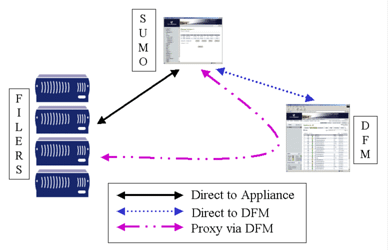
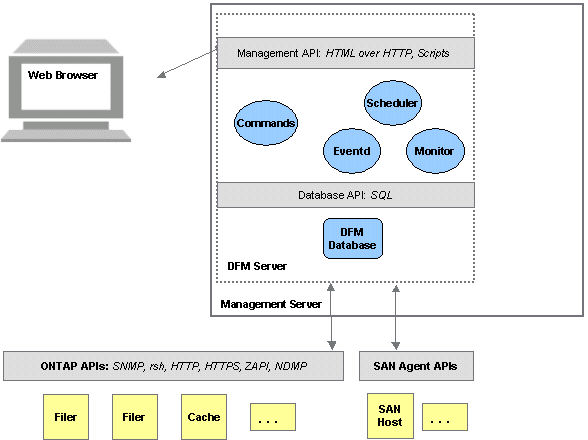
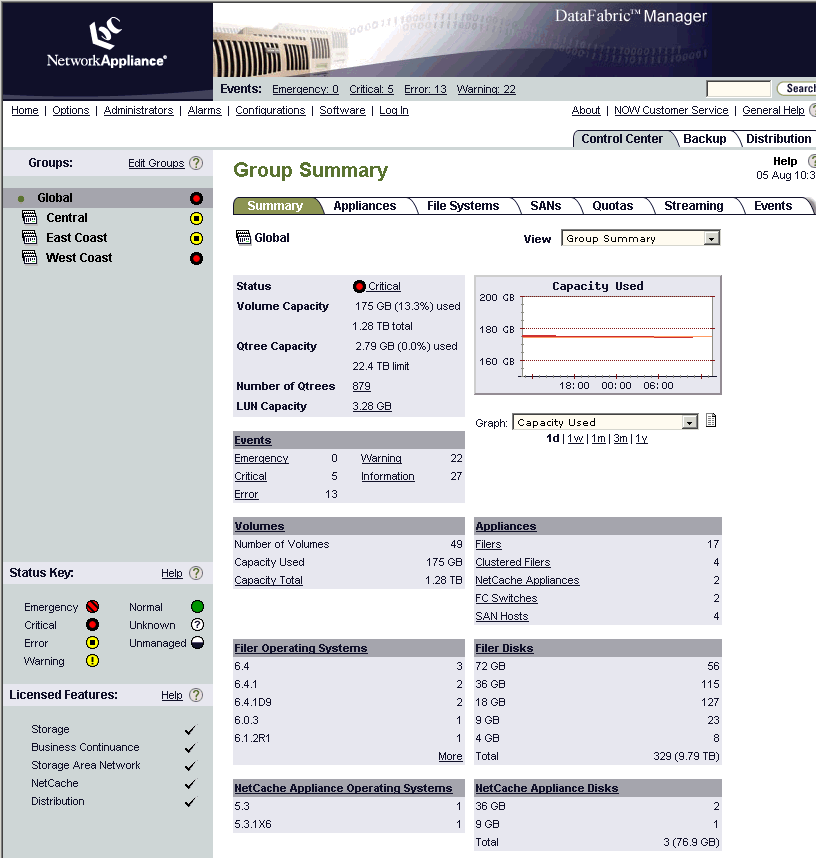
**DataFabric Manager: FAQ**

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DataFabric Manager is a collection of cooperating programs, written in C, that run on a Windows or UNIX server.



**Interfaces**

The primary user interface for DFM is a GUI accessed via a web browser. DFM also includes a scripting interface, and exports all reports in XML, perl, and spreadsheet for use by other applications.

Future releases will include a richer API set for other applications to direct DFM management operations.

The interface between the DFM Server and the filers it manages include

* SNMP
* Telnet
* RSH
* NDMP
* Zephyr APIs (ZAPI, an XML-over-HTTP scheme)

For many management tasks, DFM invokes a device's element manager to handle the operation. Examples include FilerView for filers, FabricWatch for Brocade switches, and so on.

**4.****Technology Direction**

We intend to evolve the DFM product in the following directions:

* continue adding **comprehensive filer management**tools as filers add new features
* expand **data management**tools to cover scalable unified storage and flexible replication, migration, backup
* add additional **management APIs**to allow other applications more access into DFM
* add **repository APIs**to give DFM more transparent access into other applications
* develop additional **client GUIs**in addition to or instead of the current web-based GUI

**5.****Examples**

The screen examples below give a flavor for what DFM looks like.

**5.1****Main Navigation Elements**

The first is the main summary page. Group-based navigation is on the left. One set of tabs ("Control Center", "Backup", "Distribution") selects an application within the DataFabric management suite; the other set of tabs selects management activities within the application.

**DataFabric Manager: FAQ**

**Questions**

**1 Overview**

**1.1 What is DataFabric Manager?**

DataFabric Manager software provides infrastructure services such as discovery, monitoring, role-based access control, auditing, logging, etc. for products in the Storage and Data Suites. DataFabric Manager software runs on a separate server. It does not run on storage systems.

The DataFabric Manager server supports the following products:

* Operations Manager
* Protection Manager
* Provisioning Manager

The DataFabric Manager server has a command line interface (CLI) for scripting commands, that might otherwise be performed via a graphical user interface (such as Operations Manager web UI or NetApp Management Console).

**1.2 What is Operations Manager?**

Operations Manager is part of the NetApp Manageability Family Suite and is accessed via a web browser (see **"What's the URL for Operations Manager?"**). It is used for day to day monitoring, alerting, and reporting of storage infrastructure. Operations Manager has the following tabs (some of which are license controlled):

* **Control Center** - Allows users to configure and view results for discovery, monitoring, reporting, and alerting for storage systems. This tab is enabled when Operations Manager has been licensed.
* **Backup Manager** - Allows users to monitor and manage SnapVault and Open Systems SnapVault disk-to-disk backups. This tab appears only when the Business Continuance Option has been licensed.
* **Disaster Recovery Manager** - Allows users to monitor and manage SnapMirror disk-to-disk mirroring. This tab appears only when the Business Continuance Option has been licensed.
* **File SRM** - This sub-tab (located under the Control Center group status tab) allows users to view filesystem reports filtered and sorted by size, age, owner, access date, and modified date. This sub-tab appears only when the File SRM has been licensed.
* **Performance Advisor** - This functionality is provided via NetApp Management Console, which can be downloaded from the Setup menu. The Performance Advisor provides pre-defined real-time and historical performance views and allows the user to create custom views for a variety of Data ONTAP performance counters. This module is available along with Operations Manager license.

Operations Manager offers these features:

* **Discovery** - You can use Operations Manager to configure the DataFabric Manager server discovery of storage systems, volumes, qtrees, LUNs, disks, quotas, etc. and then view the results filtered by role-based access control and user-defined grouping.
* **Monitoring and Reporting** - You can monitor device/object health, capacity utilization, and performance in Operations Manager and view or export reports with the relevant information. You can also create custom reports using Operations Manager.
* **Alerting** - You can use Operations Manager to configure alerts and thresholds for the DataFabric Manager server event management. The DataFabric Manager server will then issue alerts and Operations Manager will generate event reports for monitored systems, volumes, qtrees, etc. The DataFabric Manager server alerts are sent via e-mail, pager, or by generating SNMP traps to be sent to other monitoring applications.
* **Planning** - You can use Operations Manager to plan for future storage capacity needs based on past growth rates.
* **Management** - Operations Manager provides the following management features:
  + Group devices, vFiler units, host agents, volumes, qtrees, LUNs, etc. into meaningful groups for ease of management. The groups are stored within the DataFabric Manager server and are shared with other client applications.
  + Launch FilerView for single-node management.
  + Configure the DataFabric Manager server role-based access control settings.
  + Define group configuration management templates and apply those templates to one or more storage systems.
  + Edit qtree, or user quotas.
  + Run Data ONTAP CLI commands simultaneously on multiple systems.

**1.2.X1 [internal] What version of NetApp DataFabric Manager can manage IBM's N series, and what version is the first IBM-branded release?**

[This FAQ is not included in customer-visible pages]

**CAUTION**: This must remain an internal FAQ only.

NetApp DataFabric Manager manages "[IBM System Storage N series](http://www-03.ibm.com/servers/storage/nas/)" as from version 3.3.

The first version of the IBM-branded DataFabric Manager is 3.3.1 which can also manage both IBM and NetApp storage, and NetApp's NetCache.

The IBM-branded version of the host agent is 2.3.1, which is named "DataFabric® Manager Host Agent" for IBM only (remains "NetApp® Host Agent" for NetApp). Either brand of the host agent can be used on a host, but not both, and either brand can be used in managing either NetApp or IBM N series storage.

**1.3 What are the system hardware requirements for running the DataFabric Manager server?**

The Windows system running the DataFabric Manager server must satisfy the following minimum requirements:

* Intel-based PC with single 2 GHz CPU (Xeon or Pentium 4)
* At least 4 GB of free disk space; 8 GB is better
* At least 1 GB of memory

For the Linux system, the minimum requirements are:

* Intel-based PC with single 2 GHz CPU (Xeon or Pentium 4)
* At least 4 GB of free disk space; 8 GB is better
* At least 1 GB of memory

These requirements are for a setup with basic monitoring of storage systems. As more features are enabled and more monitored objects added, it is likely that a better platform will be required. The size depends mainly on the number and type of managed objects (e.g. number of storage systems, qtrees, use of Storage Resource Management or Performance Advisor).

For more detail about how to size the system, refer to [TR-3440 (Sizing Guide)](http://www.netapp.com/library/tr/3440.pdf) on NOW.

You should deploy DataFabric Manager on a system that is running no other applications.

**1.4 What are the OS and patch level requirements for running the DataFabric Manager server?**

These operating system service packs and patches should be applied to the DataFabric Manager server:

For the Windows system:

* Windows 2003 (32-bit and 64-bit x86), any service pack.
* Windows 2008 (32-bit and 64-bit x86), any service pack.
* Windows NT 4.0, Windows 2000 and Windows XP are not supported.

For the Linux system:

* Red Hat Enterprise Linux AS version 4 (32-bit and 64-bit x86), update 3 or later.
* Red Hat Enterprise Linux Advanced Platform v5 (32-bit and 64-bit x86), any update.
* SUSE Linux Enterprise Server 9 (32-bit and 64-bit x86), service pack 2 or later.
* SUSE Linux Enterprise Server 10 (32-bit and 64-bit x86), any update.
* Oracle Enterprise Linux 4 (32-bit and 64-bit x86), any update.
* Oracle Enterprise Linux 5 (32-bit and 64-bit x86), any update.
* Other Linux versions and distributions are not supported.

For the VMware Infrastructure 3 and 3.5, Standard and Enterprise Editions:

* All supported Linux and Windows platforms as guest OS, except Oracle Enterprise Linux. Oracle Enterprise Linux is not supported as guest OS.

Solaris support has been removed in version 3.8 of DataFabric Manager server.

NOTE: Please refer [DataFabric Manager Support Matrix](http://now.netapp.com/NOW/knowledge/docs/olio/guides/dfm_compatibility/DFM.shtml) for more details.

The browsers used to access Operations Manager must be Internet Explorer 6.0 or later, or Mozilla suite 1.7 or later, or Mozilla FireFox 1.5 or later. Operations Manager does not support Netscape Navigator.

**1.5 What are the NetApp Management Console workstation requirements?**

NetApp Management Console is supported on the following operating systems:

* Windows: Windows XP, Windows 2003, Windows Vista.
* Linux: Red Hat Enterprise Linux, SUSE Linux.

Solaris support has been removed in version 2.2 of NetApp Management Console.

The NetApp Management Console uses J2SE 1.5.0. For any compatibility issues, refer to [Supported System Configurations in Java[tm] 2 Platform v1.5.0](http://java.sun.com/j2se/1.5.0/system-configurations.html).

Note: Please refer [DataFabric Manager Support Matrix](http://now.netapp.com/NOW/knowledge/docs/olio/guides/dfm_compatibility/DFM.shtml) for more details.

**1.6 How much configuration will I have to do before the DataFabric Manager server returns useful information?**

None! The DataFabric Manager server is up and running as soon as the installation completes. Auto-discovery of storage systems has already begun at that point, and it will discover them on the local network. However, network discovery is disabled so the DataFabric Manager server will not discover connected networks until you decide to do this.

Within a few minutes, if your network allows it, you will see storage systems listed along with their important health and configuration information.

You can use your web browser to sort what you see and to generate reports by clicking easy-to-follow links. You don't have to write scripts or remember command line options to get started.

Of course, you can make the DataFabric Manager server even more useful by taking advantage of its many configuration options. A good place to start is in the "Options" page, and viewing the online help.

**1.6.X1 [internal] What are the various DataFabric Manager releases?**

[This FAQ is not included in customer-visible pages]

The table below lists the releases of DataFabric Manager along with the major new content in each:

|  |  |  |
| --- | --- | --- |
| **Release Name** | **Release Date** | **Description** |
| 1.0 | May 24, 2001 | Monitoring for storage systems and NetCache including discovery, reporting, graphing, alerting. |
| 1.1 | October 17, 2001 | Qtree monitoring, Solaris platform. |
| 2.0 | March, 2002 | NetCache configuration and software management, enhanced graphs for NetCache, access control, alarms as SNMP traps, new packaging into Storage and NetCache options. |
| 2.1 | August, 2002 | User quota monitoring, Storage chargeback, LUN management, SnapMirror monitoring. |
| 2.2 | March, 2003 | SAN Switch management, SnapVault backups, User Quota Editing, Security, Web Content Distribution. |
| 2.3 | July, 2003 | SAN client discovery, monitoring, and management; FilerView cross-linking; quotas for Content Distribution. |
| 3.0 | March, 2004 | Storage Resource Management (SRM), Disaster Recovery Manager, Performance Advisor, addition of a new NetApp Management Console, and Chargeback By Allocation. |
| 3.0.1 | July, 2004 | Windows 2003 Server support plus some customer RFEs. |
| 3.1 | November, 2004 | Linux Red Hat EL ES v3 support; Flexible Volumes and Aggregate (Data ONTAP 7.0) discovery and monitoring; SAN Manager support; Faster monitoring triggered by SNMP Traps from appliances; Recognize NetCache failover. |
| 3.2 | May, 2005 | Hierarchical groups; Custom reporting; Rotate logs; Storage System configuration management; Script Plugin Framework; RBAC for storage system CLI; Event and Quota RBAC; Snapshot monitoring and space management; Backup improvement; Improved Storage Resource Management; Support for NetCache in a NAT environment; Basic RLM scripting support; Configuration difference checker script. |
| 3.3 | February, 2006 | MultiStore monitoring; Storage System configuration management; Linux Red Hat EL AS v3, SUSE Linux ES 9 and Solaris 10 support; Disk firmware monitoring; Autosupport for DataFabric Manager; Expand custom report catalog; Custom Reporting GUI; Usability improvements; Snaplock monitoring; Password management; Facilitate EOA of SAN option; Alert improvements; DataFabric Manager backup improvements; Snapshot monitoring; Threshold and growth rate based events; High Availability; RBAC improvements; RLM support; NetCache Files Management. |
| 3.3.1 | April, 2006 | IBM-branded release of 3.3. |
| 3.4 | August, 2006 | Audit Logging; RBAC improvements for group administration; V-series disk reporting; vFiler capacity reporting; Renaming DataFabric Manager web UI as Operations Manager. |
| 3.4.1 | November, 2006 | IBM-branded release of 3.4, and NetApp maintenance release (bug fix only). |
| 3.5 | January, 2007 | Protection Manager |
| 3.5.1 | June, 2007 | IBM-branded release of 3.5. |
| 3.6 | August, 2007 | Operations Manager: MultiStore Configuration Management, Faster backup for DFM data, Scheduling Report Generation, Data ONTAP RBAC Management, Enhancements to Operations Manager UI and Reporting; Performance Advisor: RBAC integration, improved navigation, event management; Protection Manager: Improved Diagnostics, Usability Improvements, Application Data Sets. |
| 3.6.1 | November, 2007 | IBM-branded release of 3.6. |
| 3.7 | May, 2008 | Operations Manager: Relax licensed node count enforcement, add "additive" license support, VCS for HA, DR of DataFabric Manager server data using Protection Manager (Windows only), SNMP v3, export of and ODBC access to database and Performance Advisor data, "filer" replaced with "storage system", V-series (LUN array) reporting improvements; Performance Advisor: combination thresholds, rule-based thresholds, threshold properties, Performance Reports in the Operations Manager UI; Protection Manager: VMware protection with OSSV, disaster recovery, limit data streams; New Provisioning Manager: Policy-based provisioning for NAS, SAN and secondary nodes, vFiler setup and creation, Space Management for primary nodes. This is also the IBM-branded release. |
| 3.8 | April, 2008 | Operations Manager: NetCache de-supported, all NetCache features removed, Solaris platform de-supported, Windows 2008 platform support, IPv6 support; Performance Advisor: Autosupport enhancements to include Performance Advisor data; Protection Manager: (need list); Provisioning Manager: (need list); This is also the IBM-branded release. |
| 4.0 | Feb, 2010 | Operations Manager: ONTAP 8 monitoring and reporting support; Performance Advisor: Enhanced data collection, baselining, data export, diagnostics; Protection Manager: (need list); Provisioning Manager: (need list); This is also the IBM-branded release. |

**1.6.X2 [internal] What versions of Sybase are used in each release?**

[This FAQ is not included in customer-visible pages]

|  |  |  |  |
| --- | --- | --- | --- |
| **Release** | **Sybase version** | | |
| **Windows** | **Solaris** | **Linux** |
| 1.0 | 7.0.1.918 | NA | NA |
| 1.1 | 7.0.1.1207 | 7.0.1.1200 | NA |
| 2.0 | 7.0.3.2046 | 7.0.3.2047 | NA |
| 2.1, 2.2 | 7.0.4.2788 | 7.0.4.2789 | NA |
| 2.3, 3.0 | 8.0.2.3601 | 8.0.2.3608 | NA |
| 3.1, 3.2 | 9.0.1.1943 | 9.0.1.1902 | 9.0.1.1902 |
| 3.3, 3.3.1 | 9.0.2.3198 | 9.0.2.3137 | 9.0.2.2452 |
| 3.4 | 9.0.2.3228 | 9.0.2.3300 | 9.0.2.3300 |
| 3.4.1 | 9.0.2.3396 | 9.0.2.3300 | 9.0.2.3300 |
| 3.5 through 3.7.1 | 9.0.2.3396 | 9.0.2.3397 | 9.0.2.3397 |
| 3.8 and later | 10.0.1.3831 | NA | 10.0.1.3830 |

Note: The fourth number in the Sybase version signifies the EBF (Emergency Bug Fix) build.

**1.6.X3 [internal] What versions of Apache are used in each release?**

[This FAQ is not included in customer-visible pages]

|  |  |
| --- | --- |
| **Release** | **Apache version** |
| 1.0 through 2.1 | 1.3.12 |
| 2.2 through 3.0.1 | 2.0.44 |
| 3.1 through 3.5.1 | 2.0.52 |
| 3.6 through 3.7.1 | 2.0.59 |
| 3.8 and later | 2.2.10 |

**1.6.X4 [internal] What versions of OpenSSL are used in each release?**

[This FAQ is not included in customer-visible pages]

|  |  |
| --- | --- |
| **Release** | **OpenSSL version** |
| 1.0 through 2.1 | No SSL |
| 2.2 | 0.9.6g |
| 2.3 | 0.9.7a |
| 3.0 through 3.5.1 | 0.9.7c |
| 3.6 and later | 0.9.8e |

**2 Installation**

**2.1 How do I start the setup process?**

DataFabric Manager setup and all of the program and configuration files that will be deployed on your system are contained in a very large executable file (about 260 MB on Windows, and 280 MB on Linux). It will be named **dfmsetup-*x-y*-win32.exe** for Windows, and **dfmsetup-*x-y*-linux.sh** for Linux. The *x-y* identifies the release number, such as *4-0*.

To start the setup process, run this file and answer a few questions as they are presented to you.

**2.2 What information will I need during setup?**

You'll need a DataFabric Manager/Operations Manager (CORE) license key, which you can view on NOW if you have bought DataFabric Manager/Operations Manager. Alternatively, limited-time demo licenses can be obtained from your NetApp sales representative.

**2.3 How can I uninstall DataFabric Manager?**

For Windows, use the normal uninstall method. From the Control Panel, select "Add/Remove Programs". Then select "NetApp DataFabric Manager" and click the **Remove**button. Answer any prompts that are presented.

For Linux, use **rpm --erase NTAPdfm** command which comes with Red Hat Linux.

Uninstalling removes most of the DataFabric Manager files and all registry and other configuration settings. However, a number of files are not deleted (in case they are needed later) and the install directory is renamed. This means that if a new version is installed after an uninstall, the uninstalled version will not interfere with the new installation, but can be manually retrieved if necessary. You can manually delete this renamed directory when you no longer need it.

**2.4 Will my computer reboot during installation?**

Not usually. However, on Windows the installer might request a reboot to upgrade MSI (Microsoft Installer) components. This is unrelated to DataFabric Manager product, and only occurs if the MSI version on the target machine is old.

**2.5 How do I upgrade my system running DataFabric Manager server from Windows 2000 to Windows 2003?**

DataFabric Manager server 3.7 (and later) does not support Windows 2000, so the server OS must be upgraded to Windows 2003 before upgrading to DataFabric Manager 3.7.

If necessary, upgrade to DataFabric Manager 3.0.1 (or later) before upgrading the OS to Windows 2003 Server.

Remember to perform a "dfm backup create" before doing any upgrade in case you need to go back to the earlier version. However, you should not need to restore from this backup if the upgrade proceeds successfully.

Alternatively, use another PC to install a fresh version of Windows 2003 and DataFabric Manager 3.0.1 (or later), then migrate the database from the old PC (Windows 2000) to the new PC (Windows 2003) using "dfm backup create" on the old PC and "dfm backup restore" on the new PC. Make sure the old PC is shut down or all monitoring is disabled before restoring the database onto the new PC. Only one PC should be used to actively manage appliances.

**2.6 What does it mean if the database is temporarily unavailable?**

If Operations Manager pages or CLI commands report a message like this:

The DataFabric Manager database is temporarily unavailable; error code is -100.

Please try again later.

If the error persists, contact your NetApp representative.

Here's how to interpret the error codes:

|  |  |  |
| --- | --- | --- |
| **Error Code** | **Meaning** | **Action** |
| -72 | No database file (Windows only) | Usually means that the Sybase server instance for the MonitorDB isn't running. Check the ODBC configuration for further details. |
| -80 | Unable to start database | The database server is not running and couldn't be restarted. |
| -85 | Communications error | This usually means that the database server went down in the middle of a transaction. If you try again, you'll likely get a different error code. Follow the recommendations for the other error code. |
| -100 | Database engine is not running | Check to see if the "DFM Sybase ASA" service is Started. If not, start it. If it is already running, the error may mean that the database is recovering after a shutdown. Wait up to an hour (depending on the size of the database), and try again. |
| -101 | Not connected | The Sybase database ASA server is not functioning properly. Contact NetApp for assistance. |
| -107 | Error writing to transaction log file | This generally happens due to network disconnect when database files doesn't reside on local system. Try restarting DataFabric Manager server services. |
| -308 | Connection terminated | This usually means that the database server went down in the middle of a transaction. If you try again, you'll likely get a different error code. Follow the recommendations for the other error code. |
| -832 | SQL connection error | This means that DataFabric Manager is not able to connect to database. Try restarting DataFabric Manager services. |

**2.7 How can I upgrade my demo license to a real one?**

To replace the license key in your demo version with a real license key, enter the new license key on the Options page in Operations Manager, or use the license subcommand from the command line:

$ dfm license install AABBCCDDEEFFGG

replacing the "AA..GG" part with the real license code.

**2.8 How do I install the NetApp Management Console?**

The NetApp Management Console is installed by each user on their workstation by downloading an installation program from Operations Manager Control Center page.

The version of NetApp Management Console must match the version of DataFabric Manager server or be newer since backwards compatibility is built into NetApp Management Console.

The links for downloading this installer are located by selecting the "Download Management Console" item in the "Setup" drop-down menu of the Control Center.

**2.8.X1 [internal] What should I do when I hit an error (e.g. 1722) during DataFabric Manager install or uninstall?**

[This FAQ is not included in customer-visible pages]

During the installation process, there is a chance that you might hit an error, and then the installation would roll back. Quite often the reason that the installation fails is due to the fact that there were some conflicts during setting up DataFabric Manager.

Before you do anything, check that you have backed up any existing DataFabric Manager install (using "dfm backup create" or by copying the install directory if the DataFabric Manager server is not running).

Next, you should retry the installation/upgrade. If that doesn't work, you should then try to reboot your computer, then stop all the DataFabric Manager server services then retry the upgrade/installation. If it still fails, then proceed.

Get a copy of nukedfm, and make sure you have the most up-to-date version. Make sure that the version you have matches the OS version as well as the release of DataFabric Manager.

Run nukedfm, and then try to re-install. Make sure there are no failures when running nukedfm, if there are, it is recommended to run it again, until there are no errors.

After nukedfm has cleaned up your system, try to re-install, but use the extra setup.log flag (e.g. setup.exe /v" /L\*v setup.log"). If the installation still fails, send all the log files inside the log directory plus the "setup.log" file which is located in the same directory as "setup.exe" to NetApp.

Note: If you need a copy of nukedfm, contact [smoot@netapp.com](mailto:smoot@netapp.com) or (for release 4.1) go here: [http://web.netapp.com/engineering/rlse/aw/**4.1**/release/nt/bin/nukedfm.exe](http://web.netapp.com/engineering/rlse/aw/4.1/release/nt/bin/nukedfm.exe)(and read the [readme](http://web.netapp.com/engineering/rlse/aw/4.1/release/nt/bin/nukedfm_readme.txt)).

**3 General**

**3.1 What's the URL for Operations Manager?**

Once you've installed DataFabric Manager software on your server, you can visit Operations Manager at:

http://*system\_name*:8080/

where *system\_name* is the name or address of the system on which you installed DataFabric Manager. Note that the ":8080" is required.

The browsers used to access Operations Manager must be Internet Explorer 6.0 or later, or Mozilla suite 1.7 or later, or Mozilla FireFox 1.5 or later. Operations Manager does not support Netscape Navigator.

The default URL mentioned above can be changed via subsequent customization. You can always view the current configuration in Operations Manager by selecting "Options" in the "Setup" menu, then select "Security", or by using the command:

$ dfm option list httpEnabled httpPort httpsEnabled httpsPort

Option Value

--------------- ------------------------------

httpEnabled Yes

httpPort 8080

httpsEnabled No

httpsPort 8443

To change the ports, refer to question **"How do I enable HTTPS protocol for accessing Operations Manager?"**

**3.2 When I access an Operations Manager page, I see "Invalid Parameters" error. What should I do?**

Make sure that you are accessing Operations Manager using the correct URL which is:

*protocol*://*server*:*port*/

where:

* *protocol* is either HTTP or HTTPS depending on the security settings you have selected. Default is HTTP.
* *server* is the name or address of the system on which you installed DataFabric Manager.
* *port* is the port for the selected *protocol*. Default is 8080 for HTTP and 8443 for HTTPS.

The browsers used to access Operations Manager must be Internet Explorer 6.0 or later, or Mozilla suite 1.7 or later, or Mozilla FireFox 1.5 or later. Operations Manager does not support Netscape Navigator.

**3.3 Can I use my own scripts to view the information collected by the DataFabric Manager server?**

Yes. The DataFabric Manager server is designed to be used with any sort of scripting language that is available on your system, from Windows batch files to Perl. Use whatever suits your needs.

You can access nearly all of the features of DataFabric Manager via the command line interface - the **dfm** command. To see what commands are available, type these two commands:

dfm help

dfm report

On Linux, you'll need to set several environment variables before running the command. Set these variables by running one of the following (e.g. add to your shell's rc file), before invoking the "dfm" command:

[sh] . *INSTALL\_PATH*/bin/vars.sh

[csh] source *INSTALL\_PATH*/bin/vars.csh

where *INSTALL\_PATH* is the path to the DataFabric Manager install directory. For a default installation *INSTALL\_PATH* is "/opt/NTAPdfm".

Simple help for each of the commands can be displayed at the command line by adding "help" to the end of the command, for example:

dfm host help

The "dfm" command covers the usage of Control Center in Operations Manager. Use the following commands for Backup Manager, Disaster Recovery Manager and Protection Manager/Provisioning Manager:

dfbm help

dfdrm help

dfpm help

These will display the syntax and usage, but do not generally give much detail. For more details use either the "man" pages or the online help.

To access the "**man**" pages on Linux, use these commands after setting the environment variables described above:

man dfm

man dfbm

man dfdrm

man dfpm

On Windows the "man" program is not available at the command line. Instead, it's available from the Windows Start menu: select Programs > NetApp > DataFabric Manager > Man Pages.

Alternatively, launch Operations Manager and access the online help ("General Help"). Within the help pages look for the item in the "Contents" list (left panel) called "MAN pages".

