

FortiDDoS and FortiDDoS CM 5.6.0

Release Notes

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FortiDDoS & FortiDDoS CM 5.6.0 Release Notes

Revision 1

TABLE OF CONTENTS

Change Log	5
Introduction	6
Introduction to FortiDDoS	6
Introduction to FortiDDoS Central Manager (FortiDDoS-CM)	6
What's new	7
FortiDDoS	7
FortiDDoS-CM	7
Image checksums	9
FortiDDoS	10
Hardware support	11
Special Notes for FortiDDoS 5.6.0	11
Updating firmware on HA cluster	12
Upgrading	13
Supported upgrade paths For B-series:	13
Supported upgrade paths For E-series:	13
Section 1: Upgrading using GUI	16
Section 2: Upgrading via CLI	18
Section 3: Upgrading via BIOS	20
Sample console log	22
Downgrading	25
Factory reset	27
Resolved issues	28
Known issues	29
FortiDDoS-CM	31
Introduction to FortiDDoS-CM	32
Special Notes for CM	33
FortiDDoS-CM hardware support	34
Installing FortiDDoS-CM	35
Upgrading FortiDDoS-CM	35
Upgrading using GUI	35
Upgrading using CLI	36
Downgrading FortiDDoS-CM	36
Downgrading using GUI	36

Downgrading using CLI.....	37
Resolved issues in FortiDDoS-CM.....	38
Known issues in FortiDDoS-CM.....	39

Change Log

Date	Change Description
2022-05-04	Initial release of FortiDDoS 5.6.0 Release notes.

Introduction

Introduction to FortiDDoS

This document provides a list of new features and known issues for FortiDDoS 5.6.0 build 0354, including ASIC Version: 5600015f Date: Mar 15, 2022.

FortiDDoS is a network behavior anomaly (NBA) prevention system that detects and blocks network attacks that are characterized by excessive use of network resources. These attacks are known as Distributed Denial of Service (DDoS) attacks.

For additional documentation, please visit: <http://docs.fortinet.com/fortiddos>

Introduction to FortiDDoS Central Manager (FortiDDoS-CM)

This document provides a list of new features and known issues for FortiDDoS-CMVM 5.6.0 build 0354

FortiDDoS-CM is designed to manage multiple FortiDDoS appliances with shared management attributes.

For specific FortiDDoS-CM information, proceed to the section - FortiDDoS-CM

For additional documentation, please visit: <http://docs.fortinet.com/fortiddos>

What's new

FortiDDoS

FortiDDoS 5.6.0 release includes the following new features and enhancements:

- Additional TCP Flag Flood Mitigation has been added for Asymmetric Mode deployments.
- TLS 1.2 support for email. The PDF attachment MIME type has been modified to prevent the attachment being seen as spam.
- New GUI image is displayed when FortiDDoS is updating or rebooting.
- Improved Event logging for changes to Domain Reputation, IP Reputation and LQ Upload.
- The existing Dashboard Data Path Resources table provides a real-time snapshot of system table occupancy. A new graph set has been added for each of the thirteen parameters under Monitor > Data Path Resources. Graphs can be displayed from 1-Hour to 1-Year.
- New AES256 and AES256Cisco security options added to SNMPv3 settings.
- Monitor > Packet Length graphs have been removed.
- IP Reputation Categories added for TOR nodes, Spam and Phishing.
- You can now merge Traffic Statistics from the Secondary appliance with the Traffic Statistics of the Primary appliance. System Recommendations can then be created based on the merged data and applied to both appliances.
- Added success/fail Event Log messages for any attempt to access external email servers for sending Alert emails.
- Name and comment fields have been extended to support 40 characters.
- Admin users can now execute test messages for both attack and event syslogs.
- FortiDDoS DNS inspection now supports mixed-case FQDNs (called "0x20" in the industry) for LQ, TTL, DQRM, Domain ACLs and Domain Reputation. This can be useful for protecting and preventing false-positive drops for Authoritative servers and for protecting DNS Resolvers with DQRM, Domain ACLs and Domain ACLs.
- ICMP Type/Code Anomaly has been updated to reflect added/removed ICMP Types and Codes to 2021Q4.
- Global ACLs can no longer be edited. To change a Global ACL, delete it everywhere and replace it.
- Users can now upgrade the Factory SSL Certificate to stronger cipher suites and 2048-bit keys using the following CLI commands: `execute local-certificate upgrade` and `execute local-certificate factory`.
- Added Event Log message to warn that IP/Domain Reputation has expired but system is still trying to access FortiGuard.
- Support for 25GE QSFP28 interfaces has been removed.
- When DNS Cache is enabled, there are now 3 options when there is a Cache miss: Drop the packet, send a TC=1 or forward the packet to the server.
- Username allowed characters are extended to a-z, 0-9, ., -, _ . No other characters are allowed.
- Due to security concerns, users can no longer access FortiDDoS via HTTP (TCP Port 80) with referral to HTTPS.
- The total number of GRE endpoints (for inspection of GRE return traffic from Cloud DDoS partners) is increased to 32.

FortiDDoS-CM

FortiDDoS-CM 5.6.0 release includes the following new features and enhancements:

- FortiDDoS-CM can now optionally synchronize Thresholds among a group of similar appliances.

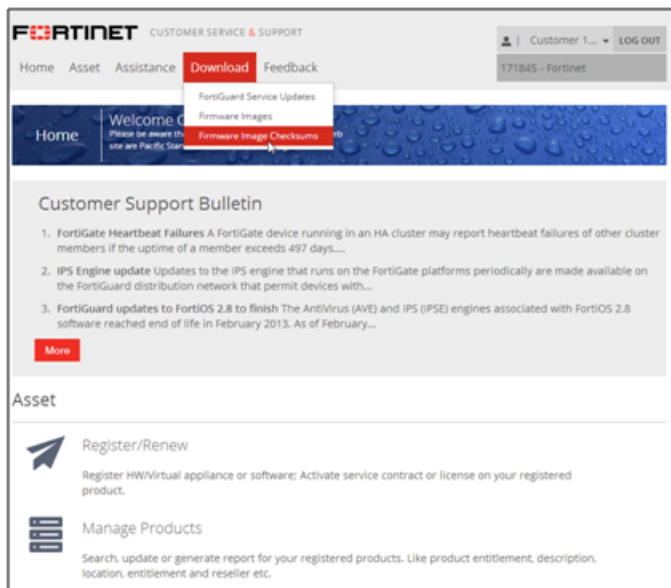
Image checksums

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 from Fortinet Customer Service & Support:

<https://support.fortinet.com>

Figure 1: Customer Service & Support image checksum tool



After logging in to the web site, in the menus at the top of the page, click **Download**, and then click **Firmware Image Checksums**.

