LINUX_PROCESS_EXEC.
- **Linux Agent – adds time zone information so that times in logs are normalized correctly**.
- **Linux Agent syslog definition section automatically selects logs of higher severity when a specific severity is chosen. This avoids unnecessary mouse clicks.**

Cluster upgrades

Current upgrade procedure is complex for a large Super, Worker cluster:

1. Stop Workers
2. Stop Super
3. Upgrade Super
4. Bring up Super
5. Upgrade and bring up Workers one by one

FortiSIEM provides one script to upgrade the Super and another script to upgrade the Workers.

The scripts are available only in releases after 5.2.5.

See "Upgrading a FortiSIEM Cluster Deployment" in the Upgrade Guide.

Key Enhancements

- In the GUI, we explicitly show the specific report design template that will be used to create the PDF. See here.
- FortiSIEM automatically adds a default template when the user adds a new report to a Report Bundle with an existing design template
- On the Entity Risk score page, the user can choose the time duration for Risk Trends and Associated Incidents
- For the Nessus6 scanner, the user can discover and pull log names by host name
- A Redis cluster is introduced for Super and Worker nodes to share large objects such as device properties. This reduces the load on the App Server.
- In the Custom Parser definition, search is improved to show all matched values more clearly
- The ability to search for a specific job in the Jobs page has been added
- Improved performance for C++ XML parsing of large XMLs received from App Server
- Custom Jobs are now discoverable without SNMP/WMI credentials
- A system error is created when many in-line report files accumulate at a Worker node. This indicates that the Worker is falling behind in merging in-line reports. You should add a Worker or reduce the number of in-line reports.
- Jira incident outbound integration can now map FortiSIEM Incident attributes to custom Issue Types
- REST APIs have been added to:
  - update certain Incident attributes
  - get Agent Status for a specific host
  - get Triggering Event IDs for one or more incidents

  For more information see the FortiSIEM - Integration API Guide.
- Optimize Malware IP/Domain/URL import performance via CSV files
- Multi-line log parsing support for logs read from a directory
- Identity and Location data processing is optimized to run faster
- ConnectWise is deprecating SOAP-based integration and recommending REST APIs. For REST API-based ConnectWise integration, Client ID is now required.

New Device Support

Devices are described in the External Systems Configuration Guide.

Support for the following devices are added in this release:

- Alert Logic IPS IRIS V2.0 API - Log collection via API
- AWS Kinesis stream - Log collection via API
- AWS Security Hub - Log collection via API
- Bro Parser - New log parser
- Cisco AMP endpoint V1 streaming API - Log collection via API
- CoSoSys Endpoint Protector - New log parser
- Forcepoint - New log parser
- FortiADC - New log parser
- Fortinet FortiInsight – Alert collection via API
- GitLab - Log collection via Git CLI

- Microsoft Azure Event Hub - Log collection via API
- OneIdentity Balabit - New log parser
- Sophos XG Firewalls - New log parser

Device Support Extensions

- BIND - Enhanced syslog parsing and new Event Types
- Cisco ASA - Enhanced syslog parsing
- Cisco ASA - Enhanced syslog parsing and support Threat Defense
- Cisco ISE - Enhanced syslog parsing
- Crowdstrike Falcon Data Replicator - EnhancedLog collection via API, parse more attributes
- FireEye - Enhanced syslog parsing
- Forcepoint - Enhanced syslog parsing
- Forescout ACT - Enhanced syslog parsing
- FortiAuthenticator – parse logs received via FortiAnalyzer
- FortiGate - parse firewall action - Enhanced syslog parsing
- FortiMail support alternative date format - Enhanced syslog parsing
- FortiOS add support for FOS 6.2 - Enhanced syslog parsing
- FortiSandbox 2.5.1 - Enhanced syslog parsing
- FortiSwitch – Discovery, CPU and Memory usage monitoring
- FortiWeb - Enhanced syslog parsing
- French Windows Security Logs parsing update - Enhancement to parser
- Gitlab - Enhanced parsing
- IPFIX – Parse pre-NAT Source IP field
- Juniper SRX300 JUNOS-15 support - Enhanced syslog parsing
- Linux/Unix - Enhanced syslog parsing
- Mcafee web gateway - Enhanced syslog parsing
- Microsoft Windows Security events - Enhancement to parser
- Nozomi - Enhanced syslog parsing
- Office 365 - Enhanced parsing
- PacketFence - Enhanced syslog parsing
- Palo Alto Firewall - Enhanced syslog parsing
- Postfix - Enhanced syslog parsing and new Event Types
- SentinelOne - Enhanced syslog parsing
- Snort parser to support Security Onion - Enhanced syslog parsing
- STIX OTX Integration – extended to cover STIX 2.0
- Symantec WebIsolation - Enhanced syslog parsing
- Websense Web security - Enhanced syslog parsing and new Event Types
- Windows - Update WinOSParser (logs received via Snare) to match WinOSWMIParser and WinOSPullParser parsing
- Windows Security events – update parsing and categorization for event Ids - 4625, 4768, 4771, 4772, 4769
- Windows Security logs – translations updated for French

New and Modified Rules and Reports

New Rules

The following new rules have been defined for the 5.2.5 release:

- AI: File Creation Anomaly
- AI: File Deletion Anomaly
- AI: File Reading Anomaly
- AI: File Writing Anomaly
- AI: Process Started Anomaly
- AI: Process Stopped Anomaly
- AlertLogic Incident
- AWS SecHub: Host Vulnerability Detected
- AWS SecHub: Software and Configuration Violation
- AWS SecHub: Tactics: Collection Detected
- AWS SecHub: Tactics: Command_and_Control Detected
- AWS SecHub: Tactics: Credential Access Detected
- AWS SecHub: Tactics: Defense Evasion Detected
- AWS SecHub: Tactics: Discovery Detected
- AWS SecHub: Tactics: Execution Detected
- AWS SecHub: Tactics: Impact: Data Destruction Detected
- AWS SecHub: Tactics: Impact: Data Exfiltration Detected
- AWS SecHub: Tactics: Impact: Data Exposure Detected
- AWS SecHub: Tactics: Impact: Denial of Service Detected
- AWS SecHub: Tactics: Initial Access Detected
- AWS SecHub: Tactics: Lateral Movement Detected
- AWS SecHub: Tactics: Persistence Detected
- AWS SecHub: Tactics: Privilege Escalation Detected
- AWS SecHub: Unusal Data Behavior Detected
- AWS SecHub: Unusal Database Behavior Detected
- AWS SecHub: Unusal Network Flow Behavior Detected
- AWS SecHub: Unusal Process Behavior Detected
- AWS SecHub: Unusal Serverless Behavior Detected
- AWS SecHub: Unusual Application Behavior Detected
- Crowdstrike - Activity Prevented
- Crowdstrike - Attacker Methodology
- Crowdstrike - Authentication Bypass
- Crowdstrike - Blocked Exploit

- Crowdstrike - Credential Theft Detected
- Crowdstrike - Data Deletion
- Crowdstrike - Data Theft
- Crowdstrike - Drive By Download
- Crowdstrike - Establish Persistence
- Crowdstrike - Evade Detection
- Crowdstrike - Exploit Pivot
- Crowdstrike - File Blocked With Matching Hash
- Crowdstrike - Intel Detection
- Crowdstrike - Known Malware
- Crowdstrike - Machine Learning
- Crowdstrike - Malicious Document
- Crowdstrike - NextGen Anti-virus based Malware
- Crowdstrike - Overwatch Detection
- Crowdstrike - Privilege Escalation
- Crowdstrike - Ransomware
- Crowdstrike - Server Compromise
- Crowdstrike - Social Engineering
- Crowdstrike - Suspicious Activity
- Crowdstrike - Suspicious Processes Terminated
- Crowdstrike - User Compromise
- Excessive Crowdstrike detected suspicious activity at a host
- Policy: Browser Download
- Policy: Browser Upload
- Policy: Customer Data Uploaded to Cloud
- Policy: Customer database changes
- Policy: Customer Defined Policy Violation
- Policy: File Backed Up to Cloud
- Policy: File Written to Removable
- Policy: Financial Data Breach
- Policy: HR Data Access
- Policy: Monitor Command Line Usage
- Policy: Monitor Suspicious Application Usage
- Policy: Protect Sensitive Folders - Board Minutes
- Policy: Removable Media Audits
- Policy: Segregation of Duties
- Policy: Source Code Copied to Removable Media
- Policy: Uploads of sensitive data to non-EEA countries
- Policy: User Login Out of Hours
- Policy: VPN Usage

New Reports

The following new reports have been defined for the 5.2.5 release:

- All AWS Security Hub Events
- All AWS Security Hub Threat Sources
- All Crowdstrike Authentication Audit Activity Events
- All Crowdstrike Detection Events
- DNS Requests to .ru and .cn
- Linux bash history access
- Linux file staging
- Linux file timestomping via touch
- Linux internal reconn
- Linux Successful and Failed sudo
- Malware activity - AfraidGate
- Malware activity - Angler
- Malware activity - InPage - Domain match
- Malware activity - Sage 2.0 - Domain match
- Malware activity - Sage 2.0 Ransomware - IP and Port match
- Malware activity - Sage 2.0 Ransomware - Process match
- Top AWS Security Events and Hosts
- Top AWS Security Hub Events
- Top Crowdstrike Detection Events
- Top DNS Destination domains
- Top Hosts With AWS Security Hub Events
- Top Linux Process File Hashes (from Crowdstrike Data Replicator)
- Top Linux Process File Hashes (from FSM Agent)
- Top Non-US Web Connections
- Top outbound non-http connections by destination city, country
- Top Unique DNS Requesters (From Crowdstrike Data Replicator logs)
- Top Unique DNS Requesters (From FSM Agent)
- Top Windows Process File Hashes (from Crowdstrike Data Replicator)
- Top Windows Process File Hashes (from sysmon)
- Top Windows Systems With Unique Logins
- Windows Active Directory Controller Database file modification
- Windows BITSAdmin download
- Windows Certutil Decode in AppData
- Windows Code Execution in Non Executable Folder
- Windows Code Execution in Webserver Root Folder
- Windows Command With Suspicious URL and AppData String
- Windows DHCP Callout DLL installation
- Windows External IP in Command Line (From Crowdstrike data Replicator)
- Windows External IP in Command Line (From FSM Agent)
- Windows Java running with remote debugging
- Windows Logons By Logon type
- Windows LSASS Process Access
- Windows machines running MS WORD

- Windows malicious HTML Applications Spawning Windows Shell
- Windows Net.exe command audit
- Windows Network Connection from Suspicious Program Locations
- Windows Permission check command audit
- Windows Powershell command hiding
- Windows Powershell command usage audit
- Windows Powershell opening external connections
- Windows Registry Changes
- Windows regsvr32 command usage audit
- Windows Remote Desktop connections
- Windows Remote Thread in LSASS
- Windows Routing table modification
- Windows SSH/telnet connections to outside
- Windows Suspicious Control Panel DLL Load
- Windows suspicious driver load from Temp directory
- Windows whoami command usage audit
- Windows wmic command usage audit
- Windows wmic suspicious information retrieval

Modified Reports

The following existing reports have been modified for the 5.2.5 release.

- AppFlow: Top Applications By Bytes (Detailed)
- AppFlow: Top Applications By Bytes
- AppFlow: Top Conversations By Bytes (Detailed)
- AppFlow: Top Sources By Bytes
- AppFlow: Top Conversations By Bytes
- Windows Servers By Last Authentication Event Receive Time
- Windows Servers By Last Change Event Receive Time
- Windows Servers By Last FIM Event Receive Time
- Linux Servers By Last Authentication Event Receive Time
- Linux Servers By Last Change Event Receive Time
- Linux Servers By Last FIM Event Receive Time
- Routers/Switches By Last Authentication Event Receive Time
- Routers/Switches By Last Change Event Receive Time
- Firewalls By Last Authentication Event Receive Time
- Firewalls By Last Change Event Receive Time
- Hypervisors By Last Authentication Event Receive Time
- All PCI Systems By Last Event Receive Time
- FortiGate Top Botnets
- FortiGate Top Botnets
- FortiSandbox Top Source Country By Malware
- FortiSandbox Top Destination Country By Malware

- FortiSandbox Total Analysis Jobs
- FortiSandbox Zero Day Suspicious URLs
- FortiSandbox Zero Day Malicious URLs
- FortiSandbox Zero Day Malicious Files
- FortiGate Top Applications by Bandwidth
- FortiGate Top Websites by Connections
- FortiGate Top IPS detected Attacks
- FortiGate Top Malicious Websites
- FortiGate Top Phishing Websites
- FortiGate Top Proxy Avoidance Attempts
- FortiGate Top Protocols By Bandwidth
- GLBA 1.6.1: Top Reporting Modules Ranked By Event Rate
- ISO 27001 A.12.4.1: Top Reporting Modules By Event Rate (Per Sec)

Deleted Reports

The following report has been deleted for the 5.2.5 release:

- Carbon Black Functionality Stopped

Important Bug Fixes

Bug ID	Severity	Module	Description
564336	Minor	App Server	CSV Report Export Report with Calculations fail
570934	Enhancement	System	Remove Hail a Taxii from External Threat Intelligence source - no longer updating
561449	Minor	GUI	Non Built in admin users have session timeouts regardless of configuration
567553	Minor	Query	COUNT DISTINCT Event queries do not work on Elasticsearch
559488	Minor	App Server	Email Notification with TLS1.2 does not work

Bug ID	Severity	Module	Description
580713	Minor	App Server	Remediation script execution failed when events triggered in org level
566959	Minor	Log Collection	Azure Expect script credentials need to be obfuscated
564252	Minor	Parser	Incident Event Forwarding not working when event group is chosen in filter conditions
524946	Minor	App Server	FortiSIEM incident notification unnecessarily adds Identity And Location information to incident_detail
570780	Minor	Data Manager	Events are not cached on collector when ElasticSearch is down
524275	Minor	GUI	Quick Info and Identity Location Dashboard > SenderBase Reputation has wrong URL
556271	Normal	GUI	Incident risk entity is not showing up if user set it as home landing page
428993	Minor	App Server	PostGreSQL Incident table does not sync with time zone changes

Bug ID	Severity	Module	Description
561378	Normal	GUI	Collector fails to register collector through proxy
573744	Minor	App Server	When Organization is renamed, offline retention policy still refers to the old name
573922	Minor	Data Manager	Excessive phDataPurger loading agent info into cache log fills up disk over time
556271	Minor	GUI	Incident > Risk View does not display if user set it as home landing page. Information shows if you change tabs and come back
556525	Minor	Log Collection	Custom JDBC job: Oracle service name is not saved
564804	Minor	App Server	Incident XML export shows a negative value for Repeat Count
559241	Minor	Parser	Excessive logging during Sophos Central log collection causes disk to be full
572591	Minor	Data Manager	Incorrectly parsed binary even type attributes causes data corruption
574694	Minor	App Server	Saved search results at Organization level cannot be viewed

Bug ID	Severity	Module	Description
476419	Enhancement	GUI	User session should not timeout during test connectivity, discovery and dashboards
552531	Minor	Log Collection	Sophos Central Event pulling do not work
570234	Minor	Rule Engine	Rule does not trigger with IN condition when there are nore than 2 elements in the SET
569235	Normal	Log Collection	Used EPS information does not correctly account netflow logs
574901	Minor	Parser	Correctly set FortiGate IPS Severity based on severity field
550234	Minor	Rule Engine	Incident attributes not showing non-English characters - Non-ASCII characters displayed as '_' in incident
572800	Minor	GUI	GUI memory leak when user is switching between tabs

Known Issues in Release 5.2.5

- Search - Unable to get more than 16.38K entries in COUNT DISTINCT operations. No workaround is possible.
- Search – Many files may accumulate in the dynamic-reports folder for canceled report exports. The folder path is `/opt/phoenix/config/dynamicreports/customize-export`. The workaround is to periodically delete the files.

- FortiSIEM Collector doesn't validate the Supervisor/Worker HTTPS public certificate. No workaround is possible.
- The Default Time Range (10 days) on the Incident Explorer dashboard is too long and the user cannot change this default setting. The workaround is to change the setting to fewer days and make sure there is sufficient disk I/O to the event database for this query to return results.
- External Lookup does not pickup IPs from the external lookup request unless you specify <IP> in the URL. The workaround is to put "<IP>" in the URL.
- The Elasticsearch NOT IN query does not work with network groups with low and high. No workaround is possible, other than trying to rewrite the query.
- The Widget Dashboard drill down gives incorrect results when the report contains Protocol and Port. The workaround is to add the specific Protocol and Port conditions in the drill down query.
- FortiSIEM is unable to create a ticket from multiple incidents. No workaround is possible.
- The rule "Multiple Distinct IPS Events From Same Src" is firing on FGT non-IPS events. The workaround is to modify the rule definition by modifying the rule filter condition to "Event Type CONTAIN FortiGate-ips-".
- Swap partition is not created for Super, Worker, and Collector. The workaround is as follows:
  - Run the `blkid /dev/sda2` executable.
  - Take this UUID and replace the UUID for the swap partition in the `/etc/fstab` folder.
- No FortiSIEM user can delete or modify a device credential other than the user who created it. The workaround is to delete the credential from the database. It is advisable to contact ForiSIEM technical support for this operation.
- If there are lots of Cases created in FortiSIEM, then the CASES tab may take a long time to load. The workaround is to delete some old cases from the database. It is advisable to contact ForiSIEM technical support for this operation.

What's New in 5.2.4

This release adds the following new features and enhancements.

- Features
- Enhancements
- Bug Fixes

Features

- Active Directory Group to FortiSIEM Role Mapping
- Shared dashboard
- Handle incoming log via JSON/REST API
- Bidirectional ThreatConnect integration
- VirusTotal and RiskIQ integration
- Bi-directional Jira integration
- Rackspace CMS Organization and Credential discovery

Active Directory Group to FSM Role Mapping

This release allows you to directly use Active Directory Groups to specify FortiSIEM user roles. The FortiSIEM administrator begins by defining mappings from Active Directory Groups to FortiSIEM Roles. When the user logs in, FortiSIEM authenticates the user to Active Directory, downloads all the groups that the user belongs to, and then assigns FortiSIEM Roles based on the previously defined mappings. Least restrictive principle is used if the user belongs to multiple groups, meaning that the user has rights to all mapped FortiSIEM roles.

For details see here.

Shared Dashboard

This release enables a FortiSIEM user to share a dashboard with one or more users. The shared users can be based on FortiSIEM user groups or Active Directory Groups. The dashboard creator has edit permissions, while the shared users have only viewing, filtering, and drill-down capabilities. All changes made by the dashboard creator are instantly reflected on the shared user dashboard.

At any point, a shared user can disconnect from the shared dashboard by creating a clone. The cloned dashboard will no longer receive any changes to the original dashboard. Users can make their own changes to the cloned dashboard.

For details see here.

Handle incoming events via JSON/REST

This release enables FortiSIEM to receive JSON formatted events over HTTP PUT. This can be considered as an enhancement for TCP/UDP-based syslog. To take advantage of this enhancement, the user must write a JSON parser in the same way as a regular syslog-based parser. See Ingesting JSON Formatted Events Received via HTTP(S) POST.

Bi-directional ThreatConnect integration

ThreatConnect is a source of external threat intelligence, e.g. Indicators of Compromise (IOCs) including malware domain, IP, URL, and hash.

In FortiSIEM 5.2.4, users can download IOCs from ThreatConnect and receive alerts on matches in logs. Since ThreatConnect aggregates threat feeds from multiple sources, large numbers of automatically downloaded IOCs can cause false positives, increase processing needs and filling storage.

To circumvent this issue, FortiSIEM 5.2.4 release enables the user to control the downloaded IOCs by specifying IOC download policies. Only the IOCs that match policy definitions would be downloaded.

This release also enables the user to mark a ThreatConnect IOC as a False positive. This action can be taken when an incident triggers matching a ThreatConnect IOC, and the user determines that it is a false positive

For details on setting up ThreatConnect integration, see Working with ThreatConnect IOCs. For details on marking a ThreatConnect IOC as a False positive, see here.

VirusTotal and RiskIQ integration

VirusTotal and Risk IQ websites provide reputation for IP addresses, domains, URLs, and file hashes. They also provide APIs which allow the user to programmatically consume data.

In this release, a FortiSIEM user can run checks against these websites when an appropriate security incident triggers. This check can be run either on demand seeing an incident trigger or in the background via a notification policy. In on-demand mode, FortiSIEM will display the reputation results on screen and the user can take various

follow-up actions such as, updating Incident comments, resolving the incident as a true or false positive, opening a ticket in FortiSIEM or an external ticketing system, taking a remediation action. When run in background mode, incident comments will be automatically updated with the findings from the websites.

For details on VirusTotal and RiskIQ integration, see here.

Bi-directional Jira integration

This release supports Jira as an external ticketing system. A ticket can be created in Jira either on-demand when an incident triggers, or in the background via a notification policy. Extensive mappings between Jira fields and FortiSIEM incident fields are provided to enable a Jira ticket to have sufficient information. When a Jira ticket is closed, the corresponding ticket is closed in FortiSIEM.

For details on Jira integration, see here.

Rackspace Customer Organization and Credential discovery

This release enables FortiSIEM to discover Rackspace customers and cloud credentials from Rackspace Janus, MSCloud and CMS Systems. This discovery-based methodology eliminates administrators need to enter credentials twice since they already exist in Rackspace internal systems. Additionally, it is easy to update – when customers get added or credentials get added or updated, a simple rediscovery enables FortiSIEM to have the new information.

The user must provide credentials for Rackspace Janus, MSCloud and CMS Systems in FortiSIEM and then run a Rackspace Org Credential discovery. FortiSIEM will do the following

- Discover Rackspace customers and automatically create organizations in FortiSIEM
- Discover AWS and Azure cloud credentials associated with each customer
- Discover Cloud application credentials e.g. Cloud Passage Halo, Crowdstrike and AlertLogic.
- Start pulling events logs Cloud applications

Enhancements

PCI Logging Dashboard Enhancements

1. Drill down is permitted on all metrics
2. Search allows the user to select values from a drop-down menu

Elasticsearch queries are now case-insensitive

This release changes Elasticsearch query behavior from case-sensitive to case-sensitive. This increases the storage by about 10% as Elasticsearch has to store the original version for display and a lower-case version for search.

For existing customers that are already running elastic search, older data has to be re-indexed for searches to work after upgrading to 5.2.4. Exact steps are as follows

1. Upgrade FortiSIEM to 5.2.4
2. Go to **Admin > Setup > Storage**. Click **Test and Save**.
3. Wait for GMT new day (current day's index will still be with old style).
4. Re-index all old indices.
5. Delete old indices.
6. Create alias.

Re-indexing:

```
curl -X POST "X.X.X.X:9200/_reindex" -H 'Content-Type: application/json' -d'
{
"source": {
"index": "fortisiem-event-2019.04.22"
},
"dest": {
"index": "fortisiem-event-upgrade-2019.04.22"
}
}'
```

Delete old index:

```
curl -XDELETE http://X.X.X.X:9200/fortisiem-event-2019.04.22
```

Creating Alias :

```
curl -X POST "X.X.X.X:9200/_aliases" -H 'Content-Type: application/json' -d'
{
"actions" : [
{ "add" : { "index" : "fortisiem-event-upgrade-2019.04.22", "alias" : "fortisiem-
event-2019.04.22" } }
]
}
'
```

Generic GUI Enhancements

1. In CMDB, **Incident List View** and **Dashboard Table View**, a horizontal slide bar is added when the user chooses to display a large number of columns.
2. **Incident Details** panel is re-organized:
    a. Separate incident attributes, incident comments, and **Incident Action** history
    b. Newly added **Incident Action** history records every (modification) action taken by the user or the system on that incident
3. For faster display, the following views are paginated:
    a. **Admin > Organization View** – especially when there are large numbers of organizations
    b. **Widget Dashboard > Table View**

Allow the user to change the severity of an Incident

In prior releases, Incident severities are set by Rule severity. Now the user can change the Incident severity independently of Rule severity.

Windows Agent (3.1.1) Enhancements

1. Ability to install and run with SYSTEM privilege
2. Support for Italian locale for File Integrity Monitoring User name detection

Bug Fixes

Bug Id	Module	Description
553127	GUI	Two issues - CMDB > Auto-expand option is not saved. In Analytics result, row highlight disappears after viewing event details.
553283	App Server	Duo @ Factor Authentication is broken after App Server security hardening.
553230	App Server	Random GUI login failures when Active Directory Group to FortiSIEM Role Mapping is used.
553122	App Server	Event pulling jobs like Alertlogic and Cloudpassage should be distributed to multi-tenant collectors.
552912	Windows Agent	Windows Agent doesn't support Virtual Collector
550826	Java Query Server	COUNT (DISTINCT) not working for Elasticsearch ad hoc queries
549634	System	Linux agent log fortisiem-linux-agent.log file has world writable permissions
548677	Rule Engine	Rule with Event Type IN more than 2 non-group entries fails to trigger
548646	App Server	Device names with a single quote will break SQL grammar
548229	Java MSSQL Agent	MSSQL JDBC Monitor does not handle dates found in Spanish locale

What's New in 5.2.2

This release is for hardware appliances only.

It contains the following new feature.

Support for new 3500G model

In addition to FSM 2000F and FSM 500F appliances, this release supports the new FSM 3500G appliance, a replacement for FSM 3500F. This model is more powerful than FSM3500F, with 24 cores, 48 vCPU, 128 GB RAM and 48 TB (12x4TB) storage.

The release contains the following bug fix.

Bug 549856: "diagnose system disk info" command output does not show the correct physical disk slots

What's New in 5.2.1

FortiSIEM 5.2.1 release includes the following:

New Features

FortiSIEM 5.2.1 release includes the following features:

- Automated Failover and Disaster Recovery
- Multi-tenant Collectors
- Data Anonymization support
- Windows Agent without Windows Agent Manager
- Linux Agent
- Custom Log File Analysis
- PCI Logging Status Dashboard
- Packet Capture (PCAP) File analysis
- Ability to forward any event in FortiSIEM to an external server via CEF
- Azure Platform Support

Enhancements

FortiSIEM 5.2.1 release includes the following enhancements:

- Elasticsearch deployment and performance enhancements
- Windows Agent enhancements
- HTML GUI enhancements
- Ability to rate limit collectors
- Rule Worker Performance optimization
- Incident Reporting status
- Case Management enhancements
- Custom Device Property support in Analytics
- System Security Hardening

New Device Support

- AWS Cloud Passage Halo - log collection via API
- Tenable.io - log collection via API
- GitLab - log collection via API

- Rapid7 InsightVM - log collection via API
- Crowdstrike - log collection via Streaming API, Data Replicator
- Sophos Central - log collection via API
- Windows Defender ATP - log collection via API
- Tanium Connect - log parser
- OneIdentity - log parser
- Cyxtera AppGate - log parser
- PacketFence - log parser
- Cimcor CimTrak - log parser
- Watchguard Firebox - discovery and performance monitoring
- TruStar - Threat Intelligence integration via API
- ThreatConnect - Threat Intelligence integration via API

Device Support Enhancements

- Microsoft Office365 - new event types
- ForeScout CounterACT - enhanced log parser
- AlertLogic - enhanced log parser
- Cisco ISE - enhanced log parser
- Box - API - log collection
- Nessus Pro v7 and v8
- McAfee EPO - enhanced log parsing
- FortiManager - enhanced syslog parsing
- PulseSecure - enhanced syslog parsing
- Digital Guardian DLP - enhanced syslog parsing
- HP ComWare - enhanced syslog parsing
- F5 LTM - enhanced syslog parsing
- Office 365 - enhanced management activity log parsing
- Checkpoint Firewall 1 - CEF and syslog event parsing
- Windows - French language - enhanced security event parsing
- FireAMP/eStreamer - new agent

Automated Failover and Disaster Recovery

This release enables native FortiSIEM Failover and Disaster Recovery. The feature works with all FortiSIEM deployments – hardware appliance, all-in-one Virtual Appliance and Super/Worker Cluster using NFS based Event Database (Event DB) or Elasticsearch.

This feature enables customers to have two FortiSIEM systems – one Primary FortiSIEM for full Read/Write operations and a Secondary FortiSIEM for Read only operations. Logs are sent to the Primary Site. Discovery and Performance monitoring happens on the Primary Site. Users normally login to the Primary Site. Alerts and notifications trigger on the Primary Site. The full state - CMDB (PostGreSQL DB), Config (SVN), Profile data (SQLite DB) and Event DB (NFS based Event DB or Elasticsearch) are synched from Primary to Secondary – are synched from the Primary to the Secondary. Users can login to the Secondary FortiSIEM and run searches – the results are available after a slight delay.

After disaster, the Secondary FortiSIEM can become the Primary and users and events can be diverted to the new Primary using DNS mechanisms.

This feature requires a separate FortiSIEM license with exactly same parameters as the original. FortiSIEM has to be set up in two sites in an identical fashion, implying identical number of Super, Workers and identical Event DB (NFS or Elasticsearch) at the two sites. To handle CMDB replication, the embedded PostgresSQL database will be automatically upgraded to 9.4-BDR as part of 5.2.1 upgrade.

For details about setting up Failover and Disaster Recovery, see here.

Multi-tenant Collectors

A Collector is an important component in a multi-tenant FortiSIEM deployment. By associating one or more Collectors to an Organization, devices and logs can be easily associated to that Organization.

Prior to 5.2.1, Collectors can be deployed in one of two ways:

- **Many-to-One deployment**: Collectors can be associated to an Organization in many-to-one fashion. Logs collected and devices monitored by a Collector belong to the corresponding Organization.
- **Special One-to-Many deployment**: To handle multi-tenant log sources (for example, FortiGate firewall with VDOM), a Collector can be associated to the special Super/Local FortiSIEM Organization. You can define Event Organization Mapping Rules to map the Organizations in multi-tenant devices to FortiSIEM Organizations. The Collector uses the Event Organization Mapping Rules to associate devices and logs to the correct FortiSIEM Organization.

A Collector belonging to the Super/Local Organization is a multi-tenant Collector, since it can handle multiple Organizations. In this release, the multi-tenant Collector concept is enhanced further:

- **Multi-tenant Agents**: FortiSIEM Windows Agent 3.1 and Linux Agents 5.2.1 belonging to any Organization can send logs to a multi-tenant Collector. Using the Organization Id information in log, a multi-tenant Collector can associate the Agents and the logs to the correct Organization.
- **Multi-tenant Event Pulling**: When events need to be collected via an API (for example, AWS Audit trail), the user can now associate a FortiSIEM Organization to a credential. The event collection job is assigned to a multi-tenant Collector and it associates events to the correct Organization.
- **Multi-tenant Collector Pool**: For scalability, multiple multi-tenant Collectors can be defined for the Super/Local Organization. Windows and Linux Agents send to the multi-tenant Collector pool in a round-robin fashion. API based event pulling jobs are distributed by the Application Server to a collector from the multi-tenant collector pool. If one Collector goes offline or is deleted, the job is automatically re-distributed to another multi-tenant Collector.

For details about various deployment scenarios, see here.

For details about setting up multi-tenant collectors, see here.

Data Anonymization Support

Starting this release, FortiSIEM can anonymize any parsed log field containing Personally Identifiable Information (PII), including IP addresses, host names, user names, MAC addresses and email addresses. User can choose any attribute including custom-defined attributes for anonymization. This enables Organizations to comply with data privacy regulations such as General Data Protection Regulation (GDPR).

Anonymization is done for externally received logs, internally generated logs, incidents and CMDB records, search results, notifications. FortiSIEM is able to store the event database on both NFS and Elasticsearch deployments. Encryption can be used where the underlying storage is encrypted by the external storage system in a way that is transparent to FortiSIEM. If the user mounts the hard disk at a different location, a password is required to access the internal data.

Data Anonymization is role-based. You need to define a new role, specify the attributes to be anonymized for that role and map users to that role. FortiSIEM includes a de-anonymization workflow. You need to define a de-anonymization approver user for approving de-anonymization requests. A user may create a de-anonymization request. Once the request is approved for a specific time duration, the data is de-anonymized for the specific user and duration. After the de-anonymization duration expires, the date is re-anonymized using a different key.

Currently, a user belonging to the anonymized role has the following restrictions:

- User cannot see any part of the raw events – they are completely hidden.
- User cannot perform search on anonymized event attributes.
- User cannot run CSV exports on search results.
- If an integer event field is anonymized, the GUI may not show those fields. Normally, integer fields are not anonymized.

For details about setting up data anonymization support, see here.

Windows Agent without Agent Managers

Windows Agents (version 3.1 onwards) can now be centrally configured and managed from the FortiSIEM GUI. Windows Agent Manager is not required.

Note: Collectors are required to collect logs from Windows Agents.

The new Agent configuration process is similar to earlier releases, except that it is done from FortiSIEM GUI and can be applied globally to Agents belonging to multiple Organizations in Service Provider deployments.

a. Define Windows Monitoring Templates in GUI
b. Associate Windows hosts to Monitoring Templates and a list of Collectors.
c. Deploy the Agents.

Agents register to Supervisor and obtain the respective monitoring templates and the list of Collectors to forward events. Agents collect logs according to the monitoring template and send to one of the available Collectors. If any change is made to the template or the Collector list, the changes are propagated to the Agents. Agents can send logs to a different Collector from the list, if one is busy.

The new centralized Agent configuration approach simplifies Agent management and eliminates the need to have an Agent Manager. In addition to providing the same functionality as earlier 2.x versions, new Agents include additional features as described in the Windows Agent Enhancements.

For details about setting up Windows 3.1 agents, see here.

Linux Agents

This release introduces Linux Agents (Version 5.2.1) with the following functionalities:

- Collect any logs sent to the syslog facility
- Monitor Custom log files
- File Integrity Monitoring

Note: Collectors are required to collect logs from Windows Agents.

Linux Agents configuration is done from FortiSIEM GUI and can be applied globally to Agents belonging to multiple Organizations in Service Provider deployments.

a. Define Linux Monitoring Templates.
b. Associate Linux hosts to Monitoring Templates and a list of Collectors.
c. Deploy the Agents.

Agents register to Supervisor and obtain the respective monitoring templates and the list of Collectors to forward events to. Agents collect logs according to the monitoring template and send to one of the available Collectors. If any change is made to the template or the Collector list, the changes are propagated to the Agents. Agents can send logs to a different Collector from the list, if one is busy.

Linux agents need to be licensed in the same way as Windows Agents. FortiSIEM enforces the total number of Windows or Linux Agents deployed within the system.

For details about setting up Linux 5.2.1 agents, see here.

Custom CSV File Analysis

This release allows the ability to load a custom CSV file from the GUI. User can define a mapping from CSV file columns to event attributes. FortiSIEM will generate events – one for every line in the log file. The events can be searched like an externally received event.

For details about setting up a custom CSV file for analysis, see here.

PCI Logging Status Dashboard

This release provides a dashboard that provides a status of PCI devices that are logging/not logging at all or logging correctly. Logging correctness is defined on a device group basis by associating a Report to a device group in Report > Compliance folder.

For details about setting up PCI Logging Status Dashboard, see here.

Azure Platform support

FortiSIEM can now be deployed in Azure Clouds.

For more information about FortiSIEM Azure Collector installation, see here.

PCAP File Analysis

This release allows user to parse PCAP files. IP, TCP/UDP and HTTP attributes. PCAP files can be moved to this location on any node defined in `phoenix_config.txt`.

Ability to forward any event to an external server via CEF

This release enables FortiSIEM to forward logs to an external system using Common Event Format (CEF) format over UDP or TCP.

For details about setting up event forwarding via CEF, see here.

FortiSIEM parsed event attribute to CEF attribute mapping is defined here.

Elasticsearch deployment and performance enhancements

FortiSIEM can be configured to use Elasticsearch as its event database – this enables FortiSIEM to scale out event storage and search capabilities using Elasticsearch distributed architecture. This release adds the following Elasticsearch related enhancements:

- Elasticsearch 6.4.2 version support.
- Multiple Coordinator node support for fail-over: Enter multiple coordinator nodes using a comma separated manner in **Admin** > **Setup** > **Storage**.

- **Ability to store events on per-customer basis in Service Provide deployments**
  For multi-tenant deployments, you can optionally store logs for each Organization in a separate Elasticsearch index. This enables you to easily delete the logs for an Organization if needed, without affecting the performance of the system.

  To do this set `index_per_customer = true` in the Elasticsearch section of `/opt/config/phoenix_config.txt` for Super and each Worker nodes.

  ```
  [BEGIN Elasticsearch]
   enable=false
   ...
   index_per_customer=false
   ...
  [END]
  ```

  By default, `index_per_customer = false`

  It is highly recommended to set this at the beginning of the install before events are stored in Elasticsearch. Once the setting is changed, Supervisor and Worker nodes need to be restarted for the modules to read the change. If the change is done after Elasticsearch has been running for a while, then the queries around the time of change may not work properly. But queries for time window before or after the time change will work correctly.

  Note: You will likely need more data nodes if you decide to separate customer data. Refer to the Elasticsearch capacity planning guide.
- **Elasticsearch log storage capacity improvements**
  a. Use 'best compression'.
  b. FortiSIEM event attribute types mapped to the smallest (in size) Elasticsearch data type.
  c. FortiSIEM profile data and per-Worker-5minute-inline-report data not stored in Elasticsearch.
  d. Option to not store inline report data in Elasticsearch. Inline reports speed up Dashboard display. There are now three options to choose from:
     i. **Disable inline computation** – when the user visits a Dashboard, the GUI will query directly raw events in Elasticsearch – this does not consume Elasticsearch storage.
     ii. **Inline computation via files** – inline computation is still done but the results are stored in files on Supervisor node - this does not consume Elasticsearch storage. This approach is the same as FortiSIEM NFS based Event Database.
     iii. **Inline computation via Elasticsearch (default)** – Inline computation results will be stored in Elasticsearch. It consumes Elasticsearch storage and dashboard will load faster. However, compared to earlier releases, per Worker results are not stored and merging is done outside of Elasticsearch – so Dashboard queries will be equally fast but consume less space.
- **Support of tiered Elasticsearch Hot/Warm storage**
  User can configure certain Elasticsearch Data Nodes (typically with SSD) as Hot Nodes, and remaining Data Nodes (typically with magnetic disks) as Warm Nodes. In this configuration, read/writes involving recent logs go to the Elasticsearch hot nodes. When the hot nodes become close to full, then logs are migrated to Warm nodes. When the Warm nodes become full, logs are either Archived (if an archive destination is defined) or purged. FortiSIEM manages the Hot > Warm > Archive data movement based on user defined storage utilization thresholds. User can search events from Hot and Warm nodes in a transparent manner – specific

knowledge of data residence is not needed. Currently, restore from Archived node to Elasticsearch Warm nodes is not supported.

- **Support of CMDBDeviceToAttributeMap functionality in Elasticsearch searches**
  Often there is a need to 'join' log data with device properties from CMDB. The `CMDBDeviceToAttributeMap` function provides this functionality with custom device properties. These searches now work for Elasticsearch.

Windows Agent Enhancements

This release contains the following Windows Agent specific enhancements, in addition to the ability to work without Agent Manager functionality described earlier.

- **Support for Windows Event Forwarding**
  Windows can forward logs using Windows mechanisms to a Central Windows Server. A FortiSIEM agent on the central server can then bring all the events from the various windows servers to FortiSIEM. This is an alternative to running FortiSIEM agent on every Windows server. The disadvantage of this approach is that Windows (Security, application and system) event logs can be collected in this way, while FortiSIEM agent can collect other information such as FIM, Custom log, Sysmon etc. This release is able to parse the forwarded Windows events so that actual reporting Windows server is captured and all the attributes are parsed as sent by native agents.
- **Support of Windows FIPS enabled mode**
  In earlier releases, the agent did not work properly if FIPS mode was turned on. This issue is addressed in this release.
- **File hash for File Integrity Monitoring computed using SHA256**
  The file hash value for file/folder monitoring is now reported using SHA256 algorithm instead of MD5. This enables direct match with external threat intelligence malware file hashes.

For enabling Windows Event Forwarding on Windows Servers, see here.

For enabling FIPS on Windows Servers, see here.

HTML GUI Enhancements

This release adds the following important GUI enhancements:

- Light theme is now added for FortiSIEM GUI. This can be configured on a per user basis under **ADMIN** > **Settings** > **System** > **UI**.
- User state is saved while the user navigates from one tab to another during a login session. When the user goes back to a tab, the last user view is shown.
- The following items are added from Flash GUI:
  - Dashboard slide show
  - Interface Usage Dashboard
  - Event Database Management – works both for NFS based Event Database and Elasticsearch
  - Port Mapping table
  - Application Health table
- Keyword-based search is added in Analytics.

- User can save the Analytics Filters and Time Range attributes and then choose the Saved Filters in Search later.
- Dashboard search filter GUI is redesigned to be similar to Incident Search.
- When user creates a Dashboard Search, queries are run on-demand to capture all data.
- SNMP SysObject Ids can be defined from GUI. This enables custom device discovery.
- New Dashboard view with counts of important types in CMDB and Case tabs.
- New main 'TASK' tab for managing de-anonymization approval and requests.

For setting light theme, see here.

For creating Dashboard slide show, see here.

For creating Interface Usage Dashboard, see here.

For details about Event Database Management, see here.

For Keyword based search, see here.

For saving and displaying Analytics Filters and Display attributes, see here.

For creating SNMP SysObject Ids, see here.

For details about de-anonymization, see here.

Ability to Rate Limit Collectors

This release allows user to limit the rate at which Collectors can send events to Workers.

FortiSIEM, being a real-time event correlation system, requires Collectors to push events as quickly as possible to the Workers. However, if Collectors are offline for a long period of time or Internet bandwidth is scarce, then the Collector to Worker link can get overwhelmed. By defining an upper limit on a Collector bandwidth, the user can force the Collector to limit Collector to Worker bandwidth usage. Note that the drawback of rate limiting is that events may be delayed and correlation rules may not trigger for the delayed events. Also, events may get lost if Collector disk gets full if Collector is receiving events at a higher rate than it is allowed to send.

For setting an upper limit on a Collector bandwidth, see here.

Rule Worker Performance Optimization

In this release, the Rule Worker CPU performance is improved by keeping a cache of event type to Rule mappings – this eliminates the requirement to check every rule for event type match.

Incident Reporting Status

This release adds the incident reporting device status flag (Approved or Pending) to every incident. This enables users to quickly identify the incidents triggered by Approved devices and assign them higher priority.

Case Management Enhancements

This release adds several enhancements to the in-built Case management system:

- Ability to search cases using Incident Id.
- Ability to drill down from Case to Incident List view page with the incidents pre-selected.
- Display the triggered events directly in a Case.

For more information about Case Management, see here.

Custom Device Property Support in Analytics

This release allows users to define custom device properties and then display them under CMDB for use in Analytics searches and incidents.

System Security Hardening

In this release, FortiSIEM Super, Worker and Collector system is configured to be more secure. Following are the Security Hardening enhancements in various ports:

Port 443 hardening

- Removed Apache default installation/welcome page.
- Disabled HTTP OPTIONS method.
- Allows only TLS 1.2 and good ciphers: AES128-SHA, ECDHE-RSA-AES128-SHA, ECDHE-RSA-AES256-GCM-SHA384, ECDHE-ECDSA-AES256-GCM-SHA384.

Port 21 hardening

- Allows only TLS 1.2 and good ciphers: AES128-SHA, ECDHE-RSA-AES128-SHA, ECDHE-RSA-AES256-GCM-SHA384, ECDHE-ECDSA-AES256-GCM-SHA384.
- Disallows non-SSL FTP.

General system hardening

- Google Chrome packages are removed - so Selenium based Synthetic Transaction Monitoring will not work out of the box.
- ICMP redirection is disabled.
- Only root partition allows device files (Partition mounting weakness).
- TCP timestamp response is disabled.
- Tightened permission for user nfsnobody (used for nfs mounting).
- Removed Ghostscript package.
- Changed permission of some files from world writable to world readable.
- All path entries are made absolute paths.

Port 5480 hardening

- Disabled light httpd port 5480 on Collector. Collectors need to be registered by running this script: `phProvisionCollector --add <user> <password> <super IP or host> <organization> <collectorName>`

Resolved issues

Id	Severity	Module	Summary
429644	Minor	GUI	User Activity Window does not properly show full name for users.

Id	Severity	Module	Summary
432791	Minor	GUI	Increase password length limit from 32 characters to 64 characters.
465797	Minor	Discovery	Test connectivity task for OKTA with large number of users may fail.
502929	Minor	App Server	Smart Scan discovery does not ignore devices already in the CMDB.
505759	Minor	GUI	Incidents are not triggering for failed STM.
507368	Minor	App Server	CMDB Rule Exception report shows exceptions from other Organizations.
511230	Minor	GUI	User full name is not displayed in the user traffic report.
517223	Minor	Agent	Windows Agent Installation error on Windows Server running PowerShell 5.1.
520294	Minor	Agent	Windows DNS parser with collection via Agent does not work if Detailed Debug DNS is NOT enabled.
521194	Minor	GUI	The Due Date in Create Ticket via Notification Policy should Be Relative Time.

Id	Severity	Module	Summary
522672	Minor	App Server	Exporting PDF reports fails after host upgrade from 5.0.0.
522810	Minor	System	CURL problems resulting undefined behavior including deadlock.
522824	Minor	App Server	Scheduled Reports runs twice on Execution.
522857	Minor	App Server	The deviceInfo/PerfMonitor REST API may take long time to load.
523287	Minor	App Server	HTML Role Management may take a long time to load.
523654	Minor	App Server	Large Active Directory discovery may be slow.
524273	Minor	App Server	String Longitude value in Identity Location Identity XML causes invalid XML
525052	Minor	Data Manager	Excessive "event without host attribute" error logs for summary dashboard.
525333	Minor	App Server	Last Login Date conversion in CMDB Report is not correct.
526306	Minor	App Server	CMDB Report loading can be slow when CMDB is large.

Id	Severity	Module	Summary
528698	Minor	Data Purger	Log integrity signature update to PostGress DB can be slow.
529008	Minor	App Server	CMDB Device delete can be slow when CMDB is very large.
529205	Minor	GUI	CSV Report export has data in exponential format.
529300	Minor	GUI	FortiSIEM LDAP server password reflected in GUI.
529795	Minor	App Server	Scheduled report may run as inline report and not get data.
530642	Minor	Parser	Collector EPS may be a large number when event dropping rules are in action.
531851	Minor	App Server	CSV Export event shows receive time and device time to be 1 hour ahead of current time.
532784	Minor	Query Engine	Excessive PH_ REPORT_VALUE_ TYPE_ UNSUPPORTED errors reported by phReportMaster.
532800	Minor	GUI	HTML Role definition shows Flash GUI elements.
533985	Minor	Performance Monitoring	Fortinet QoS statistics for bytes and packet drops not being pulled.

Id	Severity	Module	Summary
534857	Enhancement	Parser	Vulnerability upload from Parser to AppSvr contains unnecessary information, causes processing delay on App Server.
535344	Minor	Performance Monitoring	Fortinet Link usage dashboard does not show Jitter/Latency/Pkt Loss.
535926	Minor	Performance Monitoring	Monitor inbound and outbound QoS for FortiGate Interface Usage Monitoring.
500588	Enhancement	App Server	Allow users to configure multiple SNMP Trap / SMTP servers for notifications.
510555	Enhancement	GUI	Enhance the time axis in Bar trend and line trend chart based on length of time window.
519377	Enhancement	System	Add flexibility for FortiSIEM to have better event database compression (at low EPS).
519870	Enhancement	System	Need to enable HTTPS and PowerShell for Windows Remediation (WinRM protocol).
534857	Enhancement	Parser	Vulnerability upload from Parser to App Server contains unnecessary information, causes processing delay on App Server.

Common Vulnerabilities and Exposures

Bug ID	CVE References
529300	FortiSIEM 5.2.1 is no longer vulnerable to the following. CVE Reference: • CVE-2018-13378

What's New in 5.1.3

This release is for FortiSIEM hardware appliances 2000F and 3500F models only. It has the following enhancement.

Ability to run in Cluster mode

Earlier releases allowed FortiSIEM hardware appliances 2000F and 3500F to run only in standalone (or all-in-one) mode without the ability to add external storage. This release removes this restriction. See Setting Event Storage for configuration information.

When you set up the appliance, you must choose between Supervisor and Worker mode. If you chose Supervisor mode, then select one of the following event data storage options:

- Local disk (previous standalone mode)
- External storage - FortiSIEM EventDB on NFS
- External storage - Elasticsearch

To set up a cluster, follow these steps:

1. First set up external storage.
2. Install Supervisor appliance (2000F or 3500F) and configure event storage as external.
3. Install Worker appliances (2000F or 3500F) and add them to the cluster using the Supervisor GUI.

To run as standalone mode:

1. Install the Supervisor appliance (2000F or 3500F) and configure the event storage as local disk.

What's New in 5.1.2

FortiSIEM 5.1.2 release resolves the following issues.

Resolved issues

Id	Severity	Module	Summary
522824	Major	App Server	Scheduled Reports may run twice on execution.
523653	Major	System	Some SSH based inbuilt remediation scripts do not work.
524273	Minor	Identity Location	Misformatted 'Longitude' field in Identity Location message creates and sends invalid XML to the App Server.
523791	Minor	Parser	Large number of Device Vulnerabilities reported by scanners may cause the App Server to slow down.
523654	Minor	App Server	Large Active Directory user discovery can cause unnecessary change sets to be generated, slowing down log collection and performance monitoring.
523287	Minor	App Server	Role Management page loads slowly in HTML GUI when there are large number of users with different roles.
522672	Minor	App Server	Custom PDF Report export may not work after upgrading from FortiSIEM 5.0.0.
520515	Minor	App Server	Custom PDF Report export may not work if Trend Bar chart contains null values in data.
519643	Minor	App Server	Exporting a Saved Report Result may fail, requiring users to re-run the report on Analytics page.

What's New in 5.1.1

FortiSIEM 5.1.1 release includes the following resolved issues and enhancements.

Resolved issues and Enhancements

Id	Severity	Module	Summary
515799	Major	App Server	Scheduled Custom PDF Report always produces data only for the last one hour.
515642	Major	App Server	Scheduled Custom PDF Report may have data leak across customers.
515135	Major	Query Engine	Analytics results differ for the same query when run from Super and Org.
514354	Major	Query Engine	Incident > Triggering events may not show when there are more than three events in an Incident.
512797	Major	App Server	Custom PDF may allow tenants to view other tenant's devices when CMDB report contains 'Customer Name' attribute.
518437	Minor	System	Initial install may fail when user specifies FQDN in `vami_config_net`. Subsequent installs often succeed.
518301	Minor	App Server	Global defined report template may be lost after the template is modified and saved in Organization level.
516240	Minor	App Server	Java error: 'Comparison method violates its general contract' found in logs can cause 'Identity and location' module to not work correctly sometimes.
515926	Minor	App Server	Role Based Access Control (RBAC) does not apply on Incident Overview - User can see Incidents of other Organizations.
515907	Minor	App Server	Incident Notification fails when the recipient is a FortiSIEM LDAP user.

Id	Severity	Module	Summary
519844	Minor	GUI	The 'Edit Organization' window does not open the selected Organization.
518405	Minor	GUI	The unit of 'Max Avg Response Time' setting for PING protocol should be replaced with 'millisecond' instead of 'second' in the GUI.
517958	Minor	GUI	If the mouse is hovered over the second half of the 'Collector Health' page, the pointer does not move.
517957	Minor	GUI	CMDB groups from page 2 onwards cannot be modified from the GUI.
517749	Minor	GUI	User has to save Report Design many times while adding a few sections to the Report Design.
517552	Minor	GUI	Rapid7 Nexpose API credentials are not saved or incorrect when configuring from the HTML GUI.
517352	Minor	Parser	Buffer timeout for Cisco ASA buildup and teardown session is too short (2 minutes) - preventing matching up build and teardown syslog.
516006	Minor	Parser	For certain parsers, phParserTester coredumps upon testing causing parser test to fail.
515444	Minor	Query Engine	Widget dashboard (more than 5 minutes) is empty for non-admin user only.
518501	Enhancement	GUI	Time Axis is crowded in Custom PDF for monthly reports.
513090	Enhancement	App Server	CMDBDeviceInfo/devices REST API is slow when number of devices is very large.
472895	Enhancement	Parser	Excessive parser errors of the same type are reported in log.

Id	Severity	Module	Summary
515807	Enhancement	Data	FortiMail parser is incomplete and not accurate for many event types.
515805	Enhancement	Data	FortiWeb parser is not parsing event action for FortiWeb event 20000008.
514775	Enhancement	Data	Need to utilize UTM Action as the final Firewall action for FortiGate.
512227	Enhancement	Data	Missing FortiSwitch SysObject ID to systemSnmpSysObjId.csv.
510934	Enhancement	Data	Russian translation file parser need to update for Windows logs.
432617	Enhancement	Data	Parse log from gtmd module for F5.

What's New in 5.1.0

FortiSIEM 5.1.0 release includes the following new features, enhancements and device support.

New Features

- IPv6 Support
- Custom PDF Reports
- Incident Subcategory
- Incident Resolution
- Analyze log files from a directory on FortiSIEM nodes

Enhancements

- Custom time zone support in PDF reports
- Ability to associate specific parsers to a device
- Ability to drop specific parsed event attributes
- Windows Agent 2.3

IPv6 Support

This release enables FortiSIEM deployment in IPv6 networks including the following features:

- FortiSIEM components - Supervisor, Worker, Collector, Report Server can be installed in IPv6 networks.
- Receive, parse and analyze IPv6 syslog, Netflow.
- Discovery of IPv6 devices via Simple Network Management Protocol (SNMP).

- Discovery of configuration from IPv6 devices via Secure Shell (SSH).
- GUI, Search, Report and Correlation functions with both IPv6 and IPv4 formatted addresses. You can enter addresses in various IPv6 formats in the GUI. FortiSIEM displays the addresses in standard IPv6 notation.
- FortiSIEM supports both Mixed and Dual IPv4 and IPv6 environments.

Currently, the following features do NOT work with IPv6 systems:

- Log collection and monitoring via Protocols other than Syslog, SNMP, SSH, and Netflow
- Windows Agent and Windows Agent Manager (These can only run in IPv4 networks.)
- Geo-location look-up for IPv6 addresses

Custom PDF Report

In earlier releases, FortiSIEM supported a fixed PDF Report format. This release enables you to format a PDF Report and Report Bundle by adding:

- Cover Page with custom image
- Table of Contents
- Sections and Subsections with Titles
- Custom content in each section including notes, charts, tables and images
- One or more CMDB reports along with Event reports

You can customize both scheduled and ad hoc reports. The PDF Report templates can be defined at folder level in **RESOURCES** > **Reports** to avoid defining the format for each and every Report in the folder.

For more information about customizing a PDF Report Output, see here.

- FortiSIEM Flash GUI does not support the 'Custom PDF Report' feature. To customize PDF reports and export, use the HTML GUI.
- After upgrading to FortiSIEM 5.1.0, you must reimport all the Report Bundle reports because the report template has to be created. Otherwise, the Report Bundles may fail.

Incident Subcategory

FortiSIEM Incidents are grouped into different categories – Availability, Change, Performance, Security and Other. A Category is assigned to every Rule and you can search any Incidents using these Categories.

This release extends this concept to include Subcategories. A Subcategory is defined for every system-defined rule. You can add a Subcategory for custom rules and also create new Subcategories. Incidents can be searched using both Categories and Subcategories.

For more information about creating Subcategories, see the section 'Setting Rule Subcategory' here.

Incident Resolution

This release adds Incident Resolution attribute for Incidents. Incident Resolution can be set to 'True Positive', 'False Positive' or 'Open'. Incidents can be searched using the Incident Resolution values.

For more information about Incident Resolution settings, see the desciption for 'Resolution' in the table here.

Ability to analyze log files from a directory on FortiSIEM nodes

Currently, FortiSIEM handles logs either (a) sent to it via Protocols such as Syslog, SNMP trap and so on or (b) pulled from devices via Protocols such as WMI, Checkpoint LEA and so on.

In this release, FortiSIEM can process log files copied to a directory on one of the FortiSIEM nodes:

- Copy the files to a specific directory named by the reporting device IP. For Service Provider installations, create this directory on the Collector of the Organization to which these log files belong. The attribute `event_sftp_directory` in `phoenix_config.txt` defines the path. For example, to handle logs from a device with IP: `1.2.3.4`, create log files in `<event_sftp_directory>/1.2.3.4`. A typical example is `opt/phoenix/cache/syslog/1.2.3.4`.
- Each log in the files should be formatted exactly in the same way as sent by the device. If this is a new log source, a new parser may need to be defined.
- Each file should have a distinct time stamp to prevent files from being overwritten.
- Set `event_eps_limit_controls in phoenix_config.txt` to control the EPS burst.
    - If `event_eps_limit_controls` is set to '10', FortiSIEM will process 30 events from this file in 3 seconds.
    - If `event_eps_limit_controls` is set to '0', FortiSIEM will process as many log files as possible and this may inhibit the overall EPS license usage.
    - If you change a `phoenix_config.txt` parameter, then reload the parser on that node.

Note the following:

- The log file is deleted once it has been read. Keep a separate backup if required.
- The system requires write access to the log file directory in order to delete the log file once read. This is important because if the log file cannot be deleted, it is repeatedly read and consumed by FortiSIEM resulting in many duplicate events and extra EPS consumption.

Custom time zone support in PDF reports

In earlier releases, the time zone of Supervisor was used to report event receive time. Now, you can choose the required time zone. If the devices are in a different time zone from the Supervisor, you can choose the time zone of the devices while configuring the PDF report.

For more information about adding custom time zone in reports, see Step #6 here.

Ability to associate specific parsers to a device

Currently, upon receiving an event, the system tries the list of parsers in a specific order looking for Event Format Recognizer match defined in each parser. Syslog from some devices are too generic and do not have a proper Event Format Recognizer and causes parsing issues.

To overcome this issue, this release enables you to attach a list of parsers to a device in CMDB. This overrides the default parser selection mechanism based on Event Format Recognizer. When a device with a list of attached parsers sends a log, the specified parsers are attempted first.

For more information about associating a set of parsers to a device, see here.

Ability to drop specific parsed event attributes

FortiSIEM adds many meta data to events such as geo-location for every IP field, user name, user full name. FortiSIEM also adds a message for its self-generated events. This can contribute to storage costs especially for frequently occurring events.

This release allows you to not store such meta data if you want to minimize storage costs.

For more information about dropping specific parsed event attributes, see 'Event Dropping' - Step #8 here.

Windows Agent 2.3

This release includes Windows Agent 2.3 with the following enhancements:

- Ability to install Windows Agent and Windows Agent Manager where only TLS 1.2 is enabled for Security reasons (Mantis id: 0441466)
- Extended Date and Time format parsing for Windows DNS logs (Mantis id: 0470398)

For more information about working with Windows Agent, see here.

New Device Support

This release includes support for the following devices:

- Azure Identity Protection
- Azure Advanced Threat Protection (ATP) via Syslog (CEF)
- Azure Logs - Data Plane logs, Processed event via Syslog (CEF)
- Cisco Stealthwatch log parser
- Microsoft Cloud App Security via Syslog (CEF)

Device Support Enhancements

This release includes the following device support enhancements:

Mantis Id	Summary
430995	Huawei Firewall log parser extension
433018	ESXi log parsing extension
433100	F5 log parser extension
433308	Dell S-Series Switch performance monitoring via SNMP
447872	Aruba OS log parser extension
449028	Huawei Router/Switch log parser extension
469708	Cisco ISE performance monitoring extension
471431	FortiDDoS performance monitoring extension
472384	FortiSandbox discovery and performance monitoring extension

Mantis Id	Summary
473490	FireEye Email Malware Protection System (MPS) log parser extensions
475500	Cisco IronPort Mail parser extension
493483	FortiGate Syslog action field parsing
494321	Private external threat intelligence for Threat Stream
494445	Barracuda Spam Firewall log parser extensions
496052	SNMP Sys Object Ids to cover discovery and performance monitoring for more HP Switch models
501370	FortiClient Parser enhancement to Include Vulnerability Scanning fix and Risk Score Integration
503933	FortiAuthenticator performance monitoring extension
503935	FortiMail discovery and performance monitoring extension

Resolved Issues

This release includes the following resolved issues:

Mantis Id	Severity	Keyword	Summary
494980	Major	App Server	Scheduled Report Bundle PDF Reports may not contain data for all reports if one query takes a long time to complete.
481042	Major	Rule Engine	Rule Engine may crash when there are too many active Incidents in the CMDB.
474074	Minor	App Server	FortiSIEM LDAP user is not discovered for Korean language Active Directory.
494457	Minor	App Server	The Last received Syslog time updates may lag in CMDB > Devices > Monitor tab.

Mantis Id	Severity	Keyword	Summary
496946	Minor	App Server	Remove Session id from App Server log.
496953	Minor	App Server	Incident Overview page sometimes fail due to the lack of information from PostgreSQL queries.
497363	Minor	App Server	New Organization creation may show 'Null Pointer Exception' against Business Services.
501040	Minor	App Server	CMDB Device Risk calculation consumes lots of resources when the number of CMDB devices is large.
504259	Minor	App Server	ConnectWise Integration - unable to close tickets outside of time Constraint Window.
505476	Minor	App Server	App Server looks for expiration time being updated when it's not necessary. This happens only when there is a Report Server installed and the login user has a role which doesn't have write permission on License page.
505528	Minor	App Server	Too many 'No Entity found for query' exception is shown in the log.
506947	Minor	App Server	Monitoring Event pulling Status Update is slow and cannot keep with a very large number of devices and jobs.
498600	Minor	Discovery	CMDB Device Filter does not consider AWS Log Discovery and Netflow Log Discovery.
488388	Minor	GUI	HTML GUI does not create and save CheckPoint Certificates.

Mantis Id	Severity	Keyword	Summary
490587	Minor	GUI	Baseline reporting for the interface does not show data in HTML GUI.
491271	Minor	GUI	Watch List Device Health pop-up does not show data.
498876	Minor	GUI	GUI does not correctly save CyberArk credential configurations.
501707	Minor	GUI	Changes to the Watch List is saved even if the user clicks 'Cancel' button.
501719	Minor	GUI	CSV file import fails under RESOURCES > User Agent.
503941	Minor	GUI	CMDB > Network Device > Router/Switch Group under System folder cannot be modified.
504584	Minor	GUI	Business Service Dashboard does not show full device name as it appears in CMDB.
504593	Minor	GUI	Ticket status name is inconsistent between CASE and INCIDENT tab.
505745	Minor	GUI	Organization list is empty if user selects an Organization with Collector under Business Services and switch to CMDB > Devices.
458679	Minor	Analytics	Analytics page does not show Event Details for events without raw event log (such as Netflow).
462749	Minor	Parser	Log discovery increases the load on App Server causing discoveries to be missed.

Mantis Id	Severity	Keyword	Summary
501370	Minor	Parser	FortiClient Vulnerability Scanning logs do not contribute to Risk Scores in CMDB.
504518	Minor	Parser	Parser generates excessive logs when it's log discovery cache is full.
489792	Enhancement	App Server	Add an alert message to confirm before deleting Organization or Collector.
490788	Enhancement	App Server	Incident Remediation is not supported for groups of devices.
494321	Enhancement	App Server	ThreatStream Private Collection cannot be collected.
497768	Enhancement	App Server	FortiSIEM Super and Worker can become Unmanaged devices when License limit is reached - preventing rules from being triggered.
506508	Enhancement	App Server	Monitor and truncate App Server discovery files so that it does not grow. A large number of discovery files may cause future discoveries to fail.
472999	Enhancement	GUI	HTML GUI does not provide the ability to search 'Sync only' reports.
490089	Enhancement	GUI	Incident List View is missing External Integration.
490405	Enhancement	GUI	Some Incident Detail attributes are not correctly formatted.
491073	Enhancement	GUI	Windows WMI installed software description shows 'null'.

Mantis Id	Severity	Keyword	Summary
501689	Enhancement	GUI	In Elasticsearch environment, Report Export in CSV format shows infinity for missing numerical fields.
501693	Enhancement	GUI	While adding a network interface for a device in CMDB, the GUI does not alert for missing network mask.
502806	Enhancement	GUI	In Incident PDF Export, 'Incident Ticket Status' shows '6' (meaning null) when no ticket exists for Incident.
493483	Enhancement	Parser	FortiGate Parser does not parse the dropped attack field and rules trigger unnecessarily.
505461	Enhancement	Rule	Enhance IPS rules to exclude blocked attacks from outside.
506512	Enhancement	System	Limit the size of Analytics `phoenix_log` files.

What's New in 5.0.1

FortiSIEM 5.0.1 release includes the New Features and Enhancements described below.

If you are upgrading from FortiSIEM 4.1.0, refer to *'What's New in 5.0.0'* for more information about the features in 5.0.0.

New Features

- Windows Agent 2.2
- ServiceNow Event Management Integration

Windows Agent 2.2

Windows Agent 2.2 feature includes the following changes:

a. Additional parsing of Windows DNS logs to include Source IP, Destination Name, Destination IP, Destination Canonical Name and Received Bytes.
   - Source IP – name resolution requestor
   - Destination Name and IP – resolved name and IP

- Destination Canonical Name – CNAME of the resolved entity
- Received Bytes – bytes in the DNS response

b. Avoid Agent Configuration loss at Windows Agent Manager during Agent upgrade.
c. Automatic clean-up of `.SVC` files when it reaches a certain size.
d. Do not erase log file after Agent restart.
e. Monitor encrypted USB disks.
f. Agent to perform SSL certificate checks.
g. Flush log files during file rotation of a monitored file.

ServiceNow Event Management Integration

FortiSIEM Incidents can now be pushed to ServiceNow Event Management tables via the FortiSIEM integration framework. For more details about ServiceNow Event Management, see here.

Enhancements

FortiSIEM 5.0.1 release includes the following enhancements:

- The `phoenix_config.txt` merge upgrade process is improved - The `phoenix_config.txt` file on Supervisor and Worker stores system level configurations. In earlier releases, during the upgrade process, user is asked to merge the `phoenix_config.txt` file from the new release with the `phoenix_config.txt` file existing on the system. In this release, this process is simplified as follows:
  - User is never asked to merge `phoenix_config.txt` files.
  - The existing `phoenix_config.txt` file is backed up to: `/opt/phoenix/config/phoenix_config.txt.<ver>`
    For example: `/opt/phoenix/config/phoenix_config.txt 5.0.0.1201`
  - Selected entries from the existing `phoenix_config.txt` file are picked up to create the `phoenix_config.txt` file used by the system and stored in `/opt/phoenix/config/phoenix_config.txt`
  - User can examine the difference between the `phoenix_config.txt` files and modify the system `phoenix_config.txt` file if needed.

  The following sections are merged from the existing `phoenix_config.txt` file:

Global	• cainfo • agent_key • agent_cert • ccm_ftp_directory • avaya_sftp_directory
phParser	• airline_sls_directory • airline_sls_directory_high • airline_thread • incoming_log_cfg

phEventForwarder	• tls_certificate_file • tls_key_file • tls_certificate_file • tls_key_file
phQueryWorker	• max_num_thread_per_task • phReportMaster section • num_merge_threads
Kafka	• thread_num
Elasticsearch	• Entire Elasticsearch section, if configured.

- Incident > Remediation – **Enforce On** and **Run On** fields are automatically populated based on Incident Reporting Device and Incident Target. Remediation Scripts are scoped down based on the **Enforced On** device type. Remediation results are shown on the Remediation page.
- Flex GUI is now disabled by default. You can turn on the Flex GUI by setting `Enable_Flex_UI = true` in `phoenix_config.txt` on Supervisor.

What's New in 5.0.0

Read Before Installing or Upgrading to FortiSIEM Release 5.0.0

1. Starting FortiSIEM 5.0.0 release, FortiSIEM all-in-one hardware appliances (FSM 3500F/FSM 2000F) will run on bare metal, bypassing the OpenStack Hypervisor layer. This will simplify installation and maintenance and improve performance. The user has two options:
   (a) Stay on OpenStack and simply upgrade FortiSIEM application to 5.0.0. In this case, follow the steps in the 'Upgrading FortiSIEM' section of *Hardware Configuration Guide* (FSM 3500F/FSM 2000F) here.
   (b) Recommended - Migrate the current data on your appliance and move to new FSM 3500F/FSM 2000F OS - basically run on bare metal but retain the old data. Follow the steps in the *Migration Guide* (FSM 3500F/FSM 2000F) here.
2. Starting this release, you have to explicitly choose Event Database Storage for fresh software based installs. If you upgrade to 5.0.0, then the existing database will be maintained. If you plan to switch to another database, then the data will not be migrated.
3. Upgrade notes:
   - Customers in releases prior to 4.10.0 must first upgrade to 4.10.0 before upgrading to 5.0.0. Customers in 4.10.0 can upgrade to 5.0.0 - this is because of license changes in 4.9.0 and 4.10.0.
   - Make sure that Super, Worker, Collector and Report Server can connect to FortiSIEM hosted CentOS repo on https port 443 under the URLs below. Otherwise, some packages may not install and 5.0.0 binaries will not run.
   - https://os-pkgs-cdn.fortisiem.fortinet.com/centos6/
   - https://os-pkgs.fortisiem.fortinet.com/centos6/
4. AWS Customers only - After upgrading to 5.0.0, customers' needs to apply the new license using EC2 instance Hardware ID.

5. Kafka and Event Forwarding Settings are not compatible with release 4.0. Once you upgrade to 5.0.0, the configuration in 4.10 will be lost. You have to redo the Kafka and Event Forwarding definitions after you have upgraded to 5.0.0
6. Export and Import on these tabs only support user-defined entries:
   - Admin > Device Support > Device/App
   - Admin > Device Support > Event Attribute
   - Admin > Device Support > Event Type
   - Admin > Device Support > Dashboard Column
7. Kafka based Event Forwarding is now Rule-based and done from Collectors.
8. FortiSIEM 5.0.0 release supports receiving logs via Kafka into FortiSIEM. Kafka based log pulling can only support 10K events per pull. If more than 10K events are suddenly generated, it may take more than one pull to consume all the events.
9. If Elasticsearch is chosen as the Event Database, the Supervisor needs an additional 8 GB RAM - in this case, the minimum requirement of the Supervisor is 32 GB RAM.
10. Since the GUI layout is different in Flash and HTML5, FortiSIEM User Roles defined in Flash GUI in 4.10.0 will not work in HTML5 GUI. The user needs to define new roles for use in HTML5 GUI.
11. Since the Dashboard layout is different in Flash and HTML5, user-created Dashboards in Flash GUI in 4.10.0 or earlier will not be shown in the HTML5 GUI. However, you can export from the Flash GUI and import into the Dashboard of your choice in HTML5 GUI.

FortiSIEM 5.0.0 is a significant milestone release including the following features and functionality.

New Features

FortiSIEM 5.0.0 release includes the following new features:

- New HTML5 Based GUI with Online help Documentation
- Elasticsearch Event Database Option
- User Entity Behavior Anomaly Detection
- User Risk Scoring
- Incident Mitigation Framework and Library

Key Enhancements

FortiSIEM 5.0.0 release includes the following key enhancements:

- Event Insertion Performance Improvement
- Hardware Appliance Directly On Hardware without OpenStack
- Event Forwarding Enhancements
- Ability to Handle IPFIX Based Network Flow
- Ability to Handle EC2 VPC Logs
- Ability to Receive Logs via Kafka
- Policy-Based FortiSIEM Ticket Escalation
- Multiple Language Support in Reports
- ConnectWise Integration via REST API
- Ability to Add More User Context into Events in Real-time

- Ability to Handle AWS Terminated Instances in CMDB
- Ability to Include Multiple Incidents to a FortiSIEM Ticket
- NIST 800-171 Compliance Support
- Full Catalog of FortiSIEM System Errors Using Distinct Event Types

New Device Support

- FortiAuthenticator – discovery and log analysis
- Palo Alto Traps – log analysis
- EMC Isilon – log analysis
- Radware Network IPS – log analysis
- HyTrust CloudControl – log analysis
- Vormetric Data Security Manager – log analysis
- Cisco ASA Firepower SFR module – log analysis
- Checkpoint GAIA – log analysis
- CodeGreen DLP – log analysis
- TrendMicro Interscan Web Filter
- Language support for Windows security logs – Korean, German, Russian
- Microsoft Exchange Tracking – log analysis

HTML5 based GUI with Online Help Documentation

This release provides a fresh HTML5 based GUI that combines the best ideas from the current Adobe Flash based GUI with advances in JavaScript technology.

The following table provides a high level overview of the changes in the HTML5 GUI. For a complete mapping of Flash GUI to HTML5 GUI, see Appendix A.

Area	Enhancements
Overall	• Bigger font for ease in readability • Dark theme for ease of readability (light theme in a future release) • Clean, airy look with consolidated buttons • Right-click rolled into button action, considering mobile devices • Dynamically adjusting table column width for maximum readability
CMDB	• Simplified CMDB navigation tree to contain Devices, Applications, Users, Business Service and CMDB Reports. The rest have been moved to Resources. • Action button consolidates all Flash right-click operations on a device • Consolidated device health pop-up • Ability to choose device property columns

Area	Enhancements
Analytics	• Combines Real-time and Historical Search • Combines Display and Group By • Validity checks in Display Columns
Dashboard	• Two-layer dashboard hierarchy – dashboard folders with each containing multiple dashboards. Each dashboard can be any one of Summary dashboard, Widget dashboard, Business Service dashboard and Identity location dashboard. This provides a good way to mix and match various presentation techniques in one dashboard folder. • Ability for users to customize the dashboards they want to see and also the home dashboard. • Ability to dynamically update Widget dashboard via search. • A New Business service dashboard with high level incident counts and impacted devices.
Incidents	• Two new Incident views – Overview and Risk View to complement List View, with drill downs from each view. • An intuitive way to search incidents in List View. • Action button consolidates all Flash right click operations on one incident or multiple incidents.
Resources	• Consolidates all CMDB Helper Objects and Rules/Reports • Incident Remediation library
Admin	• Allows user to specify event database storage options - local disk, NFS or Elasticsearch. • Consolidated navigation tree folders including License and Health folders.

The following items are not available in the current HTML5 GUI release. Some of them may be added in future releases:

- Topology View
- Specific Incident dashboards - Fishbone View, Calendar View
- VM View
- IPS Vulnerability Map
- Incident > Add Rule exception Via Patches
- CMDB > Link Usage View
- Analytics > Audit
- Analytics > Display Column Sets, Filter Criteria Sets
- Event Database Management
- Dashboard Slideshow view
- Simple keyword based search

Elasticsearch Event Database Option

This release provides the Elasticsearch database option for storing events. Existing customers can continue using the FortiSIEM EventDB and decide to switch at some point. Data Migration procedures from FortiSIEM EventDB to Elasticsearch is not available. New customers can choose Elasticsearch.

Elasticsearch is a distributed database that provides linearly scalable event insertion speed and query response time improvement. However, you must deploy more nodes and use more storage. The higher storage capacity applies to local disks on Elasticsearch nodes, which are relatively inexpensive. *For details, see FortiSIEM - Sizing Guide here.*

In earlier FortiSIEM releases, event database option (local disk or external NFS) was chosen during installation. Starting with release 5.0.0, user needs to choose event database option from the GUI – the additional Elasticsearch option is provided along with local disk and external NFS options.

In FortiSIEM 5.0.0, Elasticsearch will be a drop-in replacement – the system works seamlessly for NFS, local disk and Elasticsearch, with the following exceptions:

- *Policy based data retention is currently not supported on Elasticsearch* – FortiSIEM will just purge from Elasticsearch when a limit (10 GB by default and configurable) is reached.
- Percent Change aggregation function and CMDBDeviceToAttr look-up functions are currently not supported.
- *Aggregation queries with multiple Group By conditions are interpreted differently* – current event database considers multiple Group By as a tuple while Elasticsearch treats them as nested. So the sorted results are displayed differently in Elasticsearch. Consider a query with Group By A, B and display count in descending order. In current FortiSIEM event database, each row will be sorted descending by count. Elasticsearch will show the results sorted first by A and then by B. This is how Elasticsearch currently works, although there are plans to extend to tuple sorting in their later Elasticsearch releases.

For details about how FortiSIEM works with Elasticsearch, see Key Concepts.

User Entity Behavior Anomaly Detection

FortiSIEM already tracks IP addresses to user and geo-location in its User Identity and Location database. This information is now used as the foundation for machine learning techniques for the following two use cases:

- Login location anomaly detection – FortiSIEM will detect if the same user is simultaneously logging from two different locations at times that are not physically possible because of geographical distance and travel speed limitations. This covers various login scenarios:
  - Logging into a server
  - VPN into corporate network
  - Logging into a Cloud SSO platform such as OKTA
  - Logging onto a Cloud Service such as Google Apps, Office365, Salesforce
- Login pattern anomaly detection – FortiSIEM profiles user login behavior: users logging on to infrastructure devices using specific computers on specific hours of day and detect the following anomalies:
  - User logging in to a server during times that he typically never logs on
  - User logging in to a server that he typically never logs on
  - Excessive user login to a server over the whole day

User Risk Scoring

FortiSIEM 4.10 provides a machine risk score by combining asset criticality, un-patched vulnerabilities and incident severity. This concept is now extended to users. Users may use multiple machines (mobile phone, tablet,

laptops, workstations) and may trigger incidents on infrastructure devices. A user risk score is calculated by combining the associated user machine risk scores and users own risk scores. User and machine scores are now presented in a unified Entity Risk dashboard.

Incident Mitigation Framework and Library

In FortiSIEM 4.10, users could write their own remediation scripts and attach them as an Incident action. That required users to hard code credentials in the script even if FortiSIEM had the credentials in its CMDB. In this release, incident mitigation concept is formalized by eliminating that shortcoming.

- A REST API is provided to pull credentials from FortiSIEM CMDB
- A mitigation library is provided with 29 built-in mitigation actions that show the use of the API. Users can write their own mitigation scripts and include in the library from the GUI.
- A mitigation action can be taken on demand when an incident triggers or as part of a notification policy action.

FortiSIEM's inbuilt multi-vendor and multi-function incident mitigation library includes:

- Blocking an IP on FortiGate, Palo Alto and Cisco ASA firewalls and FortiWeb
- Block a MAC on all FortiSwitches managed by FortiGate firewall
- Block a MAC on Cisco IOS router/switch device
- Quarantine end points via Fortinet EMS and FortiClient
- Disable an interface on Windows and Linux Servers
- Disable a port on Cisco IOS device
- Add an IP for fine-grained control to FortiADC and FortiCache
- Add source email address to FortiMail Session Profile
- Block a web domain on Infoblox and Microsoft Windows DNS
- De-authenticate a user on FortWLC, Cisco and Aruba WLAN Controllers
- De-authenticate a user on FortiAuthenticator, Linux Server and Microsoft Active Directory
- Delete a file with specific checksums on Windows and Linux Servers
- Delete a file by name on Linux Servers
- Restart a service on Windows and Linux Servers
- Reboot a Windows or Linux server

Event Insertion Performance Improvement

FortiSIEM event indexing and insertion performance is improved significantly (approximately 25-50%):

- FSM-2000F hardware appliance can now handle 15K EPS without loss.
- FSM-3500F hardware appliance can now handle 30K EPS without loss.
- A Single Supervisor and a Single Worker performance is also improved as follows:
  - A node with 8 vCPU can handle 10K EPS without loss.
  - A node with 16 vCPU can handle 15K EPS without loss.

These benchmarks were done with specific data set and the performance in your environment may differ. *For details, see FortiSIEM - Sizing Guide here.*

Hardware Appliance Directly On Hardware without OpenStack

FortiSIEM Hardware Appliances (FSM-2000F and FSM-3500F) now run directly on bare metal hardware without OpenStack. It is easier to install, configure and manage and gives better performance since OpenStack resources

can now be used by FortiSIEM.

Existing customers have two options:

- Choose to stay on OpenStack and simply upgrade FortiSIEM guest from 4.10.0 to 5.0.0.
  See the 'Upgrading FortiSIEM' section of the Hardware Configuration Guides by selecting the models here.
- Migrate to 5.0.0 without losing their data.
  See the Migration Guides for 2000F and 3500F.

Event Forwarding Enhancements

FortiSIEM can forward events to third-party systems. In this release, this feature is enhanced in the following ways:

- Event forwarding is now more robust by buffering events in files just like Collector to Worker event forwarding. If a forwarding destination is not temporarily reachable, events are stored locally and then attempted later for forwarding.
- Event forwarding criteria is now more fine grained including Reporting IP, Event Type, Source and Destination IP and Event payload.
- More event forwarding protocols are included:
  - Syslog – UDP, TCP, TCP/SSL
  - Netflow
  - Kafka
- Kafka based event forwarding can now be controlled by filtering criteria.
- All event forwarding now happens from the FortiSIEM node that first receives the event from 3rd party system (typically a FortiSIEM Collector). In earlier releases, Kafka based event forwarding happened from Super/Worker nodes.

Ability to Handle IPFIX

FortiSIEM can handle high volume network flow data from firewalls and other network devices in the form of Netflow Version 5, Version 9, SFlow, JFlow, and Cisco AVC. This release enhances this support to include IPFIX.

Ability to Handle AWS EC2 VPC Traffic Log

In this release, FortiSIEM is able to receive, parse and analyze AWS EC2 VPC traffic like any other traffic log.

Ability to Receive Logs via Kafka

FortiSIEM can forward logs to an external system via Kafka. In this release, FortiSIEM can receive logs via Kafka. This allows FortiSIEM to have robust 2-way log exchange with 3rd party systems.

Policy-Based FortiSIEM Ticket Escalation

Administrators can now define ticket escalation policies for FortiSIEM internal ticketing system. After defining a ticket due date, user can define policies to escalate to the manager of the assignee when the ticket is not yet resolved and current time is 'close' to the due date.

Multiple Language Support in Event Report

Log data may contain certain log attribute values (for example, user name) in various languages. This release enables PDF and CSV reports to properly show these log values in various languages. Currently, out-of-the-box

supported languages are English, Korean, Russian, Japanese and Chinese. User can add a language of their choice.

ConnectWise Ticketing System Integration via REST API

FortiSIEM has a built-in integration with ConnectWise ticketing system via a SOAP API. Since the SOAP API is being deprecated, FortiSIEM 5.0 release can now do the same functionality via the new REST API.

Ability to Add More User Context into Events in Real-time

FortiSIEM can discover users from Active Directory and OpenLDAP and add user context to events in real time. For example, when the user name matches in an event, FortiSIEM adds the full user name to the event to make the user identifiable. In this release, more user attributes such as employee serial number and membership groups are added to events in real time.

Ability to Handle AWS Terminated Instances in CMDB

FortiSIEM can discover server instances in AWS and populate it's CMDB. Until this release, the deletion from CMDB used to be a manual audit worthy event, since it is difficult to tell for sure, whether the server has been terminated or it is a network connectivity issue. In AWS, where instances are brought up and torn down quickly, stale server instances in CMDB causes license exhaustion. In this release, FortiSIEM is able to analyze the AWS CloudTrail log and delete the terminated devices from CMDB.

Ability to Include Multiple Incidents to a Ticket in FortiSIEM Internal Ticketing System

You can now add more than one (related) incident to a ticket in the FortiSIEM internal ticketing system.

NIST 800-171 Compliance Support

This release adds reports for NIST 800-171 Compliance.

Full Catalog of FortiSIEM System Errors Using Distinct Event Types

Stating this release, FortiSIEM internal errors are generated with proper event types and severity so they can be queried easily from FortiSIEM.

Key Concepts

This section describes several key concepts used in FortiSIEM.

Clustering Architecture

FortiSIEM scales seamlessly from small enterprises to large and geographically distributed enterprises and service providers.

- For smaller deployments, FortiSIEM can be deployed a single all-in-one hardware or virtual appliance that contains full functionality of the product.
- For larger environments that need greater event handling throughput, FortiSIEM can be deployed in a cluster of Supervisor and Worker Virtual Appliances.

There are three types of FortiSIEM nodes – Collector, Worker, and Supervisor. Collectors are used to scale data collection from various geographically separated network environments potentially behind firewalls. Collectors communicate to the devices, collect, parse and compress the data and then send to the Worker nodes over a secure HTTP(S) channel in a load balanced manner. Supervisor and Worker nodes reside inside the data center and perform data analysis functions using distributed co-operative algorithms.

There are five primary data analysis tasks:

1. Indexing the data and storing in an event database
2. Searching the data
3. Correlating the data in a streaming mode to trigger rules (behavioral anomalies)
4. Creating a user identity and location database for adding context to data
5. Creating baselines for anomaly detection

For scalability, each of these tasks is divided into a heavyweight Worker component executed by the Worker nodes and a lightweight Master component executed by the Supervisor node. The Supervisor nodes also the GUI using a self-contained three-tier model – GUI, Application Server containing the business logic and a relational database for holding the FortiSIEM application state.

For scalable event storage, FortiSIEM provides three options:

- Local disk
- FortiSIEM NoSQL event database with data residing on an NFS Server
- Elasticsearch distributed database

Hardware appliance and All-in-one virtual appliance solutions use the Local disk option while the NoSQL or Elasticsearch options can be exploited by a FortiSIEM cluster of Supervisor and Workers.

The NoSQL event database option is a purpose built FortiSIEM proprietary solution. The Supervisor and Worker nodes create and maintain the database indices. To scale event insertion and search performance in this mode requires (a) a fast communication network between the Supervisor/Worker nodes and the NFS Server and (b) high NFS IOPS that can be achieved using fast RAID disk or tiered SSD and magnetic disks.

Elasticsearch provides a true distributed, redundant columnar database option for scale-out database performance at the expense of higher storage needs. In this option, FortiSIEM Worker nodes push the data in real time to Elasticsearch cluster, which maintains the event database. FortiSIEM has developed an intermediate adaptation layer, so that the same GUI can run seamlessly on both Elasticsearch and FortiSIEM NoSQL event database.

Licensing

FortiSIEM is licensed based on the following:

- Number of devices FortiSIEM monitors or receives logs from
- Number of Windows Agents and Linux Agents
- Aggregate Events per Second (EPS) it receives

Note that FortiSIEM licensing is not based on storage - you can store and query the data as needed for your compliance needs without any concern regarding licensing. The license parameters can be perpetual or subscription based. Maintenance and FortiGuard Threat Intelligence are subscription based.

You can have unlimited devices in CMDB. However, the total number of devices that send logs to FortiSIEM or is monitored by FortiSIEM cannot exceed the device license. The devices under license are called 'Managed' while the remaining devices are called 'Unmanaged'. If you do a discovery and the number of newly discovered devices combined with Managed CMDB devices exceed the license, then the extra devices are tagged in CMDB as 'Unmanaged'. You can either buy more device license or exchange an Unmanaged device with a Managed device.

FortiSIEM calculates Events per Second (EPS) over a 3-minute period as the total number of events received over a 3-minute period divided by 180. FortiSIEM is a distributed system where events can be received at any node - Collector, Worker, or Supervisor. The EPS licensing is enforced as follows:

At the end of every 3-minute interval, Incoming EPS is calculated at each event entry node (Collector, Worker, or Supervisor) and the value is sent to the central decision-making engine on the Supervisor node.

1. The Supervisor node takes all Incoming EPS values and based on the Licensed EPS, computes the Allocated EPS for the next 3-minute interval for every node and communicates those values to every node.

2. For the next 3-minute interval, each node accepts up to (Allocated EPS * 180) events. It also reports Incoming EPS for the current interval to the Supervisor node.
3. The continuous EPS reallocation process continues.

FortiSIEM includes some additional refinements to EPS enforcement as follows:

- Each Collector has a Guaranteed EPS and Allocated EPS for this Collector is always greater than Allocated EPS.
- FortiSIEM keeps track of Unused EPS as the sum of positive differences of Allocated EPS and Incoming EPS over all nodes. At the beginning of the day (12:00 am), Unused EPS is set to 50% of previous day's Unused EPS and then Unused EPS accumulates throughout the day before maxing out at five times Licensed EPS. Unused EPS can be used for bursting during attacks or other event surge periods, beyond Licensed EPS.

Multi-tenancy and Organizations

Multi-tenancy enables you to manage multiple groups of devices (Organizations) within a single installation. FortiSIEM provides logical separation between Organizations at an application layer. The users of one Organization cannot see another Organization's data including devices, users and logs.

