Release Notes

FortiAuthenticator 6.6.9

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FortiAuthenticator 6.6.9 Release Notes
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Change log

Date	Change Description
2026-02-09	Initial release.

FortiAuthenticator 6.6.9 release

This document provides a summary of new features, enhancements, support information, installation instructions, caveats, and resolved and known issues for FortiAuthenticator 6.6.9, build 1892.

FortiAuthenticator is a user and identity management solution that provides strong authentication, wireless 802.1X authentication, certificate management, RADIUS AAA (authentication, authorization, and accounting), and Fortinet Single Sign-On (FSSO).

For additional documentation, please visit: https://docs.fortinet.com/product/fortiauthenticator/

Special notices

TFTP boot firmware upgrade process

Upgrading FortiAuthenticator firmware by interrupting the FortiAuthenticator boot process and installing a firmware image from a TFTP server erases the current FortiAuthenticator configuration and replaces it with factory default settings.

Monitor settings for GUI access

Fortinet recommends setting your monitor to a screen resolution of 1600x1200. This allows for all the objects in the GUI to be viewed properly without the need for scrolling.

Before any firmware upgrade

Save a copy of your FortiAuthenticator configuration before upgrading the firmware. From the administrator dropdown menu in the toolbar, go to **Restore/Backup**, and click **Download Backup File** to backup the configuration.

After any firmware upgrade

Clear your browser cache before logging in to the FortiAuthenticator GUI to ensure the pages display properly.

FortiAuthenticator does not support PEAP-MAB

FortiAuthenticator only supports MAB in clear-text and not the encapsulated MAB.

SHA-1 cryptographic operations are no longer supported

FortiAuthenticator does not support SHA-1 as the SHA-1 cryptographic algorithm is no longer considered secure.

Update SHA-1 certificate signing to use SHA-2 or above for enhanced security. If this is not possible, downgrade to FortiAuthenticator version 6.5.3 for SHA-1 support.

Reconfigure LinkedIn social login

LinkedIn has changed their OAuth app API.

If you are using LinkedIn social login, you will need to reconfigure your application on LinkedIn and update your remote OAuth server for LinkedIn with the new Key and Secret after upgrading to the FortiAuthenticator 6.6.1 GA firmware.

Using remote syslog servers with Secure connection enabled

In earlier firmware versions, FortiAuthenticator did not verify if the syslog server certificate contained a valid hostname while establishing a TLS connection.

In 6.6.9, if the remote syslog server is not configured to use a server certificate with a valid hostname, FortiAuthenticator fails to negotiate the TLS connection.

What's new

FortiAuthenticator version 6.6.9 is a patch release. There are no new features. See Resolved issues on page 18 and Known issues on page 19 for more information.

Upgrade instructions

Back up your configuration before beginning this procedure. While no data loss should occur if the procedures below are correctly followed, it is recommended a full backup is made before proceeding and the user will be prompted to do so as part of the upgrade process.

For information on how to back up the FortiAuthenticator configuration, see the FortiAuthenticator Administration Guide.

FortiAuthenticator 6.6.9 requires at least 4 GB of RAM.

When FortiAuthenticator 6.6.9 is the RADIUS server and *Require client to send Message-Authenticator attribute* is enabled in *Authentication > RADIUS Service > Clients*, the RADIUS client must include the message authenticator attribute in the RADIUS authentication requests. Otherwise, FortiAuthenticator discards the RADIUS authentication requests.

When FortiAuthenticator 6.6.9 is the RADIUS client, FortiAuthenticator always includes the message authenticator attribute when sending the RADIUS authentication requests.

When *Require Message-Authenticator Attribute in Response* is enabled in *Authentication > Remote Auth. Servers > RADIUS*, FortiAuthenticator only accepts the responses that include the message authenticator attribute that was sent.

- Hardware and VM support on page 9
- Image checksums on page 10
- Upgrading from 4.x/5.x/6.x on page 10

Hardware and VM support

FortiAuthenticator 6.6.9 supports:

- FortiAuthenticator 200E
- FortiAuthenticator 300F
- FortiAuthenticator 400E
- FortiAuthenticator 800F
- FortiAuthenticator 1000D
- FortiAuthenticator 2000E
- FortiAuthenticator 3000E
- FortiAuthenticator 3000F

- FortiAuthenticator VM
  See Virtualization software support on page 15.

