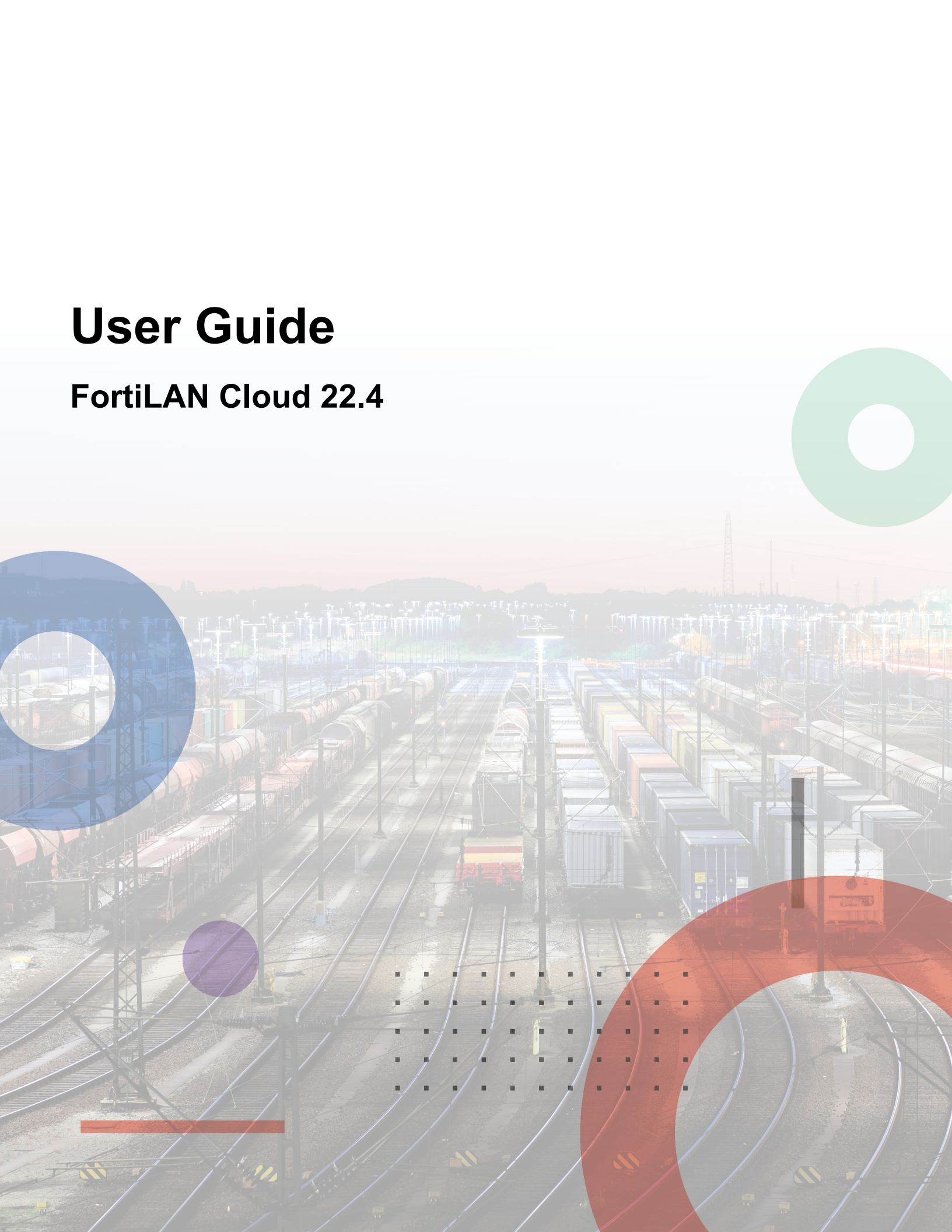


User Guide

FortiLAN Cloud 22.4



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Email: techdoc@fortinet.com

March 17, 2023

FortiLAN Cloud 22.4 User Guide

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TABLE OF CONTENTS

Change log	6
Introduction	7
User Interface Overview	9
Network Summary Dashboard	14
Licensing	15
Signing-on for FortiLAN Cloud	19
Registering on FortiCloud	19
Accessing FortiLAN Cloud	26
External IDP Authentication	27
Modifying a FortiLAN Cloud account	29
Activating the multi-tenancy feature	30
Adding and Managing Sub-Accounts	31
Adding Sub Account Users	33
Enabling two-factor authentication for FortiLAN Cloud	35
Removing a user from a FortiLAN Cloud account	36
Managing networks on FortiLAN Cloud	36
Adding a Network	36
Cloning a Network	37
Managing FortiAP	38
Getting started	39
Adding a FortiAP device to FortiLAN Cloud with a key	40
Adding a FortiAP device to FortiLAN Cloud without a key	40
Deploying a FortiAP device to a network	42
Moving a FortiAP between accounts	43
Monitoring	44
Network (Traffic)	44
Network (Security)	46
APs	47
Radios	48
Clients	49
Neighbour APs	50
BLE Devices	51
Access Points	52
Viewing the FortiAP status	52
Upgrading a FortiAP device	59
Rebooting a FortiAP device	60
Activating/Deactivating a FortiAP device	60
Configuring FortiAP settings	60
Changing FortiAP settings	61
Overriding FortiAP Settings	62
Undeploying a FortiAP device	64
Creating a Site	64
Adding a floor plan to FortiLAN Cloud	66
Setting a FortiAP device on a map or floor plan	66

Tools	67
Configuration	77
Adding an SSID to a network	78
Creating the My Captive Portal page	92
Adding a FortiAP platform profile	93
Configuring Scheduled Upgrades	97
Adding a Syslog Profile	98
Configuring SNMP Profile	99
Adding a BLE Profile	100
Enabling Distributed Automatic Radio Resource Provisioning (DARRP)	101
Adding AP tags	103
Configuring MAC access control and MAC filtering	103
Exporting ACL list	104
Adding an L3 Firewall Profile	104
Adding a QoS profile	105
Creating a FortiLAN Cloud group and users	107
Adding a FortiLAN Cloud guest	108
Adding a FortiLAN Cloud guest manager	109
Adding a RADIUS server	109
Adding a Tunnel profile	110
Adding a Schedule Profile	112
Configuring Wireless Intrusion Detection and Suppression (WIDS)	113
Network Settings	117
Enabling Bonjour Relay	119
Enabling FortiPresence	120
Viewing the history of configuration changes	122
Logs	124
Displaying logs	124
Exporting logs	124
Wireless Log Categorization and Storage Control	125
Reports	126
Customizing an AP network summary report	126
Scheduling an AP network summary report	126
Managing AP network history reports	127
Generating a PCI compliance report for an AP network	127
Managing FortiSwitch	129
Getting Started	129
Supported models	130
Using the correct switch management mode for cloud management	130
Checking your Cloud configuration	130
Enabling and disabling cloud management	131
Deploying FortiSwitch device to a network	132
Moving a FortiSwitch device between networks/accounts	132
Dashboard	133
Topology	135
Detail Topology view	136
Switches	138
Deployed Switches	139

Switch Tags	154
Configuration	156
Zero Touch Configurations	158
Scheduled Upgrade	178
Configuration Backup/Restore	181
Ports	186
Interfaces	187
Trunk/Link Aggregation	192
VLANs	194
VLAN Templates	197
Packet Capture Profiles	200
RADIUS Authentication	205
TACACS Authentication	207
User Groups	210
Port Security	213
Network	214
IGMP	215
LLDP	215
System Interfaces	216
Monitor	217
Zero Touch Config Status	219
Scheduled Upgrade Status	220
Modules	221
PoE Status	221
MAC Addresses	222
LLDP	222
STP	223
DHCP-Snooping	224
IGMP-Snooping	224
System Log	224
Audit Log	225
Event Log	225
Packet Capture Files	226
802.1x Status	226
802.1x Session	226
Switch Statistics	227
Switch Port Statistics	227
Routing Table	229
Link Monitor	230
My Account	230
Account Management	231
Cloud Management License	231
Switch Inventory	232
API Access	234
Frequently asked questions	237

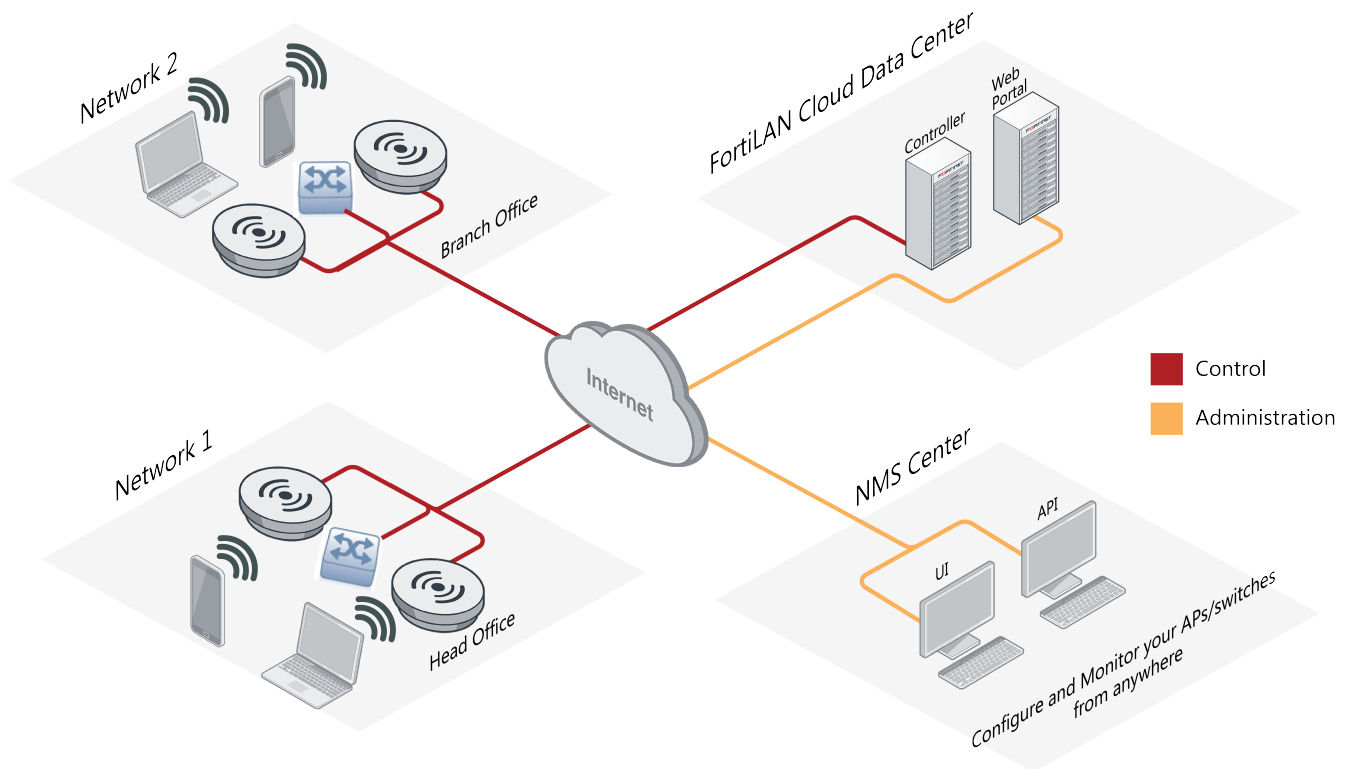
Change log

Date	Change description
2022-12-10	FortiLAN Cloud 22.4 release document.
2023-01-03	Updated Licensing .
2023-02-03	Modified the domain name to <i>fortilan.forticloud.com</i> .
2023-03-17	Modified commands in Getting Started .

Introduction

FortiLAN Cloud is a unified management platform for standalone FortiAP and FortiSwitch deployments. FortiLAN Cloud provides configuration management and monitoring control for a handful of devices and can scale up to thousands of devices across multiple sites.

The following image shows the FortiLAN Cloud overview including the network management system (NMS) and administration communications.



FortiAP

FortiLAN Cloud centralizes the life-cycle management of your standalone FortiAP deployment with a simple, intuitive, and easy-to-use cloud interface that is accessible from anywhere at any time. With FortiLAN Cloud, you can deploy, configure, and manage your FortiAP devices. FortiLAN Cloud also offers enhanced visibility, monitoring, reporting, and analytics features for your FortiAP devices. FortiLAN Cloud also supports the FortiAP-S and FortiAP-U series which combine the elements of universal threat protection (UTP) protection at the network edge.

If you are interested in cloud management of FortiAP devices that are already connected to FortiGate devices, then use [FortiGate Cloud](#), not FortiLAN Cloud.

FortiSwitch

FortiLAN Cloud provides management as a service (MaaS) for secure switching infrastructure deployed with FortiSwitch devices. It provides a centralized discovery, visibility, and configuration management solution without the need of on-

premise hardware, software, or management overhead. FortiLAN Cloud manages FortiSwitch devices in standalone mode.

REST API

REST (REpresentational State Transfer) is a modern, scalable (but not high performance) client-server based RPC technique using existing HTTP protocol methods (such as GET, POST, PUT, DELETE) on server resources (identified by URLs) and transferring the resources in either XML / JSON / HTML representation. FortiLAN Cloud REST API provides functions similar to its GUI functions, both configuration and monitoring are supported over REST API. The FortiLAN Cloud REST APIs are integrated with FortiCloud IAM users, you can use REST APIs as a local user or an IAM user.

FortiLAN Cloud SKUs

For license ordering details such as stock keeping unit (SKU) codes, see the [FortiLAN Cloud Data Sheet](#).



FortiAP-S and F-Series or later FortiAP-U family access points communicate with FortiCare/FortiGuard service to get UTP updates (for AV, IPS engine and database) when its FortiGuard subscription is valid.

Regions

Data centers are located in Canada and Germany for better performance and GDPR compliance for international customers. FortiLAN Cloud includes the Global, Europe, and Japan regions.

Network Port Numbers

The following table lists the network port numbers used by FortiLAN Cloud.

Purpose	Protocol	Port number
Customer UI and API access	HTTPS	TCP/443
FortiAP initial discovery	HTTPS	TCP/443
FortiAP CAPWAP (configuration, event logs, and statistics)	CAPWAP	UDP/5246, UDP/5247
FortiAP UTP logs	—	TCP/514
FortiAP firmware download	HTTPS	TCP/8443
FortiAP FortiGuard services (FortiAP-S/FortiAP-U series)	—	UDP/53, UDP/8888
FortiAP to FortiPresence	—	UDP/4013
FortiSwitch	—	TCP/443, TCP/8443

User Interface Overview

This section covers the following UI topics:

- [FortiLAN Cloud Home page on page 9](#)
- [FortiLAN Cloud Network page on page 13](#)

FortiLAN Cloud Home page

The FortiLAN Cloud home page view can be filtered based on the following criteria.

- **Summary:** This panel displays data for both FortiSwitches and FortiAPs deployed in all networks in your account.
- **Wireless:** This panel displays data for wireless networks managed by FortiLAN Cloud.
- **Switch:** This panel displays data for FortiSwitch networks managed by FortiLAN Cloud.

Services ▾ Support ▾
fapc.test01@gmail.com

Include Sub-accounts
+ Add Network

Managed network elements

Online 779
Offline 6,636
7415

Client devices connected to

Switches 890
Access Points 12
902

High CPU Utilization

No devices with high CPU utilization

High Memory Usage

Switches 0
Access Points 4
4

WIRELESS

Access Points

4252
APs

Online 9
Offline 4243

SSIDs

877
SSIDs

Open 335
Encrypted 542

Clients

12
Clients

2.4 GHz 0
5 GHz 12

Data Usage

60
GB

2.4 GHz 24.44 GB
5 GHz 35.75 GB

Radio 2.4 GHz

5214

0 1 2 5 2

Disable Monitor Offline Poor Fair Good

Radio 5 GHz

4243

0 0 0 0 9

Disable Monitor Offline Poor Fair Good

SWITCH

Switches

3163
Total

Online 770
Offline 2393

PoE Ports Utilized

91.67%

44 / 48

PoE Power Utilized

22.77%

168.5 W / 740 W

Non-PoE Ports Utilized

12.55%

770 / 6134

Losses

1
Total

tx_drops 0 tx_errors 0
rx_drops 1 rx_errors 0

Critical Events
No critical events

Clients
890 devices

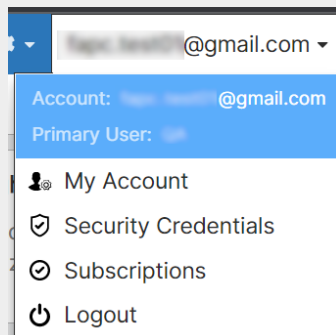
Usage
1.42 K packets/hr

Networks


Name	Sub Account	Switches	Access Points	SSID & Users	Actions
1111	Default	203 / 46	No APs		...


1

To perform the following tasks, select the drop-down menu from the displayed user name and click **My Account**.



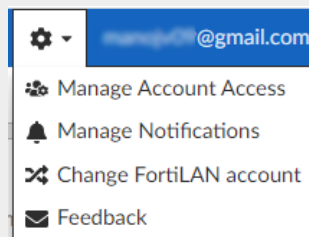
- [Modifying a FortiLAN Cloud account on page 29](#)
- [Changing the password of a FortiLAN Cloud account](#)
- [Enabling two-factor authentication for FortiLAN Cloud on page 35](#)
- [Removing a user from a FortiLAN Cloud account on page 36](#)
- [Activating the multi-tenancy feature on page 30](#)

To view what's new in the current release, click **FortiLAN Cloud Feature Reference**. 

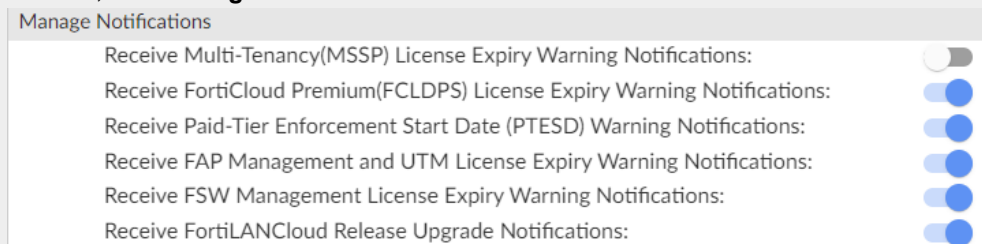
To view the license status, click **License Status**. 

To access the FortiLAN Cloud documentation, click **Product Documentation**. 

To access the following additional options, click **Settings**.



- To add and manage Email and external IDP authenticated users, click **Manage Account Access**.
- To manage (enable/disable) email alert preferences for specific notifications for your account, click **Manage Notifications**.

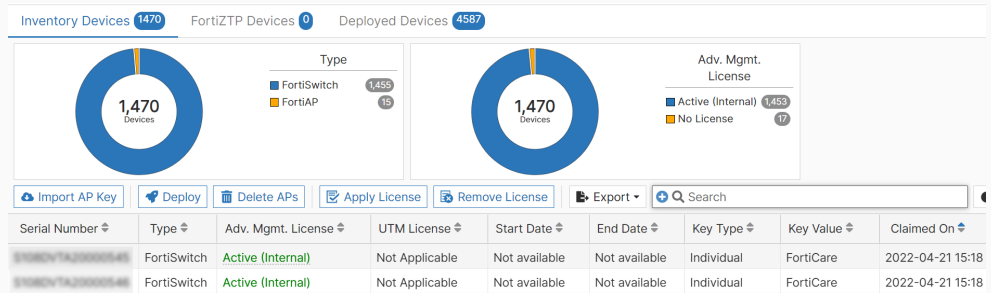


- To switch to a different account, select **Change FortiLAN Account**.
- To send feedback to the FortiLAN Cloud team, select **Feedback**.

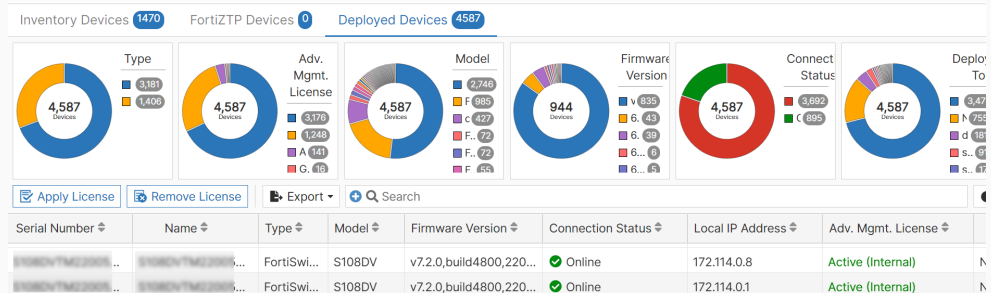
2

To deploy and manage a device in FortiLAN Cloud, click **Devices**.

- The **Devices** tab displays the claimed/un-deployed devices and allows you to deploy them.

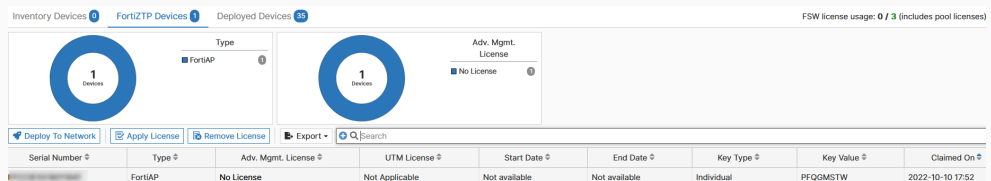


- The **Deployed Devices** tab displays fully deployed devices to networks or external ACs.



Note: If the **Deployed Time** is **Not Available**, it implies that FortiLAN Cloud could not determine the time instant at which the device was deployed to a network.

- The **FortiZTP Devices** tab displays devices deployed to FortiLAN Cloud through FortiZTP. Select one or more devices and click **Deploy to Network** to deploy them to a network. These devices are then moved to the **Deployed Devices** tab after deployment is complete.



You can apply the license to the listed devices, select unlicensed or license-expired devices and click **Apply License**. To remove the applied license, click **Remove License**. To export the device details from all 3 tabs in a CSV, JSON, or text format; click **Export As**. You can select multiple inventory rows at a given time to use the available options.

3

To view statistics and visualization for the overall network including the total number of FortiSwitches and FortiAPs and the data consumed by each.

4


To view FortiAP information and subsequent levels such as AP, radio, client, information on radio health, and SSIDs. Hover over these charts to view details.

5

To view FortiSwitch information and statistics such as number of VLANs, critical events, clients, and data usage.

6

This list shows FortiLAN Cloud networks. To access a FortiLAN Cloud network, click the network name. A separate tab opens for that FortiLAN Cloud network. See [FortiLAN Cloud Network](#) page on page 13.

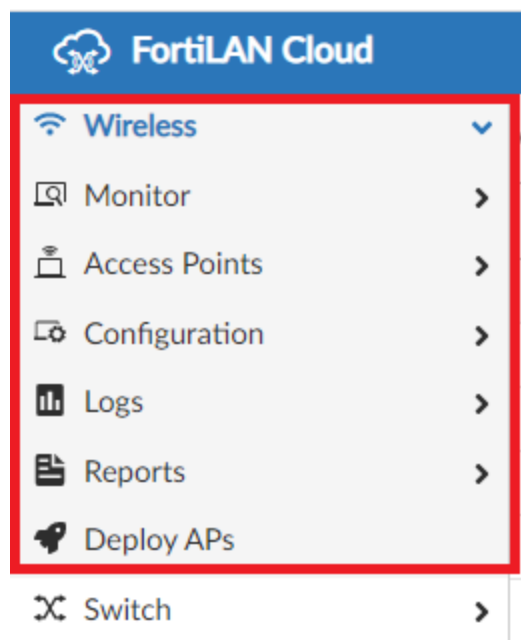
To rename, delete, or clone a FortiLAN Cloud network, click **Actions** . See [Managing networks on FortiLAN Cloud](#) on page 36.

FortiLAN Cloud Network page

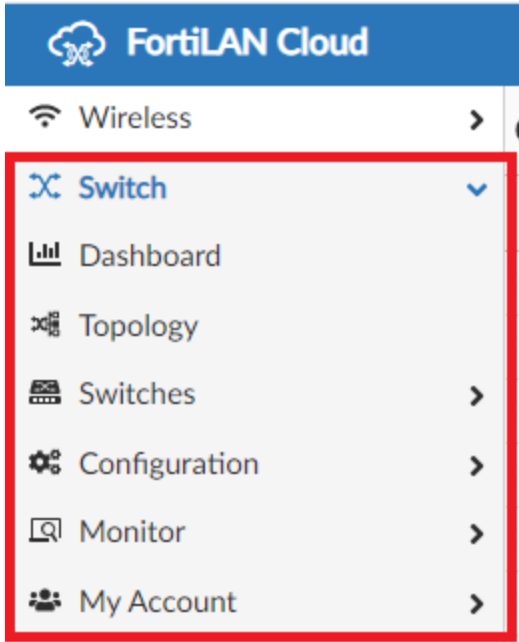
Multiple FortiAPs and FortiSwitches can be managed within a network. For example, an office environment that has multiple floors could have a FortiAP/FortiSwitch network for each floor managing its own set of devices.

For information about adding a network, see [Managing networks on FortiLAN Cloud](#).

For more information on managing the FortiAP devices, see [Managing FortiAP on page 38](#).

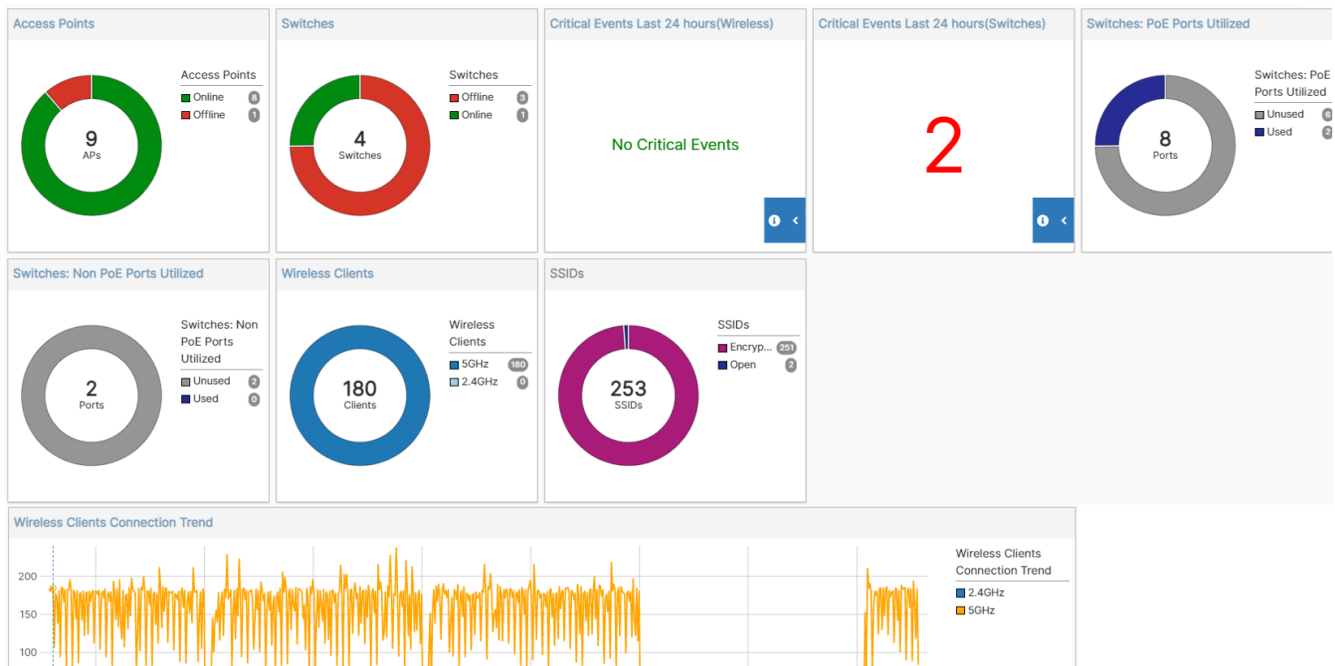


For more information on managing the FortiSwitch devices, see [Managing FortiSwitch on page 129](#).



Network Summary Dashboard


The network summary dashboard combines information from FortiAPs and FortiSwitches managed by FortiLAN Cloud. It displays a series of charts and graphs providing the device count and status, ports utilized, client and SSID details, connection trends, and critical network events. This data is crucial to monitoring and troubleshooting the wireless network elements.



Licensing

FortiLAN cloud offers the following licensing options for product subscriptions. For more information about acquiring licenses, contact the Fortinet *Customer Support* team.

Subscription	Description
Freemium	Free subscription for FortiLAN Cloud.
Device License	A license is bound to each device (FortiAP/FortiSwitch).

A FortiLAN Cloud **Freemium Account** license allows deploying a maximum of 30 unlicensed FortiAPs and 3 FortiSwitches across networks with basic management functions. After the enforcement, you cannot deploy any more unlicensed devices or create/modify networks, and any additional devices (deployed beyond the permissible limit) are un-deployed. Click on the  (warning) icon to view the grace period details and the network/devices in the grace period. An additional 60 days grace period is given to any device with a valid license that is expiring. After the grace period, the system randomly retains (up to) a maximum of 30 freemium FortiAPs and 3 freemium FortiSwitches. Any other FortiAPs/FortiSwitches will not be able to connect to the service but can retain their configuration.

For advanced management, you must purchase a license for each FortiAP and FortiSwitch device, see the [FortiLAN Cloud Data Sheet](#).

Note: FortiAP-U models require an additional license for the Universal Threat Protection feature. You are required to purchase this license in addition to the advanced management license.

Device/Service	Freemium/Unlicensed	Device License
Number of FortiAPs	30	Unlimited
Number of FortiSwitches	3	Unlimited
Number of Networks	3	+1 per deployed/claimed FortiAP or per deployed/claimed FortiSwitch
Number of Sites	3	+1 per deployed FortiAP or FortiSwitch
Device Management	Basic	Advanced
Log retention duration	7 days	1 year
Customer support (24x7 FortiCare)	No	Yes



Additional Networks

- 1 licensed FortiAP (deployed/claimed) allows creating 1 additional network.
- 1 licensed FortiSwitch (deployed/claimed) allows creating 1 additional network.

Additional Sites

- 1 licensed FortiAP/ FortiSwitch deployed in the network allows creating 1 additional site.

The *Combined Default* network is not counted for license enforcement.

Note: Regular email notifications are sent with details of your FortiLAN Cloud subscription tenure and the associated services and offerings. You can manage notifications from the home page, see [FortiLAN Cloud Home page on page 9](#).

The following table includes details about **FortiAP** service offerings.

FortiAP service	Freemium	Licensed
Basic FortiAP management	Yes	Yes
Advanced FortiAP management		
SSID	No	Yes
<ul style="list-style-type: none"> • Blocking intra-SSID traffic • Broadcast Suppression • DHCP Option 82 • Fast BSS Transition (802.11r) • Radio Sensitivity (Rx-SOP) • Probe Response Suppression • Sticky Clients Removal • Protected Management Frames (802.11w) • Voice Enterprise (802.11kv) • L3 Firewall Profile • Assigning dynamic VLAN • MPSK • MPSK Scheduling 		
Platform Profile	No	Yes
<ul style="list-style-type: none"> • Airtime Fairness • AP Scan Threshold • Automatic AP Upgrade upon Connect • Beacon Interval (ms) • DTIM Period • BLE Profile • Configuring Bonjour Relay • Console Login (Platform Profile) • Customizing data rates • DARRP Configuration • Disabling unwanted data rates • Disconnection Reports • DRMA • Duplicate SSID creation • TX Optimization 		
Tools	No	Yes
<ul style="list-style-type: none"> • iPerf Bandwidth Test • Ping Test • TAC Report • Traceroute • Spectrum Analysis 		

FortiAP service	Freemium	Licensed
<ul style="list-style-type: none"> VLAN Probe AP CLI Access ARP Table 		
Tunnel Profile <ul style="list-style-type: none"> GRE/L2TP Tunnels 	No	Yes
AP Management <ul style="list-style-type: none"> Overriding radio profile parameters Problematic Connection Steps (FortiAP status view - Summary) 	No	Yes
QoS Profile <ul style="list-style-type: none"> WMM 	No	Yes
Scheduled Upgrade	No	Yes
SNMP Management	No	Yes
WIDS	No	Yes
Syslog Server Configuration	No	Yes

The following table includes details about **FortiSwitch** service offerings.

FortiSwitch service	Freemium	Licensed
Basic FortiSwitch management	Yes	Yes
Monitoring <ul style="list-style-type: none"> PoE Status System Log Audit Log Event Log Switch Statistics 	Yes	Yes
Topology	No	Yes
Configuration <ul style="list-style-type: none"> Zero Touch Configurations Scheduled Upgrade Configuration Backup/Restore Ports Interfaces Trunk/Link Aggregation VLANs VLAN Templates Packet Capture Profiles Radius Authentication TACACS Authentication User Groups 	No	Yes

FortiSwitch service	Freemium	Licensed
<ul style="list-style-type: none">• Port Security		
Monitoring	No	Yes
<ul style="list-style-type: none">• Zero Touch Config Status• Scheduled Upgrade Status• Modules• MAC Addresses• LLDP• STP• DHCP-Snooping• IGMP-Snooping• Packet Capture Files• 802.1x Status• 802.1x Session• Switch Port Statistics• Routing Table		

Signing-on for FortiLAN Cloud

Access FortiLAN Cloud and other Fortinet Cloud services by using the FortiCloud single sign-on portal.

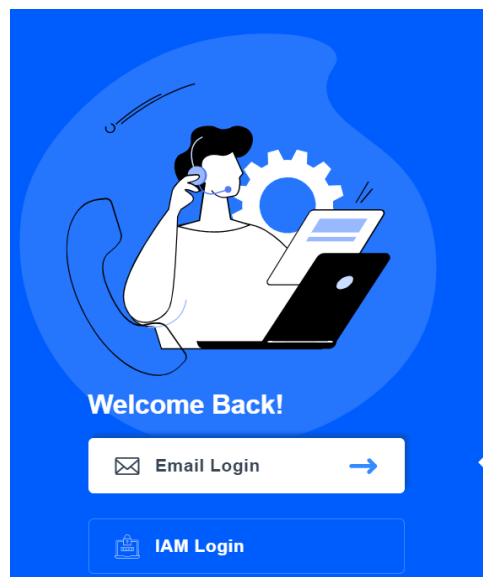
If you are...	Then go to
A new FortiCloud user	Registering on FortiCloud on page 19 Accessing FortiLAN Cloud on page 26
An existing FortiCloud user	Accessing FortiLAN Cloud on page 26

FortiLAN Cloud can be accessed and managed by the following users.

- IAM users
- External IDP authenticated users
- Email users
- Guest manager

Registering on FortiCloud

Prior to using FortiLAN Cloud, you are required to register on the *FortiCloud* portal. Use the <https://support.fortinet.com> access link to register on the *FortiCloud* portal. A security code is emailed to the address specified during registration; use the code to complete registration and activate your account.



EMAIL

PASSWORD

[Forgot Email?](#) [Forgot Password?](#)

REGISTER **LOG IN**

Asset Registration

You are required to register the procured license and device (FortiAP/FortiSwitch) on the FortiCloud portal. For a generic procedure on asset registration see the [FortiCloud](#) document.

- [Registering a Device](#)
- [Registering a License](#)

Registering a Device

Perform the following steps to register your device to deploy in FortiLAN Cloud.

This example registers a FortiSwitch; the same procedure is followed to register a FortiAP.

1. Login into <https://support.fortinet.com>.
2. Navigate to **Products > My Assets** and click **Register More**.
3. Enter the **Registration Code**/serial number obtained from Fortinet during device procurement.
4. Select the **End User Type** as per the user functionality defined on the page.

Registration Code

Please enter your product serial number, service contract registration code or license certificate number to start the registration: *

 ?

End User Type

The product will be used by

A government user

A non-government user

In this context a government end-user is any central, regional or local government department, agency, or other entity performing governmental functions, including:

1. Governmental research institutions.
2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List.
3. International governmental organizations.

5. Click **Next** and the associated product model is displayed.
6. Enter the **FortiCloud Key** that is shipped along with the device, **Product Description**, and the associated **Fortinet Partner**/reseller that helped with the product.

Serial Number: S124 FPOE 123456789 | Product Model: FortiSwitch 124F FPOE

FortiCloud Key: *

Your FortiCloud key is located on a sticker attached to your product. If you have any problems and require assistance, please [contact us](#) for assistance.

Product Description:

Support Contract (optional, if you do not purchase hardware bundles):

Fortinet Partner: *

Asset Folder:

[Cancel](#) Previous Next

7. Click **Next** and verify the displayed asset details; click **Previous** to modify/edit details.

8. Accept the product usage terms and click **Confirm**.

Serial Number: S124F [REDACTED] | Product Model: FortiSwitch 124F FPOE

Important Notice:

READ BEFORE COMPLETING THE REGISTRATION.

Product Warranty Type: Fortinet Internal Order
 Warranty Support Start Date: 2021-02-12
 Warranty Support Start Event: Auto-started 59 days after ship date

Asset location: My Assets

PRODUCT ENTITLEMENT

Support Type	Support Level	Activation Date	Expiration Date
Hardware	Return To Factory	2021-02-12	2022-02-12

Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "Register Now" or Schedule A date to run it later.

[Cancel](#)

[Previous](#)

[Confirm](#)

The device registration process is complete.

Registration Completed

Thank you for choosing this Fortinet product. **Your registration process has completed successfully.** Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

Product Info

Product Model	FortiSwitch 124F FPOE
Serial Number	S124F [REDACTED]
Registration Date	2022-03-11
Ship Date	2020-12-14
Warranty	Fortinet Internal Order
Warranty Support Start Date	2021-02-12
Warranty Support Start Event	Auto-started 59 days after ship date
Description	FortiSwitch
Partner	Unknown
OS Version	N/A
AV Engine Version	N/A
AV Engine Update Time	N/A
AV DB Version	N/A
AV DB Update Time	N/A
IPS Version	N/A

[Register More](#)

[Done](#)

The registered device is listed in the **Inventory Devices** tab (Inventory) of the FortiLAN Cloud page. You can apply the relevant license and deploy the device.

Registering a License

1. Perform the following steps to register the **FortiCloud Premium license**.

- Login into <https://support.fortinet.com>.
- Navigate to **Products > My Assets** and click **Register More**.

- Enter the **Registration Code**/serial number obtained from Fortinet during license procurement and select the **End User Type** as per the user functionality defined on the page.

Registration Code

Please enter your product serial number, service contract registration code or license certificate number to start the registration: *

482 [REDACTED] ?

End User Type

The product will be used by

A government user

A non-government user

In this context a government end-user is any central, regional or local government department, agency, or other entity performing governmental functions, including:

1. Governmental research institutions.
2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List.
3. International governmental organizations.

- Click **Next** and the associated license subscription is displayed. Verify the displayed asset details and accept the product usage terms and click **Confirm**.

Product Model: FortiCloud Premium Subscription | Contract Number: 482 [REDACTED]

Important Notice:
 READ BEFORE COMPLETING THE REGISTRATION.

PRODUCT ENTITLEMENT

Support Type	Support Level	Activation Date	Expiration Date
FortiCloud Premium Subscription	Web/Online	2021-12-24	2023-12-24

Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

The registered license is displayed in the Inventory Devices page of the FortiLAN Cloud GUI.

Registration Completed
 Thank you for choosing this Fortinet product. Your registration process has completed successfully. Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

Product Info

Service Name	FortiCloud Premium Subscription
Contract No	482 [REDACTED]
Registration Date	2021-12-24
Partner	Internal

Support Type	Support Level	Activation Date	Expiration Date
FortiCloud Premium Subscription	Web/Online	2022-12-24	2023-12-24

SUPPORT COVERAGE

Support Type	Support Level	Activation Date	Expiration Date
FortiCloud Premium Subscription	Web/Online	2021-12-24	2023-12-24

Register More
Done

2. Perform the following steps to register the **Device License**.
 - Login into <https://support.fortinet.com>.
 - Navigate to **Products > My Assets** and click **Register More**.

- Enter the **Registration Code**/serial number obtained from Fortinet during license procurement and select the **End User Type** as per the user functionality defined on the page.

Registration Code

Please enter your product serial number, service contract registration code or license certificate number to start the registration: *

482 [REDACTED] ?

End User Type

The product will be used by

A government user

A non-government user

In this context a government end-user is any central, regional or local government department, agency, or other entity performing governmental functions, including:

1. Governmental research institutions.
2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List.
3. International governmental organizations.

- Click **Next** and the associated device details are displayed. Select the device.

Contract Number: 482576713420

Serial Number

S224 [REDACTED]

Or Select It From:

	SERIAL NUMBER	PRODUCT MODEL	DESCRIPTION
<input checked="" type="radio"/>	S224 [REDACTED]	FortiSwitch 224E POE	S224E [REDACTED]

Total Units: 1

- Verify the displayed asset details and accept the product usage terms and click **Confirm**.

Serial Number: S224 [REDACTED] | Contract Number: 482 [REDACTED]

Important Notice:
READ BEFORE COMPLETING THE REGISTRATION.

PRODUCT ENTITLEMENT

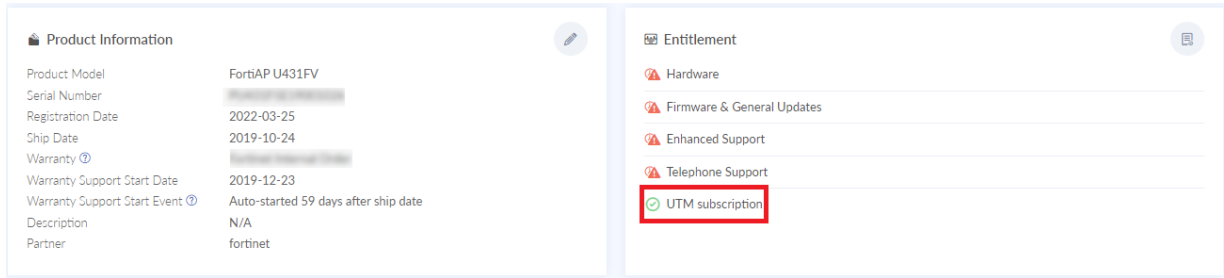
Support Type	Support Level	Activation Date	Expiration Date
Hardware	Advanced HW	2021-02-12	2023-02-12
Firmware & General Updates	Web/Online	2021-02-12	2023-02-12
Enhanced Support	Premium	2021-02-12	2023-02-12
Telephone Support	Premium	2021-02-12	2023-02-12
FortiLAN Cloud Management	Web/Online	2022-02-12	2023-02-12

By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "Confirm".

[Cancel](#) [Previous](#) [Confirm](#)

3. Ensure that the FortiAP is registered prior to performing the following steps to register the **UTP license**.
 - Login into <https://support.fortinet.com>.
 - Navigate to **Products > My Assets** and click **Register More**.
 - Enter the **Registration Code**/serial number obtained from Fortinet during license procurement and select the **End User Type** as per the user functionality defined on the page.

- Select the FortiAP to apply the UTP license to and complete the registration process. The UTP license is enabled.



Adding IAM Users

The Identity and Access Management (IAM) is a service to help you control access to FortiCloud portals and assets. You can use the portal to manage users, authentication credentials, and asset permissions. For more information, see [FortiCloud documentation](#). Access the IAM service from the FortiCloud portal using the master FortiLAN Cloud account.

1. Navigate to **IAM Users** and click **Add IAM User**.
2. (Optional) Click **Apply same permissions as existing User**, and then select a user from the drop-down. You can configure the permissions later.
3. To create a new user, enter a unique **Username**, **Full Name**, **Email** address, **Phone** number, and **Description** (optional).

1. User Details

IAM User Information

Username: *

Full Name: *

Email: *

Phone: *

Description

Adopt Permissions

Apply same permissions as existing User :

Select an existing User ▼

*Note: Checking 'Apply same permission as an existing User' allows you to easily assign a pre-configured Permission setup. User Permission settings are still fully configurable in the next step.

< CANCEL
NEXT >

4. Click **Next** and configure **User Permissions**. (Optional) Add the user to an IAM user group, click **IAM User Group**, and select a group from the dropdown. The **Effect Asset Permissions** and the **Effective Portal Permissions** are displayed. Click **Next**.
OR
5. Select an asset group from the **Asset Permissions** list.
6. Configure the **Portal Permissions** for the required portals. Click on the edit icon against the portal, update the following and click **Confirm**.

Permission	Description
Allow Portal Access	Toggle Yes to allow access to a portal.
Access Type	Select the Access Type that is defined by the selected portal. The allowed access types can vary for different portals.
Additional Permission	Allow Additional Permission based on the selected access type. The additional permission also varies for different portals.

- Configure the **Cloud Management & Services** permissions to enable access to FortiLAN Cloud. Click add (+) and select **FortiLAN Cloud** from the list.
- Click the edit icon and configure the required permissions for FortiLAN Cloud.
 - Toggle **Yes** to allow access to FortiLAN Cloud.
 - Select the required **Access Type**, *Admin*, *Read-Only*, or *Guest Manager*.
 - Click **Confirm**.

2. User Permissions
IAM User Registration: FortiLANCloud

IAM User Group (Permissions controlled by IAM User Group)

None
▼

* NOTE: User will adopt the Permission of the assigned Group. You cannot edit Asset or Portal Permissions while user is assigned to a Group. Remove user from any group to enable Permissions to be editable.

Asset Permissions +

My Assets
▼

Portal Permissions

Portals	Access	Access Type	Additional Permission	
Asset Management	✓	Admin	-	
FortiCare	✗	Denied	-	
FortiOS SSO	✗	Denied	-	

Cloud Management & Service	Access	Access Type	Additional Permission	
FortiLAN Cloud	✓	Admin	-	+ ✕

< CANCEL
< BACK
NEXT >

9. Click **Next** and review the displayed user information.

3. Confirmation IAM User Registration: FortiLANCloud

IAM User Information

Full Name: FortiLANCloud User Email: [redacted]@fortinet.com

IAM User Group **Effective Asset Permissions**

None My Assets

Effective Portal Permissions

Portals	Access	Access Type	Additional Permission
Asset Management	✓	Admin	-
FortiCare	✗	Denied	-
FortiOS SSO	✗	Denied	-

10. Click **Confirm**. Click **Download CSV** to download the new user's credentials. After this procedure is successfully completed, you are sent the login credentials after the required validation.

Accessing FortiLAN Cloud

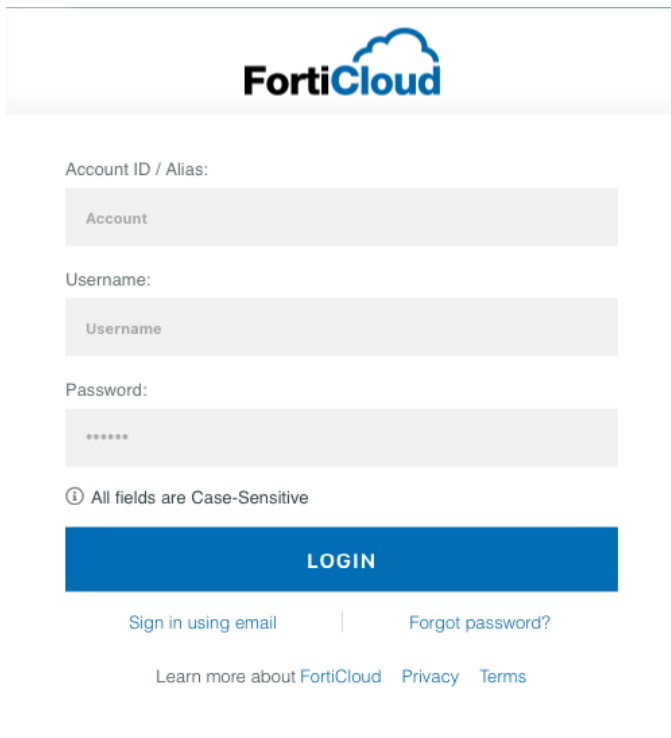
Any user registered on <https://support.fortinet.com> can access FortiLAN Cloud. Once you login into *FortiCloud*, click on **Services**, a banner with Fortinet products is displayed. Select **FortiLAN Cloud**. You are redirected to the FortiLAN Cloud GUI.

In this procedure, you need to select the FortiAP service you want to use. The following table lists the available services:

FortiAP service (domain)	Purpose
Global	Used by customers worldwide except in Europe and Japan regions.
Europe	Used by customers in the Europe region.

If you have enabled FortiToken two-factor authentication, then check your FortiToken Mobile application or email (as applicable), type the security code, and click **Go**.

You can login into FortiCloud using your registered FortiCloud account details, **Email** and **Password** OR click **Sign in as IAM user**. Enter your registered IAM user credentials to login, the **Account ID** is that of the master account.



Account ID / Alias:

Account

Username:

Username

Password:

ⓘ All fields are Case-Sensitive

LOGIN

[Sign in using email](#) | [Forgot password?](#)

[Learn more about FortiCloud](#) [Privacy](#) [Terms](#)

The FortiLAN Cloud Home page opens. For details, see the [User Interface Overview on page 9](#).

External IDP Authentication

FortiLAN Cloud supports integration of third-party Identity Provider (IDP) services to log-in and manage networks. This feature is useful for enterprises that need to secure their user credentials and hence provision FortiLAN Cloud access through their own Identity Provider. The external IDP initiated Security Assertion Markup Language (SAML) assertion consisting of specific IDP attributes is used by FortiCloud/FortiLAN Cloud to verify the user account details and grant required access.

External IDP authentication is offered in conjunction with FortiCare and FortiAuthenticator. Contact the Fortinet *Customer Support* team to enable external IDP support and raise an enrollment request with the appropriate FortiCare accounts. After the enrollment is complete follow these setup procedures.

Note: Support for SAML 2.0 and IDP initiated assertion response is required.

- Create an IDP with SAML Service Provider Metadata. The following is an example where *company* is the unique name of your organization.
SP Entity ID `http://customerssol.fortinet.com/saml-idp/proxy/{company}/metadata/`
SP Login URL `https://customerssol.fortinet.com/saml-idp/proxy/{company}/saml/?acs`
Relay State `https://customerssol.fortinet.com/saml-idp/proxy/{company}/login/`
- Configure the SAML assertions with the *username* and *role* attributes for permission control in FortiCloud.
- Provide specific information to Fortinet, such as, the SAML Metadata file, company name, contact information, and the Fortinet master account that the IDP requires to connect to.
- Configure external IDP roles in FortiCloud to allow the required access to FortiLAN Cloud. See [Adding External IDP Roles on page 28](#).

After successful authentication on your Identity Provider, you are re-directed to the FortiCloud portal from where you access FortiLAN Cloud based on the configured roles.

Adding External IDP Roles

Access the **Identity & Access Management (IAM)** service from the FortiCloud portal

1. Navigate to **Manage External IdP Roles** and click **Add IDP Role**.
2. Enter a unique **Role Name** and **Description** (optional).
Note: The role name must exactly match the role attribute in the SAML assertion.
3. Select an asset group from the **Asset Permissions** list.
4. Configure the **Effective Portal Permissions** for the required portals. Click on the edit icon against the portal and update the following.

Permission	Description
Allow Portal Access	Toggle Yes to allow access to a portal.
Access Type	Select the Access Type that is defined by the selected portal. The allowed access types can vary for different portals.
Additional Permission	Allow Additional Permission based on the selected access type. The additional permission also varies for different portals.

5. Configure the **Cloud Management & Services** permissions to enable access to FortiLAN Cloud. Click add (+) and select **FortiLAN Cloud** from the list.
6. Click the edit icon and configure the required permissions for FortiLAN Cloud.
 - Toggle **Yes** to allow access to FortiLAN Cloud.
 - Select the required **Access Type**, *Admin*, *Read-Only*, or *Guest Manager*.

Role Details

Role Name: * Description:

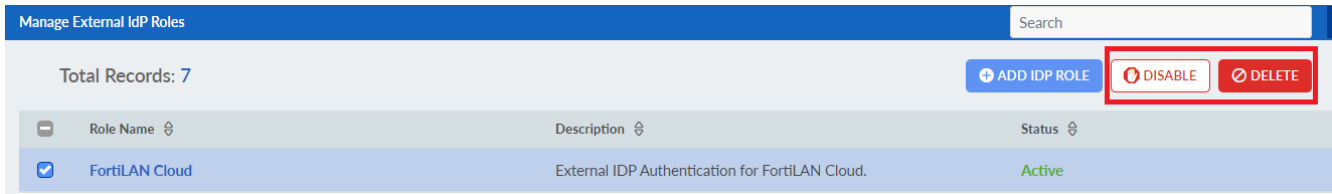
Asset Permissions*

Effective Portal Permissions

Portals	Access	Access Type	Additional Permission	
Asset Management		Denied	-	
FortiCare		Admin	-	
Cloud Management & Service				
FortiLAN Cloud		Admin	-	

7. Click **Add Role**.

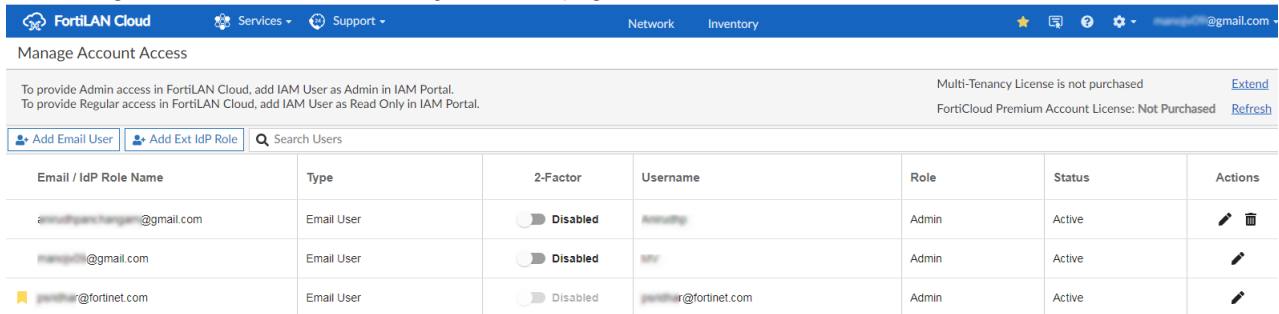
After the role is created, it is listed on the on the **Manage External IdP Roles** page. You can enable/disable or delete a created role. Select the role and click on the required option.



Managing External IDP Roles

You can add and manage the external IDP roles from the FortiLAN Cloud GUI.

- All existing IDP roles are listed in the **My Account** page.



You can edit, create, and delete IDP roles from this page.

Modifying a FortiLAN Cloud account

You can modify some user configurations from the FortiLAN Cloud GUI.

A regular user does not have the same option to create networks.

Procedure steps

1. In the top-right corner of the FortiLAN Cloud home page, click **Manage Account Access**. All users are listed.
2. Click the edit icon in the **Actions** column to modify the username, role, and language. To set a specific sub-user as primary, enable **Set as Primary**. In this case, you are required to transfer the license to the new account. Contact the *Customer Support* to do the needful.

Edit User

Email fortilanqa@gmail.com

Username

Role

Language

Set as Primary

Note: Contact the *Customer Support* team for assistance to set a sub-user as primary in case of a required password recovery.

