

gFiler™ Gateway Series

Data ONTAP™ 6.5.4

Release Notes

Network Appliance, Inc.
495 East Java Drive
Sunnyvale, CA 94089 USA
Telephone: +1 (408) 822-6000
Fax: +1 (408) 822-4501
Support telephone: +1 (888) 4-NETAPP
Documentation comments: doccomments@netapp.com
Information Web: <http://www.netapp.com>

Part number 215-01310-B0
March 2005

Copyright and trademark information

Copyright information

Copyright © 1994–2005 Network Appliance, Inc. All rights reserved. Printed in the U.S.A.

Portions © 1998–2001 The OpenSSL Project. All rights reserved.

No part of this book covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Portions of this product are derived from the Berkeley Net2 release and the 4.4-Lite-2 release, which are copyrighted and publicly distributed by The Regents of the University of California.

Copyright © 1980–1995 The Regents of the University of California. All rights reserved.

Portions of this product are derived from NetBSD, which is copyrighted by Carnegie Mellon University.

Copyright © 1994, 1995 Carnegie Mellon University. All rights reserved. Author Chris G. Demetriou.

Permission to use, copy, modify, and distribute this software and its documentation is hereby granted, provided that both the copyright notice and its permission notice appear in all copies of the software, derivative works or modified versions, and any portions thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS “AS IS” CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Software derived from copyrighted material of The Regents of the University of California and Carnegie Mellon University is subject to the following license and disclaimer:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notices, this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
This product includes software developed by the University of California, Berkeley and its contributors.
4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS “AS IS” AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF

SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Portions of the software were created by Netscape Communications Corp.

The contents of those portions are subject to the Netscape Public License Version 1.0 (the "License"); you may not use those portions except in compliance with the License. You may obtain a copy of the License at <http://www.mozilla.org/NPL/>.

Software distributed under the License is distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License.

The Original Code is Mozilla Communicator client code, released March 31, 1998.

The Initial Developer of the Original Code is Netscape Communications Corp. Portions created by Netscape are Copyright © 1998 Netscape Communications Corp. All rights reserved.

This software contains materials from third parties licensed to Network Appliance Inc. which is sublicensed, and not sold, and title to such material is not passed to the end user. All rights reserved by the licensors. You shall not sublicense or permit timesharing, rental, facility management or service bureau usage of the Software.

Portions developed by the Apache Software Foundation (<http://www.apache.org/>). Copyright © 1999 The Apache Software Foundation.

Portions Copyright © 1995–1998, Jean-loup Gailly and Mark Adler

Portions Copyright © 2001, Sitraka Inc.

Portions Copyright © 2001, iAnywhere Solutions

Portions Copyright © 2001, i-net software GmbH

Portions of this product are derived from version 2.4.11 of the libxml2 library, which is copyrighted by the World Wide Web Consortium.

Network Appliance modified the libxml2 software on December 6, 2001, to enable it to compile cleanly on Windows, Solaris, and Linux. The changes have been sent to the maintainers of libxml2. The unmodified libxml2 software can be downloaded from <http://www.xmlsoft.org/>.

Copyright © 1994–2002 World Wide Web Consortium, (Massachusetts Institute of Technology, Institut National de Recherche en Informatique et en Automatique, Keio University). All Rights Reserved. <http://www.w3.org/Consortium/Legal/>

Software derived from copyrighted material of the World Wide Web Consortium is subject to the following license and disclaimer:

Permission to use, copy, modify, and distribute this software and its documentation, with or without modification, for any purpose and without fee or royalty is hereby granted, provided that you include the following on ALL copies of the software and documentation or portions thereof, including modifications, that you make:

1. The full text of this NOTICE in a location viewable to users of the redistributed or derivative work.
2. Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, a short notice of the following form (hypertext is preferred, text is permitted) should be used within the body of any redistributed or derivative code: "Copyright © [Sdate-of-software]"

World Wide Web Consortium, (Massachusetts Institute of Technology, Institut National de Recherche en Informatique et en Automatique, Keio University). All Rights Reserved.
<http://www.w3.org/Consortium/Legal/>"

3. Notice of any changes or modifications to the W3C files, including the date changes were made.
(We recommend you provide URLs to the location from which the code is derived.)

THIS SOFTWARE AND DOCUMENTATION IS PROVIDED "AS IS," AND COPYRIGHT HOLDERS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE OR DOCUMENTATION WILL NOT INFRINGE ANY THIRD PARTY PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS.

COPYRIGHT HOLDERS WILL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY USE OF THE SOFTWARE OR DOCUMENTATION.

The name and trademarks of copyright holders may NOT be used in advertising or publicity pertaining to the software without specific, written prior permission. Title to copyright in this software and any associated documentation will at all times remain with copyright holders.

Software derived from copyrighted material of Network Appliance, Inc. is subject to the following license and disclaimer:

Network Appliance reserves the right to change any products described herein at any time, and without notice. Network Appliance assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by Network Appliance. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of Network Appliance.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark information

NetApp, the Network Appliance design, NetApp—the Network Appliance Company, FAServer, NearStore, NetCache, and WAFL are registered trademarks of Network Appliance, Inc. in the United States and other countries. Network Appliance is a registered trademark of Network Appliance, Inc. in Monaco and a trademark of Network Appliance, Inc. in the United States and Canada. SnapCopy is a registered trademark of Network Appliance, Inc. in the European Union and a trademark of Network Appliance, Inc. in the United States. DataFabric, FilerView, SecureShare, SnapManager, SnapMirror, and SnapRestore are registered trademarks of Network Appliance, Inc. in the United States. Data ONTAP and Snapshot are trademarks of Network Appliance, Inc. in the United States and other countries. ApplianceWatch, BareMetal, Center-to-Edge, ContentDirector, gFiler, MultiStore, SecureAdmin, Serving Data by Design, Smart SAN, SnapCache, SnapDrive, SnapMover, SnapVault, vFiler, and Web Filer are trademarks of Network Appliance, Inc. in the United States. Spinnaker Networks, the Spinnaker Networks logo, SpinAccess, SpinCluster, SpinFS, SpinHA, SpinMove, SpinServer, and SpinStor are registered trademarks of Spinnaker Networks, LLC in the United States, other countries, or both. SpinAV, SpinManager, SpinMirror, and SpinShot are trademarks of Spinnaker Networks, LLC in the United States, other countries, or both.

Apple is a registered trademark and QuickTime is a trademark of Apple Computer, Inc. in the United States and/or other countries.

Microsoft is a registered trademark and Windows Media is a trademark of Microsoft Corporation in the United States and/or other countries.

RealAudio, RealNetworks, RealPlayer, RealSystem, RealText, and RealVideo are registered trademarks and RealMedia, RealProxy, and SureStream are trademarks of RealNetworks, Inc. in the United States and/or other countries.

All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

Network Appliance is a licensee of the CompactFlash and CF Logo trademarks.

Network Appliance NetCache is certified RealSystem compatible.

Table of Contents

gFiler Data ONTAP 6.5.4 Release Notes	1
About this document	1
Where to find information about fixed bugs	1
Requirement for McDATA Fibre Channel switches and directors	1
Storage appliance system firmware	1
Changes in Data ONTAP 6.5.4.	2
Release scope.	2
Known problems or limitations in Data ONTAP 6.5.4.	3
vsan feature supported only for NIS authentication	3
No secondary image on systems with 32-MB CompactFlash cards	3
Client notification messages in Windows domains require NetBIOS	4
Windows features not implemented	4
Windows client software compatibility restrictions	4
Moving vFiler storage resources can cause system panics.	5
SnapMover and takeover.	5
NFS configuration issue for Hummingbird with Kerberos	5
Group membership for UNIX-to-Windows account mapping.	5
Upgrade information for Data ONTAP 6.5.4.	6
About this section	6
Requirements for Hitachi, Limited and Hitachi Data Systems storage subsystems	6
Requirements for the storage subsystem for IBM	7
Upgrade requirements for Data ONTAP.	7
Automatic editing of the /etc/exports file	8
Some entries have been removed from the /etc/rc file	8
Default behavior change for FTP	8
Virus scan default timeout option	9
Planning for upgrading gFiler gateways running SnapMirror	10
Changes in 6.5.3H1P4	13
Release scope.	13
Requirements for Running Data ONTAP 6.5.3H1P4	13
Changes in Data ONTAP 6.5.3/6.5.3P4	14
Release scope.	14
New gFiler platform support	14
New storage subsystems supported	15
gFiler multiple array family support for Data ONTAP 6.5.3/6.5.3P4	15
NVRAM5 support in gFiler clusters	16
New options in Data ONTAP 6.5.3P4	16
Changed option values in Data ONTAP 6.5.3/6.5.3P4	16
NFSv4 client compatibility.	17

Changes in Data ONTAP 6.5.2R1	18
Release scope.	18
New gFiler platform supported.	18
New switch support	18
Recommendation for DataFabric Manager users	18
New Features and Changes in Data ONTAP 6.5.2	19
Release scope.	19
New storage subsystems supported	19
New switch support	19
Bugs fixed	19
Changes in Data ONTAP 6.5.1R1	20
Release scope.	20
Bugs fixed	20
New features in Data ONTAP 6.5.1	21
Release scope.	21
New feature overview	21
New hardware support	21
Additional hardware support	21
Features now supported for the gFiler gateway for IBM	22
Capacity increases on the GF940	22
Nondisruptive upgrade on gFiler gateways	22
NTLMv2 for Windows NT domain users	23
New LDAP features	23
Support for the VERITAS NetBackup Advanced Client	23
New commands in Data ONTAP 6.5.1	24
Changed commands in Data ONTAP 6.5.1	24
New options in Data ONTAP 6.5.1	25
New features in Data ONTAP 6.5R1 and 6.5R2	32
Bug fixes	32
Features of these releases	32
New features in Data ONTAP 6.5	33
Topics in this section	33
New storage subsystems supported	33
New disk (LUN) ownership scheme	33
Gateway sharing channel adapter ports with other hosts.	34
Shared usage of a RAID group.	34
gFiler multiple array family support for Data ONTAP 6.5	34
New protocol support	34
New command if you are using switches	35
Data consolidation enhancements	35
Data protection enhancements	36
Data availability enhancements	38
Data manageability enhancements	39

New commands in Data ONTAP 6.5	40
New options in Data ONTAP 6.5	43
Where to find product documentation and other information	47
Software documentation	47
Compatibility information	47
Searching online documentation	47
 Documentation Changes for Data ONTAP 6.5.4	49
About this section	49
Changes to the gFiler Getting Started Guides	50
Updated information for the Getting Started Guides.	50
Additions to the gFiler Hardware Maintenance Guide	51
About NVRAM5	51
NVRAM5 LEDs	51
NVRAM5 boot error message	52
Replacing the NVRAM5 adapter	53
NVRAM5 media converter	59
Replacing the NVRAM5 media converter	60
Changes to the Setup, Installation, and Management Guide	63
About this section	63
Changes to the disk show option table	63
Addition to the Storage Management Guide—New LDAP features.	64
Additions and enhancements to LDAP support	64
About custom LDAP schemas	64
Custom LDAP schema options in Data ONTAP.	65
Configuring Data ONTAP for custom LDAP schemas	65
About Active Directory LDAP servers	66
Requirements for Active Directory LDAP servers.	66
Configuring Data ONTAP for Active Directory LDAP lookup services	67
Configuring Data ONTAP for non-Active Directory LDAP servers	67
Understanding Data ONTAP LDAP server option precedence	68
Using LDAP services for user mapping	69
Converting to LDAP user mapping from other lookup services.	69
Configuring Data ONTAP for LDAP-based user mapping	70
Improving performance by setting user mapping base and scope values	70
Monitoring and troubleshooting LDAP server connections	72
Active Directory LDAP server connection pooling and selection	73
Changes to the Storage Management Guide	74
About this section	74
vol create	
-r <i>raid_group_size</i> description	74

Types of LDAP servers supported	74
Specifying LDAP servers	75
Specifying preferred servers	75
Prerequisites for turning quotas on.	75
Booting gFiler gateways	75
Changes to the Data ONTAP 6.5 File Access Management Guide	78
About this section	78
Windows password change correction	78
WebDAV home directories supplement	78
Pointing a WebDAV client to a home directory	79
Enabling the WebDAV feature.	79
Changes to the Data ONTAP 6.5 Command Reference	80
Missing options on nlm.trace manual page	80
Misplaced options on nfs.mountd.trace manual page	80
Missing version support on nfs manual page	80

gFiler Data ONTAP 6.5.4 Release Notes

About this document

The Release Notes cover the following topics:

- ◆ [“Changes in Data ONTAP 6.5.4”](#) on page 2
- ◆ [“Known problems or limitations in Data ONTAP 6.5.4”](#) on page 3
- ◆ [“Upgrade information for Data ONTAP 6.5.4”](#) on page 6
- ◆ [“Changes in 6.5.3H1P4”](#) on page 13
- ◆ [“Changes in Data ONTAP 6.5.3/6.5.3P4”](#) on page 14
- ◆ [“Changes in Data ONTAP 6.5.2R1”](#) on page 18
- ◆ [“New Features and Changes in Data ONTAP 6.5.2”](#) on page 19
- ◆ [“Changes in Data ONTAP 6.5.1R1”](#) on page 20
- ◆ [“New features in Data ONTAP 6.5.1”](#) on page 21
- ◆ [“New features in Data ONTAP 6.5R1 and 6.5R2”](#) on page 32
- ◆ [“New features in Data ONTAP 6.5”](#) on page 33
- ◆ [“Where to find product documentation and other information”](#) on page 47
- ◆ [“Documentation Changes for Data ONTAP 6.5.4”](#) on page 49

Where to find information about fixed bugs

To request a list of the bugs fixed since your current version of Data ONTAP was released, see the Data ONTAP - Release Comparison (on the NOW site at <http://now.netapp.com/NOW/cgi-bin/relcmp.on>).