Image checksums

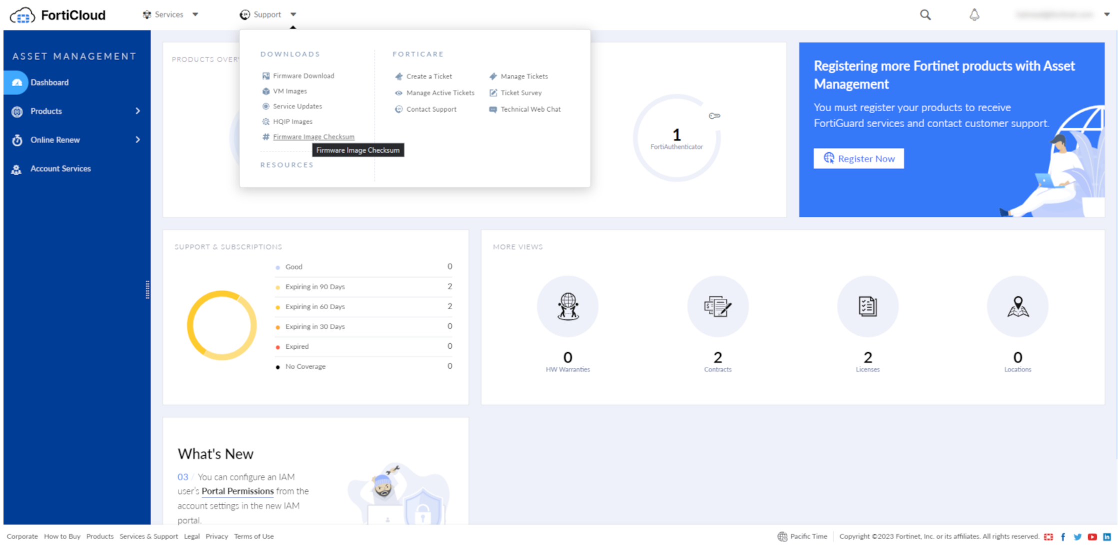
To verify the integrity of the firmware file, use a checksum tool to compute the firmware file's MD5 checksum. Compare it with the checksum indicated by Fortinet. If the checksums match, the file is intact.

MD5 checksums for software releases are available on FortiCloud.

FortiCloud image checksum tool

After logging in to FortiCloud, in the menus at the top of the page, click **Support**, then click **Firmware Image Checksum**.

In the **Image File Name** field, enter the firmware image file name including its extension, then click **Get Checksum Code** to get the checksum code.



Registering more Fortinet products with Asset Management

You must register your products to receive FortiGuard services and contact customer support.

What's New

03 / You can configure an IAM user's Portal Permissions from the account settings in the new IAM portal.

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Upgrading from 4.x/5.x/6.x

FortiAuthenticator 6.6.9 build 1892 officially supports upgrades from previous versions by following these supported FortiAuthenticator upgrade paths:

- If currently running FortiAuthenticator 6.0.5 or older, first upgrade to 6.0.7, then upgrade to 6.6.9, else the following message will be displayed: `Image validation failed: The firmware image model number is different from the appliance's.`
- If currently running FortiAuthenticator 6.0.7, then upgrade to 6.6.9 directly.
- If currently running FortiAuthenticator between 6.1.0 and 6.2.0, first upgrade to 6.3.3, then upgrade to 6.6.9.
- If currently running FortiAuthenticator 6.2.1 or later, then upgrade to 6.6.9 directly.

When upgrading existing **KVM** and **Xen** virtual machines to FortiAuthenticator 6.6.9 from FortiAuthenticator 6.0.7, you must first increase the size of the virtual hard disk drive containing the operating system image (not applicable for AWS & OCI Cloud Marketplace upgrades). See Upgrading KVM / Xen virtual machines on page 12.

Upgrade to and from FortiAuthenticator 6.0.6 is not recommended.

Ensure the hypervisor provides at least 4 GB of memory to the FortiAuthenticator-VM.

Firmware upgrade process

First, back up your configuration, then follow the procedure below to upgrade the firmware.

Before you can install FortiAuthenticator firmware, you must download the firmware image from the FortiCloud, then upload it from your computer to the FortiAuthenticator unit.