You have to choose the Service Provider Installation type when you first install FortiSIEM. Organizations can be defined in two ways:

- *By adding a Collector to an Organization* – all devices sending logs to a Collector or all devices monitored by a Collector are automatically assigned to the Organization. To which the Collector belongs. Device Names and IP Addresses can overlap between two Organizations. This situation can be used to model is Remote Managed Service Providers.
- *By assigning IP ranges to Organizations* – there are no Collectors and devices will be discovered from Supervisor node and send logs to Supervisor or Worker nodes. If the IP addresses of ALL interfaces of a device are wholly included within the IP range for an Organization, then the device is assigned to that Organization. Else, the device is assigned to the Super/Local Organization (see below).

In addition to user-defined Organizations, FortiSIEM creates two Organizations for ease of management:

- **Super/Local Organization** – this can be used to model Service Provider's own network.
  - For Organizations with Collectors, if a device sends log directly to Supervisor or Worker nodes or is discovered from the Supervisor node, then it belongs to the Super/Local Organization
  - For Organizations without Collectors, if the all IP addresses of a device (being discovered or sending logs) are not wholly included within the IP range for any Organization, then that device is assigned to the Super/Local Organization.
- **Super/Global Organization** – this is a virtual Organization that can 'see' all the other Organizations. This is useful for Service Provider administrative users.

FortiSIEM Multi-tenancy principles are as follows:

1. Users belonging to Super/Global Organization can see other organizations and their data.
2. Users belonging to Super/Local Organization and user-defined Organizations can only see its own Organization.
3. Devices and events are automatically tagged by FortiSIEM with the Organization Id and Name.
4. Rules can be written at a Global level or for a specific Organization. Incidents trigger when rule conditions are met and they trigger independently for each organization. Each Incident is labeled with Customer Id and Name.
5. Searches/Reports can be executed from Super/Global Organization for any combinations of Organizations.
6. From a specific user-defined Organization or Super/Local Organization, Searches/Reports can run on that

Organization.

7. Viewing Incidents is simply a specific Search and follows the same principles as specified in 5 and 6.

Role-based Access Control

After installation, FortiSIEM automatically creates an admin user with Full Admin rights for Super/Global and Super/Local Organization. When the user creates a new Organization, FortiSIEM creates an admin user for that Organization. These are accounts with Full Admin rights. FortiSIEM users with Full Admin rights can create Roles and then create users and assign them a role.

A FortiSIEM role is based on the following aspects:

- What the user can see:
  - Restrict GUI visibility by hiding parts of the GUI
  - Restrict some Organizations for Service Provider installations
  - Restrict data by writing filters on device type, event type and any parsed event attribute
- What the user can do:
  - Restrict or even hide Admin tab where most of the configuration takes place
  - Restrict any other GUI tab
  - Restrict write capability on certain parts of the GUI

FortiSIEM has a few built-in roles that the users can customize to meet their own needs.

Discovery and CMDB

Discovery is a key differentiator for FortiSIEM as it enables users to seamlessly discover their infrastructure (the 'truth') and auto-populate the CMDB, which can then be used to facilitate analytics.

Discovery can be of two types:

- **Simple LOG discovery** – FortiSIEM has mappings for device type to log parser for all its in-built log parsers. When it sees a log that matches a parser, it associates the corresponding device type to that device and creates a CMDB entry.
- **Detailed device discovery** – LOG discovery is very basic since only the Vendor and Model can be guessed (for example: Cisco IOS, Fortinet FortiGate, Microsoft Windows, Generic Linux). It is not possible to deduce more details about the device, for example: Operating System version, hardware model, installed patches, installed software, running processes, network device configurations, interfaces, monitor-able performance metrics, etc. In addition to discovering all of the above, FortiSIEM can also discover certain inter-device relationships, for example, Virtualization Guest to Host mappings, WLAN AP to Controller mappings, Multi-context device to physical device mappings, network topology etc. Devices in the AWS Cloud and MS Azure Cloud can be discovered as well.

Discovered information is used to automatically populate a CMDB. As new devices get added or deleted from the infrastructure, scheduled re-discoveries can keep FortiSIEM CMDB up to date. User can also define some rules to map certain groups of devices to certain CMDB device groups.

The key advantages of FortiSIEM Discovery and CMDB are as follows:

1. The customer has an *accurate picture of the infrastructure* and its relationships from a simple discovery. If a new rogue device is added to the network, FortiSIEM re-discovery learns immediately and could alert to this potential security issue. If an inadvertent configuration change to a key file is made, FortiSIEM re-discovery or configuration

monitoring also detects and alerts.

2. *Performance and availability monitoring is automated* since FortiSIEM simply learns what can be monitored and starts monitoring immediately. This approach eliminates human errors.
3. *Certain key CMDB Objects such as Business Services can remain up to date against infrastructure changes* as they can be auto-populated by discovery.
4. *CMDB Objects makes rules and reports easy to create*. First, this makes rules and reports very simple to write without a long explicit list of IP addresses or host names. Second, the rules do not need to be rewritten as devices get added or deleted.
5. *Discovery enables configuration change detection* both day-to-day changes and changes to golden versions.

Windows and Linux Agents

Some logs and performance metrics can be collected remotely from Windows servers via WMI and by running the Winexe command. Some key performance metrics and file monitoring on Linux servers can be done via SSH. However, the following limitations exist:

For Windows Servers:

- Not all metrics can be collected from a FortiSIEM Linux platform via WMI (for example: Sysmon, Generic Event Logs in the Event Log navigation tree, Registry changes). WMI can be used to collect only Windows Event logs.
- *File Integrity Monitoring Data collected via Windows Security logs is very verbose* (~8 logs per file operation) and creates unnecessary noise in FortiSIEM.
- Remotely running *some programs such Winexe starts services on the servers* – this may trigger security alerts in certain environments.
- A domain account is required to collect certain logs. The regular account does not provide all logs.
- WMI Service often creates CPU load on the servers when a large number of logs are pulled via WMI.
- *Collecting logs via polling from thousands of servers is not efficient.* If a server is not responsive or slow, you have to wait for the connection to timeout and this wastes resources.

Linux Servers send log via syslog. However, if you want to collect File Integrity Monitoring Data, then certain configuration is required to be done remotely.

Agents provide a clean and efficient way to collect exactly the data that we need. FortiSIEM Agents are very lightweight and do not consume more than 5% of system CPU and memory. FortiSIEM Windows Agents have the following functionality:

- Collect any Windows Event log including Security, Application and Performance event logs, DHCP/DNS logs, Sysmon logs etc.
- Collect Custom log files
- Detect registry changes
- Detect File read, write and edits (FIM) with added user context
- Run any PowerShell command and send the output as logs – this allows users to capture any data at periodic intervals and send to FortiSIEM.
- Detect removable media insertion, deletion, read and write

FortiSIEM Windows Agent Manager can manage a large number of FortiSIEM Windows Agents using configuration templates. The user needs to create a template and associate it with many servers. Windows Agents can be configured to send logs to FortiSIEM collectors in a round robin fashion. If one collector is not

available, then the Agent can send it to the next Collector in the list. This provides a robust and scalable way to collect logs from a large number of servers.

Linux Agents can be used to detect file reads, writes, and edits (FIM functionality) with added user context.

Business Services

A Business Service provides a collection of devices and applications serving a common business purpose. You can define a Business Service in FortiSIEM either manually or by the Dynamic CMDB Group framework that adds it to the Business Service once a device matching certain criteria appears in CMDB.

The primary objective of a Business Service is to assist in incident triage. Once a Business Service is defined, every incident is tagged with the impacted Business Services. A Business Service dashboard provides a top-level Incident-centric view of Business Services. The user can take care of incidents for critical Business services and ensure that they stay up.

Parsers and Monitors

The ability to parse any log to any depth is a key SIEM functionality. FortiSIEM comes inbuilt with over 2500 event attributes, 175,000 event types and 250 parsers for various device types and applications. In addition, it has a flexible GUI based framework for customers to enhance existing log parsers, and create completely new device types, event attributes, event types and log parsers. User can test parser changes on a live system and apply them to become effective immediately on all nodes – so changes take effect without any downtime. Parsers can also be exported out of one system and imported into another system. In Service Provider environments, a parser change can be created at a global level and deployed to all organizations.

FortiSIEM also comes with a number of built-in performance monitors and configuration pulling scripts for device types and applications. Discovery automatically enables the applicable monitors and the user can adjust some parameters, such as polling intervals. Similar to log parsers, the user can create and test performance monitors on a live system and apply them to become effective immediately on all nodes – so changes take effect without any downtime. Performance Monitors can also be exported out of one system and imported into another system.

FortiSIEM tracks changes to installed software and network device configuration. If a new configuration file needs to be monitored and can be obtained via a script, then the user can add them to the system. FortiSIEM monitors changes from current to the previous version, deviation from a blessed file, changes between running config and startup config for certain devices.

Entity Risk Score

User Identity and Location

FortiSIEM creates an Audit trail of User Identity and Location data in real time by associating a network identity (for example: an IP address, or MAC address) to user identity (for example: a user name, computer name, or domain or Cloud logon) and tying that to a location (like a wired switch port, a wireless LAN controller, or VPN

gateway or geo-location for VPN logins). The associations are generated by piecing together various pieces of information from Windows Active Directory events, DHCP events, WLAN and VPN logon events and various Cloud service logon events, with discovery results.

FortiSIEM Supervisor and Worker nodes collaborate in a distributed manner to create User Identity and Location records. The IdentityWorker module on Worker nodes keep a partial User Identity and Location in-memory database based on the events that they see. Whenever IdentityWorker module on specific Worker sees new information, for example: a new IP address to User association, then it updates the database and communicates to the IdentityMaster module on Supervisor node. The global User Identity and Location database is created by IdentityMaster module on Supervisor node by combining information from all IdentityWorker modules. Whenever the IdentityMaster module sees new information, it sends a signal to parser modules in all nodes, which then gets the latest updates from the Supervisor node. The parser module injects IP to User meta-data into events in real time so that this information can be searched without complicated database join operations.

Searches, Reports and Compliance

FortiSIEM provides a unified way to search the data it collects from various devices. All data whether it is system logs, performance metrics, or configuration changes, is converted to an event with parsed event attributes – this makes it easy to search.

Search can be done for real-time data or historical data. In real time mode, the search occurs in a streaming node on incoming data without touching the event database. In historical mode, the user specifies a time period and data residing in event database is searched for that time period. Searches can be specified on raw logs or parsed attributes. A rich variety of grouping and aggregation constructs are supported to display data at various granularity.

FortiSIEM comes pre-built with a large number of reports that can be used as starting points. User can customize them and save as their own reports for later use. Reports can be scheduled to run at specified times and delivered in PDF or CSV format via email. FortiSIEM provides a large number of compliance reports, each with reference to specific compliance mandates. To run these reports, user simply needs to add devices to the specific compliance device group (Business Service) and then run the report.

All searches run in a distributed fashion in FortiSIEM. For deployments with FortiSIEM NoSQL database, Supervisor node distributes each search query to Worker nodes and summarizes the partial results sent back from Worker nodes. Assuming you have sufficient NFS IOPS, Searches can be made faster up by adding Worker nodes. Worker nodes can be added to a live system. Since event data is centrally stored in NFS, the newly added Worker can participate in queries.

For deployments with Elasticsearch, Supervisor node sends each search query to Elasticsearch Coordinating node, which then distributes each search query to Elasticsearch Data Node and summarizes the partial results sent back from Data Node to the Supervisor node. Adding Elasticsearch Data Nodes can make up searches faster. Since each Data Node has its own storage, it takes some time for data to be distributed to the newly added Data Node. However, since data is stored locally on each Data Node, this solution scales horizontally.

Rules and Incidents

Rules detect bad behavioral anomalies for machines and users in real time. FortiSIEM has developed SQL-like XML based rule specification language. The user creates a rule from GUI, tests it using real events and then deploys the rule. The XML language is quite powerful and uses CMDB Objects (e.g. Device, Network and

Application Groups, Event Type Groups, Malware Objects, Country groups, Watch Lists) to keep the rules concise.

A Rule specification involves multiple sub-patterns of events connected by temporal operators (AND, OR, AND NOT, FOLLOWED BY, and NOT FOLLOWED BY). Each sub-pattern is like a SQL Query with filters, group by attributes and thresholds on aggregates. The thresholds can be static or dynamically specified based on statistics. A rule can be nested – meaning a rule can be set to trigger another rule. A rule can also create a watch list that, like a CMDB Object, can be used in another rule.

Rule computation happens in a streaming mode using distributed in-memory computation involving Super and Worker nodes. Latest Rule definitions are distributed to Super and Worker nodes. Worker nodes evaluate each Rule based on the events it sees and periodically sends partial Rule results to the Supervisor node. Supervisor node keeps the global rule state machine and creates an incident when the Rule conditions are met. When a rule involves a statistical attribute (for example: mean or standard deviation), a baseline report is created which computes the statistics and updates the rule conditions. The baseline report also runs in a streaming mode using in-line distributed computation. When a CMDB Object changes, an App Server module on the Supervisor node sends a change signal to the Worker nodes, which then download the changes. This distributed in-memory computation enables FortiSIEM to scale to near real time performance with high EPS and large number of rules.

Since FortiSIEM analyzes all data including logs, performance and availability metrics, flows and configuration changes, the rule engine can detect suspicious behavior. This ability to cross correlate across different functional IT domains is what makes FortiSIEM rule framework powerful.

Incident Notification Policy

Once an incident trigger, the user may want to take an action, for example: send an email, create a ticket or initiate a remediation action. Rather than attaching an action to an incident, which does not scale, FortiSIEM takes a policy-based approach. You can write Incident Notification policies involving Time Of Day, Incident Severity, Affected Items, and Affected Organization and attach actions to policies. This allows you to create corporate wide policies on who works on what and on which times of the day. Affected Items are specified using CMDB Groups and Assigned Users can be specified using CMDB Users – this makes incident notification policies easy to specify and maintain.

Remediation Library

You may want to remediate an Incident by running a script. In FortiSIEM, this amounts to creating an Incident Notification Policy and attaching the Remediation Script as an Action to the Notification Policy. The remediation script may run on the Supervisor node or on the Collectors since the enforced devices may be behind a firewall.

When an Incident triggers and a Remediation Action has to be taken, App Server sends a signal to the involved enforcement points (Supervisor and Collectors). The enforcement point first retrieves necessary information (such as enforced on device IP or Host name, enforced on device credentials and Incident details) from the Supervisor node and passes that information to the Remediation Script. After the script executes, the Remediation results are attached to the Incident.

FortiSIEM provides a wide collection of inbuilt Remediation Scripts. The user can create new Remediation Scripts in FortiSIEM.

External Ticketing System Integration

This feature allows you to manage a FortiSIEM Incident in an external ticketing system. Several API based built-in integrations are available – ServiceNow, Salesforce and ConnectWise. A Java based framework is available for user to create integrations to other ticketing systems.

There can be four types of integrations – Device or Incident and Inbound or Outbound.

- *Incident Outbound Integration* is used to create a ticket in an external ticketing system.
- *Incident Inbound Integration* is used to update the external ticket status in FortiSIEM of a ticket opened previously using Incident Outbound Integration. If a ticket is closed in external ticketing system, then the ticket status is also updated in FortiSIEM.
- *Device Outbound Integration* is used to update CMDB in an external ticketing system from FortiSIEM CMDB. Every ticketing system needs a CMDB.
- *Device Inbound Integration* is used to update FortiSIEM device attributes from an external CMDB.

To use built-in *Incident Outbound* and *Device Outbound Integrations*, define an appropriate Integration and attach it as an Action to an Incident Notification Policy. You can use extensive field mappings to customize how the ticket will appear in the external ticketing system. Incident Inbound and Device Inbound integrations have to be scheduled to run at periodic intervals.

Dashboards

FortiSIEM offers various types of dashboards for the user to understand the data it collects and the incidents that are triggering in the system:

- Summary Dashboards
- Widget Dashboards
- Business Service Dashboards
- Identity and Location Dashboards
- Incident Dashboards
- Interface Usage Dashboards
- PCI Logging Dashboards

Summary Dashboards

Summary dashboards show a near real time view of health, up-time, incidents and other key performance metrics of many devices in a single spreadsheet format – each row is a device and each column is a metric. Cells are color-coded (Red, Yellow, Green) to highlight the values when they cross certain customizable limits. The advantage of this type dashboard is that user can simultaneously compare many metrics of many devices from a single view and instantaneously spot issues. User can customize the groups of devices and the corresponding metrics. The user can build multiple Summary dashboards. FortiSIEM has developed an in-memory database that powers this dashboard – continuous querying event database does not scale. For more information, see Summary Dashboards.

Widget Dashboards

Widget dashboards offer the more traditional Top N dashboard view – one chart for one metric. A wide variety of chart types are available and are described in FortiSIEM Charts and Views.

Any FortiSIEM Report – whether it is reported on Events or on CMDB – can be added to a Widget dashboard. FortiSIEM Widget Dashboards have these distinct advantages.

- Color Coding – Items in each widget can be color coding based on thresholds – this can quickly help the user to spot problems
- Dynamic Search – The user can filter the entire dashboard by Host Name or IP Address and quickly
- Streaming Computation – The reports in the widget dashboard are computed in a streaming mode without making repeated queries to the event database. This makes the dashboards fast to load.

For more information, see Widget Dashboards.

Business Service Dashboards

Business Service Dashboards provide a top-down view of Business Service health. User can see the incidents related to each Business Service and then drill down on the impacted devices and incidents. For more information, see Business Service Dashboards.

Identity and Location Dashboards

Identity and Location dashboards provide a tabular view of network identity to user identity mappings. For more information, see Identity and Incident Dashboards.

Incident Dashboards

FortiSIEM provides two Incident Dashboards – Overview and Risk View.

- Overview dashboard shows a top-down view into Incidents By Category, Top Incidents and where they are triggering, Top Impacted Devices and what Incidents they are triggering.
- Risk View dashboard organizes devices and users by Risk.

For more information, see Overview and Risk View.

Interface Usage Dashboards

This dashboard provides an overview of the usage of individual interfaces of Router and Firewall devices. You can obtain metrics at three levels:

device level, interface level and application level. For more information, see Interface Usage Dashboards.

PCI Logging Dashboards

A PCI Logging Status dashboard provides an overview of which devices in PCI are logging . The devices are displayed by CMDB Device Groups (for example Windows, Linux, Firewalls and so on) and by Business Units. For more information, see PCI Logging Dashboards.

Getting Started

Following are the basic steps for getting started with FortiSIEM:

Step 0 - Pre-Install Considerations

FortiSIEM can run in the following modes:

- Single node all in one Virtual Appliance (Supervisor node) running on a wide variety of Hypervisors with local event database storage
- Virtual Appliance Cluster – Supervisor and Worker nodes - external event database storage
- Dedicated hardware appliances – single node with local event database storage or cluster with external event database storage

Before starting the installation process, make the following decisions:

- Installation type: Hardware appliance or Virtual appliance
- If Virtual Appliance, then decide:
  - Hypervisor type – ESX, KVM, HyperV, AWS, Azure
  - Enterprise version or Service Provider version
  - Single node (All-in-one Supervisor) or a Cluster (single Supervisor and multiple Workers)
  - Local event database or External storage (cluster requires external storage)
  - External storage type - FortiSIEM event database or Elasticsearch
  - Whether Collectors are needed
- If hardware appliance, then decide:
  - Enterprise version or Service Provider version
  - Single node (All-in-one Supervisor Appliance) or a Cluster (single Supervisor Appliance e.g. 3500F and multiple Workers e.g. 2000F)
  - Local event database or External storage (cluster requires external storage
  - External storage type - FortiSIEM event database or Elasticsearch
  - Whether Collectors are needed

Step 1 - Install the Virtual or Hardware Appliance

You can choose to use all-in-one FortiSIEM Hardware Appliance or a Virtual Appliance based solution.

To install FortiSIEM Hardware Appliance (FSM-2000F, FSM-3500F, FSM-500F), see here.

To install a FortiSIEM Virtual Appliance based solution:

- Select the hypervisor (VMWare ESX, AWS, HyperV, KVM) on which FortiSIEM is going to run
- Select event database storage – local or NFS or Elasticsearch
- Set up external storage if needed: NFS and Elasticsearch
  See *NFS Storage Guide* and *Elasticsearch Storage Guide*
- Install FortiSIEM Virtual Appliance (see the installation guides here.)

Step 2 - Install License

Apply the license provided by Fortinet. Note that for Virtual appliance install, the UUID of the Supervisor node must match the license while for hardware appliance, the hardware serial numbers must match the license.

After applying the license, the system will reboot and provide a login page.

Login with the following default values:

- **USER ID** - admin
- **PASSWORD** - admin*1
- **CUST/ORG ID** - super
- **DOMAIN** - LOCAL

For more information about FortiSIEM Licensing, see the *Licensing Guide* here.

Step 3 - Specify Event Database Storage

If you chose Virtual Appliances, then specify storage option (see here – **ADMIN** > **Setup** > **Storage**).

Hardware appliances only support local disk event database storage.

Step 4 - Check System Health and License

Ensure that:

- All the system components are up and in good health (**ADMIN** > **Health** > **Cloud Health** – see here)
- The license matches your purchase by visiting the **ADMIN** > **License** > **License** page – see here

Step 5 - (Optional) Create Organizations for Service Provider deployments

A Service Provider would consist of multiple Organizations.

These Organizations can be defined in two ways:

- **Case 1** - By associating one or more collectors to an Organization – any log received by those Collectors or any devices discovered by those collectors will belong to that Organization. This typically makes sense for remote management scenarios.
- **Case 2** - By associating an IP range to an Organization – this typically makes sense for hosted scenarios

In both cases, create organizations by visiting **ADMIN** > **Setup** > **Organizations** (see here).

The system will create default system users with Full Admin functionality for each created organization.

Step 6 - (Optional) Check Full Admin Organization Users for Service Provider deployments

FortiSIEM will automatically create a Super-global Full Admin user and one Full Admin user for each Organization. Ensure that you are able to log in to:

- each Organization using the system created Full Admin users
- Super-Global mode using Super-global Full Admin user and then switch to any Organization

Step 7 - Add Email Gateway

FortiSIEM will send notifications for incidents via email. Setup the email gateway by visiting **ADMIN** > **Settings** > **System** > **Email** (see here for details).

Step 8 - (Optional) Add Collector

If your monitored devices are behind a firewall or in a distant location across the Internet, then you will need a Collector to collector to collect logs and performance metrics from that location.

FortiSIEM Collectors can be Hardware Appliances or Virtual Appliances. Hardware Appliances are easiest to install.

- For FSM-500F

  See *500F Collector Configuration Guide* for the installation above.

Install the FortiSIEM Collector Virtual appliance based on the Hypervisor of your choice:

- VMWare ESX
- AWS
- KVM
- Microsoft Hyper-V

See the specific Installation Guides here for the installations above.

Register the Collector to the FortiSIEM Supervisor node.

See the section *Registering Collectors* for the registration process.

Step 9 - (Optional) Set Event Upload Destination for the Collector(s)

You must specify the FortiSIEM nodes where the Collector will upload events to, in **ADMIN** > **Settings** > **System** > **Worker Upload** (see here). There are three options:

- In a simple setup with one Supervisor node, specify the Supervisor node. This is not recommended in larger setups as this will make the Supervisor node busy
- You may want to specify one or more Worker nodes, listed by Worker IP addresses. The Collectors will load balance across the specified Worker nodes. In this manner, streaming analytics like inline reports and rule are distributed over Worker nodes.
- You may specify a load balancer name that sits in front of the Worker nodes. Note that in this case, you have to carefully tune the load balancing configuration to get optimum performance.

The second option works the best in most cases.

Step 10 - (Optional) Check Collector Health

You want to make sure that Collectors are up and running properly. Go to **ADMIN** > **Health** > **Collector Health** to check (see here for details).

At this point, the system is ready to receive events or perform discovery.

Step 11 - Receive Syslog and Netflow

First check the list of supported devices whose logs are parsed by FortiSIEM out of the box. The list is **ADMIN** > **Device Support** > **Parser**. See also the external device support document for further details (see here). If your device is in that list, then FortiSIEM will likely parse your logs out of the box.

Note that with every new version, vendors add new log types or sometimes, even change the log format in a non-backward compatible manner. In that case, the built-in parser may need to be adjusted (this topic will be covered in Advanced Operations). If your device is not on the list of built-in parsed devices, then a custom parser needs to be written. This topic will be covered in Advanced Operations.

Configure your device to send logs to FortiSIEM. If your device is behind a Collector, then the logs will be sent to the Collector. Otherwise, logs can be sent to Supervisor or Worker node. For devices with high event rates, it is recommended to add a Worker node (Step 19) and send logs directly to Worker node. Most vendors have straightforward methods to send syslog to external systems – see here but be aware that the information may be a little out of date. Consider your vendor's manual in that case.

FortiSIEM automatically receives Netflow variations of well-defined ports.

Step 12 – Check CMDB Devices and Run Searches for Received Events

If the logs in Step 11 are received correctly in FortiSIEM, then you should see the sending devices in the correct CMDB device and application group.

You can also search for the logs and see how they are parsed. Go to **ANALYTICS** > **Shortcuts** from the folder drop-down and run 'Raw Messages', 'Top Reporting Devices' or 'Top Event Types' queries (see here for details).

Step 13 - Discover Devices

Some systems (for example, Linux based servers) have generic log patterns – so logs cannot precisely identify the Operating system. If you want to get accurate information from such systems, then you must discover them via protocols such as SNMP, SSH. For Windows servers, if you want to collect logs via WMI, then you must discover them via WMI only or SNMP and WMI.

To perform discovery first go to **ADMIN** > **Setup** > **Credentials** and set up credentials and then go to **ADMIN** > **Setup** > **Discovery** and run discoveries. For Service Provider deployments with collectors, do the discoveries from each organization because IP addresses and names can be overlapping.

You can run the discovery in the foreground or in the background. If you run in the foreground, then you will know when it finishes. If you run in the background, then you must go to Tasks section to see the discovery completion percentages and status. Note that ill-defined discoveries can take a long time to complete – see here for guidelines.

To see the benefits of discovery, see the *External Systems Configuration Guide* here and search your device type.

Step 14 - Check CMDB and Performance Monitors for Discovered Devices

After discovery is complete, you will see the CMDB populated with the discovered devices in the correct device, application and network segment folders.

Note the following:

- If the number of devices is within your license limits, then the discovered devices will be in managed and Pending state. Otherwise, a set of (randomly chosen) devices exceeding license limit will be in the Unmanaged state. FortiSIEM will not receive logs from unmanaged devices, nor they can be monitored. You can flip a device from Unmanaged to Managed and vice-versa. You can also buy additional licenses to rectify this situation.
- If devices have overlapping IP addresses, then they will be merged. Check for this incident “PH_RULE_DEVICE_MERGED_OVERLAP_IP” to look for merged devices. To correct this situation, you have two choices:
    - Change the overlapping IP address on the device, delete the device from CMDB and rediscover.
    - If the overlapping IP is a Virtual IP (VIP), then add this IP to the VIP list in **ADMIN** > **Settings** > **Discovery**. Delete the device from **CMDB** and re-discover.

After you have corrected the situation, make sure that devices are not merged and appear correctly in **CMDB**.

Note that in the enterprise mode, discoveries are done by the Supervisor node. In the Service Provider version, there are two possibilities, depending on how organizations are defined (see Step 5)

- For Organizations defined by IP addresses, discoveries are done by the Supervisor node. After discovery, the devices should belong to the correct organization.
    - If all interfaces of a device belong to the specified Organization IP range, then the device belongs to that Organization.
    - On the other hand, if at least one IP does not belong to specified Organization IP range, then the device belongs to the Super/local Organization (representing the Hosting Service Provider Organization).
- For Organizations with Collectors, discoveries are done by the associated Collector node. Check **CMDB** to see that the devices are marked with the correct Organization and Collector.

As part of discovery, FortiSIEM also discovers which performance metrics it can collect and which logs it can pull. See **ADMIN** > **Setup** > **Pull Events** and **ADMIN** > **Setup** > **Monitor Performance** tabs (see here for details). You can turn off log/performance metric collection or tune the polling intervals.

Performance monitoring and log collection is a continuous process. If you tested the credentials before running discoveries (**ADMIN** > **Setup** > **Credentials** > **Test Connectivity**) and fixed the errors showing up in Discovery error tab, then the metric/log collection should not have errors. After running for some time, there can be errors – some reasons being (a) network connectivity issues from FortiSIEM to the devices, (b) someone changed the credentials or access policies on the device, (c) the device can have performance issues. Please check for errors in the **ADMIN** > **Setup** > **Pull Events** and **ADMIN** > **Setup** > **Monitor Performance** tabs (see here for details) and fix them. If credentials have changed, then you must change the credentials in **ADMIN** > **Setup** > **Credentials** and rediscover the corresponding devices.

Step 15 - Check Monitored Device health

You can watch the current health of a device in CMDB by selecting the device and choosing the Device health option from the menu. To see the performance metrics in real time, select the device in CMDB and choose the Real time performance option from the menu.

Step 16 - Check Incidents

FortiSIEM provides a large number of built-in machine and user behavior anomalies in the form of rules. These rules are active by default and will trigger incidents. See here on how to navigate incidents. Advanced Operations describes how to tune these rules for your environment.

Step 17 – Notify an Incident via Email

You may want to notify users via email when an incident trigger. This is achieved in one of two ways.

- Create an Incident Notification Policy and specify the incident matching criteria and the receiver email address. See here for details.
- Select an incident from **INCIDENT** > **List** view, go to **Action** and select **Notify via Email**. See here for details.

Note that many other advanced actions are possible such as:

- Customizing the email template
- Remediating the incident by running a script
- Opening a ticket in an external ticketing system and so on.

See Advanced Operations for details.

Step 18 – Create a Ticket in FortiSIEM

You can use FortiSIEM built-in ticketing system to handle tickets. Currently, this is handled outside of the notification policy concept (Step 17).

To create a FortiSIEM ticket, select one or more incidents from **INCIDENT** > **List** view, go to **Action** and select **Create Ticket**.

Step 19 - View System Dashboards

FortiSIEM provides several built-in dashboards:

- Incident Dashboard – Overview and Risk View
- Incident Location View - (see here for details)
- Incident and Location Dashboard – select **DASHBOARD** > Incident and Location Dashboard (this requires you to collect DHCP, Active Directory logon events – see here for details

Go to **DASHBOARD** and select the dashboard of your choice.

Step 20 - (Optional) Add Worker

For larger software based deployments that involve multiple collectors or large number of monitored devices or devices with high event rates, it is highly recommended to deploy one or more Workers to distribute the Supervisor node's workload. Note that Workers cannot be added to Hardware-based appliances.

Workers can be added by visiting **ADMIN** > **License** > **Nodes** - see here for details.

After adding the Worker(s), remember to add the workers to the collect event upload destination list (**ADMIN** > **Settings** > **System** > **Worker Upload** - see here for details).

Step 21 - (Optional) Check Worker Health

Check the health of the Workers by visiting **ADMIN** > **Health** > **Cloud Health**.

- The health of all nodes should be Normal, load average should be within bounds (typically less than the number of cores), CPU should not be pegged at 99%, and little swap should be used.
- Click on any node and check the health of individual processes running on that node in the bottom pane. Status should be Up with large Up times and reasonable CPU and memory usage.

Step 22 - Check License Usage

Check whether the system is operating within licensed parameters (Monitored device count and EPS) by visiting **ADMIN** > **License** > **Usage** (see here for details).

Step 23 - Set Home Page and Complete Your User Profile

Click the **Edit User Profile** icon () in the upper right corner of the UI. The dialog box contains three tabs:

Basic - Use the **Basic** tab to change your password into the system.

Contact - Use the **Contact** tab to enter your contact information.

UI Settings - Use the **UI Settings** tab to set the following:

Settings	Guidelines
Home	Select the tab which opens when you log in to the FortiSIEM UI.
Incident Home	Select the Overview, List, Risk, or Explorer display for the **INCIDENT** tab.

Settings	Guidelines
Dashboard Home	Select the Dashboard to open by default under the **DASHBOARD** tab from this drop-down list.
Dashboard Settings	Select the type of dashboards to be visible/hidden using the left/right arrows. The up/down arrows can be used to sort the Dashboards.
Language	Specify which language will be used for the UI display. Many UI items have been translated into the languages in the drop-down list, including buttons, labels, top-level headings, and breadcrumbs. Items that are data-driven are not translated.
Theme	Select Dark or Light theme for FortiSIEM UI. Save and refresh the browser to view the change.

Step 24 – Log on to the console and check status

In rare situations when the GUI is not responding, you may need to SSH in to the system console of Supervisor, Worker and Collector nodes and issue some commands. The list of node IP addresses are available in **ADMIN** > **License** > **Nodes**, **ADMIN** > **Health** > **Cloud Health** and **ADMIN** > **Health** > **Collector Health**.

Log on to each of them using the default password as below. Step 25 describes how to change the default password.

FortiSIEM provides two SSH user accounts:

- User: 'root' and password: `ProspectHills`
- User: 'admin' and password: `admin*1`

The following commands are available:

- Run `phstatus` from the admin account – shows the status of all FortiSIEM processes
- Run `phstatus -a` from the root account – shows the detailed status of all FortiSIEM processes along with events per second and local I/O rates

The following Linux commands can be useful:

- Run `top` from the admin account – shows the CPU, memory usage of all Linux processes
- Run `iostat -x 2` to check the I/O statistics for local disk
- Run `nfsiostat -x 2` to check the NFS I/O statistics for Supervisor and Worker for NFS based deployments
- Run `tail -300f /opt/phoenix/log/phoenix.log` to see the C++ module log

Step 25 – Change default passwords

FortiSIEM provides these default passwords. Please change them before running the system for production.

On Supervisor, Workers, Collectors and Report Server:

- User: `root` and password: `ProspectHills`
- User: `admin` and password: `admin*1`

On GUI:

- Enterprise deployment – User: `admin` and password: `admin*1` with full Admin User rights
- Service Provider deployment – One user for Super/Global, Super/Local and each user created organizations - user: `admin` and password: `admin*1`

The GUI accounts can be changed from the GUI by clicking the **Edit User Profile** icon on top right corner and opening the **Basic** tab. Linux passwords can be changed by issuing the `passwd` command as a logged in user.

Advanced Operations

FortiSIEM enables you to perform the following advanced operations:

- **CMDB**
  - Discovering Users
  - Creating FortiSIEM Users
  - Setting External Authentication
  - Setting 2-factor Authentication
  - Assigning FortiSIEM Roles to Users
  - Creating Business Services
  - Creating Dynamic CMDB Groups
  - Setting Device Geo-location
  - Creating CMDB Reports
- **Incidents and Cases**
  - Searching Incidents
  - Tuning Incidents via Exceptions
  - Tuning Incidents via Modifying Rules
  - Tuning Incidents via Drop Rules
  - Tuning Incidents by Adjusting Thresholds
  - Clearing Incidents
  - Adding Comments or Remediation advice to an Incident
  - Remediating an Incident
  - Notifying an Incident via Email
  - Creating New Rules
  - Creating a FortiSIEM Ticket
  - Creating a Ticket in External Ticketing System
- **Device Support**
  - Checking Device Monitoring Status and Health
  - Setting Devices Under Maintenance
  - Creating Custom Monitors
  - Setting Important Interfaces and Processes
  - Modifying System Parsers
  - Creating Custom Parsers
  - Handling Multi-line Syslog
  - Creating Synthetic Transaction Monitors
  - Mapping events to Organizations
  - Adding Windows Agents
  - Adding Linux Agents
  - Forwarding Events to External Systems

- **Rules, Reports and Dashboards**
  - Creating New Rules
  - Creating New Reports
  - Scheduling Reports
  - Customizing Built-in Dashboards
  - Creating custom Dashboards
  - Customizing Business Service Dashboards
- **Advanced System Health**
  - Monitoring System Health
  - Monitoring Collector Health
  - Monitoring Elasticsearch Health
  - System Errors
  - Monitoring User Activity

Discovering Users

Users can be discovered via LDAP, OpenLDAP, or they can be added manually. Discovering users via OpenLDAP or OKTA are similar.

To discover users in Windows Active Directory, discover the Windows Domain Controller:

1. Go to **ADMIN** > **Setup** > **Credentials**.
2. Click **New** to create an LDAP discovery credential by entering the following in the Access Method Definition dialog box:
   a. **Name** for the credential
   b. **Device Type** as "Microsoft Windows Server 2012 R2"
   c. **Access Protocol** as "LDAP"
   d. **Used For** as "Microsoft Active Directory"
   e. Enter the **Base DN** and **NetBios Domain**
3. Test the LDAP Credentials.
4. Run discovery.
5. Go to **CMDB** > **Users**.
6. Click the "Refresh" icon on left panel and see the users displayed on the right panel.

To add users manually:

1. Go to **CMDB** > **Users**.
2. Click **New** and add the user information.

For details about Discovering Users, see here (Refer to the table by searching: Credentials for Microsoft Windows Server)

For details about Adding Users, see here.

Creating FortiSIEM Users

To create users that access FortiSIEM:

1. Login as a user with "Full Admin" rights.
2. Create the **user** in CMDB.
3. Set a password – after logging in, the user can set a new password.
4. Select the user and click **Edit**.
5. Select **System Admin** and enter the following:
    a. **Authentication Mode** - "Local" or "External"
    b. **Enterprise case** - select the Role
    c. **Service Provide Case** - select the Role for each Organization

For details about creating users, see here.

To change the password:

1. Login as the user.
2. Click the "User Profile" icon on the top-right corner.
3. Click **Save**.

Setting External Authentication

FortiSIEM users can be authenticated in two ways:

- **Local** authentication – user credentials are stored in FortiSIEM
- **External** authentication – user credentials are stored in an external database (AAA Server or Active Directory) and FortiSIEM communicates with the external database to authenticate the user

Step 1: Set up an Authentication Profile

1. Login as a user with **Full Admin** rights.
2. Create an authentication profile by visiting **ADMIN** > **Settings** > **General** > **Authentication**.
3. Click **New**.
4. Provide the following information in the External Authentication Profile dialog box:
    a. Enter a Name for the profile
    b. Select an **Organization** from the drop-down list
    c. Set **Protocol** appropriately (for example, LDAP, LDAPS, or LDAPTLS for Active Directory)
    d. Enter the **IP/Host** and **Port** number
5. Make sure the credentials are defined in **ADMIN** > **Setup** > **Credentials**.
6. Select the entry and click **Test** to ensure it works correctly.

Step 2: Attach the Authentication Profile to the user

1. Select the user under **CMDB** > **User** and click **Edit**.
2. Select **System Admin** and click the edit icon.
3. Set **Mode** to "External" and set the Authentication Profile created.

For details about Setting up Authentication Profiles, see here.

For details about Editing Users, see here.

Setting 2-factor Authentication

FortiSIEM supports Duo as 2-factor authentication for FortiSIEM users:

Step 1: Set up an Authentication Profile

1. Login as a user with **Full Admin** rights.
2. Create an authentication profile by visiting **ADMIN** > **Settings** > **General** > **Authentication**:
    a. Set **Protocol** to "Duo"
    b. Make sure the credentials are defined in **ADMIN** > **Setup** > **Credentials**
    c. Select the entry and click **Test** to make sure it works correctly

Step 2: Attach the Authentication Profile to the user

- Select the user **CMDB** > **Users** and click **Edit**
- Select **System Admin** and click the edit icon
- Set **Mode** to "External" and set the Authentication Profile created

For details about Setting up Authentication Profiles, see here.

For details about Editing Users, see here.

Assigning FortiSIEM Roles to Users

FortiSIEM allows the admin user to create Roles based on what data the user can see what the user can do with the data. To set up Roles:

Step 1: Create a Role of your choice

1. Login as a user with **Full Admin** rights.
2. Go to **ADMIN** > **Settings** > **Role** > **Role**.
3. Make sure there is a Role that suits your needs. If not, then create a new one by clicking **New** and entering the required information. You can also Clone an existing Role and make the changes.

Step 2: Attach the Role to the user

1. Select the user **CMDB** > **Users** and click **Edit**
2. Select **System Admin** and click the edit icon.
3. Set **Default Role**:
    a. Enterprise case – select the **Role**
    b. Service Provide Case – select **Role** for each Organization

For details about Setting up Roles, see here.

For details about Editing Users,see here.

Creating Business Services

Business Service is a smart grouping of devices. Once created, incidents are tagged with the impacted Business Service(s) and you can see business service health in a custom Business Service dashboard.

For details about creating a Business Service, see here.

For details about setting up Dynamic Business Service, see here.

For details about viewing Business Service health, see here.

Creating Dynamic CMDB Groups and Business Services

CMDB Groups are a key concept in FortiSIEM. Rules and Reports make extensive use of CMDB Groups. While inbuilt CMDB Groups are auto-populated by Discovery, user-defined ones and Business Services are not. You can use the Dynamic CMDB Group feature to make mass changes to user-defined CMDB Groups and Business Services.

To create Dynamic CMDB Group Assignment Rules:

1. Login as a user with **ADMIN** tab modification rights.
2. Go to **ADMIN** > **Settings** > **Discovery** > **CMDB Group.**
3. Click **New**.
4. Enter CMDB Membership Criteria based on **Vendor**, **Model**, **Host Name** and **IP Range**.
5. Select the CMDB group (**Groups**) or Business Services (**Biz Services**) to which the Device would belong if the criteria in Step 3 is met.
6. Click **Save**.

You can now click **Apply** to immediately move the Devices to the desired CMDB Groups and Business Services. Discovery will also honor those rules – so newly discovered devices would belong to the desired CMDB Groups and Business Services.

For details about Setting up Dynamic CMDB Groups and Business Services, see here.

Setting Device Geo-Location

FortiSIEM has location information for public IP addresses. For private address space, you can define the locations as follows:

1. Login as a user with **ADMIN** tab modification rights.
2. Go to **ADMIN** > **Settings** > **Discovery** > **Location**.
3. Click **New**.
4. Enter **IP/IP Range**.
5. Specify the Corresponding **Location** for the IP address Range.
6. Select **Update Manual Devices** if you want already discovered device locations to be updated.
7. Click **Save**.
   You can now click **Apply** to set the geo-locations for all devices matching the IP ranges.

For details about Setting Device Location, see here.

Creating CMDB Reports

If you want to extract data from FortiSIEM CMDB and produce a report, FortiSIEM can run a CMDB Report and display the values on the screen and allows you to export the data into a PDF or CSV file.

For details about Creating CMDB Reports, see here.

Searching Incidents

If you want to search for specific incidents, go to **INCIDENT** > **List** > **Action** > **Search**. A Search Windows appears on left. First, select the Time Window of interest. Then by clicking on any of the criteria, you can see the current values. You can select values to see matches incidents in the right pane.

For details about Searching Incidents, see here.

Tuning Incidents via Exceptions

If you do not want a rule to trigger for a specific Incident Attribute, then you can create an exception.

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident.
4. Click **Action** > **Edit Rule Exception**.
5. Enter the exception criteria – attribute based or time-based.

For details about Tuning Incidents via Exceptions, see here.

Tuning Incidents via Modifying Rules

Sometimes modifying the rule is a better idea than creating exceptions. For example, if you do not want a rule to trigger for DNS Servers, simply modify the rule condition by stating something like “Source IP NOT CONTAIN DNS Server”. To do this:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident
4. Click **Action** > **Edit Rule**
5. Edit the Rule.
   If it is a System Rule, then you must save it as a User Rule. Deactivate the old System Rule and activate the new User Rule.

For details, see here.

Tuning Incidents via Drop Rules

Sometimes the rule can be prevented from triggering by dropping the event from rule considerations. There are two choices - (a) store the event in database but not trigger the rule or (b) drop the event completely.

To do this:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident.
4. Click **Action** > **Create Event Dropping Rule**.
5. Specify event drop criteria and action. Events can be dropped on certain parsed fields (like Reporting/Source/Destination IP and Regex filter on the content).

For details, see here.

Tuning Incidents by Adjusting Thresholds

Some performance rules are written using global thresholds, for example - the Rule “High Process CPU: Server” uses the global threshold “Process CPU Util Critical Threshold” defined in **ADMIN** > **Device Support** > **Custom Property**.

You have two choices – (a) modify the global threshold or (b) modify the threshold for a specific device or a group of devices. If you change the global threshold, then the threshold will change for all devices.

To modify the global threshold, follow these steps:

1. Go **ADMIN** > **Device Support** > **Custom Property**.
2. Select the property and click **Edit**.
3. Enter the new value and click **Save**.

For details, see here.

To modify the threshold for one device, follow these steps:

1. Go to **CMDB**.
2. Select the device and click **Edit**.
3. In the **Properties** tab, enter the new value and click **Save**.

To modify the threshold for a group of devices, repeat the above step for all devices.

Clearing Incidents

In some cases, the Incident may not be happening anymore as the exception condition was corrected.

To clear one or more Incidents:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.

4. Click **Action** > **Clear Incident**
5. Enter **Reason** and click **OK**.

For details, see here.

Adding Comments or Remediation Advice to an Incident

To add a comment to an Incident:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Action** > **Edit Comment**
5. Enter the **Comment** and click **OK**.

For details, see here.

Sometimes, it is necessary to add Remediation advice for the recipient of an Incident, so he can take some action to remediate the Incident. This has to be done by editing the Rule.

1. Go to **RESOURCES** > **Rules**
2. Select a Rule and click **Edit**.
3. Enter **Remediation Note** text and click **Save**.

For details, see here.

The Remediation text can be added to the Incident Notification email template.

For details, see here.

Remediating an Incident

You can use the following commands to enable Windows Remote Management (WinRM) and set authentication on the target Windows Servers. See Remediations for information on adding, editing, and deleting a remeditation from the FortiSIEM UI.

In the remediation script:

1. When you initiate the WinRM session, set `transport` parameter to `ssl`.
2. Set the `server_cert_validation` option accordingly. If you do not need to validate the certificate, set to `ignore`. For example:

```
session = winrm.Session(enforceOn, auth = (user, password),
transport="ssl", server_cert_validation = "ignore")
```

In the target Windows server:

Note: You might need to disable Windows Firewall before running remediation.

1. Create the self-signed certificate in the certificate store, for example:

```
New-SelfSignedCertificate -CertStoreLocation Cert:\LocalMachine\My -DnsName
"mySubjectName.lan"
```

where `Cert:\LocalMachine\My` is the location of the certificate store and `mySubjectName.lan` is the subject alternate name extension of the certificate.

2. Create an HTTPS listener, for example:
```
winrm create winrm/config/Listener?Address=*+Transport=HTTPS '@{Port
="5986";Hostname="{your host name}"; CertificateThumbprint="
{CertificateThumbprint}"}'
```
3. Start the WinRM service and set the service `startup` type to `auto-start`. The `quickconfig` command also configures a listener for the ports that send and receive WS-Management protocol messages using either HTTP or HTTPS on any IP address.
```
winrm quickconfig -transport:https
```
4. Validate the WinRM service configuration and Listener.
   a. Check whether basic authentication is allowed, for example:
```
winrm get winrm/config/service
```
   b. Check whether a listener is running, and verify the default ports, for example:
```
winrm get winrm/config/listener
```

Remediation can be done either on an ad hoc basis (for example, user selects an Incident that has already occurred to Remediate) or using a Notification Policy where the system takes the Remediation action when Incident happens. First, make sure the Remediation script for your scenario is defined. Check the existing Remediation scripts in **ADMIN** > **Settings** > **General** > **Notification** > Remediation settings. If your device is not in the list, add the needed Remediation script.

To set ad hoc remediation:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incident you want to remediate (you can remediate only one Incident at a time)..
4. Click **Action** > **Remediate Incident**.
5. In the **Run Remediation** dialog box:
   a. Select the script in the **Remediation** drop-down list that you want to run.
   b. Select the role that the script will run on from the **Run On** drop-down list.
   c. Open the **Enforce On** drop-down list to choose which devices the remediation script will run on. In the **Run Remediation** dialog box, open the **Device** tree. Select individual devices and shuttle them to the **Selections** column. (You can choose only individual devices; you cannot choose device groups.)
6. Click **Run** in the **Run Remediation** dialog box.

For details, see here.

To set policy-based remediation:

1. Go to **ADMIN** > **Settings** > **General** > **Notification**
2. Click **New**.
3. Under **Action**, click the edit icon next to **Run Remediation/Script**.
4. In the **Notification Policy - Define Script\Remediation** dialog box click New.
5. In the dialog box tha topens click either **Legacy Script** or **Remediation**:
   - **Legacy Script**:
     - Enter the name and path to the script in the **Script** field.
     - Select the role the script will run on from the **Run On** drop-down list.

- **Remediation**:
  - Select a remediation script from the **Script** drop-down list.
  - Select the role that the script will run on from the **Run On** drop-down list.
  - Open the **Enforce On** drop-down list to choose which devices the remediation script will run on. In the**Notification Policy - Define Script\Remediation - Enforce On** dialog box, open the **Device** tree. Select individual devices and shuttle them to the **Selections** column. (You can choose only individual devices; you cannot choose device groups.)

6. Click **Save**.

For details, see here.

To see the Notification history of an Incident:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Action** > **Show Notification History**

For details, see here.

Notifying an Incident via Email

Notifying an Incident can be done either on ad hoc basis (for example - user selects an Incident that has already occurred to notify) or using a Notification Policy where the system takes the notification action when Incident happens.

First, make sure that Email Server has been properly defined in **ADMIN** > **Settings** > **Email** > **Email Settings**.

FortiSIEM has a built-in Incident Notification Email template. If you want a different one, please define it under **ADMIN** > **Settings** > **Email** > **Incident Email Template.**

For details, see here.

To set ad hoc notifications:

1. Go to **INCIDENT** > **List** view.
2. Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Action** > **Notify via Email**.
5. Choose Receive Email Address and Email Template.
6. Click **Send**.

For details, see here.

For Policy based Notification

To send policy-based notifications:

1. Go to **ADMIN** > **Settings** > **General** > **Notification**.
2. Click **New**.

3. Specify the Incident Filter Conditions (**Severity**, **Rules**, **Time Range**, **Affected Items**, **Affected Organizations**) carefully to avoid excessive emails.
4. Under **Action**, click **Send Email/SMS to Target Users**.
5. Enter **Email Address** or Users from CMDB.
6. Click Save.

For details, see here.

To see the Notification history of an Incident:

- Go to **INCIDENT** > **List** view.
- Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
- Highlight the Incidents.
- Click **Action** > **Show Notification History**

For details, see here.

Creating New Rules

Sometime, you may want to create a new rule from scratch.

For details, see here.

Creating a FortiSIEM Ticket

First make sure that:

- Ticket's assigned user is in CMDB
- Assigned user's Manager that is going to handle escalation is in CMDB
- A Ticket Escalation Policy is defined

For adding users see Advanced Operations > Creating System users.

For defining ticket escalation policy, see here.

To create a FortiSIEM ticket:

- Go to **INCIDENT** > **List** view.
- Search the Incident (**Action > Search**) or make sure that Incidents show in the right pane.
- Highlight the Incidents.
- Click **Action** > **Create Ticket**.
- Click **Save**

Note that you can put multiple Incidents on one ticket or add an Incident to an existing ticket.

For details, see here.

Creating a Ticket in External Ticketing System

First, define an Incident Outbound Integration Policy by visiting **ADMIN** > **Settings** > **General** > **Integration**.

For details, see here.

Then set the Incident Outbound Integration Policy in Notification Policy Action:

1. Go to **ADMIN** > **Settings** > **General** > **Notification**.
2. Click **New**.
3. Specify the Incident Filter Conditions (**Severity**, **Rules**, **Time Range**, **Affected Items**, **Affected Organizations**) carefully to avoid excessive emails.
4. Under **Action**, click **Invoke an Integration Policy**.
5. Choose the Integration Policy.
6. Click **Save**.

For details, see here.

To update external ticket state in FortiSIEM:

1. Define an Incident Inbound Integration Policy by visiting **ADMIN** > **Settings** > **General** > **Integration**.
2. Select the Policy and click **Schedule** to run the Incident Inbound Integration Policy.

For details, see here.

Checking Device Monitoring Status and Health

For Performance Monitoring scenarios, you would like to know:

- Is FortiSIEM is able to monitor the devices on time? Is FortiSIEM falling behind?
- Are there monitoring errors?
- What is the current health of monitored devices?

To check whether FortiSIEM is able to collect monitoring data on time:

1. Go to **CMDB**.
2. Search for the device and by typing in a string in the search window.
3. Check the **Monitor Status** column.
4. If Monitor Status Warning or Critical, then select the Device and check the Monitor sub-tab in the bottom pane to find out the reason.

FortiSIEM is an optimized multi-threaded solution. If one node is given too many devices to monitor, each device with many metrics, then it may not be able to keep up. If FortiSIEM is not able to keep up (e.g. polling interval is 1 minute and last poll was 3 minutes ago), then you can do one of the following:

1. Check the Monitored Device resources (CPU, memory) and the network between FortiSIEM and the Monitored Device. Many monitoring protocols such as SNMP, WMI will not operate under WAN type latencies (greater than 10 msec).
2. Increase the polling intervals by visiting **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Edit Intervals**. **Note**: If you increase polling intervals, some performance monitoring rules that require a certain number of polls in

a time window may not trigger. Please adjust those rules either by reducing the number of polls or increasing the time window. For example, if a rule needs 3 events (polls) for a 10 min time window with original polling interval as 3 min, the rule will not trigger if polling interval is changed to 4 min or higher. To make the rule trigger again, either reduce the number of events needed (for example, from 3 to 2) or increase the time window (for example, from 10 min to 15 min).

3. Turn off some other jobs by visiting **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Edit Intervals**.
4. Deploy Collectors close to the Monitored Devices or deploy more Collectors and distribute performance monitoring jobs to Collectors by doing re-discovery.

To check for Monitoring errors:

- Go to **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Errors**.

For details see here.

To see current health of a monitored device:

1. Go to **CMDB**.
2. Search for the device and by typing in a string in search window.
3. Choose **Action** > **Device Health**.

For details, see here.

Setting Devices Under Maintenance

If a device will undergo maintenance and you do not want to trigger performance and availability rules while the device is in maintenance, then

1. Go to **ADMIN** > **Setup** > **Maintenance**
2. Select the Maintenance Schedule.
3. Select the Group of Devices or Synthetic Transaction Monitors (STM) for maintenance.
4. Make sure the **Generate Incidents for Devices under Maintenance** is checked.

For details, see here

Creating Custom Monitors

Although FortiSIEM provides out of the box monitoring for many devices and applications, user can add monitoring for custom device types or add monitoring for supported device types.

1. Go to **ADMIN** > **Device Support** > **Monitoring**
2. Click **Enter Performance Object** > **New** and enter the specification of the Performance Object.
3. Select the Performance Object and click **Test**.
4. Click **Enter Device Type to Performance Object Association** > **New** and choose a set of Device Types and associated Performance Objects.
5. Go to **ADMIN** > **Setup** > **Credentials** and enter the Device Credentials for a set of device types specified in Step 4.
6. Go to **ADMIN** > **Setup** > **Discovery** and discover these devices.
7. FortiSIEM will pick the customer monitors defined in Step 2 if the Tests in Step 3 succeeded.

8. Go to **ADMIN** > **Setup** > **Monitor Performance** and see the monitors
   From the same tab, Select one or more devices and Click **More** > **Report** and check whether the monitoring events are generated correctly.

Steps 1-4 are described here.

Steps 5 is described here.

Steps 6 is described here.

Step 8-9 are here.

Setting Important Interfaces and Processes

A network may have hundreds of interfaces and you have may have hundreds of network devices. Not all interfaces may not be interesting for up/down and utilization monitoring. For example, you may only want to monitor WAN links and trunk ports and leave out Access Ports. This saves you lots of CPU and storage. Similar logic applies to critical processes on servers.

Since FortiSIEM discovers interfaces and processes, it is easy to select Critical Interfaces and Processes for Monitoring.

1. Go to **ADMIN** > **Settings** > **Monitoring**
2. Click **Important Interfaces**> **Enable** > **New** and select the Interfaces.
3. Click **Important Processes**> **Enable**> **New** and select the Processes.

Note that once you select Important Interfaces and Processes, only these Interfaces and Processes will be monitored for availability and performance.

For details, see here.

Modifying System Parsers

If you want to modify a built-in log parser, then do the following steps:

1. Go to **ADMIN** > **Device Support** > **Parser**.
2. Select a Parser and click **Disable** since you have two parsers for the same device.
3. Select the same Parser and click **Clone**.
4. Make the required modifications to the parser.
5. Click **Validate** to check the modified Parser syntax.
6. Click **Test** to check the semantics of the modified Parser.
7. If both Validate and Test pass, then click **Enable** and then **Save**.
   The modified Parser should show **Enabled**
8. Click **Apply** to deploy the modified Parser to all the nodes.

For details, see here.

Creating Custom Parsers

If you want to create a completely new log parser, then do the following steps:

1. Go to **ADMIN** > **Device Support** > **Parser**.
2. Parsers are evaluated serially from top to bottom in the list. Select the parser just before the current custom parser and click **New**.
3. Fill in the parser details – **Name**, **Device Type**, test Events and the parser itself.
4. Click **Validate** to check the syntax
5. Click **Test** to check the semantics of the modified parser.
6. If all passes, then click **Enable** and then click **Save**.
   The newly added parser should show **Enabled**.
7. Click **Apply** to deploy the change to all the nodes.

For details, see here.

Handling Multi-line Syslog

When devices send the same log in multiple log messages, you can combine them into one log in FortiSIEM to facilitate analysis and correlation.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Multiline Syslog**
2. Click **New** to begin a multi-line syslog handling rule.
3. Enter a **Protocol** – TCP or UDP.
4. Enter a **Begin Pattern** and **End Pattern** regular expressions.
   All the logs matching a begin pattern and an end pattern are combined into a single log
5. Click **Save**.

For details, see here.

Creating Synthetic Transaction Monitors

You can define a Synthetic Transaction Monitor to monitor the health an application or a web service. To do this:

1. Go to **ADMIN** > **Setup** > **STM**.
2. **Step 1: Create a monitoring definition**, click **New** and enter the required fields. When the protocol is HTTP, then a Selenium script can be input. Specify the timeout values for detecting STM failures.
3. **Step 2: Apply the monitoring definition to a host**
4. **Step 3: Make sure it is working correctly** - click **Monitor Status**.

For details, see here.

Mapping Events to Organizations

In most cases, the events received by a Collector is tagged with the Organization to which the Collector belongs. In some cases, events for multiple Organizations are aggregated by an upstream device and then forwarded to FortiSIEM. In this case, FortiSIEM needs to map events to organizations based on some parsed event attribute. An example is the FortiGate VDOM attribute.

This is accomplished as follows:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping**.
2. Click **New** to create an Event Org mapping definition.
3. Select a **Device Type** from the drop-down list.
4. Specify the **Event Attribute** that contains the Organization information.
5. Specify the **Collector** that will do this Event Org Mapping.
6. Specify an **IP** or **IP Range**.
7. Specify the mapping rules by clicking the edit icon next to **Org mapping**. In the Event Organization Mapping dialog box, map Event Attribute values to Organizations.

For details, see here.

Adding Windows Agents

FortiSIEM Windows Agents provides a scalable way to collect performance metrics, logs and other audit violations from a large number of Windows servers. Windows Agents (version 3.1 onwards) can be configured and managed from the FortiSIEM GUI. Windows Agent Manager is not required. As long as license is available, you can install Windows Agents and register to the FortiSIEM Supervisor node.

For details about Installing Windows Agents, see Windows Agent 3.2.0 Installation Guide.

For details about Configuring Windows Agent in FortiSIEM, see here.

Adding Linux Agents

Starting release 5.2.1, Linux Agent requires a license. Install a Linux Agent and register to the FortiSIEM Supervisor node. As long as the license is available, you can install Linux Agent and register to the FortiSIEM Supervisor node. Linux Agents can be configured and managed from the FortiSIEM GUI.

For details about Installing Linux Agents, see Linux Agent Installation Guide.

For details about Configuring Linux Agent in FortiSIEM, see here.

Forwarding Events to External Systems

Events received by FortiSIEM can be forwarded to external systems. FortiSIEM provides a flexible way to define forwarding criteria and forwarding mechanism such as syslog, Kafka and Netflow.

For details, see here.

Creating New Rules

To create new Rules, go to **RESOURCES** > **Rules**, choose a folder and click **New**. Remember to test and activate the rule.

For details, see here.

Rules can also be created from **ANALYTICS** tab. Once you have run a search, create a rule from it by clicking **Action** > **Create Rule.**

For details, see here.

Creating New Reports

New Reports can be created from **RESOURCES** > **Reports** > Choose a Folder > Click **New**.

For details, see here.

Reports can also be created from **ANALYTICS** tab. Once you have run a search, you can save it as a Report by clicking **Action** > **Save Result**.

For details, see here.

Scheduling Reports

Reports can be scheduled to run at later time and contain data for a specific period of time. Go to **RESOURCES** > **Reports** > Choose a Report > **More** > **Schedule**.

For details, see here.

Customizing Built-in Dashboards

FortiSIEM Built-in Dashboards are organized in Folders with multiple Dashboards in each Folder. You can add dashboards to any Folder or modify the dashboards in any built-in folder. Dashboard modification can include – modifying chart layout, chart settings or even adding new widgets for widget dashboards.

For details, see here.

You can also choose to display only a set of Dashboard Folders by visiting **ADMIN** > **Settings** > **System** > **UI** > **Dashboard Settings**.

Creating Custom Dashboards

You can either create a new Dashboard Folder and move dashboards in it or add dashboards to an existing folder.

To create a new Dashboard folder:

1. Click **DASHBOARD**
2. Open the Dashboard Folder drop-down list.
3. Click **New**.

To create a new Dashboard for the folder:

1. Select the Dashboard Folder from the drop-down list.
2. Click **+** to the right of the selected folder.
3. Enter a **Name** and Dashboard **Type** from the drop-down list in the Create New Dashboard dialog box.
4. If you created a Widget Dashboard, click **+** beneath the folder name to add Widgets to the Dashboard.

For details, see here.

Creating Business Service Dashboards

After creating a new Dashboard, choose Type = Business Service Dashboard. Then select the Business Service Selector on the top right to add Business Services to the Dashboard.

For details, see here.

Monitoring System Health

To see the system level health of every FortiSIEM Supervisor/Worker node, go to **ADMIN** > **Health** > **Cloud Health**. The top pane shows the overall health of various nodes – Supervisor and Workers. Click any one node and the bottom pane shows the health of the various processes in that node.

For details, see here.

Monitoring Collector Health

To see the system level health of every FortiSIEM Collector node, go to **ADMIN** > **Health** > **Collector Health**.

For details, see here.

Monitoring Elasticsearch Health

To see the Elasticsearch health information, go to **ADMIN** > **Health** > **Elasticsearch Health**.

For details, see here.

System Errors

To see the system errors, click the **Jobs/Errors** icon on the top-right corner of FortiSIEM GUI and select the **Error** tab. You can also run a report in **ANALYTICS** > click the **Folders** icon > **Shortcuts** > **Top FortiSIEM Operational Errors**.

Monitoring User Activity

To see FortiSIEM User Activity, click the "User Activity" icon on the top-right corner of FortiSIEM GUI. You can see Logged in Users and what Queries they are doing and Locked out users. You can also forcefully log out specific users.

Administration

The **ADMIN** tab provides the tools required to setup and monitor FortiSIEM.

The following tools are available:

Setup
Device support
Health
License
Settings

Setup

Before initiating discovery and monitoring of your IT infrastructure, configure the following settings:

Configuring Storage
Setting Organizations and Collectors (Service Provider)
Setting Collectors (Enterprise)
Setting Credentials
Discovering Devices
Editing Event Pulling
Editing Performance Monitors
Configuring Synthetic Transaction Monitoring
Configuring Maintenance Calendars
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Configuring Storage

- Overview
- Configuring Online Event Database on Local Disk
- Configuring Online Event Database on NFS
- Configuring Online Event Database on Elasticsearch
- Configuring Archive Event Database on NFS
- Configuring Archive Event Database on HDFS
- Changing Event Storage Options

Overview

FortiSIEM provides a wide array of event storage options. Upon arrival in FortiSIEM, events are stored in the Online event database. The user can define retention policies for this database. When the Online event database becomes full, FortiSIEM will move the events to the Archive Event database. Similarly, the user can define retention policies for the Archive Event database. When the Archive becomes full, events are discarded.

The Online event database can be one of the following:

- FortiSIEM EventDB
  - On local disk for All-in-one installation
  - On NFS for cluster installation
- Elasticsearch
  - Native installation
  - AWS Elasticsearch

The Archive event database can be one of the following:

- FortiSIEM EventDB on NFS
- HDFS

Note the various installation documents for 3rd party databases, for example.

- Elasticsearch Storage Guide
- NFS Storage Guide

In this release, the following combinations are supported:

Event DB		Retention	
Online	**Archive**	**Online**	**Archive**
FortiSIEM EventDB (local or NFS)	FortiSIEM EventDB (NFS)	Policy-based and Space-based	Policy-based and Space-based
Elasticsearch	FortiSIEM EventDB (NFS)	Space-based	Policy-based and Space-based
Elasticsearch	HDFS	Space-based	Space-based

Configuring Online Event Database on Local Disk

- Setting Up the Database
- Setting Up Retention
- Viewing Online Data

This section describes how to configure the Online Event database on local disk. Use this option when you have an all-in-one system, with only the Supervisor and no Worker nodes deployed.

Setting Up the Database

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Local Disk**.

3. Enter the following parameters :

Settings	Guidelines
Disk Name	[Required] Local disk name. During FortiSIEM installation, you can add a 'Local' data disk of appropriate size as the 4th disk. Use the command `fdisk -l` to find the disk name. If you want to configure Local Disk for the physical 2000F or 3500F appliances, enter "`hardware`" in this field. This prompts a script to run that will configure local storage.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When Online database becomes full, then events have to be deleted to make room for new events. This can be Space-based or Policy-based.

- Setting Up Space-Based Retention
- Setting Up Policy-Based Retention
- How Space- and Policy-Based Retention Work Together

Setting Up Space-Based Retention

Space-based retention is based on two thresholds defined in the `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phDataPurger]
online_low_space_action_threshold_GB=10
online_low_space_warning_threshold_GB=20
[END]
```

When the Online Event database size in GB falls below the value of `online_low_space_action_threshold_GB`, events are deleted until the available size in GB goes slightly above the `online_low_space_action_threshold_GB` value. If Archive is defined, then the events are archived. Otherwise, they are purged.

If you want to change these values, then change them on the Supervisor and restart `phDataManager` and `phDataPurger` modules.

Setting Up Policy-Based Retention

Policies can be used to enforce which types of event data remains in the Online event database.

For information on how to create policies, see Creating Online Event Retention Policy. **Note**: This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space- and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below the value of `online_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Online Event Database on NFS

The following sections describe how to configure the Online database on NFS.

- Setting Up the Database
- Setting Up Retention
- Viewing Online Data

Setting Up the Database

You must choose this option when you have multiple Workers deployed and you plan to use FortiSIEM EventDB.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > NFS**
3. Enter the following parameters :

Settings	Guidelines
Server IP/Host	[Required] the IP address/Host name of the NFS server
Exported Directory	[Required] the file path on the NFS Server which will be mounted

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When the Online database becomes full, then events must be deleted to make room for new events. This can be Space-based or Policy-based.

- Setting Up Space-Based Retention
- Setting Up Policy-Based Retention
- How Space- and Policy-Based Retention Work Together

Setting Up Space-Based Retention

Space-based retention is based on two thresholds defined in the `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phDataPurger]
online_low_space_action_threshold_GB=10
```

```
online_low_space_warning_threshold_GB=20
[END]
```

When the Online Event database size in GB falls below the value of `online_low_space_action_threshold_GB`, events are deleted until the available size in GB goes slightly above the `online_low_space_action_threshold_GB` value. If Archive is defined, then the events are archived. Otherwise, they are purged.

If you want to change these values, then change them on the Supervisor and restart the `phDataManager` and `phDataPurger` modules.

Setting Up Policy-Based Retention

Policies can be used to enforce which types of event data stays in the Online event database.

For information on how to create policies, see Creating Online Event Retention Policy. **Note**: This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space- and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below the `online_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Online Event Database on Elasticsearch

The following sections describe how to set up the Online database on Elasticsearch:

- Setting Up the Database
- Setting Up Space-Based Retention
- Viewing Online Data

Setting Up the Database

There are three options for setting up the database:

- Native Elasticsearch Using REST API
- Native Elasticsearch Using Java Transport Client
- AWS Elasticsearch Using REST API

Native Elasticsearch Using REST API

Use this option when you want FortiSIEM to use the REST API Client to communicate with Elasticsearch.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Elasticsearch** and choose **Client as Rest API** and **AWS = No**.

3. Enter the following parameters:

Settings	Guidelines
ES Service Type	Set to Native
URL	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The **IP/Host** must contain `https`.
Port	[Required] The port number
User Name	[Optional] User name
Password	[Optional] Password associated with the user
Shard Allocation	• **Fixed** -Enter the number of **Shards** and **Replicas** • **Dynamic**- Dynamically shards data using the Elasticsearch rollover API
Per Organization Index	Select to create an index for each organization

4. Click **Test**
5. If the test succeeds, click **Save**

Native Elasticsearch Using Java Transport Client

Use this option when you want FortiSIEM to use Java Transport Client to communicate with Elasticsearch. This is an outdated option.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Elasticsearch** and choose **Client** as **Java Transport**.

3. Enter the following parameters:

Settings	Guidelines
ES Service Type	Set to Native
Cluster Name	[Required] Name of the Elasticsearch Cluster
Cluster IP/Host	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The **IP/Host** must contain `http`.
HTTP Port	[Required] HTTP port number
Java Port	[Required] Java port number
User Name	[Optional] User name
Password	[Optional] Password associated with the user
Shard Allocation	• **Fixed** - Enter the number of **Shards** and **Replicas** • **Dynamic** - Dynamically shards data using the Elasticsearch rollover API
Per Organization Index	Select to create an index for each organization

4. Click **Test**.
5. If the test succeeds, click **Save**.

AWS Elasticsearch Using REST API

Use this option when you have FortiSIEM deployed in AWS Cloud and you want to use AWS Elasticsearch.

1. Go to **ADMIN > Setup > Storage**
2. Click **Online > Elasticsearch** and choose **Client** as **REST API** and **AWS = Yes**.
3. Enter the following parameters:

Settings	Guidelines
ES Service Type	Set to Amazon
URL	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The **IP/Host** must contain `https`.
Port	[Required] The port number
User Name	[Optional] User name
Password	[Optional] Password associated with the user
Shard Allocation	• **Fixed** -Enter the number of **Shards** and **Replicas** • **Dynamic**- Dynamically shards data using the Elasticsearch rollover API
Per Organization Index	Select to create an index for each organization

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Space-Based Retention

Elasticsearch is installed using Hot (required) and Warm (optional) nodes. The space is managed by Hot and Warm node thresholds defined in Setting Elasticsearch Retention Threshold.

- When the Hot node cluster storage capacity falls below the lower threshold, then:
  - if Warm nodes are defined, the events are moved to Warm nodes,
  - else, if Archive is defined then they are archived,
  - otherwise, events are purged

  This is done until storage capacity exceeds the upper threshold.
- If Warm nodes are defined and the Warm node cluster storage capacity falls below lower threshold, then:
  - if Archive is defined, then they are archived,
  - otherwise, events are purged

  This is done until storage capacity exceeds the upper threshold

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Archive Event Database on NFS

The following sections describe how to set up the Archive database on NFS:

- Setting Up the Database
- Setting Up Retention
- Viewing Archive Data

Setting Up the Database

You must choose this option when you have multiple Workers deployed and you plan to use FortiSIEM EventDB.

1. Go to **ADMIN > Setup > Storage**,
2. Click **Archive > NFS**,
3. Enter the following parameters:

Settings	Guidelines
Server IP/Host	[Required] the IP address/Host name of the NFS server
Exported Directory	[Required] the file path on the NFS Server which will be mounted

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When the Archive database becomes full, then events must be deleted to make room for new events. This can be Space-based or Policy-based.

- Space-Based Retention
- Policy-Based Retention
- How Space- and Policy-Based Retention Work Together

Space-Based Retention

Space-based retention is based on two thresholds defined in `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phDataPurger]
archive_low_space_action_threshold_GB=10
archive_low_space_warning_threshold_GB=20
[END]
```

When the Archive Event database size in GB falls below the value of `archive_low_space_action_threshold_GB`, events are purged until the available size in GB goes slightly above the value set for `archive_low_space_action_threshold_GB`.

If you want to change these values, then change them on the Supervisor and restart the `phDataManager` and `phDataPurger` modules.

Policy-Based Retention

Policies can be used to enforce which types of event data remain in the Archive event database.

For information on how to create policies, see Creating Offline (Archive) Retention Policy. **Note** - This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space- and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below `archive_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Archive Data

For more information, see Viewing Archive Data.

Configuring Archive Event Database on HDFS

The following sections describe how to set up the Archive database on HDFS:

- Setting Up the Database
- Setting Up Space-Based Retention
- Viewing Archive Data

Setting Up the Database

HDFS provides a more scalable event archive option - both in terms of performance and storage.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Archive > HDFS**.

3. Enter the following parameters:

Settings	Guidelines
Spark Master Node	
IP/Host	IP or Host name of the Spark cluster Master node.
Port	TCP port number for FortiSIEM to communicate to Spark Master node.
HDFS Name Node	
IP/Host	IP or Host name of HDFS Name node. This is the machine which stores the HDFS metadata: the directory tree of all files in the file system, and tracks the files across the cluster.
Port	TCP port number for FortiSIEM to communicate to HDFS Name node.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Space-Based Retention

When the HDFS database becomes full, events have to be deleted to make room for new events.

This is set by Archive Thresholds defined in the GUI. Go to **ADMIN > Settings > Database > Archive Data**. Change the **Low** and **High** settings, as needed.

When the HDFS database size in GB rises above the value of `archive_low_space_action_threshold_GB`, events are purged until the available size in GB goes slightly above the value set for `archive_low_space_action_threshold_GB`.

Viewing Archive Data

For more information, see Viewing Archive Data.

Changing Event Storage Options

It is highly recommended to chose a specific event storage option and retain it. However, it is possible to switch to a different storage type.

Note: In all cases of changing storage type, the old event data is not migrated to the new storage. Contact FortiSIEM Support if this is needed - some special cases may be supported.

For the following three cases, simply choose the new storage type from **ADMIN** > **Setup** > **Storage**.

- Local to Elasticsearch
- NFS to Elasticsearch
- Elasticsearch to Local

The following four storage change cases need special considerations:

- Elasticsearch to NFS
- Local to NFS
- NFS to Local
- NFS to Elasticsearch to NFS

Elasticsearch to NFS

1. Log in to FortiSIEM GUI.
2. Select and delete the existing Workers from **ADMIN** > **License** > **Nodes** > **Delete**.
3. Go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **NFS** server
4. Go to **ADMIN** > **License** > **Nodes** and **Add** the recently deleted Workers in step #2.

Local to NFS

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount `/data` by running:
   `umount /data`
3. Validate that /data is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Log in to FortiSIEM GUI, go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **NFS** server.

NFS to Local

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount /data by running:
   `umount /data`
3. Validate that `/data` is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Connect the new disk to Supervisor VM.
6. Log in to FortiSIEM GUI, go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **Local Disk**.

NFS to Elasticsearch to NFS

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount /data by running:
   `umount /data`
3. Validate that /data is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Repeat steps #1 to #4 on all Workers.
6. Log in to FortiSIEM GUI, select and delete all the existing Workers from **ADMIN** > **License** > **Nodes** > **Delete**.

7. Go to **ADMIN** > **Setup** > **Storage** and update the Storage type as appropriate.
8. Go to **ADMIN** > **License** > **Nodes** and add all recently deleted Workers in step #6.

Setting Organizations and Collectors (Service Provider)

FortiSIEM supports multi-tenancy via Organizations in a Service Provider deployment. The devices and logs belonging to two Organizations are kept separate. Incidents trigger separately for Organizations.

A Collector enables FortiSIEM to collect logs and performance metrics from geographically disparate networks. Data collection protocols such as SNMP and WMI are often chatty and the devices may only be reachable from the Supervisor node via Internet and behind a firewall. Syslog protocol specially over UDP is unreliable and insecure. A Collector can be deployed behind the firewall to solve these issues. The Collector registers with FortiSIEM Supervisor node and then receives commands from the Supervisor regarding discovery and data collection. The Collector parses the logs and forwards the compressed logs to Supervisor/Worker nodes over an encrypted HTTPS channel. The Collector also buffers the logs locally for a period of time if the network connection to the Super/Worker is not available.

Organizations can be defined in one of two ways:

- Associating one or more Collectors to an Organization – the devices monitored by the Collector or the events sent to the Collector automatically belong to the associated Organization.
- Defining an IP range for an Organization – if the sending IP of a device belongs to the IP range, then the device and logs belong to that Organization.

This section provides the procedures to configure an Organization for a multi-tenant FortiSIEM deployment.

- Creating an Organization
- Installing a Collector
- Registering a Collector

Make sure the Worker Upload has been configured prior to defining the Collectors.

Creating an Organization

Complete these steps to add an Organization:

1. Go to **ADMIN** > **Setup** > **Organizations** tab.
2. Click **New**.
3. In the **Organization Definition** dialog box, enter the information below.

Settings	Guidelines
Organization	[Required] Name of the Organization
Full Name	Full name of the Organization
Admin User	[Required] User name that will be used two purposes: (a) Users logging in to FortiSIEM Supervisor GUI for that Organization and (b) Collector registration to Supervisor. This user has 'Full Admin' role.

Settings	Guidelines
Admin Password/Confirm Admin Password	[Required] Password of the Admin user.
Admin Email	[Required] Email id of the Admin user for the Organization.
Phone	Contact number for the Organization
Include IP/IP Range	IP range for the Organization in case the Organization is defined by IP addresses. Allowed format is comma-separated individual IPs or IP range 10.10.10.1-10.10.10.8
Exclude IP/IP Range	IP range to be excluded for the Organization. Allowed format is comma-separated individual IPs or IP range 10.10.10.1-10.10.10.8
Agent User	User name used by FortiSIEM Windows and Linux Agents to register to FortiSIEM Supervisor.
Agent Password/Confirm Agent Password	Password of Agent User.
Max Devices	Maximum number of monitored CMDB devices for the Organization
Address	Contact address for the Organization

4. If your Organization uses Collectors, click **New** under **Collectors** and enter the information below.

Settings	Guidelines
Name	[Required] Name of the Collector
Guaranteed EPS	[Required] Events from this Collector are always accepted when its event rate is below this Guaranteed EPS. FortiSIEM will re-allocate excess EPS (license minus the sum of Guaranteed EPS over all the collectors) based on need but the allocation will never go below the Guaranteed EPS.
Upload Rate Limit (Kbps)	Maximum rate limit (in Kbps) at which a Collector can send events to all Workers.
Start Time	[Required] Select a specific start date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.
End Time	[Required] Select a specific end date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.

5. Enter the **Description** about the Organization.
6. Click **Save**.

Installing a Collector

For installing Collectors, see the "Install Collector" sections in the specific Installation Guides. See also the Upgrade Guide and the Sizing Guide.

Registering a Collector

Once a Collector has been created in the GUI, the Collector needs to be installed and registered.

For registering a Collector, follow these steps:

1. SSH to the Collector.
2. Run the following command:

```
phProvisionCollector --add <user> '<password>' <super IP or host> <organization>
    <collectorName>
```

The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped. In Enterprise mode, use `super` as the organization .

Refer to the tables in steps 3 and 4 here for more information about these settings: `<user>`, `<password>`, `<organization>` and `<collectorName>`

Setting Collectors (Enterprise)

A Collector enables FortiSIEM to collect logs and performance metrics from geographically disparate networks. Data collection protocols such as SNMP and WMI are often chatty and the devices may only be reachable from the Supervisor node via Internet and behind a firewall. Syslog protocol, especially over UDP, is unreliable and insecure. A Collector can be deployed behind the firewall to solve these issues. The Collector registers with FortiSIEM Supervisor node and then receives commands from the Supervisor regarding discovery and data collection. The Collector parses the logs and forwards the compressed logs to Supervisor/Worker nodes over an encrypted HTTPS channel. The Collector also buffers the logs locally for a period of time if the network connection to the Super/Worker is not available.

This section provides the procedures to configure a Collector in Enterprise deployment.

- Adding a Collector
- Installing a Collector
- Registering a Collector

Make sure the Worker Upload has been configured prior to defining the Collectors.

Adding a Collector

Complete these steps to add an Collector:

1. Go to **ADMIN** > **Setup** > **Collector** tab.
2. Click **New**.
3. In the **Event Collector Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Collector name

Settings	Guidelines
Guaranteed EPS	[Required] Events from this Collector are always accepted when its event rate is below this Guaranteed EPS. FortiSIEM will re-allocate excess EPS (license minus the sum of Guaranteed EPS over all the collectors) based on need but the allocation will never go below the Guaranteed EPS.
Upload Rate Limit (Kbps)	Maximum rate limit (in Kbps) at which a Collector can send events to all Workers.
Start Time	[Required] Select a specific start date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.
End Time	[Required] Select a specific end date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.
Agent User	User name used by FortiSIEM Windows and Linux Agents to register to FortiSIEM Supervisor.
Agent Password/Confirm Agent Password	Password of Agent User

4. Click **Save**.

Installing a Collector

For installing Collectors, see the "Install Collector" sections in the specific Installation Guides. See also the Upgrade and Sizing Guides here.

Registering a Collector

Once a Collector has been created in the GUI, the Collector needs to be installed and registered.

For registering a Collector, follow these steps:

1. SSH to the Collector.
2. Run the following command:

```
phProvisionCollector --add <user> '<password>' <super IP or host> <organization>
    <collectorName>
```

The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped. In Enterprise mode, use `super` as the organization .

Refer to the tables in steps 3 and 4 here for more information about these settings: `<user>`, `<password>`, `<organization>` and `<collectorName>`

Setting Credentials

FortiSIEM communicates with various systems to collect operating system/hardware/software information, logs, and performance metrics. This section provides the procedures to set up a device credential and associate them to an IP or IP range.

- Creating a Credential
- Associating a Credential to IP Ranges or Hosts

- Testing Credentials and API Event Collection
- Modifying Device Credential
- Modifying a Credential Association
- Credentials Based on Access Protocol

Creating a Credential

Complete these steps to create a login credential:

1. Go to **ADMIN** > **Setup** > **Credentials** tab.
2. Under **Step 1: Enter Credentials** section, click **New**.
3. In the **Access Method Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Name of the credential that will be used for reference purpose.
Device Type	Type of device from the drop-down.
Access Protocol	Type of access protocol from the drop-down. Note that this list depends on the selected device type.
Port	TCP/UDP Port number for communicating to the device for the access protocol.
Password config	Choose **Manual** or **CyberArk**. - **Manual**: The credentials will be defined and stored in FortiSIEM. See the table below for the corresponding device type configuration settings. - **CyberArk**: FortiSIEM will get credentials from CyberArk password Vault. See "CyberArk Password Configuration" in the External Systems Configuration Guide for configuration settings.

4. Enter the options in the remaining fields that appear based on the **Device Type** selection.
5. Click **Save**.

Associating a Credential to IP Ranges or Hosts

The association is on a per-Collector basis.

1. Under **Step 2: Enter IP Range to Credential Associations** section, click **New**.
2. In the **Device Credential Mapping Definition** dialog box, enter the information below.

Settings	Guidelines
IP/Host Name	[Required] Host name, IP address or IP range to associate with a credential. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10. Host names are only allowed for a specific set of credentials see below.
Credentials	Select one or more credentials by name. Use **+** to add more.

3. Click **Save**.

Testing Credentials and API Event Collection

Credentials can be tested to ensure that they are working correctly and do not perform a full discovery, and therefore provide results more quickly.

Test Connectivity also has a special function for certain Device API integrations. Instead of performing separate Discovery to integrate FortiSIEM with a Device API, clicking **Test Connectivity** will test the credential and start collecting event from the API. The External System Configuration Guide details Device integrations that require only this step to collect events.

1. Select an association.
2. Click **Test** after choosing:
   - **Test Connectivity** – the device will be pinged first and then the credential will be attempted. This shortens the test connectivity process in case the device with specified IP is not present or reachable.
   - **Test Connectivity without Ping** – the credential will be attempted without pinging first.
3. Check the test connectivity result in the pop up display.

Modifying Device Credentials

Complete these steps to modify device credentials:

1. Select an association from the list and click the required option.
   - **Edit** - to modify any credential settings.
   - **Delete** - to delete a credential.
   - **Clone** - to duplicate a credential.
2. Click **Save**.

Modifying a Credential Association

Complete these steps to modify a credential association:

1. Select the credential association from the list and click the required option under **Step 2: Enter IP Range to Credential Associations**:
   - **Edit** - to edit an associated IP/IP range
   - **Delete** - to delete any association
2. Click **Save**.

Credentials Based on Access Protocol

For information on the credential configuration settings for selected devices, see the External Systems Configuration Guide.

Discovering Devices

FortiSIEM automatically discovers devices, applications, and users in your IT infrastructure and start monitoring them. You can initiate device discovery by providing the credentials that are needed to access the infrastructure component, and from there FortiSIEM will discover information about your component such as the host name, operating system, hardware information such as CPU and memory, software information such as running

processes and services, and configuration information. Once discovered, FortiSIEM will also begin monitoring your component on an ongoing basis.

This section provides the procedures for discovering devices.

- Creating a discovery entry
- Discovering on demand
- Scheduling a discovery
- Searching previous discovery results
- Editing a discovery
- Exporting discovery results

Creating a discovery entry

Complete these steps to create a discovery:

1. Go to **ADMIN** > **Setup** > **Discovery** tab.
2. Click **New**.
3. In the **Range Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Name of the discovery entry that will be used for reference.
Discovery Type	Select the type of discovery: • **Range Scan** - FortiSIEM will sequentially discover each device in one or more IP ranges and CIDR subnets. • **Smart Scan** - FortiSIEM will first discover the Root IP, which will provide a list of devices that it knows about. Then FortiSIEM will discover each of the devices learnt from the Root IP device. Each of these devices will provide a list of devices they know about, which FortiSIEM will then discover. This process continues until the list of known devices is exhausted. • **AWS Scan** - FortiSIEM will discover the devices in Amazon Web Services (AWS) Cloud learnt via AWS SDK. For AWS Scan to succeed, there needs to be an AWS Credential mapped to aws.com or amazon.com in the IP to Credential mapping. • **L2 Scan** - FortiSIEM will discover only the Layer 2 connectivity of the devices. • **Azure Scan** - FortiSIEM will discover the devices in Azure Cloud learnt via Azure SDK. For Azure Scan to succeed, there needs to be a Credential mapped to azure.com in the IP to Credential mapping.
Root IPs	IP address of the Starting device for Smart Scan. See Smart scan definition above.
Include	[Required] A list of IP addresses that will be included for discovery. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10.

Settings	Guidelines
Exclude	A list of IP addresses that will be excluded for discovery. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10.
Include Types	A list of device Types that will be included for discovery. Click the edit icon to configure the **Range Definition** and **Save**.
Exclude Types	A list of device Types that will be excluded for discovery. Click the edit icon to configure the **Range Definition** and **Save**.
Name resolution	Host names can learn from DNS look up or SNMP/WMI. If these do not match, then choose which discovery method with higher priority. For example, if DNS is chosen then FortiSIEM will get host names from DNS. If DNS lookup fails for an IP, the host names will be obtained from SNMP/WMI.
Options	Select the options for this discovery: - **Do not ping before discovery**: Device will not be pinged before attempting the credentials. - **Ping before discovery**: Device will be pinged before attempting the credentials. A successful ping can shorten discovery times; since FortiSIEM may have to wait for a protocol timeout in case of failed credentials. - **Winexe based discovery** - for windows servers, we discover HyperV metrics and other AD replication metrics via Winexe. However, winexe installs a service and uninstalls the service after it finishes for certain old OS. This setting enables to control this behavior. - **Only discover devices not in CMDB** - **Discover Routes**: Routes help to discover neighboring devices for Smart Scan but “show route” can be expensive for BGP routers. This selection provides a way to control this behavior. - **Include powered off VMs**: This allows the administrator to control whether powered off VMs will be discovered during VCenter discovery - **Include VM templates**: This allows the administrator to control whether VM templates will be discovered during VCenter discovery. - **Set discovered devices as unmanaged**: This allows the administrator to set the discovered devices as unmanaged.

4. Click **Save**.

Discovering on demand

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Select the required discovery from the table.
3. Click **Discover**.
4. Click **Results** to view the discovery result.
5. Click **Errors** to check for any errors found during discovery.
   Use the **Run in Background** to run discovery in background while performing other operations.
6. After successful discovery, **Discovery Completed.** message is displayed with the discovery results.

Scheduling a discovery

Discovery can be a long-running process when performed on a large network, or over a large IP range, and so you may want to schedule it to occur when there is less load on your network or during off hours. You may also want to set up a schedule for the process to run and discover new devices on a regular basis.

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Click **Scheduled**.
3. Under **Discovery Schedule** dialog box, click **New**.
4. Select from the available ranges.
   You can select multiple ranges and set the order in which discovery will run on them using the up and down arrows.
5. Set the time at which you want discovery to run.
   - For a one-time scheduled discovery, select the **Start Time**.
   - For recurring discoveries, select how often (hourly, daily, weekly, monthly), you want discovery to run, and then enter other scheduling options.
6. Click **Save**.

Searching previous discovery results

Complete these steps to search previously discovered results:

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Select a discovery result.
3. Click **History**.
4. In the **Discovery History** dialog box, click **View Results**, **View Errors** or **View Changes** to see the related information.

Editing a discovery

Complete these steps to modify discovery settings:

1. Select the required option from the table below.
   - **Edit** - to edit any scheduled discovery settings.
   - **Delete** - to delete any scheduled discovery.
2. Click **OK**.

Exporting discovery results

Complete these steps to export discovery history:

1. Click **History**.
2. In the **Discovery History** dialog box, select the discovery type.
3. Based on the type of information required, select the required option:
   - **View Results** - to see the discovery results
   - **View Errors** - to see the errors during discovery
   - **View Changes** - to see the changes in discovery
4. Click **Export** based on your selection in step#3.
5. Optional - Enter the **User Notes**.
6. Select the **Output Format** as **PDF** or **CSV**.
7. Click **Generate**.

'Export successful message' is displayed under **Export Report** dialog box.

8. Click **View** to see the discovery results.

Editing Event Pulling

After discovery is complete, FortiSIEM starts pulling events from devices with correct credentials. Examples include Windows Servers via WMI, VMWare VCenter via VMWare SDK, AWS CloudTrail via AWS SDK, etc.

The following section describes the procedures to see the status of these event pulling jobs and turn them on/off.

- Viewing event pulling jobs
- Modifying event pulling jobs
- Checking status of event pulling jobs
- Exporting event pulling jobs into a report
- Viewing event pulling reports

Viewing event pulling

Complete these steps to enable event pulling:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. See the listed jobs:
   - Enabled – the job is enabled at a device level.
   - Device name – name of the device in CMDB.
   - Access IP – IP address with which FortiSIEM accesses this device.
   - Device Type – the device type in CMDB.
   - Organization – the organization to which this device belongs (for a multi-tenant FortiSIEM install).
   - Method – the event pulling method – format - credential name (Access Protocol).
   - Maintenance – indicates if this device is in maintenance or not.
3. See **Enabled** option to view the enabled device.
4. Select **Errors** to view the list of errors, if any.

Modifying event pulling jobs

Complete these steps to enable/disable event pulling at all device level (all jobs will be enabled/disabled).

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Select **All** check-box to enable all jobs or deselect to disable.
4. Click **Apply**.

Complete these steps to enable/disable a specific event pulling job for a device:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Click **Edit**.
4. Check the specific job to enable/disable.
5. Click **Apply**.

Checking status of event pulling jobs

Complete these steps to the status of event pulling jobs:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Hover over the method column – the tool tip shows the Execution Status.
4. To see the events generated from the event pulling job, click **Report**.
   A report is run for all the events generated by this event pulling job in the last 10 minutes.

Exporting event pulling jobs into a report

Complete these steps to export an event pulling job report:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Click **Export**.
3. Optional - Enter the **User Notes**.
4. Select the output format to **PDF** or **CSV** and click **Generate**.
5. Click **View** to download and view the report.

Viewing event pulling reports

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select **Super/Local** or **Org with collector** or use the **Search** field to view any related jobs.

Editing Performance Monitors

After the discovery is complete, FortiSIEM starts monitoring successfully discovered devices for performance, availability and change. The following section describes the procedure to see the status of these performance monitoring jobs and edit them.

- Viewing performance monitoring jobs
- Enabling/Disabling performance monitoring jobs
- Modifying performance monitoring jobs

Viewing performance monitoring jobs

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. To check the **Device Health** details, select the device from the list and click the drop-down near the device name.
3. To check the errors during the monitoring job, select the device and click **More** > **Errors**.
4. To export a Performance Monitor, select the device and click **More** > **Export Monitors**.
5. To generate a Performance Monitoring report for any device(s), select the device and click **More** > **Report**.

Enabling/Disabling performance monitoring jobs

Complete these steps to enable/disable performance monitoring at a device level – all jobs will be enabled/disabled:

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Select the device from the list.

3. Select **Enabled** check-box to enable and select again to disable.
4. Click **Apply**.

Modifying performance monitoring jobs

Complete these steps to enable/disable a specific performance monitoring job for a device:

1. Change the Scope to Local and go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Select the device from the list.
3. Click **More** and select the required option:
   - **Edit System Monitors** to select the Protocols and click **Save**.
   - **Edit App Monitors** to select the Protocols and click **Save**.
4. Click **Save**.
5. Click **Apply**.

Another way to enable/disable a specific job or tune monitoring intervals for specific jobs for all devices:

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Click **More** > **Edit Intervals**.
3. In the **Set Intervals** pop-up:
   - Choose the Monitor on the left panel.
   - Choose the device on the middle panel.
   - Click **>>** to move the chosen jobs on the chosen devices to the right panel.
   - Choose the new polling interval or choose **Disabled**.
   - Click **Save**.
4. Click **Apply**.

Configuring Synthetic Transaction Monitoring

A Synthetic Transaction Monitoring (STM) test lets you test whether a service is up or down, and measure the response time. An STM test can range from something as simple as pinging a service, to complex as sending and receiving an email or a nested Web transaction.

This section provides the procedures to set up Synthetic Transaction Monitoring tests.

- Create monitoring definition
- Create STM test
- Edit monitoring definition
- Protocol settings for STM tests

Creating monitoring definition

Complete these steps to create monitor definitions:

1. Go to **ADMIN** > **Setup** > **STM** tab.
2. Under **Step 1: Edit Monitoring Definitions**, click **New**.
3. In the **Add Monitor Definition** dialog box, enter the information below.
   a. Name – enter a name that will be used for reference.
   b. Description – enter a description.
   c. Frequency – how often the STM test will be performed.

d. Protocol - See 'Protocol Settings for STM Tests' for more information about the settings and test results for specific protocols.
e. Timeout – when the STM test will give up when it fails.
f. Probe Settings - enter the timeout period in seconds.

4. Click **Save**.

Creating an STM test

Complete these steps to create an STM test:

1. Go to **ADMIN** > **Setup** > **STM** tab.
2. Under **Step 2: Create synthetic transaction monitoring entry by associating host name to monitoring definitions**, select **New**.
3. Click **New** and enter the following information:
   a. **Monitoring Definition** – enter the name of the Monitor (previous step).
   b. **Host name or IP/IP Range** – enter a host name or IP or IP range on which the test will be performed.
   c. **Service Ports** – click the Port(s) on which the test will be performed. To add/delete Ports, click **+/-**.
   d. Check **SSL** option to enable SSL for encryption.
   e. Click **Test and Save** to test and save the changes.
   f. Click **Apply**.

Editing monitoring definition

Complete these steps to modify monitor definition settings:

1. In the **Step 1: Edit Monitoring Definitions** dialog box, click the tab based on the required action.

Tab	Description
Edit	To modify the Monitoring Definitions.
Delete	To delete the selected Monitoring Definition.
Clone	To duplicate the selected Monitoring Definition.

2. Click **Save**.

Protocol settings for STM tests

This table describes the settings associated with the various protocols used for Creating monitoring definition.

Protocol	Description	Settings	Notes
Ping	Checks packet loss and round trip time.	**Maximum Packet Loss PCT**: tolerable packet loss. **Maximum Average Round Trip Time**: tolerable round trip time (seconds) from FortiSIEM to the destination and back. If either of these two thresholds are exceeded, then the test is considered as failed.	Make sure the device is accessible from the FortiSIEM node from which this test is going to be performed.
LOOP Email	This test sends an email to an outbound SMTP server and then attempts to receive the same email from a mailbox via IMAP or POP. It also records the end-to-end time.	**Timeout**: the time limit by which the end to end LOOP EMAIL test must complete. **Outgoing Settings**: these specify the outgoing SMTP server account for sending the email. • **SMTP Server**: name of the SMTP server. • **User Name**: user account on the SMTP server. • **Email Subject**: content of the subject line in the test email. **Incoming Settings**: These specify the inbound IMAP or POP server account for fetching the email. • **Protocol Type**: choose IMAP or POP. • **Server**: name of the IMAP or POP server. • **User Name**: user account on the IMAP or POP server. • **Email Subject**: content of the subject line in the test email.	Before you set up the test you must have set up access credentials for an outbound SMTP account for sending email, and an inbound POP/IMAP account for receiving email.

Protocol	Description	Settings	Notes
HTTP(S) - Selenium Script	This test uses a Selenium script to play back a series of website actions in FortiSIEM.	**Upload**: select the java file you exported from Selenium. **Total Timeout**: the script must complete by this time or the test will be considered failed. **Step Timeout**: each step must complete by this time.	**How to export**: • Make sure Selenium IDE is installed within Firefox browser. • Open Firefox. • Launch Tools > Selenium IDE. From now on, Selenium is recording user actions. • Visit websites. • Once done, stop recording. • Click File > Export Test case as > Java / Junit 4 /WebDriver. • Save the file as .java in your desktop. This file has to be inputted in FortiSIEM.
HTTP(S) - Simple	This test connects to a URI over HTTP(s) and checks the response time and expected results.	**URL**: the URI to connect to. **Authentication**: any authentication method to use when connecting to this URI. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results. **Response Code**: an expected HTTP(S) response code in the test results. The default is set to **200 - 204**.	

Protocol	Description	Settings	Notes
HTTP(S) - Advanced	This test uses HTTP requests to connect to a URI over HTTP(s), and checks the response time and expected results.	Click **+** to add an HTTP request to run against a URI. **URI**: the URI to run the test against. **SSL**: Whether or not to use SSL when connecting to the URI, and the port to connect on. **Authentication**: the type of authentication use when connecting to the URI. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Method Type**: the type of HTTP request to use. **Send Parameters**: click **+** or the **Pencil** icon to add or edit any parameters for the request. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results. **Response Code** : an expected HTTP(S) response code in the test results. The default is set to **200 - 204**. **Store Variables as Response Data for Later Use:** click **+** or the **Pencil** icon to add or edit any variable patterns that should be used as data for later tests.	
TCP	This test attempts to connect to the specified port using TCP.	**Timeout**: this is the single success criterion. If there is no response within the time specified here, then the test fails.	

Protocol	Description	Settings	Notes
DNS	Checks response time and expected IP address.	**Query**: the domain name that needs to be resolved. **Record Type**: the type of record to test against. **Result**: specify the expected IP address that should be associated with the DNS entry. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails.	
SSH	This test issues a command to the remote server over SSH, and checks the response time and expected results.	**Remote Command**: the command to run after logging on to the system **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Contains**: an expected string in the test results.	You must set up an SSH credential on the target server before setting up this test. As an example test, you could set **Raw Command** to `ls`, and then set **Contains** to the name of a file that should be returned when that command executes on the target server and directory.
LDAP	This test connects to the LDAP server, and checks the response time and expected results.	**Base DN**: an LDAP base DN you want to run the test against. **Filter**: any filter criteria for the Base DN. **Scope**: any scope for the test. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Number of Rows**: the expected number of rows in the test results. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results.	You must set up an access credential for the LDAP server before you can set up this test

Protocol	Description	Settings	Notes
IMAP	This tests checks connectivity to the IMAP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
POP	This test checks connectivity to the IMAP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
SMTP	This test checks connectivity to the SMTP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
JDBC	This test issues a SQL command over JDBC to a target database, and checks the response time and expected results.	**JDBC Type**: the type of database to connect to. **Database Name**: the name of the target database. **SQL**: the SQL command to run against the target database. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Number of Rows**: the expected number of rows in the test results. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results.	
FTP	This test issues a FTP command to the server and checks expected results.	**Anonymous Login**: choose whether to use anonymous login to connect to the FTP directory. **Remote Directory**: the remote directory to connect to. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails.	

Protocol	Description	Settings	Notes
TRACE ROUTE	This test issues a trace route command to the destination and parses the results to create PH_DEV_MON_TRACEROUTE events, one for each hop.	**Timeout**: If there is no response from the system within the time specified here, then the test fails. **Protocol Type**: Specifies the IP protocol over which trace route packets are send - current options are UDP, TCP and ICMP. **Max TTL**: Max time to live (hop) value used in outgoing trace route probe packets. **Wait Time**: Max time in seconds to wait for a trace route probe response.	For the trace route from AO to destination D via hops H1, H2, H3, FortiSIEM generates 3 hop by hop PH_DEV_MON_TRACEROUTE events. **First event:** Source AO, destination H1, Min/Max/Avg RTT, Packet Loss for this hop. **Second event:** Source H1, destination H2, Min/Max/Avg RTT, Packet Loss for this hop. **Third event:** Source H2, destination H3, Min/Max/Avg RTT, Packet Loss for this hop. **Fourth event:** Source H3, destination D, Min/Max/Avg RTT, Packet Loss for this hop **Fourth event:** Source H3, destination D, Min/Max/Avg RTT, Packet Loss for this hop.

When an STM test fails, three system rules are triggered, and you can receive an email notification of that failure by creating a notification policy for these rules:

- **Service Degraded - Slow Response to STM**: Detects that the response time of an end-user monitored service is greater than a defined threshold (average over 3 samples in 15 minutes is more than 5 seconds).
- **Service Down - No Response to STM:** Detects a service suddenly went down from the up state and is no longer responding to synthetic transaction monitoring probes.
- **Service Staying Down - No Response to STM**: Detects a service staying down, meaning that it went from up to down and did not come up, and is no longer responding to end user monitoring probes.

Configuring Maintenance Calendars

A Maintenance Calendar displays when a device is undergoing maintenance (likely due to hardware and software upgrades). When a device is in maintenance, it is not monitored for performance, availability and change and the corresponding rules do not trigger.

This section provides the procedures to set up maintenance calendars.

- Create a maintenance calendar
  - Specifying a schedule
  - Specifying the devices under maintenance

- Viewing existing maintenance calendars
- Modifying existing maintenance calendars

Create a maintenance calendar

Complete these steps to schedule maintenance:

1. Go to **ADMIN** > **Setup** > **Maintenance** tab.
2. Click **New** and specify the following:

Settings	Guidelines
Name	[Required] Name of the Calendar. This will be displayed on the Calendar.
Description	Description or details about this schedule.
Schedule	[Required] Specify the times during which devices will be in maintenance.
Groups/Devices	Specify the groups/devices and Synthetic Transaction Monitoring (STM) tasks that will be in maintenance.

3. Optional - To generate incidents during maintenance, enable **Generate Incidents for Devices under Maintenance**.
4. Click **Save**.

Specifying a schedule

1. Click the **Schedule** drop-down list in the **Device Maintenance** window.
2. Enter values for the following options:
    - **Time Range** specifies start time (within the day) and the duration of the maintenance window.
    - **Recurrence Pattern** specifies if and how the maintenance window will repeat.
        - If the maintenance window is one time:
            a. Select **Once** for **Recurrence Pattern**.
            b. Select the specific date on the **Recurrence Range**.
        - If the maintenance window should repeat on certain days of the week:
            a. Select **Recurring Days** and select the Repeat Days and Repeat months.
            b. Select the start and end dates for Recurrence Range.
        - If the maintenance window should repeat on certain months of the year:
            a. Select **Recurring Months** and select the Repeat Months.
            b. Select the **Start From**/**End By** dates for Recurrence Range or select **No end date** to continue the recurrance forever.
3. Click **Save** to apply the changes.

Specifying the devices under maintenance

1. Click the **Groups/Devices** drop-down list in the **Device Maintenance** dialog box.
2. From the **Folders** on the left pane, select either the Devices folder or the STM folder of all the STM jobs defined so far.

3. From the devices/STM jobs shown in the middle pane, select the appropriate ones and click **>** for them to appear in the right **Selections** pane.
4. To select all devices in a folder, select the folder on the left windows and click **>>** to move the folder into the right window.
5. Click **Save**.

Viewing existing maintenance calendars

The existing maintenance calendars can be displayed in various time windows. These options are available on the top-right:

- Monthly view - click **Month**.
- Weekly view - click **Week** or **List (Week)**.
- Day view - click **Day**.

You can navigate to a specific month on the Calendar, click the **<** and **>** buttons on the top-left of the Calendar. To view the current Maintenance, click **Current**.

Modifying existing maintenance calendars

Complete these steps to modify a maintenance schedule:

1. Select the schedule from the Calendar.
2. Click the tab based on the required action:
    - Edit - to edit the scheduled maintenance settings.
    - Delete - to delete the scheduled maintenance.
3. Click **Save**.

Configuring Windows Agent

Starting with version 3.0, Windows Agents can be configured and managed from the FortiSIEM Supervisor node. Windows Agent Manager is not required.

Before proceeding, follow the instructions in the Windows Agent 3.3.0 Installation Guide to complete these steps:

1. Install the Windows Agent using the correct installation file.
2. Make sure the Agent appears in the CMDB page of the FortiSIEM GUI, using the host name defined in the installation file.
3. Configure the Windows Server to receive the types logs of interest (see Configuring Windows Servers for FortiSIEM Agents in the Windows Agent 3.3.0 Installation Guide).

To receive logs from Windows Agent, you must complete the following steps:

1. Define Windows Agent Monitor Templates
2. Associate Windows Agents to Templates

Once these steps are completed, the Supervisor node will distribute monitoring policies to the Agents and you will be able to see events in FortiSIEM.

This section also covers these topics:

- Viewing Agent Status
- Enabling or Disabling an Agent
- Viewing Files in FortiSIEM

- Verifying Events in FortiSIEM
- Sample Windows Agent Logs

Define the Windows Agent Monitor Templates

A Windows Monitoring Template consists of:

- Log Settings: Windows Event Logs and Log Files
- Change Settings: File Integrity Monitoring, Registry Changes, Installed Software Changes, Removable media
- Script Settings: WMI Classes and PowerShell Scripts

Complete these steps to add a Windows Agent Monitor Template:

1. Go to **ADMIN** > **Setup** > **Windows Agent** tab.
2. Click **New** under the section **Windows Agent Monitor Templates**.
3. In the **Windows Agent Monitor Template** dialog box, enter the information under each tab with reference to the tables below.

    a. Configure the **Generic** settings with reference to the table below:

Generic settings	Guidelines
Name	Enter the name of the Windows Agent Monitor Template. This name is used as a reference in Template associations.
Description	Enter a description of the Windows Agent Monitor Template.

    b. Configure the **Event** settings with reference to the table below. Make sure you have completed these steps from the Windows Agent 3.3.0 Installation Guide:
        - To enable DNS logging, follow the steps in Configuring Windows DNS.
        - To enable DHCP logging, follow the steps in Configuring Windows DHCP.
        - To enable IIS logging, follow the steps in Configuring Windows IIS.
        - To get sysmon events, follow the steps in Configuring Windows Sysmon.

Event settings	Guidelines
Event Log	To configure **Event log** settings: a. Select the **Type** of log from the drop-down: • **Application** — Events that are logged by Windows Application. Select All, Exchange Server or SQL Server as Source. • **Security** — Log that contains records of login/logout activity or other security-related events specified by the system's audit policy. • **System** — Events that are logged by the operating system components. • **DFS** — Logs to identify the users who accessed the Distributed File System. • **DNS** — DNS Debug logs and Name Resolution Activity logs. • **Hardware Events** — Events related to hardware. • **Key Management Service** — Events related to creation and control of keys used to encrypt your data. • **Setup** — Log files for all actions that occur during installation. • **Windows PowerShell** — Logs related to Windows PowerShell. • **Other** — Any other log type (specify the name under **Event Name** setting.) b. Enter the events to be included under **Include Event** and the ones to exclude under **Exclude Event**.

c. Configure the **User Log** settings with reference to the table below:

User Log settings	Guidelines
User Log	Click **New** to add the custom log files that must be monitored: • **File/Directory**—Path to the file/directory. • **Log Prefix**—Any prefix to the identify events from this file/directory for better accessibility.

d. Configure the **FIM** settings with reference to the table below. Make sure you have completed these steps from the Windows Agent 3.3.0 Installation Guide:
- To enable logging appropriately, follow the steps in Configure Security Audit Logging Policy.
- To get user meta data in the file auditing logs, follow the steps in Configure File Auditing Policy.
- To enable change events for permission and/or ownership changes to files and/or directories, follow the steps in Configure Audit File System Policy.

FIM settings	Guidelines
FIM	To include the file directory details: a. Click **New** to add the file directory details: • **File/Directory** — Enter the full path of the file directory: • **Include Subfolder(s)** — Select if you must include the directory sub-folders. • **Exclude Subfolder(s)** — Enter any sub-folders to exclude, if any. • **Include File Type** — Enter the file types to include separated by a semi-colon. • **Exclude File Type** — Enter the file types to exclude, if any, separated by a semi-colon. • **On Modify:** • **Push Files**—Select this if you want Windows Agent to push files to FortiSIEM whenever there is a change. The files are stored in SVN and are accessible from the Supervisor. These files are displayed in **CMDB > Device > File**. Send only important files, as this can fill up disk space. • **Compare Baseline**—Select this if you want to be alerted when the file changes from a baseline. This is common for configuration files that rarely change. If you choose this option, you will be asked to provide a copy of the baseline file. Click **Choose File** and upload the file from your workstation. The Supervisor will compute the MD5 checksum and distribute the checksum to the agents for comparison. b. Click **Save**. Use the **Edit**/**Delete** buttons to modify/remove any file directory information.

e. Configure the **Change** settings with reference to the table below:

Change settings	Guidelines
Registry Change	Select the required key(s) to monitor: • **HKEY_CLASSES_ROOT**—key that contains file extension association information, as well as a programmatic identifier, Class ID, and Interface ID data. • **HKEY_CURRENT_USER**—key that contains configuration information for Windows and software specific to the currently logged in user. • **HKEY_LOCAL_MACHINE**—hive that contains the majority of the configuration information for the software you have installed, as well as for the Windows Operating System. • **HKEY_USERS**—key that contains user-specific configuration information of all currently active users on the computer. • **HKEY_CURRENT_CONFIG**—key that acts as a shortcut to a registry key which keeps information about the hardware profile currently used.
Check Every	Set the time period to check the Registry Change in Minute(s) or Hour(s).
Installed Software Change	Select to enable monitoring of any installed software change.
Removable Drive	Select the removable drive to track: • USB drive(s) • CD-DVD drive(s)

f. Configure the **Script** settings with reference to the table below:

Script settings	Guidelines
WMI Classes	To include a WMI Class: a. Click **New** to add a new WMI Class. Select the **Name**, **WMI Class**, and **Attributes** from the drop-down lists (Use ';' as the separator). b. Set the time period to monitor in Minute(s) or Hour(s) under **Check Every** setting. Use the **Edit**/**Delete** buttons to modify/remove any WMI Classes.
PowerShell Script	To include a PowerShell Script: Click **New** to add a new PowerShell Script and enter the **Name** and **Script**. Use the **Edit**/**Delete** buttons to modify/remove any PowerShell Script.

4. Click **Save**.
   Use the **Edit** button to modify any template or **Delete** button to remove any Windows Agent Monitor template.

Associate Windows Agents to Templates

After defining the monitoring templates, you must associate hosts to templates. To scale to a large number of hosts, this is done via Policies. A Policy is a mapping from Organization and Host to Templates and Collectors. Policies are evaluated in order (lower order or rank is higher priority) and the policy that matches first is selected. Therefore, define the exceptions first followed by broad policies. Hosts are defined in terms of CMDB Device Groups or Business Services. Multiple templates can be used in one Policy and the system detects conflicts, if any.

Complete these steps to associate a Host to Template:

1. Click **New** under the section **Host To Template Associations**.
2. In the **Host To Template Associations** dialog box, enter the information below.

Settings	Guidelines
Name	Name of the Host to Template Association.
Organization	Select the organization.
Host	Use the drop-down list to browse the folders and select the **Devices** or/and **Business Services** to monitor and click **Save**.
Template	Select one or more monitoring templates from the list or select **All Templates** to include all. You can also use the search bar to find any specific template.
Collector	Select the Collector from the list or select **All Collectors** to include all. Agents forward events to Collectors via HTTP(S). A Collector is chosen at random and if that Collector is not available or non-responsive, then another Collector in the list is chosen.

3. Click **Save** and **Apply**.
   A **Rank** is automatically assigned to the association.

You can use the **Edit** button to modify or **Delete** button to remove any template association.

Viewing Agent Status

Complete these steps to view the Windows Agent status for any specific device:

1. Go to **CMDB** > **Devices** and select the device.
   The following fields display the information related to the Agent:
   - Agent Status: status of the Agent on the device
   - Agent Policy: agent policy name
   - Monitor Status: status of monitoring

   The **Agent Status** indicates the following:

Status	Description
Registered	Agent has completed registration but has not received the monitoring template.
Running Active	Agent has received a monitoring template and it is performing properly.
Running Inactive	Agent is running but does not have a monitoring template – the reasons can be (a) no license or (b) incomplete definition - no Collector or Template is defined for that host.
Stopped	Agent is stopped on the Linux Server.
Disconnected	Supervisor did not receive any status from the Agent for the last 10 minutes.

Enabling or Disabling an Agent

Complete these steps to enable or disable Agent for a specific device:

1. Go to **CMDB** > **Devices** and select the required device.
2. Select the **Action** drop-down menu and click **Enable Agent** to enable or **Disable Agent** to disable Agent monitoring for the selected device.

Viewing Files in FortiSIEM

If the FortiSIEM Agent is running on a Server and a FIM policy is enabled with **Push Files On Modify**, then the FortiSIEM Agent will send the files to FortiSIEM when a change is detected. FortiSIEM stores the files in SVN on the Supervisor.

1. Go to the **CMDB** page. Make sure that **AGENT** is one of the **Methods**.
2. Search for the device in CMDB by name.
   Use the host name that you used in the `InstallSettings.xml` file to install the Windows Agent.
3. Click **File** beneath the device table.
   You will see all of the files that were changed since the monitoring template was applied.
4. Select a file.
   If you need to search for a file, set the **From** and **To** dates. The files which changed between those dates will be displayed.
5. Click the file name on the left and its contents will be displayed in the right hand window.
   Each file has a header containing file meta data followed by the actual file content.
   - **FILEPATH:** The full file name, including the path.
   - **ARCHIVE:** Set to true if **ArchiveBit** is set; set to false if it is not.
   - **HASHCODE:** The file hash.
   - **HASHALGO:** The algorithm used to compute file hash.
   - **OWNER:** The file owner.
   - **USER, PERMIT, DENY:** Permissions are specified as a (User, Permit, Deny) triple. This describes the actions that the user is allowed to perform.
   - **MODIFIED_TIME:** The time when the file was last modified.
6. To see the differences between two files, select two files on left and click **Diff**.

Verifying Events in FortiSIEM

Follow the steps below to verify the events in FortiSIEM:

1. Go to **ANALYTICS** tab.
2. Click the **Filters** field.
3. Create the following condition: **Attribute**= Raw Event Log, **Operator** = CONTAIN, **Value** = AccelOps-WUA and click **Save & Run.**
   Note: All event types for all Windows Server generated logs are prefixed by **AccelOps-WUA**.
4. Select the following **Group By**:
   a. Reporting Device Name
   b. Reporting IP
5. Select the following **Display Fields:**
   a. Reporting Device Name
   b. Reporting IP
   c. COUNT(Matched Events)
6. Run the query for the last 15 minutes.
   The query will return all hosts that reported events in the last 15 minutes.

Sample Windows Agent Logs

FortiSIEM Windows Agent Manager generates Windows logs in an easy way to analyze "attribute=value" style without losing any information.

- System Logs
- Application Logs
- Security Logs
- DNS Logs
- DHCP Logs
- IIS Logs
- DFS Logs
- File Content Monitoring Logs
- File Integrity Monitoring Logs
- Installed Software Logs
- Registry change Logs
- WMI Logs

System Logs

```
#Win-System-Service-Control-Manager-7036
Thu May 07 02:13:42 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="System"
[eventSource]="Service Control Manager" [eventId]="7036" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:13:41" [deviceTime]-
]="May 07 2015 10:13:41"
[msg]="The Skype Updater service entered the running state."

Thu May 07 02:13:48 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="System"
```

```
[eventSource]="Service Control Manager" [eventId]="7036" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:13:47" [deviceTime]-
]="May 07 2015 10:13:47"
[msg]="The Skype Updater service entered the stopped state."
```

Application Logs

```
#Win-App-MSExchangeServiceHost-2001
Thu May 07 03:05:42 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="Application" [eventSource]="MSExchangeServiceHost"
[eventId]="2001" [eventType]="Information" [domain]="" [computer]="WIN-2008-249.er-
sijiu.com"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 11:05:42" [deviceTime]-
]="May 07 2015 11:05:42"
[msg]="Loading servicelet module Microsoft.Exchange.OABMaintenanceServicelet.dll"


#MSSQL
#Win-App-MSSQLSERVER-17137
Thu May 07 03:10:16 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="Application"
[eventSource]="MSSQLSERVER" [eventId]="17137" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-249.ersijiu.com" [user]=""
[userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 11:10:16" [deviceTime]="May 07
2015 11:10:16"
[msg]="Starting up database 'model'."
```

Security Logs

```
#Win-Security-4624(Windows logon success)
Thu May 07 02:23:58 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="Security"
[eventSource]="Microsoft-Windows-Security-Auditing" [eventId]="4624" [eventType]-
]="Audit Success" [domain]=""
[computer]="WIN-2008-249.ersijiu.com" [user]="" [userSID]="" [userSIDAcctType]=""
[eventTime]="May 07 2015 10:23:56"
[deviceTime]="May 07 2015 10:23:56" [msg]="An account was successfully logged on."
[[Subject]][Security ID]="S-1-0-0" [Account Name]=""
[Account Domain]="" [Logon ID]="0x0" [Logon Type]="3" [[New Logon]][Security ID]="S-1-
5-21-3459063063-1203930890-2363081030-500"
[Account Name]="Administrator" [Account Domain]="ERSIJIU" [Logon ID]="0xb9bd3" [Logon
GUID]="{00000000-0000-0000-0000-000000000000}"
[[Process Information]][Process ID]="0x0" [Process Name]="" [[Network Information]]
[Workstation Name]="SP171" [Source Network Address]="10.1.2.171"
[Source Port]="52409" [[Detailed Authentication Information]][Logon Process]="NtLmSsp"
[Authentication Package]="NTLM" [Transited Services]=""
[Package Name (NTLM only)]="NTLM V2" [Key Length]="128" [details]=""
```

DNS Logs

```
#DNS Debug Logs
#AccelOps-WUA-DNS-Started
Thu May 07 02:35:43 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS
```

```
[monitorStatus]="Success"
[msg]="5/7/2015 10:34:05 AM 20BC EVENT   The DNS server has started."


#AccelOps-WUA-DNS-ZoneDownloadComplete
Thu May 07 02:35:43 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015 10:34:05 AM 20BC EVENT
The DNS server has finished the background loading of zones. All zones are now available
for DNS updates and zone
transfers, as allowed by their individual zone configuration."


#AccelOps-WUA-DNS-A-Query-Success
Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
 10:47:13 AM 5D58 PACKET  0000000002B74600 UDP Rcv 10.1.20.232  0002   Q [0001   D
NOERROR] A      (8)testyjyj(4)yjyj(3)com(0)"Thu May 07 02:48:25 2015 WIN-2008-LAW-agent
10.1.2.242 AccelOps-WUA-DNS [monitorStatus]="Success" [msg]="5/7/2015
 10:47:13 AM 5D58 PACKET  0000000002B74600 UDP Snd 10.1.20.232     0002 R Q [8085 A DR
NOERROR] A      (8)testyjyj(4)yjyj(3)com(0)"


#AccelOps-WUA-DNS-PTR-Query-Success
Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
10:47:22 AM 5D58 PACKET  00000000028AB4B0 UDP Rcv 10.1.20.232 0002   Q [0001   D   NOERROR]
PTR
(3)223(3)102(3)102(3)102(7)in-addr(4)arpa(0)"

Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
10:47:22 AM 5D58 PACKET  00000000028AB4B0 UDP Snd 10.1.20.232     0002 R Q [8085 A DR
NOERROR] PTR
(3)223(3)102(3)102(3)102(7)in-addr(4)arpa(0)"


#DNS System Logs
#Win-App-DNS-2(DNS Server started)
Thu May 07 02:39:17 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success"
[eventName]="DNS Server" [eventSource]="DNS" [eventId]="2" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:39:17" [deviceTime]-
]="May 07 2015 10:39:17"
[msg]="The DNS server has started."


#Win-App-DNS-3(DNS Server shutdown)
Thu May 07 02:39:16 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DNS Server"
[eventSource]="DNS" [eventId]="3" [eventType]="Information" [domain]="" [computer]="WIN-
2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 10:39:16" [deviceTime]="May 07 2015 10:39:16"
[msg]="The DNS server has shut down.
```

DHCP Logs

```
AccelOps-WUA-DHCP-Generic
Thu May 07 05:44:44 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="00" [Date]="05/07/15"
[Time]="13:44:08" [Description]="Started" [IP Address]="" [Host Name]="" [MAC Address]=""
[User Name]="" [ TransactionID]="0"
[ QResult]="6" [Probationtime]="" [ CorrelationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-IP-ASSIGN
Thu May 07 05:56:41 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="10" [Date]="05/07/15"
[Time]="13:56:37" [Description]="Assign" [IP Address]="10.1.2.124" [Host Name]="Agent-
247.yj" [MAC Address]="000C2922118E"
[User Name]="" [ TransactionID]="2987030242" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-Generic(Release)
Thu May 07 05:56:41 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="12" [Date]="05/07/15"
[Time]="13:56:33" [Description]="Release" [IP Address]="10.1.2.124" [Host Name]="Agent-
247.yj" [MAC Address]="000C2922118E"
[User Name]="" [ TransactionID]="2179405838" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-IP-LEASE-RENEW
Wed Feb 25 02:53:28 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="11" [Date]="02/25/15"
[Time]="10:53:19" [Description]="Renew" [IP Address]="10.1.2.123" [Host Name]="WIN-2008-
249.yj" [MAC Address]="0050568F1B5D"
[User Name]="" [ TransactionID]="1136957584" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""
```

IIS Logs

```
#AccelOps-WUA-IIS-Web-Request-Success
Thu May 07 03:49:23 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-IIS [mon-
itorStatus]="Success" [date]="2015-05-07"
[time]="03:44:28" [s-sitename]="W3SVC1" [s-computername]="WIN-2008-LAW-AG" [s-ip]-
]="10.1.2.242" [cs-method]="GET"
[cs-uri-stem]="/welcome.png" [cs-uri-query]="-" [s-port]="80" [cs-username]="-" [c-ip]-
]="10.1.20.232" [cs-version]="HTTP/1.1"
[cs(User-Agent)]="Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.36+(KHTML,+-
like+Gecko)+Chrome/42.0.2311.135+Safari/537.36"
[cs(Cookie)]="-" [cs(Referer)]="http://10.1.2.242/" [cs-host]="10.1.2.242" [sc-status]-
]="200" [sc-substatus]="0" [sc-win32-status]="0"
[sc-bytes]="185173" [cs-bytes]="324" [time-taken]="78" [site]="Default Web Site" [form-
at]="W3C"


#AccelOps-WUA-IIS-Web-Client-Error
Thu May 07 03:49:23 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-IIS
```

```
[monitorStatus]="Success" [date]="2015-05-07" [time]="03:44:37"
[s-sitename]="W3SVC1" [s-computername]="WIN-2008-LAW-AG" [s-ip]="10.1.2.242" [cs-meth-
od]="GET" [cs-uri-stem]="/wrongpage" [cs-uri-query]="-"
[s-port]="80" [cs-username]="-" [c-ip]="10.1.20.232" [cs-version]="HTTP/1.1" [cs(User-
Agent)]="Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.36+(KHTML,+-
like+Gecko)+Chrome/42.0.2311.135+Safari/537.36" [cs(Cookie)]="-" [cs(Referer)]="-" [cs-
host]="10.1.2.242" [sc-status]="404"
[sc-substatus]="0" [sc-win32-status]="2" [sc-bytes]="1382" [cs-bytes]="347" [time-taken]-
]="0" [site]="Default Web Site" [format]="W3C"


#AccelOps-WUA-IIS-Web-Forbidden-Access-Denied
Thu May 07 03:30:39 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-IIS [mon-
itorStatus]="Success" [date]="2015-05-07" [time]="03:30:15" [s-ip]="10.1.2.249" [cs-meth-
od]="POST" [cs-uri-stem]="/AOCACWS/AOCACWS.svc" [cs-uri-query]="-" [s-port]="80" [cs-
username]="-"
[c-ip]="10.1.2.42" [cs(User-Agent)]="-" [sc-status]="403" [sc-substatus]="4" [sc-win32-
status]="5" [time-taken]="1" [site]="Default Web Site"
[format]="W3C"
```

DFS Logs

```
#Win-App-DFSR-1002
Thu May 07 03:01:12 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1002" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:12" [deviceTime]="May 07 2015 11:01:12"
[msg]="The DFS Replication service is starting."


#Win-App-DFSR-1004
Thu May 07 03:01:12 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1004" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:12" [deviceTime]="May 07 2015 11:01:12"
[msg]="The DFS Replication service has started."


#Win-App-DFSR-1006
Thu May 07 03:01:10 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1006" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:10" [deviceTime]="May 07 2015 11:01:10"
[msg]="The DFS Replication service is stopping."


#Win-App-DFSR-1008
Thu May 07 03:01:11 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1008" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
```

```
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:11" [deviceTime]="May 07 2015 11:01:11"
[msg]="The DFS Replication service has stopped."
```

File Content Monitoring Logs

```
#AccelOps-WUA-UserFile
Thu May 07 05:40:08 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-UserFile [mon-
itorStatus]="Success" [fileName]="C:\test\i.txt"
[msg]="another newline adddeddddddd"
```

File Integrity Monitoring Logs

The following sections describe various use cases that can be detected by File Integrity Monitoring Logs.

- Use Case 1: File or Directory Created
- Use Case 2: File or Directory Deleted
- Use Case 3: File Content Modified
- Use Case 4: File Content Modified and Upload is Selected
- Use Case 5: File Renamed
- Use Case 6: File Permission Changed
- Use Case 7: File Ownership Changed
- Use Case 8: File Archive Bit Changed
- Use Case 9: File Baseline Changed

Use Case 1: File or Directory Created

Event Type

`AO-WUA-FileMon-Added`

Important Event Attributes

- `userId`: The ID of the user who added the file.
- `domain`: The user's domain for a Domain computer.
- `osObjType`- Can be either File or Directory.
- `fileName`: The name of the file or directory that was added.
- `hashCode, hashAlgo`: The file hash obtained by using the specified algorithm.
- `procName`: The name of the Windows process that was used to create the file.
- `fileOwner`: The owner of the file.
- `targetUserType, targetUser`: The user or group to whom the permission applies.
- `targetFilePermit`: The permitted file operations.
- `targetFileDeny`: The denied file operations.
- `archiveSet`: Is `true` if the Archive bit is set for this file; `false` otherwise.

Reports

`Agent FIM: Windows File/Directory Created/Deleted/Renamed`

Rules

`Agent FIM - Windows File or Directory Created`

Sample Log

```
2020-03-25T07:30:50Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [cus-
tomer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-
bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]="Mar 25
2020 07:30:48" [fileName]="C:\\test\\New Text Document.txt" [osObjAction]="Added"
[objectType]="File" [hashCode]-
]="e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855" [hashAlgo]="SHA256"
[procName]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="true" [fileOwner]=""
```

Use Case 2: File or Directory Deleted

Event Type

`AO-WUA-FileMon-Removed`

Important Event Attributes

- `userId`: The ID of the user who removed the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The name of the file that was removed.
- `procName`: The Windows process that was used to remove the file.

Report

`Agent FIM: Windows File/Directory Creation/Deletion/Rename`

Rule

`Agent FIM - Windows File or Directory Deleted`

Sample Log

```
2020-03-25T07:43:24Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [cus-
tomer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-
4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]-
]="Mar 25 2020 07:43:21" [fileName]="C:\\test\\test1.txt" [osObjAction]="Removed"
[objectType]="Unknown" [hashCode]="" [hashAlgo]="SHA256" [procName]-
]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="false" [fileOwner]=""
```

Use Case 3: File Content Modified

Event Type

`AO-WUA-FileMon-Modified`

Important Event Attributes

- `userId`: The user who modified the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The name of the file that was modified.
- `procName`: The Windows process that was used to modify the file.
- `hashCode, hashAlgo`: The file hash after modification and the algorithm used to calculate the hash.

Report

```
Agent FIM: Windows File Content Modified
```

Rule

```
Agent FIM - Windows File Content Modified
```

Sample Log

```
2020-03-25T10:50:40Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:50:37" [fileName]-
]="C:\\test\\test.txt" [osObjAction]="Modified" [objectType]="File"
[hashCode]="6396e3c19b155770f3ae25afa5f29832d6f35b315407ed88820339b705fd2bcc" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\System32\<br/>otepad.exe" [msg]="" [archiveSet]-
]="true" [fileOwner]=""
```

Use Case 4: File Content Modified and Upload is Selected

Event Type

```
PH_DEV_MON_FILE_CONTENT_CHANGE
```

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The name of the file that was modified.
- `procName`: The Windows process that was used to modify the file.
- `hashCode, hashAlgo`: The file hash after modification and the algorithm used to calculate the hash.
- `oldSVNVersion`: The SVN revision number of file before the change.
- `newSVNVersion`: The SVN revision number of file after the change.
- `addedItem`: The lines that were added to the file.
- `deletedItem`: The lines that were removed from the file.

Report

```
Agent FIM: Windows File Content Modified in SVN
```

Rule

```
Audited file or directory content modified in SVN
```

Sample Log

```
<14>Mar 25 20:30:44 sp3 phPerfMonitor[17521]: [PH_DEV_MON_FILE_CONTENT_CHANGE]:
[eventSeverity]=PHL_INFO,[procName]=phPerfMonitor,[fileName]=phSvnUpdate.cpp,[lineNum-
ber]=306,[phCustId]=2000,[hostName]=Win-169,[hostIpAddr]=10.30.3.169,[fileName]-
]=/C:/test/test.txt,[hashCode]=08998b2cce90ee6695bd8dae82d43137,[oldSVNVersion]=50,
[newSVNVersion]=51,[deletedItem]=(none),[addedItem]=333;,[user]=Administrator,[hashAl-
go]=SHA256,[phLogDetail]=
```

Use Case 5: File Renamed

Event Type

`AO-WUA-FileMon-Renamed-New-Name`

Important Event Attributes

- `userId`: The ID of the user who renamed the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The new name of the file.
- `procName`: The Windows process that was used to rename the file.
- `hashCode, hashAlgo`: The new file hash using the specified algorithm.

Report

`Agent FIM: Windows File/Directory Creation/Deletion/Rename`

Rule

None

Sample Log

```
2020-03-25T09:59:34Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 09:59:32" [fileName]-
]="C:\\test\\test5.txt" [osObjAction]="Renamed [New Name]" [objectType]="File"
[hashCode]="2b64c6d9afd8a34ed0dbf35f7de171a8825a50d9f42f05e98fe2b1addf00ab44" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="true"
[fileOwner]=""
```

Event Type

`AO-WUA-FileMon-Renamed-Old-Name`

Important Event Attributes

`userId`: The ID of the user who modified the file.

`domain`: The user's domain for a Domain computer.

`fileName`: The old name of the file before renaming.

`procName`: The Windows process that was used to remove the file.

Report

`Agent FIM: Windows File/Directory Creation/Deletion/Rename`

Rule

None

Sample Log

None

Use Case 6: File Permission Changed

Event Type

`AO-WUA-FileMon-PermissionChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file permission.
- `domain`: The user's domain for a Domain computer.
- `objectType`: The type of object. Can be `File` or `Directory`.
- `fileName`: The name of the file or directory whose permission was changed.
- `procName`: The Windows process that was used to change the permission.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `fileOwner`: The name of the owner of the file.
- `targetUserType, targetUser`: The name of the user or group to whom the permission below applies.
- `targetFilePermit`: The permitted file operations after change.
- `targetFileDeny`: The denied file operations after change.
- `archiveSet`: Is `true` if the `Archive` bit is set for this file; `false` otherwise.

Report

`Agent FIM: Windows File/Directory Permission Changes`

Rule

`Agent FIM - Windows File Permission Changed`

Sample Log

```
2020-03-25T10:21:00Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:20:58" [fileName]-
]="C:\\test\\test.txt" [osObjAction]="PermissionChange" [objectType]="File"
[hashCode]="7936d255ef43706a93fdd15f4bbfde45e3b2d2b9a0d4cc7c39184cf745ab78c5" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\System32\\dllhost.exe" [msg]="" [archiveSet]-
]="true" [fileOwner]="Joe" [targetUserType]="USER"
[targetUser]="BUILTIN\Administrators" [targetFilePermit]="ALL" [tar-
getFileDeny]="WRITE"
```

Use Case 7: File Ownership Changed

Event Type

`AO-WUA-FileMon-OwnershipChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file ownership.
- `domain`: The user's domain for a Domain computer.
- `objectType`: The type of object whose ownership was changed: `File` or `Directory`.
- `fileName`: The name of the file or directory whose ownership was changed.

- `procName`: The Windows process that was used to change ownership.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `fileOwner`: The name of the new file owner.
- `archiveSet`: Is `true` if the `Archive` bit is set for this file; `false` otherwise.

Report

`Agent FIM: Windows File/Directory Ownership Changes`

Rule

`Agent FIM - Windows File Ownership Changed`

Sample Log

```
2020-03-06T07:08:56Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="1" [cus-
tomer]="super" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-
bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="Administrator" [domain]-
]="WIN-167" [eventTime]="Mar 06 2020 07:08:53" [fileName]="C:\\test\\test1.txt" [osOb-
jAction]="OwnershipChange" [objectType]="File"
[hashCode]="d17f25ecfbcc7857f7bebea469308be0b2580943e96d13a3ad98a13675c4bfc2" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\System32\\dllhost.exe" [msg]="" [archiveSet]-
]="true" [fileOwner]="Joe"
```

Use Case 8: File Archive Bit Changed

Event Type

`AO-WUA-FileMon-ArchivedBitChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user's domain for a Domain computer.
- `objectType`: The type of object whose `Archive` bit was changed: `File` or `Directory`.
- `fileName`: The name of the file whose archive bit was changed.
- `procName`: The Windows process that was used to change archive bit.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `archiveSet`: Is `true` if the `Archive` bit is set for this file; `false` otherwise.

Report

`Agent FIM: Windows File/Directory Archive Bit Changes`

Rule

`Agent FIM - Windows File/Directory Archive Bit Changed`

Sample Log

```
2020-03-25T10:02:38Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:02:35" [fileName]-
]="C:\\test\\test.txt" [osObjAction]="ArchivedBitChange" [objectType]="File"
```

```
[hashCode]="7936d255ef43706a93fdd15f4bbfde45e3b2d2b9a0d4cc7c39184cf745ab78c5" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\System32\\attrib.exe" [msg]="" [archiveSet]-
]="false" [fileOwner]=""
```

Use Case 9: File Baseline Changed

Event Type

`AO-WUA-FileMon-BaselineChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The name of the file that was changed.
- `procName`: The Windows process that was used to remove the file.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `targetHashCode`: The hash of the target file (defined in the GUI).

Report

`Agent FIM: Windows File Change from Baseline`

Rule

`Agent FIM - Windows File Changed From Baseline`

Sample Log

```
2020-03-25T12:52:42Z Win-169 10.30.3.169 AccelOps-WUA-FileMon [phCustId]="2000" [cus-
tomer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="5c83ec12-73fd-4e06-
a396-1f128564f09e" [timeZone]="+0800" [userId]="Administrator" [domain]="WINSRV2012-169"
[fileName]="C:\\test\\test.txt" [osObjAction]="BaselineChange" [hashCode]-
]="c1f79ea2bbfb77bf30446a4c9be762eb" [hashAlgo]="MD5" [tar-
getHashCode]="74DE7651DFC55294CC59240AE514A676" [msg]="
```

Installed Software Logs

```
#AccelOps-WUA-InstSw-Added
Thu May 07 05:28:17 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-InstSw [mon-
itorStatus]="Success" [osObjAction]="Added"
[appName]="7-Zip 9.20 (x64 edition)" [vendor]="Igor Pavlov" [appVersion]="9.20.00.0"
```

```
#AccelOps-WUA-InstSw-Removed
Thu May 07 05:28:30 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-InstSw [mon-
itorStatus]="Success" [osObjAction]="Removed"
[appName]="7-Zip 9.20 (x64 edition)" [vendor]="Igor Pavlov" [appVersion]="9.20.00.0"
```

Registry Change Logs

```
#AccelOps-WUA-Registry-Modified
Thu May 07 04:01:58 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-Registry [mon-
itorStatus]="Success"
```

```
[regKeyPath]="HKLM\\SOFTWARE\\Microsoft\\ExchangeServer\\v14\\ContentIndex\\CatalogHealth\\
{0d2a342a-0b15-4995-93db-d18c3df5860d}" [regValueName]="TimeStamp" [regValueType]="1" [osOb-
jAction]="Modified" [oldRegValue]-
]="MgAwADEANQAtADAANQAtADAANwAgADAAMwA6ADQAOQA6ADQANwBaAAAA"
[newRegValue]="MgAwADEANQAtADAANQAtADAANwAgADAANAA6ADAAMQA6ADQAOABaAAAA"


#AccelOps-WUA-Registry-Removed
Thu May 07 05:25:09 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-Registry [mon-
itorStatus]="Success"
[regKeyPath]="HKLM\\SOFTWARE\\RegisteredApplications" [regValueName]="Skype" [regValueType]-
]="1" [osObjAction]="Removed" [oldRegValue]-
="UwBPAEYAVABXAEEAUgBFAFwAQwBsAGkAZQBuAHQAcwBcAEkAbgB0AGUAcgBuAGUAdAAgAEMAYQBsAGwAXABTAGs-
AeQBwAGUAXABDAGEAcABhAGIAaQBsAGkAdABpAGUAcwBkAGgAZABoAGQAaABkAGgAZABoAGQAAAA="
[newRegValue]=""
```

WMI logs

```
#AccelOps-WUA-WMI-Win32_Processor
Thu May 07 03:53:33 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WMI [mon-
itorStatus]="Success"  [__CLASS]="Win32_Processor"
[AddressWidth]="64" [Architecture]="9" [Availability]="3" [Caption]="Intel64 Family 6
Model 26 Stepping 5" [ConfigManagerErrorCode]="" [ConfigManagerUserConfig]=""
[CpuStatus]="1" [CreationClassName]="Win32_Processor" [CurrentClockSpeed]="2266" [Cur-
rentVoltage]="33"
[DataWidth]="64" [Description]="Intel64 Family 6 Model 26 Stepping 5" [DeviceID]-
]="CPU0" [ErrorCleared]="" [ErrorDescription]=""
[ExtClock]="" [Family]="12" [InstallDate]="" [L2CacheSize]="0" [L2CacheSpeed]=""
[L3CacheSize]="0" [L3CacheSpeed]="0"
[LastErrorCode]="" [Level]="6" [LoadPercentage]="8" [Manufacturer]="GenuineIntel"
[MaxClockSpeed]="2266"
[Name]="Intel(R) Xeon(R) CPU           E5520  @ 2.27GHz" [NumberOfCores]="1" [Num-
berOfLogicalProcessors]="1"
[OtherFamilyDescription]="" [PNPDeviceID]="" [PowerManagementCapabilities]="" [Power-
ManagementSupported]="0"
[ProcessorId]="0FEBFBFF000106A5" [ProcessorType]="3" [Revision]="6661" [Role]="CPU"
[SocketDesignation]="CPU socket #0"
[Status]="OK" [StatusInfo]="3" [Stepping]="" [SystemCreationClassName]="Win32_Com-
puterSystem" [SystemName]="WIN-2008-LAW-AG"
UniqueId]="" [UpgradeMethod]="4" [Version]="" [VoltageCaps]="2"
```

Configuring Linux Agent

Linux Agents can be configured and managed from the FortiSIEM Supervisor node.

Before proceeding, install the Linux Agent following the instructions in the *Linux Agent Installation Guide.*

To receive logs from the Linux Agent, you must complete the following steps

1. Define the Linux Agent Monitoring Templates.
2. Associate Linux Agents to Templates.

Once these steps are completed, the Supervisor node will distribute monitoring policies to the Linux Agents and you will be able to see events in FortiSIEM.

Note: FortiSIEM Linux Agent will perform file integrity monitoring on the `/root` directory.

This section also covers these topics.

- Viewing Agent Status
- Enabling or Disabling an Agent
- Viewing Files in FortiSIEM
- File Integrity Monitoring Logs

Define the Linux Agent Monitor Templates

Complete these steps to add a Linux Agent Monitor Template:

1. Go to **ADMIN** > **Setup** > **Linux Agent** tab.
2. Click **New** under the section **Linux Agent Monitor Templates**.
3. In the **Linux Agent Monitor Template** dialog box, enter the information below.

Generic tab:

Configure the Generic settings with reference to the table below:

Generic Settings	Guidelines
Name	**[Required] Enter the name of the FortiSIEM Linux Agent. This name is used as a reference in Template associations.**
Description	**[Required] Enter the description about the FortiSIEM Linux Agent.**

Syslog tab:

Configure the Syslog settings with reference to the table below:

Syslog Settings	Guidelines
Syslog	**Select the Facility with the corresponding Syslog levels:** • **Emergency** • **Alert** • **Critical** • **Error** • **Warning** • **Notice** • **Info** • **Debug**

Log File tab:

Configure the Log File settings with reference to the table below:

Log File Settings	Guidelines
Log Files	**Click New to add the custom log files to monitor:** • **File/Directory**—Path to the file or directory. • **Log Prefix**—Any prefix to the identify events from this file or directory for better accessibility.

FIM tab:

Configure the FIM settings with reference to the table below:

FIM Settings	Guidelines

FIM	**Click New to add the files to monitor:**
	• **Include File/Directory**—Enter the file or directory to monitor.
	• **Exclude File/Directory**—Enter the file or directory to exclude from monitoring using a semi-colon (;) as a separator.
	• **Action**—Select the actions to monitor when there is an event in the included file or directory:
	  • **All**—All of the following actions will be monitored.
	  • **Open**—One or more of the monitored files or directories has been opened.
	  • **Close**—One or more of the monitored files or directories has been closed.
	  • **Create**—A file or directory has been created in one or more of the monitored files or directories.
	  • **Modify**—One or more of the monitored files or directories has been edited.
	  • **Delete**—One or more of the monitored files or directories has been deleted.
	  • **Attribute Change**—An attribute belonging to one or more of the monitored files or directories has been changed.
	• **On Modify** (appears only if All or Modify is selected):
	  • **Push Files**—Select this if you want Linux Agent to push files to FortiSIEM whenever there is a change. The files are stored in SVN and are accessible from the Supervisor. These files are displayed in **CMDB > Device > File**. Send only important files, as this can fill up disk space.
	  • **Compare Baseline**——Select this if you want to be alerted when the file changes from a baseline. This is common for configuration files that rarely change. If you choose this option, you will be asked to provide a copy of the baseline file. Click **Choose File** and upload the file from your workstation. The Supervisor will compute the MD5 checksum and distribute the checksum to the agents for comparison.

4. Click **Save**

Associate Linux Agents to Templates

After defining the monitoring templates, associate the hosts to templates. To scale to large number of Hosts, this is done via Policies. A Policy is a mapping from Organization and Host to Templates and Collectors. Policies are evaluated in order (lower order or rank is higher priority) and the policy that matches first is selected. Therefore, define the exceptions first followed by broad policies. Hosts can be defined in terms of CMDB Device Groups or Business Services. Multiple templates can be used in one Policy and the system detects conflicts, if any.

Complete these steps to associate a Host to Template:

1. Click **New** under the section **Host To Template Associations**.
2. In the **Host To Template Associations** dialog box, enter the information below.

Settings	Guidelines
Name	Name of the Host to Template Association.
Organization	Select the organization.
Host	Use the drop-down list to browse the folders and select the items.
Template	Select one or more monitoring templates from the list or select **All Templates** to select all. You can also use the search bar to find a specific template.
Collector	Select the Collector from the list or select **All Collectors** to select all. Agents forward events to Collectors via HTTP(S). A Collector is chosen at random and if that Collector is not available or non-responsive, then another Collector in the list is chosen.

3. Click **Save** and **Apply**.
   A **Rank** number is automatically assigned to the association.

You can use the **Edit** button to modify or **Delete** button to remove any template association.

Viewing Agent Status

Complete these steps to view the Agent status for any specific device:

1. Go to **CMDB** > **Devices** and select the device.
   The following fields displays the information related to the Agent:
   - Agent Status: status of the Agent running on the device.
   - Agent Policy: agent policy.
   - Monitor Status: status of monitoring.

   The **Agent Status** indicates the following:

Status	Description
Registered	Agent has completed registration but has not received the monitoring template.
Running Active	Agent has received a monitoring template and it is performing properly.

Status	Description
Running Inactive	Agent is running but does not have a monitoring template – the reasons can be (a) no license or (b) incomplete definition - no Collector or Template is defined for that host.
Stopped	Agent is stopped on the Linux Server.
Disconnected	Supervisor did not receive any status from the Agent for the last 10 minutes.

Enabling or Disabling an Agent

Complete these steps to enable or disable Linux Agent for a specific device:

1. Go to **CMDB** > **Devices** and select the required device.
2. Select the **Action** drop-down menu and click **Enable Agent** to enable or **Disable Agent** to disable Agent monitoring for the selected device.

Viewing Files in FortiSIEM

If the FortiSIEM Agent is running on a Server and a FIM policy is enabled with **Push Files On Modify**, then the FortiSIEM Agent will send the files to FortiSIEM when a change is detected. FortiSIEM stores the files in SVN on the Supervisor.

1. Go to the **CMDB** page. Make sure that **AGENT** is one of the **Methods**.
2. Search for the device in CMDB by name.
   Use the host name that you used to install the Linux Agent.
3. Click **File** beneath the device table.
   You will see all of the files that were changed since the monitoring template was applied.
4. Select a file.
   If you need to search for a file, set the **From** and **To** dates. The files which changed between those dates will be displayed.
5. Click the file name on the left and its contents will be displayed in the right hand window.
   Each file has a header containing file meta data followed by the actual file content.
   - **OWNER**: The name of the file owner
   - **GROUP**: User group for specifying file permissions.
   - **PERMISSION=USER: “OWNER”, PERMIT: "..."**: The file owner’s permissions.
   - **PERMISSION=GROUP: “MEMBER”, PERMIT: "...":**: The group member’s file permissions.
   - **PERMISSION=GROUP: “OTHER”, PERMIT: "...":**: Other group file permissions.
   - **FILEPATH:** The full file name, including the path.
   - **HASHCODE:** The file hash.
   - **HASHALGO:** The algorithm used to compute file hash.
   - **MODIFIED_TIME:** The time when the file was last modified.
6. To see the differences between two files, select two files on left and click **Diff**.

File Integrity Monitoring Logs

The following sections describe various use cases that can be detected by File Integrity Monitoring Logs.

Use Case 1: File Created

Event Type

`FSM_LINUX_FILE_CREATE`

Important Event Attributes

- `targetOsObjType`: The type of object that was created: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file.
- `hashAlgo`: The algorithm used to create the file.

Reports

`Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity`

Rules

`Agent FIM - Linux File or Directory Created`

Sample Log

```
Fri Mar 27 09:39:25 2020 centos7: [FSM_LINUX_FILE_CREATE]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=CREATE,[targetObjType]=File,[tar-
getObjName]="/mlm/a.log",[hashCode]="d41d8cd98f00b204e9800998ecf8427e",[hashAl-
go]="MD5",[user]=root
```

Use Case 2: File Deleted

Event Type

`FSM_LINUX_FILE_DELETE`

Important Event Attributes

- `targetOsObjType`: The type of object that was created: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.

Reports

Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity

Rules

Agent FIM - Linux File or Directory Deleted

Sample Log

```
Fri Mar 27 09:43:11 2020 centos7: [FSM_LINUX_FILE_DELETE]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=DELETE,[targetObjType]=File,[tar-
getObjName]="/mlm/k.log",[user]=root
```

Use Case 3: File Attributes Changed

Event Type

FSM_LINUX_FILE_ATTRIB_CHANGE

Important Event Attributes

- `targetOsObjType`: The type of object: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.
- `fileOwner`: The name of the owner of the file or directory.
- `userGrp`: The name of the user group for the file or directory.
- `userPerm`: The permission granted to the owner.
- `groupPerm`: The permission granted to the user group.
- `otherPerm`: Other permissions.

Reports

Agent FIM: Linux File/Directory Ownership or Permission Changes

Rules

- Agent FIM - Linux Directory Ownership or Permission changed
- Agent FIM - Linux File Ownership or Permission Changed

Sample Log

```
Fri Mar 27 09:45:27 2020 centos7: [FSM_LINUX_FILE_ATTRIB_CHANGE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=ATTRIBUTE_CHANGE,[targetObjType]=File,
[targetObjName]="/mlm/mlm.txt",[fileOwner]="root",[groupName]="mlm",[user-
Perm]="READ,WRITE,EXEC",[groupPerm]="READ,EXEC",[otherPerm]="READ,EXEC",[user]=root
```

Use Case 4: File Modified

Event Type

FSM_LINUX_FILE_MODIFY

Important Event Attributes

- `targetOsObjName`: The name of the file.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file.
- `hashAlgo`: The algorithm used to create the file.

Reports

`Agent FIM: Linux File Content Modified`

Rules

`Agent FIM - Linux File Content Modified`

Sample Log

```
Fri Mar 27 09:47:06 2020 centos7: [FSM_LINUX_FILE_MODIFY]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MODIFY,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[hashCode]=5d71f074cf9a75e0324f210160d4b9cb,[hashAlgo]=md5,
[user]=root
```

Use Case 5: File Modified and Upload is Selected

Event Type

`PH_DEV_MON_FILE_CONTENT_CHANGE`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user's domain for a Domain computer.
- `fileName`: The name of the file that was modified.
- `procName`: The Windows process that was used to modify the file.
- `hashCode, hashAlgo`: The file hash after modification and the algorithm used to calculate the hash.
- `oldSVNVersion`: The SVN revision number of the file before change.
- `newSVNVersion`: The SVN revision number of the file after change.
- `addedItem`: The lines that were added to the file.
- `deletedItem`: The lines that were removed from the file.

Reports

`Agent FIM: Linux File Content Modified in SVN`

Rules

`Audited file or directory content modified in SVN`

Sample Log

```
<14>Mar 27 09:51:30 sp3 phPerfMonitor[6340]: [PH_DEV_MON_FILE_CONTENT_CHANGE]:
[eventSeverity]=PHL_INFO,[procName]=phPerfMonitor,[fileName]=phSvnUpdate.cpp,[lineNum-
ber]=306,[phCustId]=2000,[hostName]=centos7,[hostIpAddr]=10.30.3.39,[fileName]-
]=/mlm/mlm.txt,[hashCode]=ac399331afa9d1f13618c9eff36ed51c,[oldSVNVersion]=53,
[newSVNVersion]=54,[deletedItem]=(none),[addedItem]=retest;,[user]=root,[hashAl-
go]=MD5,[phLogDetail]=
```

Use Case 6: File Baseline Changed

Event Type

`FSM_LINUX_FILE_CHANGE_BASELINE`

Important Event Attributes

- `targetOsObjName`: The name of the baseline file.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file after modification.
- `hashAlgo`: The algorithm used to create the file hash.
- `targetHashCode`: The hash code of the baseline file.

Reports

`Agent FIM: Linux File Change from Baseline`

Rules

`Agent FIM - Linux File Changed From Baseline`

Sample Log

```
Fri Mar 27 09:51:23 2020 centos7: [FSM_LINUX_FILE_CHANGE_BASELINE]: [fileName]-
]=/mlm/mlm.txt,[targetHashCode]="aa63e826654915e0e2e1da385e6d14f8",[hashCode]-
]="ac399331afa9d1f13618c9eff36ed51c",[hashAlgo]="MD5",[user]=root
```

Use Case 7: File Renamed

Event Types

- `FSM_LINUX_FILE_MOVED_TO`
- `FSM_LINUX_FILE_MOVED_FROM`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who renamed the file.

Reports

`Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity`

Rules

None

Sample Logs

```
Fri Mar 27 09:57:42 2020 centos7: [FSM_LINUX_FILE_MOVED_FROM]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MOVED_FROM,[targetObjType]=File,[tar-
getObjName]="/mlm/bb.log",[user]=root
```

```
Fri Mar 27 09:57:42 2020 centos7: [FSM_LINUX_FILE_MOVED_TO]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MOVED_TO,[targetObjType]=File,[tar-
getObjName]="/mlm/cc.log",[user]=root
```

Use Case 8: File Accessed

Event Type

`FSM_LINUX_FILE_ACCESS`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who accessed the file.

Reports

None

Rules

None

Sample Log

```
Fri Mar 27 10:05:28 2020 centos7: [FSM_LINUX_FILE_ACCESS]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=ACCESS,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[user]=root
```

Use Case 9: File Opened

Event Type

`FSM_LINUX_FILE_OPEN`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who opened the file.

Reports

None

Rules

None

Sample Log

```
Fri Mar 27 09:57:40 2020 centos7: [FSM_LINUX_FILE_OPEN]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=OPEN,[targetObjType]=Directory,[tar-
getObjName]="/mlm",[user]=root
```

Use Case 10: File Closed

Event Types

- `FSM_LINUX_FILE_CLOSE_WRITE`
- `FSM_LINUX_FILE_CLOSE_NOWRITE`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who closed the file.

Reports

None

Rules

None

Sample Logs

```
Fri Mar 27 09:57:36 2020 centos7: [FSM_LINUX_FILE_CLOSE_WRITE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=CLOSE_WRITE,[targetObjType]=File,[tar-
getObjName]="/mlm/bb.log",[user]=root
```

```
Fri Mar 27 10:05:28 2020 centos7: [FSM_LINUX_FILE_CLOSE_NOWRITE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=CLOSE_NOWRITE,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[user]=root
```

Device support

The following sections provide procedures to configure device support:

Working with Devices or Applications

You can create a device/application if it is not available in the list for creating a parser or monitoring under **ADMIN** > **Device Support** > **Device/App**.

This section provides the procedure to configure devices or applications.

- Adding a device/application
- Modifying a device/application

Adding a device or application

Complete these steps to add a new device or application:

1. Go to **ADMIN** > **Device Support** > **Device/App** tab.
2. Click **New**.
3. In the **Device/Application Type Definition** dialog box, enter the information below.

Settings	Guidelines
Category	[Required] Select the **Device** or **Application** from the drop-down list.
Vendor	[Required] Vendor of the device or application.
Model	[Required] Device or application model.
Version	[Required] Version number of the device or application.
Device/App Group	[Required] Select the group where you want to add this new device/application
Biz Service Group	Select the Biz Service group.
Access Protocol	Select the Access Protocol from the drop-down.
App Package Group	This setting is applicable only for 'Application' category. Enter the app package group here.
Description	Description about the device or application.

4. Click **Save**.
   The new device(s)/application(s) appears in the list.
5. Select the device(s)/application(s) from the list and click **Apply**.

You can clone an existing device/application by clicking **Clone** and modify as necessary.

Modifying a device/application

Complete these steps to modify a device or application:

1. Select one or more device(s)/application(s) to edit from the list.
2. Click the required option:
   - **Edit** to modify any device/application setting.
   - **Delete** to remove any device /application.
3. Click **Save**.

Working with Event Attributes

Event attributes are used to capture parsed information from events. Create a new attribute if the one you want to use for your custom parser or monitor is not listed in **ADMIN** > **Device Support** > **Event Attribute**.

This section provides the procedure to create event attributes.

- Adding an event attribute
- Modifying an event attribute

Adding an event attribute

Complete these steps to add a new event attribute:

1. Go to **ADMIN** > **Device Support** > **Event Attribute** tab.
2. Click **New**.
3. In the **Add Event Attribute Type Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Event attribute name
Display Name	[Required] Display name of the event attribute
Value Type	[Required] Select the value type from the drop-down to associate with the event attribute type.
Display Format	Units in which the event attribute has to be displayed
Description	Description of the event attribute

4. Click **Save**.
   The new event attribute appears in the list.
5. Select the event attribute(s) from the list and click **Apply**.

You can clone an existing event attribute type to use as the basis for a new one. Select the event attribute type you want to use, click **Clone** and modify as necessary.

Modifying an event attribute

Complete these steps to modify an event attribute setting:

1. Select one or more event attribute(s) to edit from the list.
2. Click the required option:
   - **Edit** to modify the settings of an event attribute(s).
   - **Delete** to remove an event attribute(s).
3. Click **Save**.

Working with Event Types

After parsing an event or log, FortiSIEM assigns a unique event type to that event/log. When you create a new custom parser for device logs, you have to add a new event type to FortiSIEM so the log events can be identified.

This section provides the procedure to create event types.

- Adding an event type
- Modifying an event type

Adding an event type

Complete these steps to add an event:

1. Go to **ADMIN** > **Device Support**> **Event** tab.
2. Click **New**.
3. In the **Event Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] If the event will be used for Custom Monitoring, the Event Type name must begin with `PH_DEV_MON_CUST_`. See here for more details on Custom Monitoring.
Device Type	[Required] Select a device from the drop-down list.
Event Type Group	[Required] Select the type of group for the event.
Severity	[Required] Severity (0 - lowest) to 10 (highest).
Description	Description of the event type.

4. Click **Save**.
   The new event appears in the table.
5. Select the event(s) from the list and click **Apply**.

You can also use the **Clone** option to duplicate and modify an existing event type.

Modifying an event type

Complete these steps to modify an event type:

1. Select one or more event attribute(s) to edit from the list.
2. Click the required option from the following table.
   - **Edit** - To modify the settings of a selected event(s).
   - **Delete** - To delete an event type.
3. Click **Save**.

Working with Parsers

Creating a custom parser for device logs involves writing an XML specification for the parser and using a test event to make sure the logs are parsed correctly.

Prerequisites

You should have:

- examples of the logs that you want to parse.
- created any new device/application types, event attribute types, or event types that you want to use in your XML specification.

- already written the XML specification for your parser.
- prepared a test event that you can use to validate the parser.

Parsers are applied in the order they are listed in **ADMIN** > **Device Support** > **Parser**, so it is important to add your custom parser to the list in relation to any other parsers that may be applied to your device logs. If you click **Fix Order**, this will arrange the parsers with system-defined parsers at the top of the list in their original order, and user-defined parsers at the bottom. Be sure to click **Apply** to ensure the change in order is picked up by the back-end module.

The following sections provide information about working with parsers:

- Event Parser XML Specification
- Creating a Custom Parser
- Deleting or Disabling a Parser
- Ingesting JSON Formatted Events Received via HTTP(S) POST
- Parser Examples

Event Parser Specification

FortiSIEM uses an XML-based parser framework to parse events. These topics describe the parser syntax and include examples of XML parser specifications.

- Custom Parser XML Specification Template
- Parser Name Specification
- Device or Application Type Specification
- Format Recognizer Specification
- Pattern Definition Specification
- Parsing Instructions Specification

Custom Parser XML Specification Template

The basic template for a custom parser XML specification includes five sections. Click the name of any section for more information.

Section	Description
Name	Name of the parser file.
Device Type	The type of device or application associated with the parser.
Format Recognizer Specification	Patterns that determine whether an event will be parsed by this parser.
Pattern Definition Specification	Defines the parsing patterns that are iterated over by the parsing instructions.
Parsing Instructions Specification	Instructions on how to parse events that match the format recognizer patterns.

Custom Parser XML Specification Template

```
<eventParser name="xxx">
   <deviceType> </deviceType>
   <eventFormatRecognizer> </eventFormatRecognizer>
   <patternDefinitions> </patternDefinitions>
   <parsingInstructions> </parsingInstructions>
</eventParser>
```

Parser Name Specification

This section specifies the name of the parser, which is used only for readability and identifying the device type associated with the parser.

```
<eventParser name="CiscoIOSParser">
</eventParser>
```

Device or Application Type Specification

This section specifies the device or the application to which this parser applies. The device and application definitions enable FortiSIEM to detect the device and application type for a host from the received events. This is called **log-based discovery** in FortiSIEM. Once a received event is successfully parsed by this file, a CMDB entry is created with the device and application set from this file. FortiSIEM discovery may further refine the device.

There are two separate subsections for device and application. In each section, vendor, model and version can be specified, but version is not typically needed.

Set Version to Any

In the examples in this topic, `<Version>` is set to `ANY` because events are generally not tied to a particular version of a device or software. You could of course set this to a specific version number if you only wanted this parser to apply to a specific version of an application or device.

Vendor and Model Must Match the FortiSIEM Version

`<Vendor>` and `<Model>` entries must match the spelling and capitalization in the CMDB.

Examples of Specifications for Types of Device and Applications

Hardware Appliances

In this case, the type of event being parsed specifies the device type, for example Cisco IOS, Cisco ASA, etc.

```
<deviceType>
    <Vendor>Cisco</Vendor>
    <Model>IOS</Model>
    <Version>ANY</Version>
</deviceType>
```

Software Operating Systems that Specify the Device Type

In this case, the type of events being parsed specifies the device type, for example Microsoft Windows etc. In this case the device type section looks like:

```
<deviceType>
    <Vendor>Microsoft</Vendor>
    <Model>Windows</Model>
```

```
    <Version>ANY</Version>
</deviceType>
```

Applications that Specify Both Device Type and Application

In this case, the events being parsed specify the device and application types because Microsoft SQL Server can only run on Microsoft Windows OS.

```
<deviceType>
    <Vendor>Microsoft</Vendor>
    <Model>Windows</Model>
    <Version>ANY</Version>
</deviceType>
<appType>
    <Vendor>Microsoft</Vendor>
    <Model>SQL Server</Model>
    <Version>ANY</Version>
    <Name> Microsoft SQL Server</Name>
</appType>
```

Applications that Specify the Application Type but Not the Device Type

Consider the example of an Oracle database server, which can run on both Windows and Linux operating systems. In this case, the device type is set to **Generic** but the application is specific. FortiSIEM depends on discovery to identify the device type.

```
<deviceType>
    <Vendor>Generic</Vendor>
    <Model>Generic</Model>
    <Version>ANY</Version>
</deviceType>
<appType>
    <Vendor>Oracle</Vendor>
    <Model>Database Server</Model>
    <Version>ANY</Version>
    <Name>Oracle Database Server</Name>
</appType>
```

Format Recognizer Specification

In many cases, events associated with a device or application will contain a unique pattern. You can enter a regular expression in the Format Recognizer section of the parser XML file to search for this pattern, which if found, will then parse the events according to the parser instructions. After the first match, the event source IP to parser file map is cached, and only that parser file is used for all events from that source IP. A notable exception is when events from disparate sources are received via a syslog server, but that case is handled differently.

While not a required part of the parser specification, a format recognizer can speed up event parsing, especially when one parsing pattern file among many pattern files must be chosen. Only one pattern check can determine whether the parsing file must be used or not. The other less efficient option would be to examine patterns in every file. At the same time, the format recognizer must be carefully chosen so that it is not so broad to misclassify events into wrong files, and at the same time, not so narrow that it fails at classifying the right file.

Order in Which Parsers are Used

FortiSIEM parser processes the files in the specific order listed in the file `parserOrder.csv`.

Format Recognizer Syntax

The specification for the format recognizer section is:

```
<eventFormatRecognizer><![CDATA[regexpattern]]></eventFormatRecognizer>
```

In the `regexpattern` block, a pattern can be directly specified using regex or a previously defined pattern (in the pattern definition section in this file or in the `GeneralPatternDefinitions.xml` file) can be referenced.

Example Format Recognizers

Cisco IOS

All Cisco IOS events have a `%module name` pattern.

```
<patternDefinitions>
    <pattern name="patCiscoIOSMod" list="begin"><![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
    <pattern name="patCiscoIOSMod" list="continue"><![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
    <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
</patternDefinitions>
<eventFormatRecognizer><![CDATA[:%<:patCiscoIOSMod>-<:gPatInt>-<:patStrEndCo-
lon>:]]></eventFormatRecogniz
er>
```

Cisco ASA

All Cisco ASA events have the pattern `ASA-severity-id` pattern, for example `ASA-5-12345`.

```
<eventFormatRecognizer><![CDATA[ASA-\d-\d+]]></eventFormatRecognizer>
```

Palo Alto Networks Log Parser

In this case, there is no unique keyword, so the entire message structure from the beginning to a specific point in the log must be considered.

Event

```
<14>May 6 15:51:04 1,2010/05/06 15:51:04,0006C101167,TRAFFIC,start,1,2010/05/06
15:50:58,192.168.28.21,172.16.255.78,::172.16.255.78,172.16.255.78,rule3,,,icmp,vs
ys1,untrust,untrust,ethernet1/1,ethernet1/1,syslog-172.16.20.152,2010/05/06
15:51:04,600,2,0,0,0,0,0x40,icmp,allow,196,196,196,2,2010/05/06 15:50:58,0,any,0
```

```
<eventFormatRecognizer><![CDATA[<:gPatTime>,\w+,
(?:TRAFFIC|THREAT|CONFIG|SYSTEM)]]></eventFormatRecognizer>
```

Pattern Definition Specification

In this section of the parser XML specification, you set the regular expression patterns that that FortiSIEM will iterate through to parse the device logs.

Reusing Pattern Definitions in Multiple Parser Specifications

If you want to use a pattern definition in multiple parser specifications, you must define it in the `GeneralPatternDefinitions.xml` file. The patterns in the file must have a `g` prefix, and can be referenced as shown in this example:

```
<generalPatternDefinitions>
<pattern name="gPatSyslogPRI"><![CDATA[<\d+>]]></pattern>
    <pattern name="gPatMesgBody"><![CDATA[.*]]></pattern>
    <pattern name="gPatMonNum"><![CDATA[\d{1,2}]]></pattern>
    <pattern name="gPatDay"><![CDATA[\d{1,2}]]></pattern>
    <pattern name="gPatTime"><![CDATA[\d{1,2}:\d{1,2}:\d{1,2}]]></pattern>
    <pattern name="gPatYear"><![CDATA[\d{2,4}]]></pattern>
</generalPatternDefinitions>
```

Each pattern has a name and the regular expression pattern within the CDATA section. This the basic syntax:

```
<pattern name="patternName"><![CDATA[pattern]]></pattern>
```

This is an example of a pattern definition:

```
<patternDefinitions>
    <pattern name="patIpV4Dot"><![CDATA[\d{1,3}.\d{1,3}.\d{1,3}.\d{1,3}]]></pattern>
    <pattern name="patComm"><![CDATA[[^,]+]]></pattern>
    <pattern name="patUpDown"><![CDATA[up|down]]></pattern>
    <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
</patternDefinitions>
```

You can also write a long pattern definition in multiple lines and indicate their order as shown in this example. The value of the `list` attribute should be `begin` in first line and `end` in last line. If there are more than two lines, the attribute should be set to `continue` for the other lines.

```
<pattern name="patSolarisMod" list="begin"><![CDATA[sshd|login|]]></pattern>
<pattern name="patSolarisMod" list="continue"><![CDATA[inetd|lpstat|]]></pattern>
<pattern name="patSolarisMod" list="end"><![CDATA[su|sudo]]></pattern>
```

Parsing Instructions Specification

This section is the heart of the parser, which attempts to recognize patterns in a log message and populate parsed event attributes.

In most cases, parsing involves applying a regular expression to the log, picking up values, and setting them to event attributes. Sometimes the processing is more involved, for example when attributes must be stored as local variables and compared before populating the event attributes. There are three key components that are used in parsing instructions: Event attributes and variables, inbuilt functions that perform operations on event attributes and variables, and `switch` and `choose` branching constructs for logical operations. Values can be collected from both unstructured and structured strings in log messages.

- Event Attributes and Variables
- Inbuilt Functions
- Branching Constructs
- Collecting Values from Unstructured Strings
- Collecting Fields from Structured Strings

Event Attributes and Variables

The dictionary of event attributes are defined in FortiSIEM database and any member not belonging to that list is considered a local variable. For readability, local variables should begin with an underscore (_), although this is not enforced.

Setting an Event Attribute to a Constant

```
<setEventAttribute attr="eventSeverity">1</setEventAttribute>
```

Setting an Event Attribute from Another Variable

The `$` symbol is used to specify the content of a variable. In the example below, attribute `hostMACAddr` gets the value stored in the local variable `_mac`.

```
<setEventAttribute attr="hostMACAddr">$_mac</setEventAttribute>
```

Inbuilt Functions

Combining Two or More Strings to Produce a Final String

Use the `combineMsgId` function to do this. Here `_evIdPrefix` is the prefix, `_evIdSuffix` is the suffix, and the output will be `string1-_evIdPrefix-_evIdSuffix`.

```
<setEventAttribute attr="eventType">combineMsgId("string1",
$_evIdPrefix, "-", $_evIdSuffix)</setEventAttribute>
```

Normalize MAC Address

Use the `normalizeMAC` function to do this. The output will be six groups of two nibbles separated by a colon, for example `AA:BB:CC:DD:EE:FF`.

```
<setEventAttribute
attr="hostMACAddr">normalizeMAC($_mac)</setEventAttribute>
```

Compare Interface Security Level

Use the `compIntfSecVal` function to do this. This primarily applies to Cisco ASA and PIX firewalls. The results returned are:

- `LESS` if `srcIntf` has strictly lower security level than `destIntf`
- `GREATER` if `srcIntf` has strictly higher security level than `destIntf`
- `EQUAL` if `srcIntf` and destIntf have identical security levels

```
<setEventAttribute attr="_result">compIntfSecVal($srcIntf, $destInt-
f)</setEventAttribute>
```

Convert Hex Number to Decimal Number

Use the `convertHexStrToInt` function to do this.

```
<setEventAttribute attr="ipConnId">convertHexStrToInt($_ipConnId)</setEventAttribute>
```

Convert TCP/UDP Protocol String to Port Number

Use the `convertStrToIntIpPort` function to do this.

```
<setEventAttribute attr="destIpPort">convertStrToIntIpPort($_dport)</-
setEventAttribute>
```

Convert Protocol String to Number

Use the `convertStrToIntIpProto` function to do this.

```
<setEventAttribute attr="ipProto">convertStrToIntIpProto($_proStr)</setEventAttribute>
```

Convert Decimal IP to String

Use the `converIpDecimalToStr` function to do this.

```
<setEventAttribute attr="srcIpAddr">convertIpDecimalToStr($_srcIpAd-
dr)</setEventAttribute>
```

Convert Host Name to IP

Use the `convertHostNameToIp` function to do this.

```
<setEventAttribute attr="srcIpAddr">convertHostNameToIp($_saddr)</setEventAttribute>
```

Add Two Numbers

Use the `add` function to do this.

```
<setEventAttribute attr="totBytes">add($sentBytes, $recvBytes)</setEventAttribute>
```

Divide Two Numbers

Use the `divide` function to do this.

```
<setEventAttribute attr="memUtil">divide($_usedMem, $_totalMem)</setEventAttribute>
```

Scale Function

Use the `scale` function to do this.

```
<setEventAttribute attr="durationMSec">scale($_durationSec, 1000)</setEventAttribute>
```

Extract Host from Fully Qualified Domain Name

Use the **extractHostFromFQDN** function to do this. If `_fqdn` contains a period (`.`), get the string before the first period. If it does not contain a period, get the entire string.

```
<setEventAttribute attr="hostName">extractHostFromFQDN($_fqdn)</setEventAttribute>
```

Replace a String Using a Regular Expression

Use the `replaceStringByRegex` function to do this.

```
<setEventAttribute attr="eventType">replaceStringByRegex($_eventType, "\s+", "_")</-
setEventAttribute>e.g. _eventType: "Event Type"; eventType: "Event_Type"
```

Replace String in String

Use the `replaceStrInStr` function to do this.

```
<setEventAttribute attr="computer">replaceStrInStr($_computer, "\\", "")</-
setEventAttribute>
```

Resolve DNS Name

Use the `resolveDNSName` function to do this. This function converts the DNS name to an IP address.

```
<setEventAttribute attr="destIpAddr">resolveDNSName($destName)</setEventAttribute>
```

Convert to UNIX Time

Use the `toDateTime` function to do this.

```
<setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_year, $_time)</-
setEventAttribute><setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_
time)</setEventAttribute>
```

Trim Attribute

Use the `trimAttribute` function to do this. In this example, it is used to trim the leading and trailing dots in `destName`.

```
<setEventAttribute attr="destName">trimAttribute($destName, ".")</setEventAttribute>
```

Branching Constructs

- **Choose**
  The format is:

  ```
  <choose>
      <when test='$AttributeOrVariable1 operator Value1'>
           ...
      </when>
      <when test='$AttributeOrVariable2 operator Value2'>
           ...
      </when>
      <otherwise>
           ...
      </otherwise>
  </choose>
  ```

- **Switch**
  The format is:

  ```
  <switch>
         <case>
          ...
         </case>
         <case>
          ...
  ```

```
            </case>
        </switch>
```

Collecting Values from Unstructured Strings

From a string input source, a regex match is applied and variables are set. The variables can be event attributes or local variables. The input will be a local variable or the default raw message variable. The syntax is:

```
<collectAndSetAttrByRegex src="$inputString ">
     <regex><![CDATA[regexpattern]]></regex>
</collectAndSetAttrByRegex>
```

The `regexpattern` is specified by a list of variables and sub-patterns embedded within a larger pattern. Each variable and sub-pattern pair are enclosed within angle brackets (<>).

Consider an example in which the local variable `_body` is set to `list 130 permitted eigrp 172.16.34.4 (Serial1 ) > 172.16.34.3, 1 packet`. From this string we must set the values to local variables and event attributes.

Value	Set To	Type
130	_aclName	Local Variable
permitted	_action	Local Variable
eigrp	_proto	Local Variable
172.16.34.4	srcIpAddr	Event Attribute
Serial1	srcIntfName	Event Attribute
172.16.34.3	destIpAddr	Event Attribute
1	totPkts	Event Attribute

This is achieved by using this XML. Note that you can use both the `collectAndSetAttrByRegex` and `collectFieldsByRegex` functions to collect values from fields.

```
<collectAndSetAttrByRegex src="$_body">
         <regex><![CDATA[list <_aclName:gPatStr> <_action:gPatWord>
<_proto:gPatWord> <srcIpAddr:gPatIpV4Dot>(<:srcIntfName:gPatWord>) ->
<destIpAddr:gPatIpV4Dot>, <totPkts:gPatInt> <:gPatMesgBody>]]></regex>
</collectAndSetAttrByRegex>
```

Collecting Fields from Structured Strings

There are usually two types of structured strings in device logs:

- Key=value structured
- Value list structured

In each case, two simpler specialized parsing constructs are provided.

Key=Value Structured Data

Certain logs, such as SNMP traps, are structured as `Key1 = value1 <separator> Key2 = value2,....` These can be parsed using the `collectAndSetAttrByKeyValuePair` XML attribute tag with this syntax.