Alternatively, near the bottom of the page, click the **Firmware Image Checksums** button. (The button appears only if one or more of your devices have a current support contract.) In the Image File Name field, enter the firmware image file name including its extension, then click **Get Checksum Code**.

FortiDDoS

This section includes the following topics specific to FortiDDoS release 5.6.0:

"Hardware support" on page 11

"Special Notes for FortiDDoS 5.6.0" on page 11

"Updating firmware on HA cluster" on page 12

"Upgrading" on page 13

"Section 1: Upgrading using GUI" on page 16

"Section 2: Upgrading via CLI" on page 18

"Section 3: Upgrading via BIOS" on page 20

"Sample console log" on page 22

"Downgrading" on page 25

"Factory reset" on page 27

"Resolved issues" on page 28

"Known issues" on page 29

For topics specific to FortiDDoS Central Manager, see [FortiDDoS-CM](#).

Hardware support

This release supports the following hardware models:

- FortiDDoS 1500E
- FortiDDoS 2000E
- FortiDDoS 2000E-DC
- FortiDDoS 200B
- FortiDDoS 400B
- FortiDDoS 600B
- FortiDDoS 800B
- FortiDDoS 900B
- FortiDDoS 1000B
- FortiDDoS 1000B-DC
- FortiDDoS 1200B
- FortiDDoS 2000B
- FortiDDoS 2000B-USG

NOTE: FortiDDoS B series appliances require firmware release 5.5.1.

NOTE: FortiDDoS A series models are not supported.

Special Notes for FortiDDoS 5.6.0

In Releases prior to 5.4.0 E-Series Physical ports defaulted to Forward Error Correction (FEC) enabled with no GUI options to change that. GE/10GE do not normally support or require FEC but 40GE and 100GE ports may use either depending on the settings of connected devices.

In 5.4.0 and later, FEC is set to default DISABLED with per-port options to enable it. This has no affect on GE or 10GE ports, which must be left with FEC disabled. If 40GE or 100GE Ports were used and operating in 5.3.0 (FEC enabled by default), they will fail on upgrade since FEC will be disabled.

To fix, after upgrade, go to *System > Network > Interface* and edit ports 17-20 to select correct FEC settings.

Updating firmware on HA cluster

Note the following before upgrade:

- Upgrading FortiDDoS requires at least one reboot of each appliance and can be disruptive of network traffic depending on fail-open/closed conditions and RSTP/BGP settings of surrounding switches. This procedure assumes production traffic on the Master appliance with an upgrade of the Slave appliance first. This procedure can be reversed – move traffic to the Slave, upgrade the master, revert traffic and upgrade the Slave.
- If both devices are carrying production traffic (each appliance is on one leg of an asymmetric traffic environment), ensure both devices support fail-open and perform in a maintenance window.
- Do not modify any configuration settings when systems are in Standalone Mode. Any configuration changes may cause the Slave unit to reboot when returning to the HA pair.

To update the firmware of an HA cluster:

1. Verify that the cluster node members are powered on and available.
2. Log into the web UI of the Master node with an account whose access profile contains **Read** and **Write** permissions in the Maintenance and HA categories.
3. Backup the configuration.
4. Go to System > High Availability and note or take a screenshot of all settings on this page.
5. Change the HA mode from Active-Passive to Standalone.
6. Repeat steps 2-4 on the Slave system.
Note: Having both systems in Standalone mode is important for this procedure.
7. On the Slave system, follow the upgrade procedure as instructed in the Release Note [upgrading](#) section. (This assumes that the traffic is currently on the Master system.)
8. Once the Slave system is upgraded, leave the Slave in Standalone Mode and move traffic to the Slave.
9. On the Master system, follow the upgrade procedure as instructed in the Release Note [Upgrading](#) section.
10. When upgrade of the Master system is complete, while still connected to the Master, go to System > High Availability. Confirm or set all HA settings that you retrieved from Step 4. Ensure that the Device priority is set to a higher priority (lower number) than what you have recorded for the Slave system. Then change the Master system Configured HA Mode to 'Active-Passive'.
11. Revert traffic to the Master system.
12. On the Slave appliance, go to System > High Availability. Confirm all settings from those you recorded in Step 4 and confirm or set the Device Priority to a lower priority (higher number) than the Master system. Then change Configured HA Mode to 'Active-Passive'.
13. Depending on what Release you are upgrading from, new configuration information may be available on the Master system that is not in the Slave. When the Slave sees this configuration mismatch, it will reboot in order to synchronize its configuration with the Master. This is normal and will only occur once. Once both units are synchronized, changes in the Master are synchronized to the Slave without further reboots.

Upgrading

Supported upgrade paths For B-series:

Use the following instructions to upgrade to FortiDDoS 5.6.0.

Steps	Current Release	Upgrade method	Upgrade path
1	<4.1.5	BIOS ONLY	<ol style="list-style-type: none"> 1. Upgrade to 4.1.5. 2. Upgrade to 4.2.3. Follow Step 2. 3. Upgrade to 5.6.0. Follow Step 3. Refer to section 3 for detailed upgrade procedure.
2	4.1.5 to 4.2.2	GUI/CLI/BIOS	<ol style="list-style-type: none"> 1. Upgrade to 4.2.3. 2. Upgrade to 5.6.0. Follow Step 3.
3	4.2.3 to 5.4.0	GUI/CLI/BIOS	<ol style="list-style-type: none"> 1. Upgrade directly to 5.6.0. Refer to sections 1, 2 or 3 for detailed upgrade procedure.

Supported upgrade paths For E-series:

Use the following instructions to upgrade to FortiDDoS 5.6.0.