**3.4 How can I tell which storage systems are running out of disk space, or view their space breakout?**

One of DataFabric Manager's main features is to let you know when volumes on your storage systems are full or nearly full and to give you the information you need to take corrective action. You can use the "Volume Growth" report to tell you which volumes on all of your storage systems are full or are projected to be full soon. You can then use the "Volume Expandability" report to determine if these full volumes can be dynamically expanded or the "Volume Space Availability" report to investigate whether other volumes are available to absorb the demand for more disk space. In addition, events will be generated when volumes reach their configurable full or nearly-full thresholds.

To drill down into the space breakout for volumes or aggregates, view their details pages (Volume Details, and Aggregate Details). To see the space breakout across several volumes use the "Volume Space Breakout" report. Space breakout is a complicated topic, so be sure to read the help (select "Help->About This Page" on the Volume Details and Aggregate Details pages). Additional task-based help is available in the help system under the following topics (select "Help->General Help" and browse the "Storage management" section):

* Determining how much volume space is used for Snapshot copies
* Determining how much aggregate space is used for snapshots.
* Determining whether a LUN is in danger of write failure.

**3.5 Can I see information about only those appliances I care about?**

Yes. You can define "groups" with a name you choose and select appliances, file systems, or LUNs to add to these groups. The criteria you use to group objects is completely up to you. Some common criteria are to group by location, network, department, type of use, or administrator. All of the DataFabric Manager server's information, reports, statuses, and events can be presented on a per-group basis.

For more information, refer to the section called "**Groups**".

**3.6 Can I remove a managed appliance from the Global group?**

No. The Global group will always hold all of the currently-managed appliances.

You can add or remove appliances from a user-defined group at any time, but they will remain in the Global group.

However, if you no longer want to manage an appliance at all, you can remove it from the DataFabric Manager server's appliance list entirely by deleting it using either the Operations Manager (in the "Appliances" tab of the Global group), or by using the following command at the command line interface:

dfm host delete *hostname*

Removing an appliance from the DataFabric Manager server marks it as no longer visible and it won't be monitored. However, its data doesn't get deleted from the database because doing so could result in a large impact on the system. This means that if the appliance is re-added to the system later, the old historical data reappears.

You can view the list of deleted hosts using the following command at the command line interface:

dfm host list -a

The "Deleted" column of the resulting list will show "Yes" for the deleted hosts.

You can "undelete" them (restoring the historical data) simply by re-adding them using either Operations Manager (in the "Appliances" tab of the Global group), or by using the following command at the command line interface:

dfm host add *hostname*

Because of this "undelete" action, don't try to delete a host and re-add it to rename the host: it won't work. See the FAQ "**What do I do after changing the head, host name or the IP address of an appliance?**" instead.

**3.7 Can I move the DataFabric Manager server to another computer without losing configuration, history, and discovery information?**

For one reason or another (such as upgrading to better hardware or replacing a malfunctioning computer), you might want to move your entire DataFabric Manager server setup to another computer. DataFabric Manager's database backup and restore feature allows you to do this while preserving all the configuration changes you have made and keeping all the appliance information which has been collected since DataFabric Manager was first installed. Before proceeding, review the FAQs on database backup and restore in the "**Management Tasks**" section.

Move your DataFabric Manager installation using the following steps:

* Install DataFabric Manager on the new computer and verify that it is operating. You'll need your license key for this. Make sure to install the same release of DataFabric Manager on the new computer that is running on the old computer.
* Back up the current contents of the DataFabric Manager database on the old computer using the backup command:

$ dfm backup create *backupfile*

This backup file will be very large, possibly many gigabytes in size, so make sure there is enough room in the "data" directory to hold it. If you do not have enough room in the "data" directory, set databasebackupdir option to a directory which has enough space. For more detail, refer to question "**How can I create database backups in a different location?**".

* Locate the backup file that was created: it's inside the "data" subdirectory of the program install directory (by default this is usually "C:\Program Files\NetApp\DataFabric Manager\DFM\data" on Windows and "/opt/NTAPdfm/data" on Linux), if databasebackupdir is not set. If this option is set, the backup file will be created in this directory. The filename will be the backup filename with ".ndb" extension.
* Copy the backup file to the new computer, placing it in a directory with enough space to hold it.
* Add the backed up information to the database on the new computer by using the restore command:

$ dfm backup restore *absolute\_path\_to\_backupfile*

The restore operation makes a temporary copy of the data in the backup and you will need at least twice as much room as the expanded size of the backup in the new directory. Moreover, if the database location is not in the default location ("data" subdirectory of the installation directory), the extra temporary space is needed in the installation directory (for unpacking files before copying to the final location). **IMPORTANT:** Previous releases of "dfm backup restore" command do not accept absolute path to the backup file as input. In this case, copy the backup file to the "data" directory and run "dfm backup restore" with name of the backup file as an argument.

* Some option setting may need adjusting, such as "localHostName" (if it isn't blank). Use "dfm option list" at the CLI to inspect the settings.
* Once you are sure that the DataFabric Manager server is operating correctly on the new computer with its original data, you can uninstall it from the old computer.

Here are some restrictions you should keep in mind, though:

* The new computer should be in the same Windows domain as the old one.
* If possible, the new computer should be on the same subnet as the old one. In any case, all of the appliances that the DataFabric Manager server is monitoring need to remain "reachable".
* All of the users (administrators) that have been added to the DataFabric Manager server need to have a corresponding user name available on the new computer.

If the new computer and old computer are different platforms (example: you migrated from a Windows server to a Linux server), the administrators defined in the DataFabric Manager server will no longer be valid. In this case, you must use the **resetadmin** program that matches your particular release of DataFabric Manager. When you run this program, it removes all administrators from the database, and adds you (the user running the program) as the only administrator.

When migrating DataFabric Manager server between two Windows computer, and there is no local administrative user with full control on the new computer, then you may also need to run the **resetadmin** tool on the new computer. This can usually be avoided by ensuring a domain user common to both computers has full control within DataFabric Manager server on the original computer before migrating to the new computer.

**3.7.X1 [internal] Where is "resetadmin"?**

[This FAQ is not included in customer-visible pages]

This utility is build with each release of DataFabric Manager but is not installed on the system. NetApp people can find it on the internal web in the following locations (per OS):

* Windows: [http://web.netapp.com/engineering/rlse/aw/**4.1**/release/nt/bin/resetadmin.exe](http://web.netapp.com/engineering/rlse/aw/4.1/release/nt/bin/resetadmin.exe).
* Linux: [http://web.netapp.com/engineering/rlse/aw/**4.1**/release/linux/bin/resetadmin](http://web.netapp.com/engineering/rlse/aw/4.1/release/linux/bin/resetadmin) (and [readme](http://web.netapp.com/engineering/rlse/aw/4.1/release/linux/bin/resetadmin_readme.txt)).

Make sure you get the right release version by editing the URL for the release you need.

**3.8 What should I do if I see an "ASA" warning when I log off or reboot?**

When you log off your current Windows user or shutdown or restart your Windows system, you may see a warning dialog box that says "The Windows session is ending. An ASA service is still running, and it has connections. End the service too?".

If you are shutting down or restarting your computer, select Yes for the smoothest shutdown of all of the DataFabric Manager server services. They will start again normally and automatically when the computer starts up again.

If you are only logging off the current user but intend to leave the computer running, be sure to select No here. That will allow the DataFabric Manager server monitoring to continue and leave Operations Manager available for use.

If you inadvertently stop the DataFabric Manager server services without restarting your computer, you'll need to restart them manually by typing "dfm service start" at the CLI. Of course, you can also start up the DataFabric Manager server services by rebooting the computer.

**3.9 Why are "File does not exist" errors written to "error.log" when real-time charts are displayed?**

Harmless errors are generated and written to error.log by the real-time Java charts due to the way they determine which browser they are running under and if there is any optional code they need to call at runtime.

**3.10 After adjusting the system clock on the DataFabric Manager server, some of the DataFabric Manager server services appear hung. Is this normal?**

The DataFabric Manager server services are multithreaded applications. The threads in these services frequently enter the sleep state between tasks. After adjusting the system clock, some sleeping threads may not wake up at all. To correct the situation, these services must be restarted from the command line:

$ dfm service stop server scheduler watchdog monitor eventd

$ dfm service start eventd monitor watchdog scheduler server

This problem does not occur during automatic daylight saving time change.

**3.11 How much space is the database going to consume?**

The DataFabric Manager server can store many gigabytes of data on a system monitoring many hosts. Adding features such as Storage Resource Management and Performance Advisor will consume more space.

Refer to the following for more discussion:

* Question "**What are the system requirements for installing DataFabric Manager?**".
* Question "**How is historical data accumulated?**".
* Section "**Performance of the DataFabric Manager server**".

**3.12 Does the DataFabric Manager server keep every sample it collects?**

No. The DataFabric Manager server generally saves more samples of recent data and fewer samples of older data.

The DataFabric Manager server saves:

* one sample every 15 minutes for the last two days
* one sample every 2 hours for the last two weeks
* one sample every 8 hours for the last two months
* one sample every day for the last two quarters
* one sample every 4 days indefinitely

For more detail, refer to question "**How is historical data accumulated?**".

To collect more granular data, use the Performance Advisor.

**3.13 Why does a browser refresh clear the contents of my telnet applet?**

The telnet/console connection is actually running in a Java applet embedded in Operations Manager page. When you refresh the browser, you actually terminate the running Java program and reload a new instance of it which starts with a cleared terminal history.

**3.14 What ports should be open on my firewall for the DataFabric Manager server to work?**

In the tables below, the following annotations indicate how important each port is to the functioning of DataFabric Manager, and the capabilities that are lost if the port is blocked. Different tables describe the different communication links and the direction in which communication is initiated.

* [M] = Mandatory. Required for core discovery, monitoring and reporting by Operations Manager.
* [E] = Essential. Required for active management or extended monitoring.
* [O] = Optional. This provides only one capability, or is otherwise less important.

When the annotation includes a number (e.g. "[E1]") this indicates that it is paired with another port with the same number, and the requirement is that one or other port be available, but not necessarily both. Apart from configuring the firewall, DataFabric Manager must also be configured to use the chosen protocol and port.

The following ports are used by the DataFabric Manager server to communicate with managed storage systems, NetApp Host Agent (Storage Resource Management and SAN management), and Open Systems SnapVault agents:

|  |  |  |
| --- | --- | --- |
| **Initiated from DataFabric Manager server to managed storage systems and agents** | | |
| **161/udp (snmp)** | [M] | Monitoring of storage systems |
| **80/tcp (http)** | [E1] | Storage System management (including Performance Advisor, configuration management), and HTTP ping method |
| **443/tcp (https)** | [E1] | SecureAdmin-based storage system management |
| **4092/tcp (http)** | [E3] | Connectivity to NetApp Host Agent (configurable) |
| **4093/tcp (https)** | [E3] | Secure connectivity to NetApp Host Agent (configurable) |
| **\* 514/tcp (rsh)** | [E4] | Cluster console, storage system takeover/giveback, remote command execution on managed storage systems, vFiler monitoring and management |
| **22/tcp (ssh)** | [E4] | Secure cluster console, secure storage system takeover/giveback, secure remote command execution on managed storage systems, vFiler monitoring and management |
| **23/tcp (telnet)** | [O] | Interactive telnet applet ("Run Telnet" in Operations Manager) to managed storage systems |
| **10000/tcp (ndmp)** | [E] | Used by Backup Manager, Disaster Recovery Manager and Protection Manager to monitor and manage storage system SnapVault and SnapMirror relationships, and SnapVault relationships from Open Systems SnapVault agents (configurable). |

\* rsh typically has problems traversing firewalls because it actually involves connections in both directions. The rsh client will connect to port 514 on the rsh server. The rsh server will then open two connections back to the rsh client to return stdout and stderr; these connections are typically made to dynamic ports on the client, making it difficult for firewall admins. For rsh to work properly, the firewall will need to allow *all* TCP traffic from the managed storage systems destined for the DataFabric Manager server (in addition to allowing rsh traffic from the DataFabric Manager server to reach the managed storage system). Using ssh instead avoids this problem.

The following ports are used by Operations Manager, and the NetApp Management Console to communicate with the DataFabric Manager server:

|  |  |  |
| --- | --- | --- |
| **Initiated by managed storage systems, Operations Manager web GUI, and NetApp Management Console to DataFabric Manager server** | | |
| **8080/tcp (http)** | [M5] | Operations Manager access (configurable) |
| **8443/tcp (https)** | [M5] | Secure Operations Manager access (configurable) |
| **8088/tcp (http)** | [E6] | NetApp Management Console access (configurable) |
| **8488/tcp (https)** | [E6] | Secure NetApp Management Console access (configurable) |
| **162/udp (snmp)** | [O] | Managed storage systems send SNMP Traps to the DataFabric Manager server to speed up monitoring of important events (configurable) |

The following ports are used by the DataFabric Manager server to communicate with other devices:

|  |  |  |
| --- | --- | --- |
| **Initiated from DataFabric Manager server to other devices** | | |
| **25/tcp (smtp)** | [O] | SMTP server port (configurable) used when the DataFabric Manager server sends e-mail for alarms and for autosupport notification when the "autosupportProtocol" option is set to SMTP |
| **162/udp (snmp)** | [O] | The DataFabric Manager server sends SNMP Traps to a traphost (configurable) |

The ports listed in all the tables above are the default values; you can change some of them (annotated "configurable") through the DataFabric Manager server "Options" (and where necessary also on the managed storage system or NetApp Management Console).

Note: Many virus scanning programs block sending TCP packets to another host on port 25. This is to disable mass-mailing worm virus programs. For alarm e-mails and autosupport (if configured to send transmissions using SMTP), the virus scanner might block the transmission. Configure any virus scanner on the DataFabric Manager server not to block outgoing connections over port 25.

**3.14.X1 [internal] Do I need to re-configure my virus scanner to coexist with DataFabric Manager server?**

[This FAQ is not included in customer-visible pages]

DataFabric Manager server requires exclusive access to the database and transaction log files. If a virus scanner responds to activity by opening the database or log files with exclusive access, it prevents the database server from accessing the files, which causes the database to become unusable.

You should configure your virus scanner to ignore access activity on the database file (monitordb.db) and its transaction log (monitordb.log), which are located in the subdirectories listed in options "dbDir" and "dbLogDir" shown by using the command "dfm database get".

If you have other utilities that scan files, make sure those utilities do not access the database file and its transaction log.

**3.14.X2 [internal] What do I do if I see an error message in the database's "sybase.log" file saying: "\*\*\* ERROR \*\*\* Assertion failed..."?**

[This FAQ is not included in customer-visible pages]

This is actually quite serious and occurs very rarely. If you see this error, your database will require reconstruction. Shut down all dfm services with:

dfm service stop

Delete the existing transaction log. The transaction log is present at the following location:

C:\Program Files\NetApp\DataFabric Manager\DFM\data\monitordb.log

Note: the installation path may be different.

Start the database with the following command:

dbsrv9 -f C:\Program Files\NetApp\DataFabric Manager\DFM\data\monitordb.db

Note: the installation path may be different, and older versions of DataFabric Manager server may use a different "dbsrv" version.

Wait for the command to complete. This could take anywhere from seconds to hours.   
After the reconstruction finishes, you should be able to start the database and other services normally with:

dfm service start

If you still cannot start the database or other services, contact NetApp.

**3.14.X3 [internal] Why is the storage system CPU usage over 100%, flat, or nothing at all?**

[This FAQ is not included in customer-visible pages]

CPU usage reported by the DataFabric Manager server could be incorrect due to a series of bugs and incorrect fixes.

Fundamentally, the initial problem was an Data ONTAP calculation error for CPU busy timing that caused the values to jump very high then return to normal. However, from the perspective of the DataFabric Manager server and other applications which rely on SNMP, these resulted in values that represent CPU usage being very high, even over 100%. Not only do the graphs show high values, but events (and alarms if configured) are generated by the DataFabric Manager server.

Because the root cause is timing-dependent, it's not seen on all hardware platforms, and even on those where it might occur, it's unpredictable.

An initial "fix" in Data ONTAP actually made things worse because it caused the value, once high, to remain high forever. Because the CPU count stopped changing, this then looked like a flat-line to the DataFabric Manager server. Finally, Data ONTAP was fixed properly.

Also, a DataFabric Manager server fix was added to suppress bad data. This generates "holes" in the historical data (graphs) but that's better than bad data. With the final Data ONTAP fix, the DataFabric Manager server fix doesn't cause any holes or other problems.

The bugs are:

* [burt113467](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=113467&button=view) - SNMP cpuBusyTime sometimes goes backwards causing DataFabric Manager server CPU busy values to be unreliable
* [burt141441](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=141441&button=view) - SNMP values for cpuUpTime and cpuBusyTime don't change (this was caused by an initial bad fix to bug 113467).
* [burt142102](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=142102&button=view) - DataFabric Manager server sends bogus alerts with CPU utilization > 100%.

Although not directly related, other bugs worth looking at are [burt148982](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=148982&button=view) (CPU utilization reported by SNMP may be inconsistent with sysstat) and [burt173714](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=173714&button=view) (Change the CPU % reported by SNMP to a metric better than ANY or AVG cpu busy). Furthermore, there are some inefficiencies in Data ONTAP which truly will drive the storage system CPU high, such as [burt195847](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=195847&button=view) (exposed in Data ONTAP 7G). Additional Data ONTAP changes can be seen in [burt159087](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=159087&button=view) (Improve sysstat CPU% metric's ability to indicate true CPU saturation) and [burt227140](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=227140&button=view) (sysstat CPU summary value overstates CPU headroom).

**3.15 How do I enable HTTPS protocol for accessing Operations Manager?**

HTTPS access is disabled by default for Operations Manager. Enabling HTTPS for the first time requires configuring a certificate. A certificate could be self-signed or Certificate Authority signed (CA-signed).

To use a self-signed certificate, issue following command:

$ dfm ssl server setup

- OR -

To use a CA-signed certificatei, issue following command:

$ dfm ssl server import <path\_to\_cert\_file>

Configuring certificate is required only for the first time or for replacing an existing certificate with new one. Once a certificate has been configured, HTTPS can be enabled by following the steps below:

1. Set "httpsEnabled" global option to "Yes".
2. $ dfm option set httpsEnabled=Yes
3. Stop http service
4. $ dfm service stop http
5. Start http service
6. $ dfm service start http

This will enable HTTPS on the port as configued by option **"httpsPort"** and Operations Manager will be accessible at https://*server:port*/.

For enhanced security, HTTP access to Operations Manager should be disabled by setting "httpEnabled" to "No" and "httpsEnabled" to "Yes", followed by a restart of "http" service.

**3.16 How do I change the default HTTP or HTTPS ports used by Operations Manager?**

Prior to changing the HTTP or HTTPS port values, use ***netstat*** command to identify and avoid port conflicts.

By default, Operations Manager uses port 8080 for HTTP and port 8443 for HTTPS. To change HTTP and/or HTTPS port, follow these steps:

1. Set "httpPort" option value to the desired port value
2. $ dfm option set httpPort=<port number>

And/or set "httpsPort" option value to the desired port value

$ dfm option set httpsPort=<port number>

*NOTE: You will be prompted to enable HTTPS, if HTTPS has not been enabled.*

1. Stop http service
2. $ dfm service stop http
3. Start http service
4. $ dfm service start http

**3.17 How do I change default HTTP or HTTPS ports used by Server service?**

Prior to changing the HTTP or HTTPS port values, use ***netstat*** command to identify and avoid port conflicts.

By default, Server uses port 8088 for HTTP and port 8488 for HTTPS. To change HTTP and/or HTTPS port, follow these steps:

1. Set "serverHTTPPort" option value to the desired port value
2. $ dfm option set serverHTTPPort=<port number>

And/or set "serverHTTPSPort" option value to the desired port value

$ dfm option set serverHTTPSPort=<port number>

1. Stop Server service
2. $ dfm service stop server
3. Start Server service
4. $ dfm service start server

**Disabling HTTPS:** HTTPS is enabled by default in Server service. HTTPS access to Server service can be disabled by following the steps below:

1. Set "serverHTTPSEnabled" global option to "No".
2. $ dfm option set serverHTTPSEnabled=No
3. Stop Server service
4. $ dfm service stop server
5. Start Server service
6. $ dfm service start server

Above steps will disable HTTPS access to the Server service. NetApp Management Console would be able to connect to Server via HTTP only afterwards.

For enhanced security, HTTP access to Server service should be disabled by setting "serverHTTPEnabled" to "No" and "serverHTTPSEnabled" to "Yes", followed by a restart of "Server" service.

**3.17.X1 [internal] What storage system information is collected by Operations Manager using SNMP and XML APIs?**

[This FAQ is not included in customer-visible pages]

Operations Manager polls storage system configuration, status and resource usage using SNMP and XML APIs. In addition, it listens for SNMP traps from storage system. If storage system is configured to send traps to Operations Manager, Operations Manager refreshes its collected data as soon as an SNMP trap is received i.e. data that is affected by the trap is collected again from the storage system sending the trap.

Following table summarizes the information collected by Operations Manager from storage system.

**NOTE:** APIs and CLIs used for performing management actions on storage system are not covered here.

**Monitoring:** Type of information collected by Operations Manager  
**SNMP:** SNMP groups and tables queried by Operations Manager to monitor the information mentioned in **Monitoring** column  
**SNMP Traps:** Traps that Operations Manager acts upon to refresh its data. Lists trap IDs from netapp.mib  
**Data ONTAP APIs:** The APIs that get invoked additionally, if login has been set for the storage system in Operations Manager  
**Data ONTAP CLIs:** The CLIs that get invoked additionally, if login has been set for the storage system in Operations Manager

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Monitoring** | **SNMP** | **SNMP Traps** | **Data ONTAP APIs** | **Data ONTAP CLIs** |
| Discovery and System Information | system group, product group | None | None | None |
| Licenses | IsLicensed variables under respective groups e.g nfsIsLicensed, cifsIsLicensed | None | license-list-info | None |
| Status | miscGlobalStatus, miscGlobalStatusMessage | globalStatusNonRecoverable (111), globalStatusCritical (113), globalStautsNonCritical (115), globalStatusOk (116) | None | None |
| Interfaces | ipAddrTable, ifTable, netifTable | linkUp (standard), linkDown (standard), vifPrimaryLinkFailed (237), vifAllLinksFailed (238) | None | None |
| Cluster failover status (CFO) | cf group | clusterNodeFailed (72), clusterNodeTakenOver (75), clusterNodeRepaired (76) | None | None |
| CPU | cpuBusyTime, cpuUpTime | cpuTooBusy (55), cpuok (56) | None | None |
| Environmentals | environment group, nvramBatteryStatus, enclTable | fanFailureShutdown (31), fanFailed (33), fanWarning (35), fanRepaired (36), powerSupplyFailureShutdown (41), powerSupplyFailed (43), powerSupplyWarning (45), powerSupplyRepaired (46), nvramBatteryDischarged (62), nvramBatteryLow (63), overTempShutdown (91), overTemp (95), overTempRepaired (96), shelfFault (103), shelfRepaired (106), chassisTemperature (371), chassisCPUFan (372), chassisPowerSupply (375), chassisFan (376), chassisCPUFanStopped (382), chassisCPUFanSlow (383), chassisCPUFanOk (386), chassisPowerSuppliesFailed (391), chassisPowerSupplyDegraded (392), chassisPowerSupplyFailed (393), chassisPowerSupplyRemoved (394), chassisPowerSupplyOff (395), chassisPowerSuppliesOk (396), chassisPowerSupplyOk (397), chassisPowerDegraded (403), chassisPowerOk (406), chassisFanDegraded (412), chassisFanRemoved (413), chassisFanStopped (414), chassisFanWarning (415), chassisFanOk (416), shelfSESElectronicsFailed (464), shelfSESElectronicsInf (467), shelfIFModuleFailed (473), shelfIFModuleInfo (477) | None | None |
| Filer Ops | misc group, fcp group, iscsi group | None | None | None |
| Disks | raid group (raidVTable, spareTable, diskSummary group) | dhmNoticePFAEvent (6), dhmNoticeDegradedIO (7), diskFailedShutdown (21), diskFailed (22), diskRepaired (26) | disk-list-info, aggr-list-info (if version >= 7.0), volume-list-info (if version <= 7.0) | None |
| Disk Free space | dfTable, volTable | volumeFull (82), volumeNearlyFull (85), volumeRepaired (86), snapAutoDelete (656), volumeAutogrow (666) | volume-list-info, snapshot-reserve-list-info, perf-object-get-instances, volume-autosize-get | None |
| File System | aggrTable, volTable, qtreeTable, dfTable, qvStateTable, lunTable | volumeRestrictedByMirrorBigIo (272), volumeInconsistentUmount (274), volumeStateChanged (275), volumeOnline (276), volumeRestrictedRootConflict (304), volumeOfflineTooBig (314), volumeOffline (324), volumeRestricted (334), volumeDegradedDirty (344), volumeError (354) | aggr-list-info, volume-get-language | None |
| Qtree and Qtree Quota | qrV2Table, qvStateTable, (qrVTable if version < 6.4) | None | None | None |
| User Quota | None | None | quota-report-iter-\*, quota-report, volume-list | options command to get nis.domainname, quota |
| Lun and FCP | dfTable, lunTable, lunMapTable, initiatorGroupTable, initiatorGroupMemberTable, initiatorListTable, fcpTargetTable | scsitgtFCPLinkBreak (222), scsitgtPartnerPathMisconfigured (224), scsitgtThrottleNotice (226) | lun-list-info, lun-config-check-cfmode-info, fcp-adapter-list-info | igroup show, lun show, iscsi initiator show, iscsi show initiator |
| vFilers | None | vfStopped (245), vfStarted (246) | vfiler-list-info, vfiler-get-allowed-protocols, vfiler-get-disallowed-protocols | vfiler |
| Max Dir Size | None | maxDirSizeAlert (482), maxDirSizeWarning (485) | None | None |
| SnapMirror | snapmirrorOn, snapmirrorIsLicensed, snapmirrorStatusTable, snapmirrorConnTable (if version > 6.5) | snapmirrorSyncFailed (364), snapmirrorSyncOk (366) | None | None |
| Snapshots | snapvaultSchedTable | None | snapshot-list-info, snapshot-delta-info, snapshot-get-schedule, snapshot-autodelete-list-info | None |
| Exports and Shares | None | None | nfs-exportfs-list-rules, cifs-share-list-iter-\* | exportfs, cifs shares |
| Host Connectivity | None | None | volume-list | version |
| Configuration Conformance | None | None | file-read-file, file-write-file | config, syslog (for logging on storage system) |
| Performance Counters | None | None | perf-object-counter-list-info, perf-object-get-instances, perf-object-instance-list-info, perf-object-list-info | None |

**NOTE:** Collection of certain information depends on the licenses installed on DataFabric Manager server and on storage system.

**3.18 How to configure DataFabric Manager server 3.8 to use an unarchived pre-3.8 DataFabric Manager server database?**

DataFabric Manager server 3.8 uses higher version of Sybase DB than the one used by older versions of DataFabric Manager server. As a result, in order configure DataFabric Manager server 3.8 to use an unarchived pre-3.8 DataFabric Manager server database, the database file needs to be upgraded from old format to the new one.

In order to upgrade the old database file format to new format, perform the following steps in DataFabric Manager server 3.8:

**NOTE**: It is advised to take a backup of unarchived pre-3.8 DataFabric Manager server database before trying the following steps.

1. Stop the DataFabric Manager server services
2. $ dfm service stop
3. Set the dbDir and dbLogDir to the folder containing un-archived database files
4. $ dfm database set dbDir=<unarchived\_dfm\_data\_path>/data
5. $ dfm database set dbLogDir=<unarchived\_dfm\_data\_path>/data
6. Reload the database
7. $ dfm database reload

**NOTE**: If this command is not executed, "dfm datastore setup" CLI will fail and the sybase.log file will have the following error message:

<dfm\_data\_path>/monitordb.db was created by a different version of the software.

You must rebuild this database in order to use it with SQL Anywhere 10

1. Upgrade the database
2. $ dfm upgrade
3. Configure DataFabric Manager server 3.8 to use the data from pre-3.8 location
4. $ dfm datastore setup -n <unarchived\_dfm\_data\_path>
5. Start all the services
6. $ dfm service start

**3.19 What products support Data ONTAP 8.0 cluster-mode?**

Only Operations Manager supports Data ONTAP 8.0 cluster mode. Performance Advisor Protection Manager Provisioning Manager do not support cluster-mode. NMC will not show clusters and their components.

**3.20 What Operations Manager features are not supported for Data ONTAP 8.0 cluster-mode?**

* Operations Manager does not extend multi-filer configuration management feature to cover cluster and vserver configurations
* Operations Manager discoverss, reports and manages vserver using the cluster management LIFs. But it does not discover a vserver using the vserver management LIFs. When Operations Manager is installed in a SSP client's network and it access to the vserver management vif only, Operations Manager is not be able to discover the vserver. Operations Manager discovers the vservers only if it can discover the cluster.
* Operations Manager does not discovers and reports:
  + cifs domain settings of a vserver
  + kerberos realm of a vserver
  + nis domain of a vserver
  + users, snmpusers and login profiles
  + local unix users and groups
* Operations Manager does not displays audit logs and other logs on a cluster
* Luns, iSCSI, FCP and related information is not be reported

**3.21 How are Active/Active pair and ONTAP8 cluster different?**

Active/Active pairs are high availability setup making use of two 7G storage systems. ONTAP8 Cluster is a group one or more of storage systems providing an abstraction around the controllers in the form of vservers.