```
<collectAndSetAttrByKeyValuePair sep='separatorString'src="$inputString">
   <attrKeyMap attr="variableOrEventAttribute1" key="key1"/>
   <attrKeyMap attr="variableOrEventAttribute2" key="key2"/>
</collectAndSetAttrByKeyValuePair>
```

When a `key1` match is found, the entire string following `key1` up to the `separatorString` is parsed out and stored in the attribute `variableOrEventAttribute1`.

For example, consider this log fragment:

```
_body =
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.60 = Hex-STRING: 07 D8 06 0B
13 15 00 00 2D 07 00    SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.11.0
= Hex-STRING: 00 16 B6 DB 12 22
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.12.0 = Hex-STRING: 00 21 55
4D 66 B0  SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.13.0 = INTEGER: 36
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.1.0 = Hex-STRING: 00 1A 1E C0
60 7A  SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.56.0 = INTEGER: 2
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.17.0 = STRING:
"00:1a:1e:c0:60:7a"
```

The corresponding parser fragment is:

```
<collectAndSetAttrByKeyValuePair sep='\t\\| SNMP' src="$_body">
     <attrKeyMap attr="srcMACAddr"
key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.11.0 = Hex-STRING: "/>
     <attrKeyMap attr="_destMACAddr"
key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.12.0 = Hex-STRING: "/>
    <attrKeyMap attr="wlanSSID"
key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.6.0 = STRING: "/>
     <attrKeyMap attr="wlanRadioId"
key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.56.0 = INTEGER: "/>
     <attrKeyMap attr="apMac"
key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.17.0 = STRING: "/>
</collectAndSetAttrByKeyValuePair>
```

After parsing, the attribute values are set:

Value	Attribute
00 16 B6 DB 12 22	srcMACAddr
00 21 55 4D 66 B0	destMacAddr
2	wlanRadioId
00:1a:1e:c0:60:7a	apMac

Value List Structured Data

Certain application logs, such as those from Microsoft IIS, are structured as a list of values with a separator. These can be parsed using the `collectAndSetAttrByPos` XML attribute tag following this syntax.

```
<collectAndSetAttrByPos sep='separatorString' src="$inputString">
         <attrPosMap attr="variableOrEventAttribute1" pos='offset1'/>
         <attrPosMap attr="variableOrEventAttribute2" pos='offset2'/>
</collectAndSetAttrByPos>
```

When the position `offset1` is encountered, the subsequent values up to the `separatorString` is stored in `variableOrEventAttribute1`.

For example, consider this log fragment:

```
_body =
W3SVC1 ADS-PRI 192.168.0.10 GET /Document/ACE/index.htm - 80 -
192.168.20.55 HTTP/1.1
Mozilla/5.0+(Windows;+U;+Windows+NT+5.1;+en-US;+rv:1.8.1.11)+Gecko/20071
127+Firefox/2.0.0.11 [http://wwwin/Document/] wwwin 200 0 0 5750 445 15
```

The parser fragment is:

```
<collectAndSetAttrByPos src="$_body" sep='  '>
       <attrPosMap attr="srvInstName" pos='1'/>
       <attrPosMap attr="destName" pos='2'/>
       <attrPosMap attr="relayDevIpAddr" pos='2'>
       <attrPosMap attr="destIpAddr" pos='3'/>
       <attrPosMap attr="httpMethod" pos='4'/>
       <attrPosMap attr="uriStem" pos='5'/>
       <attrPosMap attr="uriQuery" pos='6'/>
       <attrPosMap attr="destIpPort" pos='7'/>
       <attrPosMap attr="user" pos='8'/>
       <attrPosMap attr="srcIpAddr" pos='9'/>
       <attrPosMap attr="httpVersion" pos='10'/>
       <attrPosMap attr="httpUserAgent" pos='11'/>
       <attrPosMap attr="httpReferrer" pos='13'/>
       <attrPosMap attr="httpStatusCode" pos='15'/>
       <attrPosMap attr="httpSubStatusCode" pos='16'/>
       <attrPosMap attr="httpWin32Status" pos='17'/>
       <attrPosMap attr="recvBytes" pos='18'/>
       <attrPosMap attr="sentBytes" pos='19'/>
       <attrPosMap attr="durationMSec" pos='20'/>
 </collectAndSetAttrByPos>
```

For structured strings, techniques in this section are more efficient than in the previous section because the expression is simpler and ONE tag can be used to parse regardless of the order in which the keys or values appear in the string.

Creating a Custom Parser

You should have:

- examples of the logs that you want to parse.
- created any new device/application types, event attribute types, or event types that you want to use in your XML specification.

- already written the XML specification for your parser.
- prepared a test event that you can use to validate the parser.

Parsers are applied in the order they are listed in **ADMIN > Device Support > Parser**, so it is important to add your custom parser to the list in relation to any other parsers that may be applied to your device logs. If you click **Fix Order**, this will arrange the parsers with system-defined parsers at the top of the list in their original order, and user-defined parsers at the bottom. Be sure to click **Apply** to ensure the change in order is picked up by the back-end module.

Note: Custom parsers can be created only from the Super/Global account in Service Provider FortiSIEM deployments.

1. Go to **ADMIN** > **Device Support** > **Parser**.
2. Select a parser that is above the location in the list where you want to add your parser, and click **New**.
3. Enter a **Name** for the parser.
4. Select a **Device Type** from the drop-down list to which the parser should apply.
   If the device type doesn't appear in the menu, you should create a new device type.
5. Enter a **Test** containing an example of an event that you want to use to validate the parser.
6. Enter the **Parser XML**.
7. Click **Validate**.
   This will validate the XML.
8. Click **Test**.
   This will send the test event to the parser to make sure it is parsed correctly, and will also test the parsers above and below yours in the list to make sure they continue to parse logs correctly.
9. If the XML for your parser validates and the test event is correctly parsed, select **Enable**.
   If you must continue working on your parser, you can **Save** it without selecting **Enable**.
10. Add a **Description** of the Parser.
11. Click **Save**.
12. Click **Apply** to have the back-end module pick up your parser and begin applying it to device logs.
    You should now validate that events are being parsed by creating some activity that will cause a log to be generated, and then run a query against the new device IP address and validate the parsed results.

Cloning New Parsers

You can clone an existing parser and then use it as the basis for creating a new one. Select the parser you want to clone, and then click **Clone**. Modify the parser as necessary, and then make sure you use the **Up** and **Down** buttons to place it in the list of parsers at the point at which is should be applied.

Ingesting JSON Formatted Events Received via HTTP(S) POST

FortiSIEM can receive, parse, and store JSON formatted events received via HTTP(S) POST. Follow these steps to implement this.

1. Configure the FortiSIEM node with the HTTPS credential for receiving the HTTP(S) POST event.
   a. Identity the FortiSIEM node receiving the events. Most likely, this will be the Collector.
   b. SSH to the Collector and run the command: `htpasswd -b /etc/httpd/accounts/passwds <user> <password>`
2. Modify the built-in JSON parser to parse event attributes and set the Event Type.
   a. Login to the Supervisor.
   b. Go to **ADMIN > Device Support > Parser**.

c. Clone `PHCustomJSONParser.xml` and make the changes so that additional event attributes are parsed.
d. Validate, Test, and Save the parser.
e. Click **Apply All** to deploy the parser changes.

3. Make sure the events are being pushed to the FSM node using the credentials in Step 1 via this REST API:
   `https://<FSMNodeName>/rawupload?vendor=<vendor>&model=<model>&reptIp=<reptIp>&reptName=<reptHost>`

   where `FSNNodeName` is the resolvable host name or FQDN in Step 1. The parameters Reporting Vendor (`vendor`), Reporting Model (`model`), Reporting Device (`reptHost`), and Reporting IP (`reptIP`) are needed to create a CMDB entry and populate events.

4. Query the events by using the Reporting Device Name or IP in Step 3 and Event Type in Step 2c.

Deleting or Disabling a Parser

- Deleting Parsers
- Disabling Parsers

Deleting Parsers

You can only delete user-defined parsers.

1. Go to **ADMIN** > **Device Support** > **Parser**.
2. Select the parser you want to delete.
3. Click **Delete**.
4. Click **Yes** to confirm.

Disabling Parsers

You can disable both system and user-defined parsers.

1. Go to **ADMIN** > **Device Support** > **Parser**.
2. Select the parser and deselect the tick mark below **Enabled** column.
3. Click **Yes** to confirm.

Parser Examples

The followng example is based on **Cisco IOS Syslog Parser**. The objective is to parse this syslog message:

```
<190>91809: Jan  9 02:38:47.872: %SEC-6-IPACCESSLOGP: list testlog permitted tcp
192.168.20.33(3438) -> 69.147.86.184(80), 1 packet
```

Complete these steps to create an appropriate parser.

- Add Device Type
- Create the Parser Specification and Add Local Patterns
- Define the Format Recognizer
- Parse the Syslog Header
- Parse the Syslog Body
- Final Parser
- Parsed Output

Add Device Type

Create a `CiscoIOSParser.xml` file with this content:

```
<eventParser name="CiscoIOSParser">
   <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
</eventParser>
```

Create the Parser Specification and Add Local Patterns

Create the parser XML file with this content, and add the pattern definition `patCiscoIOSMod` for detecting IOS modules such as SEC.

```
<eventParser name="CiscoIOSParser">
   <deviceType>
       <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
   <patternDefinitions>
      <pattern name="patCiscoIOSMod" list="begin">  <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
     <pattern name="patCiscoIOSMod" list="continue"><![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
     <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
     <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
     <pattern name="patComm"><![CDATA[[^,]+]]></pattern>
  </patternDefinitions>
</eventParser>
```

Define the Format Recognizer

Add this format recognizer for detecting `%SEC-6-IPACCESSLOGP`, which is a signature of Cisco IOS syslog messages.

```
<eventParser name="CiscoIOSParser">
   <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
   <patternDefinitions>
     <pattern name="patCiscoIOSMod" list="begin">  <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
     <pattern name="patCiscoIOSMod" list="continue"><![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
     <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
     <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
```

```
    <pattern name="patComm"><![CDATA[[^,]+]]></pattern>
  </patternDefinitions>
  <eventFormatRecognizer>
    <![CDATA[: %<:patCiscoIOSMod>-<:gPatInt>-<:patStrEndColon>:]]>
  </eventFormatRecognizer>
</eventParser>
```

Parse the Syslog Header

A syslog message consists of a syslog header and a body. For better organization, first parse the syslog header and event type. Subsequent code will include event type specific parsing, which is why event type is extracted in this step. In this example, the header is in boldface.

<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP: `list testlog permitted tcp 192.168.20.33(3438) -> 69.147.86.184(80), 1 packet`

The XML code for parsing the header does the following:

1. Matches the pattern `<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP:`
2. Sets the `eventType` attribute to `IOS-SEC- IPACCESSLOGP`.
3. Sets `deviceTime`.
4. Sets event severity (1-7 scale in Cisco IOS, 1=> most severe, to normalized 1-10 scale in FortiSIEM where 10=>most severe)
5. Saves the event `list testlog permitted tcp 192.168.20.33(3438) -> 69.147.86.184(80), 1 packet` in a temporary variable `_body`.

Note that the patterns `gPatSyslogPRI`, `gPatMon`, `gPatDay`, `gPatTime`, `gPatInt`, and `gPatmesgBody` are global patterns that are defined in the `GeneralPatternDefinitions.xml` file:

```
<generalPatternDefinitions>
 <pattern name="gPatSyslogPRI"><![CDATA[<\d+>]]></pattern>
 <pattern name="gPatMesgBody"><![CDATA[.*]]></pattern>
 <pattern name="gPatMon"> <![CDATA[Jan|Feb|Mar|Apr|May|Jun|Jul|Aug|Sep|Oct|Nov|Dec|\d
{1,2}]]></pattern>
 <pattern name="gPatDay"><![CDATA[\d{1,2}]]></pattern>
 <pattern name="gPatTime"><![CDATA[\d{1,2}:\d{1,2}:\d{1,2}]]></pattern>
 <pattern name="gPatInt"><![CDATA[\d+]]></pattern>
</generalPatternDefinitions>
```

This parser file XML fragment for parsing the example syslog message looks like this:

```
<parsingInstructions>
    <collectFieldsByRegex src="$_rawmsg"><regex><![CDATA[<:gPatSys-
logPRI>?<:gPatMon>\s+<:gPatDay>\s+<:gPatTime> %<evIdPrefix:patCiscoIOSMod>-<_sever-
ity:gPatInt>-<_evIdSuffix:patStrEnd
Colon>: <_body:gPatMesgBody>]]></regex>
    </collectFieldsByRegex>
    <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
    <choose>
        <when test='$_severity IN "6, 7"'>
            <setEventAttribute attr="eventSeverity">1</setEventAttribute>
        </when>
        <when test='$_severity = "1"'>
           <setEventAttribute attr="eventSeverity">10</setEventAttribute>
```

```
        </when>
        <when test='$_severity = "2"'>
           <setEventAttribute attr="eventSeverity">8</setEventAttribute>
        </when>
        <when test='$_severity IN "3, 4"'>
          <setEventAttribute attr="eventSeverity">5</setEventAttribute>
      </when>
      <when test='$_severity = "5"'>
          <setEventAttribute attr="eventSeverity">2</setEventAttribute>
      </when>
    </choose>
<parsingInstructions>
```

Parse the Syslog Body

The parsing is done on an `eventType` by `eventType` basis, because the formats are `eventType`-specific. Parsing the syslog body involves three steps:

1. Parsing the action string. Based on the action staring value (`permit` or `denied`), modify the `eventType` by appending the action string value at the end, and also modify the `eventSeverity` values.
2. Parsing the protocol, source, and destination IP, port, and totalPackets.
3. Converting the protocol string to a protocol integer.

```
<choose>
   <when test='$eventType IN "IOS-SEC-IPACCESSLOGP,IOS-SEC-IPACCESSLOGDP, IOS-SEC-
IPACCESSLOGRP"'>
       <collectAndSetAttrByRegex src="$_body">
       <regex><![CDATA[list <_aclName:gPatStr>\s+<_action:gPatWord>\s+<_pro-
to:gPatWord>\s+<srcIpAddr
:gPatIpV4Dot>\(<srcIpPort:gPatInt>\)<:gPatMesgBody>->\s+<destIpAddr:gPat
IpV4Dot>\(<destIpPort:gPatInt>\),\s+<totPkts:gPatInt> <:gPatMesgBody>]]>
                  </regex>
       </collectAndSetAttrByRegex>
       <choose>
          <when test='$_action = "permitted"'>
              <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-
", $_evIdSuffix, "-PERMITTED")</setEventAttribute>
         <setEventAttribute attr="eventSeverity">1</setEventAttribute>
          </when>
          <when test='$_action = "denied"'>
               <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix,
"-", $_evIdSuffix, "-DENIED")</setEventAttribute>
               <setEventAttribute attr="eventSeverity">3</setEventAttribute>
          </when>
       </choose>
       <setEventAttribute attr="ipProto">convertStrToIntIpProto($_pro-
to)</setEventAttribute>
   </when>
</choose>
```

Final Parser

```
<eventParser name="CiscoIOSParser">
    <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
    </deviceType>
    <patternDefinitions>
        <pattern name="patCiscoIOSMod" list="begin"> <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
        <pattern name="patCiscoIOSMod" list="continue"> <![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
        <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
        <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
        <pattern name="patComm"><![CDATA[[^,]+]]></pattern>

      </patternDefinitions>
    <parsingInstructions>
    <!—parse header -->
    <collectFieldsByRegex src="$_rawmsg"><regex><![CDATA[<:gPatSys-
logPRI>?<:gPatMon>\s+<:gPatDay>\s+<:gPatTime>
%<_evIdPrefix:patCiscoIOSMod>-<_severity:gPatInt>-<_evIdSuffix:patStrEnd
Colon>: <_body:gPatMesgBody>]]></regex>
    </collectFieldsByRegex>
    <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
    <choose>
        <when test='$_severity IN "6, 7"'>
            <setEventAttribute attr="eventSeverity">1</setEventAttribute>
        </when>
        <when test='$_severity = "1"'>
           <setEventAttribute attr="eventSeverity">10</setEventAttribute>
        </when>
        <when test='$_severity = "2"'>
           <setEventAttribute attr="eventSeverity">8</setEventAttribute>
        </when>
        <when test='$_severity IN "3, 4"'>
          <setEventAttribute attr="eventSeverity">5</setEventAttribute>
      </when>
      <when test='$_severity = "5"'>
          <setEventAttribute attr="eventSeverity">2</setEventAttribute>
      </when>
    </choose>
    <!—parse body -->
    <choose>
      <when test='$eventType IN "IOS-SEC-IPACCESSLOGP,IOS-SEC-IPACCESSLOGDP, IOS-SEC-
IPACCESSLOGRP"'>
          <collectAndSetAttrByRegex src="$_body">
       <regex><![CDATA[list
<_aclName:gPatStr>\s+<_action:gPatWord>\s+<_proto:gPatWord>\s+<srcIpAddr
:gPatIpV4Dot>\(<srcIpPort:gPatInt>\)<:gPatMesgBody>->\s+<destIpAddr:gPat
```

```
IpV4Dot>\(<destIpPort:gPatInt>\),\s+<totPkts:gPatInt> <:gPatMesgBody>]]>
                  </regex>
          </collectAndSetAttrByRegex>
          <choose>
              <when test='$_action = "permitted"'>
                 <setEventAttribute attr="eventType">combineMsgId("IOS-", $_evIdPre-
fix, "-", $_evIdSuffix,
"-PERMITTED")</setEventAttribute>
          <setEventAttribute attr="eventSeverity">1</setEventAttribute>
              </when>
              <when test='$_action = "denied"'>
                 <setEventAttributeattr="eventType">combineMsgId("IOS-", $_evIdPrefix,
"-", $_evIdSuffix,
"-DENIED")</setEventAttribute>
                 <setEventAttribute attr="eventSeverity">3</setEventAttribute>
              </when>
          </choose>
          <setEventAttribute attr="ipProto">convertStrToIntIpProto($_pro-
to)</setEventAttribute>

      </when>
    </choose>
<parsingInstructions>
```

Parsed Output

Input syslog:

```
<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP: list testlog permitted tcp
192.168.20.33(3438) -> 69.147.86.184(80), 1 packet
```

Parsed fields:

1. **phRecvTime**: the time at which the event was received by FortiSIEM
2. **phDeviceTime**: Jan 9 02:38:47 2010
3. **eventType**: SEC-IPACCESSLOGP-PERMITTED
4. **eventSeverity**: 3
5. **eventSeverityCategory**: LOW
6. **aclName**: testlog
7. **ipProto**: 6
8. **srcIpAddr**: 192.168.20.33
9. **destIpAddr**: 69.147.86.184
10. **srcIpPort**: 3438
11. **destIpPort**: 80
12. **totPkts**: 1

Working with Custom Performance Monitors

Creating a custom performance monitor involves creating a performance object that specifies the monitoring access protocol to use, maps event attributes available for that protocol to FortiSIEM event attribute types, and

then associates those attributes to an event type. You can use system or user-defined device types, event attribute types, and event types when creating the performance object. The following sections provide information about working with Performance Monitors:

- Creating a Custom Performance Monitor
- Monitoring Protocol Configuration Settings
- Mapping Monitoring Protocol Objects to Event Attributes
- Managing Monitoring of System and Application Metrics for Devices
- Examples of Custom Performance Monitors

Creating a Custom Performance Monitor

You can create Custom Performance Monitors by defining the performance object that you want to monitor, including the relationship between the performance object and FortiSIEM events and event attributes, and then associating the performance object to a device type.

In Service Provider FortiSIEM deployments, custom performance performance have to be created by the Super/Global account, and apply to all organizations. In enterprise deployments, custom performance monitors can be created by any user who has access to the **ADMIN** tab.

Prerequisites

- You should review the configuration settings for the monitoring protocols that you will use in your monitor, and be ready to provide the appropriate OIDs, classes, or database table attributes for the access protocol.
- You should have created any new device/application types, event attributes, or event types that you want to use in your Performance Monitor.
- You should have the IP address and access credentials for a device that you can use to test the monitor.

Creating the Performance Object and Applying it to a Device

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Click **New**.
3. Enter a **Name** for the Performance Monitor.
4. For **Type**, select either **System** or **Application**.
5. For **Method**, select the monitoring protocol for the performance monitor.
   See the topics under Monitoring Protocol Configuration Settings for more information about the configuration settings for each type of monitoring protocol.
6. Click **New** next to **List of Attributes**, and create the mapping between the performance object and FortiSIEM event attributes.
   Note that the Method you select will determine the name of this mapping and the configuration options that are available. See Mapping Monitoring Protocol Objects to Event Attributes for more information.
7. Select the **Event Type** that will be monitored. Event Types used for Custom Monitoring must begin with `PH_DEV_MON_CUST_`.
8. Enter the **Polling Frequency** for the monitor.
9. Enter a **Description**.
10. Click **Save**.
11. Under **Enter Device Type to Performance Object Association** section, click **New**.
12. Enter a **Name** for the mapping.
13. Select the **Device Type** from the drop-down for which you want to apply the monitor.
    Whenever a device belonging to the selected device type is discovered, FortiSIEM will attempt to apply the performance monitor to it.
14. Click **Perf Objects** drop-down to select or search the Performance Objects.
15. Click **Save**.

Testing the Performance Monitor

1. Go to **ADMIN** > **Device Support** > **Monitoring.**
2. Select the Performance Monitor.
3. Click **Test**.
4. For **IP**, enter the IP address of the device that you want to use to test the monitor.
   Testing for Multi-Tenant Deployments: If you have a Service Provider FortiSIEM, select the Supervisor or Collector where the device is monitored.
5. Click **Test**.If the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

After you have successfully tested and applied the performance monitor, you should initiate discovery of the device that it will monitor, and then make sure that the new monitor is enabled as described in Managing Monitoring of System and Application Metrics for Devices.

Monitoring Protocol Configuration Settings

These topics describe the configuration settings for monitoring Protocols such as SNMP, WMI, and JDBC that are used for creating custom Performance Monitors.

- JDBC Configuration Settings
- JMX Configuration Settings
- SNMP Configuration Settings for Custom Performance Monitors

- WMI Configuration Settings for Custom Performance Monitors
- Login Configuration Settings for Custom Performance Monitors

JDBC Configuration Settings

Use these settings when configuring JDBC as the access protocol for a custom performance monitor. You might want to review the topic Custom JDBC Performance Monitor for a Custom Table as an example of how to set up a custom performance monitor using JDBC.

Field	Setting/Notes
Method	JDBC
Database Type	Select the type of database to connect to
SQL Query	The SQL Query to execute when connecting
List of Columns	This creates the mapping between columns in the database and FortiSIEM event attributes. See Mapping Monitoring Protocol Objects to Event Attributes for more information.
Where Clause	This indicates whether the database table being queried has a fixed set of rows, or whether it is growing over time. An example of this would be a table containing logs, in which case FortiSIEM would keep track of the last entry and only pull the new ones. There are three options here: 1. There is a fixed set of rows and all rows are needed. Leave all options cleared. 2. There is a fixed set of rows and a fixed number of rows are needed. Select **Fixed records** and enter the number of required rows. 3. The table is growing and only new values are needed. Select **Retrieve all new values since last retrieve time of column**, and enter the name of the column that represents time in the database. FortiSIEM will keep track of the largest value in this column and only pull entries greater than that value during the next polling interval.
Event Type	Select the **Event Type** from the drop-down for which you want to apply the monitor. Whenever a event belonging to the selected method is discovered, FortiSIEM will attempt to apply the performance monitor to it.
Polling Frequency	Enter the **Polling Frequency** for the monitor.

JMX Configuration Settings

When configuring JMX as the monitoring protocol for a custom performance monitor, use these settings. You may also want to review the topic Custom JMX Monitor for IBM Websphere as an example of creating a custom JMX performance monitor.

Field	Setting/Notes
Method	JMX
MBean	Enter the MBean interface that you want to monitor, or click the downward arrow to browse the JMX tree and select it. Note that the option you select here will determine the objects that are available when you select an **Object Attribute** for the **List of Attributes**. See the next section in this topic for information on how to find MBeans
Event Type	Select the **Event Type** from the drop-down for which you want to apply the monitor. Whenever a event belonging to the selected method is discovered, FortiSIEM will attempt to apply the performance monitor to it.
Polling Frequency	Enter the **Polling Frequency** for the monitor.

Identifying MBean Names and Attributes for Custom Applications

This section discusses how to get MBean names and attributes for custom J2EE based applications.

1. Launch JConsole on your workstation and connect to the application.
2. Select the **MBeans** tab.
3. Browse to the application you want to monitor, and select it.
4. In the right pane, you will see the `MBeanInfo`. Note the `ObjectName`, while the attributes for the application will be listed in the tree view.

SNMP Configuration Settings for Custom Performance Monitors

When configuring SNMP as the access protocol for a custom performance monitor, use these settings. You may also want to review the topics Custom SNMP Monitor for D-Link Interface Network Statistics and Custom SNMP Monitor for D-Link HostName and SysUpTime as example of how to set up a custom performance monitor using SNMP.

Field	Settings/Notes
Method	SNMP
Parent OID	The parent Object Identifier (OID) is used to optimize the number of SNMP GETs required for pulling the various individual OIDs. You can enter this directly, or click the downward arrow to select it from an MIB file. Several different MIB files are available to select from, see Importing OID Definitions from a MIB File for more information.
Parent ID is table	Select **is table** if the OIDs you want to monitor are in a table with at least one row. An example would be interface metrics, such as `ifInOctets` and `ifOutOctets`, since there is an interface metric for each interface.
List of OIDs	The OIDs you want to monitor mapped to FortiSIEM event attributes. The selection you make for **Parent OID** determines the options available in the **OID** menu when you select **New**.

Importing OID Definitions from a MIB File

Many devices include MIB files that you can then use to create a custom performance monitor for the device. This involves creating a configuration file based on information in the MIB file, using that file as input for the `mib2xml` executable, and then placing the resulting output file in the `/data/mibXml` directory of your Supervisor. Once placed in this directory, you can select the file from the **MIB File List** menu to select the parent OID, which will then also affect which OIDs you can select for the OID to event attribute mapping.

Procedure

1. Collect the device OID files you want to use and place them in a directory where the mib2XML resides.
2. Create the input config file with these fields, and name it with the `.cfg` file extension.
   See the attached alcatel.cfg file for an example. (**Note:** the link is available only in the HTML version of the User Guide.)

Field	Description
`group`	This is the number of MIB file group. MIB files must be analyzed as a group because of cross-references within them. The group attribute specifies an ID for each group and needs to be unique for every group.
`mibFile`	The name of the MIB file being analyzed. There can be multiple entries. Be sure to specify the path to the MIB files.
`vendor`	The name of the device vendor for the MIB file.
`model`	The model name or number for the device.
`evtPrefix`	As SNMP trap notification definitions in the MIB file are parsed, an event file is generated for each SNMP trap. This field specifies the event type prefix.
`enterpriseId`	The enterprise ID number for this vendor, which is used for generating the SNMP trap parser.

3. Run `mib2XML <filename>.cfg`.
4. Move the resulting `.mib.xml` file to the `/data/mibXml` directory of your Supervisor.

Example

In this example, a set of MIB files from an Alcatel 7x50 device are used to generate the XML output file. (**Note:** the following links are available only in the HTML version of the User Guide.)

1. Sample MIB files:
   TIMETRA-CHASSIS-MIB.mib
   TIMETRA-GLOBAL-MIB.mib
   TIMETRA-SYSTEM-MIB.mib
   TIMETRA-TC-MIB.mib
2. Information in these files, and the paths to them, are then used to create this config file.
   alcatel.cfg
3. Running `mib2xml alcatel.cfg` generates both an output and an mib2XML file.
   alcatel.out
   TIMETRA-TC-MIB.mib.xml

WMI Configuration Settings for Custom Performance Monitors

When configuring WMI as the monitoring protocol for a custom performance monitor, use these settings. You may also want to review the topic Custom WMI Monitor for Windows Domain and Physical Registry as example of how to set up a custom performance monitor using WMI.

Field	Settings
Method	WMI
Parent Class	WMI metrics are defined in the form of a parent class having multiple attributes. For example, the parent class `Win32_ComputerSystem` has the attributes `Domain` and `TotalPhysicalMemory`.
Is Table	If the parent WMI class is a table with one or more rows, select this option.

LOGIN Configuration Settings for Custom Performance Monitors

From the **Used For** drop-down list, choose **File Monitor**, **Target File**, **Command Output Monitoring**, or **Configuration Monitoring**.

Used For: File Monitor

Field	Settings
File Path	This setting is pre-populated with the **Parent OID/Class/File Path** value.

Used For: Target File

Field	Settings
File Path	This setting is pre-populated with the **Parent OID/Class/File Path** value.
Upload Target File	Click **Upload** and browse to the file you want to upload.

Used For: Command Output Monitoring

Field	Settings
Command	
Regular Expression	Enter a regex expression.

Field	Settings
Matched Attribute Count	
Apply Regular Expression to	Select Single Line or Multiple Lines.
List of Attributes	Click **Edit** to edit an existing attribute or **New** to create a new attribute. See Adding Attributes for Command Output Monitoring.

Used For : Configuration Monitoring

Field	Settings
Upload Expect Script	Click **Upload** to browse for the script you want to use.

Adding Attributes for Command Output Monitoring

Click **New** to add a new attribute or **Edit** to modify an existing attribute.

Field	Settings
Matched Position	
Format	Select either **INTEGER**, **DOUBLE**, or **STRING** from the drop-down list.
Type	Select **Counter** or **Raw Value** from the drop-down list.
Event Attribute	Click the drop-down list and select an event attribute from the table.
Transform	For information on adding transforms, see Creating Transforms.

Mapping Monitoring Protocol Objects to Event Attributes

When you select a monitoring protocol for your custom performance monitor, you must also establish the relationship between the objects used by that protocol and event attributes in FortiSIEM. For example, creating a performance monitor that uses SNMP to monitor a device requires that you create a mapping between the SNMP OIDs that you want to monitor, and set of event attributes. This topic describes the configuration settings that you will use to create these object-to-event attribute relationships.

1. When creating your custom performance monitor, after you have selected the **Method**, click **New** next to **List of Attributes**.
   Depending on the monitoring protocol that you select, this table may be named **List of Oids** (SNMP), or **List of Columns** (JDBC).

2. In the first field, enter or select the monitoring protocol object that you want to map to FortiSIEM event attribute. Your options depend on the monitoring protocol you selected for Method.

Monitoring Protocol	Field name	Settings/Notes
SNMP	**OID**	Select an MIB file from the **MIB File List**, and then select the OID that you want to create the mapping for.You must enter an **Event Type** and a **Polling Frequency**.
WMI	**Attributes**	Enter an attribute of the WMI class you entered for **Parent Class**. You must enter an **Event Type** and a **Polling Frequency**.
JMX	**Object Attribute**	The **MBean** you select determines the attributes you can select. You must enter an **Event Type** and a **Polling Frequency**. You will also have to enter a **Name** and **Private Key** for the MBean attribute.
JDBC	**Column Name**	Select the **Database Type**, the **SQL Query** and specify the list of columns. You must enter an **Event Type** and a **Polling Frequency**.
WINEXE	**Matched Position**	Enter the Matched Position. You must enter an **Event Type** and a **Polling Frequency**.
LOGIN	**Used For**	Select **File Monitor**, **Target File**, **Command Output Monitoring**, or **Configuration Monitoring** from the drop-down list.

3. Select the **Format** for the object attribute.
   Your options will depend on the monitoring protocol you selected for Method.
4. For **Type**, select **Raw Value** or **Counter**.
5. For **Event Attribute**, select the FortiSIEM event attribute that the monitoring protocol object should map to.
   If you must create a new event attribute, see Adding an Event Attribute.
6. Create any **Transforms** of the values returned for the monitoring protocol object.
   See the next section for more information how to configure transforms.
7. Click **Save** when you are done creating the mappings, and complete the configuration of your custom performance monitor.

Creating Transforms

You can use a transform to convert the value returned for your monitoring project object into a more physically meaningful or usable metric. You an create multiple transforms, and they will be evaluated in the order shown in the table. Multiple transforms can be selected – they are evaluated in sequential order as shown in the display table.

1. Next to **Transforms**, click **New**.
2. For **Type**, select **system** or **custom**.
3. For **Formula**, either select a system-defined transformation formula from the menu if you selected **System** for **Type**, or enter a formula if you selected **custom**.
4. Click **Save**.

You can use the **Edit**, **Delete** or **Clone** buttons to modify, remove or clone a Transform respectively.

Managing Monitoring of System and Application Metrics for Devices

When FortiSIEM discovers devices, it also discovers the system and application metics that can be monitored for each device, and displays these in the **Monitor Performance** tab of **ADMIN** > **Setup**. Here you can also disable the monitoring of specific metrics for devices, disable devices from being monitored, and change the polling interval for specific metrics. See Checking status of event pulling jobs for checking the status.

1. Go to **ADMIN > Setup > Monitor Performance**.
2. Click **Refresh** icon to make sure you have the latest list of devices.
3. To disable monitoring for a device, clear the **Enable** option for it.
4. To enable or disable monitoring of a specific metrics for a device, click a device to select it, then click **More** and select **Edit System Monitors** or **Edit App Monitors**to view the list of metrics associated with that monitor and device. You can also enable or disable the metrics for a device's monitor type by clicking on the **Edit System Monitoring** or **Edit Application Monitoring** section for the device.
5. To change the polling interval for a metric, in the **More** menu, select **Edit Intervals**. Select the **Monitor Type** and **Device**, and then set the interval.
6. When you are done making changes, click **Save**.

Examples of Custom Performance Monitors

- Custom JDBC Performance Monitor for a Custom Table
- Custom SNMP Monitor for D-Link Interface Network Statistics
- Custom JMX Monitor for IBM Websphere
- Custom SNMP Monitor for D-Link HostName and SysUpTime
- Custom WMI Monitor for Windows Domain and Physical Registry

Custom JDBC Performance Monitor for a Custom Table

- Planning
- Adding New JDBC Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Examining the Table Structure

For this example, consider two custom Oracle tables that you want to monitor.

1. A table called `HEALTH_STATIC_DEMO` that does not have time stamp as a column. The table does not grow with time, and the `HEALTH` column is updated by the application.

```
create table HEALTH_STATIC_DEMO
{
   ID        VARCHAR2 (200) not null,
   HOST_NAME NVARCHAR2 (200) not null,
   HEALTH    NVARCHAR2 (50)
}
```

2. A table called `HEALTH_DYNAMIC_DEMO` that has a time-stamp in the column `create_time`. Only records with a more recent time-stamp than previous ones have to be pulled in, and every time a new record is written, it includes a time stamp.

```
create table HEALTH_DYNAMIC_DEMO
{
   ID          VARCHAR2 (200) not null,
   HOST_NAME   NVARCHAR2 (200) not null,
   HEALTH      NVARCHAR2 (50),
   CREATE_TIME DATE not null
}
```

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **Admin > Device Support**.

In this case, you only need to create two new event types to handle the contents of the two tables.

Naming Custom Event Types

All custom event types must begin with the prefix `P H_DEV_MON_CUST_ .`

Event Types

Name	Device Type	Priority
PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC	Generic	Low
PH_DEV_MON_CUST_JDBC_PERFORMANCE_DYNAMIC	Generic	Low

Adding New JDBC Performance Objects

Each table requires its own performance object for monitoring.

Performance Object Configuration for Static Table HEALTH_STATIC_DEMO

Field	Setting
Name	jdbc_static_perfObj
Type	Application
Method	JDBC
Database Type	Oracle Database Server
SQL Query	select * from health_static_demo

Field	Setting			
	Column Name	**Name**	**Format**	**Event Attribute**
List of Columns	host_name		STRING	hostName
	health		STRING	health
Where Clauses	Not applicable, since the table doesn't grow over time			
Event Type	`PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC`			
Polling Frequency	180 seconds			

Performance Object Configuration for Dynamic Table HEALTH_DYNAMIC_DEMO

Field	Setting			
Name	`jdbc_dynamic_perfObj`			
Type	Application			
Method	JDBC			
Database Type	Oracle Database Server			
SQL Query	`select * from health_dynamic_demo`			
	Column Name	**Name**	**Format**	**Event Attribute**
List of Columns	host_name		STRING	hostName
	cpu_util		DOUBLE	cpuUtil
	mem_util		DOUBLE	memUtil
	create_time		STRING	createTime
Where Clauses	retrieve all new values since last retrieve time of column create_time			
Event Type	`PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC`			
Polling Frequency	180 seconds			

Associating Device Types to Performance Objects

In this example, the Oracle database runs on Microsoft Windows, so you must associate Microsoft Windows device types to the two performance objects. Because the discovered device type has to exactly match one of

device types in this association for the discovery module to initiate monitoring, you must add other device types, such as Linux, if you also want to monitor Oracle databases over JDBC on those devices.

Edit Device to Performance Object

Field	Settings
Name	windows_oracle_perf_association
Device Types	• Microsoft Windows • Microsoft Windows 7 • Microsoft Windows 98 • Microsoft Windows ME • Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• jdbc_static_perfObj(JDBC) - Default Interval:3mins • jdbc_dynamic_perfObj(JDBC) - Default Interval:3mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the database server, created the IP address to credentials mapping, and tested connectivity to the server.

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.
3. For **IP**, enter the address of the Oracle database server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test** .
   You should see `succeed` under **Result** , and a parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

1. Create a structured historical search, and in the **Filter Criteria**, enter `Event Type = "PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC"; Group by:` [None]
   This should show the entries in the `HEALTH_STATIC_DEMO` table

2. Create a structured historical search, and in the **Filter Criteria**, enter `Event Type = "PH_DEV_MON_CUST_JDBC_PERFORMANCE_SDynamic"; Group by:` [None]
   This should show the entries in the `HEALTH_DYNAMIC_DEMO` table .

Custom SNMP Monitor for D-Link Interface Network Statistics

This example shows how to create a custom performance monitor for network interface statistics for D-link switches. In this case, the result is a table, with one set of metrics for each interface.

- Planning
- Adding the D-Link SNMP Performance Object
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Matching SNMP OIDs to FortiSIEM Event Attribute Types

If you run the command `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1` against the D-Link switch, you should see an output similar to this:

```
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifIndex.2 = INTEGER: 2
IF-MIB::ifIndex.3 = INTEGER: 3
IF-MIB::ifIndex.4 = INTEGER: 4
IF-MIB::ifIndex.5 = INTEGER: 5
...
```

To get the interface index, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.1`:

```
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifIndex.2 = INTEGER: 2
IF-MIB::ifIndex.3 = INTEGER: 3
IF-MIB::ifIndex.4 = INTEGER: 4
IF-MIB::ifIndex.5 = INTEGER: 5
...
```

To get interface queue length (the `outQLen` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.21`:

```
IF-MIB::ifOutQLen.1 = Gauge32: 0
IF-MIB::ifOutQLen.2 = Gauge32: 0
IF-MIB::ifOutQLen.3 = Gauge32: 0
IF-MIB::ifOutQLen.4 = Gauge32: 0
IF-MIB::ifOutQLen.5 = Gauge32: 0
...
```

To get interface speed, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.5`:

```
IF-MIB::ifSpeed.1 = Gauge32: 1000000000
IF-MIB::ifSpeed.2 = Gauge32: 1000000000
```

```
IF-MIB::ifSpeed.3 = Gauge32: 1000000000
IF-MIB::ifSpeed.4 = Gauge32: 1000000000
IF-MIB::ifSpeed.5 = Gauge32: 1000000000
...
```

To get received bytes (the `recvBitsPerSec` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.10`:

```
IF-MIB::ifInOctets.1 = Counter32: 0
IF-MIB::ifInOctets.2 = Counter32: 1247940872
IF-MIB::ifInOctets.3 = Counter32: 0
IF-MIB::ifInOctets.4 = Counter32: 0
IF-MIB::ifInOctets.5 = Counter32: 0
...
```

Finall,y to get sent bytes (the `sentBitsPerSec` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.16`:

```
IF-MIB::ifOutOctets.1 = Counter32: 0
IF-MIB::ifOutOctets.2 = Counter32: 1271371281
IF-MIB::ifOutOctets.3 = Counter32: 0
IF-MIB::ifOutOctets.4 = Counter32: 0
IF-MIB::ifOutOctets.5 = Counter32: 0
...
```

From these outputs you can see that if you want to create a performance monitor for D-Link switch uptime, you must:

1. Create a new device type, since D-Link switches are not supported in this release.
2. Create an event type, `PH_DEV_MON_CUST_DLINK_INTF_STAT`, that will contain the event attribute types `outQLen` , `recvBitsPerSec`, and `sentBitsPerSec`, which are already part of the FortiSIEM event attribute library, and `hostNameSnmpIndx` and `intfSpeed`, which you must create.
3. Create the mapping between the SNMP OIDs and the event attributes:
    1. OID `.1.3.6.1.2.1.2.2.1.1` and `hostNameSnmpIndx`
    2. OID `.1.3.6.1.2.1.2.2.1.5` and `intfSpeed`
    3. OID `.1.3.6.1.2.1.2.2.1.21` and `outQLen`
    4. OID `.1.3.6.1.2.1.2.2.1.10` and `recvBitsPerSec`
    5. OID .1.3.6.1.2.1.2.2.1.16 and `sentBitsPerSec`

Creating New Device Types, Event Attributes, and Event Types

To create these items, go to **Admin > Device Support**.

Device Type

Create a new device type with these attributes:

Field	Setting
Vendor	D-Link

Field	Setting
Model	DGS
Version	Any
Device/App Group	**Devices > Network Devices > Router Switch**
Biz Service Group	<no selection>
Description	D-Link Switch

Event Attribute Types

Create these event attribute types:

Name	Display Name	Value Type	Display Format Type
hostSnmpIndex	Host Interface SNMP Index	INT64	<left blank>
intfSpeed	Interface Speed in bits/sec	INT64	<left blank>

Event Types

Naming Custom Event Types: All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Create this event type:

Name	Device Type	Severity
`PH_DEV_MON_CUST_INTF_STAT`	D-Link DGS	Low

Adding the D-Link SNMP Performance Object

In this case, you will create one performance object that will map the SNMP OIDs to the FortiSIEM event attribute types, and then associate them with the `PH_DEV_MON_CUST_INTF_STAT` event type. When you create the `recvBitsPerSec` and `sentBitsPerSec` mapping you will also add a sequential transform to convert the cumulative metric to a rate, and then convert bytes per second to bits per second. .

Performance Object Configuration for Event Type PH_DEV_MON_CUST_INTF_STAT

Field	Setting
Name	D-LinkIntStat
Type	System
Method	SNMP

Field	Setting
Parent OID	.1.3.6.1.2.1.2.2.1
Parent OID is Table	Selected
List of OIDs	**Object Attribute** / **Name** / **Format** / **Type** / **Event Attribute** .1.3.6.1.1.2.1.2.2.1.1 / IntfIndex / INTEGER / RawValue / `hostSnmpIndex` .1.3.6.1.1.2.1.1.2.1.5 / intfSpeed / Gauge32 / RawValue / `intfSpeed` .1.3.6.1.1.2.1.1.2.1.10 / recvBitsPerSec / Counter32 / Counter / recvBitsPerSec .1.3.6.1.1.2.1.1.2.1.16 / sentBitsPerSect / Counter32 / Counter / sentBitsPerSect .1.3.6.1.1.2.1.1.2.1.21 / outInftQ / Gauge32 / RawValue / OutQLen
Event Type	PH_DEV_MON_CUST_INTF_STAT
Polling Frequency	60 seconds

Transform Formula for recvBitsPerSec and sentBitsPerSec Event Attributes

Type	Formula
system	toRate
system	BytesPerSecToBitsPerSec

Associating Device Types to Performance Objects

In this case you would only need to make one association with the D-Link DGS device you created.

Field	Settings
Name	`D-LinkPerfObj`
Device Types	• D-Link DGS
Perf Objects	• D-LinkIntfStat(SNMP) - Default Interval:1mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the D-Link device, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select the performance monitor you created, and then click **Test**.
3. For **IP**, enter the address of the device, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
Structured `Reporting IP IN <IP Range> AND Event Type =" PH_DEV_MON_CUST_INTF_STAT"; Group by: Host Name, Host Interface`	Host Name,Host Interface SNMP Index,MAX(Out Intf Queue), AVG (Intf Speed), AVG(Sent Bit Rate), AVG(Received Bit Rate)	Last 10 Minutes	All

Custom JMX Monitor for IBM Websphere

- Planning
- Adding New IBM WebSphere Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor

- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

This example illustrates how to write a custom performance monitor for retrieving IBM Websphere thread, heap memory, and non-heap memory metrics.

Planning

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **Admin > Device Support**.

In this case, the IBM Websphere device type is already supported by FortiSIEM, but you must create new event attributes and event types for the metrics you want to retrieve.

Event Attribute Types

Name	Display Name	Value Type	Display Format Type
`websphere_heapPCT`	WebSphere HeapPct	INT64	
`websphere_numThreads`	WebSphere NumThreads	INT64	
`websphere_maxThreads`	WebSphere MaxThreads	INT64	
`websphere_threadPct`	WebSphere ThreadPct	INT64	
`websphere_numClass`	WebSphere NumClass	INT64	
`websphere_heapUsed`	WebSphere HeapUsed	INT64	Bytes
`websphere_heapMax`	WebSphere HeapMax	INT64	Bytes
`websphere_heapCommitted`	WebSphere HeapCommitted	INT64	Bytes
`websphere_nonHeapUsed`	WebSphere NonHeapUsed	INT64	Bytes
`websphere_nonHeapMax`	WebSphere NonHeapMax	INT64	Bytes
`websphere_nonHeapCommitted`	WebSphere NonHeapCommitted	INT64	Bytes

Event Types

Naming Custom Event Types: All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity
PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY	IBM WebSphere App Server	Low
PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY	IBM WebSphere App Server	Low
PH_DEV_MON_CUST_WEBSPHERE_THREAD	IBM WebSphere App Server	Low

Adding New IBM WebSphere Performance Objects

Each of the event types requires creating a performance object for monitoring.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY

Field	Setting
Name	websphere_heapMemory_perfObj
Type	Application
Method	JMX
MBean	java.lang:type=Memory
List of Attributes	**Object Attribute** / **Private Key** / **Name** / **Format** / **Event Attribute** HeapMemoryUsage / committed / committed / Long / websphere_heapCommitted HeapMemoryUsage / used / used / Long / websphere_heapUsed HeapMemoryUsage / max / max / Long / websphere_heapMax Long / websphere_heapPCT
Event Type	PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY
Polling Frequency	180 seconds

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_THREAD

For the `webSphere_threadPct` **Event Attribute**, you will enter a transform as shown in the second table.

Field	Setting				
Name	`websphere_thread_perfObj`				
Type	Application				
Method	JMX				
MBean	`java.lang:type=Threading`				
List of Attributes	**Object Attribute**	**Private Key**	**Name**	**Format**	**Event Attribute**
	ThreadCount		ThreadCount	Long	`webspher e_ numThread s`
	PeakThreadCo unt		PeakThreadCo unt	Long	`webspher e_ maxThread s`
				Long	`webspher e_ threadPCT`
Event Type	`PH_DEV_MON_CUST_WEBSPHERE_THREAD`				
Polling Frequency	180 seconds				

Transform Formula for websphere_threadPCT Event Attribute

Click **New** next to **Transforms** in the dialog to enter the formula.

Field	Settings
Object Attribute	<blank>
Name	<blank>

Field	Settings
Private Key	<blank>
Format	Long
Event Attribute	websphere_threadPct
Transforms	**Type** **Formula** custom ThreadCount*100/PeakThreadcount

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY

Field	Setting
Name	`websphere_nonHeapMemory_perfObj`
Type	Application
Method	JMX
MBean	`java.lang:type=Memory`
List of Attributes	**Object Attribute** / **Private Key** / **Name** / **Format** / **Event Attribute** NonHeapMemoryUsage / used / / Long / `websphere_nonHeapUsed` NonHeapMemoryUsage / committed / / Long / `websphere_nonHeapCommitted` NonHeapMemoryUsage / max / / Long / `websphere_nonHeapMax`
Event Type	`PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY`
Polling Frequency	180 seconds

Associating Device Types to Performance Objects

In this example, IBM WebSphere runs on Microsoft Windows, so you must associate Microsoft Windows device types to the three performance objects. Because the discovered device type has to exactly match one of device types in this association for the discovery module to initiate these monitors, you must add other device types, such as Linux, if you also wanted to monitor IBM Websphere over JMX on those devices.

Edit Device to Performance Object

Field	Settings
Name	windows_oracle_perf_association
Device Types	• Microsoft Windows • Microsoft Windows 7 • Microsoft Windows 98 • Microsoft Windows ME • Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• websphere_thread_perfObj(JMX) - Default Interval:3mins • websphere_thread_perfObj(JMX) - Default Interval:3mins • websphere_nonHeapMemory_perfObj (JMX) - Default Interval:3mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the server, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.
3. For **IP**, enter the address of the Oracle database server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test** .
   You should see `succeed` under **Result** , and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
Structured `Reporting IP IN <IP Range> AND Event Type CONTAIN "ph_dev_mon_cust_web"; Group by: [None]`	Event Receive Time,Reporting IP, Event	Last 60 Minutes	All

Custom SNMP Monitor for D-Link HostName and SysUpTime

Although D-link switches and routers are not supported in this release of FortiSIEM, you can still use the custom monitor feature to create a system uptime event that will collect basic performance metrics like `hostName` and `SysUpTime`.

- Planning
- Adding New IBM WebSphere Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Mapping SNMP OIDs to FortiSIEM Event Attribute Types

If you run the command `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1` against the D-Link switch, you should see an output similar to this:

```
SNMPv2-MIB::sysDescr.0 = STRING: DGS-1210-48          2.00.011
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.171.10.76.11
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (157556100) 18 days, 5:39:21.00
SNMPv2-MIB::sysContact.0 = STRING:
SNMPv2-MIB::sysName.0 = STRING: SJ-Test-Lab-D-Link
SNMPv2-MIB::sysLocation.0 = STRING: San Jose
SNMPv2-MIB::sysServices.0 = INTEGER: 72
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (157555949) 18 days, 5:39:19.49
```

To get sysU`ptime`, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1.3`:

```
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (157577770) 18 days, 5:42:57.70
```

To get `hostname`, you run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1.5`:

```
SNMPv2-MIB::sysName.0 = STRING: SJ-Test-Lab-D-Link
```

From these outputs you can see that if you want to create a performance monitor for D-Link switch uptime, you must:

1. Create a new device type, since D-Link switches are not supported in this release
2. Create an event type, `PH_DEV_MON_CUST_DLINK_UPTIME`, that will contain the event attribute types `hostName` and `SysUpTime`, which are already part of the FortiSIEM event attribute type library.
3. Create the mapping between the SNMP OIDs and the event attributes:
   - OID `.1.3.6.1.2.1.1.5` and `hostName`.
   - OID `.1.3.6.1.2.1.1.5` and `SysUpTime`.

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **Admin > Device Support**.

Device Type:

Create a new device type with these attributes:

Field	Setting
Vendor	D-Link
Model	DGS
Version	Any
Device/App Group	**Devices > Network Devices > Router Switch**
Biz Service Group	<no selection>
Description	D-Link Switch

Event Attribute Types and Event Types

Both `sysUptime` and `hostName` are included in the **Event Attribute Types**, so you only need to create a new event type, `PH_DEV_MON_CUST_DLINK_UPTIME`, that will contain them.

Naming Custom Event Types

All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity	Description
`PH_DEV_MON_CUST_DLINK_UPTIME`	D-Link DGS	0 - Low	D-Link Uptime

Adding the D-Link SNMP Performance Object

In this case, you will create one performance object that will map the SNMP OIDs to the FortiSIEM event attribute types `hostName` and `SysUptime`, and then associate them with the `PH_DEV_MON_CUST_DLINK_UPTIME` event type. When you create the `SysUpTime` mapping you will also add a transform to convert system time to centiseconds to seconds as shown in the second table.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_DLINK_UPTIME

Field	Setting					
Name	D-LinkUptime					
Type	System					
Method	SNMP					
Parent OID	.1.3.6.1.1.2.1.1					
Parent OID is Table	<left cleared>					
List of OIDs		**Object Attribute**	**Name**	**Format**	**Type**	**Event Attribute**
		.1.3.6.1.1.2.1.1.5	Host Name	String	RawValue	`hostName`
		.1.3.6.1.1.2.1.1.3	Uptime	Timeticks	RawValue	`SysUpTime`
Event Type	`PH_DEV_MON_CUST_DLINK_UPTIME`					
Polling Frequency	10 seconds					

Transform Formula for SysUptime Event Attribute

Type	Formula
custom	uptime/100

Associating Device Types to Performance Objects

In this case you would only need to make one association with the D-Link DGS device you created.

Field	Settings
Name	`D-LinkPerfObj`
Device Types	D-Link DGS
Perf Objects	D-LinkUptime(SNMP) - Default Interval:0.17mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the D-Link device, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Performance Monitoring**.
2. Select the performance monitor you created, and then click **Test**.
3. For **IP**, enter the address of the device, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
Structured `Reporting IP IN <IP Range> AND Event Type = "PH_DEV_MON_CUST_DLINK_UPTIME"; Group by: [None]`	Event	Last 10 Minutes	All

Custom WMI Monitor for Windows Domain and Physical Registry

Planning

Mapping Windows WMI Classes to FortiSIEM Event Attribute Types

If you run the command `wmic -U <domain>/<user>%<pwd> //<ip> "select * from Win32_ComputerSystem` against a Windows server, you will see an output similar to this:

```
CLASS: Win32_ComputerSystem
```

```
AdminPass-
wordStatus::SEP::Auto-
mat-
icMan-
agedPage-
file::SEP::Auto-
mat-
icRe-
setBootOp-
tion::SEP::Auto-
mat-
icRe-
setCap-
abil-
ity::SEP::BootOp-
tionOnLim-
it::SEP::BootOp-
tionOnWatchDo-
g::SEP::BootROMSup-
por-
ted::SEP::BootupState::SEP::Cap-
tion::SEP::ChassisBootupState::SEP::CreationClassName::SEP::Cur-
rentTimeZone::SEP::Day-
lightInEf-
fect::SEP::De-
scrip-
tion::SEP::DNSHostName::SEP::Do-
main::SEP::Do-
mainRole::SEP::En-
ableDay-
lightSav-
ing-
sTime::SEP::FrontPanelRe-
setStatus::SEP::In-
fraredSup-
por-
ted::SEP::Ini-
tialLoadIn-
fo::SEP::In-
stallDate::SEP::Key-
boardPass-
wordStatus::SEP::LastLoadIn-
fo::SEP::Man-
ufac-
turer-
::SEP::Model::SEP::Name::SEP::NameFormat::SEP::Net-
workServer-
ModeEn-
abled::SEP::Num-
ber-
OfLo-
```

```
gic-
alPro-
cessor-
s::SEP::Num-
ber-
OfPro-
cessor-
s::SEP::OEMLo-
goBit-
map::SEP::OEMStringAr-
ray::SEP::PartOfDo-
main::SEP::PauseAfter-
Reset::SEP::PCSys-
temType::SEP::Power-
Man-
age-
mentCap-
abil-
ities::SEP::Power-
Man-
age-
mentSup-
por-
ted::SEP::Power-
OnPass-
wordStatus::SEP::Power-
State::SEP::Power-
Sup-
plyState::SEP::PrimaryOwn-
erContact::SEP::PrimaryOwn-
erName::SEP::Re-
setCap-
abil-
ity::SEP::Re-
setCoun-
t::SEP::Re-
setLim-
it::SEP::Roles::SEP::Status::SEP::Sup-
portContactDe-
scrip-
tion::SEP::Sys-
temStar-
tupDelay::SEP::Sys-
temStar-
tupOp-
tion-
s::SEP::Sys-
temStar-
tupSet-
ting::SEP::Sys-
temType::SEP::ThermalState::SEP::TotalPhys-
icalMemory::SEP::UserName::SEP::WakeUpType::SEP::Workgroup
```

```
1::SEP::True::SEP::True::SEP::True::SEP::3::SEP::3::SEP::True::SEP::Normal
boot::SEP::WIN2008-ADS::SEP::3::SEP::Win32_ComputerSystem::SEP::-
420::SEP::True::SEP::AT/AT COMPATIBLE::SEP::WIN2008-
ADS::SEP::FortiSIEM.net::SEP::5::SEP::True::SEP::3::SEP::False::SEP::NULL::SEP::
(null)::SEP::3::SEP::(null)::SEP::VMware, Inc.::SEP::VMware Virtual Plat-
form::SEP::WIN2008-ADS::SEP::(null)::SEP::True::SEP::1::SEP::1::SEP::NULL::SEP::([MS_
VM_CERT/SHA1/27d66596a61c48dd3dc7216fd715126e33f59ae7],Welcome to the Virtual
Machine)::SEP::True::SEP::3932100000::SEP::0::SEP::NULL::SEP::False::SEP::0::SEP::0::S-
EP::3::SEP::(null)::SEP::Windows User::SEP::1::SEP::-1::SEP::-1::SEP::(LM_Work-
station,LM_Server,Primary_Domain_
Con-
troller,Timesource,NT,DFS)::SEP::OK::SEP::NULL::SEP::0::SEP::NULL::SEP::0::SEP::X86-
based PC::SEP::3::SEP::4293496832::SEP::FortiSIEM\Administrator::SEP::6::SEP::(null)
```

From this output you can see that the `Win32_ComputerSystem` WMI class has two attributes:

- `Domain`
- `TotalPhysicalMemory`

From these outputs you can see that if you want to create a performance monitor for Windows Domain and Physical Registry, you must:

1. Create an event type, `PH_DEV_MON_CUST_WIN_MEM`, that will contain the event attribute types `Domain` and `memTotalMB`, both of which are already contained in the FortiSIEM event attribute types library.
2. Create the mapping between the WMI class attributes and the FortiSIEM event attribute types:
   - WMI class attribute `Domain` and `Domain`.
   - WMI class attribute `TotalPhysicalMemory` (Bytes) and `memTotalMB` (type INT64). Because `TotalPhysicalMemory` returns in bytes, and `memTotalMB` is in `INT64`, a transform will be required to convert the metrics.

Creating New Device Types, Event Attributes, and Event Types

To create these items, go to **Admin > Device Support**.

- **Device Type**
  Since Microsoft Windows is supported by FortiSIEM, you don't need to create a new device type.
- **Event Attribute Types and Event Types**
  Both `Domain` and `memTotalMB` are included in the FortiSIEM event attribute type library, so you only need to create a new event type, `PH_DEV_MON_CUST_WIN_MEM`, that will contain them.
- **Naming Custom Event Types**
  All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity	Description
`PH_DEV_MON_CUST_WIN_MEM`	Microsoft Windows	0 - Low	Windows Domain and Memory

Adding the Microsoft Windows WMI Performance Object

In this case, you will create one performance object that will map the WMI Class attributes to the FortiSIEM event attribute types `Domain` and `memTotalMB`, and then associate them with the `PH_DEV_MON_CUST_WIN_MEM` event type. When you create the `memTotalMB` mapping you will also add a transform to convert bytes to INT64 as shown in the second table.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_DLINK_UPTIME

Field	Setting
Name	WinMem
Type	System
Method	WMI
Parent Class	Win32_ComputerSystem
Parent Class is Table	<left cleared>
List of Attributes	**Attribute** / **Format** / **Type** / **Event Attribute** Domain / String / RawValue / `domain` TotalPhysicalMemory / Integer / RawValue / `memTotalMB`
Event Type	`PH_DEV_MON_CUST_WIN_MEM`
Polling Frequency	20 seconds

Transform Formula for TotalPhysicalMemory Event Attribute Type

Type	Formula
custom	TotalPhysicalMemory/1024/1024

Associating Device Types to Performance Objects

In this example, you must associate Microsoft Windows device types to the performance object.

Edit Device to Performance Object

Field	Settings
Name	WinMisc
Device Types	• Microsoft Windows • Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• WinMem(WMI) - DefaultInterval:0.33mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the server, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.
3. For **IP**, enter the address of the Microsoft Windows server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
`Host IP = <IP> AND Event Type = " PH_DEV_MON_CUST_WIN_MEM";Group by:[None]`	Event Receive Time,Reporting IP,Domain,Total Memory (MB)	Last 10 Minutes	All

Working with Custom Properties

FortiSIEM includes over 30+ pre-defined global threshold properties that you can edit and use in rules, but you can also create custom threshold properties.

This section provides the procedure to configure Custom Properties.

- Adding a Custom Property
- Modifying a Custom Property

Adding a Custom Property

Complete these steps to add a custom property:

1. Go to **ADMIN** > **Device Support** > **Custom Property**.
2. Click **New**.
3. Enter a **Name** and **Display Name** for the new property.
4. Enter the **Default Value** for the threshold.
5. Select the **Value Type** of threshold value.
   For most global threshold values, select **Double**. For **Map** thresholds, which apply to disks and interfaces, select the **Item Type** for the threshold value, and select the **Component Type** to which it applies.
6. Click **Save**.

Modifying a Custom Property

Complete these steps to modify a custom property:

1. Select one or more property from the list.
2. Click the required option:
   - **Edit** to modify a property setting.
   - **Delete** to remove a property.
3. Click **Save**.

Analyzing custom log files

Custom CSV formatted log files can be uploaded from the FortiSIEM GUI for detailed analysis. For this, a mapping has to be defined from the CSV file columns to the event attributes. This generates a FortiSIEM event that can be searched, similar to an externally received event.

Complete these steps to upload a custom log file for analysis:

1. Set up a Parsing template:
   a. Go to **ADMIN** > **Device Support** > **Upload Files**.
   b. Click **New**.
   c. Upload the log file under **Step 1: CSV file**:
      i. Browse to select the **Sample File** to upload.
      ii. Enter the **Separator** used in the CSV file.
      iii. To include the header, select **Header**.
      iv. Click **Next**.

d. Map the CSV file columns to the event attributes under **Step 2: Attribute Mapping**:
    i. Select the event attributes to map to the CSV file columns.
    ii. Click **Next**.
e. Set the template details under **Step 3: Template Details**:
    i. Enter a **Name** for the Template.
    ii. The **Event Type** is automatically updated based on the name.
    iii. Enter any **Description** about the Template.
    iv. Click **Save**.

2. Upload the file.
3. Run Reports.

Creating SNMP System Object Identifiers for devices

If a new device has to be identified using SNMP System Object Identifiers (OIDs) during discovery, you can create a device type and add the SNMP System OID or this device from the FortiSIEM UI.

Complete these steps to create SNMP Object Identifiers for device discovery:

1. Go to **ADMIN** > **Device Support** > **SNMP SysObjectId**.
2. Click **New**.
3. Select the **Device Type** from the drop-down which lists all the devices added in the system under **Device Support** > **Device/App**.
4. Enter the **Hardware Model** of the device.
5. Enter an **SNMP SysObjectId** for the device.
6. Click **Save**.

Health

The following sections provide procedures to view health information:

Viewing Cloud Health

The **ADMIN** > **Health** > **Cloud Health** page displays the status of the nodes in your deployment and the processes running on them. The top frame displays all of the available clouds and the lower frame provides information about the applications that are contained in the cloud selected in the main frame.

Complete these steps to view the information about Cloud health:

1. Go to **ADMIN** > **Health** > **Cloud Health** tab.
2. Click any node in the first frame to view its process details in the second frame.
   See the FortiSIEM Back-End Processes table for more information about the system role played by each process.

First frame

Settings	Description
Name	Name of the available clouds
IP Address	IP address of the available clouds
Module Role	Module role, for example, 'Supervisor'
Health	Current health of the cloud
Version	Current version of the cloud
Upgrade Version	Upgrade version number
Build Date	Date when the cloud was created
Cores	Number of cores
Load Average	Average load of the cloud
CPU	Percentage CPU used
Swap Size	Swap size
Swap Used	Swap used
Memory Size	Maximum memory size
Memory Used	Memory used
Up Time	Total time that the cloud was in 'Up' status
Last Report Sync	Time when the report was synched previously

Second frame

Settings	Description
Process Name	Name of the process
Status	Status of the process

Settings	Description
Up Time	Total up time of the process
CPU	Measure of the CPU that the process is using
Event Rate	Events used each second by the process
Physical Memory	Amount of physical memory used by the process
Virtual Memory	Amount of virtual memory used by the process
SharedStore ID and SharedStore Position	SharedStore ID and position information

FortiSIEM Back-End Processes

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
Apache	Webserver for front-ending http(s) requests to AppSvr or other FortiSIEM nodes	x	x	x
AppSvr	Middleware for handling GUI requests, storing and managing PostgreSQL database and serving REST API requests from FortiSIEM nodes	x		

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
DBSvr	PostgreSQL Database for storing information displayed in FortiSIEM GUI other than events	x		
Node.js-charting	Message			
Node.js-pm2				
phAgentManager	Collects logs and metrics from devices or servers using protocols other than SNMP and WMI.	x	x	x
phCheckpoint	Collects logs from Checkpoint firewalls via LEA			
phDataManager	Stores the parsed events to event store (FortiSIEM EventDB or Elasticsearch)	x	x	

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
phDataPurger	Archives online event store (FortiSIEM EventDB or Elasticsearch). Implements event retention policy for FortiSIEM EventDB - both online FortiSIEM EventDB and archive.	x		
phDiscover	Discovers devices using various protocols such as SNMP, WMI and SSH	x		x
phEventForwarder	Forwards events from FortiSIEM to external Systems	x	x	x
phIpIdentityMaster	Merges Identity and location audit trails from multiple phIpIdentityWorker modules to produce the final Identity and location audit trail. Stores the trail in PostgreSQL Database.			

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
phIpIdentityWorker	Produces Identity and location audit trail based on its own view of events	x	x	
phMonitor	Monitors the health of FortiSIEM processes. Distributes tasks from AppSvr to various processes on Supervisor and to phMonitor on Worker for further dustribution to processes on Worker nodes.			
phParser	Parses raw events and preparses them for storing into event store (FortiSIEM EventDB or Elasticsearch)	x	x	x
phPerfMonitor	Continually collects performance monitoring and configuration change data after discovery completes	x	x	x

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
phQueryMaster	Handles Adhoc queries from GUI for FortiSIEM EventDB. Paralellizes queries by sending them to phQueryWorkers and merges individual results to produce the final result.	x		
phQueryWorker	Handles individual FortiSIEM EventDB queries from phQueryMaster	x	x	
phReportLoader	Loads Report data into Report Server.	x		
phReportMaster	Handles individual FortiSIEM EventDB inline reports. Produces results every 5 minutes.	x		

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
phReportWorker	Handles inline event reports FortiSIEM EventDB.Merges individual inline report results multiple phReportMaster modules to produce the final result. Rolls up results from 5 minute intervals to 15 minute intervals and then to 60 minute intervals.	x		
phRuleMaster	Triggers a rule in real time by evaluating rule summaries from individual phRuleWorker modules	x		
phRuleWorker	Evaluates a rule in real time based on events seen by the worker and sends a summary to the phRuleMaster module	x	x	

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
Redis	In-memory distributed database for holding results returned by Elasticsearch and for distributing CMDB objects between Supervisor and Worker nodes.	x	x	

Viewing Collector Health

If your FortiSIEM deployment includes Collectors, you can monitor the status of the Collectors in the **ADMIN** > **Health** > **Collector Health** page. You can also upgrade Collectors from this page. Select a Collector and click **Show Processes** to see the processes running on that Collector.
Refer to the 'FortiSIEM Back-End Processes' table below for information about the processes that run on Collectors.

The **Action** menu provides the operations you can perform on a Collector:

- **Start** - to start the Collector.
- **Stop** - to start the Collector.
- **Download Image** - to download a Collector image.
- **Install Image** - to install a Collector image.
- **Download Update** - to download a Collector image update.
- **Install Update** - to install a Collector image update.

Properties associated with Collector Health

Collector Property	Description
Organization	Name of the organization to which the Collector belongs.
Name	Name of the Collector.
IP Address	IP address of the Collector.
Status	Status of the Collector as either **Up** or **Down**.

Collector Property	Description
Health	Health of the Collector based on the health of the modules running on it. If Health is **Critical**, it means that one of the modules is not running on the Collector.
Up Time	Total time that the Collector has been up.
Last Status Updated	The time when the collector last reported its status to the cloud.
Last Event Time	The time when the collector last reported events to the cloud.
Last File Received	The time when the collector last reported its performance status to the cloud.
CPU	Overall CPU utilization of the Collector.
Memory	Overall memory utilization of the Collector.
Allocated EPS	The number of events per second (EPS) dynamically allocated by the system to this collector.
Incoming EPS	The EPS that the Collector is currently seeing.
Upgrade Version	If the Collector has been upgraded, the new version.
Build Date	Date on which the version of FortiSIEM the Collector is running on was built.
Install Status	If you upgrade the Collector, the status of the upgrade is shown here as either **Success** or **Failed**.
Download Status	If an image was downloaded to the Collector, the status of the download is shown here as **Success** or **Failed**.
Version	Version of FortiSIEM the Collector is running on.

FortiSIEM Back-End Processes

Process	Function	Used by Supervisor	Used by Worker	Used by Collector
phAgentManager	Execute event pulling job	X	X	X
phCheckpoint	Execute checkpoint monitoring	X	X	X
phDiscover	Pulling basic data from target	X		X

Process	Function	Used by Super-visor	Used by Worker	Used by Col-lector
phEventForwarder	Responsible for forwarding events and incidents from FortiSIEM to external systems	X	X	X
phEventPackage	Uploading event/SVN file to Supervisor/Worker			X
phMonitorAgent	Monitoring other processes	X	X	X
phParser	Parsing event to shared store (SS)	X	X	X
phPerfMonitor	Execute performance job	X	X	X
rsyslogd	Responsible for forwarding locally generated logs to FortiSIEM	X	X	X

Viewing Elasticsearch Health

The Elasticsearch Health page displays two frames of information.

Complete these steps to view Elasticsearch health details:

1. Go to **ADMIN** > **Health** > **Elasticsearch Health** tab.
2. Click **Columns** tab under both frames to select the required information to display.

License

The following sections provide procedures to view License information:

Viewing License Information
Viewing License Usage
Adding Nodes

Viewing License Information

The License displays information associated with your current FortiSIEM license under **ADMIN** > **License** > **License** tab.

- Total EPS
- Maintenance and Support
- IOC Service
- Endpoint Devices
- Devices

- Agents
- Basic Windows Agent
- Advanced Windows Agent
- Additional EPS

You can use the **Upload** button on the top-right to upload a new License. For more information, refer to FortiSIEM Licensing Guide.

Viewing License Usage

The **License Usage** tab displays the information your license. Select the desired time period from the top-right drop-down to **Last 1 Hour**, **Last 1 Day**, or **Last 1 Week**.

The current License information is displayed under various tab:

- **Device Usage** - Organization, Licensed, and Used devices
- **Agent Usage** - Organization, Windows Agents, Linux Agents, and total agents used for an organization
- **EPS Usage** - Total Licensed EPS, Used EPS and Unused Events
- **EPS Usage by Node** - EPS Usage based on each Node
- **EPS Usage by Organization** - EPS Usage based on each Organization

To print the monthly usage report, click the **Print Monthly Usage Report** button on the top-right corner.

Adding Nodes

This tab allows you to add nodes.

- Adding a Worker
- Adding a Report Server

Adding a Worker

Complete these steps to add a Worker:

1. Go to **ADMIN** > **License**> **Nodes** tab.
2. Click **Add** to add a new Worker.
3. Select the **Type** and enter the **Worker IP Address**.
4. Click **OK**.

Adding a Report Server

Complete these steps to add a Report Server:

1. Go to **ADMIN** > **License**> **Nodes** tab.
2. Click **Add** to add a new Report Server.
3. Select the **Type** as 'Report Server' and enter the **Report Server IP Address**.
4. Enter the **Database Username** and **Database Password**.
5. Click **OK**.

Settings

This section contains information on monitoring the health of your FortiSIEM deployment, general system settings such as language, date format, and system logos, and how to add devices to a maintenance calendar.

System Settings

The following section describes the procedures for system settings:

UI settings

There are two locations where you can change UI settings in FortiSIEM. One location is in the user profile. The other is in the administrator settings.

User Profile UI Settings

The initial view of FortiSIEM UI after login can be configured using the UI settings including dashboard, logos, and theme.

Click the **Edit User Profile** icon () in the upper right corner of the UI. The dialog box contains three tabs:

Basic - Use the **Basic** tab to change your password into the system.

Contact - Use the **Contact** tab to enter your contact information.

UI Settings - Use the **UI Settings** tab to set the following:

Settings	Guidelines
Home	Select the tab which opens when you log in to the FortiSIEM UI.
Incident Home	Select the Overview, List, Risk, or Explorer display for the **INCIDENT** tab.
Dashboard Home	Select the Dashboard to open by default under the **DASHBOARD** tab from this drop-down list.
Dashboard Settings	Select the type of dashboards to be visible/hidden using the left/right arrows. The up/down arrows can be used to sort the Dashboards.
Language	Specify which language will be used for the UI display. Many UI items have been translated into the languages in the drop-down list, including buttons, labels, top-level headings, and breadcrumbs. Items that are data-driven are not translated.
Theme	Select Dark or Light theme for FortiSIEM UI. Save and refresh the browser to view the change.

Note: All of the above settings will take effect when you log in again or when you refresh the browser in the same login session.

Administrator UI Settings

Click **ADMIN > Settings > System > UI** to access the administrator UI settings.

Settings	Guidelines
UI Logo	Click the edit icon to enter the path to the image file for the logo that will be used in the UI.
Report Logo	Click the edit icon to enter the path to the image file for the logo that will be used in reports.
Google Maps API Key	Click the edit icon to enter the API key to access Google Maps.

Email settings

The system can be configured to send email as an incident notification action or send scheduled reports. Use these fields to specify outbound email server settings.

Complete these steps to customize email settings:

1. Go to **ADMIN** > **Settings** > **System** > **Email** tab.
2. Enter the following information under **Email Settings**:

Settings	Guidelines
Email Gateway Server	[Required] Holds the gateway server used for email.

Settings	Guidelines
Server Account ID	[Required] The account name for the gateway.
Account password	[Required] The password for the account.
Server Port	Port used by the gateway server.
Secure Connection (TLS)	Protocol used by the gateway server. This can be Exchange or SMTP.
Admin Email Ids	Email addresses for all of the admins.
Default Email Sender	Default email address of the sender.

3. Click **Test Email** button to test the new email settings.
4. Click **Save**.

Customizing the Incident Email Template

Use the following procedure to customize the incident email template.

1. Click **New** under the section **Incident Email Template**.
2. Enter the **Name** of the template.
3. Select the **Organization** from the list.
4. Enter the **Email Subject**. You can also choose the incident attribute variables from **Insert Content** drop-down as part of Email Subject.
5. Enter the **Email Body** by selecting the attribute variables from **Insert Content** drop-down into your template, rather than typing. If required, enable **Support HTML** for HTML content support.

Incident Attribute	Description
Organization	Organization to which this Incident belongs.
Status	Incident Status – Active (0), Auto Cleared (1), Manually Cleared (2), System Cleared (3)
Host Name	Host Name from Incident Target. If not found then gathered from Incident Source
Incident ID	Incident ID – assigned by FortiSIEM and is unique – this attribute has an URL which takes user to this incident after login
Incident ID Without Link	Incident ID – assigned by FortiSIEM and is unique – this attribute does not have an URL
First Seen Time	First time the incident occurred

Incident Attribute	Description
Last Seen Time	Last time the incident occurred
Incident Category	Security, Performance, Availability or Change
Incident Severity	A number from 0-10
Incident Severity Category	HIGH (9-10), MEDIUM (5-8) and LOW (1-4)
Incident Count	Number of times the same incident has happened with the same group by parameters
Rule Name	Rule Name
Rule Remediation Note	Remediation note defined for each rule
Rule Description	Rule Description
Incident Source	Source IP, Source Name in an Incident
Incident Target	Destination IP, Destination Host Name, Host IP, Host Name, User in an Incident
Incident Detail	Any group by attribute in an Incident other than those in Incident Source and Incident Target
Affected Business Service	Comma separated list of all business services to which Incident Source, Incident Target or Reporting Device belongs
Identity	Identity and Location for Incident Source
Notify Policy ID	Notification Policy ID that triggered this email notification
Triggering Attributes	List of attributes that trigger a rule – found in Rule > Sub pattern > Aggregate
Raw Events	Triggering events in raw format as sent by the device (up to 10)
Incident Cleared Reason	Value set by user when clearing a rule
Device Annotation	Annotation for the device in Incident Target – set in CMDB
Device Description	Description for the device in Incident Target – set in CMDB
Device Location	Location for the device in Incident Target – set in CMDB

Incident Attribute	Description
Incident Subcategory	Specific for each category – as set in the Rule definition
Incident Resolution	None, True Positive, False Positive

6. Click **Preview** to preview the email template.
7. Click **Save** to apply the changes.

To set an email template as default, select the template in the list, and then click **Set as Default**. When you are creating a notification policy and must select an email template, if you leave the option blank, the default template will be used. For Service Provider deployments, to select a template as default for an Organization, first select the Organization, then set the default email template for that organization.

Collector Image Server settings

Click **Admin > Settings > System > Collector Image Server** to display the location of the image updates. The **Image Download URL** field cannot be edited.

To update the image, see Upgrade the Collector Image From the Supervisor in the Upgrade Guide for more information.

If the **Image Download URL** field is empty, then no image updates have been performed.

Event Worker settings

Collectors upload events and configurations to Worker nodes. Use this field to specify the Worker host names or IP addresses.

There are three cases:

- Explicit list of Worker IP addresses or host names - Collector forwards to this list in a round robin manner.
- If you are not using Workers and using only a Supervisor and Collector(s) – specify the Supervisor IP addresses or host name. The Collectors will upload directly to the Supervisor node.
- Host name of a load balancer - Collector forwards this to the load balancer which must be configured to distribute events to the workers.

Any Hostnames specified in the Worker Upload must be resolvable by the Collector and similarly, any specified IP addresses must have connectivity from the Collector.

Complete these steps to configure Worker upload settings:

1. Go to **ADMIN** > **Settings** > **System**
2. Click **Event Worker**.
3. Enter the IP address of the event worker under **Worker Address**.
   You can click '**+**' or '**-**' to add or remove addresses.
4. Click **Save**.

Query Worker Settings

Release 5.3 introduces the concept of a Query Worker to handle only query requests, adhoc queries from GUI, and scheduled reports. This allows more system resources to be dedicated to queries and make them run faster.

By default, all Workers are also Query Workers. If you want only a subset of Workers to be Query Workers, then complete these steps:

1. Go to **ADMIN > Settings > System**.
2. Click **Query Worker**.
3. Select the Workers you want to use from the list.
   Note: Workers will be removed automatically from the Query Worker Settings if they are explicitly listed there. If you used a load balancer or DNS name, then you must manually remove the Query Worker from those configurations.

Data Update Server settings

Data Update Server settings are used to specify the location of the data update images and the credentials needed to access them.

Prerequisites

- Contact FortiSIEM support and make sure that your license includes Data Update Service.
- Make sure you have the **Data Update URL** which is typically **https://images.FortiSIEM.net/upgrade/ds-** contact FortiSIEM to make sure that this information has not changed.
- Make sure you have license credentials.

Complete these steps to configure Data Update server settings:

1. Go to **ADMIN** > **Settings** > **System** > **Data Update Server** tab.
2. Enter the following information:
   - Data Update URL
   - Server Username and Server Password - these are the license credentials.
   - Notify Email - you will receive an email notification when new data updates are available.
3. Click **Save**.

Lookup settings

Lookup setting can be used to find any IP or domain by providing the link.

Complete these steps for lookup:

1. Go to **ADMIN** > **Settings** > **System** > **Lookup** tab.
2. Enter the **Name**.
3. Select the **Client Type** to **IP** or **Domain**.
4. Enter the **Link** for look-up.
   You must enter "`<ip>`" in the link. FortiSIEM will replace "`<ip>`" with a proper IP during lookup.

   For example, to lookup the following URL:

   `http://whois.domaintools.com/8.8.8.8`

   Enter the following link in FortiSIEM:

   `http://whois.domaintools.com/<ip>`
5. Click **Save**.

Kafka settings

FortiSIEM events found in system event database can be exported to an external system via Kafka message bus.

FortiSIEM supports both forwarding events to an external system via Kafka message bus as a 'Producer' and receiving events from a third-party system to FortiSIEM via Kafka message bus as a 'Consumer'.

As a Producer:

- Make sure you have set up a Kafka Cloud (here) with a specific Topic for FortiSIEM events.
- Make sure you have identified a set of Kafka brokers that FortiSIEM is going to send events to.
- Make sure you have configured Kafka receivers which can parse FortiSIEM events and store in a database. An example would be Logstash receiver (see here) that can store in an Elastic Search database.
- Supported Kafka version: 0.8

As a Consumer:

- Make sure you have set up a Kafka Cloud (here) with a specific Topic, Consumer Group and a Consumer for sending third party events to FortiSIEM.
- Make sure you have identified a set of Kafka brokers that FortiSIEM will receive events from.
- Supported Kafka version: 0.8

Complete these steps for configuring Kafka settings in FortiSIEM:

1. Go to **ADMIN** > **Settings** > **System** > **Kafka** tab.
2. Click **New**.
3. Enter the **Name** and **Topic**.
4. Select or search the **Organization** from the drop-down.
5. Add **Brokers** by clicking **+** icon.
    a. Enter IP address or Host name of the broker.
    b. Enter Broker port (default 9092).
6. Click **Save**.
7. Select the **Client Type** to **Producer** or **Consumer**.
8. If the Consumer is selected in step 7, enter the **Consumer Name** and **Group Name** fields.
9. Click **Save**.

Dashboard Slideshow settings

Dashboard Slideshow settings are used to select a set of dashboards and display them in a slideshow mode on big monitors to cover the entire display. This is useful for Network and Security Operation Centers.

Complete these steps to create a Dashboard Slideshow:

1. Go to **ADMIN** > **Settings** > **System** > **Dashboard Slideshow** tab.
2. Click **New** to create a slideshow.
3. Enter a **Name** for the slideshow.
4. Select the **Interval** for switching between dashboards.
5. Select the **Dashboards** from the list and move to the **Selected** list.
   These dashboards will be displayed in a slideshow mode.
6. Click **Save**.

For all the above System settings, use the **Edit** button to modify or **Delete** button to remove any setting from the list.

Analytics Settings

The following section describes the procedures for Analytics settings:

- Scheduling Report Alerts
- Setting Incident SNMP Traps
- Setting Incident HTTP Notification
- Setting Remedy Notification
- Scheduling Report Copy
- Setting a Subcategory
- Setting Risk Filters

Scheduling Report Alerts

You can schedule reports to run and send email notifications to specific individuals. This setting is for default email notifications that will be sent when any scheduled report is generated.

1. Go to **ADMIN** > **Settings** > **Analytics** tab.
2. Select the required action under **Scheduled Report Alerts** section.
   - **Do not send scheduled emails if report is empty** - Sometimes a report may be empty because there are no matching events. If you don't want to send empty reports to users, select this option. If you are running a multi-tenant deployment, and you select this option while in the Super/Global view, this will apply only to Super/Global reports. If you want to suppress delivery of empty reports to individual Organizations, configure this option in the Organizational view.
3. Enter the email address in **Deliver notification via** filed. Click **+** to add more than one email address, if needed.
4. Click **Save**.
5. To receive email notifications, go to **Admin** > **Settings** > **System** > **Email** and configure your mail server.

Setting Incident SNMP Traps

You can define SNMP traps that will be notified when an event triggers an incident.

1. Go to **ADMIN** > **Settings** > **Analytics** tab.
2. Enter the following information under **Incident SNMP Traps** section.
   a. **SNMP Trap IP Address**
   b. **SNMP Community String** - to authorize sending the trap to the SNMP trap IP address.
3. Select the **SNMP Trap Type** and **SNMP Trap Protocol** options.
4. Click **Test** to check the connection.
5. Click **Save**.

For the SNMP MIB definition, see here.

Setting Incident HTTP Notification

You can configure FortiSIEM to send an XML message over HTTP(s) when an incident is triggered by a rule.

1. Go to **ADMIN** > **Settings** > **Analytics** tab.
2. Enter the following information under **Incident Http Notification** section.
3. For **HTTP(S) Server URL**, enter the URL of the remote host where the message should be sent.

4. Enter the **User Name** and **Password** to use when logging in to the remote host, and enter **Confirm Password** to reconfirm the password.
5. Click **Test** to check the connection.
6. Click **Save**.

Incidents are sent out in XML format. For details, see here.

Setting Remedy Notification

You can set up Remedy to accept notifications from FortiSIEM and generate tickets from those notifications.

Configuring Remedy to Accept Tickets from FortiSIEM Incident Notifications

Before configuring Remedy to accept tickets, make sure you have configured the Remedy Notifications in FortiSIEM.

1. In Remedy, create a new form, **FortiSIEM_Incident_Interface**, with the incident attributes listed in the table at the end of this topic as the form fields.
2. When you have defined the fields in the form, right-click the field and select the **Data Type** that corresponds to the incident attribute.
3. After setting the form field data type, click in the form field again to set the **Label** for the field.
4. When you are done creating the form, go to **Servers** > **localhost** > **Web Service** in Remedy, and select **New Web Service**
5. For **Base Form**, enter **FortiSIEM_Incident_Interface**.
6. Click the **WSDL** tab.
7. For the **WSDL Handler URL**, enter `http://<midtier_server>/arsys/WSDL/public/<servername>/FortiSIEM_Incident_Interface`.
8. Click the **Permissions** tab and select **Public.**
9. Click **Save.**

You can test the configuration by opening a browser window and entering the WSDL handler URL from step 7 above, substituting the Remedy Server IP address for `<midtier_server>` and `localhost` for `<servername>`. If you see an XML page, your configuration was successful.

Incident Attributes for Defining Remedy Forms

Incident Attribute	Data type	Description
biz_service	text	Name of the business services affected by this incident
cleared_events	text	Events which cleared the incident
cleared_reason	text	Reason for clearing the incident if it was cleared
cleared_time	bigint	Time at which the incident was cleared
cleared_user	character varying (255)	User who cleared the incident
comments	text	Comments

Incident Attribute	Data type	Description
cust_org_id	bigint	Organization id to which the incident belongs
first_seen_time	bigint	Time when the incident occurred for the first time
last_seen_time	bigint	Time when the incident occurred for the last time
incident_count	integer	Number of times the incident triggered between the first and last seen times
incident_detail	text	Incident Detail attributes that are not included in incident_src and incident_target
incident_et	text	Incident Event type
incident_id	bigint	Incident Id
incident_src	text	Incident Source
incident_status	integer	Incident Status
incident_target	text	Incident Target
notif_recipients	text	Incident Notification recipients
notification_action_status	text	Incident Notification Status
orig_device_ip	text	Originating/Reporting device IP
ph_incident_category	character varying (255)	FortiSIEM defined category to which the incident belongs: Network, Application, Server, Storage, Environmental, Virtualization, Internal, Other
rule_id	bigint	Rule id
severity	integer	Incident Severity 0 (lowest) - 10 (highest)
severity_cat	character varying (255)	LOW (0-4), MEDIUM (5-8), HIGH (9-10)
ticket_id	character varying (2048)	Id of the ticket created in FortiSIEM
ticket_status	integer	Status of ticket created in FortiSIEM
ticket_user	character varying (1024)	Name of the user to which the ticket is assigned to in FortiSIEM

Incident Attribute	Data type	Description
view_status	integer	View status
view_users	text	View users

Complete these steps to set up the routing to your Remedy server.

1. Go to **ADMIN** > **Settings** > **Analytics** tab.
2. Enter the following information under **Remedy Notification** section.
3. For **WSDL**, enter the URL of the Remedy Server.
4. Enter the **User Name** and **Password** associated with your Remedy server, and enter **Confirm Password** to reconfirm the password.
5. Click **Test** to check the connection.
6. Click **Save**.

Scheduling Report Copy

Reports can be copied to a remote location when the scheduler runs any report. Note that this setting only supports copy to Linux remote directory.

1. Go to **ADMIN** > **Settings** > **Analytics** tab.
2. Enter the following information under **Scheduled Report Copy** section.
3. Enter the **Host** - IP address or name.
4. Enter the **Path** - absolute path, such as `/abc/def`.
5. Enter the **User Name** and **Password**, and enter **Confirm Password** to reconfirm the password.
6. Click **Test** to check the connection.
7. Click **Save**.

Note: For all of the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

Setting a Subcategory

FortiSIEM Incidents are grouped into different categories – Availability, Change, Performance, Security and Other. A Category is assigned to every Rule and you can search any Incidents using these Categories. FortiSIEM extends this concept to include Subcategories. A Subcategory is defined for every system-defined rule. You can add a Subcategory for custom rules and also create new Subcategories. Incidents can be searched using both Categories and Subcategories.

Creating a Subcategory

1. Go to **ADMIN > Settings > Analytics > Subcategory**.
2. Select the **Category** from the left-hand panel where you want to create a Subcategory.
3. Click **Add** in the right-hand panel.
4. Enter a name for the new Subcategory.
5. Click the checkmark icon or click **Save All**.

Modifying a Subcategory

You can modify only user-defined Subcategories. You cannot modify system-defined Subcategories.

1. Select the Subcategory you want to modify.
2. Click the edit icon.
3. Modify the name in the **Subcategory** field.
4. Click the checkmark icon or **Save All**.

Deleting a Subcategory

You can delete only user-defined Subcategories. You cannot delete system-defined Subcategories.

1. Select the Subcategory you want to delete.
2. Click the **-** icon.
3. Click **Save All**.

Setting Risk Filters

A Risk Filter allows you to include or exclude certain rules from the Risk Score calculation. For more information on Risk Scores, see Risk View. (Note we also have an Entity Risk Score topic which is empty)

In the SP model, you can create a global Risk Filter or filters for individual organizations. A global Risk Filter can include only system rules, and is available to all organizations. You can create only one Risk Filter for an organization. Multiple filters are not allowed. This Risk Filter includes the filter defined for the organization itself and the global filter if one exists.

The VA model allows only one filter.

The Risk Filter view contains a table with three columns. The **Scope** column lists the organization the filter belongs to. The **Included Rules** column lists the rules that will be included in the calculation of the risk score. The **Excluded Rules** columns lists the rules that will not be included in the calculation of the Risk Score.

Creating a Risk Filter

Follow these steps to create a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Click **New**.
3. In the New Risk Filter dialog box, select **Super/Local** or the name of an organization from the **Add filter for** drop-down list.
4. Click **Next**.
5. In the next dialog box, **Include** is selected by default. Open the **Rules** tree under **Groups** and shuttle the rules you want to include in the filter from the **Rules** column to the **Selection** column.
6. Select **Exclude** and repeat the process described in the previous step to exclude rules from the filter.
7. Click **Save**. Your rule selections will appear in the **Included Rules** and **Excluded Rules** columns of the table.

Editing a Risk Filter

Follow these steps to edit a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Click **Edit**.
3. In the dialog box, **Include** is selected by default. Shuttle the rules you do not want to be included in the Risk Score from the **Selection** column to the **Rules** column.
4. Select **Exclude** and repeat the process described in the previous step to exclude rules from the filter.
5. Click **Save**.

Deleting a Risk Filter

Follow these steps to delete a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Select the row in the table containing the filter you want to delete.
3. Click **Delete**.

Viewing Risk Filter Results

To see the impact of the filters you defined, go to **INCIDENTS**. Click the Risk icon 

to open the Risk View. For a description of the Risk View, see Risk View.

Discovery Settings

The following section describes the procedures for Discovery settings:

- Generic Settings
- Setting CMDB Device Filter
- Setting Application Filter
- Setting Location
- Setting CMDB Group

Generic Settings

Before you initiate discovery, you should configure the Discovery Settings in your Supervisor as required for your deployment.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Generic** tab.
2. Enter the following information under **Generic Settings** section. In a SP deployment, you must define all these settings for each Organization by logging in to the Organization directly.

Setting	Description
Virtual IPs	Often a common virtual IP address will exist in multiple machines for load balancing and fail-over purposes. When you discover devices, you must have these virtual IP addresses defined within your discovery settings for two reasons: • Listing the virtual IP addresses ensures that two or more devices with the same virtual IP will not be merged into one device during device discovery, so each of the load-balanced devices will maintain their separate identity in the CMDB • The virtual IP will not be used as an access IP during discovery, since the identity of the device when accessed via the virtual IP is unpredictable Enter the **Virtual IP** and click **+** to add more, if required.
Excluded Shared Device IPs	An enterprise often has servers that share credentials, for example mail servers, web proxies, and source code control servers, and a large number of users will authenticate to these servers to access their services. Providing a list of the IP addresses for these servers allows FortiSIEM to exclude these servers from user identity and location calculations in the **Analytics** > **IdentityandLocation** report. For example, suppose user A logs on to server B to retrieve his mail, and server B authenticates user A via Active Directory. If server B is not excluded, the **Analytics > Identity and Location Report** will contain two entries for user A: one for the workstation that A logs into, and also one for server B. You can eliminate this behavior by adding server B to the list of Server IPs with shared credentials. Enter the **Excluded Shared Device IPs** and click **+** to add more, if required.
Virtual Device Hardware Serial Numbers	If two or more devices have identical hardware serial number, specify them here. In general, hardware serial number is used to uniquely identify a device and therefore two devices with identical hardware serial number is merged into a single device in CMDB. If a hardware serial number is present in the Virtual Hardware Serial Numbers list, then it is excluded for merging purposes. Enter the **Virtual Device Hardware Serial Numbers** and click **+** to add more, if required.

Setting	Description
Allow Incident Firing on	This setting allows you to control incident firings based on approved device status. If the **Approved Devices Only** option is selected, the following logic is used: (a) If at least one Source, Destination or Host IP is approved, the incident triggers. (b) Else if at least one incident reporting device is approved, the incident triggers. (c) Else the incident does not trigger. **Note:** System devices (Super, Worker, and Collectors) will always be considered to be approved devices. In other words, incidents will fire for these system devices even if **Approved Devices Only** option is selected. Select **All Devices** or **Approved Devices Only** accordingly.

3. Click **Save**.

Setting CMDB Device Filter

This setting allows you to limit the set of devices that the system automatically learns from logs and Netflows. After receiving a log from a device, the system automatically learns that device and adds it to CMDB. When a TCP/UDP service is detected running on a server from Netflow analysis, the server along with the open ports are added to CMDB.

Sometimes, you may not want to add all of these devices to CMDB. You can create filters to exclude a specific set of devices from being added to CMDB. Each filter consists of a required **Excluded IP Range** field and an optional **Except** field.

1. Go to **ADMIN** > **Settings** > **Discovery** > **CMDB Device Filter** tab.
2. Click **New**.
3. In the **Range Definition** dialog box, enter the following information:
   a. **Excluded IP Ranges** - A device will not be added to CMDB if it falls in the range defined in the Excluded IP Range field. For example, if you wanted to exclude the `172.16.20.0/24` network from CMDB, add a filter with `172.16.20.0-172.16.20.255` in its **Excluded IP Range** field.
   b. **Except** - This field allows you to specify some exceptions in the excluded range. For example, if you wanted to exclude the `172.16.20.0/24` network without excluding the `172.16.20.0/26` network, add a filter with `172.16.20.0-172.16.20.255` in the **Excluded IP Range** field, and `172.16.20.192-172.16.20.255` in the **Except** field.

   You can add multiple values for these fields by clicking the **+** icon or remove an entry by clicking the **-** icon.
4. Click **Save**.

Setting Application Filter

This setting allows you to limit the set of applications/processes that the system automatically learns from discovery. You may be more interested in discovering and monitoring server processes/daemons, rather than client processes, that run on a server. To exclude client processes from being discovered and listed in the CMDB,

enter these applications here. An application/process will not be added to CMDB if it matches one of the entries defined in this table.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Application Filter** tab.
2. Click **New**.
3. In the **Process Definition** dialog box, enter the **Process Name** and any **Parameters** for that process that you want to filter.
   Matching is exact and case-insensitive based on Process Name and Parameter. If **Parameter** is empty, then only **Process Name** is matched.
4. Select the **Organization** from the drop-down list.
5. Click **Save**.

Setting Location

This setting allows you to set location information for devices in CMDB. Location information can be defined for a set of IP addresses. When applied, this information will overwrite the existing Location information in the CMDB. Future discoveries will not overwrite this information. Use this method to update locations of multiple devices with private IP addresses only. It is not necessary to update locations for public address space in this manner, because this information can also be obtained from a separate built-in database location.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Location** tab.
2. Click **New**.
3. In the **Location Definition** dialog box, select or enter the following information:
   - Organization Type
   - IP/IP Range
   - Location
   - Update Manual Devices (This enables the system to overwrite the location information for manually defined devices in CMDB.)
4. Click **Save**.
5. Select the new location from the list and click **Apply**.

Setting CMDB Group

This setting allows you to write rules to add devices in CMDB Device Group and Business Service Groups of your choice. When a device is discovered, the policies defined here are applied and the device is assigned to the group (s) defined in the matching policies. This device grouping does not overwrite the CMDB Device group assigned during discovery. The grouping defined here is in addition to the discovery defined CMDB group.

1. Go to **ADMIN** > **Settings** > **Discovery** > **CMDB Group** tab.
2. Click **New**.
3. In the **CMDB Group Definition** dialog box, select or enter the following information:
   - **Organization** - the organization which this rule applies to
   - **Vendor** - the matching device vendor
   - **Model** - the matching device model
   - **Host Name** - matching device host name via regular expression match
   - **IP Range** - matching device access IP - format is single IP, IP range, CIDR
   - **Custom Properties** - see Grouping Devices by Custom Properties
   - **Groups** - specify the groups which the matching devices will be added to
   - **Biz Services**- specify the business services which the matching devices will be added to

4. Click **Save**.
5. Select the new CMDB group from the list and click **Apply**.

Conditions are matched in ANDed manner: Both the actions are taken, that is, if both a Group and a Business Service is specified, then the device will be added to both the specified Group and Business Service.

To apply one or more CMDB Group policies:

1. Select one or more policies and click **Apply** or click **Apply All** to apply all policies.
2. Once a policy is saved, then next discovery will apply these policies. That means, discovered devices will belong to the groups and business services defined in the policies.

Note: For all the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

Grouping Devices by Custom Properties

FortiSIEM allows you to define device groups based on IP address, host name, or device type. You can also group devices based on custom properties. These steps assume that you have already defined the custom properties you are interested in. See Working with Custom Properties.

To group devices by custom properties:

1. In the **CMDB Group Definition** dialog box, click the edit icon next to **Custom Properties**.
2. Click **+** to add a new group definition based on the custom property.
3. Select a custom property from the **Property** drop-down list.
4. Enter a **Value** for the property. You can add multiple values by clicking the **+** button.
5. Click **Save**, then click **Save** again to return to the **CMDB Group Definition** dialog box.
6. In the **Add To** section of the dialog box, select the group to which the CMDB Group will be added from the **Groups** drop-down list.

Monitoring Settings

The following sections describe the procedures for Monitoring settings:

- Important Processes
- Important Ports
- Important Interfaces
- Excluded Disks
- Windows WMI Filter

Important Processes

This setting allows you to always get process resource utilization reports and UP/DOWN alerts on a set of important processes across all device types.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Processes** tab.
2. Click **Enable**.
   This will stop monitoring all processes.
3. Click **New**.
4. Enter a **Process Name**, **Parameter**, and select an **Organization** from the drop-down.
5. Click **Save**.
6. Select the processes from the table and click **Apply**.

FortiSIEM will start monitoring only the selected processes in this tab.

7. If you want to disable this and return to ALL process monitoring, then click **Disable**.

Important Ports

This setting allows you to get TCP/UDP port UP/DOWN status only for a set of important critical ports. Always reporting UP/DOWN status for every TCP/UDP port on every server can consume a significant amount of resources. A port's UP/DOWN status is reported only if the port belongs to this list defined here.

Matching is exact based on port number and IP protocol.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Ports** tab.
2. Click **New**.
3. Enter the **Port Number** and select the **Port Type** and **Organization** from the drop-down.
4. Click **Save**.
5. Select the new ports from the list and click **Apply**.

Important Interfaces

This setting allows you to always get interface utilization reports on a set of important network interfaces across all device types.

1. Create a list of all Important interfaces.
2. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Interfaces** tab.
3. Click **Enable**.
   This will stop monitoring all interfaces.
4. Click the icon left to search field to select either **Show Device Table** or **Show Interface only**.
5. Click **Select** to add the selected interface to the list. The **Critical** and **Monitor** columns will be automatically checked.
6. Check the WAN box if applicable. If checked, the interface utilization events will have the `isWAN = "yes"` attribute.
   You can use this to run a report for all WAN interfaces.
7. Select the interfaces from the table and click **Apply**.
   FortiSIEM will start monitoring only the selected interfaces in this tab.
8. If you want to disable this and return to ALL process monitoring, click **Disable**.

By default, this feature is disabled regardless of whether it is upgraded or newly installed. If this feature is disabled, FortiSIEM monitors all interface util and up/down events. The `isHostIntfCritical` attribute will be set to false for all interfaces. Only non-critical interface staying down rule may trigger. Critical interface staying down rule will have no chance to trigger. If this feature is enabled, there are two check boxes - monitor and critical. If critical is checked, monitor will be checked automatically. Monitor controls whether we must generate interface util event. We monitor interface utils events for interface whose monitor check box is selected. Critical controls whether we must generate interface up/down events. FortiSIEM monitors interface up/down events for an interface whose critical check box is selected. If one interface is marked as critical, we set the attribute of `isHostIntfCritical` to true in the generated interface util and up/down events. The Rule “critical interface staying down” will trigger on interfaces whose `isHostIntfCritical` is true. Non-critical interface staying down rule will have no chance to trigger.

Excluded Disks

This setting allows you to exclude disks from disk capacity utilization monitoring. Disk capacity utilization events will not be generated for devices matching device name, access IP and disk name. Incidents will not trigger for these events, and the disks will not show up in summary dashboards. Use this list to exclude read only disk volumes or partitions that do not grow in size and are close to full.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Excluded Disks** tab.
2. Click **New**.
3. From the **Choose Disk** dialog box, select the device from the device group.
4. Click **Select**.
5. Select the device from the table and click **Apply**.

Windows WMI Filter

Windows can produce a very high number of system, application, and security logs. The system provides a default filter, **Get All Logs**, which returns all of the Windows logs detected. By defining a filter, you can obtain only the logs you need.

Step 1: Create the Windows WMI Filter

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Windows WMI Filter** tab.
2. Click **New**.
3. Enter a name and an optional description for the filter in the New WMI Filter dialog box.
4. Click **New** to define a filter for the template:
    a. From the **Type** drop-down list, select **Application**, **Security**, or **System**.
    b. In the **Include** and **Exclude** fields, enter a comma-separated list of the event codes which should be included or excluded from the filter.
    c. Click **Save**.
5. Click **Save** again to save the Windows WMI filter.

Step 2: Apply the Filter in a Credential

1. Go to **ADMIN > Setup > Credentials**.
2. Click **New** in **Step 1: Enter Credentials**.
    a. In the Access Method Definition dialog box, select one of the Microsoft devices from the **Device Type** drop-down list.
    b. From the **Access Protocol** drop-down list, select **WMI**.
    c. From the **WMI Filter** drop-down list, select the filter created in Step 1: Create the Windows WMI Filter.
    d. Enter any other required information for the credential. For more information, see Setting Credentials.
    e. Click **Save**.
3. Click **New** in **Step 2: Enter the IP Range for Credential**.
    a. In the Device Credential Mapping Definition dialog box, enter an IP or IP range.
    b. From the **Credentials** drop-down list, select the filter created in Step 1: Create the Windows WMI Filter. For more information, see Associating a credential to IP ranges or hosts.
    c. Click **Save**.

Step 3: Discover using the WMI credential in Step 2

Any Windows Server discovery that uses that a WMI credential will only pull the logs specified in the Filter in Step 1.

Event Handling Settings

This section provides the procedures to configure Event Handling.

- Event Dropping
- Event Forwarding
- Event Organization Mapping
- Multiline Syslog

Event Dropping

Some devices and applications generate a significant number of logs, which may be very verbose, contain little valuable information, and consume storage resources. You can configure Event Dropping rules that will drop events just after they have been received by FortiSIEM, preventing these event logs from being collected and processed. Implementing these rules may require some thought to accurately set the event type, reporting device, and event regular expression match, for example. However, dropped events do not count towards licensed Events per Second (EPS), and are not stored in the Event database. Dropped events also do not appear in reports, and do not trigger rules. You can also specify that events should be dropped but stored, so event information will be available for searches and reports, but will not trigger rules. An example of an event type that you might want to store but not have trigger any rules would be an IPS event that is a false positive.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Dropping** tab.
2. Click **New**.
3. Deselect **All** and click the drop-down next to **Reporting Device** and browse the folders to select the device group or individual devices for which you must create a rule.
4. Click **Save**.
5. Deselect **All** and click the drop-down next to **Event Type** and browse the folders to find the group of event types, or a specific event type for which you must create a rule.
6. Click **Save**.
7. Enter **Source IP** or **Destination IP** that you want to filter. The value can be IP range.
8. Select the **Action** that should be taken when the event dropping rule is triggered from the available options.
    - Drop event
    - Store event:
        - Do not trigger rules
        - Drop attributes - to select the drop attributes, use the edit icon.
9. For **Regex Filter**, enter any regular expressions you want to use to filter the log files.
   If any matches are made against your regular expression, then the event will be dropped.
10. Enter any **Description** for the rule.
11. Click **Save**.

Notes:

- All matching rules are implemented by FortiSIEM, and inter-rule order is not important. If you create a duplicate of an event dropping rule, the first rule is in effect.

- If you leave a rule definition field blank, then that field is not evaluated. For example, leaving **Event Type** blank is the same as selecting **All Event Types**.
- FortiSIEM drops the event at the first entry point. If your deployment uses Collectors, events are dropped by the Collectors. If your deployment doesn't use Collectors, then the event will be dropped by the Worker or Supervisor where the event is received.
- You can use the report System Event Processing Statistics to view the statistics for dropped events. When you run the report, select AVG(Policy Dropped Event Rate (/sec) as one of the dimensions for Chart to see events that have been dropped to this policy.

Event Forwarding

In systems management, many servers may need access to forward logs, traps and Netflows from network devices and servers, but it is often resource intensive for network devices and servers to forward logs, traps and Netflows to multiple destinations. For example, most Cisco routers can forward Netflow to two locations at most. However, FortiSIEM can forward/relay specific logs, traps and Netflows to one or more destinations. A Super, Worker or Collector can forward events - the one which receives and parses the event forwards it. If you want to send a log to multiple destinations, you can send it to FortiSIEM, which will use an event forwarding rule to send it to the desired locations.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Forwarding** tab.
2. Click **New**.
3. Select the **Organization** for which the rule will apply.
4. Click the drop-down next to **Reporting Device** and browse the folders to find the group of devices, or a specific device for which you must create a rule.
5. Click the drop-down next to **Event Type** and browse the folders to find the group of event types, or a specific event type for which you must create a rule.
6. Click **Save**.
7. Select the **Traffic Type** to which the rule should apply.
8. For **Source IP**, enter the IP address of the device that will be sending the logs.
9. For **Destination IP**, enter the IP address of the device to which the logs are sent.
10. For **Severity**, select an operator and enter a severity level that must match for the log to be forwarded.
11. For **Regex Filter**, enter any regular expressions you want to use to filter the log files.
    If any matches are made against your regular expression, then the event will be forwarded.
12. Select the forwarding **Protocol** from the drop-down.
    - **UDP** - If you use this protocol, events may be lost.
    - **TCP** - This method ensures reliability.
    - **TCP over SSL** - This method ensures reliability and security. See Note 3 below.
13. Based on your selection of **Traffic Type**, enter the following information:
    a. Enter the **IP** address in **Forward to** > **IP**.
    b. Select the **Port** number in **Forward to** > **Port** field.
    c. Select a **Forward to** > **Protocol** from the drop-down list.
    d. Select the **Forward to** > **Format**:
       - **Incoming** - outgoing format is same as incoming.
       - **CEF** - outgoing events are CEF formatted. See here for details on CEF formatted logs.
14. Click **Save**.

Notes:

1. If you want the same sender IP to forward events to multiple destinations, create a rule for each destination.
2. FortiSIEM will implement all rules that you create and enable, so if you create a duplicate of an event forwarding rule, two copies of the same log will be sent to the destination IP.
3. If you want to use public CA certificates for TCP over SSL communication, then note the following:
   - FortiSIEM's SSL library can validate an external system's certificate if it is signed by a public CA.
   - If the external system wants to verify the FortiSIEM node's certificate, then you need to add the following certificate and key to the `phoenix_config.txt` file of the FortiSIEM nodes forwarding the event.