3. To save changes, click **Submit**.

To add FortiSwitch users, see [Account Management on page 231](#).

Activating the multi-tenancy feature

The multi-tenancy account is designed for managed security service providers (MSSPs). A multi-tenancy account allows you to create and manage multiple sub-accounts. You can add and move devices between these sub-accounts and each account can have its own administrators and users, allowing more control over a managed service's provisioning.

Prerequisites

Purchase a license for the FortiLAN Cloud multi-tenancy feature and obtain the activation code.

Procedure steps

1. In the top-right corner of the FortiLAN Cloud Home page, click **My Account**.
2. Click **Activate multi-tenancy feature**.
3. Enter the activation code.
4. Click **Submit**.



▼ All - 12

- Default - 5
- ▼ Lab_Network - 4
 - ECRT_LAB - 1
 - ..._Desk - 2

⚙️ Include Sub-accounts Sub-account - Default

+ Add Network 🔔

WIRELESS
SWITCH

Name	Sub Account	Switches	Access Points	SSID & Users	Actions
Combined Default	Default	🟢 128 🟡 190	🟢 1 🟡 0		⋮

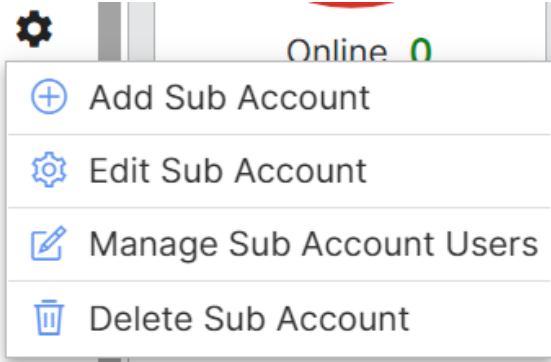
Adding and Managing Sub-Accounts

You can create multiple sub-accounts in a multi-tenancy account.

Notes:

- You cannot edit/modify the default sub-account.
- You can create a maximum of 1024 sub-accounts.
- Authentication via REST API is not supported for sub-accounts with permissions for specific folders.

1. To create a sub-account, click on the  icon and select **Add Sub Account**.




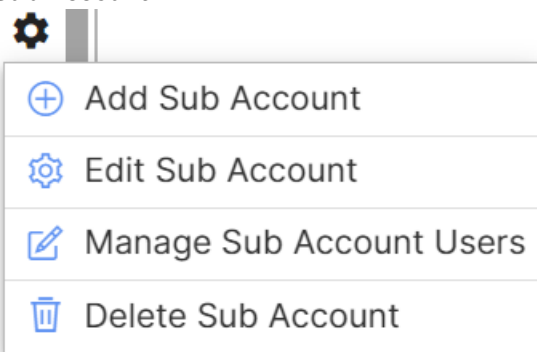
Enter a unique name for the sub-account.


Add Sub Account
×

Sub Account Name :

Submit
Cancel

2. Alternately, you can create nested sub-accounts, click the  icon against an existing sub-account and select **Add Sub Account**.




3. You can edit and delete the sub-accounts. Click on the  icon and select **Edit Sub Account** to modify the account name.

Edit Sub Account
×

Sub Account Name :

Submit
Cancel





4. Click on the  icon and select **Delete Sub Account** to delete the account. Click **Submit** and confirm deletion.

Delete Sub Account
×

Are you sure to delete sub account ?

Submit
Cancel

You can assign sub-accounts to existing or new users. In the settings option of the home page, navigate to **Manage Account Access**.

Email / IdP Role Name	Type	2-Factor	Username	Role	Status	Sub Account	Actions
.....@gmail.com	Email User	<input type="checkbox"/> Disabled	MVTest	Regular (1)	Active		 
.....@fortinet.com	Email User	<input type="checkbox"/> Disabled	ganushtha	Admin (1)	Active		 

Select any user and click the edit icon to manage sub-accounts for the user.

Edit User

Email

Username

Role

Language

Manage Sub Account All Sub-Accounts

- bangalore
- > Lab_Network

You can manage sub-accounts while creating a new user as well, that is **Add Email User** or **Add Ext Idp Role**.

Add Email User

Email

Re-type Email

Username

Role


Language

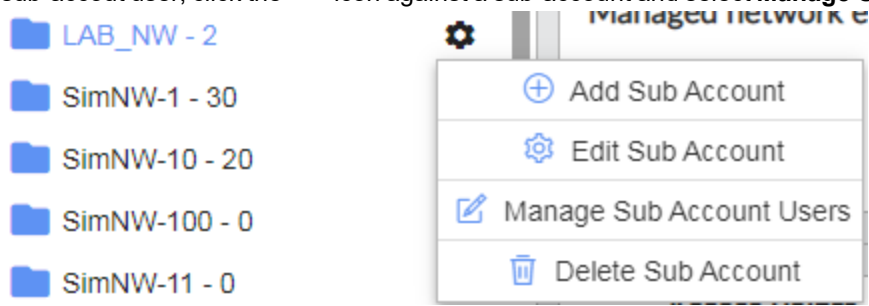
Manage Sub Account All Sub-Accounts

- bangalore
- > Lab_Network

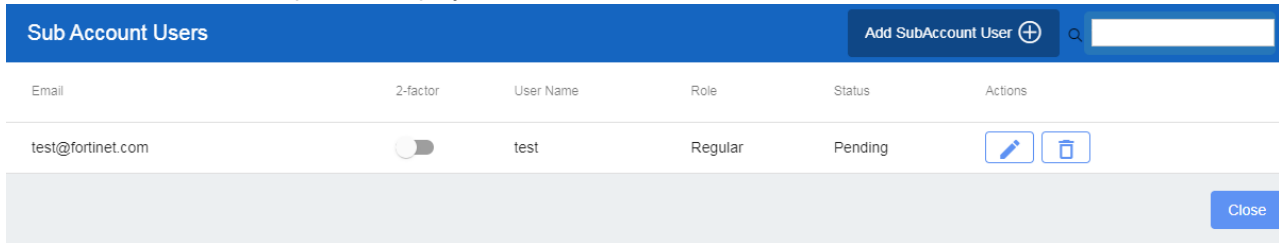
Adding Sub Account Users

You can add users for each sub-account and define their roles.

1. To add a sub-account user, click the  icon against a sub-account and select **Manage Sub Account Users**.



The **Sub Account Users** panel is displayed.



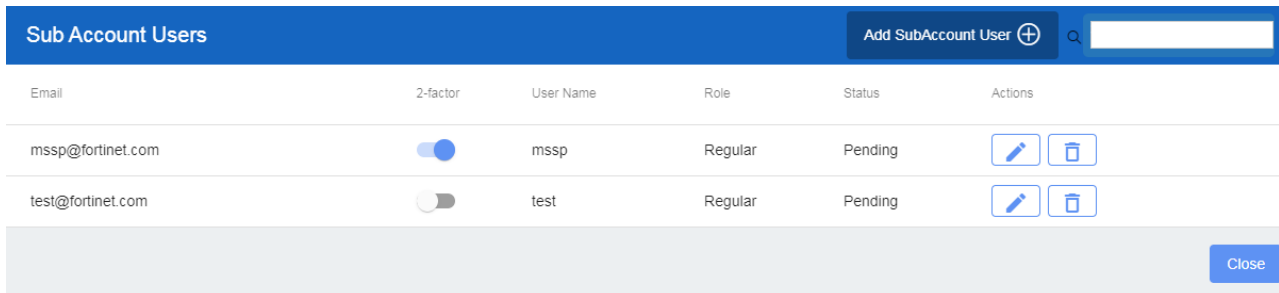
2. Click **Add SubAccount User** and enter the email address, user name, role, and language.


The screenshot shows the 'Add SubAccount User' form with the following fields:

- Email: mssp@fortinet.com
- Re-type Email: mssp@fortinet.com
- User Name: mssp
- Role: Regular (dropdown menu)
- Language: English (dropdown menu)

At the bottom of the form are two buttons: **Submit** and **Cancel**.

3. Click **Submit**. The user is listed.



You can manage the sub-account users listed here. Click on the  icon to edit the user details, FortiLAN Cloud also allows you to enable **2-factor** authentication for each sub-account user.

Alternately, in the settings option of the home page, navigate to **Manage Account Access** and select **Add Sub-Account User**. Assign a sub-account to the user.

Add Sub-Account User

Email



Re-type Email

Username

Role Regular



Language

Manage Sub Account

-  bangalore
-  Lab_Network

Enabling two-factor authentication for FortiLAN Cloud



Two-factor authentication is offered as part of the FortiLAN Cloud, including the free service. You can choose to enable two-factor authentication using FortiToken Mobile or email.

1. In the top-right corner of the FortiLAN Cloud Home page, click **My Account** . The My Account dialog opens.
2. Enable **2-Factor**.
3. Click on  in the **Actions** column and then click **FortiToken Setting**. The FortiCloud page opens.
4. Click **Edit**.
5. Select one of the following options:
 - Enable Two-Factor Authentication Using FortiToken Mobile
 - Enable Two-Factor Authentication Using Email
6. Click **Save**.
7. The next time you log in to FortiCloud to access FortiLAN Cloud, type the authentication token code available from FortiToken Mobile or your email depending on the FortiToken setting that you selected during the setup.

Removing a user from a FortiLAN Cloud account

You can remove an admin user or a regular user from your account.

Procedure steps

1. In the top-right corner of the FortiLAN Cloud Home page, click **My Account**. 
2. Under **Action**, select the delete icon for the user you wish to delete. 
3. Click **Yes**.

Managing networks on FortiLAN Cloud

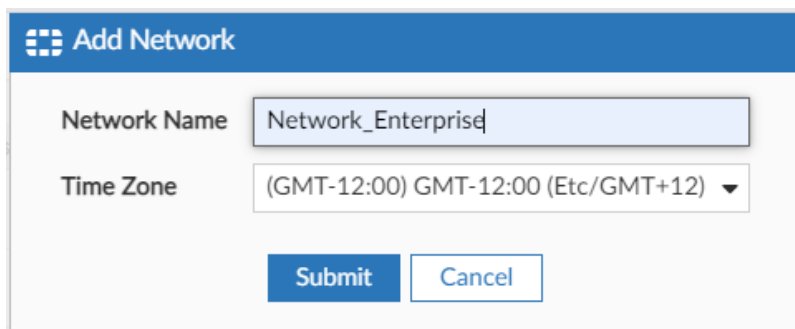
A network is a logical grouping of FortiAP and FortiSwitch devices for common configuration and management. A FortiLAN Cloud account can have multiple networks. For instance, if you have 20 devices and you plan to use 10 devices in the head office and the other 10 devices in a branch office, then you would create two networks.

In a network, you can also group devices into subsets (sites) and then apply configurations to those subsets. For example, in an office building, you can have a device subset for each floor of the building.

Though it is possible and valid to have a single network containing all devices, and apply configurations to subsets of devices, the recommendation is that you create multiple independent networks.

Adding a Network

1. Log in to FortiCloud and access FortiLAN Cloud.
2. On the Home page, click **Add Network**.
3. Type a name for the network.
4. Select a time zone. This is the time zone of the FortiAP devices that you want to manage with this network.
5. Click **Submit**.

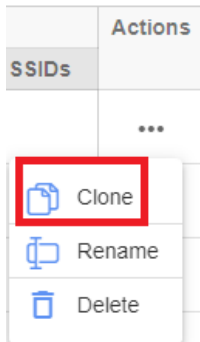


The newly created network is added to the FortiLAN Cloud Home page.

6. Click the network that you created and configure FortiAPs and FortiSwitches.

Cloning a Network

You can clone (in the same Master account) all the configuration in an existing network to a new network. On the home page, click **Actions** against the network that you want to clone and select **Clone**.



Specify a unique name for the network and select your time zone, click **Submit**. The network is cloned.

 A screenshot of a 'Clone Network' dialog box. The title bar says 'Clone Network'. It contains two fields: 'Network to clone' with the value 'Combined Default' and 'Name of the new network' with the value 'Network_Enterprise'. Below these is a 'Time Zone' dropdown menu showing '(GMT-12:00) GMT-12:00 (Etc/GMT+12)'. At the bottom are two buttons: 'Submit' and 'Cancel'.


- **FortiAP** - All configurations except **MAC Access Control** are cloned.
- **FortiSwitches** - **Only** the following configurations are cloned.
 - Switch Tags - No switches are assigned to tags.
 - Zero Touch Configurations – Tag or model based configurations are cloned, device based configurations are NOT cloned.
 - Scheduled Upgrade – Tag based configurations are cloned.
 - Network
 - VLAN Templates

Additionally, you can rename or delete a network from the **Actions** column.

Managing FortiAP

This section describes configuring, monitoring, and managing FortiAP devices in your networks using FortiLAN Cloud and includes the following FortiAP requirements.

- [Supported access points on page 38](#)
- [Recommended FortiAP firmware version on page 38](#)

Menu	Description
Monitor	Displays a dashboard with a view of all managed APs including up time, client details, usage statistics, and rogue APs that may be in your environment.
Deploy APs	Allows the deployment of an AP from the inventory to an AP network. During an AP deployment, you can set the platform profile, AP tags, an AP site, and administration settings.
Access Points	Displays the status of APs. Allows tasks such as configuration and upgrade. You can also capture packets and observe live network traffic on an AP.
Configure	Provides sub-menus to add and configure wireless service set identifiers (SSID) including platform profiles, AP tags, MAC access control and more. You can also enable Bonjour Relay and FortiPresence.
Logs	Provides logs for events in the following categories: wireless, antivirus, botnet, IPS, web access, and application control.
Reports	Provides summary reports with charts on current and past information such as traffic and client count by SSID and AP. Also provides the option to run PCI compliance reports.

Supported access points

FortiLAN Cloud supports all FortiAP, Compact FortiAP (FortiAP-C), Smart FortiAP (FortiAP-S), and Universal FortiAP (FortiAP-U) models.

For a complete list of cloud-managed access points, review the [Wireless Product Matrix](#).

Recommended FortiAP firmware version

Fortinet recommends that you use FortiAP version 6.0 or later with FortiLAN Cloud version 22.4.

Getting started

This section includes the following FortiLAN Cloud procedures:

- [Adding a FortiAP device to FortiLAN Cloud with a key on page 40](#)
- [Adding a FortiAP device to FortiLAN Cloud without a key on page 40](#)
- [Managing networks on FortiLAN Cloud on page 36](#)
- [Deploying a FortiAP device to a network on page 42](#)
- [Moving a FortiAP between accounts on page 43](#)

After purchasing and physically deploying the FortiAP devices (such as connecting to the internet) in various premises, perform the tasks and procedures from the following workflow to configure and monitor FortiAP devices using the FortiLAN Cloud management solution.

Task sequence	Description and procedure
Task 1	Register on FortiCloud and access the FortiLAN Cloud management solution. Perform this procedure: Signing-on for FortiLAN Cloud on page 19
Task 2	Add a purchased FortiAP device to your FortiLAN Cloud account inventory. Later in this workflow, you will deploy that FortiAP device from the inventory to a network. Perform the applicable procedure: <ul style="list-style-type: none">• Adding a FortiAP device to FortiLAN Cloud with a key on page 40• Adding a FortiAP device to FortiLAN Cloud without a key on page 40
Task 3	Add logical AP networks to organize your FortiAP devices by their physical premises. With a network, you manage FortiAP devices and service set identifiers (SSID). Perform this procedure: Managing networks on FortiLAN Cloud on page 36
Task 4	Deploy your FortiAP devices from the inventory into various networks. This task includes assigning a wireless network name that clients can connect to, and configuring settings for access control, security, and availability. Perform this procedure: Deploying a FortiAP device to a network on page 42
Task 5	Configure and customize FortiAP settings (for example, rogue scan). Perform this procedure: Configuring FortiAP settings on page 60

Task sequence	Description and procedure
Task 6	Create SSIDs and make them available on desired FortiAP devices. Perform this procedure: Adding an SSID to a network on page 78

Adding a FortiAP device to FortiLAN Cloud with a key

Use this procedure to add a FortiAP device to your FortiLAN Cloud account using its FortiLAN Cloud key (or multiple FortiAP devices with a bulk key).

If the FortiAP device does not have a FortiLAN Cloud key, then go to the [Adding a FortiAP device to FortiLAN Cloud without a key on page 40](#) procedure.

Prerequisites

- Find the FortiLAN Cloud key printed on a sticker located on your FortiAP device.
- If you purchased a bulk key to add multiple FortiAP devices in a single import, then locate that bulk key on the purchase order (PO) from Fortinet.

Procedure steps

1. Using an Ethernet cable, connect the FortiAP device to a network that allows internet access.
2. Log in to FortiCloud and connect to FortiLAN Cloud.
3. On the Home page, click **Inventory**.
4. Click **Import AP Key**. If you have a bulk key, click **Import Bulk Key**.
5. Type the key.
6. Click **Submit**.
7. Make sure that the FortiAP device is added to the inventory list.
8. You can now go to the [Managing networks on FortiLAN Cloud on page 36](#) procedure.

Adding a FortiAP device to FortiLAN Cloud without a key

If the FortiAP device is an older model that does not have a sticker with the FortiLAN Cloud key, then use this procedure to add the FortiAP device to your FortiLAN Cloud account.

Prerequisites

Take note of the model name and number of your AP and the firmware version you need to upgrade to (see [Introduction on page 7](#)).

Procedure steps

1. Download the FortiAP firmware:
 - a. Start a web browser and visit the [Fortinet Support](#) website.
 - b. Log in to your account.
 - c. Click **Download > Firmware Images**.
 - d. In **Select Product**, select the AP product to upgrade.
 - e. Click the **Download** tab.
 - f. Navigate to the firmware image file that you want to download. For example FAP_224D-v6-build0037-FORTINET.out.
 - g. To save that firmware image file to your computer, go to the end of the row, click **HTTPS**, and follow the on-screen instructions.
 - h. Take note of the path where you save the firmware image file.
2. Upgrade and configure the FortiAP device:
 - a. Connect your computer to the FortiAP Ethernet port.
 - b. The default IP address of the FortiAP device is 192.168.1.2. If your computer does not have an IP address on the same subnet, change the IP address of your computer to 192.168.1.3.
 - c. Start a web browser and connect to <https://192.168.1.2>.
 - d. Log in to the FortiAP UI as admin. Leave the **Password** field empty.
 - e. In the **Status** section, go to **Firmware Version** and click **Update**.

FortiAP-222E		admin
Information	System	Backup Configuration
Dashboard	System Time	Restore Configuration
System Status	System Uptime	Reboot
WTP Configuration	CPU Usage	Upload/Upgrade
Radio Configuration	Memory Usage	Download
Settings	Network	Logout
Local Configuration	IP Address	
	IP Netmask	
	Gateway	
	DNS Server	
	Firmware	
	Hostname	FP222ETF19003318
	Serial Number	FP222ETF19003318
	Firmware Version	FortiAP-222E v7.0,build0008,210426 (GA)
	Branch Point	008
	BIOS Version	04000003
	BIOS Data Version	3
	System Part-Number	P20844-04
	Region Code	A
	Base MAC	

- f. Follow the on-screen instructions to load and apply the firmware file.
- g. When you see the message "Uploading file is done. Firmware updating.", click **OK**, and close the web browser.
- h. After the upgrade is complete, start a web browser and connect to <https://192.168.1.2>.
- i. In the WTP Configuration section, go to AC Discovery Type and select **FortiAP Cloud**.

WTP Configuration	
AC Discovery Type	<input type="radio"/> Auto <input type="radio"/> Static <input type="radio"/> DHCP <input type="radio"/> DNS <input type="radio"/> Broadcast <input type="radio"/> Multicast <input checked="" type="radio"/> FortiAP Cloud
FortiAP Cloud Server	<input type="text"/>
FortiAP Cloud Account	<input type="text"/>
FortiAP Cloud Password	<input type="text"/>

- j. Type the name and password of your FortiLAN Cloud account.
- k. Click **Apply**.
- l. Disconnect your computer from the FortiAP Ethernet port.

- m. Restore your computer to its normal network configuration.
 - n. Using an Ethernet cable, connect the FortiAP device to a network that allows internet access.
3. Check FortiLAN Cloud for the newly added FortiAP device:
 - a. Log in to FortiCloud and connect to FortiLAN Cloud.
 - b. On the Home page, click **Inventory**.
 - c. Make sure that the list includes the newly added FortiAP device.
4. You can now go to the [Managing networks on FortiLAN Cloud on page 36](#) procedure.

Deploying a FortiAP device to a network

Use this procedure to deploy a FortiAP device from your account inventory to your network.

Prerequisites

Complete the following procedures, as applicable:

- [Adding a FortiAP device to FortiLAN Cloud with a key on page 40](#) or [Adding a FortiAP device to FortiLAN Cloud without a key on page 40](#)
- [Managing networks on FortiLAN Cloud on page 36](#)

Procedure steps

1. Make sure that the window shows the network where you want to deploy the FortiAP device.
2. In the **Inventory** tab, select the FortiAP and click **Deploy**.
 - You can deploy the FortiAP to FortiLAN Cloud or to an external AP Controller. Select **Deploy to FortiLAN Cloud** and click **Deploy**. Select the network to deploy the FortiAP to and click **Deploy**.
 - You can also deploy the FortiAP through FortiZTP. In the **FortiZTP Devices** tab, select the FortiAP and click **Deploy to Network**. Select the network to deploy the FortiAP to and click **Deploy**.
3. In the Menu bar, click **Access points**.
4. In the Navigation pane, select **Status View**.
5. Verify that the table includes the deployed FortiAP device.

You can also deploy the FortiAP device from the **Wireless** menu.

1. In the Navigation pane, select **Deploy APs**; all FortiAP devices are listed.
2. In the table, select the FortiAP device(s) that you want to deploy and follow the on-screen instructions in each section.

You can configure generic parameters and override specific access point settings in the **Select Platform Profiles & Overrides** section. To upgrade the FortiAP firmware upon discovery, enable **Upgrade APs upon Connect** and configure the desired firmware version. Optionally, you can also choose the platform profile that already has this option enabled. See [Overriding FortiAP Settings on page 62](#).

Deploy AP ⓘ

1 Select APs from Inventory —
 2 Select Platform Profiles & Overrides —
 3 Set AP Tags —
 4 Set AP Site —
 5 Set Admin —
 6 Preview

▼ FAP231E FAP231E

▼ Upgrade Override

Upgrade Override Enable

Upgrade APs upon Connect ⓘ

Force Downgrade ⓘ

Target Firmware Version ⓘ Latest Version Available

▼ BLE Overrides

iBeacon Major ID ⓘ

iBeacon Minor ID ⓘ

Eddystone Instance ID ⓘ

Radio 1 Overrides

Band 2.4GHz 802.11n/g

Channel Width 20MHz

Channels 1,6,11

TX Power Manual(100%)

Radio 2 Overrides

Band 5GHz 802.11ac/n/a

Channel Width 20MHz

Channels 36,40,44,48,52 *...

TX Power Manual(100%)

Radio 3 Overrides

Mode monitor

Back Next

You can also select the AP tags, sites, and admin settings for the FortiAP that you are deploying. The FortiAP beacons the SSID with the specified parameters for wireless clients to connect. Review the information in the **Preview** section and click **Deploy**.

To undeploy a FortiAP, see [Undeploying a FortiAP device on page 64](#).

Moving a FortiAP between accounts

You can move a FortiAP between different user accounts.

1. Login into the account with the FortiAP and undeploy the FortiAP from the account. See [Undeploying a FortiAP device on page 64](#).
2. Remove the FortiAP from the account inventory.
3. Login into the account you want the FortiAP to be moved to.
4. Add the FortiAP to FortiLAN Cloud account with/without a key. See [Adding a FortiAP device to FortiLAN Cloud with a key on page 40/Adding a FortiAP device to FortiLAN Cloud without a key on page 40](#).
5. Deploy the FortiAP to a network linked to this account. See [Deploying a FortiAP device to a network on page 42](#).

Monitoring

The FortiLAN Cloud provides a comprehensive dashboard with detailed statistics and visualization for the overall network and subsequent levels such as AP, radio, client, and rogue devices. The information presented in the dashboard is pivotal for monitoring network health and for diagnostic purpose.

The dashboards are split into three views - **Standard**, **Charts**, and **List**. The standard view displays information as a combination of chart based and listed data. The charts and list view displays data only in a series of charts and columns respectively.

Note: You can filter the lists displayed based on specific parameters and hide others by modifying the column settings,



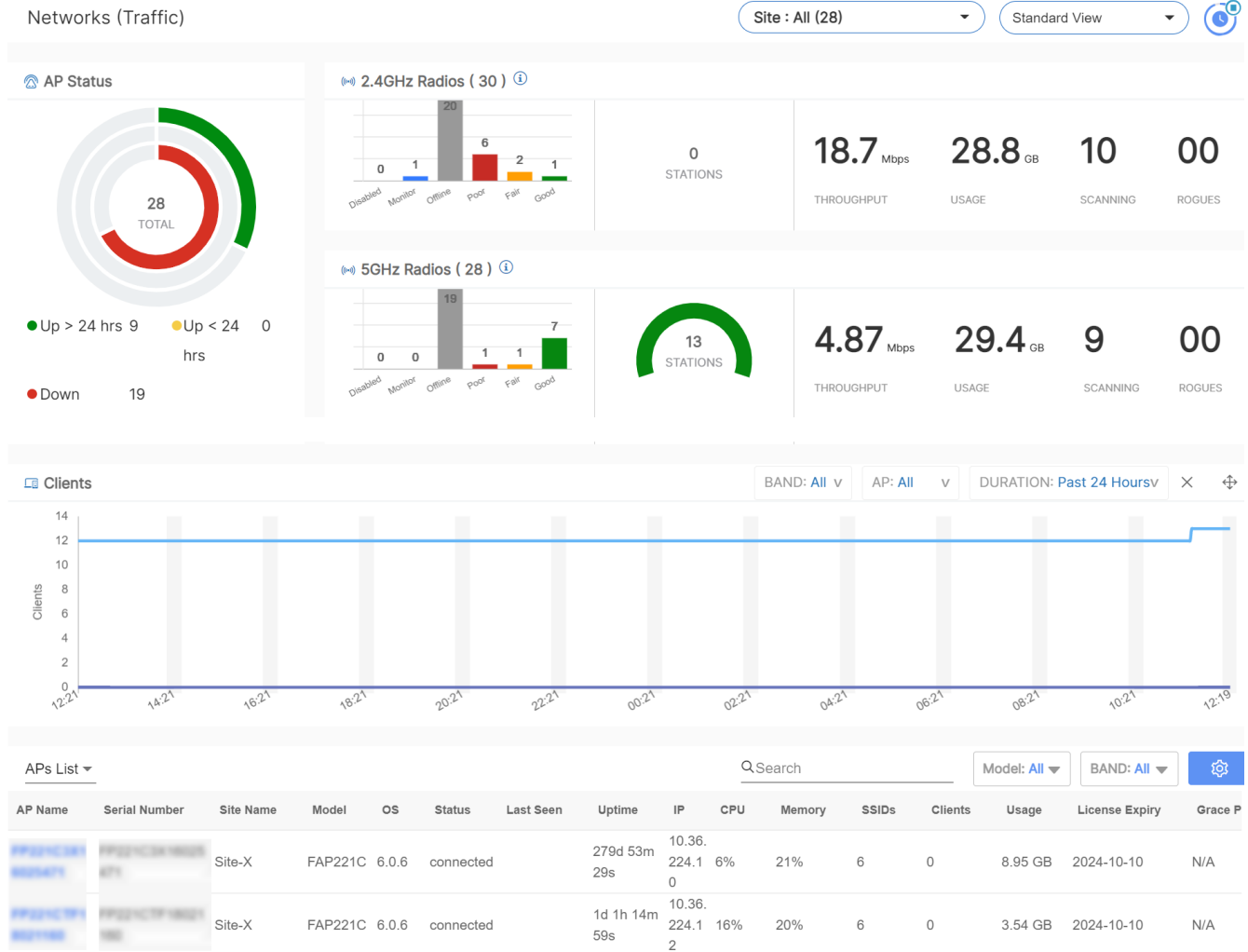
The dashboard data can be filtered using the location based AP sites created during deployment. The chart dashlets and columns are click-able to view detailed information; hover over these charts to view details.

Dashboard data is refreshed every 60 seconds, you can refresh the dashboard as per requirement.

Note: The **Charts** view provides additional and varied data in comparison to the **Standard** view. The subsequent sections describe data fields displayed in all views.

Network (Traffic)

This dashboard provides network traffic information arranged in several rows and charts.



- **AP Status** counts the APs based on their connection status, APs up for more than 24 hours, APs up for less than 24 hours, and APs that are currently down.
- **2.4/5 GHz Radio** provides a summary for both 2.4 GHz and 5 GHz radios. Displays the radio modes (**Disabled, Monitor, Offline**) and health (**Poor, Fair, Good**), the station count, the total number of MAC errors, throughput, data usage, rogue APs, and APs in scan mode.
- **Clients & Throughput** displays the number of clients and the throughput for each of the 2.4 GHz and 5 GHz bands over the selected period of time.
- **Top 20 APs by Clients Count (2.4 GHz and 5 GHz)** displays the twenty APs with the highest number of clients connected to them in the 2.4 GHz and 5GHz bands.
- **Top SSIDs by Client Count** displays the five SSIDs with the highest number of clients connected to the SSID; counts the number of clients connected to each of these SSIDs and the total number of clients in the network. Filter data based on the band (2.4 GHz, 5 GHz, or both).
- **Top SSIDs by Usage** displays the five SSIDs with the highest data usage; counts the number of clients connected to each of these SSIDs and the total number of clients in the network. Filter data based on the band (2.4 GHz, 5 GHz, or both).
- **Top 20 Stations by Throughput** displays the 20 clients with the highest throughput.
- **Top 20 Stations by Usage** displays the 20 clients with the highest data usage.

Click on the AP, Radio, client, and SSID information to view details.

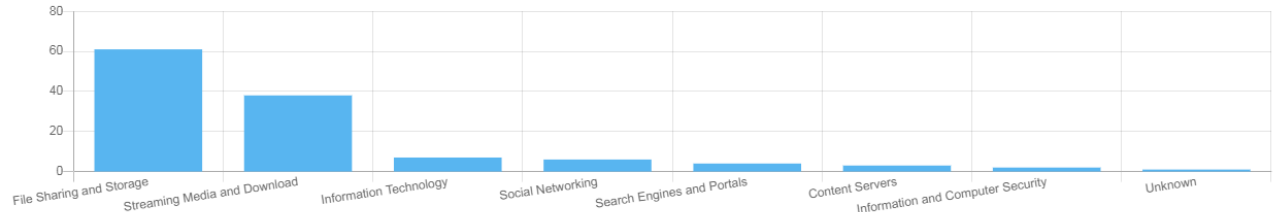
Network (Security)

This dashboard provides network security information such as web applications, attacks, and viruses. The dashboard provides a summary of the 10,000 most recent security events for the chosen filters. For deeper insights into past events, please visit the **Logs** section for the event category of interest. See [Logs](#).

Network (Security) Site : All (3) Standard View 11


Duration: Past 24 Hours SSID: All AP: All

Top Web




Category	Count
File Sharing and Storage	60
Streaming Media and Download	38
Information Technology	8
Social Networking	8
Search Engines and Portals	5
Content Servers	3
Information and Computer Security	2
Unknown	1

Top Attacks



Category	Count
[Unlabeled]	1

Top Viruses



Category	Count
W32/EICAR_Test_File	1
EICAR_TEST_FILE	1

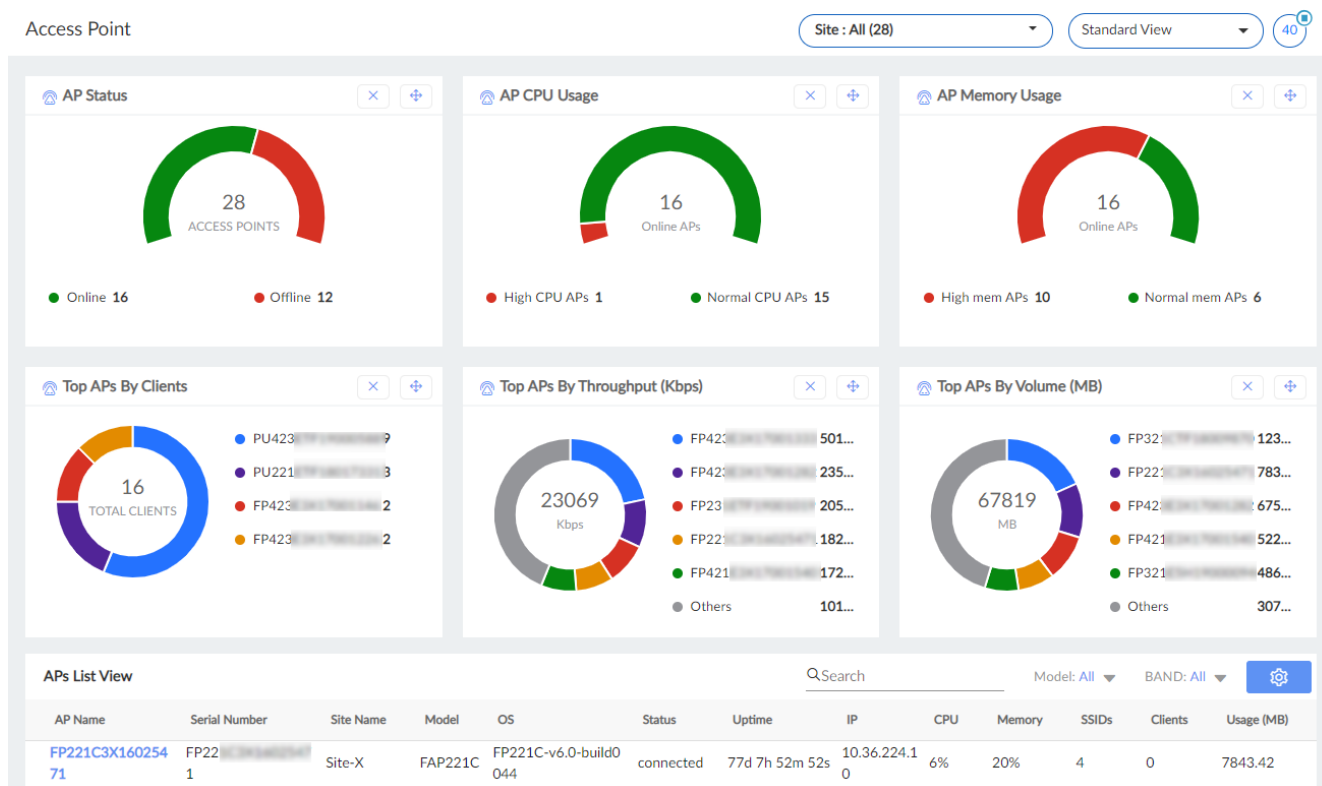
Web Access List Search Duration: All SSID: All AP: All Source: All Destination: All Category: All Type: All Settings

Time	AP	Source	Destination	Category	Hostname	SSID	Type	Message	Log Id	Level	Source Port	Destination Port	Client MAC	Protocol	URL
16:20:36	PS221ETF18001399	10.1.1.100	10.1.1.100	37	webdav.facebook.com	1_mpsk	ftgd_allow				57078	443			
16:13:09	PS221ETF18001399	10.1.1.100	10.1.1.100	25	r4---sn-npoeenle.googlevideo.com	1_mpsk	ftgd_allow				57076	443			
16:13:05	PS221ETF18001399	10.1.1.100	10.1.1.100	25	r4---sn-npoeenle.googlevideo.com	1_mpsk	ftgd_allow				57075	443			

- **Top Web** - The top ten web categories that are most frequently used.
- **Top Attacks** - The top ten attacks that the FortiLAN Cloud's IPS most frequently prevents.
- **Top Viruses** - The top ten viruses that the FortiLAN Cloud's AV most frequently detects.

APs

This dashboard provides visualization of APs in your network and their health and utilization.

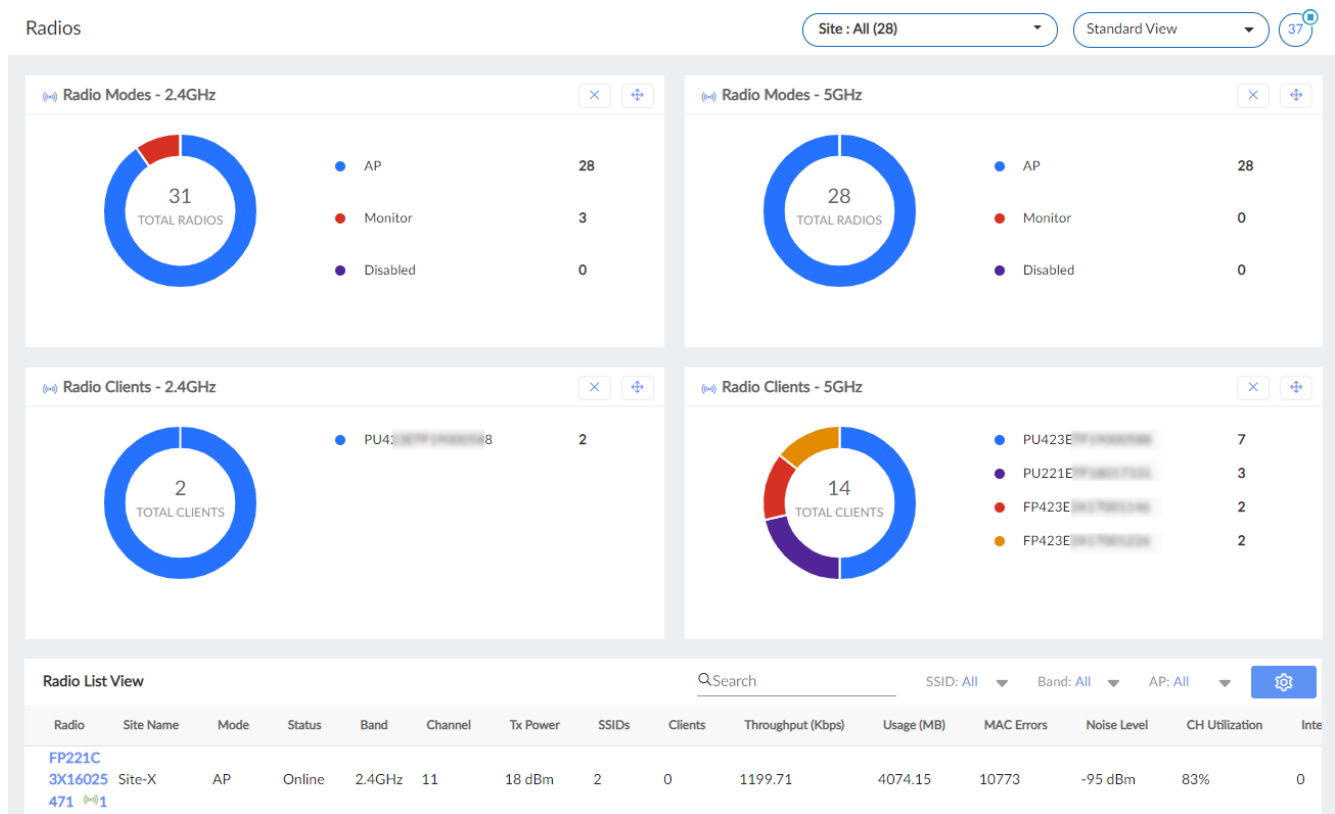


- **AP Status** displays the APs based on their connection status, whether online or offline.
- **AP CPU Usage** categorizes all the APs into different buckets of high and normal CPU utilization.
- **AP Memory Usage** categorizes all the APs into different buckets of high and normal memory utilization.
- **Top APs by Clients** displays the five APs with highest number of clients connected to them; counts the number of clients connected to each of these APs and the total number of clients.
- **Top APs By Throughput** displays the five APs with highest throughput; displays the throughput for each of these APs and the aggregate throughput.
- **Top APs By Volume** displays the five APs associated with the highest data volume; displays the data volume for each of these APs and the total data volume.
- **Top APs by Interfering BSSIDs** displays the top most interfering APs' BSSIDs.

- **Top AP Group** displays the five AP groups with highest number of AP members; counts the number of APs in each of these AP groups and the total number of AP groups.
- **AP Advanced Management** categorizes all the APs based on whether they avail free service or are subscription services
- **Top AP Models** displays the five AP models mostly deployed in your network; counts the number of APs belonging to each of these AP models and the total number of AP models.
- **Top AP OS** displays the five FOS version most FAPs belong to; counts the number of APs belonging to each of these AP models and the total number of AP models.


Radios

The data displayed on this dashboard categorizes the 2.4 GHz and 5 GHz radios into the top most based on different criteria, highest number of clients, highest throughput, data volume, noise levels (dBm), channel distribution, interfering APs, radio types, and Tx power (dBm). Radio Modes counts the radios in the 2.4 GHz and 5 GHz modes based on the operating modes: AP, Disabled, and Monitor. Click on any of these to view the radio details.

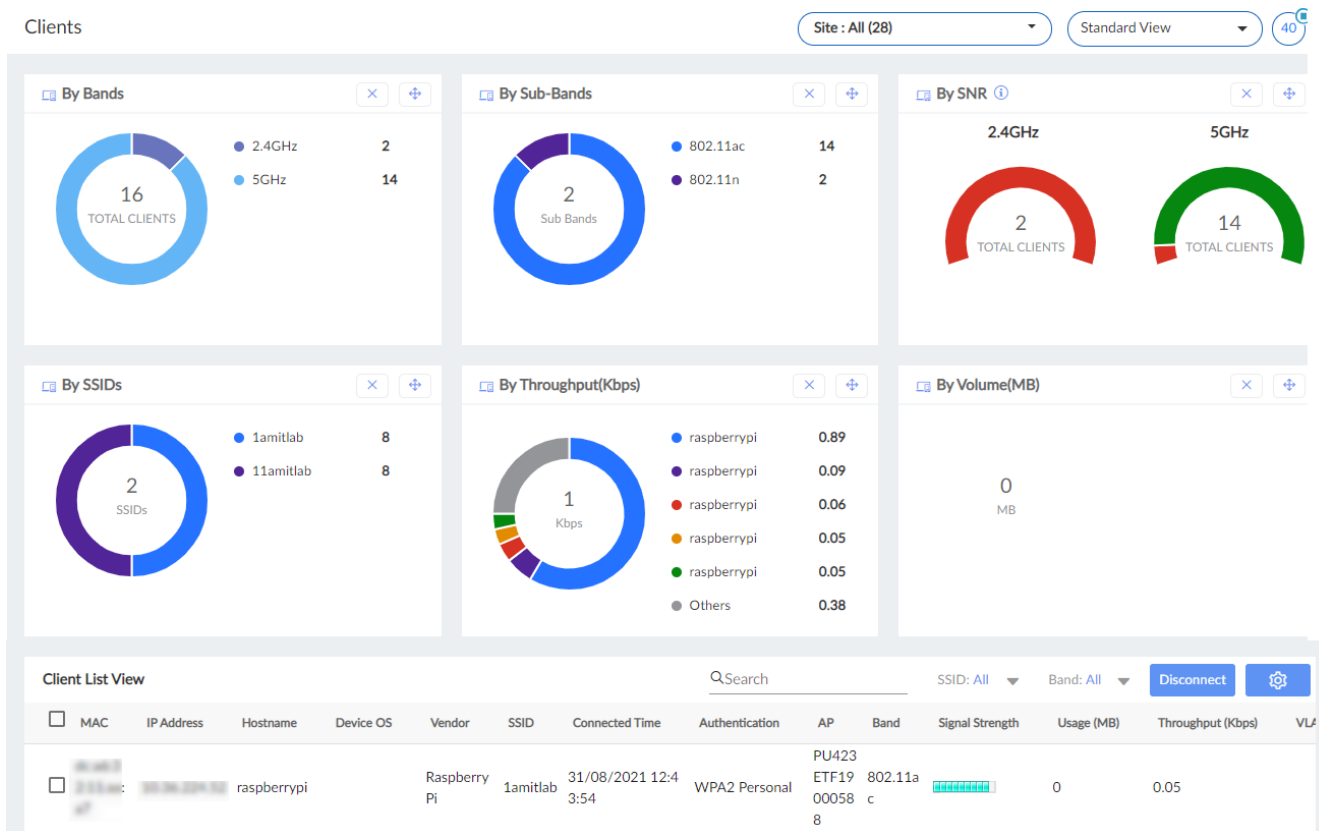


Click on any radio name to view the radio configuration and other associated details.

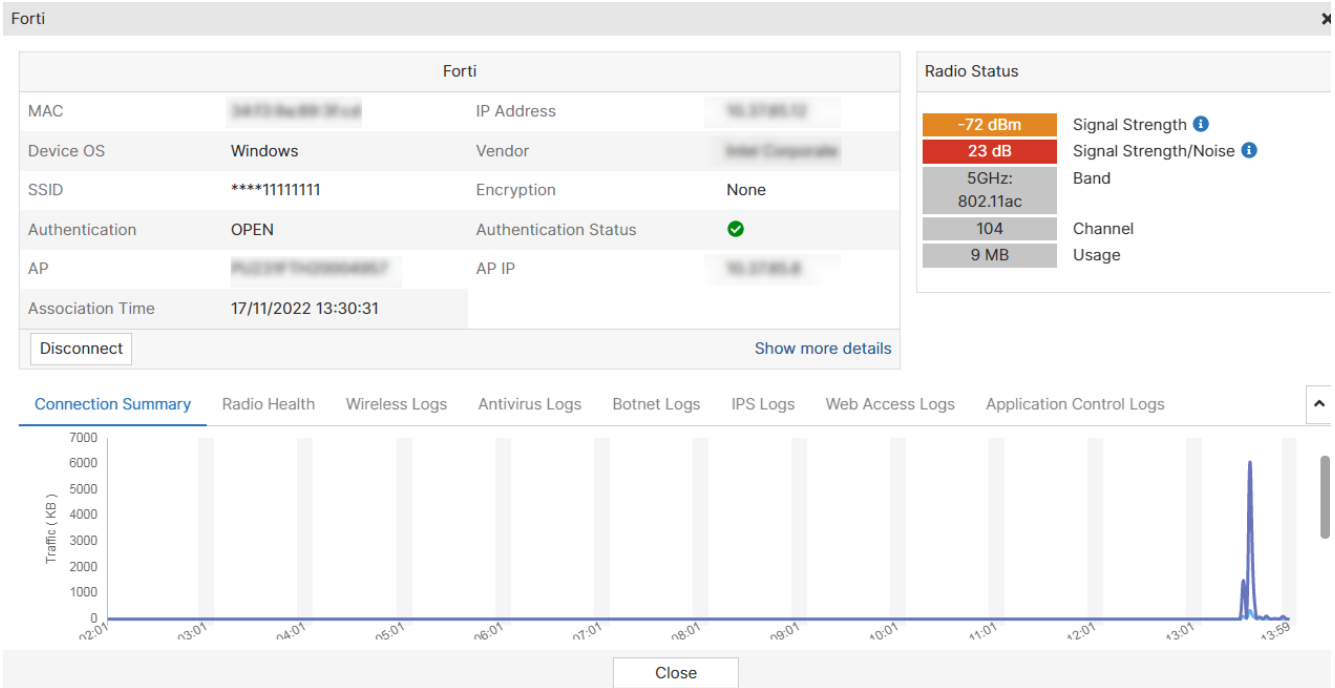
Clients

This tab lists the clients in your network with the associated information. The data displayed on this dashboard categorize the clients based on different criteria, bands and sub-bands used, SSIDs, SNR, highest throughput, data volume, VLAN, authentication mode, encryption mode, associated APs, number of channels, operating system, device types, and user groups. Click on the displayed data to view the client and other associated details. Click  for criteria based filtering of the columns, such as, user, MPSK, group, channel etc.

You can disconnect a wireless client from the wireless network. However, the disconnected wireless clients may connect back when operating in auto-connect mode or one manually connects the client.



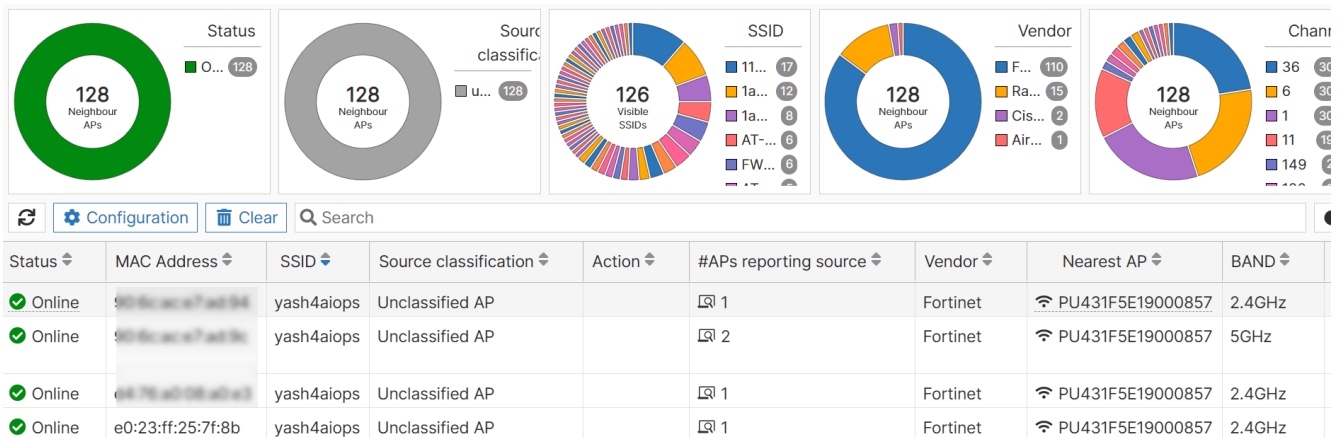
You can drill-down to view a single pane with all information and operations, related to a connected wireless client. This aids in quick troubleshooting.



Neighbour APs

This tab displays any neighboring APs (rogue and interfering APs) that might be present in your network. The dashboard displays the sources of interference that can be from the same network (Infrastructure) or a rogue device. The data is organized in widgets and tabular format. You can filter the required data easily and categorize multiple FortiAPs.

The data displayed on this dashboard categorizes the APs based on different criteria, class (*Rogue AP*, *Accepted AP*, *Unclassified AP*), SSIDs, signal strength, the radios detected by, channel used, authentication modes, vendors, etc. Click on the charts to view the specific devices and other associated details.



BLE Devices

This dashboard displays devices detected over Bluetooth Low Energy (BLE) with associated details such as the configured UUID, Major ID, and the device name and manufacturer. Click on the displayed data to view the devices and other details.

BLE Devices Site: All (2) Standard View 45

By Device Name

Others	102
--------	-----

By Device Manufacturer

Accelerated	1
Meru Networks Inc	1
Apple, Inc.	1
Others	99

By Device UUID

542 [redacted]	3
337 [redacted]	2
806 [redacted]	1
005 [redacted]	1
Others	95

By Device Major ID

Major ID 0	99
Major ID 1121	2
Major ID 1000	1

BLE Device List View AP: All Name: All Manufacturer: All ⚙️

Detected By	Serial Number	MAC	Name	Manufacturer	Address Type	UUID	Major ID	Minor ID	TX Power	Signal	Last Seen	First Seen
PU431F5E190010 38	[redacted]	[redacted]	[redacted]	[redacted]	Random	[redacted]	0	0		-83 dBm	01/03/2021 16:18:22	01/03/2021 16:09:32

Access Points

This section includes the following procedures to deploy, configure, and manage access points in FortiLAN Cloud:

- [Viewing the FortiAP status on page 52](#)
- [Upgrading a FortiAP device on page 59](#)
- [Rebooting a FortiAP device on page 60](#)
- [Activating/Deactivating a FortiAP device on page 60](#)
- [Configuring FortiAP settings on page 60](#)
- [Overriding FortiAP Settings on page 62](#)
- [Undeploying a FortiAP device on page 64](#)
- [Moving a FortiAP between accounts on page 43](#)
- [Capturing packets on page 68](#)
- [Creating a Site on page 64](#)
- [Adding a floor plan to FortiLAN Cloud on page 66](#)
- [Setting a FortiAP device on a map or floor plan on page 66](#)
- [Spectrum Analysis on page 72](#)
- [VLAN Probe on page 70](#)
- [iPerf Throughput Test on page 75](#)
- [Ping Test on page 75](#)
- [ARP Table on page 68](#)
- [Disconnection Reports on page 69](#)
- [Traceroute on page 69](#)
- [AP CLI Access on page 71](#)
- [TAC Report on page 71](#)

Viewing the FortiAP status

The status view provides vital information about the FortiAP health. It organizes data in various tabs with configuration and operational status of the FortiAP and its radios. Information is classified into charts and lists.

Procedure steps

1. In the Menu bar, click **Access Points**.
2. In the Navigation pane, click **Status View**.

Summary

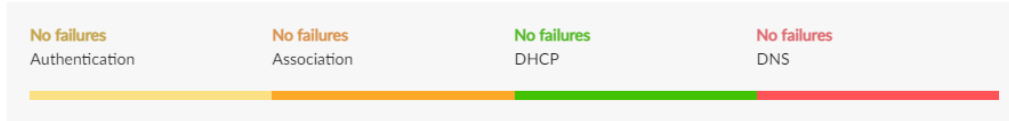
This tab displays the FortiAP and wireless client summary, by default, data for the last 12 hours is displayed. You can filter information for specific SSIDs; the client count affected by connection issues and the **Association**, **Authentication**, **DHCP**, and **DNS** failures are listed. The graphs display the FortiAP aggregate throughput (uplink and downlink) and the client count for the selected duration. Wireless information such as the client count with good and low RSSI values and clients per SSID are also displayed.

Duration: 12 hours | SSID: All SSIDs

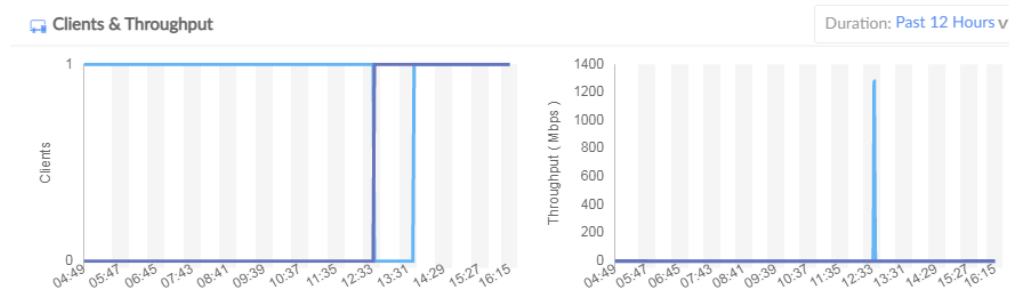
Connection Status
No issues with connection were found.

Issues by SSID
No issues with connection were found.

