



User Guide

## DFM Purge Tool: User Guide

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### About the document

This document provides usage information for the DFM Purge Tool. This tool purges (permanently deletes) objects from the Sybase Database embedded in OnCommand Unified Manager. The tool operates on objects that have been marked as deleted through normal OnCommand Unified Manager monitoring processes.

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## 1 Introduction

OnCommand Unified Manager (formerly named DataFabric Manager (DFM) and Operations Manager) is a NetApp enterprise discovery, monitoring, and management software suite. After deployment of OnCommand Unified Manager, the classic problem of increasing database size is encountered as a dynamic environment is monitored over time. The dynamic environment of a large-scale data center may hasten the observed increase in database size.

This increase in database size will impact database operations and affect the overall performance of OnCommand Unified Manager. This performance impact may be observed by:

1. Delayed response in the UI
2. Delayed response in the NetApp Management Console (NMC)
3. Increased database backup time
4. Increased memory and CPU utilization of the host server

This document provides complete information about DFM Purge Utility including an overview of the tool, installation guidelines and usage information.

## 2 Reasons For Database Growth

There are two types of data tables in the embedded Sybase database, broadly categorized as

- Non-Historical tables – Point-in-time data (such as current volume capacity).
- Historical tables – Trending data (such as volume usage over time)

Stale data is defined as data no longer needed for normal management/monitoring/reporting functions. This stale data continues to grow over time and leads to database bloat. Short-lived objects, such as LUN Clones or Volume Clones created by SnapManger/SnapDrive produced for backup verifications are large contributors to stale data and database bloat. The objects used for backup verification are typically short-lived, and are deleted after the verification process completes. Normal creation/deletion of LUN, Qtree, Volume, and Aggregate storage units also contribute to database bloat. For every Volume/Qtree/LUN that is discovered, a default set of events is generated and inserted into respective database tables. When these objects are deleted on the managed systems, the corresponding entries (events tables and history tables) in the database are not deleted from database tables. Entries are mark-deleted by dfmmonitor as normal monitor processes are executed, but not purged (permanently removed from the database), leading to database bloat over time.

To address the particular issue where an inference can be made that database growth/bloat is impacting performance of the OnCommand Unified Manager environment, use of the DFM Purge Tool may be recommended.

## 3 DFM Purge

The main objective of the DFM Purge Tool is to permanently delete (purge) the objects that were mark-deleted by the monitor processes. Note that objects that have been mark-deleted by an administrator are not affected by this DFM Purge Tool. Purging these mark-deleted objects has proven to be highly beneficial in reducing database bloat with marked improvement on performance of OnCommand Unified Manager.

The DFM Purge Tool is available in four variants:

- Windows (32 bit)
- Windows (64 bit)
- Linux (32 bit)
- Linux (64 bit)

The following section gives complete information regarding the download and usage of DFM Purge Tool on both Windows and Linux platforms.

## 4 Using the DFM Purge Tool

**Note:** Use of this tool requires a downtime for the OnCommand Unified Manager instance as all services except for the database service (sql) will be taken offline. No discovery, monitoring, management, alerting, or Data Protection management will occur while the DFM Purge Tool is purging marked-deleted objects or during the subsequent database reload. Please ensure that you have created an archive backup (dfm backup create) or captured a snapshot backup and exported to archive backup before using the DFM Purge Tool. Using the DFM Purge Tool without an archive or snapshot backup is **not** recommended.

### 4.1 Windows (32 bit and 64 bit)

1. Obtain details for the OnCommand Unified Manager installation by typing 'dfm about | more' on the command prompt.

```
Administrator: C:\Windows\system32\cmd.exe
C:\>dfm about | more
Version                    5.0.1.7864 (5.0.1)
Executable Type            64-bit
Serial Number              1-50-000001
Edition                    Standard edition of DataFabric Manager server

Administrator Name        UMWIN208-168\Administrator
Host Name                  vmwin208-168
Host IP Address            10.238.208.168
Host Full Name             vmwin208-168.mponbme.lab.eng.btc.netapp.in
Node limit                 250 (currently managing 18)
Operating System           Microsoft Windows Server 2008 R2 (Build 7600) x64 based
CPU Count                  2
System Memory              4095 MB (load: 43%)
Installation Directory      C:/Program Files/NetApp/DataFabric Manager/DFM
                           76.4 GB free (76.5%)
```

