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# Step - by - Step DDOS Upgrade Guide

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## Introduction

This document will guide you through the steps necessary to upgrade the DDOS version on your Data Domain System.

### Step 1: Pre – Upgrade Preparation

- A. DDOS Version:** Choose the DDOS version you wish to upgrade to. Use the following KB to do this;

DD OS Software Versions <https://support.emc.com/kb/334649>

- B. Release Notes**

Read the release notes for this DDOS version here:

DD OS Software Versions <https://support.emc.com/kb/334649>

- C. Compatibility**

Then ensure the DDOS version is suitable for your Backup Environment by using the following compatibility guide: <http://compatibilityguide.emc.com:8080/CompGuideApp/>

- D. Download DDOS rpm file**

The DDOS rpm package can be found in KB <https://support.emc.com/kb/334649> or downloaded from here: [https://support.emc.com/downloads/9012\\_Data-Domain](https://support.emc.com/downloads/9012_Data-Domain)  
Expand “DD OS” tab on left hand menu and click on the DDOS you want.

**Note:**

The rpm file will download directly to your PC up to DDOS 5.5.0.9

From DDOS 5.5.2.0 onwards you will be redirected to Feedback Central.

Once on Feedback Central, do the following;

Click on "Access Downloads" and log in.

If you cannot log in here, you will need to create a new account on <http://feedbackcentral.emc.com>)

The screenshot shows the EMC Feedback Central header with the logo and "Feedback Central" text. Below the header is a dark blue bar. The main content area has a light gray background. On the right side, there is a white box with the following text: "DD OS 5.7.0.3 General Availability Download." followed by "5.7.0.3 General Availability". Below this, it says "Hello," "Thank you for your interest in downloading our DD OS 5.7.0.3 GA product." "To start the process, please click on the banner below for important information about this release." "You will be granted access to the download after reading and acknowledging the provided information." "Thank you." and "Data Domain OS 5.7.0.3 Team". At the bottom of this white box is a dark gray button with the text "Access DD OS 5.7.0.3 Downloads" which is circled in orange.

The screenshot shows the EMC Feedback Central header with the logo and "Feedback Central" text. Below the header is a dark blue bar. The main content area has a light gray background. On the right side, there is a white box with the following text: "EMC Customer Sign-up" followed by "Please log in to apply for this opportunity." Below this, there is a section titled "Existing Users" with the text "If you already have an EMC FeedbackCentral user account, please use it to login below (Please note the login credentials for this site is different than your EMC Support account login credentials)". Below this text is a form with two input fields: "Username" containing "testuser@example.com" and "Password" containing ".....". To the right of the password field is an "Apply" button. Below the form is a section titled "New Users" with the text "If you do not already have an EMC FeedbackCentral user account, create a new one (Please note the login credentials for this site is different than your EMC Support account login credentials)". At the bottom of this white box is a dark gray button with the text "Join EMC FeedbackCentral Now" which is circled in orange. On the left side of the page, there is a red text annotation "Log in here ---->" pointing to the "Existing Users" section and another red text annotation "If you cannot login -->" pointing to the "New Users" section.

### Read and agree to the End User License Agreement

The screenshot shows the EMC<sup>2</sup> Feedback Central interface. At the top, the logo and 'Feedback Central' are displayed. Below is a navigation bar with 'Home', 'DD OS 5.7.2.0-532316 GA', and 'End User License Agreement'. The main content area is titled 'End User License Agreement' with the subtitle 'SOFTWARE LICENSE AND MAINTENANCE AGREEMENT'. It contains a paragraph of text, the date 'Jun 13, 2016', and a 'Digital Signature' section. The signature section includes a prompt to sign, a 'Username' field with 'testuser@example.com', and a 'Password' field with masked characters. At the bottom are 'I Agree' and 'Cancel' buttons.