Problematic Connection Steps



Access Point



Wireless Information

Clients



- Clients with Low RSSI: 0
- Clients with Good RSSI: 2

Clients per SSID



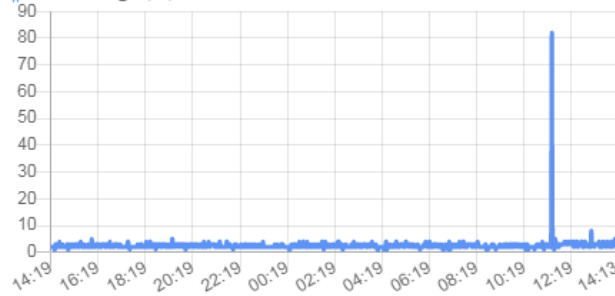
- 1Uma_psk: 2

AP

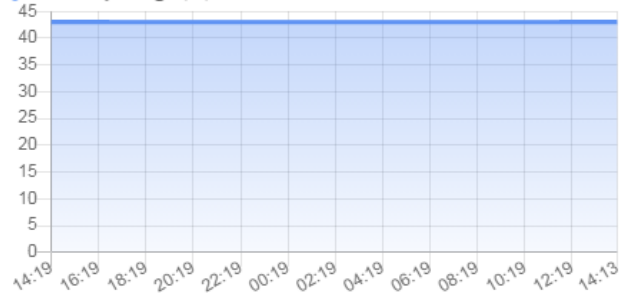
This tab displays the aggregate data usage (uplink and downlink), the FortiAP uptime, Platform profile details, and radio configuration (overridden parameters are highlighted).

Duration
Past 24 hours

CPU Usage (%)



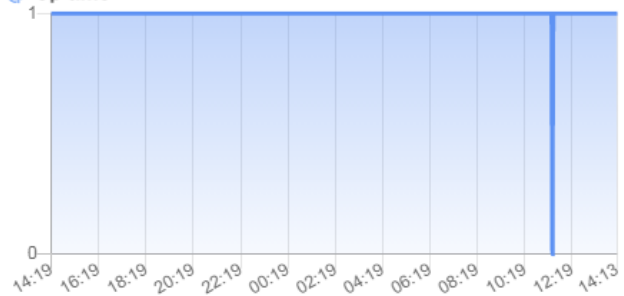
Memory Usage (%)



Usage (GB)



Up time



AP configuration

Platform Profile	FAP320C (US)
Region Code	A
SNMP Profile	None
BLE Profile	None
Discovery Type	DNS
LAN Ports	1

Radio Configuration

Smart AP Details

This device is not a smart AP.

You can perform the actions on the FortiAP.

- Reboot
- Upgrade
- Deactivate
- Undeploy
- LED blinking
- Configuration edit

Actions

LED Blinking	START	Reboot this device	REBOOT
Deactivate this device	DEACTIVATE	Undeploy this device	UNDEPLOY
Upgrade this device	UPGRADE	Configure this device	EDIT

Logs

This tab displays the following logs associated with the FortiAP.

- Wireless Logs
- Antivirus Logs
- Application control Logs
- Botnet Logs
- IPS Logs
- Web Access Logs

You can set the duration to view FortiAP logs, by default, logs are displayed for the last 12 hours. The donut charts display the number of logs based on their severity; **High**, **Medium**, **Low**, and **Info**.

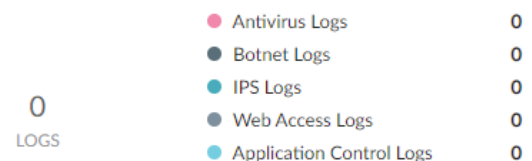
Note: The FortiAP must have a UTP license to access all logs except **Wireless Logs**.

Duration: 12 hours | Log Type: Wireless Logs

Wireless Logs



Unified Threat Management logs



Wireless Logs

Search

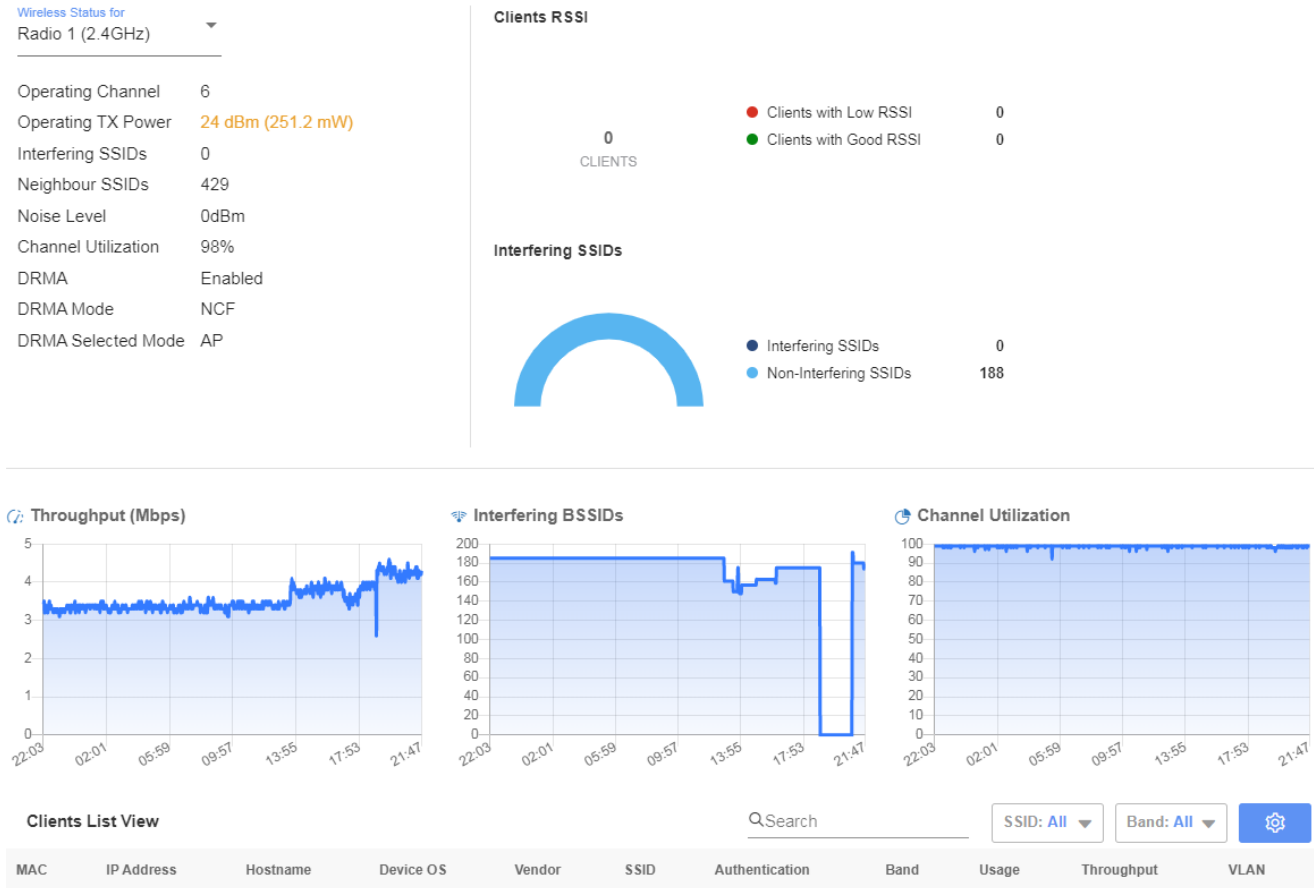
SSID: All



Timestamp	Event Type	Subtype	SSID	Client MAC	Action	Reason	Message
2021-06-02 11:31:55	station	auth-psk	1Uma_psk	[REDACTED]	client-disconnected-by-wtp	Reserved 0	Client [REDACTED] disconnected by WTP.
2021-06-02 11:31:54	station	auth-psk	1Uma_psk24	[REDACTED]	client-disconnected-by-wtp	Reserved 0	Client [REDACTED] disconnected by WTP.

Radio

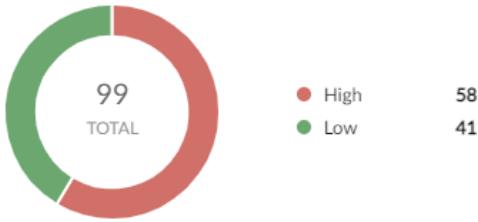
This tab displays wireless statistics and the list of wireless clients. You can select any one of the 3 radios to view the associated details. The charts display the client count with good and low RSSI values, interfering and non-interfering APs' count, throughput (Mbps), interfering APs' BSSIDs, and the channel utilization.



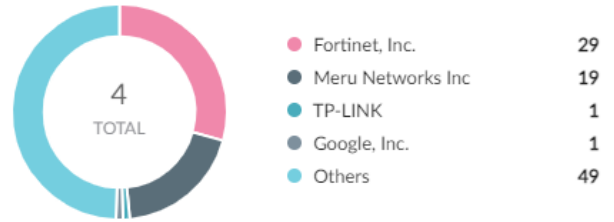
Neighbour APs

This tab displays any neighboring APs detected by this FortiAP and visualizes data on the basis of signal strength and vendor. Click on the displayed data to view the devices and other associated details.

By Signal



By Vendor



Neighbour List View

Search

SSID: All Class: All Channel: -

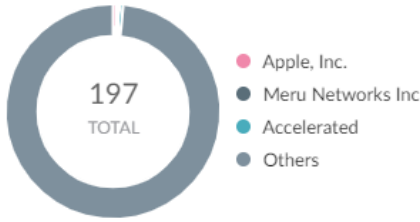


Status	BSSID	SSID	Vendor	Band	Channel	Rate	Authentication	Signal Strength	Last Seen	First Seen
(📶)	...	AZMM Voice	Meru Networks Inc	5GHz	36	289Mbps	WPA2 Personal	-50 dBm	2021-03-01 16:38:38	2021-03-01 05:01:18
(📶)	...	CLOUD-QA-OPEN	Meru Networks Inc	2.4GHz	1	216Mbps	OPEN	-63 dBm	2021-03-01 16:38:51	2021-02-22 21:09:02
(📶)	...	PRANEE TH-84	Meru Networks Inc	2.4GHz	1	216Mbps	OPEN	-64 dBm	2021-03-01 16:38:51	2021-02-22 21:09:02

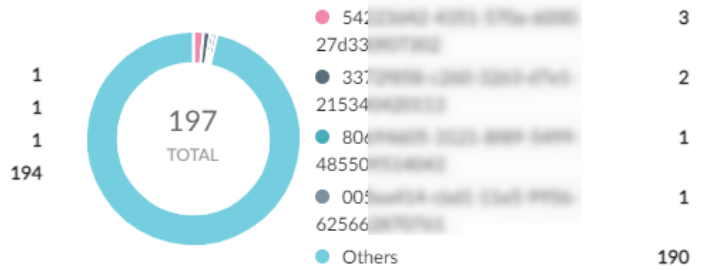
BLE

This tab displays devices detected over BLE with associated details such as the configured UUID, Major ID, and the device manufacturer. Click on the displayed data to view the devices and other details.

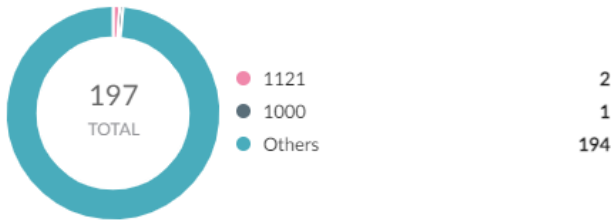
By Device Manufacturer



By Device UUID



By Device Major ID



BLE Devices List View

Search

MAC	Name	Manufacturer	UUID	Major ID	Minor ID	TX Power	Signal	Last Seen	First Seen
4:...				0	0		-83 dBm	01/03/2021 1 6:18:22	01/03/2021 1 6:09:32
1:...				0	0		-83 dBm	01/03/2021 1 6:38:22	01/03/2021 1 6:19:32
7:...				0	0		-84 dBm	01/03/2021 1 6:23:22	01/03/2021 1 6:14:02

LAN

This tab displays the RADIUS and VLAN request status.

Summary AP Logs Radio Neighbour APs BLE **LAN** Tools

Duration
12 hours

RADIUS Request Status


Client MAC	Radius Request Type	Status
...	Access Request	Success
...	Access Request	Success
...	Access Request	Success
...	Access Request	Success

VLAN Request Status
No requests were found.

Tools

This tab displays the functionalities/utilities that you can run on the FortiAP. These are available in **Edit View > Tools**.

Radio Frequency Analysis


 Spectrum Analysis Run i

Connectivity Analysis

 Capture Packet Run i


 VLAN Probe Run i

 ARP Table Run i

 Disconnection reports Run i

 Traceroute Run i

Throughput Analysis

 iPerf Throughput Test Run i

 Ping Test Run i

Enhanced Troubleshooting

 TAC Report Run i

 AP CLI access Run i

Upgrading a FortiAP device

Use this procedure to upgrade the firmware on one or more FortiAP devices.

FortiLAN Cloud downloads the firmware to the FortiAP device.



During a FortiAP firmware upgrade, there is a service interruption because the FortiAP device needs to reboot.

Procedure steps

1. In the Menu bar, click **Access Points**.
2. In the Navigation pane, click **Edit View**.
3. To set the firmware upgrade for a single FortiAP device:
 - a. In the table, locate the FortiAP device that you want to upgrade. At the end of that row, click on the **AP Actions** tab and select **Upgrade Firmware**.
 - b. Select the build and schedule.
 - c. To save changes, click **Apply**.
4. To set the firmware upgrade for multiple FortiAP devices:
 - a. In the table, select checkboxes for all the FortiAP devices that you want to upgrade.
 - b. Click **Edit Configuration > AP Actions > Upgrade Firmware**.
 - c. For each FortiAP device, select the build and schedule.
 - d. To save changes, click **Apply**.

Rebooting a FortiAP device

Use this procedure to reboot one or more FortiAP devices.

FortiAP devices will need to reboot during a FortiAP firmware upgrade.

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device to configure. At the end of that row, click on the **AP Actions** tab and select **Reboot AP**.
4. You may have to wait a few minutes before the AP is successfully rebooted.

Activating/Deactivating a FortiAP device

Use this procedure to activate a FortiAP device.

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device to configure. At the end of that row, click on the **AP Actions** tab and select **Activate AP/Deactivate AP**.
4. The status of the AP changes to **Not Activated/ Online** as per the action.

Configuring FortiAP settings

Use this procedure to modify the settings of a FortiAP device.

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device. At the end of that row, click on the **Edit** icon and to configure/edit the AP settings. When you edit/configure a FortiAP device, you can apply or change the following settings.
 - Name
 - AP Tag - Select the tag to apply to the FortiAP. See [Adding AP tags on page 103](#)
 - Platform Profile - Use the default profile or a custom profile. See [Adding a FortiAP platform profile on page 93](#).
 - Overrides (Upgrade, BLE, and radio) - Configure platform profile overrides. See [Overriding FortiAP Settings on page 62](#).
 - Admin Access (Telnet, HTTP, HTTPS, SSH, SNMP)

- Admin Password (maximum length is 128 characters)

Configure Access Point
✕

Serial Number	<input type="text" value="FP320C3X17004542"/>
Name	<input type="text" value="FP320C3X17004542"/>
AP Tag	<input type="checkbox"/> connectivity <input type="checkbox"/> vaithe <input type="checkbox"/> U231
Platform Profile	<input type="text" value="FAP320C"/>
▼ Upgrade Override	
Upgrade Override Enable	<input checked="" type="checkbox"/>
Upgrade APs upon Connect	<input type="checkbox"/> ⓘ
Force Downgrade	<input type="checkbox"/> ⓘ
Target Firmware Version	<input type="text" value="Latest Version Available"/>
▶ BLE Overrides	
Radio 1 Overrides	
Band	<input type="checkbox"/> 2.4GHz 802.11n/g/b
Channel Width	20MHz
Channels	<input type="checkbox"/> 1 ,6 ,11
TX Power	<input type="checkbox"/> Manual(100 %)
Radio 2 Overrides	
Band	<input type="checkbox"/> 5GHz 802.11ac/n/a
Channel Width	20MHz
Channels	<input type="checkbox"/> 36 ,40 ,44 ,48 ,52 *...
TX Power	<input type="checkbox"/> Manual(100 %)
Admin Access	<input type="checkbox"/> Telnet ⓘ <input type="checkbox"/> HTTP ⓘ <input checked="" type="checkbox"/> HTTPS <input checked="" type="checkbox"/> SSH <input checked="" type="checkbox"/> SNMP
Set Admin Password ⓘ	<input type="checkbox"/>

4. To save the changes, click **Apply**.

Changing FortiAP settings

Use this procedure to change the settings of a FortiAP device.

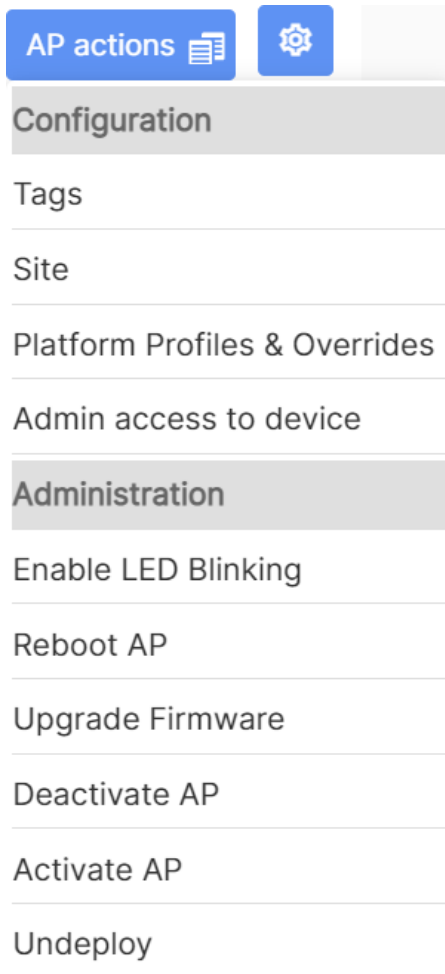
When you configure a FortiAP device, you can apply or change the following settings:

- Tags
- Sites

- Platform Profiles (Use the default profile or a custom profile. See the [Adding a FortiAP platform profile on page 93](#) procedure) and Overrides (See the [Overriding FortiAP Settings on page 62](#) procedure.)
- Admin (Telnet, HTTP, HTTPS, SSH, SNMP) and Admin Password
- Firmware (See the [Upgrading a FortiAP device on page 59](#) procedure.)
- Undeploy (See the [Undeploying a FortiAP device on page 64](#) procedure.)

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device to configure and click on the **AP Actions** tab.



4. Edit settings as required.
5. To save the changes, click **Apply**.

Overriding FortiAP Settings

The FortiAP Platform profile settings can be overridden. For more information, see [Adding a FortiAP platform profile on page 93](#).

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device to update and click on the **AP Actions** tab and select **Platform Profiles and Overrides**. You can override the upgrade, BLE, and radio configurations. For more information on these parameters, see [Adding a FortiAP platform profile on page 93](#).

Edit platform profile and override settings for APs

▼ FAPS421E FAPS421E ▼

▼ Upgrade Override

Upgrade Override Enable

Upgrade APs upon Connect i

Force Downgrade i

Target Firmware Version Latest Version Available ▼

▼ BLE Overrides

iBeacon Major ID

iBeacon Minor ID

Eddystone Instance ID

Radio 1 Overrides

DRMA Mode Override i

DRMA Mode AP Monitor NCF NCF-Peek i

Band 2.4GHz 802.11n/g/b

Channel Width 20MHz

Channels 1,6,11

TX Power Manual(100 %)

4. Select the parameters to be modified and enter the new values. The DRMA Mode Override setting forces the radio into the AP or monitor mode. Enable it and select the any of the following DRMA modes to apply to the radio.
 - **AP** – Set the radio to AP mode.
 - **Monitor** – Set the radio to Monitor mode.
 - **NCF** – Select and set the radio mode based on NCF score.
 - **NCF Peek** – Select the radio mode based on NCF score, but do not apply.

When **NCF** or **NCF Peek** is selected, you can view the target mode selected by the NCF algorithm in the **Radio** tab of [Viewing the FortiAP status](#).

Procedure steps

1. In the menu bar, click **Access Points**.
2. In the navigation pane, click **Edit View**.
3. In the table, locate the row for the FortiAP device to update. At the end of that row, click on the **Edit** icon and select **Change Platform Profiles and Overrides**.
4. Select the parameters to be modified and enter the new values.
See section [Configuring FortiAP settings on page 60](#).

Procedure steps

1. In the menu bar, click **Deploy APs**.
2. Select the FortiAP device to update and select **Select Platform Profiles and Overrides**.
3. Select the parameters to be modified and enter the new values.
See section [Deploying a FortiAP device to a network on page 42](#).

Undeploying a FortiAP device

When you undeploy a FortiAP device, FortiLAN Cloud removes the device from a network and then returns this device to the AP Inventory list. You can then deploy that device to another network or delete it from FortiLAN Cloud.

Procedure steps

1. Go to the network that has the FortiAP device that you want to undeploy.
2. menu bar, click **Access Points**.
3. In the navigation pane, click **Edit View**.
4. In the table, locate the FortiAP device that you want to undeploy. At the end of that row, click on the **AP Actions** tab and select **Undeploy**.
5. Click **Yes**.
6. Go to the FortiLAN Cloud Home page and click **Inventory**.
7. Make sure that the FortiAP device is in the AP inventory list.

Creating a Site

Create a geographical site in FortiLAN Cloud to associate a floor plan to.

1. Navigate to **Wireless > Access Points > Edit View** and select the **Site** drop-down menu and click on the  icon.

Add site

Name *

Address

2. Select **Add Site** and enter a unique name for your site and an optional **Address**.

Add site

Name *


Address


3. Click **Apply**.


The site that you created is now displayed in the **Site** drop-down menu.


Site : All(1) ▼

Include sub-sites

▼ All 

 Site-X

 Site1

 test


Adding a floor plan to FortiLAN Cloud

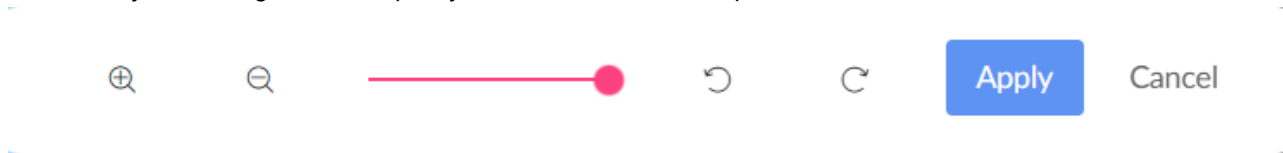
Use this procedure to add a floor plan to FortiLAN Cloud.

Prerequisites

Identify the site where you want to load a floor plan. Go to **Access Points > Map View**. If there is no site, then add one.

Procedure steps

1. In the Menu bar, click **Access Points**.
2. In the Navigation pane, click **Map View** and then select the site to which you want to add a floor plan.
3. Click  and select **Add Floor Plan**.
The Upload Floor Plan dialog opens.
4. To select a file for the floor plan, click **Choose File**.
The File Upload dialog opens.
5. Locate the file and then click **Open**.
6. If it is an outdoor plan, select **Is Outdoor?**
7. Click **Submit**.
FortiLAN Cloud displays the uploaded floor plan.
8. You can adjust the magnification, opacity, and rotation of the floor plan.



9. To save changes, click **Apply**.

Setting a FortiAP device on a map or floor plan



Use this procedure to set the position of a FortiAP device on a map or floor plan.

Prerequisites

- Complete the [Adding a floor plan to FortiLAN Cloud on page 66](#) procedure, if you want to set a FortiAP device on a floor plan.
- Identify the site that has the map or floor plan that you want to set the FortiAP device on. Go to **Access Points > Map View**.

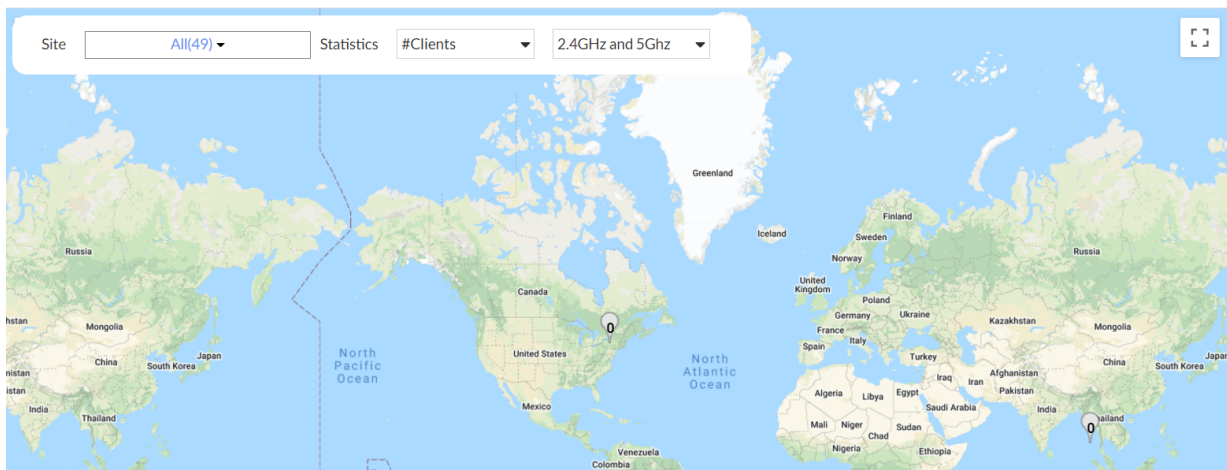
Procedure steps

1. To move a FortiAP device to the site that has the map or floor plan that you want to use:
 - a. In the Menu bar, click **Access Points**.
 - b. In the Navigation pane, click **Edit View**.

- c. In the first column of the table, select the checkbox for the FortiAP device that you want to move.
 - d. Click **AP Actions > Site**.
 - e. Select the site and click **Apply**.
2. To set the position of a FortiAP device on a map or floor plan:
- a. In the Navigation pane, click **Map View** and then select the site that includes the FortiAP that you want to use.
 - b. Click  and select **Set AP Position**.
 - c. Click and drag  to the desired position on the map or floor plan.
 - d. Click **Close**.

The map or floor plan shows the FortiAP device.

The following image shows an example of an AP set on a floor plan:



Tools

FortiLAN Cloud provides various utilities that you can run on the FortiAP for the following.

- **Connectivity Analysis**
 - [ARP Table on page 68](#)
 - [Capturing packets on page 68](#)
 - [Disconnection Reports on page 69](#)
 - [Traceroute on page 69](#)
 - [VLAN Probe on page 70](#)
- **Enhanced Troubleshooting**
 - [AP CLI Access on page 71](#)
 - [TAC Report on page 71](#)
- **Radio Frequency Analysis**
 - [Spectrum Analysis on page 72](#)
- **Throughput Analysis**
 - [iPerf Throughput Test on page 75](#)
 - [Ping Test on page 75](#)

ARP Table

The ARP Table records the discovered MAC address - IP address pairs of devices connected to a network and the vendor details. Each connected device has its own ARP table that stores the MAC-IP address pairs that the device has communicated with.

ARP Table (FP224E5J19001439) ✕		
Status: Test complete		Filter by <input type="text" value="MAC or IP"/> Run
IP	MAC	Vendor Name
10.33.118.1	d0:7e:28:48:52:a8	HP
10.33.118.27	04:d5:90:46:35:20	Fortinet

Items per page: 1 - 2 of 2 |< < > >|

Capturing packets

Use this procedure to capture packets on a FortiAP device. Packet captures help you diagnose and troubleshoot FortiAP device problems in a FortiLAN Cloud deployment. Capturing packets can affect device performance because the capture can collect large amounts of data. We recommend capturing packets when required only.

The packet capture includes the following information:

- **No.:** The packet number.
- **Time:** The start time of the packet capture with the format yyyy-mm-dd hh:mm:ss.
- **Source:** The IP address of the device that is sending the packet.
- **Destination:** The IP address of the device that is receiving the packet.
- **Length:** The length of each packet in bytes.
- **Info:** Additional information about the packet such as Control and Provisioning of Wireless Access Points (CAPWAP) control messages. For example, wireless termination points (WTP) information such as the following events:
 - WTP Event Response
 - WTP Event Request

Procedure steps

1. In Menu bar, click **Access Points**.
2. In the Navigation pane, click **Edit View**.
3. In the table, locate the FortiAP device for which you want to capture packets. At the end of that row, click on the **Tools** tab and select **Capture Packet**.

The <FortiAP_name> (Capturing) dialog opens.

4. To stop the packet capture, click **Stop**.

5. To download the packet capture, click **Download PCAP**.

No.	Time	Source	Destination	Length	Info
1	2022-12-06 21:33:40	10.24.93.15	10.24.93.5	8	Echo Request
2	2022-12-06 21:33:40	10.24.93.5	10.24.93.15	66	Echo Response
3	2022-12-06 21:33:58	10.24.93.15	10.24.93.5	129	WTP Event Request
4	2022-12-06 21:33:58	10.24.93.5	10.24.93.15	16	WTP Event Response
5	2022-12-06 21:34:11	10.24.93.15	10.24.93.5	357	WTP Event Request
6	2022-12-06 21:34:11	10.24.93.5	10.24.93.15	16	WTP Event Response
7	2022-12-06 21:34:11	10.24.93.15	10.24.93.5	8	Echo Request
8	2022-12-06 21:34:11	10.24.93.5	10.24.93.15	66	Echo Response
9	2022-12-06 21:34:11	10.24.93.15	10.24.93.5	268	WTP Event Request
10	2022-12-06 21:34:11	10.24.93.5	10.24.93.15	16	WTP Event Response
11	2022-12-06 21:34:41	10.24.93.15	10.24.93.5	8	Echo Request
12	2022-12-06 21:34:41	10.24.93.5	10.24.93.15	66	Echo Response
13	2022-12-06 21:35:12	10.24.93.15	10.24.93.5	357	WTP Event Request

Disconnection Reports

These reports provide diagnostic information on the factors causing the FortiAP to disconnect from the associated controller.

Select the AP and click **Fetch latest reports** and reports are displayed for the last three FortiAP disconnects. You can copy the report text or download it in the *.pdf* format.

Disconnection Reports: FP432FTF20000033		
AP	FP432FTF20000033	Fetch latest reports
Thu Nov 25 22:01:41 2021		COPY DOWNLOAD
Thu Nov 25 19:33:38 2021		COPY DOWNLOAD
Thu Nov 25 18:38:07 2021		COPY DOWNLOAD

Note: Currently, the FAP-U models do not support this feature.

Traceroute

Traceroute displays a hop-by-hop path through a network starting from the FortiAP to a specific destination. It displays all possible routes (paths) and measures transit delays of packets across the network.

You can enter a destination with an IPv4 address or hostname (FQND) that the FortiAP sends traceroute to. Enable **Do not fragment** to prevent packet fragmentation when it passes through a segment with a smaller Maximum Transmission Unit (MTU). The *UDP* and *ICMP echo* protocols are supported.

Traceroute: PU323E5E18012852

AP: PU323E5E18012852

Traceroute: 4.2.2.2

Do not fragment:

Protocol: UDP

Run

Trace Route Result

COPY | DOWNLOAD

```

traceroute to 4.2.2.2 (4.2.2.2), 20 hops max, 38 byte packets
 1: 10.10.10.1 (10.10.10.1) 0.273 ms
 2: 10.10.10.2 (10.10.10.2) 4.89 ms 0.587 ms
 3: 10.10.10.3 (10.10.10.3) 71.233.1) 0.818 ms
 4: 10.10.10.4 (10.10.10.4) .71.81.121) 5.211 ms
 5: 10.10.10.5 (10.10.10.5) 6.119.57.150) 42.304 ms
 6: 10.10.10.6 (10.10.10.6) 70.113) 48.924 ms
 7: 10.10.10.7 (10.10.10.7) 218.86) 39.377 ms
 8: 10.10.10.8 (10.10.10.8) 39.828 ms

```

You can copy or download the traceroute result in a PDF format.

VLAN Probe

VLAN probe feature enables FortiAPs to probe connected VLANs and subnets. It sends DHCP probes from the FortiAP's Ethernet interface to specific VLANs on the wired interface and returns information on their availability and subnet details. This helps diagnose and troubleshoot WiFi deployment issues.

- **AP** – Select the FortiAP. FOS version 6.4.0 and higher are supported.
- **WAN Port** – Select the 1st or 2nd Ethernet port of the FortiAP to initiate the VLAN probe.
- **VLAN Range** – Select the range of VLANs to probe. The valid range is 1 -4094.
- **Timeout** – Configure the timeout for the VLAN probe. The valid range is 1 – 60 seconds with a default value of 10 seconds.
- **Retries** – Configure the number of retries before timeout. The valid range is 1 to 10 with a default value of 6.

Select **Start** and the FortiAP initiates VLAN probe as per configurations.

VLAN Probe
✕

AP:

WAN Port:

VLAN Range: to 1 - 4094

Timeout: 1 to 60 secs

Retries: 1 to 10

Show: All Available

00:00:00

STOP
▶ START

VLAN ID	AVAILABILITY	SUBNET	AGE
230	● Not Available		
231	● Available		60s
232	● Available		60s
233	● Not Available		
234	● Not Available		

Items per page: 1 - 5 of 11

AP CLI Access

You can select any of the available commands in the **AP CLI Access** list; each command is associated with the corresponding help description. Click **Run** and the command output is displayed.

AP CLI Access: PU323E5E18012852
✕

AP:

AP CLI Access:

▶ Run

AP CLI Access Command Result [COPY](#) | [DOWNLOAD](#) ^

```

Version: FortiAP-U323EV v6.2,build0281,211125 (GA)
Serial-Number: PU323E5E18012852
BIOS version: 00000001
System Part-Number: P19568-05
Regcode: A
Base MAC: 
Hostname: PU323E5E18012852
Branch point: 281
Release Version Information: GA
Power-type: Eth1 PoE 802.3at
          
```

You can copy or download the result in a PDF format.

TAC Report

The Technical Assistance Center (TAC) report runs an exhaustive series of diagnostic commands for troubleshooting network issues.

TAC Report: PU323E5E18012852 ✕

AP Run

TAC Report Result COPY | DOWNLOAD ^

```

=====
OUTPUT of command "fap-get-status":
=====
Version: FortiAP-U323EV v6.2,build0281,211125 (GA)
Serial-Number: PU323E5E18012852
BIOS version: 00000001
System Part-Number: P19568-05
Regcode: A
Base MAC: ██████████
Hostname: PU323E5E18012852
Branch point: 281
Release Version Information: GA
Power-type: Eth1 PoE 802.3at
=====
OUTPUT of command "perf":
=====

CPU Load   : 1%
Memory Usage: 31%
```

You can copy the TAC report or download it in a PDF format.

Spectrum Analysis

This feature provides visual spectrum analysis capabilities that scan radios for RF channel conditions and sources of interference which can potentially impact WLAN efficiency. Based on the spectrum analysis data, corrective measures such as determining optimal channel planning, debugging client related connectivity issues and automatic transmit power settings are initiated. This facilitates quality wireless service levels by ensuring the optimal usage of the channels considering the information provided by the FortiLAN Cloud spectrum analyser. Both 802.11 and non-802.11 sources of interference can be detected and analyzed by the spectrum analyzer.

This feature is supported only on the FortiAP-S and FortiAP-W2 models with FortiOS 6.4 and above.

Notes:

- Spectrum analysis is only supported when the radio is in the monitor mode.
- FortiAP supports spectrum analysis and is online.
- FortiAP Advanced Management License is required.

Select the channels to be scanned and configure the scan duration, the spectrum analysis is performed on both 2.4 GHz and 5 GHz frequency bands. The spectrum analyzer result displays widgets with the type of interference, signal strength, impacted channels, and wireless spectrum current utilization, start and end time and duration of the interference. It classifies wireless & non-wireless interferences to easy identification of the source.

- You can select the **AP**, **Radio**, and **Channels** to be scanned for interferences.
- The **Scan Duration** can be set to 1, 5, 30, 60 minutes or Infinity. When Infinity is selected the scan is performed till it is manually stopped.
- The **Sampling Interval** and the number of **Spectrogram Samples** cannot be modified.

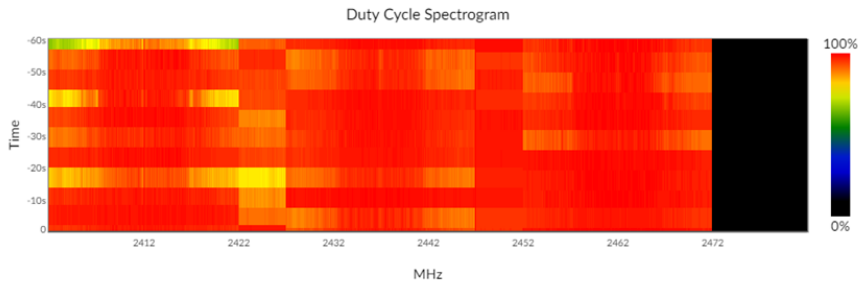
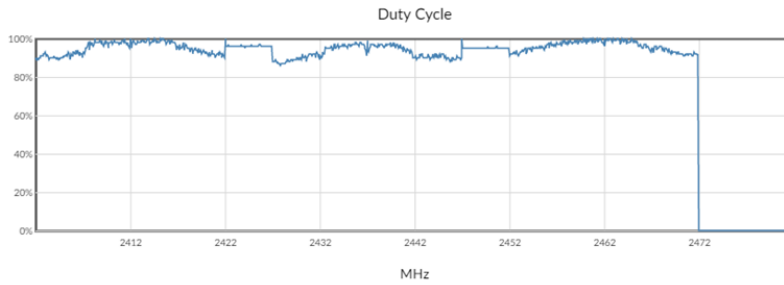
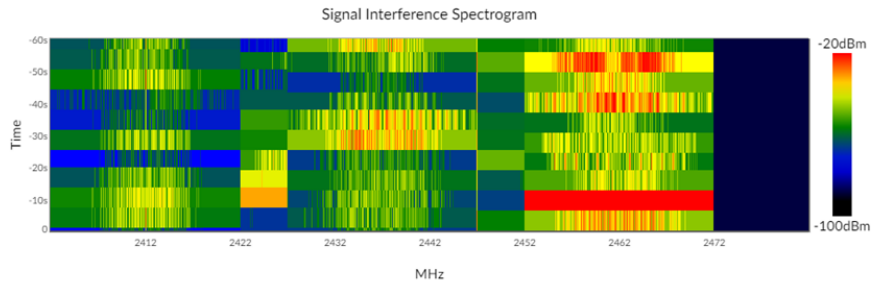
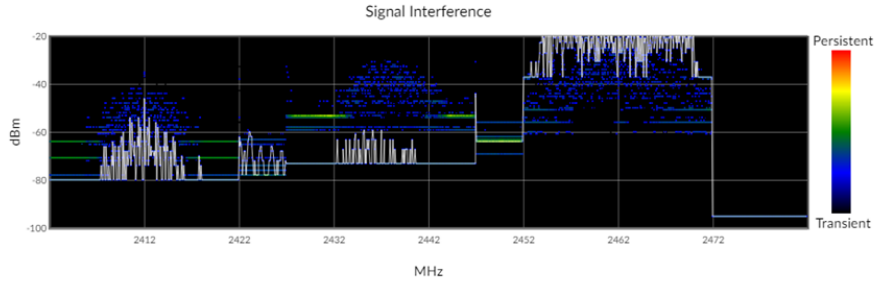
Select **Start** and the GUI periodically polls the spectrum analysis data based on the fixed sampling interval of 1000 milliseconds. Data is visualized as 4 charts representing signal interference marking the noise levels for each channel, signal interference spectrogram representing 60 samples for different channels at specific time intervals, the duty cycle

charts marking the extent to which a non-WiFi device/neighbouring AP is interfering, and the duty cycle spectrogram representing 60 such duty samples for each channel over a period of time.

The tabular data for non-WiFi interference displays the time and frequency of last detection and any of the following type of devices causing the interference.

- Microwave ovens
- Video bridges
- Wi-Fi, DSSS cordless phones
- Bluetooth, FHSS cordless phones

The tabular data for WiFi interference displays the online neighbouring AP's BSSID, SSID, maximum signal strength, and channel and time of last detection.



Non Wi-Fi Interference		
Detected Time	Frequency	Type
2020-09-14 14:54:09	2452	Wi-Fi, DSSS cordless phone
2020-09-14 14:54:08	2402	Wi-Fi, DSSS cordless phone
2020-09-14 14:54:08	2427	Wi-Fi, DSSS cordless phone
2020-09-14 14:53:54	2427	Bluetooth, FHSS cordless phone
2020-09-14 14:53:00	2437	Bluetooth, FHSS cordless phone

Items per page: 5 | 1 - 5 of 7 | < >

Wi-Fi Interference				
Detected Time	BSSID	SSID	Channel	Signal
2020-09-14 14:54:02	[blurred]		6	-30 dBm
2020-09-14 14:54:02	[blurred]	Bluetooth-1	6	-52 dBm
2020-09-14 14:54:02	[blurred]	ad	6	-58 dBm
2020-09-14 14:54:02	[blurred]	llo5677	6	-62 dBm
2020-09-14 14:54:02	[blurred]	plus1	6	-59 dBm

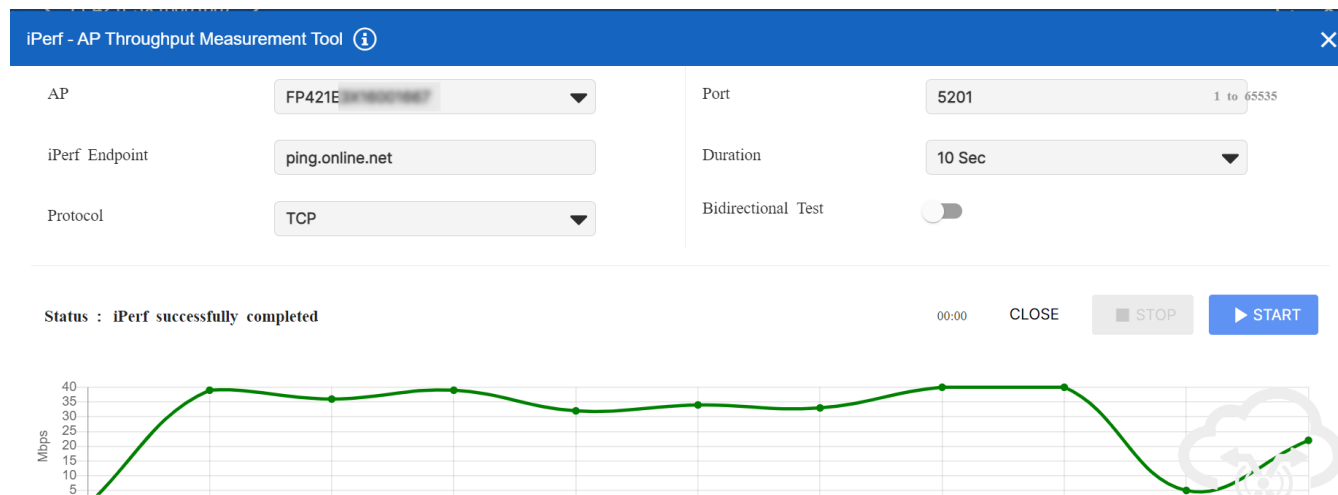
Items per page: 5 | 1 - 5 of 54 | < >

iPerf Throughput Test

The iPerf throughput test measures the UDP and TCP real-time network throughput to aid in estimating the maximum achievable bandwidth in your network. This is useful to isolate problems related to slow network connections. The iPerf test is performed between the FortiAP and an endpoint that can be a wireless client, a computer in the LAN, or an external online server like *ping.online.net*. You must start the iPerf server manually on the endpoint unless using the online server. This feature tests uplink, downlink, or both traffic streams.

- **AP** - Select the FortiAP for iPerf testing.
Note: The supported FOS version is 6.4.0 and higher for FAP-S/W2 models and 6.2.0 or higher for FAP-U models.
- **Port** – Select the port. The valid range is 1 – 65535.
- **iPerf Endpoint** – Enter the endpoint device IPv4 address/hostname. iPerf 2 and 3 are supported.
- **Duration** – Enter the duration for the iPerf test. The allowed values are 10, 30, and 60 seconds.
- **Protocol** – Select the protocol to measure throughput, **UDP** or **TCP**.
- **Target Bandwidth** – This is applicable only on UDP traffic. The valid range is 1 – 1024 Mbps.
- **Bidirectional Test** – When disabled only uplink traffic is tested and when enabled both uplink and downlink traffic streams are measured. In a bidirectional test, the total time required to complete the test is twice the selected time. For example, if 30 seconds is the configured test duration then the total time required to complete the test is 60 seconds; 30 seconds for uplink and 30 seconds for downlink.

Select **Start** and the FortiAP initiates iPerf testing as per configurations.



Notes:

- Fortinet recommends to use the latest supported iPerf version in the endpoint machine.
- IPv6 servers are not supported for iPerf testing.
- Ensure the iPerf test ports are enabled in the firewall.

Ping Test

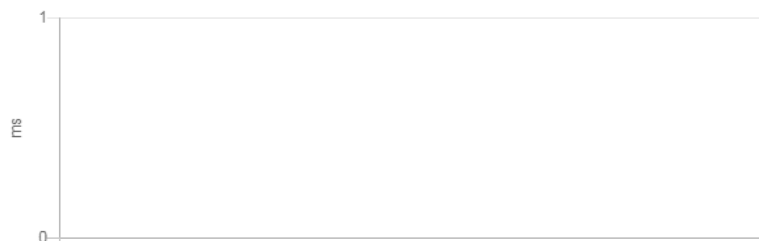
You can conduct a ping test to an IP/domain or to a local AP for troubleshooting network connectivity issues between devices.

Note: The ping test supports only IPv4 addresses.

Ping Test (FP224E5J19001439)

Ping or

Status: **Not started**




- **Ping** - Enter the target IP address or hostname to run the ping test.
- **Ping AP** - Select the local AP within the network to run the ping test.

The test result is obtained in 10 seconds.

Ping Test (FP224E5J19001439) ×

Ping or

Status: **Test complete**



Loss Rate: 0 % Average Latency: 1.314 ms

Configuration

This section includes the procedures for creating different types of SSID with FortiLAN Cloud and configuring various options.

Use the following table for configuration information available in a network under the **Configure** section.

Configuration module	Description
SSIDs	Configuration of SSIDs and their deployment on all APs or selected APs in the AP Network. For more information, see Adding an SSID to a network on page 78 .
Platform Profile	Customization of AP profiles. For more information, see Adding a FortiAP platform profile on page 93 .
Scheduled Upgrade	To upgrade fully deployed FortiAPs. For more information, see Configuring Scheduled Upgrades on page 97 .
Syslog Profiles	To create a Syslog profile. For more information, see Adding a Syslog Profile on page 98 .
SNMP Profile	To create and assign an SNMP profile. For more information, see Configuring SNMP Profile on page 99 .
BLE Profile	To configure a BLE Profile. For more information, see Adding a BLE Profile on page 100 .
DARRP	Configure Distributed Automatic Radio Resource Provisioning (DARRP). For more information, see Enabling Distributed Automatic Radio Resource Provisioning (DARRP) on page 101 .
AP Tags	AP grouping. APs in a group share the same AP tag. For more information, see Adding AP tags on page 103 .
MAC Access Control	Import and export MAC addresses in order to manage an access control list (ACL). For more information, see: <ul style="list-style-type: none">• Configuring MAC access control and MAC filtering on page 103• Exporting ACL list on page 104
L3 Firewall Profile	Create L3 profiles used in SSID. For more information see, Adding an L3 Firewall Profile on page 104 .
QoS Profile	QoS profiles used in SSIDs. For more information, see Adding a QoS profile on page 105 .
FortiLAN Cloud User/Group	Users and their group configurations can help avoid the need for RADIUS servers at the customer location. For more information, see: <ul style="list-style-type: none">• Creating a FortiLAN Cloud group and users on page 107

Configuration module	Description
	<ul style="list-style-type: none"> • Adding a FortiLAN Cloud guest on page 108 • Adding a FortiLAN Cloud guest manager on page 109
Tunnel Profile	GRE/L2TP profiles used in SSIDs. For more information, see Adding a Tunnel profile on page 110
Schedule Profile	Create a Multiple PSK schedule profile. For more information, see Adding a Schedule Profile on page 112..
WIDS Profile	Create a WIDS profile for network security. For more information, see Adding a WIDS Profile on page 113.
My RADIUS Server	RADIUS servers used for authenticating wireless users. For more information, see Adding a RADIUS server on page 109.
Network	Manage various network administration settings. For more information, see Network Settings on page 117
Bonjour Relay	Configure the Bonjour Relay service for devices to broadcast their services. For more information, see Enabling Bonjour Relay on page 119.
FortiPresence	Configure FortiPresence for user traffic analytics. For more information, see Enabling FortiPresence on page 120.
Change History	View the history of FortiLAN Cloud configuration changes. For more information, see Viewing the history of configuration changes on page 122.

Adding an SSID to a network

Use this procedure to configure and add an SSID to a network.

Note: The SSID name is alpha-numeric and case-sensitive. The first character of the SSID name must NOT be any of these characters, ; # and !. Special characters, + [] " TAB, and trailing spaces are also not allowed in the SSID name.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the SSID.
2. In the Menu bar, click **Configure**.
3. In the Navigation bar, click **SSIDs**.
4. Click **Add SSID** and select any of the listed [Authentication Methods on page 79](#).
5. To go to Security, click **Next**. If the FortiAP model supports security features, then select the ones you want to enable.
6. To go to Availability, click **Next** and complete the following fields.
 - **Radio:** Select which radios you want to be active.
 - **Per-AP:** Select whether you want the SSID to be available to all APs or APs with specific tags.
 - **Schedule:** Select a schedule for when the SSID is available.
7. To go to Preview, click **Next** and review the summary. If you need to make changes, click **Prev**.

8. To complete the changes, click **Apply**.
9. You can now go to the [Deploying a FortiAP device to a network on page 42](#) procedure.

Authentication Methods

This section describes the supported authentication methods. Follow the prerequisites and configuration options listed for each authentication method, and the [Basic Settings on page 84](#) and [Advanced Settings on page 87](#) to add an SSID.

- [WPA2 Personal on page 79](#)
- [WPA2 Enterprise on page 79](#)
- [WPA3-SAE/WPA3-SAE Transition on page 80](#)
- [WPA3 Enterprise on page 81](#)
- [WPA3-OWE/WPA3-OWE Transition on page 81](#)
- [FortiLAN Cloud captive portal on page 82](#)
- [My Captive Portal on page 83](#)

WPA2 Personal

Add a WPA2 Personal SSID to a network

Prerequisites	Configuration
<ul style="list-style-type: none"> • If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). • If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). • If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). • If you want to block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<ul style="list-style-type: none"> • Authentication: Select WPA2-Personal. Type a Pre-shared Key (PSK). This PSK must contain from 8 to 63 printable ASCII characters or exactly 64 hexadecimal numbers. If older stations also need to be supported, then select WPA/WPA2-Personal which enables mixed (WPA and WPA2) mode authentication. • Captive Portal: Leave as No Captive Portal. <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

WPA2 Enterprise

WPA2 Enterprise SSIDs can be configured to use an external RADIUS server to authenticate wireless clients, or control access to the SSID with a configured user group.

With the RADIUS accounting server method, the **Accounting Interim Interval** parameter becomes available. The AP will send an Interim Update Accounting-Request to update the RADIUS accounting server with time and bandwidth usage. The default value is set to **600** seconds (or 10 minutes).

Prerequisites	Configuration
<ul style="list-style-type: none"> Complete the Adding a RADIUS server on page 109 procedure. If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). If you want to enable dynamic VLAN, block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<p>With enterprise class SSIDs, individual users can have their own login (such as username and password, and VLAN, administrative control).</p> <ul style="list-style-type: none"> Authentication: Select WPA2-Enterprise (or WPA/WPA2-Enterprise mixed mode). To define authorized users RADIUS Auth Setting: Set to one of the following: <ul style="list-style-type: none"> My RADIUS Server: Use your own RADIUS server. To define your RADIUS server, see Adding a RADIUS server FortiCloud User/Group: Use FortiLAN Cloud as the RADIUS server. In this case, you do not need to have your own RADIUS server. All users are to be defined in FortiLAN Cloud (see Creating a FortiLAN Cloud group and users). <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

WPA3-SAE/WPA3-SAE Transition

Add a WPA3 simultaneous authentication of equals (SAE) or WPA3-SAE Transition SSID to a network.

Prerequisites	Configuration
<ul style="list-style-type: none"> If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). If you want to block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<p>With enterprise class SSIDs, individual users can have their own login (such as username and password, and VLAN, administrative control).</p> <ul style="list-style-type: none"> Authentication: Select WPA3-SAE or WPA3-SAE Transition. <ul style="list-style-type: none"> WPA3-SAE: Type an SAE Password. This password must contain 8 to 32 alphanumeric characters or exactly 64 hexadecimal numbers. WPA3-SAE Transition: Enables mixed (WPA2 and WPA3) mode authentication. Two passwords are used in the SSID; if the SAE Password is used, client connects with WPA3 SAE and if Pre-shared Key is used, client connects with WPA2 PSK. This PSK must contain from 8 to 63 printable ASCII characters or exactly 64 hexadecimal numbers. Captive Portal: Add a captive portal to the SSID. <ul style="list-style-type: none"> To add a FortiLAN Cloud captive portal, see section FortiLAN Cloud captive portal on page 82. To add your own captive portal, see section My Captive Portal on page 83

Prerequisites	Configuration
	Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.

WPA3 Enterprise

WPA3 Enterprise SSIDs can be configured to use an external RADIUS server to authenticate wireless clients, or control access to the SSID with a configured user group.

With the RADIUS accounting server method, the **Accounting Interim Interval** parameter becomes available. The AP will send an Interim Update Accounting-Request to update the RADIUS accounting server with time and bandwidth usage. The default value is set to **600** seconds (or 10 minutes).

Prerequisites	Configuration
<ul style="list-style-type: none"> Complete the Adding a RADIUS server on page 109 procedure. The RADIUS server must support 192-bit AES encryption as required by WPA3-Enterprise security level. If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). If you want to enable dynamic VLAN, block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<p>With enterprise class SSIDs, individual users can have their own login (such as username and password, and VLAN, administrative control).</p> <ul style="list-style-type: none"> Authentication: Set to WPA3-Enterprise. RADIUS Auth Setting: To define authorized users, set to My RADIUS Server where you use your own RADIUS server. To define your RADIUS server, see Adding a RADIUS server <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

WPA3-OWE/WPA3-OWE Transition

Add a WPA3 opportunistic wireless (OWE) or WPA3-OWE Transition SSID to a network.

Prerequisites	Configuration
<ul style="list-style-type: none"> If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist 	<ul style="list-style-type: none"> Authentication: Select WPA3-OWE. Enable OWE Transition to allow clients that do not support OWE to connect to an OWE enabled network. This mode requires an Open OWE Transition SSID for such clients to connect. Captive Portal: Add a captive portal to the SSID. <ul style="list-style-type: none"> To add a FortiLAN Cloud captive portal, see section FortiLAN Cloud captive portal on page 82.

Prerequisites	Configuration
<p>(see the Adding AP tags on page 103 procedure).</p> <ul style="list-style-type: none"> If you want to block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<ul style="list-style-type: none"> To add your own captive portal, see section My Captive Portal on page 83 <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

FortiLAN Cloud captive portal

FortiLAN Cloud includes captive portal settings that you can customize during the SSID addition.