Figure 1: dfm about - Output

This output provide information about the version of OnCommand Unified Manager you are running, executable type - 64 bit or 32 bit, the operating system and installation directory

2. Download the latest version of DFM Purge Tool corresponding to the version of OnCommand Unified Manager, the operating system and the executable type from the NetApp Utility Toolchest.
3. Extract the file in the downloaded archive and copy to the installation directory (default "<Install Directory>/NetApp/DataFabric Manager/DFM").
4. If necessary, rename the file to: "dfmpurge.exe".
5. From the command prompt, change directories to the copy location in the previous step and type dfmpurge help to verify the tool is properly installed.

## 4.2 Linux (32 bit and 64 bit)

6. Obtain details for the OnCommand Unified Manager installation by typing 'dfm about | more' on the command prompt.

This output provides information about the version of OnCommand Unified Manager you are running, executable type - 64 bit or 32 bit, the operating system and installation directory.

7. Download the latest version of DFM Purge Tool corresponding to the version of OnCommand Unified Manager, the operating system and the executable type from the NetApp Utility Toolchest.
8. Extract the file in the downloaded archive and copy to the installation directory (default "/opt/NTAPdfm/bin").
9. If necessary, rename the file to: "dfmpurge" and set execution bit.
10. From a terminal, change directories to the copy location in the previous step. Source vars.sh or vars.csh, depending upon the running shell, by typing one of the following commands:

```
source vars.sh
```

```
source vars.csh
```

11. After sourcing the appropriate file in the previous step, type dfmpurge help to verify the tool is properly installed.

## 5 Commands in the DFM Purge tool

### 5.1 Help

The help command is used to get various subcommands and options in the tool.

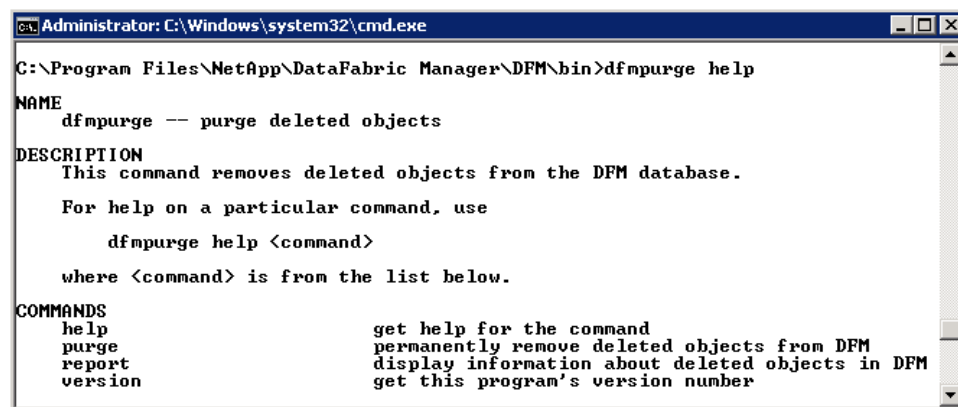
Help - get help for a particular command

Purge - permanently purges the objects mark-deleted by dfmmonitor.

Report - gives information about the deleted objects by the dfm monitor.

Version - displays the version number of the DFM Purge Tool.

The figure below shows the working of the dfmpurge help command:



```
Administrator: C:\Windows\system32\cmd.exe
C:\Program Files\NetApp\DataFabric Manager\DFM\bin>dfmpurge help
NAME
dfmpurge -- purge deleted objects
DESCRIPTION
This command removes deleted objects from the DFM database.
For help on a particular command, use
dfmpurge help <command>
where <command> is from the list below.
COMMANDS
help          get help for the command
purge         permanently remove deleted objects from DFM
report        display information about deleted objects in DFM
version       get this program's version number
```