1. Log in to the FortiCloud. In the **Support > Download** section of the page, select the **Firmware Download** link to download the firmware.
2. To verify the integrity of the download, go back to the **Download** section of the login page and click the **Firmware Image Checksum** link.
3. Log in to the FortiAuthenticator unit’s web-based manager using the **admin** administrator account.
4. Upload the firmware and begin the upgrade.
   When upgrading from FortiAuthenticator 6.0.4 and earlier:
   a. Go to **System > Dashboard > Status**.
   b. In the **System Information** widget, in the **Firmware Version** row, select **Upgrade**. The **Firmware Upgrade or Downgrade** dialog box opens.
   c. In the **Firmware** section, select **Choose File**, and locate the upgrade package that you downloaded.
   When upgrading from FortiAuthenticator 6.1.0 or later:
   a. Click on the administrator name in the upper-right corner of the GUI to display the dropdown menu, and click **Upgrade**.
   b. In the **Firmware Upgrade or Downgrade** section, select **Upload a file**, and locate the upgrade package that you downloaded.
5. Select **OK** to upload the file to the FortiAuthenticator.
   Your browser uploads the firmware file. The time required varies by the size of the file and the speed of your network connection. When the file transfer is complete, the following message is shown:

   ```
   Fortinet recommends to save a copy of the current configuration before proceeding with
   firmware upgrade.
   ```

   It is recommended that a system backup is taken at this point. Once complete, click **Start Upgrade**.

   Wait until the unpacking, upgrade, and reboot process completes (usually 3-5 minutes), then refresh the page.

Due to a known issue in 6.0.x and earlier releases, the port5 and port6 fiber ports are inverted in the GUI for FAC-3000E models (i.e. port5 in the GUI corresponds to the physical port6 and vice-versa).

This is resolved in 6.1.0 and later, however, the upgrade process does not swap these configurations automatically. If these ports are used in your configuration during the upgrade from 6.0.x to 6.1.0 and later, you will need to physically swap the port5 and port6 fibers to avoid inverting your connections following the upgrade.

Upgrading KVM / Xen virtual machines

When upgrading existing KVM and Xen virtual machines from FortiAuthenticator 6.0.7 to 6.6.9, it is necessary to manually increase the size of the virtual hard disk drive which contains the operating system image before starting the upgrade. This requires file system write-access to the virtual machine disk drives, and must be performed while the virtual machines are in an offline state, fully powered down.

If your virtual machine has snapshots, the resize commands detailed below will exit with an error. You must delete the snapshots in order to perform this resize operation. Please make a separate copy of the virtual disk drives before deleting snapshots to ensure you have the ability to rollback.

Use the following command to run the resize on KVM:

```
qemu-img resize /path/to/fackvm.qcow2 1G
```

Use the following command to run the resize on Xen:

```
qemu-img resize /path/to/facxen.qcow2 1G
```

After this command has been completed, you may proceed with the upgrade from 6.0.7 to 6.6.9

Recovering improperly upgraded KVM / Xen virtual machines

If the upgrade was performed without completing the resize operation above, the virtual machine will fail to properly boot, instead displaying many **initd** error messages. If no snapshots are available, manual recovery is necessary.

To recover your virtual machine, you will need to replace the operating system disk with a good copy, which also requires write-access to the virtual hard disks in the file system while the virtual machines are in an offline state, fully powered down.

To recover an improperly upgraded KVM virtual machine:

1. Download the 6.0.7 GA ZIP archive for KVM, **FAC_VM_KVM-v6-build0059-FORTINET.out.kvm.zip**.
2. Extract the archive, then replace your virtual machine's **fackvm.qcow2** with the one from the archive.
3. Execute the following command:

   ```
   qemu-img resize /path/to/fackvm.qcow2 1G
   ```

To recover an improperly upgraded Xen virtual machine:

1. Download the 6.0.7 GA ZIP archive for Xen, **FAC_VM_XEN-v6-build0059-FORTINET.out.xen.zip**.
2. Extract the archive, then replace your virtual machine's **facxen.qcow2** with the one from the archive.
3. Execute the following command:

```
qemu-img resize /path/to/facxen.qcow2 1G
```

Product integration and support

FortiAuthenticator supports the following:

- Web browser support on page 14
- FortiOS support on page 14
- Fortinet agent support on page 14
- Virtualization software support on page 15
- Third-party RADIUS authentication on page 15

Web browser support

The following web browsers are supported by FortiAuthenticator 6.6.9:

- Microsoft Edge version 144
- Mozilla Firefox version 147
- Google Chrome version 144

Note: Other web browsers may function correctly, but are not supported by Fortinet.