```
[BEGIN phEventForwarder]
tls_certificate_file= #/opt/phoenix/bin/.ssh/my_cert.crt
…
tls_key_file= #/opt/phoenix/bin/.ssh/my_cert.key
[END]
```

Event Organization Mapping

FortiSIEM can handle multi-tenant reporting devices that already have Organization names in the events they send, for example, VDOM attribute in FortiGate. This section shows how to map Organization names in external events to those in FortiSIEM. FortiSIEM will create a separate reporting device in each Organization and associate the events to the reporting device in the corresponding FortiSIEM Organization.

This feature requires that:

- One or more (multi-tenant) Collectors are created under Super-Local Organization.
- Multi-tenant devices send logs to the multi-tenant Collectors under Super-Local Organization.

Follow the steps below:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping** tab.
2. Click **New**.
3. Select or search the **Device Type** of the sender from the drop-down.
   This has to be a device that FortiSIEM understands and able to parse events.
4. Select or search the **Event Attribute** that contains the external organization name from the drop-down.
   FortiSIEM will map the value in this field to the FortiSIEM Organization.
5. Select or search the multi-tenant **Collectors** under Super-Local Organization that will receive the events from the drop-down.
   To include all Collectors, select **All Collectors**.
6. Specify the **IP/IP Range** of the multi-tenant devices that are sending events.
   Only a single IP or an IP Range is allowed, for example, 10.1.1.1 or 10.1.1.1-10.1.1.2. Comma-separated values, such as 10.1.1.1,10.1.1.2, are not allowed.
7. Click the edit icon next to **Org Mapping** to map an organization to an event.
   - Click on any **Event Organization** cell in the **Event Organization Mapping** dialog box to edit. Click **Save**.
8. Click **Save**.

Note: Do not define overlapping rules - make sure there are no overlaps in (Collector, Reporting IP/Range, Event Attribute) between multiple rules.

Multiline Syslog

Often applications generate a single syslog in multiple lines. For analysis purposes, the multiple lines must be put together into a single log. This feature enables you to do that. User can write multiple multiline syslog combining

rules based on reporting IP and begin and ending patterns. All matching syslog within the begin and ending pattern are combined into a single log.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Multiline Syslog** tab.
2. Click **New**.
3. Enter or select the following information:
    a. **Organization** - syslog from devices belonging to this Organization will be combined to one line.
    b. **Sender IP** - the source of the syslog. Format is a single IP, IP range, CIDR and a combination of the above separated by comma.
    c. **Protocol** - TCP or UDP since syslog can come via either of these protocols.
    d. **Begin Pattern** - combining syslog starts when the regular expression specified here is encountered.
    e. **End Pattern** - combining syslog stops when the regular expression specified here is encountered.
4. Click **Save**.

Note: For all the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

The current conception is only for UDP, which is different from TCP. If a single event is sent by multiple UDP packets, you need a multiline rule to combine them. Otherwise, FortiSIEM treats them as multiple events. If a continuous TCP stream contains multiple events, you need a multiline rule to separate them. Otherwise, FortiSIEM treats LF (new line character \n) as the separator.

Event Database Settings

The following sections provide more information about the Event Database settings:

Configuring Event Database Replication

FortiSIEM enables Database Replication by setting up two identical sites (identical number of Super, Workers and identical Event Database - NFS/Elasticsearch) using separate licenses.

The Active site is called 'Primary' while the Passive (disaster recovery) site is called the 'Secondary'. The Passive site receives data from Primary and the system will be ready for use but not usable while the Primary is running. Once the setup is complete, CMDB (PostGreSQL DB), Config (SVN), Profile data (SQLite DB) and Event DB (NFS based Event DB or Elasticsearch) are synched from the Primary to the Secondary site. Synching can be controlled via an update interval.

The following sections provide more information about configuring Database Replication:

- Replication settings for Local/NFS storage
- Replication settings for Elasticsearch storage
- Exporting Database Replication settings
- Importing Database Replication settings
- Disabling Disaster Recovery

For the operational details about setting up and managing FortiSIEM disaster recovery and failover, see:

- Operationalizing Disaster Recovery and Failover

Replication settings for Local/NFS storage

Settings	Description
Host Info	
Role	Choose the site as: - 'Primary' for the main active site. - 'Secondary' for the disaster recovery site which will receive data from the Primary and the system will be ready for use only when the Primary site is down.
Host	Host name of the Primary/Secondary site.
IP	Public IP of Primary/Secondary Supervisor to communicate with each other.
UUID	Universal Unique Identifier (UUID) for Supervisors to identify the Primary and Secondary site.
CMDB Replication	
Mount Point	CMDB Replication Mount point where the CMDB directory has to be mounted on Primary for writing and for a Write Mount Point on Secondary for reading.
Configuration and Profile Replication	
SSH Public Key	SSH Public Key is used for rsynch based data movements (for profile database, SVN and Local/NFS Event Database).
SSH Private Key Path	Path to the SSH Private Key.
Replication Frequency	
Value	Frequency (in minutes/hours) at which the Primary and Secondary sites data are synchronized.
EventDB Replication	Allows Event Database replication from the Primary to Secondary site.

Replication settings for Elasticsearch storage

Settings	Description
Host Info	

Settings	Description
Role	Choose the site as: - Primary for the main active site. - Secondary for the disaster recovery site which will receive data from the Primary and the system will be ready for use when the Primary site is down.
Host	Host name of the Primary /Secondary site.
IP	Public IP of Primary/Secondary Supervisor to communicate with each other.
UUID	Universal Unique Identifier (UUID) for Supervisors to identify the Primary and Secondary site.
CMDB Replication Mount Point	CMDB Replication Mount Point is used during PostGreSQL replication. CMDB Replication Mount point is where the CMDB directory has to be mounted on Primary for writing and for a Write Mount Point on Secondary for reading.
SSH Public Key	SSH Public Key is used for rsynch based data movements (for profile database, SVN and Local/NFS Event Database).
Elasticsearch Snapshot	
Write Mount Point	Write Mount Point is used during Elasticsearch Snapshot. Elasticsearch Data Directory is mounted to a Write Mount Point on Primary for writing and for a Write Mount Point on Secondary for reading.
Read Mount Point	Read Mount Point for Elasticsearch Restore operation.
Write Repository	Elasticsearch writes snapshots into Write repositories.
Read Repository	Elasticsearch reads snapshots from Read repositories.
Frequency	Frequency (in minutes/hours) at which the Primary and Secondary sites data are synchronized.

Exporting Database Replication settings

Database Replication settings can be exported to a JSON file for use in the Secondary site during setup. You can import the same settings in the Secondary site to avoid manual entry at the Secondary site.

Complete these steps to export an existing Database Replication setting:

1. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
2. Once the Database Replication settings are defined, click **Export**.
3. Save the JSON file to your local system for future use.

Importing Database Replication settings

To set up the Primary and Secondary sites for Disaster Recovery, you can import the Database Replication settings exported earlier into these sites.

Complete these steps to import Database Replication settings:

1. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
2. Click **Import** to upload the Database Replication settings from a previously saved JSON file.
3. Click **Save** to update the Replication settings to the Primary and Secondary sites.

Operationalizing Disaster Recovery and Failover

This section provides details about setting up and managing FortiSIEM disaster recovery and failover.

Prerequisites

It is recommended to use DNS names for Supervisor to support this operation.

Note: You need two separate FortiSIEM licenses - one for each site.

1. Create DNS Names for the Supervisor nodes at the two sites, for example:
   - Site1.fortisiem.acme.com
   - Site2.fortisiem.acme.com
2. Install FortiSIEM on both sites (version 5.2.1 and later).
3. The FortiSIEM setup at the two sites must be identical. (**Note: Collectors are not part of replication as they are deployed close to the devices.**)
   a. Number of Workers
   b. Storage type
   c. Archiving setup
   d. Report Server setup
   e. Hardware resources (CPU, Memory, Disk) of various FortiSIEM nodes
4. Make sure the users and Collector nodes can access both Supervisor nodes by DNS names.
5. Make sure that the two sites can communicate with each other using HTTPS, SSH and PostgreSQL.
6. Log in to the Supervisor, go to **ADMIN** > **Settings** > **Database** > **Replicate** and make sure you have the required information for the two sites.

Set up Disaster Recovery and Failover

Before setting up Disaster Recovery, determine which of the two sites will be the Primary site to start with.

1. Log in to the current Primary Supervisor node:
    a. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
    b. Enter the required information based on the event storage type:
        - Local/NFS
        - Elasticsearch
    c. Click **Save**.
    The Replication process starts and runs in the background. A Job will be created – the status can be seen in the Job window.
    d. Go back to **ADMIN** > **Settings** > **Database** > **Replicate** page.
    e. Click **Export** and **Save** the Replication Configuration file on your local system.
2. Log in to the current Secondary Supervisor node:
    a. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
    b. Select the exported Replication file from the current Primary site stored in your local computer. Click **Import**.
    c. The Replicate page opens. Make sure the information is correct. Click **Save**.
    This will continue the Replication process that started with the current Primary. A Job will also be created on the current Secondary – the status can be seen in the Job window.

The Replication process works as follows:

1. The CMDB of the current Primary will be replicated to current Secondary.
2. Once step 1 is complete, you will see that the two jobs created in Primary and Secondary will show complete in the Job window.
3. Other replication will begin and continue until replication status changes:
    a. SVN replication – Secondary will pull in replication files from Primary
    b. Profile DB replication
    c. Local or NFS based replication
    d. Elasticsearch replication

Operating FortiSIEM in Replication mode

1. Make sure DNS points to current Primary:
    a. DNS: fortisiem.acme.com (Site1.fortisiem.acme.com)
    b. Users log in to fortisiem.acme.com (Site1.fortisiem.acme.com)
    c. Collectors register to fortisiem.acme.com. This will cause the Worker Configuration at Site1.fortisiem.acme.com to be pushed to Collectors.
2. Events and configurations will be sent to the Primary and replicated to Secondary.
3. Profile Database and Incidents will be computed in the Primary and replicated to Secondary.
4. Inline Reports and scheduled reports are not copied over from Primary to Secondary. Incident Notification and Scheduled Report delivery happens on Primary only.
5. Incidents trigger on Primary and replicates to Secondary.
6. Archiving and Report Server synching occur independently on the two sites.
7. All processes will be up on Primary. However, on the Secondary node, only the processes required for user login (App Server, PostGreSQL, Query Master/Worker, Java Query Server) and replication (Data Purger) will be up.
8. The Secondary site can be operated like a Primary except the events are delayed because of replication (see **ADMIN** > **Settings** > **Database** > **Replicate** > **Replication Frequency**).
9. CMDB is set in a multi-master mode – so any changes on Secondary are replicated over to Primary. It is recommended to do all edits on the Primary site.

Handling Disaster

Assuming that disaster happens at the current Primary Site, make sure DNS points to current Secondary, that is, fortisiem.acme.com points to Site2.fortisiem.acme.com. Users log in to fortisiem.acme.com (now Site2.fortisiem.acme.com).

Log in to the current Secondary Supervisor node (Site2.fortisiem.acme.com) and:

1. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
2. Switch the roles – set Site2.fortisiem.acme.com as the Primary site.
3. Click **Save**.
   A Replication Change will be created in the Secondary and it will finish (Progress 100%). All processes will come up on Supervisor and all Worker nodes.

Collectors will send to the new Primary (Site2.fortisiem.acme.com) as follows:

1. Collectors will first fail to send to old Workers (part of Site1.fortisiem.acme.com).
2. Collectors will request a new Worker list from Super (now Site2.fortisiem.acme.com because of DNS change).
3. Collectors a new list of Workers from Site2.fortisiem.acme.com
4. Collectors will start sending events to the new Primary FortiSIEM cluster

Handling Recovery

Once the old Primary (Site1.fortisiem.acme.com) recovers, you may want to switch back to that site.

First, make the old Primary (Site1.fortisiem.acme.com) a Secondary.

1. Log on to Site1.fortisiem.acme.com and make it Secondary and follow these steps:
   a. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
   b. Make sure Site1.fortisiem.acme.com is Secondary and Site2.fortisiem.acme.com is Primary. This will happen because the CMDB replication will bring back changes from Site2 (Current Primary) to Site 1 (Current Secondary).
   c. Click **Save**.
      A Replication Change will be created in the Secondary and it will finish (Progress 100%).
   d. Only the processes required for user login (App Server, PostGreSQL, Query Master/Worker, Java Query Server) and replication (Data Purger) will be up.
   e. Replication will continue – all missing data during disaster will flow back in from Site2 to Site1.

Once Site1.fortisiem.acme.com has come up, make it Primary.

1. Log in to Site1.fortisiem.acme.com and make it Primary:
   a. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
   b. Switch Roles.
   c. Click **Save**.
2. Log in to Site2.fortisiem.acme.com and make it Secondary:
   a. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
   b. Verify Roles (verify since the changes in Site1 will be replicated).
   c. Click **Save**.

Disabling Disaster Recovery

If you do not want to enable the Disaster Recovery feature, you can turn off this.

Log in to the current Primary (note that this has to be done first):

1. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
2. Uncheck **Enable Replication** to disable Replication.
3. Click **Save** and make sure Replication setting task is completed.
   A Replication Job will be created. Make sure that the Job is finished from the Jobs and Errors window.

Log in to the current Secondary site:

1. Go to **ADMIN** > **Settings** > **Database** > **Replicate**.
2. Make sure Replication is disabled.
3. Click **Save**.
   A Replication Job will be created. Make sure that the Job is finished from the Jobs and Errors window.

Creating Retention Policy

The life cycle of an event in FortiSIEM begins in the online event database, before moving to the Archive data store. You can set up retention policies to specify which events are retained, and for how long, in the online event database and the archive.

- Creating Online Event Retention Policy
- Creating Offline (Archive) Retention Policy

Creating Online Event Retention Policy

Online event retention policies specify which events are retained, and for how long, in the online event database.

Note: **This is applicable only for NFS and Local Storage.**

1. Go to **ADMIN** > **Settings** > **Database** > **Retention**.
2. Under **Online Retention Policy**, click **New**.
3. Select **Enabled** if the policy has to be enforced immediately.
4. Choose the **Organizations** for which the policy must be applied (for service provider installations). Select **All** if it should apply to all organizations.
5. Choose the **Reporting Devices** to apply this policy using the edit icon and click **Save**.
6. Choose the **Event Type** or event type groups to apply this policy and click **Save**.
7. Enter or select the **Time Period** in days that the event data specified by the conditions (Organizations, Reporting Devices and Event Type) should be held in the online storage before it is moved to archive or purged.
8. Enter any **Description** related to the policy.
9. Click **Save**.

Consider the following when implementing online event retention policies:

- Implementing an online event policy requires selectively deleting specific events from the database and then re-indexing the database for the affected days. This is expensive in terms of time and performance. Therefore, do not define excessively fine-grained retention policies, because this will affect database performance.
- Policies are enforced only at the end of day – this means that events are deleted and re-indexed only at the end of the day. This minimizes the impact on database performance, because the database usage should be low at that time.
- Policies are enforced only from the day the policy is first created. It can be expensive to automatically apply retention policies on potentially large amount of historical events. It is advisable to manually enforce the retention policies by running the command: `EnforceRetentionpolicy <DATES>`, where `DATES` is a comma-separated list of dates

or date-range on which to enforce the policy. `DATES` is specified as the number of days since the UNIX epoch began: 1970-01-01. A date-range is the range specified by two dates inclusively separated by "-". For example, run the command `EnforceRetentionpolicy 16230,16233-16235` to imply "enforce retention policies" on the online event database on these dates: 6/8/2014 and from 6/11/2014 to 6/13/2014.

- FortiSIEM will attempt to retain the events in the online event database according to the policies. However, if the low storage threshold is hit (20GB, by default), then the events from the earliest day are moved to archive.
- If an event has remained in the online event database for the time period in the event retention policy, then the event is moved to the archive at the end of the day.
- If an event does not match any online event retention policy, then it remains in the online event database until the low storage threshold (20GB, by default) is reached. The event is then moved to the archive.
- If the archive mount point is defined, then ALL events are moved from online to archive. Nothing is purged.
- If the archive is not reachable after multiple retries, then FortiSIEM is forced to purge the event because there is nowhere to store the event.

Creating Offline (Archive) Retention Policy

These policies specify which events are retained, and for how long, in the archive.

1. Go to **ADMIN** > **Settings** > **Database** > **Retention**.
2. Under **Offline Retention Policy**, click **New** to create a new policy.
3. Select the **Organization** this policy applies to.
4. Enter the **Time Period** in days for archive retention.
5. Click **Save**.

Consider the following when implementing offline (archive) event retention policies:

- Policies are enforced only at the end of the day.
- FortiSIEM will attempt to retain the events in the archive according to the policies. However, if the low storage threshold is hit (20GB, by default), then the events which occurred earliest in the day are purged.
- Policies are enforced only from the day the policy is written. It can be expensive to automatically apply retention policies on potentially large amounts of historical events. It is advisable to manually enforce the retention policies by running the command: `TestDiskUChecker purge <archive mount point> <orgId> <StartPurgeDateEpoch>` where *`archive mount point`* is the full path to the location where data is stores, *`orgID`* is the ID of the organization and *`StartPurgeEpoch`* is the number of days since the UNIX epoch began.
- If an event has remained in the archive for the time period in the event retention policy, then the event is purged at the end of the day.
- If an event does not match any archive retention policies, then it stays in the archive until the low storage threshold (20GB, by default) is reached. It is then purged.

Viewing Online Event Data Usage

Online Event Data Usage enables you to see a summarized view of online event data usage. This view enable you to manage storage more effectively by writing appropriate event dropping policies or online event retention policies.

The Online Event Data Usage is displayed in tree view under **ADMIN** > **Settings** > **Database** > **Online Data** grouped by the year and dates for NFS/Local storage. For Elasticsearch-based deployments, if the storage is set per Organization, the usage is displayed specific to each Organization grouped by year and dates. You can drill-down from the year to view the usage for any specific date.

Viewing Archive Event Data

The event database archived data is displayed in tree view grouped by Organization and archive dates.

Complete these steps to view archived data:

1. Go to **ADMIN** > **Settings** > **Database** > **Archive**.
2. Search the **Archived Data** by Organization in the search box and drill-down to find the specific data by specific dates from the tree view.

Setting Elasticsearch Retention Threshold

Complete these steps to configure the Elasticsearch retention threshold:

1. Go to **ADMIN > Settings > Database > Archive Data**.
2. Select the low and high percentage thresholds under:
    a. **Hot Threshold** - When the Hot node cluster disk utilization falls below **Low value**, then events are moved to Warm nodes until the Hot node cluster utilization reaches **High value**. If Warm nodes are not defined, but Archive is defined, then events are archived. If neither Warm nodes nor Archive are defined, then events are purged.
    b. **Warm Threshold** - When the Warm node cluster disk utilization reaches **Low value**, then:
        - If Archive is defined, then events are archived until Warm node cluster disk utilization reaches **High value**
        - If Archive is not defined then events are purged until the Warm node cluster disk utilization reaches **High value**
    c. **Archive Threshold** - Snapshots are archived. When **Archive Mount Point** disk utilization reaches **Low value**, then snapshots are purged until disk utilization reaches **High value**.
3. Click **Save**.

Setting HDFS Retention Threshold

Complete these steps to configure the HDFS retention threshold:

1. Go to **ADMIN > Settings > Database > Archive Data**.
2. Select the low and high percentage thresholds under **Archive Threshold**. If HDFS disk utilization falls below **Low value**, then events are purged until disk utilization reaches **High value**.

Validating Event Log Integrity

Security auditors can validate that archived event data has not been tampered using the **Event Integrity** function of event database management.

Note: This setting is not available for Elasticsearch.

Viewing Event Log Integrity Status

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. Use the following filters to view the event log integrity:
   a. For a specific time using the **From** and **To** fields.
   b. Based on the status of event integrity using the **Status** drop-down:
      - Not Validated - the event integrity has not been validated yet.
      - Successful - the event integrity has been validated and the return was success. This means that the logs in this file were not altered.
      - Failed - the event integrity has been validated and the return was failed. This means that the logs in this file were altered.
      - Archived - the events in this file were archived to offline storage.
      - Purged - the log event is removed from the log.
      - Restored - the event is restored to the log file.

The event log integrity table is automatically updated with the applied filters.

Columns	Description
Start Time	The earliest time of the messages in this file. The file does not contain messages that were received by FortiSIEM before this time.
End Time	The latest time of the messages in this file. The file does not contain messages that were received by FortiSIEM after this time.
Category	• **Internal**: these messages were generated by FortiSIEM for its own use. This includes FortiSIEM system logs and monitoring events such as the ones that begin with `PH_DEV_MON`. • **External**: these messages were received by FortiSIEM from an external system. • **Incident**: these corresponds to incidents generated by FortiSIEM.
File Name	Name of the log file.
Events	Number of events in the file.
Algorithm	Checksum algorithm used for computing message integrity.
Checksum	Value of the checksum.

Columns	Description
Status	Event log integrity validation status.
File Location	File location: • **Local**: Local to Supervisor node. • **External**: means external to Supervisor node, for example, on NFS storage.

Validating Event Log Integrity

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. To validate the event log integrity of:
   a. Single event log - select the event log and click **Validate**.
   b. Multiple event logs - use **Ctrl**/**Command** keys to select the event logs and click **Validate**.
   c. All logs at a time - click **Validate All**.

The validation **Status** of the event log(s) will be updated in the list. The Validation History of any selected event log can be viewed under **Action** > **Validation History**.

Exporting Event Log Integrity Status

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. To generate and download the file in PDF or CSV format, select the event log from the list and click **Export**. Use **Ctrl**/**Command** keys to select multiple event logs.

General Settings

- External Authentication Settings
- Incident Notification Settings
- External System Integration Settings
- Escalation Settings
- Mapping AD Groups to Roles

External Authentication Settings

This screen allows you to define servers for external user authentication. Once one or more authentication server profiles have been defined, users of the system can be configured to be authenticated locally, or by one or more of these external authentication servers. To configure a user for external authentication, select that user from the **CMDB > Users** screen, and select **External** as the authentication mode. If more than one authentication profile is associated with a user, then the servers will be contacted one by one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.

The following section describes the procedure to configure External Authentication Settings:

- Adding External Authentication settings
- Modifying External Authentication settings

Adding External Authentication settings

Prerequisites

The following sections provide prerequisites steps before setting up external authentication in FortiSIEM.

Note: RADIUS and Okta follow the same authentication set up process.

- Adding Users from Active Directory via LDAP
- Adding Users from Okta
- Adding 2-factor Authentication via Duo Security
- Authenticating users against FortiAuthenticator (FAC) via RADIUS

Adding Users from Active Directory via LDAP

If you want to add users to your FortiSIEM deployment from an Active Directory server over LDAP, you must first add the login credentials for your server and associate them to an IP range, and then run the discovery process on the Active Directory server. If the server is discovered successfully, then all the users in that directory will be added to your deployment. You then must set up an authentication profile, which will become an option you can associate with users as described in Adding Users.

- Creating Login Credentials and Associate with an IP Address
- Discovering the Active Directory Server and Users

Creating Login Credentials and Associating with an IP Address

1. Log in to your Supervisor node.
2. Go to **ADMIN**> **Setup** > **Credentials**.
3. Click **New**.
4. Enter a **Name**.
5. For **Device Type**, select **Microsoft Windows**.
6. Select your **Access Protocol.**
   FortiSIEM supports these LDAP protocols:

Protocol	Settings
LDAP	**[Required] IP Host - Access IP for LDAP** **Port - Non-secure version on port 389**
LDAPS	**[Required] IP Host - Access IP for LDAPS** **Port - Secure version on port 636**
LDAP Start TLS	**[Required] IP Host - Access IP for LDAP Start TLS** **Port - Secure version on port 389**

7. For **Used For**, select **Microsoft Active Directory**.
8. For **Base DN**, enter the root of the LDAP user tree.
9. Enter the **NetBIOS/Domain** for your LDAP directory.
10. Enter the **User Name** for your LDAP directory.
    For user discovery from OpenLDAP, specify the full DN as the user name. For Active Directory, use your server login name.

11. Enter and confirm the **Password** for your **User Name**.
12. Click **Save**.
    Your LDAP credentials will be added to the list of **Credentials**.
13. Under **Enter IP Range to Credential Associations**, click **Add**.
14. Select your LDAP credentials from the list of **Credentials**. Click **+** to add more.
15. Enter the **IP/IP Range** or host name for your Active Directory server.
16. Click **Save**.
    Your LDAP credentials will appear in the list of credential/IP address associations.
17. Click **Test** > **Test Connectivity** to make sure you can connect to the Active Directory server.

Discovering the Active Directory Server and Users

1. Go to **ADMIN**> **Discovery**.
2. Click **Add**.
3. For **Name**, enter **Active Directory**.
4. For **Include Range**, enter the IP address or host name for your Active Directory server.
5. Leave all the default settings, but clear the **Discover Routes** under **Options**.
6. Click **OK**.
   Active Directory will be added to the list of discoverable devices.
7. Select the Active Directory device and click **Discover**.
8. After discovery completes, go to **CMDB > Users** to view the discovered users.
   You may need to click **Refresh** for the user tree hierarchy to load.

Adding Users from Okta

Follow the procedures below to add users from Otka.

Configuring Okta Authentication

To use Okta authentication for your FortiSIEM deployment, you must set up a SAML 2.0 Application in Okta, and then use the certificate associated with that application when you configure external authentication.

1. Log into Okta.
2. In the **Applications** tab, create a new application using **Template SAML 2.0 App**.
3. Under **Settings**, configure the settings similar to the table below:

Post Back URL	Post Back URL
Application label	FortiSIEM Demo
Force Authentication	Enable
Post Back URL	https://<FortiSIEMIP>/phoenix/okta
Name ID Format	EmailAddress
Recipient	FortiSIEM

Post Back URL	Post Back URL
Audience Restriction	Super
authnContextClassRef	PasswordProtectedTransport
Response	Signed
Assertion	Signed
Request	Uncompressed
Destination	https://<FortiSIEMIP>/phoenix/okta

4. Click **Save**.
5. In the **Sign On** tab, click **View Setup Instructions**.
6. Click **Download Certificate**.
7. Follow the instructions above and enter the downloaded certificate for Okta authentication.

Creating an Okta API Token

1. Log in to Okta using your Okta credentials.
2. Got to **Administration** > **Security** > **API Tokens**.
3. Click **Create Token**.
   You will use this token when you set up the Okta login credentials in the next section. Note that this token will have the same permissions as the person who generated it.

Creating Login Credentials and Associating Them with an IP Address

1. Log in to your Supervisor node.
2. Go to **ADMIN**> **Setup** > **Credentials**.
3. Click **New**.
4. Enter a **Name**.
5. For **Device Type**, select **OKTA.com OKTA**.
6. For **Access Protocol**, select **OKTA API**.
7. Enter the **Pull Interval** in minutes.
8. Enter the **Domain** associated with your Okta account.
   For example, `FortiSIEM.okta.com`.
9. Enter and reconfirm the **Security Token** you created.
10. Enter any related information in **Description**.
11. Click **Save**.
    Your Okta credentials will be added to the list of **Credentials**.
12. Under **Enter IP Range to Credential Associations**, click **New**.
13. Enter the **IP/IP range** or host name for your Okta account.
14. Select your Okta credentials from the list of **Credentials**. Click **+** to add more.
15. Click **Save**.

Your Okta credentials will appear in the list of credential/IP address associations.

16. Click **Test** > **Test Connectivity** to make sure you can connect to the Okta server.

Discovering Okta Users

If the number of users is less than 200, then Test Connectivity will discover all the users. Okta API has some restrictions that do not allow FortiSIEM to pull more than 200 users. In this case, follow these steps:

1. Log in to **Okta.**
2. Download user list CSV file (`OktaPasswordHealth.csv`) by visiting **Admin** > **Reports** > **Okta Password Health**.
3. Rename the CSV file to `all_user_list_%s.csv`. (`%s` is the placeholder of token obtained in Create an Okta API Token - Step 3, e.g. `all_user_list_00UbCrgrU9b1Uab0cHCuup-5h-6Hi9ItokVDH8nRRT.csv`).
4. Log in to **FortiSIEM Supervisor node**:
    a. Upload CSV file `all_user_list_%s.csv` to this directory `/opt/phoenix/config/okta/`
    b. Make sure the permissions are `admin` and `admin` (Run `chown -R admin:admin /opt/phoenix/config/okta/`)
    c. Go to **ADMIN > Setup > Credentials > Enter IP Range to Credential Associations**.
    d. Select the Okta entry and run **Test** > **Test connectivity** to import all users.

Adding 2-factor Authentication via Duo Security

Obtain keys for FortiSIEM to communicate with Duo Security

1. Sign up for a Duo Security account: signup.
   This will be admin account for Duo Security.
2. Log in to Duo Security Admin Panel and navigate to **Applications**.
3. Click **Protect an Application.** Locate **Web SDK** in the applications.
4. Get **API Host Name**, **Integration key**, **Secret key** from the page.
   You will need it when you configure FortiSIEM.
5. Generate **Application key** as a long string.
   This is a password that Duo Security will not know. You can choose any 40 character long string or generate it as follows using python

```
import os, hashlib

print hashlib.sha1(os.urandom(32)).hexdigest()
```

Create and Manage FortiSIEM users in Duo Security

This determines how the 2-factor authentication response page will look like in FortiSIEM and how the user will respond to the second-factor authentication challenge:

1. Log in to Duo Security as admin user.
2. Choose the **Logo** which will be shown to users as they log on.
3. Choose the super set of 2-factor **Authentication Methods**.
4. **Optional** - you can create the specific users that will logon via FortiSIEM. If the users are not pre-created here, then user accounts will be created automatically when they attempt 2-factor authentication for the first time.

Setup External Authentication Profiles

Add LDAP, LDAPS, and LDAPTLS authentication profile as follows:

1. Go to **ADMIN** > **Settings** > **General** > **Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**.
5. Set **Protocol** as LDAP or LDAPS or LDAPTLS.
6. Set IP/Host of LDAP server.
7. Change the port if it is different than default port.
8. Check **Set DN Pattern** if needed by filling in the DN Pattern field.
   Setting the DN pattern manually is not necessary if the user is discovered via LDAP. However, this feature allows you to manually override the discovered pattern, or enter it for a user that is being manually created. Enter `%s` to represent the user's name (`CN/uid`), for example:
   `CN=%s,CN=Users,DC=accelops,DC=com`
9. Click **Save**

Add RADIUS authentication profile as follows:

1. Go to **ADMIN**> **Settings** > **General** > **Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**.
5. Set **Protocol** as RADIUS.
6. Set IP/Host of RADIUS server.
7. Change and set **Authen Port** if the port is different from default.
8. Enter **Shared Secret**.
9. Click on **CHAP** if Radius server uses Challenge Handshake Authentication Protocol.
10. Click **Save**.

Add Okta authentication profile as follows:

1. Go to **ADMIN**> **Settings** > **General** > **Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**
5. Set **Protocol** as "Okta".
6. Copy and paste the certificate you downloaded in Configuring Okta Authentication - step 6 to **Certificate**.
7. Click **Save**.

Add 2-factor authentication option for FortiSIEM users

1. Create a 2-factor authentication profile:
   a. Go to **ADMIN**> **Settings** >**General** > **Authentication**.
   b. Click **New**.
      a. Enter **Name**.
      b. Select the organization from the **Organization** drop-down
      c. Set the **Protocol** as 'Duo'.
      d. Set the **IP/Host** from API hostname in Step 4 above.
      e. Set the **Integration key**, **Secret key**from Step 4 above.

f. Set the **Application key** from Step 5 above.
g. Click **Save**.

2. Add the 2-factor authentication profile to an user:
   a. Go to **CMDB** > **Users** > **Ungrouped**.
   b. Click **New** to create a new use or **Edit** to modify a selected user.
   c. Select **System Admin** checkbox and click the edit icon.
   d. In the **Edit User** dialog box, enter and confirm a password for a new user.
   e. Select the **Second Factor** check-box.
   f. Select the 2-factor authentication profile created in Step 1 above.
   g. Select a **Default Role** from the drop-down list.
   h. Click **Save**.

Log in to FortiSIEM using 2-factor authentication

Before logging in to FortiSIEM with 2-factor authentication, make sure that these steps are completed.

1. Obtain keys for FortiSIEM to communicate with Duo Security.
2. Create and Manage FortiSIEM users in Duo Security.
3. Add 2-factor authentication option for FortiSIEM users.

Follow these steps:

1. Log on to FortiSIEM normally (first factor) using the credential defined in FortiSIEM - local or external in LDAP.
2. If the 2-factor authentication is enabled, the user will now be redirected to the 2-factor step.
   a. If the user is not created in the Duo system (by the Duo admin), a setup wizard will let you set some basic information like phone number and ask you to download the Duo app.
   b. If the user already exists in FortiSIEM, then follow the authentication method and click **Log in**.

   The user will be able to log in to FortiSIEM.

Authenticating users against FortiAuthenticator (FAC)

FortiSIEM authenticates users against FortiAuthenticator (FAC) via RADIUS. User credentials are either stored in the FAC local database, or in an external credential store such as Active Directory (AD), accessed via LDAP. FAC optionally applies 2-factor authentication to users with the FortiToken.

The following sections provide information about the configurations and steps to log in and troubleshoot:

a. Configure AD users
b. Configure FortiAuthenticator
c. Configure FortiSIEM

Configure AD users

1. Install AD Domain Services following the steps here.
2. Configure the test domain users:
   a. **Server Manager** > **Tools** > **Active Directory Users and Computers**.
   b. Expand the Domain, right-click **Users**, select **New** > **User**.

Configure FortiAuthenticator

1. Perform the basic FAC setup following the steps in the *FortiAuthenticator Administration Guide: Section: FortiAuthenticator-VM image installation and initial setup* here.

a. Use the default credentials:
   - user name: `admin`
   - password: <blank>

b. At the CLI prompt enter the following commands:
   - `set port1-ip 192.168.1.99/24`
   - `set default-gw 192.168.1.2`

   Note that the CLI syntax has changed in FAC 5.x. Refer to FAC 6.x documentation for details.

c. Log in to the FAC GUI (default credentials user name / password: `admin` / `<blank>`).

d. Set the time zone under **System** > **Dashboard** > **Status** > **System Information** > **System Time**.

e. Change the GUI idle timeout for ease of use during configuration, if desired: **System Administration** > **GUI Access** > **Idle Timeout**.

2. Configure the DC as a remote LDAP server under **Authentication** > **Remote Authentication Servers** > **LDAP**. Follow the instructions in the FortiAuthenticator - FSSO Authentication User Guide.Note that the user must have appropriate privileges. The Domain Admin account can be used for testing in a lab environment. The 'Remote LDAP Users' section will be blank at this stage, users are imported later.
3. Configure an external Realm to reference the LDAP store:
   a. Select **Authentication** > **User Management** > **Realms** > **Create New**.
   b. Choose the LDAP source from the drop-down and click **OK**.
4. Configure the FortiSIEM as a RADIUS Client:
   a. Select **Authentication** > **RADIUS Service** > **Clients** > **Create New**.
   b. Enter the IP address of FortiSIEM and a shared secret.
   c. Choose the realms as required.
   d. Click 'add a realm' to include multiple realms.
   Note the FAC evaluation license only supports 2 realms.
   e. Click **Save**.
5. Import users from LDAP to FortiSIEM to allow FortiToken to be used:
   a. Select **Authentication** > **User Management** > **Remote Users**.
   b. Select the **Import** button.
   c. Choose and import the test users configured in AD. Note that the FAC Evaluation license is limited to 5 users.
6. (Optional) Configure local users in the FAC database for local authentication under **Authentication** > **User Management** > **Local Users**.
7. Provision the FortiToken:
   a. Select and edit the user in **Authentication** > **User Management** > **Remote Users** (or Local Users as appropriate).
   b. Select the **Token Based Authentication** check box, and assign an available FortiToken Mobile.
   FAC evaluation includes 2 demo FortiTokens.
   c. Choose **Email** delivery method and enter an email address in user information.
   The email address doesn't have to be valid for basic testing, the provisioning code is visible in the FAC logs.
   d. Click **OK**.
8. Configure the FortiToken iPhone app:
   a. Install the FortiToken app from the app store.
   b. Open the app and select the **+** icon in the top right corner.
   c. Choose **enter manually** from the bottom of the screen.

d. Select and edit the user in **Authentication** > **User Management** > **Remote Users** (or Local Users as appropriate).
e. Select the **Token Based Authnetication** check box, and assign an avaialble FortiToken Mobile. FAC eval includes 2 demo FortiTokens.
f. Choose **Email** delivery method and enter an email address in user information. The email address doesn't have to be valid for basic testing, the provisioning code is visible in the FAC logs.
g. Click **OK**.

Configure FortiSIEM

Step 1: Configure an External Authentication Source

1. Go to **ADMIN**> **Settings** > **General** > **Authentication**.
2. Click **New**.
3. Enter the following settings:
   - **Organization** - System
   - **Protocol** - RADIUS
   - **IP/Host** - IP of FortiAuthenticator
   - **Shared Secret** - Secret configured when setting RADIUS Client in FAC
4. Click **Save**.
5. Click **Test** to test the authentication settings.

Step 2: Configure users in FortiSIEM database

1. Go to **CMDB** > **Users** and click **New**.
2. Enter the user name to match the user configured in FSM/AD. (Use the format: user@domain.com)
3. Select the **System Admin** checkbox.
4. Select the **Mode** as **External**.
5. Select the RADIUS profile previously configured from **Authentication Profiles**.
6. Select the **Default Role** from the list.
7. Click **Save**.

Logging In

The **User Name** must be entered in the format `user@domain.xyz`. For 2-factor authentication, the password and FortiToken value must be concatenated and entered directly into the **Password** field.

For example:

- Username: `user123@testdomain.local`
- Password : `testpass123456`; where `123456` is the current FortiToken value

Troubleshooting

FortiAuthenticator logs are accessible by opening the **Logging** tab. Select a log entry to see more details.

Modifying External Authentication settings

Complete these steps to modify External Authentication settings:

1. Use the following buttons to modify External Authentication settings:
   - **Edit** - to modify an External Authentication setting.
   - **Delete** - to delete an External Authentication setting.
2. Click **Save**.

Incident Notification Settings

Notification Policies handles the sending of notifications when an incident occurs. Instead of setting notifications for each rule, you can create a policy and apply it to multiple rules.

The following section describes the procedures to enable Incident Notification settings:

- Adding Incident Notification settings
- Modifying Incident Notification settings

Adding Incident Notification settings

1. Go to **ADMIN** > **Settings** > **General** > **Notification** tab.
2. Click **New**.
3. Select the **Severity**.
4. For **Rules**, click the drop-down and select the rule or rules you want to trigger this notification from the folders.
5. Set a **Time Range** during which this notification will be in effect.
   Notifications will be sent only if an incident occurs during the time range you set here.
6. For **Affected Items**, click the drop-down and select the devices or applications from the **Select Devices** drop-down list for which this policy should apply.
   Instead of individual devices or groups, you can apply the notification policy to an IP address or range by clicking **Add IP/Range**. You can also select a group, and move to the **(NOT) Selections** column to explicitly exclude that group of applications or devices from the notification policy.
7. For Service Provider deployments, select the **Affected Orgs** to which the notification policy should apply.
   Notifications will be sent only if the triggering incidents affect the selected organization.
8. Select the **Action** to take when the notification is triggered.
   - Send Email/SMS to the target users. See here.
   - Run Remediation/Script. See here.
   - Invoke integration Policy. Run:no policy
   - Send SNMP message to the destination set in **ADMIN > Settings > Analytics**.
   - Send XML file over HTTP(S) to the destination set in **ADMIN> Settings > Analytics**.
   - Open Remedy ticket using the configuration set in **ADMIN > Settings > Analytics**.
9. Select the **Settings** to enable the exceptions for notification trigger.
   - Do not notify when an incident is cleared automatically.
   - Do not notify when an incident is cleared manually.
   - Do not notify when an incident is cleared by system.
10. Enter any **Comments** about the policy.
11. Click **Save**.

You can also create a duplicate notification by selecting a notification from the table and clicking **Clone**.

Modifying Incident Notification settings

Complete these steps to modify an Incident Notification setting.

1. Go to **ADMIN** > **Settings** > **General** > **Notification** tab.
2. Use the following buttons to modify Incident Notification settings:
   - **Edit** - To edit an Incident Notification setting
   - **Delete** - To delete an Incident Notification setting
3. Click **Save**.

System Integration Settings

This tab allows you to integrate devices and incidents with external CMDB and helpdesk/workflow systems. You can also write your own plugins to support other systems.

This section provides the procedures to configure External Systems Integration.

- Proxy Settings
- Setting up External System Integration
- Modifying an External System Integration

Proxy Settings

If you want the communication between the FortiSIEM Supervisor and the external system to go through a proxy, then complete the following steps

1. Login to Supervisor as `admin`.
2. Go to the glassfish configuration directory: `/opt/glassfish/domains/domain1/config`.
3. Add proxy server information to the `domain.xml` file:
```
<jvm-options>-Dhttp.proxyHost=172.30.57.100</jvm-options>
<jvm-options>-Dhttp.proxyPort=3128</jvm-options>
<jvm-options>-Dhttp.proxyUser=foo</jvm-options>
<jvm-options>-Dhttp.proxyPassword=password</jvm-options>
```
4. Restart glassfish.

Setting up External System Integration

FortiSIEM integration helps to create a two-way linkage between external ticketing/work flow systems like ServiceNow, ConnectWise and Salesforce. The integration can be for Incidents and CMDB.

This involves two steps:

1. Create an integration.
2. Attach the integration to an Incident Notification Policy or run the integration on a schedule.

Four types of integrations are supported:

- **Incident Outbound Integration**: This creates a ticket in an external ticketing system from FortiSIEM incidents.
- **Incident Inbound Integration**: This updates FortiSIEM incident ticket state from external system ticket states. Specifically, when a ticket is closed in the external ticketing system, the incident is cleared in FortiSIEM and the ticket status is marked closed to synchronize with the external ticketing system.
- **CMDB Outbound Integration**: This populates an external CMDB from FortiSIEM CMDB.
- **CMDB Inbound Integration**: This populates FortiSIEM CMDB from an external CMDB.

FortiSIEM provides a Java-based API that can be used to integrate with ticketing systems. Out of the box integration is available for ServiceNow, ConnectWise, Salesforce, RiskIQ, VirusTotal, and Jira. Integration with other systems can be built using the API. Contact Fortinet support for assistance.

See the following sections to set up External Systems Integration:

- ConnectWise Integration
- ServiceNow Integration
- Salesforce Integration
- RiskIQ Integration
- VirusTotal Integration
- Jira Integration
- CMDB Inbound Integration

ConnectWise Integration

- Configuring ConnectWise for FortiSIEM Integration
- ConnectWise Incident Outbound Integration
- ConnectWise Incident Inbound Integration
- ConnectWise CMDB Outbound Integration

Configuring ConnectWise for FortiSIEM Integration

1. Log in to ConnectWise MANAGE.
2. Go to **Setup Tables > Integrator Login** List.
3. Create a new **Integrator Login** for FortiSIEM:
    a. Enter **Username**.
    b. Enter **Password**.
    c. Set **Access Level** to **Records created by integrator**.
    d. Enable **Service Ticket API** for Incident Integration.
    e. Enable **Configure API** for CMDB Integration.
4. For Service Provider Configurations, create Companies by creating:
    a. **Company Name**
    b. **Company ID**

ConnectWise Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
    b. Choose whether the **Plugin Type** is **SOAP** or **REST**.
    c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you must create your own plugin and enter the plugin name here.

7. For **Host/URL**, enter the host name or URL of the external system. For ConnectWise, enter the login URL.
8. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key** and the **Private Key** in addition to the **User Name**, **Password**, and **Client ID**.
9. For **Incidents Comments Template**, specify the formatting of the incident fields.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ConnectWise, enter the Company names in Configuring ConnectWise for FortiSIEM Integration, Step 4.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. Enter the **Max Incidents** to be recorded.
13. Click **Save**.

Next, link the integration to one or more incident notification policies.

ConnectWise Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for ConnectWise.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
    b. Choose whether the **Plugin Type** is **SOAP** or **REST**.
    c. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system (see section Configuring external helpdesk systems). For ConnectWise, select the login URL.
8. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key** and the **Private Key** in addition to the **User Name**, **Password**, and **Client ID**.

9. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
10. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policy.
    b. Select a schedule.

ConnectWise CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM's own CMDB. Built in integrations are available for ServiceNow, ConnectWise and Salesforce.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
    b. Choose whether the **Plugin Type** is **SOAP** or **REST**.
    c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ConnectWise, select the login URL.
8. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key** and the **Private Key** in addition to the **User Name**, **Password**, and **Client ID**.
9. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ConnectWise, select the Company name in Configuring ConnectWise for FortiSIEM Integration, Step 4.
10. For **Run For**, choose the organizations for whom tickets will be created.

11. For ConnectWise, it is possible to define a **Content Mapping**.
    a. Enter **Column Mapping** values:
        i. To add a new mapping, click the + button.
        ii. Choose FortiSIEM CMDB attribute as the Source Column.
        iii. Enter external (ConnectWise) attribute as the Destination Column.
        iv. Specify Default Mapped Value as the value assigned to the Destination Column if the Source Column is not found in Data Mapping definitions.
        v. Select Put to a Question is the Destination Column is a custom column in ConnectWise.
    b. Enter **Data Mapping** values:
        i. Choose the (Destination) Column Name.
        ii. Enter From as the value in FortiSIEM.
        iii. Enter To as the value in ConnectWise.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Enter the **Max Devices**: the number of devices to send to the external system.
15. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure Run after Discovery is checked.
3. Click **Save.**

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policies.
    b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Select a specific integration policy and click **Run**.

ServiceNow Integration

- Configuring ServiceNow for FortiSIEM Integration
- ServiceNow Incident Outbound Integration
- ServiceNow Incident Inbound Integration
- ServiceNow CMDB Outbound Integration

Configuring ServiceNow for FortiSIEM Integration

1. Log in to ServiceNow.
2. For Service Provider Configurations, create Companies by creating Company Name.

ServiceNow Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two ServiceNow installations, each would have different Instance names.
    b. Select whether **Plugin Type** is **Ticket** or **Event Management**.
    c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ServiceNow, enter the login URL.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, enter the login credentials.
9. If your **Plugin Type** is **Ticket**, specify the formatting of the incident fields in the **Incidents Comments Template**. If your **Plugin Type** is **Event Management**, specify the mapping of attributes to resources in the **Attribute Mapping** table.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ServiceNow, enter the Company names as in Configuring ServiceNow for FortiSIEM Integration, Step 2.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. Enter the maximum number of incidents you want to record in **Max Incidents**.
13. Click **Save**.

Next, link the integration to one or more incident notification policies.

ServiceNow Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for ServiceNow.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two ServiceNow installations, each would have different Instance names.
    b. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system (see section Configuring external helpdesk systems). For ServiceNow, select the login URL.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, select the login credentials.
9. In **Attribute Mapping**, specify the mapping of attributes to resources.
10. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
11. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policy.
    b. Select a schedule.

ServiceNow CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM's own CMDB. Built in integrations are available for ServiceNow.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.

4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had 2 ServiceNow installations, each would have different Instance names.
    b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ServiceNow, select the login URL
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, select the login credentials.
9. In **Attribute Mapping**, specify the mapping of attributes to resources.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ServiceNow, select the Company names as iin Configuring ServiceNow for FortiSIEM Integration, Step 2.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Enter the **Maximum** number of devices to send to the external system.
15. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure **Run after Discovery** is checked.
3. Click **Save.**

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Click **Schedule** and then click **+**.
    a. Select the integration policies.
    b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Select a specific integration policy and click **Run**.

Salesforce Integration

- Configuring Salesforce for FortiSIEM Integration
- Salesforce Incident Outbound Integration

- Salesforce Incident Inbound Integration
- Salesforce CMDB Outbound Integration

Configuring Salesforce for FortiSIEM Integration

1. Log in to Salesforce.
2. Create a **custom domain**.
3. For Service Provider Configurations, create **Service App** > **Accounts**.
   FortiSIEM will use the **Account Name**.

Salesforce Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box.
   When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two Salesforce installations, each would have different Instance names.
   b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
   a. Log in to Salesforce.
   b. Go to **Setup** > **Settings**.
   c. Use the **Custom URL** under **My Domain**, typically it is `xyz.my.salesforce.com`
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system.
   a. For Salesforce, enter the login credentials.
9. For **Incidents Comments Template**, specify the formatting of the incident fields.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For Salesforce:
    a. Go to **Service App** > **Accounts**.
    b. Use **Account Name**.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system
13. Click **Save**.

Next, link the integration to one or more incident notification policies.

Salesforce Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for Salesforce.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had two Salesforce installations, each would have different Instance names.
    b. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
    a. Log in to Salesforce.
    b. Go to **Setup > Settings**.
    c. Use the **custom URL** under **My Domain** – typically it is `xyz.my.salesforce.com`.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For Salesforce, select the login credentials.
9. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
10. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policy.
    b. Select a schedule.

Salesforce CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM's own CMDB. Built in integrations are available for Salesforce.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration**.
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had 2 Salesforce installations, each would have different Instance names.
    b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce . For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
    a. Log in to Salesforce.
    b. Go to **Setup** > **Settings**.
    c. Use the **Custom URL** under **My Domain**, typically it is `xyz.my.salesforce.com`.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For Salesforce, select the login credentials.
9. Enter the **Maximum** number of devices to send to the external system.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For Salesforce:
    a. Go to **Service App** > **Accounts**.
    b. Use **Account Name**.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure Run after Discovery is checked.
3. Click **Save.**

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Click **Schedule** and then click **+**.
   a. Select the integration policies.
   b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Select a specific integration policy and click **Run**.

RiskIQ Integration

Configuring RiskIQ for FortiSIEM Integration

Register at the RiskIQ website to obtain a user name, password, and the API keys. For more information, see https://api.riskiq.net/api/concepts.html.

RiskIQ Incident Outbound Integration

To create an outbound integration, follow these steps:

1. Go to **Admin > Settings > General > Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **RiskIQ**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
   - **Username** and **Password**, enter your RiskIQ user name and the API key as the password.
4. Enter an optional **Description** of the integration.
5. Click the edit icon next to **Attribute Mapping**.
   a. In the **Incident Comments Template** dialog box, select content from the **Insert Content** drop-down list.
   b. Click **Save** when you are finished.
6. Click the edit icon next to the **Organization Mapping** to map attributes to resources.

7. Click the edit icon next to the **Run for**.
   a. In the **Run for** dialog box, select the organizations for which the integrations will be run.
   b. Click **Save** when you are finished.
8. Enter the maximum number of incidents you want recorded in the **Max Incidents** field.
9. Click **Save**.

VirusTotal Integration

- Configuring VirusTotal for FortiSIEM Integration
- VirusTotal Incident Outbound Integration

Configuring VirusTotal for FortiSIEM Integration

Register at the VirusTotal website to obtain a user name, password, and the API key. For more information, see https://developers.virustotal.com/reference?gclid=Cj0KCQjw4-XlBRDuARIsAK96p3AvLIJSGdBtBWpE1Tm0_KJkWci7U0aAxBVcoOgoZKfd3qjDMG2jJ9IaArVuEALw_wcB#getting-started.

VirusTotal Incident Outbound Integration

To create an outbound integration, follow these steps:

1. Go to **Admin > Settings > General > Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **VirusTotal**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the integration class: `com.accelops.service.integration.impl.VirusTotalIntegrationServiceImpl`.
   - **Password**: enter your API key in the password field.
4. Enter an optional **Description** of the integration.
5. Click the edit icon next to the **Incident Comments template**.
   a. In the **Incident Comments Template** dialog box, select content from the **Insert Content** drop-down list.
   b. Click **Save** when you are finished.
6. Click the edit icon next to the **Organization Mapping**.
   a. In the **Org Mapping** dialog box, click beneath **External Company ID** to enter the ID of the company you want to map to organizations.
   b. Click **Save** when you are finished.
7. Click the edit icon next to the **Run for**.
   a. In the **Run for** dialog box, select the organizations for which the integrations will be run.
   b. Click **Save** when you are finished.
8. Enter the maximum number of incidents you want recorded in the **Max Incidents** field.
9. Click **Save**.

Jira Integration

Configuring Jira for FortiSIEM Integration

Before configuring Jira, you must log in to your Jira account and create an API Key. Follow these steps:

1. Log in to your Jira account.
2. Create an API Key.
3. Use the GUI user name and API Key in FortiSIEM.

Jira Incident Outbound Integration

Jira outbound integration allows a user to map FortiSIEM fields to Jira ticket fields and to create incidents in Jira. When the integration runs, FortiSIEM looks for incidents that match the mappings and creates a ticket in the Jira system.

To create an outbound integration, follow these steps:

Step 1: Provide Configuration Information

1. Go to **Admin > Settings > General > Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
    - **Type**: select **Incident**.
    - **Direction**: select **Outbound**.
    - **Vendor**: select **Jira**.
    - **Instance**: enter an instance name or accept the default.
    - **Plugin Name**: is pre-populated with the name of the Jira integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
    - **Host/URL**, enter the URL of the Jira provider, for example, `https://<customer>.atlassian.net`.
    - **Username** and **Password**, enter your Jira user name and password.

Step 2: Specify the FortiSIEM to Jira Field Mapping

1. Click the edit icon next to **Field Mapping**.
2. In the **Field Mapping** dialog box, provide the following values:
    - **Project**: enter a name for the project.
    - **Issue Type**: select **Event**.
    - The **Summary**: field is pre-populated with the **Incident Rule Name (**`$ruleName`**)**.
    - For **Description**: click the edit icon to build the expression for the Jira issue description. The drop-down list contains FortiSIEM fields that can be mapped to.
    - The **Priority**: field is pre-populated with **Incident Severity Category (**`$incident_severityCat`**)**.

3. Create mappings between Jira fields and FortiSIEM fields by clicking **New**.
   Select Jira fields from the upper drop-down list and match them with corresponding FortiSIEM fields in the lower drop-down list.
4. Click **Save** when you are finished mapping fileds. The mappings are reflected in the table in the Field Mapping dialog box.
5. Click **Save** to dismiss the **Mapping Fields** dialog box.

Step 3: Run the Jira Integration

Select the Jira instance and click **Run**. FortiSIEM looks for incidents that match the mappings and creates a ticket in the Jira system.

Jira Incident Inbound Integration

Jira inbound integration allows a user to close a ticket in FortiSIEM if the ticket is closed in Jira.

To create an inbound integration, follow these steps:

Step 1: Provide Configuration Information

1. Go to **Admin > Settings > General > Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Inbound**.
   - **Vendor**: select **Jira**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the Jira integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
   - **Host/URL**, enter the URL of the Jira provider, for example, `https://<customer>.atlassian.net`.
   - **Username** and **Password**, enter your Jira user name and password.
   - **Description**: enter an optional description of the integration.
   - **Time Window**: enter the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.

Step 2: Specify the FortiSIEM to Jira Field Mapping

1. Click the edit icon next to **Field Mapping**.
2. In the **Field Mapping** dialog box, provide the following values:
   - **Project**: enter a name for the project.
   - **Issue Type**: select **Event**.
   - The **Summary**: field is pre-populated with the **Incident Rule Name (**`$ruleName`**)**.
   - For **Description**: click the edit icon to build the expression for the Jira issue description. The drop-down list contains FortiSIEM fields that can be mapped to.
   - The **Priority**: field is pre-populated with **Incident Severity Category (**`$incident_severityCat`**)**.

3. Create mappings between Jira fields and FortiSIEM fields by clicking **New**.
   Select Jira fields from the upper drop-down list and match them with corresponding FortiSIEM fields in the lower drop-down list.
4. Click **Save** when you are finished mapping fileds. The mappings are reflected in the table in the Field Mapping dialog box.
5. Click **Save** to dismiss the **Mapping Fields** dialog box.

Step 3: Run the Jira Integration

Select the Jira instance and click **Run**. FortiSIEM looks for incidents which are closed in the Jira system and closes them if they also appear in FortiSIEM.

Link the Integration to One or More Incident Notification Policies (for Incident Outbound)

1. Complete the incident outbound integration steps for your system.
2. Go to **Admin** > **Settings** > **General** > **Notifications**.
3. Click **New** to create a new policy or **Edit** to edit an existing policy.
4. In the **Notification Settings** dialog box, select **Action** > **Invoke an Integration Policy**, then select the edit icon.
5. Choose a specific integration from the drop-down list.
6. Click **Save**.

CMDB Inbound Integration

CMDB Inbound Integration populates FortiSIEM CMDB from an external CMDB.

Step 1: Create a CMDB Inbound integration

You must create a CSV file for mapping the contents of the external database to a location on your FortiSIEM Supervisor, which will be periodically updated based on the schedule you set.

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Inbound**.
6. Enter the **File Path** to the CSV file.
7. For **Content Mapping**, click the edit icon.
   a. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
      I. Enter Source CSV column Name for **Source Column**
      II. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist
         i. Enter a name for the **Destination Column** of the property from the drop-down list.
         ii. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
      III. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
      IV. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite

its current value.

V. Click **OK**.

b. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
For example, if you wanted to change all instances of **California** in the entries for the **State** attribute in the external system to **CA** in the destination CMDB, you would select the **State** attribute, enter **California** for **From**. and **CA** for **To**.

8. In **Attribute Mapping**, map attributes to resources.
9. Click **OK**.
10. Click **Save**.

Step 2: Create a CMDB Inbound integration schedule

Updating FortiSIEM CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Click **Schedule** and then click **+**.
   a. Select the integration policies.
   b. Select a schedule.

Updating FortiSIEM CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **Integration.**
3. Select a specific integration policy and click **Run**.

Modifying an External System Integration

Complete these steps to modify an External System Integration.

1. Use the below options to modify an External System Integration setting.

Settings	Guidelines
Edit	To edit an External System Integration setting.
Delete	To delete an External System Integration setting.

2. Click **Save**.

Escalation Settings

Escalation settings allow you to define escalation policies for incident tickets and then use it as an escalation policy when creating a ticket using FortiSIEM Case system.

Follow the below procedures to enable Escalation Settings:

- Adding an escalation policy
- Modifying an escalation policy

Adding an escalation policy

Complete these steps to create an escalation ticket and then use it as an escalation policy while creating a ticket, using FortiSIEM Case system.

1. Go to **ADMIN** > **Settings** > **General** > **Escalation** tab.
2. Click **New**.
3. In the **Escalation Policy** dialog box, enter or select the following information:

Settings	Guidelines
Name	[Required] Name of the escalation policy.
Remaining Time	Expiration Time of the policy either relative or absolute time.
Email To	Email the policy to the Assignee or Assignee's Manager.

4. Click **Save**.

Modifying an escalation policy

Complete these steps to create an escalation ticket:

1. Go to **ADMIN** > **Settings** > **General** > **Escalation** tab.
2. Select one or more ticket(s).
3. Use the options below to edit an escalation ticket.
   - **Edit** - to edit an escalation ticket.
   - **Delete** - to delete an escalation ticket.
4. Click **Save**.

Role Settings

FortiSIEM provides performance, availability, and environmental alerts, as well as change and security monitoring for network devices, servers and applications. It is difficult for one admin to monitor across the entire spectrum of available information. In addition, devices may be in widely distributed geographical and administratively disjointed locations. Role-based access control provides a way to partition the FortiSIEM administrative responsibilities across multiple admins.

A role defines two aspects of a user's interaction with the FortiSIEM platform:

- Which user interface elements a user can see and the ability to use the associated Read/Write/Execute permissions. As an example, the built-in Executive role can see only the dashboard, while the Server Admin role cannot see network devices. Role permissions can be defined to the attribute level in which, for example, a Tier1 Network Admin role can see network devices but not their configurations.
- What data can the user see. For example, consider a Windows Admin role and a Unix Admin role. They both can run the same reports, but the Windows admins sees only logs from Windows devices. This definition can also be fine-grained, for example one Windows admin sub-role can be defined to see Windows performance metrics, while another Windows admin sub-role can see Windows authentication logs. The roles described in the following table are default roles.

Role	Permissions
DB Admin	Full access to the database servers part of the GUI and full access to logs from those devices.
Executive	View access to the Business Service dashboard and personalized My Dashboard tabs, but reports can be populated by logs from any device.
Full Admin	Full access to the GUI and full access to the data. Only this role can define roles, create users and map users to roles.
Help Desk	Access to the Admin, CMDB, and Dashboard tabs, with view and run permissions for the Analytics and Incidents tabs.
Network Admin	Full access to the network device portion of the GUI and full access to logs from network devices.
Read Only Admin	View access to all tabs and permission to run reports.
Security Admin	Full access to Security aspects of all devices.
Server Admin	Full access to the Server part of the GUI and full access to logs from those devices.
Storage Admin	Full access to the Storage device part of the GUI and full access to logs from those devices.
System Admin	Full access to the Server/Workstation/Storage part of the GUI and full access to logs from those devices.
Unix Server Admin	Full access to the Unix Server part of the GUI and full access to logs from those devices.
Windows Server Admin	Full access to the Windows Server part of the GUI and full access to logs from those devices.

The following sections describe the procedures to create custom roles and privileges:

- Adding a New Role
- Modifying a Role
- Viewing User Roles for AD Group Mappings

Adding a New Role

You can create a new role or use an existing role by selecting an existing role and clicking the **Clone** button.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New**.

3. Enter a **Role Name** and **Description**.
4. Enter the **Data Conditions** for this role.
   This restricts access to the event/log data that is available to the user, and will be appended to any query that is submitted by users with this role. This applies to both Real-Time and Historical searches, as well as Report and Dashboard information.
5. Enter the **CMDB Report Conditions** for this role. Choose a type from the drop-down list.
   This restricts access to the reports for devices, users, monitors, rule, report, task, identity, incident, audit that are available to the user with this role.
6. Select the appropriate **Approver** capability:
   - Select **De-Obfuscation** if this role can approve De-Obfuscation requests.
   - Select **Report Schedule** if this role can approve Report Schedule Activation requests.
   - Select **Rule Activation/Deactivation** if this role can approve Rule Activation/Deactivation requests,
7. Select the appropriate **Activation** capability:
   - Select **Report Schedule** if this role needs approval for Report Schedule Activation.
   - Select **Rule Activation/Deactivation** if this role needs approval for Rule Activation/Deactivation.
8. Select the **Data Obfuscation** options for this role:
   - **System Event/CMDB Attribtues** to anonymize IP, User and Email or Host Name in the events.
   - **Custom Event Attributes** to anonymize custom event attributes. Search or click **+** to include multiple attributes.

   Note: If Data Obfuscation is turned on for a FortiSIEM user:
   - Raw events are completely obfuscated - user cannot see any part of the raw message.
   - Cannot perform search on obfuscated event attributes.
   - CSV Export feature is disabled.
   - If an integer event attribute is obfuscated, then the GUI may not show those obfuscated fields. Normally, integer fields are not obfuscated.
9. Select the **UI Access** conditions for this role.
   This defines the user interface elements that can be accessed by users with this role. By default, the child nodes in the tree inherit the permissions of their immediate parent, however you can override those default permissions by explicitly editing the permission of the child node. The options for these settings are in the **All Nodes** drop-down list:
   - **Full** - No access restrictions.
   - **Edit** - The role can make changes to the UI element.
   - **Run** - The role can execute processes for the UI element.
   - **View** - The role can only view the UI element.
   - **Hide** - The UI element is hidden from the role.
10. Click **Save**.

Hiding Network Segments

If a **Network Segment** is marked as hidden for a user role, users with that role will not be able to see any of the devices whose IP addresses fall within that network segment, even if the CMDB folder(s) containing those devices have not been hidden.

Modifying a role

Complete these steps to modify a cloned or user defined role. (You cannot directly modify a system defined role):

1. Select the role from the table.
2. Click the required option:
    a. **Edit** to modify any role setting.
    b. **Delete** to remove a role.
    c. **Clone** to duplicate a role.
3. Click **Save**.

Viewing User Roles for AD Group Mappings

To see the AD groups that the user is a member of, go to **CMDB > Users > Member Of**.

The User Roles are explicitly shown in **CMDB > Users > Access Control**.

Mapping AD Groups to Roles

FortiSIEM provides the ability to map Microsoft Active Directory (AD) Groups to Roles. A user mapped to more than one Role has permissions for all roles following the Least Restrictive Role principle described below.

Follow these steps to map an AD Group to a Role:

Step 1: Setup or Edit an Authentication Profile

1. Log in to the FortiSIEM system.
2. Follow the instructions in Adding External Authentication Settings to setup a new profile or edit an existing profile. Currently, only LDAPS and LDAPTLS are supported for mapping AD Groups. The new or edited entry appears in the list of authenticated organizations.

Step 2: Create a Role to be Mapped to the AD Group

Follow the instructions in Adding a New Role to add a role that is to be mapped to an AD Group.

Step 3: Assign an AD Group

1. Click **Admin > Settings > Role > AD Group Role**.
2. Click **New** to create a new AD Group mapping or select a row and click **Edit** to edit an existing mapping.
3. Provide the following information in the Add AD Group Role popup:
    - **Organization** - Set to System (all organizations can use the information), Super/Local (only Super/Local can use the information).
    - **AD Group DN** - The AD Group domain name. Currently, the server must be either LDAPS or LDAPTLS.
    - **Mapped Role** - Scroll down the list for the role you want to map to. You can find descriptions of the predefined roles in Role Settings.
    - **Comment** - Enter an optional comment describing the mapping.

Step 4: Test Your Mappings

Test your mappings by logging out of the FortiSIEM session then logging back in as the LDAPS/LDAPTLS user.

You can use either the CN or the SamAccountName as the Username in FortiSIEM.

The following example account illustrates the options:

```
PS C:\Users\Administrator> Get-ADUser -Identity jdoe

DistinguishedName : CN=J Doe,OU=department1,DC=fortisiem,DC=lab
Enabled : True
GivenName : J
Name : J Doe
ObjectClass : user
ObjectGUID : 2386c3e6-d2c0-47b8-85d0-334585e959f
SamAccountName : jdoe
SID : S-1-5-21-87403157-1919951427-186658781-1620
Surname : Doe
UserPrincipalName : jdoe@fortisiem.lab
```

- Using the CN as the Username, for example:
  ```
  User: J Doe
  Password: ********
  Domain: local
  ```
- Using the SamAccountName as the Username, for example:
  ```
  User: fortisiem\jdoe
  Password: ********
  Domain: local
  ```

Principle of Least Restrictive Role

If a user belongs to two FortiSIEM Roles, then the user will have the rights of BOTH Roles.

- Case 1 - A node is explicitly defined in both role definitions. Then a user belonging to BOTH roles have the union of all permissions for that node. Explicit definitions mean that the node appears in the bottom **Restrictions** area when you view the Role in **Settings > Role**. Some examples:

  One Role has READ permission on the **Resources** tab, while the other Role has WRITE and EXECUTE permissions on **Resources** tab. Then, a user belonging to BOTH roles has READ, WRITE, EXECUTE on **Resources** tab.

  One Role has READ permission on the **Resources** tab, while the **Resources** tab is hidden in the other Role. Then, a user belonging to BOTH roles has READ permission on **Resources** tab.

- Case 2 - A node is not explicitly defined in one Role but explicitly defined in the other role. Then the user belonging to BOTH roles have the explicit permission defined in the second role. For example, a Full Admin role has nothing explicitly defined, because it has full permission on ALL nodes. If the user belongs to both Full Admin role and another role that can only READ the CMDB tab, then the user has only READ permission on the CMDB tab.
- Case 3 - A node is not explicitly defined in two Roles. Then the user belonging to BOTH roles has full permission on that node.

Managing Tasks

FortiSIEM supports Data Anonymization to hide Personally Identifiable Information including IP addresses, host names, user names and email addresses in external and internal logs, Incidents, and CMDB records based on the user role for a specific period of time.

After assigning the user to anonymize a role and creating a Data Anonymization approver, the work-flow is as follows:

a. The user creates a de-anonymization request and sends to the approver.
b. The approver receives an email notification.
c. The approver then verifies and accepts the request for a specific period by setting a validity date. (An approver may also reject a request specifying a valid reason.)
d. If approved, the user can see the de-anonymized data until the validity period.
e. After the validity period, the data is hidden again. To de-anonymize the data, create a new request.

The following procedures describe how a user can submit a task request and the Data Anonymization approver approves or rejects.

- Requesting a de-anonymization request
- Approving a de-anonymization request

Requesting a de-anonymization request

You can send a de-anonymization request with justification, to a Data Anonymization approver, to de-anonymize the requested data for a specific period of time.

1. Go to **TASK**> **Request** tab.
2. Click **New** to create a de-anonymization request.
3. Select the **Approver** from the drop-down to send this request.
4. Select the **Type** of de-anonymization request.
5. Enter the **Justification** for viewing the data.
6. Click **Save** to send the request to the Data Anonymization approver.

Approving a de-anonymization request

When a user sends a de-anonymization request, the Data Anonymization approver receives an email notification. The approver can see the list of de-anonymization requests under the **Approval** tab on login. The approver then verifies the justification and provides approval.

1. Go to **TASK**> **Approval** tab.
2. Select the request from the list or search using the search bar and choose the following options from the drop-down list on the right:
    - **Approve** to allow de-anonymization for a specific time period under **Valid Till** or **For** the date and time listed in the time stamp field. You can click the time stamp field to choose a different date and time.

- **Reject** to reject the de-anonymization request specifying a valid **Reason**.

3. Click **OK** to send the approval/rejection.
   The user can see the **Status** of this request under the **Request** tab on login.

Managing CMDB

FortiSIEM Configuration Management Database (CMDB) contains the following:

- Discovery information about your IT infrastructure such as devices, applications, and users.
- Information derived from your discovered infrastructure, including inter-device relationships such as the relationship of WLAN Access Points to Controller, and Virtual Machines to ESX Hosts.
- Information about system objects such as business services and CMDB reports.

The following topics provide more information about managing CMDB:

Devices

You can add devices to the CMDB through the Discovering Infrastructure process. However, there may be situations in which you want to add devices to the CMDB manually. For example, you may not have access credentials for a device but still want to include network information about it so that logs received by FortiSIEM can be parsed properly.

These topics describe those situations and provide instructions for adding a device to the CMDB:

Viewing Device Information

To view device information, open the **CMDB** page and click **Devices** in the left panel. Expand **Devices** to see all of the subgroups belonging to it. Click **Devices**, or on one of its subgroups, to see the devices in the table associated with that group. The icons above the panel allow you to add, edit, and delete subgroups. System-defined subgroups cannot be deleted, but they can be edited. For more information on managing device groups, see Working with Device Groups.

The headings and numbers at the top of the page, such as above **Routers**, **Firewall**, **Windows**, and so on, represent the number of devices of that type that are active in FortiSIEM. Click the heading to see the devices associated with that device type.

The table on the right of the page displays a list of all of the devices known to FortiSIEM. The table contains columns such as the **Device Name**, **IP** address, **Device Type**, **Status**, and so on.

On the **CMDB** page you can do the following:

- Choose which columns to display by clicking the **Choose columns** icon. For more information, see Changing Display Columns.
- Create, edit, and delete devices by clicking the **New**, **Edit**, and **Delete** buttons. See Creating and Editing Devices for more information.
- Filter the list of devices by organization by opening the drop-down list to the right of the **Delete** button.
- Perform a variety of operations on a selected device by making a selection from the **Action** drop-down list. For more information on the operations you can perform, see Performing Operations on Devices.
- Get more information about a device by clicking a device name and then clicking one of the buttons beneath the table: **Summary**, **Properties**, **Monitor**, **Software**, **Hardware**, **Configuration**, **Relationships**, and **File**. The information returned is described in the following table.

Selection	Description
Summary	Click **Summary** to return general information about the device such as the **Name**, **Device Type**, **Importance**, **IP address**, and so on. It also displays information regarding the device's health, what group it is a member of, and various statistics (such as **Created**, **Last Discovered**, **Last Updated**, and so on.
Properties	
Monitor	Click **Monitor** to return tables describing the **Event Received Status** and **Monitor Status**.
Software	Click **Software** and make a selection from the drop-down list: **Installed Software**, **Running Applications**, **Windows Services**, or **Installed Patches**.
Hardware	Click **Hardware** and make a selection from the drop-down list: **Interfaces**, **Processes**, **Storage**, **SAN Storage**, **System BIOS**, **Components**, or **SAN Ports**.
Configuration	
Relationships	Click **Relationships** to return the device's **Node Name**, **Access IP**, **Version**, **Device Type**, and **Description**.
File	

Working with Device Groups

This section provides the procedures to set up Device Groups.

- Adding Device Groups
- Modifying Device Groups
- Performing Operations on Device Groups
- Changing Display Columns

Adding Device Groups

Complete these steps to add device groups:

1. Go to **CMDB** and click **Devices** folder on the left panel.
2. Click **+** above the list of CMDB groups list.
3. In the **Create New Device Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the organization from the drop-down list.
Group	[Required] Enter a name for the group.
Description	Enter a description of the device group.
Folders	Choose a folder under **Devices** where you want to create the new group.
Items	Displays the devices in the selected folder. Use the **|<**, **<**, **>** and **>|** buttons to page through the list of devices. Select the devices you want to include in the new group.
Selections	Click **>** to shuttle the selected devices into the **Selections** column. These devices will be the members of the new group.

4. Click **Save**.
   The new device group appears on the left panel.

Modifying Device Groups

Complete these steps to modify a Device Group:

1. Click **Devices** from the left panel and navigate to the device group.
2. Select the required change from the table below:

Settings	Guidelines
Edit	To modify any Device Group.
Delete	To delete any Device Group.

3. Click **Save**.

Performing Operations on Device Groups

You can perform a number of operations on devices or device groups by selecting the **Action** drop-down list. For more information on these actions, see Performing Operations on Devices and Device Groups.

Changing Display Columns

Complete these steps to choose which columns appear in the device table.

1. Click the **Choose columns** icon.
2. In the Select Columns dialog box, select the columns you want to display from **Available Columns** and use the **>** button to shuttle them to **Selected Columns**. Likewise, you can remove columns from the display by selecting columns in **Selected Columns** and using the **<** button to shuttle them to **Available Columns**.
3. Click **Save**.

The table will display your chosen columns.

Creating and Editing Devices

Complete these steps to add a new device.

1. Click **CMDB** and select the device group under **Devices** on the left panel.
2. Click **New**.
3. In the **Add New Device** dialog box, enter the information under **Summary**, **Contact**, **Interfaces**, and **Properties** tabs.
4. Click **Save**.
   The new device appears in the list.
5. Click on the device from the list.
   A second pane opens below with information under various tabs.

Complete these steps to edit a device:

1. Go to **CMDB** tab.
2. From the left panel, select the device type under **Devices** folder.
3. Select the Device from the list displayed on the table and click **Edit**.
4. In the **Edit Device** dialog box, modify the settings under **Summary**, **Contact**, **Interfaces**, **Properties** and **Parser** tabs.
5. Click **Save**.

Performing Operations on Devices and Device Groups

You can perform various operations on individual devices or device groups by selecting the device or device group and clicking the **Action** drop-down list. The following table descries the operations you can perform.

Action Settings	Function description
Quick Info	Displays the a summary of information about the device. The information can include the Device Name, Access IP, Device Type , Version, and so on.
Device Health	Displays Availability Status, Performance Status, and a variety of health reports for the device, such as Monitor Status, Incident Status, and so on. Click the **<** and **>** buttons to shuttle through additional health information.
Vulnerabilities	By default, displays the top 10 vulnerabilities of the past week. You can also choose a time interval of 15 minutes, 1 hour, one day, or 30 days.
Incidents	Displays the summary of incidents associated with the device. Click an incident and open the **Action** drop-down list to drill down on the incident for more information.
Real Time Events	Opens a Real Time Search window for events for the selected device. For more information, see Viewing Real-time Search Results.
Historical Events	Displays the historical events under **ANALYTICS** tab. Use **Action** tab on top-left corner to email, export, copy to a new tab or save results. For more information, see Viewing Historical Search Results.

Action Settings	Function description
Real-time Performance	Displays the real-time Performance Metrics of the selected device. You can choose a **Monitor**, and **Collector** from the drop-down lists, and set the polling **Frequency** and the number of **Runs**.
Impacted Business Services	Displays the Business services that contain the selected device.
Change Status	Changes the status of the device to **Approved** or **Unmanaged**. The devices under license are called 'Managed' while the remaining devices are called "Unmanaged".
Edit Location	Changes the device location address: Country, State, City, Latitude, Longitude, Region, Building and Floor.
Change Organization	Changes the organization in the **New Organization** drop-down list.
Impacted Organization	Select the **Impacted Orgs** from the drop-down list.
Decommission	Decommissions the selected device. Enter a reason in the Decommission Device dialog box.
Recommission	Recommissions the selected device.
Connect To	Connects to a specific Protocol or Port. Select a **Protocol** from the drop-down list and enter a **Port** number and **User** name. A Secure Shell plugin is required.
Re-discover	Specify the **Range Definition** information to rediscover the device. For a description of the options in the Discovery Definition dialog box, see the table in Creating a discovery entry.
Add to Watchlist	Add the device to Watchlist. In the Add to Watch List dialog, select the **Attribute**, **Organization**, and **Expires** on time. Make selections from the list using the **>** button.
All Event Group	Displays all event groups under **ANALYTICS** tab. Use the **Action** tab on top-left corner to email, export, copy to a new tab or save results.
Enable Agent	Enables Agent monitoring for the selected device.
Disable Agent	Disables Agent monitoring for the selected device.

Associating Parsers to a Device

You can attach a set of parsers to a device in CMDB. This overrides the default parser selection mechanism based on the Event Format Recognizer. When a device with a list of attached parsers sends a log, the specified parsers are attempted first.

1. Go to **CMDB** tab.
2. From the left panel, select the device(s) under **Devices** folder.
3. Click **Edit** and select the **Parser** tab.

4. Select the parsers from the **Available Parsers** list and move to the **Selected Parsers** list using the right arrow. You can use the up and down arrows to re-arrange the order of the parsers. Note that the parsers will be attempted in order.
5. Click **Save** to confirm the parser selection.
   The selected parsers are now associated to the device.

Searching for Devices

FortiSIEM allows you to search for CMDB devices based on system device properties and custom device properties.

Note: For custom properties to appear in the search list, you must first select them in **ADMIN > Device Support > Custom Property**. To select and define custom properties, see Working with Custom Properties.

1. Go to **CMDB > Devices**.
2. Click the **Search** icon.
3. Select the value(s) you want to search for:
   - In the drop-down list, click a device attribute (for example, **Device Type**). All possible values of the selected attribute (for example, Cent OS, VMware, Cisco, and so on) are displayed with a count next to it. You can select multiple attributes and values in the drop-down list. The results will be ANDed together.
   - If you need to search for a column or an attribute value, enter it in the **Search** field.
4. Click **Search** at the top of the drop-down list.
   The top 5 items are returned. Click **Show All** to display all of the returned items.
5. The CMDB device list updates based on your search criteria.
6. To refine your search, click the **Search** icon again and select other CMDB device attributes or click **X** to cancel a selection.

Applications

Applications in the CMDB are grouped at the highest level by Infrastructure and User apps, with further sub-categorization in each of those two categories.

Viewing Application Information
Editing Applications
Working with Application Groups

Viewing Application Information

Complete these steps to add and view application information:

1. Click **CMDB** and select the application group under **Applications** on the left panel.
2. Click **New**.
3. In the **Add New Application** dialog box, enter the information related to the Application.
4. To add an IP to the Application, click the edit icon near **Running on**.
   a. Click **Add by IP** and enter the IP in the search box.
   b. Click the tick mark.
5. Click **Save**.
   The new application appears in the list.

6. Click on the application from the list.
   A second pane opens below with information under various tabs.

Editing Applications

Complete these steps to edit an application:

1. From the left panel tree, select the application group under **Applications**.
2. Select the Application from the list and click **Edit**.
3. In the **Edit Application** dialog box, modify the settings.
4. To modify an IP, click the edit icon near **Running on** and select the IP.
   - Click **Add by IP** to add a new IP.
   - Click **Delete** to delete the IP.
5. Click **Save**.

Working with Application Groups

This section provides the procedures to set up Application Groups.

- Adding Application Groups
- Modifying Application Groups

Adding Application Groups

Complete these steps to add Application groups:

1. Go to **CMDB** and click **Applications** folder on the left panel.
2. Click **+** above the list of CMDB groups list.
3. In the **Create New application Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.
Description	Description about the application group.
Folders	Folder under **Applications** where the group has to be created.
Items	Items to add under the application group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new application group appears on the left panel.

Modifying Application Groups

Complete these steps to modify an Application Group:

1. Click **Applications** from the left panel and navigate to the Application group.
2. Use the delete, edit or move icon above the application groups list for the required modification.
3. Click **Save**.

Users

FortiSIEM CMDB Users page contains information about the users of your system.

Adding Users

Complete these steps to add Users:

1. Click **CMDB** and select **Users** folder on the left panel.
2. Click **New** to create a new user.
3. In the **New User** dialog box, enter the detailed information about this User:
    a. Add the user profile information including **User Name**, **Full Name**, **Job Title** and **Company**.
    b. Click the drop-down to select the **Importance** of this user - "Important", "Critical" or "Mission Critical".
    c. Enable **Active** if this is an active user.
    d. Enter the user's **Domain**.
    e. Enter the user's Distinguished Name **DN**.
    f. For **User Lockout**, enter the number of minutes the user will be unable to log into the system after three successive authentication failures.
    g. For **Password Reset**, enter the number of days after which a user's current password for logging in to the system will automatically expire. If left blank, the user's password will never expire.
    h. For **Session Timeout**, enter the number of minutes after which an inactive user will be logged out.
    i. Enter the **Employee ID** of the user.
    j. Select the **Manager** to which this user belongs.
    k. For **System Admin**, select **Yes**.
        i. For **Mode**, select **Local** or **External**.
        If you select **Local**, enter and then reconfirm the user password. For **External**, see Authentication Settings for more information about using external authentication.
        Note: If more than one authentication profile is associated with a user, then the servers will be contacted one-by-one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.
        ii. Select a **Default Role** for the user.
        See the topic Role Settings for a list of default roles and permission. You can also create new roles, which will be available in this menu after you create them.
    l. If this System Admin user should be allowed to approve de-anonymization requests, enable **De-obfuscation Approver**.
    m. Click **Contact Info** to enter your personal contact information.
    n. Enter any **Description** about the user.

4. Click **Save**.
   The new user details appear in the list.

Notes:

- When viewing this user list as a Super global user, you may see repetitions of a few **User Names**, where those names exist in multiple Organizations. This can be determined by checking the contents of the **Organization** column.
- Repetition of **User Names** may also occur if an LDAP server has moved from one Organization to another and discovery of that LDAP server introduces users from the previous organization who may share the same user name. In this case, the administrator may wish to remove users that are no longer applicable.

Editing User Information

Complete these steps to edit a CMDB user:

1. From the left panel folders, select a User from the **Users** folder.
2. Click **Edit**.
3. In the **Edit User** dialog box:
   a. Add the **User Name** and user profile information including **User Name**, **Full Name**, **Job Title**, and **Company**.
   b. Click the drop-down to select the **Importance** - "Important", "Critical" or "Mission Critical".
   c. Select a **Default Role** for the user.
   See Role Settings for a list of default roles and permission. You can also create new roles, which will be available in this menu after you create them.
   d. For **Session Timeout**, enter the number of minutes after which an inactive user will be logged out.
   e. For **User Lockout**, enter the number of minutes the user will be unable to log into the system after three successive authentication failures.
   f. For **Password Reset**, enter the number of days after which a user's current password for logging in to the system will automatically expire.
   If left blank, the user's password will never expire.
   g. Enter the **Employee ID** of the user.
   h. Select the **Manager** to which this user belongs.
   i. For **System Administrator**, select **Yes**.
   j. If this System Admin user should be allowed to approve de-anonymization requests, enable **De-obfuscation Approver**.
   k. For **Password**, select **Local** or **External**.
   If you select **Local**, enter and then reconfirm the user password. See Authentication Settings for more information about using external authentication.
   Note: If more than one authentication profile is associated with a user, then the servers will be contacted one-by-one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.
4. Click **Save**.

You can also use the following functions on the **Action** menu:

- **Unlock** - to unlock a user, select the user from the list and click **Action** >**Unlock**.
- **Add to Watchlist**- select the user from the list and click **Action** > **Add to Watchlist**. In the **Add to Watch List** dialog, select the **Organization** and **Expires on** time. Make the selections from the list using the **>** button and save.

Working with User Groups

This section provides the procedures to set up User Groups.

- Adding User Groups
- Modifying User Groups

Adding User Groups

Complete these steps to add User groups:

1. Go to **CMDB** and click the **Users** folder on the left panel.
2. Click **+** above the list of CMDB groups.
3. In the **Create New User Group** dialog box, provide the following information:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.
Description	Description about the User group.
Folders	Folder under **Users** where the group has to be created.
Items	Items to add under the User group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new User group appears on the left panel.

Modifying User Groups

Complete these steps to modify a User Group:

1. Click **Users** from the left panel and navigate to the User group.
2. Use the delete, edit or move icon above the User groups list for the required modification.
3. Click **Save**.

Business Services

A business service lets you view FortiSIEM metrics and prioritize alerts from a business service perspective. A business service is defined within FortiSIEM as a smart container of relevant devices and applications serving a business purpose. Once defined, all monitoring and analysis can be presented from a business service perspective. It is possible to track service level metrics, efficiently respond to incidents on a prioritized basis, record business impact, and provide business intelligence on IT best practices, compliance reporting, and IT service improvement. What is also novel about FortiSIEM is how easily a business service can be defined and maintained. Because FortiSIEM automatically discovers the applications running on the servers as well as the

network connectivity and the traffic flow, you can simply choose the applications and respective servers and be intelligently guided to choose the rest of components of the business service. This business service discovery and definition capability in FortiSIEM completely automates a process that would normally take many people and considerable effort to complete and maintain.

Defining an IT or Business Service can create a logical grouping of devices and IT components which can be monitored together.

Viewing Business Services

Complete these steps to view Business Services:

1. Go to **CMDB** and select a service under **Business Services** in the left panel.
   The services are: IT Srvc, Biz Srvc, Compliance, or Ungrouped.
2. Select the service from the list.
   The lower panel displays the information about the service including the following details: Type, Name, Running on, Access IP, Details, and Maintenance.

Creating Business Services

Complete these steps to create a Business Service:

1. Go to **CMDB** and select a service under **Business Services** in the left panel.
2. Click **New**.
3. In the **New Business Service** dialog box, enter the following information.

Settings	Guidelines
Name	Name of the Business Service group.
Description	Description about the Business Service group.
Filter	Click this field to add the **Filter**.
Devices	Browse this folder to select or search the devices and also the adjacent network devices. Click **>** to move the device selections to the **Selected Devices/Apps** table.
Applications	Browse this folder to select or search the applications, instance running on and adjacent network devices. Click **>** to move the application selections to the **Selected Devices/Apps** table.

4. Click **Save** to save the selections or **Apply Filter and Save** to proceed with adding the service.

You can use the links in the drilldown menu on the Business Services summary dashboard to find out more information about incidents, device availability, device and application performance, interface and event status, and real-time and historical search for a selected business service.

Working with Business Service Groups

This section provides the procedures to set up Business Service Groups.

- Adding Business Service Groups
- Modifying Business Service Groups

Adding Business Service Groups

Complete these steps to add Business Service groups:

1. Go to **CMDB** and click **Business Services** folder on the left panel.
2. Click **+** above the list of CMDB groups list.
3. In the **Create New Business Service Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.
Description	Description about the Business Service group.
Folders	Folder under **Business Service** where the group has to be created.
Items	Items to add under the Business Service group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new Business Service group appears on the left panel.

Modifying Business Service Groups

Complete these steps to modify a Business Service Group:

1. Click **Business Services** from the left panel and select a Business Service group.
2. Click the required option:
   - **Edit** to modify the settings of a Business Service.
   - **Delete** to remove a Business Service.
3. Click **Save**.

CMDB Reports

You can find all system-defined reports under **CMDB** > **CMDB Reports**. The reports are organized into folders as shown on the left tree. Click a report to view Summary and Schedule information. the report conditions, and the columns included in the report.

CMDB Report Folder	Object to Report On	Report Name
Overall	Device Approval Status	• Approved Devices • Not Approved Devices
	Users	• Discovered Users • Externally Authenticated FortiSIEM Users • Locally Authenticated FortiSIEM Users • Manually Defined Users
	Rules	• Active Rules • Rules with Exceptions
	Reports	• Scheduled Reports
	Performance Monitors	• Active Performance Monitors
	Task	• All Existing Tasks
	Business Service	• Business Service Membership
Network	Inventory	• Network Device Components with Serial Number • Network Interface Report • Router/Switch Inventory • Router/Switch Image Distribution
	Ports	• Network Open Ports
	Relationship	• WLAN-AP Relationship

CMDB Report Folder	Object to Report On	Report Name
Server	Inventory	• Server Inventory • Server OS Distribution • Server Hardware: Processor • Server Hardware: Memory and Storage
	Ports	• Server Open Ports
	Running Services	• Windows Auto Running Services • Windows Auto Stopped Services • Windows Exchange Running Services • Windows IIS Running Services • Windows Manual Running Services • Windows Manual Stopped Services • Windows SNMP Running Services • Windows VNC Running Services • Windows WMI Running Services
	Installed Software / Patches	• Windows Installed Software • Windows Installed Patches • Windows Installed Software Distribution
Virtualization	Relationship	• VM-ESX Relationship
Beaconing		• CMDB Device Types • CMDB Network Device Count • CMDB Server Count • CMDB Storage Device Count • PING Monitored Device Count • Performance Monitor Status

CMDB Report Folder	Object to Report On	Report Name
FortiCare		• FortiCare 360 Device Inventory Report • FortiCare 360 Software License Report • FortiCare 360 Software Update Report • Top FortiCare 360 Customers By Devices Monitored • Top FortiCare 360 Customers and Hardware Models By Count • Top FortiCare 360 Customers and OS Versions By Count
Ungrouped	user-defined	user-defined

The following topics provides information about using CMDB reports.

Creating CMDB Reports
Scheduling a CMDB Report
Running a CMDB Report
Adding CMDB Report to Dashboard

Creating CMDB Reports

There are two ways you can create new CMDB reports:

- Create a new report from scratch.
- Clone and modify an existing system or user-defined report by selecting a report and clicking **Clone**.

Follow these procedures to create or modify a CMDB Report.

- Creating a CMDB report
- Cloning and Modifying a CMDB report
- Exporting a CMDB Report
- Importing and Exporting CMDB Report Definitions

Creating a CMDB report

1. Go to **CMDB** and select the CMDB report folder where you want to create the report.
2. Click **New**.
3. In the **New CMDB Report** dialog box, enter the following information.

Settings	Guidelines
Report Name	Name of the CMDB report.

Settings	Guidelines
Description	Any information related to the new report.
Target	Select the target type.
Conditions	Set the filter conditions by selecting (Attributes, Operator and Value) together with Next Operators. Parenthesis can be added by clicking **+** to give higher precedence to any evaluation conditions.
Display Columns	The columns in the report result. The order can be changed by selecting a column and clicking the Up or Down icons. You can specify the **Order** as ASC or DESC.

4. Click **Save**.

You can also import a report under CMDB by clicking **Import** to browse and choose.

Cloning and Modifying a CMDB report

You can modify user-defined reports by selecting the report and clicking **Edit**. However, you cannot directly edit a system-defined report. Instead, you have to clone it, then save it as a new report and modify.

1. Go to **CMDB** > **CMDB Reports**.
2. Select the system-defined report you want to modify, and click **Clone**.
3. Enter a name for the new report, and click **Save**.
   The cloned report will be added to the folder of the original report.
4. Select the new report, and then click **Edit**.
5. Modify the report, and click **Save**.

Exporting a CMDB Report

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB Report folder from where the report will be exported.
3. Click **Export** to download and save the report.

Importing and Exporting CMDB Report Definitions

Instead of using the user interface to define a report, you can import report definitions, or you can export a definition, modify it, and import it back into your FortiSIEM virtual appliance. Report definitions follow an XML schema.

Importing a CMDB Report Definition

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB Report folder to where the report will be imported.
3. Click **Import**. The report will appear in the selected folder.

Exporting a Report Definition

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB report to be imported.
3. Click **Export**. The report will appear in the selected folder.
4. Paste the report definition into a text editor, modify it, and then follow the instructions for importing it back into your virtual appliance.

XML Schema for Report Definitions

The XML schema for the report definition is:

```
<cmdbReports>
<cmdbReport>
<name></name>
<naturalid></naturalid>
<description></description>
<selectClause></selectClause>
<orderByClause></orderByClause>
<whereClause></whereClause>
</cmdbReport>
</cmdbReports>
```

This is an example for the **Active Rules** report:

```
<cmdbReports>
<cmdbReport>
<name>Active Rules</name>
<naturalId>PH_CMDB_Report_Overall_8</naturalId>
<target>com.ph.phoenix.model.query.Rule</target>
<description>This report captures active rules on a per organization
basis</description>
<selectClause>ph_drq_rule.ph_incident_category,ph_drq_rule.name,ph_sys_d
omain.name</selectClause>
<orderByClause>ph_drq_rule.ph_incident_category ASC</orderByClause>
<whereClause>ph_drq_rule.active = true</whereClause>
</cmdbReport>
</cmdbReports>
```

Scheduling a CMDB Report

Complete these steps to schedule a CMDB report to run at a later time:

1. Go to **CMDB** and browse to select the report under **CMDB Reports** on the left tree.
2. Select the report from the list.
3. Click **Schedule**.
4. In the **Schedule** dialog box, select the required information.

Settings	Guidelines
Organization	Organization type. Select whether to **Run this report for** or **Schedule this report for** the remaining settings. • Choose **Run this report for** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF or CSV report and sent to the Global Administrators added in the notification settings while scheduling report alerts. • Choose **Schedule this report for** if you would like to run this report for each selected Organization seperately same as your login to each of these Organizations and schedule this report there. In this case, each selected Organization will receive its own copy of PDF or CSV report containing the event data for its own Organization based on the notification settings added while scheduling report alerts.
Schedule Time Range	Enter the Time range to run the report.
Schedule Recurrence Pattern	Recurrence pattern: once, hourly, daily, weekly or monthly. Enter the start date in the **Start From** field.
Notification	Use the options as required: • Default Notification - to send notification to new recipients by adding them using the **+** icon. • Custom Notification - to send the notification to the specific email addresses added under ADMIN > Settings > System. • Copy to a remote location - To copy the report to a remote directory, first define the remote location in ADMIN > Settings > Analytics > Report to be copied to this remote location when scheduler runs any report and then select this option.

5. Click **OK**.

You can also schedule a CMDB report by selecting the report from the list and clicking **+**under **Schedule** tab in the lower pane.

Running a CMDB Report

Complete these steps to run a CMDB Report.

1. Go to **CMDB > CMDB Reports** and select the report you want to run from the folder.
2. Click **Run**.

3. In the **Run CMDB for** dialog box, select the Organization and click **Run**.

Reports are saved only for the duration of your login session. You can view saved reports by clicking **Results**. You can use the **Export** button to export any report in PDF or CSV format.

Adding CMDB Report to Dashboard

Complete these steps to add CMDB reports to Dashboard:

1. Select the dashboard to which you want to add a CMDB report.
2. Click **+** to the right of the dashboard.
3. In the **Create New Dashboard** dialog box, enter a name for the Dashboard and select the Widget Dashboard from the drop-down list. For more information, refer to Dashboard.
4. Click **+** below the Dashboard drop-down list.
5. Select a report from the **CMDB Reports** folder, then click **>**. The report will be added to the dashboard.

Managing Resources

The following sections provide the procedures for managing Resources:

Reports

Reports as similar to pre-defined versions of searches that you can load and run at any time. FortiSIEM includes over 2000 pre-defined reports that you can access in **RESOURCES > Reports**.

Viewing System Reports

Complete these steps to view system-defined Reports:

1. Go to **RESOURCES** > **Reports**.
2. Select the **Organization** for which you want to view the available reports.
3. Expand the **Reports** folder on the left panel and select the sub-category of report to view.
4. Select the report you want to view information about.
   The reports display the information below under various tabs in the lower pane:

- **Summary** - Includes the **Condition** and **Group By** conditions for the report, and the report's **Display** attributes.
- **Schedule** - Information about when the report is scheduled to run. See Scheduling a Report for more information. Click the **+** icon to set a schedule for the report to run.
- **Results** - The results from any scheduled runs of the report, or results you have saved by running the report.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- Raw events are completely obfuscated - user cannot see any part of the raw message.
- Cannot perform search on obfuscated event attributes.
- CSV Export feature is disabled.
- If an integer event attribute is obfuscated, then the GUI may not show those obfuscated fields. Normally, integer fields are not obfuscated.

Working With Report Templates

FortiSIEM gives you the flexibility of designing custom templates for each of your reports. When you select **RESOURCES > Reports**, notice that the table of reports includes a **Report Design Template** column. This column identifies the template to be used when generating and exporting a report. By default, all reports are assigned the same template. The default template name has the format *organization_name scope* **Reports Template**. For example, Global System Reports Template would be a report for the Global organization with System scope.

The Global System Reports Template cannot be edited unless you log in as Super/Global. In this case, an Edit icon will appear next to Global System Reports Template.

A Template can be created at various levels:

- For each Report in **RESOURCES > Reports**
- For each Report folder in **RESOURCES > Reports**
- For each Report Bundle defined in **RESOURCES > Reports > Report Bundles**

When you run a report under **RESOURCES > Reports**, FortiSIEM will choose the appropriate PDF Report Template in the following order:

1. If a specific template is defined for the selected report, then that template will be chosen.
2. If a template in the previous step is not found, then the template for the folder to which the Report belongs will be chosen.
3. If no matching template is found in Steps 1 and 2, then the system-defined template for the root folder **RESOURCES > Reports** will be chosen. System-defined templates cannot be edited.

If you load and run a report in **RESOURCES > Reports** from the **ANALYTICS** page and then manually export the Report in PDF format:

- If you choose the **Defined** option, then FortiSIEM will use the rules above to find the matching template.
- If you choose the **New** option, then you can define a new Report format for this report instance only.

Note:

- For Service Provider deployments, the PDF Report templates can only be defined at the Super/Global level and applies for all customers.
- If a report is part of two folders and each folder has its own template defined, then the template of the current folder being viewed will be used.

The following sections provide information about:

- Creating a PDF report template
- Designing a PDF report template

Creating a PDF Report template

A PDF Report template can be created as follows:

1. Go to **Resources > Reports** and select one of the subcategories from the left pane.
2. Select the desired row from the table.
3. (Optional) Select the **Sync** checkbox in the row to synchronize the report with the Report Server.
4. Open the **More** drop-down list and select **Report Design**. The Report Design page opens.
5. Notice that the **Name** given to the report template is in the form *organization_name scope report_name* **Template**. You can edit this name if you want.
6. Follow the instructions in Designing a PDF report template to design the cover page and add sections, subsections, attachments, and so on, to the report.
7. Click **Save**.
   The name of the new template will be displayed in the **Report Design Template** column of the table. Notice that an edit icon appears next to the name of the template.

Creating report templates for a Report folder or Resource Bundle

To create a report template for a Resource folder, choose any Report folder from the left pane. The steps to create the template are similar to Creating a PDF Report template.

To create a report template for a Report Bundle, complete these steps:

1. Select any system-defined or user-defined report bundle in this group.
2. Select all of the reports in the table.
3. Click **More** > **Report Design**.

Notice that the **Name** of the template for a Report Bundle cannot be edited.

Modifying an existing report template

1. Click the edit icon next to the name of the existing report design template. The Report Design page opens.
2. Make the desired changes to the template design.
3. Click **Save**.

Designing a PDF report template

You can design or modify the following template sections using the settings under **Report Design**:

- Cover Page
- Table of Contents - Sections and Subsections

Cover Page

The default Cover Page template includes the current Organization, Start Time, End Time, Generated Time, and Device Time Zone as Default Text. These settings can be deleted or rearranged but not modified. You can also add text content and attachments to the **Cover Page**.

- Adding text to cover page
- Adding attachments to cover page

Adding text to cover page

1. Click the **Cover Page** bar to expand the section.
2. Click **Add** and select **Text** from the drop-down list to add text content in the cover page.
3. Add the text in the **Content** field.
4. Enable **HTML** if the text should be displayed in HTML format.
5. Click **Save** to apply the changes.

Adding attachments to cover page

1. Click the **Cover Page** bar to expand the section.
2. Click **Add** and select **Attachment** from the drop-down list to add any PDF or PNG attachments in the cover page.
3. Click **Upload** to add the attachment.
4. Enter the required **Width** and **Height** of the attachment or else enable **Auto Resize** to adjust the size of the attachment to the PDF borders. The units for Height and Width are in pixels. The acceptable range of values is 595-860.
5. Click **Save** to apply the changes.

   Use the **Edit**, **Delete**, **Move Up** or **Move Down** icons to the right of the **Text** field to modify, delete or re-arrange the order of text.

Table of Contents - Sections and Subsections

This sections allows you to add new **Sections** and **Sub Sections** to the **Table of Contents**. You can also add text content, attachments, event reports and CMDB reports here.

- Adding sections and subsections
- Adding text to a section or subsection
- Adding attachments to a section or subsection
- Adding an Event Report to a section or subsection
- Adding a CMDB Report to a section or subsection

Adding sections and subsections

1. Click the **Table of Contents** bar to expand the section.
2. Click **Add** and select **Section** to add a new section.
3. To add a subsection, select the required Section and click **Add** > **Sub Section**.
4. Click the new section bar to expand.
5. Enter a **Title** for the section.
6. Click **Preview** to view the changes before saving.
7. Click **Save** to apply the changes.

Adding text to a section or subsection

1. Click the required section or subsection bar to expand the section.
2. Click **Add** and select **Text** from the drop-down list to add text information in the cover page.

3. Add the text in the **Content** field.
4. Enable **HTML** if the text should be displayed in HTML format.
5. Click **Save** to apply the changes.

Adding attachments to a section or subsection

1. Click on the required section or subsection bar to expand the section.
2. Click **Add** and select **Attachment** from the drop-down list to add any PDF or PNG attachments.
3. Click **Upload** to add the attachment.
4. Enter the required **Width** and **Height** of the attachment or else enable **Auto Resize** to adjust the size of the attachment to the PDF borders.
5. Click **Save** to apply the changes.

Adding an Event Report to a section or subsection

1. Click on the required section or subsection bar to expand the section.
2. Click **Add** and select **Event Report** from the drop-down list.
3. Select the Event Report from the drop-down.
4. To display the event type, enable **Show Event Type**.
5. When you define a custom template for **Report Bundles** (excluding the root group), you can select any Event Reports from the **Select Event Report** drop-down list.
   Note the following:
   - For Report folders (including the root group), the **Select Event Report** setting is not available.
   - For a single Report, the Event Report is automatically selected under **Select Event Report** setting and you cannot modify this.
6. Configure the display format:
   a. Select the report **Format** from the drop-down list. The list displays the available charts.
   b. Select the **Attribute**.
   c. Enter the **Title** for the chart.
   d. Select or enter the number of **Items** to display.
   e. Enter the **Height** of the chart or table.
   f. To add more formats, click **+** under **Row** and use the **Move** arrows to re-order the list.
   g. Click **Save**.
7. Click **Save** to apply the changes.

Adding a CMDB Report to a section or subsection

Note: You can add **CMDB Reports** only to a **Report Bundle** template.

1. Click on the required section or subsection bar to expand the section.
2. Click **Add** and select **CMDB Report** from the drop-down.
3. Click the **Edit** icon to select the **CMDB Report** from the drop-down. You can also use the search bar to find a specific CMDB report.
4. Click **Select** to confirm the selection.
5. Select the number of **Items** to display.
6. Click **Save** to apply the changes.

Creating New Reports

- Creating a Report
- Creating a Report Bundle
- Editing a Report Bundle

Creating a Report

Creating a report or baseline report is like creating a structured historical search, because you set the **Conditions** and **Group By** attributes that will be used to process the report data, and specify **Display Columns** to use in the report summary. You can clone an existing report to use as the basis for a new report by selecting the existing report, and clicking **Clone**.

Complete these steps to create a report:

1. Go to **RESOURCES** > **Reports**.
2. Select the report type from the **Reports** folder on the left panel.
3. Click **New**.
4. Enter a **Report Name** and **Description**.
5. For baseline reports, select **Anomaly Detection Baseline**.
6. Enter the **Conditions** to use in your report.
7. Set the **Display Columns** to use in your search results.
8. Click **Save**.
9. Optional - If you want to create a new PDF report template for this report, follow the steps in Working With Report Templates or else the system-defined template will be used.

Your report will be saved into the selected category, and you can run it or schedule it to run later.

Creating a Report Bundle

Complete these steps to create a report bundle:

1. Go to the **RESOURCES** tab and select a **Report Bundle** from the left panel.
2. Click **New**.
3. Enter a **Report Name** and **Description**.
4. For baseline reports, select **Anomaly Detection Baseline**.
5. Enter the **Conditions** to use in your report.
6. Set the **Display Columns** to use in your search results.
7. Click **Save**.
8. Optional - If you want to create a new PDF report template for this report, follow the steps here or else the system-defined template will be used.

Your report will be saved into the selected category, and you can run it or schedule it to run later.

Editing a Report Bundle

Complete these steps to edit a user-defined resource bundle:

1. Go to the **RESOURCES** tab and select a **Report Bundle** from the left panel.
2. Click the Edit icon ( ) above the left panel. The Edit Report Group dialog box opens.
3. Edit the Report Group **Name** and **Description**, if needed.

4. From the **Folders** column select the report subcategory.
5. In the **Items** column, select the desired report(s) to add to the report bundle.
6. Select **Update Template** if you want to add the selected reports to the previously defined Report Bundle template. See Creating a PDF report template.
7. Click **Save**.

Running System Reports

FortiSIEM includes a number of baseline reports for common data center analytics, as well as over 300 reports relating to IT infrastructure. You can also create your own reports.

Complete these steps to run a system-generated or user-defined baseline report:

1. Go to **RESOURCES** tab and select the desired report group from the **Reports** folder.
2. Select the report(s) from the table.
3. Click **Run** to run the report(s) immediately, or select **More** and click **Schedule** to schedule the report.
4. If you have a multi-tenant deployment, select the **Organization** for which you want to run the report.
5. Select one of the **Report Time Range** options:
   - **Relative**: Select the last number of hours from which report has to be generated.
   - **Absolute**: Select the range of start and end date and time.
6. Click **OK**.
   The report will run and the results will be displayed.

Scheduling Reports

You can schedule reports/report bundles to run once or for recurring periods in the future. When you schedule a reports/report bundle, you can specify notifications that can be sent for the report. In addition, you should make sure that the default settings for notifications for all scheduled reports/report bundles have been set up.

- Scheduling a Report
- Scheduling a Report Bundle
- Scheduling Reports Using a Workflow

Scheduling a Report

Complete these steps to schedule a report:

1. Go to **RESOURCES** tab and select the report under **Reports** folder from the left pane.
2. Select the report(s) to schedule from the list on the right pane.
3. Click **More** > **Schedule**.
   Note: You can also schedule a report from the lower pane - select the **Schedule** tab after selecting the report. Use the **+** icon to enter the **Schedule** settings.
4. In Super/Global scope, under **Organization** section, you can choose either **Run this report for** or **Schedule this report for** with selected organizations:

- Choose **Run this report for** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF report and sent to the Global Administrators added in the Notification settings while scheduling reports.
- Choose **Schedule this report for** if you would like to run this report for each selected Organization separately same as your login to each of these Organizations and schedule this report there. In this case, each selected organization will receive its own copy of the PDF report containing the event data for its own Organization based on the Notification settings added while scheduling reports.

5. Click **Next**.
6. Use the **Schedule Time Range** option if the run time has to be scheduled for a later period and a specific place.
7. Schedule the **Schedule Recurrence Pattern** for the report to run once, hourly, daily, weekly, or monthly or set the range under **Schedule Recurrence Range**.
8. Click **Next**.
9. Select the **Output Format** as **PDF**.
   For PDF output, the default template configured under **RESOURCES** > **Reports** is used. You can customize the report templates following the steps under Designing a PDF Report Template.
10. Specify the **Notification** that should be sent when the report runs from the available options:
    - **Default Notifications** - to send default notifications. Click the edit icon to add more **Recipients**.
    - **Custom Notifications** - to send notifications to specific email addresses. Use the edit icon to add more **Recipients**
    - **Copy to a remote directory** - to copy the report to a remote directory.
11. Specify the time that the report should be retained after it has run using the **Retention** setting in hours or number of days.
12. Click **OK**.
    The report will run at the time you scheduled.

Scheduling a Report Bundle

Complete these steps to schedule a report bundle:

1. Go to **RESOURCES > Reports** tab and select a report bundle under **Report Bundles** folder from the left pane.
2. Select the clock icon () above the left panel folders to open the scheduler settings.
3. In Super/Global scope, under **Organization** section, you can choose either **Run this report for** or **Schedule this report for** with selected organizations:
   - Choose **Run this report for** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF report and sent to the Global Administrators added in the Notification settings while scheduling reports.
   - Choose **Schedule this report for** if you would like to run this report for each selected Organization separately same as your login to each of these Organizations and schedule this report there. In this case, each selected Organization will receive its own copy of PDF report containing the event data for its own Organization based on the Notification settings added while scheduling reports.
4. Select the **Report Time Range**:
   - Select the **Time Zone**.
   - Select **Relative** to enter the last number of hours from which report has to be generated or **Absolute** to enter the range of start and end date and time.
5. Click **Next**.

6. Use the **Schedule Time Range** if the run time has to be scheduled for a later period and a specific place.
7. Click **Next**.
8. Select the **Output Format** as **PDF**.
   For PDF output, the default template configured under **RESOURCES** > **Reports** is used. You can customize the report templates following the steps under Designing a PDF Report Template
9. Schedule the **Schedule Recurrence Pattern** for the report bundle to run once, hourly, daily, weekly, or monthly or set the range under **Schedule Recurrence Range**.
10. Specify the **Notification** that should be sent when the report bundle runs from the available options:
    - **Default Notifications** - to send default notifications. Click **+** to add more **Recipients**.
    - **Custom Notifications** - to send notifications to specific email addresses. Use the edit icon to add more **Recipients**.
    - **Copy to a remote directory** - to copy the report bundle to a remote directory.
11. Specify the Event/CMDB **Attribute**, **Operator**, and **Value**. Click **+** to add more, if required.
12. Click **OK**.
    The report bundle will run at the time you scheduled.

Scheduling Reports Using a Workflow

Follow these steps to schedule a report by using a workflow.

- Step 1 - Create Appropriate Roles for Users
- Step 2 - Map Users to Appropriate Roles
- Step 3 - Request the Report to be Scheduled
- Step 4 - Approve the Report Scheduling Request
- Step 5 - View the Report Scheduling Request Status

Step 1 - Create Appropriate Roles for Users

Complete these steps to create a role that will require report scheduling approval.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Report Schedule** option is not checked.
4. Make sure the **Activation > Report Schedule** option is not checked.
5. Save the role definition.

Complete these steps to create a role that can approve report scheduling requests.

1. Go to **ADMIN > Settings > Role > Role Management**
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Report Schedule** option is checked.
4. Make sure the **Activation > Report Schedule** option is not checked.
5. Save the role definition.

Step 2 - Map Users to Appropriate Roles

1. Go to **CMDB > Users**.
2. Select a user from the table and click **Edit**.
3. In the Edit User dialog box, select the **System Admin** option, and click the **Edit** icon.
4. Select the **Requestor** or **Approver** role as appropriate.

Step 3 - Request Report to be Scheduled

1. Go to **RESOURCES > Reports**.
2. Select a report, then select **More > Schedule**. The Create New Request dialog box opens.
3. If the role requires approval, select an approver from the **Approver** drop-down list.
4. Click **Submit**.
5. The approver will receive an email with a link to log back in to FortiSIEM and approve the request.

Step 4 - Approve the Report Scheduling Request

1. Login to FortiSIEM using a role that can approve a report being scheduled .
2. Click **Approval**. The table in the **TASKS** page lists pending requests.
3. To process the requests, scroll to the right-hand end of the row.
4. From the drop-down list, select **Approve** or **Reject**.
   - If you select **Approve**, the Approve Request dialog box opens. You can choose whether the request is valid **Until** or **For the date and time listed in the time stamp field**. You can click the time stamp field to choose a different date and time.
   - If you choose **Reject**, the Reject Request dialog box opens where you can enter a reason for the rejection.
5. If you choose **Approve**, the report will now be scheduled.

Step 5 - View Report Scheduling Request Status

Complete this step to see the status of your report schedule activation requests.

1. Login to FortiSIEM using the same account as in Step 3.
2. Click **Request**. The table in the **TASKS** page shows the status of requests.

Importing and Exporting Reports

Importing a Report

1. Go to **RESOURCE>Reports** and select the folder where you want to import the report.
2. Open the **More** drop-down list and select **Import**.
3. Click **Choose File** and browse to the report file to import.
4. Click **Import**.

Exporting a Report

Complete these steps to export Reports in PDF or CSV format:

1. Go to **RESOURCES** tab and select the report under **Reports** folder from the left panel.
2. Select the reports and click **Run** to view the results under **ANALYTICS** tab.
3. Go to **Action** and select **Export Result**.
4. Optional - Enter any **User Notes** about this report.
5. Select the **Output Format** for the report as CSV or PDF.
6. Select the **Time Zone** for which the report is to be generated. If the devices are in a different Timezone from the Supervisor, then you can choose the time zone of the devices while configuring the PDF report.
7. Select the **Template** if PDF format is selected:
   - **Defined** - to use the default template defined for this report defined under **RESOURCES** > **Reports**.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear on choosing this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**. See Designing a PDF Report Template for the steps to customize the report template.
8. Click **Generate** to create the report.
9. Click **View** to open and save the report.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- Raw events are completely obfuscated - the user cannot see any part of the raw message.
- Cannot perform search on obfuscated event attributes.
- CSV Export feature is disabled.
- If an integer event attribute is obfuscated, then the GUI may not show those obfuscated fields. Normally, integer fields are not obfuscated.

Rules

FortiSIEM continuously monitors your IT infrastructure and provides information to analyze performance, availability, and security. There may also be situations in which you want to receive alerts when exceptional, suspicious, or potential failure conditions arise. You can accomplish this using rules that define the conditions to watch out for, and which trigger an incident when those conditions arise. You can configure a notification policy that will send email and SNMP alerts that the incident has occurred. FortiSIEM includes over 500 system-defined rules, which you can see in **RESOURCES > Rules**, but you can also create your own rules as described in the topics in this section.

Viewing Rules

FortiSIEM includes a large set of rules for Availability, Performance, Change, Security, and Beaconing groups in addition to the rules that you can define for your system.

Complete these steps to view all system and user-defined rules:

1. Go to **RESOURCES** > **Rules**.
2. Use the **System** drop-down menu of the Rules list pane to filter rules by Organization.
3. Select any rule in the Rules list to view related information in the lower pane.

All rules have two information tabs:

Tabs	Description
Summary	This tab provides an overview of the rule logic, its status, and notification settings.
Test Results	If you are testing a rule, you can view the results here. **Note**: Active rules cannot be tested. You must deactivate a rule before testing.

Creating Rules

Creating a new rule involves defining the attributes of the incident that is triggered by the rule, as well as the triggering conditions and any exceptions or clear conditions. You can also create a rule by cloning an existing rule using the **Clone** button and editing it.

Note: Do not use certain keywords in sub-pattern names - `regexp`.

- Creating a Rule
- Defining Rule Conditions
- Defining the Incident Generated by a Rule
- Defining Rule Exceptions
- Defining Clear Conditions
- Defining an Incident Title

Creating a Rule

Complete these steps to create a rule:

1. Go to **RESOURCES** > **Rules**.
2. Select the group where you want to add the new rule.
3. Click **New** to create a new rule.

Settings	Guidelines
Step 1: General	
Rule Name	Enter a name for the new Rule.
Description	Enter a description of the new Rule.
Event Type	The name you enter in the Rule Type field is replicated in the Event Type field.
Remediation Note	Enter the **Remediation** script. Make sure that the Remediation script for your scenario is defined. Check the existing Remediation scripts under **ADMIN** > **Settings** > **Notification** > **Action** column. If your device is not in the list, add the needed Remediation script.

Settings	Guidelines
Step 2: Define Conditions	
Conditions	Click **Condition** to create the rule conditions. See Defining Rule Conditions.
Step 3: Define Actions	
Severity	Select a **Severity** to associate with the incident triggered by the rule.
Category	Select the **Category** of incidents to be triggered by the rule.
Subcategory	Select the **Subcategory** from the available list based on the selected incident **Category**. To add custom subcategories, follow the steps under Setting Rule Subcategory.
Action	Click the edit icon to define the incident (Incident Attributes and Triggered Attributes) that will be generated by this rule. You must have at least one incident defined before you can save your rule.
Exception	Click the edit icon to define any **Exceptions** for the rule. See Defining Rule Exceptions.
Dashboard	Select **Dashboard** to add this report under **DASHBOARD** tab.
Notification	Enter a **Notification** frequency for how often you want notifications to be sent when an incident is triggered by this rule.
Impacts	Select the **Impacts** of the incident triggered by this rule from the drop-down.
Watch Lists	Click the edit icon to add the rule you want to add to the watch list. **Note:** The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
Clear	Click the edit icon to define any **Clear** conditions for the rule. See Defining Clear Conditions.

4. Click **Save**.
   Your new rule will be saved to the group you selected in an inactive state. Before you activate the rule, you should test it.

Defining Rule Conditions

Rule conditions define the event attributes and thresholds that will trigger an incident. Rule conditions are built from sub-patterns of event attribute filters and aggregation functions. You can specify more than one subpattern and the relationships and constraints between them.

Specifying a Subpattern

A subpattern defines the characteristics of events that will cause a rule to trigger an incident. A subpattern involves defining event attributes that will be monitored, and then defining the threshold values for aggregations of event attributes that will trigger an incident.

Event Filters

Event filter criteria determine which event attributes and values will be monitored by the rule, and are set in a way that is similar to the way you set event attributes for structured historical searches and real time searches.

Event Aggregation

While you could have a rule that triggers an incident on a single instance of a particular event, it is more likely that you will want your rule to trigger an incident when some number of events have been found that meet your event filter criteria.

Group By Attributes

This determines which event attributes will be used to group the events before the group constraints are applied, in a way that is similar to the way the Group By attribute is used to aggregate the results of structured searches.

Aggregate Conditions

The group aggregation conditions set the threshold at which some aggregation of events will trigger a rule to create an incident. You create an aggregation condition by using the **Expression Builder** to set a function, and then enter the **Operator** and **Value** for the aggregation condition. Examples of Group By and Aggregate Conditions Settings are shown below:

Scenario	Group By Attributes	Aggregate Conditions
10 or more events	none	**COUNT(Matched events) >= 10**
Connections to 100 or more distinct destination IPs from the same source IP	**Source IP**	**COUNT (DISTINCT Destination IP) >= 100**
Connections to 100 or more distinct destination IPs from the same source IP on the same destination port	**Source IP,Destination Port**	**COUNT (DISTINCT destination IP) >= 100**
Average CPU Utilization on the same server > 95% over 3 samples	**Host IP**	**COUNT (Matched Events) >= 3 AND AVG(CPU Util) > 95**
Logins from the same source workstation to 5 or more accounts on the same target server	**Source IP**, **Destination IP**	**COUNT(DISTINCT user) >= 5**

Setting the Relationship between Subpatterns

If you have more than one sub-pattern, you must specify the relationship between them with these operators.

Operator	Meaning
AND	**Sub-pattern P1 AND Sub-pattern P2** means both sub-patterns P1 and P2 have to occur
OR	**Sub-pattern P1 OR Sub-pattern P2** means either P1 or P2 have to occur
FOLLOWED-BY	**Sub-pattern P1 FOLLOWED-BY Sub-pattern P2** means P1 has to be followed by P2 in time
AND-NOT	**Sub-pattern P1 AND-NOT Sub-pattern P2** means P1 must occur while P2 must not; the time order between P1 and P2 is not important
NOT-FOLLOWED-BY	**Sub-pattern P1 NOT-FOLLOWED-BY P2** means P1 must occur and P2 must not occur after P1

Setting Inter-subpattern Constraints

You may want to relate attributes of a sub-pattern to the corresponding attributes of another sub-pattern, in a way that is similar to a JOIN operation in an SQL, by using the relationship operators **<**, **>**, **<=**, **>=**, **=**, **!=**.

Examples of inter-subpattern relationships and constraints

Scenario	Sub-pattern P1 - filter	P1 - Group-by attribute set	P1 Group constraint	Sub-pattern P2 filter	P2-group-by attribute	P2 group constraint	Inter-P1-P2 relationships	Inter-P1-P2 constraints
5 login failures from the same source to a server not followed by a successful logon from the same source to the same server	Event type = Login Success	Source IP, Destination IP	COUNT (Matched Event) >= 5	Event type = Login failure	Source IP, Destination IP	COUNT (Matched Event) > 0	P1 NOT_FOLLOWED_BY P2	P1's Source IP = P2's Source IP
An security attack to a server followed by the server scanning the network, that is, attempting to communicate to 100 distinct destination IP addresses in 5 minute time windows	Event type = Attack	Destination IP	COUNT (Matched Event) > 0	Event Type = Connection Attempted	Source IP	COUNT (DISTINCT Destination IP) > 100	P1 FOLLOWED_BY P2	P1's Destination IP = P2's Source IP

Scenario	Sub-pattern P1 - filter	P1 - Group-by attribute set	P1 Group constraint	Sub-pattern P2 filter	P2-group-by attribute	P2 group constraint	Inter-P1-P2 relationships	Inter-P1-P2 constraints
Average CPU > 95% over 3 sample on a server AND Ping loss > 75%	Event Type = CPU_Stat	Host IP	COUNT (Matched Event) >= 3 AND AVG (cpuUtil) > 95	Event Type = PING Stat	Host IP	pingLoss Pct > 75	P1 AND P2	P1's Host IP = P2's Host IP

Defining the Incident Generated by a Rule

Defining an incident involves setting attributes for the incident based on the subpatterns you created as conditions for the rule, and then setting attributes for the incident that will be used in analytics and reports.

Note: You must have at least one incident defined before you can save your rule.

1. Select the rule you want to define an incident for.
2. Click **Edit** and go to **Step 2: Define Condition**.
3. Select a **Subpattern** from the drop-down list and click the edit icon to define the conditions for the rule. See Defining Rule Conditions.
   Define attributes for the incident based on the **Filter**, **Aggregate**, and **Group By** attributes you set for your subpatterns. Typically, you will set the Incident attributes to be the same as the Group By attributes in the subpattern:
   a. Select the **Attribute** you want to add to Incident.
   b. Select a **Subpattern**.
   c. This will populate values from the **Group By** attributes in the subpattern to the **Filter** menu.
   d. In the **Filter** menu, select the attribute you want to set as equivalent to the **Event Attribute**.
4. In **Step 3: Define Action**, provide values for the **Severity**, **Category**, **Subcategory**, **Dashboard**, **Notification**, **Impacts**, and **Watch List** fields as described in Creating a Rule. For information on exceptions, see Defining Rule Exceptions.
5. Click the **Action** edit icon to define the incident events and triggered attributes in the **Generate Incident for** dialog box. This dialog box is is pre-populated with typical attributes you would want included in an incident report.
6. Under **Triggered Attributes**, select the attributes from the triggering events that you want to include in Dashboards and Analytics for this event.
7. Click **Save**.

Defining Rule Exceptions

Once you activate a rule, it continuously monitors your IT infrastructure for conditions that would trigger an event. However, you may also want to define exceptions to those conditions. For example, you may know that a server

will be going down for maintenance during a specific time period and you don't want your **Server Down - No Ping Response** rule to trigger an incident for it.

1. In **RESOURCES** > **Rules**, select the rule you want to add the exception to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. Next to **Exceptions**, click **Edit**.
4. Select an **Attribute** and **Operator**, and enter a **Value**, for the conditions that will prevent an incident from being generated.
   The values in the Attribute menu are from the **Event Attributes** associated with the incident definition.
5. Click the **+** icon to set an effective time period for the exception.
   You can set effective time periods for single and recurring events, and for durations of time from hours to days.
6. Enter any **Notes** about the exception.
7. Click **Save**.

Defining Clear Conditions

Clear conditions specify conditions in which incidents will have their status changed from **Active** to **Cleared**. You can set the time period that must elapse for the clear condition to occur, and then set the conditions based on the triggering of the original rule, or on a sub pattern based on the Incident Attributes.

1. In **RESOURCES** > **Rules**, select the rule you want to add the clear condition to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. Next to **Clear Condition**, click **Edit**.
4. Set the **Time Period** that should elapse for the clear condition to go into effect.
5. If you want the clear condition to go into effect based on the firing of the original rule, select t**he Original Rule Does Not Trigger**.
   For example, if you wanted the clear condition to change the status of **Active** incidents to **Cleared** after the original rule had not been triggered for ten minutes, you would set **Cleared Within** to **10 Minutes** and select this option.
6. If you want to base the clear condition on a sub-pattern of the incident attributes, select **the following conditions are met**.
   The incident attributes from your rule will load and the clear condition attributes will be set to match.
7. Define the pattern to use by clicking the **Edit** icon next to the clear sub pattern.
8. Click **Save**.

Defining an Incident Title

Defining an incident title makes it convenient to identify an incident without having to search on incident source, target, and details. You can define titles for both user-defined rules and system rules.

These steps assume you have already created a rule or are editing a system rule.

1. In **RESOURCES** > **Rules**, select the rule you want to add a title to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. You can either enter text for the title or build the title using incident attributes defined for the rule.
   To use the incident attributes to build the title, follow these steps:

   a. Open the drop-down list next to **Insert Attribute**.
      Notice that the list contains all of the attributes defined in the **Incident Attributes** field.

   b. Select an attribute and click the **+** symbol to the right of the **Insert Attribute** list.
      The attribute appears in the **Incident Title** field prefixed by a "`$`" symbol, for example, `$user`.

c. Repeat the previous step for all of the attributes you want to appear in the title.
d. You can add text to the **Incident Title** field to make it more meaningful to you, for example: `$user` *created* `$fileName` *on* `$hostName`.

4. Click **Save** when you have finished your edits.

Once the title is defined in a rule definition, FortiSIEM will populate Incident **Title** field for all new instances of the Incidents.

To Display the Incident Title Field

Follow these steps to display the **Incident Title** column in the list of incidents table.

1. Go to **INCIDENTS > List by Time** view.
2. Open the **Action** drop-down list and select **Change Display Columns**.
3. Select **Incident Title** from the list.
4. Click **Close**.

The **Incident Title** column appears in the incidents table.

Activating and Deactivating a Rule

- Activating a Rule Without a Workflow
- Activating a Rule Using a Workflow

Activating a Rule Without a Workflow

If you have permission to activate a rule, follow these steps: You may also want to deactivate a rule, for example to test it, instead of deleting it from the system.

1. Go to **RESOURCES** > **Rules**.
2. Browse or search to find the rule that you want to activate or deactivate.
3. Select **Active** in the Active column to activate the rule, or clear the **Active** option to deactivate the rule.

Activating a Rule Using a Workflow

Follow these steps to activate a rule by using a workflow.

- Step 1 - Create Appropriate Roles for Users
- Step 2 - Map Users to Appropriate Roles
- Step 3 - Rule to be Activated/Deactivated
- Step 4 - Approve the Rule Activation/Deactivation Request
- Step 5 - View the Rule Activation/Deactivation Request Status

Step 1 - Create Appropriate Roles for Users

Complete these steps to create a role that will require approval for rule activation/deactivation requests.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Rule Activation/Deactivation** option is not checked.
4. Save the role definition.

Complete these steps to create a role that can approve rule activation/deactivation requests.

1. Go to **ADMIN > Settings > Role > Role Management**
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Rule Activation/Deactivation** option is checked.
4. Save the role definition.

Step 2 - Map Users to Appropriate Roles

1. Go to **CMDB > Users**.
2. Select a user from the table and click **Edit**.
3. In the Edit User dialog box, select the **System Admin** option, and click the **Edit** icon.
4. Select the **Requestor** or **Approver** role as appropriate.

Step 3 - Request Rule to be Activated/Deactivated

1. Go to **RESOURCES > Rules**.
2. Select a rule, then check or uncheck the active column status as needed. The Create New Request dialog box opens.
3. If the role requires approval, select an approver from the **Approver** drop-down list.
4. Click **Submit**.
5. The approver will receive an email with a link to log back in to FortiSIEM and approve the request.

Step 4 - Approve the Rule Activation/Deactivation Requests

1. Login to FortiSIEM using a role that can approve rule activation/deactivation requests.
2. Click **Approval**. The table in the **TASKS** page lists pending requests.
3. To process the requests, scroll to the right-hand end of the row.
4. From the drop-down list, select **Approve** or **Reject**.
   - If you select **Approve**, the Approve Request dialog box opens. You can choose whether the request is valid **Until** or **For the date and time listed in the time stamp field**. You can click the time stamp field to choose a different date and time.
   - If you choose **Reject**, the Reject Request dialog box opens where you can enter a reason for the rejection.
5. If you choose **Approve**, the rule will be enabled or disabled.

Step 5 - View the Rule Activation/Deactivation Request Status

Complete this step to see the status of your rule activation/deactivation requests.

1. Login to FortiSIEM using the same account as in Step 3.
2. Click **Request**. The table in the **TASKS** page shows the status of requests.

Testing a Rule

After creating or editing a rule, you should test it to see if it works as expected, before activating.

Note: You can perform rule testing only on the super global organization and not within the local organization.

Complete these steps to test a rule:

1. Go to **RESOURCES** > **Rules**, and deactivate the rule to test.
   Note: If you cannot deactivate a rule for testing, you can clone an inactive version of it.
2. In the **Set Activation Scope** dialog box, deselect the **Activation Status for New Org** and all of the organizations under **Activation Status for This Rule**.
3. Click **Save** to close the **Set Activation Scope** dialog box.
4. Select the rule, and click **Test**.
   This opens the **Rule Debug Events** dialog box.
5. Enter a **Reporting IP** where the synthetic event should originate from.
   If the rule you're testing specifies that the **Reporting IP** should be a member of a group, you should make sure that the Reporting IP you enter here is in that group.
6. Under **Raw Event**, enter the raw event log text that contains the triggering conditions for the rule.
7. Under **Pause**, enter the number of seconds before the next test event will be sent, and click **+** under **Action** to enter additional test events.
   Create as many events as necessary to trigger the rule conditions.
8. Click **Test Rule**.
   If the test succeeds you are now ready to activate the rule.

Exporting and Importing Rule Definitions

Instead of using the user interface to define a rule, you can import rule definitions, or you can export a definition, modify it, and import it back into your FortiSIEM virtual appliance. Rule definitions follow an XML schema.

- Exporting a Rule Definition
- Importing a Rule Definition

Exporting a Rule Definition

Complete these steps to export a Rule Definition:

1. Go to **RESOURCES** > **Rule**.
2. Select the Rule Definition(s) to export from the table.
3. Click **Export** to download and save the Rule Definition.

Importing a Rule Definition

Complete these steps to import a Rule Definition:

1. Go to **RESOURCES** > **Rule**.
2. Select the Rule Definition(s) to import in XML format.
3. Click **Import** to import the Rule Definition.

Network

The Networks page lists the defined networks in your IT infrastructure.

Adding a Network
Modifying a Network
Deleting a Network

Adding a Network

Complete these steps to add a network:

1. Go to **RESOURCES** > **Networks**.
2. Select a group where you want to add the Network group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information:
   - **Name** - name of the network
   - **Low** - lower IP address of the network IP range
   - **High** - higher IP address of the network IP range
   - **Mask** - Subnet mask
5. Click **Save**.

Modifying a Network

Complete these steps to modify a network:

1. Go to **RESOURCES** > **Networks**.
2. Select the network to modify from the table.
3. Click **Edit**.
4. Modify the required information:
   - **Name** - name of the network
   - **Low** - lower IP address of the network IP range
   - **High** - higher IP address of the network IP range
   - **Mask** - Subnet mask
5. Click **Save**.

Deleting a Network

Complete these steps to delete a network:

1. Go to **RESOURCES** > **Networks**.
2. Select the network to modify from the table.
3. Click **Delete**.
4. Click **Yes** to delete the network or **Remove only from group** to just remove the network from the group.

Watch list

A Watch List is a smart container of similar items such as host names, IP addresses, or user names, that are of significant interest to an administrator and must be watched. Examples of watch lists that are already set up in FortiSIEM are:

- **Frequent Account Lockouts** - users who are frequently locked out
- **Host Scanners** - IP addresses that scan other devices
- **Disk space issues** - hosts with disks that are running out of capacity
- **Denied countries** - countries with an excessive number of access denials at the firewall
- **Blacklisted WLAN endpoints** - Endpoints that have been blacklisted by Wireless IPS systems

Items are added to a watch list dynamically when a rule is triggered, but you can also add items to a watch list manually. When you define a rule, you can also choose a watch list that will be populated with a specific incident attribute, and you can use watch lists as conditions while creating reports, as described in Using a Watch List. You can also define when an entry leaves a watch list - this is time based. For example, if the rule does not trigger for that attribute for defined time-period, then the entry is removed from the watch list. Watch lists are also multi-tenant aware, with organization IDs tracked in relation to watch list items.

The following section provides the procedures to use Watch Lists:

System-defined Watch list

FortiSIEM includes several pre-defined watch lists that are populated by system-defined rules.

Watch list	Description	Attribute Type	Triggering Rules
Accounts Locked	Domain accounts that are locked out frequently	User (STRING)	Account Locked: Domain

Watch list	Description	Attribute Type	Triggering Rules
Application Issues	Applications exhibiting issues	Host Name (STRING)	IIS Virtual Memory Critical SQL Server Low Buffer Cache Hit Ratio SQL Server Low Log Cache Hit Ratio SQL Server Excessive Deadlock SQL Server Excessive Page Read/Write SQL Server Low Free Pages In Buffer Pool SQL Server Excessive Blocking Database Server Disk Latency Critical SQL Server Excessive Full Scan SQL Server scheduled job failed High Oracle Table Scan Usage High Oracle Non-System Table Space Usage Oracle database not backed up for 1 day Exchange Server SMTP Queue High Exchange Server Mailbox Queue High Exchange Server RPC Request High Exchange Server RPC Latency High Oracle DB Low Buffer Cache Hit Ratio Oracle DB Low Library Cache Hit Ratio Oracle DB Low Row Cache Hit Ratio Oracle DB Low Memory Sorts Ratio Oracle DB Alert Log Error Excessively Slow Oracle DB Query Excessively Slow SQL Server DB Query Excessively Slow MySQL DB Query

Watch list	Description	Attribute Type	Triggering Rules
Availability Issues	Servers, networks or storage devices or Applications that are exhibiting availability issues	Host Name (STRING)	Network Device Degraded - Lossy Ping Response Network Device Down - No Ping Response Server Degraded - Lossy Ping Response Server Down - No Ping Response Server Network Interface Staying Down Network Device Interface Flapping Server Network Interface Flapping Important Process Staying Down Important Process Down Auto Service Stopped Critical network Interface Staying Down EC2 Instance Down Storage Port Down Oracle Database Instance Down Oracle Listener Port Down MySQL Database Instance Down SQL Server Instance Down Service Staying Down - Slow Response To STM Service Down - No Response to STM Service Staying Down - No Response to STM
DNS Violators	Sources that send excessive DNS traffic or send traffic to unauthorized DNS gateways	Source IP	Excessive End User DNS Queries to Unauthorized DNS servers Excessive End User DNS Queries Excessive Denied End User DNS Queries Excessive Malware Domain Name Queries Excessive uncommon DNS Queries Excessive Repeated DNS Queries To The Same Domain
Denied Countries	Countries that are seeing a high volume of denials on the firewall	Destination Country (STRING)	Excessive Denied Connections From An External Country

Watch list	Description	Attribute Type	Triggering Rules
Denied Ports	Ports that are seeing a high volume of denies on the firewall	Destination Port (INT)	Excessive Denied Connection To A Port
Environmental Issues	Environmental Devices that are exhibiting issues	Host name (String)	UPS Battery Metrics Critical UPS Battery Status Critical HVAC Temp High HVAC Temp Low HVAC Humidity High HVAC Humidity Low FPC Voltage THD High FPC Voltage THD Low FPC Current THD High FPC ground current high NetBoz Module Door Open NetBotz Camera Motion Detected Warning APC Trap Critical APC Trap
Hardware Issues	Servers, networks or storage devices that are exhibiting hardware issues	Host Name (String)	Network Device Hardware Warning Network Device Hardware Critical Server Hardware Warning Server Hardware Critical Storage Hardware Warning Storage Hardware Critical Warning NetApp Trap Critical Network Trap
Host Scanners	Hosts that scan other hosts	Source IP	Heavy Half-open TCP Host Scan Heavy Half-open TCP Host Scan On Fixed Port Heavy TCP Host Scan Heavy TCP Host Scan On Fixed Port Heavy UDP Host Scan Heavy UDP Host Scan On Fixed Port Heavy ICMP Ping Sweep Multiple IPS Scans From The Same Src

Watch list	Description	Attribute Type	Triggering Rules
Mail Violators	End nodes that send too much mail or send mail to unauthorized gateways		Excessive End User Mail to Unauthorized Gateways Excessive End User Mail
Malware Found	Hosts where malware found by Host IPS /AV based systems and the malware is not remediated	Host Name (String)	Virus found but not remediated Malware found but not remediated Phishing attack found but not remediated Rootkit found Adware process found

Watch list	Description	Attribute Type	Triggering Rules
Malware Likely	Hosts that are likely to have malware - detected by network devices and the determination is not as certain as host based detection	Source IP or Destination IP	Excessive Denied Connections From Same Src Suspicious BotNet Like End host DNS Behavior Permitted Blacklisted Source Denied Blacklisted Source Permitted Blacklisted Destination Denied Blacklisted Destination Spam/malicious Mail Attachment found but not remediated Spyware found but not remediated DNS Traffic to Malware Domains Traffic to Emerging Threat Shadow server list Traffic to Emerging Threat RBN list Traffic to Emerging Threat Spamhaus list Traffic to Emerging Threat Dshield list Traffic to Zeus Blocked IP list Permitted traffic from Emerging Threat Shadow server list Permitted traffic from Emerging Threat RBN list Permitted traffic from Emerging Threat Spamhaus list Permitted traffic from Emerging Threat Dshield list Permitted traffic from Zeus Blocked IP list
Port Scanners	Hosts that scan ports on a machine	Source IP	Heavy Half-open TCP Port Scan: Single Destination Heavy Half-open TCP Port Scan: Multiple Destinations Heavy TCP Port Scan: Single Destination Heavy TCP Port Scan: Multiple Destinations Heavy UDP Port Scan: Single Destination Heavy UDP Port Scan: Multiple Destinations

Watch list	Description	Attribute Type	Triggering Rules
Policy Violators	End nodes exhibiting behavior that is not acceptable in typical Corporate networks	Source IP	P2P Traffic detected IRC Traffic detected P2P Traffic consuming high network bandwidth Tunneled Traffic detected Inappropriate website access Inappropriate website access - multiple categories Inappropriate website access - high volume Inbound clear text password usage Outbound clear text password usage Remote desktop from Internet VNC From Internet Long lasting VPN session High throughput VPN session Outbound Traffic to Public DNS Servers

Watch list	Description	Attribute Type	Triggering Rules
Resource Issues	Servers, networks or storage devices that are exhibiting resource issues: CPU, memory, disk space, disk I/O, network I/O, virtualization resources - either at the system level or application level	Host Name (STRING)	High Process CPU: Server High Process CPU: Network High Process Memory: Server High Process Memory: Network Server CPU Warning Server CPU Critical Network CPU Warning Network CPU Critical Server Memory Warning Server Memory Critical Network Memory Warning Network Memory Critical Server Swap Memory Critical Server Disk space Warning Server Disk space Critical Server Disk Latency Warning Server Disk Latency Critical Server Intf Util Warning Server Intf Util Critical Network Intf Util Warning Network Intf Util Critical Network IPS Intf Util Warning Network IPS Intf Util Critical Network Intf Error Warning Network Intf Error Critical Server Intf Error Warning Server Intf Error Critical

Watch list	Description	Attribute Type	Triggering Rules
			Virtual Machine CPU Warning Virtual Machine CPU Critical Virtual Machine Memory Swapping Warning Virtual Machine Memory Swapping Critical ESX CPU Warning ESX CPU Critical ESX Memory Warning ESX Memory Critical ESX Disk I/O Warning ESX Disk I/O Critical ESX Network I/O Warning ESX Network I/O Critical Storage CPU Warning Storage CPU Critical NFS Disk space Warning NFS Disk space Critical
			NetApp NFS Read/Write Latency Warning NetApp NFS Read/Write Latency Critical NetApp CIFS Read/Write Latency Warning NetApp CIFS Read/Write Latency Critical NetApp ISCSI Read/Write Latency Warning NetApp ISCSI Read/Write Latency Critical NetApp FCP Read/Write Latency Warning NetApp FCP Read/Write Latency Critical NetApp Volume Read/Write Latency Warning
			NetApp Volume Read/Write Latency Critical EqualLogic Connection Read/Write Latency Warning EqualLogic Connection Read/Write Latency Critical Isilon Protocol Latency Warning

Watch list	Description	Attribute Type	Triggering Rules
Routing Issues	Network devices exhibiting routing related issues	Host Name (STRING)	OSPF Neighbor Down EIGRP Neighbor down OSPF Neighbor Down
Scanned Hosts	Hosts that are scanned	Destination IP	Half-open TCP DDOS Attack TCP DDOS Attack Excessive Denied Connections to Same Destination
Vulnerable Systems	Systems that have high severity vulnerabilities from scanners	Host Name (STRING)	Scanner found severe vulnerability
Wireless LAN Issues	Wireless nodes triggering violations	MAC Address (String)	Rogue or Unsecure AP detected Wireless Host Blacklisted Excessive WLAN Exploits Excessive WLAN Exploits: Same Source

Creating a Watch List

Complete these steps to create a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select an existing group under **Watch Lists** folder or create a new Watch List group.

To create a new Watch List group:

a. Select **Watch Lists** folder from the left panel and click **+** above the **RESOURCES** groups.
b. In the **Create New Watch List** dialog box, select the **Organization** type.
c. Enter the information below:
   - **Group** - name of the Watch List group
   - **Description** - description about the Watch List group
   - **Type** - Watch List type - String, Number, IP, or Date
   - **Case Sensitive** - Select if the group name is case-sensitive
   - **Expired in** - time period in which the items will expire from the watch if there is no activity for that time

To create a new Watch List:

a. Select a Watch List and click **New**.
In the **Add New Entry** dialog box, the **Watch List** and **Type** values are pre-populated based on the Watch List selection.

b. Enter the information below:
   - **Active** - select whether the Watch List will be active when it is created
   - **Value** - a value for the Watch List
   - **Description** - a description of the Watch List
   - **Expires** - time period in which the items will expire from the watch if there is no activity for that time

c. Click **Save**.

Modifying a Watch List

Complete these steps to modify a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List to modify from the table.
3. Click **Edit** and make the required changes.
4. Click **Save**.

Use the **Delete** button to select and delete any Watch List(s) from the table.

Using a Watch list

- Adding Watch List to a Rule
- Using Watch Lists as Conditions in Rules and Reports

Adding Watch List to a Rule

You can now add your new watch list to a rule, so that when the rule is triggered, items will be added to the watch list.

1. Go to **RESOURCES** > **Rules**.
2. Select the rule where you want to add the watch list, and click **Edit**.
3. Go to the **Step 3: Define Action** page.
4. Click the edit icon for the **Watch List**.
5. For **Incident Attribute**, select the incident information you want to add to the watch list.
   Note: **Watch List Attribute Type Must Match Incident Attribute**- The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
6. Move the watch list you want to add from **Available** to **Selected** list using the right arrow.
7. Click **Save**.
   The **Watch Lists** field value displays "Defined".

Using Watch Lists as Conditions in Rules and Reports

If you want to create a rule that refers to the attributes in a watch list, for example if you want to create a condition in which a **Source IP** listed in your **DNS Violators** watch list will trigger an incident.

1. Go to **RESOURCES** > **Reports** or **Rules** and select the rule or report where you want to use the watch list.
2. Click **Edit**.
3. Go to the **Step 2: Define Condition** page.

4. Under **Conditions** for the report in your rule sub-pattern, enter the watch list attribute you want to filter for in the **Attribute** field.
   For example, **Source IP**.
5. For **Operator**, select **IN**.
6. Click **... Select from CMDB** under **Value**, and browse the folders to select the watch list using the right arrow.
   For example, **DNS Violators**.
7. Click **OK** and continue creating your search criteria or rule sub pattern.

Exporting and Importing Watch Lists

- Exporting Watch Lists
- Importing Watch Lists

Exporting a Watch List

Complete these steps to export a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List(s) to export from the table.
3. Click **Export**.
4. Select the file format as **PDF** or **CSV** and click **Generate**.
   "Export successful" message is displayed.
5. Click **Open Report File** to save the file.

Importing a Watch List

Complete these steps to import a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List to modify from the table.
3. Click **Import**.
4. Select the file to import in CSV format and click **Import**.

Protocols

The Protocols page lists the protocols used by applications and devices to communicate with the FortiSIEM virtual appliance.

Adding a Protocol
Modifying a Protocol
Deleting a protocol

Adding a Protocol

Complete these steps to add a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select a group where you want to add the Network group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information:
    a. **Name** - name of the protocol.
    b. **Description** - description about the protocol.
    c. **Protocol/Port(s)** - select the Protocol and Port from the drop-down.
    d. **Apps Group** - enter the group to associate with the Protocol.
5. Click **Save**.

Modifying a Protocol

Complete these steps to modify a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select the Protocol to modify from the table.
3. Click **Edit**.
4. Modify the required information:
    - **Name** - name of the protocol.
    - **Description** - description about the protocol.
    - **Protocol/Port(s)** - Protocol and Port from the drop-down.
    - **Apps Group** - group to associate with the Protocol.
5. Click **Save**.

Deleting a protocol

Complete these steps to delete a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select the Protocol to delete from the table.
3. Click **Delete**.
4. Click **Yes** to confirm.

Event types

The Event Types page lists the types of events that are collected for supported devices.

Adding an event type

Complete these steps to add an event type:

1. Go to **RESOURCES** > **Event Types**.
2. Select a group to add the new event to, or create a new one.
3. Click **New**.
4. Enter a **Name**, and **Description** for the event type.
5. Select the **Device Type** from the drop-down list to associate with this event type.
6. Select the level of **Severity** associated with this event type.
7. For **CVE IDs**, enter links to any vulnerabilities associated with this event type as cataloged by the National Vulnerability Database.
8. Click **Save**.

Modifying an Event Type

Complete these steps to modify an Event Type:

1. Go to **RESOURCES** > **Event Types**.
2. Select the Event Type to modify from the table.
3. Click **Edit** to modify any settings.
4. Click **Save**.

Deleting an Event Type

Complete these steps to delete an Event Type:

1. Go to **RESOURCE**> **Event Types**.
2. Select the Event Type group from the folder structure on the left panel.
3. Select the Event Type from the table and click **Delete** to delete.
4. Confirm whether to **Remove only from group** or to remove completely by clicking **Yes**.

Working with FortiGuard IOCs

The following sections describe how to work with FortiGuard malware domains, IPs, and URLs.

- Working with FortiGuard Malware Domains
- Working with FortiGuard Malware IPs
- Working with FortiGuard Malware URLs

Working with FortiGuard Malware Domains

The following sections describe how to enable, disable, and setup a proxy for the FortiGuard Malware domain.

- Enabling the FortiGuard IOC Service
- Disabling the FortiGuard IOC Service
- Using a Proxy for the FortiGuard IOC Service

Enabling the FortiGuard IOC Service

To start the FortiGuard IOC service, follow these steps:

1. Go to **Resources > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select an inactive domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Enable IOC Service**.
4. (Optional) Schedule the starting of the service. See Specifying a schedule.
5. Click **Save**.

Disabling the FortiGuard IOC Service

To stop the FortiGuard IOC service, follow these steps:

1. Go to **Resources > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select an active domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Disable IOC Service**.
4. Click **Save**.

Using a Proxy for the FortiGuard IOC Service

Follow these steps to use a proxy for the FortiGuard IOC service:

1. Go to **Resources > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select a domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Use Proxy**.
4. The **Mode** will be **Proxy**. Provide the following information:
    a. **IP/Host**
    b. **Port**
    c. **User Name**
    d. **Password**
5. Click **Save**.

Working with FortiGuard Malware IPs

For FortiGuard Malware IPs, go to **Resources > Malware IPs,** select the **FortiGuard Malware IP** folder, and repeat the same steps as for **FortiGuard Malware Domains**.

Working with FortiGuard Malware URLs

For FortiGuard Malware URLs, go to **Resources > Malware URLs,** select the **FortiGuard Malware URL** folder, and repeat the same steps as for **FortiGuard Malware Domains**.

Working with ThreatConnect IOCs

ThreatConnect can provide malware IPs, domains, hashes, or URLs which FortiSIEM can use to match in log data The steps are as follows: for each IOC (IP, domain, hash, URL).

1. Discover Collections
2. Create Collection Policy
3. Schedule IOC Download

Since an Organization may subscribe to many Collections (an intelligence source), downloading every IOC for all Collections may result in too much data. Therefore, specifying a Collection Policy is essential.

Download ThreatConnect Malware Domains

1. Go to **Resources > Malware Domains** and select the **ThreatConnect Malware Domain** folder.
2. Click **More > Update**. In the **Update Malware** dialog box, then select **Update via API**.
3. Use your ThreatConnect credentials to complete the **URL**, **User name**, and **Password** fields.
4. **Plugin Class** is provided by default.
5. Select a **Data Format**. In this release, only **STIX-TAXII** is supported.
6. Enter an **Organization** name that is defined in your ThreatConnect account.
7. Define a **Collection**.
8. Click **Discover Collections** to expose all of the collections you are eligible to use.
9. Select a collection policy in the table and click **Edit**.
10. Edit any of the following values in the **Edit Collection Policy** dialog box:
    - **Enabled**: select whether the collection policy is enabled
    - **Collection**: edit the collection name
    - **Tag**: enter an optional user-defined tag for the collection
    - **Max False Positive Count**: enter a number where the frequency of an attack produces a false positive on your network.
    - **Min Rating**: enter a value between 0 and 5.
    - **Confidence**: enter a value between 1 and 100.
11. Click **Save**.
12. Schedule the download. See Specifying a schedule.
13. Check the folder 5 minutes after the scheduled time. Downloaded results should be displayed – organized by each collection.

Note that FortiSIEM does not provide system rules and reports because ThreatConnect folders are dynamic. The user must create them using the Collection folders.

Download Other ThreatConnect IOCs

For ThreatConnect Malware IP, go to **Resources > Malware IP**, select the **ThreatConnect Malware IP** folder, and repeat the same steps as for **Malware Domains**.

For ThreatConnect Malware URL, go to **Resources > Malware URLs**, select the **ThreatConnect Malware URL** folder, and repeat the same steps as for **Malware Domains**.

For ThreatConnect Malware hash, go to **Resources > Malware Hash** , select the **ThreatConnect Malware Hash** folder and repeat the same steps as for **Malware Domains**.

Specifying a schedule

1. Click the **+** icon next to **Schedule**.
2. Enter values for the following options:
    - **Time Range** specifies start time (within the day) and the duration of the scheduling window. Select a UTC time and a corresponding location from the drop-down lists.

- **Recurrence Pattern** specifies if and how the window will repeat.
  - If you are scheduling for one time only:
    a. Select **Once** for **Recurrence Pattern**.
    b. Select the specific date in **Start From**.
  - If you are scheduling for hourly:
    a. Enter the hourly interval.
    b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.
  - If you are scheduling for **Daily**:
    a. Select the interval of days or **Every weekday**.
    b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.
  - If you are scheduling for **Weekly**:
    a. Select the interval of weeks or select particular days of the week.
    b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.
  - If you are scheduling for **Monthly**:
    a. Select the days and months from the drop-down lists.
    b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.

3. Click **Save** to apply the changes.

Malware Domains

The Malware Domains page lists domains that are known to generate spam, host botnets, create DDoS attacks, and generally contain malware. The default groups included in your FortiSIEM deployment, MalwareDomainList, Zeus Domains, and SANS Domains, contain malware domains that are derived from the websites malwaredomainlist.com and isc.sans.edu. Since Malware Domains are constantly changing, FortiSIEM recommends maintaining a dynamically generated list of IP addresses provided by services such as these that is updated on a regular schedule, but you can also add or remove blocked IP addresses from these system-defined groups, and create your own groups based on manual entry of IP addresses or file upload.

The following sections describe Malware Domains:

Adding a Malware Domain
Modifying a Malware Domain
Deleting a Malware Domain

Adding a Malware Domain

Complete these steps to add a Malware domain:

1. Go to **RESOURCES** > **Malware Domains**.
2. Select a group where you want to add the Malware Domains, or create a new one by clicking **+** above the **RESOURCES** groups. To create a new Malware Domain group:
   a. Select Malware Domain folder and click **+** above the **RESOURCES** groups.
   b. Enter the **Group** name and **Description** of the Malware Domain.
3. Select the Malware Domain group (existing or new) and click **New**.

4. Select the **Domain Name** and **Description** of the Malware domain.
5. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware Domain, see Working with FortiGuard Malware Domains.

Modifying a Malware Domain

Complete these steps to edit a Malware Domain:

1. Go to **RESOURCES**> **Malware Domain**.
2. Select the Malware Domain group on the left panel.
3. Select the Malware Domain from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware Domain, see Working with FortiGuard Malware Domains.

Deleting a Malware Domain

Complete these steps to delete a Malware Domain:

1. Go to **RESOURCES** > **Malware Domain**.
2. Select the Malware Domain on the left panel.
3. Select the Malware Domain from the table and click **Delete**.
4. Click **Yes**.

Malware IPs

The Malware IP Addresses page lists IP addresses that are known to generate spam, host botnets, create DDoS attacks, and generally contain malware. The two default groups included in your FortiSIEM deployment, Emerging Threats and Zeus, contain IP addresses that are derived from the websites rules.emergingthreats.net and zeustracker.abuse.ch. Because malware IP addresses are constantly changing, FortiSIEM recommends maintaining a dynamically generated list of IP addresses provided by services such as these that is updated on a regular schedule, but you can also add or remove blocked IP addresses from these system-defined groups, and create your own groups based on manual entry of IP addresses or file upload.

The following sections describe Malware IPs:

Adding a Malware IP
Modifying a Malware IP
Deleting a Malware IP
Importing Malware IPs

Adding a Malware IP

Complete these steps to add a Malware IPs:

1. Go to **RESOURCES** > **Malware IPs**.
2. Select a group where you want to add the Malware IPs, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the details of the Malware IP.
5. Click **Save**.

To configure a ThreatConnect Malware IP, see Working with ThreatConnect.

To configure a FortiGuard Malware IP, see Working with FortiGuard Malware IPs.

Modifying a Malware IP

Complete these steps to edit a Malware IP:

1. Go to **RESOURCE**> **Malware IP**.
2. Select the Malware IP group in the left panel.
3. Select the Malware IP from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware IP, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware IP, see Working with FortiGuard Malware IPs.

You can use the **Delete** button to select and remove any Malware IP from the list.

Deleting a Malware IP

Complete these steps to delete a Malware IP:

1. Go to **RESOURCE**> **Malware IPs**.
2. Select the Malware IP group from the folder structure on the left panel.
3. Select the Malware IP from the table and click **Delete** to delete.
4. Click **Yes** to confirm.

Importing Malware IPs

You can import Malware IP information into FortiSIEM from external threat feed websites.

- Prerequisites
- Websites with built-in support
- Custom threat feed websites - CSV data - one-time manual import
- Custom threat feed websites - CSV data - programmatic import
- Custom threat feed websites - non-CSV data - programmatic import
- Custom threat feed websites - STIX formatted data and TAXII import

Prerequisites

Before proceeding, gather the following information about a threat feed web site:

- Website URL
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you may need to understand the format of the data returned by the URL.
    - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator), then a simple integration is possible.
    - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Websites with built in support

The following websites are supported:

- Emerging threat (http://rules.emergingthreats.net)
- Threat Stream Malware IP (https://api.threatstream.com)
- Hail-A-TAXII Malware IP (http://hailataxii.com/)

For Threat Stream Malware IP, the following Malware types are imported:

- Bot IP
- Actor IP
- APT Email
- APT IP
- Bruteforce IP
- Compromised IP
- Malware IP
- DDoS IP
- Phishing email IP
- Phish URL IP
- Scan IP
- Spam IP

To import data from these websites, follow these steps:

1. In the **RESOURCES** > **Malware IPs**, find the website you must import data from.
2. Select the folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will show in the edit box.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - when to start and how often to import. FortiSIEM recommends no more frequent than hourly.
7. Select the type of template you want to create.

Custom threat feed websites - CSV data - one-time manual import

This requires that the data to be imported is already in a file in comma-separated value format. The required format is:

```
Name, Low IP, High IP, Malware Type, Confidence, Severity, ASN, Org, Country ,De-
scription,Data Found(MM/DD/YYYY),Last Seen(MM/DD/YYYY)
```

Although many fields are possible, only Low IP is required. If High IP is not provided, then it is set to Low IP.

1. Select **RESOURCE**>**Malware IPs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware IP Group** dialog box.
3. Enter a **Group** name and add a **Description**.
4. Click **Save** to create the folder under **Malware IPs**.
5. Select the folder just created.
6. Select **More > Update**.
7. Click **Choose File**.
8. Browse to the file you want to import and click **Save**.
   The imported data will appear in the right pane.

Custom threat feed websites - CSV data - programmatic import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in one line.

Although many fields are possible, only Low IP is required. If High IP is not provided, then it is set to Low IP.

Follow these steps:

1. Select **RESOURCES** > **Malware IPs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware IPs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon next to **URL** and provide the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the default class **com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService** is displayed.
   Note: Do not modify this in any case.
   d. Enter the correct **Field Separator** (by default, it is a comma).
   e. Select **CSV** as the **Data Format**.
   f. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, then choose 3 in the **Position** column.
7. Click **Save**.
8. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will show on the right pane after some time.

Custom threat feed websites - non-CSV data - programmatic import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, write a Java plugin class by modifying the default system provided one.

After the class has been written and fully tested for correctness, follow these steps.

1. Select **RESOURCES** > **Malware IPs**.
2. Click on the "**+**" button on the left navigation tree to bring up the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**.
4. Click **Save** to create the folder under **Malware IPs**.
5. Select the folder just created.
6. Select **More** > **Update** > **Update via API**.
7. Click the edit icon and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the custom Java class for this case.
    d. Select 'Custom' as the **Data Format**.
    e. Click **Save**.
8. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will display on the right pane after some time.

Custom threat feed websites - STIX formatted data and TAXII import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Select **RESOURCES** >**Malware IPs**.
2. Click on the "**+**" button on the left navigation tree to bring up the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware IPs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. Select 'STIX-TAXII' as the **Data Format**.
    d. For **Plugin Class**, choose **com.accelops.service.threatfeed.impl.StixMalwareIPUpdateService** and **Full**.
    e. Click **Save**.
7. Select a import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will show on the right pane after some time.

Malware URLs

The Malware URLs page lists URLs that are known to host malware. The Threat Stream Blocked URL group is included in your FortiSIEM deployment.

The following sections describe Malware URLs:

Adding a Malware URL

Complete these steps to add a Malware URL:

1. Go to **RESOURCES** > **Malware URLs**.
2. Select a group where you want to add the Malware URL, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information about the Malware URL:
   - URL
   - Malware Type
   - Confidence
   - Description
   - Last Seen
5. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware URL, see Working with FortiGuard Malware URLs.

Modifying a Malware URL

Complete these steps to edit a Malware URL:

1. Go to **RESOURCE**> **Malware URL**.
2. Select the Malware URL group from the folder structure on the left panel.
3. Select the Malware URL from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware URL, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware URL, see Working with FortiGuard Malware URLs.

You can use the **Delete** button to select and remove any Malware URL from the list.

Deleting a Malware URL

Complete these steps to delete a Malware URL:

1. Go to **RESOURCES** > **Malware URLs**.
2. Select the Malware URL group from the folder structure on the left panel.
3. Select the Malware URL from the table and click **Delete** to delete.
4. Click **Yes** to confirm.

Importing Malware URLs

This section describes how to import Malware URL information into FortiSIEM from external threat feed websites.

- Prerequisites
- Threat feed websites with built in support
- Custom threat feed websites - CSV data - one-time manual import
- Custom threat feed websites - CSV data - GUI import

- Custom threat feed websites - non-CSV data - programmatic import
- Custom threat feed websites - STIX formatted data and TAXII import

Prerequisites

Before proceeding, gather the following information about a threat feed web site:

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you may need to understand the format of the data returned by the URL.
    - If the data is in comma-separated value (CSV) format, then a simple integration is possible. Note that the separator need not be a comma but could be any separator.
    - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Threat feed websites with built in support

The following websites are supported:

- Threat Stream Malware URL (https://api.threatstream.com)
- FortiSandbox Malware URL
- Hail-A-TAXII Malware IP (http://hailataxii.com/)

To import data from these websites, follow these steps:

1. In the **RESOURCES** > **Malware URLs**, find the website you must import data from.
2. Select the folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will show in the edit box.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters: when to start and how often to import. FortiSIEM recommends no more frequent than hourly.

Custom threat feed websites - CSV data - one-time manual import

This requires that the data to be imported is already in a file in comma-separated value format. The required format is:

```
URL, Malware Type, Confidence, Description,Last Seen(MM/DD/YYYY)
```

1. Select **RESOURCES** > **Malware URLs**.
2. Click the + button on the left navigation tree to open the **Create New Malware URL Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **Import from a CSV file**.
6. Click **Choose File**; enter the file name and click **Upload**.
   The imported data will show on the right pane.

Custom threat feed websites - CSV data - GUI import

This requires that the web site data has the following structure:

- The file is in a comma-separated value format (the separator can be any special character such as space, tab, hash, dollar sign, etc.).
- One line has only one entry.

Follow these steps:

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog box.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon next to **URL** and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the default class **com.accelops.service.threatfeed.impl.ThreatstreamMalwareUrlUpdateService** is shown. Do not modify this value for this case.
    d. Enter the correct **Field Separator** (by default it is a comma).
    e. Set **Data Format** to **CSV**.
    f. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
    g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example if the URL is in third position, then choose 3 in the **Position** column.
    h. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane.

Custom threat feed websites - non-CSV data - programmatic import

This is the most general case where the website data format is not CSV. In this case, write a Java plugin by modifying the default class provided by the system.

After the class has been written and fully tested for correctness, follow these steps:

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog.
3. Enter the **Group** name and add a **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, enter the name of the custom Java plugin class.
    d. Select **Custom** as the **Data Format**.

e. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
f. Click **Save**.

7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
The imported data will show on the right pane.

Custom threat feed websites - STIX formatted data and TAXII import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog box.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. Do not edit the name of the **Plugin Class**.
   d. Select **STIX-TAXII** as the **Data Format**.
   e. Enter the name of the STIX-TAXII **Collection**.
   f. Select **Full** as the **Data Update** value. Existing data will be overwritten.
   g. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
The imported data will display on the right pane.

Malware Processes

The following sections describe Malware Processes:

Creating a Malware Process Group

Complete these steps to add a Malware Process group:

1. Go to **RESOURCES** and select **Malware Processes**.
2. Click **+** above the **RESOURCES** groups.
3. Enter a group **Name** and **Description** in the **Create New Malware Process Group** dialog box.
4. Choose processes to include by expanding the tree in the **Folders** panel.
5. Select processes from the **Items** panel and move them to the **Selections** panel.
6. Click **Save**.

Adding a Malware Process

Complete these steps to add a Malware Processes:

1. Go to **RESOURCES** > **Malware Processes**.
2. Select a group where you want to add the Malware Processes.
3. Click **New**.
4. Enter the **Process Name** and **Description** of the Malware Process.
5. Click **Save**.

Complete these steps to import Malware processes from a CSV file:

1. Go to **RESOURCES** > **Malware Processes**.
2. Click **More** > **Update** > **Import from a CSV file**.
3. Click **Choose File** to select the CSV file.
4. Click **Import**.

Modifying a Malware Process

Complete these steps to edit a Malware Process:

1. Go to **RESOURCE**> **Malware Process**.
2. Select the Malware Process group from the folder structure on the left panel.
3. Select the Malware Process from the table and click **Edit** to modify the settings.
4. Click **Save**.

Deleting a Malware Process

Complete these steps to delete a Malware Process:

1. Go to **RESOURCE**> **Malware Processes**.
2. Select the Malware Process group from the folder structure on the left panel.
3. Select the Malware Process from the table and click **Delete** to delete.
4. Confirm whether to **Remove only from group** by clicking **Yes** or **No**.

Country Groups

The Country Groups page contains a list of all of the country names in the FortiSIEM geolocation database. You can also create folders that represent different organizations of countries for use in analytics.

Creating a Country Group

Complete these steps to add a Country Group:

1. Go to **RESOURCES** > **Country Group**.
2. Click **+** above the **RESOURCES** groups.
3. Enter a group **Name** and **Description** in the **Create New Country Group** dialog box.
4. Choose countries to include by expanding the tree in the **Folders** panel, selecting countries from the **Items** panel, and moving them to the **Selections** panel.
5. Click **Save**.

Adding a Country Group

Complete these steps to add a Country Group:

1. Go to **RESOURCES** > **Country Group**.
2. Select a group where you want to add the Country Group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the **Country Name** and **Description** of the Country Group.
5. Click **Save**.

Modifying a Country Group

Complete these steps to edit a Country Group:

1. Go to **RESOURCE**> **Country Group**.
2. Select a Country Group from the left panel.
3. Select the Country Group from the table and click **Edit** to modify the settings.
4. Click **Save**.

Deleting a Country Group

Complete these steps to delete a Country Group:

1. Go to **RESOURCE**> **Country Group**.
2. Select a Country Group from the left panel.
3. Select **-** above the Resource groups.
4. Confirm whether to **Remove only from group** or to remove the group completely by clicking **Yes**.

Creating a Country

Complete these steps to add a Country to a Country Group:

1. Go to **RESOURCES** > **Country Group**.
2. Click the Country Group where you want to create a country.
3. Click **New**.
4. Enter a country **Name** and **Description** in the **Add New Geo Country** dialog box.
5. Click **Save**.

Deleting a Country

Complete these steps to delete a Country from a Country Group:

1. Go to **RESOURCE**> **Country Group**.
2. Select a Country Group from the left panel.
3. Select a country from the table and click **Delete**.
4. Confirm whether to **Remove only from group** only or to remove the country completely.

Malware Hash

Use the **Malware Hash** page to define a list of malware files and their hash functions. When FortiSIEM monitors a directory, it generates these directory events:

Directory Event	Generated by This Action
PH_DEV_MON_CUST_FILE_CREATE	New file creation
PH_DEV_MON_CUST_FILE_SCAN	Directory is scanned
PH_DEV_MON_CUST_FILE_CHANGE_CONTENT	Changes in file content

When FortiSIEM scans a file and collects its hash, it uses the system rule `Malware Hash Check` to check the list of malware hashes. FortiSIEM will then trigger an alert if a match is found.

The following sections describe Malware Hashes:

Adding a Malware Hash
Modifying a Malware Hash
Updating user-defined Malware Hash

Adding a Malware Hash

Complete these steps to add a Malware Hash:

1. Go to **RESOURCES** > **Malware Hash**.
2. Select a group where you want to add the Malware Hash, or create a new group by clicking **+** above the **RESOURCES** groups.
3. Click **New** and add the information related to the Malware Hash.
4. Click **Save**.

To add a ThreatConnect Malware Hash, see Working with ThreatConnect.

Modifying a Malware Hash

Complete these steps to edit a Malware Hash:

1. Go to **RESOURCE**> **Malware Hash**.
2. Select the Malware Hash group from the folder structure on the left panel.

3. Select the Malware Hash from the table and click **Edit** to modify the settings.
4. Click **Save**.

To modify a ThreatConnect Malware Hash, see Working with ThreatConnect.

You can use the **Delete** button to select and remove any Malware Hash from the list.

Updating user-defined Malware Hash

System defined groups are updated by its own service:

- Threat Stream Malware Hash
- FortiSandbox Malware Hash

You can update the Malware Hash using the following options:

- Import from a CSV file
- Update via API

Prerequisites:

Before proceeding, gather the following information about a threat feed web site.

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you must understand the format of the data returned by the URL.
  - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator, then a simple integration is possible.)
  - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Import from a CSV file

Custom websites - CSV data - one-time manual import

Instead of manually adding Malware Hashes to a group individually, you can upload a CSV file with multiple entries. This requires that the data to be imported is already in a file in a comma-separated value format.