Figure 2: Command - dfmpurge help

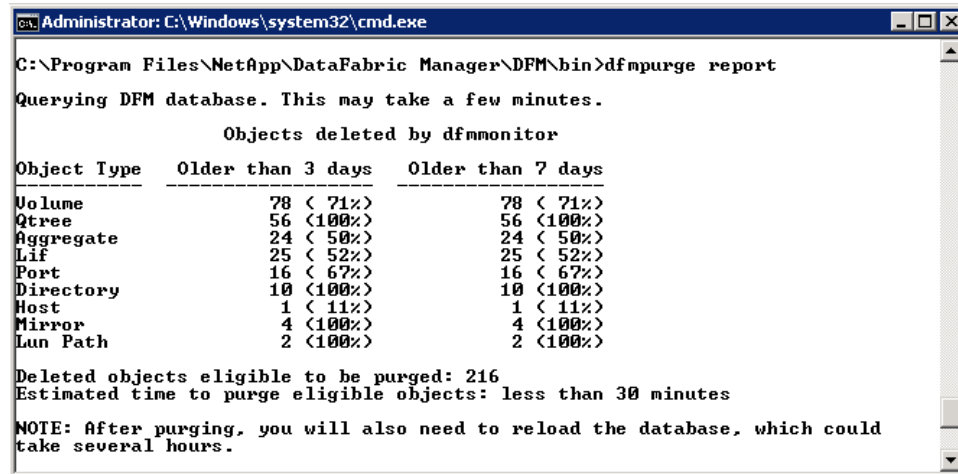
### 5.2 Report

The report command is used to view details of the different object types, which are mark-deleted by dfmmonitor, and are eligible to be permanently removed by the DFM Purge Tool. It also gives the time estimate for the purge operation to complete.

Usage: dfmpurge report

On typing the command on the console, the embedded Sybase Database is queried, and a table with a list of objects mark-deleted by the dfmmonitor is displayed in 3 columns which includes the type of objects, objects older than 3 days, and objects older than 7 days. The deleted timestamp is used to determine if the object was deleted more than 3 days (Older than 3 days) or more than 7 days (Older than 7 days) prior to the current timestamp. Also displayed is the total number of objects eligible to be deleted, and the estimated time required to purge the eligible objects.

The illustration of the dfmpurge report command is shown below.



```
Administrator: C:\Windows\system32\cmd.exe

C:\Program Files\NetApp\DataFabric Manager\DFM\bin>dfmpurge report

Querying DFM database. This may take a few minutes.

      Objects deleted by dfmmonitor
-----
Object Type  Older than 3 days  Older than 7 days
-----
Volume       78 < 71%>         78 < 71%>
Qtree        56 <100%>         56 <100%>
Aggregate    24 < 50%>         24 < 50%>
Lif          25 < 52%>         25 < 52%>
Port         16 < 67%>         16 < 67%>
Directory    10 <100%>         10 <100%>
Host          1 < 11%>           1 < 11%>
Mirror        4 <100%>           4 <100%>
Lun Path      2 <100%>           2 <100%>

Deleted objects eligible to be purged: 216
Estimated time to purge eligible objects: less than 30 minutes

NOTE: After purging, you will also need to reload the database, which could
take several hours.
```

Figure 3: Command - dfmpurge report

You can find the number of current live objects of each type in your DFM server by going to the group summary page as below

<http://<your dfm server name-or-ip>:8080/dfm/> -or- <https://<your dfm server name-or-ip>:8443/dfm/>