To request more information about an individual bug and to explore other bug-related tools, see Bugs Online (on the NOW site at <http://now.netapp.com/NOW/cgi-bin/bol>).

Requirement for McDATA Fibre Channel switches and directors

If you are using McDATA® Fibre Channel switches or directors, Open System Management Software (OSMS) must be licensed on each switch in the data path between the gFiler gateway and the storage subsystem. See the McDATA switch documentation for more information.

Storage appliance system firmware

Network Appliance recommends that you upgrade to the latest version of system firmware for your gFiler. For a list of available system firmware, see the System Firmware Release Table (on the NOW site at <http://now.netapp.com/NOW/tools/releasetable.shtml>).

Changes in Data ONTAP 6.5.4

Release scope

Data ONTAP 6.5.4 provides several bug fixes and includes the support for NVRAM5-based gFiler systems that was provided in Data ONTAP 6.5.3H1P4. This release also includes all bug fixes implemented in prior Data ONTAP releases.

Known problems or limitations in Data ONTAP 6.5.4

vscan feature supported only for NIS authentication

The gFiler gateway anti-virus vscan feature requires NTLM or Kerberos authentication. The gFiler gateway validates any vscan server that connects to the gFiler gateway and requires the vscan server to connect as a user who is in the gFiler gateway Backup Operators group. This is particularly important for vscan servers because they are allowed special privileges, such as bypassing ACLs and locks.

If you have access to the NOW site, see Bug ID 139111 at Bugs Online (on the NOW site at <http://now.netapp.com/NOW/cgi-bin/bol>) for more information.

No secondary image on systems with 32-MB CompactFlash cards

During a Data ONTAP upgrade on CompactFlash™ card-based systems, the `download` command copies a new boot image to the CompactFlash card and attempts to back up the existing boot image as a secondary boot image. Beginning with Data ONTAP 6.5, two boot images cannot fit on 32-MB CompactFlash media. Therefore, a secondary CompactFlash boot image is not available on systems with a 32-MB CompactFlash card. Although the secondary image is no longer available, the alternative mechanisms of booting over a network (netboot) is more than adequate. It is unlikely that a secondary image will be required.

If your gFiler currently has a 32-MB CompactFlash card and you want to upgrade to a larger card, 256-MB cards are available from Network Appliance. For your convenience, you can order a 256-MB CompactFlash card using the existing Return Material Authorization (RMA) process. To obtain the card, submit a request at the Submit RMA/Return Request page (on the NOW site at http://now.netapp.com/Self-Service/FORMS/frmSearch.asp?ObjType=NA_WEB_SUBMIT_RMA).

Replacement 256-MB CompactFlash cards are provided for the purpose of upgrading to Data ONTAP 6.5 and are available through Best Effort delivery from regional depots only.

Note

gFiler gateways support only CompactFlash media distributed by Network Appliance and its partners.

Client notification messages in Windows domains require NetBIOS

The Windows client notification feature used for client messaging, shutdown notices, and vscan alerts requires NetBIOS over TCP to be enabled in Data ONTAP. On Windows clients, NetBIOS over TCP must be enabled and the Windows Messenger service must be running. (Windows 2003 and Windows XP SP2 clients have messaging disabled by default.)

Windows features not implemented

This release does not implement every available Windows 2000 and Windows XP feature, including the following:

- ◆ Encrypting File System (EFS)
- ◆ Logging of NT File System (NTFS) events in the change journal
- ◆ File Replication Service (FRS)
- ◆ Microsoft® Windows Indexing Service
- ◆ Remote storage through Hierarchical Storage Management (HSM)
- ◆ Local user management from the User Manager or Microsoft Manager Console
- ◆ Quota management from Windows 2000 clients
- ◆ Windows 2000 quota semantics
- ◆ The LMHOSTS file
- ◆ NTFS native compression

Windows client software compatibility restrictions

This version of Data ONTAP is not supported by all versions of NetApp Windows client software. Before installing or upgrading to this version of Data ONTAP, make sure that the SnapManager® and SnapDrive™ versions you are running or plan to install are compatible with this release. For more information about supported versions of Data ONTAP for client software, see the client software's Description page at <http://now.netapp.com/NOW/cgi-bin/software/>.

Note

In most cases, there is a client software upgrade path available if your current client software version does not support this version of Data ONTAP. However, SnapManager for Exchange 5.5 1.1.1R1 is not compatible with this release. SnapManager 3.1 for Microsoft Exchange is the first version of SnapManager compatible with both Data ONTAP 6.5.4 and Microsoft Exchange 5.5.

Moving vFiler storage resources can cause system panics

Before adding existing storage resources to a new vFiler™ virtual filer, and before moving existing storage resources from a vFiler, make sure that no active CIFS sessions are using the storage and that no home directory paths are defined on the storage to be moved. NetApp recommends that you delete all the CIFS shares for the storage before moving it. After the storage is moved to its new destination, the CIFS shares can be recreated.

Failure to deactivate CIFS sessions before moving storage resources can cause the system to panic after one of these commands is issued: `vfiler add`, `create`, `dr`, `migrate`, `move`, or `remove`.

SnapMover and takeover

With SnapMover, you cannot migrate a vFiler during takeover from one node to the partner.

NFS configuration issue for Hummingbird with Kerberos

The Data ONTAP option `nfs.mount_rootonly` should be set to off for implementations that require support for Hummingbird® software using Kerberos v5 authentication.

Group membership for UNIX-to-Windows account mapping

Some group Active Directory group membership information is not obtained when NFS users access shares with Windows-style security. Specifically, Data ONTAP does not retrieve the following membership information:

- ◆ Cross-domain universal groups
- ◆ Nested universal groups
- ◆ Nested domain local groups
- ◆ Nested global groups

Upgrade information for Data ONTAP 6.5.4

About this section

This section provides upgrade requirements and discusses some product changes and issues related to upgrade.

Note

For the most recent information about supported microcode versions, and other requirements, refer to the appropriate support matrices on the NetApp NOW site: the *gFiler Support Matrix for Hitachi, Limited*; the *gFiler Support Matrix for Hitachi Data Systems*; the *gFiler Support Matrix for HP*; and the *gFiler Support Matrix for IBM*.

Requirements for Hitachi, Limited and Hitachi Data Systems storage subsystems

For a storage subsystem provided by Hitachi, Limited or Hitachi Data Systems, ensure that you have completed the following before configuring your gFiler.

Microcode version: The following table shows the minimum requirements for the storage system. Ensure that the minimum requirements are met before you upgrade from a pre-6.5 version of Data ONTAP to Data ONTAP 6.5 or later. Otherwise, the upgrade process fails.

The minimum required microcode versions are as follows:

Storage subsystem model	Microcode version
9970V/9980V	21-06-22-00/00 or 21-06-23-00/00
9910/9960	01-19-26-00/00 or 01-19-30-00/00
9570V	0653/F
9580V/ 9585V	1654A
TagmaStore USP	50-02-14-00/00

Configuration settings: Before starting the upgrade to Data ONTAP 6.5.4, ensure that you have configured the following on the storage subsystem:

For storage system models	Configuration setting
9570V, 9580V, 9585V	Enable No_RSV_ConfMode
TagmaStore USP, 9910, 9960, 9970V, and 9580V	Set System mode 254

Requirements for the storage subsystem for IBM

The storage subsystem License Internal Code for the ESS models 800 and 750 should be 2.2.0.677. The license internal code for models F10 and F20 is 2.2.0.461. Contact IBM Customer Support to obtain these versions.

Upgrade requirements for Data ONTAP

To upgrade to Data ONTAP 6.5.4, you must follow the procedures exactly. NetApp strongly recommends that you familiarize yourself with these issues before upgrading your system:

- ◆ If you are upgrading to Data ONTAP 6.5.4 from a release prior to Data ONTAP 6.5, follow the instructions specific to upgrading from 6.4.x to 6.4.2 to 6.5.1 in the *gFiler Gateway Series Data ONTAP 6.5.1 Upgrade Guide*.
- ◆ If you are upgrading to Data ONTAP 6.5.4 from within the 6.5 family of releases, follow the instructions specific to upgrading from Data ONTAP 6.5 to Data ONTAP 6.5.1 in the *gFiler Gateway Series Data ONTAP 6.5.1 Upgrade Guide*.

GF920 gFiler gateways must be running system firmware 4.2.3 or later to run Data ONTAP 6.5.4; GF980 gateways must be running system firmware 4.3 or later. All other supported gFiler platforms must be running system firmware 4.2.2 or later to run Data ONTAP 6.5.4.

Automatic editing of the /etc/exports file

In the Data ONTAP 6.5 release family, the following operations cause the /etc/exports file to be modified according to the new rules in “New access rules for /etc/exports file” in the *gFiler Gateway Series Data ONTAP 6.5.1 Upgrade Guide*:

- ◆ `vol create`

New volumes are automatically entered in /etc/exports.

Note

When new volumes are created using the `vol create` command, access rules for the new volumes are set by default to `-rw,nosuid` (read-write permissions, `setuid` and `setgid` not allowed) in /etc/exports. If you want different access permissions, you must edit /etc/exports after the `vol create` operation is complete.

- ◆ `vol destroy`

Volume listings are removed from /etc/exports when the volume is destroyed.

- ◆ `vol rename`

When a volume is renamed, the new volume name is automatically entered in /etc/exports.

Some entries have been removed from the /etc/rc file

Data ONTAP 6.5 removed the following commands from the /etc/rc file:

- ◆ `exportfs -a`

- ◆ `nfs on`

These commands are no longer necessary because they are issued automatically when NFS is licensed.

For more information, see the NFS chapter in the *Data ONTAP File Access Management Guide*.

Default behavior change for FTP

An FTP security enhancement option has been added (`ftp.3way.enable`) that changes the default behavior of Data ONTAP. This option prevents clients from redirecting FTP operations to a third-party client or server.

Standard FTP commands allow FTP communications to be redirected to third-party FTP servers. However, this functionality can be exploited using “bounce attacks” to circumvent network security and redirect FTP output (or FTP commands stored in a file) to unauthenticated machines.

In Data ONTAP 6.5: In Data ONTAP 6.5 and later, FTP redirects are disabled by default. You need to modify the value of the `ftp.3way.enable` option to permit FTP redirects.

To enable one client to FTP a file directly from a gFiler gateway to another client, complete the following step.

Step	Action
1	From the Data ONTAP command line, enter the following command: <pre>options ftp.3way.enable on</pre> Result: Redirecting of FTP files to third-party clients is immediately enabled.

Note

This option is persistent across gFiler reboots. Valid values for `ftp.3way.enable` are `on` (allowing FTP redirects) and `off` (not allowing FTP redirects).

Virus scan default timeout option

Beginning with Data ONTAP 6.4.4, the `vscan timeout` option had a default setting of 10 seconds. If your gFiler was upgraded at any time from Data ONTAP 6.4.1x or 6.4.2x and you did not explicitly reset this option, the original default value of 30 seconds is still in effect.

This option controls the length of the waiting period before the scanning client checks the status of a virus scan request. By setting the option to a lower value, you enable the gFiler gateway to determine more quickly whether there is a problem with a virus scan request. NetApp therefore recommends that you set this option to 10 seconds or other lower value appropriate to your configuration.

To view the current setting of the `vscan timeout` option, you would enter the following command at the gFiler gateway console:

```
vscan options timeout
```

To set the `vscan timeout` option to a new value, you would enter the following command at the gFiler gateway console (where *nn* is the new value in seconds):

```
vscan options timeout set nn
```

For more information about virus scanning in Data ONTAP 6.5.3P4, see the *Data Protection Online Backup and Recovery Guide* and the NetApp `vscan(1)` man page.

Planning for upgrading gFiler gateways running SnapMirror

If you are upgrading Data ONTAP on gFiler gateways that are running SnapMirror, you must upgrade the gFiler gateways with SnapMirror destination volumes *before* you upgrade the gFiler gateways with SnapMirror source volumes. For SnapMirror volume replication, the destination volume must run under a version of Data ONTAP that is the same as or later than the version of the SnapMirror source volume.

Note

This requirement applies to both asynchronous and synchronous SnapMirror for volume replication.

The requirement does not apply to SnapMirror for qtree replication or data restoration from tape using the `restore` command. However, NetApp recommends that when you upgrade systems that use these features, upgrade your SnapMirror destination systems and restoration target systems before the corresponding source systems to maintain backward compatibility.

Overview of upgrades for SnapMirror volumes: To upgrade asynchronous or synchronous SnapMirror for volume replication, use the following process.