Steps	Current Release	Upgrade method	Upgrade path
1	5.0.0 to 5.4.0	GUI/CLI/BIOS	<ol style="list-style-type: none"> 1. Upgrade directly to 5.6.0. Refer to sections 1, 2 or 3 detailed upgrade procedure.



FortiDDoS TP2/TP3 hardware takes longer to upgrade than x86-based systems. Prepare your maintenance window to accommodate at least 20 minutes for the upgrade (most will not take this long but some may). In some cases, you need to upgrade to an intermediate release before the final upgrade (2 x 20 minutes). Plan accordingly, after you understand the upgrade path from the table below. We strongly recommend that while you can upgrade via GUI, you also connect to the console port, which will provide status messages during the upgrade process, while the GUI is offline.

To track the progress of upgrade from any version, check the console. While the back-end processes are initializing after an upgrade, a rotating GIF of several icons is displayed on the browser until the system is ready to accept login.

Clear your browser cache after upgrade to ensure new features are displayed correctly once logged-in.

Prerequisites

- The procedures explain the upgrade from 4.2.3 or higher. If your system is not at 4.2.3, refer to the table above and follow the instructions.
- Download the correct 5.6.0 firmware file for your model from the Fortinet Technical Support website: <https://support.fortinet.com/>.
- Check that the upgrade info file is available on your FortiDDoS system:
 - On the Dashboard page, click the CLI Console window to connect and see the command (#) prompt.
 - Enter: `f cat /var/log/upgrade_info.txt`
 - Check that the X,Y,Z number you see looks like the current Release of the system (from the Dashboard page. This file is needed to properly upgrade your system.

Example:

```
FI200B3914000071 # f cat /var/log/upgrade_info.txt
4,7,0FI200B3914000071 #
```

- **Back up your configuration before beginning this procedure:**
 - If you later revert to an earlier firmware version, the active configuration is deleted, and you will want to restore the configuration that worked well with the earlier version.
 - Attempting to use a system configuration from a newer firmware release on a downgraded firmware release may have unexpected results.
- Make a note of configuration items that are disabled in your active configuration. Configurations that are not enabled are not preserved in the upgrade to 5.6.0. For example, if a custom HTTP service port, log remote port, or event log port have been configured and then disabled in an earlier version, the configuration information is not preserved in the upgrade to 5.6.0.
- After upgrade you may need to regenerate system recommended Thresholds. Before upgrading, go to Protection Profiles > Thresholds > Scalars and for each SPP, use the 'Save as CSV' in the top right corner of the GUI. This will allow you to compare pre- or post-upgrade/new Recommended Threshold values.
- You must have super user permission (user admin) to upgrade firmware.

IMPORTANT:

- Releases 4.1.6, 4.1.8, 4.2.0, 4.5.0 and 4.7.0 included improvements to System Recommended Thresholds and Threshold ranges. If you upgraded from any version lower than 4.7.0, take the following additional steps after the upgrade to 5.6.0 has completed and the system has restarted:
- **If you upgraded from any Release lower than 4.2.0:** If you have DNS server(s), create a DNS SPP and SPP Policies to place the server IP(s) inside the DNS SPP. Set all DNS anomalies ON for that SPP. Leave that SPP in learning mode (no Thresholds and in Detection mode only) for as long as possible (recommended period is one week). After one week, run the Traffic Statistics and set System Recommended Thresholds. Then run for several days with Thresholds set to look for false-positives and tune if needed. Check for the volume of Anomalies. It should be a few per 5-minute reporting cycle. If there are many, remove DNS Anomalies and contact [Fortinet Support](#).
- **If you upgraded from any Release between 4.2.0 and 5.0.0:** For every other SPP, about one week after the upgrade, run Traffic Statistics and set System Recommended Thresholds. This will create Thresholds that were not included in earlier Releases. Review the new Thresholds against the saved Threshold CSVs. **Note:** Review the TCP and UDP port thresholds from 1-9999. These may be higher in 5.1.0. This is design-intent. Ignore ports above 10,000. After the new System Recommended Thresholds have been set, it is recommended that the SPPs affected be placed in Detection Mode for a few days to check for false-positives and tune if needed. If in doubt, contact [Fortinet Support](#) for assistance.