If you want to create and use your own captive portal, then go to the [Adding a My Captive Portal SSID to a network](#) procedure.

Prerequisites	Configuration
<ul style="list-style-type: none"> If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). If you choose one of the following sign on methods, make sure to complete the required setup: <ul style="list-style-type: none"> My RADIUS Server (see Adding a RADIUS server on page 109) FortiLAN Cloud user and group (see Creating a FortiLAN Cloud group and users on page 107) If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). If you want to block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<ul style="list-style-type: none"> Authentication: Select Open or WPA2-Personal. If you select WPA2-Personal, then type a Pre-shared Key. This password must contain from 8 to 63 characters. Characters can be any combination of upper and lower case letters, numbers, punctuation marks, and symbols. Captive Portal: Select FortiLAN Cloud Captive Portal. MAC Access Control: Select to allow clients identified in the MAC address import list to connect to that SSID. <ul style="list-style-type: none"> Fail Through Mode. This mode is available if you select the Open authentication. If you select the Fail Through Mode, then the following applies: <ul style="list-style-type: none"> If a client is not in the MAC address import list, then the client must pass captive-portal authentication to access the internet. If a client is in the MAC address import list, then the client can bypass the captive-portal authentication and access the internet directly. Redirect URL: The URL to which the user is redirected after a successful login; Original request or Specific URL. Walled Garden: The walled garden is a list of web domains that users can access before completing the authentication process. You can type an IP address, domain name, and subnetwork address/mask. Separate multiple entries with a comma. Sign-on Method: Choose one of the following: <ul style="list-style-type: none"> Click Through: Users go to the captive portal page and click Continue to gain access to the wireless network. Users do not type a username and password.

Prerequisites	Configuration
	<ul style="list-style-type: none"> • My RADIUS Server: Select a configured RADIUS server. • FortiLAN Cloud user and group: Select a configured FortiLAN Cloud group. • Self-registered guests: Users access the captive portal page and sign up for an account. They receive their username and password details by SMS or email as defined in step 11 of this procedure. • Social media: Users can sign on with their social media account. FortiLAN Cloud supports Facebook, Google+, LinkedIn, and Twitter accounts. <p>In the Captive Portal page, you can additionally customize the following.</p> <ul style="list-style-type: none"> • Logo: You can upload an image. • Title: You can change the appearance of the title (background color and image as well as the text color) or the text (in English, French, or Japanese). • Message: You can add a message (in English, French, or Japanese) and change the background color, image, and text color. • Self-Registered: If you selected the sign on method as self-registered guest (in step 5), then you can customize the page for self-registered guests as well as set an account expiration period and a method to generate a username and password. <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

My Captive Portal

In this procedure, you are required to create your own captive portal page.

If you prefer to use and customize an existing captive portal page, then go to the [FortiLAN Cloud captive portal on page 82](#) procedure instead.

Prerequisites	Configuration
<ul style="list-style-type: none"> • Complete the Creating the My Captive Portal page on page 92 procedure. • If you want to use the MAC access control, make sure to import MAC addresses (see the Configuring MAC access control and MAC filtering on page 103 procedure). • Choose and set up one of the following sign on methods: 	<ul style="list-style-type: none"> • Authentication: Select Open or WPA2-Personal. If you select WPA2-Personal, then type a Pre-shared Key. This password must contain from 8 to 63 characters. Characters can be any combination of upper and lower case letters, numbers, punctuation marks, and symbols. • Captive Portal: Select My Captive Portal. • MAC Access Control: Select to allow clients

Prerequisites	Configuration
<ul style="list-style-type: none"> • My RADIUS Server (see the Adding a RADIUS server on page 109 procedure) • FortiLAN Cloud user and group (see the Creating a FortiLAN Cloud group and users on page 107 procedure) • If you want to apply a QoS profile, make sure that the QoS profile exists (see the Adding a QoS profile on page 105 procedure). • If you want the SSID to be available to APs with specific tags only, make sure that the AP tags exist (see the Adding AP tags on page 103 procedure). • If you want to block intra-SSID traffic, and customize radio and rate optional settings, then purchase a FAP Advanced Management License. 	<p>identified in the MAC address import list to connect to that SSID.</p> <ul style="list-style-type: none"> • Fail Through Mode. This mode is available if you select the Open authentication. If you select the Fail Through Mode, then the following applies: <ul style="list-style-type: none"> • If a client is not in the MAC address import list, then the client must pass captive-portal authentication to access the internet. • If a client is in the MAC address import list, then the client can bypass the captive-portal authentication and access the internet directly. • Captive Portal URL: Type the URL of your captive portal page. • Redirect URL: The URL to which the user is redirected after a successful login; Original request or Specific URL. • Walled Garden: The walled garden is a list of web domains that users can access before completing the authentication process. You can type an IP address, domain name, and subnetwork address/mask. Separate multiple entries with a comma. • Sign-on Method : Choose one of the following: <ul style="list-style-type: none"> • Click Through: Users go to the captive portal page and click Continue to gain access to the wireless network. Users do not type a username and password. • My RADIUS Server: Select a configured RADIUS server. • FortiLAN Cloud user and group: Select a configured FortiLAN Cloud group. <p>Complete the Basic Settings on page 84 and Advanced Settings on page 87 as required.</p>

Basic Settings

Configure the following basic settings for an SSID assigned to your network.

Field	Description
SSID	Type a name for this wireless network. Wireless clients use this name to find and connect to this wireless network.
Enabled	Select to have the SSID active.

Field	Description
Broadcast SSID	Select to advertise the SSID. All wireless clients within range can see the SSID when they scan for available networks.
MAC Access Control	<p>Select to allow clients identified in the MAC address import list to connect to that SSID.</p> <ul style="list-style-type: none"> • Fail Through Mode. This mode is available if you select the Open authentication. If you select the Fail Through Mode, then the following applies: <ul style="list-style-type: none"> • If a client is not in the MAC address import list, then the client must pass captive-portal authentication to access the internet. • If a client is in the MAC address import list, then the client can bypass the captive-portal authentication and access the internet directly.
Mesh Link	<p>Select to enable the mesh link.</p> <p>A wireless mesh eliminates the need for Ethernet wiring by connecting Wi-Fi APs to each other by radio. AP networks can be configured in this way so that only one AP unit is connected to the wired network.</p>
Data Encryption	When either of the mixed mode authentication methods are enabled, select a data encryption protocol: AES , TKIP , or TKIP-AES .
Simple Multiple Pre-shared Keys (MPSK)	<p>Simple Multiple PSKs can also be configured for Personal SSIDs, in which case stations will be able to connect to an SSID using either a common PSK or their own PSK. You can select the configured schedule profile for activating multiple PSKs. For more information, see Adding a Schedule Profile on page 112.</p> <p>Note:A maximum of 128 multiple PSKs are allowed per SSID.</p>
MPSK	<p>You can create multiple pre-shared key groups to associate with VLANs; up to 16000 keys are supported per network.</p> <p>Adding MPSK Groups</p> <ul style="list-style-type: none"> • Click Add and enter a unique Group Name and VLAN ID to associate the MPSK group with and configure pre-shared keys. • Click Import to import (.csv) and populate existing MPSK groups into the SSID profile. • Click Export to export the existing MPSK groups into your local machine in .csv format. <p>Adding Pre-shared keys</p> <ul style="list-style-type: none"> • Click Add to create new pre-shared keys and update the following. <ol style="list-style-type: none"> a. A unique Name and Pre-shared Key (8 to 63 characters or 64 hexadecimal digits). b. The client MAC Address for which this key is used. This field takes precedence over the client limit. c. Select the Client Limit. <p>Default - The maximum number of clients is determined by the default client limit which is set at the SSID level. If this is value not set, then an unlimited number of clients can connect to the key.</p> <p>Unlimited - An unlimited number of clients can connect to the key.</p>

Field	Description
	<p>Specify - The specified maximum number of clients can connect to the key.</p> <ul style="list-style-type: none"> d. Select a configured Schedule Profile. See Adding a Schedule Profile on page 112. e. Enter User Name, User Email address, and Mobile number (prefixed with the country code). These credentials are used to send pre-shared keys to email addresses (Send Keys via Email) or via SMS (Send Keys via SMS) on the associated mobile number. <ul style="list-style-type: none"> • Click Generate to auto-generate pre-shared keys and update the following. <ul style="list-style-type: none"> a. A unique Name Prefix (1 -32 alphanumeric characters) for the generated keys and the Number of Keys to generate (1 - 16383). b. The required Key Length (8 - 63 characters). c. Specify the Client Limit and the configured Schedule Profile. See Adding a Schedule Profile on page 112. • Click Import to import (.csv) and populate existing pre-shared keys in the MPSK group. • Click Export to export the existing pre-shared keys into your local machine in .csv format.
RADIUS Authentication by	<p>The FortiAP acts as a RADIUS client and sends accounting information to the configured RADIUS server.</p> <p>This configuration parameter is applicable ONLY when the SSID operates in the OPEN security mode with external captive portal and RADIUS authentication and accounting parameters.</p> <p>When RADIUS Authentication by is enabled, the FortiAP redirects clients to the configured external captive portal, collects credentials and performs RADIUS authentication and accounting. When disabled (default), the legacy functionality continues where the FortiAP redirects all clients to a centralized FortiLAN Cloud which then redirects them to the configured external captive portal.</p> <p>When you enable RADIUS Authentication by, the following parameters become configurable.</p> <ul style="list-style-type: none"> • Secure HTTP - Secure HTTP is used to post credentials from the configured external captive portal web server to the FortiAP. This is disabled by default. • Session Interval - The time interval after which the captive portal authentication session is invalidated and the user is required to log in again. The valid range for the session interval is 0 - 864000 seconds, 0 (default) indicates that the user is never logged out. <p>Note: This feature is supported on FAP-S and FAP-W2 models with firmware versions 6.2 and 6.4.</p>
RADIUS Acct Settings	<p>Select the RADIUS profile for accounting.</p> <p>CoA is also supported and can be enabled in RADIUS Accounting profile.</p>

Field	Description
IP assignment	Select Bridge or NAT . If you choose NAT , then complete the following: <ul style="list-style-type: none"> • Local LAN: Select Allow or Deny. • DHCP Lease Time: Default is 3600 seconds (or one hour). • IP/Network Mask: Type the IP address and network mask of the SSID.
QoS Profile	If you want to apply a QoS profile that you have already created, select it from the list.
VLAN ID	If the IP assignment is Bridge, you can type the ID of the VLAN for your wireless network (SSID). Default is 0 for non-VLAN operation.

Advanced Settings

With a FortiAP advanced management license, you can enable the following advanced settings.

Field	Description
Radio Sensitivity (Rx-SOP)	The Receiver Start of Packet (Rx-SOP) configures a threshold to allow FortiAPs to adjust the SSID cell size. The radio discards all received wireless frames with minimum WiFi signal lesser than the configured threshold value. Adjusted cell size ensures that wireless clients are connected to the nearest FortiAP at highest possible data rates and distant clients do not deprive other clients of airtime. The valid range of signal strength is -95 to -20 dBm with a default value of -79 dBm for 2.4GHz and -76 dBm for 5GHz.
Probe Response Suppression	Restricts distant wireless clients from connecting to the FortiAP if the received signal strength is less than the configured threshold. The FortiAP does not send any probe response to these distant wireless clients and responds to the probe requests sent from nearby clients only. The valid range of signal strength is -95 to -20 dBm with a default value of -80 dBm.
Sticky Clients Removal	De-authenticates sticky wireless clients (distant clients that stick to the FortiAP) if the signal strength is less than the configured threshold. The valid range of signal strength is -95 to -20 dBm with a default value of -79 dBm for 2.4GHz and -76 dBm for 5GHz.

Field	Description
Protected Management Frames (802.11w)	<p>Provides a layer of security for wireless management frames by ensuring that traffic comes from legitimate sources. Network attackers and malicious entities are unable to disrupt legitimate wireless connections by sending spoofed clear text wireless management frames.</p> <ul style="list-style-type: none"> • Disable - Disables the usage of 802.11w management protection frames. • Optional - Allows wireless clients that do not support 802.11w along with those that support 802.11w to associate with the SSID. • Required - Allows only those wireless clients to associate with the SSID that support 802.11w and prevents clients that do not support 802.11w from associating. • PMF Association Comeback Timeout (seconds) - Specifies the time which an associated client must wait before the association can be tried again when first denied. The valid range is 1 -20 seconds with a default value of 1 second. • PMF SA Query Retry Timeout (milliseconds) - Specifies the amount of time the controller waits for a response from the wireless client for the query process. If there is no response from the client, it is dis-associated. The supported values are 100, 200, 300, 400, and 500 milliseconds with a default value of 200 milliseconds <p>Note: Any change in the PMF configuration requires the controller to delete and then add the SSID. This disrupts existing connections.</p>
Fast BSS Transition (802.11r)	<p>This feature allows faster roaming for Wi-Fi clients by enabling swift BSS transitions between APs. This minimizes delay caused due to a client transitioning from one BSS to another in a multi-AP deployment.</p> <ul style="list-style-type: none"> • Mobility Domain ID – This parameter acts as a network identifier. The clients attempt 802.11r enabled roaming only when the same mobility domain ID is configured for both the networks. The valid range is 1 to 65535 and the default is 1000. • R0 Key Lifetime – This parameter indicates the duration after which the R0 key in the FortiAP expires. For WPA/WPA2 PSK authentication methods, the R0 key is derived from the PSK and for enterprise, it is derived after the EAP handshake with the RADIUS server is complete. The valid range is 1 to 65535 minutes and the default is 480 minutes.
Voice Enterprise (802.11kv)	<p>This feature provides support for network assisted roaming based on 802.11k and 802.11v standards.</p> <p>802.11k network assisted roaming allows a potential roaming wireless client to collect from its current AP the list of compatible neighbour APs. This saves the wireless client from performing full scan on both bands. The wireless client selects and moves to the optimal neighbour AP from the list. The 802.11k also provides support for Radio Resource Management (RRM) such as APs querying the associated wireless clients for beacon reports and perceived RSSI used to prepare the compatible neighbour AP list for wireless clients.</p>

Field	Description
	<p>802.11v network assisted roaming allows the wireless network to send requests to associated clients, recommending better APs to associate with while roaming. This is beneficial for both load balancing and in guiding clients with poor connectivity.</p> <p>The BSS Transition feature allows the roaming client to initiate a BSS transition query to the associated AP for a candidate list of other APs it can re-associate with, the associated AP responds with a BSS transition request containing the requested AP list. The AP can also send an unsolicited BSS transition request to the client. The client can accept the request and re-associate with the suggested APs or it can reject the request and continue its association with the current AP.</p>
Airtime Fairness Weight (%)	<p>Wi-Fi has a natural tendency for clients farther away or clients at lower data rates to monopolize the airtime and drag down the overall performance. Airtime Fairness (ATF) helps to improve the overall network performance.</p> <p>Airtime Fairness is configured per SSID, each SSID is granted airtime according to the configured allocation. It is configurable on both 2.4 GHz and 5 GHz radios. Data frames that exceed the configured % allocation are dropped. Enable Airtime Fairness when creating a Platform profile.</p> <ul style="list-style-type: none"> • Applicable only on downlink traffic. • Applicable only on data, management and control functions are excluded. • Applicable on all types of SSIDs; Tunnel, Bridge and Mesh. • Applicable on all authentication modes. <p>Airtime Fairness is supported with FOS 6.2.0 and on all FortiAP-S and FortiAP-W2 models.</p> <p>Note: Enable ATF processing on desired radios in AP Platform Profile.</p>
Broadcast Suppression	<p>Suppresses the transmission of specific broadcast traffic to secure the wireless network and optimize airtime usage. When the received broadcast traffic exceeds the threshold, the interface discards it until the broadcast traffic drops below a specific threshold.</p> <p>Since broadcast packets sent to wireless clients connected to a FortiAP occupy valuable airtime, unnecessary and potentially detrimental packets can impact network throughput.</p> <p>By default, ARP Replies, ARPs For Known Clients, DHCP Uplink, DHCP Downlink, and DHCP Unicast broadcast suppression is enabled. The following methods are supported.</p> <ul style="list-style-type: none"> • ARP Poison - Suppress ARP poison attacks from malicious Wi-Fi clients. Prevent malicious WiFi clients from spoofing ARP packets. • ARP Proxy - Suppress ARP request packets broadcast by the Ethernet downlink to known Wi-Fi clients. Instead, send ARP reply packets to the Ethernet uplink, as a proxy for Wi-Fi clients. • ARP Replies - Suppress ARP reply packets broadcast by Wi-Fi clients. Instead, forward the ARP packets as unicast packets to the clients with target MAC addresses. • ARPs For Known Clients - Suppress ARP request packets broadcast to known Wi-Fi clients. Instead, forward ARP packets as unicast packets to the

Field	Description
	<p>known clients.</p> <ul style="list-style-type: none"> • ARPs For Unknown Clients - Suppress ARP request packets broadcast to unknown Wi-Fi clients. • DHCP Uplink - Suppress DHCP discovery and request packets broadcast by Wi-Fi clients. Forward DHCP packets to the Ethernet uplink only. Prevent malicious Wi-Fi clients from acting as DHCP servers. • DHCP Downlink - Suppress DHCP packets broadcast by the Ethernet downlink to Wi-Fi clients. Prevent malicious Wi-Fi clients from acting as DHCP servers. • DHCP Unicast - Convert downlink broadcast DHCP messages to unicast messages. • DHCP Starvation - Suppress DHCP starvation attacks from malicious Wi-Fi clients. Prevent malicious Wi-Fi clients from depleting the DHCP address pool. • IPv6 - Suppress IPv6 broadcast packets. This is useful when the network is configured to support only IPv4. • NetBIOS Name Services - Suppress NetBIOS name services packets with UDP port 137. • NetBIOS Datagram - Suppress NetBIOS datagram services packets with UDP port 138. • All Other Broadcast - Suppress broadcast packets not covered by any of the specific options. • All Other Multicast - Suppress multicast packets not covered by any of the specific options.
L3 Firewall Profile	Create L3 Firewall rules. For more information, see Adding an L3 Firewall Profile on page 104 .
Block intra-SSID traffic	To block intra-SSID network traffic.
Tunnel Settings	<p>Select Tunnel Profile to add an existing GRE/L2TP Tunnel profile. FortiLAN Cloud supports tunnel redundancy. When the primary tunnel goes down, data traffic is automatically redirected to the secondary or the standby tunnel. Select the Primary Tunnel Profile and the Secondary Tunnel Profile. For more information, see Adding a Tunnel profile.</p> <ul style="list-style-type: none"> • Tunnel Echo Interval: The time interval to send echo requests to primary and secondary tunnel peers. The valid range is 1 to 65535 seconds; default is 300 seconds. • Tunnel Fallback Interval: The time interval for secondary tunnel to fall back to the primary tunnel once it is active. The valid range is 0 to 65535 seconds; default is 7200 seconds.

Field	Description
DHCP Option 82	<p>DHCP option 82 (DHCP relay information) secures wireless networks served by FortiAPs against vulnerabilities that facilitate DHCP IP address starvation and spoofing/forging of IP and MAC addresses. The Circuit ID and Remote ID parameters enhance this security mechanism by allowing the FortiAP to include specific AP and client device information into the DHCP request packets. Both these options are disabled by default.</p> <p>The DHCP server can use the location of a DHCP client when assigning IP addresses or other parameters.</p> <p>Note: This feature is supported with FOS 6.2.0 and above.</p> <ul style="list-style-type: none"> • Circuit ID: The AP information is inserted in the following formats: <ul style="list-style-type: none"> • Style-1: ASCII string composed in the format <code><AP MAC address>;<SSID>;<SSID-TYPE></code>. For example, "00:12:F2:00:00:59;SSID12;Bridge". • Style-2: ASCII string composed of the AP MAC address. For example, "00:12:F2:00:00:59". • Style-3: ASCII string composed in the format <code><Network-Type:WTPProfile-Name:VLAN:SSID:AP-Model:AP-Hostname:AP-MAC address></code>. For example, "WLAN:FAPS221E-default:100:wifi:PS221E:FortiAP-S221E: 00:12:F2:00:00:59". • Remote ID: The MAC address of the client device is inserted in the following format: <ul style="list-style-type: none"> • Style-1 - ASCII string composed of the client MAC address. For example, "00:12:F2:00:00:59".
Radio and Rates Optional Settings	Customize the 2.4 GHz and 5 GHz rate settings.

Security

The following security features can be configured in the SSID.

Application control

FortiLAN Cloud allows you to configure UTP on FortiAP endpoints (for supported models) to detect traffic in specific categories generated by a large number of applications. You can specify what action to take with the application traffic; allow, monitor, or block. Application control supports traffic detection using the HTTP protocol and uses deep application inspections to detect traffic for better control and coverage. You can select specific application signatures in the supported categories to configure and override the action set generally for all categories.

Web Access

You can control access to web content by blocking web pages containing specific words or patterns. The web access feature scans the content of every web page that is accepted by a security policy. You can use the following multiple web content filter lists.

- Allow General Interest Sites Only
- Allow General Interest Sites and Bandwidth Consuming Sites

- Allow All Sites except Security Risk
- Advanced Configuration

In advanced configuration, you can configure the action to be taken for web pages of specific categories. You can also specify words, phrases, patterns, wildcards and Perl regular expressions to match content on web pages.

Block Botnet

FortiLAN Cloud allows you to enable botnet monitoring and blocking across all network traffic.

Intrusion Prevention

Intrusion Prevention System (IPS) detects network attacks and prevents threats from compromising the network, including protected devices. You can enable protection of wireless clients from being attacked by Internet hosts and vice versa.

IPS sensors can contain one or more IPS filters that you can configure. A filter is a collection of signature attributes, the following are the attribute groups.

- Target
- Severity
- Service
- OS
- Application

When selecting multiple attributes within the same group, the selections are combined by using a logical OR. When selecting multiple attributes between attribute groups, each attribute group is combined by using a logical AND.

Once you select filters in the GUI, the filtered list of IPS signatures are displayed. Adjust your filters accordingly to construct a suitable list for your needs.

AntiVirus

The Antivirus feature protects against the latest viruses, spyware, and other content-level threats. It uses industry-leading advanced detection engines to prevent both new and evolving threats from gaining a foothold inside your network and accessing its invaluable content. The Antivirus database type selection depends on the network and security needs. The following protocols are inspected.

- HTTP
- SMTP
- POP3
- IMAP
- FTP

Creating the My Captive Portal page

This section includes details about creating the My Captive Portal page. The creation of this page is a prerequisite for the [Adding a My Captive Portal SSID to a network](#) procedure.

A user connects to the Wi-Fi network and is redirected to **https://<my_captive_portal_url>?grant_url=fortilcloud_grant_url**.

The user lands on the captive portal, who is then redirected by the captive portal to the **<FortiLANCloud_grant_url>**.

Check the AP network web URL in the address bar. This URL should be set to **https://xxx-<digit>.fortilan.forticloud.com**.

- The base URL of <FortiLANCloud_grant_url> without -<digit> can be https://xxx.fortilan.forticloud.com
- The full URL of <FortiLANCloud_grant_url> can be https://xxx.fortilan.forticloud.com/APAuthentication/submit?type=external

If the SSID sign on method is **Click Through**, no parameters are submitted. For the other SSID sign on methods, the following parameters are submitted:

- User
- Password
- error_page_url

Sample jsp to paste in the captive portal

```
<form action="<%=request.getParameter("grant_url") %>" method="GET">
<input type="hidden" name="error_page_url"
value="http://yourcompany.com/test/error.jsp"/>
<table>
<tr><td>Username:</td><td><input name="user" type="text"></td></tr>
<tr><td>Password:</td><td><input name="password" type="password"></td></tr>
<tr><td><input type="submit" value="Login"></td></tr>
</table>
</form>
```

Adding a FortiAP platform profile

FortiLAN Cloud provides default platform (AP) profiles for each supported model. All APs of a given model can use their default platform profile. However, more profiles can be added, edited, and then assigned to APs, thereby changing their characteristic. For instance, two FAP221E models can have their own platform profiles, one with rogue scanning disabled (using default platform profile) and the other enabled (using a customized platform profile).

Other parameters that you can customize for each AP using its own platform profile include radio band, channel, channel width, and transmit power.

When you perform the [Configuring FortiAP settings on page 60](#) procedure, you can select the FortiAP platform profile that you added using this procedure.

Procedure steps

1. In the Menu bar, click **Configure**.
2. In the Navigation pane, click **Platform Profile**.
3. Near the top-right corner, click **Add Platform Profile**.
4. Customize the profile and update the following fields.
 - Select the required Platform (AP model) for your network and Country, optionally, enter any Comments related to

the platform profile.

5. Configure the following options as per your network requirement.

Configuration	Description
LED Off	Disables the LEDs from glowing on the FortiAP.
Dedicated Monitor	<p>In this mode, during FortiAP operation the radio scans for other available APs as a dedicated monitor.</p> <ul style="list-style-type: none"> When enabled, all radios except the last one do not scan, hence you cannot apply the WIDS profile to the last radio (WIDS option not available). This radio can be in disabled/monitor mode with/without WIDS profile. When disabled, you can apply the WIDS profile to all radios. <p>Note: This features is available only for F-series and G-series models and works only with <i>Single-5G</i> mode in G-series models.</p>
Short Guard Interval	Configure the short guard interval to protect symbols (characters) transmitted in your packet from damaging other symbols by eliminating inter-symbol interference, thereby enhancing throughput. This is set to 400 nano seconds.
Channel Utilization	Select this option to monitor FortiAP's per radio channel utilization.
Radio Resource Provision	Select to enable DARRP to measures utilization and interference on the available channels and automatically and periodically select the optimal channel for your FortiAP.
Client Load Balancing	<p>Wireless load balancing allows your wireless network to distribute wireless traffic more efficiently among FortiAPs and available frequency bands. The following types of client load balancing are supported.</p> <p>AP Handoff - The wireless controller signals a client to switch to another access point.</p> <p>Frequency Handoff - The wireless controller monitors the usage of 2.4 GHz and 5 GHz bands, and signals clients to switch to the lesser-used frequency.</p>
TX Power	<p>High-density deployments cover a small area that has many clients. Maximum AP signal power is usually not required. Enabling Automatic TX Power Control reduces power and interference between APs. This feature is based on the interference level of the strongest neighbour AP signal being higher than -70dBm. Additionally, you can configure the interference level as per your wireless network deployment.</p> <p>Configuring the target Tx power is particularly beneficial in high density deployments where multiple APs serve on the same channel. In such a scenario, it is possible that the highest neighbour AP signal strength could be greater than -70dBm. For example, if the AP signal strength is -50dBm, then the target value must be set close to -50dBm. Hence, avoiding the reduction of Tx power to very low values leading to coverage issues. The optimal value for this parameter is set based on the average RSSI of the neighbour APs, that is observed (as normal) in a deployment.</p> <p>The automatic Tx power is computed based on the target value, assume the strongest neighbour AP signal =S and the auto Tx power target = T, then:</p>

Configuration	Description
	<ul style="list-style-type: none"> • If $S > T$: the current TX power is reduced by (S-T) • If $S < T$: the current TX power is increased by (T-S)
Rogue AP Scan	The access point radio scans, detects, and reports rogue APs in your network.
Call Admission Control	<p>Enable to regulate voice traffic and specify the Call Capacity, the maximum number of concurrent VoIP calls allowed. The valid range is 0 – 60 and default is 10.</p> <p>Bandwidth Admission Control: Enable to limit traffic bandwidth usage and specify the Bandwidth Capacity, the bandwidth usage per second. The valid range is 0 – 600000 kbps and default is 2000 kbps.</p>
LAN Port	<p>To use the LAN port, run the <code>cfg -a WANLAN_MODE=WAN-LAN</code> command in the FortiAP, and select any of the following options.</p> <ul style="list-style-type: none"> • NAT to WAN • Bridge to WAN • Bridge to SSID

The following features require a license for advanced AP management.

Configuration	Description
Dynamic Radio Mode Assignment	<p>The <i>Adaptive Radio Architecture</i> (ARA) centralizes and improves the overall efficiency of the wireless network in high traffic conditions. Dynamic Radio Mode Assignment (DRMA) is a feature in ARA that enables FortiAPs to calculate the network coverage factor (NCF) based on radio interference. The NCF value is calculated at configured intervals and is based on overlapping coverage in a radio coverage area. When DRMA is enabled and the NCF value crosses the configured threshold, then the radio becomes redundant by switching from AP mode to monitor mode. On subsequent NCF calculation, if the value is below the threshold then the radio switches back to AP mode.</p> <p>The DRMA Sensitivity determines the NCF threshold value to consider a radio redundant or not. The following are the permissible values.</p> <ul style="list-style-type: none"> • Low: 100% NCF • Medium: 95% NCF • High: 90% NCF <p>You can configure the DRMA interval in Network Settings and override the configuration in Overriding FortiAP Settings on page 62</p> <p>You can view the DRMA AP events in the Wireless logs displayed in Viewing the FortiAP status. Logs are generated when DRMA runs and stops, also, whenever the operational mode of the radio changes.</p>

Configuration	Description
Upgrade APs upon Connect	Enables upgrade of newly deployed FortiAPs associated with this Platform profile. The firmware is upgraded to the <i>Target Firmware Version</i> when the FortiAP connects to the FortiLAN Cloud. If this FortiAP is included in the <i>Scheduled Upgrade</i> profile ensure that the target firmware versions match. To upgrade fully deployed FortiAPs, see Configuring Scheduled Upgrades on page 97 .
Force Downgrade	Forcefully downgrades newly deployed FortiAPs with a firmware version greater than the <i>Target Firmware Version</i> .
Target Firmware Version	The firmware version that the newly deployed FortiAPs are upgraded/downgraded to.
Enhanced Logging	Enable to receive and store more than 50 categories of logs from the FortiAPs with detailed insights into all network activity. The logs provide specific insights into different stages of client connection to troubleshoot/enhance poor wireless connectivity experience.
Console Login	You can enable/disable console port access on the FortiAP. This feature is enabled by default and is supported on FortiOS 7.0.1 and higher. You can edit the access point settings to override this feature configuration on a per FortiAP basis (Console Login Override) Note: Modifying this feature setting reboots the FortiAP.
Airtime Fairness	Wi-Fi has a natural tendency for clients farther away or clients at lower data rates to monopolize the airtime and drag down the overall performance. Airtime Fairness (ATF) helps to improve the overall network performance.
AP Scan Threshold	Configures the threshold for minimum detected signal strength required for a FortiAP to be categorized as an interfering/rogue AP when a scan is performed. This parameter is supported in the monitor mode and conditionally in the AP mode with either of the these parameters enabled, Radio Resource Provision, Auto TX Power Control enabled, Rogue AP Scan. The valid range of signal strength is -95 to -20 dBm with a default of -90 dBm.
Beacon Interval (ms)	Configures the time interval between two successive beacon frames. The beacon interval is measured in milliseconds and supports a valid range of 40 – 3500 milliseconds with a default of 100 milliseconds. Higher beacon intervals aid in the power saving capability of wireless clients and lower beacon intervals keep fast roaming clients connected to the network.

Configuration	Description
DTIM Period	<p>Configures the Delivery Traffic Indication Map (DTIM) interval to transmit buffered multicast and broadcast data, after the beacon is broadcast. This enables wireless clients in power-saving mode to wake up at a suitable time to check for buffered traffic. Higher DTIM period aids in the power saving capability of wireless clients and lower DTIM period speeds up broadcast and multicast data delivery to wireless clients. The valid range is 1 -255 with a default of 1.</p> <p>The recommended values are 1 (to transmit broadcast and multicast data after every beacon) and 2 (to transmit broadcast and multicast data after every other beacon).</p>
TX Optimization	<p>The data packet transmit optimization feature enables a set of options in your FortiAP to enhance transmission performance and minimize packet loss.</p> <p>Note: This feature is supported only on 2.4G radios of the FAP-U series. The following optimization options are available and are enabled by default.</p> <ul style="list-style-type: none"> • Power Save: Tags the client as operating in the power-save mode if excessive transmit retries are detected. • Aggregation Limit: Reduces the aggregation limit if the data transmission rate is low. • Retry Limit: Reduces the software retry limit if the data transmission rate is low. • Send BAR: Limits the transmission of the BAR (Block Acknowledgement Request) frames. <p>This feature is disabled if none of the options is selected.</p>

- To save the profile, click **Apply**.
The list of profiles includes the new FortiAP platform profile.

Configuring Scheduled Upgrades

The scheduled upgrade configuration is applied only to fully deployed FortiAPs. After a FortiAP is deployed with or without firmware upgrade during its deployment/discovery, its firmware is upgraded as per the scheduled upgrade profile. For example, if an upgrade schedule profile is configured to upgrade all FAP23JF models 5 days later then an FAP23JF model deployed today will have its firmware upgraded 5 days later. To upgrade newly deployed FortiAPs, see [Adding a FortiAP platform profile on page 93](#).

Notes:

- A maximum of 1024 scheduled upgrade profiles can be created.
- The upgrade process completion takes approximately 30 minutes if you try to upgrade multiple FortiAPs (count in 3 digits or more) simultaneously.

Procedure steps

- On the FortiLAN Cloud Home page, select the network that you want to edit.
- In the Menu bar, click **Configure**.

- In the Navigation pane, click **Scheduled Upgrades**.
- Complete the following fields.

Name	The name you want to give to the scheduled upgrade profile.
Comment	A description of the profile or any other text for this profile. This field is optional.
Force Downgrade	Forcefully downgrades deployed FortiAPs with a firmware version greater than the firmware version specified in this profile.
Device Selection	You can include <i>OR</i> exclude specific devices for upgrade based on certain criteria; model, site, tag, device, and Platform profile. When <i>Apply to All</i> is enabled, the profile is applied to all FortiAPs associated with the Platform profile.
Schedule	You can configure a one-time schedule upgrade to start immediately or specify a time slot (date/time). The upgrade schedule can also be recurring, select a start and end time with the recurring frequency.
Firmware Selection	Specify the firmware version to upgrade to for a specific FortiAP model deployed in your network. By default, the latest firmware version is selected for upgrade. Note: To enable UTP functionality for FAP-U43xF series models currently on software version v6.2.1 or below, upgrade to v6.2-build0401 prior to upgrading to V6.2.2 or above.

You can perform the following additional actions, select a displayed profile and right-click.

Name	Comments	Status	Running Status	Schedule
S1_Upgrade		✘ Disabled	None	2022/06/01 14:40:00
s2_Downgrade		✘ Disabled	None	2022/05/31 11:02:00
Upgrade		✘ Disabled	None	2022/05/31 12:03:00
downgrade		✘ Disabled	None	2022/05/31 13:05:00
SAT_Download		✘ Disabled	None	2022/05/30 07:35:00
SAT_Download		✘ Disabled	None	2022/05/20 07:04:00
SAT_Upgrade		✘ Disabled	None	2022/05/20 09:06:00
SUN_Download		✘ Disabled	None	2022/05/19 15:15:00
SUN_Upgrade		✘ Disabled	None	2022/05/15 02:10:00

- **Add Scheduled Upgrade** – To create a new Scheduled Upgrade profile.
- **Clone** – You can clone an existing profile with a new name, the cloned profile is disabled (default).
- **Enable/Disable** – You can enable or disable the selected profile(s).
- **Run Now** – This is allowed only for enabled profiles that are not running. If you select multiple profiles, then at least one of them should not be running.
- **Firmware Upgrade Status** - You can view the status of the firmware upgrade for FortiAPs from the edit page.

Adding a Syslog Profile

A Syslog server provides a centralized repository to store diagnostic information and monitoring logs from various remote systems or devices. The logs are used for network monitoring and maintenance purposes. Syslog profiles enable

FortiAPs to directly send their wireless/event/security logs to an external Syslog server. The Syslog profile is associated to a Platform profile.

Notes:

- A maximum of 1024 Syslog profiles are allowed.
- Syslog profiles cannot be deleted when used by a Platform profile.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **Syslog Profile**.
4. Complete the following fields.

Name	A unique name for the Syslog profile. The valid range is 1 -32 characters.
Description	A description for the Syslog profile.
Enable Status	Enables or disables the FortiAP to send log messages to the Syslog server
Server Host (IPv4/FQDN)	The IPv4 address or hostname (FQDN) of the Syslog server that FortiAP sends log messages to.
Server Port	The port number of Syslog server that FortiAP sends log messages to. The valid range is 1-65535 and the default is 514.
Log Level	The lowest level (severity) of log messages that FortiAP sends to the Syslog server. The default is <i>Information</i> .

Configuring SNMP Profile

FortiLAN Cloud supports SNMP access to FortiAPs such as sending queries and receiving traps. To assign an SNMP profile to a FortiAP, see [Adding a FortiAP platform profile on page 93](#).

Note: A FortiAP can be associated with a platform profile linked to a configured SNMP profile, even if the SNMP admin access is disabled in the AP settings.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to configure SNMP.
2. In the Menu bar, click **Configure**.
3. In the Navigation area, click **SNMP Profile**.
4. Click **Add Profile**.
5. Enter a unique name for the SNMP profile.
6. Enter the SNMP **Engine ID**; the default is FortiLANCloud, and the administrator **Contact Info**.
7. Enter the threshold for high CPU usage (%) when the trap is sent. The valid range is 10 - 100 and the default is 80.
8. Enter the threshold for high memory usage (%) when the trap is sent. The valid range is 10- 100 and the default is 80.

9. Add SNMP v1/v2 communities and enable SNMP queries and traps as required. Enter the SNMP management stations in the **Host** field. A maximum of four, comma separated hosts can be specified along with optional netmasks.
10. Configure SNMP v3 users and manage traps and queries for these users. You can manage the security level for message authentication and encryption. The supported authentication and encryption algorithms are **MD5** and **SHA**. The valid range for authentication and encryption passwords is 8 - 32 characters. You can configure the SNMP user-notify **Hosts**; a maximum of sixteen, comma separated hosts can be specified
11. To close the dialog box, click **Save**.

Adding a BLE Profile

BLE is a wireless personal area network technology used for transmitting data over short distances. It allows mobile applications to receive advertisements from beacons and deliver hyper-contextual content to clients based on location. The BLE profile incorporates Google's Eddystone and Apple's iBeacon to identify groups of devices and individual devices. Broadly, based on the configured BLE profile, the FortiAP broadcasts signals that the client receives when it comes in the configured proximity.

Individual AP overrides for BLE profile parameters are supported. See section [Overriding FortiAP Settings on page 62](#).

Name - Enter a unique name for the BLE profile. Valid range is 1 – 32 characters.

Advertising – Select one or multiple supported advertising protocols, **iBeacon**, **Eddystone UUID**, **Eddystone URL**.

You can configure the following broadcast data for iBeacon.

- **iBeacon UUID** – Click **Generate UUID** to obtain a unique 128-bit identifier in 8-4-4-4-12 Hex format for a beacon. Specify **wtp-uuid** to generate FortiAP specific identifier.
- **iBeacon Major ID** – A unique identifier assigned to some beacons in a network and is used to distinguish this subset of beacons within a larger group of beacons. For example, beacons within a particular geographic area can have the same major number. The valid range is 0 -65535 with a default of 1000.
- **iBeacon Minor ID** - A unique identifier assigned to identify individual beacons. For example, each beacon in a group of beacons with the same major number, will have a unique minor number. The valid range is 0 -65535 with a default of 2000.

You can configure the following broadcast data for Eddystone UUID.

- **Eddystone Namespace ID** – A unique identifier assigned to some beacons in a network. This serves the same purpose as the aforementioned iBeacon Major ID. The valid range is 1 -20 Hex digits, the corresponding ASCII value is also displayed. You can enter the ID in ASCII format also using the ASCII link.
- **Eddystone Instance ID** - A unique identifier assigned to identify individual beacons. This serves the same purpose as the aforementioned iBeacon Minor ID. The valid range is 1 - 12 Hex digits, the corresponding ASCII value is also displayed. You can enter the ID in ASCII format also using the ASCII link.

Eddystone URL - The FortiAP broadcasts the configured URL as a beacon and the physical web or the latest Google Chrome plugin picks up the beacon and renders the URL into a web page. The URL supports HTTP and HTTPS and valid range is 1 -30 characters. The default is **http://www.fortinet.com**.

TX Power Level – Select a power level for the beacon's transmit signal. The higher the power the greater will be the range of your signal. The valid range is –21 dBm to +5 dBm with a default value of 0 dBm.

Beaconing Interval - Select the time interval at which the successive beacons transmit signals to associated devices, that is, this sets the rate at which beacons advertise packets. The valid range is 40 -3500 milliseconds with a default of 100 milliseconds.

BLE Scanning – Enable scanning for BLE devices. This is disabled by default.

BLE Scan Report Interval – The interval to generate BLE scan report. The valid range is 10 – 3600 seconds with a default value of 30 seconds.

Enabling Distributed Automatic Radio Resource Provisioning (DARRP)

When DARRP is enabled, FortiAPs continuously monitor the RF environment for interference, noise and signals from neighboring APs or other devices operating in the same frequency range. Interference on the configured channel can affect the WiFi experience for your network user. DARRP determines the optimal RF power levels to automatically and periodically select the optimal channel for wireless communication. This is done by measuring utilization and interference on the available channels, mainly by scanning the neighbor APs, signal strength, and channel width of the radio. This feature is especially useful in large-scale deployments where multiple access points have overlapping radio ranges. DARRP selects the optimal channel without manual intervention and facilitates an optimized wireless infrastructure to deliver maximum performance.

Also, the FortiAP automatically adjusts the TX power levels, when the FortiAP detects any other wireless signal stronger than -70 dBm, it reduces its transmission power until it reaches the minimum configured TX power limit and when any wireless client signal weaker than -70 dBm is detected, it reduces its transmission power until it reaches the maximum configured TX power limit.

Configuring Basic DARRP

Basic DARRP configuration is enabled by default.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **Network**.
4. Enable DARRP optimization for your network. Configure the following parameters.
 - **Optimize Timer** - Configures the timer interval for DARRP optimization. The default is 10 minutes and the valid range is 10 - 1440 minutes.
 - **Optimize Schedule** - Configures **One Time** or **Recurring** schedules. One time schedule initiates DARRP optimization only once on a particular day and time. Recurring schedule initiates and repeats DARRP optimization on specific days and time of the week. A maximum of 4 schedules can be created for both types.
 - **Optimize Now** - Manually initiates DARRP optimization. This operation occurs irrespective of the configured timer or schedule.

Configuring Advanced DARRP

Advanced DARRP configuration uses various additional parameters to perform DARRP optimization and accurate channel planning. It integrates data from channel utilization and takes into consideration the neighbour AP channel configuration and non-WiFi interference sources. The DARRP profile must be applied per radio in the Platform profile.

Notes:

- Supported on FortiAP version 6.4.2 or higher.
- Spectrum analysis and channel utilization features are used. FortiLAN Cloud uses spectrum analysis in the *scan only* mode and restores its original configuration when DARRP is disabled.
- FortiAP Advanced Management License is required for this feature.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **DARRP Profile**.
4. Click **Add Profile** and configure the following parameters.

Profile Name	A unique DARRP Profile name. Valid range is 1 - 36 characters.
Description	Any remarks/notes specific to the profile. The valid range is 0 – 255 characters.
Selection Period	The time period to measure average channel load, noise floor, spectral RSSI. The valid range is 0 to 65535 seconds and the default is 3600 seconds.
Monitor Period	The time period to measure average transmit retries and receive errors. The valid range is 0 to 65535 seconds and the default is 300 seconds.
Managed AP Weight	The weight in DARRP channel score calculation for managed APs. The valid range is 0 to 2000 and the default is 50.
Rogue AP Weight	The weight in DARRP channel score calculation for rogue APs. The valid range is 0 to 2000 and the default is 10.
Noise Floor Weight	The weight in DARRP channel score calculation for noise floor. The valid range is 0 to 2000 and the default is 40.
Channel Load Weight	The weight in DARRP channel score calculation for channel load. The valid range is 0 to 65535 and the default is 20.
Spectral RSSI Weight	The weight in DARRP channel score calculation for spectral RSSI. The valid range is 0 to 2000 and the default is 40.
Weather Channel Weight	The weight in DARRP channel score calculation for weather channels. The valid range is 0 to 2000 and the default is 1000.
DFS Channel Weight	The weight in DARRP channel score calculation for DFS channels. The valid range is 0 to 2000 and the default is 500.
AP Threshold	Threshold to reject channel in DARRP channel selection phase 1 due to surrounding APs. Integer value from 1 to 500 (default = 250)
Noise Floor Threshold	Threshold in dBm to reject channel in DARRP channel selection phase 1 due to noise floor. dBm (-95 to -20, default = -85)
Channel Load Threshold	The threshold to reject a channel in DARRP channel selection phase 1 due to channel load. The valid range is 0 to 100% and the default is 60%.

Spectral RSSI Threshold	The threshold to reject a channel in DARRP channel selection phase 1 due to spectral RSSI. The valid range is -95 dBm to -20dBm and the default is -65 dBm.
Tx Retries Threshold	The threshold for transmit retries to trigger channel reselection in DARRP monitor stage. The valid ranges is 0 to 1000% and the default is 300%.
Rx Errors Threshold	The threshold for receive errors to trigger channel reselection in DARRP monitor stage. The valid range is 0 to 100% and the default is 50%.
Include Weather Channel	To enable or disable the use of weather channels in DARRP channel selection. This is disabled by default.
Include DFS Channel	To enable or disable the use of DFS channels in DARRP channel selection. This is disabled by default.

Adding AP tags

When you configure a wireless network (SSID), you decide whether the SSID is available to all APs or to a certain groups of APs. A group of APs is formed by assigning the same tag to them. For example, if there are 10 APs in your AP network, you could create 2 AP groups based on AP model or by their physical location.

Use AP tags to control which SSIDs to broadcast on a group of FortiAP devices.

Procedure steps

1. In the Menu bar, click **Configure**.
2. In the Navigation pane, click **AP Tags**.
3. Near the top-right corner, click **Add AP Tag**.
4. Type a name and description.
5. To save the AP tag, click **Apply**.
6. You can assign AP tags to an AP when you perform the [Activating/Deactivating a FortiAP device on page 60](#) procedure.

Configuring MAC access control and MAC filtering

FortiLAN Cloud supports the configuration of station MAC addresses to allow those stations to access wireless networks. This is called an access control list (ACL). Only **Allow ACL** is currently supported (**Deny ACL** is not supported).

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to import MAC addresses.
2. In the Menu bar, click **Configure**.
3. In the Navigation area, click **MAC Access Control**.
4. Click **Import**.

5. Add the MAC addresses. Separate each address with a comma. An import can include a maximum of 10,000 MAC addresses (records).
6. Review the summary. If you want to make changes, click **Back**.
7. To import the MAC addresses, click **Submit**.
A dialog box displays a status message. Here is an example: Import 2 records successfully.
8. To close the dialog box, click **OK**.
9. When adding an SSID to an network, make sure to select MAC Access Control.

Exporting ACL list

Use this procedure to export all MAC addresses as an access control list (ACL) text file.

Prerequisites

Complete the importing MAC addresses procedure in [Configuring MAC access control and MAC filtering](#).

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that has the MAC addresses to export.
2. In the Menu bar, click **Configure**.
3. In the Navigation bar, click **MAC Access Control**.
4. Click **Export All**.
5. Complete the instructions on the screen to open or save the text file.

Adding an L3 Firewall Profile

Layer 3 Firewall rules provide granular access control of client traffic in your wireless network. An L3 Firewall profile allows or denies traffic between wireless clients based on the configured source and destination IP addresses/ports and specific protocols. The L3 Firewall profile must be assigned to an SSID profile.

Notes:

- The maximum number of rules allowed per profile are to 64.
- FortiAP Advanced Management License is required for this feature.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to create the L3 Firewall profile.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **L3 Firewall Profile**.
4. Click **Add Profile**.
5. Complete the following fields:

Name	A unique L3 Firewall Profile name. Valid range is 1 - 32 characters.
-------------	--

Rule ID	A unique rule identifier. The L3 Firewall rules are sorted and processed in the ascending order of the rule IDs, that is, starting from the lowest rule ID. The valid range is 1 - 65535 and a rule ID cannot be modified. Note: It is recommended to have a buffer between rule IDs to facilitate creating new rule IDs in future.
Enabled	Select to enable or disable the rule.
Comment	Any remarks/notes specific to the rule. The valid range is 0 – 255 characters.
IP Version	Select the IP rule type. You can create IPv4 or IPv6 rules based on your network requirements.
Policy	Select the policy action for the rule. Wireless traffic can be allowed or denied based on the configured rule.
Protocol	Select the protocol type to apply the rule. The protocol types are defined based on the Internet Assigned Numbers Authority (IANA) categorization. The valid range is 0 – 255.
Source Address	Specifies the source IP address to match the rule. You can select Any to specify all networks, Local LAN IP addresses, or Specify an IP address and the optional netmask length with a valid range of 0 – 32.
Source Port	Specify the source port to match the rule. This can be a single port, port range, multiple comma-separated ports, or any denoted by a 0. The valid range is 0 – 65535.
Destination Address	Specifies the destination IP address to match the rule. You can select Any to specify all networks, Local LAN IP addresses, or Specify an IP address and the optional netmask length with a valid range of 0 – 32.
Destination Port	Specify the destination port to match the rule. This can be a single port, port range, multiple comma-separated ports, or any denoted by a 0. The valid range is 0 – 65535.

Adding a QoS profile

When you add an SSID to a network, you can assign a quality of service (QoS) profile to that SSID. The QoS profile helps to set up different QoS parameters for voice, video, data wireless networks, or guest/employee wireless networks.

FortiLAN Cloud transfers the QoS configuration parameters to each FortiAP, which then interprets the values and enforces the QoS.

Prerequisites

Complete the [Managing networks on FortiLAN Cloud on page 36](#) procedure.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the QoS profile.
2. In the Menu bar, click **Configure**.

3. In the Navigation pane, click **QoS Profile**.
4. Click **Add QoS Profile**.
5. Complete the following fields:

Name	The name you want to give to the QoS profile.
Comment	A description of the QoS profile or any other text for this profile. This field is optional.
Uplink	<p>The maximum uplink bandwidth for each FortiAP radio, defined by the SSID. Here is an SSID example (with two radios) and an uplink value of 100000 Kbps:</p> <ul style="list-style-type: none"> • 10 stations are connected to the Guest SSID on 2.4 GHz (radio 1): The total maximum uplink bandwidth of the stations connecting to that Guest SSID is 100000 Kbps. • 20 stations are connected to the Guest SSID on 5 GHz (radio 2): The total maximum uplink bandwidth of the stations connecting to that Guest SSID is 100000 Kbps. <p>The range is from 0 to 2097152 Kbps (or approximately 2 Gbps). The default is 0, which means there is no restriction.</p>
Downlink	<p>The maximum downlink bandwidth for each FortiAP radio, defined by the SSID. Here is an SSID example (with two radios) and a downlink value of 100000 Kbps:</p> <ul style="list-style-type: none"> • 10 stations are connected to the Guest SSID on 2.4 GHz (radio 1): The total maximum downlink bandwidth of the stations connecting to that Guest SSID is 100000 Kbps. • 20 stations are connected to the Guest SSID on 5 GHz (radio 2): The total maximum downlink bandwidth of the stations connecting to that Guest SSID is 100000 Kbps. <p>The range is from 0 to 2097152 Kbps. The default is 0, which means there is no restriction.</p>
Station Uplink	<p>The maximum uplink bandwidth for each station in the SSID. The range is from 0 to 2097152 Kbps. The default is 0, which means there is no restriction.</p>
Station Downlink	<p>The maximum downlink bandwidth for each station in the SSID. The range is from 0 to 2097152 Kbps. The default is 0, which means there is no restriction.</p>
Burst	<p>When you enable the burst parameter on the SSID, the first couple of packets have a large buffer to upload and download after the station connects. After that, the station traffic returns to normal.</p> <p>By default, the Burst checkbox is unselected.</p>
WMM	<p>QoS WiFi Multi-Media (WMM) enables priority marking of data packets from different applications and preserving these markings by translating them into DSCP values when forwarding them upstream and downstream. The priority is set between four access categories; voice, video, best effort, and background.</p> <p>The applications that require improved throughput and performance are inserted in queues with higher priority. WMM maintains the priority of these applications over others which are less time critical.</p>

You can customize the priority markings for various traffic types and apply these changes to WMM-enabled SSID profiles. All configurations are disabled by default.

Note: This feature is supported with FOS 6.2.0 and above and requires a FortiAP-S or FortiAP-W2 device.

- **WMM UAPSD:** The Unscheduled Automatic Power Save Delivery (UAPSD) enables the power save mechanism.
- **Call Admission Control:** Enable this option to regulate voice traffic. Specify the **Call Capacity**, the maximum number of concurrent VoIP calls allowed. The valid range is 0 – 60 and default is 10.
- **Bandwidth Admission Control:** Enable this option to limit traffic bandwidth usage. Specify the **Bandwidth Capacity**, the bandwidth usage per second. The valid range is 0 – 600000 kbps and default is 2000 kbps.

Configure the **Call Admission Control** and **Bandwidth Admission Control** parameters when creating a *Platform profile*.

Specify the appropriate DSCP values for downstream (LAN to WLAN) traffic. You can map one or more (up to 16) DSCP values into the following access categories. For example, DSCP values 48 and 56 (and even other non-standard values used in your network) can be mapped into the WMM access category - Voice.

- **DSCP Voice Mapping:** DSCP mapping for the voice traffic.
- **DSCP Video Mapping:** DSCP mapping for the video traffic.
- **DSCP Best Effort Mapping:** DSCP mapping for the best-effort traffic.
- **DSCP Background Access Mapping:** DSCP mapping for the background traffic.

Specify the appropriate DSCP values for upstream (WLAN to LAN) traffic. You can mark the following access categories with appropriate DSCP values. For example, DSCP value 48 can be used to mark the WMM access category - Voice.

- **DSCP Voice AC:** DSCP mapping for the voice traffic.
- **DSCP Video AC:** DSCP mapping for the video traffic.
- **DSCP Best Effort AC:** DSCP mapping for the best-effort traffic.
- **DSCP Background AC:** DSCP mapping for the background traffic.

6. To complete the addition of the QoS profile, click **Apply**.

Creating a FortiLAN Cloud group and users

Perform this procedure to use a FortiLAN Cloud group and users as the RADIUS setting when you configure an SSID with WPA-2 Enterprise authentication. As part of user group configuration, you can assign VLAN IDs, especially useful for when assigning users to different networks without requiring multiple SSIDs.

Note: Enterprise (802.1x) wireless networks (versions prior to FortiLAN Cloud 21.2) that use the FortiAP Cloud User/Group feature and have client devices (such as Android 11) with the domain name fortiacloud.com during their wireless connection must be re-configured in FortiLAN Cloud; the new domain name is *forticloud.com* or *fortilan.forticloud.com*. This is required for the wireless client devices to connect.


Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the group.
2. In the Menu bar, click **Configure**.

3. In the Navigation pane, click **FortiLAN Cloud User/Group**.
4. Click **Group**.
5. Click **Add Group**.
6. Complete the following fields:

Group ID	Type the ID for this group, up to a maximum of 16 characters in length.
Description	Type a description for this group.
VLAN ID	The VLAN ID for this group.