Stage	Description
1	Identify any destination volumes.
2	Upgrade the gFiler gateways with destination volumes, beginning with the furthest one in the topology.
3	Upgrade the gfiler gateway with the source volume.

The following sections provide more detail about

- ◆ [“Identifying SnapMirror destination volumes”](#) on page 11
- ◆ [“Upgrading gFiler gateways running synchronous SnapMirror”](#) on page 11
- ◆ [“Why you must plan for SnapMirror upgrades”](#) on page 11
- ◆ [“For more information”](#) on page 12

Caution

If you do not upgrade the gFiler gateways with SnapMirror destination volumes before upgrading those that have source volumes, SnapMirror volume replication is disabled until the source gFiler is downgraded or the destination gFiler is upgraded so that the version of Data ONTAP on the destination gFiler is greater than that on the source gFiler.

Identifying SnapMirror destination volumes: SnapMirror source volumes can be replicated to single or multiple destination volumes (replication to multiple destination volumes is also referred to as replication to *cascading destinations*). When you upgrade Data ONTAP, you must identify all destination volumes and then upgrade the gFiler gateways on which they reside before upgrading the gFiler gateway where the source volume resides. In addition, when you upgrade gFiler gateways in a cascading series, upgrade the gFiler gateways in order, beginning with the destination gFiler gateways furthest in your topology from the source gFiler.

To identify gFiler gateways with SnapMirror destination volumes, complete the following step.

Step	Action
1	On the gFiler gateway with the source volume, enter the following command: <pre>snapmirror destinations</pre> Result: The <code>snapmirror</code> command lists all destination volumes, including cascaded destinations. For more information about the <code>snapmirror</code> command and options, see the NetApp <code>snapmirror(1)</code> man page.

Upgrading gFiler gateways running synchronous SnapMirror: Use the same procedure to upgrade gFiler gateways running synchronous SnapMirror as described for gFiler gateways running asynchronous SnapMirror; that is, destination gFiler gateways must be upgraded first.

However, synchronous SnapMirror requires that the source gFiler and destination gFiler run the same version of Data ONTAP; hence, when you upgrade Data ONTAP on gFiler gateways running synchronous SnapMirror, SnapMirror goes into an asynchronous mode. When in asynchronous mode, the source gFiler asynchronously replicates data to the destination every minute until a synchronous replication can be reestablished; that is, until the source gFiler is upgraded so that the same Data ONTAP version is running on destination and source gFiler gateways.

Why you must plan for SnapMirror upgrades: When you upgrade Data ONTAP on gFiler gateways that have a mirrored relationship with each other using SnapMirror, the order in which you upgrade the gFiler gateways is critical. If you do not upgrade in the correct order, you can cause a lapse in SnapMirror replication coverage.

A SnapMirror transfer is initiated when the destination gFiler reads a snapshot of the source gFiler. Therefore, the destination gFiler must be upgraded first, so that it can read the snapshots of the earlier release. If the source gFiler is upgraded first, the destination gFiler cannot read the source gFiler's file system, thereby disabling SnapMirror.

For more information: For more information about running SnapMirror on gFiler gateways configured for network attached storage (NAS), see the *Data ONTAP Data Protection Online Backup and Recovery Guide*.

Changes in 6.5.3H1P4

Release scope

Data ONTAP 6.5.3H1P4 provides support for NVRAM5 in gFiler gateways and clusters. It is based on the Data ONTAP 6.5.3P4 release.

Note

Data ONTAP 6.5.3H1P4 is supported on all gFiler gateways shipped on or after January 10, 2005. Data ONTAP 6.5.3P4 is supported on gFiler gateways shipped before this date.

Requirements for Running Data ONTAP 6.5.3H1P4

All gFiler gateways are supported.

Changes in Data ONTAP 6.5.3/6.5.3P4

- Release scope

Data ONTAP 6.5.3/6.5.3P4 includes new hardware support, new features, and bug fixes. This release also includes all bug fixes implemented in prior Data ONTAP releases, including Data ONTAP 6.5R2, Data ONTAP 6.5.1, Data ONTAP 6.5.1R1, Data ONTAP 6.5.2, and Data ONTAP 6.5.2R1.
- New gFiler platform support

In addition to previous NetApp platforms supported, Data ONTAP 6.5.3/6.5.3P4 supports the new GF980 and GF980c gFiler platforms.

Storage and LUN capacities: Storage capacity and LUN capacity supported by the new gFiler platforms is as follows:

gFiler platform	Maximum capacity	Minimum capacity	LUN capacity
GF980	32 TB	Recommended: 958 GB Required: 575 GB	336
GF980c	64 TB	For each node, single node values apply.	672 (336 on each cluster node)

Note In the table, Required assumes 60 percent compression. A coredump is not guaranteed. Recommended assumes no compression and a guaranteed coredump. A coredump is information written to disk to help with troubleshooting when a system failure occurs.

Configurations for connecting a GF980 to a storage subsystem: For details about connecting your gFiler to your storage subsystem see the GF960 configurations in the *Getting Started* guide for your storage subsystem.

New storage subsystems supported

Data ONTAP 6.5.3/6.5.3P4 adds new gFiler support for storage subsystems provided by Hitachi Limited, Hitachi Data Systems, and HP StorageWorks.

Provider	Additional supported storage subsystems
Hitachi, Limited	Universal Storage Platform (USP)
Hitachi Data Systems	◆ TagmaStore Universal Storage Platform (USP) ◆ 9980V ◆ 9970V ◆ 9960 ◆ 9910 ◆ 9585V ◆ 9580V ◆ 9570V
HP StorageWorks	◆ XP12000 ◆ XP1024 ◆ XP512 ◆ XP128 ◆ XP48

gFiler multiple array family support for Data ONTAP 6.5.3/6.5.3P4

Multiple arrays from the same storage subsystem family can be connected to one gFiler. This section lists the subsystem storage families supported by the gFiler for Data ONTAP 6.5.3/6.5.3P4.

Hitachi Limited SANRISE families are as follows:

- ◆ 99xx, 99xxV series, and USP
- ◆ 9570V, 9580V, 9585V with Fibre Channel disk drives
- ◆ 9570V, 9580V, 9585V with SATA disks

The IBM family is as follows:

- ◆ IBM ESS Model 750, ESS Model 800, and ESS Model 850

The HP family is as follows:

- ◆ HP XP12000, XP1024, XP128, XP512, and XP48

There is no limitation to the number of storage subsystems in the same family that can be connected to a gFiler gateway.

NVRAM5 support in gFiler clusters

NVRAM5 serves as both the NVRAM and the cluster interconnect adapter for all GF980 systems except in MetroCluster configurations that use switch connections.

NVRAM5 slot information for GF980: The GF980 uses the NVRAM5 in both stand-alone and cluster systems. For a stand-alone system, NVRAM5 goes in slot 10. For a cluster system, NVRAM5 goes in slot 11.

Note

NVRAM5 is supported on all gFiler gateways in 6.5.3H1P4.

New options in Data ONTAP 6.5.3P4

New options you can use with Data ONTAP are described in the following table. For each new option that can be used with the options command, the table lists

- ◆ A description of what the option does
- ◆ The type of value used with the option as an argument and the option's default value

For more information about the options command and individual options, see the `na_options(1)` manual page.

Option	Purpose	Value (default)
<code>nfs.export.auto-update</code>	To specify whether automatic updates are performed on the <code>/etc/exports</code> file.	<code>on off</code> (<code>on</code>)
<code>nfs.export.harvest.timeout</code>	To specify how long an entry can remain idle before expiring.	Number of seconds (<code>36000</code>)

Changed option values in Data ONTAP 6.5.3/6.5.3P4

Options with changed default values are described in the following table, which lists

- ◆ A description of what the option does
- ◆ The type of value used with the option as an argument and the option's default value

For more information about the options command and individual options, see the `na_options(1)` manual page.

Option	Purpose	Value (default)
<code>nfs.export.neg.timeout</code>	To specify how long negative entries live in the access cache before being flushed.	Number of seconds (3600)
<code>nfs.export.pos.timeout</code>	To specify how long positive entries live in the access cache before being flushed.	Number of seconds (1800)

Additionally, the maximum values of the `nfs.export.harvest.timeout`, `nfs.export.neg.timeout`, and `nfs.export.pos.timeout` options have been increased to 604,800 seconds (seven days).

NFSv4 client compatibility

If you use NFSv4: When your NFSv4 clients are in a different domain than your NetApp device is in, you might need to enter the client domain name as the value for the Data ONTAP option `nfs.v4.id.domain`, to provide mapping for file ownership and group membership. For more information about mapping options, see RFC 3530 and your client operating system documentation.

If you have any client that needs to access the gFiler using NFSv4, ensure the Data ONTAP option `nfs.v4.enable` is set to on. In new installations, this option is set to off by default.

Note

Data ONTAP has an NFSv4 bug that is known to affect interoperability with the early access release (Solaris Express) for Solaris 10 NFSv4 clients. See Bug ID 138273 at Bugs Online (on the NOW site at <http://now.netapp.com/NOW/cgi-bin/bol>) for more information.

If you do not use NFSv4: Ensure that the Data ONTAP option `nfs.v4.enable` is set to off.

Changes in Data ONTAP 6.5.2R1

Release scope

Data ONTAP 6.5.2R1 addresses a few bug fixes only and does not introduce any new features. It also includes all bug fixes implemented in prior Data ONTAP releases, including Data ONTAP 6.5.2, Data ONTAP 6.5R2, Data ONTAP 6.5.1, and Data ONTAP 6.5.1R1.

Documentation specific to gFiler gateways that use Data ONTAP is provided separately, in the gFiler Data ONTAP *Release Notes*.

New gFiler platform supported

Data ONTAP 6.5.2R1 adds support for the GF270c gFiler platform.

New switch support

Switch support in Data ONTAP now encompasses the following:

- ◆ McData® switch models: 32xx, 4x00, 6xxx for IBM® storage connectivity and MetroCluster configurations
- ◆ Brocade® switch models: 1200/3900/3x00 for IBM storage connectivity (ESS model 800) and MetroCluster configurations; Brocade switch model 3900 for non MetroCluster configurations

Note

gFiler connectivity to the IBM F10 and F20 storage subsystems is supported only for McData switches

Recommendation for DataFabric Manager users

If you are currently running DataFabric Manager® and have the DataFabric Manager Business Continuanace license enabled, Network Appliance recommends that you upgrade to DataFabric Manager 3.0.1. Not doing so results in SnapVault relationship updates to fail with the following error:

```
"destination requested snapshot that does not exist on the source"
```

If you have access to the NOW site, see bugs 128767 and 132355 at [Bugs Online](https://now.netapp.com/NOW/cgi-bin/bol) (on the NOW site at <http://now.netapp.com/NOW/cgi-bin/bol>) for more information about the bugs related to this recommendation.

If you do not have access to NOW, contact your authorized reseller.

New Features and Changes in Data ONTAP 6.5.2

Release scope	Data ONTAP 6.5.2 includes new hardware support and bug fixes. It also includes all bug fixes implemented in prior Data ONTAP releases, including Data ONTAP 6.5R2, Data ONTAP 6.5.1, and Data ONTAP 6.5.1R1.
New storage subsystems supported	For IBM: Data ONTAP 6.5.2 adds support for the IBM ESS Model 2105-F10 and 2105-F20 storage subsystems. See the gFiler Gateway Series Support Matrix for IBM, which is available on the NOW site, for information about any last-minute software requirements for the IBM ESS Models 2105-F10 and 2105-F20 that might be required. Note— gFiler direct-attached storage is not supported for the 2105-F10 or 2105-F20 storage subsystems.
New switch support	This release of Data ONTAP includes added hardware support for the following switches: ◆ McData switch models: 32xx, 4x00, 6xxx ◆ Brocade switch models: 3800/3200
Bugs fixed	For more information about specific bugs fixed in this release, use the Bugs Online tools, available on the NOW site. You can use these tools to: ◆ List changes made to Data ONTAP software since the Data ONTAP release you currently have installed. ◆ Obtain the latest information about known issues and workarounds for Data ONTAP software. ◆ Track updates to issues that affect your Data ONTAP implementation.

Changes in Data ONTAP 6.5.1R1

Release scope

Data ONTAP 6.5.1R1 addresses a single bug fix. This release includes all bug fixes implemented in prior Data ONTAP releases, including Data ONTAP 6.5.1 and Data ONTAP 6.5R2.

Note

Although Network Appliance has completed testing for the Data ONTAP 6.5.1R1 release, your gFiler vendor might not have completed the required testing to ensure support. Contact your gFiler vendor concerning the availability of support for this release.

Bugs fixed

Data ONTAP 6.5.1R1 addresses Bug 130383. This bug causes gFiler gateways to experience system panics when attacked by Windows® clients that are infected with certain Internet worms designed to take over Windows machines. No new features or other bug fixes are included in this release.

Although this vulnerability does not allow gFiler gateways to be infected or taken over, infected Windows machines that connect to gFiler gateways can cause an invalid memory reference to occur on the gFiler gateway. When this invalid memory reference occurs, the gFiler gateway panics.

Data ONTAP 6.5.1R1 adds a security measure to prevent these system panics.