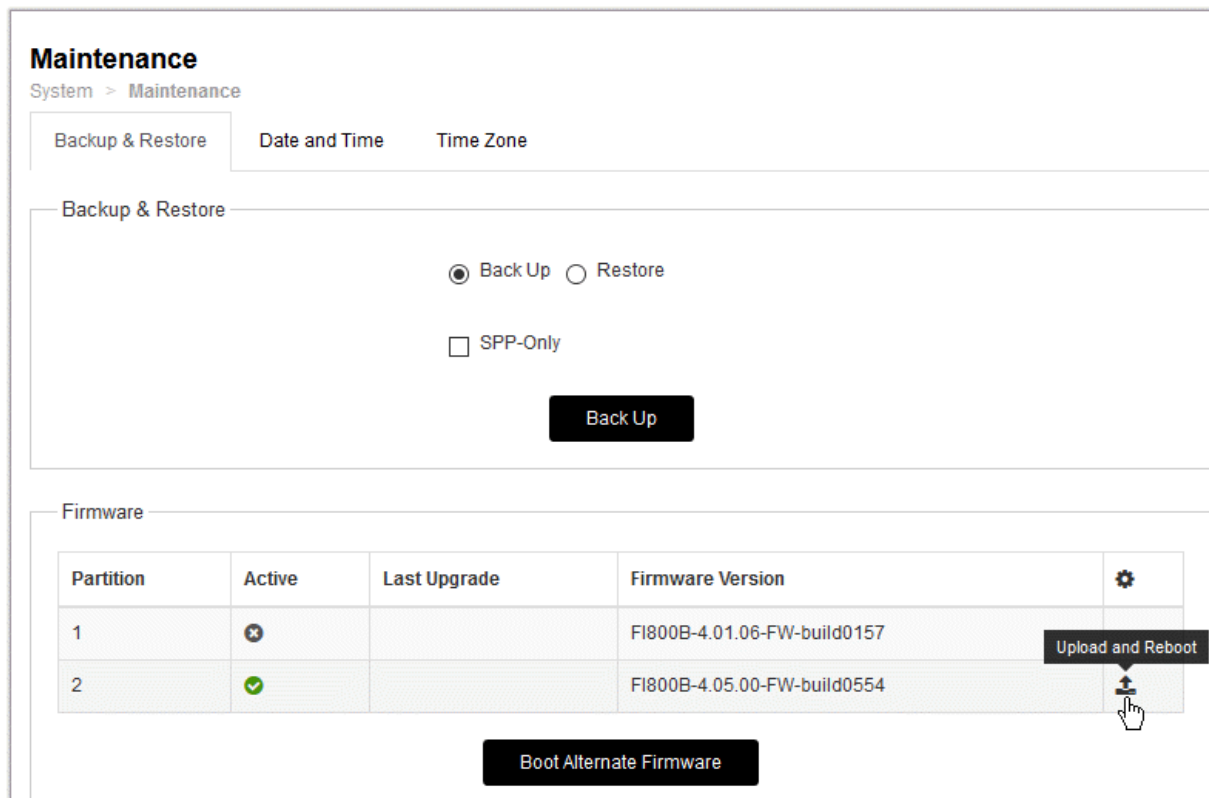
Section 1: Upgrading using GUI

Ensure that you have read the general [Upgrading](#) section before you start an upgrade.

Note: You can upgrade directly to FortiDDoS 5.6.0 via GUI from any version above 4.2.3.

For any version below 4.2.3, you **MUST** upgrade to 4.2.3 and then to 5.6.0.

For this upgrade, you must use Partition 2. The following figure shows the user interface for managing firmware.



To install firmware:

1. Go to **System > Maintenance > Backup & Restore** tab.
2. Under Firmware Upgrade/Downgrade, in the row for Partition 2, click the Upload and Reboot icon to display the upload file controls.
3. Use the upload file controls to select the firmware image file.
4. Click **OK** to upload the file, install the firmware, and restart the system. Always use Partition 2 for upgrades even if Partition 2 is showing a newer Release than Partition 1. From 4.2.3, partition choices will not be shown.

WARNING: The upgrade takes several (as long as 15) minutes – longer for larger systems and the system will reboot once or twice depending on the Release. During this time, there is no progress indicator on the GUI. FortiDDoS must write register information to each TP2 which takes considerably longer than loading firmware as in most x86-based systems. This is only a factor during the upgrade. Once installed, the TP2 firmware is persistent and will only change with a further upgrade. **It is very important the system not be disturbed or power cycled during this process.** A power cycle will

result in an unusable system that must be returned to factory for repair. Ideally, leave the system for 20 minutes. If the system has NOT recovered in that time, contact [Fortinet Support](#). It is highly recommended to connect to the Console port during an upgrade, even if using the GUI. The Console will display progress messages when the GUI is unresponsive during the upgrade.

5. Clear your browser cache to avoid potential issues that can be caused by caching.
During upgrade, the console will show upgrade progress information if a terminal is connected to it. See the [Sample console log](#) for reference.
6. Login and from **Dashboard**, confirm that the firmware version is correct.

From the GUI-based Console, SSH or Console, access the command line and follow these steps:

- a. Enter: `diagnose debug rrd_cmd_check`
The console will display the percentage (%) checked messages which may scroll off the screen depending on your access method. Allow this to complete. The system will return one of the following messages on success/failure:
 - `RRD commands check successful`
The upgrade was successful. Proceed with other actions. No further checks are required.
 - `RRD commands check failed`
The upgrade failed to create some database. Proceed to next step.
- b. Enter: `diagnose debug rrd_cmd_recreate`
- c. Enter `y` when confirmation is requested.
The Console will display the messages below, if successful:
`100% complete`
`Created rrd cmd files`
If any error message occurs during this process, contact [Fortinet Support](#). If the `100% Complete` message is seen, proceed to other actions.

Section 2: Upgrading via CLI

Ensure that you have read the general [Upgrading](#) section before you start an upgrade.

Note: You can upgrade directly to FortiDDoS 5.6.0 via CLI from any version above 4.1.5. For any version below 4.1.5, you MUST upgrade to 4.1.5 and then to 5.6.0.

To install firmware:

1. Connect your management computer to the FortiDDoS console port using an RJ-45-to-DB-9 serial cable or a null-modem cable. Use the following terminal settings:
Speed (Baud Rate): 9600 Data Bits: 8 Stop Bits: 1 Parity: None
2. Initiate a connection to the CLI and log in as the user admin.
3. Use an Ethernet cable to connect FortiDDoS mgmt1 to the TFTP server directly, or connect it to the same subnet as the TFTP server.
4. If necessary, start the TFTP server.
5. Enter the following command to transfer the firmware image to the FortiDDoS system:

```
execute restore image tftp <filename_str> <tftp_ipv4>
```

where:

- <filename_str> is the name of the firmware image file
- <tftp_ipv4> is the IP address of the TFTP server.

For example, if the firmware image file name is `FDD_200B-v5.6.0-build0354-FORTINET.out` and the IP address of the TFTP server is `172.30.153.105`, enter:

```
FI900B3915000043 # execute restore image tftp FDD_200B-v5.6.0-build0354-
FORTINET.out 172.30.153.105
```

```
This operation will replace the current firmware version!
Do you want to continue? (y/n)y
```

```
Connect to tftp server 172.30.153.105 ...
Please wait...
```

```
#####
#####
Get image from tftp server OK.
Verifying the integrity of the firmware image.
```

The following message appears:

```
This operation will replace the current firmware version!
Do you want to continue? (y/n)
```

6. Type `y`.
The system gets the image from the TFTP server, installs the firmware, and restarts. See the [Sample console log](#) for reference.

WARNING: The upgrade takes several (as long as 15) minutes – longer for larger systems and the system will reboot once or twice depending on the Release. (See the progress examples from the console output below). FortiDDoS must write register information to each TP2 which takes considerably longer than loading firmware as in most x86-based systems. This is only a factor during the upgrade. Once installed, the TP2 firmware is persistent and will only change with a further upgrade. **It is very important the system not be disturbed or power cycled during this process.** A power cycle will result in an unusable system that must be returned to factory for repair. Ideally, leave the system for 20 minutes. If the system has NOT recovered in that time, contact [Fortinet Support](#).