### Click on "GA Code" on left side bar

The screenshot shows the EMC<sup>2</sup> Feedback Central interface for product 'DD OS 5.7.0.3-507764 GA'. The navigation bar includes 'Home', 'DD OS 5.7.0.3-507764 GA', and 'End User License Agreement'. On the left, a 'Resources' sidebar lists 'Agreements', 'Product Documentation', and '5.7.0.3 GA Code', with the last item circled in orange. The main content area has a title 'DD OS 5.7.0.3-507764 GA' and tabs for 'Overview' and 'Resources'. A blue bar at the bottom contains the text 'DD OS 5.7.0.3-507764'.

Click on option 1.

EMC<sup>2</sup> | Feedback Central

Home > DD OS 5.7.0.3-507764 GA > 5.7.0.3 GA Code

Resources  
 Agreements  
 Product Documentation  
 5.7.0.3 GA Code

### 5.7.0.3 GA Code

DDOS 5.7.0.3 - Code

1. 5.7.0.3 RPM + MD5 Files
2. 5.7.0.3 MD5 + MD5 Files
3. 5.7.0.3 Error Message Catalog

Download first .rpm file onto your computer

EMC<sup>2</sup> | Feedback Central

Home > DD OS 5.7.0.3-507764 GA > 5.7.0.3 GA Code > 5.7.0.3 RPM + MD5 Files

Resources  
 Agreements  
 Product Documentation  
 5.7.0.3 GA Code

### 5.7.0.3 RPM + MD5 Files

5.7.0.3-507764 RPM + MD5 Files

Downloads

File Name	Size
5.7.0.3-507764.rpm	973.06 MB
5.7.0.3-507764.rpm.md5	33 Bytes

**E. Upload DDOS rpm file**

The RPM can be loaded onto the DD system using the System Manager GUI: **Maintenance -> Upload Upgrade Package**

## Step 2: Pre - Upgrade Health Check and Reboot

### 2.A Health Check

Log into the DD system using SSH (i.e. putty). Input your DD user credentials. Then run the following commands;

#### #hostname and #system show serialno

```
sysadmin@dd690# hostname
The Hostname is: dd690.
sysadmin@dd690# system show serialno
Serial number: 8F46
```

Ensure this is the correct DD system to upgrade

#### # fi st

```
sysadmin@dd690# filesys status
The filesystem is enabled and running.
sysadmin@dd690#
```

Ensure Filesystem is enabled

#### # alerts show current

```
sysadmin@dd690# alerts show current
-----
Id      Post Time                Severity  Class      Object      Message
-----
5957    Wed Feb 17 14:23:03 2016    CRITICAL  Environment Slot=3    EVT-SAS-03806: Invalid SAS cable topology detected.
-----
There is 1 active alert.
```

If there are current alerts, contact DD support. If not, continue with next command.

**Note:** Replication out of sync alerts are ok and will not affect the upgrade

#### # df

```
sysadmin@dd690# df
Active Tier:
Resource                Size GiB   Used GiB   Avail GiB   Use%   Cleanable GiB*
-----
/data: pre-comp         -           5991.9         -           -           -
/data: post-comp        5065.8      211.7      4854.2      4%         0.0
/ddvar                  189.0       15.2       164.1       8%         -
-----
* Estimated based on last cleaning of 2016/03/22 06:05:11.
```

Under "Use%", ensure that /data is 90% or lower. Upgrades need available capacity to be at least 10% . If >90%, please reduce space by running a cleaning cycle # filesys clean start

## # iostat 2

```

sysadmin@dd690# iostat 2
03/22 11:06:32
INTERVAL: 2 secs
 "-" indicates that system is busy and unable to get recent data.
-----
CPU  |State|NFS|CIFS|Net|Disk|NVRAM|Repl|
aggr|aggr|ops/s|load|data|in|data|out|ops/s|in|out|eth0a|eth0a|eth0b|eth0b|eth6a|eth6a|eth6b|eth6b|read|write|busy|aggr|aggr|Repl|
busy|max|%|CDBVMSFIR|%|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|MB/s|KIB/s|KIB/s|%|KIB/s|KIB/s|in|out|
%|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|161|0|0|0|0|0|
0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|939|1|0|0|0|0|
0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|553|1|0|0|0|0|0|
0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|1275|295|1|0|0|0|0|0|
sysadmin@dd690#

```

Ensure no backup/restore activity is occurring (Look at NFS, CIFS and Net columns).