7. Click **Apply**.

A new group is added. To download data in a .csv format for all groups, click .

1. Click **User**.
2. Click **Add user**.
3. Complete the following fields:

User ID	Type the ID for this user, up to a maximum of 64 characters in length.
Full name	Type the full name for this user.
Password	Type the password associated with this user.
VLAN ID	The VLAN ID for this group.
Email address	Type the email address for this user.
Re-type Email	
Groups	Select the group you want this user to be added to.

4. Click **Apply**.

A new user is added. To download data in a .csv format for all users, click .

Adding a FortiLAN Cloud guest

Use this procedure to add a single guest or multiple guests in FortiLAN Cloud.



Prerequisites

Add a guests SSID. For details, see procedure.

Procedure steps

1. On the FortiLAN Cloud Home page, select the networks to which you want to add the guest.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **FortiLAN Cloud User/Group**.
4. Click **Guest**.
5. Click **Add Guest**.

6. If you want to add multiple guests, click the **Multiple Guest** checkbox.
7. Complete the fields.
8. To complete the addition of guests, click **Apply**.

A new guest user is added. To download data in a .csv format for all guests, click . To import data for guest users, click .

Adding a FortiLAN Cloud guest manager

Use this procedure to add a guest manager in FortiLAN Cloud.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the guest manager.
2. In the Menu bar, click **Configure**
3. In the Navigation pane, click **FortiLAN Cloud User/Group**.
4. Click **Guest Manager**.
5. Click **Add Guest Manager**.




Make sure to type an email address that the network configuration is not already using.

6. Complete the following fields.

User Name	Type the name for this user.
Email address	Type the email address for this user.
Re-type Email	
Enable 2-Factor Authentication	Select to enable 2-factor authentication for guest manager.

To add the guest manager, click **Submit**.

A new guest user is added. To download data in a .csv format for all guest managers, click .

Adding a RADIUS server

Perform this procedure to add a RADIUS server to a network and then use this server to authenticate wireless clients.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the RADIUS server.
2. In the Menu bar, click **Configure**.

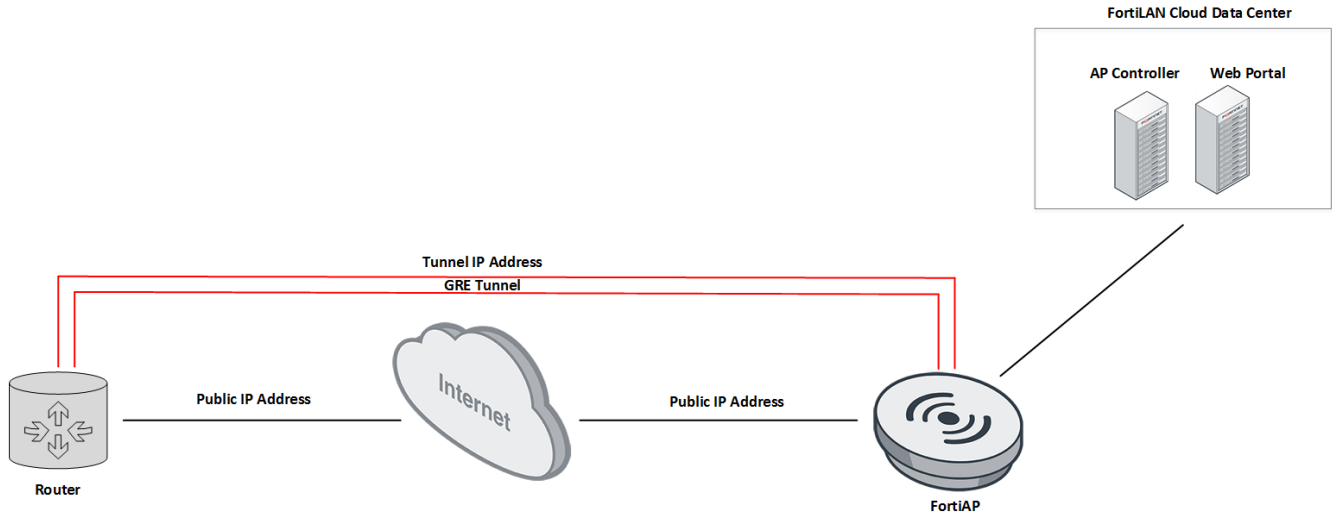
3. In the Navigation pane, click **My RADIUS server**.
4. Click **Add My RADIUS Server**.
5. Complete the following fields:

Name	Type a name for My RADIUS Server.
NAS IP	Type the IP address of the network access server (NAS). This field is optional.
Primary server name/IP	Type the server name or IP address of the primary RADIUS server.
Primary server secret	Type the secret key of the primary RADIUS server.
Secondary server name/IP	Type the server name or IP address of the secondary RADIUS server. This field is optional.
Secondary server secret	Type the secret key of the secondary RADIUS server. This field is optional.
Server port	If the RADIUS server is not using the default port, then type the server port. The default is 1812.
Auth Protocol	Select the authentication protocol only to authenticate wireless clients that connect to captive portal enabled networks. If you select Auto , then the protocols are tried in this order. <ul style="list-style-type: none"> • PEAP • MSCHAPv2 • MSCHAPv1 • CHAP • PAP
TLS Version	Select the TLS version for the PEAP authentication protocol.
CoA enable	Enable Change of Authorization (CoA) to allow the RADIUS server to adjust active client sessions. The AP disconnects user sessions when it receives a Disconnect-Request from the RADIUS server.
Account all servers	Enable this option to use both primary and secondary RADIUS servers for authentication.
Case sensitive username	Enable case sensitive RADIUS user name.

6. To complete the addition of the RADIUS server, click **Apply**.

Adding a Tunnel profile

When you add an SSID to a network, you can assign a generic routing encapsulation (GRE) tunneling or a Layer 2 Tunneling Protocol (L2TP) profile to that SSID. The configured GRE tunnel profile encapsulates data traffic from wireless and wired clients between the FortiAP and a GRE concentrator, for example, a router.



The configured L2TP profile allows Internet Service Providers (ISP) to enable VPN services using an encryption protocol. Traffic is encrypted within the tunnel that is established between the FortiAP and an L2TP access concentrator.

Note: You cannot delete a tunnel profile if it is being used by an SSID.

Prerequisites

Complete the [Managing networks on FortiLAN Cloud on page 36](#) procedure.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to add the tunnel profile.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **tunnel Profile**.
4. Click **Add Tunnel Profile**.

5. Complete the following fields:

Name	Enter a unique name for the tunnel. The name can be from 1 to 32 characters.
Tunnel Type	Select GRE or L2TP as the tunnel type.
Tunnel IP address	Enter the IP address of the Wireless Access Gateway (WAG), the tunnel remote end. Only IPv4 address format is supported.
Tunnel Port	Enter the tunnel port when using L2TP.
Configure the following fields to monitor the tunnel.	
Ping interval	Enter the frequency at which ping requests are sent to check the status of the tunnel. The valid range is 1 – 65535 seconds; default is 1 second.
Ping number	Enter the number of ping requests sent at the configured interval. The valid range is 1 – 65535; default is 5.
Recv pkt timeout	Enter the duration for which the devices wait for the ping response; after this the ping request times out. The valid range is 1 – 65535 seconds; default is 160 seconds.
DHCP Server IP Address	Optionally, enter the DHCP server IP address.

6. To complete the addition of the tunnel profile, click **Apply**.

Adding a Schedule Profile

This feature allows each Multiple PSK entry to have its own availability schedule based on different time periods. The defined schedule profile is referred to by the Multiple PSK entries in the SSID profile.

Notes:

- Maximum number of profiles allowed is 1024 and each profile can have 1 - 40 schedules.
- Schedule profiles cannot be deleted when used by a Multiple PSK in the SSID.
- Date and time are scheduled as per the network timezone.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network to which you want to create the Schedule profile.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **Schedule Profile**.
4. Click **Add Profile**.
5. Complete the following fields:

Name	A unique name for the profile/schedule. The valid range is 1 – 36 characters.
Comment	Any remarks/notes specific to the profile/schedule. The valid range is 0 – 255 characters.

Type

Each individual schedule is either **One-Time** or **Recurring**. One-Time schedules have absolute start and stop date/time and they expire after the configured period.

Recurring or repetitive schedules have start/stop time for selected days of the week and they never expire. When the **All Day** option is selected, the schedule applies to all days of the week with the start and stop time set to 00:00. Disable the **All Day** option to select specific week days and modify the start and stop time.

Note: The schedule **Type** cannot be modified after the profile is created.

Configuring Wireless Intrusion Detection and Suppression (WIDS)

The WIDS monitors wireless traffic for a wide range of security threats by detecting and reporting possible intrusion attempts.

- [Adding a WIDS Profile on page 113](#)
- [Detecting Fake and Rogue Access Points on page 116](#)

Adding a WIDS Profile

When an attack is detected, FortiLAN Cloud records a log message. The FortiAPs that have a dedicated radio for scanning, use that same radio for WIDS scanning. Create a WIDS profile to configure the wireless intrusion monitoring and detection parameters, and then associate the WIDS profile with radios in the Platform Profile. This association causes FortiLAN Cloud to push the configured WIDS profile to all FortiAP radios linked with the platform profile.

Navigate to **Wireless > Configuration > WIDS Profile**.

Add WIDS Profile

Name	<input type="text" value="wids_test"/>	
Comments	<input type="text" value="WIDS profile"/>	
ASLEAP Attack Detection i	<input checked="" type="checkbox"/>	
Association Frame Flooding Detection i	<input checked="" type="checkbox"/>	Threshold <input type="text" value="30"/> Interval <input type="text" value="10"/>
Authentication Frame Flooding Detection i	<input checked="" type="checkbox"/>	Threshold <input type="text" value="30"/> Interval <input type="text" value="10"/>
Broadcasting Deauth to Clients Detection i	<input checked="" type="checkbox"/>	
Invalid MAC OUI Detection i	<input checked="" type="checkbox"/>	
Long Duration Attack Detection i	<input checked="" type="checkbox"/>	Threshold <input type="text" value="8200"/>
Null SSID Probe Response Detection i	<input checked="" type="checkbox"/>	
Spoofed Deauthentication Attack Detection i	<input checked="" type="checkbox"/>	
Weak WEP IV Detection i	<input checked="" type="checkbox"/>	
Wireless Bridge Detection i	<input checked="" type="checkbox"/>	
De-Auth Unknown Source For Dos Attack i	<input checked="" type="checkbox"/>	Threshold <input type="text" value="10"/>
Override Radio Scan Parameters i	<input type="checkbox"/>	

You can configure WIDS against the the following types of intrusions.

Type of Attack	Description
ASLEAP Attack Detection	The attacker uses the ASLEAP tool to attack clients against LEAP authentication.
Association Frame Flooding Detection	This is a Denial-of-Service (DoS) attack using a large number of association requests. The default detection threshold is 30 requests (range is 1 to 100 requests) in 10 seconds interval (range is 5 to 120 seconds).
Authentication Frame Flooding Detection	This is a DoS attack using a large number of authentication requests. The default detection threshold is 30 requests (range is 1 to 100 requests) in 10 seconds interval (range is 5 to 120 seconds).
Broadcasting Deauth to	This is a DoS attack. A flood of spoofed de-authentication frames forces wireless

Type of Attack	Description
Clients Detection	clients to de-authenticate, then re-authenticate with their AP.
Invalid MAC OUI Detection	Some attackers use randomly generated MAC addresses. The first 3 bytes of the MAC address are the Organizationally Unique Identifier (OUI), administered by IEEE. Invalid OUIs are logged when this field is enabled.
Long Duration Attack Detection	To share radio bandwidth, Wi-Fi devices reserve channels for brief periods of time. Excessively long reservation periods can be used as a DoS attack. You can set a threshold between 1,000 and 32,767 microseconds (default = 8200).
Null SSID Probe Response Detection	In this attack, when a wireless client sends out a probe request, the attacker sends a response with a null SSID. This causes many wireless cards and devices to stop responding.
Spoofed Deauthentication Attack Detection	The attacker sends spoofed de-authentication messages to the FortiAP on behalf of the client. These spoofed de-authentication frames form the basis for most DoS attacks, disconnecting all clients from the FortiAP.
Weak WEP IV Detection	A primary means of cracking WEP keys is by capturing 802.11 frames over an extended period of time and searching for patterns of WEP initialization vectors (IVs), that are known to be weak. WIDS detects known weak WEP IVs in on-air traffic.
Wireless Bridge Detection	Wi-Fi frames with both <i>FromDS</i> and <i>ToDS</i> fields set indicate a wireless bridge. This also detects a wireless bridge that you intentionally configured in your network.
De-Auth Unknown Source For Dos Attack	This is a DoS attack where an unknown client sends a large number of de-authentication requests in quick succession. In an aggressive attack, this de-authentication activity can prevent packet processing from valid clients. As part of mitigating a DoS attack, the FortiAP sends de-authentication packets to unknown clients. In an aggressive attack, this de-authentication activity can prevent the processing of packets from valid clients. The threshold value set is a measure of the number of de-authorizations per second. It can be 0 to 65535 (default = 10 and 0 means no limit).

Enabling **Override Radio Scan Parameters** overrides the radio scan parameters defined at the network level (**Configuration > Network**).

Radio Scan Parameters

Sensor Mode i	<input checked="" type="radio"/> Disable <input type="radio"/> Foreign and Home Channels <input type="radio"/> Foreign Channels Only
Background Scan every i	<input type="text" value="600"/>
Background Scan Interval i	<input type="text" value="3"/>
Background Scan Report Interval i	<input type="text" value="30"/>
Background Scan Duration i	<input type="text" value="30"/>
Background Scan Idle Time i	<input type="text" value="20"/>
Disable Background Scan during Specified Time i	<input type="checkbox"/>
Enable Passive Scan Mode i	<input type="checkbox"/>
Monitor Mode: Foreground Scan Report Interval i	<input type="text" value="15"/>

Detecting Fake and Rogue Access Points

You can configure rules for automatic detection of fake and offending SSIDs. Additionally, it is also possible to configure actions and counter measures to be taken when these categories of threats are detected. FortiLAN Cloud actively scans and reports the neighbour APs to identify other access points in the area to know their potential impact on the FortiAPs managed by FortiLAN Cloud. You can define the policy to classify the detected neighbour access points **Fake & Offending** and **Rogue & Accepted**. Navigate to **Wireless > Monitor > Neighbour APs**.

Fake & Offending

Fake and Offending categories include phishing access points that lead clients to connect to fake/offending access points instead of getting connected to legitimate FortiAPs. A fake access point broadcasts the same SSID as the legitimate FortiAP and an offending access point broadcasts SSIDs that falsely represent the company/organization/department of the legitimate FortiAP.

You can configure the criteria for classifying the detected neighbour access points as fake or offending. FortiLAN Cloud compares the received neighbour access point data with the configured policy (SSID) and in case of a match, categorizes them and takes the action as per the configured policy parameters.

Neighbour AP configuration		Add rule for classifying a wireless source as Fake/Offending AP					
Fake & offending AP Config i							
<input type="button" value="+ Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Refresh"/>							
<table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Name	Description			Name <input type="text" value="Fake_APs"/> Description <input type="text" value="Fake APs"/> Status <input type="button" value="Disable"/> <input checked="" type="button" value="Enable"/> Classify as type <input checked="" type="button" value="Fake AP"/> <input type="button" value="Offending AP"/> Action <input checked="" type="button" value="Log"/> <input type="button" value="Log + Suppress"/> SSID Pattern ? <input type="text" value="All SSIDs"/>	
Name	Description						

Rogue & Accepted

A neighbour access point that could potentially affect the performance of the FortiAPs managed by FortiLAN Cloud, is classified as rogue and a neighbour access point with no adverse impact or interference in the FortiAP wireless network operations are deemed acceptable.

You can configure a single or multiple parameters for the classification of FortiAPs as rogue or acceptable. FortiLAN Cloud compares the received neighbour access point data with the configured parameters and in case of a match, categorizes them and takes the action as per the configured policy parameters.

Add rule for classifying a wireless source as Rogue/Accepted AP Config

Name	<input type="text" value="Rogue APs"/>
Description	<input type="text" value="Rogue APs"/>
Status	<input type="button" value="Disable"/> <input checked="" type="button" value="Enable"/>
Type	<input checked="" type="button" value="Rogue AP"/> <input type="button" value="Accepted AP"/>
Action	<input type="button" value="None (Ignore)"/> <input checked="" type="button" value="Log"/> <input type="button" value="Log + Suppress"/>
Match Criteria	<input checked="" type="button" value="Match All Parameters"/> <input type="button" value="Match Any Parameter"/>

Match Parameters

SSID Pattern ?	<input type="text" value="*forti"/>
BSSID Pattern ?	<input type="text" value="XX:XX:XX:XX:XX:XX"/>
Authentication ?	<input type="text" value="WPA3 - OWE"/>
Vendor ?	<input type="text"/>
Channel ?	<input type="text"/>
Min RSSI(dbm) ?	<input type="text"/>
Min Reporting APs ?	<input type="text"/>
Min seen duration(seconds) ?	<input type="text"/>

Notes:

- SSID and BSSID patterns allow up to one wildcard (*) character.
- You can create multiple configuration profiles and each configuration profile can specify only a single SSID/BSSID pattern.
- The specified SSID pattern is case-insensitive.

Network Settings

Use this procedure to configure and manage specific network settings.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation page, click **Network**.

Editing the Network Time Zone

Locate the **Network Info** section and in the **Time Zone** drop-down list, select the time zone. Click **Apply** and verify the updated time.

1. Go back to the FortiLAN Cloud Home page.
2. Locate the network that you selected in step 1.

Enabling Network Alerts

Locate the **AP Network Alert** section. If you want to use the email associated with the FortiLAN Cloud account, click **Use Account Email**. Otherwise, in the **Send alerts via email to** field, type an email address. Click **Apply**.

Editing Radio Scan Settings

Use this procedure to change the following radio scan settings:

- editing background scan interval (in seconds)
- disabling background scan
- enabling passive scan mode (no probe)

Note: These settings can optionally be overridden by a WIDS profile, if any, associated with this radio.

Prerequisites

To use the radio scan settings, make sure to enable one of the following platform profile settings:

- Automatic TX Power Control
- DRMA
- Radio Resource Provision
- Rogue AP Scan

For details about the platform profile, see the [Adding a FortiAP platform profile on page 93](#) procedure.

In the **Radio Scan** section, complete the updates and click **Apply**.

Editing Timeout Settings

You can edit the timeout settings for **Idle Client** and **Captive Portal User Authentication**.

Enabling Duplicate SSID

A duplicate SSID bears the same wireless network SSID as another original SSID. The duplicate SSID can have different configurations and can be deployed on different APs/AP groups (AP tags).

Consider an example of an organization where an original SSID **Staff** is configured on **AP Group 1** located at the company headquarters. The duplicate SSID **Staff** is configured on **AP Group 2** located at the company branch. Both these SSIDs have different configurations, such as, VLANs, QoS, and so on. A wireless client moving from the

headquarters (**AP Group 1**) to the branch (**AP Group 2**) seamlessly transitions from the original SSID **Staff** to the duplicate SSID **Staff** and is now governed by the configurations of the duplicate SSID.

The OID of the duplicate SSID is displayed for easy identification.

<All> ▾
Add SSID

OID	SSID	Description	Authentication	Sign on Method	IP Assignment	Security	Available to APs with following AP Tags	Radio Av
4056	SSID_1		Open		Bridge (VLAN ID: 0)		Wave2 AP	2.4 GHz, I
4057	SSID_1		WPA2-Personal		Bridge (VLAN ID: 0)		S AP	2.4 GHz, I

Note: The original and duplicate SSIDs must NOT be deployed on the same AP. This may prevent the wireless client from connecting to the desired SSID.

You must delete the duplicate SSIDs before disabling this feature.

Enabling DRMA Timeout

You can configure the specific interval to run DRMA in the Network configuration. The valid range is 10 - 1440 minutes.

Enabling Bonjour Relay

Bonjour is a protocol where devices broadcast their services. For example, an Apple TV sends a Bonjour broadcast, so an iPad knows it is there and can connect to it.

With Bonjour Relay, you set the FortiAP-S device to operate with a service network (where the Apple TV is), and a client network (where the iPad is). The FortiAP-S device re-transmits the Bonjour requests from the service network onto the client network. The iPad can learn where the Apple TV is and create a session.

To set up Bonjour Relay, enter one or more services as Service VLAN and Client VLAN, along with a definition of the service. For example, you may choose to only send the information about the Apple TV to a meeting room, and not to the printer in reception. After you define these services, select the FortiAP that will perform the Bonjour Relay function.

Prerequisites

You must purchase a FAP Advanced Management License.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **Bonjour Relay**.
4. Select the **Enable Bonjour Relay** checkbox.
5. To add the Bonjour Service:
 - a. Go to the **Bonjour Service** section and click the plus sign (+).
 - b. Complete the following fields:

Description	Specify a name for the Bonjour Service.
Service VLAN	Specify one or more VLAN ID where network services are running.

	<p>A valid VLAN ID is from 0 to 4094.</p> <p>APs support up to 32 VLAN entries.</p> <p>To specify multiple entries, use a comma (,) or a dash (-).</p> <p>For a full range, use "all". When you use "all", it counts as one entry.</p> <p>For example, 1,2-5.</p>
Client VLAN	<p>A valid VLAN ID is from 0 to 4094.</p> <p>APs support up to 32 VLAN entries.</p> <p>To specify multiple entries, use a comma (,) or a dash (-).</p> <p>For a full range, use "all". When you use "all", it counts as one entry.</p> <p>For example, all.</p>
Services	<p>Select one or more Bonjour services that you want to advertise across the network.</p> <p>To enable all services, select the all checkbox.</p>

6. To save changes, click **Submit**.
7. To add a Bonjour Relay Gateway:
 - a. Go to the **Bonjour Relay Gateway** section and click the plus sign (+).
 - b. For each subnet, select only one AP as the Bonjour Relay Gateway.
 - c. To save changes, click **Submit**.

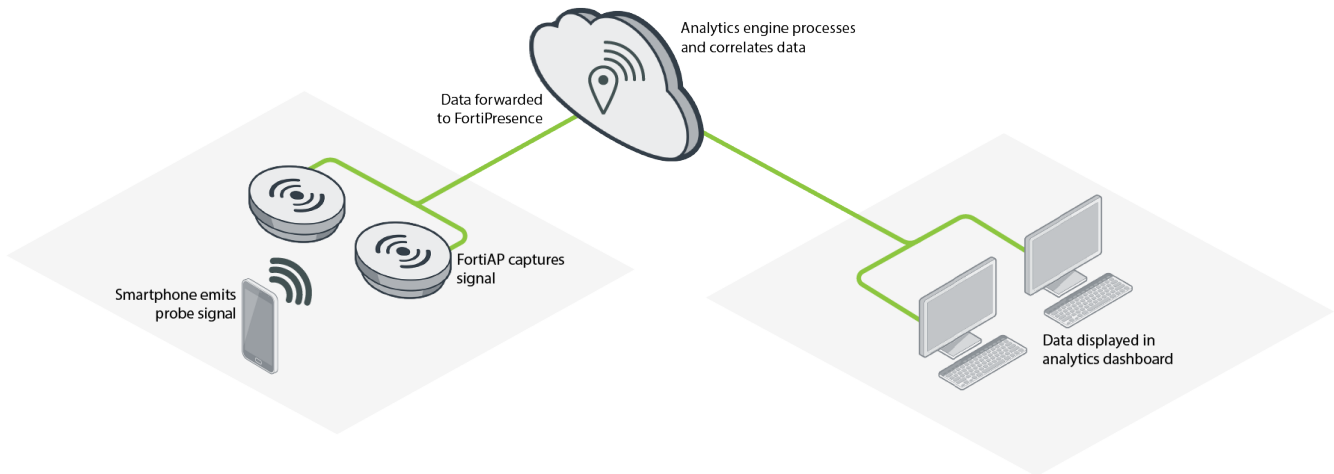
Enabling FortiPresence

FortiPresence is a secure and comprehensive data analytics solution designed to provide presence and positioning analytics for user traffic. By capturing analytics of consumer traffic patterns, businesses can learn more about their customers.

For location analytics, the FortiAP uses a Push API to communicate with FortiPresence.

How it works

1. Smartphone emits a Wi-Fi probe signal, even if it is in the visitor's pocket and not connected to the Wi-Fi network.
2. FortiAP captures the MAC address and signal strength information from the smartphone.
3. FortiLAN Cloud managed AP summarizes and forwards the data records directly to FortiPresence.
4. FortiPresence service receives data.
5. FortiPresence analytics engine processes and correlates the data.
6. Data is displayed in the analytics dashboard in an actionable format.



Prerequisites

- Access your FortiPresence account UI and navigate to **Admin > Settings > Discovered APs** to retrieve the following parameters:
 - Project Name
 - Project Secret Key
 - Location Server IP
 - Port
- For FortiPresence configuration details, see the following sections in the [FortiPresence Administration Guide](#):
 - Configuring location services
 - Configuring captive portal

Procedure steps

1. On the FortiLAN Cloud Home page, select the network that you want to edit.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **FortiPresence**.

4. Complete the following fields:

Mode	<p>Select one of the following options to enable FortiPresence:</p> <ul style="list-style-type: none"> • Foreign Channels Only: With this setting AP will only listen to clients on foreign channels when doing background scan. It will not listen to clients associated to other APs running on its home (or operating) channel to preserve associated clients traffic. • Foreign and Home Channels: AP will also listen to connected clients associated to other APs on its home channel. This is useful for FortiPresence, but can negatively impact AP performance when AP is serving clients.
Server IP Address	<p>Specify the IP address/FQDN of the server. Copy the value from the FortiPresence UI.</p> <p>Note: FortiPresence FQDN is supported only on FortiAP 7.0 and later; for FortiAPs with lower version, specify the IP address.</p> <p>In the FortiPresence UI, the value is in the Location Server IP field.</p>
UDP Listening Port	<p>Type UDP listening port. The default is 3000.</p> <p>Copy the value from the FortiPresence UI. In the FortiPresence UI, the value is in the Port field.</p>
Project Name	<p>Specify a project name. Copy the value from the FortiPresence UI.</p> <p>In the FortiPresence UI, the text is in the Project Name field.</p>
Secret Password	<p>Type fortipresence. Copy the value from the FortiPresence UI.</p> <p>In the FortiPresence UI, the password is in the Project Secret Key field.</p>
Report Transmit Frequency	<p>Frequency at which each AP will report wireless client information to the FortiPresence server.</p> <p>The default is 30 seconds. The range is between 5 and 65535 seconds (or approximately 18 hours).</p>
Reporting of Rogue APs	<p>If you want FortiPresence to report rogue APs, select the checkbox.</p>
Reporting of Unassociated Stations	<p>If you want FortiPresence to report unassociated stations, select the checkbox.</p>

5. Click **Apply**.

Viewing the history of configuration changes

You can view the history of FortiLAN Cloud configuration changes.

Procedure steps

1. On the FortiLAN Cloud Home page, select the network.
2. In the Menu bar, click **Configure**.
3. In the Navigation pane, click **Change History**.

4. The history of FortiLAN Cloud configuration changes presents the following details:

- Time
- Access IP
- User
- Email
- Category
- Action
- New Value vs Old Value

You can optionally filter these entries by the following time periods:

- Last 60 Minutes
- Last 24 Hours
- Last 7 Days
- Last 30 Days
- Specify

Note: The last 1000 entries of history are stored.

Logs

This section includes the following FortiLAN Cloud log procedures:

- [Displaying logs on page 124](#)
- [Exporting logs on page 124](#)
- [Wireless Log Categorization and Storage Control on page 125](#)

Displaying logs

You can view logs related to FortiLAN Cloud features. The logs can be filtered using the AP sites created during deployment based on the AP location.

1. In the Menu bar, click **Logs**.
2. In the Navigation pane, select one of the following categories:
 - Wireless Logs
 - AntiVirus Logs
 - Botnet Logs
 - IPS Logs
 - Web Access Logs
 - Application Control Logs

Exporting logs

Use this procedure to export logs to a comma-separated values (CSV) file.

Procedure steps

1. In the Menu bar, click **Logs**.
2. In the Navigation page, select one of the following categories:
 - Wireless Logs
 - AntiVirus Logs
 - Botnet Logs
 - IPS Logs
 - Web Access Logs
 - Application Control Logs
3. Click **Export**.
The Export to CSV dialog opens.
4. In the Top drop-down list, select how many logs you want to export.
5. Click **Apply**.
The Opening <AP_network_name_and_date>.zip dialog opens.

6. Select to open or save the file.
7. Click **OK**.

Wireless Log Categorization and Storage Control

FortiLAN Cloud generated wireless logs, instrumental in troubleshooting networks, are stored in the database for 1 year (subscription based). Given that wireless logs can be voluminous depending on the network size, you can now segregate them into multiple different categories and manage the categories to store and display, as per requirement. For example, frame-level logs such as probe logs, authentication logs, and association logs are only required during a debug session and are not always needed. This feature enables you to swiftly filter-down to specific logs of interest.

The network specific log storage policy (settings) configuration overrides the default log storage policy. Navigate to **Wireless > Logs > Settings** to view and manage the log record storage. The log types are displayed on the left panel, select the relevant log type and view the current log storage policy. FortiLAN Cloud assigns each log a severity level.

In the **Log Storage** column, enable/disable the storing of logs and click **Apply**. To reset the log storage policy to the default setting, click **Reset to Defaults** and to reload the saved log storage configuration, click **Reload Saved Config**.

Log Storage Policy

Wireless				Severity Level ▾
AUTHD	ⓘ <input type="checkbox"/> Select All <input type="checkbox"/> Remove All <input type="text" value="Search"/>			
WPA	Log Storage	Action Name ↕	Description ↕	Severity Level ↕
Messages	<input checked="" type="checkbox"/>	user-sign-on-success	User Sign On Successfully	■ ○ ○ ○ ○ ○
Connection	<input checked="" type="checkbox"/>	user-sign-on-failure	User Sign On Failed	■ ○ ○ ○ ○ ○
AP	<input checked="" type="checkbox"/>	user-sign-on	User Sign On	■ ○ ○ ○ ○ ○
DHCP	<input checked="" type="checkbox"/>	email-collect-success	Email Collect Successfully	■ ○ ○ ○ ○ ○
RADIUS Auth	<input checked="" type="checkbox"/>	email-collect-request	Email Collect Request	■ ○ ○ ○ ○ ○
FT & OKC	<input checked="" type="checkbox"/>	email-collect-failure	Email Collect Failed	■ ○ ○ ○ ○ ○
DNS	<input checked="" type="checkbox"/>	disclaimer-decline	Disclaimer Declined	■ ○ ○ ○ ○ ○
	<input checked="" type="checkbox"/>	disclaimer-check	Disclaimer Checked	■ ○ ○ ○ ○ ○
	<input checked="" type="checkbox"/>	CMCC-sign-on-timeout	CMCC Sign On Timeout	■ ○ ○ ○ ○ ○
	<input checked="" type="checkbox"/>	CMCC-sign-on-success	CMCC Sign On Successfully	■ ○ ○ ○ ○ ○
	<input checked="" type="checkbox"/>	CMCC-sign-on-failure	CMCC Sign On Failed	■ ○ ○ ○ ○ ○
	<input checked="" type="checkbox"/>	CMCC-MAC-auth-success	CMCC MAC Auth Successfully	■ ○ ○ ○ ○ ○

Reports

This section includes the following FortiLAN Cloud report procedures:





- [Customizing an AP network summary report on page 126](#)
- [Scheduling an AP network summary report on page 126](#)
- [Managing AP network history reports on page 127](#)
- [Generating a PCI compliance report for an AP network on page 127](#)

Customizing an AP network summary report

Use this procedure to customize an AP network summary report, and its various sections and sub-sections.

Procedure steps

1. In the Menu bar, click **Reports**.
2. In the Navigation pane, click **Summary Report**.

If you want to	Then
Change the summary report settings	<ol style="list-style-type: none">1. Click Settings. 2. You can add a logo, change the language, and enable or disable the generation of an empty report.3. To save changes, click Submit.
Customize a section	<ol style="list-style-type: none">1. Go to the section that you want to customize and click  2. Select one of the following action:<ol style="list-style-type: none">a. Add Chartb. New Section Titlec. New Report Blockd. Reset Report3. Follow the onscreen instructions.
Customize a sub-section	<ol style="list-style-type: none">1. Click Edit. 2. You can change the sub-section title and add filters.3. To save and apply the changes, click Run.

Scheduling an AP network summary report

Use this procedure to schedule when you want to receive an AP network summary report by email.

Procedure steps





1. In the Menu bar, click **Reports**.
2. In the Navigation pane, click **Summary Report**.
3. Click **Schedule**.
4. Select the frequency (**Daily**, **Weekly**, or **Monthly**).
5. To receive summary reports by email, select **Email To** and type an email address.
6. To access a summary report, go to the Navigation pane and click **History Reports**.

Managing AP network history reports

Use this procedure to view, download, send by email, and delete AP network history reports.

Procedure steps

1. In the Menu bar, click **Reports**.
2. In the Navigation pane, click **History Reports**.
3. Hold the pointer over the report that you want to access.

If you want to	Click
View the report	
Download the report	
Send the report by email	
Delete the report	

Generating a PCI compliance report for an AP network

Use this procedure to answer questions about AP network settings for compliance with the Payment Card Industry Data Security Standard (PCI DSS) 3.0.

Procedure steps

1. In the Menu bar, click **Reports**.
2. In the Navigation pane, click **PCI Report**.
3. Review and answer questions.
4. To generate a PCI report, click **Run Report**.
The generated PCI compliance report opens.
5. To save the report, scroll to the right and click **Save Report**.

6. To return to the list of questions, scroll to the right and click **Back to Questionnaire**.
7. To access previously saved reports, click **Saved Reports**.

Managing FortiSwitch

.You can configure, monitor, and manage FortiSwitches using the FortiLAN Cloud management solution.

Menu	Description
Dashboard	Displays a snapshot of FortiSwitch activity that occurred in the last 24 hours.
Topology	Displays the FortiSwitch topology.
Switch	Provides sub-menus to configure and manage FortiSwitches, switch tags and so on.
Configure	Configuration page to configure switches, ports, interfaces, VLANs, and remote authentication servers and to create zero-touch configurations, scheduled upgrades, packet capture profiles, VLAN templates, and user groups. and change your notification and backup settings.
Monitor	Monitor page to check modules, MAC addresses, switch and port statistics; FortiSwitch units using PoE, LLDP, or 802.1x authentication; STP instances; DHCP-snooping and IGMP-snooping databases; logs; and the status of zero-touch configurations, scheduled upgrades, and packet captures.
My Account	My Account page to review your account, deploy FortiSwitch units to FortiLAN Cloud.

Getting Started



Some FortiSwitch units might have a sticker on them with an outdated procedure. Use the procedures in the *FortiLAN Cloud Administration Guide* instead of procedures on the sticker.

NOTE: The following are the requirements to use all of the features of FortiLAN Cloud:

- Register your FortiSwitch units with Fortinet Support (<https://support.fortinet.com>).
- Check that your FortiSwitch units are running FortiSwitchOS 6.0.0 or later.
- Check that your FortiSwitch units are connected to the Internet.
- Subscribe to FortiCare (<https://www.fortinet.com/support-and-training/support-services/forticare-support.html>).
- Purchase a Management license for each FortiSwitch unit through authorized Fortinet resellers and distributors. For information on the FortiLAN Cloud license offering, see [Licensing on page 15](#).
 - a. After you purchase a FortiSwitch Management license, you need to register it in your FortiCare account.
 - b. FortiLAN Cloud will automatically import the license from your FortiCare account during its regular license check. Depending on when the license was registered, there might be a delay before the license is available in FortiLAN Cloud.
- Set your FortiSwitch units to the standalone mode.
- Check that the system time on your FortiSwitch units is accurate. To set the time on your FortiSwitch unit, see the *FortiSwitchOS Administration Guide—Standalone Mode*.

Supported models

FortiLAN Cloud supports all FortiSwitch units running FortiSwitchOS Release 6.0.0 or later

To get started using FortiLAN Cloud, follow these procedures:

1. [Using the correct switch management mode for cloud management](#)
2. [Enabling and disabling cloud management](#)
3. [Deploying FortiSwitch device to a network](#)

Using the correct switch management mode for cloud management

To manage a FortiSwitch unit from FortiLAN Cloud, make certain that the switch management mode is set to `local` using the following commands on your FortiSwitch unit:

```
config system global
  set switch-mgmt-mode local
end
```

If your FortiSwitch unit is in FortiLink mode, you need to change your switch management mode to `local` and also run the following command on your FortiGate unit:

```
execute switch-controller set-standalone <switch-id>
```

This command returns the FortiSwitch unit to the factory defaults, reboots the FortiSwitch unit, and prevents the FortiGate unit from automatically detecting and authorizing the FortiSwitch unit.

Checking your Cloud configuration

To check your Cloud configuration, use the following commands:

```
S524DF4K15000024 # config system flan-cloud
S524DF4K15000024 (flan-cloud) # get

interval          : 45
name              : fortiswitch-dispatch.forticloud.com
port              : 443
status            : enable
```

Option	Description
interval	The time in seconds allowed for domain name system (DNS) resolution. The default is 15 seconds. The range of values is 3-300 seconds.
name	The domain name for FortiLAN Cloud. By default, this field is set to <code>fortiswitch-dispatch.forticloud.com</code> .
port	Port number used to connect to FortiLAN Cloud. The default is port 443.
status	Whether access to FortiLAN Cloud is enabled or disabled. By default, the status is set to <code>enable</code> .

To check your connections to FortiLAN Cloud, use the `get system flan-cloud-mgr connection-info` command.

The State-Machine field is set to FSMGR_STATE_READY when your FortiSwitch unit is being managed by FortiLAN Cloud. The SSL tunnel is the secure communication channel between your FortiSwitch unit and FortiLAN Cloud. FortiLAN Cloud uses the Socket Secure protocol (SOCKS) to communicate with your FortiSwitch units.

For example:

```
S524DF4K15000024 # get system flan-cloud-mgr connection-info

User Account-ID:      : 012345
Dispatch Service     : IP= xx.xx.xx.xx
SSL verify Code      : ok
Access Service       : IP= xx.xx.xx.xx, Port= 443, Connected on: 2018-11-28 10:59:32
Bootstrap Service    : hostname= xxxxxxxxxxxx, Port= 8000

Remote Assistance    : Disabled.
State-Machine        : State= FSMGR_STATE_READY, Event= EV_READY_HBEAT_GOOD

SSL Local End-Point  : Interface: mgmt, IP: xx.xx.xx.xx
SSL Tunnel Uptime    : Days: 0 Hours: 2 Mins: 22 [Connected @2018-11-28 10:59:32]
SSL Tunnel stats     : restart-count= 4, Reason= Configuration Change

Stats:
=====
Switch Keep Alive   Tx/Reply := 45 / 45
Manager Keep Alive  Rx/Error := 45 / 0

Socks  Req Rx/Last Stream-ID := 224 / 14
Reset  Req Rx/last Stream-ID := 8 / 12
Goaway Req Rx      := 0
Unknown Req Rx     := 0

Syslog FD/Tx/Err := 8 / 3 / 0

Used SOCKS stream-id:
=====
SID           SockFd      State      Description
-----
18            10           DATA     REST REQ
5             0            DATA     SYSLOG DATA
```

Enabling and disabling cloud management

To allow your FortiSwitch unit to be managed by FortiLAN Cloud, use the following commands:

```
config system flan-cloud
    set status enable
end
```

If you want to remove a FortiSwitch unit from FortiLAN Cloud, use the following commands:

```
config system flan-cloud
    set status disable
```

Deploying FortiSwitch device to a network

You can deploy any of the FortiSwitch units listed in the switch inventory to FortiLAN Cloud.

1. Login into your [FortiCare](#) account and register the switch serial number. Registered switches are automatically added to FortiLAN/FortiSwitch Cloud.
2. To deploy the FortiSwitch, go to the *Inventory* tab on the main page of the FortiLAN Cloud portal **OR** go to *My Account > Switch Inventory* and select the switches to deploy.
 - You can deploy the FortiSwitch to FortiLAN Cloud or to an external AP Controller. Select **Deploy to FortiLAN Cloud** and click **Deploy**. Select the network to deploy the FortiSwitch to and click **Deploy**.
 - You can also deploy the FortiSwitch through FortiZTP. In the **FortiZTP Devices** tab, select the FortiSwitch and click **Deploy to Network**. Select the network to deploy the FortiSwitch to and click **Deploy**.

In the *Switch Inventory*, if you are deploying one switch, click *Add*. If you are deploying multiple switches, select *Deploy*.

Serial Number	License	IP Address	Description	Firmware Version	Registration Time	Last Seen Time
S108DVTA	Active (Internal)					
S108DVTA	Active (Internal)					
S108DVTA	Active (Internal)					

After you deploy a FortiSwitch unit to FortiLAN Cloud, it is removed from the *Switch Inventory* pane and listed in the *Switches* pane (*Switches > Deployed Switches*).

Host Name	Status	Tags	Model	Connecting From	Private IP	BIOS	Version	Joining Time
test_host_1	Online		S108DV	192.71.233.4	172.116.0.6	04000002	v7.2.0,build4800,220826 (MR2 Beta 0)	4 days ago
S108DVYMVHWKOA5A	Online		S108DV	192.71.233.4	172.114.0.15	04000002	v7.2.0,build4800,220826 (MR2 Beta 0)	1 day ago
S108DVTM22005003	Online		S108DV	171.83.126.132	172.110.0.95	04000002	v7.2.0,build4800,220826 (MR2 Beta 0)	22 hours ago
S108DVTA19001199	Online		S108DV	192.71.233.4	172.116.0.19	04000002	v7.2.0,build4800,220826 (MR2 Beta 0)	1 day ago
S108DVTA19001198	Online		S108DV	192.71.233.4	172.116.0.1	04000002	v7.2.0,build4800,220826 (MR2 Beta 0)	1 day ago

To undeploy a FortiSwitch device, see [Undeploying a FortiSwitch device on page 142](#).

Moving a FortiSwitch device between networks/accounts

You can move a FortiSwitch between different networks associated with a user account.

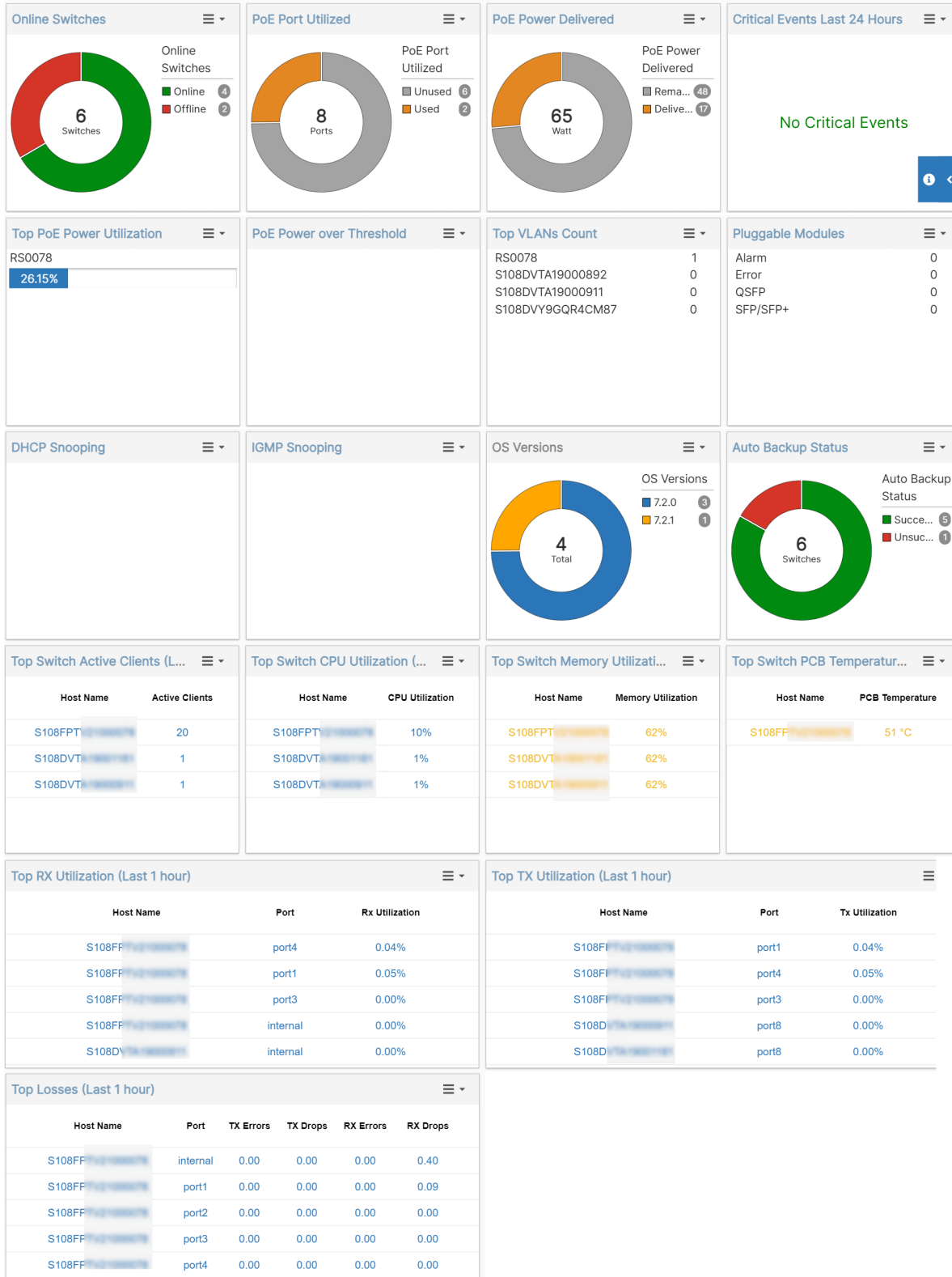
1. Open the network and undeploy the FortiSwitch. See [Undeploying a FortiSwitch device on page 142](#).
2. Open the network to add the FortiSwitch to, navigate to *Switch > My Account > Switch Inventory*.
3. Select the FortiSwitch and select *Add* to deploy it.

You can move a FortiSwitch between different user accounts.

1. Login into the account and undeploy the FortiSwitch device. See [Undeploying a FortiSwitch device on page 142](#).
2. Remove the FortiSwitch from the FortiCare account (*Services > Asset Management*).
3. Register the FortiSwitch in the FortiCare account that you want to move it to and login into the FortiLAN Cloud. See [Deploying FortiSwitch device to a network on page 132](#).

Dashboard

Select *Dashboard* to see a snapshot of FortiSwitch activity that occurred in the last 24 hours.



Use the *Quick Links* drop-down list to view the switch topology, deploy switches, add zero-touch configurations, or add scheduled upgrade configurations.

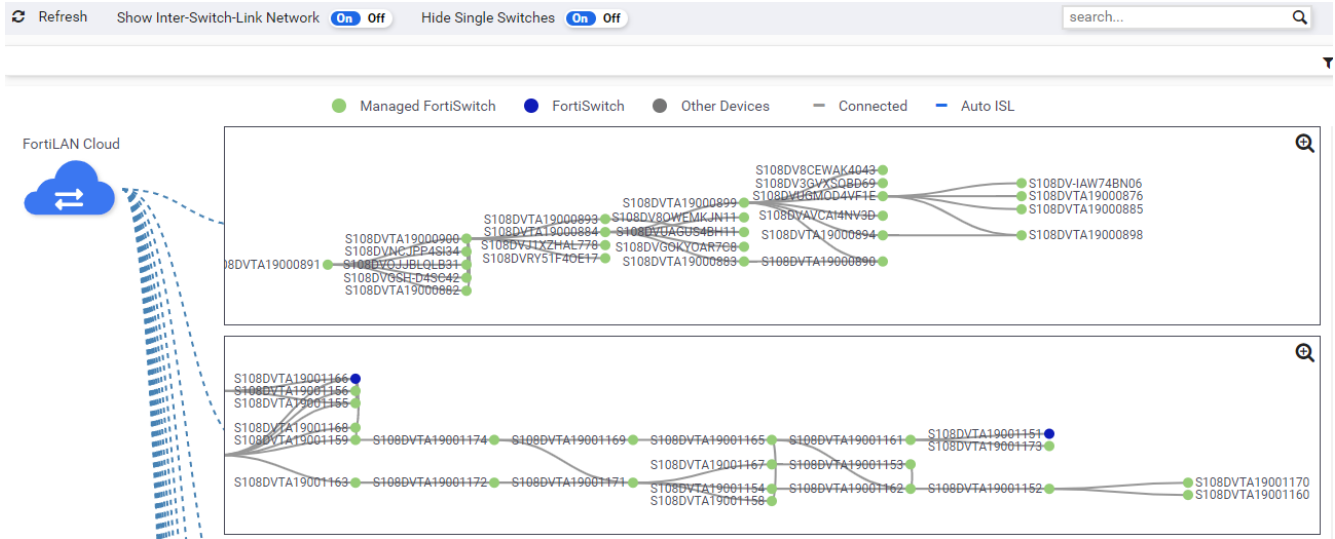
The Dashboard page provides the following information.

- *Online Switches*—The number and percentage of managed devices that are online
- *PoE Port Utilized*—The number and percentage of Power over Ethernet (PoE) ports that are being used
- *PoE Power Delivered*—The number of Watts and the percentage of PoE delivered.
- *Critical Events Last 24 Hours*—The number of critical events in the last 24 hours
- *Top PoE Power Utilization*—The five FortiSwitch units with the highest PoE usage
- *PoE Power over Threshold*—The five FortiSwitch units that have a current power budget that exceeds a specified percentage of the total power budget.
- *Top VLANs Count*—The five FortiSwitch units with the most VLANs.
- *Pluggable Modules*—The number and types of modules inserted in FortiSwitch units, as well as any warnings or alerts
- *DHCP Snooping*—The number of DHCP-snooping-enabled VLANs, the number of dynamically learned DHCP snooping entries in the client and server databases, and the number of DHCP-snooping entries in the limit database.
- *IGMP Snooping*—The number of switches and VLANs enabled for IGMP snooping and the number of dynamic IGMP-snooping groups.
- *OS Versions*—Which FortiSwitchOS versions are being used by managed FortiSwitch units
- *Auto Backup Status (Last 24 hours)*—The number of scheduled configuration backups that failed and succeeded in the last 24 hours and which FortiSwitch units were not backed up.
- *Top Switch Active Clients* - The FortiSwitches with the highest number of active clients in the last one hour.
- *Top Switch CPU Utilization* - The FortiSwitches with the highest CPU utilization in the last one hour.
- *Top Switch Memory Utilization* - The FortiSwitches with the highest memory utilization in the last one hour.
- *Top Switch PCB Temperature* - The FortiSwitches with the highest PCB temperature in the last one hour.
- *Top Rx/Tx Utilization* - The FortiSwitches with the highest percentage of Rx/Tx utilization in the last one hour.
- *Top Losses* - The FortiSwitches with the highest Rx/Tx drops and errors in the last one hour.

Topology

Select *Topology* to view the switch topology. The Topology page shows an overview of FortiSwitch islands connected to FortiLAN Cloud.

A FortiSwitch island contains a cluster of connected FortiSwitch units, as well as devices that are not managed by FortiLAN Cloud. Depending on whether FortiLAN Cloud can obtain valid root information from Spanning Tree Protocol (STP), each FortiSwitch island is displayed with either an LLDP-based graph or an LLDP-and-STP-based graph with tiers. The host name is displayed for FortiSwitch units; MAC addresses are displayed for non-FortiSwitch devices.




To update the topology display, select *Refresh*.

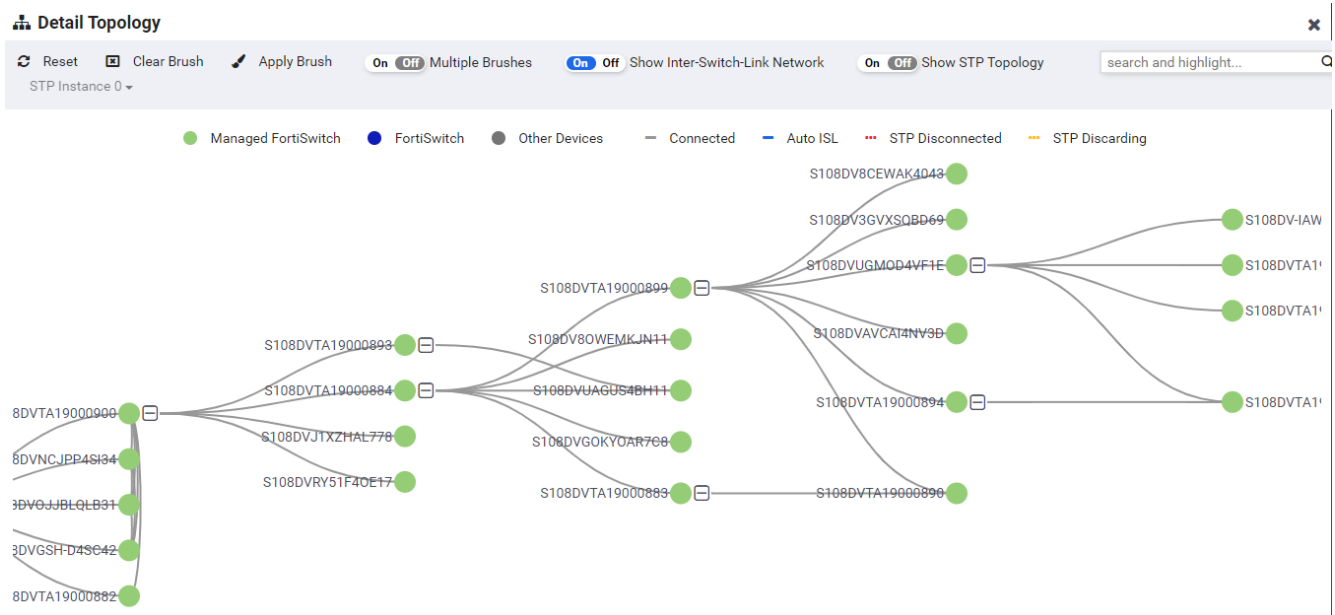
To display networks with inter-switch links (ISLs), select *On* for Show Inter-Switch-Link Network.

By default, only topologies containing more than one FortiSwitch unit are displayed. To display single FortiSwitch topologies, select *Off* for Hide Single Switches.

To find a specific FortiSwitch unit, enter the host name in the Search field, and the node for the switch is highlighted. If you select a node in the Topology pane and then go to the Detail Topology view, the node is still highlighted to make it easier to locate it.