FortiOS support

FortiAuthenticator 6.6.9 supports the following FortiOS versions:

- FortiOS v7.6.x
- FortiOS v7.4.x
- FortiOS v7.2.x
- FortiOS v7.0.x
- FortiOS v6.4.x
- FortiOS v6.2.x
- FortiOS v6.0.x

Fortinet agent support

FortiAuthenticator 6.6.9 supports the following Fortinet Agents:

- FortiClient v.6.x , v.7.x for Microsoft Windows and macOS (Single Sign-On Mobility Agent)
- For FortiAuthenticator Agents for Microsoft Windows and Outlook Web Access compatibility with FortiAuthenticator, see the *Agents Compatibility Matrix* on the Fortinet Docs Library.

  Note that the FortiAuthenticator Agents for Microsoft Windows and OWA download files are now available in the `FortiTrustID_Agents` folder in *Support > Firmware Download* on FortiCloud.
- FSSO DC Agent v.5.x
- FSSO TS Agent v.5.x

Other Agent versions may function correctly, but are not supported by Fortinet.

For details of which operating systems are supported by each agent, please see the install guides provided with the software.

Note: FortiAuthenticator Agent for Microsoft Windows 4.0 and above required to support emergency offline access. Also, FortiAuthenticator Agent for Microsoft Windows below 4.0 compatible for all other features.

Virtualization software support

FortiAuthenticator 6.6.9 supports:

- VMware ESXi / ESX 6/7/8
- Microsoft Hyper-V 2010, Hyper-V 2016, Hyper-V 2019, and Hyper-V 2022
- Linux Kernel-based Virtual Machine (KVM) on Virtual Machine Manager and QEMU 2.5.0
- Xen Virtual Machine (for Xen HVM)
- Nutanix
- AWS (Amazon Web Services)
- Microsoft Azure
- Oracle OCI
- Alibaba Cloud
- Saudi Cloud Computing Company (SCCC) and alibabacloud.sa domain (a standalone cloud backed by AliCloud)
- Proxmox

Support for HA in Active-Passive and Active-Active modes has not been confirmed on the FortiAuthenticator for Xen VM at the time of the release.

See FortiAuthenticator-VM on page 17 for more information.

Third-party RADIUS authentication

FortiAuthenticator uses standards based RADIUS for authentication and can deliver two-factor authentication via multiple methods for the greatest compatibility:

- RADIUS Challenge Response - Requires support by third party vendor.
- Token Passcode Appended - Supports any RADIUS compatible system.

FortiAuthenticator should therefore be compatible with any RADIUS capable authentication client / network access server (NAS).

FortiAuthenticator-VM

For information about FortiAuthenticator-VM deployments and system requirements, see the VM installation guide on the Fortinet Docs Library.

Resolved issues

The resolved issues listed below may not list every bug that has been corrected with this release. For inquiries about a particular bug, please contact Technical Support within the FortiCare portal.

Bug ID	Description
1250485	OpenSSL 3.5.1-3.5.5 security fixes.

Known issues

This section lists the known issues of this release, but is not a complete list. For inquiries about a particular bug, please contact Technical Support within the FortiCare portal.