**4 Discovery**

**4.1 How does discovery work?**

Discovery starts on the local network to which the DataFabric Manager server is attached. It issues SNMP GET requests to each node on the network, looking for storage system. If network discovery is enabled, it also requests a list of networks from each router it contacts. Those networks are added to the list of networks to be searched later.

Discovery issues SNMP GET requests to 20 addresses at a time, with a 5 second timeout for each. That's about 240 addresses per minute, or about 4.5 hours for a Class B network with 65,535 possible addresses.

In case of IPv6 networks, discovery runs only on the local IPv6 network to which DataFabric Manager server is attached. Discovery on local IPv6 network requires DataFabric Manager server itself to have a global scope IPv6 address configured. If no global IPv6 address has been configured for DataFabric Manager server, local IPv6 network discovery is not performed.

As IPv6 networks could be very large, remote network discovery is not supported for IPv6 networks. **[ Needs review: Should we talk about how host ping works to maintain host state?]** **[ Needs review: What about firewalls and SNMP communities?]** **[ Needs review: Finally, what about Host Agents and Open Systems SnapVault discovery?]**

**4.2 What should I do if discovery doesn't find any storage systems?**

If your DataFabric Manager server is on the same subnet as the storage systems you want to manage, the DataFabric Manager server will probably discover them right away. But if your DataFabric Manager server is on a different subnet, you must give the DataFabric Manager server the list of networks on which to look for those storage systems. For the most efficient addition of storage systems and networks, observe the following guidelines:

* Keep the default discovery options: host discovery on; network discovery off.
* Prime the discovery process by adding one storage system from each network that has them. This automatically adds the network to which the storage system is attached, so other storage systems on the same network will be found automatically.

You can add storage systems to the DataFabric Manager server through the **Add** option at the bottom of the **Appliances** reports in Operations Manager, or by running the CLI command:

dfm host add *name-or-IP-address*

* After verifying that all the storage systems have been added, turn off host discovery to save network resources.
* After acquiring a new storage system, add it to the DataFabric Manager server manually through the Operations Manager or the CLI.

**NOTE:** DataFabric Manager server does not look for any nodes in remote IPv6 networks. In case of IPv6 networks, only networks that are local to DataFabric Manager server are looked at. However, nodes from remote IPv6 networks can be added to DataFabric Manager server manually or using host-initiated discovery.

**4.3 How can I turn off discovery?**

There are two ways to limit discovery: turn off discovery of new networks, and turn off discovery of new hosts. Discovery of new networks is disabled by default.

If you don't often add more systems, and the DataFabric Manager server has already found all the systems you're interested in, you may want to turn off discovery of new hosts to reduce network traffic.

Do this by setting **Host Discovery Enabled** to "no" from the **Options** page in Operations Manager, or with the following command from the CLI:

dfm option set discoverHosts=no

**4.4 How can I run discovery only on certain networks?**

Many organizations keep file servers on particular high-speed networks. You may want to limit the DataFabric Manager server's discovery algorithms to look only on those networks for new hosts.

You can edit the list of networks on which the DataFabric Manager server runs discovery by clicking the edit link next to **Networks to Discover** on the **Options** page in Operations Manager. The CLI equivalent commands are:

dfm network list

dfm network add -m 255.255.255.0 xxx.xxx.xxx.xxx

where *255.255.255.0* is replaced by the network's real netmask, and *xxx.xxx.xxx.xxx* is replaced by the network's IP address.

**NOTE:** DataFabric Manager server does not run discovery in remote IPv6 networks. In case of IPv6 networks, only networks that are local to DataFabric Manager server are discovered.

**4.5 What should I do if discovery finds too many storage systems?**

After you enable network discovery, the DataFabric Manager server may find storage systems in networks that you don't intend to monitor. You can delete those storage systems from the DataFabric Manager server.

To show all of the hosts which the software discovered, enter the following command at the CLI:

$ dfm host list

Note the small numeric identifier at the beginning of each line of output. For the ones which you don't want to monitor, execute the following command:

$ dfm host delete *id1* *id2* *id3*

where each *id* is from the list step above.

You can also delete a storage system through the **Delete** options at the bottom of the **Appliances** reports.

To keep from discovering other undesired hosts, you might want to turn off Network Discovery, and delete networks you're not interested in. See the Networks to Discover page in Operations Manager.

**4.6 Why doesn't discovery work after I delete some networks and then add some more?**

When you delete a network, the DataFabric Manager server will stop monitoring all hosts in that network. If you add the very same network at a later time, the DataFabric Manager server will resume monitoring those hosts. However, if you delete one network and add another network which overlaps the original (either by being a supernet or subnet of it) the DataFabric Manager server will not resume monitoring those hosts which were deleted as a result of the network delete.

To verify that you have this problem, you can get a list off the deleted hosts that the DataFabric Manager server knows about from the command line:

$ dfm host list -a

To resume monitoring of those hosts which are marked as deleted, you must manually re-add them from the command line:

$ dfm host add *id1* *id2* *id3*

Or you can resume monitoring of all deleted hosts with a single command:

$ dfm host add all

This method will maintain any old data collected from the hosts before the network was deleted.

**4.7 How long does it take for the DataFabric Manager server to notice that a storage object has been deleted?**

The DataFabric Manager server will notice when an aggregate, volume, qtree, or user quota has been deleted on a storage system when the File System and User Quota monitoring information is collected. However, many situations and administrative tasks could cause that information to be temporarily unavailable.

Therefore, the DataFabric Manager server intentionally waits for one hour (plus up to one File System Monitoring Interval) before marking an aggregate, volume, or qtree as deleted. This wait period was added in release 2.2 as a four hour wait, and reduced to one hour from release 3.1.

For user quotas, the wait period is usually one additional User Quota Monitoring Interval (in the "Options" page in Operations Manager, default is 24 hours), and not less than four hours. This wait period was also added in release 2.2, and has not been reduced.

After this waiting period, these objects will no longer be accessible by the DataFabric Manager server. For aggregates and volumes, object deleted events will then be generated.

If the DataFabric Manager server later notices these deleted objects are back online, they will be immediately re-added. For aggregates and volumes, object discovered events will be generated.

**4.8 Why doesn't the DataFabric Manager server realize that a storage object was renamed?**

When an object such as a volume, aggregate, qtree, or lun is renamed on a storage system, the DataFabric Manager server may not be able to determine that the object was renamed, and instead will show a new object with the new name. The old object with the old name is then deleted (after a delay as described in "**How long does it take for the DataFabric Manager server to notice that a storage object has been deleted**").

Unique volume identifiers were added in Data ONTAP 6.4, and from release 3.2 The DataFabric Manager server recognizes these identifiers and will automatically change the name of a renamed volume (and its contained qtrees and luns) instead of adding a new volume.

Similarly, from release 3.2 The DataFabric Manager server recognizes the unique identifiers of aggregates (first added in Data ONTAP 7.0) and will automatically rename them, instead of adding a new aggregate and deleting the old one.

Other objects (such as qtrees and luns) do not have unique identifiers, and so the DataFabric Manager server doesn't realize they are renamed, resulting in new objects being added, and the old ones deleted.

**4.9 Why didn't the DataFabric Manager server notice that a host (appliance) was down?**

Because the DataFabric Manager server polls for the host (appliance) status periodically, it may be that the host was down for only a short time between two polls of the "Ping Monitoring Interval" (in the "Options" page in Operations Manager). If this happens, the DataFabric Manager server won't notice that a host was down.

Also, the "Ping Method" (in the "Options" page in Operations Manager) can affect this. If any one of the selected methods is "successful" then the DataFabric Manager server assumes the host is up. If the method "All" or "HTTP" is selected and the network between the DataFabric Manager server and the host includes a transparent HTTP cache, that cache might respond on behalf of the host and cause the DataFabric Manager server to believe the host is up. In DataFabric Manager release 3.2 a new method "ICMP ECHO and SNMP" has been added which doesn't use HTTP for determining the host up/down state, and is the default for new installations.

Another example is where a host IP address is changed, but not yet reflected in the DataFabric Manager server. Until the discovery polling finds the host at the new IP address, the DataFabric Manager server will assume it's down. Refer to the question "**What do I do after changing the head, host name or the IP address of an appliance**".

**4.10 Why does the DataFabric Manager server think a host (appliance) is down when it isn't?**

This is likely a networking issue: either the whole IP connection from the DataFabric Manager server to the host is blocked/broken when a poll is attempted, or the specific protocols selected for the "Ping Method" (set in the "Options" Operations Manager page) are blocked.

To check the connectivity between the DataFabric Manager server and the host, navigate to the Appliance Details page then select "Diagnose Connectivity", or type the following at the CLI:

dfm host diag *name-or-IP-address*

If the problem is intermittent, it may be necessary to use an alarm to script the execution of this command at the time when the host down event occurs.

**4.11 Why does the DataFabric Manager server report "HTTP POST - Service unavailable" error when communicating with a storage system?**

When trying to communicate with a storage system, the DataFabric Manager server may report the error "HTTP POST - Service unavailable". This can be due to access restrictions that have been set up on the storage system with "trusted.hosts" (deprecated) or "httpd.admin.access" options. These options restrict administrative access to a storage system, and cannot be overridden even if the DataFabric Manager server knows the login/password of a storage system.

**4.12 How does DataFabric Manager server choose between IPv4 and IPv6 address of a host having both types of addresses configured?**

When a host is added using "dfm host add" command or through Operations Manager, DataFabric Manager server uses the global option "preferredIPAddressType" value to choose the IP address of the host being added. Default value for this option is "IPv4". So, by default DataFabric Manager server picks IPv4 address, if both are available.

**4.13 Why does XML test in "dfm host diag" for a storage system having IPv6 address fail with error "Can't connect to host (err=5)."**

XML test in "dfm host diag" for a storage system having IPv6 address might fail with this error due to storage system misconfiguration. By default, "httpd.ipv6.enable" option on storage system is set to "off" after enabling IPv6 on the storage system. You need to change this option value to "on" in order to pass the XML test in "dfm host diag".

**4.14 What IP Address should be used for adding a cluster?**

Cluster Management IP address is preferred as it fails over when a node or interface fails. Node Management IP addresses will also work, but they do not failover.

**4.15 Can discovery of clusters be disabled?**

Yes. Use .Cluster Discovery. option in UI, or .discoverClusters. option in CLI.

**4.16 Why are VFilers not getting discovered by Operations Manager?**

Make sure that HostLogin and Password is set for the Storage System.

**4.17 I have configured multipath for my disks in ONTAP. Does DataFabric Manager handle this during discovery/monitoring?**

Yes, Operations Manager can detect disks with multipathing enabled when login and password have been specified for the storage system. When a path failover happens and Operations Manager does not have login and password, you may need to wait for 1 hour or 1 disk monitoring cycle for the non-existing disks to be deleted from Database.

**4.18 How to configure SNMPv3 privacy settings in DataFabric Manager?**

$ dfm snmp add -v 3 -c *community-name* -U *host-login* -P *host-password*

-A *auth-protocol* -X *priv-password* -m *mask* *address*

**4.19 What SNMP v3 options are supported for communication with cluster?**

Authentication is supported using MD5 and SHA protocols. Encryption is supported using DES protocol.

**5 Groups**

**5.1 Why can't I delete group members from reports after upgrading to DataFabric Manager 3.2?**

DataFabric Manager 3.1 and earlier had a button at the bottom of a few reports to delete objects from the groups. For example, the "Appliances, All" report on a group of appliances allowed you to delete appliances from that group.

Due to the introduction of hierarchical grouping added from DataFabric Manager 3.2, only group membership reports (reports beginning "Group Members" in the "View" drop-down menu) on the group's Summary page can be used to delete objects from the group. Other reports don't have that facility.

See also "**How do the DataFabric Manager server user accounts work?**"

**5.2 Why does the "Administrators" page in Operations Manager show "No Access" to a group even though the user has the "Global Read" privilege?**

This question and answer is only relevant for DataFabric Manager 3.2 and earlier, since the "Administrators" page and RBAC system in the DataFabric Manager server was completely revamped in DataFabric Manager 3.3. See the FAQ section below on Role-based Access Control (RBAC) for more questions and details about this new system.

The "Administrators" page shows "raw" group privileges, meaning the privileges that you have explicitly set on group. When the "Administrators" page shows "No Access" on group, it is telling you that you have not explicitly set any privileges on that group.

If a user has the "Global Read" privilege, that user implicitly has "Read" privilege on all the groups. Similarly, if a user has the "Read" privilege on a parent group, that user implicitly has "Read" privilege on all of the subgroups of that parent group.

Several other factors such as "Everyone" user's privilege, user's membership to Windows user groups that have been added to the DataFabric Manager server also affect the real group privilege granted to the user.

**5.3 Why does a group's status appear to be different depending on who is logged in?**

The DataFabric Manager server computes group status on the fly. It is based on the events that you can see on the Events tab for that group. If different administrators have different permissions on the indirect members of the group, they can see different events and hence will see different status for the same group.

As an example, consider that "adminA" has read permission on a group of volumes and read permission on the group of storage systems hosting those volumes. If there is a "Host Down" event for the storage system, "adminA" will see red status for the group of volumes. This is because the down storage system is indirect member of the group of volumes and "adminA" has read permission on that storage system.

Now consider "adminB" who has read permission for the group of volumes but has no permission on the storage systems hosting those volumes. "adminB" does not see the "Host Down" event due to lack of read permission on the down storage system. So the status for the group of volumes as seen by "adminB" is green provided there are no other events for that group.

**5.3.X1 [internal] What if I encounter "Database Error" while executing the "dfm group destroy" command?**

[This FAQ is not included in customer-visible pages]

Sometimes "dfm group destroy" command may fail with "Database Error" and "dfm.log" shows "Deadlock detected" or "Invalid Statement" errors.

The "Deadlock detected" error can occur if the monitor service and the "dfm" command are simultaneously trying to access the same records; the monitor trying to update information, and the "dfm" command trying to delete.

The "Invalid Statement" error is under investigation.

In case of all of these errors, stop all the services using:

$ dfm service stop

Service: server stopped.

Service: scheduler stopped.

Service: watchdog stopped.

Service: monitor stopped.

Service: eventd stopped.

Service: sql stopped.

Start only sql service using:

$ dfm service start sql

Service: sql started.

Now try to remove group:

$ dfm group destroy

Destroyed 1 group and its subgroups.

Now start all the services:

$ dfm service start

Service: sql started.

Not attempting to start sql because service is started already.

Service: eventd started.

Service: monitor started.

Service: scheduler started.

Service: server started.

Service: watchdog started.

Service: http started.

**5.4 What does it mean when I see Storage Server, Storage System and Controller?**

Storage Server: A report column that can show a vFiler, vServer, 7G storage controller or a cluster. The generic term used is Storage Server. Storage System: When we have a report column that can show only a 7G storage controller or a cluster, then Storage System is used. Controller: It refers to the storage controller of the cluster.

**6 Reports and Graphs**

**6.1 What reports are available? How can I print them?**

There are more than 100 pre-configured reports available in Operations Manager. The reports are available from the "View" pull-down menus under most tabs. The reports are also available from the command line interface. To see which reports are available from the command line, type "dfm report" from a command shell.

To print a report from Operations Manager, click the "Print" link in the upper right corner of the browser window when viewing the report. To print a report from the command line, first redirect the output of a "dfm report <reportname>" command to a file, then print the file.

In addition, from DataFabric Manager 3.2 onwards you can also create your own reports using

$ dfm report create

The Backup Manager reports are available under "Backup" tab in Operations Manager. To see the available reports in the Backup Manager in the command line, use "dfbm report" command.

**6.2 In the Chargeback reports the numbers don't appear to add up properly. Is something wrong?**

When displaying numbers of bytes or currency amounts in Operations Manager, the numbers are rounded and may appear not to add up. However, the DataFabric Manager server uses double-precision floating point numbers internally for computing volume and qtree usage, as well as computing monthly charges when chargebackRate is set. The numbers displayed are rounded to the nearest displayable value. To see the unrounded numbers, you can run a report from the command line, in text or one of the many other supported formats.

**6.3 I don't want the monthly Chargeback rate to change based on the number of days in the month. Can I calculate the Chargeback independent of this?**

You can use the Chargeback Increment option for this. Change it to Monthly (the default is Daily) in Options->Chargeback or from the CLI using

$ dfm option set chargebackIncrement=Monthly

The monthly rate calculated will then be independent of the number of days in the month. For example, if the Chargeback Increment is set to Monthly, the rate for both February and March will be same, whereas if it is set to Daily, the two rates will be slightly different.

**6.4 Why do some reports render improperly in Operations Manager?**

Some versions of Netscape and Mozilla have a bug which may cause reports which have a large number of columns to have incorrect column widths. Try a newer version of your browser or use Internet Explorer.

The browsers used to access Operations Manager must be Internet Explorer 6.0 or later, or Mozilla suite 1.7 or later, or Mozilla FireFox 1.5 or later. Operations Manager does not support Netscape Navigator.

**6.5 Do I have to make do with the reports that the DataFabric Manager server provides, or can I create my own?**

You can create your own **Custom Reports** from DataFabric Manager 3.2 onwards using the "dfm report create" command. You do this by first deciding which object you want to create the report on. The DataFabric Manager server provides **Catalogs** from which you can create a report. Each catalog has several **fields** available for you to create the report with. Fields with an (A) against their name can be used to link related catalogs, such as Volumes and Aggregates. You can use the "dfm report catalog list" command to see a list of catalogs, and "dfm report catalog list *catalog-name*" to see a list of available fields.

For example, you can use the following command to create a report having the name, type and used space of the volume, and the name of the aggregate it belongs to:

$ dfm report create -R Volume -f "Volume.Name=Volume Name,

Volume.Type, Volume.Used:MB=Used Space, Volume.Aggregate.Name"

-L "my Volumes" my-volumes

The report will show up in the list of reports in the CLI by the name specified as the argument in the command above. You can also see a list of custom reports only using the following command:

$ dfm report -C

In Operations Manager, the report will show up by the name specified as the "-L" option, or the report name as above, if the option is not given. The tab that it is visible in is determined by the base catalog for the report ("-R" option). Refer to the DataFabric Manager help pages for a list of base catalogs and the tab in which reports created from them will be visible.

You can give your own names to the fields using an equals sign after the field name.

For fields that have a default format, you can change the format based on its type. A default format of "DD MMM 24H" or "DD MMM YYYY 24" indicates a time field, "1" indicates a percentage field, "KB", "MB", etc. indicate a size field. For details on the allowed formats for such fields, refer to the "man" pages. The format is specified after a colon in the field name, as for "Volume.Used" in the example above.

You can delete a custom report using:

$ dfm report destroy my-volumes

**6.6 Why can't I change the base catalog option for existing custom reports?**

If you change the base catalog for a custom report, you need to change the entire field specification. This means you would probably want to change the name and description to reflect the new specification of the report. So you might as well create a new report.

**6.7 How is historical data accumulated?**

The DataFabric Manager server keeps history on five different time scales: daily, weekly, monthly, quarterly and yearly. For each time scale, the DataFabric Manager server saves sample values for periods of the following duration:

* Each daily history sample covers 15 minutes.
* Each weekly history sample covers two hours.
* Each monthly history sample covers eight hours.
* Each quarterly history sample covers one day.
* Each yearly history sample covers four days.

Sample periods always begin at midnight, so the daily sample periods are 12:00 to 12:15am, 12:15 to 12:30am, and so forth.

The DataFabric Manager server monitors can run at very different rates, so a monitor may run once, several times, or never during a particular sample period. For example, the "CPU Usage" monitor runs by default every 5 minutes, so it will run three times for each daily sample period, while the "Disk Free Space" monitor runs every 30 minutes, so it will only run every other daily history sample period.

When a monitor runs, it finds the sample period covering the current time and adds the newly measured value to the saved history value. Numeric values (CPU usage, I/Os per second, etc.) get averaged with any existing measurements for the current sample period, smoothing out peaks. Status values (storage system up or down) simply replace any old value with the most currently measured value within the current sample period.

The DataFabric Manager server keeps two history tables for each of the daily, weekly, monthly and quarterly time scales. For example, at the start of each day, the DataFabric Manager server deletes the daily history samples from two days ago. This means the DataFabric Manager server always has somewhere between one and two days of daily data, one and two weeks of weekly data, and so forth. The DataFabric Manager server never deletes the yearly history tables, so the yearly data is preserved forever. This means that the database will grow fairly rapidly when first installed, but the growth rate will slow by the end of the first year, assuming the number of managed objects (storage systems, volumes, qtrees, LUNs, etc.) stays constant.

Refer to the section "**Performance Advisor**" for a fine-grain performance data collection tool.

**6.8 How can I use the graphs to access historical data?**

The "dfm graph" command can be used to show historical data. Using this command the data can be piped into a file and then analyzed or graphed using a spreadsheet program or script. Use the "dfm graph" command (with no arguments) to see the list of possible graphs, and "dfm graph help" to see the syntax of options.

As an example, to obtain the CPU usage for a storage system with a command like this:

$ dfm graph cpu <name-of-storage system>

1227250800 4.4

1227251700 6.1

1227252600 3.9

1227253500 6.1

1227254400 5.3

1227255300 5.0

... etc ...

Use a suffix (-1w, -1m, -3m, -1y) on the graph name to go farther back in time. For example, CPU usage for this month, with date in a readable form (-D option):

$ dfm graph -D "%c" cpu-1m <name-of-storage system>

Tuesday 21,November,2007 01:30:00 PM IST 5.4

Tuesday 21,November,2007 09:30:00 PM IST 5.6

Wednesday 22,November,2007 05:30:00 AM IST 5.6

Wednesday 22,November,2007 01:30:00 PM IST 5.5

Thursday 23,November,2007 05:30:00 AM IST 6.0

Thursday 23,November,2007 01:30:00 PM IST 5.8

... etc ...

Use the options "-s" and "-e" to define a date range, as explained in "dfm graph help".

Refer to the section "**Performance Advisor**" for a fine-grain performance data collection tool.

**6.9 How are the graphs calculated for groups?**

When displaying graphs for a group of items, the DataFabric Manager server consolidates the values for the items in the group in one of two ways: either by summing the values or by averaging the values. Rates and sizes are generally summed. Percentages are generally averaged.

For example:

* The "Aggregate Capacity Used" graph for a group of storage systems shows the total amount of space used in all aggregates in the group.
* The "CPU Usage" graph for a group of storage systems shows the average percentage CPU utilization across the storage systems in the group.

Sometimes the data values are both averaged and summed. For example, all network traffic/sec data is an average over a certain period of time (as explained in "**How is historical data accumulated**"), and these averaged values are stored in the database against the various time periods. To create a graph of the traffic/sec of a group, the DataFabric Manager server sums up the traffic/sec value for each appliance in the group. It doesn't divide this value by the number of interfaces or appliances: it's a total.

**6.10 Why is the "Capacity Used" graph for a group of qtrees empty after upgrading to DataFabric Manager 3.2?**

The "Capacity Used" (volume-usage) graph shows usage for volumes in the group. DataFabric Manager 3.2 does not treat volumes as part of the group unless they are explicitly added to the group. In previous releases this report would include volumes that contain the qtrees in the group. From release 3.2, if a group has only qtrees (not volumes), then the "Capacity Used" (volume-usage) graph is empty.

You can view "Qtree Capacity Used" (qtree-usage) graph on a group of qtrees. If you would like to see "Capacity Used" (volume-usage) graph, you need to add volumes (or the storage system) to the group.

**6.11 Are any reports and catalogs deprecated or renamed, will my existing custom reports work fine?**

Yes. "Appliance" catalog is renamed to "Controller". All parent catalog names in other catalogs are renamed. "Filer" catalog is renamed to "Storage System". All parent catalog names in other catalogs are renamed. All existing custom reports that use the renamed catalogs will work, however a message is printed to indicate that a report uses a deprecated catalog. All Appliance reports have been renamed to Storage Controller. For example "Appliamce, All" report in UI is now called "Storage Controllers, All". Similarly, CLI command for displaying all storage controllers(previously Appliance) is

$dfm report view contollers

**7 Events and Alerting**

**7.1 How can I be notified if the DataFabric Manager server finds something wrong with an appliance?**

The DataFabric Manager server can alert you when it has detected that an appliance has encountered a condition or problem that requires attention. You can configure the DataFabric Manager server to send e-mails or pages to designated administrators when events of a specified type or severity occur. To configure alarms, click on the "Alarms" link in the upper left corner on any screen in Operations Manager. For more information about how to set up alarms, look at the "Alarms" topic in the online help system.

**7.2 Can I set up my own alerting criteria?**

Yes. You can select which event(s) should trigger an alarm. You can select how severe an event needs to be before an alarm is triggered. You can select which administrators are to receive e-mail or be paged when an alarm is triggered. You can restrict the alarms that an administrator is to receive to a specified user-defined group of appliances or volumes.

**7.3 How can I change the host name that appears in the links inside the alert messages?**

If the host name in the links inside an alert message cannot be reached from the computer on which you are running the browser, you can specify which host name to use when referring to the DataFabric Manager server by using "dfm option set localHostName=myHostname" command, e.g.:

dfm option set localHostName=somehost.somecompany.com

dfm option set localHostName=1.2.3.4

**7.4 How can I tell the DataFabric Manager server to run a script for alerting?**

The DataFabric Manager server has an alerting mechanism where it can invoke a script when a new event matches the conditions of an alarm. You'll need to specify the full script path along with any arguments to the "dfm alarm create" command. Note that you cannot attach a script to an alarm using Operations Manager; you have to use the command line interface for this. Currently, the DataFabric Manager server does now allow any spaces within the script pathname.

It is best that the alerting scripts be configured to run under an admin account.

The following example tells the DataFabric Manager server to invoke the specified script when a severity "error" or above event occurs. It assumes that "perl.exe" is in the system path; if it isn't, you'll need to specify the complete path to the executable:

C:\> dfm alarm create -v error -s "perl.exe c:\scripts\handle\_event.pl"

You can tell the DataFabric Manager server to invoke a Windows batch file as follows:

C:\> dfm alarm create -v error -s "cmd.exe /C c:\bat\script.bat"

**7.5 Which environment variables are passed to the alarm script by the DataFabric Manager server?**

**[ Needs review: Did any more environment variables get added in this release?]**

Various event fields are passed to the script as environment variables. The names for these strings begin with "DFM\_"; e.g. DFM\_EVENT\_ID.

The following perl script fragment prints all of the environment strings passed to it by the DataFabric Manager server:

foreach my $key (sort(keys %ENV)) {

if ($key =~ /^DFM\_/) {

print "$key: $ENV{$key}\n";

}

}

The following is list of environment variables passed to the script:

|  |  |
| --- | --- |
| DFM\_ALARM\_ID | Alarm identifier associated with this alert |
| DFM\_EVENT\_ID | Identifier of event that caused this alert |
| DFM\_EVENT\_NAME\_CLI | Event name in command line interface friendly format |
| DFM\_EVENT\_NAME\_GUI | Event name in graphical user interface friendly format |
| DFM\_EVENT\_SEVERITY | Severity of event |
| DFM\_EVENT\_TIMESTAMP | Time when event occurred in UNIX time format |
| DFM\_HOST\_ID | The database identifier of the host associated with the event |
| DFM\_HOST\_NAME | Name of the host associated with the event |
| DFM\_HOST\_TYPE | Type of the host associated with the event e.g. Filer, Clustered Filer |
| DFM\_LINK\_EVENT | HTTP Link to the event |
| DFM\_SERIAL\_NUMBER | Serial number of the DataFabric Manager installation |
| DFM\_SOURCE\_ID | Identifier of the object where event occurred |
| DFM\_SOURCE\_NAME | Name of the object where event occurred |
| DFM\_SOURCE\_TYPE | Type of the object where event occurred |

The following environment variables are set optionally depending on the event:

|  |  |
| --- | --- |
| DFM\_CFO\_REASON\_CANNOT\_TAKEOVER | Reason why this controller cannot take over its active/active partner |
| DFM\_CFO\_PARTNER\_NAME | Name of the partner in an active/active configuration |
| DFM\_CFO\_PARTNER\_SYS\_ID | System identifier of the partner in an active/active configuration |
| DFM\_CPU\_UTILIZATION | % utilization of CPU |
| DFM\_CPU\_TOO\_BUSY\_THRESHOLD | Threshold for generating cpu-too-busy event |
| DFM\_DF\_KB\_TOTAL | Total capacity of the volume in kilobytes |
| DFM\_DF\_KB\_USED | Used space on the volume in kilobytes |
| DFM\_DF\_KB\_PERCENT | Percentage of the volume space used |
| DFM\_DF\_INODE\_TOTAL | Total number of inodes on the volume |
| DFM\_DF\_INODE\_USED | Number of inodes used on the volume |
| DFM\_DF\_INODE\_PERCENT | Percentage of inodes used on the volume |
| DFM\_DF\_LINK\_VOL | HTTP link to the volume |
| DFM\_DISK\_MESSAGE | Message describing state of the disks on the appliance |
| DFM\_ENV\_MESSAGE | Message describing state of environmental conditions such as fans, temperature, NVRAM battery, power supplies |
| DFM\_ENV\_ENCL\_MESSAGE | Message describing the changes on the appliance's enclosures |
| DFM\_STATUS\_GLOBAL\_MESSAGE | Message describing global status of the appliance |
| DFM\_FREE\_SPACE\_BYTES | Number of available bytes for the DataFabric Manager server |
| DFM\_FREE\_SPACE\_BYTES\_THRESH | Number of bytes needed for the DataFabric Manager server |
| DFM\_FREE\_SPACE\_PERCENT | Percentage of free space available for the DataFabric Manager server |
| DFM\_FREE\_SPACE\_PERCENT\_THRESH | Percentage of free space needed for the DataFabric Manager server |
| DFM\_QTREE\_KB\_LIMIT | Qtree quota in kilobytes |
| DFM\_QTREE\_KB\_USED | Space used by the qtree in kilobytes |
| DFM\_QTREE\_KB\_PERCENT | Percentage of the qtree space used |
| DFM\_QTREE\_FILES\_LIMIT | Max number of files on the qtree |
| DFM\_QTREE\_FILES\_USED | Number of files on the qtree |
| DFM\_QTREE\_FILES\_PERCENT | Percentage of the files used by qtree |
| DFM\_USERQUOTA\_KB\_LIMIT | User quota in kilobytes |
| DFM\_USERQUOTA\_KB\_USED | Space used by the user quota in kilobytes |
| DFM\_USERQUOTA\_KB\_PERCENT | Percentage of the user quota space used |
| DFM\_USERQUOTA\_FILES\_LIMIT | Max number of files on the user quota |
| DFM\_USERQUOTA\_FILES\_USED | Number of files on the user quota |
| DFM\_USERQUOTA\_FILES\_PERCENT | Percentage of the files used by user quota |
| DFM\_QUOTA\_USER | Name of the user using the quota |
| DFM\_QUOTA\_FILE\_SYSTEM | File system name on which quota is present |
| DFM\_USER\_EMAIL\_SERVER | Name of the mail server that rejected user's e-mail address |
| DFM\_USER\_EMAIL\_ADDRESS | E-mail address that was rejected by mail server |

**7.6 When I created an alarm, why did the DataFabric Manager server warn me about specifying an e-mail address?**

In order to receive e-mail alerts from the DataFabric Manager server, you have to specify your e-mail address in addition to creating an alarm. You can do this from Operations Manager by clicking on the "Administrators" link or from the command line interface by using the "dfm user modify" command. In a similar way, you can specify your pager address in order to receive pager alerts:

dfm user modify -e john.doe@company.com DOMAIN\JohnDoe

dfm user modify -P jdoe-pager@company.com DOMAIN\JohnDoe

**7.7 How can I change the severity level associated with a particular event type?**

There are times when you may want to change the default severity level of an event type.