Currently known names for the malicious code worm that takes advantage of this vulnerability:

- ◆ GaoBot
- ◆ AgoBot
- ◆ W32.Gaobot.AAY
- ◆ W32.HLLW.Gaobot.gen
- ◆ W32/Gaobot.worm.gen.d
- ◆ Backdoor.Agobot.kr

For more information about Bug 130383, enter ID 130383 on the Bugs Online page of the NOW site.

For more information about this worm and its latest variants, see your virus scanning software company's web site and the Microsoft® web site for security bulletins.

New features in Data ONTAP 6.5.1

Release scope

Data ONTAP 6.5.1 includes new features, extended hardware support, performance enhancements, and bug fixes. Data ONTAP 6.5.1 also includes all features and bug fixes implemented in previous Data ONTAP releases.

New feature overview

Data ONTAP 6.5.1 adds the following features and enhancements:

- ◆ New hardware support, including new gFiler platforms
- ◆ New features for the gFiler gateway for IBM
- ◆ Capacity increases on the GF940/GF940c
- ◆ Nondisruptive upgrade for Data ONTAP 6.5 and later
- ◆ UNIX® platform support with SnapDrive™ software
- ◆ Enhancements for NTLMv2 in Windows NT® 4 domains
- ◆ New LDAP features
- ◆ Support for the VERITAS® NetBackup® Advanced Client to manage NetApp Snapshot™ and SnapRestore® operations

New hardware support

The following hardware support was added to Data ONTAP 6.5.1.

New gFiler platforms supported: Data ONTAP 6.5.1 adds support for the following gFiler platforms:

- ◆ GF270c
- ◆ GF920/GF920c

Note

MetroCluster and SyncMirror cannot be used with the GF270c.

Additional hardware support

Data ONTAP 6.5.1 adds support for the following:

- ◆ MetroCluster with iSCSI-attached hosts
You can now order a MetroCluster configuration with iSCSI.
- ◆ Semi-synchronous and synchronous SnapMirror® functionality with Cisco® switches

- ◆ Updated versions of the following network interface cards:
 - ❖ Single 10Base-T/100Base-TX/1000Base-T (X1027C)
 - ❖ Single 1000Base-SX (X1025E)
 - ❖ Dual 10Base-T/100Base-TX/1000Base-T (X1037B)
 - ❖ Dual 1000Base-SX (X1035B)
- ◆ IBM 3592 Fibre Channel tape drive

For information about Data ONTAP support for hardware, see the *System Configuration Guide*.

Features now supported for the gFiler gateway for IBM

Data ONTAP 6.5.1 now supports the following features for the gFiler gateway for IBM. Previously, these features were supported for the gFiler gateway for Hitachi®, Limited but not for the gFiler gateway for IBM.

- ◆ SnapMover™ functionality
See “[New SnapMover feature for workload distribution](#)” on page 39 for more information about this feature.
- ◆ SyncMirror
See “[SyncMirror support](#)” on page 38 for more information about this feature.
- ◆ Semi-synchronous and synchronous SnapMirror functionality
See “[Synchronous SnapMirror](#)” on page 36 for more information about this feature.
- ◆ MetroCluster
See “[MetroCluster support](#)” on page 38 for more information about this feature.
- ◆ Brocade® 3900/12000

Capacity increases on the GF940

The maximum capacity for the GF940 was increased to 12 TB. The maximum capacity for the GF940c was increased to 24 TB.

Nondisruptive upgrade on gFiler gateways

In a *nondisruptive upgrade*, clustering technology is used to enable a takeover gFiler to assume the functions of the “failed” partner while the failed partner is being upgraded. One gFiler, therefore, is always alive. Because the gFiler gateway’s cluster partner fulfills service requests during the gFiler gateway’s upgrade, no disruption in service is experienced by the clients.

Additionally, because the takeover gFiler assures continuous availability of the failed gFiler's storage, more extensive upgrades requiring a system halt—such as system firmware upgrades and hardware adapter replacements—can be performed without disrupting services that are based on stateless protocols (such as NFS, FCP, and iSCSI).

You can use the nondisruptive cluster upgrade method only within the Data ONTAP 6.5 release family. See the *gFiler Gateway Series Upgrade Guide* for more information.

Note

The nondisruptive upgrade method cannot be used for upgrading a single node.

**NTLMv2 for
Windows NT
domain users**

NTLM (NT LAN Manager) authentication for NT domains is now supported. NTLM for AD domains was supported in a previous release.

With this additional feature, NTLMv2 is supported for gFiler gateways that are members of both NT domains and AD domains.

New LDAP features

New LDAP features include the following:

- ❖ Ability to use Active Directory for LDAP lookup services
- ❖ Support for LDAP servers with custom schemas
- ❖ Ability to define multiple LDAP search bases and multiple search scopes for each search
- ❖ Ability to use an LDAP server for user account mapping
- ❖ Dynamic pooling of Active Directory LDAP server connections (per domain), for enhanced performance
- ❖ Periodic verification of best possible Active Directory server connection

See “[Changes to the Storage Management Guide](#)” on page 74 for details.

**Support for the
VERITAS
NetBackup
Advanced Client**

Support for the VERITAS NetBackup Advanced Client to manage NetApp Snapshot and SnapRestore operations was added in Data ONTAP 6.5.1. This capability is available through the Advanced Client Network Attached Storage (NAS) Snapshot interface, which is a signature feature of VERITAS NetBackup 5.1.

New commands in Data ONTAP 6.5.1

Data ONTAP 6.5.1 includes new and modified commands that you can use when managing your gFiler. For each command, the following table lists

- ◆ The purpose of the command
- ◆ The location of documentation about the feature

Command	Purpose	Documentation
<code>exportfs -b</code>	Barricades the export to deny write access to a member of a cluster.	manual page
<code>exportfs -p</code>	“Persistent export”: When performed from the Data ONTAP command line, the <code>-p</code> option adds the export as an entry in the <code>etc/exports</code> file, so it will be available in future sessions (after reboot).	manual page
<code>vfiler migrate -f</code>	Allows vFiler™ data migration regardless of licensing, SnapMirror or SnapVault™ relationship, and file system version, provided the local file system version is equal to or greater than the source file system version.	manual page
<code>vol options</code> <code>[volume_name]</code> <code>fractional_reserve</code>	Designates the percentage of <code>overwrite_reserve</code> to be taken away from free space in a volume for overwrites of reserved objects, such as Logical Unit Numbers (LUNs) and files.	100 (0-100)

Changed commands in Data ONTAP 6.5.1

The following commands have changed their behavior in Data ONTAP 6.5.1.

Behavior changes for `cifs domaininfo` command: The `cifs domaininfo` command now provides information about Active Directory LDAP server connections, as well as domain controllers.

Behavior changes for `cifs prefcdc` command: In addition to specifying preferred domain controllers, the `cifs prefcdc` list is now used by Data ONTAP to designate preferred Active Directory LDAP servers.

Behavior changes for `cifs resetdc` command: The `cifs resetdc` command now breaks and reestablishes connections to LDAP servers, as well as domain controllers. Data ONTAP rediscovers the LDAP servers for the domain

and establishes a new LDAP server connection, using a method similar to the domain controller selection process. For information about domain controller selection, see the *Data ONTAP File Access Management Guide*.

New options in Data ONTAP 6.5.1

New options that you can use with Data ONTAP are described in the following table. For each new option that can be used with the `options` command, the table lists the following:

- ◆ A description of what the option does
- ◆ The type of value used with the option as an argument and the option's default value

For more information about the `options` command and individual options, see the `na_options(1)` manual page.

Option	Purpose	Default value or example
<code>coredump.dump.attempts</code>	Sets the number of attempts to dump the core following the first panic, for troubleshooting purposes.	2 (0-5)
<code>ldap.ADdomain</code>	Specifies the fully qualified domain of the Active Directory to be used for LDAP lookup services. When this value is not specified and no value has been specified for <code>ldap.preferred.servers</code> and <code>ldap.servers</code> , Data ONTAP chooses the local domain.	Example: group.company.com
<code>ldap.base.passwd</code>	Specifies the base in Distinguished Name (DN) format to use for user password lookups.	Example: cn=People, o=org

Option	Purpose	Default value or example
<code>ldap.base.group</code>	Specifies the base in DN format to use for group lookups.	Example: <code>cn=People, o=org</code>
<code>ldap.usermap.base</code>	Enables LDAP-based user and group mapping.	Example: <code>cn=People, dc=domain1</code>
<code>ldap.usermap.attribute.unixaccount</code>	Specifies the attribute name to use for UNIX account lookups.	<code>unixaccount</code>
<code>ldap.usermap.attribute.windowsaccount</code>	Specifies the attribute name to use for Windows account lookups.	<code>windowsaccount</code>
<code>ldap.nssmap.objectClass.posixAccount</code>	Specifies the object class name to be mapped to the <code>posixAccount</code> object class in an RFC2307-compliant schema.	<code>posixAccount</code>
<code>ldap.nssmap.objectClass.posixGroup</code>	Specifies the object class name to be mapped to the <code>posixGroup</code> object class in an RFC2307-compliant schema.	<code>posixGroup</code>
<code>ldap.nssmap.attribute.groupname</code>	Specifies the attribute name to be mapped to the group name attribute in an RFC2307-compliant schema.	<code>cn</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.memberUid</code>	Specifies the attribute name to be mapped to the member UID attribute in an RFC 2307-compliant schema.	<code>memberUid</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.gidNumber</code>	Specifies the attribute name to be mapped to the <code>gidNumber</code> attribute in an RFC2307-compliant schema.	<code>gidNumber</code> (RFC2307 attribute value by default)

Option	Purpose	Default value or example
<code>ldap.base.group</code>	Specifies the base in DN format to use for group lookups.	Example: <code>cn=People, o=org</code>
<code>ldap.usermap.base</code>	Enables LDAP-based user and group mapping.	Example: <code>cn=People, dc=domain1</code>
<code>ldap.usermap.attribute.unixaccount</code>	Specifies the attribute name to use for UNIX account lookups.	<code>unixaccount</code>
<code>ldap.usermap.attribute.windowsaccount</code>	Specifies the attribute name to use for Windows account lookups.	<code>windowsaccount</code>
<code>ldap.nssmap.objectClass.posixAccount</code>	Specifies the object class name to be mapped to the <code>posixAccount</code> object class in an RFC2307-compliant schema.	<code>posixAccount</code>
<code>ldap.nssmap.objectClass.posixGroup</code>	Specifies the object class name to be mapped to the <code>posixGroup</code> object class in an RFC2307-compliant schema.	<code>posixGroup</code>
<code>ldap.nssmap.attribute.groupname</code>	Specifies the attribute name to be mapped to the group name attribute in an RFC2307-compliant schema.	<code>cn</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.memberUid</code>	Specifies the attribute name to be mapped to the member UID attribute in an RFC 2307-compliant schema.	<code>memberUid</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.gidNumber</code>	Specifies the attribute name to be mapped to the <code>gidNumber</code> attribute in an RFC2307-compliant schema.	<code>gidNumber</code> (RFC2307 attribute value by default)

Option	Purpose	Default value or example
<code>ldap.base.group</code>	Specifies the base in DN format to use for group lookups.	Example: <code>cn=People, o=org</code>
<code>ldap.usermap.base</code>	Enables LDAP-based user and group mapping.	Example: <code>cn=People, dc=domain1</code>
<code>ldap.usermap.attribute.unixaccount</code>	Specifies the attribute name to use for UNIX account lookups.	<code>unixaccount</code>
<code>ldap.usermap.attribute.windowsaccount</code>	Specifies the attribute name to use for Windows account lookups.	<code>windowsaccount</code>
<code>ldap.nssmap.objectClass.posixAccount</code>	Specifies the object class name to be mapped to the <code>posixAccount</code> object class in an RFC2307-compliant schema.	<code>posixAccount</code>
<code>ldap.nssmap.objectClass.posixGroup</code>	Specifies the object class name to be mapped to the <code>posixGroup</code> object class in an RFC2307-compliant schema.	<code>posixGroup</code>
<code>ldap.nssmap.attribute.groupname</code>	Specifies the attribute name to be mapped to the group name attribute in an RFC2307-compliant schema.	<code>cn</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.memberUid</code>	Specifies the attribute name to be mapped to the member UID attribute in an RFC 2307-compliant schema.	<code>memberUid</code> (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.gidNumber</code>	Specifies the attribute name to be mapped to the <code>gidNumber</code> attribute in an RFC2307-compliant schema.	<code>gidNumber</code> (RFC2307 attribute value by default)

Option	Purpose	Default value or example
<code>ldap.nssmap.attribute.uid</code>	Specifies the attribute name to be mapped to the uid attribute in an RFC2307-compliant schema.	uid (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.uidNumber</code>	Specifies the attribute name to be mapped to the uidNumber attribute in an RFC2307-compliant schema.	uidNumber (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.userPassword</code>	Specifies the attribute name to be mapped to the userPassword attribute in an RFC2307-compliant schema.	userPassword (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.homeDirectory</code>	Specifies the attribute name in a custom LDAP schema to be mapped to the homeDirectory attribute in an RFC2307-compliant schema.	homeDirectory (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.loginShell</code>	Specifies the attribute name to be mapped to the loginShell attribute in an RFC2307-compliant schema.	loginShell (RFC2307 attribute value by default)
<code>ldap.nssmap.attribute.gecos</code>	Specifies the attribute name to be mapped to the geocos attribute in an RFC2307-compliant schema.	gecos (RFC2307 attribute value by default)
<code>nfs.response.trigger</code>	Specifies, in seconds, the threshold for logging of Network File System (NFS) requests, to diagnose whether NFS timeouts are caused by the server or the network.	60