Bug ID	Description
801933	LDAP service logs 'LDAP_FAC' as the source IP address instead of the LDAP client IP address.
874293	FortiAuthenticator picks the incorrect IP address from the proxied requests of the header when multiple headers are used in a request.
971708	Avoid using the default 'admin' account in AWS since restoring config resets its password to `instance-id`.
973414	Downloading large Summary Debug Report from the GUI leads to Gateway Timeout error.
997200	SAML IdP Proxy not able to retrieve group memberships from remote the OpenLDAP server.
1010053	Gateway Timeout Error on the GUI when doing a Manual Sync for a Remote User Sync rule with a large number of users (users are synced).
1010853	Invalid URL link in the password reset email when the username contains special UTF8 characters.
1026106	Failed to add a new Fido key in Google Chrome with Bitwarden extension.
1027581	SCIM server does not support provisioning user accounts with FTM.
1033509	Log message should be recorded when SAML the user session expires.
1037946	SMS does not replace replacement message tag `{{:random_id_64}}` with random 64-char value.
1048961	Cannot change user portal policy priority order (403 Forbidden) if the captive portal is disabled for all the network interfaces.
1068878	Cannot access FortiAuthenticator portals with IPv6 address if the interface does not also have an IPv4 address.
1072845	Accounting requests sent by FortiGate over RADsec are ignored causing time out on the FortiGate.
1084364	Optimize heartbeat packets sent in load-balancing HA mode.
1084583	Exporting raw logs does not reflect filter selection on the GUI.
1084900	Device Self-Enrollment in the legacy self-service portal not working with placeholder variables `{{:cn}}` for cert SAN fields.

Bug ID	Description
1091168	Push notifications do not work if using UPN format username in the Window FortiAuthenticator Agent.
1098310	Gateway Timeout occurs when downloading the config backup with a very large number of users.
1108618	RADIUS MFA bypass not working for users with FTC/Email or FTC/SMS.
1128643	FortiAuthenticator does not include rootCA cert in CMP initialization response as required by `3GPP TS.33.310`.
1130853	RADIUS client import via CSV does not support '.' (dot) character in the RADIUS client name.
1133973	Delay in updating the user counts after a CSV import.
1134745	Changes to adaptive MFA rules in the admin UI are not logged.
1134748	Generate a log entry when creating/editing/deleting a Zero Trust Tunnel.
1134749	Generate a log entry when starting or downloading a packet capture.
1134751	Generate a log entry when there are changes made to NetHSM.
1135277	Changes to mobile number or email address of guest users are not logged.
1138014	'Username' is allowed as a password for IAM User.
1139476	Gateway Timeout when loading local users page with large number of users.
1139721	Secure connection to remote syslog server does not verify server cert against CRL.
1140601	CLI logins attempts that fail without a successful follow-up are not being logged.
1140901	Missing log for 'Failed login attempt not followed by successful login' on RADIUS authentications.
1141778	FortiAuthenticator GUI shows multiple Organization RDNs in subject but actual certificate only contains one.
1142209	PCI DSS SAML portal immediately fails on incorrect passwords if the IP falls under a trusted subnet.
1143190	Self-service portal shows empty page when all post-login options are disabled.
1143578	MFA bypass does not work if the previous user portal authentication used password + token concatenation.
1144145	RADIUS bypasses MAC filtering and authorization checks for EAP-MSCHAPV2 2FA when FortiToken push is used.
1144845	FortiAuthenticator should not present SAML captcha when performing a proxy authentication.
1145628	SAML IdP FIDO authentication fails on first try after FCT disconnect/reconnect.

Bug ID	Description
1148829	SCEP enrollment fails when certmonger client sends really large GET request URI (exceeds maximum length of 8190 bytes).
1149569	Rename 'Trusted subnets' LB HA category to 'Trusted subnets and adaptive MFA rules.'
1152927	OAuth General setting (User Login session lifetime) does not sync over the LB node when OAuth service is enabled for HA LB sync.
1155278	Importing local users using FortiGate configuration file fails.
1156684	Non-fatal `load_license` error message on the console after restoring the config.
1157157	Radius sessions incorrectly labeled with 'external' user type due to username case-sensitivity mismatch.
1157369	When saving a user, even if no changes are made, a PUT request is sent to the FTC server.
1157400	ftcd error log improvement.
1157522	FortiAuthenticator OWA Agent MFA bypass option for users without token configured not working against FortiAuthenticator 6.6.
1159384	Log backups to FTP server failing repeatedly prevents log auto-deletion.
1160794	Time-cap full database repair operation initiated by load-balancing sync daemon on startup/admin request from GUI.
1169005	Need to do CRL check for full certificate chain when doing LDAPS connection to a remote LDAP server.
1170731	FortiAuthenticator HA cluster forming/routing issues in an OpenStack environment.
1171320	Admin UI should not allow selecting an OU in the LDAP tree browser for 'Set Group.'
1178589	Typo in tooltip of Event 4768 in Event ID selection (displays 6768 instead of 4768).
1179387	Unable to use a certificate with multiple SAN as the RADSec server certificate.
1180386	Permanent IP address based lockout cannot be unlocked in the GUI.
1181816	IP address lockout time reset by unknown user.
1183726	Failed tiered FSSO TLS connection due to invalid disk copy of firmware certificate signed by Fortinet CA2 on FortiAuthenticator-3000F.
1189168	Revoking of certificate is not seen with OCSP until FortiAuthenticator reboot.
1192375	500 internal server error when provisioning a user with an FTM token in the self-service portal.