To verify that the firmware was successfully installed, login and run `get system status`, confirming the version information is correct:

```
Version:          FortiDDoS-200B v5.6.0,build0354,190912
TP2ASIC Version:  5600015f Date: Apr 22, 2019
IP Reputation DB:  Not enabled
Domain Reputation DB: Not enabled
Serial-Number:    FI200B3914000081
BIOS version:     04000001
Log disk:         Capacity 62 GB, Used 978 MB ( 1.52%), Free 62 GB
RRD disk:         Capacity 369 GB, Used 165 GB (44.82%), Free 203 GB
Hostname:         FDD-169
HA configured mode: active-passive
HA effective mode: Master
Distribution:     International
License Type:     -
Uptime:          0 days 0 hours 37 minutes
Last reboot:     Thu Apr 25 15:35:18 PDT 2019
System time:     Thu Apr 25 16:25:00 PDT 2019
```

Section 3: Upgrading via BIOS



- The system configuration will be lost when upgrading via BIOS. For this reason, BIOS upgrade should only be used for:
 - a. Upgrading new systems that have not been put in service.
 - b. When continuity of the system configuration is not important.
- Backup your configuration before starting a BIOS upgrade. It is not recommended to attempt to restore the system configuration but it can be done by editing the configuration. This is useful only for maintaining administrative information. Please contact FortiCare TAC for further information.

Ensure that you have read the general [Upgrading](#) section before you start an upgrade.

Note: You can upgrade directly to FortiDDoS 5.6.0 via BIOS from any version.

To upgrade the firmware:

1. Download the new firmware image.
2. Copy the file to a location you can access from the FortiDDoS appliance using TFTP.
3. Connect to the FortiDDoS appliance console.
4. Reboot the system and, when prompted, press any key to display the BIOS configuration menu.
5. Select option G so that the system can get the new firmware image from the TFTP server and load it when it reboots.

The following example shows the CLI sequence:

```

FI-1KBXXXXXXXXXX # execute reboot
This operation will reboot the system ! Do you want to
continue? (y/n) y
System is rebooting... The system is going down NOW !!
Please stand by while rebooting the system.
FortiDDoS-1000B (20:41-06.12.2018)
Ver:04000001
Serial number:FI1KBXXXXXXXXXX
RAM activation
CPU(00:000306a9 bfebfbff): MP initialization
CPU(01:000306a9 bfebfbff): MP initialization
CPU(02:000306a9 bfebfbff): MP initialization
CPU(03:000306a9 bfebfbff): MP initialization
CPU(04:000306a9 bfebfbff): MP initialization
CPU(05:000306a9 bfebfbff): MP initialization
CPU(06:000306a9 bfebfbff): MP initialization
CPU(07:000306a9 bfebfbff): MP initialization
Total RAM: 8192MB
Enabling cache...Done.
Scanning PCI bus...Done.
Allocating PCI resources...Done.
Enabling PCI resources...Done.
Zeroing IRQ settings...Done.
Verifying PIRQ tables...Done.
Boot up, boot device capacity: 15272MB.

```

```

Press any key to display configuration menu...
... <----- Press any key
[G]: Get firmware image from TFTP server.
[F]: Format boot device.
[B]: Boot with backup firmware and set as default.
[I]: Configuration and information.
[Q]: Quit menu and continue to boot with default firmware.
[H]: Display this list of options.

Enter Selection [G]: <----- Press 'g'

Please connect TFTP server to Ethernet port "MGMT".

Enter TFTP server address [192.168.1.168]: 192.168.1.168 <---- enter TFTP server IP
Enter local address [192.168.1.188]: 192.168.1.188 <--- Enter FortiDDoS IP
Enter firmware image file name [image.out]: FDD_1000B-v5.6.0-build0354-FORTINET.out <--
- Enter Image Name
MAC:085B0E9F061C
#####
Total 76694566 bytes data downloaded.

Verifying the integrity of the firmware image.
Total 204800kB unzipped.
Save as Default firmware/Backup firmware/Run image without saving:[D/B/R]?d <-----
Press 'd'
Programming the boot device now.
.....
...
.....
...
.....
Reading boot image 2791231 bytes.
Initializing FortiDDoS...
System is started.

```

1. Set the management port IP address and gateway IP address using the console.
2. If you saved and edited the configuration file, restore it using the CLI or web UI.
3. If you did not save a configuration file, you must reconfigure the user accounts and system options.
4. If you have restored a configuration file, go to Protection Profiles > Factory Reset and reset every SPP in use to factory defaults (Learning Mode).
5. Treat the upgrade like a new installation with Learning mode for 1 week, creating Traffic Statistics Reports and setting System Recommended Thresholds for each SPP and so on.