You can adjust the severity of any given event type using the following command from the CLI:

dfm eventtype modify [ -v <event-severity> ] <event-name>

For example, if you are getting too many "NVRAM Battery: Unknown Status" warning events, you can change its severity to normal by:

dfm eventtype modify -v Normal nvram-battery:unknown-status

To see the current severity settings for each event type, use this command from the CLI:

dfm eventtype list

**7.8 Some of the event views show only current events. What is a current event?**

Current event is an event that has not been cleared automatically by the DataFabric Manager server. The DataFabric Manager server may clear an event because the condition causing that event no longer exists. e.g. "Host Down" event ceases to be a current event once the same host comes back up. Similarly "Volume Almost Full" event ceases to be a current event when the "Volume Full" event occurs for the same volume.

The DataFabric Manager server keeps history of all events and it can be seen using the history views on the events tab.

**7.9 What is the difference between events shown by history views and those shown by the other views on the events tab?**

The history views on the Events tab show all events including current events, non-current events, normal events and deleted events. Other views such as "Critical or Worse" show only the events which are current, which have not been deleted by the administrator and which have above normal severity. Here is an example.

The following table shows an example of host makita going down and coming up several times. It shows which events would be displayed by the various views of the events tab.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time** | **Event on storage system makita** | **Warning or Worse Events View** | **Unacknowledged Events View** | **History View** | **History, Deleted Events View** | **History, Acknowledged Events View** |
| 1:00 | Host Up event 201 | Empty | Empty | 201 | Empty | Empty |
| 2:00 | Host Down event 202 | 202 | 202 | 201, 202 | Empty | Empty |
| 2:30 | Event 202 is acked by admin | 202 | Empty | 201, 202 | Empty | 202 |
| 3:00 | Host Up event 203 | Empty | Empty | 201, 202, 203 | Empty | 202 |
| 4:00 | Host Down event 204 | 204 | 204 | 201, 202, 203, 204 | Empty | 202 |
| 4:30 | Event 204 is deleted by admin | Empty | Empty | 201, 202, 203, 204 | 204 | 202 |
| 5:00 | Host Up event 205 | Empty | Empty | 201, 202, 203, 204, 205 | 204 | 202 |

**7.10 When does event move to the history view?**

Actually all the events show up on "History" view, even the current events. There is no timeout after which current event is moved into the history view. The event stays current until the DataFabric Manager server detects that condition causing the event no longer exists.

**7.11 How can I specify a port number or a community to be used for sending SNMP Traps to traphosts?**

When sending traps to traphosts, the DataFabric Manager server uses community "public" and port 162 by default. But you can override defaults by specifying traphost as community@host\_name\_or\_address:port. e.g. To send traps to port 7162 of host "mountain" with community "sunrise":

dfm alarm create -T sunrise@mountain:7162

**7.12 How can I configure HP Openview to see traps sent by the DataFabric Manager server?**

You can find a trap configuration file for HP Openview called **dfm.conf**, and MIB of all the DataFabric Manager server traps called **dfm.mib** in **misc** directory of DataFabric Manager installation. Assuming that you have already loaded netapp.mib into HP Openview, you can load the "dfm.mib" and then load the traps using HPOV command "xnmevents -load dfm.conf".

Refer to HP Openview documentation for more information on loading mibs and traps. You can customize "dfm.conf" before loading to change the format of the display message for the traps. The severity values for all the traps are set to match with default event severities in "dfm.conf".

**7.13 How can I send alarm notification to a distribution list?**

Create the DataFabric Manager server administrator with e-mail address of a distribution list. You can then specify that administrator as an e-mail recipient of the alarm:

$ dfm user add -e dl-list@company.com dummy-user

Warning: dummy-user does not exist in the user database(s),

so login is disabled for this user.

Added user dummy-user.

$ dfm alarm create -A dummy-user -v critical

Created alarm 1 with 1 email recipient.

**7.14 How can I copy object owners on the alarm e-mails?**

Specify owner's e-mail address in ownerEmail field of any object (volume, qtree, storage system etc.).

$ dfm comment set storage01:/vol0/qtree1 ownerEmail=qtree-owner@company.com

Set value for comment field "ownerEmail" to "qtree-owner@company.com" for qtree storage01:/vol0/qtree1 (1943).

This can also be done in the web GUI by navigating to the object's (qtree, volume, etc.) details then select "Edit Settings".

The owner of the object is copied on any alarm e-mail that the DataFabric Manager server sends.

**7.15 When I try to run commands on vserver, I am getting error "There are no hosts with DataFabric Manager Console Execute permission." Why?**

Run command is not supported for vserver. Use CLI.

$ dfm run cmd

**8 Run a Command (RSH and remote commands)**

**8.1 How does remote execution work?**

**[ Needs review: Barry said: I would want to see additional text for the "dfm run cmd" call which is very handy and which users should consider for all ad-hoc command runs.]**

**[ Needs review: Why only mention 'submit' and 'wait' subcommands?**

When you use "dfm run submit", the DataFabric Manager server does not actually run any of the commands. It merely adds entries to the Jobs table - one entry for each host on which the command is to run.

These entries are interpreted by another process that attempts to run the desired commands, and updates the Jobs table with the results. This process is triggered immediately after you enter "dfm run submit", and is run periodically thereafter. If there is a problem contacting a particular host, that entry in the Jobs table is marked "scheduled", and the jobAttempted and jobRetryTime values are updated, so that it will be attempted again later.

The "dfm run wait" command will not return until all hosts have been successfully contacted. If a timeout is not specified, the command may wait forever.

Authentication of rsh for a particular host is enabled either by the useHostsEquiv option or hostLogin and hostPassword values in the host's settings. If useHostsEquiv option is set either at the host level or at the global level, then the DataFabric Manager server assumes that the "/etc/hosts.equiv" file on the host allows rsh to be executed by the user id and machine on which the DataFabric Manager server is running. **]**

**8.2 How do I configure Data ONTAP to allow remote commands?**

There are two ways to configure Data ONTAP to allow it to run commands issued from the DataFabric Manager server:

* **Store Data ONTAP usernames and passwords in the DataFabric Manager server**.

To do this, tell DataFabric Manager server the username and password to use for each managed host that you want to run commands on.

Use either the **Edit Settings** link in Operations Manager, or the **dfm host set** command from the CLI.

For example:

dfm host set myhost.example.com hostLogin=root hostPassword=thepassword

You can test this configuration by running a simple command such as:

dfm run cmd myhost.example.com version

* **Configure Data ONTAP to trust rsh requests from the DataFabric Manager server.**

To do this, edit the **/etc/hosts.equiv** file on the managed hosts to include an entry of the form:

server user

where *server* is replaced by the name of the computer which is running the DataFabric Manager server, and *user* is replaced by the login name of the user who is running the CLI and who is running the DataFabric Manager server services. The Administrator's Guide has a topic named "Using the hosts.equiv file" in the chapter "Configuring Security" with complete details on the entries required in the hosts.equiv file of the managed host.

**8.3 Why does the "dfm run cmd ..." command sometimes never finish?**

The "dfm run cmd ..." command will wait until the specified command has been successfully executed on the specified host or group. If a host is down, another attempt to execute the command will be made later, but the "dfm run cmd" command will not return until all attempts succeed (or fail due to authentication failures). If a host is permanently down or isn't accessible, the "dfm run cmd ..." will therefore never finish.

If you want the "dfm run cmd" to terminate early, you can use the "-t" option to specify a timeout, in which case the command will be guaranteed to terminate.

**9 Management Tasks**

**9.1 How do the DataFabric Manager server user accounts work?**

The DataFabric Manager server has a list of users that are allowed to use the system, along with their roles. There is also a special Everyone usergroup that is used to control the default roles of all users (both authenticated and unauthenticated). For details on how to add new users, see the section "**How can I add additional DataFabric Manager server users?**" below. The Administrator's Guide has a chapter named "Controlling Administrative User Access" with complete details on how role-based access control works. Additional FAQ questions for this topic can be found in the Role-Based Access Control section below.

**9.2 What do I enter when prompted for a username?**

The DataFabric Manager server performs user authentication using the operating system's native calls (passwd/NIS on UNIX, domain controllers, etc on Windows). When prompted for a username and password from Operations Manager, use the username and password that you would use to log in to the computer system, where DataFabric Manager server is running.

On systems where your username may map to more than one account, you must use the DOMAIN\username syntax to specify the Windows domain for the user account. This is necessary when either of these occurs:

* You have a local account on the DataFabric Manager server and also have an account with the same name in the DataFabric Manager server's domain.
* The DataFabric Manager server is in a domain with a trust relationship with other domains, and you have accounts in more than one domain.

**9.3 How can I add additional DataFabric Manager server users?**

You can use the "Administrative Users" page (under "Administration") in Operations Manager or the **dfm user add** CLI command to add, delete, view, and edit accounts of users who are authorized to access or change the DataFabric Manager server information. You must have the appropriate capability to add, delete, or edit user accounts. Users to be added to the DataFabric Manager server must be valid users on the DataFabric Manager server.

The special "Everyone" usergroup represents all users, and is used to set the default roles (capabilities) of all users (authenticated or unauthenticated). In a fresh installation of the DataFabric Manager server, the Everyone usergroup will have no roles by default. In previous releases of DataFabric Manager (and upgraded releases), the Everyone usergroup will have global read access. You can change the capabilities of Everyone by adjusting its role membership.

Refer to the online help in Operations Manager, or type "dfm user help" at the CLI for further details.

**9.4 How do I configure SNMP on storage systems?**

SNMP is normally enabled on storage systems. You can verify this with:

storage01> options snmp.enable

on

If SNMP is not enabled on your storage system, enable it with:

storage01> options snmp.enable *on*

SNMP uses "community" strings for authentication. Storage Systems normally allow read-only access with the "public" community.

**9.5 What monitoring thresholds can I adjust?**

There are a few thresholds that might be of interest:

* For each host, the CPU Busy Threshold specifies how busy (in percentage terms) the CPU should be before triggering an event (default is 95%).
* For each volume, the Volume Full Threshold and Volume Nearly Full Threshold specify the error and warning levels for volume events (defaults are 90% and 80%).

To adjust thresholds, use the Edit Settings page from Operations Manager, or use this command at the CLI:

$ dfm host set *host-id* *setting*=*value*

**9.5.X1 [internal] What is the purpose of various log files?**

[This FAQ is not included in customer-visible pages]

The log files are located in the "log" subdirectory of the installation directory for DataFabric Manager, and are used as follows (see notes after table):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Log File** | **Used By** | **Contents** | **Rotation** | |
| access.log | HTTP Service (Apache) | Web pages access information | 3,000 kB | +3 (\*) |
| alert.log | Event Service | Actions such as e-mail/page etc. taken for alarms | 300 kB | +3 |
| audit.log | CLI/Operations Manager | Changes to the DataFabric Manager server | 300 kB | +3 |
| ccmon.log | Monitor Service | Log messages about config conformance of storage systems | 300 kB | +3 |
| conformance.log | Server Service | Log messages about data set conformance checks and actions | 300 kB | +3 |
| dbiperf.log | All | Log messages related to database access performance | 300 kB | +3 |
| dfbm.log | Backup Manager | General log messages | 300 kB | +3 |
| dfdrm.log | Disaster Recovery Manager | Log messages for Disaster Recovery Manager | 300 kB | +3 |
| dfm.log | Control Center CLI/Operations Manager | General log messages | 300 kB | +3 |
| dfmbackup.log | Control Center CLI/Operations Manager | Log messages specific to database backup | 300 kB | +3 |
| dfmcheck.log | Cluster Config Checker plugin | General log messages | 300 kB | +3 |
| dfmcmd.log | CLI | Log CLI output | 300 kB | +3 |
| dfmconfig.log | CLI | Log messages related to configuration management | 300 kB | +3 |
| dfmconsole.log | Connect to device console (in Appliance Tools) | General log messages | 300 kB | +3 |
| dfmeventd.log | Event Service | General log messages | 3,000 kB | +3 |
| dfmmonitor.log | Monitor Service | General log messages | 3,000 kB | +3 |
| dfmscheduler.log | Scheduler Service | General log messages | 3,000 kB | +3 |
| dfmserver.log | Server Service | General log messages | 3,000 kB | +3 |
| dfmwatchdog.log | Watchdog Service | General log messages | 3,000 kB | +3 |
| dfpm.log | Protection Manager/Provisioning Manager | General log messages | 3,000 kB | +3 |
| discovery.log | Monitor Service | Discovery of new hosts | 300 kB | +3 |
| error.log | HTTP Service (apache) | Errors encountered by apache | 3,000 kB | +3 (\*) |
| mon\_perf.log | Monitor Service | Performance data for monitor service | 500 kB | +4 |
| ndmpmon.log | Server and Monitor Service | Log messages related to state of NDMP services on storage systems and OSSV systems | 300 kB | +3 |
| pingmon.log | Monitor Service | Detection of hosts going down or coming up | 300 kB | +3 |
| run.log | CLI | Log messages from "dfm run" commands | 300 kB | +3 |
| sharemon.log | Monitor service | Log messages from NFS exports and CIFS share monitor | 300 kB | +3 |
| smmon.log | Disaster Recovery Manager | Log messages for Disaster Recovery Manager | 300 kB | +3 |
| svmon.log | Monitor Service | Discovery of SnapVault Hosts and Relationships | 300 kB | +3 |
| svmondir.log | Monitor Service | Discovery of new directories | 300 kB | +3 |
| sybase.log | SQL Service (Sybase) | General log messages | 10,000 kB | +3 (\*) |
| vfmon.log | Monitor service | Log messages from vfiler monitoring | 300 kB | +3 |

**Notes**:

* (\*) Rotation of logs "access.log", "error.log", and "sybase.log" was added in DataFabric Manager release 3.2. Previous releases did not rotate these logs.
* Some logs won't be created at all if there are no problems (or if the feature isn't used for CLI/Operations Manager-generated logs).
* If a log file called "application.log" appears, it's caused by an error that is being logged before the program has started up properly, and is likely a bug.
* The column "Rotation" is the rotation policy. The log files are filled up to a maximum size (kB=1000 bytes) then they "rotate". After each rotation, the current log is renamed with "-0" added to the filename (e.g. "dfm-0.log") and any previous "-n" is renamed to "-n+1", but keeping up to a limit as indicated in the last column as "+n". For example, "+3" means up to 3 copies ("-0", "-1", and "-2") are kept, in addition to the currently active log file.
* The "sybase.log" rotation mechanism is implemented slightly differently such that there is a short period in which a file called "sybase.log.old" might appear. Every 15 minutes the DataFabric Manager server checks for this file and renames it to conform with the correct naming convention. Usually, customers won't see this.

There are also log files available for each NetApp Management Console client, in the "logs" subdirectory of the installation directory:

|  |  |  |  |
| --- | --- | --- | --- |
| **Log File** | **Contents** | **Rotation** | |
| jpf.log | Information logged by the Java Plugin Framework, usually useful only for diagnosing faulty installations that may lack all the necessary files. | 1 MB | +10 |
| nmconsole.log | Traces of activity in NetApp Management Console, including any exceptions encountered in the client. It is possible to log all activity between NetApp Management Console and DataFabric Manager in this log file; see "**What other logs can be enabled?**" for more information. | 1 MB | +10 |

**9.5.X2 [internal] How can I see if the DataFabric Manager server is working correctly on the Windows system?**

[This FAQ is not included in customer-visible pages]

If you suspect that there are some DataFabric Manager server operational problems on your computer or if you simply want to look "under the hood" a little, here are a few things you can try:

* View **DataFabric Manager diagnostics**. This is available in a page in Operations Manager or from the command line.

**Operations Manager**: http://*server*:8080/dfm/diag

**CLI**: C:\> dfm diag

Note that Operations Manager URL could be slightly different. See FAQ entry "What's the URL for Operations Manager?"

* Run the **Windows Task Manager**. This is available by right-clicking on the Windows task bar and selecting "Task Manager".
* Run the **Windows Services Manager**. This is available from the DataFabric Manager utilities submenu or from the Windows Control Panel by selecting "Administrative Tools->Services".
* Run the **Windows Events Viewer** This is available from the DataFabric Manager utilities submenu or from the Windows Control Panel by selecting "Administrative Tools->Events Viewer".
* Run the **Windows ODBC Data Source Administrator** This is available from the DataFabric Manager utilities submenu or from the Windows Control Panel by selecting "Administrative Tools->Data Sources (ODBC)".

The locations for Windows Utilities given above are for Windows 2000.

**9.5.X3 [internal] What other logs can be enabled?**

[This FAQ is not included in customer-visible pages]

In addition to the normal application logs described in "**What is the purpose of various log files?**", there are other logs that can be enabled to debug problems with the DataFabric Manager server.

Detailed SNMP tracing can be turned on using a hidden option which causes the DataFabric Manager server to trace all the SNMP traffic it receives. To turn this on use:

$ dfm option set snmpLogEnabled=yes

After waiting long enough to capture the data you want turn it off again, because these logs do not rotate and can consume the disk.

The log files are created inside the "log" subdirectory of the installation directory of DataFabric Manager. The files are all inside a subdirectory called "snmp" and then another subdirectory by IP address for the host. For example:

<installdir>/log/snmp/10.10.10.10/trace.log

For diagnosing problems observed with NetApp Management Console, it is sometimes helpful to capture traces of the traffic between NetApp Management Console and DataFabric Manager. To enable client-side traces, edit the log4j.properties file in the installation directory of NetApp Management Console to change the log level for**netapp.sumo** from **INFO** to **DEBUG**:

#

# Log4j configuration

# Available priorities are: OFF, FATAL, ERROR, WARN, INFO, DEBUG, ALL

#

log4j.rootLogger = INFO,nologger

log4j.logger.com.netapp.nmf = INFO,nmf

log4j.logger.netapp.sumo = **DEBUG**,nmf

log4j.logger.org.java.plugin = INFO,jpf

Restart NetApp Management Console after changing the file.

**9.6 How do I backup the database?**

The **dfm backup** CLI commands allow you to create backup copies of the working database and then restore the database from a backup. These commands can also be used to set a daily or weekly schedule for creating backups.

**Creating a backup of the database:**

From the command line, enter the following:

dfm backup create *backup\_file\_name*

**WARNING:** Do not use CTRL-C or any other means to interrupt this process. Doing so will cause the backup to fail and can result in an unusable database file.

If the procedure fails, one or more error messages will be printed.

**9.7 What can I try if the restore operation fails?**

* The restore operation (**dfm backup restore**) can sometimes fail with the following error message:
* Could not stop service <service-name>, error: The service did not respond
* to the start or control request in a timely fashion.

If this occurs, you should first manually stop all services with:

dfm service stop

Finally, retry the restore operation (**dfm backup restore**).

* The restore operation (**dfm backup restore**) can sometimes fail with the following error message:
* Error: Could not find database file.
* Error: Could not rename all restore targets.

If this occurs, you should first check if **monitordb.db** and **monitordb.log** files are present in the **dbDir** and **dbLogDir** directories respectively (run **dfm database get** command to get the **dbDir** and **dbLogDir** directories).

If these files are not present, try creating dummy **monitordb.db** and **monitordb.log** files in **dbDir** and **dbLogDir** directories respectively and retry the restore operation (**dfm backup restore**).

**IMPORTANT**: The "dfm backup restore" command in previous releases needs the database running, so restart only the database service with:

dfm service start sql

before retrying the restore operation.

**9.7.X1 [internal] What happens if a backup restore fails due to a corrupted backup file?**

[This FAQ is not included in customer-visible pages]

Note: There is a known issue where the system appears to successfully restore from a **corrupt** backup file. If this happens, the database will not start and the system might require reinstallation. To avoid this potential problem, you should manually copy the database to a temporary location before doing the restore. You can revert to this copy if the restore fails.

Stop the sql service by entering the following:

dfm service stop sql

Confirm that the sql service is stopped by entering the following:

dfm service list sql

The following message should appear:

sql: not started

Note: The user can change both the database directory and the database log directory with the "dfm database set" command. To check the current settings, use:

C:\working>dfm database get

Option Value

--------------- ------------------------------

dbDir C:/Program Files/NetApp/DataFabric/DFM/data/

dbLogDir C:/Program Files/NetApp/DataFabric/DFM/data/

dbCacheSize

Change the working directory to the "data" directory. If DataFabric Manager is installed in "C:\Program Files", the path should be:

C:\Program Files\NetApp\DataFabric Manager\DFM\data

Copy the active database file to a temporary location by entering the following:

copy monitordb.db monitordb.db.bak.040220

If the log file is in a different directory, change to that directory. Copy the active database log file to a temporary location with:

copy monitordb.log monitordb.log.bak.040220

Restart the sql service by entering the following:

dfm service start sql

Confirm that the sql service has started by entering the following:

dfm service list sql

If the service is up and running, the following message will appear:

sql: started

If the service is not yet running, the following message will appear:

sql: unknown

Wait 2 minutes, then query the state again by entering the following:

dfm service list sql

The following message should appear:

sql: started

If the state is still *unknown*, wait a few more minutes and try again. You should now see the following message:

sql: started

If this message does not appear, the database might be taking a long time to start because it is very large. Do not interrupt the database startup operation.   
To check to see if the database server process is running, look for a process named "dbsrv7", "dbsrv8" or "dbsrv9" using the task manager program on Windows or "ps" on UNIX.   
For further assistance, contact NetApp.

If the service restarted successfully, proceed with the restore by entering the following:

dfm backup restore *backup\_file\_name*

**WARNING:** This process can take several minutes to complete. Do not use CTRL-C or any other means to interrupt the restore. Doing so can cause the restore to fail and make the system unusable. Check the service state by entering the following:

dfm service list sql

If the restore was successful, the following message will appear:

sql: started

If there was an error with the restore, the following message will appear:

sql: not started

You will now have to manually revert from the temporary copies of the database and log files. (Ensure that your current working directory is the "data" subdirectory of your DataFabric Manager installation.)

Execute the following steps:

1. Make the active database file writable by entering the following:

attrib -r monitordb.db

2. Delete the active database file by entering the following:

del monitordb.db

3. Rename or copy the temporary database copy to the active database file.

If you want to retain the temporary copy of the database file, copy the file by entering the following:

copy old.valid.db monitordb.db

If you do not need the temporary copy, rename the file by entering the following:

ren old.valid.db monitordb.db

If the database log file is in a different directory then change to that directory.   
Repeat steps 1 through 3 above for the database log file replacing the ".db" extension with the ".log" extension in every step.

Note: the performance monitoring data was also saved to a temporary location during the backup.   
Note: Like the database and log directories, the user can re-map the performance data directory. Access this setting with:

dfm option list perfArchiveDir

Go to the parent directory of the performance data directory, i.e.:

C:\Program Files\NetApp\DataFabric Manager\DFM

Look for a directory named perf.tmp.rstr. Rename the directory to its working name (default is "perfdata").

It is possible that the backup was in the middle of a tar or zip operation for the performance data. If necessary, unzip and/or unpack the tar archive of the files in the performance data directory.

Start the sql service by entering the following:

dfm service start sql

Confirm that the sql service has started by entering the following:

dfm service list sql

If the service is up and running, the following message will appear:

sql: started

If the service is not yet running, the following message will appear:

sql: unknown

Wait a little while, then query the state again by entering the following:

dfm service list sql

The following message should appear:

sql: started

If this message does not appear, contact NetApp for further assistance.

If there are no errors, the database has been restored successfully and data should be viewable with any of the dfm list commands. To test this, enter the following:

dfm host list

You should see a listing of valid appliances entries or a message stating that there are currently no managed hosts.

If a database related error message appears, contact NetApp.

**Note**: In the examples above, the paths for database and other files use the defaults for a Windows installation. For a Linux installation, substitute:

/opt/NTAPdfm/

for

C:\Program Files\NetApp\DataFabric Manager\DFM\

**9.8 Can I move my database files?**

The database file has a hard-coded, system dependent path to the log file location. This must be changed in the following cases:

* Moving to another system with a different OS.
* Changing the location of the log file in any way, including when you are changing from a non-default location back to the default location.

**IMPORTANT:** When moving the database file to a file system mounted on a Linux server using NFS, the database file size could exceed the 2 GB limit imposed by NFSv2. This could lead to a database server crash and/or database file corruption. To resolve this, use the NFSv3 ("vers=3") mount option when mounting the filesystem you will be moving the database file to.

To move the database and log files from one dfm system to another, or to another directory on the same system, you will have to use the "dfm database" command.

If you are moving the database file location on the same computer, or a non-standard location on a new administration host, move the file to the new location and run:

dfm database set dbDir=/opt/NTAPdfm/data/moved

Changed dbDir to /opt/NTAPdfm/data/moved.

**IMPORTANT:** Before changing dbDir option, make sure that the database file (monitordb.db) file is copied to the new location.

If you are also moving the log file to a location that is in any way different from the one was referenced in the database file before you moved it, (even if you are moving to the same path on a different drive on Windows), run:

dfm database set dbLogDir=<new-log-location>

Updated dbLogDir to <new-log-location>.

If you are moving a database to an existing DataFabric Manager server and you will be using the default "data" directory locations, move the database and log files and run:

dfm database set dbLogDir=""

Cleared database log directory and reset log path to default.

**9.9 Why can't I start the http service after upgrading an existing database?**

This problem can occur when the SSL server information goes out of sync with the SSL information tracked in the database. To reinitialize the SSL setup information for your server, you will need to run the "dfm ssl server setup" command as follows:

$ dfm ssl server setup

Supply the following information:

Key Size (512 or 1024) [default=512]:

Certificate Duration (days) [default=365]:

Country Name (e.g., 2 letter code): US

State or Province Name (full name): California

Locality Name (city): San Jose

Organization Name (e.g., company): Your Company, Inc.

Organizational Unit Name (e.g., section): Dev

Common Name (fully-qualified hostname): eng-2k-desk.yourcompany.com

Email Address: fred@yourcompany.com

Loading 'screen' into random state - done

Generating a 512 bit RSA private key

.....................++++++++++++

..++++++++++++

writing new private key to 'C:\Program Files\NetApp\DataFabric Manager\DFM\conf\server.key'

-----

The DataFabric Manager SSL server has been initialized.

You should now be able to start the http server as follows:

$ dfm service start http

Service: http started.

To make sure it's running, use:

$ dfm service list http

http: started

**9.10 What do I do after changing the head, host name or the IP address of an appliance?**

The DataFabric Manager server tracks the appliances using three pieces of information:

1. Host name
2. IP address
3. System ID

Usually, if only one of the three items changes, the DataFabric Manager server should discover the change when it re-collects system information from that appliance. It should usually happen within an hour. To get a more immediate update, you can request the monitor to refresh data from the appliance by invoking the *Refresh Monitoring Samples* tool from the Appliance Details page for that appliance, or running this command at the CLI:

dfm host discover <*old-hostname-or-IP-address*>

If the IP address is changed, and the address is the one to which the DataFabric Manager server communicates, it may be necessary to manually update the IP address on the Edit Appliance Settings page for the appliance, or by running this command, before refreshing the monitoring (as described above):

dfm host set <*hostname*> hostPrimaryAddress=*new-address*

If the IP address being changed is not the primary IP address, nothing needs to be done.