Bug ID	Description
1192926	Cluster not forming with error 'PGRES_FATAL_ERROR ERROR: payload string too long.'
1194901	Default to 'https' format for 'IdP entity id' field in SAML Service Provider config.
1195161	HSTS: Increase default max-age and include 'includeSubDomains' directive when HSTS enabled.
1196760	Failed to restore configuration just after factory reset due to 'Database restore failed:.'
1196880	Mismatched Cert/key in the LB secondary side.
1198348	“500 Internal server error” when 'Let registrant specify their endorser' is selected and set to 'enter manually' on Portal.
1204521	Zero-Trust Tunnel continues working even after server certificate is revoked.
1212698	Unable to create a user certificate with OCSP URL when root domain contains a digit.
1212936	Group filtering not properly enforced by OAuth when accessing second RP.
1218888	Local users REST API with LDAP auto-provisioning does not work.
1219592	Usage Profile allowing users to go over threshold for 30-90 seconds after reaching data quota.
1220308	SAML Sync Rule with No OTP method generates excessive logs.
1220448	HA tables showing Out of Sync intermittently when tables are actually in sync.
1223330	If a FortiGate filter includes group name starting with 'OU=', FAC stripping the leading 'OU=' from that group name in FSSO sessions.
1223352	Too many static routes (5+) on unlicensed VM breaks route setup upon reboot.
1223922	Admin UI crash after CLI allows creating more static routes than the license limit.
1225477	FTM activation may fail with 'Activation Code is invalid' when sync rules run concurrently.
1229075	SSO Webservices: 'Self-Service portal policies' search function show that 'the results could not be loaded.'
1231262	LDAP service user search returns wrong responses to ~1 of 10K requests under heavy load and 200K users.
1231468	Admin users cannot enable the 'allow LDAP browsing' feature.
1231472	500 error when logging in with an IAM user to the OAuth portal.
1232965	SCIM client crash on restart.
1233747	RADIUS service may take a long time to restart after config changes under degraded LDAP server conditions.

Bug ID	Description
1234449	Admin GUI login fails with third-party RADIUS push MFA; longer timeout setting not applied.
1236010	500 server error when importing certificate with invalid format into remote SAML server.
1238552	Locked-out IP addresses are getting unlocked before configured lockout period.
1244740	FortiAuthenticator allows a maximum of 255 TACACS+ service attributes.
1247171	FortiAuthenticator SAML IdP User source setting 'search local users first' has no effect. It is called after authentication.

Maximum values for hardware appliances

The following table lists the maximum number of configuration objects per FortiAuthenticator appliance that can be added to the configuration database for different FortiAuthenticator hardware models.

Similar to the FortiAuthenticator-VM, the FortiAuthenticator hardware appliances permit stacking licenses.

The maximum values in this document are the maximum configurable values and are not a commitment of performance.

Similar to the FortiAuthenticator-VM, when user license upgrades are applied, the corresponding metrics increase proportionally. For example, a FortiAuthenticator-300F with a base license supports 1500 users, which allows 1500 ÷ 5 = 300 user groups.

If the customer upgrades the FortiAuthenticator-300F to the maximum of 3500 users, the number of user groups becomes 3500 ÷ 5 = 700.

Refer to the Maximum values for VM on page 30 section for all parameters, features, and their corresponding metrics.