Sample console log

Sample console log while upgrading from 5.0.0 to 5.6.0:

```
FI200B3914000035 # execute restore image tftp FDD_200B-v5.6.0-build0354-
FORTINET.out 172.30.153.105
This operation will replace the current firmware version!
Do you want to continue? (y/n)y

Connect to tftp server 172.30.153.105 ...
Please wait...

#####
#####
Get image from tftp server OK.
Verifying the integrity of the firmware image.
FI200B3914000035 #
FI200B3914000081 #

The system begins to upgrade ...

Firmware upgrade in progress ...
New image: FI200B-5.6.0-FW-build0354-180612
Done. 2

The system is going down NOW !!

Please stand by while rebooting the system.
FortiDDoS-200B (20:41-06.12.2018)
Ver:04000001
Serial number:FI200B3914000081
RAM activation
CPU(00:000306a9 bfebfbff): MP initialization
CPU(01:000306a9 bfebfbff): MP initialization
CPU(02:000306a9 bfebfbff): MP initialization
CPU(03:000306a9 bfebfbff): MP initialization
CPU(04:000306a9 bfebfbff): MP initialization
CPU(05:000306a9 bfebfbff): MP initialization
CPU(06:000306a9 bfebfbff): MP initialization
CPU(07:000306a9 bfebfbff): MP initialization
Total RAM: 8192MB
Enabling cache...Done.
Scanning PCI bus...Done.
Allocating PCI resources...Done.
Enabling PCI resources...Done.
```

```
Zeroing IRQ settings...Done.
Verifying PIRQ tables...Done.
Boot up, boot device capacity: 15272MB.
Press any key to display configuration menu...
.....

Reading boot image 3713003 bytes.
Initializing FortiDDoS...\ufffd

System is started.

Updating Application Image
FortiASIC-TP.0: update started. Reconfigure process takes a few minutes
FortiASIC-TP.0: 0% Complete
FortiASIC-TP.0: 10% Complete
FortiASIC-TP.0: 20% Complete
FortiASIC-TP.0: 30% Complete
FortiASIC-TP.0: 40% Complete
FortiASIC-TP.0: 50% Complete
FortiASIC-TP.0: 60% Complete
FortiASIC-TP.0: 70% Complete
FortiASIC-TP.0: 80% Complete
FortiASIC-TP.0: 90% Complete
FortiASIC-TP.0: FPGA image download complete.
FortiASIC-TP.0: Checking update image on FPGA.....
FortiASIC-TP.0: Checking update image on FPGA.....OK, GBL_RUPD_RECONFIG_STAT = 0x3
FortiASIC-TP.0: UPDATE FPGA OK, WAIT FOR REBOOT....
FortiASIC-TP.0: update finished
FortiDDoS-200B (20:41-06.12.2018)
Ver:04000001
Serial number:FI200B3914000081
RAM activation
CPU(00:000306a9 bfebfbff): MP initialization
CPU(01:000306a9 bfebfbff): MP initialization
CPU(02:000306a9 bfebfbff): MP initialization
CPU(03:000306a9 bfebfbff): MP initialization
CPU(04:000306a9 bfebfbff): MP initialization
CPU(05:000306a9 bfebfbff): MP initialization
CPU(06:000306a9 bfebfbff): MP initialization
CPU(07:000306a9 bfebfbff): MP initialization
Total RAM: 8192MB
Enabling cache...Done.
Scanning PCI bus...Done.
Allocating PCI resources...Done.
Enabling PCI resources...Done.
Zeroing IRQ settings...Done.
Verifying PIRQ tables...Done.
```

```
Boot up, boot device capacity: 15272MB.  
Press any key to display configuration menu...  
.....
```

```
Reading boot image 3713003 bytes.  
Initializing FortiDDoS...\ufffd
```

```
System is started.
```

```
FI200B3914000081 login:
```

Downgrading

Use the following instructions to downgrade, if necessary, from FortiDDoS 5.6.0 or earlier releases.

Note the following:

- **Downgrading returns the system to factory default with no user configuration. If you do not have a stored backup configuration of the earlier release and must downgrade, you will need to backup your current configuration, edit the first line to the correct destination (downgraded) firmware release, build number and date, and restore that configuration file. If you are unsure of this step, contact Fortinet Support.**
- **Downgrades below 4.1.12 are NOT recommended for bug and security reasons.** If you need to downgrade below 4.1.12 you may need to alter your current configuration, removing all NTP configurations and removing multiple remote syslog servers if configured. Please contact Fortinet Support if you need to downgrade below 4.1.12.
- When downgrading there may be no default IP assigned to the Management 1 port. This will need to be set via CLI. We do not recommend downgrading to releases earlier than 4.2.3.

Downgrading from 5.6.0 and earlier versions

You can use the web UI, CLI or BIOS to downgrade from 5.6.0 and earlier releases. You can downgrade directly to the release you want to use.

To downgrade firmware:

1. Take a backup of your configuration. Downgrade will delete the current configuration and will set everything to factory defaults.

Use GUI:

1. Go to **System > Maintenance > Backup & Restore** tab.
2. Select **Back Up** option and click **Back Up**.

or

Use CLI:

```
137-900B # execute backup config tftp 137.conf 172.30.153.105
Connect to tftp server 172.30.153.105 ...
Please wait...
#
Send config file to tftp server OK.
```

2. Load new build via GUI/ CLI or BIOS.

For GUI:

1. Go to **System > Maintenance > Backup & Restore** tab.
2. Select the file and upload. The system will reboot.

For CLI:

```
137-900B # execute restore image tftp FDD_900B-v5.6.0-build0354-
FORTINET.out 172.30.153.105
This operation will replace the current firmware version!
Do you want to continue? (y/n)y
Connect to tftp server 172.30.153.105 ...
Please wait...
#####
```

```
####
```

```
Get image from tftp server OK.
```

Verifying the integrity of the firmware image. This operation will downgrade the current firmware version!
You will lose your existing configuration

```
Do you want to continue? (y/n)y
```

```
137-900B #
```

3. The system will reboot and reprogram the FPGA.
This takes about 10-15 min based on what appliance you are using.
WARNING: Reboot or power fail during this process may result in unusable product, requiring RMA.
4. Once the system is up, assign the IP address and restore the saved configuration. System will reboot and apply the configuration. The system should be ready to use.

Factory reset

If you want to restore a system to factory defaults with no customer configuration or traffic data, do the following from CLI:

- # `execute formatlogdisk` - removes all traffic data.
- # `execute factoryreset` - removes all configurations.

Resolved issues

The following issues have been resolved in FortiDDoS 5.6.0. For inquiries about a particular bug, please contact [Fortinet Customer Service & Support](#).

Mantis ID	Description
0680781	In some previous E-Series releases, NTP Duplicate Query and NRM Hash Attacks showed when the features were disabled. These were reporting errors, not actual drops and they no longer show on logs and graphs.
0737208	IP header checksum errors and L4 Anomalies Drops show up for SPPs for which Strict Anomalies are disabled. This is a reporting error and the drops do not occur. Tip: There is almost no reason to disable Strict Anomalies in any SPP. This function was added to allow troubleshooting but has never uncovered a situation where the FortiDDoS anomalies caused false-positive drops.
0739460	For RADIUS and TACACS+, if you edit Server Configuration page for any reason, you must re-enter the Primary and Secondary Server Shared Secrets. A warning is provided.
0746033	Global Settings > Settings > Deployment: Asymmetric Mode and Asymmetric Mode Allow Inbound SYN-ACK were not automatically synced between Primary and Secondary devices, resulting in unexpected drops on the Secondary device.
0748526	Newer Serial Numbers for E-Series models display incorrect Dashboard > Bypass Status Information.
0763052	A small number of E-Series customers were reporting false-positive drops for disabled features, particularly Src IP==Dst IP Layer 3 Anomaly and SSL Renegotiation.
0782657	It is possible that a residual file in Traffic Stats prevented running the statistics again.
0794327	Under some conditions, REST API authentication was not able to add token info.