Depending on the situation, changing two of the three pieces of information at the same time may result in the system looking like a new appliance, and therefore the historical data would not be associated with this new appliance in the DataFabric Manager server. In some situations, the manual step of changing the "hostPrimaryAddress" described above can avoid this problem, or using this command:

dfm host rename <*old-system-name*> <*new-system-name*>

Changing all three pieces of information at the same will certainly result in the system looking like a new appliance in the DataFabric Manager server.

It may be worth doing a "dfm backup create" before major appliance head swaps or upgrades, in case you need to restore the DataFabric Manager server to an earlier state.

**9.10.X1 [internal] How do I delete all information about hosts from the database so they can be rediscovered?**

[This FAQ is not included in customer-visible pages]

You can delete information about hosts and all objects owned by those hosts from the database by using the **-f** flag with the host delete command on the command line. This will allow the DataFabric Manager server to rediscover these hosts and its volumes, qtrees, etc.

This can take an extremely long time - up to a few hours. It might be worthwhile to reinstall DataFabric Manager instead since deleting all hosts will effectively delete all historical data and the reinstall will take less time than the delete.

First, make sure the following services are turned off to ensure that there are no database conflicts during the delete:

$ dfm service stop server scheduler watchdog monitor eventd

To delete all data for a single host, enter the following command:

$ dfm host delete **-f** *host-name-or-id* ...

To delete all data for all hosts, enter the following command:

$ dfm host delete **-f** **all**

When the delete operation completes, you should turn the following services back on:

$ dfm service start eventd monitor watchdog scheduler server

**9.10.X2 [internal] What if I encounter "deadlock" or "Invalid statement" or "no primary key" errors from the database while executing delete commands with the "-f" option?**

[This FAQ is not included in customer-visible pages]

The "-f" (force) flag for the delete commands is hidden from the user. Support staff can use this flag when deleting objects (hosts, volumes, qtrees, networks etc.) from the database. It tells the DataFabric Manager server to completely remove all records for those objects.

Note that the force delete operations can take many minutes, even hours, so be patient!

The "no primary key" errors are generated by the monitor when it tries to access a record that just got deleted.

The "deadlock" errors can occur if the monitor and the "dfm" command are simultaneously trying to access the same records; the monitor trying to update and the "dfm" command trying to delete.

The "Invalid statement" error is under investigation.

To avoid all of these errors, stop the following services before you delete with "-f":

$ dfm service stop server scheduler watchdog monitor eventd

Service: server stopped.

Service: scheduler stopped.

Service: watchdog stopped.

Service: monitor stopped.

Service: eventd stopped.

Now forcibly delete the object with "-f":

$ dfm host list makita

ID Host Name Host Address ProductId Deleted

---- ----------------------------------- --------------- -------------- --------

12 makita.eng.yourcompany.com 172.24.1.20 0016801791 No

$ dfm host delete -f makita.eng.yourcompany.com

Deleted host makita.eng.yourcompany.com (33).

$ dfm host list makita

Error: There is no host, volume, qtree, or group named "makita".

If you still encounter "Invalid statement" error, restart sql service and retry the "host delete -f" command.

$ dfm service stop sql

Service: sql stopped.

$ dfm service start sql

Service: sql started.

Now restart the following services:

$ dfm service start eventd monitor watchdog scheduler server

Service: eventd started.

Service: monitor started.

Service: watchdog started.

Service: scheduler started.

Service: server started.

If you are going to forcefully delete all hosts, you should consider reinstalling DataFabric Manager since it will take much less time than the delete operation.

**9.10.X3 [internal] How do I rebuild the DataFabric Manager server if it dies catastrophically?**

[This FAQ is not included in customer-visible pages]

However reliable hardware and software becomes, there can always be a catastrophic failure of a server if a disaster (flood, fire, earthquake) occurs. Therefore, customers need to plan their disaster recovery plan for the DataFabric Manager server.

This FAQ needs writing, but here for now are some internal sources of information:

**[ Needs review: Bruno Eurich used to maintain this information for SEs primarily (probably not up to date)**

[Bruno Eurich's Word document](http://web.netapp.com/~brunoe/netapp/DFM-Disaster-Recovery-Build-Guide.doc). **]**

**[ Needs review:**

Another suggestion:

1. Setup a standby DataFabric Manager server on another platform, preferably in a separate location. After setup, stop all the services ("dfm service stop") or shut down the machine.
2. On the primary (active) DataFabric Manager server, set a periodic database backup schedule (weekly or daily) using "dfm backup schedule set" command.
3. Backups are created in "data" directory by default. If you need backups to be created on a "safe" location, set the datababasebackupdir option to this directory. Once this option is set, database backups will be created in this location. The backups created will have the extension ".ndb".
4. If the primary the DataFabric Manager server dies:
   1. Copy the backup file from the safe place over to the standby DataFabric Manager server.
   2. Execute "dfm backup restore absolute\_path\_to\_backupfile" to import the database.
   3. Remember to set up a scheduled backup on this new server.  
      **Note**: Don't have both DataFabric Manager servers running at the same time. Once you have moved over to using the standby DataFabric Manager server it will now be doing active management, so shut down the services on the original server ("dfm service stop").
   4. After repairing the original DataFabric Manager server, make sure you uninstall DataFabric Manager software and then reinstall a fresh version so that you have a new "standby" DataFabric Manager server.

**]**

**[ Needs review:**

There is also a manual failover method documented in the customer documents in which both DataFabric Manager servers share a single database file on a shared file server, which provides a fairly fast failover (improving up-time). However, this failover method doesn't provide much geographical separation for disaster recovery (both DataFabric Manager servers must be able to mount and lock the same shared file). **]**

Regardless of the disaster recovery method used, it's always a good idea to keep archive copies of the database backup files so that if the database gets corrupted you have a backup copy of earlier versions of the database which can be restored.

**9.11 How do I change settings (e.g. snmp traphost) for many storage systems at the same time?**

A common example is where 'snmp traphost' needs changing on all (or many) storage systems. The trick here is to use groups.

Start by putting all the storage systems in a new group. Here is an example ("same-snmp-traphost" is the group name):

$ dfm group create same-snmp-traphost

$ dfm group add same-snmp-traphost storage01 storage02 storage04

This example assumes all these storage systems send a trap to the same host, and all need updating to a 'snmp traphost' which is common to all of them.

Make sure the DataFabric Manager server knows the current root password (this step may not be needed if the DataFabric Manager server already knows the current password):

$ dfm host set same-snmp-traphost hostLogin=root hostPassword={current-passwd}

Next, change the 'snmp traphost' on all these storage systems:

$ dfm run cmd same-snmp-traphost "snmp traphost add trap-host.company.com"

It's probably best to try this out with a small group of storage systems before using it on a large group.

Note that this procedure is only using the group as a collection. This means that although the commands execute on a group, the values are being changed for the members of the group, and are not stored for the group itself. This means that adding another storage system to the group later will not cause it to have its password changed automatically.

**9.12 How do I keep the web server from being crawled by web search engines?**

There is a file called "robots.txt" in the "misc" subdirectory of the DataFabric Manager installation. Copy this file to the "web" subdirectory of the installation and web search engines should stop crawling and indexing all pages in Operations Manager.

**9.13 How can I create database backups in a different location?**

Database backups can be created in a different location by setting the databaseBackupDir global option.

Do this by setting **Destination Directory** to **<destination-directory>** in Setup->Database Backup->Database Backup main page in Operations Manager or by using the command line:

dfm option set databaseBackupDir=<destination-directory>.

**9.14 Why can't I create database backups from Operations Manager when the Server service is down?**

Database backups can not be created from Operations Manager when the Server service is down, because Operations Manager depends on the Server service to verify the settings of the database backup destination directory.

From CLI, only root/Administrator user can run the "dfm backup create" command. The CLI does not depend on the Server service and therefore, CLI will work even if the Server service is down.

**9.15 Why can't I restore my DataFabric Manager database when perfArchiveDir or scriptDir option is set to a CIFS share?**

If the Global Option perfArchiveDir or scriptDir on DataFabric Manager server is set to a top level CIFS share like "\\server\share", then the database restore operation will fail.

The workaround, in this case, is to create a folder inside the CIFS share, like "\\server\share\folder", and set the perfArchiveDir or scriptDir Global Option to this path and then retry the restore operation:

dfm option set perfArchiveDir="\\server\share\folder"

OR

dfm option set scriptDir="\\server\share\folder"

**9.16 Why does the "dfm datastore setup" command fail with a "proc\_pipe CreateProcess failed" error?**

Some versions of SnapDrive for Windows (e.g. 3.2R1) do not update the PATH environment variable with the "sdcli" path during installation. Therefore, the DataFabric Manager server CLIs fail to execute the "sdcli" command. Update the PATH environment variable with the "sdcli" path and restart the DataFabric Manager server services to resolve this problem.

**9.17 How can I add a new cluster using SNMP v3 credentials?**

Two options:

* Setup a network entry with correct credentials and then add the cluster using UI or CLI.
  + Add the cluster from CLI
  + $ dfm cluster add
  + specify the SNMP v3 credentials.

**9.18 How do I setup RLM IP Address and credentials for cluster nodes?**

You can use CLI:

$ dfm host set hostlogin= hostpassword=

$ dfm host set hostrlmaddress=

$ dfm host set hostLogin=naroot

If you want to use UI then the host RLM address can be set through the "Edit Storage Controller Settings" page of a controller.

**9.19 How do I troubleshoot communication issues between Operations Manager and a cluster?**

Use can use CLI command:

$ dfm host diag

There is a web UI equivalent to this. Cluster Details > Diagnose Connectivity.

**9.20 Should I provide Host Login and Host Password for a cluster?**

Yes. Snapshot reporting is available only if Host Login and Password are specified. Running commands on a cluster also requires it. All other functionality works with SNMP monitoring.

**9.21 Why do I get Apache Error "Timed Out" after sometime of trying to access the web UI? Even the CLI is not responding?**

There is not sufficient disk space available. Kindly refer to the system requirements.

**9.22 My cluster is down but controllers are shown as green. Why?**

The management IP of the cluster is down but at least one of the nodes is up.

**9.23 In the controller reports, I see "Controller Ping Status" as error. Why?**

SNMP agent is not responding for that particular controller.

**10 Performance of the DataFabric Manager server**

**10.1 How can I manage many storage systems with DataFabric Manager server?**

**[ Needs review: Should we really recommend database be placed on non-local disks other than over SAN or CIFS?**

To manage more than 75 storage systems, the embedded database needs to be optimized. It should be relocated to a fast I/O device, like a storage system, or a local striped volume with 4 to 5 fast disks. In addition, to reduce the I/O load, more memory (optimally 60-70% of physical memory) should be assigned to the database cache. If the database is on JBOD (Just a Bunch Of Disks - no RAID), its transaction log should be placed on a separate physical device to reduce fragmentation.

To optimize the performance of the embedded database, follow these steps:

* Stop all services:
* $ dfm service stop
* Service: http stopped.
* Service: server stopped.
* Service: scheduler stopped.
* Service: watchdog stopped.
* Service: monitor stopped.
* Service: eventd stopped.
* Service: sql stopped.
* Move database file (monitordb.db) from its default location (<installdir>/data/) to the new location.
* Tell the DataFabric Manager server where to find the relocated database:
* $ dfm database set dbDir=/t/kirby/data/
* Changed Database Directory to /t/kirby/data/.
* (Optional): Tell the DataFabric Manager server to put the database transaction log in another directory:
* $ dfm database set dbLogDir=/home/data/
* Changed Database Log Directory to /home/data/.
* (Optional): Increase memory allocated to the database cache:
* $ dfm database set dbCacheSize=1024
* Changed Database Cache Size (MB) to 1024.
* Restart all services:
* $ dfm service start
* Service: sql started.
* Service: eventd started.
* Service: monitor started.
* Service: watchdog started.
* Service: scheduler started.
* Service: server started.
* Service: http started.

On Windows, all the DataFabric Manager server services run under the Local System account. The Local System account does not have permissions to access shared network resources. If the database is relocated to a shared drive, the database service will fail to start until the service is changed to log on as a user with permissions to access the shared drive when it starts. To do that, follow these steps:

* Bring up the Services control panel applet
* Double click on the "DFM Sybase ASA" service to launch its Properties dialog box.
* Switch to the "Log On" tab.
* Provide a different user account.

**]**

**10.1.X1 [internal] Do multiple processors get used by the database?**

[This FAQ is not included in customer-visible pages]

Using a multi-processor platform will speed up the DataFabric Manager server, but the database itself is limited to only using 2 processors on Linux, and 4 on Windows. This is limited by our license with Sybase for iAnywhere, and the Windows limit was a concession for the fact that each CPU core within a physical processor chip (with hyperthreading) is counted as a whole processor.

**10.2 How is the CPU usage of cluster calculated?**

It.s the maximum of the CPU usage for all the nodes.

**11 Configuration Management**

**11.1 How do I manage the configuration of a group of storage systems?**

Configuration files are used by the DataFabric Manager server to store parts of the configuration settings to be applied to groups of storage systems. There can be many such files, and any one of them can contain any subset of the storage system settings. These files are created by pulling the settings from an existing storage system and then editing those down to the subset needed. Refer to the "Configurations" menu under the "Management" drop-down present at the top of the Control Center tab in Operations Manager.

The Configuration files are not group-specific: they can be used in any number of groups. To add a configuration file to a group, use the "Edit Group Storage System Configuration" page, which can be found in the "Current Group" menu provided in the left pane in the group's Summary page.

More than one configuration file can be added to the group, and they can also be added to parent groups. The order of the files will effect which settings actually get set on the target storage system. For more information, see "**What happens when many configurations in a group have different values for the same setting?**".

The settings from the configurations can then be pushed to one or more storage systems in the group. You can do this in Operations Manager with the "Push" button in the "Edit Group Storage System Configuration" page for storage systems.

You can also do all of this on the command line. Use the "dfm group" commands to change the group membership. For example, to add a config to a group:

$ dfm group add sunny\_config my\_new\_config

Added 1 member to sunny\_config.

Use the "dfm config" commands to manage the configurations. For example, to push the group's configuration to all storage systems in the group, use:

$ dfm config push sunny\_config

Started job : 43.

To push to all storage systems in the group, use:

$ dfm config push -t filer sunny\_config

Started job : 44.

To push to an individual storage system, use:

$ dfm config push fred.yourcompany.com

Started job : 45.

**11.2 Under what kind of groups do I expect to see links for "Edit Group Storage System Configuration"**

You will expect to see "Edit Storage System Configuration" links in the "Current Group" menu provided in the left side pane the for groups of the following types:

* A group that already contains configurations.
* A group that contains only storage systems.
* An empty group (i.e. unknown group type).

**11.3 What happens when many configurations in a group have different values for the same setting?**

Since configurations are ordered within a group, the general rule, of "the last one wins" can be applied. If there is more than one config file which seeks to set the same setting with different values, the last one in the sequence will win and the previous updates will be overwritten.

This also applies to config group inheritance (group parent settings). That is, any settings in the parent groups will be applied before those in the target group.

To control the sequence of the configs in a group, use the "Edit Group Storage System Configuration" page to change the order of the files in the group. At the command line, use the "dfm config move" command. For example, to move my\_new\_config up (earlier) in the sequence in group sunny\_config, type:

$ dfm config move up sunny\_config my\_new\_config

Reordered configurations in group sunny\_config.

**11.4 How do I find out if my configuration push operation has completed?**

The configuration push operation is handled as a job in the DataFabric Manager server. In the "Edit Group Storage System Configuration" page, the running config jobs that apply to the current group will be listed by id. Clicking on any of these will take you to the job status page for that job.

From the CLI, you can use the "dfm run status" command to view the details of the job:

$ dfm run status 20

Job: 20

Host: storage1.yourcompany.com

Command: config push storage1

Status: done

Submitted: Tue Feb 19 16:23:50 2002

Attempts: 1

Started: Tue Feb 19 16:23:50 2002

Completed: Tue Feb 19 16:23:54 2002

Timeout: 7200

**11.5 Can a configuration group contain configuration files for different versions of Data ONTAP? What will happen if I push all these config files to a storage system?**

Yes, you can have a configuration group with configuration files from different versions of Data ONTAP. If you push this group of files to a storage system, the DataFabric Manager server will automatically upgrade or revert the files to the version that matches the storage system's version, and then push the configuration.

**11.6 Can a configuration group contain storage systems running different versions of Data ONTAP? What will happen if I push config files to this group of storage systems?**

Yes, you can have a configuration group with storage systems different versions of Data ONTAP. If you push configuration files to such a group of storage systems, the DataFabric Manager server will automatically upgrade or revert the config files to a matching version for each storage system, and then push the configuration.

**11.7 What plugins are required for configuration management?**

You need storage system plugins for storage system and vFiler unit configuration management. Plugins are shipped as zip files named "filerconfig\_<platform>.zip", where <platform> could be "Linux" or "Windows".

**11.8 What privileges do I need to have to install or uninstall plugins?**

You need root privilege on Linux, and administrator privilege on Windows to install or uninstall plugins.

**11.9 What happens if I install a plugin when the same version plugin is already installed?**

When two plugins have the same version, if the plugin you're installing is newer than the existing plugin, "dfm plugin add" will overwrite the existing plugin with the new one. Otherwise, you will be required to use "-f" (force) option with "dfm plugin add" command to force overwriting the existing plugin.

**11.9.X1 [internal] When "dfm plugin add" fails, how do I diagnose the problem?**

[This FAQ is not included in customer-visible pages]

Inside the plugin zip file, there is a file called "libfilerconfig.rc". The "dfm plugin add" command uses this file for collecting all the information about the plugin.

First you need to check if this file is there. If it is, find the attribute-value pairs specified in this file. *FileDescription*, *Platform*, *ProductName*, *ProductVersion*, *SpecialBuild*, and *TimeStamp* are the attributes used by "dfm plugin add". *FileDescription* and *ProductName* decide the plugin type.

**This file should never be edited.**

**11.10 I deleted a plugin by mistake. Where can I get it?**

Most of the plugins are shipped with DataFabric Manager software. If you delete a plugin shipped with DataFabric Manager, you can install it again from <dfm\_install\_path>/src/<type>/<version>/<zip\_filename>, where <type> is "filer". Examples:

Installing a Data ONTAP version 7.0 storage system plugin on Windows,

C:\> dfm plugin add <dfm\_install\_path>/src/filer/7.0/filerconfig\_Windows.zip

You can get the latest plugins from the [NOW](http://now.netapp.com/) site.

**12 Configuration Management (for Storage Systems)**

**12.1 What versions of Data ONTAP are supported?**

You can pull and push configurations from storage systems running Data ONTAP versions 6.5.1 and later.

**12.2 Why does a "dfm config pull" operation fail for a storage system?**

There are four common failures that can occur while pulling a configuration:

* Cannot establish connection to storage system.
* Host Login or Password not set.
* Authorization failed.
* No such file or directory.
* Service unavailable.

**Cannot establish connection to storage system**: This error can occur if the storage system is down or unreachable.

**Host Login or Password not set**: This error will occur if the storage system's host login and/or password is not set for the storage system in the DataFabric Manager server. These values can be assigned on a per-host basis from the "Edit Settings" link in the "Appliance Tools" menu provided in the left side pane on the host's Appliance Details page.

**Authorization failed**: This error will occur if the storage system's host login and/or password do not match the settings on the storage system. These values can be assigned on a per-host basis from the "Edit Settings" link in the "Appliance Tools" menu provided in the left side pane on the host's Appliance Details page.

**No such file or directory**: This error could occur mainly for following reasons,

* The "admin.config.list" option is not set on the storage system. Confirm it by running following command on the storage system,
* storage01> options admin.config.list

If no value is set, you need to set a proper value like following,

storage01> options admin.config.list /etc/registry.default,/etc/registry.local

* The root volume on the storage system does not have enough free space left to dump the configuration settings of the storage system. Confirm it by checking the amount of free space available on the root volume of the storage system.
* storage01> df -h <path\_to\_root\_volume>
* Filesystem total used avail capacity Mounted on
* xxxx xxx xxx xxx xxx xxxx

Generally, the free space required is a few hundred kilobytes, but actually it depends on the size of settings files present in the etc folder and therefore space requirement could be more. If the available space is less than the space required for dumping the configuration of the storage system, you would need to mount the root volume of the storage system and delete some data from the root volume to make space for dumping the configuration settings.

**Service unavailable**: This error could occur, if "httpd.admin.enable" option is set to "off". Confirm it by running following command on the storage system,

storage01> options httpd.admin.enable

httpd.admin.enable off

If the value is set to "off", you would need to set it to "on",

storage01> options httpd.admin.enable on

**12.3 Why does a configuration push job fail for a storage system configuration group?**

If the job never runs to completion before the timeout (default 7200 seconds), its status will eventually show "failed".

If a job pushes an empty value for "admin.config.list" option, it will fail because the DataFabric Manager server will not be able to pull the configuration from storage system for matching purposes.

If a job pushes "off" value for "httpd.admin.enable" option, it will fail because this option disables the API access on storage system.

The config push operation can also fail with the many of the same error modes as the "dfm config pull" operation. For more information on these settings, see "**Why does my "dfm config pull" operation fail for a storage system?**"

**12.4 Does the DataFabric Manager server maintain any log of configuration push jobs for storage systems?**

When a configuration push succeeds a message like following is logged in audit.log,

A config push job (id=*n*), submitted by user *'user'*, pushed config to

storage system *'system name(id)'* successfully [Message id#*mesg\_id*].

A similar message is logged to the target storage system's messages file with the same *mesg\_id*. The *mesg\_id* can be used to co-relate the log messages of the DataFabric Manager server and the storage system.

**12.5 Can I edit the values of a storage system configuration file?**

Yes. The only caveat is the DataFabric Manager server does not do any validation of the changes you make. So, you get to know about mistakes only when you push an edited configuration file to a storage system.

**12.6 Why are Config Conformance monitoring samples not being collected by the DataFabric Manager server?**

The DataFabric Manager server starts Config Conformance monitoring for a storage system only after the first successful configuration push to the storage system. Until then, Config Conformance monitoring will not run for the storage system and Operations Manager will show the "Most Recent Sample" timestamp as empty.

**NOTE**: For conformance monitoring, the DataFabric Manager server pulls the configuration from the storage system. If the configuration pull operation fails, the conformance monitoring will not work. See, "**Why does a "dfm config pull" operation fail for a storage system?**"

**12.6.X1 [internal] Exactly how does the DataFabric Manager server generate the Configuration Changed event for a storage system?**

[This FAQ is not included in customer-visible pages]

When the DataFabric Manager server first pushes a configuration, it keeps a copy of the pushed configuration in the database.

Whenever the Config Conformance monitor runs, the current configuration is obtained from the storage system and compared to the saved configuration. If they are different, the DataFabric Manager server generates the warning event "Storage System Configuration: Changed Locally".

When viewing this event in Operations Manager, if you choose "Fix" you are shown the difference between the two files. You then get the choice to "Accept" or "Reject".

If you choose to "Accept" then the changed settings are copied to the saved configuration and the changed settings are marked as "Excluded". The excluded settings are not pushed to a storage system, if the global option "Preserve Local Configuration Changes" is set to yes. Thus the subsequent push operations to this storage system will not overwrite the local changes. If the global option is set to no, the subsequent push operations to this storage system will overwrite the local changes. By default this option is set to yes.

However, if you choose "Reject" then the old settings (corresponding to the changed settings) are pushed to the storage system overwriting the local changes.

Once the storage system configuration settings are matched with the DataFabric Manager server, the next monitoring cycle would generate "Storage System Configuration: Matches with Pushed Configuration" event and cause the warning event to go away.

Acknowledging the event only stops repeated alarm generation, but doesn't change anything on the storage system.

**12.6.X2 [internal] What are dfm-x.x.x.x-nnnnnn.cfg files in the etc folder on the storage system?**

[This FAQ is not included in customer-visible pages]

When the DataFabric Manager server pulls the configuration settings from a storage system, it dumps the configuration settings of the storage system in the etc folder to following temp file, "dfm-<ip\_address\_of\_dfm\_server>-<timestamp>.cfg". The DataFabric Manager server deletes this temp file after reading it, but there could be some cases when the DataFabric Manager server is stopped in between or the system failures that could prevent the DataFabric Manager server from deleting the temp file from the storage system.

If there are any such stale temp files (older than couple of minutes) present on the storage system, administrator can delete these safely.

**12.7 Which configuration settings are not pulled by DataFabric Manager server?**

The DataFabric Manager server pulls all the options and "/etc" files, except the ones which are storage system specific. For example, options related to network interfaces aren't pulled. These options are as below:

options.autosupport.support.to

options.bootorder

options.cifs.wins\_servers

options.ems

options.hosts

options.if

options.ip.tcp.offload.enable

options.license

options.sslp

options.system.hostname

options.vfconfig

Following "/etc" files are not pulled as they contain storage system specific information:

/etc/cifs\_homedir.cfg

/etc/cifs\_nbalias.cfg

/etc/cifsconfig\_setup.cfg

/etc/cifsconfig\_share.cfg

/etc/cifssec.cfg

/etc/dgateways

/etc/exports

/etc/filessid.cfg

/etc/group

/etc/hosts

/etc/krb5.keytab

/etc/lclgroups.cfg

/etc/passwd

/etc/qual\_devices

/etc/quotas

/etc/rc

/etc/rmtab

/etc/serialnum

/etc/shadow

**12.8 How do I know what options get pushed to a storage system in a configuration group?**

The following steps show the preview of the configuration that is pushed to a storage system in a group:

* Select the configuration group in the left pane.
* Click Edit Storage System Configuration link from the "Current Group" menu provided in the left pane.
* From "Configure Overrides and Exclusion List" section, choose the storage system and click "Edit" button. A new window is opened for editing storage system specific settings like including/excluding options and setting override values.
* In the new window, the "Preview Configuration" link provided in the left pane would show the configuration settings present on the storage system and the new settings that would be pushed from the DataFabric Manager server.

**Note**: In the "Preview Configuration" page for a storage system, some options are marked as "Not Pushed (Cluster Constraint)" in the last column. This happens when storage system is part of an active/active configuration. The DataFabric Manager server does not push these options to the storage system because these options are required to be the same on both of the active/active controllers.

**12.8.X1 [internal] How do I manage hidden options of a storage system?**

[This FAQ is not included in customer-visible pages]

The DataFabric Manager server does not handle hidden options in any special way. Hidden options are treated as any other option.

It is important to note that during a "config pull" operation, the DataFabric Manager server pulls the options using the "config dump" command on the storage system, which dumps all of the options including the hidden options.

**Note**: While pulling a configuration from a storage system, the DataFabric Manager server removes the options listed in the "exclude-keys" section in the "<dfm\_install\_path>/conf/filerconfig.conf" file. Modifications should be made to this file only after consulting with Engineering.

**12.9 Why are some options in the configuration file not getting pushed to a storage system?**

Under the following situations some options might not get pushed to a storage system:

* When the storage system is part of an active/active configuration, some options that are supposed to be the same for both active/active partners are removed by the DataFabric Manager server from the configuration before pushing it to a active/active controller. This does not affect push operation for controllers not in an active/active configuration.
* The options do not apply to the target storage system's Data ONTAP version. While pushing configuration to a storage system, the DataFabric Manager server does an upgrade/revert on the configuration depending on the configuration version and storage system's Data ONTAP version. During the upgrade/revert process, options not valid for the storage system's Data ONTAP version are removed.

**Note**: Also, see **"How do I know what options get pushed to a storage system in a configuration group?"**

**12.10 What will happen to an option which was overridden earlier and was excluded later from event details page?**

An option value or etc file contents that is overridden for a storage system could be excluded in the following ways:

* From the event details page of "Storage System Configuration Push: Some options could not be set" event.
* By accepting the changes shown in "Storage System Configuration: Changed Locally" event.
* Manually excluding the option while configuring overrides and exclusion list of a storage system.

In all of the cases mentioned above, exclusion list takes precedence over the overrides list. Therefore, the overridden value is lost and the option or the etc file is marked as excluded.

**12.11 What is a storage system plugin? When and how do I install storage system plugins?**

A storage system plugin is a zip file (called "filerconfig\_<platform>.zip") which is used for management of config files from different versions of Data ONTAP.

A user will need storage system plugin version X, where X is greater than or equal to 6.5.1, in the following cases:

* Manage a storage system of version X.
* Manage a config file of version X.
* Upgrade or revert a config file to/from version X.

DataFabric Manager ships storage system plugins starting from Data ONTAP version 6.5.1 on all the platforms. The storage system plugins get installed along with DataFabric Manager.

New plugins are available on the [NOW](http://now.netapp.com/) site in the same download web pages as for the Data ONTAP software itself.

**13 User Quota And Qtree Monitoring**

**13.1 Why is the DataFabric Manager server not showing user quotas on my storage system?**

Make sure that your storage system is running Data ONTAP 6.3 or later and you have specified root login and password on the appliance details page. You can also set login and password from CLI using:

$ dfm host set <storage-system> hostLogin=<root-account> hostPassword=<password>

**13.1.X1 [internal] What bugs have caused problems with user quotas?**

[This FAQ is not included in customer-visible pages]

This is not an exhaustive list, but the ones most frequently hit:

* [burt131547](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=131547&button=view) - DataFabric Manager 3.0 does not monitor user quotas on storage systems running Data ONTAP 6.3
* [burt158196](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=158196&button=view) - DataFabric Manager fails to edit and in some cases discover derived quota users on storage systems running Data ONTAP 7.0

**13.2 Can I format user quota alerts in HTML?**

The following format can be used for HTML alerts:

From: IT Administrator

Subject: URGENT: Your DFM\_QUOTA\_TYPE quota on DFM\_QUOTA\_FILE\_SYSTEM\_NAME

Content-Type: text/html

<html>

<body>

<p>You (as user <b>DFM\_QUOTA\_USER\_NAME</b>) have used up

<b>DFM\_QUOTA\_PERCENT\_USED</b> (DFM\_QUOTA\_USED out of DFM\_QUOTA\_LIMIT)

of available DFM\_QUOTA\_TYPE quota on <b>DFM\_QUOTA\_FILE\_SYSTEM\_NAME</b>.