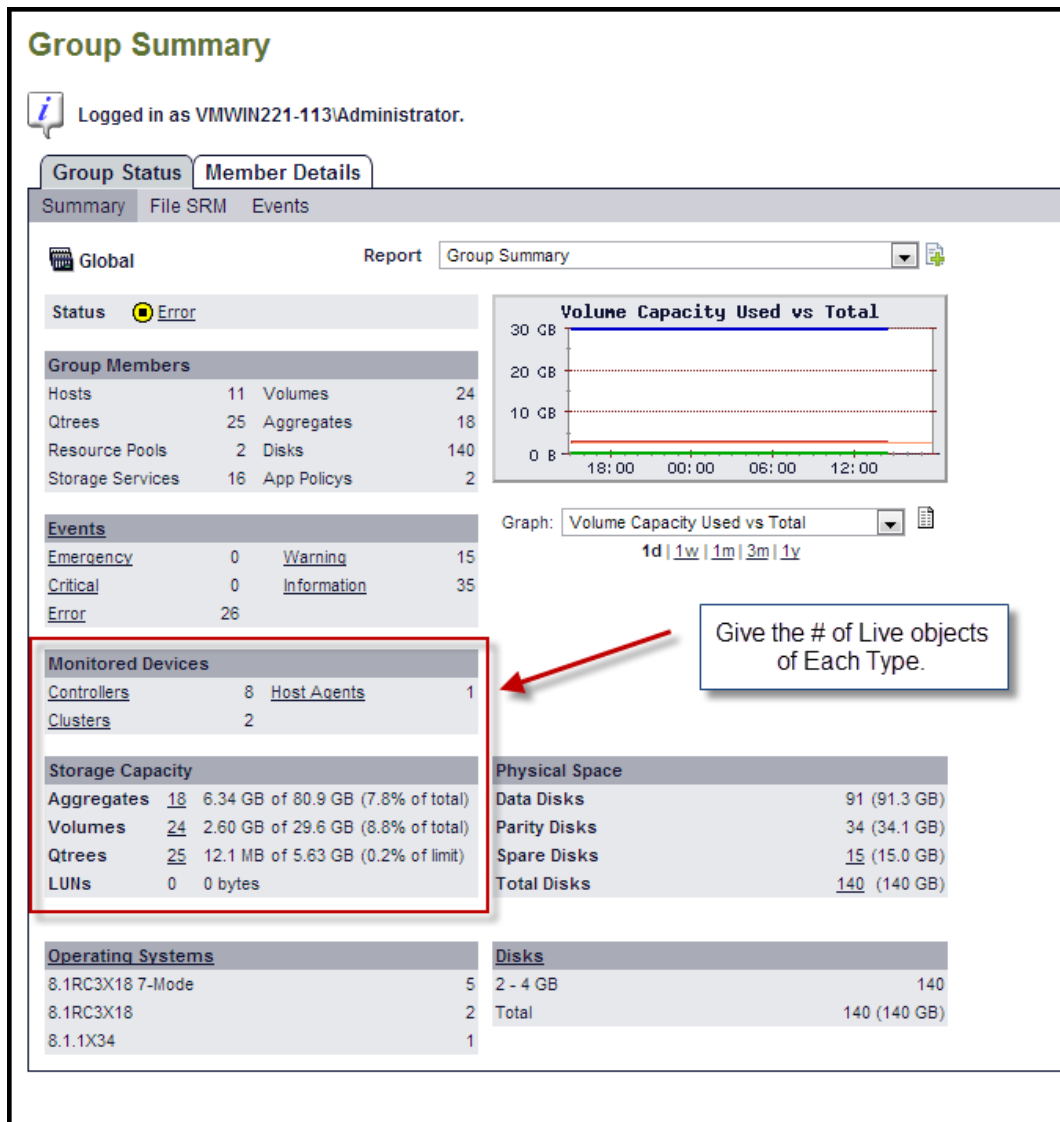


Figure 4: Group Summary View

## 5.3 Purge

The `purge` command is used to permanently purge objects that were mark-deleted by dfmmonitor. It has 4 variants. The `purge` command deletes the objects which are older than 3 days which is default, the `purge -c` deletes the objects older than 7 days, and the `purge -f` command performs the purge operation, without displaying any user prompts for taking confirmation. Also, `purge -c -f` can be used together.

### Type1: purge

This is the default way of using `purge` command. It permanently deletes objects that were mark-deleted by dfmmonitor greater than 3 days from the current timestamp

Usage: `dfmpurge purge`

Steps to be followed to use `dfmpurge purge` command:

1. Create a backup of dfm using `dfm backup create` on the console or capturing a snapshot if snapshot-based backups are configured.(If you already have a recent backup you can skip this)
2. Stop all services except sql:  
`dfm service stop`  
`dfm service start sql`
3. Type `dfmpurge purge`
4. The console will say, "You must backup DFM before you purge the database. The most recent backup is: `dfm_backup_xxxx-xx-xx_xx-xx-xx.ndb`. Are you sure you want to continue? (yes/no)"  
  
Review the backup details and once you are sure that you have captured a backp of OnCommand Unified Manager, enter `yes`, else enter `no`.
5. Upon entering `yes`, the console will prompt for re-confirmation, "This will permanently remove deleted objects from DFM. Are you sure you want to continue? (yes/ no)?" .Enter `yes` to proceed, else enter `no`.
6. The consle will now display a summary of the objects eligible to be deleted, and the estimated time to perform the operation, similar to the one shown by the output of `dfmpurge report` and the purgin operationg will be executed for the individual objects.
7. After the purge operation is finished, the Sybase Database must be reloaded. To execute the reload process, stop all services, reload the databse, and restart services.
8. To stop all the DFM services: `dfm service stop`
9. To reload the database: `dfm database reload`  
This operation may take some time depending on the size of the database.
10. To start all services: `dfm services start`

NOTE:Here is a link to a simple video showing this entire process in action in less than 4 minutes.