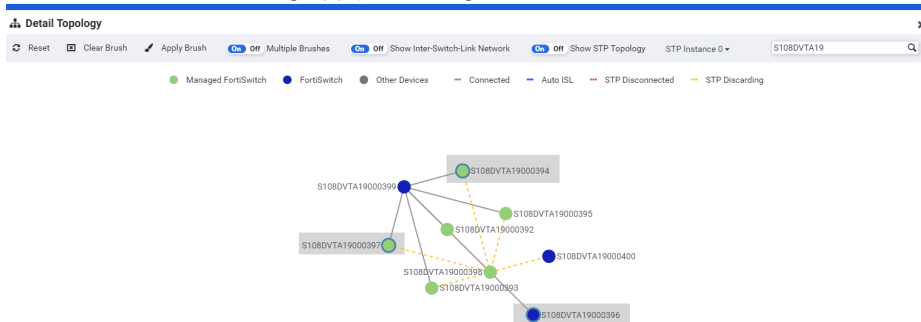
Detail Topology view


To examine the details of the topology of one of the FortiSwitch islands, select , and the Detail Topology view is displayed.



In the Detail Topology view, you can do the following:

- When the cursor changes from a crosshair to an arrow, you can click and drag the graph to where you want it.
- To look at a subset of connected nodes, use your cursor to click and drag around the nodes that you want to examine. When you release the cursor, only the selected nodes are displayed. You can repeat this action until a single node remains. Select *Reset* to see the entire graph.
- To look at a subset of nodes that are not connected, select *On* for Multiple Brushes, use your cursor to click and drag around the nodes that you want to examine, and then select *Apply Brush*. Select *Clear Brush* to undo your selections before selecting *Apply Brush* again.



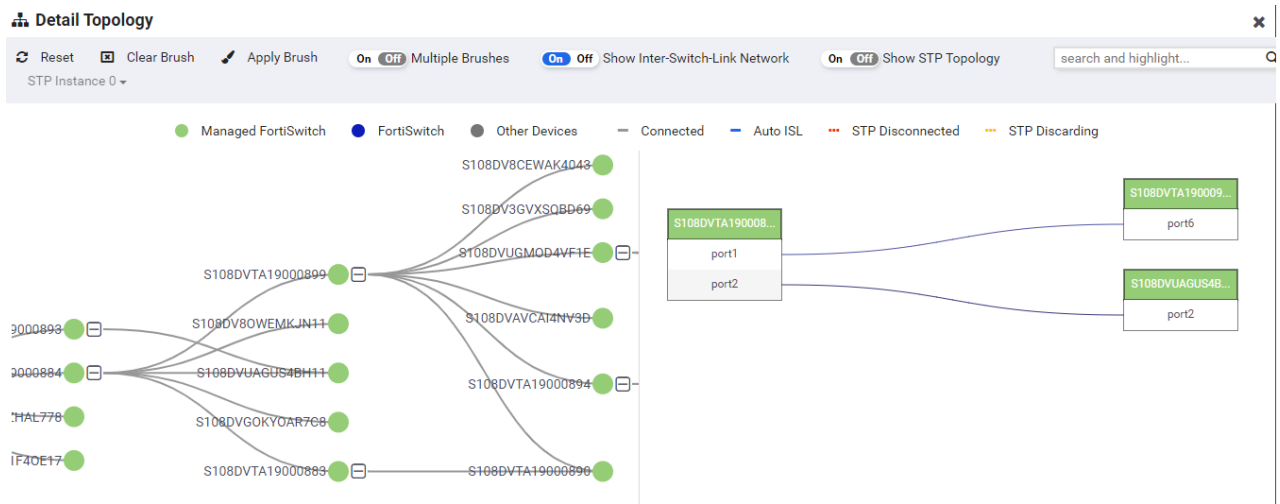
- You can zoom in and out by using the scroll wheel on your mouse.
- To collapse the topology, select the  icon.



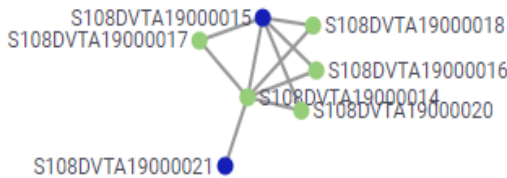
- To expand the topology, select the  icon.



- To see the connections between ports, select a node.
NOTE: Ports that are not connected are not displayed. You cannot zoom in on ports with a brush.



- In an LLDP-based graph (a topology without tiers), you can click on a node and drag it to make the host names easier to read.



- To change the Detail Topology view to the default settings, select *Reset*.
- To display networks with inter-switch links (ISLs), select *On* for Show Inter-Switch-Link Network.
- To display the state of ports for a single Spanning Tree Protocol (STP) instance, select *On* for Show STP Topology. When you hover over a link, a tooltip displays the detailed state of the connected ports.
- To change which STP instance is displayed, select the instance number from the STP Instance drop-down list.
- To return to the Topology pane, select *Close*.

Switches

Select *Switches* to manage the FortiSwitch configuration, to view the switch topology, and to add switch tags. Use the left pane for navigation.

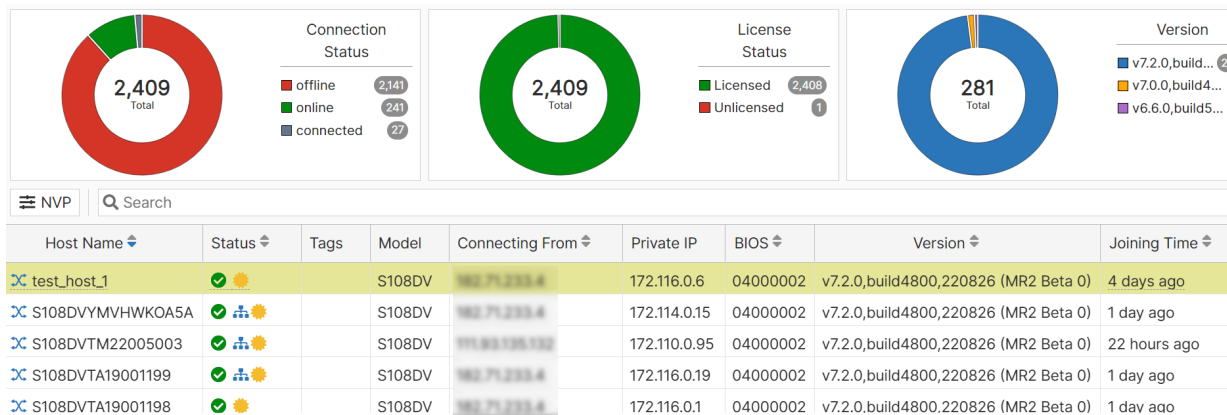
You can select the following options from the left pane:

- [Deployed Switches](#)
- [Switch Tags](#)

Deployed Switches

The **Deployed Switches** pane lists the FortiSwitch units managed by FortiLAN Cloud and gives the serial number, host name, model, IP address, firmware version, connection time, and status of each FortiSwitch unit.

Note: Requisite warning message is displayed in case of old BIOS version, upgrade BIOS as required. Firmware upgrade in case of BIOS compatibility issue is not allowed.



To find a specific FortiSwitch unit, enter part or all of the serial number in the Search field.

Hovering over a host name FortiSwitch unit details, click on **Diagnostics and Tools** for FortiSwitch management options.

S424DF3X15000067	Online		FortiSwitch
------------------	--------	--	-------------

FortiSwitch	S424D
Serial Number	S424DI
Model	FortiSwitch-424D-FPOE
Status	Online
Firmware Version	v7.0.3,build0058,211130 (GA)
IP Address	111.93.135.132
Diagnostics and Tools	

A lightning bolt indicates that the current power budget of the FortiSwitch unit exceeds a specified percentage of the total power budget.

You can perform the following tasks from the **Diagnostics and Tools** panel.

- [Viewing Switch Details](#)
- [Displaying switch statistics](#)
- [Actions](#)
- [Configuration](#)
- [Tools](#)

- Using the FortiSwitch CLI
- Using the FortiSwitch GUI
- Defining Switch Name-Value Pairs

Viewing Switch Details

To view the FortiSwitch statistics and diagnostics in detail, click on the serial number. The **Status** including the FortiSwitch face plate, hardware summary, general status and statistics, and configuration details.

Diagnostics & Details: S108DVY9GQR4CM87

Serial Number	S108DV
Version	v7.2.0,build4800,2208:
Model	FortiSwitch-108D-VM
Connecting From	182.71.233.4
Joining Time	15 hours ago

General

- 0% CPU Usage
- 62% Memory Usage
- 15 hours Connection Uptime
- N/A Temperature
- 0% PoE Power Budget Remaining

Faceplate

Ports | MAC Addresses | LLDP | STP | 802.1X Status | 802.1X Session | POE Status | Modules | Sy

Search

Port	Trunk	Access Mode	Enabled Features	PoE	Port Stats	DHCP Snooping	Native VLAN
------	-------	-------------	------------------	-----	------------	---------------	-------------

Displaying switch statistics

The CPU Utilization/Memory Utilization, PCB Temperature, TX bps/RX bps, and Active Client graphs make it easy to see data from the last 24 hours for a FortiSwitch unit.

NOTE: If the data is not available, the graph is not displayed.

To display switch statistics:

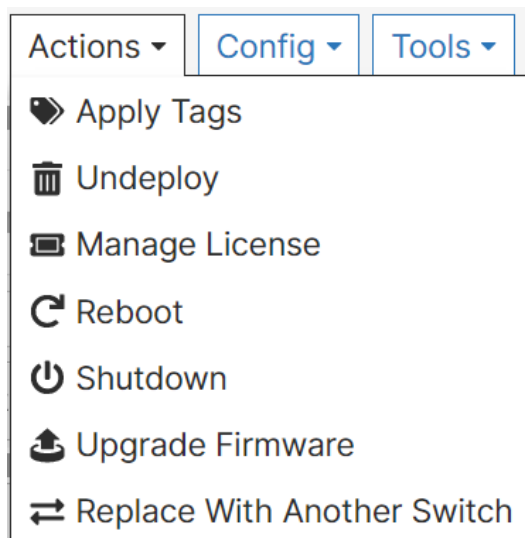
1. Select **Statistics** in the **Diagnostics & Details** panel.



2. Select *Period* to choose the start day and time and end day and time for the graphs.
3. Select *Lines Only* to display just the connected data points in the graphs.
4. Hover above a point in one of the graphs to see the details for that time.

Actions

The **Actions** tab enables you to perform the tasks listed in the **Actions** column in this page and described subsequently in this chapter.

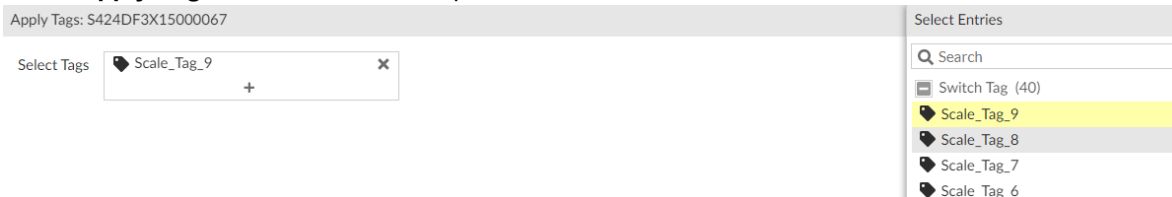



Applying tags to a FortiSwitch unit

Tags allow you to group FortiSwitch units by model, location, department, owner, and so on. You can add more than one tag to a FortiSwitch unit.

To apply a tag to a FortiSwitch unit:

1. Select **Apply Tags** from the **Actions** drop-down menu.

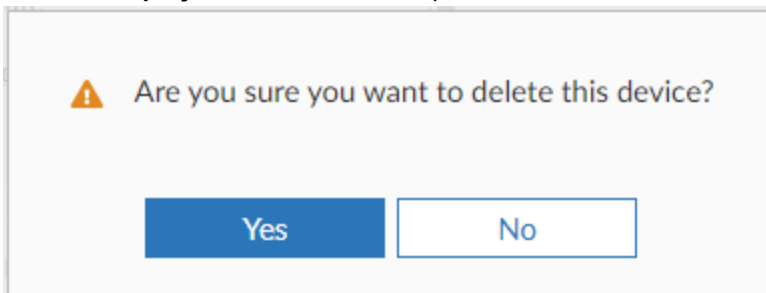


2. Select  to search from the list of existing tags. Select which tags that you want to apply.
3. Select *Submit*.

Undeploying a FortiSwitch device

To remove a FortiSwitch unit from FortiLAN Cloud:

Select **Undeploy** from the **Actions** drop-down menu.



- 1.
2. Select **Yes** to remove the FortiSwitch unit from FortiLAN Cloud. The FortiSwitch unit is removed from the Switches pane and is listed in the Switch Inventory pane (*My Account > Switch Inventory*). It can be added again to the FortiLAN Cloud by going to *My Account > Switch Inventory* and selecting *Add*.

Reboot/Shutdown

You can reboot or shutdown the FortiSwitch from the GUI. A shutdown requires a physical reboot of the FortiSwitch to connect it to FortiLAN Cloud.

Manage License

You can now add and remove the FortiSwitch feature license from the FortiLAN Cloud GUI.

Remove Feature License: S108DVTA

Active License FS-SW-LIC-3000

Advance Features License

Advanced features for FS-3000 series switch:

- Virtual Router Redundancy Protocol (VRRP)
- Open Shortest Path First Protocol (OSPF)
- Routing Information Protocol (RIP)
- Border Gateway Protocol (BGP)
- Intermediate System to Intermediate System


Note: The feature license management option is supported only on firmware version 7.0 and above.

Upgrading the firmware for a FortiSwitch unit

To upgrade the firmware for a FortiSwitch unit:

1. Select **Upgrade Firmware** from the **Actions** drop-down menu.

Upgrade Firmware: S424DF

Serial Number S424DF
 Version v7.0.3,build0058,211130 (GA)
 Firmware Status  Up to Date
 Upgrade Scheduled None

Upgrade/Downgrade To

Mode **Firmware List** Local Image File

Remote Files v7.0.3,build0058,211130

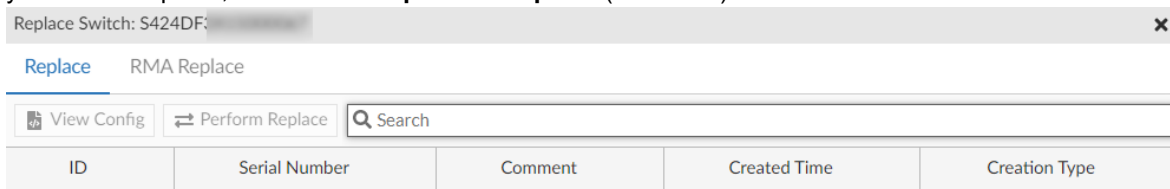
[Release Notes](#)

2. Select *Firmware List* or *Local Image File*.
3. Select the firmware image for the upgrade.
Click the help link, *Release Notes*, to learn about the available versions.
4. Select *Submit* to upgrade.

Replacing a Switch

You can replace a switch in your network with another switch of the same model and copy the configuration to the new switch. The new switch must have the same or higher firmware version. The replacement operation is required either due to switch failure (RMA) or any other reason (non-RMA).

- Backup the switch configuration prior to the replacement operation, see [Configuration Backup/Restore on page 181](#) or [Network on page 214](#).
 - FortiCare synchronizes the inventory data with FortiLAN Cloud periodically and the switch inventory page is updated with the new switch details. Navigate to My **Account > Switch Inventory** and deploy the new switch, see [Deploying FortiSwitch device to a network on page 132](#).
1. Select **Replace with Another Switch** from the **Actions** drop-down menu of the online FortiSwitch unit that you want to replace, select **RMA Replace** or **Replace** (non-RMA).

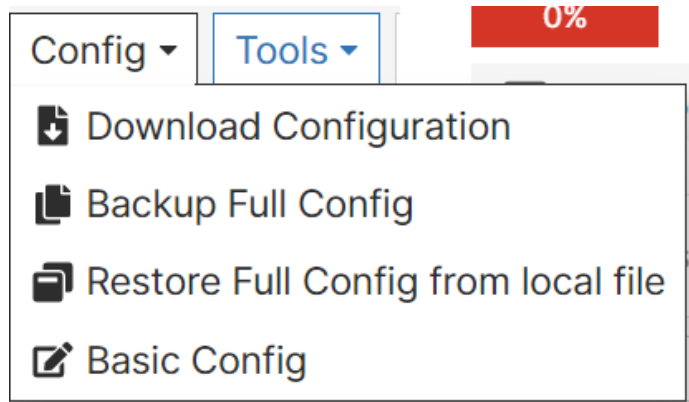


2. Select the serial number and click **Perform Replace**.
3. Click **View Config** to view the configuration details.

Note: In case of a FortiSwitch replacement, you are required to obtain a new license.

Configuration

You can perform various operations to manage the FortiSwitch configurations.



Downloading the FortiSwitch configuration to your computer

To download the FortiSwitch configuration:

Select **Download Configuration** from the **Config** drop-down menu. The configuration is saved as a `.txt` file.

Backing up the FortiSwitch configuration to FortiLAN Cloud

To backup the configuration of a FortiSwitch unit to FortiLAN Cloud:

1. Select **Backup Full Config** from the **Config** drop-down menu of the FortiSwitch unit that you want to save the configuration of.

Backup Full Config: S424DF

Comment

2. Enter a description of the configuration file.
3. Select *Submit*.
Configuration files are listed in *Configuration > Config Backup/Restore*.

Applying a configuration file to a FortiSwitch unit

To apply a configuration file that has been saved to your computer to a FortiSwitch unit:

1. Select **Restore Full Config from local file** from the **Config** drop-down menu of the FortiSwitch unit that needs the configuration restored.

Restore Config: S108DVTA

- Please ensure that full switch configuration is being provided as it will restore full configuration. Partial switch configurations may not be processed and could halt the switch.
- Please note that the switch will reboot after this configuration is applied.

Select local config file No file chosen

2. Select *Choose Files*.
3. Select the configuration file to apply.
4. Select *Open*.
5. Click **Submit** to apply the configuration.

Basic Configuration

You can configure basic parameters for your FortiSwitch unit such as global and administrative settings, ports, and internal and management interfaces. In each of the tabs, select the parameter and enter a value, when you un-select an option, the default value is applied. Select **Basic Config**.

Port (All) Admin **Global** Internal Interface Management Interface Feature License

Asset Tag Enter tagname for switch. Max length 32 characters

Detect IP Conflict

Daylight Savings Time ▾

Hostname Enter hostname for the switch. Max length 35 characters

IP conflict ignore default

Language ▾

You can now add and remove the FortiSwitch feature license from the FortiLAN Cloud GUI. This operation is supported in the **Feature License** tab.

Checking the value sets the value in the switch to the value in the text field. Un-checking the value resets the value on the switch.

Port (All) Admin Global Internal Interface Management Interface **Feature License**

i This action is only available for FortiSwitches with firmware version v7.0.0 or higher. When applying a feature license key with a ZTC Config, the switch will reboot and stop all subsequent CLI commands to the device. Please ensure you only add one key per device and run the required command only after all other commands.

License Key

Note: The feature license management option is supported only on firmware version 7.0 and above.

Tools

The following troubleshooting tools are available in FortiSwitch. You can access them from the **Diagnostics and Tools** panel.

Diagnostics & Details: S108FPTV21000078

Serial Number	[REDACTED]
Version	v7.2.1,build0406,220621 (GA)
Model	FortiSwitch-108F-POE
Connecting From	[REDACTED]
Joining Time	41 minutes ago
Status	✔ 🔌 ⚙️
Firmware Status	✔ Up to Date

[Statistics](#)
[Actions](#)
[Config](#)
[Tools](#)
[CLI](#)
[GU](#)

- Ping
- Blink LEDs
- Cable Testing
- Port Utilities
- TAC Report
- Traceroute
- Multi Path Traceroute

Ports | MAC Addresses | LLDP

Search

Port	Trunk	Access Mode
🔌 internal		Normal

Ping

The ping command sends data packets to a specific IP address on a network, and then lets you know how long it took to transmit that data and get a response. This is used to determine reachability of the FortiSwitch to other devices on the internal or external Internet. You can conduct a ping test to an IP/domain from a FortiSwitch for troubleshooting, reachability and other network connectivity issues. The ping tool uses ICMP protocol packets to connect to a specified host. Both IPv4 and IPv6 hosts are supported.

Ping

- The ping tool uses ICMP protocol packets to connect to a specified host.
- It can be used to check for reachability and network communication.

IPv4
 IPv6

IP Address/Hostname:

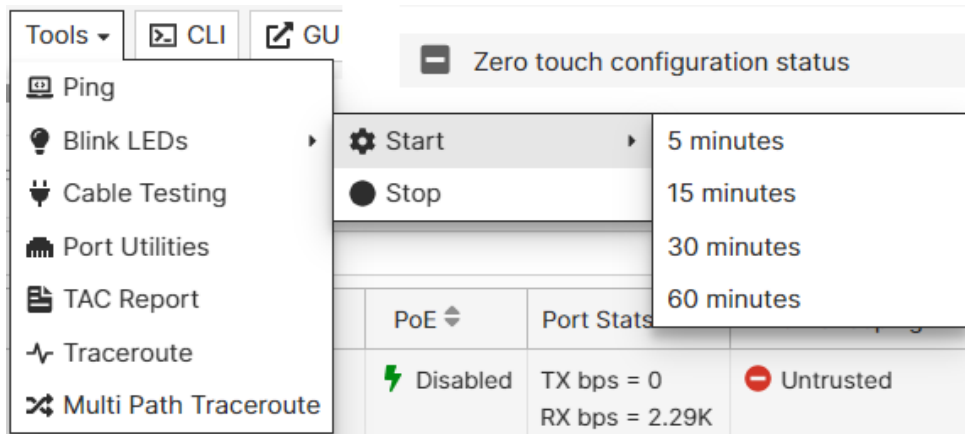
[Ping](#)

Executing...

50%

Blink LEDs

Starting this operation, blinks the FortiSwitch LEDs for a specific time period. This is used to identify the physical location of a specific switch/port in a rack. Click **Start** and select a time duration, to stop the blinking LEDs before the configured time, click **Stop**.



Cable Testing

This is a diagnostic and troubleshooting tool to check the state of cables between the FortiSwitch and the devices connected to its physical ports. This tool does not work on fiber ports and on very short or very long cables (more than 100 meters).

All available external physical ports of the FortiSwitch are displayed. Select one or more ports and click **Diagnose**.

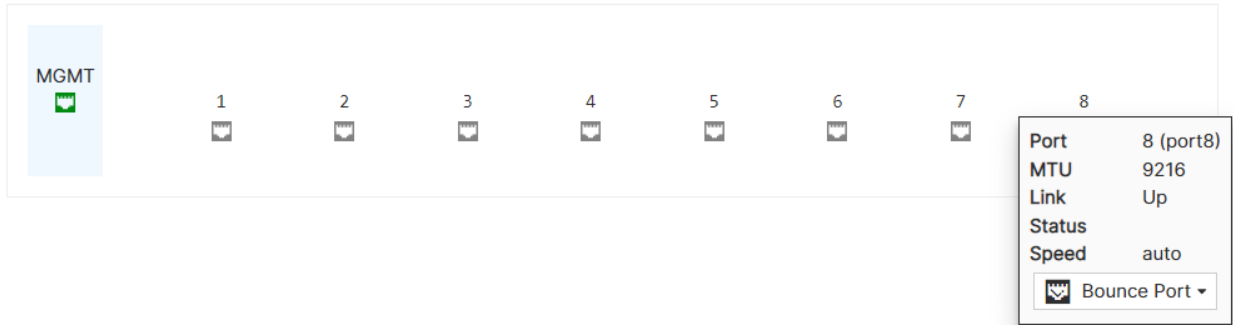
Note: Running the cable diagnostic test on a port disables it briefly. The network traffic is affected for a few seconds.

Switch Cable Diagnostics: S424DF3X15000067						
Diagnose						Status: Completed
portname	Status	Error Range	Pair A	Pair B	Pair C	Pair D
port1	Completed	+/- 10 meters	Unknown, lengt...	Ok, length 5 me...	Ok, length 2 me...	Ok, length 5 me...

Port Utilities

You can use the **Bounce Port** utility to disable a port for a specific period of time. This allows you to isolate problematic clients or force a network reconfiguration on the connected clients. You can stop the bounce port operation mid-way and the connected clients recover immediately.

The **PoE Reset** utility resets the power supplied over Ethernet on a specific port. This enables you to reset PoE devices connected to the port, when the devices are located in an environment where physical access is not easily achievable.



TAC Report

The Technical Assistance Center (TAC) report runs an exhaustive series of diagnostic commands. This report contains a significant amount of information which can be used by the TAC team to analyze issues that a customer is seeing on his FortiSwitch device.

Click **Run**. The report generation can take up to 5 minutes to complete and generates approximately 2 MB worth of data.

- The TAC report tool executes a series of trouble shooting commands on the switch and generates a report.
- This report can be shared with customer support teams to aid in faster trouble shooting of devices. The report generation can take up to 5 minutes to complete and will generate about 2MB worth of data

Run

✔ Command Execution succeeded.

Output 📄 📤

Serial Number: XXXXXXXXXXXX Diagnose output

```

### get system status

Version: FortiSwitch-108F-POE v7.2.1,build0406,220621 (GA)
Serial-Number: XXXXXXXXXXXX
Boot: Coldboot
BIOS version: 04000001
System Part-Number: P26234-01
Burn in MAC: XXXXXXXXXXXX
Hostname: S108FPTV21000078
Distribution: International
    
```

Cancel

Traceroute

The traceroute tool utilizes ICMP packets to trace the different servers/routers that a packet visits, on its journey to a specified host. This tool is used to determine specific points in a network with bottle necks/traffic drops.

Traceroute

- The traceroute tool tracks the route that packets take in an IP network, on their way to a given host.
- This tool can be utilized to determine if/where packets from the switch are being dropped, on their journey to the specified destination.

IPv4
IPv6

IP Address/Hostname ?

TTL ?

Probe Count ?

Timeout(s) ?

Run

✓ Command Execution succeeded.

Output 📄 📥

```

traceroute to 10.1.1.2 (10.1.1.2), 32 hops max, 3 probe count, 5 timeout, 84 byte packets
 1 10.1.1.1 10 <cpe-172-116-10-10.socal.res.rr.com> 10.404 ms 10.736 ms 11.257 ms
 2 10.1.1.2 22.349 ms 22.180 ms 22.488 ms
 3 10.1.1.2 22.499 ms 21.270 ms 24.063 ms
        
```

Cancel

Update the following configuration for IPv4.

- IP Address/Hostname** – The IPv4 address or host name to trace the route to.
- TTL** – The maximum time-to-live (number of hops) that the route can take. The valid range is 1 – 64 and the default is 32.
- Probe Count** – The number of probes to use to trace the route. The valid range is 1 – 5 and the default is 3.
- Timeout(s)** – The time duration that the route is probed for, before the trace route stops. The valid range is 1 – 10 seconds and the default is 5 seconds.

Update the following configuration for IPv6.

- IP Address/Hostname** – The IPv6 address or host name to trace the route to.
- Fragment** – Enable/disable the Don't Fragment flag.
- Resolve Name** – Enable resolving the numeric address to domain name.
- Max TTL** – The maximum number of hops used in outgoing probe packets. The valid range is 1 – 255 and the default is 30.

Multi Path Traceroute

This is an advanced version of traceroute that identifies routers which could be load balancing on the path from the source to destination. It attempts to avoid triggering load balancing on the routers, wherever possible.

Update the following configuration for IPv4/IPv6.

- IP Address** - The IP address or host name to trace the route to.
- Confidence Level (%)** – Select the confidence level. The allowed values are 90, 95, and 99, the default is 95.

- **Flow ID** – Select the flow identifier.
- **Max TTL** - The maximum time-to-live (number of hops) used in outgoing probe packets. The valid range is 1 – 255 and the default is 30.

Multi Path Traceroute ✕

- Multipath trace route is an advanced version of traceroute.
- It identifies routers which could be doing load balancing, on the path from the source to destination and attempts to avoid triggering load balancing on the routers wherever possible.

IPv4
IPv6

IP Address ?

Confidence Level (%) ?

95

Flow ID ?

udp-sport

Max TTL ?

30

Run

✔ Command Execution succeeded.

Output
📄 📄

```

Run mtracert to 10.1.1.1 - max-ttl: 30, flow-id: udp-sport, confidence: 95
0 root: 10.1.1.1 (0.327461 ms)
1 10.1.1.1: 10.1.1.1 (0.372209 ms)
2 10.1.1.1: 10.1.1.1 (0.417439 ms)
3 10.3.1.1: 172.16.1.1 (254.571964 ms)
                    
```

Using the FortiSwitch CLI

To use the CLI for a FortiSwitch unit:

1. Select **CLI** in the **Diagnostics and Tools** panel of the FortiSwitch unit.

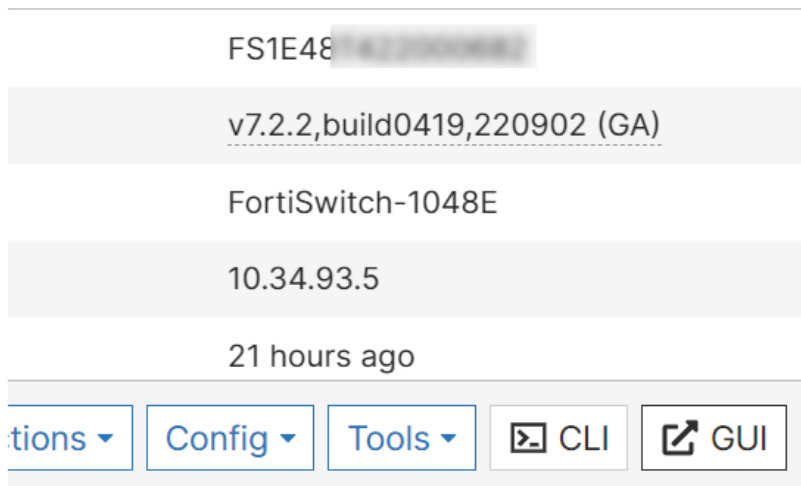
The screenshot shows the FortiSwitch GUI. On the left, the 'Diagnostics & Details' panel for a FortiSwitch unit (S424DF3X150000) is visible. The 'CLI' button is highlighted. A terminal window is open in the foreground, displaying a 'login as:' prompt, indicating the user is about to access the CLI.

2. In the CLI window, log in with your credentials for the FortiSwitch unit.

Using the FortiSwitch GUI

To use the GUI for a FortiSwitch unit:

1. Select **GUI** in the **Diagnostics and Tools** panel of the FortiSwitch unit.



2. Log in with your credentials for the FortiSwitch unit.

Defining Switch Name-Value Pairs

The zero-touch configuration CLI templates allow switch specific parameter values, each switch can have its own name-value pairs (NVPs). The NVPs for switches are defined in the **Deployed Switches** page (before deployment) or in the **Switch Inventory** page (after deployment). The switch specific NVPs are defined once and used across multiple zero-touch configuration templates.

1. Click **NVP**, the **Inventory Switch Name Value Pairs (NVP) List** is displayed.
2. Click **Add**.
3. Select the **Serial Number** for the deployed switches.
4. Enter a unique **Parameter Name**. This value is case-insensitive and a maximum of 512 characters are allowed.
5. Enter a unique **Parameter Value**. This value is case-insensitive and a maximum of 2048 characters are allowed.

Add NVP

Serial Number

Parameter Name

Parameter Value

Note: A maximum of 1024 NVPs per switch are allowed.

FortiLAN Cloud supports the import and export of NVP data in the CSV format. This is useful for bulk data addition/update and backup/restoration of data. Click **Import** to upload the NVP data, the following is a sample CSV file.

```
sn, hostname, password
S548DF5019000917, FSW_NYC_1, fortinyc1
S548DF5019000918, FSW_NYC_2, fortinyc2
```

The maximum file size is supported in 2 MB.

Import NVP

Upload	Select local config file <input type="button" value="Choose File"/> No file chosen
Edit CSV	Please edit the CSV content uploaded <div style="border: 1px solid #ccc; height: 30px; background-color: #ffffcc; margin-top: 5px;"></div> If CSV file does not contain header, please add it in the content field above.
Column Name for Serial Number	<input type="text" value="sn"/>
Column Names (Comma Separated)	<input type="text"/>
	Used to select columns to import. By default, all columns will be imported.
Delimiter Character	<input "="" type="text" value=","/>
Quotation Character	<input type="text" value=""/>
Trim Values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Duplicate Action Row	<input checked="" type="button" value="Skip/Ignore"/> <input type="button" value="Overwrite"/>

You can edit the data in the content field after upload and additionally populate/modify the following.

- **Column Name for Serial Number:** Identifies the column in the CSV file that represents the device serial number.
- **Column Names:** Identifies the columns in the CSV file to import selectively. By default, all columns are imported. The **Column Name for Serial Number** is implicitly included.
- **Delimiter character:** A single character field specifying the character used to separate fields.
- **Quotation Character:** A single character field specifying the character used to surround values, especially when they contain the delimiter character.
- **Trim Values:** Specifies whether to strip values of leading and trailing white spaces while parsing.
- **Duplicate Action Row:** Whether a duplicate row (data line) is ignored or overwritten.

Likewise, click **Export** to save NVP data.

Export NVP

Selected SNs

CSV File Name

Column Name for Serial Number

Column Names (Comma Separated)

Used to select columns to export. By default, all columns will be imported.

Delimiter Character

Quotation Character

Write Header Line

Trim Values

Quote Values

- **Column Name for Serial Number:** Identifies the column name to export for the specific switch.
- **Column (Parameter) Names (Comma Separated):** A comma-separated list of NVP parameter names to export. If not specified then only the serial number column is exported.
- **Delimiter Character** and **Quotation Characters** are single character fields, when not specified, they default to comma and double-quote respectively.
- **Trim Values:** Specifies whether to strip values of leading and trailing white spaces while parsing.

Click **Download Sample CSV** to download a sample .csv file populated with actual FortiSwitch serial numbers. You can select the required serial numbers and modify the column data to include NVPs for FortiSwitches and then import it.

Switch Tags

The **Switch Tags** pane allows you to create and assign tags to FortiSwitch units to form groups of switches.

Tag Name	Summary
Scale_Tag_9	1 switch
Scale_Tag_8	0 switches
Scale_Tag_7	1 switch

To find a specific tag, enter part or all of the tag in the Search field.

Select a row and click **View Switches** to see which FortiSwitch units are assigned to each switch tag.

You can perform the following tasks from the Switch Tags pane:

- [Creating a switch tag](#)
- [Editing a switch tag](#)
- [Deleting a switch tag](#)

Creating a switch tag

You can create a switch tag and assign it to FortiSwitch units to create a group of similar switches.

To create a switch tag:

1. Go to *Switch > Switch Tags*.
2. Select **Add**.

3. Enter the name of the switch tag.
4. Click **Select Switches** to specify which FortiSwitch units to associate with the tag.
5. Select **Submit**.
The switch tag is listed in the Switch Tags pane.

Editing a switch tag

After creating a switch tag, you can change which FortiSwitch units are assigned to the tag.

To edit a switch tag:

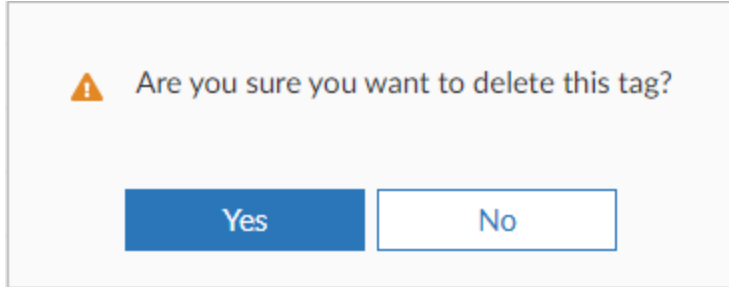
1. Select a row for the switch tag that you want to edit and click **Edit**.

2. Make your changes and click **Submit** to apply your changes.

Deleting a switch tag

To delete a switch tag:

1. Select a row for the switch tag that you want to edit and click **Delete**.



2. Select Yes to delete the switch tag.

Configuration

Select *Configuration* to configure switches, ports, interfaces, VLANs, and remote authentication servers and to create zero-touch configurations, scheduled upgrades, packet capture profiles, VLAN templates, and user groups. Use the left pane for navigation:

Tags / Switches / Model	Description	Firmware Version	Configuration	Start Time (UTC-07:00)	Status	Action
S548DF5018000715				10/06/2020 09:58:29	On Off	🚀 ✕ ✎
S108DVTA19000203				07/31/2020 13:05:20	On Off	🚀 ✕ ✎
tag_175 Physical-Devices		v6.4.1,build0411,200409			On Off	🚀 ✕ ✎
tag_175 Physical-Devices		v6.4.1,build0411,200409			On Off	🚀 ✕ ✎

You can select the following options from the left pane:

- [Zero Touch Configurations on page 158](#)
- [Scheduled Upgrade on page 178](#)
- [Configuration Backup/Restore on page 181](#)
- [Ports](#)
- [Interfaces on page 187](#)
- [Trunk/Link Aggregation on page 192](#)
- [VLANs on page 194](#)
- [VLAN Templates on page 197](#)

- [Packet Capture Profiles on page 200](#)
- [RADIUS Authentication on page 205](#)
- [TACACS Authentication on page 207](#)
- [User Groups on page 210](#)
- [Port Security on page 213](#)
- [Network on page 214](#)
- [IGMP on page 215](#)
- [LLDP on page 215](#)
- [System Interfaces on page 216](#)

Zero Touch Configurations

The Zero Touch Configurations pane allows you to apply the same configuration to all FortiSwitch units of a specific model.

Tags / Switches / Model	Description	Firmware Version	Configuration	Start Time (UTC-07:00)	Status	Action
S546DF				10/06/2020 09:58:29	On Off	↗ ✕ ↻
S108DV				07/31/2020 13:05:20	On Off	↗ ✕ ↻
tag_175 Physical-Devices		v6.4.1_build0411.200409			On Off	↗ ✕ ↻
tag_175 Physical-Devices		v6.4.1_build0411.200409			On Off	↗ ✕ ↻

To update the list of zero-touch configurations, select *Refresh*.

Use the Local Time Zone/UTC slider to control which time zone is displayed.

To find a specific tag, switch, model, or firmware version, enter part or all of the search item in the Search field.

Note: The switch configuration is retained when the switch is moved from the combined default network to a different network and vice versa; until the user/administrator apply new configuration in the related network.

You can perform the following tasks from the Zero Touch Configurations pane:

- [Creating a zero-touch configuration on page 158](#)
- [Running a zero-touch configuration on page 176](#)
- [Editing a zero-touch configuration on page 177](#)
- [Deleting a zero-touch configuration on page 178](#)

Creating a zero-touch configuration

You can create a zero-touch configuration using switch tags, FortiSwitch serial numbers, or a single FortiSwitch model. Zero-touch configurations are run on a scheduled date and time or when FortiSwitch units are deployed in FortiLAN Cloud. You can apply CLI commands or GUI configuration templates, update the firmware, or both.

To create a zero-touch configuration:

1. Go to *Configuration > Zero Touch Configurations*.
2. Select *Add*.

Add zero touch configuration

Choose the tags, switches or model that will be configured by the template:
Note: Zero Touch Configurations cannot be applied on unlicensed switches.
 Tags Switches Model

Click on the icon on the right side to make your selection:

tag1 ✕ ✎

Choose when the template is applied:
When
 New device (First seen) Scheduled date and time

Choose the firmware version that you want applied:

v6.2.0,build0138,181103

[Release Notes](#)

Force Downgrade

Enter the configuration that you want applied:

CLI **GUI**
Export
Import

Vlan ✕
+

✎ Add On Off

Operation	VLAN ID	Description	VLAN		Members			Action
			Isolated	Community	MAC	IP	IGMP	
ADD	63		0		0	0	0	✕ ✎

Treat CLI Configuration as template. (This will use NVPs created on the switches)

Enter description for this configuration:

Not Required.

Enter serial numbers of the switches excluded from zero touch configuration switch list:

Not Required. The serial numbers should be delimited by comma.

Example: S1080VTA18000354,S1080VTA18000377

3. Select *Tags, Switches, or Model*.
 - If you select *Tags*, select one or more switch tags to apply the zero-touch configuration to.
 - If you select *Switches*, select one or more FortiSwitch units.
NOTE: Do not include the same switch or switches in both a zero-touch configuration and a scheduled upgrade.
 - If you select *Model*, select a FortiSwitch model to apply the zero-touch configuration to.
4. Select when the firmware upgrade and configuration are applied.
 - If you select *New device (First seen)*, the firmware is upgraded and the configuration applied when FortiSwitch units are deployed in FortiLAN Cloud.

- If you select *Scheduled date and time*, select the date and time for the firmware to be upgraded and the configuration applied .
5. If you want to change the firmware version, select the firmware image to apply.
The available firmware images and the latest version are listed. Click the help link, *Release Notes*, to learn about the available versions.
 6. Select *Force Downgrade* to forcefully downgrade newly deployed FortiSwitches.
 7. Enter the **CLI** commands to apply to the selected FortiSwitch model or create a CLI template.
A CLI template has parameter names (placeholders) instead of static parameter values. The parameter names are resolved dynamically to their switch specific parameter values when the CLI template is applied to a switch, as defined in the NVP data; the variables (\$param) are declared in the NVP and called in the CLI template. See [Defining Switch Name-Value Pairs on page 152](#). The parameter values are contained in braces.
Enable **Treat CLI Configuration as template** to use configured templates.

Enter the configuration that you want applied:

CLI

GUI

Export

Import

```

1 config system global
2     set hostname "US_{hostname}"
3 end
4
5 config system admin
6     edit admin
7         set password "{password}"
8 end
```

Treat CLI Configuration as template. (This will use NVPs created on the switches)

This example sets different values for *hostname* and *password* on multiple switches.

Refer to the *FortiSwitchOS CLI Reference* for available commands.

NOTE: You can enter 250 KB of CLI commands.

OR

Create a **GUI** template, click **Add** and create the following template configurations.

- **VLAN** - Create template configurations to add a VLAN, modify an existing VLAN or delete a VLAN. To configure a template, see [VLAN Templates on page 197](#).
- **Ports** - To configure the administrative status and PoE status of the FortiSwitch, see [Ports on page 186](#).
- **Interfaces** - To configure interface VLANs, see [Configuring interface VLANs on page 188](#).
- **Port Security** - To configure 802.1x/802.1x MAC based security, see [Editing the port security on page 191](#).
- **Packet Capture** - To configure a packet capture profile, see [Creating a packet capture profile on page 190](#). You can add a packet capture profile, modify an existing profile or delete a profile.
- **Trunk** - To configure a trunk, see [Creating a trunk on page 188](#) . You can add a trunk, modify an existing trunk or delete a trunk.
- **IGMP** - To configure IGMP settings, update the following parameters. You cannot modify **Action**.

Parameter	Description
Aging Time	The maximum time to retain a multicast snooping entry for which no packets are visible. The valid range is 15 - 3600 seconds.
Query Interval	The maximum time after which the IGMP query is sent. The valid range is 10 - 1200 seconds.
Proxy Report Interval	The unsolicited report interval time period. The valid range is 1 - 260 seconds.
Leave Response Timeout	The time that the FortiSwitch waits after sending group specific queries in response to the leave message. The valid range is 1 - 20 seconds.

- **LLDP** - To configure LLDP **Settings**, update the following parameters. You cannot modify **Action**.

Parameter	Description
Status	Enable/Disable the LLDP transmit and receive feature.
Management Interface	The primary management interface advertised in LLDP.
Number of TX intervals before local LLDP data expires	The number of Tx intervals before local LLDP data expires, that is, the packet TTL (in seconds) is tx-hold times tx-interval. The valid range is 1 - 16.
Frequency of LLDP PDU transmit (seconds)	The frequency of LLDP PDU transmission. The valid range is 5 - 4095.
Fast Start	The frequency of LLDP PDU transmit for the first 4 packets when the link comes up. Configure the Fast Start Interval , the valid range is 2 - 5 seconds.
Device Detection	Enable/disable dynamic updates of LLDP neighbour devices to FortiLink.

- To configure LLDP **Profile**, update the following parameters. You can add an LLDP profile, modify an existing profile or delete a profile.

Parameter	Description
Profile Name	A unique name of the Profile. The valid range is 63 characters.
Transmitted IEEE 802.1 TLVs.(Port VLAN ID)	Enable to transmit the IEEE 802.1 port native-VLAN Type-Length-Value (TLV).
Transmitted IEEE 802.3 TLVs.	Enable to transmit the IEEE 802.3 organizationally-specific TLVs. The following options are available, you can select more than one. <ul style="list-style-type: none"> • Maximum frame size TLV - This TLV sends the maximum frame size value of the port. If this variable is changed, the sent value will reflect the updated value. • PoE+ classification TLV - This TLV sends whether there is software PoE negotiation on the port. • Efficient Energy Ethernet Config - This TLV sends whether energy-efficient Ethernet is enabled on the port. If this variable

Parameter	Description
	is changed, the sent value will reflect the updated value.
Auto MCLAG inter chassis link	Enable the multi-chassis link aggregation group (MCLAG).
Enable/disable automatic Inter-Switch LAG	<p>Enable or disable the automatic inter-switch LAG.</p> <ul style="list-style-type: none"> • Automatic ISL Hello Timer - The time for the automatic inter-switch LAG hello timer. The valid range is 1 - 30 seconds and the default is 3 seconds. • Automatic ISL timeout - The time before the automatic inter-switch LAG times out if no response is received. The valid range is 0 - 300 seconds and the default is 60 seconds. • Automatic inter-switch LAG port group - The automatic inter-switch LAG port group identifier. The valid range is 0 - 9.
Transmitted LLDP-MED TLVs	Select the LLDP-Media Endpoint Discovery (MED) TLVs to transmit; Inventory Management TLVs, Network Policy TLVs, Power Management TLV, and Location Identification TLVs . You can select one or more option.
MED Network Policy	<p>Enter the following for MED network policy.</p> <ul style="list-style-type: none"> • Name - Select which MED network policy type-length-value (TLV) category to edit; Voice, Voice Signalling, Guest Voice, Guest Voice Signalling, Softphone Voice, Video Conferencing, Streaming video, Video Signalling. • Status - Enable or disable whether this TLV is transmitted. • Assign VLAN - Enable or disable whether to assign a VLAN interface. • VLAN - The VLAN interface to advertise. The valid range is 0 - 4094. • Priority - Tthe advertised Layer-2 priority. The valid range is 0 - 7, set to 7 for the highest priority. • DSCP - The advertised DSCP value to indicate the level of service requested for the traffic. The valid range is 0 - 63.
MED location Service	<p>Enter the following for MED location services.</p> <ul style="list-style-type: none"> • Name – Select which MED location type-length-value (TLV) category to edit; Civic Address, Co-ordinates, ELIN Number. • Status – Enable or disable whether this TLV is transmitted. • Sys Location ID – If the status is enabled then you can enter the location service identifier. The maximum length is 63 characters.
Custom TLVs	<p>Enter the following for custom TLVs.</p> <ul style="list-style-type: none"> • Name - The name of a custom TLV entry. • Oui – The organizationally unique identifier (OUI), a 3-byte hexadecimal number, for this TLV. • Subtype – The organizationally defined subtype. The valid range is 0 – 255.

Parameter	Description
	<ul style="list-style-type: none"> • Information String – The organizationally defined information string in hexadecimal bytes.

- **ACL** - To configure ACL **Settings**, update the following parameters. You cannot modify **Action**.

Parameter	Description
Density Mode	Enable the ACL density mode.
Trunk Load Balance	Enable trunk load balancing.

To configure **Ingress** (for incoming traffic), **Egress** (for outgoing traffic), and **Prelookup** (for processing traffic) policies, update the following parameters.

Parameter	Description
ID	A unique identifier for this profile. The valid range is 1 - 2048.
Active	Enable to activate the profile.
Group ID	A unique group identifier. The valid range is 1 - 2048.
Ingress Interface All	Enable to apply the profile to all interfaces.
Ingress Interface	The specific interfaces to apply the profile to.
Schedule	The schedule for when the ACL profile is enforced.
Description	The description for the profile.
Classifier - Identification of packets that the policy is applied to, each packet is classified based on one or more criteria as per these configurations.	
VLAN ID to be matched	The VLAN identifier to match.
Cost of Service	The cost of service (CoS) value to match. The valid range is 0 - 7, leave blank to disable this field.
802.1Q CoS value to be matched	The 802.1Q CoS value to match. The valid range is 0 - 7, leave blank to disable this field.
Ethernet type to be matched	The Ethernet type to match. The valid range is 1-65535.
ACL Custom Service to be matched	The pre-configured custom service type to match.
Source MAC	The source MAC address to match.
Destination MAC	The destination MAC address to match.
Source IP Prefix	The source IP address to match (IPv4 only).
Destination IP Prefix	The destination IP address to match (IPv4 only).
Action - If a packet matches the classifier criteria for a given ACL, different actions are applied to a packet based on these configurations.	

Parameter	Description
Count	Enable to track the number of matching packets.
Drop	Enable to drop matching packets.
Mirror Session Name	The name of the mirror to use collect packets to analyze.
Redirect Bcast Cpu	Enable to redirect broadcast traffic to all ports including the CPU.
Redirect Bcast No Cpu	Enable to redirect broadcast traffic to all ports excluding the CPU.
Outer VLAN Tag	The outer VLAN tag.
CoS Queue	The CoS queue number. The valid range is 0 - 7, leave blank to disable this field.
Remark CoS	The CoS marking value. The valid range is 0 - 7, leave blank to disable this field.
CPU COS queue number (17 - 25). Only if packets reach to CPU	The CPU CoS queue number. This CoS queue is only used if the packets reach the CPU. The valid range is 17 - 25.
Remark DSCP	The DSCP marking value. The valid range is 0 - 63, leave blank to disable this field.
Redirect Interface	The redirect interface to use.
Redirect Physical Port	The physical ports to include in the egress mask or to redirect packets to.
Egress Mask Interface	The physical ports that are included in the egress mask.
Policer ID	The policer ID to use.

To configure the **Policer**, update the following parameters. You can add, modify, or delete an existing policer.

Parameter	Description
ID	A unique number to identify this policer. The valid range is 1-2048.
Type	Whether the policer is for the egress policy or the ingress policy.
Guaranteed Bandwidth	The amount of bandwidth guaranteed (in Kb/second) to be available for traffic controlled by the policy. The valid range is 1-524287000 Kb.
Guaranteed Burst	The guaranteed burst size in bytes. The valid range is 1-4294967295 bytes.
Maximum Burst	The maximum burst size in bytes. The valid range is 1-4294967295 bytes.
Description	A description of the policer.

To configure the **Custom Service**, update the following parameters. You can add, modify, or delete an existing policer.

Parameter	Description
Name	The name of the ACL custom service.
Comment	A description of the custom service.
Color	The icon color for the service in the Service page.
Protocol	<p>The protocol to use with the custom service, TCP, ICMP, IP, UDP, or SCTP.</p> <ul style="list-style-type: none"> • Port Range - [TCP, UDP, or SCTP] The destination ports and source ports. You can enter a single port or a range of ports in each field. • Protocol Number - [IP] The protocol number. • ICMP Type/ICMP Code - [ICMP] The ICMP type and code. The valid range is 0 - 254.

Logging - To configure external Syslog server for switch logs, update the following parameters. You cannot modify **Action**.

Parameter	Description
Event Types	<p>The types of log messages sent to the Syslog server. You can enable logging activity messages for the following categories.</p> <ul style="list-style-type: none"> • Link • PoE • Router • Spanning Tree • Switch • Switch Controller • System • User • FOS Legacy
Syslog Severity	<p>Select the least severity level to log from the following options.</p> <ul style="list-style-type: none"> • Emergency - The system is unusable. • Alert - Immediate action is required. • Critical - Functionality is affected. • Error - An erroneous condition exists and functionality is probably affected. • Warning - Functionality might be affected. • Notification - Information about normal events. • Information - General information about system operations. • Debug - Information used for diagnosing or debugging the system.
Syslog Server	<p>Update the following Syslog server parameters.</p> <ul style="list-style-type: none"> • Server - The IPv4 address or hostname (FQDN) of the remote Syslog server. • Port - The port number of Syslog server. The valid range is 1-65535 and the default is 514.

Parameter	Description
	<ul style="list-style-type: none"> Source IP - The source IPv4 address of the Syslog server. CSV - To enable/disable CSV.

Logging - To configure external Syslog server for switch logs, update the following parameters. You cannot modify **Action**.

- VLAN** - Create template configurations to add a VLAN, modify an existing VLAN or delete a VLAN. To configure a template, see [VLAN Templates on page 197](#).
- Ports** - To configure the administrative status and PoE status of the FortiSwitch, see [Ports on page 186](#).
- Interfaces** - To configure interface VLANs, see [Configuring interface VLANs on page 188](#).
- Port Security** - To configure 802.1x/802.1x MAC based security, see [Editing the port security on page 191](#).
- Packet Capture** - To configure a packet capture profile, see [Creating a packet capture profile on page 190](#). You can add a packet capture profile, modify an existing profile or delete a profile.
- Trunk** - To configure a trunk, see [Creating a trunk on page 188](#). You can add a trunk, modify an existing trunk or delete a trunk.
- IGMP** - To configure IGMP settings, update the following parameters. You cannot modify **Action**.

Parameter	Description
Aging Time	The maximum time to retain a multicast snooping entry for which no packets are visible. The valid range is 15 - 3600 seconds.
Query Interval	The maximum time after which the IGMP query is sent. The valid range is 10 - 1200 seconds.
Proxy Report Interval	The unsolicited report interval time period. The valid range is 1 - 260 seconds.
Leave Response Timeout	The time that the FortiSwitch waits after sending group specific queries in response to the leave message. The valid range is 1 - 20 seconds.

- System Interfaces** - You can configure physical and VLAN interfaces on a FortiSwitch. To configure

interfaces, update the following parameters.

Parameter	Description
Interface Name	Enter the name of the interface. Interface names can't be changed.
Alias	Enter an alternate name for a interface on the FortiSwitch unit.
VLAN ID	Enter the VLAN identifier for a VLAN interface.
IP Configuration	Static - Configure a static IP address and netmask of the interface. DHCP - Configure the interface to receive its IP address from an external DHCP server.
Administration	Indicates if the interface can be accessed for administrative purposes. If the administrative status is Up , an administrator can connect to the interface using the configured access. If the administrative status is Down , the interface is administratively down and can't be accessed for administrative purposes. Select the types of access permitted on this interface or secondary IP address.
Secondary IP	Add additional IP addresses to this interface. Select the expand arrow to expand or hide the section.
DHCP Relay	Enable/Disable DHCP relay for the physical interface.
VRRP	The Virtual Router Redundancy Protocol (VRRP) uses virtual routers to control which physical routers are assigned to an access network. A VRRP group consists of a master router and one or more backup routers that share a virtual IP address. The VRRP master router sends VRRP advertisement messages to the backup routers. When the VRRP master router fails to send advertisement messages, the backup router with the highest priority takes over as the master router. To create a VRRP group, you need to create a VRRP virtual MAC address, which is a shared MAC address adopted by the VRRP master. <ul style="list-style-type: none"> • Enter the unique virtual router identifier (ID). • Enter the VRRP group number. • Enter the priority. If the highest priority value of 255 is entered, the virtual router becomes the master router. If the master router fails, the VRRP automatically assigns one of the backup routers without affecting network traffic. When the failed router is functioning again, it becomes the master router again. • Select Preempt if you want the router to preempt the master virtual router if the priority changes. • Enter the source virtual IP address that will be shared across the VRRP group.