<p>Please delete files that you no longer need.

<p><a href="DFM\_LINK\_EVENT">Event</a> (For IT Use only)

<p>-- IT Administrator

</body>

</html>

**13.3 Why is the DataFabric Manager server not showing correct user names for quotas?**

If the DataFabric Manager server shows either UNIX UID's or Windows SID's in place of the user names, make sure that *quota report -x* CLI command on the storage system shows the correct names. To do that, log in to the storage system, and run "quota report -x" from the prompt. If output doesn't show the correct user names, the DataFabric Manager server won't show them either. For Windows user names, make sure that CIFS is set up correctly on the storage system and that Windows domain controller is working. For UNIX user names, make sure that NIS is enabled on the storage system and the NIS server is working.

**13.4 How does the DataFabric Manager server handle default and derived quota?**

*Default quota* is the line in storage system's "/etc/quotas" file such as,

\* user@/vol/vol0 200G - -

The above default quota specifies that all users that are not explicitly mentioned in "/etc/quotas" are subject to 200G limit.

*The DataFabric Manager server does not show default quota in its reports.*

*Derived quota* is the actual user, such as "DOMAIN\hitz", that is making use of the default quota settings because the user has not been mentioned explicitly in the "/etc/quotas" file. Example of the derived quota would be user "DOMAIN\hitz" using 150G on vol/vol0 out of 200G limit.

*The DataFabric Manager server shows derived quota users in its reports.*

**13.5 How should I format user names in the mailmap file?**

Specify Windows user names as WINDOWS-DOMAIN\USER. If the user name contains spaces, enclose the entire name along with domain part in double quotes.

Specify UNIX user names as USER@NIS-DOMAIN. Make sure that you use the same NIS domain name specified in nis.domainname option on the storage system.

**13.6 Why does the DataFabric Manager server sometimes report that qtree status is unknown?**

The DataFabric Manager server computes the status for a qtree based on its usage. Qtree usage information is only available if a tree quota is configured for the qtree on the storage system.

If tree quota is not configured, the DataFabric Manager server may be able to obtain partial qtree information (without usage) from the storage system if one or more of the following conditions is true:

* the qtree contains user quotas, the storage system is running at least Data ONTAP 6.3, and the DataFabric Manager server is configured to monitor user quotas on that storage system
* the qtree is a SnapMirror destination, the storage system is running at least Data ONTAP 6.3, and the Business Continuance license is installed
* the qtree contains LUNs and the storage system is running at least Data ONTAP 6.3.
* the storage system is running Data ONTAP 6.4 or later.

Since qtree information obtained from these sources does not contain usage information, the DataFabric Manager server reports the status as unknown.

**13.7 How does the DataFabric Manager server discover new qtrees?**

The information below applies to DataFabric Manager 2.2 or later:

* For storage systems running Data ONTAP 6.3 or earlier, the DataFabric Manager server does not automatically discover qtrees. You have to run **dfm host discover**command.
* For storage systems running Data ONTAP 6.4 or later, the DataFabric Manager server automatically discovers new qtrees via SNMP every 15 minutes. That interval can be changed by setting value for global option **fsMonInterval**.

**13.7.X1 [internal] How does the DataFabric Manager server discover new qtrees (with hidden option)?**

[This FAQ is not included in customer-visible pages]

The information below applies to DataFabric Manager 2.2 or later.

* For storage systems running Data ONTAP 6.3 or earlier, the DataFabric Manager server does not automatically discover qtrees. You have to run **dfm host discover**command.

You can enable automatic discovery of qtrees by setting the global option **qtreeAutoDiscovery** to Yes. However that may impact the performance of storage system, if there are large number of quota entries.

* For storage systems running Data ONTAP 6.4 or later, the DataFabric Manager server automatically discovers new qtrees via SNMP every 15 minutes. That interval can be changed by setting value for global option **fsMonInterval**.

**13.8 How has Qtree monitoring changed over the releases of DataFabric Manager and Data ONTAP?**

Qtree discovery and monitoring was added in the DataFabric Manager server 1.1. From that release on, Qtrees will be discovered, even if they aren't monitored. See the FAQ "**How does the DataFabric Manager server discover new qtrees?**" for information on discovery of qtrees. This FAQ entry discusses **monitoring** of discovered qtrees.

|  |  |  |  |
| --- | --- | --- | --- |
| **DataFabric Manager version** | **Data ONTAP Version** | **hostLogin (XML enable)** | **Qtree Monitoring** |
| 1.1 through 2.3 | ANY | Yes or No | Monitor with SNMP |
| 3.0 or later | <= 6.2.x | Yes or No | Monitor with SNMP |
| >= 6.3.x | No | Monitor with SNMP |
| Yes | Monitor with XML |

**13.8.X1 [internal] Including the hidden option, how has Qtree monitoring changed over the releases of DataFabric Manager and Data ONTAP?**

[This FAQ is not included in customer-visible pages]

Qtree discovery and monitoring was added in DataFabric Manager 1.1. See the FAQ "**How does DataFabric Manager discover new qtrees?**" for information on discovery of qtrees. This FAQ entry discusses **monitoring** of discovered qtrees.

A hidden option "Host Enable SNMP Qtree Monitoring" (hostEnableSNMPBasedQtreeMonitoring) has been added since 3.0. The default is "Yes". It can be changed to "No" to turn off SNMP-based monitoring (which impacts Data ONTAP performance). It doesn't affect XML-based monitoring.

Pre-3.3, another hidden option "Host Enable User Quotas" (hostEnableUserQuotas, default: Yes) used to affect XML based qtree monitoring. Effect of that hidden option on qtree monitoring is captured in the **XML Enabled** column of the table below.

Value of column *XML Enabled* is Yes, if and only if both of the following conditions are true:

* hostLogin is set for the storage system
* hidden option hostEnableUserQuotas is set to Yes

If any one of the above conditions is not true, column *XML Enabled* is No.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DataFabric Manager version** | **Data ONTAP Version** | **XML Enabled? (See above)\*\*** | **Host Enable SNMP Qtree Monitoring (hidden option, default: Yes)** | **Qtree Monitoring** |
| 1.1 through 2.3 | ANY | N/A | N/A | Monitor with SNMP |
| 3.0 through 3.2 | <= 6.2.x | N/A | No | No monitoring |
| N/A | Yes | Monitor with SNMP |
| >= 6.3.x | No | No | No monitoring |
| No | Yes | Monitor with SNMP |
| Yes | Yes or No | Monitor with XML |

Starting with DataFabric Manager 3.3, "Host Enable User Quotas" (hostEnableUserQuotas, default: Yes) is modified to affect only quota monitoring and not qtree monitoring. So, for 3.3 and later releases of DataFabric Manager, the value of column *XML Enabled* is Yes, if hostLogin is set for the storage system. For storage systems running Data ONTAP older than 6.3, qtrees are monitored using SNMP always. For storage systems running Data ONTAP 6.3 or later, qtrees are monitored using XML if hostLogin is set otherwise SNMP is used. In all of the cases, "Host Enable SNMP Qtree Monitoring" option affects SNMP based monitoring, if SNMP is chosen by the DataFabric Manager server.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DataFabric Manager version** | **Data ONTAP Version** | **hostLogin set (XML Enabled)?** | **Host Enable SNMP Qtree Monitoring (hidden option, default: Yes)** | **Qtree Monitoring** |
| 3.3 or later | <= 6.2.x | N/A | No | No monitoring |
| N/A | Yes | Monitor with SNMP |
| >= 6.3.x | No | No | No monitoring |
| No | Yes | Monitor with SNMP |
| Yes | Yes or No | Monitor with XML |

**NOTE:**\*\* - In case of DataFabric Manager 3.3, "XML Enabled" refers to only hostLogin being set and hostEnableUserQuotas option does not affect the Qtree monitoring at all.

**13.9 How has user quota and group quota monitoring changed over the releases of DataFabric Manager and Data ONTAP?**

DataFabric Manager releases before 2.1 don't have user or group quota monitoring capability.

User quota monitoring was introduced in DataFabric Manager release 2.1, and group quota monitoring was introduced in DataFabric Manager release 3.0.1.

The DataFabric Manager server cannot monitor user or group quotas for Data ONTAP versions 6.2.x or earlier.

User quotas are monitored via XML only (i.e. no SNMP-based monitoring). If XML is not enabled (hostLogin is not set) then user and group quota monitoring is disabled for that storage system.

Otherwise, use this table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DataFabric Manager version** | **Data ONTAP Version** | **User Quota Editing** | **User Quota Monitoring** | **Group Quota Monitoring and Editing** |
| 2.1 | 6.3.x or later | No | Yes | No |
| 2.2 | 6.3.x | No |
| 6.4.x or later | Yes |
| 2.3 | 6.3.x | No |
| 6.4.x or later | Yes |
| 3.0 | 6.3.x | No | No ([burt131547](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=131547&button=view)) |
| 6.4.x or later | Yes | Yes |
| 3.0.1 or later | 6.3.x | No |
| 6.4.x, 6.5 | Yes |
| 6.5.1 or later | Yes | Yes | Yes |

**13.9.X1 [internal] Including the hidden option, how has user and group quota monitoring changed over the releases of DataFabric Manager and Data ONTAP?**

[This FAQ is not included in customer-visible pages]

If the hidden option hostEnableUserQuotas is set to "No" (default: Yes) then user and group quota monitoring is disabled.

Otherwise, see the previous FAQ (above).

**14 SnapMirror Monitoring and Management**

**14.1 What is Operations Manager's "Disaster Recovery" tab all about? What does the "dfdrm" command do?**

Starting with DataFabric Manager 3.0, you can manage SnapMirror relationships when both source and destination storage systems are running Data ONTAP 6.5 or above. This management is done through the features available in Operations Manager's Disaster Recovery tab. This functionality can also be accessed through the "dfdrm" command.

**14.2 Why is Disaster Recovery Manager not showing some mirrors on my storage system?**

There might be several reasons for this:

* The Business Continuance option is not licensed on DataFabric Manager.
* The destination storage system is running an older version of Data ONTAP. Note that Disaster Recovery Manager is able to monitor only those relationships that have the destination volume/qtree on a storage system running Data ONTAP 6.2 or later.
* The source or destination storage system is not currently managed by the DataFabric Manager server. Run "dfm host list -a" to verify that both source and destination storage systems are managed by the DataFabric Manager server and both are not marked deleted.
* The SnapMirror relationships are specified in the destination storage system's snapmirror.conf with the new (Data ONTAP 6.5) SnapMirror Connections. Disaster Recovery Manager normally attempts to map the source addresses specified in a SnapMirror connection to a source storage system. When it fails to do so, any SnapMirror relationship using that connection will not be discovered by Disaster Recovery Manager until the user manually associates the connection to a source storage system using the Edit Connection in Operations Manager or the "dfdrm connection modify" CLI.
* If all of the following conditions are true: the mirror is a qtree SnapMirror, the source or destination qtree is newly created, and the source or destination storage system is running a version of Data ONTAP that is older than Data ONTAP 6.4.

Run "dfm host discover <storage-system>" to instruct the DataFabric Manager server to discover new qtrees created on those storage systems.

**14.3 What are the requirements for monitoring mirrors on my storage systems?**

Both of the following conditions must be met to monitor mirrors on storage systems:

* The DataFabric Manager server must be monitoring both source and destination storage systems for a mirror.
* The source and destination storage systems must be running Data ONTAP 6.2 or later.

**14.4 What are the requirements for managing mirrors on my storage systems with Disaster Recovery Manager?**

Both of the following conditions must be met to manage mirrors on storage systems:

* The source and destination storage systems must be running Data ONTAP 6.5 or later.
* NDMP must be enabled on both source and destination storage systems. NDMP access must be granted to the DataFabric Manager server.

**14.5 How do I customize the failover process of a mirror?**

Users can dictate the behavior of a mirror's failover process with a failover policy. Currently, a failover policy contains the path to an executable script. At break or resync, if a mirror is assigned a failover policy, Disaster Recovery Manager will execute the script both before and after the mirror operation.

**14.6 What are the things I need to be aware of when installing a failover script?**

Users need to specify a program that will execute the script, as "/usr/local/bin/perl" in the following example. The total length of the path to the program plus the script should not exceed 255 characters. In addition, both paths cannot contain any spaces.

"/usr/local/bin/perl /opt/NTAPdfm/scripts/failover.pl"

**14.7 Why can't I see some of the volumes/qtrees in the drop down on the "Add a Mirror" page?**

The volumes/qtrees you are looking for might belong to a vFiler. So you need to add the vFiler as a SnapMirror host and select it. You will then be able to see the volumes/qtrees.

**14.8 I have specified the NDMP credentials for the vFiler SnapMirror host. But I still cannot start any SnapMirror jobs from Disaster Recovery Manager. Why?**

You need to specify the NDMP credentials for the hosting storage system.

**14.9 How do I set up SnapMirror connections for SnapMirror relationships between vFiler units?**

You can use the SnapMirror connections created for the hosting storage systems while creating SnapMirror relationships between vFiler units.

**14.10 Can I create SnapMirror connections with vFiler units as source or destination?**

No. The SnapMirror connections have to be between hosting storage systems.

**14.11 How do I add a vFiler as a SnapMirror host to Disaster Recovery Manager? What NDMP credentials do I specify?**

You need not specify any NDMP credentials while adding vFiler as a SnapMirror host. Disaster Recovery Manager will use the NDMP credentials of the hosting storage system. Ensure that NDMP credentials for hosting storage system are correctly specified. Also the vFiler should be added to the database as a vFiler before adding it as a SnapMirror host. Refer to the section "**MultiStore Monitoring**" for more information on adding a vFiler to the DataFabric Manager server.

**14.12 How does Disaster Recovery Manager perform SnapMirror jobs on vFiler units since vFiler units do not have NDMP daemon running?**

Disaster Recovery Manager uses NDMP on hosting storage system to perform all the SnapMirror jobs for vFiler units.

**15 Backup and Restore Management**

**15.1 What is Operations Manager's "Backup" tab all about? What does the "dfbm" command do?**

In DataFabric Manager 2.2, you can manage online backups using Data ONTAP's SnapVault functionality. This management is done through the features available in Operations Manager's Backup tab. This functionality can also be accessed through the **dfbm** command on the DataFabric Manager server.

**15.2 What is a primary? What is a secondary?**

Primaries are the file systems to be backed up, and secondaries are the systems where backups for primaries are stored. A primary can be a qtree on a storage system, or any file system that is on a machine with a SnapVault client on it. A secondary must be a volume on a storage system running Data ONTAP with the SnapVault feature licensed.

**15.3 Why do I get "Path was not valid" error when browsing certain backup contents?**

This is because the DataFabric Manager server lists backups by name, and cannot, at listing time, differentiate between two unrelated backups of the same name. If the DataFabric Manager server has deleted a particular primary from its list of primaries to back up, then adds a primary of the same name to its list of primaries to manage, then the old primary's backups will appear in the new primary's list.

When attempting to browse such "leftover" backups, the DataFabric Manager server will find that they are not valid backups for the new primary being managed. The DataFabric Manager server will then generate errors that look like the following:

Error: Path /vol/volx/host\_vol\_qtree/.snapshot/dfm\_sv\_hourly.5 was

not valid on host2.companyx.com.

This same problem can occur even if the same primary is deleted from the DataFabric Manager server, then added back, since the DataFabric Manager server stops managing backups at the point of the deletion. The DataFabric Manager server will treat the addition as a new primary to back up, whose contents are unrelated to older backups.

**15.4 My backup job failed with a strange error in the Job Log. What does "could not register source qtree information" mean?**

This indicates that SnapVault cannot write to the secondary volume or to the secondary host's root volume. This prevents SnapVault from performing backup-related operations, like writing out data about the qtrees it is backing up, or writing information to the root volume's registry file (a repository that the storage system uses for bookkeeping).

Usually, the write failure means that the volume is full, so freeing up data on the secondary volume or the root volume should clear up the problem. Be aware that SnapVault backups need a certain amount of "scratch space" to work in, so more space than the bare minimum to store the incremental backup is needed.

**15.5 My backup job failed with "SV INTERNAL ERROR" in the job log. What does it mean?**

This indicates that while the DataFabric Manager server was talking to a primary or secondary host, an error was encountered by or in the SnapVault subsystem.

Possible causes include:

* Full root file system

If the root volume is full, SnapVault will be unable to perform backup-related operations, like writing out data about the qtrees it is backing up, or writing information to the root volume's registry file (a repository that the storage system uses for bookkeeping). In this case, freeing up data on the root volume of the primary or secondary host should clear up the problem.

* Backup of too many relationships at once

**[ Needs review: What is the burt number and first-fix release?**  
Each secondary host has a fixed number of NDMP threads available to process requests from NDMP clients like the Backup Manager. If all NDMP threads are in used, the Backup Manager queues up the failed backup tasks until thread resources become available. However, due to a defect in Data ONTAP 6.4, Backup Manager only receives the generic SV\_INTERNAL\_ERROR when thread exhaustion occurs. The generic error does not provide enough information for the Backup Manager to determine when to retry.

To work around this problem, adjust the number of simultaneous threads Backup Manager will use to initiate backups by running this on the command line:

$ dfbm secondary host modify -T <threads> <hosts>

Lowering this number reduces the chance of causing NDMP thread exhaustion on the secondary host.

**]**

**15.5.X1 [internal] I can't add a primary directory whose name matches another primary directory when you ignore case. Is this a bug?**

[This FAQ is not included in customer-visible pages]

Yes, this is [burt102220](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=102220&button=view) in the DataFabric Manager server. It prevents you from adding myhost:/myvol/Foo as a primary directory if myhost:/myvol/foo is already being backed up to the same secondary volume. This was first fixed in DataFabric Manager 3.0.

**15.6 Can I limit the bandwidth used by SnapVault transfers triggered via Backup Manager?**

Yes, you can specify the bandwidth limit (in KB per second) on the Primary Directory Details page of Operations Manager, or with a command like

dfbm primary dir modify -k <throttle> <primary-dir>

For example, to limit transfers to 380 KB/s, use

dfbm primary dir modify -k 380 win-server:C:\\Data

**15.6.X1 [internal] How can I get more information about a failed restore to Open Systems SnapVault primary?**

[This FAQ is not included in customer-visible pages]

In some situations Open Systems SnapVault primaries do not pass enough error messages back to Backup Manager when restore operation fails. You can look at the error messages logged on the secondary storage system (/etc/log/snapmirror) and Open Systems SnapVault primary (<installation directory>/etc/snapvault).

**15.7 Does Backup Manager allow storage system running Data ONTAP 6.2 or 6.3 as SnapVault primary or secondary?**

No, in order to be added to Backup Manager, the SnapVault primary or secondary storage system must be running Data ONTAP 6.4 or later.

**15.8 How does Backup Manager version 3.5 or older use the NDMP preferred interface setting on primaries and secondaries?**

Backup Manager honors the NDMP preferred interface setting on storage system primary when performing SnapVault backup and on the storage system secondary when restoring to a storage system primary.

When performing SnapVault backup, if the **ndmpd.preferred\_interface** option on a primary storage system is set, Backup Manager **3.5**or older tries that interface first for SnapVault data transfer. If the secondary storage system cannot connect to that interface's IP address, Backup Manager uses other available IP addresses (including the primary address of the storage system) for SnapVault data transfer.

If **ndmpd.preferred\_interface** option on a primary storage system is not set, Backup Manager **3.5**or older first tries the primary address of the storage system for SnapVault data transfer. If the secondary storage system cannot connect to the primary IP address, Backup Manager uses other available IP addresses for SnapVault data transfer.

When performing SnapVault restore, the **ndmpd.preferred\_interface** setting on the secondary storage system is used in the similar manner as described above.

Backup Manager does **not** use the NDMP preferred interface setting on Open Systems SnapVault primary when performing SnapVault backups.

Backup Manager does **not** use the NDMP preferred interface setting on SnapVault secondary storage system when restoring to Open Systems SnapVault primary.

**15.9 How does Backup Manager version 3.6 or later use the NDMP preferred interface setting on primaries and secondaries?**

Backup Manager honors the NDMP preferred interface setting on storage system primary when performing SnapVault backup and on the storage system secondary when restoring to a storage system primary.

When performing SnapVault backup, if the **ndmpd.preferred\_interface** option on a primary storage system is set, Backup Manager **3.6**or later uses only that interface for SnapVault data transfer. If the secondary storage system cannot connect to that interface's IP address, backup job will fail. Backup Manager will not use other available IP addresses (including the primary address of the storage system) for SnapVault data transfer.

If **ndmpd.preferred\_interface** option on a primary storage system is not set, Backup Manager **3.6**or later uses the primary address of the storage system for SnapVault data transfer. If the secondary storage system cannot connect to the primary IP address, backup job will fail. Backup Manager will not use other available IP addresses for SnapVault data transfer.

When performing SnapVault restore, the **ndmpd.preferred\_interface** setting on the secondary storage system is used in the similar manner as described above.

Default behavior described above can be overridden by setting a global option **ndmpDataUseAllInterfaces** to *yes*. In that case, DFM will try to use all available IP addresses for SnapVault data transfer.

Backup Manager does **not** use the NDMP preferred interface setting on Open Systems SnapVault primary when performing SnapVault backups.

Backup Manager does **not** use the NDMP preferred interface setting on SnapVault secondary storage system when restoring to Open Systems SnapVault primary.

**15.10 I removed a primary system from service without first removing its backup relationships from the Backup Manager. How do I remove those relationships from the Backup Manager?**

Run the following command for each primary directory:

dfbm primary dir relinquish <primary-dir-id>

To get the primary directory IDs, run:

dfbm primary dir list <primary-system>

**15.11 Why can't I add a host to Backup Manager when the host has already been added to the DataFabric Manager server?**

If you try to add a host to the Backup Manager and the host is already added to the DataFabric Manager server, it might fail with the error message "Error : System ID <num> for <hostname> is already used by <hostname>". The work around is to add the host to the Backup Manager with the IP address or the FQDN of the hostname.

For example this fails:

dfbm primary host add -U <username> -P <passwd> kett.eng

Error: System ID 0033602027 for kett-fe.eng.yourcompany.com (0) is already

used by kett.eng.yourcompany.com (141).

However, either of these would work:

dfbm primary host add -U <username> -P <passwd> kett.eng.yourcompany.com

dfbm primary host add -U <username> -P <passwd> 10.56.10.29

**15.12 Backup Manager has discovered some SnapVault relationships and is monitoring it. How do I enable Backup Manager to manage these relationships?**

To manage a relationship Backup Manager should have the NDMP credentials of the primary and the secondary storage systems involved in the relationship. To set the credentials, use the Primary Host Details page and the Secondary Host Details page for the primary and the secondary host respectively and update the credentials there. You can also run these commands for the appropriate hosts:

dfbm primary host modify -U <ndmp-user> -P <ndmp-password> <primary-host>

dfbm secondary host modify -U <ndmp-user> -P <ndmp-password> <secondary-host>

Unless Backup Manager has the proper NDMP credentials of the primary and secondary storage systems, you will **not** be able to perform the following actions from Backup Manager:

* Initiate an unscheduled backup.
* Associate a backup schedule with the secondary volume.
* Restore a primary directory.
* Browse the backups on a secondary volume.

**15.13 How do I know whether Backup Manager has proper NDMP credentials for a primary or secondary storage system?**

The Storage Systems tab has two reports which are helpful in this case; select either the "All Storage Systems with NDMP unavailable" or the "All Storage Systems with no NDMP credentials" pull-down menu items.

The same information is also available from command line:

dfbm report unauthenticated-systems

dfbm report unavailable-agents

**15.14 Why is Backup Manager not able to discover a SnapVault relationship?**

Possible causes could be:

* Ensure that primary storage system is added to Backup Manager.
* If NDMP is disabled on the primary/secondary storage system Backup Manager will not be able to discover any relationships on this system. Enable NDMP and ensure that Backup Manager has the correct NDMP credentials.

**15.14.X1 [internal] If a primary storage system is changed into a secondary, how do I make Backup Manager discover this system as a secondary system?**

[This FAQ is not included in customer-visible pages]

If a system was previously added to Backup Manager as a primary storage system, but is then changed into a secondary storage system, Backup Manager will not automatically discover this system as a secondary storage system.

To resolve this, use the following commands, but this will delete all historical data for this system:

dfm host delete -f <host-name>

then add it back using:

dfm host add <host-name>

Also refer to "**What if I encounter "deadlock" or "Invalid statement" or "no primary key" errors from the database while executing delete commands with the "-f" option?**."

Note that "dfm host delete -f" removes all historical information about the storage system. For situations where this approach is unacceptable, seek engineering assistance to modify the customer's database to reflect the change.

**15.15 What are exactly are Directories to Ignore?**

These are the directories that Backup Manager would ignore while watching for new directories on Open Systems SnapVault systems. These directories would not appear on the "Directories not Scheduled for Backup" report.

**15.16 How do I ignore some directories globally on all primary systems and how do I ignore them for specific primary systems?**

To ignore a directory globally for all primary systems, run the following command:

dfbm primary dir ignore <primary-dir-path>

To ignore a directory on a specific system run the following command:

dfbm primary dir ignore <primary-host>:<primary-dir-path>

**15.17 I set the default NDMP credential for a network, so why is the Backup Manager not discovering the NDMP hosts on this network?**

Make sure the network exists on Operations Manager's Options -> Edit Networks to Discover page.

You can also add the network to the list of networks on which the DataFabric Manager server looks for hosts by running this command:

dfm network add <network-address>

**15.18 After upgrade to DataFabric Manager 3.3 or later, I want to create a backup relationship but cannot see the volume/qtree when browsing the list for the primary host.**

The volume containing the qtree which you want to backup might belong to a vFiler. During upgrade, the DataFabric Manager server would have changed the ownership of the qtree and the volume. Add the vFiler as a primary storage system, and then backup the qtree with the vFiler as the primary storage system.

You can also use the command line to add the relationship. The command line accepts the hosting storage system as well the vFiler name so both of the following commands would work.

dfbm primary dir add <secondary-volume> <hosting-storage-system>:/<vol-name>/<qtree-name>

dfbm primary dir add <secondary-volume> <vfiler>:/<vol-name>/<qtree-name>

**15.19 After upgrade to DataFabric Manager 3.3 or later, why can't I see the secondary volume in the drop down of volumes displayed for a host? How do I create a relationship now?**

The volume might belong to a vFiler and during upgrade the DataFabric Manager server would have changed its ownership. Add the vFiler as a secondary storage system, and then select the vFiler as secondary storage system. You will see the secondary volume in the drop-down list.

**15.20 I have a qtree that belongs to a vFiler, but the volume does not belong to the vFiler. How do I backup this qtree? Why can't I see the secondary volume in the drop-down list of volumes displayed?**

You cannot do it from Operations Manager. You need to use the command line to do it.

**15.21 How do I add a vFiler as a primary/secondary host? What NDMP credentials do I specify?**

For adding a vFiler as a primary/secondary host, the DataFabric Manager server should have the NDMP credentials of the hosting storage system. Also the vFiler should have been added as a managed host in the DataFabric Manager server database. You can then add the vFiler as a primary/secondary host just the way you would add the hosting storage system. You need not specify any the NDMP credentials while adding, just leave the field blank.

**15.22 I created a qtree on the storage system, added the storage system as a primary storage system. I want to backup this qtree, but can't see the qtree when I browse the primary host?**

The qtree you created has not yet been discovered by the DataFabric Manager server. refresh the timestamps of the storage system that qtree was created on. Also ensure that SNMP is enabled on the storage system.

**15.23 Can a vFiler administrator create new backup relationships?**

No. To create backup relationships you need a Global DatabaseWrite privilege.

**15.24 After upgrade to DataFabric Manager 3.3 or later, why haven't the ownership changes happened for some of my primary directories?**

For the ownership changes to happen during upgrade to DataFabric Manager 3.3 or later, the DataFabric Manager server should have the NDMP credentials of both the primary as well as the secondary host involved in the relationship. Ensure that NDMP is enabled on both primary and secondary host, and the DataFabric Manager server has the correct NDMP credentials for them.

**15.25 I can't add a vFiler as a primary/secondary host. It says 'SNMP not responding' on the host.**

vFiler is not known to the DataFabric Manager server. Add the vFiler to the system using the

dfm vfiler add -H <hosting-storage-system> <vFiler-name-or-ipaddress>

Look at the "**MultiStore Monitoring**" section to learn more about adding a vFiler.

**15.26 I have some scripts associated with the primary directories, do I have to make any changes to the scripts for them to work properly after upgrade to DataFabric Manager 3.3 or later?**

With the ownership changes, some of the environment variables passed to the backup scripts will change. The following variables will be affected:

DFBM\_PRI\_HOST\_NAME

DFBM\_PRI\_HOST\_ID

DFBM\_PRI\_VOL\_NAME

DFBM\_PRI\_DIR\_NAME

DFBM\_SEC\_HOST\_NAME

DFBM\_SEC\_HOST\_ID

DFBM\_SEC\_VOL\_NAME

DFBM\_SEC\_QTREE\_NAME

These will have the vFiler name instead of the hosting storage system name, if the volume or the qtree belongs to the vFiler.