[DFM Purge Tool: How to Video \(https://communities.netapp.com/videos/3134\)](https://communities.netapp.com/videos/3134)



Now, the purge operation has been completed, and all objects that were mark-deleted by dfmmonitor have been removed from the database.

The illustration of the dfmpurge purge command is shown below:

```

Administrator: C:\Windows\system32\cmd.exe

C:\Program Files\NetApp\DataFabric Manager\DFM\bin>dfmpurge purge

You must back up DFM before you purge the database.
The most recent known DFM backup is: "dfm_backup_2012-09-05_15-37-03.ndb"

Are you sure you want to continue (yes/no)? yes

This will permanently remove deleted objects from DFM.
Are you sure you want to continue (yes/no)? yes

Querying DFM database. This may take a few minutes.

      Objects deleted by dfmmonitor
-----
Object Type      Older than 3 days  Older than 7 days
-----
Volume           78 < 71%         78 < 71%
Qtree            56 <100%         56 <100%
Aggregate        24 < 50%         24 < 50%
Lif              25 < 52%         25 < 52%
Port             16 < 67%         16 < 67%
Directory        10 <100%         10 <100%
Host              1 < 11%           1 < 11%
Mirror           4 <100%           4 <100%
Lun Path         2 <100%           2 <100%

Deleted objects eligible to be purged: 216
Estimated time to purge eligible objects: less than 30 minutes

NOTE: After purging, you will also need to reload the database, which could
take several hours.

Purging 2 deleted 'Lun Path' objects (step 1 of 9)
[#####] 100%
Purging 56 deleted 'Qtree' objects (step 2 of 9)
[#####] 100%
Purging 78 deleted 'Volume' objects (step 3 of 9)
[#####] 100%
Purging 24 deleted 'Aggregate' objects (step 4 of 9)
[#####] 100%
Purging 0 deleted 'Directory' objects (step 5 of 9)
[#####] 100%
Purging 1 deleted 'Mirror' objects (step 6 of 9)
[#####] 100%
Purging 16 deleted 'Port' objects (step 7 of 9)
[#####] 100%
Purging 6 deleted 'Lif' objects (step 8 of 9)
[#####] 100%
Purging 1 deleted 'Host' objects (step 9 of 9)
[#####] 100%

You must reload the DFM database before restarting DFM.
Run the commands

    dfm service stop
    dfm database reload
    dfm service start
  
```

Figure 5: Command - dfmpurge purge

## Type 2: purge -c

This is the conservative way of using purge command. When run with the -c option, dfmpurge deletes objects that were mark-deleted by dfmmonitor greater **than 7 days** from the current timestamp.

Usage: dfmpurge purge -c

The steps to use the dfmpurge purge -c command is similar to Type1. Only change is in the step 3, where dfmpurge purge -c command will be used instead.

## Type 3: purge -f

The main feature of this command is that the prompts in case of Type1: Step 4 & Step 5 are eliminated. Thus, purge operation is carried out as soon as the command is entered, without any interaction by the user.

This method removes the objects mark-deleted by dfmmonitor greater **than 3 days** from the current timestamp.

This method is mainly helpful when the tool is used by scripts for automation.

Usage: dfmpurge purge -f

The steps to use the dfmpurge purge -f command is similar to Type1. Only change is in the step 3, where dfmpurge purge -f command will be used instead. Steps 4 & 5 are not encountered.

#### Type 4: purge -c -f

This is used to get the combined effect of -c and -f . It basically forces the purge operation and does not return any prompts, but is a conservative way and deletes objects that were mark-deleted by dfmmonitor greater **than 7 days** from the current timestamp.

Usage: dfmpurge purge -c -f

The steps to use the dfmpurge purge -c command is similar to Type1. Only change is in the step 3, where dfmpurge purge -c -f command has to be used instead. Steps 4 & 5 are not encountered.