Ensure you STOP all backups/restores from backup application before proceeding with upgrade

## # filesystem clean status

```

sysadmin@dd690# filesystem clean status
Cleaning finished at 2016/03/22 06:05:11.
sysadmin@dd690#

```

Ensure cleaning is not running. If running, please stop it with the command `#filesystem clean stop`

**Note:** Let cleaning finish if space is > 90%

## #disk show reliability-data and #disk show state

```

sysadmin@dd690# disk show reliability-data
Disk      Slot  ATA Bus  Reallocated  Temperature
(enc/disk) CRC Err  Sectors
-----
1.1       1     0        0             32 C 90 F
1.2       2     0        0             29 C 84 F
1.3       3     0        0             31 C 88 F
1.4       4     0        0             29 C 84 F
2.1       1     0        0             32 C 90 F
2.2       2     0        1             32 C 90 F
2.3       3     0        2             31 C 88 F
2.4       4     0        0             34 C 93 F
2.5       5     0        4             32 C 90 F
2.6       6     0        0             31 C 88 F
2.7       7     0        0             32 C 90 F
2.8       8     0        0             33 C 91 F
2.9       9     0        0             33 C 91 F
2.10      10    0        0             32 C 90 F
2.11      11    0        0             32 C 90 F
2.12      12    0        0             33 C 91 F
2.13      13    0        0             34 C 93 F
2.14      14    0        1             31 C 88 F
2.15      15    0        0             33 C 91 F
2.16      16    0        0             33 C 91 F
-----
20 drives operating normally.

```

```

sysadmin@dd690# disk show state
Enclosure  Disk
           1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16
-----
1          .  s  .  .
2          .  .  .  .  .  .  .  .  s  .  .  .  .  s
-----

Legend  State      Count
-----
.        In Use Disks  17
s        Spare Disks   3
-----
Total 20 disks

```

Ensure there are no disks with “**Reallocated Sectors**” above 50. If a disk has RAS count >50, please open an SR to get this disk replaced.

Ensure there is no Failed **(F)**, Reconstructing **(R)** or Absent disks **(A)**.

**Note:** If you find any issues with the health check above, please open a Service Request (SR) for this or inform your Remote Technical engineer if an SR case is already open

## 2.B System Reboot

For any DDOS upgrade, always reboot the DD system first. On system reboot, any hidden hardware issues that may be present will be identified here.

### #system reboot

```
sysadmin@dd690# system reboot
The 'system reboot' command reboots the system. File access is
interrupted during the reboot.
Are you sure? (yes|no|?) [no]: y
```

**Tip:** For the reboot and DDOS upgrade itself, open a command prompt and type # ping -t <dd-hostname> This will show you when the system starts up again.

Once the DD system boots up again, **wait 10 minutes**, then run the commands

**# fi st** (ensure filesystem is enabled)

**# alerts show current**

If the filesystem is enabled and there are still no alerts, then you can run the upgrade.

If the filesystem is still not enabled, wait 10-15 minute and run the command again. If still not enabled and/or alerts are now present, please contact DD Support.