**16 Protection Manager**

**16.1 What kind of relationship does Protection Manager create to back up data if both SnapMirror and SnapVault licenses are available?**

By default, Protection Manager analyzes the protection policy, available resources, and licenses on the storage systems to determine whether it can create SnapVault relationships. If SnapVault is not feasible, it uses Qtree SnapMirror relationships instead. This behavior can be changed using this CLI command:

dfm option set pmQSMBackupPreferred=Yes

In this case, Protection Manager will try first prefer to use Qtree SnapMirror relationships, and only if it can't will it use SnapVault relationships. Version 3.7 and earlier of Protection Manager defaulted to preferring Qtree SnapMirror.

**Special Cases that force specific relationship type usage**

* All DR Backup connections must use Qtree SnapMirror.
* For versions of Protection Manager prior to version 3.8 where a schedule specified that the data to be backed up had to be backed up more frequently than once per hour, then Protection Manager would have to use a Qtree SnapMirror relationship
* If the source qtree contains a space in its name, Protection Manager will try to create only SnapVault relationships.
* Options such as the usage of deduplication or non-disruptive LUN restore impose other rules on the selection of the relationship type to be used.
* If the source data is an Open Systems directory, the relationship must use Open Systems SnapVault.

**16.2 How does Protection Manager set the size for backup (SnapVault and Qtree SnapMirror) secondary volumes?**

Prior to DataFabric Manager server version 3.8 Protection Manager thin provisioned the size for backup (SnapVault and Qtree SnapMirror) secondary volumes to the size of the aggregate containing the secondary volume. The space guarantee setting for the secondary volume is set to "none", so it will only use up free space in its containing aggregate as data is copied from the primary volume. Once the secondary volume is created, Protection Manager does not change its size.

Starting with DataFabric Manager server version 3.8 Protection Manager introduced a dynamic secondary sizing feature. Dynamic secondary sizing provisions the destination volume for Backup relationships to more closely match the actual used data size as needed over time. The secondary volume still has it's space guarentee set to 'none'. With a large enough change rate and high retention, it could grow much larger.

By default, dynamic secondary sizing is **disabled** when upgrading from earlier releases and **enabled** in new Protection Manager releases.

In DataFabric Manager server version 3.8 Protection Manager did not respect deduplication or platform limits on volume size however those factors are considered in DataFabric Manager server version 4.0.

**16.3 How does Protection Manager determine the size for a SnapMirror destination volume?**

For two node data protection policies, Protection Manager sets the size of a SnapMirror destination volume to the greater of the source volume size and the destination aggregate size. For policies with a third tier node, the size may be limited by the size of the tertiary aggregate if it is smaller than the secondary aggregate. As with backup secondary volumes, the space guarantee setting for mirror destinations is set to "none" so they only use space in the containing aggregate as data is copied from the source volumes.

**16.4 How do I set Protection Manager backup retention time based on a maximum number of backups rather than a duration until they expire?**

Protection Manager only supports retaining backups based on their age from the GUI. From the CLI, you can use the **dfpm policy node set** command to specify a minimum number of backups to retain. Backups will be deleted only when they are older than the retention period **and** there are more backups than the minimum count stored on a given dataset node.

**16.5 How does Protection Manager use the aggregate nearly overcommited threshold in the process of conforming a dataset?**

The aggregate nearly overcommitted threshold is used by Protection Manager to determine if an aggregate within a resource pool has enough space to be selected to provision a new destination volume. Protection Manager calculates a projected size that existing primary volumes could require to be present in each destination aggregate as committed space. Protection Manager considers the total projected size requirements as the amount that is committed already on the destination aggregate.

If provisioning a new destination volume on a given aggregate would make the committed space exceed the aggregate nearly overcommitted threshold, that aggregate will not be used to provision a new volume.

**16.6 Why do Protection Manager generated snapshot names have a timestamp in them that shows the wrong timezone?**

The timestamps in snapshot names as of version 3.8 are in Universal Coordinated Time.

**16.7 When Protection Manager tells me I have a redundant relationship, what do I need to do to clean it up?**

Protection Manager will set a dataset to non-conformant when it detects that there are two or more relationships performing the functionality required to satisfy the backup or mirror needs for a given connection. Protection Manager versions prior to 3.8 would automatically remove redundant relationships. As of version 3.8, users can configure whether to automatically remove unneeded relationships. The default behavior is to ask for user confirmation before removing unneeded relationships

Get a list of the relationships Protection Manager considers are redundant by using the **dfpm relationship list -r** CLI command. You may also wish to use the CLI command **dfpm relationship list -x** to show all relationships and then look at the **Redundant** column.

You may agree with the choices made by Protection Manager as to which relationships are redundant and choose to let Protection Manager remove the relationships. Protection Manager has a global option to clean up redundant relationships for **ALL** datasets so be sure to review the entire list of redundant relationships.

To have Protection Manager remove all of the redundant relationships in any Protection Manager datasets you may enable the following command:

$ dfm option set dpReaperCleanupMode=Automatic

This process may take several hours. You may check on the progress of Protection Manager by using the **dfpm relationship list -r** command.

After a few hours the redundant relationships will have been cleaned up and you will see 'dfpm relationship list -r' no longer return any more entries.

If you don't want the relationships Protection Manager identifies to be cleaned up automatically, you may remove other relationships for the same primary volumes or qtrees manually using Operations Manager or direct storage system cli commands and after the next conformance run the dataset will become conformant.

**16.8 Why does Protection Manager sometimes consider volumes that have been deleted on a storage system to be still present?**

Protection Manager has had to attempt to workaround cases where storage systems have stopped reporting volumes as being present for assorted reasons. When a volume that had been managed by Protection Manager as a secondary volume was reported as missing, Protection Manager would form a new secondary volume and a new relationship in order to conform the dataset.

Because DataFabric Manager server was unable to tell when a volume was actually missing, DataFabric Manager server version 3.7 stopped marking missing, once managed, volumes as deleted. It was felt that this would lead to far less serious problems than marking the once managed volume as deleted.

By the time of DataFabric Manager server version 3.8 these issues had been addressed by assorted storage system versions and it was felt that DataFabric Manager server should have a way to begin to trust the reporting of deleted volumes from storage systems if the versions of the storage system were known to be fixed.

By default in DataFabric Manager server version 3.8 DataFabric Manager server will trust storage systems that had been known to have versions that had addressed the issues of incorrect reporting of deleted volumes.

There are two hidden options that will modify the default behavior. Both of these hidden options start out with a default of **Disabled**.

dpVolumeCleanupNever When set to Enabled, managed volumes are

never set as deleted. This option defeats

dpVolumeCleanupAlways when both are set.

dpVolumeCleanupAlways When set to Enabled, managed volumes are

always set as deleted if a storage system

does not report the volume.

**16.8.X1 [internal] What versions of storage systems are trusted by Protection Manager?**

[This FAQ is not included in customer-visible pages]

No version of storage system prior to ONTAP version 7.0 is trusted because these storage systems stopped reporting volumes that were offline.

Storage systems with versions of 7.3.3 or later are trusted.

Storage systems with versions of 8.0 or later are trusted.

ONTAP versions reported as having the defect described in Burt 285120 are not trusted.

ONTAP versions reported as having a fix for Burt 285120 are trusted.

Part of the reason for the hidden option of dpVolumeCleanupNever is that there is no guarantee that future versions of storage systems will not regress.

**16.8.X2 [internal] Can I set a maximum destination volume size for Protection Manager?**

[This FAQ is not included in customer-visible pages]

Yes, automatically provisioned destination volumes can be capped with a hidden option:

dfm option set pmAutomaticSecondaryVolMaxSizeMb=1200000

In this example, Protection Manager will not provision a destination volume larger than 1,200,000 megabytes. The option applies to all newly created volumes across all storage systems and datasets. Volumes provisioned before the option is set and volumes provisioned outside of Protection Manager are not limited by this option unless dpDynamicSecondarySizing=Enabled. dpDynamicSecondarySizing is an option introduced in 3.8.

Setting the value to 0 indicates no maximum size.

Limiting the size of destination volumes may prevent performance problems as described by [burt280512](http://burtweb.eng.netapp.com:8080/burt-bin/start?burt-id=280512&button=view).

**16.8.X3 [internal] Does Protection Manager ever delete SnapVault, SnapMirror, and Qtree SnapMirror relationships?**

[This FAQ is not included in customer-visible pages]

Yes. If the source qtree was deleted and restored back from one of its backup versions and Protection Manager was not able to restart its relationship, it may decide to delete the relationship, and create a new one.

After certain events, such as a change in the data protection policy applied to a data set, Protection Manager may determine that it no longer needs a particular SnapVault, SnapMirror, or Qtree SnapMirror relationship. Based on the following dfm options, Protection Manager will delete protection relationships.

dfm option set dpReaperInterval=40minutes

dfm option set dpReaperCleanupMode=Orphans | Automatic | Never

dfm option dpReaperInterval defines time interval defining how often Protection Manager will scan to look for protection relationships that should be cleaned up depending the option dpReaperCleanupMode.

Protection relationships could be orphaned, redundant and imported. Orphaned relationships are protection relationships which are no longer part of a dataset because they were removed from the dataset or the dataset was deleted. Redundant relationships are relationships that are duplicating the function of one or more other relationships in a dataset on a given connection. Imported relationships are relationships that had at one time become part of a dataset because they were imported into the dataset.

When dfm option dpReaperCleanupMode is set to Orphans, Protection Manager will only cleanup orphaned relationships that had never been imported into a dataset.

When dfm option dpReaperCleanupMode is set to Never, Protection Manager will not attempt to remove any relationships.

When dfm option dpReaperCleanupMode is set to Automatic, Protection Manager will operate in legacy cleanup mode and cleans up both orphan and redundant relationships regardless of if the relationships were imported or not into a dataset.

By default, Protection Manager deletes unneeded SnapVault, SnapMirror, and Qtree SnapMirror relationships after about one hour. You may change how quickly Protection Manager deletes unneeded relationships using this CLI command:

dfm option set pmDpRelationshipReaperTimeToDelete=1:30:00

The time interval is expressed as hours, minutes, and seconds using a string in the format **hh:mm:ss**. In this case, we are setting the interval to 1 hour and 30 minutes.

**16.8.X4 [internal] When Protection Manager creates a SnapVault, Open Systems SnapVault, or Qtree SnapMirror relationship, how does it select the secondary volume?**

[This FAQ is not included in customer-visible pages]

Protection Manager allows a volume to be the secondary for at most 50 SnapVault, Open Systems SnapVault, or Qtree SnapMirror relationships. In addition, Protection Manager does not mix relationships of different types (e.g. SnapVault and Open Systems SnapVault) in a single volume. Protection Manager also tries to make sure that all the relationships going to a given destination volume come from the same source volume.

You may change the default limits on the number of relationships per secondary volume using CLI commands such as the following:

dfm option set pmMaxSvRelsPerSecondaryVol=100

dfm option set pmOSSVDirMaxSvRelsPerSecondaryVol=25

dfm option set pmMaxQsmRelsPerSecondaryVol=200

In this case, we allow a volume to be the secondary for up to 100 SnapVault, or 25 Open Systems SnapVault, or 200 Qtree SnapMirror relationships.

**16.8.X5 [internal] When Protection Manager creates a new backup or mirror destination volume, how does it select the aggregate?**

[This FAQ is not included in customer-visible pages]

Protection Manager will create new volumes if it can not find an acceptable pre-existing volume in the data set. It gets a list of aggregates from the resource assigned to the destination policy node. It then removes all aggregates from the list which do not have appropriate licenses or are not on storage systems running recent enough versions of Data ONTAP.

From the remaining aggregates, Protection Manager eliminates all aggregates which are nearly full or nearly overcommitted. If the aggregate used space is over the **aggrNearlyFullThreshold** setting, it is considered nearly full.

Determining whether an aggregate is nearly overcommitted is slightly more complicated. Protection Manager sums up the committed space value for each volume contained by an aggregate and compares the total to the **aggrNearlyOvercommittedThreshold**. Protection Manager determines the committed space value for each volume like this:

* For volumes not created by Protection Manager, use the size of the volume.
* For FlexCache volumes, use the greater of the volume's actual used space and the **flexcacheMinReserve** option setting.
* For volume created by Protection Manager, use the greater of the volume's actual used space and the Protection Manager projected size value.

The **projected size** is Protection Manager's estimate of how much space the secondary volume will need. If Protection Manager is estimating too high, it may not use aggregates which actually have plenty of free space. In this case, increase the **aggrNearlyOvercommittedThreshold** until the actual aggregate used space increases to a better level.

**16.8.X6 [internal] How does Protection Manager compute the projected size for SnapVault and Qtree SnapMirror secondary volumes?**

[This FAQ is not included in customer-visible pages]

Protection Manager bases the projected size for SnapVault and Qtree SnapMirror secondary volumes on the total size of the source volume. The actual computation is difficult to explain because there are many special cases.

**16.8.X7 [internal] How do I control the projected size that Protection Manager sets for Open Systems SnapVault secondary volumes?**

[This FAQ is not included in customer-visible pages]

By default, Protection Manager estimates each Open Systems SnapVault secondary volume will be 10 gigabytes. You may change the initial projected size using this CLI command:

dfm option set pmOSSVDirSecondaryVolSizeMB=51200

The projected size is expressed in megabytes. In this case, we are setting it to 51200 megabytes (50 gigabytes).

**16.9 I have a qtree with space in its name, Protection Manager is not able to protect it up. Why?**

Protection Manager can only create SnapVault relationships for a qtree with a space. Qtree SnapMirror relationships do not support qtrees with a space. Enable SnapVault primary license on the storage system hosting the qtree and ensure that Resource Pool has aggregates on storage systems having SnapVault secondary license.

Protection Manager will not allow importing of Qtree SnapMirror relationships if the source or the destination qtree name contain spaces.

**16.10 I deleted a sample policy or schedule. How do I get it back?**

Protection Manager ships with a number of sample policies and schedules which you may freely modify or delete. It also includes non-modifiable, non-deletable copies of all the samples. If you delete a sample policy or schedule and wish to get it back, you can copy the corresponding non-modifiable sample.

To see all the policies, both modifiable and non-modifiable, run this command:

dfpm policy list -a

The non-modifiable sample policies have the same names as the modifiable samples, but with a suffix of "NM". Use "dfpm policy copy" to copy a policy:

dfpm policy copy "Back up NM" "Back up"

The copied policy will not have any schedules attached to it, so you will need to edit the new policy to add them back.

You can use "dfpm schedule list -a" to list all the schedules and "dfpm schedule copy" to copy a schedule. As with policies, non-modifiable schedules have the "NM" suffix at the end of their names.

**16.10.X1 [internal] What is the difference between adding physical resources or resource pools to a destination node?**

[This FAQ is not included in customer-visible pages]

When adding an aggregate or a storage system directly to a destination node (**physical resource**), you are really just adding the volumes which they contain. When Protection Manager needs to find a destination volume for a backup or a mirror operation, it will not try to provision new volumes on the aggregates (added directly or indirectly through the storage systems). In these cases, Protection Manager will only consider the existing volumes when trying to pick a destination. If more volumes are added to these storage systems or aggregates later, then Protection Manager will start using those, too.

Alternatively, if you add a **resource pool** to a destination node, you are making the spare disks and unused space in all the aggregates available to the destination node. When Protection Manager needs a new flexible volume as backup or mirror destination, and it has exhausted useful existing volumes (physical resources), it attempts to create a volume using one of these aggregates in the resource pool. If Protection Manager needs to mirror a traditional volume, it will create a traditional volume from the spare disks. When there is a storage system in a resource pool and a new aggregate is created on that storage system from spare disks, that aggregate is automatically part of the resource pool.

This allows flexibility for customers. If they want Protection Manager to create volumes on the fly, they should use a resource pool. If they want Protection Manager to only use the volumes they explicitly provisioned, and not have Protection Manager provision new volumes, they add them directly by adding physical resource. When they do both, Protection Manager uses the physical resources first, then the resource pools.

**16.10.X2 [internal] How can I tell if too many Protection Manager jobs are running at one time, and how do I control the number of jobs?**

[This FAQ is not included in customer-visible pages]

DataFabric Manager may run multiple jobs at one time. Each job runs in a separate process on the DataFabric Manager server, and each job process creates one or more threads. If too many jobs run at the same time, this may cause jobs to fail because the DataFabric Manager server cannot create more processes or threads, or it may cause DataFabric Manager to respond very slowly due to overloading of the system.

Each of the following is a symptom that too many jobs are running at one time on the DataFabric Manager server:

* Messages appear that indicate **no more processes can be created**. The messages are at the **ERROR** level of severity, and look like this:
* Could not start data protection job for data set *data\_set\_id*: Could not spawn background process

The messages appear in the Scheduler Service log file (see **"What is the purpose of various log files?"**).

* Messages appear that indicate **no more threads can be created**. The messages are at the **ERROR** level of severity, and look like this:
* Failed to add task to work queue.

For a SnapVault backup job, these messages appear in job progress event messages for the job. You may view these event messages in the Jobs display of the Protection Manager GUI client, or by running a CLI command such as this:

dfpm job details *job\_id*

For a Qtree SnapMirror or Volume SnapMirror backup job, these messages appear in the Protection Manager Jobs log file.

* The **DataFabric Manager server responds very slowly** to CLI commands or requests by the Protection Manager GUI client, **and there are a large number of job processes running**. You may view the number of job processes currently running by using a utility such as "ps" or "top" on Linux, or by using Task Manager on Windows. The job processes are named "dfpm" on Linux, and "dfpm.exe" on Windows.

If a job fails to start because no more processes can be created, or if a job attempts to create a new thread and this attempt fails, the job itself immediately fails. Failed jobs are **not** automatically restarted by DataFabric Manager, you must restart them manually.

By default, DataFabric Manager runs up to 100 Protection Manager jobs at the same time. You may change the maximum number of concurrent Protection Manager jobs using a CLI command such as this:

dfm option set dpMaxRunningJobs=32

If you change **dpMaxRunningJobs**, you must restart the Scheduler Service for the change to take effect. You may restart the Scheduler Service using these CLI commands:

dfm service stop scheduler

dfm service start scheduler

The **dpMaxRunningJobs** option applies only to Protection Manager jobs. It does not apply to others sorts of jobs, such as Disaster Recovery Manager jobs.

Once the DataFabric Manager server has reached its limit of **dpMaxRunningJobs** Protection Manager jobs running at one time, it does not attempt to start another job until an already-running job completes. While this behavior has the benefit that jobs are less likely to fail due to exhausting system resources such as threads or processes, it also has the drawback that jobs may fail to start in a timely fashion. In particular, Protection Manager backup jobs may be delayed until after their scheduled starting times. You should take this behavior into account if you are considering reducing the value of **dpMaxRunningJobs**.

The number of threads created by a job depends on the type of job; there is no way to control it directly. If jobs are failing because job processes are exhausting the total number of threads allowed by the DataFabric Manager server, you may be able to avoid this problem by reducing **dpMaxRunningJobs**.

**16.11 How does Protection Manager 3.5 use the NDMP preferred interface setting on SnapVault primaries and secondaries?**

For **SnapVault** based backups and restores, Protection Manager uses the NDMP preferred interface setting in the same way as Backup Manager uses it. See the FAQ "**How does Backup Manager version 3.5 or older use the NDMP preferred interface setting on primaries and secondaries?**".

**16.12 How does Protection Manager version 3.6 or later use the NDMP preferred interface setting on SnapVault primaries and secondaries?**

For **SnapVault** based backups and restores, Protection Manager uses the NDMP preferred interface setting in the same way as Backup Manager uses it. See the FAQ "**How does Backup Manager version 3.6 or later use the NDMP preferred interface setting on primaries and secondaries?**".

**16.13 How can I tell Protection Manager to use different network interface for SnapMirror based data transfer?**

**[ Needs review by "smoot":]** You can set DataFabric Manager server options **hostPreferredAddr1** and **hostPreferredAddr2** for each host involved in SnapMirror based backups.

Use **dfm host set** command from the CLI.

For example:

dfm host set myhost.example.com hostPreferredAddr1=1.2.3.4 hostPreferredAddr2=1.2.3.5

Protection Manager will use only those IP addresses for Volume SnapMirror (VSM) or QTree SnapMirror (QSM) based data transfers.

Those settings need to be set before Protection Manager has created the QSM or VSM relationships. Protection Manager then creates appropriate Disaster Recovery Manager connection policy for those relationships.

If the SnapMirror relationship has already been created, you can create or modify the Disaster Recovery Manager connection policy for that relationship directly using Disaster Recovery Manager.

**17 SAN (Storage Area Network) Management**

**17.1 Why isn't the DataFabric Manager server discovering any FCP HBAs on my Solaris SAN Host?**

Start by making sure that a compatible version of NetApp Host Agent is installed the on SAN Host machine, and that the DataFabric Manager server is discovering the host machine.

If the agent is discovered, but no FCP HBAs are discovered, the problem is often with the Emulex HBAAPI library. There are 2 version of the Emulex library: a 64 bit version and a 32 bit version. The NetApp Host Agent software requires the 32 bit library. On some machines, the 32 bit version is not enabled by default. To correct this problem you must edit the **/etc/hba.conf** file on the host machine, and add a line for the 32 bit version.

Example of bad "hba.conf" file:

com.emulex.emulexapilibrary /usr/lib/sparcv9/libemulexhbaapi.so

Example of good "hba.conf" file:

com.emulex.emulexapilibrary /usr/lib/sparcv9/libemulexhbaapi.so

com.emulex.emulexapilibrary /usr/lib/libemulexhbaapi.so

**18 Performance Advisor**

**18.1 What is the Performance Advisor?**

Starting with DataFabric Manager 3.0, you can use the Performance Advisor to monitor performance counters that are exported from Data ONTAP in more detail than with Operations Manager.

**18.2 How is data collected and displayed?**

The Performance Advisor consists of two pieces:

* The DataFabric Manager server is responsible for collecting the data from the storage systems.
* The NetApp Management Console is responsible for displaying the performance counters in graphs.

**18.3 How is the performance data stored?**

The server portion of the Performance Advisor stores the data on the DataFabric Manager server in a set of flat files. The data can either be accessed via the DataFabric Manager server CLI or via the NetApp Management Console.

**18.4 Why does my storage system show no counters?**

The Performance Advisor only collects data from storage systems.

The Performance Advisor uses XML APIs to collect counters from the storage system. If the host password, or host login are incorrectly set, then the Performance Advisor will be unable to collect counter information.

To check if the storage system is correctly set up, select "Diagnose Connectivity" from the Appliance Details page, or type the following at the CLI:

dfm host diag *name-or-IP-address*

The command will include a Performance Advisor checklist of conditions that must be satisfied. If any one of the conditions is not satisfied, then the Performance Advisor will not collect any counter information.

**18.4.X1 [internal] How can I copy and paste a view and the data already collected?**

[This FAQ is not included in customer-visible pages]

You cannot.

**18.4.X2 [internal] Why can't I see any SnapMirror counters on the Performance Advisor?**

[This FAQ is not included in customer-visible pages]

**[ Needs review: How to make SnapMirror counters visible on the Performance Advisor**

The snapmirror instances can be viewed under volume\_snapmirror\_source and volume\_snapmirror\_destination under the "subsystem" view of the performance advisor tool. Since the counters for volume\_snapmirror\_source and volume\_snapmirror\_destination happen to be DIAG counters, the following steps should be followed in order to make the counters visible :

* On the CLI use "dfm options set perfAdvisorShowDiagCounters=Enabled".
* Stop the server process "dfm service stop server".
* Start server process "dfm service start server".

The counters should now be visible from the Performance Advisor tool when the user tries to create a new view for snapmirror instances.

Note that DIAG counters may change in future releases of Data ONTAP and any views created may break.

**]**

**18.5 Why does the bar chart not show all the instances even though I specified "all" instances while creating the bar chart?**

The maximum number of instances displayed in a bar chart is limited by the global option perfMaxObjectInstancesInBarChart. The default value of this option is 20. If more number of instances need to be displayed, this option can be modified. When an explicit number of instances is specified when the bar chart is created, this option is not used.

**18.6 How can I change the sampling intervals?**

The sampling intervals are limited to four values using four global options perfSampleRate1, perfSampleRate2, perfSampleRate3 and perfSampleRate4, respectively. By changing the values of these options, the sampling intervals can be changed.

**18.7 What are the new files created in performance archive directory with extensions 1d, 1w, 1m, 3m and 1y?**

These files are created to serve the performance reports in the Operations Manager web UI interface.

**18.8 What happens to the custom views created before 4.0?**

These custom views are left untouched. The counter group created for each of these custom views will continue to collect performance data.

**18.9 I have created a custom view, but when I accessed it why is it not showing any data?**

If the data collection is disabled for the counters on a selected host, then custom view won't show any data.

**18.10 I have not enabled diag counters, but still some of the counters are appearing in canned views. Why?**

Performance Advisor by default added some useful diag counters in canned views. These counters collect data as like other counters in canned views.

**18.11 Why Data collection wizard is not showing some useful counters?**

Performance Advisor always collects data for system:load\_in\_bound, system:load\_out\_bound etc calculated stats. So they are not showing in the data collection wizard.

**18.12 Why disabling a counter does not reclaim my disk space?**

When counter is disabled disk space is not reclaimed. Instead invalid data will be stored in the performance file during the subsequent data collection. This limitation is due to the existing mechanism of storing performance records in a fixed length manner for faster lookup. Reclaiming space without loosing historic data requires re-design of current file formats.

**18.14 How different Calculation types Simple, Step, Rolling will be computed to get metric data?**

Different type of calculations that will be peformed on the data to get metric data are:

|  |  |  |  |
| --- | --- | --- | --- |
| **Calculation type** | **Description** | **Output value** | **Display formats** |
| Simple | Take 1 hour time period and reduce it to 1 sample | Single value for the whole period | Straight line |
| Step | Keep accumulating the values and extract result at each time window. No samples are removed and hence cascading | Multiple values for given time period | Step line |
| Rolling | Take 1 hour sample and reduce it to 1 sample, remove the oldest sample and add samples till the difference between oldest and newest is 1 hour and get another sample (compute window) | Multiple values for given time period | Smoothened line |

Please refer the third party [Boost Accumulators Documentation](http://www.boost.org/doc/libs/1_38_0/doc/html/accumulators.html) for more details.

**18.13 How to convert views with counters added to charts using Add Counter dialog into Real Time Views with the added counters available?**

Counters added using Add Counter dialog will only be available for Real Time views if the modified views are saved. Clicking on Real Time on views with added counters will prompt to save the view. If the view is saved then the new view will be loaded and converted to Real Time view.

**18.15 In Metric views, my MIN/MAX lines are not touching the data line?**

This happens when the consolidation type is different from the metric type. i.e. If the consolidation type is "Average", which is the default option, metric lines won't touch the data line. You can see this in the information text displayed in the GUI also. Close the opened views and change the consolidation type in the performance settings dialog. Now open the view and check the metric lines.

**18.16 How do I see performance events with Warning and Informational Severity in the event correlation chart?**

NMC shows only events with severity 'Error' and 'Critical' only. This is to avoid clutter in the GUI. Workaround for this is to use 'dfm perf diag troubleshoot' CLI. This CLI allows to specify event severities throught the '-S' flag.

**18.17 Certain health checks are not included in the diagnosis results for invocation on a history data.**

Please note that Performance Advisor has different collection period for different counter groups. Certain health checks like 'LUN Misalignment' verifies data collected by the 'lun' counter group whose default collection period is 7 days. If the input time range is beyond the last 7 days, then diagnosis engine will encounter error evaluating these kind of rules. Hence these rules are not shown in the results summary. However, this can be confirmed by looking at the log files (dfmserver.log)

**19 Script Plugins**

**19.1 Why did schedules of scripts stop working when I changed the system time of the DataFabric Manager server?**

If you change the system time while the DataFabric Manager server scheduler service is running, schedules may not work as expected. The DataFabric Manager server scheduler service depends on system time to work properly. If the time is altered, schedules may not work as expected. You have to restart the scheduler service for schedules to work. When the scheduler service is restarted it recalculates the schedule times according to the modified time. Thus, the scheduler service should be stopped before changing the system time.

**19.2 Why does a schedule of a script get disabled automatically?**

Sometimes, you may find a schedule of script is automatically disabled. This can happen when the administrator who has last modified the schedule loses RBAC capabilities required by the script.

It may also happen if the script was upgraded and the new version of the script has new command line arguments that are incompatible with the old version.

**19.3 What does the error "Installation directory 'script-name' already present" mean?**

This error occurs if two scripts being installed have the same name. You will only be able to have one of the two scripts installed at a time.

**19.3.X1 [internal] Can I run batch files, exe files, com files as part of script plugin framework?**

[This FAQ is not included in customer-visible pages]

Yes.

**19.3.X2 [internal] How does the script plugin framework work in case of manual failover feature?**

[This FAQ is not included in customer-visible pages]

**[ Needs review: This FAQ is not yet written]**

**19.3.X3 [internal] How are user-defined events named which are added as part of script installation?**

[This FAQ is not included in customer-visible pages]

User-defined events can be added as part of script installation. The events are named "<script-package-name>:<event-class>:<event-name>", where "<script-package-name>" denotes the "<name>" element mentioned in "package.xml" of the script. This allows you to use the same event class names used across multiple scripts. Also, you can use the same event names across different event classes.