Option	Purpose	Default value or example
<code>nfs.response.trace</code>	Forces all NFS requests that exceed the time value in <code>nfs.response.trigger</code> to be logged.	<code>off</code> (<code>on</code> <code>off</code>)
<code>nfs.rpcsec.ctx.high</code>	Specifies the number of unique Generic Security Services Application Programming Interface (GSSAPI) NFS authentications (related to a Kerberos principal and NFS client pair) beyond which Data ONTAP will conserve resources by eliminating authentication records (oldest first) until falling below this value. When set at 0, records are only purged as new ones arrive.	0 (0-4294967295)
<code>nfs.rpcsec.ctx.idle</code>	Specifies how long to keep GSSAPI NFS authentications before conserving resources by allowing their contexts to be purged.	360 (0-4294967295)
<code>rpc.nlm.tcp.port</code>	Assigns a port for Network Lock Manager (NLM) Remote Procedure Call (RPC) service over TCP.	4045
<code>rpc.nlm.upd.port</code>	Assigns a port for NLM RPC service over User Datagram Protocol (UDP).	4045
<code>rpc.nsm.tcp.port</code>	Assigns a port for Network Status Monitor (NSM) RPC service over TCP.	4047

Option	Purpose	Default value or example
<code>rpc.nsm.udp.port</code>	Assigns a port for NSM RPC service over UDP.	4047
<code>rpc.mountd.udp.port</code>	Assigns a port for MOUNTD RPC service over UDP.	4046
<code>rpc.mountd.tcp.port</code>	Assigns a port for MOUNTD RPC service over TCP.	4046
<code>rpc.pcnfsd.tcp.port</code>	Assigns a port for Personal Computer NFS Daemon (PCNFSD) RPC service over TCP.	4048
<code>rpc.pcnfsd.udp.port</code>	Assigns a port for PCNFSD RPC service over UDP.	4048
<code>rpc.rquotad.udp.port</code>	Assigns a port for PCNFSD RPC service over UDP.	4049

New features in Data ONTAP 6.5R1 and 6.5R2

Bug fixes

Data ONTAP 6.5R1 6.5R2 addressed bug fixes only. Data ONTAP 6.5R2 included all bugs fixed in 6.5R1 and 6.5; Data ONTAP 6.5R1 included all bugs fixed in 6.5.

Features of these releases

Neither Data ONTAP 6.5R1 nor 6.5R2 introduced new features. However, each release included all features introduced in Data ONTAP 6.5.

Note

Although NetApp has completed testing for the Data ONTAP 6.5R1 and Data ONTAP 6.5R2 releases, your gFiler vendor might not have completed the required testing to ensure support. Contact your gFiler vendor concerning the availability of support for this release.

New features in Data ONTAP 6.5

Topics in this section

This section contains the following topics:

- ◆ [“New storage subsystems supported”](#) on page 33
- ◆ [“New disk \(LUN\) ownership scheme”](#) on page 33
- ◆ [“Gateway sharing channel adapter ports with other hosts”](#) on page 34
- ◆ [“Shared usage of a RAID group”](#) on page 34
- ◆ [“gFiler multiple array family support for Data ONTAP 6.5”](#) on page 34
- ◆ [“New protocol support”](#) on page 34
- ◆ [“New command if you are using switches”](#) on page 35
- ◆ [“Data consolidation enhancements”](#) on page 35
- ◆ [“Data protection enhancements”](#) on page 36
- ◆ [“Data availability enhancements”](#) on page 38
- ◆ [“Data manageability enhancements”](#) on page 39
- ◆ [“New commands in Data ONTAP 6.5”](#) on page 40
- ◆ [“New options in Data ONTAP 6.5”](#) on page 43

New storage subsystems supported

Data ONTAP 6.5 adds support for the following storage subsystems:

- ◆ IBM ESS Model 800
See the gFiler Gateway Series Support Matrix for IBM, which is available on the NOW site, for information about any last-minute software requirements for the IBM ESS Model 800 that might be required.
- ◆ SANRISE® 9580V with Fibre Channel disk drives and with all compatibility settings set for the 9570

New disk (LUN) ownership scheme

gFiler gateways now use a software-based scheme, referred to as *disk (LUN) ownership*, instead of the fixed scheme to control access of gFiler gateways to LUNs that a storage subsystem makes available to gFiler gateways. The primary benefits of the new disk (LUN) ownership scheme are

- ◆ You can leave LUNs unowned until you need them. When you need them, you can use a command at the gFiler gateway console to add them to the storage that the gFiler gateway is using.

- ◆ If you need to move data service from one gFiler to another because one gFiler is handling too much load, you can use the new SnapMover feature to do so at the software level. You do not need to reconfigure hardware or the LUN access controls on the storage subsystem to change which gFiler is servicing data requests.

See the *gFiler Gateway Series Software Setup, Installation, and Management Guide* for information about disk (LUN) ownership and how to use it when setting up and managing your gFiler.

Gateway sharing channel adapter ports with other hosts

If you are running Data ONTAP 6.5 or later, you can share channel adapter ports among gFiler gateways and non-gFiler hosts.

Shared usage of a RAID group

LUNs created out of the same parity group (array) can be allocated to multiple hosts—gFiler as well as non-gFiler hosts.

gFiler multiple array family support for Data ONTAP 6.5

Multiple arrays from the same storage subsystem family can be connected to one gFiler. This section lists the storage subsystem families supported by Data ONTAP 6.5.

Hitachi Limited SANRISE families are as follows:

- ◆ 99xx, 99xxV series
- ◆ 9570, 9580V with Fibre Channel disk drives and with all compatibility settings set for the 9570

The IBM family is as follows:

- ◆ IBM ESS Model 800

There is no limitation to the number of storage subsystems in the same family that can be connected to a gFiler gateway.

New protocol support

Data ONTAP 6.5 supports iSCSI over IP for the gFiler gateway.

New command if you are using switches

If you are using switches, you use the `disk.target_port.cmd_queue_depth` option on gFiler gateways to limit the number of commands that gFiler gateways can send to the target port on the storage subsystem. Your goal is to limit the commands sent to the target port from all initiators together (gFiler gateways and non-gFiler nodes) so that performance is not affected. If you are reverting to an earlier release, see the *gFiler Gateway Series Data ONTAP 6.5 Upgrade Guide*.

Data consolidation enhancements

Data consolidation has been enhanced in the following areas: new features for block access protocols, CIFS enhancements, NFS enhancements, WebDAV support, LDAP support enhancements, and security enhancements.

New features for block access protocol: For iSCSI networks, this release provides the following enhancements:

- ◆ vFilers, with the purchase of the MultiStore® license.
For more information, see the *Data ONTAP MultiStore Management Guide*.
- ◆ An iSCSI MIB, which enables Simple Network Management Protocol (SNMP) monitoring of gFiler iSCSI activity.
For more information, see the *Data ONTAP Network Management Guide*.

CIFS enhancements: This release provides the following enhancements for CIFS:

- ◆ Support for restoration of Snapshot™ files and folders using shadow copy tools in Windows 2003, or Microsoft shadow copy client software for pre-Windows 2003 clients
- ◆ Improved methodology for selection of domain controllers
- ◆ Support for the Windows `xcopy /d` (copy by date) command
- ◆ Ability to configure viewing of hidden files with the `options cifs.show_dotfiles` command
- ◆ Multiple policy support for file screening operations
- ◆ Support for Windows NT null session clients
- ◆ Ability to retrieve domain information with the `cifs domaininfo` command

For more information, see the *Data ONTAP File Access Management Guide*.

NFS enhancements: For Network File System (NFS), this release includes the following enhancements:

- ◆ File delegation for NFS 4
- ◆ Kerberos configuration through the `nfs setup` script

- ◆ Improvements in access verification that provide better security and reliability of user connections
- ◆ File export options that have been standardized and are more intuitive
- ◆ Ability to trace denied `mountd` requests with the `nfs.mountd.trace` command

For more information, see the *Data ONTAP File Access Management Guide*.

WebDAV support: This release adds support for the WebDAV protocol. When you set the `cifs.home_dir` option, users can access their home directories by using WebDAV by entering the following URL:

```
http://gFiler/~username
```

For more information, see the *Data ONTAP File Access Management Guide*.

LDAP support: This release provides the following LDAP enhancements:

- ◆ Group support
- ◆ Workgroup authorization

For more information, see the *Data ONTAP Storage Management Guide*.

Security enhancements: This release includes the following security enhancements:

- ◆ The gFiler gateway now supports the Internet Protocol Security (IPsec) protocol on the X1017 card. The IPsec protocol implementation in NetApp systems now supports Kerberos authentication with CIFS clients in addition to authentication using pre-shared keys.

For more information, see the *Data ONTAP Network Management Guide*.

- ◆ An FTP security enhancement option has been added that prevents clients from redirecting FTP operations to a third-party client or server.

For more information, see “[Default behavior change for FTP](#)” on page 8.

Data protection enhancements

Data protection has been enhanced with Synchronous SnapMirror, SnapLock™ Enterprise, and larger inodes. For synchronous SnapMirror, you need an additional license.

Synchronous SnapMirror: Data ONTAP 6.5 adds support for synchronous SnapMirror replication, which enables remote protection of mission-critical data and ensures that the data is up-to-date and ready for immediate use during disaster recovery. The source and destination appliances can be either gFiler gateways or filers.

Note

Semi-synchronous and synchronous SnapMirror were not supported for the gFiler gateway for IBM in Data ONTAP 6.5 and the 6.5 R releases, but they are supported in Data ONTAP 6.5.1 and later.

The following factors should be considered before using SnapMirror in synchronous mode:

- ◆ You should have a SnapMirror configuration that can adequately handle the anticipated replication traffic.
 - ❖ The source and destination gFiler gateways or filers should be powerful enough with regards to processor power (computation power and speed), disk speed, and number of disks or LUNs used for replicating data (spindles).
 - ❖ The power and disk geometry of the destination gFiler or filer must be the same as the source gFiler or filer.
 - ❖ The network bandwidth between the source and destination must be at least as much as the anticipated write traffic rate (MB/s) at the source.

- ◆ You can send replication traffic over IP transports on Ethernet or Fibre Channel.

- ◆ You can send replication traffic over two paths.

This gives you the option of either balancing the load between the two paths or reserving the second path for failover.

- ◆ You can achieve better throughput of replication traffic by using the best path available for transferring data and by not sharing the path with other traffic.
- ◆ You can define with an option the amount of lag time between when data is written to the source gFiler or filer and when replication data is sent to the destination gFiler or filer from the source gFiler or filer.

This option is useful when balancing the need for synchronizing replication and gFiler performance. Some data, such as financial database data, must be as synchronous as possible because if there is a disaster, lag time between source and destination is not acceptable. For data that does not necessarily need such close synchronization, you can use this option.

- ◆ With any mission-critical application, you should consider involving professional services when you review your site needs and deployment decisions.

SnapMirror takes the complication out of installing, setting up, and administering synchronous replication, but you still have the standard issues when making trade-offs on gFiler or filer performance, type of application, data, and site priorities.

Licensing requirements for synchronous SnapMirror: To use synchronous SnapMirror, you need both of the following:

- ◆ Synchronous SnapMirror license
The synchronous SnapMirror license for the gFiler gateway is PLFQNUJ.
- ◆ SnapMirror license

Before installing the synchronous SnapMirror license, review the previously listed factors for synchronous SnapMirror to determine whether synchronous replication is appropriate for your organization. For more information about synchronous SnapMirror, see the *Data ONTAP Data Protection, Online Backup, and Recovery Guide*.

SnapLock Enterprise software: This new feature provides nonwritable data-permanence storage that enables compliance with government records retention and business records-keeping best practices.

Larger inodes, supporting greater numbers of subdirectories: You can now create up to 99,998 subdirectories.

For more information, see the *Data ONTAP Storage Management Guide*.

Data availability enhancements

For the gFiler gateway, new to this release is support for SyncMirror and MetroCluster.

SyncMirror support: New to Data ONTAP 6.5 for the gFiler gateway for Hitachi, Limited is support for the optional NetApp SyncMirror product. Customers who choose to use SyncMirror typically have two storage subsystems and cannot tolerate any down time. SyncMirror enables you to implement RAID mirroring for redundancy. The SyncMirror software creates two physically separated copies of the volume. When two storage subsystems exist, one copy of the volume is on each storage subsystem. SyncMirror is typically used in a MetroCluster deployment.

To use SyncMirror, you must have a license.

Note

SyncMirror was not supported for the gFiler gateway for IBM in Data ONTAP 6.5 and the 6.5R releases, but it is supported in Data ONTAP 6.5.1 and later.