### Step 3: Upgrade DDOS

# system upgrade <upgrade.rpm> (find the file name under in System Manager GUI -> Maintenance)

```
sysadmin@dd690# system upgrade 5.5.1.4-464376.rpm

The 'system upgrade' command upgrades the Data Domain OS. File access
is interrupted during the upgrade. The system reboots automatically
after the upgrade.
Are you sure? (yes|no|?) [no]: y
```

An automatic pre-upgrade check will be performed

```
ok, proceeding.

[UPGRADE]: Check DDOS rpm .....[success]
[UPGRADE]: Finish DDOS version check.....[EXACT SAME VERSION]
[UPGRADE]: Data upgrade completeness checking .....
[UPGRADE]: Private NFS mounting point check .....[success]

[UPGRADE]: Data upgrade completeness checking .....[success]

[UPGRADE]: Pre-upgrade Checking [ | ].....
[UPGRADE]: Pre-upgrade Checking [ \ ]03/22 12:13:26.263 (tid 0xadfb70): NOTICE: Soft 4293918720, Hard 4293918720, Parent 16305
[UPGRADE]: Pre-upgrade Checking [ / ]
Pre-upgrade check completed successfully
[UPGRADE]: Pre-upgrade Checking .....[success]
[UPGRADE]: System pre-upgrade check successful.

Upgrade will take approximately 66 minutes.The actual time may vary based on system configuration.
```

After this, the upgrade script will run

```
[UPGRADE]: Format Upgrade Partition .....[success]
Preparing... ##### [100%]
 1:ddr ##### [100%]
Copy RPM package to link to new rpmfile.rpm in /ddr/var/releases
[UPGRADE]: RPM upgrade.....[success]
[UPGRADE]: Relink Secondary Partition .....[success]
[UPGRADE]: Disable DDOS.....[success]
[UPGRADE]: Post installation check .....[success]
[UPGRADE]: Post-upgrade Script [ - ]/bin/cp: cannot stat `/var/lib/dhccp/*': No such file or directory
[UPGRADE]: Post-upgrade Script.....[success]
[UPGRADE]: Post-upgrade-newimage Script.....completed
[UPGRADE]: Syncing boot image.....[success]
[UPGRADE]: Firmware upgrade .....[start]
[UPGRADE]: Firmware upgrade .....[done]
[UPGRADE]: DDOS Upgrade Finished .....[success]
[UPGRADE]: Upgrade succeeded. Rebooting the system...
sysadmin@dd690#
Broadcast message from root (Tue Mar 22 12:23:37 2016):

The system is going down for reboot NOW!
```

The DD system will then reboot automatically as part of the upgrade process.

**Note:** The reboot time can take from **30 minutes to 90 minutes**, depending on DD system size and DDOS level being upgraded to. Do not worry if this part takes some time

Once the system restarts after the reboot, please wait for **at least 10 - 15 minutes** before running any commands to let the filesystem fully enable and the upgrade to fully complete

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## ## Important Note: ##

1. It is not uncommon for the Filesystem to take up to an hour to enable after an upgrade. If the FS is still not enabled **after 1 hour**, please contact DD support.
2. The System Manager Web GUI may also be unresponsive for a length of time after the upgrade but will eventually become responsive again.

**Tip:** Clearing the cache in your web browser can help here.

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Log in via SSH again and run the commands;

### # system upgrade status

```
sysadmin@dd690# system upgrade status
Current upgrade status: upgrade complete
End time: Tue 2016-03-22 12:39:50 GMT
Stage (24/24): Filesystem upgrade
Status: completed
Failure: No error.
sysadmin@dd690#
```

**# alerts show current** (as seen above) – Ensure there is no active alerts

### # system show version

```
sysadmin@dd690# system show version
Data Domain OS 5.5.1.4-464376
```

**# fi st** (as seen above) – Ensure the filesuste

If you see the error **“filesystem has encountered a problem”** when you run the command **#fi st**, do not worry. See **“Important Note”** above.

If there are no issues at this stage, then the upgrade has been successfully completed. Check that backups to the DD system are running ok after the upgrade.

Finally, if you do encounter any issues during or after the DDOS upgrade, please open a SR with DD support.