```
Botnet Name, Algorithm, Hash Code, Controller IP, Malware Type, Confidence,
Severity, Asn, Org, Country, Description, Data Found(MM/DD/YYYY), Last Seen
(MM/DD/YYYY), High IP,Malware Type, Confidence, Severity, ASN, Org, Country
,Description,Data Found (MM/DD/YYYY),Last Seen(MM/DD/YYYY)
```

Note: Although many fields are possible, only Botnet Name and Hash Code are required.

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the group from the left panel or create a new group by clicking the **+** icon above the list of RESOURCES groups.
3. Select **More** > **Update**.
4. Select **Import from a CSV file** and choose the file to import.
5. Click **Import**.

Update via API

This section describes how to import Malware Hash information into FortiSIEM from external threat feed websites. Malware Hashes are used by malware to hide their own identity.

Updating System Defined Malware Hash Group

The following websites are supported:

- Threat Stream Open Proxy (https://api.threatstream.com)
- Threat Stream TOR Node (https://api.threatstream.com)

Complete these steps to import data from these websites:

1. Go to **Resources** > **Malware Hash**.
2. Select the folder and find the website you want to import data from.
3. Click **More** > **Update**.
4. Select **Update via API**.
   The link will be displayed in the URL field or else manually enter the URL and details.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - **Start Time** and **Recurrence Pattern**. FortiSIEM recommends no more frequent than hourly.
7. Click **Save**.
   You can use the edit icon to modify or delete icon to remove a **Schedule**.

Custom threat feed websites - CSV data - programmatic import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in a single line.

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCE**> **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Click the edit icon near **URL**.
6. Enter the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the default class '**com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService**' is shown. Do not modify this in any case.
   d. Enter the correct **Field Separator** (by default it is a comma).
   e. Select **CSV** as the **Data Format**.
   f. Select **Data Update** as **Full**.

g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
h. Click **Save**.

7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
The imported data will show on the right pane after some time.

Custom threat feed websites - non-CSV data - programmatic import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, write a Java plugin class by modifying the default system provided one.

1. Go to **RESOURCE**> **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.
3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.
6. Enter the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the custom Java class in this case.
   d. Select **Custom** as the **Data Format**.
      - Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
      - Select **Full** as the **Data Update** value. Existing data will be overwritten. Select **Incremental** to preserve the existing data.

      For **STIX-TAXII**:

      - Enter the name of the STIX-TAXII **Collection**.
      - Select **Full** as the **Data Update** value. Existing data will be overwritten.
   e. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
The imported data will display in the table after some time.

Custom threat feed websites - non-CSV data -STIX formatted data and TAXII import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Go to **RESOURCE**> **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.
3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.

6. Enter the following information:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the custom Java class in this case.
    d. Enter the name of the STIX-TAXII **Collection**.
    e. Select **STIX-TAXII** as the **Data Format**.
    f. Select **Data Update** as **Full**.
    g. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will display in the table after some time.

Default Password

The Default Password page contains a list of default vendor credentials. These well-known credentials should never be used in production. During device discovery FortiSIEM checks if the device credentials are still set to default, The system rule `Default Password Detected by System` triggers an incident if they are.

This is a sample raw event log for a default password incident:

```
<174>Oct 20   22:50:03   [PH_AUDIT_DEFAULT_PWD_MATCH]:[phEventCategory]=2,
[appTransportProto]=SNMP,[reptModel]=Firewall-1   SPLAT,[srcIpAddr]=192.168.19.195,
[phCustId]=1,[sessionId]=0f8bdee2b6a265c4bd075fc777ed,[procName]=AppServer,
[reptVendor]=Checkpoint,[hostIpAddr]=172.16.0.1,[hostName]=SJ-QA-F-Lnx-CHK,
[eventSeverity]=PHL_INFO,[user]=,[phLogDetail]=Default password matches for   the
same composite key (Vendor, Model, Access method, User Name, Password)
```

The following sections describe Default Passwords:

Adding a Default Password
Modifying a Default Password
Importing and Exporting a Default Password

Adding a Default Password

Complete these steps to add a default password:

1. Go to **RESOURCES** > **Default Password**.
2. Select a group where you want to add the default password, or create a new group by clicking **+** above the **RESOURCE** groups.
3. Click **New**.
4. Select the **Vendor** and **Model** of the device for which you want to enter a default password.
5. Select the **Access Protocol** that is used to connect to the device from the drop-down.
6. Enter the default **User Name** and **Password** for the device.
7. Click **Save**.

Modifying a Default Password

Complete these steps to edit a default password:

1. Go to **RESOURCES**> **Default Password**.
2. Select the default password group from the folder structure on the left panel.
3. Select the default password from the table and click **Edit** to modify the settings.
4. Click **Save**.

Use the **Delete** button to select and remove any default password(s) from the list.

Importing and Exporting a Default Password

The procedures below describe how to import and export a Default Password.

Importing Default Password

Instead of manually adding default passwords to a user-defined or system group individually, you can upload a CSV file with multiple entries into a group.

You must format the file with these fields: `Vendor,Model,Access Protocol,User Name,Password`

For example: `Microsoft,Windows,WMI,Administrator,Administrator`

1. Go to **RESOURCES** > **Default Password**.
2. Select the Default Password group where you want to import the new password from the folder structure.
3. Click **Import** and select the CSV file.
4. Click **Import**.

Exporting Default Password

Complete these steps to export a default password from a Group to a CSV File.

1. Go to **RESOURCES** > **Default Password**.
2. Select the Default Password group from where you want to export the Default Password from the folder structure.
3. Select the Default Password from the table and click **Export**.
4. Click **Generate**.
   'Export successful' message is displayed.
5. Click **Open Report File** and save the report.

Anonymity network

An anonymity network is used to hide one's network identity, and is typically used by malware to hide its originating IP address. Enterprise network traffic should not be originating from or destined to Anonymity network.

When FortiSIEM discovers traffic destined to or originating from anonymity networks, it triggers these rules:

- Inbound Traffic from Tor Network
- Outbound Traffic to Tor Network
- Inbound Traffic from Open Proxies
- Outbound Traffic to Open Proxies

Adding Anonymity Networks
Modifying Anonymity Networks
Updating Anonymity Networks

Adding Anonymity Networks

FortiSIEM provides two default (system-defined) groups for Anonymity Networks:

- **Open Proxies**: A set of open proxies in the internet. This is a static group.
- **Tor Nodes**: This group is dynamically updated from https://check.torproject.org/exit-addresses. To schedule regular updates for this group, click the group name, then click **Update** and provide updated scheduling information.

Complete these steps to add Anonymity Networks:

1. Go to **RESOURCE**> **Anonymity Network** folder on the left panel.
2. Select **Open Proxies** or **Tor Nodes** folder or click **+** to add a new group.
3. Click **New**.
4. Enter **IP**, **Port**, and **Country** information about the anonymity network.
5. Click the **Calendar** icon to select the **Date Found** and **Last Seen**.
6. Click **Save**.

Adding Anonymity Networks to Watch Lists

You can easily add an anonymity network IP address to your watch lists. Hover your mouse cursor over the anonymity network IP address until the icon for the **Options** menu appears, and then select **Add to Watchlist**.

Modifying Anonymity Networks

Complete these steps to edit an Anonymity Network:

1. Go to **RESOURCE**> **Anonymity Network**.
2. Select the Anonymity Network group from the folder structure on the left panel.
3. Select the Anonymity Network from the table and click **Edit** to modify the settings.
4. Click **Save**.

You can use the **Delete** button to select and remove any Anonymity Network from the list.

Updating Anonymity Networks

This section describes how to update Anonymity Network information in FortiSIEM from external threat feed websites.

You can update the Anonymity Network information in the following ways:

- Import from a CSV file
- Update via API

Prerequisites:

Before proceeding, gather the following information about a threat feed web site.

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you must understand the format of the data returned by the URL.
    - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator, then a simple integration is possible.)

- If the data is any other format, for example, XML, then some code needs to be written for integration using the FortiSIEM provided framework.

Import from a CSV file

Custom websites - CSV data - one-time manual import

Instead of manually adding anonymity networks to a group individually, you can upload a CSV file with multiple entries. This requires that the data to be imported is already in a file in comma-separated value format.

```
IP, Port, Malware Type, Confidence, Severity, Asn, Org, Country, Description, Data Found(MM/DD/YYYY), Last Seen(MM/DD/YYYY)
```

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the group from the left panel or create a new group by clicking the **+** icon above the list of RESOURCES groups.
3. Select **More** > **Update**.
4. Select **Import from a CSV file** and choose the file to import.
5. Click **Import**.

Update via API

This section describes how to import anonymity networks information into FortiSIEM from external threat feed websites. Anonymity networks are used by malware to hide their own identity.

Websites with built in support

The following websites are supported:

- Threat Stream Open Proxy (https://api.threatstream.com)
- Threat Stream TOR Node (https://api.threatstream.com)

Complete these steps to import data from these websites:

1. Go to **Resources** > **Anonymity Network**.
2. Select the folder and find the website you must import data from.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - **Start Time** and **Recurrence Pattern**. FortiSIEM recommends no more frequent than hourly.
7. Click **Save**.
   You can use the edit icon to modify or delete icon to remove a **Schedule**.

Custom websites - CSV data - programmatic import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in a single line.

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCE**> **Anonymity Network**.
2. Select the folder or click **+** to add a new group under **Anonymity Network** folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Click the edit icon near **URL**.
6. Enter the following information:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the default class `com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService` is shown. **Do not modify this in this case.**
    d. Enter the correct **Field Separator** (by default it is a comma).
    e. Select **CSV** as the **Data Format**.
    f. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
    g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
    h. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule Summary**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane after some time.

New Websites - non-CSV data - programmatic import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, you have to write a Java plugin class by modifying the default system provided one. After the class has been written and fully tested for correctness, follow these steps.

1. Go to **RESOURCE**> **Anonymity Network**.
2. Select the folder or click **+** to add a new group under **Anonymity Network** folder.
3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.
6. Enter the following information:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the custom Java class in this case.
    d. Enter the correct **Field Separator** (by default it is a comma).

e. Select **Custom** or **STIX-TAXII** as the **Data Format**.
   - **STIX-TAXII** - provide the name of the **Collection**. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
   - **Custom** - select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.

f. Click **Save**.

7. Select an import schedule by clicking **+** on the **Schedule Summary**. Select when to start the import and how often to import new data from the website.
   The imported data will display in the table after some time.

User Agents

The User Agent page lists common and uncommon user agents in HTTP communications. The traditional use case for a user agent is to detect browser types so the server can return an optimized page. However, user agents are often misused by malware, and are used to communicate the identity of the client to the BotNet controller over HTTP(S). FortiSIEM monitors HTTP(S) logs and the system rule Blacklist User Agent Match uses regular expression matching to detect blacklisted user agents.

Adding User Agents

Complete these steps to add a User Agent:

1. Go to **RESOURCE**> **User Agents**.
2. Select the **User Agent** group where you want to add the new user agent from the folder structure on the left panel. To create a new User Agent group, click **+** above the **Resources** tree.
3. Click **New**.
4. Enter the **User Agent** using regular expression notation.
5. Click **Save**.

Modifying User Agents

Complete these steps to edit a User Agent:

1. Go to **RESOURCE**> **User Agents**.
2. Select the **User Agent** group from the folder structure on the left panel.
3. Select the User Agent from the table and click **Edit** to modify the settings.
4. Click **Save**.

You can use the **Delete** button to select and remove any User Agent from the list.

Importing and Exporting User Agents

The procedures below describe how to import and export User Agents.

Importing User Agents

Instead of manually adding User Agents to a user-defined or system group individually, you can upload a CSV file with multiple entries into a group.

Note: You must format the User Agent password with regular expression notation: *User Agent (regular expression)*

Complete these steps to import User Agents to a Group from a CSV File.

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group where you want to import the new User Agents from the folder structure.
3. Click **Import** and select the CSV file.
4. Click **Import**.

Exporting User Agents

Complete these steps to export User Agents from a Group to a CSV File.

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group from where you want to export the User Agents from the folder structure.
3. Select the User Agent from the table and click **Export**.
4. Click **Generate**.
   If the export is successful, an "Export successful" message is displayed.
5. Click **Open Report File** and save the report.

Remediations

Remediation can be performed either on an ad hoc basis or by using a Notification Policy. A Notification Policy directs the system to take a Remediation action when an Incident occurs. To invoke a Remediation, do the following:

- Make sure the Remediation script for your scenario is defined.
- Check the existing Remediation scripts. Go to **ADMIN** > **Settings** > **General** > **Notification**, then choose **Run Remediation/Script** in the **Action** section of the Notification Policy dialog box. See Adding Incident Notification settings.
- If your device is not in the list, add the needed Remediation script.

The system-defined and custom Remediations are listed under **RESOURCES** > **Remediations**. The following sections describe how to create and manage custom Remediations.

- Adding Remediations
- Modifying Remediations
- Deleting Remediations

Adding Remediations

Complete these steps to create a new custom Remediation. You can also select any existing Remediation to **Clone** and customize.

1. Go to **RESOURCES** > **Remediations**.
2. Click **New**.

3. Enter the **Name** of the Remediation.
4. Select the **Device Type** to which this Remediation will be applied.
5. Select the **Protocol** as SSH, HTTP, HTTPS or MS_WMI for the device type.
6. Enter the Remediation **Script Name**.
7. Enter the Remediation **Script Content**.
8. Add any **Description** related to this Remediation.
9. Click **Save**.
   The Remediation will be available in the list along with the system-defined Remediations.

Modifying Remediations

Note that you cannot modify any system-defined Remediations.

Complete these steps to modify a custom Remediation:

1. Go to **RESOURCE**> **Remediations**.
2. Select a custom Remediation from the list.
3. Click **Edit** and modify the remediation settings.
4. Click **Save**.
   The updated Remediation will be available in the list along with the system-defined Remediations.

Deleting Remediations

Note that you cannot remove any system-defined Remediations.

Complete these steps to delete a custom Remediation(s).

1. Go to **RESOURCES** > **Remediations**.
2. Select the custom Remediation to delete from the list.
3. Click **Delete**.
4. Click **Yes** to confirm.
   These Remediation(s) will be deleted from the list.

Working with Cases

FortiSIEM allows you to create and assign cases for IT infrastructure tasks, and create tickets. You can see all tickets that have been created under the CASES tab and use filter controls to view tickets by assignees, organization, priority, and other attributes.

The following topics provide instructions for ticket related operations:

Creating a Ticket

FortiSIEM has a built-in ticketing system. A ticket can be created from the following:

- Case tab
- Incidents tab
- Via Incident Notification policy

Creating a ticket from Case tab

To create a ticket from Case tab:

1. Go to **CASE**.
2. Click **New**.
3. In the **New Ticket** dialog box, enter the following information:

Settings	Guidelines
Summary	[Required] Summary information about the ticket.
State	State is automatically created by the system once the ticket is created. This can be modified from New to other values later.
Assignee	Click the edit icon to select a user from the list of Users.
Escalation	Escalation policy.
Priority	[Required] Priority of the ticket - High, Medium, or Low.

Settings	Guidelines
Due Date	Due date for the ticket.
Attachment	Click the edit icon to select and upload or delete any files related to the ticket.
CC	Email IDs to copy the ticket details to.
Notes	Any description of the ticket.

4. Click **Save**.
   A unique ID is automatically assigned to the ticket.
5. Select the ticket from the list to display tabs for the **Detail**, **Action History**, and **Evidence** information in the lower pane.

Creating a ticket from Incidents tab

To create a ticket from any specific Incident:

1. Go to **INCIDENT** > **List View**.
2. Select the incident and click the **Action** drop-down menu to select **Create Case**.
   The Incident details are automatically pulled to the new ticket creation window.
3. Enter the following information for the new ticket:

Settings	Guidelines
Assignee	Click the edit icon to select a user from the list of Users.
Priority	[Required] Priority of the ticket - High, Medium, or Low.
Due Date	Due date for the ticket.
Attachment	Click the edit icon to select and upload or delete any files related to the ticket.
CC	Email IDs of the users who will receive copies of the ticket details.

4. Click **Save**.

Creating a ticket via Incident Notification policy

To create a ticket automatically when an Incident triggers:

1. Go to **ADMIN** > **Settings** > **General** > **Notification**.
2. Click **New** and select **Create Case when an incident is created**.

3. Click the edit icon for this setting and add the following details:

Settings	Guidelines
Escalation	Select an escalation policy from the drop-down list. See Escalation Settings.
Expires in	Time after which the ticket expires.
Priority	[Required] Priority of the ticket - High, Medium, or Low.
Assignee	Click the edit icon and assign this ticket to a user in the **Users** group. The user can belong to any Organization.

4. Click **Save**.

Editing a Ticket

The **Edit** option under **CASE** allows you to edit any ticket settings except the **Ticket ID**.

Complete these steps to edit an existing ticket:

1. Go to **CASE** and select the ticket to edit.
2. Click **Edit**.
3. In the **Edit Ticket** dialog box, modify the ticket information.
4. Click **Save**.
   The modified ticket appears in the table.

Managing Cases

You can perform the following operations from Cases tab:

- Viewing a Ticket
- Searching a Ticket
- Escalating a Ticket
- Exporting a Ticket

Viewing a Ticket

The Ticket Dashboard displays the total number of:

- **New** - tickets in New state.
- **Assigned** - tickets that are Assigned.
- **High** - tickets in high priority state.

- **Overdue** - tickets that crossed the Due Date.
- **Late** - tickets that elapsed more than half of the Due Date but not yet overdue.
- **Closed** - tickets that are closed
- **MTTR** - mean time to repair

Understanding ticket settings

The **CASES** tab displays all of the tickets raised in the system in a tabular format with the following information:

Settings	Description
Elapsed	Percentage of time elapsed since the ticket was created. If the time is beyond Due Date, this field displays the "Overdue" status.
State	Current status of the ticket.
Priority	Priority of the ticket - High, Medium or Low.
Ticket ID	Unique ID assigned to the ticket automatically by the system during creation.
Organization	Organization of the reporting device.
Summary	Summary information about the ticket.
Incident ID	Unique ID of the incident in the incident database.
Assignee	User assigned to the ticket.
Creator	User who created the ticket.
Resolution Time	The time to resolve the incident in the external ticketing system.
Due Date	The date by which the ticket should be resolved.
Creation Date	Date when the ticket was created.

For any selected ticket, the Incident and event details are displayed in the **Detail** and **Action History** sections.

Settings	Description
Detail	
Assignee	The user to whom the ticket is assigned.

Settings	Description
Close code	The reason for closing the ticket. Choose one of the following from the drop-down list: **Solved (Workaround)**, **Solved (Permanent)**, **Not Solved (Not Reproducible)**, **Not Solved (Expensive)**, **Closed (Resolved by Caller)**
Closed date	The date when the ticket was closed
Creator	User who created the ticket.
Escalation Policies	Escalation policy for the incident tickets.
Priority	The priority assigned tothe ticket: LOW, MEDIUM, or HIGH.
State	Current status of the ticket.
Ticket ID	Unique ID assigned to the ticket automatically by the system during creation.
CC	Email address(es) of the users who will receive a copy of the ticket details.
Close Note	Any description you want to enter when closing the ticket.
Creation Date	Date when the ticket was created.
Elapsed	Percentage of time elapsed since the ticket was created. If the time is beyond Due Date, this field displays the "Overdue" status.
Incident ID	Unique ID of the incident in the incident database.
Resolution Time	The time when the ticket was resolved in the ticketing system.
Summary	Summary information about the ticket.
Time Zone	The time zone in which the ticket was created.
Action History	
Incident Name	Name of the rule that triggered the incident.
Incident Target	IP or host name where the incident occurred.
Incident Detail	Event attributes that triggered the incident.
Incident ID	To find the events that triggered the incident for the Case, click **Triggering Events**.

Settings	Description
Evidence	
Attachments	List of files related to the ticket.
Triggering Event	List of events that triggered the incident for the Case.

Viewing Incident details

To see the incident details related to a ticket:

1. Go to the **CASES** tab.
2. Select the ticket from the list. You can find the Incident ID from the **Detail** section and the Incident name, target and details from the **Action History** section.
3. Click the **Incident ID** under **Detail** section to open the details under the **INCIDENT** tab.

Viewing events that triggered the incident

To see the events that triggered the Incident for a ticket:

1. Go to the **CASES** tab.
2. Select the ticket from the list.
3. Click **Action History-List**. The events appear in the **Case action** section. Or you can click **Evidence > Triggering Event** to view the event details.

Creating a ticket escalation policy

To create a ticket escalation policy, follow the steps here.

Searching a Ticket

You can use various attributes mentioned in the table below from the search filter to find more information about any ticket.

Complete these steps to search a ticket:

1. Go to **CASES** tab.
2. Click the **Add Filter** search field to select any known filter from the drop-down with reference to the table below.
3. Based on the selection, new fields appear including the condition and value fields.

Settings	Guidelines
Time Range	Search any ticket created during a specific time range. Use **LAST** to find the tickets from the last number of days, hours and/or minutes or **FROM** to choose a range of dates and time from the Calendar.

Settings	Guidelines
State	Select the state of the ticket from the drop-down list: New, Assigned, Closed, In Progress, or Reopened.
Elapsed	Search using the time elapsed since the ticket was created.
Assignee	Search any ticket by entering the assignee of the ticket.
Creator	Search any ticket using the creator of the ticket.
Priority	Search any ticket by entering the priority: High, Medium, or Low.
Organization	Search any ticket by entering the Organization to which the ticket applies.
Ticket ID	Search any ticket using the Ticket ID auto-generated by the system.
Incident ID	Search any ticket using the Incident ID associated with the ticket.
Summary	Search any ticket using any known information included in the Ticket Summary.

4. Select the check mark to display the results.
   The results are displayed in the table. Select any Ticket to display the **Detail** and **Action History** in the lower pane.

Escalating a Ticket

Complete these steps to escalate a ticket:

1. Go to **CASES** tab.
2. Click the **Add Filter** search field to select and open a ticket using filters.
   The table displays the tickets matching the filter criteria.
3. Click **Edit** button to open the ticket settings.
4. Select the Escalation type from the drop-down and click **Save**.

Refer to Ticket Escalation Settings for more information about related settings.

Exporting a Ticket

You can export all or selected tickets using filters to a PDF or CSV report.

Complete these steps to export a ticket:

1. Go to **CASES**.
2. Click **Add Filter** search field to search any ticket using filters.
   The table displays the tickets matching the filter criteria.
3. Select one or more tickets from the list and click the **Export** button.

4. In the **Export Report** dialog box, select the following:
    a. Report Option: Select **Summary for all tickets** or **Detailed report for selected tickets**.
    b. User Notes (optional): Description related to the exported document.
    c. Output Format: PDF or CSV.
5. Click **Generate**.
    "Export Successful" message is displayed.
6. Click **View** to download and save the report.

Working with Incidents

When a correlation rule triggers, an incident is created in FortiSIEM. This section describes how to view and manage Incidents in FortiSIEM. There are three views:

- **List View**: This tabular view enables the user to search incidents and take actions.
- **Attack View**This view classifies security events detected by FortiSIEM into MITRE ATT&CK categories.
- **Overview**: This view provides a "top down" view of the various types of Incidents and impacted hosts.
- **Risk View**: This view organizes impacted entities (Devices, Users) by Risk based on the triggered incidents.
- **Incident Explorer View**: This view helps users to correlate Actors (IP, Host, User) across multiple incidents, without creating multiple reports in separate tabs.

FortiSIEM can cross-correlate incident data and perform lookups on selected external ticketing/work flow systems. See Filtering in the Incident Explorer View and Lookups Via External Websites.

FortiSIEM can also be configured to collect this host vulnerability data to preform CVE-Based IPS False Positive Analysis.

List View

This tabular view enables the user to search incidents and take actions.

- Viewing Incidents
- Acting on Incidents

Viewing Incidents

To see this view, click **INCIDENTS**in the FortiSIEM header. By default, the **List by Time** view opens. The **INCIDENTS** view also allows you to filter data by device and by incident.

You can set **INCIDENTS** as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list. You can filter the **INCIDENTS** view further by choosing **List – by Time**, **List – by Device**, or **List – by Incident** from the **Incident Home** drop down list.

An incident's status can be one of the following:

- **Active**: An ongoing incident.
- **Manually Cleared**: Cleared manually by a user - the incident is no longer active.
- **Auto Cleared**: Automatically cleared by the system when the rule clearing condition is met. Rule clearance logic can be set in the rule definition.
- **System Cleared**: Cleared by the system. All non-security related incidents are cleared from the system every night at midnight local time, and will show a status of **System Cleared**.
- **Externally Cleared**: Cleared in the external ticketing system.

The resolution for an incident can be:

- **Open**
- **True Positive**, or

- **False Positive**

When an **Incident Status** is **Active**, Incident Resolution is **Open**. When an Incident is **Cleared**, then the user can set the **Incident Resolution** to be **True Positive** or **False Positive**. If you are changing the **Incident Resolution** to be **True Positive** or **False Positive**, then you must **Clear** the Incident.

The following sections describe the three views that are available through the **INCIDENTS** view:

- List by Time View
- List by Device View
- List by Incident View

List by Time View

The **List by Time** view displays a table of the incidents which have been active in the last 2 hours. The **Last Occurred** column contains the incidents sorted by time, with the most recent first. By default, the view refreshes automatically every minute. The refresh menu on the top bar allows the user to disable automatic refresh or choose a different refresh interval.

Unique to the **List by Time** view is a list of five time range buttons (15m 1h 1d 7d 30d) which appear above the paginator. They allow you to filter data by the last 15 minutes, 1 hour, 1 day, 7 days, or 30 days.

The following attributes are shown for each incident:

- Severity - High (Red), MEDIUM (Yellow), or LOW (Green).
- Last Occurred - last time this incident occurred.
- Incident - name of the incident.
- Reporting - set of devices that is reporting the incident.
- Source - source of the incident (host name or IP address).
- Target - target of the incident (host name or IP address or user).
- Detail - other incident details, for example, Counts, Average CPU utilization, file name, and so on.

To see the incident details, click the incident. A bottom panel appears that shows more details about the incident:

- **Details** - includes the full list of incident attributes that are not shown in the top pane.

Column	Description
Biz Service	Impacted biz services to which either the incident source or target belongs.
Category	Category of incidents triggered.
Cleared Reason	For manually cleared incidents, this displays the reason the incident was cleared.
Cleared Time	Time when the incident was cleared.
Cleared User	User who cleared the incident.
Count	Number of times this incident has occurred with the same incident source and target criteria.

Column	Description
Detail	Event attributes that triggered the incident.
Event Type	Event type associated with this incident. All incidents with the same name have the same Incident Type.
External Cleared Time	Time when the incident was resolved in an external ticketing system.
External Resolve Time	Resolution time in an external ticketing system.
External Ticket ID	ID of a ticket in an external ticketing system such as ServiceNow, ConnectWise, etc.
External Ticket State	State of a ticket in an external ticketing system.
External Ticket Type	Type of the external ticketing system (ServiceNow, ConnectWise, Salesforce, Remedy).
External User	External user assigned to a ticket in an external ticketing system.
First Occurred	The first time that the incident was triggered.
Incident	Name of the rule that triggered the incident. Use the drop-down list near the Incident if you must add this incident to filter.
Incident Comments	Comments added by the user.
Incident ID	Unique ID of the incident in the Incident database.
Incident Status	An incident's status can be one of the following: • **Active**: An ongoing incident. • **Manually Cleared**: Cleared manually by a user - the incident is no longer active. • **Auto Cleared**: Automatically cleared by the system when the rule clearing condition is met. Rule clearance logic can be set in the rule definition. • **System Cleared**: Cleared by the system. All non-security related incidents are cleared from the system every night at midnight local time, and will show a status of **System Cleared**. • **Externally Cleared**: Cleared in the external ticketing system.
Incident Title	A system default title or a user-defined title for an incident.
Last Occurred	The last time when the incident was triggered.
Notification Recipient	User who was notified about the incident.

Column	Description
Notification Status	Status of the Notification: Success or Fail.
Organization	Organization of the reporting device (for Service Provider installations).
Reporting	Reporting device.
Reporting IP	IP addresses of the devices reporting the incident.
Reporting Status	Status of the device: Approved or Pending. You must approve devices for the incidents to trigger, but they will still be monitored.
Resolution	The resolution for an incident can be: • **Open** (not defined or not known whether the incident is True Positive or False Positive) • **True Positive**, or • **False Positive** When an **Incident Status** is **Active**, Incident Resolution is **Open**. When an Incident is **Cleared**, then the user can set the **Incident Resolution** to be **True Positive** or **False Positive**. If you are changing the **Incident Resolution** to be **True Positive** or **False Positive**, then you must **Clear** the Incident.
Severity	Incident Severity is an integer in the range 0-10 (0-4 is set as Low, 5-8 as Medium, and 9-10 as High).
Severity Category	Incident Severity Category: High, Medium or Low.
Source	Source IP or host name that triggered the incident.
Subcategory	Subcategory of the triggered incident. To add custom subcategories to an incident category, see here.
Target	IP or host name where the incident occurred.
Ticket ID	ID of the ticket if created in FortiSIEM.
Ticket Status	Status of any tickets associated with the incident.
Ticket User	User assigned to a ticket if created in FortiSIEM.
View Status	Whether the Incident has been Read or Not.

- **Events** - this displays the set of events that triggered the incident. If an incident involves multiple sub-patterns, select the sub-pattern to see the events belonging to that sub-pattern. For **Raw Event Log** column, click **Show Details** from the drop-down to see the parsed fields for that event.
- **Rule** - this displays the **Definition of Rule that Triggered the Incident** and the **Triggered Event Attributes**.

To close the incident details pane, click the highlighted incident.

List by Device View

The upper pane of the **List by Device** view lists the devices that are experiencing incidents. In the list, the device can be identified by either an IP or a host name. The name of the device is followed by the number of incidents in parentheses. Click the device name to see the incidents associated with the device. The lower portion of the view contains the same features and functionality as the **List by Time** view.

List by Incident View

The upper pane of the **List by Incident** view lists the incidents detected by FortiSIEM. The name of the incident is followed by the number of incidents in parentheses. Click the incident name to see the incidents associated with the device. The lower portion of the view contains the same features and functionality as the **List by Time** view.

Acting on Incidents

The **Action** menu provides a list of actions that can be taken on incidents. To see a Location View of the incidents, select **Locations** from the **Action** menu. FortiSIEM has a built in database of locations of public IP addresses. Private IP address locations can be defined in **ADMIN** > **Settings** > **Discovery** > **Location**.

To change the incident attribute display columns in the List View, select **Display** from the **Action** menu, select the desired attributes and click **Close**.

You can perform the following operations using the **Action** menu:

- Changing the Severity of an Incident
- Searching Incidents
- Searching for MITRE ATT&CK Incidents
- Clearing one or more Incidents
- Clearing All Incidents from the Incident View
- Disabling one or more rules
- Adding or editing comments for one or more incidents
- Exporting one or more incidents into a PDF or CSV file
- Fine tuning a rule triggering an Incident
- Creating an exception for the Rule
- Creating Event Dropping Rules
- Creating a Ticket
- Emailing Incidents
- Creating a Remediation action
- Show Ticket History

Changing the Severity of an Incident

1. Select the incident.
2. Select **Change Severity** from the **Action** menu.
3. Select **Change to HIGH**, **MEDIUM**, or **LOW**.

Searching Incidents

1. Select **Search** from the **Action** menu.
2. In the left pane, click an Incident attribute (for example, Function). All possible values of the selected attribute with a count next to it is shown (for example, Security, Availability and Performance for Function).
3. Select any value (for example, Performance) and the right pane updates with the relevant incidents.
4. Click and select other Incident Attributes to refine the Search or click **X** to cancel the selection.

Changing the Time Range for the Search

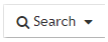
1. Select **Search** from the **Action** menu.
2. Near the top of the left panel, click the time value.
3. Click **Relative** or **Absolute**:
   - If you click **Relative**, adjust the time value in the **Last** field.
   - If you click **Absolute** enter a time range. If you select **Always Prior**, enter a time period prior to the current time.

Saving the Search Criteria

Once you have performed your search, follow these steps to save the search criteria:

1. Click the **Save** icon 

which appears above the list of incident attributes.
2. In the **Save Search Filter under by Time as** dialog box, enter a name for the filter or accept the default. The default will be a time stamp value such as `Search Filters - 12/17/2019 17:04:59`.

The filter will appear in the **Search** 

drop-down list, for example:

- When saving a filter based on the List by Time View, it displays in the **Search** drop-down list.
- When saving a filter based on the List by Device View, it displays in the **Search** drop-down list.
- When saving a filter based on the List by Incident View, it displays in the **Search** drop-down list.

Searching for MITRE ATT&CK Incidents

To find incidents that fall into any of the 12 MITRE ATT&CK categories, follow these steps:

1. Select **Search** from the **Action** menu.
2. Click **Category** in the left pane.
   The total number of security incidents will appear under **Security**. The tree under **Security** displays the MITRE ATT&CK categories (among others) that have associated security incidents.
3. Select one or more checkboxs next to the categories of interest.
   The incidents associated with the categories are displayed.

For more information on the Attack View and MITRE ATT&CK categories, see Attack View.

Clearing one or more incidents

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.

3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Clear Incident** from the **Action** menu.
5. Select whether the **Resolution** is **True Positive** or **False Positive**.
6. Enter a **Reason** for clearing.
7. Click **OK**.

Clearing All Incidents from the Incident View

You can remove all occurrences of selected incidents from the Incident View. This action can potentially span multiple pages.

1. Search for specific incidents and move them into the right pane.
2. Select **Clear All Incidents in View** from the **Action** menu.
3. Select whether the **Resolution** is **True Positive** or **False Positive**.
4. Enter a **Reason** for clearing.
5. Click **OK**.

Disabling one or more rules

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Disable Rule** from the **Action** menu.
5. For Service Provider installations, select the Organizations for which to disable the rule.
6. Click **OK**.

Adding or editing comments for one or more incidents

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Edit Comment** from the **Action** menu.
5. Enter or edit the comment in the edit box.
6. Click **OK**.

Exporting one or more incidents into a PDF or CSV file

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Export** from the **Action** menu.
5. Enter or edit the comment in the edit box.
6. Select the **Output Format** and **Maximum Rows**.

7. Click **Generate**.
   A file will be downloaded in your browser.

Fine tuning a rule triggering an Incident

1. Select an incident.
2. Select **Edit Rule** from the **Action** menu.
3. In the **Edit Rule** dialog box, make the required changes.
4. Click **OK**.

Creating an exception for the rule

1. Select an incident.
2. Select **Edit Rule Exception** from the **Action** menu.
3. In the **Edit Rule Exception** dialog box, make the required changes:
   a. For Service provider deployments, select the Organizations for which the exception will apply.
   b. Select the exception criteria:
      i. For incident attribute based exceptions, select the incident attributes for which rule will not trigger.
      ii. For time based exceptions, select the time for which rule will not trigger.
      iii. Select AND/OR between the two criteria.
      iv. Add Notes.
   c. Click **Save**.

Creating Event Dropping Rules

Event Dropping Rules may need to be created to prevent an incident from triggering. To create such a rule:

1. Select an incident.
2. Select **Event Dropping Rule** from the **Action** menu.
3. In the **Event Dropping Rule** dialog box, enter the event dropping criteria:
   a. **Organization** - For Service provider deployments, select the organizations for which the exception will apply.
   b. **Reporting Device** - Select the device whose reported events will be dropped.
   c. **Event Type** - Select the matching event types.
   d. **Source IP** - Select the matching source IP address in the event.
   e. **Destination IP** - Select the matching destination IP address in the event.
   f. **Action** - Choose to drop the events completely or store them in the event database. If you store events, you can select the following actions:
      - Do not trigger rules
      - Drop attributes (Click the edit icon to open the selection window and select the attributes to drop)
   g. **Regex filter** - Select a regex filter to match the raw event log.
   h. **Description** - Add a description for the drop rule.
4. Click **Save**.
   The Rule will be appear in **ADMIN** > **Settings** > **Event Handling** > **Dropping**.

Creating a Ticket

See Creating a ticket from Incidents tab.

Emailing incidents

Incidents can be emailed to one or more recipients. Make sure that Email settings are defined in **ADMIN** > **Settings** > **System** > **Email**. Note that email notification from the Incident page is somewhat ad hoc and must be manually setup by the user after the incident has triggered. To define an automatic notification, create an Incident Notification Policy in **ADMIN** > **Settings** > **Notification**. To email one or more incidents on demand:

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Notify via Email** from the **Action** menu and enter the following information:
    a. Send To – a list of receiver email addresses, separated by commas.
    b. Email template – Choose an email template. You can use the default email template, or create your own in **ADMIN** > **Settings** > **System** > **Email** > **Incident Email Template**.

Creating a Remediation action

Incidents can be mitigated by deploying a mitigation script, for example, blocking an IP in a firewall or disabling a user in Active Directory. Note that this type of incident mitigation from the Incident page is somewhat ad hoc and must be manually setup by the user after the incident has triggered.

To define an automatic remediation, create an Incident Notification Policy in **ADMIN > Settings > General > Notification**. Click **New**, and in the Notification Policy dialog box, select **Run Remediation/Script** in the **Action** section. To create a remediation action:

1. Select an incident.
2. Select **Remediate Incident** from the **Action** menu.
3. Choose the **Enforce On** devices – the script will run on those devices. Make sure that FortiSIEM has working credentials for these devices defined in **ADMIN** > **Setup** > **Credentials**.
4. Choose the **Remediation** script from the drop-down menu.
5. Choose the node on which the remediation will **Run On** from the drop-down list.

Show Ticket History

1. Select an incident.
2. Select **Show Ticket History** from the **Action** menu.
3. The Ticket History dialog box opens and displays the following information:

Field	Description
Detail:	
Incident ID	The unique ID of the incident in the incident database.
Due Date	The date by which the ticket should be resolved.

Field	Description
Escalation Policy	The escalation policy defined for the incident.
Attachment	The list of files related to the incident.
Action History:	
Created at	The time when the incident was created.
Incident Name	The name of the rule that triggered the incident.
Incident Target	The IP or host name where the incident occurred.
Incident Detail	The event attributes that triggered the incident.
Incident ID	The unique ID of the incident in the incident database.

Attack View

The INCIDENTS Attack View maps security incidents detected by FortiSEIM into attack categories defined by MITRE Corporation (MITRE ATT&K). Go to **INCIDENT** > **Attack** to see this view. Attack can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Attack** from the **Incident Home** drop-down list.

The following table briefly describes the attack categories. See https://attack.mitre.org/matrices/enterprise/ for more detailed information.

Category	Description
Initial Access	The adversary is trying to get into your network.
Execution	The adversary is trying to run malicious code.
Persistence	The adversary is trying to maintain their foothold.
Privilege Escalation	The adversary is trying to gain higher-level permissions.
Defense Evasion	The adversary is trying to avoid being detected.
Credential Access	The adversary is trying to steal account names and passwords.
Discovery	The adversary is trying to figure out your environment.
Lateral Movement	The adversary is trying to move through your environment.

Category	Description
Collection	The adversary is trying to gather data of interest to their goal.
Command and Control	The adversary is trying to communicate with compromised systems to control them.
Exfiltration	The adversary is trying to steal data.
Impact	The adversary is trying to manipulate, interrupt, or destroy your systems and data.

Using the Attack View

To open the Incident Attack View, click the **Attack** icon (

) on the **INCIDENTS** tab. The table at the top of the Incident Attack View displays the devices experiencing the security incidents and the MITRE ATT&CK categories into which the incidents fall. The circles in the table indicate:

- Number - The number in the middle of the circle indicates the number of incidents in that category. Click the number to get more detail on the incidents. See Getting Detailed Information on an Incident.
- Size - The size of the circle is relative to the number of incidents.
- Color - The color of the circle indicates the severity of the incident: Red=HIGH severity, Yellow=MEDIUM severity, and Green=LOW severity.

Filtering in the Incident Attack View

You can filter the incident data by attack category, whether the incident is active or cleared, and the time range when the incident occurred.

- The **Subcategory** drop–down list allows you to filter on one or more of the attack categories. You can also display **All** of the categories.
- The **Status** drop-down list allows you to filter on **Active** and/or **Cleared** incidents.
- The **Time Range** dialog box allows you to choose a relative or absolute time range. For relative times, enter a numerical value and then either **Minutes**, **Hours**, or **Days** from the drop-down list. For absolute times, use the calendar dialog to specify **From** and **To** dates.

Getting Detailed Information on an Incident

The lower pane of the Incident Attack View provides a table with more detailed information about a security incident. You can populate the table in any of these ways:

- Click a device to see all of the incidents associated with the device.
- Open the **Subcategory** drop-down list and choose one of the attack categories. All of the incidents associated with the selected category or categories are displayed. You can also choose to display **All** of the categories.
- Click the heading in the table of the attack category you are interested in (for example, **Execution**, **Persistence**, **Collection**, and so on). All of the incidents associated with the selected category are displayed.

- Click the number in the middle of the circle. All of the incidents associated with the selected device and category are displayed.
- Click an incident and all of the actions in the **Action** drop-down list that you can perform on the event become available. See Acting on Incidents.

For more information on the column headings that appear in the lower pane of the Attack View, see Viewing Incidents.

Displaying Triggering Events for an Incident

Click an incident in the lower table to display its triggering events. Another pane opens below the Incident table. It displays information related to the event that triggered the incident, such as **Host Name**, **Host IP**, and so on.

Overview View

The Overview view provides a "top down" view of various types of Incidents and impacted hosts. Go to **INCIDENT > Overview** to see this view. Overview can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Overview** from the **Incident Home** drop-down list.

The panel is divided into three sections:

- **Incidents By Category** – displays Incident Counts By Function and Severity.
- **Top Incidents** – displays the Top Incidents sorted first by Severity and then Count.
- **Top Impacted Hosts** – displays Top impacted hosts by Severity or Risk Score.

To change the incident time range, choose the **Time Range** option on the top right. For Service provider installations, choose the appropriate Organizations on top right. By default, the data combined for all Organizations and the Organization is shown next to each host. This view will automatically refresh every minute by default. The refresh menu on top bar allows the user to disable the automatic refresh or choose a different refresh interval.

Incidents By Category

This pane shows the number of unique Security, Performance, Availability, and Change incidents that have triggered in the specified time range.

To drill into a specific category, click the number and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Incidents

This pane shows the Top Incidents, first by Severity and then by Count.

- Each box represents an Incident.
- The color of the box title reflects the Incident Severity.
- The number reflects the unique incidents that has triggered in the chosen time window.
- The entries inside the box represent the IP address and host names appearing in either the Incident Source or Incident Target.
- Boxes are ordered left to right by Incident Severity and then unique incident count. That means that Red colored boxes (High Severity) appear first, then Yellow (Medium Severity), and finally Green (Low

Severity). Within boxes of the same color, boxes with a higher number of Incident counts appear first. You can scroll to the right.

To drill down, click the number in the left side bar or each host and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Impacted Hosts By Severity

This pane shows the Top Impacted Hosts, first by Severity and then by Count.

- Each box represents an impacted host (where an Incident has occurred during the specified time window).
- The color of the box title reflects the maximum of Severity over all Incidents.
- The number on the left of the box reflects the unique incidents that have triggered on the host in the chosen time window.
- The entries inside the box represent the incidents that have triggered for that host.
- Boxes are ordered left to right by Incident Severity and then unique incident count. That means that the Red colored boxes (High Severity) appear first, then Yellow (Medium Severity), and finally Green (Low Severity). Within boxes of the same color, boxes with a higher number of Incident counts appear first. You can scroll to the right.

To drill down, click the number in the left side bar or each incident and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Impacted Hosts By Risk Score

This pane shows the Top Impacted Hosts, first by Risk Score.

- Each Box represents an impacted host (where an Incident has occurred during the specified time window).
- The color of the box title reflects the Risk Score (80 and above is Red, 50-79 is Yellow, and less than 50 is Green).
- The number on the left of the box reflects the risk score.
- The entries inside the box represent the incidents that have triggered for that host.
- Boxes are ordered left to right by Risk Score. That means that Red colored boxes (High Risk) appear first, then Yellow colored boxes (Medium Risk), and Green colored boxes (Low Risk).
- You can scroll to the right.

To drill down, click the number in the left side bar or each incident and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Risk View

Risk view displays the Devices and Users ordered by Risk. Risk is calculated based on the triggering incidents using a proprietary algorithm that incorporates asset criticality, incident severity, frequency of incident occurrence, and vulnerabilities found. Risk is only computed for devices in CMDB, private IP addresses, and users found in logs or discovered via LDAP.

Go to **INCIDENT** > **Risk** to see this view. Risk can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Risk** from the **Incident Home** drop-down list.

Devices and Users are categorized by Risk as follows:

- Devices - number of devices with Risk
- Users - number of users with Risk
- High Risk - number of devices and users with high risk
- Medium Risk - number of devices and users with medium risk
- Low Risk - number of devices and users with low risk

To see only the above categories of devices and users in the Risk View, click any of the five categories above.

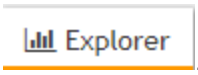
The Risk View displays the following:

- Device or User name
- Current Risk - Current value, up or down versus the same period
- 24 Hour Risk Trend
- Incidents in Last 24 hours

To drill down, click one row and the incidents that led to this risk are shown in a time line format. You can select an incident, and select any action from the **Action** menu. The actions are similar to those described for the List view.

Explorer View

The Incident Explorer view allows you to correlate Actors (IP, Host, User) across multiple incidents, without creating multiple reports in separate tabs. Incident trends, Actor and Incident detail are displayed on the same page. You can choose an actor and see all the incidents that actor is part of. You can then choose a time range and narrow down the incidents. Time ranges, Actors, and Incidents can be chosen in any order. Each time a selection is made, the rest of the dashboard updates to reflect that selection.

To open the Incident Explorer view, click **INCIDENTS**, then click the Explorer icon 

. Explorer can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Explorer** from the **Incident Home** drop-down list.

The Incident Explorer view is divided into three layers:

- The top layer displays the Incident Trend graph. The graph displays the incident counts over time, organized by severity, then by count.

  Each bar in the graph represents the number of incidents at a given time. The colors used in the bars reflects the Incident Severity. Red colored boxes (High Severity) appear first then Yellow (Medium Severity), and finally Green (Low Severity). The numbers in the bars reflect the number of unique incidents that triggered in the chosen time window.
- The middle layer displays panels for Incidents, Hosts, IPs, and Users. You can filter the items in the panels by Category, Status, and Time Range. See “Filtering in the Incident Explorer” for more information.
- The bottom layer displays the Incidents Table with these headings: Severity, Last Occurred, Incident, Reporting, Source, Target, Detail, Incident Status, and Resolution. Click an incident row to get more

detail.

Drill down is available from the Reporting, Target, Detail, Resolution columns.

The following tables describe the drill down options available for each column.

Reporting Options

Option	Description
Quick Info	Displays the quick information about the device.
Device Health	Availability, Performance, and Security health reports for the device.
Related Incidents	Switches to List view and displays related incidents.
Add to Filter	Switches to List view. Open the drop-down list next to the Reporting column for the desired incident and select **Add to Filter**. Add to Filter modifies the search on the current tab by including this constraint.

Target Options

Option	Description
Quick Info	Displays the quick information about the device.
External Lookup	Looks up external threat intelligence websites about likely malicious Indicators of Compromise (IOCs).
Device Health	Availability, Performance, and Security health reports for the device.
Related Incidents	Switches to List view and displays related incidents.
Related Real Time Events	Switches to the **ANALYTICS** tab and displays related real time events.
Related Historical Events	Switches to the **ANALYTICS** tab and displays related historical events.

Option	Description
Add to Filter	Switches to List view. Open the drop-down list next to the **Reporting** column for the desired incident and select **Add to Filter**. **Add to Filter** modifies the search on the current tab by including this constraint.
Add to Application Group	Opens the IP Application Group Mapping Definition dialog box where you can choose the group where you want to add the incident.

Detail Options

Displays other incident details, such as Counts, Average CPU utilization, file name, and so on.

Resolution Options

Option	Description
Set Resolution to Open	Sets the resolution status to Open (not defined or not known whether the incident is True Positive or False Positive).
Set Resolution to True Positive	Sets the incident resolution status to True Positive.
Set Resolution to False Positive	Sets the incident resolution status to False Positive. If you are changing the Resolution to False Positive, you must clear the incident at the same time.

To leave the Incident Explorer View, click the **List** icon or select **Action > Show in Incident List View**.

Using the Incident Explorer View

Click any of the bars in the **Incident Trend** graph. The corresponding Incidents, IP addresses, Hosts and Users are displayed in the panels. The corresponding incidents are also displayed in the **Incident Table**.

Click any of the items in the Incident, IP, Host, or User panels. The corresponding bar is displayed in the **Incident Trend** graph and corresponding incidents are displayed in the **Incident Table**.

Click multiple items in the **Incident Trend** graph and in the panels. Your selections will be ANDed together and the results displayed in the **Incident Table**.

Click any incident in the **Incident Table**. Details on the event that triggered the incident will open beneath the **Incident Table**.

Filtering in the Incident Explorer View

You can filter the incident data by incident category, whether the incident is active or cleared, and the time range when the incident occurred.

- The **Category** drop–down list allows you to filter on unique **Security**, **Performance**, **Availability**, and **Change** incidents that have triggered in the specified time range.
- The **Status** drop-down list allows you to filter on **Active** and/or **Cleared** incidents.
- The **Time Range** dialog box allows you to choose a relative or absolute time range. For **Relative**, enter a numerical value and then either **Minutes**, **Hours**, or **Days** from the drop-down list. For **Absolute**, use the calendar dialog to specify **From** and **To** dates.

Lookups Via External Websites (e.g. VirusTotal)

Indicators of Compromise (IOC) can be transmitted via external IPs, domain names, URLs, and file hashes.

When a security incident is triggered due to a potentially malicious IOC, you may want to consult an external threat intelligence website to get more information about the IOC. If the website can confidently say that the IOC is malware, then you can take corrective action, such as blocking the IOC. On the other hand, if the website says that the IOC is safe, then you can mark the IOC as a false positive.

There are two types of external lookups:

- Some websites accept an IOC as a parameter in the URLand the website will respond with information about the IOC. In many of these cases, the IOC information in the web page cannot be parsed programmatically, and user must manually determine whether the IOC is malware. For example, see https://www.talosintelligence.com/reputation_center/lookup?search=8.8.8.8.
- Other websites, such as VirusTotal and RiskIQ, have APIs. FortiSIEM can analyze the data from these websites and present the results in an easily understandable format for user. **Note:** VirusTotal supports domain, URL, and file hash lookups. RiskIQ supports IP and domain lookups.

FortiSIEM supports both types of lookups. External Website lookups can be performed only from the **Incident List View**.

Prerequisites

Complete these steps before performing external lookups:

1. External lookups that accept an IOC in the URL must be defined in **Admin > Settings > System > Lookup**. See Lookup Settings for more information.
2. VirusTotal and RiskIQ integrations must be defined in **Admin > Settings > General > Integration**. This involves setting credentials.
   See VirusTotal Integration and RiskIQ Integration for more information.

Performing an External Lookup on VirusTotal and/or RiskIQ

Follow these steps to perform an external lookup on VirusTotal and/or RiskIQ.

1. Go to **INCIDENTS** and click the **List** view.
2. Select an incident from the table.

3. Drill down on either the **Source**, **Target**, or **Detail** columns and choose **External Lookup**. FortiSIEM will identify IP, Domain, URL and file hash fields for lookup.
4. Choose one of the following and click Check.
    a. An External website that accepts IP in the URL
    b. **VirusTotal** and/or **RiskIQ**
5. For the first case (4a), the page opens in a different tab in the browser.
6. For the second case (4b), FortiSIEM collects information about the IOC from the websites using the API, makes a conclusion as to whether it is Safe/Malware/Not Sure, and presents the data.
7. Based on the information about the IOC, you can take any of the following actions.
    a. **Update Comment**: You can update Incident comment based on the website findings. Enter an optional comment about the incident and click **Add Summary**, then **Apply**. The comment will appear in the **Incident Comment** panel in the **Details** tab when you select the incident in the **List** view.
    b. **Resolve Incident**: You can resolve the incident. Choose **Open**, **True Positive**, or **False Positive**. Click **Apply**.
        - If you choose **False Positive**, you have the option of providing a reason for your choice. You also have the option to **Create a False Positive in ThreatConnect**. Clicking this option will respond with a message describing whether the creation was successful. This option assumes that you have created a malware configuration for ThreatConnect. You can configure IPs, domains, hash, or URLs for ThreatConnect. See Working with ThreatConnect IOCs.
    c. **Create Rule Exception**: If it is a false positive, then you can create a rule exception. Click the edit icon to create an exception to the rule. For more information on using the **Edit Rule Exception** dialog box, see Creating an exception for the rule.
    d. **Set Incident Severity**: You can change the incident severity. Open the drop-down list and choose **Change to LOW**, **Change to MEDIUM**, or **Change to HIGH**.
    e. **Remediate Incident**: You can remediate the Incident, e.g. block the malware domain. Click the edit icon to remediate the incident. For more information on using the **Run Remediation** feature, see Creating a Remediation action.
    f. **Run External Integration**: You can create a ticket in an external ticketing system. Click the edit icon to choose an integration policy from the drop-down list. Click **OK**.
8. Click **Close**.

CVE-Based IPS False Positive Analysis

Network Intrusion Prevention Sensors (IPS) trigger alerts based on network traffic. When an IPS sees traffic matching an attack signature, it generates an alert. Some of these attacks correspond to host vulnerabilities and have an associated CVE number. Most organizations run vulnerability scanning tools to scan their servers for vulnerabilities. If FortiSIEM is configured to collect this host vulnerability data, it can combine the IPS signature to CVE mapping, and Host to CVE mapping to detect if an IPS Alert is false positive.

- Requirements
- False Positive Detection Logic
- Running an IPS False Positive Test
- Consequences of Running the IPS False Positive Test

Requirements

- Currently, FortiSIEM applies this logic on Incidents but not events. All important IPS events trigger some rule in FortiSIEM.
- FortiSIEM IPS rules must be written with a **Signature Id** and **Event Type** in the group by conditions. All built-in rules have been enhanced with this requirement starting with release 5.3.0.
- The primary source of IPS Signature to CVE mapping is FortiSIEM CMDB. These mappings are part of the FortiSIEM knowledge base and upgraded with every release. For FortiGate IPS signatures, FortiSIEM can also pull this information from FortiGuard Services via an API. The FortiGuard IOC license must be enabled in FortiSIEM.
- The source of Host to CVE mapping is Vulnerability scanners. FortiSIEM currently supports Qualys, Rapid7, Nessus and Tenable scanners. Make sure FortiSIEM is configured to collect this data at least once a day.

False Positive Detection Logic

Recall that for this detection logic to work, IPS-related incidents must have **Signature Id** and **Component Event Type** configured (for example, see the built-in **High Severity Outbound Permitted IPS Exploit** rule). The test is performed separately for both internal (for example, RFC-1918 address space) **Incident Source** and **Incident Target IPs**, as it does not make sense to perform tests for Internet addresses.

After the incident triggers, the associated CVEs for the Incident Event Type are first looked up. The primary source is the CMDB. If the CMDB does not have this information, then external websites are looked up. In the current release, only Fortinet IPS signatures are looked up using **Signature Id** in the FortiGuard database.

If associated CVEs are found, then another CMDB lookup is performed to see if the Host (in **Incident Source** or **Target**) is vulnerable to the CVEs. CMDB collects Host Vulnerability information from vulnerability scan data.

There are four detection outcomes:

- **Vulnerable** - this can result if ALL the following are true:
    a. IP is internal and,
    b. Event type to CVE mapping is found and,
    c. Host has been scanned for vulnerabilities in the last 2 weeks and,
    d. At least one CVE in (b) is found in the list of current vulnerabilities in (c).
- **Not Vulnerable** - this can result if ALL the following are true:
    a. IP is internal and,
    b. Event type to CVE mapping is found and,
    c. Host has been scanned for vulnerabilities in the last 2 weeks and,
    d. None of the CVEs in (b) are found in the list of current vulnerabilities in (c).
- **Insufficient Information** - this can result any of these cases:
    a. Even type to CVE mapping is not found or,
    b. Host has not been scanned in the last 2 weeks.
- **Not Needed** - this case is true if the IP is external.

An Incident is False positive if either of the following cases is true

- **Source Detection Status** is not **Not Needed** and Destination is **Not Vulnerable** or vice-versa
- Both **Source** and **Target** are **Not Vulnerable**

An Incident is True positive when either **Source** or **Destination** is **Vulnerable**.

Running an IPS False Positive Test

This test can be run on-demand or automatically when an Incident triggers. First you need to set up an Integration.

1. Go to **ADMIN > Settings > Integration**.
2. Click **New**.
3. Set **Type = Incident**, **Direction = Outbound**, **Vendor = “FortiSIEM Attach CVE Check"**.
4. Click **Save**.

To Run the IPS False Positive Test On-Demand on an IPS Incident

1. Go to **INCIDENTS > List By Time**.
2. Select one incident. Make sure that the **Signature Id** and **Component Event Type** are configured in the **Incident Detail**.
3. Click **Action** and select **Run External Integration**.
4. Select the specific integration and click **OK**.

The IPS False positive test can be automated so that it runs automatically when the Incident triggers for the first time. To do this, create an **Incident Notification Policy**. The IPS Attack CVE Check will run as an **Incident Action**.

1. Go to **ADMIN > Settings > Notification**.
2. Select an existing notification policy to edit, or click **New** to create one.
3. In the **Action** section, select **Invoke an Integration policy**, then select the policy.
4. Save the policy.

Consequences of Running the IPS False Positive Test

When you run the integration policy, the following results can occur:

- The **Incident Comment** is updated with the detection status.
- The **Incident Status** is determined based on the following cases:
    a. False Positive Case: the **Incident Severity** is set to **Low** and the Incident is cleared.
    b. True Positive Case: the **Incident Severity** is set to **High** and a Case is opened.
    c. In all other cases, the **Incident Status** remains unchanged.

Working with Analytics

FortiSIEM search functionality includes real time and historical search of information that has been collected from your IT infrastructure. With real time search, you can see events as they happen, while historical search is based on information stored in the event database. Both types of search include simple keyword searching, and structured searches that let you search based on specific event attributes and values, and then group the results by attributes.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- Raw events are completely obfuscated - the user cannot see any part of the raw message.
- Cannot perform search on obfuscated event attributes.
- CSV Export feature is disabled.
- If an integer event attribute is obfuscated, then the GUI may not show those obfuscated fields. Normally, integer fields are not obfuscated.

The following sections provide information about the operations under **ANALYTICS** tab:

Running a Built-in Search

FortiSIEM provides a number of built-in reports.

Complete these steps to run an built-in report:

1. Go to **ANALYTICS** tab.
2. From the folder drop-down list on the left, select **Shortcuts** or the **Reports** folder.
   - **Shortcuts** folder contains a few quick reports.
   - **Reports** folder contains the entire collection of built-in reports.
     You can search for a specific report in both of these collections by entering keywords in the Search box.
3. Select a specific report and click **>**.
4. If you are generating the report from **Shortcuts**, select whether you want to run the report in the currently selected tab or a new tab.
   Note: Running search in the currently selected tab discards the existing results displayed on that tab.

The query will run and display the results.
Note: You can also run the reports from **RESOURCE** > **Reports** folder. See here.

Search can be performed in two modes:

- Real time mode – from current time onwards. This mode runs only built-in searches that have no aggregation (for example, **Shortcuts** > **Raw Messages**). Note that every time you re-run this query, the displayed results will change.
- Historical mode – for previous time periods. Any query can be run in this mode. Note that the displayed search results will not change if you re-run this query for Absolute time range.

To run a historical search:

1. Click the **Edit Filters and Time Range** edit box.
   The filter conditions are displayed for the selected built-in query.
2. For **Time**, select **Relative** or **Absolute** option.
   a. For **Relative** option, the query will run for a duration in the past, starting from current time. Select the value and time scale in (**Minutes**/**Hours**/**Days**).
   b. For **Absolute** option, the query will run for a specific time window in the past. There are two ways to specify this:
      i. Using two explicitly defined time epochs.
      ii. Using **Always prior** option to define time-periods like last 1 week or last 2 months. If you are interested in re-running the same report on a daily basis, then you do not have to change the time period.
3. Click **Apply & Run**.

Understanding Search Components

To perform a well-defined search, see the following sections:

- Specifying Search Filters – this specifies which data will be included in the Search.
- Specifying Search Time Window – only events that have been received by FortiSIEM within this time window will be part of the search.
- Specifying Aggregations and Display fields – this specifies how the data will be grouped and which fields will be displayed in the search result.
- Specifying Organizations for a Service Provider deployment – only events belonging to this organization will be included in the Search.
- Examples of Operators in Expressions

Specifying Search Filters

Complete these steps to specify search filters:

1. Click the **Edit Filters and Time Range** edit box.
2. Specify a filter condition:
   a. **Event Keyword** - Enter any related keyword for search.
   b. **Event Attribute** - Choose an event attribute from the drop-down list or build an expression using the expression builder. Only those event attributes based on the event type will be displayed.

i. **Operator** - Choose the operator from the drop-down list.
ii. **Value** - Enter a value in the edit box, or choose from CMDB, or build an expression using the expression builder, or select from Report.

c. **CMDB Attribute** - Select a **Target** from the drop-down list. In the table, enter the CMDB attributes you want to search on.
   a. Select the **Attribute**.
   b. Select the **Operator**--the most common operators are IN and NOT IN.
   c. Click in the **Value** field and select **Select from Report** or **Select from CMDB**.

3. If more than one filter condition is needed, then click **+** under **Row**.
   a. Specify the AND/OR operator under **Next**.
   b. Specify the next filter condition. When you click in the **Attribute** field, FortiSIEM will display only those attributes that can be used with the previous attribute.
   c. Apply parenthesis if needed to prioritize filter evaluation by clicking **+** on the **Paren** icon.

Note that the rows can be deleted by clicking the - under Row and the parenthesis can be deleted by clicking - under Paren.

Specifying Search Time Window

Complete these steps to specify search filters and time window:

1. Click the **Edit Filters and Time Range** edit box.
2. Specify the time window:
   a. **Real time mode** – only from the current time onwards.
   b. **Historical mode** – for previous time periods that have already occurred. Select **Relative** or **Absolute** option.
      - For the **Relative** option, the query will run for a duration in the past, starting from current time. Choose the time scale (Minutes/Hours/Days) and the quantity.
      - For the **Absolute** option, the query will run for a specific time window in the past. There are two ways to specify this:
        - Using two explicitly defined time epochs.
        - Using Always prior option to define time-periods such as the previous week or the previous two months. If you are interested in re-running the same report on a daily basis, then you do not have to change the time period.

The **ANALYTICS** view also provides a list of five time range buttons (15m 1h 1d 7d 30d) which appear to the left of the paginator. They allow you to filter data by the last 15 minutes, 1 hour, 1 day, 7 days, or 30 days.

Specifying Aggregations and Display Fields

The following sections describe how to aggregate data using Group By fields and how to apply display conditions.

- Specifying Group By and Display Fields
- Specifying Display Conditions for Aggregated Search
- Saving Group By and Display Fields and Display Conditions
- Loading Group By and Display Fields and Display Conditions

Specifying Group By and Display Fields

If you want to specify an non-aggregated search (without Group By fields), then complete these steps:

1. Click the **Change Display Fields** drop-down list icon  to create a display column.
2. Under the **Group By and Display Fields** section, enter an attribute:
    a. For a non-aggregated search, choose the event attribute from the drop-down list. If the attribute is not on the list, then enter a part of the attribute name to see some matches (for example, entering “IP” will display “Source IP” which is not on the list).
3. Optionally, select the **Order** of display as **ASC** (ascending) or **DESC** (descending) if the search result needs to show the results ordered by this column. Choose this order carefully. If multiple columns have **Order** specified, then the system will order the column that appears first and then go on to the other columns in order of appearance in the **Display Column** page.
4. If you want a column heading to display differently than the attribute, choose the desired name as **Display As**.
5. The search results are displayed in the order of the columns. You can alter the position of a column by clicking the **Move** up and down arrows.

If you want to specify an aggregated search (with Group By fields), then complete these steps:

1. Click the **Change Display Fields** drop-down list icon  to create a display column.
2. Under the **Group By and Display Fields** section, enter an attribute:
    a. For aggregated search, enter an event attribute or create an expression using the Expression Builder, described below.
3. Optionally, select the **Order** of display as **ASC** (ascending) or **DESC** (descending) if the search result needs to show the results ordered by this column. Choose this order carefully. If multiple columns have **Order** specified, then the system will order the column that appears first and then go on to the other columns in order of appearance in the **Display Column** page.
4. If you want a column heading to display differently than the attribute, choose the desired name as **Display As**.
5. The search results are displayed in the order of the columns. You can alter the position of a column by clicking the **Move** up and down arrows.

Specifying Display Conditions for Aggregated Search

If you specified an aggregate search with Group By fields, then you can specify certain conditions. Only the events that match these display conditions will be displayed.

In the **Display Conditions** section of the **Group By and Display Fields** dialog box :

1. Choose an **Attribute** from the drop-down list.
2. Choose an **Operator** from the drop-down list.
3. Enter a **Value** for the operator.
4. If you require additional conditions, choose a value from the **Next** drop-down list and click the **+** icon under **Row**.
5. Click the **+** or **-** icons under **Paren** as needed, to add or remove parentheses on a row.

Saving Group By and Display Fields and Display Conditions

To save Group By and Display Fields and Display conditions, complete these steps:

1. Click **Save** in the **Group By and Display Fields** dialog box to save your configuration as a template.
2. Choose a **Scope** from the drop-down list in the **Save Group By and Display Fields as:** dialog box and enter a name for the template.

Loading Group By and Display Fields and Display Conditions

To load Group By and Display Fields and Display conditions, complete these steps:

1. Click **Load** in the **Group By and Display Fields** dialog box if you want to see a list of display fields that can be added to the template. The list can contain system- and user-defined display fields.
2. Click an item in the list, then click **Load**. The **Group By and Display Fields** dialog box closes and you will see the selected item in the list of **Attributes** in the **Group By and Display Fields** section.

Specifying Organizations for a Service Provider Deployment

To specify Organizations in a Service Provider deployment, select the organizations from the  drop-down.

Examples of Operators in Expressions

Operator	Argument	Example
COUNT	Matched Events	COUNT (Matched Events)
COUNT DISTINCT	Any non-numerical attribute that is not unique	COUNT DISTINCT (Host Name)
AVG, MAX, MIN, SUM, Pctile95, PctChange	Numerical attribute	AVG (CPU Util), MAX (CPU Util), MIN (CPU Util)
LAST, FIRST	Numerical attribute	LAST (System Uptime), FIRST (System Uptime)
HourOfDay, DayOfWeek	Time attribute	HourOfDay(Event Receive Time), DayOfWeek (Event Receive Time)
DeviceToCMDBAttr	Host name/IP	DeviceToCMDBAttr (Reporting IP : County/Region)

Examples of Expressions

Operators with arguments can be combined with +, -, / and * with parenthesis to form an expression. For a good example, see the built in report “Top Devices By System Uptime Pct” which computes the System Uptime percentage using the expression

100 – (100*SUM(System Down Time)/SUM(Polling Interval)).

Examples of various searches

- Non-aggregate search – see **Shortcut** > **Raw Messages**.
- Aggregate search:
    a. Basic – one attribute and one counting expression - **Shortcut** > **Top Event Types**.
    b. Intermediate – three attributes and one counting expression - **Shortcut** > **Top Reporting Devices** and **Event Types**

c. Advanced – multiple attributes and complex expressions including Device to CMDB attributes:
   i. **Reports** > **Function** > **Performance** > **Top Network Interfaces By Util**
   ii. **Reports** > **Function** > **Availability** > **Top Devices By Business Hours Network Ping Uptime Pct**
   iii. **Reports** > **Incidents By Location and Category**

Viewing Historical Search Results

Historical Search results are displayed in two panes:

- Bottom pane displays the results in tabular view following the definitions in the Display Fields.
- Top pane displays the trends over time:
  - For non-aggregated searches, the trend is for event occurrence and is displayed in a trending bar graph. Each bar captures the number of entries in the table during a particular time window.
  - For aggregated searches, the trend is for any of the (numerical) columns with aggregations. Trends are displayed for the Top 5 entries in the table. For integer values, such as COUNT (Matched Events), you will see a trend bar graph, while for continuous values such as AVG(CPU Utilization), you will see a line chart.

Both the bar and line charts show trends in a stacked manner, one for each row in the table. To see the trend for a specific row, disable all the other entries by deselecting the check box in the first column. To view the trend for a set of entries, you can select the check box corresponding to those entries.

For continuous values, you can toggle between a stacked view and a non-stacked view:

- To show the stacked view, click 
- To show the line chart view, click 

If there are multiple aggregate columns:

- Select a specific column in the **Chart for** in top right to see the Chart for that column.
- Select one column for **Chart for** and another column for **Lower Chart** to see the two charts at the same time – one on +ve Y-axis and one on –ve Y-axis. This generally makes sense when the values are of the same order. For example, AVG(CPU Utilization) and AVG(Memory Utilization) or AVG(Sent Bytes) and AVG(Recv Bytes).

You can visualize the results in other charts by clicking the  drop-down. See FortiSIEM Charts and Views for descriptions of the available charts.

Events in FortiSIEM have an Event Type (like an unique ID) and an Event Name, a short description. When you choose to display Event Type, the Event Name is automatically displayed but Event type is hidden to make room to show other fields. To see the Event Types, click the **Show Event Type** check-box.

Raw events often take many lines to display in a search result. By default, Raw events are truncated and displayed in one line so that user can see many search results in one page. To see the full raw event, click the **Wrap Raw Event** check-box.

Using search result tabs

A search result typically shows many rows. To drill down into a specific value for a specific column, hover over the specific cell and choose **Add to Filter** or **Add to Tab**. **Add to Filter** modifies the search on the current tab by including this constraint. **Add to Tab** on the other hand, gives you the option to keep the current tab intact and add the constraint to a new tab or to a tab of your choice. This enables you to see multiple search results side by side. Click **Add to Tab** and select the tab where the constraint needs to be added. The filter conditions and display columns are copied over to the new tab.

Zooming-in on a specific time window

If you see an unusual pattern (for example, a spike) in the trend chart and want to drill down without providing an exact time range, do one of the following:

- Click the bar – a new search tab is created by duplicating the original search and adding the right time window as seen by hovering on the bar.
- Press and hold the **Shift** key and drag the mouse over a time window. This modifies the time window in the current tab. Click **Apply & Run** to see the results.

Viewing parsed raw events

Hover over a **Raw Event Log** cell and click **Show Details**. The display shows how FortiSIEM parsed that event.

Adding an attribute to the filter criteria in the search

Complete these steps to add an attribute to the filter criteria in the search:

1. Check the **Filter** column.
2. Click **OK**.
   The Attribute is added to the filter condition.
3. Re-run the query to get the new results.

Adding an attribute to the search display

Complete these steps to add an attribute to the search display:

1. Check the **Display** column.
2. Click **OK**.
   The Attribute is added to the display condition.
3. Re-run the query to get the new results.

Viewing Real-time Search Results

Real-time Search results display matching events that occur from the current time onwards.

The search results are displayed in two panes:

- Bottom pane displays the results in tabular form following the definitions in the **Display Fields**.
  Note that aggregations are not permitted in real-time search. Since results are coming in continuously, the

results scroll and the latest events are displayed at the top.

- Top pane displays the counts of matched events over time.

The following actions are possible while viewing Real-time Search results:

- To pause the search, click **Pause**.
- To restart the real-time search from the point you left off, click **Resume** after **Pause**.
- To fast forward to the current time, click **Fast forward**.
- To clear the result table, click **Clear**.
- To restart the search all over again from the current time, click **Stop** and then **Run**.

In real-time search, only Event Type (like a unique ID) is displayed. Enable **Show Event Type** while running a real-time query. Note that Event Names are not displayed.

Raw events often take many lines to display in a search result. By default, Raw events are truncated and shown in one line so that user can see many search results in one page. To see the full raw event, click the **Wrap Raw Event** check-box.

Viewing Parsed Raw Events

Hover over a **Raw Event Log** cell and click **Show Details**. The display shows how FortiSIEM parses the event.

Adding an attribute to the filter criteria in the search

Complete these steps to add an attribute to the filter criteria in the search:

1. Check the **Filter** column.
2. Click **OK**.
   The Attribute is added to the filter condition.
3. Re-run the query to get the new results

Adding an attribute to the search display

Complete these steps to add an attribute to the search display:

1. Check the **Display** column.
2. Click **OK**.
   The Attribute is added to the display condition.
3. Re-run the query to get the new results.

Zooming-in on a Specific Time Window

If you see an unusual pattern (for example, a spike) in the trend chart and want to drill down without entering the exact time range, do one of the following:

- Click the bar – a new search tab is created by duplicating the original search and adding the right time window as seen by hovering on the bar
- Press and hold **Shift** key and drag the mouse over a time window – this modifies the time window in the current tab.
  Click **Apply & Run** to see the results.
- When you run the Real-time search, a pop-up will appear asking if you want to stop the Real-time search before proceeding to the Historical Search.

Using Nested Queries

Nested Query functionality enables one query to refer to results from another query. This section describes how to set up and use nested queries for the three supported scenarios:

- Outer CMDB Query, Inner Event Query
- Outer Event Query, Inner Event Query
- Outer Event Query, Inner CMDB Query

Outer CMDB Query, Inner Event Query

The following generalized steps describe how to create a nested query where the outer query targets CMDB and the inner event query targets events.

If you want to reuse an existing query, then skip Step 1 and go to Step 2. Note that for a nested query to work correctly, the data type of the filter attribute in the outer query must "match up" with the data type of one certain display column in the inner query.

Step 1: Construct the Inner Event Query

1. Go to the **ANALYTICS** page.
2. Construct the query and make sure it produces the desired results.
    a. Click the **Edit Filter and Time Range** field and select **Event Attribute** in the query tab.
    b. Set the **Time Range**. For example, you can set it to the last 1 hour. This time period is not important if you use this query as an inner query.
    c. If it has the **Event Source**, then you can set it as Online.
    d. Click **Apply** to save your changes.
    e. Click the **Change Display Fields** icon and enter the attributes you want to display.
    f. Click **Apply & Run**.
3. Click **Action > Save as Report**.
4. Ensure **Save Definition** is checked.

Step 2: Construct the Outer CMDB Query by Referring to the Query in Step 1

1. Go to the **ANALYTICS** page.
2. Click in the Search bar--it will open the **Filter** dialog box.
3. Select **CMDB Attribute**.
4. Select the appropriate target from the drop-down list.
5. Set the query condition.
    a. Select the **Attribute**.
    b. Select the **Operator**--the most common operators are IN and NOT IN.
    c. Click in the **Value** field and select **Select from Report.**
    d. Select the **Report** name, saved in Step 1, Substep 4.
    e. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 2, Substep 5a.
    f. Click **OK**.
6. Choose the **Nested Time Range**: the inner report will be run for this time range.

7. Click the **Change Display Fields** icon and choose the attributes you want to display.
8. Click **Apply & Run**.
9. To save the report, click **Action > Save as Report**. Enter the name of the nested query.

Outer Event Query, Inner Event Query

The following generalized steps describe how to set up and use nested queries for an outer event query and an inner event query.

Step 1: Construct the Inner Event Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field.
   a. Select **Event Attribute** and create the **Filter Condition**.
   b. Set the **Time Range**.
      For example, you can set it to the last 1 hour. This time period is only useful to check if this query produces the desired results. If used as an inner query, time range would be set separately in Step 2 below.
   c. If it has the **Event Source**, then you can set it as Online.
   d. Click **Apply** to save your changes.
   e. Click the **Change Display Fields** icon and enter the attributes you want to display. This query needs to be an aggregate query to be used as an inner query. One of the Group By attributes must match (meaning compatible value sets) an attribute chosen in the outer query in Step 2, Substep 2.d.ii
   f. Click **Apply & Run**.
3. If you are happy with the result, then click **Action > Save as Report**. Ensure **Save Definition** is checked.

Step 2: Construct the Outer Event Query

1. Go to the **ANALYTICS** page.
2. Click the Edit Filter and Time Range field.
   a. Select **Event Attribute** in the query tab.
   b. Choose an **Attribute**.
   c. Choose an **Operator**. The most common operators are IN and NOT IN.
   d. Click the **Value** field and select **Select from Reports**.
      i. Select the **Report** name, saved in Step 1, Substep 3.
      ii. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 1, Substep 2e.
      iii. Click **OK**.
3. Choose the time ranges.
   a. Choose the time range for outer query.
   b. Choose **Nested Time Range** for the inner query.
   c. If it has the **Event Source**, then you can set it as Online.
4. Click **Apply** to save your changes.
5. Click the **Change Display Fields** icon and enter the attributes you want to display.
6. Click **Apply & Run**.
7. You can save the results by clicking **Action > Save as Report**. Ensure **Save Definition** is checked.

Outer Event Query, Inner CMDB Event Query

The following generalized steps describe how to set up and use nested queries for an outer event query and an inner CMDB query.

Step 1: Construct the Inner CMDB Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field and select **CMDB Attribute** in the query tab.
    a. Select the appropriate **Target** from the drop-down list.
    b. Set the query condition.
        i. Select the **Attribute**.
        ii. Select the **Operator**
        iii. Click in the **Value** field. Do not select **Select from Report**.
    c. Click **Apply** to save your changes.
3. Click the **Change Display Fields** icon and enter the attributes you want to display.
4. Click **Apply & Run**.
5. If you are happy with the result, then click **Action > Save as Report**. Ensure **Save Definition** is checked.

Step 2: Construct the Outer Event Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field and select **Event Attribute** in the query tab.
    a. Choose an **Attribute**.
    b. Choose an **Operator** - the most common operators are IN and NOT IN.
    c. Click in the **Value** field and select **Select from Report**.
        i. Select the **Report** name, saved in Step 1 Substep 5.
        ii. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 1 Substep3.
        iii. Click **OK**.
3. Choose the **Time Range** for outer query.
4. If it has the **Event Source**, then you can set it as Online.
5. Click **Apply** to save your changes.
6. Click the **Change Display Fields** icon and enter the attributes you want to display.
7. Click **Apply & Run**.
8. You can save the results by clicking **Action > Save as Report**. Ensure **Save Definition** is checked.

Searches Using Pre-computed Results

If you want to run the same search again and again, or you want to run certain pre-defined searches over a large time window, then the search time can be reduced by setting up pre-computation.

It is important that search filters, group by, and display parameters and display filters do not change. Otherwise, the pre-computation results will be invalid.

To use this feature, you must complete these steps:

1. Select a Report and turn on pre-computation.
2. Select the Pre-computed result option when running the search.

The following sections provide more information about the pre-computation feature and how to use it.

Usage Notes

1. Currently, pre-computation only works with FortiSIEM EventDB. Elasticsearch and HDFS are not supported.
2. Pre-computation is currently supported for Aggregated queries with COUNT, SUM, AVG, MAX, and MIN operators. Raw event queries and nested searches are not supported.
3. If you run a query with pre-computed results, but the search interval is wider than the available pre-computed results, then the results are returned for the pre-computed time interval only. Currently, FortiSIEM does not run a separate search for the missing time window and stitch together the two search results.
4. Pre-computation begins at hourly/daily boundaries. For example, if you set up hourly pre-computation at 2:34 PM, then the first pre-computation will begin slightly after 3:00 PM for the time interval 2:00 PM – 3:00 PM.
5. FortiSIEM does not semantically compare search filters, group by, and display parameters and display filters for two searches. Thus, pre-computed results cannot be used for a cloned search.
6. Pre-computation is set up at a report level and not a report bundle level.
7. For the Service provider case, you must effectively have the same role in all Organizations to be able to use pre-computed results. Examples are
    a. Full Admin for all Organizations.
    b. Help desk user for one Organization and Read only user for another Organization. Note that both of these roles have empty data conditions and hence are effectively the same role from a pre-computation perspective.

Setting Up Pre-computation

Only a Super Global user having the Full Admin role can set up pre-computation. This is because only such a user can see all the roles. A Full Admin user for a specific organization cannot set up pre-computation. Follow these steps to set up pre-computation.

1. Log in to FortiSIEM as a Super Global Full Admin user.
2. Go to **Admin > Resources > Reports**.
3. Select a **Report**, Click **More** and Select **Pre-compute**.
4. Enter the pre-compute options:
    a. Select the **Enable** option to enable pre-computation. If you do not select **Enable**, then the definition will be there, but pre-computation will stop and all older results will be deleted.

b. Carefully select the **Organization** and the **Roles** for whom queries will be pre-computed. These selections determine when a user query can use pre-computed results. See Impact of Organization and Roles for more detail.
c. Select Pre-computation **frequency**. A lower frequency provides more accuracy at the expense of more system load and storage. Choose the highest frequency you can accept.
d. Select the **Age** in number of days. Pre-computed results older than this age will be deleted.
e. Check the **Pre-compute history** option if you want the system to automatically run and fill up data from earlier time intervals.

5. Click **OK**.

The system will begin pre-computation on the hour or day boundary. For example, if you set up hourly pre-computation at 2:34 PM, then the first pre-computation will begin slightly after 3:00 PM for the time interval 2:00 PM – 3:00 PM. As another example, if you set up daily pre-computation at 10:00 PM, then the first pre-computation will begin slightly after 12:00 AM midnight for the previous day.

Impact of Organization and Roles

A query definition does not enforce Organization and Role restrictions. When you run a query, you are forced to choose one or more Organizations. The data conditions for your role definition are automatically applied. For example, if you run a Top Event Type query as a Full Admin user for Org1 and Org2, then you get All Event Types for Org1 and Org2. However if you run as a Network Admin for Org2 then you only get Network Event Types for Org2. Your Organization and Role assignments have an effect on the query results as they change the query filters.

If you set up pre-computation for an Organization and a set of Roles, then only the users belonging to the same Organization and having exactly the same Role can use pre-computed results. The only exception is for a Full Admin user who can use any pre-computed result in a query. The examples in the following table illustrate this point.

Pre-computation Definition			
Organization	Role	Who can use pre-computed results	Who cannot use pre-computed results
All Orgs Combined	Full Admin	Super-global users that are Full Admin for all Organizations or have roles without data conditions in some organizations.	Other users, for example, Super Global Network Admins for Org1 and Full Admin for Org2

Pre-computation Definition			
Organization	Role	Who can use pre-computed results	Who cannot use pre-computed results
All Orgs Combined	Network Admin	Super-global users that have the Network Admin role in All Organizations.	
All Orgs Combined	Network Admin, Server Admin	Super-global users that are both Network Admin and Server Admin in All Organizations.	If the user is a Network Admin for Org1 and Server Admin for Org2.
Org1	Full Admin	Full Admin or users with no data constraints belonging to Org1 can use pre-compute results.	Other users, for example, Org1 Network Admins cannot use these pre-computed results.
Org1	Network Admin	Network Admin users belonging to Org1 can use pre-compute results.	
Org1	Network Admin, Server Admin	Users belonging to BOTH Network Admin and Server Admin and belonging to Org1.	If the user belongs to only one role, for example Network Admin only, then the user cannot use pre-computed results.

Viewing Pre-computed Results

Once pre-computation is defined, FortiSIEM will pre-compute on the hour or day boundary.

To see the time slots of pre-computed results:

1. Select a Report.
2. Click **Pre-compute > Results**.
3. Click **Refresh** to get the latest results.
    a. **Time Range From** and **Time Range To** represent the Query Time Window.
    b. **Organization** and **Roles** relate to the query conditions.
    c. **Finish Time** specifies when the pre-computed query finished.

To see the content of a pre-computed result:

1. Select one row and click **View Results**.
2. You will be taken to the **ANALYTICS** tab with the query conditions already provided. You can see the results. The query name will display **(Pre-computed)** appended to the end of the name.
3. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:
    a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
    b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

    All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.
4. If you want to stay in this page and change other conditions, click **Query Filter** search bar and deselect **Pre-compute Settings**.

Running a GUI Search on Pre-computed Results

You can run a search from the GUI on pre-computed results from the **ANALYTICS** page or the **RESOURCE** page.

- From the ANALYTICS Page
- From the RESOURCE Page

From the ANALYTICS Page

1. Load a **Report** and click **>**.
2. If the Report has been pre-computed, then the system will ask you to choose whether you want to use pre-computed results.
    a. If you do not want to use pre-computed results, then check **Use pre-compute for** and click **OK**. The query will run by searching the database.
    b. If you want to use pre-computed results, then check **Use pre-compute for** and select the Organization/Role combination from the drop-down list and click **OK**. The query will run based on pre-computed results.
3. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:.
    a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
    b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.

4. If you want to stay in this page and change other conditions, click the **Query Filter** search bar and deselect **Pre-compute Settings**.

From the RESOURCE Page

1. Select a **Report** and click **Run**. A dialog box will open.
2. Select the **Organization** for which you want to run the report. The query result will contain the selected organizations. Note that based on the selected organizations, the pre-compute options below will change.
3. Select **Report Time Range**.
4. Select the pre-compute option if available from the menu.
5. Click **Run**.
6. You will be taken to the **ANALYTICS** tab with the query conditions already provided. You can see the results. The Query name will display **(Pre-computed)** appended at the end of the name.
7. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:.
   a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
   b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

   All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.
8. If you want to stay in this page and change other conditions, click the **Query Filter** search bar and deselect **Pre-compute Settings**.

Scheduling a Report Based on Pre-computed Results

1. Go to the **RESOURCE** page.
2. Select a **Report** and click **More > Schedule**. A dialog box will open.
3. Select the **Organization** for which you want to run the report. Note that based on the selected organizations, the pre-compute options below will change.
   a. If you select **Combine all selected Organizations into one Report**, then the report will contain data from all organizations. You also have the option to select the organizations that you want to include. For pre-compute to work, you must select **All Organizations**.
   b. If you select **Generate separate Report for each selected Organization**, then a separate report will be sent out for each selected organization, Data between organizations will not be mixed in the same report. For pre-compute to work, you must select these Organizations to be pre-computed.
4. Select **Report Time Range**.
5. If you want data to be pre-computed, then select **Pre-compute settings** from the menu. You can select multiple entries for step 3b above.
6. Click **Next** and enter values for the rest of the options in the dialog box.
7. Click **OK**.

The system will run the report based on a schedule. If pre-compute settings are specified then the report results will be based on pre-computed data.

Running a Report Bundle Based on Pre-computed Results

A Report Bundle consists of one or more reports. One or more reports may be set to be pre-computed. If you run the Report Bundle, then the reports set up for pre-computation will have pre-computed results, while other reports will run normally (without pre-computation).

1. Go to **Resource > Reports > Report Bundle**.
2. Select a **Report Bundle**.
3. On top left, select **Export Report Bundle**.
4. In **Pre-compute Settings**, select the Organization and Role combination. Each Report can be pre-computed for multiple Organization and Role combinations. When scheduling a report bundle, a common Organization and Role combination must be chosen that is applicable for ALL pre-computed reports. When Pre-Computation is defined, Filters cannot be selected.
5. Select other setting as usual.
6. Click **OK** to run the Report Bundle.

Scheduling a Report Bundle Based on Pre-computed Results

A **Report Bundle** consists of one or more reports. One or more reports may be set to be pre-computed. If you schedule the Report Bundle, then the reports set up for pre-computation will have pre-computed results, while other reports will run normally (without pre-computation).

1. Go to **Resource > Reports > Report Bundle**.
2. Select a **Report Bundle**.
3. On top left, select **Schedule Report Bundle**.
4. Click **+** to create a schedule.
5. In **Pre-compute Settings**, select the Organization and Role combination. Each Report can be pre-computed for multiple Organization and Role combinations. When scheduling a report bundle, a common Organization and Role combination must be chosen that is applicable for ALL pre-computed reports. When Pre-Computation is defined, Filters cannot be selected.
6. Select other setting as usual.
7. Click **OK** to schedule the Report Bundle.

Saving Search Results

Sometimes you must save a search and/or the search results for later use. With the search result displayed in **ANALYTICS**, complete these steps:

1. From the **Action** drop-down list, select **Save as Report**.
2. Specify the **Report Name**.
3. Specify whether the Report Definition must be saved. This will allow you to re-run the query at a later time. If you respond "yes", then:
    a. Check **Save Definition**.
    b. Select the report folder in **Save To** where the new report should be saved.
4. Enable **Save Results** if the Report results should be saved and then select the time duration.
If this option is enabled, the results will be stored under the **Saved Results** folder under the **Folders** icon.

5. Enable **Save Template** if you want to apply a template to your results. Follow the instructions in Designing a PDF report template to design the cover page and add sections, subsections, attachments, and so on, to the report.

Viewing Saved Search Results

Complete these steps to view previously saved search results:

1. Go to the **Saved Results** folder under 
2. Select the specific entry.
3. Hover over the **Name** cell and choose **View Result** from the drop-down list. (To delete a saved search result, you can choose **Delete**.)
   The results will be displayed.

Exporting Search Results

With the search results displayed under **ANALYTICS**, complete these steps to export:

1. From the **Action** drop-down list, select **Export Result**.
2. Enter the **User Notes** (optional).
3. Specify the **Output Format** as **PDF** or **CSV**.
   Files with a large number of rows should be exported in CSV format.
4. Select the **Time Zone** of the data from the drop-down list.
5. Select the Report **Template** if you select **PDF** format:
   - **Defined** - to use the template defined for this report defined under **RESOURCES** > **Reports** or use the system default template for Analytics export.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear when you choose this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**.
     Refer to Designing a PDF Report Template for the steps to design the **Cover Page** and **Table of Contents**.
6. Click **Generate** to generate the report.
7. Click **View** to download the report to the local disk.

Emailing Search Results

You must first configure email settings under **ADMIN** > **Settings** > **System** > **Email**. With the search result displayed in **ANALYTICS** tab, complete these steps to email search results:

1. Go to the **Action** drop-down list and select **Email Result**.
2. Enter the receiver email address in the **To** field.
3. Enter the **Subject** of the email.
4. Enter any **Description** about the email.
5. Enter any **User Notes** about the search results (optional).

6. Choose the **Output Format** as **PDF** or **CSV**.
7. Select the **Time Zone** of the data from the drop-down list.
8. Select the Report **Template** if you select **PDF** format:
   - **Defined** - to use the template defined for this report defined under **RESOURCES** > **Reports** or use the system default template for Analytics export.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear when you choose this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**.
     Refer to Designing a PDF Report Template for the steps to design the **Cover Page** and **Table of Contents**.
9. Click **Send**.

Creating a Rule from Search

With the search result displayed in Analytics, follow the steps below to create a rule:

1. From the **Action** drop-down list, select **Create Rule**.
2. A rule template is automatically created by copying over important Search parameters:
   a. Rule Sub-pattern Filters contain Search Filter conditions
   b. Rule Sub-pattern Group By contain Search Display conditions
   c. Rule Aggregate Conditions are set to COUNT(Matched Events) >= 1
3. To complete the rule creation, configure the settings under the **Create Rule** window with reference to the following table:

Settings	Guidelines
Rule Name	Enter a name for the new Rule.
Description	Enter a description about the new Rule.
Remediation	Enter the **Remediation** script. Make sure that the Remediation script for your scenario is defined. Check the existing Remediation scripts under **ADMIN** > **Settings** > **Notification** > **Action** column. If your device is not in the list, add the needed Remediation script.
Condition	Click **Condition** to create the rule conditions. See Defining Rule Conditions.
Severity	Select a **Severity** to associate with the incident triggered by the rule.
Category	Select the **Category** of incidents to be triggered by the rule.
Subcategory	Select the **Subcategory** from the available list based on the selected incident **Category**. To add custom subcategories, follow the steps under Setting Rule Subcategory.

Settings	Guidelines
Actions	Click the edit icon to define the incident (Incident Attributes and Triggered Attributes) that will be generated by this rule. You must have at least one incident defined before you can save your rule.
Exception	Click the edit icon to define any **Exceptions** for the rule. See Defining Rule Exceptions.
Dashboard	Select **Dashboard** to add this report under **DASHBOARD** tab.
Notification	Select a **Notification** frequency for how often you want notifications to be sent when an incident is triggered by this rule.
Impacts	Select the **Impacts** of the incident triggered by this rule from the drop-down.
Watch Lists	Click the edit icon to add the rule you want to add to the watch list. **Note:** The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
Clear	Click the edit icon to define any **Clear** conditions for the rule. See Defining Clear Conditions.

1. Click **Save**.
   Your new rule will be saved to the group you selected in an inactive state. Before you activate the rule, you should test it.

Working with Dashboards

FortiSIEM collects logs and performance metrics and create Incidents by event correlation and other means. This data can be summarized in Reports. A Dashboard provides a graphical view of these reports. FortiSIEM Dashboards are organized into a two-level hierarchy: Dashboard folders with each folder containing multiple Dashboards.

You can perform various operations from FortiSIEM Dashboards:

- General Operations

A Dashboard can be one of the following six built-in dashboard types:

- Widget Dashboard
- Summary Dashboard
- Business Service Dashboard
- Identity and Location Dashboard
- Interface Usage Dashboard
- PCI Logging Status Dashboard

General Operations

FortiSIEM Dashboard can be used to perform various operations:

- Viewing built-in dashboard folders
- Displaying only dashboard folders of interest
- Setting a home dashboard folder
- Creating a new dashboard folder
- Creating a new dashboard under a folder
- Sharing dashboard folders
- Deleting a dashboard
- Deleting a dashboard folder
- Starting dashboard slideshow

Viewing built-in dashboard folders

FortiSIEM provides several built-in dashboard folders:

Folder	Dashboard	Type	Description
Amazon Web Services Dashboard	Summary	Summary Dashboard	

Folder	Dashboard	Type	Description
	Performance	Widget Dashboard	
	Login	Widget Dashboard	
	Cloud Trail	Widget Dashboard	
Application Server Dashboard	JBoss	Widget Dashboard	
	WebSphere	Widget Dashboard	
	WebLogic	Widget Dashboard	
	Tomcat	Widget Dashboard	
	GlassFish	Widget Dashboard	
Database Dashboard	Logon	Widget Dashboard	
	System Perf	Widget Dashboard	
	Oracle Performance	Widget Dashboard	
	SQL Server Performance	Widget Dashboard	
	MySQL Performance	Widget Dashboard	
FortiSIEM Dashboard	Event	Widget Dashboard	
	Audit	Widget Dashboard	
	Incidents	Widget Dashboard	

Folder	Dashboard	Type	Description
Fortinet Security Fabric	FortiSandbox	Widget Dashboard	
	FortiGate Threat	Widget Dashboard	
	FortiGate Traffic	Widget Dashboard	
	FortiMail	Widget Dashboard	
	FortiClient	Widget Dashboard	
	FortiCare 360	Widget Dashboard	
Google Apps Dashboard	Logon	Widget Dashboard	
	Audit	Widget Dashboard	
Identity and Location Dashboard	Identity and Location	Summary Dashboard	
NetApp Dashboard	Overall	Widget Dashboard	
	NFS Perf	Widget Dashboard	
	CISF Perf	Widget Dashboard	
	ISCSI Perf	Widget Dashboard	
Network Dashboard	Summary	Summary Dashboard	
	Hardware	Summary Dashboard	
	Availability	Widget Dashboard	

Folder	Dashboard	Type	Description
	Performance	Widget Dashboard	
	Login/Change	Widget Dashboard	
	Netflow	Widget Dashboard	
	IPSLA	Widget Dashboard	
	VoIP	Widget Dashboard	
	CBQoS	Widget Dashboard	
Office365 Dashboard	Logon	Widget Dashboard	
	Audit	Widget Dashboard	
Salesforce Dashboard	Login	Widget Dashboard	
	Activity	Widget Dashboard	
	Performance	Widget Dashboard	
Security Dashboard	Perimeter	Widget Dashboard	
	Access	Widget Dashboard	
	Malware	Widget Dashboard	
	Vulnerability	Widget Dashboard	
	Exploits	Widget Dashboard	

Folder	Dashboard	Type	Description
	Policy Violation	Widget Dashboard	
Server Dashboard	Summary	Summary Dashboard	
	Hardware	Summary Dashboard	
	Availability	Widget Dashboard	
	Performance	Widget Dashboard	
	Login	Widget Dashboard	
VMWare Dashboard	VM	Widget Dashboard	
	ESX	Widget Dashboard	
	Cluster	Widget Dashboard	
	Resource Pool	Widget Dashboard	
	Datastore	Widget Dashboard	
	Environment	Widget Dashboard	
	Events	Widget Dashboard	
VNX Dashboard	Processor	Widget Dashboard	
	Ports	Widget Dashboard	
	LUNs	Widget Dashboard	

Folder	Dashboard	Type	Description
	Storage Pool	Widget Dashboard	
Web Server Dashboard	System Performance	Widget Dashboard	
	IIS Performance	Widget Dashboard	
	Apache Performance	Widget Dashboard	
	Access	Widget Dashboard	

Displaying only dashboard folders of interest

Complete these steps to see only the dashboards folders that are of interest to you:

1. Click the **Edit User Profile** icon () in the upper right corner of the UI.
2. Click the **UI Settings** tab.
3. Select the currently **Visible Dashboards** that you want to hide and click **<**.
4. Click **Save**.

The dashboard folder drop-down list under the **DASHBOARD** tab will display only the selected dashboard folders.

Setting a home dashboard folder

Complete these steps to see a specific dashboard folder when you navigate to the **DASHBOARD** tab:

1. Click the **Edit User Profile** icon () in the upper right corner of the UI.
2. Click the **UI Settings** tab.
3. Select a **Dashboard Home** from the drop-down list.
4. Click **Save**. Refresh the Web page if it doesn't reload automatically.

Creating a new dashboard folder

Complete these steps to create a new dashboard folder:

1. Go to **DASHBOARD** and select **New** from the Dashboard drop-down list.
2. Enter a dashboard **Name**.
3. Select whether you want to share the dashboard.
4. Click **Save**.

Creating a new dashboard under a folder

Note: You can add a dashboard to a built-in dashboard folder.

To create a new dashboard under a dashboard folder:

1. Go to **DASHBOARD** tab.
2. Select the dashboard from the folder drop-down list. The dashboards belonging to the folder will display on the top menu.
3. Click **+** to the right.
4. Enter a dashboard **Name**, select a dashboard **Type**, and add any related **Description** about this dashboard.
5. Click **Save**.

Sharing dashboard folders

When you create a new dashboard folder, FortiSIEM gives you the option of sharing the folder, and all of the dashboards in it, with other users.

Note the following rules and restrictions on shared dashboards:

Rules for creating and using shared dashboard folders:

- A user can share only with other users in the same organization.
  - A Super user can share only with other Super users, even if that Super user is in Global mode.
  - Org users can share only with (the same) Org users.
- If a Global/Super user shares a dashboard with another user, the other user can see only this dashboard in Global/Super mode.
- If a Local/Super user shares a dashboard with another user, the other user can see only this dashboard in Local/Super mode.
- If you share with all users in the current Org, then above rules also apply.

Restrictions on shared dashboards:

- Only the user who created the dashboard has Write permission to it, including setting the list of shareable users. The users with whom the dashboards are shared have only Read permission.
- Shared users can view the reports and perform Search and drill down operations on them. If shared users try to change the dashboard in any way, they will be asked to clone the dashboard with a new name. Cloning the dashboard breaks the link with the original dashboard. If the user wants access to the original dashboard, then the user who created the dashboard must share it again.
- For shared dashboards, run the report once, so that all users see the same data.
- A shared dashboard cannot be hidden from view.

Advantages of a shared dashboard folder:

- The dashboard owner can seamlessly propagate changes to the users with whom the dashboard is shared.
- An organization can quickly standardize on a set of dashboards created by experts.
- The report to populate the dashboard is run once if the report is run in inline mode. This uses less system resources

Creating a Shared Dashboard

Complete these steps to create a shared dashboard folder:

1. Go to **DASHBOARD** and click **New** to create a dashboard folder.
2. In the **Create Dashboard Folder** dialog box, enter a **Name** for the dashboard folder.
3. Select the **Everyone in current org** checkbox to share the dashboard folder with everyone in the current organization.

   a. To share with selected users/groups, click the edit icon. Select **Users** (CMDB Users) and/or **AD Groups** from the left column, then select individual users from the middle column and shuttle them to the **Selections** column.
   b. Click **Continue**. The selected users and groups will be able to access the shared dashboard and its contents.
4. Click the edit icon next to **Exclude** to exclude sharing with selected users.
   a. Select **Users** (CMDB Users) and/or **AD Groups** from the left column, then select individual users from the middle column and shuttle them to the **Selections** column.
   b. Click **Continue**. The excluded users will not be able to see or access the shared dashboard folder.
5. Click **Save**. The dashboard folder will have a  icon – this indicates that it is a shared folder.
6. At this point, you can create dashboards for the shared dashboard folder. See Creating a new dashboard under a folder.

Cloning a Shared Dashboard Folder

In shared dashboard, you can perform the refresh, drill down, and search operations. If you want to make any other changes, such as add a dashboard, change display settings, or delete the dashboard, then you must clone the shared dashboard folder. Once cloned, the link between the original shared dashboard and the cloned dashboard will be broken. This means that changes to the original shared dashboard will not be reflected in the cloned dashboard.

Complete these steps to clone a dashboard folder.

1. Log in to FortiSIEM.
2. Go to **Dashboard** and select the dashboard folder that has been shared with you from the drop-down list.
3. Any changes you attempt to make, such as add a dashboard, change display settings, or delete the dashboard, will open the **Clone Dashboard Folder** dialog box.
4. Enter a new **Folder Name** in the **Clone Dashboard Folder** dialog box.
5. Click **Save**.

You can now make your own changes to the dashboards in the cloned dashboard folder.

Deleting a dashboard

Note: Built-in dashboards cannot be deleted.

Complete these steps to delete a user-created dashboard:

1. Go to **DASHBOARD** tab.
2. Select the dashboard folder drop-down list. The dashboards belonging to that folder will display.
3. Select the dashboard to delete from the top menu and click the **x**.

Deleting a dashboard folder

Note: Built-in dashboard folders cannot be deleted.

Complete these steps to delete a user-created dashboard folder:

1. Go to **DASHBOARD** tab.
2. Select the dashboard folder from the folder drop-down list and click the **x**.

Starting dashboard slideshow

Make sure that you have created the slideshow templates before starting a slideshow. See Dashboard Slideshow settings.

Complete these steps to start a dashboard slideshow:

1. Go to **DASHBOARD** tab.
2. Click the dashboard folder drop-down list and click **Start Slideshow** to select the configured slideshow. The slideshow starts in full screen mode. To exit full screen mode, click the **Exit Full Screen (Esc)** button.
3. To return to the dashboard page, click button on the top-right.

Widget Dashboard

A Widget Dashboard displays a graphical view of FortiSIEM reports. The reports can be from CMDB data or Event data. The reports can be Top N type aggregated reports or non-aggregated reports, likely displaying raw messages. Aggregated reports can be displayed in various forms: gadgets, bar, donuts, tables, line, stacked line, scatter plot, heat maps, tree maps, and geo-maps.

- Creating a Widget Dashboard
- Data Source
- Populating a Widget Dashboard
- Modifying Widget Dashboard layout
- Modifying widget information display
- Searching in a Widget Dashboard
- Drill-down into a widget
- Exporting Widget Dashboard definition
- Importing Widget Dashboard
- Forcing a refresh

Creating a Widget Dashboard

When you create a new dashboard, choose Widget Dashboard as the **Type**.

Data source

All Event data and CMDB Data can be used to populate a Widget Dashboard.

Populating a Widget Dashboard

You can add up to a maximum of 20 event reports or CMDB reports to a Widget Dashboard. Complete these steps to add a report to a Widget Dashboard:

1. Make sure the report of your choice exists. CMDB Reports can be found in **CMDB** > **CMDB Reports**. Event Reports can be found in **RESOURCES** > **Reports**.
    - If the report exists, then run the report to make sure that data is accurate and the fields you want to see are present. Do not choose too many columns in a dashboard view, as may clutter the dashboard.

- If the report does not exist, then create the report and **Save** it. You can save it in a folder for easy navigation.

2. Go to **DASHBOARD** tab. Select the dashboard folder from the drop-down list.
3. Click **+** below the dashboard folder drop-down list. Select the report from the menu and click **>** to display it on the dashboard.
   The report will run and the results will be displayed in the Widget Dashboard.

Modifying Widget Dashboard layout

You can select one of two Widget Dashboard layouts from the **Layout** drop-down list on top-right menu of dashboard:

- **Tile view** - widgets can be of non-uniform size and can be dragged around the dashboard space.
- **Column view** - widgets are arranged in a fixed number of columns (1, 2 or 4) in the dashboard space.

Modifying widget information display

1. Click the tools icon on the top-right of the widget to open the **Settings** page.
   a. To change the title, enter a new **Title**.
   b. To change the chart format, choose a new **Display** from the available choices, only if it is relevant for the report. FortiSIEM Charts and Views describes the available charts.
   c. To change the time duration of the report, choose a different **Time**.
   d. To modify the size of the widget, choose a different **Width** and **Height**. Widgets displayed in tabular formats typically take more width and height compared to Single Line view.
   e. To display more or fewer entries, choose the appropriate **Result Limit**. Note that a larger result limit may require more width and height.
   f. For a Service Provider installed in a Super/Global view, choose the **Organizations** to run the report for. This option is available if you run reports from the Super/Global view.
   g. To change the chart refresh interval, select the appropriate **Refresh Interval**. Reports will be re-run periodically at specified refresh intervals.
   h. Select **Display Settings** for the specific **Display** chosen before. FortiSIEM Charts and Views describes the required settings for each of the charts.
2. Click **Save**.

Searching in a Widget Dashboard

You can search data for specific event attributes simultaneously in all the widgets in a dashboard. To do this, click the Filter button on left and select the values. You can search on any field that appears in at least one widget on a dashboard.

For example, if you choose to Filter on IP = 10.1.1.1, then only the entries for Source IP or Destination IP or Host IP = 10.1.1.1 are shown on all the widgets.

Note the following:

- The values you can search are pre-populated by searching through the data in various widgets. You can only search for a value if it is present in any widget on the dashboard.

- Without filters, a dashboard shows pre-computed results – so they load quickly. However, when you search, all the reports in the Widget Dashboard are run in an ad hoc mode. Subsequently, search results may return relatively slowly.

Drill-down into a widget

To analyze the results shown in a widget further, click the magnifying glass icon on the top-right of the widget. This will take you to the **ANALYTICS** tab. The same query will be re-run slightly differently:

- Time conditions are maintained
- Filter conditions are maintained
- Aggregation conditions are removed and the field values and the raw messages are shown directly

This enables users to better understand the widget results. For example, if a column like AVG(CPU) is high over a time duration, then drill down shows all the individual CPU values over the time duration so that you can quickly go to the time when CPU spiked.

Exporting Widget Dashboard definition

If you want to create the same dashboard in another FortiSIEM, or share with another user, or create the same dashboard for another Organization in a Service Provider FortiSIEM instance, use the export/import feature.

To export the dashboard definition, click the export button on top-right. The definition will be saved in a file, which then can be imported into another FortiSIEM Widget Dashboard.

Importing a Widget Dashboard

To import a dashboard widget, click the import button on top-right and select the file. The imported file must be exported from another FortiSIEM Widget Dashboard.

Forcing a refresh

Each widget refreshes according to the **Refresh Interval** specified within the widget. To update the whole dashboard, click the refresh icon on top-right.

Summary Dashboard

A Summary Dashboard displays the metrics for many devices in a spreadsheet format. Unlike the widget dashboard that shows a few metrics in one widget, a Summary Dashboard can simultaneously show many more metrics. This often allows rapid diagnostics. FortiSIEM calculates and maintains these metrics in an in-memory database inside Query Master module.

Note: RBAC for Summary dashboard is controlled by hiding by Device Group and not by Data Condition. If you want to hide a group of devices in Summary dashboard for a role, hide the Device Group in the role. The user should not be able to choose the devices from the Device Group.

Creating a Summary Dashboard

When you create a new dashboard, choose Summary Dashboard as **Type**.

Data Source

The source of data in a Summary Dashboard is the performance and availability monitoring metrics and incidents. To see the metrics that can be displayed, click the column icon. The left table shows the event types and the middle table shows the available metrics for the selected event type. These metrics can be displayed in a Summary Dashboard. Custom attributes from custom monitoring may also be displayed after they are defined.

In addition to metrics, the following are shown:

- Performance, Availability and Security incident counts
- Performance, Availability and Security Status each derived from respective incident severities

Managing devices in a Summary Dashboard

When you create a Summary Dashboard for the first time, no devices are displayed.

Complete these steps to add devices to the dashboard:

1. Click the device icon.
2. Choose devices to display from the **Available Devices** list and click the right arrow button.
3. Click **OK**.

If the devices do not display in the dashboard, check the pre-defined filters for **Severity**. You may want to set Severity to **All Severities** to see the device recently added. When there are a large number of devices being monitored, you may want to show only the devices with **Critical + Warning** severity, as they would need attention.

Complete these steps to remove a device from the dashboard:

1. Click the device icon.
2. Choose devices to display from the **Selected Devices** list and click the left arrow button.
3. Click **OK**.

Changing display columns

Complete these steps to change the pre-defined set of display columns in the Summary Dashboard:

1. Click the columns icon.
2. To remove a column, choose the column from the **Selected Columns** list and click the left arrow button.
3. To add a new column:
    a. Select an **Event Types** on the left-most tab
    b. Choose the **Columns** from the middle tab corresponding to the selected **Event Types**.
    c. Click right arrow.
4. Click **OK**.

Changing refresh interval

Select the refresh interval from the drop-down menu on the top-right menu.

Forcing a refresh

To update the whole dashboard click the refresh icon on top-right menu.

Searching a Summary Dashboard

You can search for specific devices by entering values in the search field.

1. Select the fields to search by clicking the search icon.
2. Enter the search string in the search field.

You can also filter from the three pre-defined drop-down lists:

- Severity
- Organizations
- Locations

You can set the location property for devices from **ADMIN** > **Settings** > **Discovery** > **Location**.

Business Service Dashboard

In FortiSIEM, you can define a Business Service as a container of Devices (Go to **CMDB** > **Business Services**, then click **New**). A Business Service Dashboard provides an overview of the health of the business service by showing the related Incidents and impacted devices.

Creating a Business Service Dashboard

When you create a new dashboard, choose Business Service Dashboard as **Type**.

Data source

The only source of data for this dashboard is incidents triggering for the devices belonging to a Business Service.

Adding/Removing Business Services to the Dashboard

When you create a Business Service Dashboard for the first time, no Business Services are shown.

Complete these steps to add a Business Service to the dashboard:

1. Click the devices icon.
2. Select the Business Services from the **Available Services** Business Service list.
3. Click right arrow to move them to the **Selected Services** list.
4. Click **Save**.

Complete these steps to remove a Business Service from the dashboard:

1. Click the devices icon.
2. Select the Business Services to remove from the **Selected Services** list.
3. Click left arrow to move them back to the **Available Services** list.
4. Click **Save**.

Summary view

Business Service Dashboard has two views: Summary view and Drilldown view. The Summary view is the default view when you access the Dashboard.

The first level Summary view displays:

- Incident Counts By Severity and Top Impacted Devices across all Business Services.
- High and Medium Severity Incident Counts for each Business Service.

Click a specific Business Service in the first level to see the second level Summary view. This displays:

- Devices belonging to the Business Service that has triggered incidents.
- For each device:
    - Device Name
    - Device Type
    - Availability Status
    - Incidents and counts – you can click an Incident to see more details in a pop up. From there, you can take action on an incident (for example, drill down the incident on Incident page).

Drilldown view

Click the **Drilldown** button to display the Drilldown view of Business Services.

The first level Drilldown view displays the Incidents of each Business Service.

Click a specific Business Service in the first level to display the second level Drilldown view. It displays the Summary dashboard view of each device belonging to the selected Business Service.

Click the **Overview** button to get back to the Summary view.

Filtering Summary view

In the first level Summary view, you can filter the information displayed by Incident Severity and Organizations (for Service Provider deployments). Choose the values from the respective drop-down lists.

In the second level Summary view, you can filter the information by Device name and type.

Filtering Drilldown view

In the first level Drilldown view, you can filter the information by Organizations (for Service Provider deployments). Simply choose the values from the drop-down list.

In the second level Drilldown view, you can filter the information by Device name and type.

Changing refresh interval

Select the refresh interval from the drop-down menu on top-right.

Forcing a refresh

To update the whole dashboard, select **Refresh Now** on top-right.

Identity and Location Dashboard

In many situations, you would like to know which user is using an IP address and where the user connected from. The Identity and Location Dashboard provides you an audit trail of this information by providing the linkage between:

- Network Identity - IP address, or MAC address
- User identity - user name, host name, or domain
- Location - a wired switch port, a wireless LAN controller, or VPN gateway

The following sections provide more information about Identity and Location Dashboard:

Data source

This association is built over time by combining information from the following events:

- **Active Directory logon events** – such as Win-Security-540 and Win-Security-4624 that provide IP Address, User, and Domain information

- **DHCP events** – these provide IP, MAC address, and sometimes host name information. Events include:
  - WIN-DHCP-IP-LEASE-RENEW
  - WIN-DHCP-IP-ASSIGN
  - FortiGate-event-DHCP-response-Request
  - FortiGate-event-DHCP-response-Ack
  - AO-WUA-DHCP-IP-LEASE-RENEW
  - AO-WUA-DHCP-IP-ASSIGN
  - Linux_DHCPACK
  - Generic_DHCPACK
  - Cradlepoint-dhcp-updated
- **VPN logon events** – these provide IP and user information. Events include:
  - ASA-713228
  - Juniper-SecureAccess-Session-Start
  - Cisco-VPN3K-IKE/25
  - ASA-722022
  - ASA-713049-Client-VPN-Logon-success
  - FortiGate-ssl-vpn-session-tunnel-up
  - ASA-113019
- **WLAN logon events** – these provide IP and user information. Events include:
  - Aruba-1014-wlsxNUserEntryCreated,
  - FortiGate-Wireless-Client-IP-Assigned
  - Cisco-WLC-53-bsnDot11StationAssociate
- **Cloud Service logon events** – these provide IP and user information. Events include:
  - AWS-CloudTrail-SIGNIN-ConsoleLogin-Success
  - Google_Apps_login_login_success
  - Salesforce_Login_Success
  - OKTA-USER-AUTH-LOGIN-SUCCESS
  - MS_OFFICE365_UserLoggedIn_Succeeded
- **AAA Authentication events** - these provide IP and user information. Events include:
  - Win-IAS-PassedAuth
  - CisACS_01_PassedAuth
- **FortiSIEM Discovery events** – these provide IP, user, and location information. Events include:
  - PH_DISCOV_HOST_LOCATION
  - PH_DISCOV_CISCO_WLAN_HOST_LOCATION
  - PH_DISCOV_ARUBA_WLAN_HOST_LOCATION
  - PH_DISCOV_GEN_WLAN_HOST_LOCATION

Adding to the Data source

You can modify the file `/opt/phoenix/config/identityDef.xml` file to add new events. Remember to restart the `phIdentityMaster` and `phIdentityWorker` modules on all nodes after the changes are done.

Viewing Identity and Location Dashboard

Identity and Location Dashboard is a spreadsheed style tabular dashboard that displays the following information:

- **IP Address** - IP address of a host whose identity and location is recorded in this result. You can view IP addresses with country flags in a map by clicking **Locations**.
- **MAC Address** - MAC address of the host
- **User Name** - User associated with this IP Address. Obtained from one of these event types in the Data Source section.
- **Host Name** - Host Name from which IP Address was used. Obtained from one of these event types in the Data Source section.
- **Domain** - Provides context for the User. The Information displayed here depends on the logon event type it was obtained from:
    - Windows Domain Logon: Domain name
    - VPN Logon: reporting IP address of the VPN gateway
    - WLAN Logon: reporting IP address of the WLAN controller
    - AAA Logon: reporting IP of the AAA server
- **VLAN ID**- For hosts directly attached to a switch, this is the VLAN ID of the switch port,
- **Connected to** - For hosts attached to a switch port, this is the switch name, reporting IP address, and interface name,
- **First Seen** - The time at which this entry was first created in the AccelOps Identity and Location database,
- **Last Seen** - The time at which some attribute of this entry was last updated. If there is a conflict, for example, a host acquiring a new IP address because of DHCP, then the original entry is closed and a new entry is created. A closed entry will never be updated.
- **Organization** - Displays the Organization to which the IP address belongs for Service Provider installations in a Super/Global View.

Searching for specific information

You can search in two ways:

- **Search single field** - use the search box.
    - For Time Range, choose the time ranges in the time range field on the top right
    - For other fields, select the fields in the Search area and enter the value to be searched
- **Search multiple fields at the same time** – use the Filter area
    - Select the field, enter the searched value and click **OK**. The condition will diaplay on the top
    - Select another field and so on.
    - You can clear a condition by clicking the **x** button.

Using the Interface Dashboard

This dashboard provides an overview of the usage of individual interfaces of Router and Firewall devices. The dashboard has three levels:

- The Top view displays device level metrics in a tabular form.
- Once you select a device in the Top view, the middle table shows the basic interface level metrics such as received and sent bytes.
- You can drill-down and get Application level usage and QoS metrics for a specific device interface. To do this, select a device in the Top view and a specific interface in the middle view.

The following sections provide more information about the Interface Usage Dashboard:

Data source

This dashboard applies to network devices: Routers/Switches and Firewalls.

- Top View - Device level metrics are sourced from Ping monitoring and SNMP.
- Middle View – Basic interface level metrics are also sourced from SNMP.
  - The sent and receive metrics are available for all network devices implementing MIB2 (RFC 1213).
  - Latency, Jitter, and Loss are available for FortiGate Firewalls/UTM devices via SNMP – see FORTINET-FORTIGATE-MIB: `fgSystem.fgLinkMonitor` (see note below on configuration restriction).
- Bottom View
  - Application Usage is available from Netflow
  - QoS values are available for FortiGate Firewalls/UTM devices via SNMP – see FORTINET-FORTIGATE-MIB: `fgIntf.fgIntfBcs.fgIntfBcInTable.fgIntfBcInEntry` for ingress and `fgIntf.fgIntfBcs.fgIntfBcTable.fgIntfBcEntry` for egress.

Configuring Latency, Jitter and Loss

FortiGate SNMP metrics report Latency, Jitter. and Loss by link ID, which is different from SNMP interface ID. FortiSIEM requires that the user configures the link ID to be identical to SNMP interface ID.

SNMP interface IDs are available by running the SNMP walk command: `snmpwalk -v2c -c<cred> <ip> ifName`. In the output, the integer after `ifName` is the interface ID.