MetroCluster support: The primary goal of a MetroCluster is to provide redundant storage services to mission-critical applications in case of site-specific disasters (for example, in the case of fire or long-term power loss). The

MetroCluster feature requires SyncMirror and a gFiler gateway cluster configured for mirrored volumes to build a system that provides continuous updating of data and data protection over a distance.

To use MetroCluster, you must have a license.

Note

MetroCluster is not supported for the gFiler gateway for IBM in Data ONTAP 6.5 and the 6.5R releases, but it is supported in Data ONTAP 6.5.1 and later.

For more information about MetroCluster with a gFiler gateway, see the *Getting Started with the gFiler Guide* and the *gFiler Gateway Series Software Setup, Installation, and Management Guide*.

Data manageability enhancements

New to this release is SnapMover and enhancements for the FilerView® interface and the MultiStore feature.

New SnapMover feature for workload distribution: New to this release for the gFiler gateway is SnapMover. SnapMover works in conjunction with the MultiStore feature. Its sole purpose is to enable you to move MultiStore virtual filer vFilers quickly and efficiently between gFiler gateways that are *sharing the same storage subsystem*. SnapMover uses the disk (LUN) ownership scheme to migrate (move) a vFiler instead of copying it, which makes migration quite fast. In contrast, the standard Data ONTAP vFiler migrate facility, which uses the SnapMirror feature, copies data. Copying the data is time-consuming. Migration of vFilers with SnapMover is transparent to NFS and iSCSI users; for CIFS users, when a vFiler is migrated, it appears as if the server were rebooted.

Two licenses are required to use SnapMover—one for SnapMover and one for MultiStore.

Note

SnapMover is not supported for the gFiler gateway for IBM in Data ONTAP 6.5 and the 6.5R releases, but it is supported in Data ONTAP 6.5.1.

For more information about SnapMover, see the *gFiler Gateway Series Software Setup, Installation, and Management Guide*.

FilerView enhancements: FilerView enhancements in this release include the following:

- ◆ A wizard for NFS exports

- ◆ A DataFabric® Manager (DFM) configuration page and hyperlinks that launch DataFabric Manager (when DataFabric Manager is configured)
- ◆ New license management fields for the SnapManager Domino, SnapMirror Synchronous, and SnapMover features
- ◆ A link to the Syslog Translator page on the NOW site, which indexes syslog messages to Event Management System (EMS) event definitions
- ◆ Volume Add and Volume Modify wizards
- ◆ Plex management distinct from volume management
- ◆ New online Help

MultiStore enhancements: MultiStore enhancements include the following:

- ◆ iSCSI support for each vFiler
- ◆ IPSec support for each vFiler
- ◆ Simplified vFiler resource management by providing pseudo-root directory vFilers that use the CIFS protocol
- ◆ Replacement of the `license vfiler` command with the `license multistore` command

For more information, see the *Data ONTAP MultiStore Management Guide*.

New commands in Data ONTAP 6.5

This release includes new and modified commands you can use in managing your gFiler. For each command, the following table lists

- ◆ The feature that it enables
- ◆ The location of documentation about the feature

Command	Purpose	Documentation
<code>cifs changefilerpwd</code>	Schedules an immediate password change for the gFiler gateway's Windows domain (computer) account	<code>na_cifs_changefilerpwd(1)</code> manual page
<code>cifs domaininfo</code>	Displays connected domain controllers and domain controller selection settings	<code>na_cifs_domaininfo(1)</code> manual page

Command	Purpose	Documentation
cifs prefdc	Specifies preferred domain controllers	na_cifs_prefdc(1) manual page Chapter 3, “File Access Using CIFS,” in the <i>Data ONTAP File Access Management Guide</i>
disk assign disk upgrade_ownership disk show	Adds disk ownership	na_disk(1) manual page <i>gFiler Gateway Series Software Setup, Installation, and Management Guide</i> and the <i>gFiler Gateway Series Upgrade Guide</i>
disk remove_ownership	Removes disk ownership	na_disk(1) manual page <i>gFiler Gateway Series Software Setup, Installation, and Management Guide</i> and the <i>gFiler Gateway Series Upgrade Guide</i>
exportfs -f	Flushes the access cache	na_exportfs(1) manual page Chapter 2, “File Access Using NFS,” in the <i>Data ONTAP File Access Management Guide</i>
exportfs -c	Checks rules in the access cache	
exportfs -d	Reverts the /etc/exports file	
exportfs -s	Determines the actual storage path of an export	
exportfs -r	Reexports only the persistent exports	

Command	Purpose	Documentation
<code>fpolicy help</code>	Lists file policy commands	na_fpolicy(1) manual page Chapter 2, “File Access Using CIFS,” in the <i>Data ONTAP File Access Management Guide</i>
<code>fpolicy show</code>	Displays file policies	
<code>fpolicy create</code>	Creates a new file policy	
<code>fpolicy destroy</code>	Destroys an existing file policy	
<code>fpolicy enable</code>	Enables a file policy	
<code>fpolicy disable</code>	Disables a file policy	
<code>fpolicy ext[ension]</code>	Displays or modifies included or excluded file extensions for a policy	
<code>fpolicy options</code>	Enables or disables file policies, or specifies backup policy servers	
<code>fpolicy servers</code>	Displays or halts primary file policy server	
<code>ftp stat</code>	Displays FTP statistics	na_ftp(1) manual page Chapter 4, “File Access Using FTP,” in the <i>File Access Management Guide</i>
<code>ftp stat -z</code>	Resets FTP statistics	
<code>igroup set</code>	Manages igroup throttles	na_igroup(1) manual page
<code>lock status [-f -h - n]</code>	Prints lock status organized by file, host, or numbers of locks	na_lock(1) manual page
<code>quota allow disallow</code>	Enables or disables quotas on volumes	na_quota(1) manual page
<code>snap list -n</code>	Does not display snapshot space consumption during restore	na_snap(1) manual page

Command	Purpose	Documentation
vfiler migrate	Moves a vFiler to a different host	na_vfiler(1) manual page Chapter 6, “Disaster Recovery and Data Migration,” in the <i>Data ONTAP Multistore Management Guide</i>

Unsupported commands: The following commands are no longer supported in Data ONTAP 6.5:

- ◆ setmk—Sets the Master Key in the Registry.
- ◆ cdacmd—CDA Command ContentDirector commands.

New options in Data ONTAP 6.5

New options you can use with Data ONTAP are described in the following table. For each new option that can be used with the `options` command, the table lists

- ◆ A description of what the option does
- ◆ The type of value used with the option as an argument and the option’s default value

For more information about the `options` command and individual options, see the `na_options(1)` manual page.

Option	Purpose	Value (default)
<code>cifs.show_dotfiles</code>	Enables support for the Windows Folder Options View setting on a client to show or hide files with a period (.) as the first character of the file name	on/off (on)
<code>cifs.trace_dc_connection</code>	Enables tracing of domain controller discovery and selection operations	on/off (off)
<code>cifs.weekly_W2K_password_change</code>	Enables an automatic weekly password change for the gFiler gateway domain (machine) account	on/off (off)
<code>cifs.widelink.ttl</code>	Specifies the “time to live” value to designate how long a client can cache the path specified in a widelink	Number and unit of time (10m)

Option	Purpose	Value (default)
<code>fpolicy.enable</code>	Enables all file policy operations	on off (on)
<code>ftp.3way.enable</code>	Enables redirect of FTP operations to an unauthenticated third party	on off (off)
<code>ftpd.log.enable</code>	Enables logging of FTP operations	on off (on)
<code>ftpd.log.filesize</code>	Specifies the maximum size for an FTP log file before a new log file is opened	A number and qualifier (512k)
<code>ftpd.log.nfiles</code>	Specifies the number of log files to be created before the first log file is overwritten	Number from 1 to 100, inclusive (6)
<code>ftpd.max_connections_threshold</code>	Enables you to set the warning threshold to a certain percentage of <code>ftpd.max_connections</code> , which is configurable through options	A percentage (75%)
<code>iscsi.iswt.tcp_window_size</code>	Specifies the gFiler gateway's receive TCP window size for all iSCSI connections involving the iSCSI software target (ISWT) driver; use with caution	Number of bytes (131400)
<code>ndmpd.password_length</code>	Specifies either 8-byte or 16-byte NDMP-specific passwords	8 16 (16)
<code>nfs.export.neg.timeout</code>	Specifies how long negative entries live in the access cache before being flushed	Number of seconds (3600)
<code>nfs.export.pos.timeout</code>	Specifies how long positive entries live in the access cache before being flushed	Number of seconds (36000)

Option	Purpose	Value (default)
<code>nfs.ifc.xmt.high</code>	Specifies the limit for incoming requests from a client that is not keeping up with items in the send buffer.	Number from the value of <code>nfs.ifc.xmt.low</code> to 64, inclusive (16)
<code>nfs.ifc.xmt.low</code>	Specifies the point at which requests are once again granted to a client that has exceeded the limit specified with <code>nfs.ifc.xmt.high</code>	Number from 0 to the value of <code>nfs.ifc.xmt.high</code> , inclusive (8)
<code>nfs.mountd.trace</code>	Enables logging of denied mountd requests	on/off (off)
<code>nfs.v4.read_delegation</code>	Enables delegation to an NFS client for file read operations	on/off (on)
<code>nlm.trace</code>	Enables tracing of asynchronous Network Lock Manager requests and requests blocked by a conflict that requires the server to make callbacks to the client	on/off (off)
<code>webdav.enable</code>	Enables the WebDAV protocol	on/off (off)

Unsupported options: The following options are no longer supported in Data ONTAP 6.5:

- ◆ `cd.data_product_xfer_port`
- ◆ `cd.enable`
- ◆ `cd.host_attributes`
- ◆ `cd.master_key`
- ◆ `cd.mctp_dtu_size`
- ◆ `cd.mctp_external_address`

- ◆ `cd.mctp_global_channel_address`
- ◆ `cd.mctp_group_leader_address`
- ◆ `cd.mctp_port`
- ◆ `cd.mctp_single_ip_mode`
- ◆ `cd.mctp_throughput_max`
- ◆ `cd.my_external_address_for_ccm`
- ◆ `coredump.cf.dump_partner_nvram`
- ◆ `dafs.receive_multi_segment.enable`
- ◆ `dafs.request_long_limit`
- ◆ `ssh.upgraded`

Where to find product documentation and other information

Software documentation

To view the documentation for this release, see the gFiler Gateway Series documentation at http://now.netapp.com/knowledge/docs/ontap/ontap_index.shtml and select the link for gFiler documentation.

To download the documentation, select ZIP file format or tar file format.

Compatibility information

The following matrixes provide various types of compatibility information, such as supported switches and switch connectivity and topology, supported network interface cards, and supported NetApp applications:

- ◆ gFiler Gateway Series Support Matrix for Hitachi, Limited
- ◆ gFiler Gateway Series Support Matrix for Hitachi Data Systems
- ◆ gFiler Gateway Series Support Matrix for IBM
- ◆ gFiler Gateway Series Support Matrix for HP

To access the Support Matrixes, go to http://now.netapp.com/knowledge/docs/ontap/ontap_index.shtml and select the link for gFiler documentation.

Searching online documentation

The NOW Natural Language PowerSearch tool on the Service and Support page at <http://now.netapp.com/Self-Service/Forms/SupportHome.asp> enables you to search the following sources of information:

- ◆ Product Documents
- ◆ Knowledge Base Solutions
- ◆ Bugs Online
- ◆ NOW Forums
- ◆ White Papers
- ◆ Partner Knowledge Bases

Documentation Changes for Data ONTAP 6.5.4

About this section

This section covers additions and changes in the gFiler documentation and in the Data ONTAP documentation library that pertain to the gFiler.

This section contains the following topics:

- ◆ [“Changes to the gFiler Getting Started Guides”](#) on page 50
- ◆ [“Additions to the gFiler Hardware Maintenance Guide”](#) on page 51
- ◆ [“Changes to the Setup, Installation, and Management Guide”](#) on page 63
- ◆ [“Addition to the Storage Management Guide—New LDAP features”](#) on page 64
- ◆ [“Changes to the Storage Management Guide”](#) on page 74
- ◆ [“Changes to the Data ONTAP 6.5 File Access Management Guide”](#) on page 78
- ◆ [“Changes to the Data ONTAP 6.5 Command Reference”](#) on page 80

Changes to the gFiler Getting Started Guides

Updated information for the Getting Started Guides

The following gFiler Getting Started guides state that NVRAM5 applies to the GF980 only.

- ◆ *Getting Started with the gFiler for Hitachi Data Systems*
- ◆ *Getting Started Guide with the gFiler for HP*

With the release of Data ONTAP 6.5.3H1P4, NVRAM5 is supported on all gFiler gateways.

The *Getting Started Guide with the gFiler for Hitachi, Limited* and the *Getting Started Guide with the gFiler for IBM* do not contain information about NVRAM5 because they were written before NVRAM5 was supported on any models.

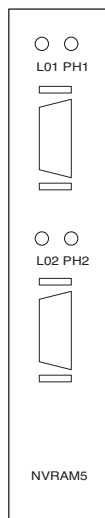
Additions to the gFiler Hardware Maintenance Guide

About NVRAM5

NVRAM5 is supported in Data ONTAP 6.5.3H1P4 and later for all gFiler gateways. Add the following information to your gFiler *Hardware Maintenance Guide*.