System > Network

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Static Routes	50	50	50	50	50	50	50	50

System > Messages

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
SMTP Servers	20	20	20	20	20	20	20	20
SMS Gateways	20	20	20	20	20	20	20	20
SNMP Hosts	20	20	20	20	20	20	20	20

System > Administration

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Syslog Servers	20	20	20	20	20	20	20	20
User Uploaded Images	40	90	115	415	515	1015	2015	2015
Language Files	50	50	50	50	50	50	50	50

Realms

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Realms	20	60	80	320	400	800	1600	1600

Authentication > General

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Auth Clients (NAS)	166	500	666	2666	3333	6666	13333	13333
Users (Local+ Remote)[1]	500	1500/ 3500*	2000	8000/ 18000*	10000	20000	40000/ 140000*	40000/ 140000*
User RADIUS Attributes	1500	4500	6000	24000	30000	60000	120000	120000
User Groups	100	300	400	1600	2000	4000	8000	8000
Group RADIUS Attributes	150	450	150	2400	600	6000	12000	12000
FortiTokens	1000	3000	4000	16000	20000	40000	80000	80000
FortiToken Mobile Licenses [2]	200	200	200	200	200	200	200	200
LDAP Entries	1000	3000	4000	16000	20000	40000	80000	80000
Device (MAC based Auth.)	2500	7500	10000	40000	50000	100000	200000	200000
RADIUS Client Profiles	500	1500	2000	8000	10000	20000	40000	40000
Remote LDAP Users Sync Rule	50	150	200	800	1000	2000	4000	4000
Remote LDAP User Radius Attributes	1500	4500	6000	24000	30000	60000	120000	120000

Remote authentication servers

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Remote LDAP Servers	20	60	80	320	400	800	1600	1600
Remote RADIUS Servers	20	60	80	320	400	800	1600	1600
Remote SAML Servers	20	60	80	320	400	800	1600	1600
Remote OAuth Servers	20	60	80	320	400	800	1600	1600
Remote TACACS+ Servers	20	60	80	320	400	800	1600	1600

FSSO & Dynamic Policies

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
FSSO Users	500	1500	2000	8000	10000	20000	200000[3]	200000
FSSO Groups	250	750	10000	4000	5000	10000	20000	20000
Domain Controllers	10	15	20	80	100	200	400	400
RADIUS Accounting SSO Clients	166	500	666	2666	3333	6666	13333	13333
FortiGate Group Filtering	250	750	1000	4000	5000	10000	20000	20000
FSSO Tier Nodes	5	15	20	80	100	200	400	400
IP Filtering Rules	250	750	1000	4000	5000	10000	20000	20000

Accounting Proxy

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Sources	500	1500	2000	8000	10000	20000	40000	40000
Destinations	25	75	100	400	500	1000	2000	2000
Rulesets	25	75	100	400	500	1000	2000	2000

Certificates > User Certificates

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
User Certificates	2500	7500	10000	40000	50000	100000	200000	200000
Server Certificates	50	150	200	800	1000	2000	4000	4000

Certificates > Certificate Authorities

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
CA Certificates	10	10	10	50	50	50	50	50
Trusted CA Certificates	200	200	200	200	200	200	200	200
Certificate Revocation Lists	200	200	200	200	200	200	200	200

Certificates > SCEP

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Enrollment Requests	2500	7500	10000	40000	50000	100000	200000	200000

Certificates > CMP

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
Enrollment Requests	2500	7500	10000	40000	50000	100000	200000	200000

Services

Feature	200E	300F	400E	800F	1000D	2000E	3000E	3000F
FortiGate Services	50	150	200	800	1000	2000	4000	4000
TACACS+ Services	50	150	200	800	1000	2000	4000	4000

[1] Users includes both local and remote users.

[2] **FortiToken Mobile Licenses** refers to the licenses that can be applied to a FortiAuthenticator, not the number of FortiToken Mobile instances that can be managed. The total number is limited by the FortiToken metric.

[3] For the 3000E model, the total number of concurrent SSO users is set to a higher level to cater for large deployments.

* Upper limit

Maximum values for VM

The following table lists the maximum number of configuration objects that can be added to the configuration database for different FortiAuthenticator virtual machine (VM) configurations.

The maximum values in this document are the maximum configurable values and are not a commitment of performance.

The FortiAuthenticator-VM is licensed based on the total number of users and licensed on a stacking basis. All installations must start with a FortiAuthenticator-VM Base license and users can be stacked with upgrade licenses in blocks of 100, 1,000, 10,000 and 100,000 users. Due to the dynamic nature of this licensing model, most other metrics are set relative to the number of licensed users. The **Calculating metric** column below shows how the feature size is calculated relative to the number of licensed users for example, on a 100 user FortiAuthenticator]-VM Base License, the number of auth clients (RADIUS and TACACS+) that can authenticate to the system is:

100 / 3 = 33

Where this relative system is not used e.g. for static routes, the **Calculating metric** is denoted by a "**-**". The supported figures are shown for both the base VM and a 5000 user licensed VM system by way of example.