- **LLDP** - To configure LLDP **Settings**, update the following parameters. You cannot modify **Action**.

Parameter	Description
Status	Enable/Disable the LLDP transmit and receive feature.
Management Interface	The primary management interface advertised in LLDP.
Number of TX intervals before local LLDP data expires	The number of Tx intervals before local LLDP data expires, that is, the packet TTL (in seconds) is tx-hold times tx-interval. The valid range is 1 - 16.
Frequency of LLDP PDU transmit (seconds)	The frequency of LLDP PDU transmission. The valid range is 5 - 4095.
Fast Start	The frequency of LLDP PDU transmit for the first 4 packets when the link comes up. Configure the Fast Start Interval , the valid range is 2 - 5 seconds.
Device Detection	Enable/disable dynamic updates of LLDP neighbour devices to FortiLink.

- To configure LLDP **Profile**, update the following parameters. You can add an LLDP profile, modify an existing profile or delete a profile.

Parameter	Description
Profile Name	A unique name of the Profile. The valid range is 63 characters.
Transmitted IEEE 802.1 TLVs.(Port VLAN ID)	Enable to transmit the IEEE 802.1 port native-VLAN Type-Length-Value (TLV).
Transmitted IEEE 802.3 TLVs.	Enable to transmit the IEEE 802.3 organizationally-specific TLVs. The following options are available, you can select more than one. <ul style="list-style-type: none"> • Maximum frame size TLV - This TLV sends the maximum frame size value of the port. If this variable is changed, the sent value will reflect the updated value. • PoE+ classification TLV - This TLV sends whether there is software PoE negotiation on the port. • Efficient Energy Ethernet Config - This TLV sends whether energy-efficient Ethernet is enabled on the port. If this variable is changed, the sent value will reflect the updated value.
Auto MCLAG inter chassis link	Enable the multi-chassis link aggregation group (MCLAG).
Enable/disable automatic Inter-Switch LAG	Enable or disable the automatic inter-switch LAG. <ul style="list-style-type: none"> • Automatic ISL Hello Timer - The time for the automatic inter-switch LAG hello timer. The valid range is 1 - 30 seconds and the default is 3 seconds. • Automatic ISL timeout - The time before the automatic inter-switch LAG times out if no response is received. The valid range is 0 - 300 seconds and the default is 60 seconds. • Automatic inter-switch LAG port group - The automatic inter-switch LAG port group identifier. The valid range is 0 - 9.

Parameter	Description
Transmitted LLDP-MED TLVs	Select the LLDP-Media Endpoint Discovery (MED) TLVs to transmit; Inventory Management TLVs, Network Policy TLVs, Power Management TLV, and Location Identification TLVs . You can select one or more option.
MED Network Policy	Enter the following for MED network policy. <ul style="list-style-type: none"> • Name - Select which MED network policy type-length-value (TLV) category to edit; Voice, Voice Signalling, Guest Voice, Guest Voice Signalling, Softphone Voice, Video Conferencing, Streaming video, Video Signalling. • Status - Enable or disable whether this TLV is transmitted. • Assign VLAN - Enable or disable whether to assign a VLAN interface. • VLAN - The VLAN interface to advertise. The valid range is 0 - 4094. • Priority - Tthe advertised Layer-2 priority. The valid range is 0 - 7, set to 7 for the highest priority. • DSCP - The advertised DSCP value to indicate the level of service requested for the traffic. The valid range is 0 - 63.
MED location Service	Enter the following for MED location services. <ul style="list-style-type: none"> • Name – Select which MED location type-length-value (TLV) category to edit; Civic Address, Co-ordinates, ELIN Number. • Status – Enable or disable whether this TLV is transmitted. • Sys Location ID – If the status is enabled then you can enter the location service identifier. The maximum length is 63 characters.
Custom TLVs	Enter the following for custom TLVs. <ul style="list-style-type: none"> • Name - The name of a custom TLV entry. • Oui – The organizationally unique identifier (OUI), a 3-byte hexadecimal number, for this TLV. • Subtype – The organizationally defined subtype. The valid range is 0 – 255. • Information String – The organizationally defined information string in hexadecimal bytes.

- **ACL** - To configure ACL **Settings**, update the following parameters. You cannot modify **Action**.

- | Parameter | Description |
|---------------------------|------------------------------|
| Density Mode | Enable the ACL density mode. |
| Trunk Load Balance | Enable trunk load balancing. |

To configure **Ingress** (for incoming traffic), **Egress** (for outgoing traffic), and **Prelookup** (for processing traffic) policies, update the following parameters.

Parameter	Description
ID	A unique identifier for this profile. The valid range is 1 - 2048.
Active	Enable to activate the profile.
Group ID	A unique group identifier. The valid range is 1 - 2048.
Ingress Interface All	Enable to apply the profile to all interfaces.
Ingress Interface	The specific interfaces to apply the profile to.
Schedule	The schedule for when the ACL profile is enforced.
Description	The description for the profile.
Classifier - Identification of packets that the policy is applied to, each packet is classified based on one or more criteria as per these configurations.	
VLAN ID to be matched	The VLAN identifier to match.
Cost of Service	The cost of service (CoS) value to match. The valid range is 0 - 7, leave blank to disable this field.
802.1Q CoS value to be matched	The 802.1Q CoS value to match. The valid range is 0 - 7, leave blank to disable this field.
Ethernet type to be matched	The Ethernet type to match. The valid range is 1-65535.
ACL Custom Service to be matched	The pre-configured custom service type to match.
Source MAC	The source MAC address to match.
Destination MAC	The destination MAC address to match.
Source IP Prefix	The source IP address to match (IPv4 only).
Destination IP Prefix	The destination IP address to match IPv4 only).
Action - If a packet matches the classifier criteria for a given ACL, different actions are applied to a packet based on these configurations.	
Count	Enable to track the number of matching packets.
Drop	Enable to drop matching packets.
Mirror Session Name	The name of the mirror to use collect packets to analyze.
Redirect Bcast Cpu	Enable to redirect broadcast traffic to all ports including the CPU.
Redirect Bcast No Cpu	Enable to redirect broadcast traffic to all ports excluding the CPU.
Outer VLAN Tag	The outer VLAN tag.
CoS Queue	The CoS queue number. The valid range is 0 - 7, leave blank to disable this field.

Parameter	Description
Remark CoS	The CoS marking value. The valid range is 0 - 7, leave blank to disable this field.
CPU COS queue number (17 - 25). Only if packets reach to CPU	The CPU CoS queue number. This CoS queue is only used if the packets reach the CPU. The valid range is 17 - 25.
Remark DSCP	The DSCP marking value. The valid range is 0 - 63, leave blank to disable this field.
Redirect Interface	The redirect interface to use.
Redirect Physical Port	The physical ports to include in the egress mask or to redirect packets to.
Egress Mask Interface	The physical ports that are included in the egress mask.
Policer ID	The policer ID to use.

To configure the **Policer**, update the following parameters. You can add, modify, or delete an existing policer.

Parameter	Description
ID	A unique number to identify this policer. The valid range is 1-2048.
Type	Whether the policer is for the egress policy or the ingress policy.
Guaranteed Bandwidth	The amount of bandwidth guaranteed (in Kb/second) to be available for traffic controlled by the policy. The valid range is 1-524287000 Kb.
Guaranteed Burst	The guaranteed burst size in bytes. The valid range is 1-4294967295 bytes.
Maximum Burst	The maximum burst size in bytes. The valid range is 1-4294967295 bytes.
Description	A description of the policer.

To configure the **Custom Service**, update the following parameters. You can add, modify, or delete an existing policer.

Parameter	Description
Name	The name of the ACL custom service.
Comment	A description of the custom service.
Color	The icon color for the service in the Service page.
Protocol	The protocol to use with the custom service, TCP , ICMP , IP , UDP , or SCTP . <ul style="list-style-type: none"> • Port Range - [TCP, UDP, or SCTP] The destination ports and source ports. You can enter a single port or a range of ports in

Parameter	Description
	<p>each field.</p> <ul style="list-style-type: none"> • Protocol Number - [IP] The protocol number. • ICMP Type/ICMP Code - [ICMP] The ICMP type and code. The valid range is 0 - 254.

Router - Routing configuration is supported on FortiSwitches managed by FortiLAN Cloud. You can add/modify the following configurations. Routing information and interfaces are monitored on the **Routing Table** and **Link Monitor** pages.

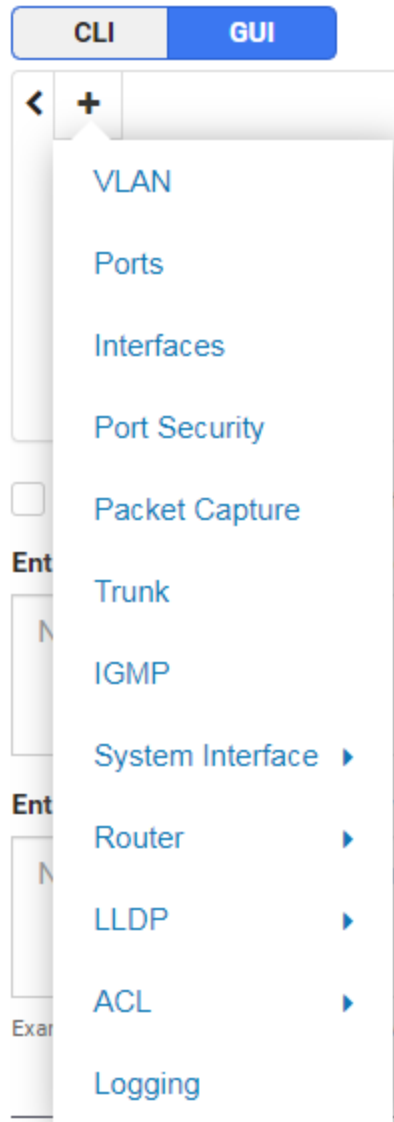
Parameter	Description
Static and IPv6 Static	<p>To provide remote access to the management port, configure an IPv4 or IPv6 static route. Set the gateway address to the IPv4 or IPv6 address of the router.</p> <p>Configure the following for IPv4 static route.</p> <ul style="list-style-type: none"> • The <i>Destination IP/ Netmask</i> for the route. • Enable <i>Blackhole</i> to disable all the Gateway options. • The pre-configured <i>Gateway out interface</i>. • Enable <i>Dynamic Gateway</i> to disable the Gateway option. • The <i>Gateway</i> router IPv4 address. <p>Configure the following for IPv6 static route.</p> <ul style="list-style-type: none"> • The <i>Destination IP/ Netmask</i> for the route. • Enable <i>Blackhole</i> to disable all the Gateway options. • The pre-configured <i>Gateway out interface</i>. • The <i>Gateway</i> router IPv6 address. • The administrative <i>Distance</i> for all routes. • Enable the <i>BFD</i> (Bidirectional Forwarding Detection).

Link Probes	<p>You can create a probe to monitor the link to a server. The FortiLAN Cloud sends periodic ping messages to test that the server is available.</p> <ul style="list-style-type: none"> • The <i>Source Interface</i>. Can be the physical or VLAN interface name. • The <i>Protocol</i> to detect the server. Select ARP or ping. • The <i>Source IP</i> address used in packet to the server. • The <i>Gateway IP</i> address used to ping the server. <p>You can configure the following Advanced Settings.</p> <ul style="list-style-type: none"> • <i>Detection Interval (Seconds)</i> - The detection interval in seconds. The range is 1-3600. • <i>Detection Timeout (Seconds)</i> - The detection request timeout in seconds. The range is 1-255. • <i>Retries Before Down</i> - The number of retry attempts before bringing the server down. • <i>Retries Before Up</i> - The number of retry attempts before bringing the server up.
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Parameter	Description
OSPF	<p>Open shortest path first (OSPF) is a link-state interior routing protocol that is widely used in large enterprise organizations. OSPF provides routing within a single autonomous system (AS).</p> <ul style="list-style-type: none"> • Enter the <i>Router IP</i> address. • Enable <i>Default Information Originate</i> to generate and advertise a default route into the device's RIP-enabled networks. The generated route may be based on routes learned through a dynamic routing protocol, routes in the routing table, or both. • Enter the <i>Default Information Metric</i> for routing. • If you want to <i>Redistribute</i> non-RIP routes, select <i>Enable</i> under Connected, Static, OSPF, BGP, or ISIS. If you select <i>Enable</i>, enter the routing metric to use. • An OSPF implementation consists of one or more <i>Areas</i>. An area consists of a group of contiguous networks. The FortiSwitch unit supports different types of areas—<i>stub</i> areas, <i>Not So Stubby areas (NSSA)</i>, and <i>Regular</i> areas. A stub area is an interface without a default route configured. NSSA is a type of stub area that can import AS external routes and send them to the backbone but cannot receive AS external routes from the backbone or other areas. All other areas are considered regular areas. • Enter a unique value to identify this <i>Network</i> configuration. Enter an IP address and netmask for your RIP network. You can configure multiple networks. • Configure ODPF <i>Interface</i>. In the <i>Hello Interval</i> field, enter the number of seconds that the FortiSwitch unit waits between sending hello messages to neighboring PIM routers. If you want to use <i>Authentication</i>, select <i>Text</i>, <i>MD5</i>, or <i>None</i>. • Enable <i>Bidirectional Forwarding Detection</i> • Configure the interface <i>Maximum Transmission Unit (MTU)</i> packet size. • Enable <i>Fast Hello</i>, which provides a way to send multiple hello packets per second. • Configure the <i>Hello Interval</i>. OSPF Hello protocol is used to discover and maintain communications with neighboring routers. Hello packets are sent out at a regular interval. • The <i>Dead interval</i> is the time other routers wait before declaring a neighbor dead (offline).
RIP	<p>The Routing Information Protocol (RIP) is a distance-vector routing protocol that works best in small networks that have no more than 15 hops. Each router maintains a routing table by sending out its routing updates and by asking neighbors for their routes.</p> <ul style="list-style-type: none"> • The FortiSwitch unit supports RIP version 1 and RIP version 2. <ul style="list-style-type: none"> • RIP version 1 uses classful addressing and broadcasting to send out updates to router neighbors. It does not support

Parameter	Description
	<p>different sized subnets or classless inter-domain routing (CIDR) addressing.</p> <ul style="list-style-type: none"> • RIP version 2 supports classless routing and subnets of various sizes. Router authentication supports MD5 and authentication keys. Version 2 uses multicasting to reduce network traffic. • Enable <i>Default Information Originate</i> to generate and advertise a default route into the device's RIP-enabled networks. The generated route may be based on routes learned through a dynamic routing protocol, routes in the routing table, or both. • Enable <i>Bidirectional Forwarding Detection</i> to quickly locate hardware failures in the network. Routers running BFD communicate with each other, and, if a timer runs out on a connection, that router is declared to be down. BFD then communicates this information to RIP, and the routing information is updated. • Enter the <i>Default Metric</i>. RIP uses hop count as the metric for choosing the best route. A hop count of 1 represents a network that is connected directly to the FortiSwitch unit. A hop count of 16 represents a network that cannot be reached. • If you want to change the default <i>Timers</i> value, enter the number of seconds in the <i>Update</i>, <i>Timeout</i>, and <i>Garbage</i> fields. <ul style="list-style-type: none"> • The update timer determines the interval between routing updates. The default setting is 30 seconds. • The timeout timer is the maximum time that a route is considered reachable while no updates are received for the route. The default setting is 180 seconds. The timeout timer setting should be at least three times longer than the update timer setting. • The garbage timer is the is the how long that the FortiSwitch unit advertises a route as being unreachable before deleting the route from the routing table. The default setting is 120 seconds. • If you want to <i>Redistribute</i> non-RIP routes, select <i>Enable</i> under Connected, Static, OSPF, BGP, or ISIS. If you select <i>Enable</i>, enter the routing metric to use. • Configure the router <i>Distance</i>. Enter the distance identifier in the <i>ID</i> field and select the <i>Access List</i>. Enter the IP address and netmask. • Enter a unique value to identify this <i>Network</i> configuration. Enter an IP address and netmask for your RIP network. You can configure multiple networks. • Configure RIP for the appropriate <i>Interface</i>. If you want to change the RIP version used to send and receive routing updates, select from the <i>Send Version</i> and <i>Receive Version</i> drop-down menus. If you do not want to send RIP updates from


Parameter	Description
	<p>this interface, select <i>Passive Interface</i>. If you want to use <i>Authentication</i>, select <i>Text</i> or <i>None</i>.</p>
Multicast	<p>A FortiSwitch unit can operate as a Protocol Independent Multicast (PIM) version-2 router. Add a multicast enabled interface.</p> <ul style="list-style-type: none"> • Enter the <i>Multicast Flow</i> value. • In the <i>Hello Interval</i> field, enter the number of seconds that the FortiSwitch unit waits between sending hello messages to neighboring PIM routers. • In the <i>Designated Router Priority</i> field, enter a priority to the FortiSwitch unit Designated Router (DR) candidacy. The value is compared to that of other DR interfaces connected to the same network segment, and the router having the highest DR priority is selected to be the DR. If two DR priority values are the same, the interface having the highest IP address is selected. • In the <i>IGMP Response Time</i> field, enter the number of seconds between queries to IGMP hosts. • In the <i>IGMP Interval</i> field, enter the maximum number of seconds to wait for an IGMP query response.
Multicast Flows	<p>You can specify a range of multicast group addresses when configuring a multicast flow.</p> <ul style="list-style-type: none"> • Enter the <i>Name</i> of the multicast flow. • In the <i>ID</i> field, enter a number between 1 and 4294967295 to identify the multicast flow entry. • In the <i>Group Address</i> field, enter the multicast group IPv4 address. • In the <i>Source Address</i> field, enter an IPv4 address for the multicast source.



8. Additionally, you can export (save) the GUI and CLI configurations, edit and then import them to the GUI to facilitate reuse. Click on **Export** and **Import** as required; JSON file format is supported for both operations.
9. Enter a description of the zero-touch configuration.
10. If you want to exclude one or more FortiSwitch unit of the selected model, enter the serial numbers, separated by a comma.
11. Select **Save**.
The zero-touch configuration is listed on the Zero-Touch Configurations pane.

Running a zero-touch configuration

By default, a zero-touch configuration is disabled. After you enable the zero-touch configuration, the CLI/GUI configurations that were entered in the Add Zero Touch Configuration dialog box are run once on all FortiSwitch units of the specified model when they connect to FortiLAN Cloud for the first time or at the scheduled time and date.


To enable a zero-touch configuration, select *On* for the Status in the row of the zero-touch configuration that you want to run. To run the zero-touch configuration immediately, select .

Tags / Switches / Model	Description	Firmware Version	Configuration	Start Time	Status	Action
S548DF5018000715		v6.2.3.build0202,191223		02/21/2020 15:41:25	On Off	  

Editing a zero-touch configuration

To edit a zero-touch configuration:

1. Select in the row for the zero-touch configuration that you want to edit.

 Edit zero touch configuration

Choose the tags, switches or model that will be configured by the template:

Tsm

Tags Switches Model

Click on the icon on the right side to make your selection:

Choose when the template is applied:

When

New device (First seen) Scheduled date and time

Choose the firmware version that you want applied:

Enter the configuration that you want applied:

```
1 config switch vlan
2 edit 5
3 set description "VLAN5"
4 set igmp-snooping enable
5 set dhcp-snooping enable
6 next
7 edit 6
8 set description "VLAN6"
9 set igmp-snooping enable
```

Treat CLI Configuration as template. (This will use NVPs created on the switches)

Enter description for this configuration:

Enter serial numbers of the switches excluded from zero touch configuration switch list:

Example: S108DVTA18000354,S108DVTA18000377

Disable this configuration.

2. Make your changes in the Edit Zero Touch Configuration dialog box.
3. Select Save to apply your changes.

Deleting a zero-touch configuration

To delete a zero-touch configuration:

1. Select in the row of the zero-touch configuration that you want to delete.



Are you sure you want to delete this item?

Yes

Cancel

2. Select Yes to delete the zero-touch configuration.

Scheduled Upgrade

The Scheduled Upgrade pane allows you to specify when firmware for the already deployed FortiSwitch will be upgraded. You can schedule firmware upgrades during off-peak hours and stagger the upgrade times for each FortiSwitch model to lower the impact on the network.

Tags / Switches / Model	Status	Running Status	Firmware Version	Start Time	Description
<input checked="" type="checkbox"/> S248EFTF	On	None	Latest	in 9 months	
<input checked="" type="checkbox"/> S248EFTF	Off	None	Latest	in 9 months	

To enable/disable the scheduled upgrades, select *Toggle Config*.

To find a specific switch or tag, enter part or all of the switch or tag name in the Search field.

You can perform the following tasks from the Scheduled Upgrade pane:

- [Scheduling a firmware upgrade on page 178](#)
- [Editing a scheduled upgrade on page 181](#)
- [Deleting a scheduled upgrade on page 181](#)

Scheduling a firmware upgrade

NOTE: Do not include the same switch or switches in both a zero-touch configuration and a scheduled upgrade.

To specify when the FortiSwitch firmware will be upgraded:

1. Go to *Configuration > Scheduled Upgrade*.
2. Select *Add*.

Add Scheduled Upgrade Configuration

Select by i
Tags
Switches
Model

Select Tags tag01, tag02

Select tags

Schedule Date 02-12-2022 15:11 📅

Target Firmware Version Latest Version Available ▼

Force Downgrade





Backup Switch Config before Upgrade

Description

Serial Numbers to exclude i

3. Select *Tags*, *Switches*, or *Models*.
4. Select 🔍 to choose one or more switch tags or choose one or more FortiSwitch units.
NOTE: Only switches of the same model as the selected firmware image are upgraded.
5. Select the date and time when you want the firmware upgraded.
6. Select the firmware version to apply.
 The available firmware images and the latest version are listed. Click the help link, *Release Notes*, to learn about the available versions.
7. Select *Force Downgrade* to forcefully downgrade newly deployed FortiSwitches.
8. The **Backup Switch Config before Upgrade** option enables you to backup the FortiSwitch configuration prior to the upgrade.
9. Select *Ok*.
 The scheduled upgrade is listed on the Scheduled Upgrade pane and the Scheduled Upgrade Status pane. You can also view the upgrade status on the **Diagnostics & Details** panel in the FortiSwitch status.

Diagnostics & Details: test_host_1

Connecting From	10.217.12.200:4
Joining Time	Tuesday
Status	  
Firmware Status	 Up to Date
Firmware Upgrade Status	None
Upgrade Scheduled	None
Tags	None

[Statistics](#) [Actions](#) [Config](#) [Tools](#) [CLI](#) [GU](#)

Editing a scheduled upgrade

To edit a scheduled upgrade:

1. Select a scheduled upgrade configuration row and click **Edit**.

Edit Scheduled Upgrade Configuration

Select by i	Tags Switches Model
Select Switches	S248EFTF XXXXXXXXXX
Schedule Date	15-09-2023 18:08 📅
Target Firmware Version	Latest Version Available ▼
Force Downgrade	<input type="checkbox"/>
Backup Switch Config before Upgrade	<input type="checkbox"/>
Description	✍️
Serial Numbers to exclude i	
Config Status	<input checked="" type="checkbox"/>

2. Make your changes in the **Edit Scheduled Upgrade Configuration** dialog box.
3. Select **Ok** to apply your changes.

Deleting a scheduled upgrade

To delete a scheduled upgrade:

1. Select the scheduled upgrade configuration row and click **Delete**.
2. Select **Yes** to delete the scheduled upgrade.

Configuration Backup/Restore

The **Configuration Backup/Restore** pane allows you to edit an imported configuration file and to manage saved configuration files.

Import View Clone Delete Download Restore Search Filter By Tags					
Updated Time	Host Name	Model	Comment	Type	
2022/11/25 15:27:07	S248EFTF- [REDACTED]	S248EF	S248EFTF18000280_SU_20221125095707...	Scheduled	
2022/11/14 12:22:44	FS1E48T42- [REDACTED]	FortiSwitch_1048E	manual	Manual	
2022/11/14 12:21:23	FS1E48T42- [REDACTED]	FortiSwitch_1048E	New: FS1E48T422000682_SU_2022101106...	Manual	

To find a specific model, host name, or comment, enter part or all of the search item in the Search field.

Note: Only 7 scheduled backup files are retained per device.

To backup a configuration file, see section [Backing up the FortiSwitch configuration to FortiLAN Cloud on page 145](#) and to schedule a backup, see section [Network on page 214](#)

You can perform the following tasks from the Config Backup/Restore pane:

- [Importing and editing a configuration file](#)
- [Viewing a configuration file](#)
- [Cloning a configuration file on page 184](#)
- [Deleting a configuration file on page 185](#)
- [Downloading a configuration file to your computer](#)
- [Restoring a configuration file to a FortiSwitch unit on page 186](#)

Importing and editing a configuration file

After you download the configuration file from one FortiSwitch unit, you can then import and edit it.

To import and edit a configuration file:

1. Select *Import*.

Import from local config file

Upload	Select local config file <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; margin-right: 5px;">Choose File</div> No file chosen
Config	Please edit the config content uploaded: <div style="border: 1px solid #ccc; background-color: #ffffcc; height: 40px; margin-top: 5px;"></div>
Model	Please select the model you want to clone to: <div style="border: 1px solid #ccc; padding: 2px; margin-top: 5px;"> 📁 FortiSwitch_1048E ▼ </div>
Switch	Please select the serial number to the device you want to clone to: <div style="border: 1px solid #ccc; padding: 2px; margin-top: 5px;"> ✕ FS1E4014220000000 ▼ </div>
Comment	<div style="border: 1px solid #ccc; height: 80px; margin-top: 5px;"></div>

Import

2. Select *Choose File*, navigate to the downloaded configuration file, and select *Open*.
3. If you want to edit the configuration file, enter your changes.
4. If you want to use the configuration file on a different FortiSwitch model, select the FortiSwitch model from the drop-down list.
5. If you want to use the configuration file on a different FortiSwitch unit, select the FortiSwitch serial number from the drop-down list.
6. Enter a description of your changes.
7. Select *Import*.
The edited configuration file is listed in the Config Backup/Restore pane.

Viewing a configuration file

To open a configuration file, select a configuration file and click **View**.

Details of config command

```
#config-version=S248EF-6.04-FW-build488-210924:opmode=0:vdom=0:user=FortiCloud
#conf_file_ver=4463562920390902504
#buildno=0488
#global_vdom=1
config system global
    set 802.1x-ca-certificate "Fortinet_802.1x_CA"
    set 802.1x-certificate "Fortinet_802.1x"
    set admin-concurrent enable
    set admin-https-pki-required disable
    set admin-https-ssl-versions tlsv1-1 tlsv1-2 tlsv1-3
    set admin-lockout-duration 60
    set admin-lockout-threshold 3
    set admin-port 80
    set admin-scp disable
    set admin-server-cert "Fortinet_Firmware"
    set admin-sport 443
    set admin-ssh-grace-time 120
    set admin-ssh-port 22
    set admin-ssh-v1 disable
    set admin-telnet-port 23
    set admintimeout 5
    set alertd-relog disable
    set allow-subnet-overlap disable
    set arp-timeout 180
```

Cloning a configuration file

When you clone a configuration file from one FortiSwitch unit, you can edit the clone and then apply it on a different FortiSwitch unit.

To clone a configuration file:

1. Select the configuration file that you want to clone and click **Clone**.

Clone

Switch Please select the serial number of the device you want to clone to:

✕ S248EFTF XXXXXXXXXX ▼

Config Please edit the config content:

```
#config-version=S248EF-6.04-FW-build488-210924:opmode=0:vdom=0:user=FortiCloud
```


Comment

New:
S248EFTF18000280_SU_20221125095
707_UTC

2. Select the serial number of the FortiSwitch unit that you want to use the edited configuration file on.
3. Make the changes to the configuration file.
4. Enter a description of your changes.
5. Select *Ok*.
The clone is listed in the Config Backup/Restore pane.

Deleting a configuration file**To delete a configuration file:**

1. Select configuration file that you want to delete and click **Delete**.


Are you sure you want to delete this entry?

Yes

No

2. Select **Yes** to delete the configuration file.

Downloading a configuration file to your computer


To download a configuration file from FortiLAN Cloud to your computer, select row of the configuration file that you want to download, click **Download**. The configuration file is saved as a `.txt` file.

Restoring a configuration file to a FortiSwitch unit

You can apply a configuration file that you saved to FortiLAN Cloud to a FortiSwitch unit.

To apply a configuration:

1. Select the row of the configuration that you want to apply and click **Restore**.

 **Note:**

A. Please ensure that the configuration to restore is a full configuration and not a partial one. That is the configuration is not significantly edited after taking the backup. Partial switch configurations can halt the switch in this restore full configuration operation.

B. Please note that the switch will reboot after this configuration is restored.







Please click "Continue" if you wish to proceed with restore the configuration.

Continue
Cancel

2. Select *Continue* to apply the configuration file to the host name in the same row as the configuration file.

Ports

The Ports pane allows you to change the administrative status and PoE status of one or more FortiSwitch ports. See [Configuring FortiSwitch ports on page 187](#).

Host Name	Status	Ports
 S524DF	 Online	31 ports
 RMA-kks	 Online	29 ports
 MV_Desk	 Online	53 ports

To view ports associated with a FortiSwitch unit, click **View Ports**.

To find a specific FortiSwitch unit, enter part or all of the host name in the Search field.

To filter the list of FortiSwitch units by tag, select **Filter By Tags** and the tag to filter with. If you select multiple tags to filter with, the results are FortiSwitch units that are tagged with one or more of the selected tags.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that contain the search term *and* are tagged with the selected tag.

Configuring FortiSwitch ports

To configure FortiSwitch ports:

1. Select the FortiSwitch unit that you want to configure and click **View Ports**.

Port Name	Admin Status	Link Status	Speed	Speed Config	Admin POE Status	POE Status
internal	Up	Up	1000Mbps full-duplex	auto	Enabled	
port1	Up	Down		auto	Enabled	Search
port2	Up	Down		auto	Enabled	Search

2. Select the port that you want to change and click **Configure Ports**.

Admin Status: Up Down

PoE Status: Enable Disable

Switch	Hostname	Port	Admin Status	PoE Status
S524DF-...	S524DF-...	internal	Enabled	Enabled

3. Select *up* or *down* in the Admin Status drop-down list.
4. Select *enable* or *disable* in the PoE Status drop-down list.
NOTE: If you select ports from more than one FortiSwitch unit, the PoE Status drop-down list is not displayed.
5. Select *Ok* to apply your changes.

Interfaces

The Interfaces pane lists all interfaces for each managed FortiSwitch unit.

Host Name	Interfaces
S524DF-...	31 ports
RMA-kks	29 ports

To find a specific FortiSwitch unit, enter part or all of the host name in the Search field.

To filter the list of FortiSwitch units by tag, select **Filter By Tags** and the tag to filter with. If you select multiple tags to filter with, the results are FortiSwitch units that are tagged with one or more of the selected tags.

You can use the Search field and the Filter with Tags field together to find host names that contain the search term *and* are tagged with the selected tag.

Select the host name and click **View Interface** to see more information about each FortiSwitch unit.

You can perform the following tasks from the Interfaces pane:

- [Configuring interface VLANs](#)
- [Creating a trunk](#)
- [Creating a packet capture profile](#)
- [Editing the port security](#)

Configuring interface VLANs

To configure an interface VLAN:

1. Select a FortiSwitch unit that you want to configure and click **View Interface**.
2. Select the interfaces that you want to configure and click **Config Interface VLANs**.

Config Interface VLANs

Native VLAN ID	<input style="width: 90%;" type="text" value="1"/>
Allowed VLAN IDs	<input style="width: 90%;" type="text"/>
Untagged VLAN IDs	<input style="width: 90%;" type="text"/>

Selected Interfaces

Switch	Interface
S524DF5019000138	internal

3. Enter the VLAN identifiers for the native VLAN, allowed VLANs, and untagged VLANs. Separate the identifiers with a comma.
4. Select *Ok* to apply your changes.

Creating a trunk

NOTE: You cannot include an internal interface or a port that is already a member of another trunk in a new trunk.

To create a trunk:

1. Select a FortiSwitch unit that you want to configure and click **View Interface**.
2. Select the interfaces that you want to include in the trunk and click **Create Trunk**.

Create Trunk

Switch S524DF XXXXXXXXXX

Members port1

Configure

Trunk Interface Name

Description

Port Selection Criteria

Mode

McLAG i None McLAG

3. Enter a name for the new trunk in the Trunk Interface Name field. Avoid using special characters, such as <, >, (,), #, ', and ".
4. (Optional) Add a description of the trunk in the Description field.
5. Select the port selection criteria:
 - *dst-ip*—destination IP address
 - *dst-mac*—destination MAC address
 - *src-dst-ip*—source or destination IP address
 - *src-dst-ip-xor16*—source and destination IP address
 - *src-dst-mac*—source or destination MAC address
 - *src-ip*—source IP address
 - *src-mac*—source MAC address
6. Select the mode:
 - *lACP-active*—active LACP
 - *lACP-passive*—passive LACP
 - *static*—static link aggregation
7. Select *McLAG* if you want to create an MLAG. You cannot select both *McLAG* and *McLAG-ICL* for a trunk.
8. Select *McLAG-ICL* if you are creating an ICL for an MLAG. Only one MLAG-ICL trunk can be configured for each managed FortiSwitch unit. You cannot select both *McLAG* and *McLAG-ICL* for a trunk.
9. Select *Ok*.

Creating a packet capture profile

When troubleshooting networks, you can look inside the header of the packets. This helps to determine if the packets, route, and destination are all what you expect. Packet capture is also called a network tap, packet sniffing, or logic analyzing.

The maximum number of packet-capture profiles and the RAM disk size allotted for packet capture are different for the various platforms:

Platform	Maximum number of profiles	RAM disk size in MB
2xx	8	50
4xx	16	75
5xx	16	100
1xxx	16	100
3xxx	16	100

The maximum number of packet capture files is equal to license points. When the number of existing packet capture files has reached the maximum, you need to delete one or more existing packet capture files before starting a packet capture.

Packet capture files are kept for 7 days. For licensed users, there is a 60-day grace period before the packet capture files are deleted.

To create a packet capture profile:

1. Select a FortiSwitch unit that you want to investigate and click **View Interface**.
2. Select the interface and click **Create Packet Capture Profile**.

Create Packet Capture Profile

Switch S524DF XXXXXXXXXX

Interface internal

Configure

Profile Name

Filter

Maximum Packet Count

Maximum Packet Length

1. Enter a name for the new packet capture profile in the Configuration Name field. Avoid using special characters, such as <, >, (,), #, ', and ".

2. Optional. Enter a filter to reduce the number of packets captured. The filter uses flexible logic. For example, if you want packets using UDP port 1812 between hosts named `forti1` and either `forti2` or `forti3`, enter the following:
`udp and port 1812 and host forti1 and \(forti2 or forti3 \)`
3. Enter the maximum number of packets to collect. The maximum number of packets that can be captured depends on the RAM disk size.
4. Enter the maximum packet length in bytes to capture on the interface. The range of values is 64-1534 bytes.
5. Select *Ok*.
Go to *Configuration > Packet Capture Profiles* to see the new packet capture profile.

Editing the port security

You can add port security with 802.1x port-based or MAC-based authentication.

To change the port security:

1. Select a FortiSwitch unit and click **View Interface**.
2. Select the interface and click **Edit Port Security**.

Edit Port Security Config

Switch	S524DF
Interface	port1
Port Security Mode	<input checked="" type="radio"/> None <input type="radio"/> 802.1X <input type="radio"/> 802.1X MAC-Based

3. Select *802.1X* for port-based authentication or select *802.1X MAC-Based* for MAC-based authentication.
4. Select *MAC Auth Bypass* to allow the system to use the device MAC address as the user name and password for authentication.
5. If the RADIUS authentication server does not support EAP-TLS, clear the *EAP Pass-Through Mode* checkbox.
6. For phone and PC configuration only, clear the *Frame VLAN Apply* checkbox to preserve the native VLAN when the data traffic is expected to be untagged.
7. Select *Open Authentication* to enable open authentication (monitor mode) on this interface. Use the monitor mode to test your system configuration for 802.1x authentication. You can use monitor mode to test port-based authentication, MAC-based authentication, EAP pass-through mode, and MAC authentication bypass. After you enable monitor mode, the network traffic will continue to flow, even if the users fail authentication.
8. Select *Guest VLAN* if you want to assign a VLAN to unauthorized users. If you select *Guest VLAN*, enter the guest VLAN identifier in the *Guest VLAN ID* field and enter the number of seconds for an unauthorized user to have access as a guest before authorization fails in the *Guest Auth Delay* field.
9. Select *Auth Fail VLAN* if you want to assign a VLAN to users who attempted to authenticate but failed to provide valid credentials. If you select *Auth Fail VLAN*, enter the VLAN identifier in the *Auth Fail VLAN ID* field.
10. If you want to use the RADIUS-provided reauthentication time, select *RADIUS Session Timeout*.

11. Click in the *Security Groups* field to select a security group. You can select multiple security groups.
12. Select *Ok* to apply your changes.

Trunk/Link Aggregation


The Trunk/Link Aggregation pane lists all trunks that have been configured.

Name	Host Name	Description	Members	Port Selection Criteria	Mode	McLAG	McLAG-ICL	Action
8DF50	S548DF		port24, port51	src-dst-ip	lacp-active	disable	disable	× ✎
8DF50	S548DF		port23	src-dst-ip	lacp-active	disable	disable	× ✎

To update the list of trunks, select *Refresh*.

To find a specific trunk, enter part or all of the name in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that contain the search term *and* are tagged with the selected tag.


To filter the list of FortiSwitch units by tag, select  and the tag to filter with. If you select multiple tags to filter with, the results are FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following tasks from the Trunk/Link Aggregation pane:

- [Creating a trunk](#)
- [Editing a trunk](#)
- [Deleting a trunk](#)

Editing a trunk

To edit a trunk:

1. Select  in the row of the trunk to edit.

Y Edit Trunk

Trunk Interface Name

Description

Members

Port Selection Criteria

Mode

McLAG

McLAG-ICL

2. Make your changes in the Edit Trunk dialog box.
3. Select Save.

Deleting a trunk

To delete a trunk:

1. Select in the row of the trunk that you want to delete.



Are you sure you want to delete this trunk?

2. Select Yes to delete the trunk.

VLANs

The VLANs pane lists the VLANs configured on each FortiSwitch unit.

Hostname	Summary	Action
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+
S108DVT/...	0 VLANs	+

To update the list of VLANs, select *Refresh*.

To find a specific FortiSwitch unit, enter part or all of the host name in the Search field.

You can use the Search field and the Filter with Tags field together to find host names that contain specific characters *and* are tagged with the selected tag.

To filter the list of host names by switch tag, select and the tag to filter with. If you select multiple tags to filter with, the results are FortiSwitch units that are tagged with one or more of the selected tags.

Double-click in a row to see which VLANs are configured on each FortiSwitch unit.

You can perform the following tasks from the VLANs pane:

- [Creating a VLAN](#)
- [Editing a VLAN configuration](#)
- [Saving a VLAN configuration as a VLAN template](#)
- [Deleting a VLAN](#)

Creating a VLAN


You can create a VLAN or private VLAN, configure IGMP snooping and DHCP snooping, and add VLAN members by MAC address or IP address.

To create a VLAN:

1. Go to *Configuration > VLANs*.
2. Select **+** in the row of the FortiSwitch unit that you want to add the VLAN to.
3. Enter a number to identify the VLAN.
4. Add a description of the VLAN.
5. Enable or disable whether this VLAN is a private VLAN.
6. If you want to use IGMP snooping on the VLAN:
 - a. Select the *Enable* checkbox.
 - b. If you want to use IGMP proxy, select the *Enable* checkbox.
 - c. Select **+** to add an IGMP static group, enter the name of the group, enter the multicast address, and enter the members of the group.
7. If you want to use DHCP snooping on the VLAN:
 - a. Select the *Enable* checkbox.
 - b. If you want the system to verify that the source MAC address in the DHCP request from an untrusted port matches the client hardware address, enable *DHCP Snooping Verify MAC Address*.
 - c. If you want to include option-82 data in the DHCP request, enable *DHCP Snooping Option 82*.
 - d. If you want dynamic ARP inspection on the VLAN, enable *Arp Inspection*.
 - e. Select **+** to add a DHCP server in the allowed server list and then enter the server name and IP address.
8. To add VLAN members by MAC address, select **+** and then enter a description and the MAC address.
9. To add VLAN members by IP address, select **+** and then enter a description, IP address, and netmask.
10. Select *Save*.

Editing a VLAN configuration

To edit a VLAN configuration:

1. Select  in the row of the VLAN configuration to edit.

Edit VLAN

Switch
S548DF5018000715

ID
10

Description

Private VLAN
 Disabled Enabled

Isolated VLAN
100

Community VLANs

IGMP Snooping
 Enable

IGMP Proxy
 Enable

IGMP Static Groups

+ Name	Multicast Address	Members
* <input type="text" value="IGMP Group"/>	<input type="text" value="239.255.255.255"/>	<input checked="" type="checkbox"/> port21 <input checked="" type="checkbox"/> port23

DHCP Snooping
 Enable


Members by MAC Address

+ Description	MAC Address

Members by IP Address

+ Description	IP/Netmask

Sub-VLAN

ID	Private Vlan Type	Description	Enabled Features	Members			Action
				MAC	IP	IGMP	
100	Isolated			0	0	0	


<< 1 >>

2. Make your changes in the Edit VLAN dialog box.
3. Select Save to apply your changes.

Saving a VLAN configuration as a VLAN template

You can save a VLAN configuration to FortiLAN Cloud and then apply it to one or more FortiSwitch units.


To save a VLAN configuration as a VLAN template:

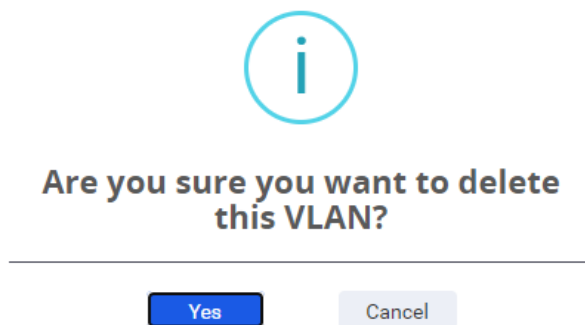
Select  in the row of the VLAN configuration that you want to save as a template.

A confirmation box is displayed. The new VLAN template is listed on the *Configuration > VLAN Templates* page.

Deleting a VLAN

To delete a VLAN:

1. In the VLANs pane, select  in the row of the VLAN that you want to delete.



2. Select Yes to delete the VLAN.

VLAN Templates

The VLAN Templates pane lists the available VLAN templates that can be applied to FortiSwitch units.

Refresh + Create VLAN Template Local Time Zone <input type="checkbox"/> UTC search...									
VLAN ID	Name	Description	Update Time (UTC-07:00)	VLAN		Members			Action
				Isolated	Community	MAC	IP	IGMP	
3			10/05/2020 16:16:53	-		0	0	0	
18	V17-DEV	VLAN18	10/05/2020 16:44:22	1000	1001-1005	0	1	0	
500	Default Settings	VLAN 500	10/05/2020 17:04:51	505	506-510	1	1	2	
500	IGMP ONLY	VLAN 500	10/05/2020 17:15:34	505	506-510	0	0	2	
500	DHCP ONLY	VLAN 500	10/05/2020 17:17:31	505	506-510	1	1	0	

<< 1 >>

To update the list of VLAN templates, select *Refresh*.

Use the Local Time Zone/UTC slider to control which time zone is displayed in the VLAN Templates page.

You can perform the following tasks from the VLAN Templates pane:

- [Creating a VLAN template](#)
- [Editing a VLAN template](#)
- [Applying a VLAN template](#)
- [Deleting a VLAN template](#)

Creating a VLAN template


You can create a VLAN or private VLAN, configure IGMP snooping and DHCP snooping, and add members by MAC address or IP address.


To create a VLAN:

1. Go to *Configuration > VLAN Templates*.
2. Select *Create VLAN Template*.
3. Optional. Enter a name for the template.
4. Required. Enter a number to identify the VLAN.
5. Add a description of the VLAN.
6. Enable or disable whether this VLAN is a private VLAN.
7. If you want to use IGMP snooping on the VLAN:
 8.
 - a. Select the *Enable* checkbox.
 - b. If you want to use IGMP proxy, select the *Enable* checkbox.
 - c. Select **+** to add an IGMP static group, enter the name of the group, enter the multicast address, and enter the members of the group.
9. If you want to use DHCP snooping on the VLAN:
 - a. Select the *Enable* checkbox.
 - b. If you want the system to verify that the source MAC address in the DHCP request from an untrusted port matches the client hardware address, enable *DHCP Snooping Verify MAC Address*.
 - c. If you want to include option-82 data in the DHCP request, enable *DHCP Snooping Option 82*.
 - d. If you want dynamic ARP inspection on the VLAN, enable *Arp Inspection*.
 - e. Select **+** to add a DHCP server in the allowed server list and then enter the server name and IP address.
10. To add VLAN members by MAC address, select **+** and then enter a description and the MAC address.
11. To add VLAN members by IP address, select **+** and then enter a description, IP address, and netmask.
12. Select *Save*.

Editing a VLAN template

To edit a VLAN template:

1. Select  in the row of the VLAN template to edit.

 Edit VLAN Template

Template Name

VLAN ID

Description

Private VLAN
 Disabled Enabled

IGMP Snooping
 Enable

DHCP Snooping
 Enable

Members by MAC Address

+	Description	MAC Address

Members by IP Address


+	Description	IP/Netmask

2. Make your changes in the Edit VLAN Template dialog box.
3. Select Save to apply your changes.

Applying a VLAN template

You can apply a VLAN template to one or more FortiSwitch units.

To apply a VLAN template to one or more FortiSwitch units:

1. Select  in the row of the VLAN template to edit.



Apply VLAN Template to Switches

Switches that will be configured by the template

This field is required


Apply

Cancel

2. Select  to choose one or more FortiSwitch units.
3. Select  to close the *Select from available switches* box.
4. Enter the VLAN identifier for each FortiSwitch unit you are applying the VLAN template to.
5. Select *Apply* to apply the VLAN template to the selected FortiSwitch units.

Deleting a VLAN template

To delete a VLAN template:

1. In the VLAN Templates pane, select  in the row of the VLAN template that you want to delete.



Are you sure you want to delete
this VLAN Template?

Yes

Cancel

2. Select *Yes* to delete the VLAN template.

Packet Capture Profiles

The Packet Capture Profiles pane lists the available profiles for packet captures.

Notes:

- The packet-capture feature requires FortiSwitchOS 6.2.2 or later.
- Packet capture profiles are NOT supported on FortiSwitch 1xxE models.

Name	Host Name	Filter	Max Packet Count	Max Packet Length	Start Time (UTC-07:00)	Status	Action
packet-105650	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-187288	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-201634	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-216100	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-230487	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-244889	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎
packet-259292	S548D...	None	400 0	12 8		Stop	▶ ■ 📄 ✕ ✎

To update the list of profiles, select *Refresh*.

Use the Local Time Zone/UTC slider to control which time zone is displayed.

To find a specific packet capture profile, enter part or all of the name in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that use the specified packet capture profile *and* are tagged with the selected tag.


To filter the list of profiles by switch tag, select ▼ and the tag to filter with. If you select multiple tags to filter with, the results are profiles for FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following tasks from the Packet Capture Profiles pane:

- [Creating a packet capture profile](#)
- [Starting a packet capture](#)
- [Pausing a packet capture](#)
- [Stopping a packet capture](#)
- [Going to the packet capture file](#)
- [Editing a packet capture profile](#)
- [Deleting a packet capture profile](#)

Starting a packet capture

To start a packet capture:

1. Select  in the row of the packet capture profile that you want to start.



Are you sure you want to start this profile?

Yes

Cancel

2. Select Yes to confirm your action.

Pausing a packet capture

To pause a packet capture:


1. Select  in the row of a packet capture profile that is currently running.



Are you sure you want to pause this profile?

Yes

Cancel

2. Select Yes to confirm your action.
3. To start the packet capture again, select .



Are you sure you want to stop this profile?

Yes

Cancel

4. Select Yes to confirm your action.

Stopping a packet capture

To stop a packet capture:

1. Select  in the row of a packet capture profile that is currently running.



Are you sure you want to stop this profile?



Yes

Cancel

2. Select Yes to confirm your action.
Go to *Monitor > Packet Capture Files* to download the saved packet capture file.


Going to the packet capture file

To go to the packet capture file:

1. In the Packet Capture Profiles pane, select .
2. In the Packet Capture Files pane, select  in the row of the packet capture profile to download the associated packet capture file. The `.pcap` file is saved in your Downloads folder.

Editing a packet capture profile

To edit a packet capture profile:

1. Select  in the row of the packet capture profile to edit.

Edit Packet Capture Profile

Interfaces Selected:

Switch	Interface
S548DF5018000715	port39

Profile Name
715-P39

Filter
None


Maximum Packet Count
4000

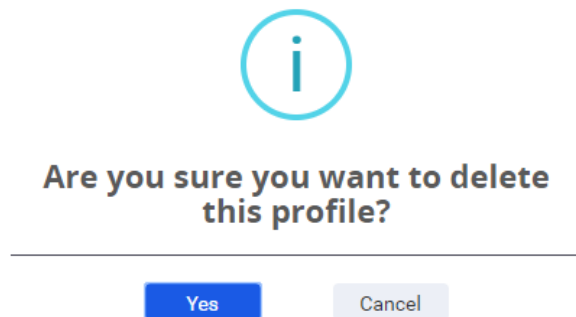
Maximum Packet Length
1024

2. Make your changes in the Edit Packet Capture Profile dialog box.
3. Select Save to apply your changes.

Deleting a packet capture profile

To delete a packet capture profile:

1. In the Packet Capture Profiles pane, select  in the row of the packet capture profile that you want to delete.



2. Select Yes to delete the profile.

RADIUS Authentication

The RADIUS Authentication pane allows you to configure RADIUS authentication for one or more FortiSwitch units.

+ Add Edit Delete <input type="text" value="Search"/> Filter By Tags						
Host Name	Name	Server	Secondary Server	RADIUS Port	Auth Type	NAS IP
S108DVT	testRadius5	10.10.10.10		1812	Default Authentication Scheme	0.0.0.0
S108DVT	testRadius4	10.10.10.10		1812	Default Authentication Scheme	0.0.0.0
S108DVT	testRadius3	10.10.10.10		1812	Default Authentication Scheme	0.0.0.0

To find a specific host name, configuration name, or server IP address, enter part or all of the search item in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that use RADIUS authentication *and* are tagged with the selected tag.

To filter the list of configurations by switch tag, select **Filter By Tags** and the tag to filter with. If you select multiple tags to filter with, the results are configurations for FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following tasks from the Radius Authentication pane:

- [Creating a RADIUS authentication configuration](#)
- [Editing a RADIUS authentication configuration](#)
- [Deleting a RADIUS authentication configuration](#)

Creating a RADIUS authentication configuration

You can create a RADIUS authentication configuration for one or more FortiSwitch units.

To create a RADIUS authentication configuration:

1. Go to *Configuration > RADIUS Authentication*.
2. Select *Add*.

Add Configuration

Switch	<input type="text" value="S108DVTA"/>
Name	<input type="text" value="RADIUS1"/>
Primary Server Address	<input type="text" value="10.1.1.1"/>
Primary Server Secret	<input type="text"/>
Secondary Server Address	<input type="text"/>
Secondary Server Secret	<input type="text"/>
Radius Port	<input type="text" value="1812"/>
Authentication Type	<input checked="" type="radio"/> Default Authentication Scheme <input type="radio"/> MS-CHAPv2 <input type="radio"/> MS-CHAP <input type="radio"/> CHAP <input type="radio"/> PAP
NAS IP Address	<input type="text"/>

3. Click in the Switch field to select a FortiSwitch unit. You can select multiple FortiSwitch units.
4. Enter a name for this RADIUS authentication configuration.
5. Enter the IPv4 address for the primary RADIUS authentication server.
6. Enter the primary server secret key. This key can be a maximum of 16 characters long. This value must match the secret on the primary RADIUS server.
7. Enter the IPv4 address for the secondary RADIUS authentication server.
8. Enter the secondary server secret key. This key can be a maximum of 16 characters long. This value must match the secret on the secondary RADIUS server.
9. Enter the port number to connect with the RADIUS authentication servers.
10. If you know that the RADIUS server uses a specific authentication scheme, click in the Authentication Scheme field and select the scheme from the list. If you do not select an authentication scheme, the default authentication scheme is used.
11. Enter the IP address of the FortiSwitch interface used to talk to the RADIUS server.
12. Select *Ok* to create the RADIUS authentication configuration.

Editing a RADIUS authentication configuration

To edit a RADIUS authentication configuration:

1. Select the RADIUS authentication configuration that you want to edit and click **Edit**.

Edit Configuration


Switch	S108DVTA1
Name	testRadius5
Primary Server Address	<input type="text" value="10.3.1.40.200"/>
Primary Server Secret	<input type="password" value="••••••"/>
Secondary Server Address	<input type="text"/>
Secondary Server Secret	<input type="password" value="••••••"/>
Radius Port	<input type="text" value="1812"/>
Authentication Type	<input checked="" type="radio"/> Default Authentication Scheme <input type="radio"/> MS-CHAPv2 <input type="radio"/> MS-CHAP <input type="radio"/> CHAP <input type="radio"/> PAP
NAS IP Address	<input type="text" value="0.0.0.0"/>

2. Make your changes in the Edit Configuration dialog box.
3. Select **Ok** to apply your changes.

Deleting a RADIUS authentication configuration

To delete a RADIUS authentication configuration:

1. Select the RADIUS authentication configuration that you want to delete and click **Delete**.

 Are you sure you want to delete this entry?

2. Select **Yes** to delete the RADIUS authentication configuration.

TACACS Authentication

The TACACS Authentication pane allows you to configure TACACS authentication for one or more FortiSwitch units.

Host Name	Name	Server	Port	Authen Type
S108DVT	Tacacs5	10.36	49	Auto
S108DVT	Tacacs3	10.36	49	MSCHAP
S108DVT	Tacacs2	10.36	49	CHAP

To find a specific host name, configuration name, or server IP address, enter part or all of the search item in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that use TACACS authentication *and* are tagged with the selected tag.

To filter the list of configurations by switch tag, select **Filter By Tags** and the tag to filter with. If you select multiple tags to filter with, the results are configurations for FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following tasks from the TACACS Authentication pane:

- [Creating a TACACS authentication configuration](#)
- [Editing a TACACS authentication configuration](#)
- [Deleting a TACACS authentication configuration](#)

Creating a TACACS authentication configuration

You can create a TACACS authentication configuration for one or more FortiSwitch units.

To create a TACACS authentication configuration:

1. Go to *Configuration > TACACS Authentication*.
2. Select *Add*.

Add Configuration

Switch	S108DVT
Name	TACACS1
Primary Server Address	10.1.1.1
Port	112
Server Key	●●●●●●●●
Authentication Type	Auto ASCII PAP CHAP MSCHAP

3. Click in the Switch field to select a FortiSwitch unit. You can select multiple FortiSwitch units.
4. Enter a name for this TACACS authentication configuration.