NVRAM5 LEDs

The following illustration shows the LED locations for the NVRAM5 adapter. There are two sets of LEDs by each port that operate when you use NVRAM5 as a cluster interconnect adapter. There is also an internal red LED that you can see through the faceplate.



What the LEDs mean: The following table describes the LEDs for an NVRAM5 adapter.

LED type	Indicator	Status	Description
Internal	Red	Blinking	There is valid data in the NVRAM5. Caution _____ This status might occur if your system did not shut down properly, as in the case of a power failure or panic. The data is replayed when the system boots up again. _____
PH1	Green	On	The physical connection is working.
		Off	No physical connection.
LO1	Yellow	On	The logical connection is working.
		Off	No logical connection.

NVRAM5 boot error message

The following table describes the error message associated with NVRAM5.

Boot error message	Explanation	Corrective action
<i>NVRAM: wrong pci slot</i>	The system cannot detect the NVRAM adapter.	◆ For a GF920, GF940 or GF960, make sure that the NVRAM4 adapter is securely installed in slot 7 or the NVRAM5 adapter is securely installed in slot 11. ◆ For a GF980 in a stand-alone configuration, make sure that the NVRAM5 adapter is securely installed in expansion slot 10. ◆ For a GF980 in a clustered configuration, make sure that the NVRAM5 adapter is securely installed in expansion slot 11.

Replacing the NVRAM5 adapter

You use the NVRAM5 adapter in cluster mode when your gFiler is in a cluster configuration.

Caution

You must perform a clean shutdown before you replace the NVRAM5 adapter.

NVRAM5 cabling: When your GF900 system is in a clustered configuration, cable the NVRAM5 adapter on each gFiler to each other.

Note

MetroCluster configurations do not use the NVRAM5 adapter.

There are two types of cables for the NVRAM5 cluster interconnect adapter:

- ◆ Copper
- ◆ Fiber optic

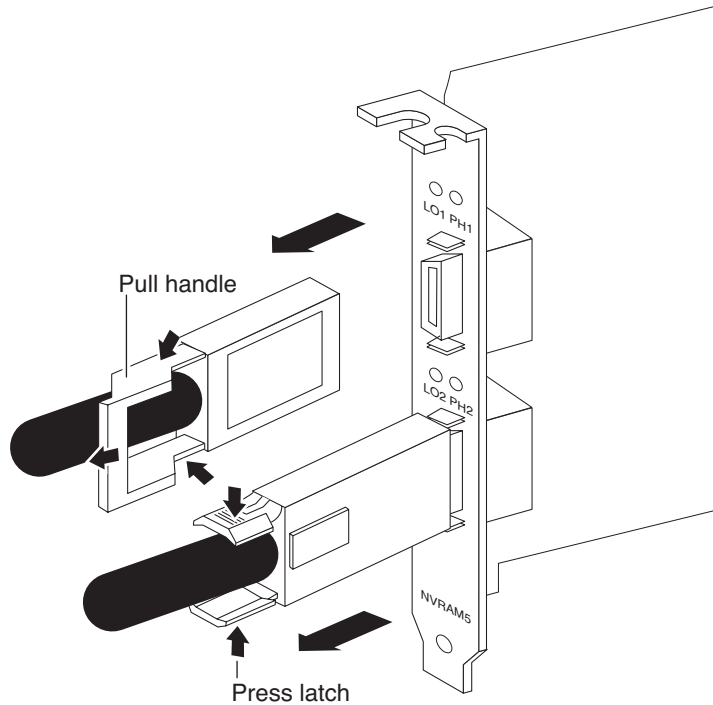
Note

If you plan on using a cable with a distance greater than 10 meters, you must use fiber cabling.

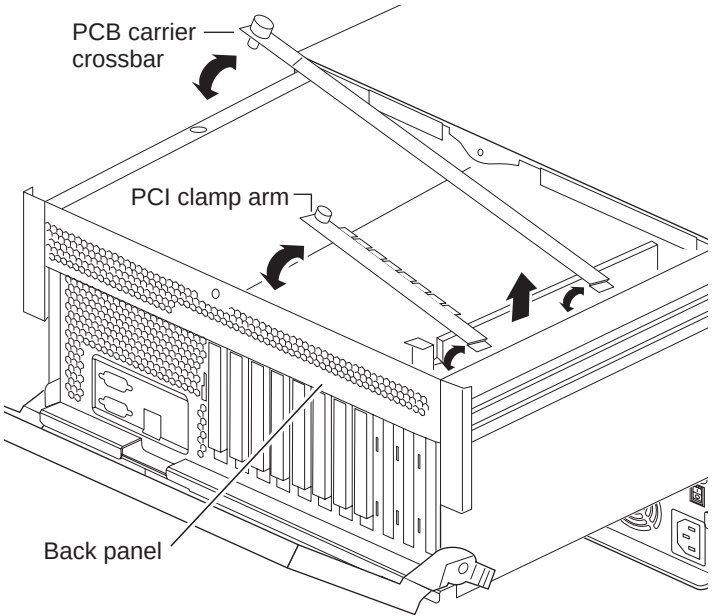
Removing the NVRAM5 adapter: To remove the NVRAM5 adapter, complete the following steps, using the illustration for reference.

Note

There are two varieties of copper cables, both of which are shown in the following illustration.



Step	Action	
1	Make sure that you are properly grounded before proceeding.	
2	If you are...	Then...
	Disconnecting copper cables with a pull-back handle	Complete these steps, using the illustration for reference. 1. Hold the copper IB connector with one hand, and then carefully pull back the latch of the top cable and slowly pull the IB connector from the NVRAM5 adapter port. 2. Repeat this step for the cable connecting to the bottom port. 3. Go to Step 3.
	Disconnecting copper cables with press-latches	Complete these steps, using the illustration for reference. 1. Press the latches of the top cable and slowly pull the IB connector from the NVRAM5 adapter port. 2. Repeat this step for the cable connecting to the bottom port. 3. Go to Step 3.
	Using fiber cables with a media converter	Go to “ Replacing the NVRAM5 media converter ” on page 60 to remove your media converter.
3	Open your PCB carrier, as described in the <i>gFiler Hardware Maintenance Guide</i> .	

Step	Action
4	By completing the following substeps, disengage the NVRAM5 adapter from the motherboard, using the illustration for reference.  The diagram illustrates the disengagement of the NVRAM5 adapter from the motherboard. It shows a perspective view of the adapter's internal components. A label 'PCB carrier crossbar' points to a horizontal bar at the top of the adapter. A label 'PCI clamp arm' points to a vertical arm on the right side. A label 'Back panel' points to the front-facing panel of the adapter. Arrows indicate the removal of the crossbar and the clamp arm. A small inset shows the NVRAM5 adapter being removed from the motherboard. 1. Remove the PCB carrier crossbar by loosening the thumbscrew and lifting the crossbar away from the top of the PCB carrier. 2. Remove the PCI clamp arm by loosening the thumbscrew and lifting the arm away from the back panel.
5	Pull upward on the top edge of the expansion adapter and lift it out of the chassis.
6	If you are installing a replacement adapter, go to “Installing an NVRAM5 adapter” on page 57.

Step	Action	
7	If you are...	Then...
	Converting your gFiler from cluster mode to stand-alone mode	1. Install the NVRAM5 adapter in slot 10, as described in “Installing an NVRAM5 adapter” on page 57. 2. Install a slot cover for PCI slot 11, if unused. 3. Close the PCB carrier, as described in the <i>gFiler Hardware Maintenance Guide</i>.
	Installing a replacement NVRAM5 adapter for cluster mode	Go to “ Installing an NVRAM5 adapter ” on page 57.

Installing an NVRAM5 adapter: To install an NVRAM5 adapter, complete the following steps.

Step	Action
1	Open your PCB carrier, as described in the <i>gFiler Hardware Maintenance Guide</i> . Make sure that you are properly grounded.
2	Unlatch the PCI clamp arm by loosening the thumbscrew, and then remove it from the back panel.
3	Remove the PCB carrier crossbar arm by loosening the thumbscrew and lifting it from the PCB carrier.

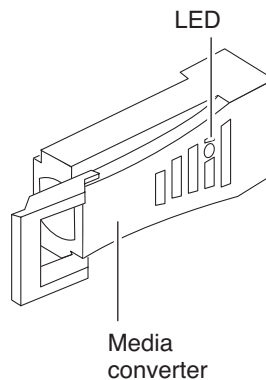
Step	Action	
4	If you are...	Then...
	Installing a new NVRAM5 adapter in a stand-alone system or converting your gFiler from a clustered to stand-alone system	1. Take the adapter out of the antistatic bag and remove the port protectors from the adapter. 2. Install the NVRAM5 adapter in slot 10, as described in Step 5.
	Installing a new NVRAM5 adapter in a clustered system or converting your gFiler from stand-alone to clustered system	1. Take the adapter out of the antistatic bag and remove the port protectors from the adapter. 2. Install the NVRAM5 adapter in slot 11, as described in Step 5. Note_____ For fabric-attached clusters, the NVRAM5 adapter is installed in slot 10.
5	Holding the NVRAM5 adapter by its top edge, with the faceplate near the back of the machine, lower the adapter into the slot until its connector edge meets the grooves in the appropriate expansion slot. The faceplate of the adapter should be in position against the back panel, and should cover the endplate slot on the back panel.	
6	Press carefully on the top edge of the adapter until the edge connector is seated in the expansion slot.	
7	Bring the PCB carrier crossbar over the top of the NVRAM5 adapter and secure it by tightening the thumbscrew.	
8	Push the PCI clamp arm back into place and tighten the thumbscrew to secure it to the back panel.	
9	Close your PCB carrier, as described in the gFiler <i>Hardware Maintenance Guide</i> .	

Step	Action	
10	If you have...	Then...
	Installed an NVRAM5 adapter in a stand-alone system	Go to Step 11 .
	Installed an NVRAM5 adapter in a clustered system	1. Reconnect the clustered nodes by cabling the NVRAM5 cluster interconnect adapters, as described in the cluster guide. Note—— If you are using fiber optic cables, go to “Installing a media converter” on page 62. 2. Go to Step 11.
11	Power on your gFiler.	
12	Run diagnostics on your entire system.	

NVRAM5 media converter

The media converter enables you to use fiber cabling to cable your gFiler gateways in a clustered configuration.

Media converter LEDs: The following illustration shows the LED locations for your NVRAM5 media converter.



Media converter LEDs: The following table describes the LEDs for an NVRAM5 media converter.

Indicator	Status	Description
Green	On	Normal operation.
Green/Amber	On	Power is present but link is down.
Green	Flickering or off	Power is present but link is down.

Replacing the NVRAM5 media converter

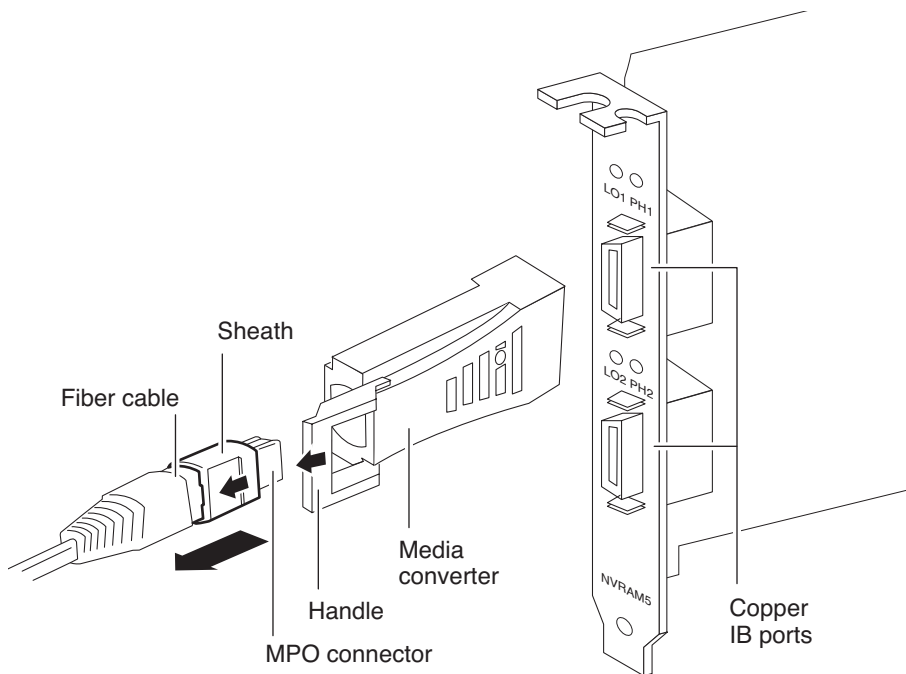
Your NVRAM5 media converter attaches to an MPO connector and plugs into the IB port on the NVRAM5 adapter when your appliance is in a clustered configuration. Replacing the NVRAM5 media converter consists of the following procedures:

- ◆ “[Removing the media converter](#)” on page 60
- ◆ “[Installing a media converter](#)” on page 62

Removing the media converter: To remove your media converter, complete the following steps, using the illustration for reference.