## 5.4 Version

This command is used to find out the current version of the DFM Purge tool which is being used.

Usage: dfmpurge version

The figure below illustrates the usage and the result of the dfmpurge version command.



Figure 6: Command - dfmpurge version

## 6 Sample Test Results

In order to test the effectiveness of the DFM Purge tool, sample tests were conducted on a DFM server with the following configuration.

Operating System	Red Hat Linux 64 bit
DFM Version	4.0.2
DFM Backup Size(.ndb)	745 MB
DFM Purge tool version	1.0 (please CHECK ver)

The number of marked deleted instances displayed by the dfmpurge report command is shown in Figure 7. The total number of deleted objects eligible to be purged was around 80,133, and the estimated time for the purge operation to be carried out was between 30 minutes and 1 hour 15 minutes. The maximum number of deleted objects were Qtree, Lun Path and Volumes, as seen in the report.

In the tests, the purge operation took about 50 minutes, which was within the estimated time. The total time for the entire purge operation, including reloading the database, took about 1 hour and 30 minutes.

```

root@MTME-ibmx3550-01:/opt/NTAPdfm/data
[root@MTME-ibmx3550-01 data]# dfmpurge report

Querying DFM database. This may take a few minutes.

Objects deleted by dfmmonitor

Object Type      Older than 3 days  Older than 7 days
-----
Qtrees           33863 (100%)      33863 (100%)
Lun Path         23281 (100%)      23281 (100%)
Volume           22418 (100%)      22418 (100%)
Directory        255 (100%)        255 (100%)
Disk             159 (100%)        159 (100%)
Initiator Group  123 (100%)        123 (100%)
Mirror           18 (100%)         18 (100%)
Interface        12 (100%)         12 (100%)
FCP Target       3 (100%)          3 (100%)
Host             1 (100%)          1 (100%)

Deleted objects eligible to be purged: 80133
Estimated time to purge eligible objects: between 30 minutes and 1 hours 15 minutes

NOTE: After purging, you will also need to reload the database, which could
take several hours.

```

Figure 7: Sample Test - dfmpurge report

Figure 8 gives the comparative representation of the results obtained during the test. As shown in the figure, the size of the monitordb file was about 3.04GB before the purge operation was carried out. After the purge operation, the size reduced to 2.94 GB, which is quite noticeable. But, after the database was reloaded, the size of the monitordb was significantly reduced to a mere 2.75 GB. This in comparison with the initial file size of 3.04 GB proves that there is a significant reduction in the database size.

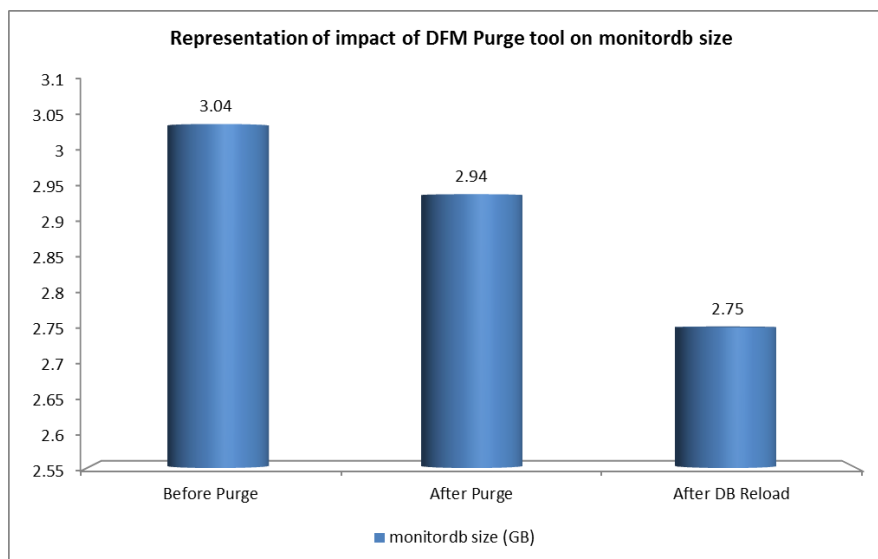


Figure 8: Sample Test Results - Size of monitordb

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