Common Vulnerabilities and Exposures

For more information, visit <https://www.fortiguard.com/psirt>.

Mantis ID	Description
0790717/ 0744286	FortiDDoS B/E-Series is no longer vulnerable to the following CVE-References: CVE-2021-3711, CVE-2021-3712, CVE-2002-20001.
0790804/ 0771109/ 0771115/ 0776311/ 0784330/ 0798063	FortiDDoS is no longer vulnerable to the following CWE references: CWE-78, CWE-120, CWE-121, CWE-124, CWE-321, CWE-610.

Known issues

This section lists the known issues in FortiDDoS 5.6.0 release. For inquiries about a particular bug, please contact [Fortinet Customer Service & Support](#).

Mantis ID	Description
802960	<p>Under rare conditions the Blocklisted Domain page will display "progress" after deleting a large list of Domains and adding a new list is not allowed. If this condition is seen, use the following conditions to clear the status. After clearing the status, new uploads are allowed.</p> <p>From CLI:</p> <pre># config ddos global dns domain acl status (status) # unset dns-domain-acl-update-status (status) # end</pre>
669195	If an active IPv4 Global ACL is edited, the old ACL is retained. Do not edit Global ACLs. Delete and replace them.
535380	Failure to send Alert/Report emails is not logged.
519240	When upgrading an HA pair, HA Group, ID and Priority are removed from the configuration on both systems. Please record the HA settings before upgrading.
478130	Event Log entries for Domain Blocklist and Domain Reputation changes are the same and may appear to be duplicates under some conditions.
477303	If the system has both trusted hosts and RADIUS trusted hosts, the standalone trusted hosts will have precedence.
476212	Even though Outbound is set in Detection Mode, outbound "drops" may result in failures in TCP and DNS. Outbound settings should be reviewed to prevent drops, particularly for: - Most Active Source - SYN/Source - DNS Query Floods - NTP Query Floods
473089	If you leave Factory Reset and Generate Traffic Statistics pages, with progress meters, while they are actively displaying progress, when you return, the progress information is lost.
471157	If a TCP port is configured as a Global Service Port, thresholds cannot be set for that port in any SPP. This is design-intent.
469829	Changing from user-installed certificate to factory certificate may lock GUI. Close and re-open browser restores the GUI.
467210	During system configuration restore, over slow networks, errors might result in partial configurations. Customer should check configuration once restored to ensure all items are restored.

Mantis ID	Description
444593	Modifying a Geolocation ACL may not modify the ACL tables. Add and delete Geolocation ACLs rather than modifying existing ACLs.
442830	If system is in Wire Mode link synchronization, and one link has failed (resulting in 2nd link being failed by the system) a reboot will lose that link synchronization. On reboot the failed link will not be reflected to the 2nd link.
442245	Under some conditions, users with RADIUS authentication may not have access to all SPPs.
441880	There is no validation between the timeouts for Slow TCP Connection Observation Period, TCP Session Idle Timeout and TCP Session Extended Timeout. Whatever period is chosen for Slow TCP Connection Observation Period, TCP Session Idle Timeout should be longer and TCP Session Extended Timeout should be longer still.
439712	SPP ID numbers are not validated when entered via CLI. User should take care to avoid duplicates if working in CLI. SPP ID numbers are automatically selected via GUI.
439122	Event Remote Log allows duplicate entries. Care should be taken to prevent entering duplicates.
415244	Boot Alternate Firmware button should not be used. This option will be removed in future releases.
413984	No HTTPS Server certificate is displayed and a certificate needs to be selected before any changes can be made on the System > Admin > Settings tab.
411833	Report schedule hour configuration does not adjust for Daylight Savings Time change. For example, if reports are scheduled to run at 9:00 am, they will run at 10:00 am after time change.
404557	The system allows duplicate IP addresses or IP/subnet masks between Global and SPP Address Config. Global ACLs will take precedence.
397104	Some IPv6 ACL entries are not validated against previous entries for overlapping subnets.
390662	NTP Server address string (FQDN and/or IP addresses) is not validated. Use care when entering.
388763	On multi-TP2 or TP3 models, traffic with Ethertypes 0x9100 (QinQ) and 0x88a8 (802.1ad/aq) is not load-balanced across more than 1 TP2. Ethertype 0x8100 (802.1q) works as expected. NOTE: FortiDDoS will NOT operate with QinQ traffic.
354467	For TCP and UDP Port graphs, if a port shows zero traffic for a long period of time and then some traffic arrives, the port graph may show the most recent traffic across the zero-traffic period.

FortiDDoS-CM

This section includes the following topics specific to FortiDDoS-CM release 5.6.0:

["Introduction to FortiDDoS-CM" on page 32](#)

["Special Notes for CM" on page 33](#)

["FortiDDoS-CM hardware support" on page 34](#)

["Installing FortiDDoS-CM" on page 35](#)

["Upgrading FortiDDoS-CM" on page 35](#)

["Downgrading FortiDDoS-CM" on page 36](#)

["Resolved issues in FortiDDoS-CM" on page 38](#)

["Known issues in FortiDDoS-CM" on page 39](#)

For topics specific to FortiDDoS, see [FortiDDoS](#).

Introduction to FortiDDoS-CM

FortiDDoS Central Manager (FortiDDoS-CM) VM Release 5.6.0 is available as an application running on the following virtual machine applications:

- Citrix Hypervisor (XenServer)
- Hypervisor
- KVM
- VMware ESX/ESXi, including vSphere client, Workstation and Fusion
- Xen Open Source

FortiDDoS-CM manages both common parameters across all FortiDDoS appliances in its configuration as well as individual appliance parameters, without the need to login to each device.

FortiDDoS-CM allows you to centrally manage any number of FortiDDoS devices depending on the license type - 'Up to 10 FortiDDoS appliances' or 'Unlimited FortiDDoS appliances'.

In this release, all FortiDDoS appliances managed by FortiDDoS-CM must be the same model (FDD-1200B and FDD-2000B are treated as the same model) and use same 5.6.0 firmware. Managing groups of different models can be accomplished with separate FortiDDoS-CM configurations, which can be saved and reloaded as required to switch between groups of appliances.