5. Enter the IPv4 address for the TACACS authentication server.
6. Enter the port number to connect with the TACACS authentication server.
7. Enter the server key for the TACACS server. This key can be a maximum of 16 characters long. This value must match the secret on the primary RADIUS server.
8. Select the authentication type to use for the TACACS server. *Auto* tries PAP, MSCHAP, and CHAP (in that order).
9. Select *Ok* to create the TACACS authentication configuration.

Editing a TACACS authentication configuration

To edit a TACACS authentication configuration:

1. Select the TACACS authentication configuration that you want to edit and click **Edit**.

Edit Configuration

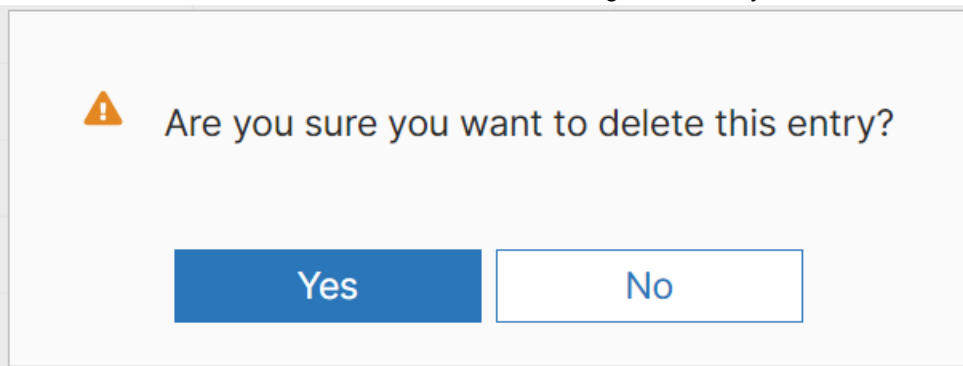
Switch	S108DVTA
Name	Tacacs5
Primary Server Address	<input type="text" value="10.36.138.254"/>
Port	<input type="text" value="49"/>
Server Key	<input type="password" value="••••••••"/>
Authentication Type	<input checked="" type="radio"/> Auto <input type="radio"/> ASCII <input type="radio"/> PAP <input type="radio"/> CHAP <input type="radio"/> MSCHAP

2. Make your changes in the Edit Configuration dialog box.
3. Select *Ok* to apply your changes.

Deleting a TACACS authentication configuration

To delete a TACACS authentication configuration:

1. Select **X** in the row of the TACACS authentication configuration that you want to delete.



2. Select **Yes** to delete the TACACS authentication configuration.

User Groups

The User Groups pane allows you to create a user group that contains users and authentication servers.

Security policies allow access to specified user groups only. This restricted access enforces role-based access control (RBAC) to your organization's network and its resources. Users must be in a group, and that group must be part of the security policy.

Host Name	Name	Members	Authentication Servers	Action
017_B411	Group-B			X
017_B411	grp1			X
017_B411	test_group		BLM	X
S548DF50	g1		radi_us2, ts1	X
S548DF50	g2		rdt1x, radi_us2	X
S548DF50	g3		rdt1x, radi_us2	X
S548DF50	test_group	x0804_3	bbbb, R-TEST	X
S548DF50	BETA	Alice, John Doe	ALPHA	X
S548DF50	Group-B	Alice, John Doe	BETA, OMEGA	X

To update the list of user groups, select *Refresh*.

To find a specific host name, user group name, group member, or authentication server name, enter part or all of the search item in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that belong to the user group *and* are tagged with the selected tag.

To filter the list of user groups by switch tag, select and the tag to filter with. If you select multiple tags to filter with, the results are user groups for FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following tasks from the User Groups pane:

- [Creating a user group](#)
- [Editing a user group](#)
- [Deleting a user group](#)

Creating a user group

You can create a user group that contains users and authentication servers for one or more FortiSwitch units.

To create a user group:

1. Go to *Configuration > User Groups*.
2. Select *Create Configuration*.

Create Configuration

Switch

This field is required


Name


This field is required

3. Click in the Switch field to select a FortiSwitch unit. You can select multiple FortiSwitch units.
4. Enter a name for this user group.
5. Click in the Members field to select available users to belong to the user group.
6. Select **+** to add an authentication server.
 - Select the server name from the drop-down list.
 - Select a specific group name or select *Any*.
7. Select *Save* to create the user group.

Editing a user group

To edit a user group:

1. Select  in the row for the user group that you want to edit.



 Edit Configuration

Switch

Name

Members


Authentication Servers

	Server Name	Group Name
	<input type="text" value="radi_us2"/>	<input type="radio"/> Any <input checked="" type="radio"/> Specify <input type="text" value="aa"/>
	<input type="text" value="ts1"/>	<input checked="" type="radio"/> Any <input type="radio"/> Specify <input type="text"/>

2. Make your changes in the Edit Configuration dialog box.
3. Select Save to apply your changes.

Deleting a user group

To delete a user group:

1. Select  in the row of the user group that you want to delete.



Are you sure you want to delete this item?

2. Select Yes to delete the user group.

Port Security


The Port Security pane allows you to edit the global 802.1x-authentication configuration for the FortiSwitch units.

Host Name	Link Down Behavior	Maximum Re-Authentication Attempts	Re-Authentication Period (Minutes)
test_host_1	Do Not Require Re-Authentication	0	60
S108DVTM	Require Re-Authentication	0	60
S108DVTA1	Require Re-Authentication	0	60
S108DVTA1	Require Re-Authentication	0	60

To update the list of 802.1x authentication configurations, select *Refresh*.

To find a specific host name, enter part or all of the search item in the Search field.

You can use the Search field and the Filter with Tags field together to find FortiSwitch units that use 802.1x authentication *and* are tagged with the selected tag.

To filter the list of configurations by switch tag, select  and the tag to filter with. If you select multiple tags to filter with, the results are configurations for FortiSwitch units that are tagged with one or more of the selected tags.

You can perform the following task from the Port Security pane:

- [Editing the global 802.1x-authentication settings](#)

Editing the global 802.1x-authentication settings

To edit the global 802.1x-authentication settings:

1. Select  in the row for the 802.1x-authentication configuration that you want to edit.

Edit Configuration

Switch test_host_1

Port Security Settings

Link Down Auth Require Re-Authentication Do Not Require Re-Authentication

802.1X/MAB

Re-Authentication Period (Minutes)

Maximum Re-Authentication Attempts

2. Make your changes in the Edit Configuration dialog box.
3. Select *Save* to apply your changes.

Network

The Network pane controls email notifications and scheduled daily backups.

Configure Network

Notifications for Offline Devices

Device offline for minutes

Selected recipients

Notifications for License Expiry



Selected recipients

Configure Daily Scheduled Backup

Status On Off

Scheduled Time India Standard Time

To set up an email notification:

1. Select 5, 10, 15, 30, or 60 minutes before FortiLAN Cloud sends an email notification that a FortiSwitch unit is offline.
2. Select  and then select one or more users to receive an email notification when a FortiSwitch unit is offline. If no users are selected, FortiLAN Cloud will not send email notifications.
3. Select  and then select one or more users to receive an email notification when FortiLAN Cloud licenses are going to expire or have expired. If no users are selected, FortiLAN Cloud will not send email notifications.
4. Select *Save* to apply your changes.

To schedule daily backups:

1. Select *On* to enable daily backups.
2. Select whether to use *Local Time* or *UTC*.

3. Select the hour and minutes for your daily backup.
4. Select Save to apply your changes.

IGMP

IGMP snooping allows the FortiSwitch to passively listen to the IGMP network traffic between hosts and routers. The IGMP configuration is a part of the ZTC templates in FortiLAN Cloud. You can review the current configuration on the FortiSwitch, modify a few selected items, and apply the configuration to the FortiSwitch. For configuration details, see [Creating a zero-touch configuration](#).

Edit IGMP: S108DVTA19000826

Aging Time	300
Query Interval	125
Proxy Report Interval	60
Leave Response Timeout	1000

LLDP

The FortiSwitches support LLDP for transmission and reception wherein the switch multicasts LLDP packets to advertise its identity and capabilities. You can modify the current LLDP settings on the ZTC template and create/edit LLDP profiles. These configurations can be directly applied to the FortiSwitch. For configuration details, see [Creating a zero-touch configuration](#).

Edit LLDP Settings - S108DVTA19000826

Enable LLDP Transmit/Receive	<input checked="" type="checkbox"/>
Management Interface	mgmt ▼
Transmit Hold	4
Transmit Interval	30
Fast Start	<input checked="" type="checkbox"/>
Fast Start Interval	2

Create LLDP Profile

Switch:

Profile Name:

Transmitted IEEE 802.1 TLVs: Port VLAN ID

Transmitted IEEE 802.3 TLVs: Maximum frame size TLV PoE+ classification TLV Efficient Energy Ethernet Config

Auto MCLAG inter chassis link:

Enable/disable automatic Inter-Switch LAG:

Transmitted LLDP-MED TLVs: Inventory Management TLV Network Policy TLVs Location Identification TLVs Power Management TLV

System Interfaces

You can configure physical and VLAN interfaces on a FortiSwitch. You can create new interfaces or modify the current interfaces settings on the ZTC template. For configuration details, see [Creating a zero-touch configuration](#).

Add System Vlan Interface Config

Switch:

Name:

Interface:

Alias:

VLAN ID:

IP Configuration

Mode: Static DHCP

Distance of Learned Routes:

Edit System Physical Interface Config - S424DF-XXXXXX internal

Interface

Alias

IP Configuration

Mode Static DHCP

IP/Netmask

Administration

Status Up Down

Access

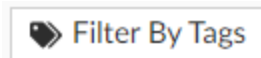
Monitor

Select *Monitor* to check modules, MAC addresses, switch and port statistics; FortiSwitch units using PoE, LLDP, or 802.1x authentication; STP instances; DHCP-snooping and IGMP-snooping databases; logs; and the status of zero-touch configurations, scheduled upgrades, and packet captures.

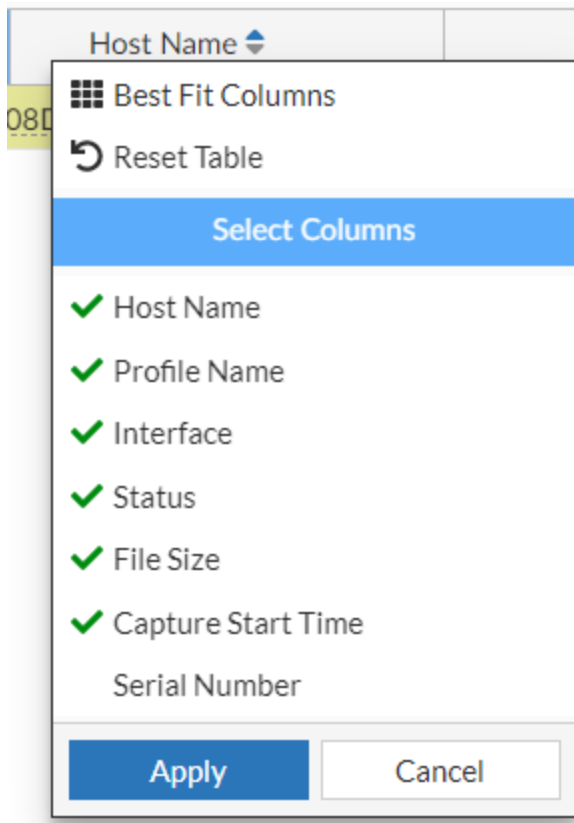
In the various monitor pages displayed in this section, hove over the host name to navigate to the **Diagnostics and Tools** options as described in section [Deployed Switches](#)

FortiSwitch	S108DVGUMUEKJF84
Serial Number	S108DVTA19000861
Model	FortiSwitch-108D-VM
Status	Online
Firmware Version	v6.6.0,build5801,201112 (Interim)
IP Address	182.71.233.4
Diagnostics and Tools	

Also, the monitor pages provide the option to filter data by the associated tags, click **Filter by Tags**.



To select the filter options, right-click on any column.



You can select the following options from the left pane:

- [Zero Touch Config Status on page 219](#)
- [Scheduled Upgrade Status on page 220](#)
- [Modules on page 221](#)
- [PoE Status on page 221](#)
- [MAC Addresses](#)
- [LLDP on page 222](#)
- [STP on page 223](#)
- [DHCP-Snooping on page 224](#)
- [IGMP-Snooping on page 224](#)
- [System Log on page 224](#)
- [Audit Log on page 225](#)
- [Event Log on page 225](#)
- [Packet Capture Files on page 226](#)
- [802.1x Status on page 226](#)
- [802.1x Session on page 226](#)
- [Switch Statistics on page 227](#)
- [Switch Port Statistics on page 227](#)
- [Routing Table on page 229](#)
- [Link Monitor](#)

Zero Touch Config Status

The Zero Touch Config Status pane lists the status of the zero-touch configurations. The status can be one of the following:

- *Firmware Upgrade In progress*—The firmware is being upgraded on the specified host names.
- *Apply configuration command*—The CLI commands entered in the Add Zero Touch Configuration dialog box are being run.
- *Timeout*—Zero Touch configurations are not processed until a specific time (approximately 30 minutes).
- *Complete*—The firmware has been upgraded, or the CLI commands have been run.
- *Failure*—The firmware has not been upgraded, or the CLI commands have not been run.

Host Name	Description	Firmware Version	Start Time	Schedule Time	Switch Status
S108DVTB19001103			2022/11/24 18:53:40	2022/12/03 06:45:...	Failure
S108DVTA19001104			2022/11/24 18:53:40	2022/12/03 06:45:...	Complete
S108DVTA190	Host Name	S108DVTA19001104	/11/24 18:53:40	2022/12/03 06:45:...	Complete
S108DVHEUO	Serial Number	S108DVTA19001104	/11/24 18:53:40	2022/12/03 06:45:...	Failure
S108DVTA190	Model	S108DV	/09/05 11:36:16		Complete
S108DVTA190	Status	Online	/09/05 11:36:16		Complete
S108DVTA190	Firmware Version	v7.2.0,buid4800,220826 (MR2 Beta 0)	/08/23 14:09:55		Failure
S108DVTA190	IP Address	192.71.233.4	/09/08 12:46:48		Complete
S108DV6_XHR			/11/24 18:53:40	2022/12/03 06:45:...	Failure
S108DVTA190	Diagnostics and Tools		/11/24 18:53:40	2022/12/03 06:45:...	Failure
S108DVRVY2TKJL93			2022/11/24 18:53:40	2022/12/03 06:45:...	Failure

Select a row and click **View Details** to view the host details.

ZTC Details: S108DVTA19001104 ✕

General

Host Name	S108DVTA19001104
Serial Number	S108DVTA19001104
Firmware Version	
Start Time	Thursday
Scheduled Time	

Details

TAB	Start Time	Status	Message from Switch
Ports	2022-11-24 18:53:41	Complete	

ZTC Details: S108DV6_XHR4_I78 ✕

☰ General

Host Name	✕ S108DV6_XHR4_I78
Serial Number	S108DVTA1 XXXXXXXXXX
Firmware Version	
Start Time	Thursday
Scheduled Time	

☰ Details

TAB	Start Time	Status	Message from Switch
Create Connection	2022-11-24 18:54:40	! Failure	Device(S108DVTA19001107) login timeout

Select a row and click **View Config** to view the CLI/GUI configuration details.

Zero Touch Config Detail

☒ CLI ☒ GUI

```

config switch interface
edit port1
config port-security
set port-security-mode disable
end
edit port2
config port-security
set port-security-mode disable
end
edit port3
config port-security
set port-security-mode disable
end
edit port4
config port-security
set port-security-mode disable
end
edit port5
config port-security
set port-security-mode disable
end
edit port6
```

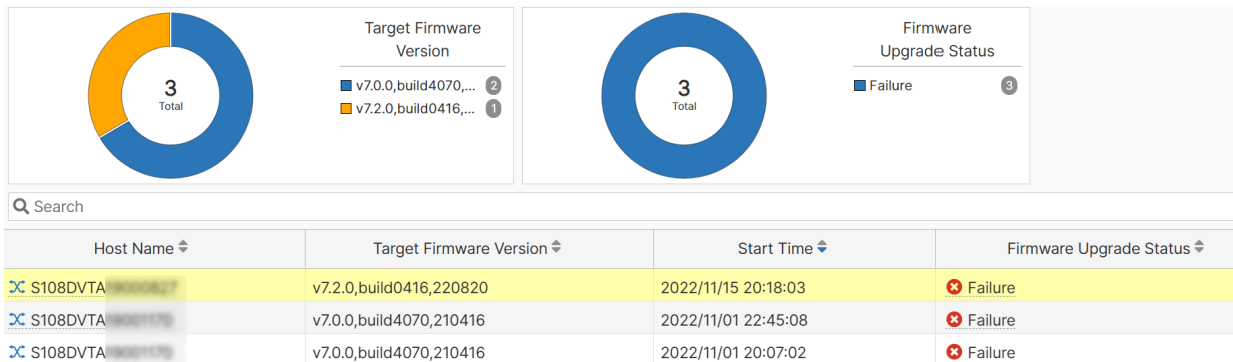
To find a specific switch, enter part or all of the host name or model number in the Search field.

Scheduled Upgrade Status

The Scheduled Upgrade Status pane lists the status of the scheduled firmware upgrades. The status can be one of the following:

- *Pending*—The scheduled time and date for the firmware upgrade have not occurred yet.
- *Download firmware*—The firmware image is loading on the FortiSwitch unit.
- *Complete*—The firmware has been upgraded.

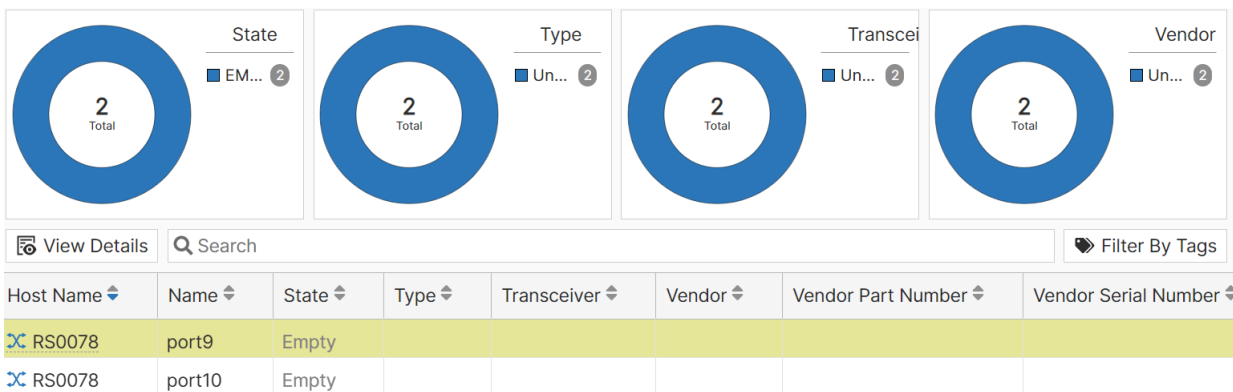
- **Failure**—The firmware has not been upgraded. Check that the firmware image is for the same model as the selected switches.



To find a specific switch, enter part or all of the host name or model number in the *Search* field.

Modules

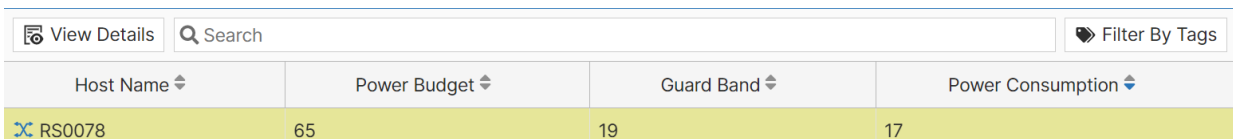
The Modules pane describes the modules inserted in any switch, including state, type, and vendor.



Use the Search field to find a switch serial number, switch host name, port name, state, type, transceiver, vendor, vendor part number, or vendor serial number..

PoE Status

The PoE Status pane lists the power budget, guard band, and power consumption (in Watts) of FortiSwitch units using PoE.



Select a row and click **View Details**.

POE Details: S108FPTV21000078

Search

Switch	Interface	Status	State	Max Power(W)	Power Consumption(W)	Class	Error	Priority
S108FPTV21000078	port1	Enabled	Searching	0	0	0	None	low-priority
S108FPTV21000078	port2	Enabled	Searching	0	0	0	None	low-priority
S108FPTV21000078	port3	Enabled	Delivering Power	26.2	10.1	4	None	low-priority
S108FPTV21000078	port4	Enabled	Delivering Power	26.2	8	4	None	low-priority

To find a switch, enter part or all of the host name in the Search field.

MAC Addresses

The MAC Addresses pane lists all MAC address and the corresponding organizationally unique identifier (OUI) host name, VLAN, interface, and flags.

Show VRRP MAC address On Off Search

Filter By Tags

Host Name	MAC Address	MAC OUI	VLAN	Switch Interface	Flags
S108DVTA19000892	84-49-92-71-00-00		1	internal	
RS0078	40-23-05-76-76-76	Fortinet, Inc.	1	port1	used
RS0078	84-76-a0-54-24-00	Fortinet, Inc.	161	internal	static used
RS0078	84-76-a0-54-24-00	Fortinet, Inc.	90	internal	static used
RS0078	84-76-a0-54-24-00	Fortinet, Inc.	91	internal	static used
RS0078	84-76-a0-54-24-00	Fortinet, Inc.	92	internal	static used

To show or hide MAC addresses learned on a VRRP server, enable/disable the **Show VRRP MAC address** option.

To find a MAC address, enter part or all of the MAC address in the Search field.

LLDP

The LLDP pane provides information about ports using LLDP.

View Details Search

Filter By Tags

Host Name	Remote Hostname	Port	System Description	Med Type	Chassis
RS0078	PU431FTH	port4			84-49-92-71-00-00 e9:9a:a2 (mac) 0
RS0078	PU421E3X	port3	FortiAP-U421EV v6.2,build0307,220602 (GA)		84-49-92-71-00-00 39:85:e2 (mac) 0
RS0078		port1	FortiSwitch-448E v7.0.3,build0058,211130 (GA)	Network Connectivity Device	40-23-05-76-76-76 5:7a:fa (mac) p

Select a specific port and click **View Details**.

Neighbor Details: S424DF3X [redacted] - port24 ✕

☰ Overview

Chassis

System Name

System Description

System Serial Number

☰ IEEE802_3, MAC/PHY Configuration/Status

Autoneg supported

Autoneg enabled

Autoneg advertised

☰ Further Details

Time to live

System Capabilities

Enabled Capabilities

Med Type

Med Capabilities

Software Rev

Firmware Rev

Hardware Rev

Manufacturer

Use the Search field to find a host name, chassis ID, or port number.

STP

The STP pane provides information about STP instances.

Host Name	Instance ID	Priority	Root MAC Address	Root Priority	Root Path Cost	Regional Root Port	Remaining Hops	Bridge MAC Address
S424DF3X [redacted]	0	32,768	[redacted]	32,768	0		20	[redacted] c7:fc
S108DV_FO	FortiSwitch S424DF3X [redacted]		cd:02:30:00	32,768	0	port1	13	[redacted] f8:0c
S108DVWK	Serial Number S424DF3X [redacted]		52:01:19:00	32,768	0	port1	16	[redacted] ea:0
S108DVWC	Model FortiSwitch-424D-FPOE		52:01:19:00	32,768	0	port4	19	[redacted] 82:c
S108DVJJC	Status ✔ Online		52:01:19:00	32,768	0	port1	15	[redacted] 7d:c
S108DVUGN	Firmware Version v7.0.3.build0058.211130 (GA)		fe:02:57:00	32,768	0	port1	16	[redacted] e1:0f
S108DVUAC			fe:02:57:00	32,768	0	port2	17	[redacted] 78:0
S108DVTA1	IP Address [redacted]		52:18:84:00	32,768	0	port1	16	[redacted] d2:c
S108DVTA1			52:18:84:00	32,768	0	port2	17	[redacted] 33:0
S108DVTA1	🔧 Diagnostics and Tools		52:18:84:00	32,768	0	port3	18	[redacted] 13:c

Select an STP instance and click **View Details** to view the instance details.

STP details: S424DF3X15000067 (S424DF3X15000067) ✕

Q Search

Port Name	Port Speed	Port Cost	Port Priority	Port Role	Port State	Edge Status	Admin Status	STP LG Status
port1	1,000	20,000	128	DESIGNATED	FORWARDING	YES	ENABLED	NO
port2	1,000	20,000	128	DESIGNATED	FORWARDING	YES	ENABLED	NO
port3	1,000	20,000	128	DESIGNATED	FORWARDING	YES	ENABLED	NO

Use the Search field to find a host name or MAC address.

DHCP-Snooping

The DHCP-Snooping pane lists information about DHCP clients and servers.

Q Search

Host Name	Client IP Address	Client Host Name	Domain Name	Vendor	VLAN	Interface	Expiry Time	DHCP Server IP	DHCP Server MAC	DHCP
-----------	-------------------	------------------	-------------	--------	------	-----------	-------------	----------------	-----------------	------

You can use the Search field to find specific IP addresses.

Hovering over the client IP address shows the MAC address, lease, host name, domain name, and vendor, if available.

IGMP-Snooping

The IGMP-Snooping pane lists information about the multicast groups learned on the ports and when the entries will be deleted from the IGMP-snooping database.

Q Search

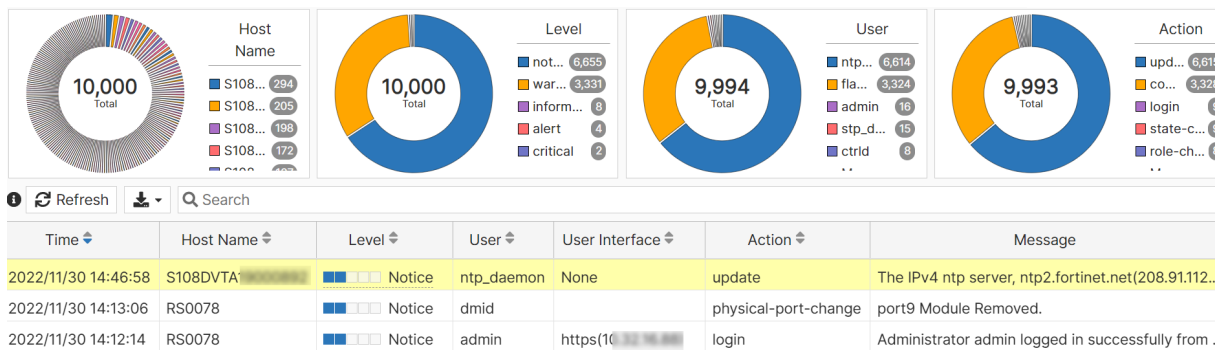
Host Name	Multicast Group	VLAN	Age-Timeout	Expiry Time	Port	IGMP Version
-----------	-----------------	------	-------------	-------------	------	--------------

You can use the Search field to find specific multicast groups.

System Log

The System Log pane lists system events for all managed FortiSwitch units.

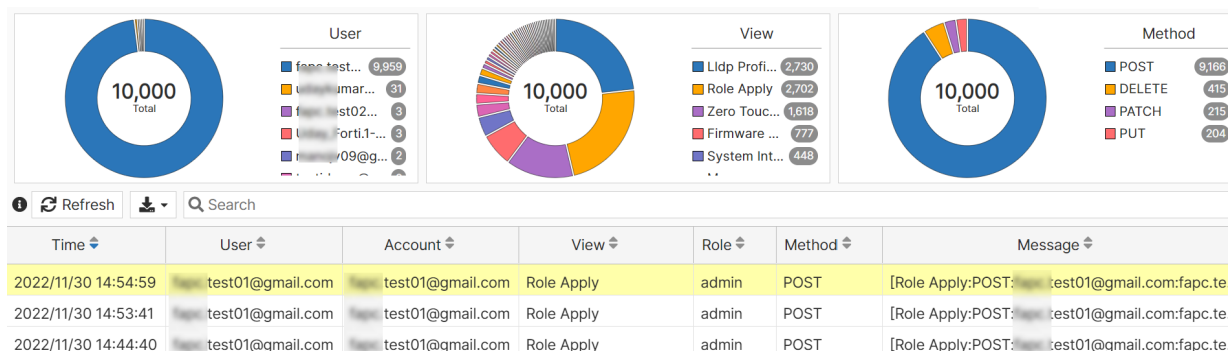
When a FortiLAN Cloud account has an active license, system log entries are retained for 365 days. After the license period ends, system log entries are retained for a maximum of 7 days. When a FortiLAN Cloud account does not have an active license, system log entries are retained for 7 days.



You can use the Search field to filter by severity level or message content.

Audit Log

The Audit Log pane lists changes for all managed FortiSwitch units.

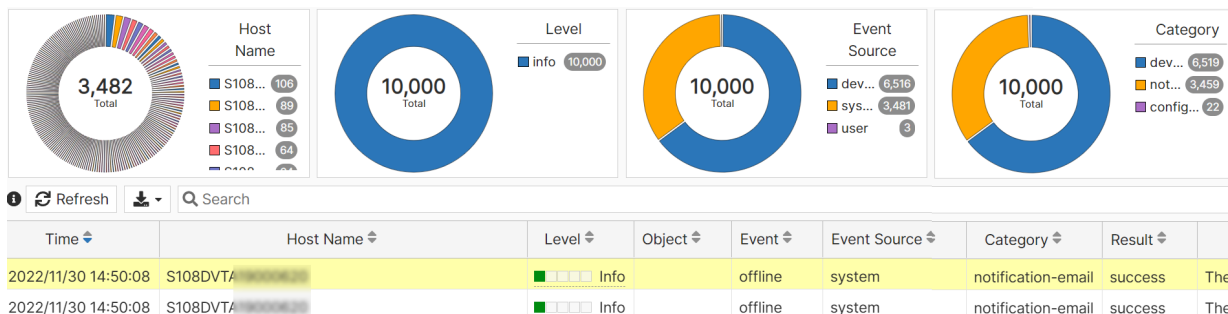


To find specific log entries, enter part or all of the log entry in the Search field.

Event Log

The Event Log pane lists system, device, and user changes.

When a FortiLAN Cloud account has an active license, event log entries are retained for 365 days. After the license period ends, event log entries are retained for a maximum of 7 days. When a FortiLAN Cloud account does not have an active license, event log entries are retained for 7 days.



You can use the Search field to find specific events.

Packet Capture Files

The Packet Capture Files pane lists all packet capture profiles and the corresponding host name, interface, status, file size, and capture time. The status can be one of the following:

- **Downloading**—The packet capture file is currently downloading from the FortiSwitch unit to FortiLAN Cloud.
- **Failed**—The packet capture file failed to download from the FortiSwitch unit to FortiLAN Cloud.
- **Finished**—The packet capture file has successfully downloaded from the FortiSwitch unit to FortiLAN Cloud.

Host Name	Profile Name	Interface	Status	File Size	Capture Start Time
S108DVTA19000607	packet-capture-profile-port2	port2	Finished	544730	2022/07/05 18:36:08
S424DF3X15000067	24	port24	Finished	22420	2022/07/08 17:55:25

FortiSwitch [S424DF3X15000067](#)

Serial Number S424DF3X15000067

Model FortiSwitch-424D-FPOE

Status ✔ Online

Firmware Version v7.0.3.build0058.211130 (GA)

IP Address 182.71.233.5

[Diagnostics and Tools](#)

To find a specific packet capture profile, enter part or all of the name in the Search field.

To download the packet capture file, select **Download** for the corresponding packet capture profile.

To delete the packet capture file, select **Delete** for the corresponding packet capture profile.

802.1x Status

The 802.1x pane displays information about FortiSwitch ports using IEEE 802.1x authentication. The information displayed includes mode, link status, port state, and VLAN configuration.

Host Name	Interface	Mode	Link Status	Port State	MAC Bypass	EAP Pass-Through	VLAN Dynamic Authorized
S108DVTA19000607	port1	port-based	✔ Up	unauthorized:	disable	enable	0
S108DVTA19000607	port1	port-based	✔ Up	unauthorized:	disable	enable	0
S108DVTA19000607	port1	port-based	✔ Up	unauthorized:	disable	enable	0
S108DVTA19000607	port1	port-based	✔ Up	unauthorized:	disable	enable	0

To find a specific host name or interface, enter part or all of the name in the Search field.

802.1x Session

The 802.1x pane displays information about IEEE 802.1x authentication sessions. The information displayed includes host name, port name, MAC address, and EAP type.

Host Name	Port Name	MAC Address	EAP Type	EAP Counter	Auth Elapsed	PAE State	Params	VLAN
S108DVTA	port1	00:00:00:00:00:00		0	0	AUTHENTICATING	reAuth=3600	
S108DVTA	port1	00:00:00:00:00:00		0	0	AUTHENTICATING	reAuth=3600	
S108DVTA	port1	00:00:00:00:00:00		0	0	AUTHENTICATING	reAuth=3600	
S108DVTA	port1	00:00:00:00:00:00		0	0	AUTHENTICATING	reAuth=3600	

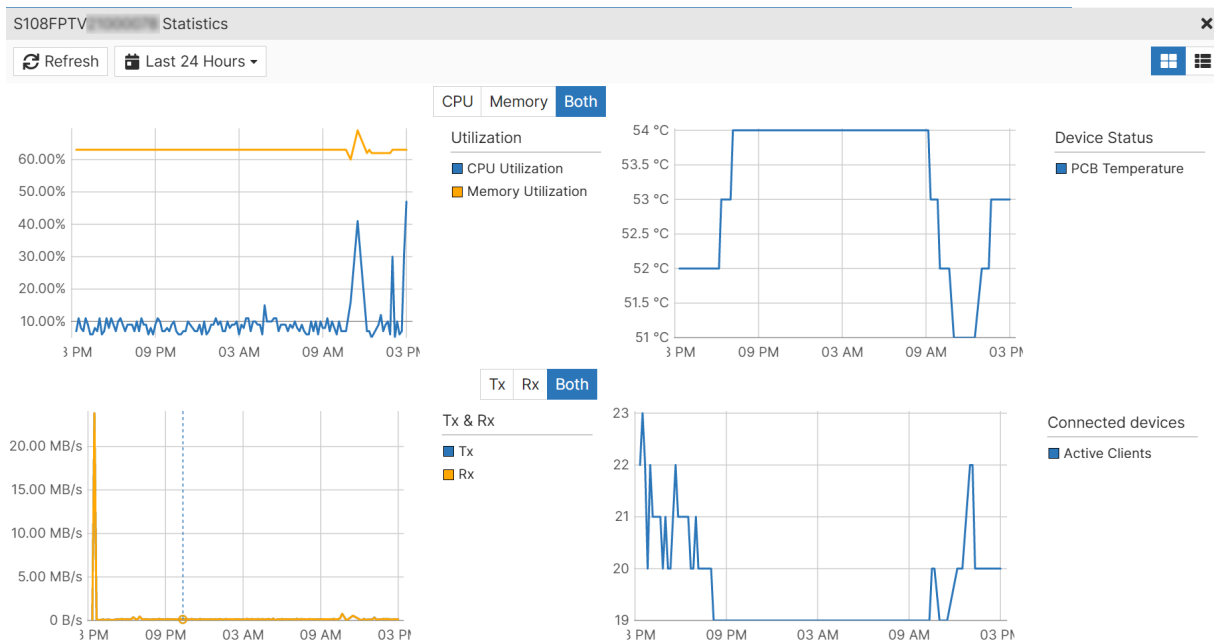
To find a specific host name or interface, enter part or all of the name in the **Search** field.

Switch Statistics

The Switch Statistics pane displays graphs for the CPU usage, memory usage, PCB temperature, received bits per second, transmitted bits per second, and number of learned MAC addresses for each FortiSwitch unit.

Serial Number	Host Name	CPU Utilization	Memory Utilization	PCB Temperature	TX	RX	Active Client
S108DVTA	S108DVTA	0.00%	62.00%	0 °C	2.77 kb...	2.28 kb...	1
S108DVTA	S108DVTA	0.00%	62.00%	0 °C	2.84 kb...	2.35 kb...	1
S108DVTA	S108DVTA	0.00%	62.00%	0 °C	2.82 kb...	2.33 kb...	1

Select a row and click **View Details** for a graphical representation of the statistics.



To find a specific switch, enter part or all of the host name in the Search field.

Switch Port Statistics

The Switch Port Statistics pane can display the following graphs for each port:

- TX Utilization—Percentage of bandwidth usage for transmitted traffic
- RX Utilization—Percentage of bandwidth usage for received traffic
- TX bps—Transmitted bits per second
- TX Packets—Transmitted packets per second
- TX Unicast—Transmitted unicast packets per second
- TX Multicast—Transmitted multicast packets per second
- TX Broadcast—Transmitted broadcast packets per second
- TX Errors—Errors in transmitted packets per second
- TX Drops—Dropped packets in transmitted packets per second
- TX Oversize—Oversized packets in transmitted packets per second
- RX bps—Received bits per second
- RX Packets—Received packets per second
- RX Unicast—Received unicast packets per second
- RX Broadcast—Received broadcast packets per second
- RX Errors—Errors in received packets per second
- RX Drops—Dropped packets in received packets per second
- RX Oversize—Oversized packets in received packet per second
- Undersize—Number of undersized packets
- Fragments—Number of fragments
- Jabbers—Number of jabbers
- Collisions—Number of packet collisions
- CRC Alignments—Number of CRC/alignment errors
- L3 Packets—Number of layer-3 packets

Select each graph to display a larger version with additional options.

Host Name	Port	TX Utilization	RX Utilization	TX	TX Packets	TX Unicast	TX Multicast
RS0078	internal	0.00085%	0.00296%	8.46 kbps	5.59	4.61	0.92
RS0078	port1	0.02%	0.00231%	156.58 kbps	23.20	21.70	0.66
RS0078	port2	0.00057%	0.00002%	5.69 kbps	1.83	0.09	1.19
RS0078	port3	0.00068%	0.00145%	6.79 kbps	2.57	0.84	1.18
RS0078	port4	0.00200%	0.01%	19.97 kbps	16.10	14.39	1.16

Select a row and click **View Details** for a graphical representation of the statistics.



To find a specific switch, enter part or all of the host name in the Search field.

Routing Table

The routing table pane displays the L3 routing information for switches. The routing table displays summary information for online FortiSwitches.

Host Name	Routing Table Entries
S108DVTA	3
RS0078	2

Click on a specific FortiSwitch to view details.

Routing Table: S108DVTA19000892 (S108DVTA19000892)

Search

Selected Route	FIB Route	Source	Destination	Next Hop	Interface
Yes	Yes	Static	0.0.0.0 / 0 (0.0.0.0 / 0)	via 172.16.0.16	mgmt
Yes	Yes	Connected	172.16.0.16	Directly connected	mgmt
Yes	Yes	Connected	192.168.1.24	Directly connected	mgmt

Link Monitor

You can create a probe to monitor the link to a server. The FortiSwitch unit sends periodic ping messages to test that the server is available. This page displays the link probes.

View Details Search

Host Name	Link Monitor Count
S108DVTA19000892	0
S108DVTA19000897	0
S108DVTA19000898	0
S108DVTA19000899	0

My Account

Select *My Account* to review your account, add FortiSwitch units to the switch inventory, deploy FortiSwitch units to FortiLAN Cloud. You can select the following options from the left pane:

- [Account Management on page 231](#)
- [Cloud Management License on page 231](#)
- [Switch Inventory on page 232](#)

Account Management

The Account Management pane provides user and license information.

+ Add User Edit User <input type="text" value="Search"/>		
User	Role	Type
utaykumar_x@outlook.com	viewer	FortiCare
Utay_Forti12@outlook.com	viewer	FortiCare
utaykumar1sd@gmail.com	admin	FortiCare

If you want more FortiSwitch users for your FortiLAN Cloud account, add the users in your FortiCare account, and they will be automatically added to your FortiLAN Cloud account. To enable access to all FortiSwitch data in FortiLAN Cloud, go to FortiCare to add new users, select *Add User*. To modify the user role, select the user and click **Edit User**.

To find a specific user, enter part or all of the user name in the Search field.

NOTE: To create a read-only user account, you need to set the account permissions in FortiCare when you create the account. Select the *Limit Access* option in FortiCare for the account that you want to be read only, and it will become a “viewer” account.

Cloud Management License

The Cloud Management License pane provides information about your FortiLAN Cloud Management license, including how many FortiSwitch units are currently managed, how many total FortiSwitch units can be managed, license status, license start date, license expiration date, number of subscriptions, and license type.

NOTE: As of March 29, 2020, FortiSwitch units that were previously managed for free are no longer included in the numbers displayed in the Cloud Management License pane.

i <input type="text" value="Search"/>						
Serial Number	Status	Start Date	Expiry Date	Number of Subscriptions	Type	Days To Expir
FSMSC 000000048	Expired	2021/05/25 12:30:00	2021/07/24 12:30:00	5		
FSMSC 000000074	Expired	2022/05/11 12:30:00	2022/07/10 12:30:00	4		
S108FP 121000078	Active	2022/05/26 12:30:00	2023/05/26 12:30:00	1		176
S248EF 178000280	Active	2022/09/09 12:30:00	2023/09/09 12:30:00	1		282

Click on the information icon to view the subscription details. The following information is displayed.

Number of FortiLAN Cloud Management Subscriptions:

Total	5
Used/Reserved	3
Available Pool	2

Note: Upto 3 FortiSwitch devices can be imported into an account, with no additional licensing requirements.

- Total number of FortiSwitch units registered in FortiCare
- How many of your FortiSwitch units are managed by FortiLAN Cloud
- How many FortiSwitch units can be managed by FortiLAN Cloud

Note: If the current license is expired, a grace period is provided. At the end of the grace period, the FortiSwitch unit will be disconnected from the FortiLAN Cloud. The FortiSwitch unit will continue to work with its last updated configuration, and you can manage the device by accessing the CLI or FortiSwitch GUI. However, it is recommended that the license is renewed, so the FortiSwitch unit can continue to be managed from FortiLAN Cloud.

Switch Inventory

The Switch Inventory pane automatically lists the FortiSwitch units registered in FortiCare. After you deploy a FortiSwitch unit to FortiLAN Cloud, it is removed from the *Switch Inventory* pane and listed in the *Switches* pane (*Switch > Switches*). While deploying FortiSwitches, you can include the tags to apply.

Deploy switches to FortiLAN Cloud

Selected Devices: S108DVTA20000536

Select Tags to apply:

Switch_Tag1661344370775
✕

test
✕

+

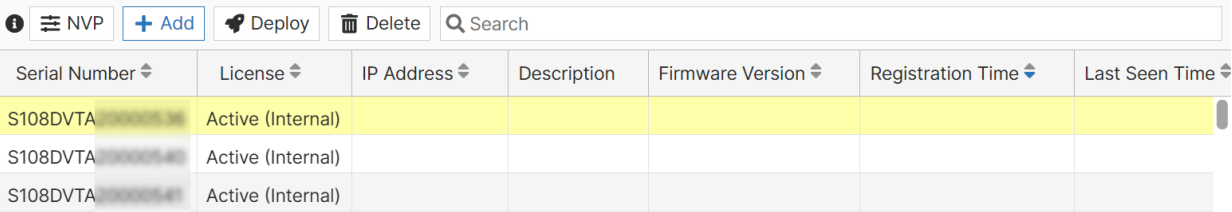
Select Entries

Search

- Switch Tag (254)
- zzssssssssss
- xiauciaioicas
- test

The following information is displayed in the Switch Inventory pane:

- Serial number of the FortiSwitch unit
- IP address of the FortiSwitch unit
- An optional description of the FortiSwitch unit
- The FortiSwitch firmware version
- When the FortiSwitch unit was shipped
- When the FortiSwitch unit was registered in FortiCare
- When the FortiSwitch unit was last seen



Serial Number	License	IP Address	Description	Firmware Version	Registration Time	Last Seen Time
S108DVTA-00000546	Active (Internal)					
S108DVTA-00000540	Active (Internal)					
S108DVTA-00000541	Active (Internal)					

To find a specific switch, enter part or all of the serial number in the Search field.

You can perform the following task from the Switch Inventory pane:

- [Deploying FortiSwitch device to a network on page 132](#)

API Access

The FortiLAN Cloud REST APIs provide functions similar to its GUI functions for configuration and monitoring. For details, see [FortiLAN Cloud REST APIs](#). To access FortiLAN Cloud, a client sends secure HTTP requests to the FortiLAN Cloud API URL determined by the domain region.

Domain	API URL
Global	https://www.fortilan.forticloud.com/api/v1/
Europe	https://eu.fortilan.forticloud.com/api/v1/
Japan	https://jp.fortilan.forticloud.com/api/v1/

All API requests and responses are in JSON format. The client programs need to use these HTTP headers; Content-Type: application/json and Accept: application/json.

Users and Authentication

Authentication (providing credentials and obtaining access token) is performed for Email users, IAM users, and API users with either FortiLAN Cloud or an external Fortinet entity, FortiAuthenticator.

Users	Authentication
Email users & IAM users	Authentication using FortiLAN Cloud with the following API path. <ul style="list-style-type: none"> Obtain token - /api/v1/auth Revoke token - /api/v1/auth/invalidate_token
API users	Authentication using FortiAuthenticator with the following API path. <ul style="list-style-type: none"> Obtain/Refresh token- /api/v1/oauth/token/ Revoke token - /api/v1/auth/invalidate_token

The obtained access token must be sent as bearer token header in FortiLAN Cloud APIs; **Authorization:** Bearer \$access_token.

Email Users

The Email users can be used to authenticate with FortiLAN Cloud and obtain access token with the following web call (Global domain is used in this example).

Request

```
$ curl https://fortilan.forticloud.com/api/v1/auth -H 'Content-Type: application/json' -d '{"accountId":"acct1@example.com","userName":"user1@email.com","password":"1234"}'
```

Response

```
{"access_token": "rVDBFKWu72Jvafj1FcVgIUxOTaNV99jU", "expires_in": 1593739101}
```

In the request, the `accountId` is the primary account email address and the `userName` is either the primary or the sub-user email address. For a sub-user created account, ensure that the user is created with **Admin** role instead of **Regular** role. Only primary account and its **Admin** users can use the APIs.

Invalidate the access token after it is no longer required as displayed in this example.

```
$ curl https://fortilan.forticloud.com/api/v1/auth/invalidate_token -H 'Content-Type: application/json' -H 'Authorization: Bearer $access_token' -d '{"access_token": "$access_token" }'
```

IAM Users

The IAM users can authenticate with FortiLAN Cloud and obtain access token with the following web call (Global domain is used in this example).

Request

```
$ curl https://fortilan.forticloud.com/api/v1/auth -H 'Content-Type: application/json' -d '{
"accountId": "acct1@example.com", "userName": "user2", "password": "1234",
"type": "iamuser" }'
```

The `type` parameter is to be set to `iamuser`. If this parameter is not provided then it defaults to `emailuser`.

Ensure that the IAM user is created with **Admin** role for FortiLAN Cloud portal. Invalidate the access token after it is no longer required as for Email users in the preceding section.

API Users

API users authenticate with FortiAuthenticator to obtain the access token, this token is then used with FortiLAN Cloud.

Perform these steps to obtain access token from FortiAuthenticator.

1. Login into the FortiCloud IAM portal with the account credentials.
2. Create an API user and set **Admin** permission for FortiLAN Cloud.
3. Download the API credentials (API ID, Password and Client ID).

Use the downloaded API user credentials to obtain the access token from FortiAuthenticator.

Request

```
$ curl https://customerapiauth.fortinet.com/api/v1/oauth/token/ -H 'Content-Type: application/json' -d '{"username": "$api_id", "password": "$password", "client_id": "fortilancloud", "grant_type": "password" }'
```

Response

```
{
"access_token": "paLreKW6YGDfgSUfreEH90Ucc1915v3",
"expires_in": 14400,
"message": "successfully authenticated",
"refresh_token": "WpD0HVYUdshsiWlMBROQ6uUoV2TGUIa",
"scope": "read write",
```

```
\ "status\": \ "success\",  
\ "token_type\": \ "Bearer\  
}
```

The FortiAuthenticator access token is then used with FortiLAN Cloud by including it in the bearer header like the Email and IAM users.

To refresh an expired or non-expired access token

```
$ curl https://customerapiauth.fortinet.com/api/v1/oauth/token/ -H 'Content-Type:  
application/json' -d '{\ "client_id\": \ "fortilanccloud\  
\ "refresh_token\  
\ "refresh_token\": \ "WpD0HVYUdshsiW1MBR0Q6uUoV2TGUIa\  
'
```

To revoke access token

```
$ curl https://customerapiauth.fortinet.com/api/v1/oauth/revoke_token/ -H  
'Content-Type: application/json' -d '{\ "client_id\": \ "fortilanccloud\  
\ "token\": \ "paLreKW6YGDfgSUfreEH90UCc1915v3\  
'
```

Note: The API user can have only one access token active at a time. In case of multiple concurrent scripts, you are required to create multiple API users with unique user credential to use in each script. Using the same API user to obtain another access token will automatically invalidate previous active access token.

Calling APIs

All APIs require access token be included as bearer authentication. This is an example to query FortiAPs deployed in various logical networks in an account:

```
$ curl -H "Authorization: Bearer $access_token"  
https://www.fortilan.forticloud.com/api/v1/inventory/deployed/
```

This is an example to query all networks existing in an account.

```
$ curl -H "Authorization: Bearer $access_token"  
https://www.fortilan.forticloud.com/api/v1/networks/
```

API Limit

The following limits apply to FortiLAN Cloud APIs.

- From the same source IP address, 6 auth requests are accepted per minute and across different source IP addresses, 60 auth calls are accepted per minute.
- From the same source IP address, 60 other API calls are accepted per minute and across different source IP address, 600 other API calls are accepted per minute.

Frequently asked questions

This section includes the following frequently asked questions (FAQ) about FortiLAN Cloud:

What happens if my paid FortiLAN Cloud subscription expires?

When your license expires, your subscription falls under the Freemium account category. For more information on the service offering, see [Licensing](#). If you are currently subscribed to the paid FortiLAN Cloud subscription and allow your license to expire, your network will continue to operate. However, your access to service capabilities will be limited to the free service.

What subscription do I need to buy to enable FortiLAN Cloud?

There is no subscription required to use FortiLAN Cloud. If you want to unlock enterprise configuration capabilities and other advanced features, then you can purchase a FortiLAN Cloud license which also includes technical support. For more information, see [Licensing](#).

What FortiAP models does FortiLAN Cloud support?

FortiLAN Cloud supports all FortiAP, Compact FortiAP (FortiAP-C), Smart FortiAP (FortiAP-S), and Universal FortiAP (FortiAP-U) models.

How many FortiAP devices can my FortiLAN Cloud account manage?

There is no limit for the number of FortiAP devices that a FortiLAN Cloud account can manage.

How do I add my FortiAP device to my FortiLAN Cloud account?

For details about adding a FortiAP device to a FortiLAN Cloud account, see one of the following procedures, as applicable.

- [Adding a FortiAP device to FortiLAN Cloud with a key on page 40](#)
- [Adding a FortiAP device to FortiLAN Cloud without a key on page 40](#)

What happens if my FortiAP device loses connection with FortiLAN Cloud?

If your FortiAP device loses connection with FortiLAN Cloud, or in the unlikely event that the FortiLAN Cloud service is unavailable, then all functions which are not hosted in FortiLAN Cloud continue to work without interruption. FortiAP locally stores the configuration which continues to function.

Open, WPA2 Personal, and WPA2 Enterprise (with 802.1X RADIUS authentication) SSIDs that are not using FortiLAN Cloud-hosted authentication (such as the ones using a local RADIUS server or local captive portal) continue to work uninterrupted.

Functions of the following SSIDs with authentication in FortiLAN Cloud are disrupted:

- FortiLAN Cloud-hosted captive portals
- FortiLAN Cloud external captive portals

- FortiLAN Cloud user groups
- MAC Filtering

Does my internal networking and wireless traffic get sent to FortiLAN Cloud?

No. Fortinet uses an out-of-band management architecture, meaning that only management data flows through the FortiLAN Cloud infrastructure. No user traffic passes through Fortinet data centers. Your data stays on your network.

Do I need to use FortiGate with FortiLAN Cloud?

No. Fortinet recommends you register your FortiAP devices to be directly managed by FortiLAN Cloud. You do not need to use a FortiGate device as a proxy to manage FortiAP devices from FortiLAN Cloud.

If you want to cloud-manage FortiAP devices in an environment that includes FortiGate, then use FortiGate Cloud instead of FortiLAN Cloud.

Can FortiAP devices be managed by FortiLAN Cloud and work with FortiPresence?

Yes. FortiAP devices can be managed by FortiLAN Cloud and work with FortiPresence. For configuration details, see [Enabling FortiPresence](#) and [FortiPresence](#) documentation.

How to move a FortiAP device from account A to B?

Login into the FortiLAN Cloud account A and navigate to the network where the device is deployed. Un-deploy the FortiAP and delete it in the Inventory page. Now, deploy the FortiAP in account B of the FortiLAN Cloud using the same key.

Note: The associated data is not carried over to account B and will be stored under account A as per license agreement. Contact the *Customer Support* team for any account login/device un-deploy issues.

How can I move a FortiAP from region A to region B?

Login into the FortiLAN Cloud in region A and un-deploy the device. Ensure that the FortiAP has returned to the Inventory page.

Now, switch the FortiLAN Cloud portal to region B and deploy the FortiAP device from the Inventory page.

Why are my FortiSwitches not visible in FortiLAN Cloud?

Ensure that the user is registered on FortiCare. If not, register the user to view the FortiSwitches and related data.

Why is my license not visible in Inventory page?

The license details are synchronized at regular intervals and a registered license may take some time (next sync interval) to appear in the FortiLAN Cloud inventory page. Alternatively, you can use the refresh option to synchronize license details.

How should I apply/remove license for my devices in the Inventory page?

Select one/multiple devices and use the **Apply FortiCloud Premium/Remove FortiCloud Premium** options; you can also right-click to selected device(s) for these options.

What is difference between UTP and advance management license?

The UTP license is applicable only for FAP-U (F-series) or later models FortiAP-U family of access points.

Why is the user account I am trying to add in FortiLAN is in pending state?

The account is in a *pending* state when it is not registered in FortiCare; register your account.

How long is my data stored in FortiLAN Cloud?

Data is stored for 1 year for licensed devices and 7 days for unlicensed devices. All scheduled backup configurations are stored for 7 days irrespective of licensed or unlicensed device.

Can I transfer the license purchased to a different account?

For details and assistance on license transfer, contact the *Customer Support* team.

How do I change the primary email of my FortiLAN Cloud account ?

In the FortiLAN Cloud home page, select **Manage Account Access** and click the edit icon in the **Actions** column, enable **Set as Primary**.

Can I view wireless logs for 1 year in FortiLAN GUI?

You can configure a filter and query logs for a specific interval (default is past 24 hours) in the **Wireless Logs** page of the **Logs** section. The log data is fetched and displayed in chunks. You can also download the required logs.