Feature		Model			
		Unlicensed VM	Calculating metric	Licensed VM (100 users)	Example 5000 licensed user VM
System					
Network	Static Routes	2	50	50	50
Messaging	SMTP Servers	2	20	20	20
	SMS Gateways	2	20	20	20
	SNMP Hosts	2	20	20	20
Administration	Syslog Servers	2	20	20	20
	User Uploaded Images	19	Users / 20	19 (minimum)	250
	Language Files	5	50	50	50
Authentication					
General	Auth Clients (RADIUS and TACACS+)	3	Users / 3	33	1666

Feature		Model			
		Unlicensed VM	Calculating metric	Licensed VM (100 users)	Example 5000 licensed user VM
	Authentication Policy (RADIUS and TACACS+)	6	Users	100	5000
Remote authentication servers	Remote LDAP Servers	4	Users / 25	4	200
	Remote RADIUS Servers	1	Users / 25	4	200
	Remote SAML Servers	1	Users / 25	4	200
	Remote OAuth Servers	1	Users / 25	4	200
	Remote TACACS+ Servers	1	Users / 25	4	200
User Management	**Users** (Local + Remote)[1]	5	***********	100	5000
	User RADIUS Attributes	15	Users x 3	300	15000
	User Groups	3	Users / 5	20	1000
	Group RADIUS Attributes	9	User groups x 3	30	1500
	FortiTokens	10	Users x 2	200	10000
	FortiToken Mobile Licenses (Stacked) [2]	3	200	200	200
	LDAP Entries	20	Users x 2	200	10000
	Device (MAC-based Auth.)	5	Users x 5	500	25000
	Remote LDAP Users Sync Rule	1	Users / 10	10	500
	Remote LDAP User Radius Attributes	15	Users x 3	300	15000
	Realms	2	Users / 25	4	200
FSSO & Dynamic Policies					

Feature		Model			
		Unlicensed VM	Calculating metric	Licensed VM (100 users)	Example 5000 licensed user VM
FSSO	FSSO Users	5	Users	100	5000
	FSSO Groups	3	Users / 2	50	2500
	Domain Controllers	3	Users / 100 (min=10)	10	50
	RADIUS Accounting SSO Clients	10	Users	100	5000
	FortiGate Group Filtering	30	Users / 2	50	2500
	FSSO Tier Nodes	3	Users /100 (min=5)	5	50
	IP Filtering Rules	30	Users / 2	50	2500
	FSSO Filtering Object	30	Users x 2	200	10000
Accounting Proxy	Sources	3	Users	100	5000
	Destinations	3	Users / 20	5	250
	Rulesets	3	Users / 20	5	250
Certificates					
User Certificates	User Certificates	5	Users x 5	500	25000
	Server Certificates	2	Users / 10	10	500
Certificate Authorities	CA Certificates	3	Users / 20	5	250
	Trusted CA Certificates	5	200	200	200
	Certificate Revocation Lists	5	200	200	200
SCEP	Enrollment Requests	5	Users x 5	500	25000
CMP	Enrollment Requests	5	Users x 5	500	25000
Services					
	FortiGate Services	2	Users / 10	10	500
	TACACS+ Services	5	Users / 10	10	500

[1] Users includes both local and remote users.

[2] **FortiToken Mobile Licenses** refers to the licenses that can be applied to a FortiAuthenticator, not the number of FortiToken Mobile instances that can be managed. The total number is limited by the FortiToken metric.

Data-at-rest protection

FortiAuthenticator protects data-at-rest in the following ways:

- Data secrets for which FortiAuthenticator needs access to the plaintext for operations are encrypted with AES256-CBC with a random initialization vector (IV) and a key-encryption key (KEK).
- Data secrets for which access to the hashed is sufficient for operations are encrypted using SHA256 with a random salt.
- Symmetric encryption keys are used for debug logs and config files.
- The FortiAuthenticator file system is encrypted.

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