This release **does not** support the following:

- Centralized graphical views or reporting - All graphs are viewed on the individual appliances through the FortiDDoS-CM GUI. Centralized attack reporting can be done via FortiAnalyzer and FortiSIEM.

In addition:

- While individual appliances can be set to automatically backup their configurations, only manual appliance configuration backup can be done from the FortiDDoS-CM.
- Appliance configuration restoration and firmware upgrades must be done via direct login to the appliance.

For additional documentation, see <http://docs.fortinet.com/fortiddos>.

Special Notes for CM

FortiDDoS Appliances need specific SPP and SPP Policy settings to operate with FortiDDoS Central Manager. Specifically:

- All SPPs in all appliances must be identical. Some appliances may then have unused SPPs
- All SPP Policies (subnets) must be identical and assigned to the same SPPs. Some subnets may not be used in some appliances but they will appear in the SPP Policy List in all appliances.

Before attempting to configure FortiDDoS-CM with several FortiDDoS Appliances, contact Fortinet Support or your local CSE for assistance.

FortiDDoS-CM hardware support

This release of FortiDDoS-CM supports the following hardware models:

- FortiDDoS 200B
- FortiDDoS 400B
- FortiDDoS 800B
- FortiDDoS 1000B
- FortiDDoS 1000B-DC
- FortiDDoS 1200B
- FortiDDoS 2000B
- FortiDDoS 2000B-USG
- FortiDDoS 1500E
- FortiDDoS 2000E
- FortiDDoS 2000E-DC

NOTE: FortiDDoS A-Series, 600B/900B and F-Series models are not supported.

Installing FortiDDoS-CM

Refer to *FortiDDoS Central Manager VM Installation Guide* [here](#) for deploying a new VM.

Upgrading FortiDDoS-CM

Upgrading using GUI

Note: You can upgrade directly to FortiDDoS-CM 5.6.0 via GUI from any version.

To install firmware:

1. Go to CM dashboard.
2. In system information widget use the Update link next to Firmware version.
3. Use the upload file controls to select the firmware image file (.out file)
4. Click **Upload** to start the firmware upgrade.
WARNING: While upgrading to 5.3.0 the VM may reboot twice
5. Clear your browser cache to avoid potential issues that can be caused by caching.
During upgrade, the VM console will show upgrade progress information.
6. Login and from **Dashboard**, confirm that the firmware version is correct.

System Information		
Firmware Version	FDD-CM v5.1.0,build0050,190410	[Update]
Serial Number	FI-CMV6789012345	
Host Name	FortiDDoS-CM	[Change]
System Time	Fri Apr 12 16:32:35 2019	
System Uptime	1d, 23h, 25m, 45s	
User Name	admin	
Host ID	000C290D6D81	

[Reboot] [Shutdown]

Upgrading using CLI

To install firmware:

1. Login to the FortiDDoS-CM using SSH or VM console.
2. Copy the image file(.out file) to a TFTP server which can be accessed from the VM's management network.
3. Make sure TFTP server is running.
4. Enter the following command to transfer the firmware image to the FortiDDoS-CM system:
`execute restore image tftp <filename_str> <tftp_ipv4>`
WARNING: While upgrading to 5.3.0 the VM may reboot twice
5. During upgrade, the VM console will show upgrade progress information.
6. Once the system is up login and verify the firmware version using `get system status`

Downgrading FortiDDoS-CM

Note the following:

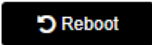
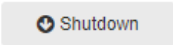
- Downgrading returns the system to factory default with no user configuration. If you do not have a stored backup configuration of the earlier release and must downgrade, you will need to backup your current configuration, edit the first line to the correct destination (downgraded) firmware release, build number and date, and restore that configuration file. If you are unsure of this step, contact Fortinet Support.
- When downgrading there maybe no default IP assigned to the Port 1. This will need to be set via VM console after the downgrade is complete.

Downgrading using GUI

To downgrade using GUI:

1. Go to CM dashboard.
2. In system information widget use the Update link next to Firmware version.
3. Use the upload file controls to select the firmware image file (.out file)
4. Click **Upload** to start the firmware downgrade.
5. Clear your browser cache to avoid potential issues that can be caused by caching.
During downgrade, the VM console will show progress information.
6. Login on the console and assign the IP address, default gateway and DNS.
7. Login to the GUI and verify the firmware version under system information.

System Information		
Firmware Version	FDD-CM v5.1.0.build0050,190410	[Update]
Serial Number	FI-CMV6789012345	
Host Name	FortiDDoS-CM	[Change]
System Time	Fri Apr 12 16:32:35 2019	
System Uptime	1d, 23h, 25m, 45s	
User Name	admin	
Host ID	000C290D6D81	

Downgrading using CLI

To downgrade using firmware:

1. Login to the FortiDDoS-CM using SSH or VM console
2. Copy the image file(.out file) to a TFTP server which can be accessed from the VM's management network.
3. Make sure TFTP server is running.
4. Enter the following command to transfer the firmware image to the FortiDDoS-CM system: `execute restore image tftp <filename_str> <tftp_ipv4>`
5. During downgrade, the VM console will show progress information.
6. Login on the console and assign the IP address, default gateway and DNS.
7. Verify the firmware version using `get system status`

Resolved issues in FortiDDoS-CM

There are no resolved issues for FortiDDoS-CM 5.6.0. For inquiries about a particular bug, please contact [Fortinet Customer Service & Support](#).

Known issues in FortiDDoS-CM

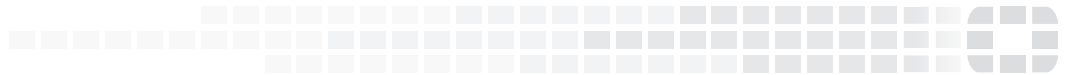
This section lists the known issues in FortiDDoS-CM 5.6.0. For inquiries about a particular bug, please contact Fortinet Customer Service & Support.

Mantis ID	Description
647043	Sync-all CM operation crashes CM if more than 6 members are out of sync.
634651	CM fails to synch more than 800 SPP Policies.
593464	Log & Report > Diagnostics > ACL Search is not available via the FDD Central Management GUI. You must login directly to each FortiDDoS to perform the search.



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