For example, you are installing a script package named "Config-diff-checker" and it has the following event classes defined:

<event-classes>

<event-class

name="config-diff"

allow-duplicate="false"

multi-current="true"

>

<about>

This event is generated when the storage system's configuration

is different from a known baseline configuration.

</about>

<event-name name="Changed">

<display-name>Config has changed</display-name>

<severity>Warning</severity>

</event-name>

</event-class>

</event-classes>

In this example the event is displayed as "Config-diff-checker:config-diff:Changed" in the command line. In Operations Manager, the event is displayed as "Config-diff-checker:config-diff:Config has changed". You can also specify alarms for these events.

**19.4 I have a Perl based Script Plugin. Whenever the DataFabric Manager server calls any "dfm" commands I get the following error: "'dfm' is not recognized as an internal or external command". What is the environment that the DataFabric Manager server uses to run a Script Plugin?**

You might see this error, if you are running the DataFabric Manager server on Windows platform. Script Plugin infrastructure spawns the script process either from the Server service (manual start) or Scheduler service (scheduled execution) of the DataFabric Manager server.

The Server and Scheduler services by default run under Local System account. The path they use is the System PATH and the DataFabric Manager installation appends the "dfm" executable path to the System PATH. So, in order to refresh the path to Local System services, you need to reboot the Windows machine after installing DataFabric Manager.

**19.4.X1 [internal] Are there any example script plugins available?**

[This FAQ is not included in customer-visible pages]

The Configuration Difference Checker script is a good example. This is available in the [NOW ToolChest](http://now.netapp.com/NOW/download/tools/dfm_config_diff_check/).

The [RRE team](http://wikid.netapp.com/w/RRE) provide a [Best Practices Guide](http://wikid.netapp.com/w/RRE_DFM_Script_Plugin_Best_Practices_Guide).

**20 Autosupport**

**20.1 Does the autosupport feature get turned on automatically?**

Yes. The "autosupportEnabled" global option is initially set to "Unknown". After 24 hours have passed since installation or upgrade to DataFabric Manager release 3.3 or above, the option will automatically be set to "Yes" unless you manually set it to "No" with:

$ dfm option set autosupportEnabled=no

**20.2 How do I disable autosupport?**

From the command line or Operations Manager, you can change the "autosupportEnabled" option to "No" with:

$ dfm option set autosupportEnabled=no

**20.3 Can I test the autosupport feature to see what it will send back to NetApp?**

Yes. You can have an autosupport sent to yourself by e-mail by running the following command:

$ dfm autosupport send -e <your-e-mail-address@your-domain.com> -p smtp

**20.4 What can I do to prevent autosupport from sending sensitive information back to NetApp as part of the content?**

You can change the "Autosupport Content" option in Operations Manager ("autosupportContent" in CLI) to "minimal" to have the autosupport feature blank out all hostnames, user names, and IP addresses with the "?" character and to not include logs in the autosupport transmission.

If you would like to re-enable full content in autosupport transmissions, and also include the contents of the DataFabric Manager server log files, you can change the "Autosupport Content" option back to "complete" which is the default setting.

**NOTE**: Starting from DataFabric Manager 3.4 , "audit.log" file will not be sent in autosupport transmissions.

**20.5 Are there any problems with using a virus scanner on a DataFabric Manager server that has autosupport enabled?**

Many virus scanning programs block sending TCP packets to another host on port 25. This is to disable mass-mailing worm virus programs. If you have autosupport configured to send transmissions using SMTP ("autosupportProtocol" set to "smtp"), the virus scanner might block the transmission. To work around this, use another protocol such as HTTP or HTTPS for autosupport, or configure any virus scanner on the DataFabric Manager server not to block outgoing connections over port 25.

**20.6 How often are status autosupport transmissions sent from the DataFabric Manager server?**

Once per week.

**20.7 Why are autosupport messages saved as files named "asup.eml"?**

The "eml" file extension is used by Microsoft Outlook Express (installed by default on all new Windows systems) as the default extension for "e-mail" files. By using this file-naming convention, users can view autosupport content with Microsoft Outlook Express which provides automatic parsing of the XML content and correctly handles the attached zipped log files.

On Linux systems, this file-naming convention can be considered completely arbitrary. The files are text files containing an XML body with the diagnostic state of the system, and MIME-encoded attachments which are the log files compressed by gzip.

**21 MultiStore Monitoring**

**21.1 Why are vFiler units not getting discovered?**

Possible reasons:

* vFiler Discovery and Monitoring are supported only for storage systems running Data ONTAP version 6.5 and above. Check the storage system Data ONTAP version.
* vFiler units are discovered via XML for storage systems running Data ONTAP version 6.5 or later. If XML is not enabled (hostLogin is not set) the vFiler discovery and monitoring will be disabled for that storage system.
* vFiler discovery option might be off. Check **vFiler Discovery** option in Setup->Discovery page in Operations Manager or by using the command line:
* dfm option list discoverVfilers
* MultiStore license on the storage system might not have been discovered by the DataFabric Manager server yet.

**21.2 What should I do if a vFiler is not yet discovered by the DataFabric Manager server?**

* Do a Refresh on the storage system in the DataFabric Manager server. You can do this by either going to Appliance Details of the storage system and clicking Refresh or by using the command line:
* dfm host discover <storage-system>
* You can add vFiler units to the DataFabric Manager server through the Add option at the bottom of the vFiler reports in Operations Manager, or by running the CLI command:
* dfm vfiler add -H <hosting-storage-system> <vfiler-name-or-ip>

**21.3 How can I turn off vFiler discovery?**

Do this by setting **vFiler Discovery** option to **Disabled** in Setup->Discovery page in Operations Manager or by using the command line:

dfm option set discoverVfilers=no

**21.4 Why can't I see DNS names of some vFiler units?**

DataFabric Manager server monitors the DNS domain name option (options dns.domainname) on vFiler units to get the DNS names of the vFiler. So if DataFabric Manager server doesn't show DNS names of some vFiler units, the possible reasons could be that the DNS domain name is not configured on the vFiler units or the vFiler units are not running.

**21.5 Why are HTTP, FTP and SSH protocols not listed for a vFiler though they are part of allowed protocols for that vFiler?**

These protocols are not returned as part of the Data ONTAP APIs. So, this information is not displayed in Operations Manager.

**21.6 Why are interface details for some IP Addresses not displayed for a vFiler?**

Possible causes:

* The interface might belong to a non-default IP Space on the storage system. The DataFabric Manager server will not discover interface details for ones belonging to non-default IP Spaces.
* Interface monitor (ifmon) on the storage system has not yet collected data for that interface.

**21.7 Why are Initiator Groups/User and Group Quotas not getting discovered for vFiler units?**

Check whether RSH/SSH is enabled on the hosting storage system and the login credentials of the hosting storage system are set in the DataFabric Manager server.

**21.8 How do I restrict vFiler administrators from seeing details of the hosting storage system?**

Steps:

* Create a resource group containing only vFiler units say vfiler\_group.
* Create a role say vfiler\_admin\_role.
* Add "DFM.Database.Read" and more capabilities as necessary for vfiler\_group to vfiler\_admin\_role.
* Add the user to the DataFabric Manager server and assign him/her vfiler\_admin\_role.

**21.9 Why are vFiler quotas not getting discovered for certain qtrees?**

The DataFabric Manager server does not discover quotas when the qtree has spaces in its name or when the user name has spaces. Check whether the qtree or user name has spaces in it.

**21.10 Why do I see the event Hosting Storage System Login Failed event in vFiler Details page?**

This happens when the login credentials for the hosting storage system of that vFiler is not set or is wrong. Check the credentials.

**21.11 Why are some volumes and qtrees renamed after upgrading to 3.3 release of DataFabric Manager?**

Once the vFiler units are discovered, the ownership of all storage resources (volumes, qtrees, lunpaths) belonging to the vFiler units are changed from hosting storage system to that vFiler. So the names of these resources will be changed accordingly.

**21.12 I'm a vFiler administrator. Why are my vFiler details not getting updated?**

This can happen when the hosting storage system of that vFiler is not responding to SNMP. Check the SNMP connectivity of the hosting storage system from the DataFabric Manager server.

**21.13 What information does vFiler Capacity Used graph and Volume Capacity Used graph in the vFiler Details page show?**

vFiler Capacity Used graph in the vFiler Details page shows the space used by the vFiler. The vFiler capacity used information is computed as the sum of

* used capacity of all volumes in the vFiler, and
* used tree quota of all qtrees in the vFiler whose volume is in the hosting storage system.

It does not include used capacity information for qtrees present in vFiler whose volume is in the hosting storage system and don't have tree quotas set on them.

Volume Capacity Used graph in the vFiler Details page shows the sum of used capacity of all the volumes in the vFiler. It does not include used capacity information for qtrees in vFiler whose volume is in the hosting storage system. For this reason, vFiler units having only qtrees and no volumes will have empty Volume Capacity Used graph.

**22 Role-based Access Control (RBAC)**

**22.1 What is RBAC?**

Starting with DataFabric Manager 3.3, access privileges were replaced with RBAC which uses roles, capabilities, and operations.

The management of permissions in large enterprises becomes cumbersome if there is no way to group permissions into a single entity which can then be assigned to users and usergroups.

RBAC allows the capabilities of a given role to be managed completely independently from the assignment of roles to users or usergroups.

When a new administrative user is added, it is only necessary to assign the proper role, rather than needing to assign individual capabilities. Updates to the capabilities of a role are immediately effective for any users who have been given that role.

**22.2 What is a 'capability'?**

A capability is the ability to perform a specific operation on a specific resource.

**22.3 What resource types are controlled by RBAC?**

The resources understood by the RBAC system are: storage system, aggregates, volumes, LUNs, vFiler units, hosts, groups (resource groups) and roles. The RBAC system does not yet provide access control based on qtrees, scripts, or configuration files.

**22.4 Where can I get more details on RBAC?**

There is a chapter called "Controlling Administrative User Access" in the Administrator's Guide for DataFabric Manager which contains a complete description.

**22.5 How can I get more details about the list of operations that RBAC understands?**

The "dfm role operation list" CLI command will list all operations. Additional details about operations can be found in the Administrator's Guide.

**22.6 Why does an administrator with write access to a group need host administrator credentials to add new members to the group?**

Adding a new storage system to a group that is used in existing roles can result in dramatic changes in terms of who can do what on that storage system.

For example, if role R contains a capability allowing the "restore" operation on group G, then any storage system added to group G is immediately included in role R, and anyone with that role can do "restore" things on that storage system. Therefore, someone who has **only** write access to a group should not be able to add arbitrary storage system to that group.

Currently, in order to be able to add things to a group, an administrator with only write access to a group, must provide the administrator credentials of the proposed member host. Administrators with write access on Global can however add any member to any group without providing credentials.

Credentials required for adding members to group is given in the table below.

|  |  |
| --- | --- |
| **Object to be added** | **Credentials required** |
| Storage System, Aggregate | Storage System's root credentials |
| Volume, Qtree or Lun Path belonging to storage system | Storage System's root credentials |
| vFiler | Storage System or vFiler's root credentials |
| Volume, Qtree or Lun Path belonging to vFiler | Storage System or vFiler's root credentials |
| Host Agent, SRM Path | Host Agent's admin credentials |

**22.7 Can an administrative user delegate capabilities to another administrative user?**

The capability to delegate capabilities is "DFM.Core.Control" operation on the role which is to be delegated.

**22.8 I have write access on a group but when I tried to add members to it after providing credentials, it gave me an error?**

Administrators with write access on Global can add any member to any group. However administrators with write access only on a resource group need to provide administrator credentials of the member host before adding it to the group. DataFabric Manager server contacts the host for authenticating the provided credentials and based on the result allows adding member to the group.

If adding a member to a group after providing the administrator credentials fails, it could be because of the following possible reasons

* The host is down
* Credentials provided is incorrect
* The host is not properly configured in DataFabric Manager server. The following settings of the host should be checked:

|  |  |
| --- | --- |
| **Host Type** | **Settings** |
| Storage System | Login Protocol |
| vFiler | Login Protocol of the storage system or the vFiler depending on the credentials provided |
| Host Agent | Administration Transport and Administration Port |

Note: Adding FC-Switches to groups by providing credentials is not supported.

**23 Audit Logging**

**23.1 Why don't I see any information getting audit logged for non-root users in "audit.log" file?**

Because audit logging service is provided by "dfmserver", the "server" service needs to be running to audit the non-root/non-administrator (in Windows) user's actions. But the root/administrator's actions will always be logged irrespective of whether "dfmserver" is up or not.

Check if "server" service is running by using:

dfm service list server

Restart the service if it is stopped:

dfm service start server

**23.2 Is there any impact of setting auditLogForever global option to "Yes"?**

The audit.log file (in <install-dir>/log/ dir) does not get rotated once the **auditLogForever** global option is set to "Yes". As a result, there could be large number of "audit-X.log" files generated in the log directory each of size 3 MB.

It is a good practice to check free disk space on the server before setting the auditLogForever to "Yes". This might also impact monitoring as it may get suspended due to low disk space on server.

**23.3 Does Operations Manager delete the audit.log information collected over time after I turn off auditLogForever option?**

When **auditLogForever** option is set to "No", the information accumulated in "audit-X.log" files over the time is still retained, however all the "audit-X.log" files are renamed to "audit-X.log-<timestamp>.bak" and audit logging starts afresh.

**23.4 Is the new format for "audit.log" entries in DataFabric Manager server 3.4 (and later) compatible with earlier versions?**

Yes, they are compatible. The new fields are added at the end, such that any scripts written to parse the old "audit.log" file, will continue to work on the new "audit.log" file as well.

**23.5 Does Operations Manager provide any UI to analyze audit log information?**

No, there is no such provision in Operations Manager as of now, customers are encouraged to write their own scripts to parse/analyze data in the "audit.log" file.

**23.6 Why do I see the application name as "Unknown" for audit log entries from Performance Advisor?**

The Performance Advisor does not leverage the audit logging infrastructure on Operations Manager. Therefore, all actions from Performance Advisor will be logged with application name as "Unknown".

**24 Managing administrator access on storage systems and vFiler units**

**24.1 Why am I not able to create roles with certain capabilities listed in the capability tree?**

On the storage system, some capabilities are available only in the advanced privilege mode. DataFabric Manager server does not support creation of roles with such capabilities. However, it does monitor roles with such capabilities which may have been created using console of the storage system.

Note: **dfm host role capability add** and **dfm host role capability delete** commands would not work for the roles with above mentioned capabilities.

**25 Password Management**

**25.1 How can I change the password of a user on storage system from DataFabric Manager server without providing the old password?**

Let us consider that the hostLogin is set to 'user1' and useHostsEquiv is not set for the storage system in DataFabric Manager server. To change the password of a user (say 'user2') on the storage system from DataFabric Manager server, you should meet the following requirements:

* You should have DFM.Console.Execute capability on the storage system.
* The capabilities of 'user1' on storage system should be a super-set of the capabilities of 'user2'.
* 'user1' should have the capability to run the **useradmin-user-modify-password** API.
* 'user1' should have **security-passwd-change-others** capability. If 'user1' and 'user2' are same, you need not meet this last requirement.

If useHostsEquiv option is set for the storage system, all the above requirements need not be met. Either the login credentials or the useHostsEquiv option need to be set for the storage system in DataFabric Manager server to change the password of a user without providing the old password.

You cannot change the password of a user on vFiler without providing the old password, unless 'user1' and 'user2' are same.

**26 Provisioning Manager**

**26.1 How do I configure the size of the root volume provisioned for a vFiler unit in Provisioning Manager?**

By default, Provisioning Manager provisions a root volume of size 50MB when creating a new vFiler unit. This default can be changed using a global option, which takes the new default size in MB.

$ dfm option set vFilerRootVolumeSizeMb=100

**26.2 Is there a limit on number qtrees per volume when provisioning in NAS based data sets ?**

By default, in NAS based data sets Provisioning Manager provisions a maximum of 15 qtrees in a volume, after that it provisions a new volume into the data set and starts provisioning new qtrees in it and so on.

**26.2.X1 [internal] How can I change the limit on number of qtrees per volume in NAS based data sets?**

[This FAQ is not included in customer-visible pages]

There is a hidden option at data set level to control this. The new limit can be set using the CLI command:

$ dfpm dataset set dataset-name-or-id maxQtreesPerVolume=10

The value can be checked after setting using the CLI command:

$ dfpm dataset get dataset-name-or-id

Maximum qtrees that can be provisioned out of a volume: 10

**26.3 Is there a limit on number of LUNs per volume when provisioning in SAN based data sets?**

By default, in SAN based data sets Provisioning Manager provisions a maximum of 15 LUNs in a volume, after that it provisions a new volume into the data set and start provisioning new LUNs in it and so on.

**26.3.X1 [internal] How can I change the limit on number of LUNs per volume in SAN based data sets?**

[This FAQ is not included in customer-visible pages]

There is a hidden option at data set level to control this. The new limit can be set using the CLI command:

$ dfpm dataset set dataset-name-or-id maxLunsPerVolume=10

The value can be checked after setting using the CLI command:

$ dfpm dataset get dataset-name-or-id

Maximum LUNs that can be provisioned out of a volume: 10

**26.3.X2 [internal] How do I control the maximum number of FlexVols per storage controller?**

[This FAQ is not included in customer-visible pages]

Provisioning Manager allows you configure limits for a given model and Data ONTAP version through a hidden CLI "dfpm reslimit". For example, if you want to limit number of FlexVols on FAS3050 running Data ONTAP 7.2 version to 200 volumes :

$ dfpm reslimit create "7.2" "FAS3050"

Created new resource limit (1).

$ dfpm reslimit set 1 maxFlexVols=200

Modified resource limit (1).

$ dfpm reslimit get 1

Id 1

ONTAP Version 7.2

Product Model FAS3050

Availability None

Maximum number of FlexVols per storage controller 200

Maximum CPU utilization threshold of storage controller

Maximum Disk utilization threshold of an aggregate

**26.4 Can I provision all storage for a data set on a specific set of storage systems or aggregates in a resource pool?**

Provisioning Manager has an internal algorithm to select the right storage system and aggregate in the resource pool when serving a provisioning request. But in case there is a requirement to provision all the volumes of a data set on specific storage systems or aggregates in a resource pool, then administrators can make use of a mechanism called "labels".

For example administrators can set a label called "low-cost" on all aggregates with SATA disks and specify the same in the provisioning policy. Now, when provisioning volumes using this provisioning policy in a data set, only those resources marked with label "low-cost" in the resource pool are considered.

**26.5 I have set the aggregate overcommit thresholds on the resource pool to > 100%, but I still can't overcommit storage space from aggregates in the resource pool, why?**

Check if the overcommit thresholds have been set at individual aggregate level using the command **dfm aggr get**. The overcommit threshold values set at aggregate level override the values set at resource pool level.

**26.5.X1 [internal] Provisioning dry run complains about lack of space on the aggregate where as "df -A" on the storage system shows enough free space?**

[This FAQ is not included in customer-visible pages]

Check if there are any **volume-offline-or-destroyed** events for volumes that belonged to given storage system or aggregate, in case there are, and these volumes have been destroyed on the storage system, then delete those volumes manually from DataFabric Manager server using **dfm volume delete** command.

Check if there are any automatically provisioned secondary volumes (backup/mirror destinations), these volumes are prefixed with "dfpm\_". These volumes are of containing aggregate size with "none" guarantee, but Provisioning Manager internally maintains a "projected" or "estimated" size for such volumes and this size is accounted as used space from aggregate. Hence the "df -A" command on the storage system may actually show free space but Provisioning Manager may not be able to provision new volumes on it due to reasons mentioned above.

**26.6 Can I provision new qtrees or LUNs in existing volumes using Provisioning Manager?**

No, Provisioning Manager cannot be used to provision new qtrees or LUNs in existing FlexVol or traditional volumes. Provisioning Manager always starts by provisioning new FlexVol when provisioning qtrees (in NAS based data sets) and LUNs (in SAN based data sets).

**26.7 Does Provisioning Manager consider performance metrics when selecting a resource for provisioning?**

Yes, but for that Performance Advisor needs to be enabled on DataFabric Manager server and at least 2 weeks data should be collected for the storage system or aggregate. Provisioning Manager looks at CPU busy and aggregate disk IO when selecting a resource for provisioning from the resource pool.

**26.8 Why do I see space status as "Unknown" for all my existing data sets?**

Space Status is computed using the thresholds specified in the provisioning policy attached to the data set. So, if a provisioning policy is not attached to the data set, the space status is "Unknown".

**26.9 What should be my availability settings in provisioning policy when provisioning storage on V-Series systems?**

DataFabric Manager server does not discover the actual RAID type of V-Series aggregates because the RAID protection is provided by the back-end storage array.

In 3.7, in order to provision volumes on V-series aggregates, you can set the availability settings as 'any' or 'single' in which case Provisioning Manager will pick the V-series aggregates. The CLI commands to achieve the same are:

$ dfpm policy set diskFailureReliability=single

or

$ dfpm policy set diskFailureReliability=any

From 3.8, provisioning storage on V-series systems can be explicitly specified using availability setting as 'external'. This indicates that external RAID protection is being used. The CLI commands to achieve the same are:

$ dfpm policy set diskFailureReliability=external

**26.9.X1 [internal] How do I see the deduplication platform limits for all the deduplication supported platforms and versions ?**

[This FAQ is not included in customer-visible pages]

The hidden CLI 'dfpm reslimit get' lists the maximum allowable deduplication size for all the deduplication supported platforms and versions.

**26.9.X2 [internal] How do I add the maximum deduplication volume limit for a newly shipped platform ?**

[This FAQ is not included in customer-visible pages]

Provisioning Manager allows you to add deduplication platform limits for a given platform and version through the hidden CLI 'dfpm reslimit'.   
For example, if you want to add deduplication platform limit on 'FAS3050' running Data ONTAP '7.3' to 1 TB, you can use:

$dfpm reslimit create "7.3" "FAS3050"

Created new resource limit (1).

$dfpm reslimit set 1 maxDedupeSizeInGB=1024

Modified resource limit (1).

$dfpm reslimit get 1

Id 1

ONTAP Version 7.3

Product Model FAS3020

Availability None

Maximum number of FlexVols per storage controller

Maximum CPU utilization threshold of storage controller

Maximum Disk utilization threshold of an aggregate

Maximum Deduplication size of a storage system model and ONTAP version (in GB) 1024

**26.9.X3 [internal] How do I run undeduplication on a volume ?**

[This FAQ is not included in customer-visible pages]

Provisioning Manager allows you to run volume undeduplication through a hidden CLI.   
Undeduplication can be run only on volumes belonging to dataset nodes which have a deduplication disabled provisioning policy attached.

The CLI command to achieve the same is:

$ dfpm dataset undedupe start <dataset-name-or-id> <member-name-or-id>

This CLI starts a undeduplication job and the job can be tracked using:

$ dfpm job details <undeduplication-job-id>

**26.9.X4 [internal] How is the size of the provisioned volume decided when a deduplication enabled provisioning policy is attached to the dataset?**

[This FAQ is not included in customer-visible pages]

Provisioning Manager internally decides the size of the provisioned volume as follows. Assuming that the requested size of the volume to be provisioned into a dataset node with deduplication enabled provisioning policy attached is 100GB. Provisioning Manager will provision a volume of 102 GB in this case. This is because, Provisioning Manager considers a 2% overhead when provisioning deduplication enabled volumes due to the additional space required to store fingerprint database.

For ONTAP version prior to 7.3, the overhead is part of the volume provisioned. Hence the volume provisioned will be 102 GB (100 + 2% of 100).   
But for ONTAP versions 7.3 or later, the overhead is checked against the aggregate free space and is not part of the volume size.

**26.10 Why do the Management Console Deduplication tab and the Data ONTAP CLI df -s command sometimes show different deduplication space savings percentage for the same volume?**

Provisioning Manager calculates deduplication space savings of a volume only against the space used by the active file system. It does not consider available overwrite reserve, hole reserve (in case of SAN) and snapshot overflow because deduplication is not applied to the space used by these functions.

The Data ONTAP CLI df -s command, on the other hand, returns a different deduplication space savings percentage calculated against the total used space in the volume which includes snapshot overflow, hole reserve and available overwrite reserve.

**26.11 How do I fix migration when the migration job details says that job terminated abnormally ?**

Migration jobs can fail where the details say "Job terminated abnormally. Please run dfpm migrate fix".

This can happen if DataFabric Manager server process has restarted while the migration job was in progress. The migration job cannot complete in that scenario. A CLI can be run which will fix the migration status of the dataset|vFiler unit. This can either fix the problem on its own OR it will generate a report in datamotion.log for the list of things user may have to do manually. The CLI to fix migration when job terminates abnormally is as follows:

$ dfpm migrate fix <dataset-name-or-id>

**26.12 What doI do if I get an error that there are no storage systems in the resource pool when I try to provision a migration enabled dataset or when I migrate a dataset ?**

Provisioning Manager when provisioning a migration enabled dataset or when migrating a dataset to a resource pool requires that the whole storage system to be a member of the resource pool. This error comes if you have added only aggregates to the resource pool. Ensure that the storage system is added to the resource pool and try to provision or migrate again.

**26.13 How do I retain old volumes in the source storage system and migrate the vFiler unit or dataset again to a different storage system ?**

Once a vFiler unit or dataset is migrated from a source to a destination storage system, the migration status is changed to "migrated\_cleanup\_required." At this stage, if the vFiler unit or dataset has to be migrated again, it is not allowed, since the cleanup of old volumes from the source storage system is not yet initiated.

If it is necessary to retain the old volumes in the source storage system the migration status can be changed using the CLI from "migrated\_cleanup\_required" to "not\_started" as follows:

$ dfpm migrate status -c not\_started <dataset|vfiler\_unit>

**26.14 How do I change the migration status from migrated\_with\_errors and continue ?**[**[**](http://web.netapp.com/engineering/design-depot/appliance-mgmt/champagne/faq-4-1.html#Sections)

If the vFiler unit or dataset is migrated to the destination storage system successfully, but there were some errors in some post-migration tasks, then the migration status changes to "migrated\_with\_errors". The details of the errors can be obtained using the CLI:

$ dfpm job details <migration\_cutover\_job\_id>

Once the errors indicated in the job details are corrected manually the migration status can be changed from the CLI as follows:

$ dfpm migrate status -c migrated\_cleanup\_required <dataset|vfiler\_unit>

**26.15 What are the benefits of online migration over offline migration ?**

Offline Migration:

* Client applications could face disruptions while the data is migrated and might have to be SHUTDOWN. This downtime is not desirable and is an expensive operation for customers as they have to plan in advance for the downtime and for certain business critical applications downtime has a direct financial impact.
* After the data is migrated the client has to remount their mount points.
* Clients will see the I/O disruptions during the cutover i.e while the data is getting migrated.

Online Migration:

* Client application need not shutdown their applications. i.e. Clients doesn't know, that the data is getting migrated to another storage system.
* No need to remount their mount point after data migration is done.
* Clients will never see I/O disruptions during the migration of data.

**26.16 What is rollback and when do I need to do it ?**

After cutover, if user is unhappy with the vFiler|dataset performance, then He can revert it to the source storage system given that the source volumes have not been destroyed and there is enough space on the source aggregates. You can roll back a migration that is in the "Migrated, cleanup required" status after the migration start and migration cutover operations are complete, but before migration cleanup. When you roll back a dataset migration, the licensed provisioning application restores the availability of the original source storage, updates it with any data changes made since cutover, and deletes the destination vFiler unit. By default, the rollback will be online, if the previous cutover was done online. However there are cases, where the rollback cannot be done using online migration, eventhough cutover was done using online migration (For ex: Mismatch in platforms i.e source model is FAS3050 and destination storage system FAS6070). In these cases Provisioning Manager will warn the user and user can still do the rollback, but it will offline.

**26.17 What migration statuses are visible in the management console?**

 'Not started', 'Started, cutover required', 'Migrated, cleanup required', 'Migrated with errors', 'Rolled back', 'Rolled back with errors' and 'Migrate failed'.

 The states will be in 'Migrated with errors' and 'Rolled back with errors', when something went wrong while migrating the relationships, migrating history or while running the script. Please check/correct these things manually and then change the status to 'Migrated, cleanup required'(if the status is in 'Migrated with errors') OR 'Rolled back'(if the status is in 'Rolled back with errors'), by using the 'dfpm migrate status' command.

**26.18 Is online migration allowed, if the migrating vFiler unit contains any qtrees whose volumes belongs to the hosting storage system?**

Online migration is not allowed, if the migrating vFiler unit contains any qtrees, whose volumes belongs to the hosting storage system. Offline migration can be done(but not rollback), if the migrating vFiler unit contains qtree(whose volume belongs to the hosting storage system), as it's root storage system.

**26.19 Is rollback allowed, if the migrating vFiler unit contains qtree as its root storage system?**

Rollback cannot be done either in offline or online migration, if the migrating vFiler unit contains any qtrees, whose volumes belongs to the hosting storage system.

**26.20 What is one step migration?**

Migration operation that begins migrating a dataset or vFiler unit to a new storage system and automatically performs the cutover operation.

**26.21 How throttling will help in online migration?**

Throttling bandwidth allocated to data migration, allows your primary storage system to carry out its other normal tasks during the business hours.

End of Document