```
#snmpwalk -v2c -cpwd 10.1.1.1 ifName
IF-MIB::ifName.1 = STRING: port1
IF-MIB::ifName.2 = STRING: port2
IF-MIB::ifName.3 = STRING: port3
```

Here the SNMP interface ID of port1 is 1, SNMP interface ID of port2 is 2 and so on.

Use the SNMP interface ID in the `config system virtual-wan-link` command – see the examples below:

This is a basic example where the port, health check members and SNMP index can align naturally, however this is not likely to be the case with all configurations.

```
#config system virtual-wan-link
  set status enable
  config members
    edit 1
      set interface port1
```

```
    next
    edit 2
      set interface port2
    next
  end

#config health-check
    edit "HC_Backoffice"
                set server "8.8.8.8"
                set update-static-route disable
                set members 1 2
     next
```

As mentioned, to ensure that the Interface SNMP Index ID corresponds to that of the virtual WAN link and the health check, it is required that SNMP index must align. This example and description shows how to configure a FortiGate for SDWAN monitoring with FortiSIEM.

1. The interface should specify the SNMP index, for example, `105` (`set snmp-index 105`):

```
config system interface
   edit "port4"
      set vdom "root"
      set ip 10.1.31.10 255.255.255.240
      set allowaccess ping https ssh
      set type physical
      set netflow-sampler both
      set inbandwidth 50192
      set outbandwidth 50192
      set ingress-shaping-profile "test_Internal"
      set egress-shaping-profile "test_Internal"
      set alias "MPLS"
       set snmp-index 105
      set preserve-session-route enable
   next
end
```

2. The member ID in the virtual WAN link must be same as the SNMP index associated with the Interface, for example, `105`.

```
config system virtual-wan-link
   set status enable
      config members
         edit 105
            set interface "ha"
            set gateway 10.1.31.1
            set comment "MPLS"
            next
            ……
            ……
      end
end
```

3. The member ID should be added to a health check, again in this example it is `105`.

```
config health-check
   edit "TEST_Backoffice"
        set server "10.10.33.240" "10.10.1.240"
        set interval 5
```

```
            set update-cascade-interface disable
            set update-static-route disable
            set members 1 2 105
        next
    end
```

4. When monitoring Latency, Jitter and Loss via SNMP it is now possible to identify the Interface it is associated with the health check.

```
[snmpwalk -v2c -c {password} {HostIp} 1.3.6.1.4.1.12356.101.4.9.2.1
SNMPv2-SMI::enterprises.12356.101.4.9.2.1.3.7 = Gauge32: 105
SNMPv2-SMI::enterprises.12356.101.4.9.2.1.5.7 = STRING: "20.078" (latency)
SNMPv2-SMI::enterprises.12356.101.4.9.2.1.6.7 = STRING: "0.736" (Jitter)
SNMPv2-SMI::enterprises.12356.101.4.9.2.1.9.7 = STRING: "0.000" (Loss)
```

Adding/Removing devices and interfaces to the dashboard

When you create an Interface Usage Dashboard for the first time, no devices are displayed.

Complete these steps to add a device to the dashboard:

1. Click the devices icon.
2. Select the Organization and then click the **Firewall** or **Router Switch** folder.
3. Select a device and its interface of interest.
4. Click the right arrow.
5. Click **Save**.

Complete these steps to remove a device from the dashboard:

1. Click the devices icon.
2. Select the **Device**/**Interface** pair from the selected list.
3. Click the left arrow.
4. Click **Save**.

This dashboard is data driven. That means the dashboard will be populated only if the metrics are present. First, create a Summary dashboard and see if the devices are present in that dashboard and display values. Then, you will see them in this dashboard.

Viewing device level metrics

The Top view displays Device level metrics. The metrics are averaged over three minute intervals. To see the trend, click the trend icon next to the numbers.

Viewing interface level metrics

Once you select a device in the Top view, the middle table displays the interface level metrics for that device. The metrics are averaged over three minute intervals. To see the trend, click the trend icon next to the numbers.

Viewing Application Usage

Complete these steps to see the Application Usage for an interface:

1. Select a device in the Top view.
2. Select an interface in the Middle view.
3. Click the **Application Usage** tab.

Viewing QoS Statistics

Complete these steps to see the QoS Statistics for an interface:

1. Select a device in the Top view.
2. Select an interface for the selected device in the Middle view.
3. Click the **QoS Statistics** tab.

Drill-down from widgets

Click the magnifying glass icon on a widget. This will take you to the **ANALYTICS** tab with the values populated. From there, you can analyze the data in more depth.

Modifying widget information display

Follow the steps in Widget Dashboard > Modifying widget information display.

Changing refresh interval

Select the refresh interval from the drop-down menu on top-right.

Forcing a refresh

To update the whole dashboard, select the refresh icon on the top-right menu.

PCI Logging Status Dashboard

A PCI Logging Status dashboard provides an overview of which devices in PCI are logging and logging correctly. The devices are displayed by CMDB Device Groups (for example Windows, Linux, Firewalls, and so on) and by Business Units.

- Setting up data source
- Creating a Dashboard
- Analyzing Dashboard data
- Searching Dashboard data

Setting up data source

Data source setup includes the following steps:

1. Creating CMDB Devices
2. Assigning devices to Business Units
3. Assigning devices to PCI Business Service
4. Specifying the criteria for logging correctly
5. Specifying the violation time limits

Creating CMDB Devices

The devices must be available in CMDB for displaying in the dashboard. This can be done in any of the following ways:

- Manually:
  a. Go to **CMDB** > select the Device Group > click **New**.
- Discovery:
  a. Create the credentials in **ADMIN** > **Setup** > **Credentials**.
  b. Discover in **ADMIN** > **Setup** > **Discovery**.
- Device Import:
  a. Go to **ADMIN** > **Settings** > **General** > **Integration**.
  b. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
  c. Choose the **File Path** on the Supervisor node and place the CSV file there.
  d. For **Content Mapping**, click the edit icon.
    I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
      i. Enter Source CSV column Name for **Source Column**.
      ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist.
        A. Enter a name for the **Destination Column** of the property from the drop-down list.
        B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
      iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
      iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
      v. Click **OK**.
    II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
  e. Click **Save**.
  f. Select the Instance and click **Run**.

Assigning Devices to Business Units

For the PCI Logging dashboard to display the devices logging and logging correctly by business units, the Business Unit property needs to be set for a device. This can be done in any of the following ways:

- Manually:
  a. Go to **CMDB** > select one or more devices > click **Edit** and set the Business Unit.
  b. Click **Save**.
- Device Import:
  a. Prepare a CSV file containing Device Host Names and Business Unit as two columns. Note that the Device host names must match the host names in CMDB, if they are present.
  b. Go to **ADMIN** > **Settings** > **General** > **Integration**.
  c. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
  d. Choose the **File Path** on the Supervisor node and place the CSV file there.

e. For **Content Mapping**, click the edit icon.
   I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
      i. Enter Source CSV column Name for **Source Column**
      ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist
         A. Enter a name for the **Destination Column** of the property from the drop-down list.
         B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
      iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
      iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
      v. Click **OK**.
   II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
f. Click **Save**.
g. Select the instance and click **Run**.

Assigning Devices to PCI Service

Devices in the PCI Logging Status Dashboard belong to the PCI Business Service. Assigning Devices to the PCI Service can be done in any of the following ways:

- Manually:
  a. Go to **CMDB** > **Business Services** > **Compliance** > select the PCI Service > click **Edit** and add **Devices**.
  b. Click **Save**.
- Device Import:
  a. Prepare a CSV file containing Device Host Names and isPCI property. Host names must match the host names in CMDB. The **isPCI Device Property** takes TRUE or FALSE values.
  b. Go to **ADMIN** > **Settings** > **General** > **Integration**.
  c. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
  d. Choose the **File Path** on the Supervisor node and place the CSV file there.
  e. For **Content Mapping**, click the edit icon.
     I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
        i. Enter Source CSV column Name for **Source Column**
        ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist
           A. Enter a name for the **Destination Column** of the property from the drop-down list.
           B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
        iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
        iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to

overwrite its current value.

v. Click **OK**.

II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.

f. Click **Save**.

g. Select the instance and click **Run**.

Note: Device Import options in Assigning Devices to Business Units and Assigning Devices to PCI Service can be combined. So it is possible to have a single file with three columns: Host Name, Business Unit, and isPCI.

Specifying criteria for logging correctly

To specify a criteria for logging correctly, define the following:

- **Correctly Logging Reports** – these specify the criteria for devices in a device group to be correctly logging Authentication, FIM, and Change events. Reports must be defined separately for each CMDB device group and each functional category: Authentication, FIM, and Change. Several Correctly Logging Reports are pre-defined in **RESOURCES** > **Reports** > **Function** > **Compliance** > **Compliance Logging Policy**.
- **PCI Logging Policy** – these specify whether a CMDB Device Group needs to correctly send logs in the various functional categories: Authentication, FIM, and Change. Currently, these three functional categories are fixed. PCI Logging Policies can be specified in **ADMIN** > **Settings** > **Compliance** > **PCI**. Several PCI Logging Policies are pre-defined.

Complete these steps to customize correctly logging criteria:

1. Define a report in **RESOURCES** > **Reports** > **Function** > **Compliance** > **Compliance Logging Policy**.
2. Create a PCI Logging Policy in **ADMIN** > **Settings** > **Compliance** > **PCI** and specify the new report.

If you create your own correctly logging report, then it must have the following well-defined structure:

- **Group By Criteria** must have Customer ID and Reporting Device Name.
- **Select Clause** must have Customer ID, Reporting Device Name, and Last Event Receive Time.
- **Filtering Criteria** must be specific to the CMDB Device Group (for example: Firewalls, Routers, Windows Server, and so on) and functional logging category (for example: Authentication, FIM, and Change).

Note: It is highly recommended to clone an existing correctly logging report and modify the Filtering Criteria.

Specifying violation time limits

Specify the time duration after which a device is reported to be not logging or not logging correctly. Four properties are defined in **ADMIN** > **Device Support** > **Custom UI Properties**:

- **lastAuthTimeLimit** - time limit for authentication logs (default 1 day)
- **lastFIMTimeLimit** - time limit for FIM logs (default 1 day)
- **lastChangeTimeLimit** - time limit for authentication log (default 1 day)
- **lastLogTimeLimit** - time limit for sending any log (default 1 day)

Similar to any other device property, you can change the global defaults and set them on a per-device basis.

Creating a Dashboard

Once you setup the data sources following the steps described in Setting up data source, the dashboard must be created manually.

The dashboard is updated nightly at 12:00 am (Supervisor time). At that time, the Supervisor:

- Runs the reports specified in **ADMIN** > **Settings** > **Compliance** > **PCI** .
- Updates the last reporting times.
- Calculates violations using the thresholds defined in **ADMIN** > **Device Support** > **Custom Properties**.

When you open the PCI Logging Status dashboard, the results are displayed from the daily run of previous night.

Analyzing Dashboard data

The PCI Logging Status Dashboard displays:

- **Logging** - Percentage of PCI devices logging within the time period lastLogTimeLimit (default 1 day).
- **Logging Correctly** - Percentage of PCI devices logging correctly.
- **Logging By Group** - Percentage of PCI devices logging correctly broken down by Device Group.
- **Logging Correctly By Group** - Percentage of PCI devices logging correctly broken down by Device Group.
- **Logging Correctly By Business Unit, Group** - Percentage of PCI devices logging correctly broken down by Device Group.

The displays are color coded as Red, Yellow, and Green according to the tunable thresholds defined in **Dashboard** > **Threshold Setting**. By default:

- Red – less than 50%
- Yellow – between 50% and 80%
- Green – higher than 80%

If you click the entries, the devices in violation are shown in a tabular format along with the last time they reported events in each category.

Searching Dashboard data

The Dashboard data can be searched by any Device Property, for example a Business Unit defined in **ADMIN** > **Device Support** > **Custom Properties** with Search (check-box) enabled. Click the search field under a specific category and enter the property values. Matches are exact and case sensitive.

Managing Tasks

FortiSIEM supports Data Anonymization to hide Personally Identifiable Information including IP addresses, host names, user names and email addresses in external and internal logs, Incidents, and CMDB records based on the user role for a specific period of time.

After assigning the user to anonymize a role and creating a Data Anonymization approver, the work-flow is as follows:

a. The user creates a de-anonymization request and sends to the approver.
b. The approver receives an email notification.
c. The approver then verifies and accepts the request for a specific period by setting a validity date. (An approver may also reject a request specifying a valid reason.)
d. If approved, the user can see the de-anonymized data until the validity period.
e. After the validity period, the data is hidden again. To de-anonymize the data, create a new request.

The following procedures describe how a user can submit a task request and the Data Anonymization approver approves or rejects.

- Requesting a de-anonymization request
- Approving a de-anonymization request

Requesting a de-anonymization request

You can send a de-anonymization request with justification, to a Data Anonymization approver, to de-anonymize the requested data for a specific period of time.

1. Go to **TASK**> **Request** tab.
2. Click **New** to create a de-anonymization request.
3. Select the **Approver** from the drop-down to send this request.
4. Select the **Type** of de-anonymization request.
5. Enter the **Justification** for viewing the data.
6. Click **Save** to send the request to the Data Anonymization approver.

Approving a de-anonymization request

When a user sends a de-anonymization request, the Data Anonymization approver receives an email notification. The approver can see the list of de-anonymization requests under the **Approval** tab on login. The approver then verifies the justification and provides approval.

1. Go to **TASK**> **Approval** tab.
2. Select the request from the list or search using the search bar and choose the following options from the drop-down list on the right:
    - **Approve** to allow de-anonymization for a specific time period under **Valid Till** or **For** the date and time listed in the time stamp field. You can click the time stamp field to choose a different date and time.

- **Reject** to reject the de-anonymization request specifying a valid **Reason**.

3. Click **OK** to send the approval/rejection.
   The user can see the **Status** of this request under the **Request** tab on login.

Appendix

Flash to HTML5 GUI mapping

This section describes the mapping between FortiSIEM Flash-based GUI (available for all AccelOps and FortiSIEM versions up to 5.0.0) and FortiSIEM HTML5-based GUI (available from FortiSIEM version 5.0.0). This mapping enables you to familiarize with AccelOps/FortiSIEM Flash-based GUI to quickly find the corresponding functions in FortiSIEM HTML5-based GUI.

FortiSIEM HTML5-based GUI is similar to the earlier Flash-based GUI. In addition to the Dashboard, Analytics, Incidents, CMDB and Admin tabs from Flash-based GUI, the HTML5-based GUI adds two new tabs - CASES and RESOURCES.

The following tables show the mapping for each tab.

Dashboard

Flash Element	HTML5 Element
Executive Summary	DASHBOARD > Network Dashboard > Summary DASHBOARD > Server Dashboard > Summary DASHBOARD > Storage Dashboard > Summary
Incident Dashboard > Table View	INCIDENT > List View
Incident Dashboard > Fishbone View	*Currently not available*
Incident Dashboard > Topological View	*Currently not available*
Incident Dashboard > Calendar View	*Currently not available*
Incident Dashboard > Location View	INCIDENT > List View > Action > Locations
My Dashboard	DASHBOARD > New Dashboard (can be imported)

Flash Element	HTML5 Element
Summary Dashboard > Biz Service Summary	DASHBOARD > Click **+** to add new Dashboard and choose **Type** as 'Business Service Dashboard'.
Summary Dashboard > All Device	DASHBOARD > Network Dashboard > Summary DASHBOARD > Server Dashboard > Summary DASHBOARD > Storage Dashboard > Summary
Summary Dashboard > Network Device	DASHBOARD > Network Dashboard > Summary
Summary Dashboard > Servers	DASHBOARD > Server Dashboard > Summary
Summary Dashboard > EC2 Systems	DASHBOARD > Amazon Web Services Dashboard > Summary
Summary Dashboard > Azure Systems	*Currently not available as built-in (user can create their own)*
Summary Dashboard > All VMs	DASHBOARD > VMWare Dashboard > VM DASHBOARD > VMWare Dashboard > ESX
Summary Dashboard > My Devices	DASHBOARD > Any customized summary dashboard can be used to manage devices.
Availability / Performance > Hardware Summary	DASHBOARD > Network Dashboard > Hardware DASHBOARD > Server Dashboard > Hardware
Storage	DASHBOARD > NetApp Dashboard DASHBOARD > VNX Dashboard
Top Monitored Processes	*Currently not available*
Apache Servers	DASHBOARD > Web Server Dashboard
Exchange Servers	*Currently not available as built-in (user can create their own)*
Windows DHCP	*Currently not available as built-in (user can create their own)*
Windows DNS	*Currently not available as built-in (user can create their own)*
IIS Servers	DASHBOARD > Web Server Dashboard
ASP.NET Servers	*Currently not available*

Flash Element	HTML5 Element
MS Active Directory Servers	*Currently not available*
MS SQL Servers	DASHBOARD > Database Dashboard
Oracle DB Servers	DASHBOARD > Database Dashboard
MySQL Servers	DASHBOARD > Database Dashboard
VoIP Summary	*Currently not available as built-in (user can create their own)*
IPSLA Summary	*Currently not available as built-in (user can create their own)*
STM Summary	*Currently not available as built-in (user can create their own)*
Environmental Dashboard	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Network > Generic	DASHBOARD > Network Dashboard > Availability DASHBOARD > Network Dashboard > Performance DASHBOARD > Network Dashboard > Login/Change DASHBOARD > Network Dashboard > Change
Dashboard By Function > Network > Netflow	DASHBOARD > Network Dashboard > Netflow
Dashboard By Function > Network > VoIP	DASHBOARD > Network Dashboard > VoIP
Dashboard By Function > Network > IPSLA	DASHBOARD > Network Dashboard > IPSLA
Dashboard By Function > Server	DASHBOARD > Server Dashboard
Dashboard By Function > Virtualization	DASHBOARD > VMWare Dashboard
Dashboard By Function > Application > Generic	DASHBOARD > Server Dashboard > Availability DASHBOARD > Server Dashboard > Performance
Dashboard By Function > Application > Mail	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Application > Database	*Currently not available as built-in (user can create their own)*

Flash Element	HTML5 Element
Dashboard By Function > Application > Web	DASHBOARD > Web Server Dashboard
Dashboard By Function > Storage	DASHBOARD > NetApp Dashboard DASHBOARD > VNX Dashboard
Dashboard By Function > Environment	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Event/Log Mgmt	DASHBOARD > FortiSIEM Dashboard
Dashboard By Function > Fortinet Security Fabric	DASHBOARD > Fortinet Security Fabric

Analytics

Flash Element	HTML5 Element
Real Time Search	ANALYTICS
Historical Search	ANALYTICS
Reports	RESOURCES > Reports
Generated Reports	ANALYTICS > 
Identity and Location Report	DASHBOARD > Click **+** to add new Dashboard and choose **Type** as 'Identity and Location Dashboard'.
Rules	RESOURCES > Rules
Audit	*Currently not available*
Incident Notification Policy	ADMIN > Settings > General > Notification
Remediations	RESOURCES > Remediations
Display Column Sets	*Currently not available*
Filter Column Sets	*Currently not available*

Incidents

Flash Element	HTML5 Element
Incidents	INCIDENT > List View
Tickets	CASE
IPS Vulnerability Map	*Currently not available*

CMDB

Flash Element	HTML5 Element
Topology	*Currently not available*
Devices	CMDB > Devices
Applications	CMDB > Applications
Users	CMDB > Users
Business Services	CMDB > Business Services
Networks	RESOURCES > Networks
Watch Lists	RESOURCES > Watch Lists
Protocols	RESOURCES > Protocols
Event Types	RESOURCES > Event Types
Malware Domains	RESOURCES > Malware Domains
Malware IP	RESOURCES > Malware IPs
Malware URLs	RESOURCES > Malware URLs
Malware Processes	RESOURCES > Malware Processes
CMDB Reports	CMDB > CMDB Reports
Country Groups	RESOURCES > Country Groups
Malware Hash	RESOURCES > Malware Hash

Flash Element	HTML5 Element
Default Password	RESOURCES > Default Password
Anonymity Networks	RESOURCES > Anonymity Networks
User Agents	RESOURCES > User Agents

Admin

Flash Element	HTML5 Element
Admin > Startup	*Not available*
Admin > Setup Wizard > Organizations	ADMIN > Setup > Organizations
Admin > Setup Wizard > Windows Agents	ADMIN > Setup > Windows Agents
Admin > Setup Wizard > Credentials	ADMIN > Setup > Credentials
Admin > Setup Wizard > Discovery	ADMIN > Setup > Discovery
Admin > Setup Wizard > Pull Events	ADMIN > Setup > Pull Events
Admin > Setup Wizard > Monitor Change/Performance	ADMIN > Setup > Monitor Performance
Admin > Setup Wizard > Synthetic Transaction Monitoring	ADMIN > Setup > STM
Admin > Device Support > Device/App Types	ADMIN > Device Support > Device/App
Admin > Device Support > Event Attribute Types	ADMIN > Device Support > Event Attribute
Admin > Device Support > Event Types	ADMIN > Device Support > Event
Admin > Device Support > Parsers	ADMIN > Device Support > Parser
Admin > Device Support > Performance Monitoring	ADMIN > Device Support > Monitoring
Admin > Device Support > Custom Properties	ADMIN > Device Support > Custom Property
Admin > Device Support > Dashboard Columns	*Currently not available*
Admin > Collector Health	ADMIN > Health > Collector Health

Flash Element	HTML5 Element
Admin > Cloud Health	ADMIN > Health > Cloud Health
Admin > Elasticsearch health	ADMIN > Health > Elasticsearch health
Admin > General Settings > System	ADMIN > Settings > System
Admin > General Settings > Analytics	ADMIN > Settings > Analytics
Admin > General Settings > Discovery	ADMIN > Settings > Discovery
Admin > General Settings > Monitoring	ADMIN > Settings > Monitoring
Admin > General Settings > UI	ADMIN > Settings > System > UI
Admin > General Settings > Email Template	ADMIN > Settings > System > Email
Admin > General Settings > Event Handling	ADMIN > Settings > Event Handling
Admin > General Settings > Kafka Config	ADMIN > Settings >System > Kafka
Admin > General Settings > External Authentication	ADMIN > Settings > General > Authentication
Admin > General Settings > Integration	ADMIN > Settings > General > Integration
Admin > General Settings > External Lookup	ADMIN > Settings > System > Lookup
Admin > General Settings > Escalation Policy	ADMIN > Settings > General > Escalation
Admin > Discovery Results	ADMIN > Setup > Discovery > History
Admin > License Management	ADMIN > License > License
Admin > Usage Information	ADMIN > License > Usage
Admin > Role Management	ADMIN > Settings > Role
Admin > Maintenance Calendar	ADMIN > Setup > Maintenance
Admin > Event DB Management	*Currently not available*
Admin > Data Update	ADMIN > Data Update

FortiSIEM Deployment Scenarios

FortiSIEM can be deployed in Enterprise and Service Provider environments in a highly scale-out fashion.

Enterprise deployment

Enterprise deployments with Supervisor and no Collector

Enterprise deployment without Collector (Supervisor only) is the simplest setup where:

- Logs are sent to the Supervisor.
- Test Connectivity, Discovery performance monitoring, and Event pulling, (for example: Cloud Services, WMI based Windows log Collection, etc.) are all done from the Supervisor – Go to **ADMIN** > **Setup** > **Credential** and **ADMIN** > **Setup** > **Discovery**.

This setup has the following drawbacks:

- Does not scale up when a large number of devices must be monitored or high EPS needs to be handled. This can be solved by deploying Workers – see here.
- Logs cannot be collected efficiently from devices across the Internet. Devices cannot be monitored across the Internet. This is because of latency and security issues over Wide Area Networks. This can be solved by deploying Collectors – see here.
- FortiSIEM Agents cannot be used as they need Collectors – see here.

Enterprise deployment with Supervisor and Worker but no Collector

The scalability issue above can be resolved by deploying Worker nodes. To add a Worker node:

1. Install a Worker node.
2. Add the Worker to the Supervisor from **ADMIN** > **License** > **Nodes** > **Add**.

In this case:

- Logs can be sent to the Supervisor or Workers. Sending to Workers is recommended since you can load balance across multiple Workers.
- Test Connectivity and Discovery is always done from Super.
- However, Performance monitoring and Event pulling jobs (for example: Cloud Services, WMI based Windows log Collection and so on) are done by the Worker nodes in addition to the Supervisor nodes. After Test connectivity and Discovery, Supervisor node distributes the jobs to the Workers. When a new Worker is added to the FortiSIEM Cluster, jobs are re-distributed to the Workers.

Although it provides scalable event handling, this system has the following shortcomings:

- Logs cannot be collected efficiently from devices across the Internet. Devices cannot be monitored across the Internet. This is because of latency and security issues over Wide Area networks. This can be solved by deploying Collectors – see here.
- FortiSIEM Agents cannot be used, because they need Collectors – see here.

Enterprise deployments with Supervisor, Worker and Collector

This solution provides the flexibility of log collection and performance across the Internet and behind firewalls. It also provides even more scalability because the Collectors, instead of the Workers, parse events.

To add a Collector node:

1. Go to **ADMIN** > **Setup** > **Collector** and create a Collector in the Supervisor.
2. If you have Workers, define the Workers that the Collectors will upload to (Go to **ADMIN > Settings > System > Worker Upload**).
3. If you are not using Workers you should define the Supervisor IP or DNS name of the Supervisor (Go to **ADMIN > Settings > System > Worker Upload**).
4. Install a Collector.
5. Register the Collector to the Supervisor using any FortiSIEM user credential with Admin privileges (see **CMDB** > **User**). The built-in admin credential will work. During registration, the Collector will get the Workers to upload events to.

In this case:

- Logs can be sent to Collectors (preferred). However, they can be sent to Workers or Super as well. Collectors will upload parsed logs to the Workers in a load-balanced fashion.
- For Test Connectivity and Discovery, choose the Collector for the job. Collectors will collect events and send them Workers in a load-balanced fashion.

In this configuration, you can add FortiSIEM Windows and Linux Agents:

1. Go to **CMDB** > **User** > **Add** and create an Agent User for Agents to register to the Supervisor node.
2. Install the Agents and register them to the Supervisor using the Agent user credential created in the previous step.
3. Define the Agent Monitoring templates.
4. Assign templates to the Agents and choose Collectors from the set created earlier.

Agents will send logs to the Collectors in a load-balanced manner. Collectors can then send to Workers in a load-balanced manner. This enables log collection in a geographically distributed and scalable manner.

Service Provider deployment

In a Service Provider deployment, there can be one or more Organizations. Devices and logs are kept logically separated for two Organizations.

Note: **It is very important to assign devices and logs to the correct Organization in FortiSIEM.**

A FortiSIEM Service Provider deployment consists of:

- Supervisor node
- Worker nodes for scalability
- Collector nodes for remote data collection
- Windows/Linux Agents for richer data collection without remote admin credentials

While Supervisor, Workers, and Agents are shared infrastructure across Organizations, Collectors may be present and may be dedicated or shared.

This section provides details on how various infrastructure components are deployed, with an eye towards assigning devices and logs to the right Organization.

Service Provider deployment - Organizations with dedicated Collector

In this case, Organization has one of more Collectors that belong to that Organization only. This is suited for large Organizations.

Setup

1. Create Organizations as follows:
    a. Log in to Super-Global Organization.
    b. Go to **ADMIN** > **Setup** > **Organization** and create an Organization.
    c. Define Admin credentials (for Collector registration) and Agent credentials (for FortiSIEM Agent registration).
    d. Add Collectors to that Organization.
2. Install the Collectors and register them to Supervisor. Use any Organization Admin credentials defined in **ADMIN** > **Setup** > **Organization**, to register the Collector.

Operations

Collecting logs via Agents

1. Install Agents and register them to the Supervisor. Use the Agent credentials for the Organization that the Agents belong to.
2. Define the Agent Monitoring templates. Assign the templates to agents and designate Collectors belonging to the specific Organization.

Agents will send logs to Collectors in a load-balanced fashion. Since Agents are configured with the Organization ID, they include the Organization in every log. This information is used by Collectors to assign devices and logs to the correct Organization.

Collecting logs without Agents

Configure devices to send logs to the Organization's Collectors. Since these collectors belong to one organization, it assigns received devices and logs to that Organization.

Discovery and Performance monitoring by IP Address range

Log in to the specific Organization and:

1. Define the credential.
2. Do Test Connectivity and Discovery using a specific Collector.

Event Pulling for Cloud Services

Log in to the specific Organization and:

1. Define the credential.
2. Do Test Connectivity and Discovery using a specific Collector.

Service Provider deployment - Organizations with shared multi-tenant Collector

It may not be economically viable for smaller Organizations to deploy their own collectors. But Collectors may be needed to deploy Agents and to scale out data collection across many smaller Organizations managed under the same FortiSIEM.

Setup

In this setup, special multi-tenant Collectors must be defined under the Super/Local Organization as follows:

1. Log in to the Super-Local Organization. This is a built-in organization meant for the Service Provider's use only .
2. Go to **ADMIN** > **Setup** > **Collector** and add Collectors to that Organization. These are called multi-tenant Collectors as they handle devices and logs from multiple Organizations.
3. Install the Collectors and register them to the Supervisor. Use any Full Admin user in **CMDB** > **User** to register the Collector.

Then create Organizations as follows:

1. Log in to Super-Global Organization.
2. Go to **ADMIN** > **Setup** > **Organization** and create an Organization.
3. Add Agent credentials for Agent registration.
4. Define the Include/Exclude IP Address ranges if devices belonging to various Organizations are going to send logs to multi-tenant Collectors.

Operations

Collecting logs via Agents

1. Install Agents and register them to the Supervisor. Use the Agent credentials for the Organization that the Agents belong to.
2. Define Agent Monitoring templates. Assign templates to Agents and designate multi-tenant collectors belonging to the Super-local Organization.

FortiSIEM Agents will send logs to multi-tenant Collectors in a load-balanced fashion. Since Agents are configured with the Organization ID, they include the Organization in every log. This information is used by multi-tenant Collectors to assign devices and logs to the correct Organization.

Collecting logs without Agents

Configure devices to send logs to the multi-tenant Collectors. Make sure the reporting device IP matches the Include/Exclude IP ranges defined for that Organization in **ADMIN** > **Setup** > **Organization**. A multi-tenant Collector uses the reporting device IP to assign devices and logs to the correct Organization.

Discovery and Performance monitoring by IP Address range

This is possible so long as the IP Address range matches the Include/Exclude IP ranges defined for that Organization in **ADMIN** > **Setup** > **Organization**.

This can be done in two ways:

1. (Recommended) From Super/Global Organization:
    a. Define the credential.
    b. Do Test Connectivity and Discovery. We will automatically choose a multi-tenant collector

2. Alternatively, log in to the Super/Local Organization and:
    a. Define the credential.
    b. Do Test Connectivity and Discovery using a specific multi-tenant Collector.

Approach #1 is recommended because the Collector is automatically chosen.

Event Pulling for Cloud Services

From Super/Global Organization:

1. Define the credential. Specify the Organization in the credential.
2. Perform Test Connectivity and Discovery.
   FortiSIEM will automatically choose a multi-tenant Collector.

Collecting logs from multi-tenant devices

A shared Collector also enables you to collect logs from multi-tenant devices such as FortiGate with Virtual Domains (VDOM). This assumes that the logs contain an attribute (such as FortiGate VDOM) that enables FortiSIEM to classify logs from multi-tenant devices to different Organizations.

From a Super/Global Organization:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping**.
2. Click **New** and enter the Organization mappings for the discriminating log attribute (such as VDOM).
3. Click **Save**.

FortiSIEM Event Attribute to CEF Key Mapping

FortiSIEM forwards externally received logs and internally generated events/incidents to an external system via CEF formatted syslog.

FortiSIEM Event Attribute to CEF Key Mappings

FortiSIEM event attributes	CEF key	Notes
appCategory	cat	
appTransportProto	app	
count	cnt	
destAction	act	
destDomain	destinationDnsDomain	
destIntfName	deviceOutboundInterface	
destIpAddr	destinationTranslated Address	
destIpAddr	dst	

FortiSIEM event attributes	CEF key	Notes
destIpPort	destinationTranslatedPort	
destIpPort	dpt	
destMACAddr	dmac	
destName	dhost	
destServiceName	destinationServiceName	
destUser	duser	
destUserId	duid	
destUserPriv	dpriv	
deviceIdentification	deviceExternalId	
deviceTime	rt	
domain	deviceDnsDomain	
endTime	end	
errReason	reason	
extEventId	externalId	
fileAccess	filePermission	
fileId	fileId	
fileModificationTime	fileModificationTime	
fileName	fname	
filePath	filePath	
fileSize	fsize	
fileType	fileType	
hashCode	fileHash	
hostIpAddr	dvc	
hostMACAddr	dvcmac	

FortiSIEM event attributes	CEF key	Notes
hostName	dvchost	
httpCookie	requestCookies	
httpMethod	requestMethod	
httpReferrer	requestContext	
httpUserAgent	requestClientApplication	
infoURL	request	
ipProto	proto	
msg	msg	
postNATHostIpAddr	deviceTranslatedAddress	
postNATSrcIpAddr	sourceTranslatedAddress	
postNATSrcIpPort	sourceTranslatedPort	
procId	dvcpid	
procName	deviceProcessName	
recvBytes	in	
sentBytes	out	
serviceName	sourceServiceName	
srcDomain	sourceDnsDomain	
srcIntfName	deviceInboundInterface	
intfName	deviceInboundInterface	
srcIpAddr	src	
srcIpPort	spt	
srcMACAddr	smac	
srcName	shost	
srcUser	suser	

FortiSIEM event attributes	CEF key	Notes
srcUserPriv	spriv	
startTime	start	
targetProcId	dpid	
targetProcName	dproc	

Mapping to CEF Custom Attributes

FortiSIEM event attributes	CEF key	Notes
supervisorName	cs1Label = SupervisorHostName	
customer	cs2Label = CustomerName	
incidentDetail	cs3Label=IncidentDetail	
ruleName	cs4Label=RuleName	
inIncidentEventIdList	cs5Label=IncidentEventIDList	
phCustId	cn1Label=CustomerID	
incidentId	cn2Label=IncidentID	
	type	0 = base event; 2 = incident

Differences in Analytics Semantics between EventDB and Elasticsearch

FortiSIEM can run on EventDB, its own proprietary NoSQL database, or Elasticsearch. To make analytics work correctly in both environments, it is important to understand the differences. Analytics includes real-time search, historical search, and rule correlation.

FortiSIEM rule correlation and real-time search work identically in both environments, because computation is done in-memory. The database is not used.

However, for historical search, results are obtained from the database and the following differences exist in the area of string comparisons, primarily because of the way Elasticsearch, a third-party product, works.

- Issues
- Example 1 - Matching Event Types
- Example 2 - Matching Raw Messsages
- Elasticsearch Support for Regex

Issues

1. EventDB is a sub-string match while Elasticsearch is a word-based match with white space as a delimiter between words. This means that the EventDB will find a match anywhere in the string. For Elasticsearch, you must explicitly include wildcard characters. This affects string operations involving the following operators: =, IN, CONTAIN, REGEXP and their inverse versions: !=, NOT IN, NOT CONTAIN and NOT REGEXP.
2. For Elasticsearch query, if an expression is defined as a display parameter and the expression includes aggregate functions, then the aggregates must be separately added as display parameters. For example, if a user wants to display an expression such as *100 - (100.0 * SUM(System Downtime))/SUM(Polling Interval)*, then the user must also add *SUM(System Downtime)* and *SUM(Polling Interval)* to the list of display parameters.
3. Sorting does not work for
   - LAST and FIRST operators when the operand is a non-Date type.
   - HourOfDay and DayOfWeek operators
4. When sorting is used for multiple key values, e.g. Group By Source IP, Destination IP, COUNT(*) DESC, then the results are presented by the last attribute (e.g. Destination IP). FortiSIEM EventDB sorts by all the fields taken as a tuple, e.g. (Source IP, Destination IP). See
   https://www.elastic.co/guide/en/elasticsearch/reference/current/search-aggregations-bucket-terms-aggregation.html
   See also Example 1 - Matching Event Types and Example 2 - Matching Raw Messsages
5. Elasticsearch (and lucene) do not support full Perl-compatible regex syntax.
   https://www.elastic.co/guide/en/elasticsearch/reference/current/regexp-syntax.html
   The table in Elasticsearch Support for Regex lists what is supported and workaround suggestions.

Example 1 - Matching Event Types

Suppose you are trying to match PH_DEV_MON for Event Type:

- In EventDB, you can write any of the following:
  - *EventType CONTAIN PH_DEV_MON*
  - *EventType CONTAIN _DEV_MON*
  - *EventType CONTAIN ph_dev_MON*
  - *EventType CONTAIN _DEV_mon*
- In Elasticsearch, you can write any of the following. Note that since event types do not end with PH_DEV_MON, you have to add the wildcard ".*" at the end.
  - *EventType CONTAIN PH_DEV_MON.**
  - *EventType CONTAIN .*_DEV_MON.**

Suppose you are trying to exactly match PH_DEV_MON_INTF_UTIL for Event Type:

- In EventDB, you can write any of the following:
  - *EventType = PH_DEV_MON_INTF_UTIL*
  - *EventType = ph_dev_mon_intf_util*
  - *EventType = ph_dev_MON_INTF_UTIL*
- In Elasticsearch, you must write:
  - *EventType = PH_DEV_MON_INTF_UTIL*

Example 2 - Matching Raw Messsages

Suppose the raw message is:

- *XYZ info="ABB123CCC"*

To match this raw message:

- In EventDB, you can write any of the following:
  - *Raw Message REGEX bb[0-9]*c*X?*
  - *Raw Message REGEX Abb[0-9]*c*X?"$*
- In Elasticsearch, you can write any of the following:
  - *Raw Message REGEX BB[0-9]*c*X?*
  - *Raw Message REGEX .*BB[0-9]*c*X?*

Elasticsearch Support for Regex

Regex syntax	Elasticsearch support	Workaround (if any)
. ? + * |	Yes	
?? +? *?	No	Not possible
()	Yes	
(?:)	No	Use () instead. Replace (?:com|net|org) with (com|net|org)
[]	Yes	
[^]	Yes	
{}	Yes	
{}?	No	Not possible
^ $	No	Elasticsearch requires full match. Add .* for partial match.

Regex syntax	Elasticsearch support	Workaround (if any)
\d \D \w \W \s \S	No	Replace \d with [0-9] Replace \D with [^0-9] Replace \w with [a-zA-Z0-9_] Replace \W with [^a-zA-Z0-9_] Replace \s with [\t \n \r] Replace \S with [^ \t \n \r]
\b \A \Z	No	Not possible
(?i:)	No	Not possible
\1 \2	No	Not possible
(?=)	No	Not possible
(?!)	No	Not possible
(?#)	No	Not possible
Case sensitive match on keyword attributes	No	If an attribute is not a keyword, it will be stored as lower case in Elasticsearch. Use abc or [aA][bB][cC]
Entire raw message search	No	Elasticsearch tokenizes string attributes using space as tokens. So, it is not possible to search the whole string. Use CONTAIN operator.

FortiSIEM Event Categories and Handling

This topic provides a brief description of various types of event categories in FortiSIEM.

System Event Category	Description	Counted in EPS License	phstatus -a outout	Stored in DB?
0	External events and not flow events (e.g. syslog, SNMP Trap, Event pulling)	Yes	EPS	Yes
1	Incidents (events that begin with PH_RULE)	No	EPS INTERNAL	Yes

System Event Category	Description	Counted in EPS License	phstatus -a outout	Stored in DB?
2	FortiSIEM Audit Events (events that begin with PH_AUDIT)	No	EPS INTERNAL	Yes
3	FortiSIEM Internal system logs, free format	No	EPS INTERNAL	Yes
4	External flow events (Netflow, Sflow)	Yes	EPS	Yes
5	FortiSIEM Internal health events for summary dashboards	No	EPS INTERNAL	Yes
6	FortiSIEM Performance Monitoring events (events that begin with PH_DEV_MON)	Yes	EPS PERF	Yes
7	AO Beaconing events	No	EPS INTERNAL	Yes
8	FortiSIEM Real Time Performance Probe Events	No	EPS INTERNAL	No
99	FortiSIEM Internal Rule Engine	No	EPS INTERNAL	No

FortiSIEM Charts and Views

FortiSIEM provides a variety of charts and maps to better help you understand and analyze your incident data. You can access these charts and views from the widget dashboard settings (see Modifying widget information display) or by clicking the  drop-down icon in the ANALYTICS page (see Viewing Historical Search Results).

Chart/View	Description	Display Settings	Requirements
Aggregation (Bar) View	Displays data similar to a bar chart.	Select the Aggregate Field (**Column**) to display and their colors. You can also reverse the color map.	At least one numeric column is required.

Chart/View	Description	Display Settings	Requirements
Aggregations (Donut) View	Displays data similar to a pie chart.	Select the Aggregate Field (**Column**) to display since the report may have multiple Aggregate Fields.	At least one numeric column is required.
Choropleth Map (Region Map)	A thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map.	Select the **Location** and **Value** from the drop-down lists.	At least one location column is required. Configure **Google Maps API Key** in **ADMIN > Settings > System > UI** See UI Settings.
Chord View	A graphical method of displaying the inter-relationships between data in a matrix. The data is arranged radially around a circle with the relationships between the data points typically drawn as arcs connecting the data.	Select the incident **Source**, **Target**, and **Value** from the drop-down lists.	At least two key columns and one numeric column are required.
Clustered Bubble Chart	You can use a bubble chart instead of a scatter chart if your data has three data series that each contain a set of values. The sizes of the bubbles are determined by the values in the third data series.	Select the **Column** from the drop-down list.	At least one numeric column is required.
Column Trend View	Displays positive or negative trends in the data.	None	None

Chart/View	Description	Display Settings	Requirements
Combo View	Displays an aggregate field and a line chart.	Select the Aggregate Field (**Column**) to display and the colors. You can also reverse the color map and set color thresholds.	One GROUP BY column and one aggregation column is required.
Geo Map (Map View)	Displays the IP addresses in a geographic map.	Public or private IP addresses with location defined in **ADMIN > Settings > Discovery > Location**. See Setting Location.	At least one numeric column is required.
Heat Map	Displays two event attributes and a numerical aggregate value.	Select the Heat map coordinates **X** and **Y**, and an associated **Value**.	At least two key columns and one numeric column are required.
Line View	Data displays as a line (Line Chart).	Select the **Column** to display from the drop-down list. You can choose to display the data as a **Stacked Area** or a **Line View** (non-stacked).	One GROUP BY column and one aggregation column is required.
Map View	See Geo Map.		

Chart/View	Description	Display Settings	Requirements
Pivot Table View	A table of statistics that summarizes the data of a more extensive table.	Select the **Key Column** and **Value Column** from the drop-down lists.	At least two GROUP BY columns and one numeric column are required.
Sankey Diagram	A specific type of flow diagram, in which the width of the arrows is shown proportionally to the flow quantity.	Select the **Source**, **Target**, and **Value** from the drop-down lists.	At least two GROUP BY columns and one numeric column are required.
Scatter Plot	Plots two aggregate fields.	Select two aggregate fields, **X** and **Y**. Select the **Size** of the sample.	At least two numeric columns are required.
Single Line	Displays a single value.	Select the **Text** or **Gauge** view and the **Column** and **Row**. For **Gauge**, you can also select a color-coded **Range**.	At least one numeric column is required.
Sunburst Chart	Visualizes hierarchical data, depicted by concentric circles. The circle in the center represents the root node, with the hierarchy moving outward from the center.	Select the **Rank1**, **Rank2**, and **Count** from the drop-down lists.	Only one column can be used in one rank.

Chart/View	Description	Display Settings	Requirements
Table View	Displays data in a tabular format.	You can choose to display the bar chart (**Show Bar**), the event type (**Show Event Type**), and the count (**Count**). Set the colors for the bar chart or reverse the color map.	None
Tree Map	Displays columns in a Tree Map.	Select the Tree Map **Ranks** and the **Count** attributes from the drop-down lists.	Only one column can be used in one rank.

Configuring FortiSIEM Application Server for Proxy Connectivity

Follow these steps to configure the FortiSIEM application server to support proxy connectivity for Integrations (for example, Incidents, CMDB, Indicators of Compromise).

1. Edit the Glassfish configuration file using your favorite text editor: `/opt/glassfish/domains/domain1/config/domain.xml`.
2. Replace the `172.30.57.100` host value in the sample configuration to the Proxy Server IP, port and/or username and password in the environment.
3. If no user name and password is required, then remove the `Dhttp.proxyUser` and `Dhttp.proxyPassword` lines from the configuration file..
4. If a proxy exclusion for certain destination hosts is required, then add the `http.nonProxyHosts` configuration option to exclude the proxy server. If this is not required, then delete the line.
5. If the proxy server allows only HTTPS, then add 's' to `http`. For example, change `http.proxyHost` to `https.proxyHost`.

The following is a sample configuration:

```
<jvm-options>-Dhttp.proxyHost=172.30.57.100</jvm-options>
<jvm-options>-Dhttp.proxyPort=3128</jvm-options>
<jvm-options>-Dhttp.proxyUser=foobar</jvm-options>
<jvm-options>-Dhttp.proxyPassword=password</jvm-options>
<jvm-options>-Dhttp.nonProxyHosts=172.30.59.130|localhost|update.fortiguard.com</jvm-
    options>
```

High Performance Network Security