Caution

You must perform a clean shutdown before you replace your media converter.



Step	Action
1	Starting with the top port, grasp the media converter firmly with one hand. With your other hand, pull the handle so that the latches open, and then gently remove the media converter IB connector from your NVRAM5 adapter port.
2	To disconnect the cable, grip the connector sheath by the top and bottom between your finger and thumb, hold the sides of the media converter firmly with your other hand, and then gently remove the cable MPO connector from the media converter.
3	Repeat steps 1 through 2 for the bottom cable, if applicable.

Step	Action	
4	If...	Then...
	You are replacing the media converter	Go to “ Installing a media converter ” on page 62.
	You are switching from fiber to copper cabling	1. Gently plug the IB connector on the copper cable into the NVRAM5 adapter top port. 2. Repeat Step 1 for the bottom port on your NVRAM5 adapter.

Installing a media converter: To install a media converter, complete the following steps.

Step	Action
1	For each media converter, plug the MPO connector on the fiber cable into your media converter.
2	Plug the media converter IB connector into the bottom port on your NVRAM5. Repeat this step for the top port on your NVRAM5.
3	Check LED status to ensure that you have physical connectivity. ◆ For media converter LEDs, go to “Media converter LEDs” on page 59. ◆ For NVRAM5 LED descriptions, go to “NVRAM5 LEDs” on page 51.

Changes to the Setup, Installation, and Management Guide

About this section This section includes additional information for the *gFiler Gateway Series Setup, Installation, and Management Guide*.

Changes to the disk show option table Replace the table on page 45, in Chapter 3, “Providing Setup Information,” with the following table. The existing table is missing an entry for the `disk show` option (no parameters) and the description of the `disk show -v` option is not clear.

disk show option	Information displayed
<code>disk show -v</code>	Shows all LUNs that are assigned to the gFiler host on the storage subsystem to which the gFiler is connected.
<code>disk show -a</code>	Shows all LUNs that have an owner.
<code>disk show -n</code>	Shows all LUNs that do not have an owner.
<code>disk show</code>	Shows only the LUNS owned by a gFiler or, if the gFiler is in a cluster, the LUNs owned by the two gFiler gateways in the cluster.

Addition to the Storage Management Guide—New LDAP features

Additions and enhancements to LDAP support

Data ONTAP 6.5.1 and later provides the following additions and enhancements to existing LDAP functionality:

- ◆ [“About custom LDAP schemas”](#) on page 64
- ◆ [“Configuring Data ONTAP for custom LDAP schemas”](#) on page 65
- ◆ [“Configuring Data ONTAP for non-Active Directory LDAP servers”](#) on page 67
- ◆ [“Understanding Data ONTAP LDAP server option precedence”](#) on page 68
- ◆ [“Using LDAP services for user mapping”](#) on page 69
- ◆ [“Converting to LDAP user mapping from other lookup services”](#) on page 69
- ◆ [“Removing map entries from the usermap.cfg file”](#) on page 69
- ◆ [“Configuring Data ONTAP for LDAP-based user mapping”](#) on page 70
- ◆ [“Improving performance by setting user mapping base and scope values”](#) on page 70
- ◆ [“Monitoring and troubleshooting LDAP server connections”](#) on page 72
- ◆ [“Active Directory LDAP server connection pooling and selection”](#) on page 73

About custom LDAP schemas

In previous releases, Data ONTAP supported only LDAP servers that comply with RFC2307, which specifies a Network Information Service (NIS)-style schema. Data ONTAP 6.5.1 and later provides support for LDAP servers with custom (not RFC2307-compliant) schemas.

You enable Data ONTAP to query a custom LDAP database by entering the schema’s custom attribute names into the corresponding Data ONTAP LDAP options.

Custom LDAP schema options in Data ONTAP

The following new options are set by default to the attribute names specified in RFC2307.

Option	Default value (per RFC2307)
<code>ldap.nssmap.objectClass.posixAccount</code>	<code>posixAccount</code>
<code>ldap.nssmap.objectClass.posixGroup</code>	<code>posixGroup</code>
<code>ldap.nssmap.objectClass.groupname</code>	<code>groupname</code>
<code>ldap.nssmap.attribute.memberUid</code>	<code>memberUid</code>
<code>ldap.nssmap.attribute.uid</code>	<code>uid</code>
<code>ldap.nssmap.attribute.uidNumber</code>	<code>uidNumber</code>
<code>ldap.nssmap.attribute.gidNumber</code>	<code>gidNumber</code>
<code>ldap.nssmap.attribute.userPassword</code>	<code>userPassword</code>
<code>ldap.nssmap.attribute.homeDirectory</code>	<code>homeDirectory</code>
<code>ldap.nssmap.attribute.loginShell</code>	<code>loginShell</code>
<code>ldap.nssmap.attribute.gecos</code>	<code>gecos</code>

Configuring Data ONTAP for custom LDAP schemas

From the command line, modify the string value of Data ONTAP custom schema options to match the corresponding objects in your LDAP schema.

For example, for a custom LDAP schema in which the object containing Group ID (GID) numbers is “groupid,” you would enter the following command:

```
options ldap.nssmap.attribute.gidNumber groupid
```

Step	Action
1	Configure the Data ONTAP <code>ldap.nssmap</code> options to match your custom LDAP server schema. Example: options ldap.nssmap.objectClass.posixAccount Users Specify values for each Data ONTAP schema option that corresponds to a customized object in your LDAP schema.

About Active Directory LDAP servers

Data ONTAP 6.5.1 or later provides the ability to connect to Active Directory using an SASL (Simple Authentication Security Layer) bind for LDAP lookup services. To use Active Directory for LDAP services, enter the fully qualified Active Directory domain into the Data ONTAP option `ldap.ADdomain`.

As Windows-to-UNIX mapping is performed using Active Directory, Data ONTAP does the following:

- ◆ Verifies that the user account exists within the Active Directory domain specified for that account
- ◆ Performs a query to the Active Directory domain specified in the `ldap.ADdomain` option
- ◆ Returns the UNIX user account information and verifies that the user account exists

Requirements for Active Directory LDAP servers

To use Active Directory as your LDAP server

- ◆ A valid CIFS license is required
- ◆ The gFiler must be joined to an Active Directory domain

Configuring Data ONTAP for Active Directory LDAP lookup services

To specify Active Directory LDAP lookup services, complete the following step.

Step	Action
1	If your UNIX user account information is in Active Directory, or if it is in a non-Active Directory LDAP server that is configured to allow anonymous user searches, go to Step 2. To configure Data ONTAP for simple LDAP server authentication, enter the user name and password to be used for LDAP lookups into the <code>ldap.name</code> and <code>ldap.passwd</code> options, respectively: <pre>options ldap.name user_name options ldap.passwd password</pre>
2	In the <code>etc/nsswitch.conf</code> file, specify “ldap” on the <code>passwd</code> entry, the <code>group</code> entry, or both, to designate LDAP as the lookup service to use.
3	If you have a custom schema, enter values for NSSMAP options, as described in the section “Configuring Data ONTAP for custom LDAP schemas” on page 65.
4	From the Data ONTAP command line, enter <pre>options ldap.ADdomain [fully_qualified_domain_name]</pre> Note _____ The domain you enter must be either the local domain or a domain that shares a trust relationship with the local domain. _____ Example: <pre>options ldap.ADdomain group.company.com</pre>

Configuring Data ONTAP for non-Active Directory LDAP servers

Data ONTAP provides the ability to designate one or more LDAP servers by entering IP addresses or fully qualified domain names, separated by commas, into the following Data ONTAP options:

- ◆ `ldap.preferred.servers`
- ◆ `ldap.servers`

Data ONTAP connects to servers specified by these two option values and attempts to authenticate using a simple bind. Because simple binds do not provide sufficient authentication for Active Directory servers, do not specify Active Directory servers within these two option values.

For more information about configuring Data ONTAP for non-Active Directory Services, see “[Specifying LDAP servers](#)” on page 75 of this document and see the *Data ONTAP Storage Management Guide*.

Understanding Data ONTAP LDAP server option precedence

Data ONTAP chooses an LDAP server based on your LDAP server option settings, as described in the following table.

Server designation option	Server selection order
<code>ldap.preferred.servers</code>	When specified, the servers listed in this option value are tried first, according to list order.
<code>ldap.servers</code>	When no <code>ldap.preferred.servers</code> are specified, or specified servers are not available, servers designated in this option value are tried, according to list order.
<code>ldap.ADdomain</code>	When no <code>ldap.preferred.servers</code> and no <code>ldap.servers</code> are specified or available, servers designated in this option value are tried using domain controller selection methodology. For information about domain controller selection methodology, see the <i>Data ONTAP File Access Management Guide</i> .

Using LDAP services for user mapping

In previous releases, the only way to map between UNIX and Windows user accounts was to use NIS data or to add entries to the `usermap.cfg` file. You can now use your LDAP database to map UNIX-to-Windows and Windows-to-UNIX accounts. Data ONTAP uses the same LDAP mechanism in both directions: UNIX-to-Windows mapping and Windows-to-UNIX mapping.

Converting to LDAP user mapping from other lookup services

If you currently use another form of lookup service, such as NIS, and you convert to LDAP-based lookup services, be aware of the following issues.

Access permissions based on netgroups specified for exports cannot be applied through LDAP:

Data ONTAP does not currently support netgroup-based lookup services for LDAP. If your `etc/exports` file includes any access permissions based on netgroups, make sure you enter all the netgroups into your `etc/netgroup` file and that the netgroup setting in your `etc/nsswitch.conf` file is set to “file.” This ensures that netgroups are resolved locally.

Note

If you do not configure Data ONTAP netgroup entries to be resolved locally and your `etc/exports` file specifies permissions for a netgroup, *all* users are denied access to that share when the LDAP lookup fails.

The `usermap.cfg` file is used for user mapping instead of LDAP information, if mapping entries are present:

If you are converting from local user mapping to LDAP-based user mapping, remove mapping entries from the `usermap.cfg` file (except for null session entries), as described in the following section.

Removing map entries from the `usermap.cfg` file:

If you already have user mapping information specified in the `etc/usermap.cfg` file, this information takes precedence over LDAP information. When you want to convert to LDAP-based user mapping, copy and save the user mapping entries in the `usermap.cfg` file for archival purposes (in case you want to restore them later), then remove all entries (other than null session entries) from the `usermap.cfg` file.

Note

If you configured Data ONTAP for null sessions, make sure you leave the null session client entry in the `usermap.cfg` file. For more information about null session configuration, see the *Data ONTAP File Access Management Guide*.

Configuring Data ONTAP for LDAP-based user mapping

By default, LDAP-based user mapping is disabled. (Data ONTAP retrieves user mapping information from the `etc/usermap.cfg` file.)

Note To allow Data ONTAP access to LDAP lookup services if your UNIX user account information is stored in a non-Active Directory LDAP server, that LDAP server must be configured to allow either simple authentication or anonymous user searches.

To enable LDAP-based user mapping, complete the following steps.

Step	Action
1	From the Data ONTAP command line, specify a value for the option <code>ldap.usermap.attribute.windowsaccount</code> . options ldap.usermap.attribute.windowsaccount
2	Extend your LDAP schema to include the user object attribute you entered in Step 1 .
3	Enter the following command: options ldap.usermap.enable on Determine whether you want to improve performance by setting a separate search base or search base and scope for user mapping, as described in the following section.

Improving performance by setting user mapping base and scope values

LDAP options were added to set search base and scope, to limit attribute searches to the appropriate areas of your LDAP database. Setting these options improves the speed of LDAP lookups.

Use the following syntax when specifying search base and scope. Search base and scope values must correspond to the structure of your LDAP data.
`options ldap.usermap.base "base[:scope] [:base[:scope]]"`

Example 1:

```
options ldap.usermap.base "ou=People,dc=domain0:BASE"
```

Entering this command sets the search base for user mapping lookups to `ou=People,dc=domain0` and the search scope to `BASE`.

Example 2:

```
options ldap.usermap.base "(ou=People,dc=domain0):BASE,o=org"
```

The use of parentheses applies the specified search scope (BASE) to `ou=People,dc=domain0`. The unspecified search scope for the `o` ("org") object defaults to SUBTREE.

For more information about setting search base and scope to narrow database lookup searches, see the documentation applicable to your LDAP implementation.

Specifying base and scope values: To specify base and scope values for all LDAP lookup services, complete the following steps.

Note

The values you assign using this procedure apply to *all* LDAP lookups unless you enter separate search base and scope values for user mapping.

Step	Action
1	Set the <code>ldap.base.passwd</code> base and scope search values for password lookups, as they are defined in your LDAP database. Example: <pre>options ldap.base.passwd "ou=People,dc=companydomain,dc=com"</pre>
2	Set the <code>ldap.base.group</code> base and scope search values for password lookups, as they are defined in your LDAP database. Example: <pre>options ldap.base.group "ou=Groups,dc=companydomain,dc=com"</pre>

Note

When specified, search base and scope information entered for `ldap.base.passwd` and `ldap.base.group` takes precedence over the search base and scope set for `ldap.base`, and for password and group lookups.

Monitoring and troubleshooting LDAP server connections

Displaying connection status for all LDAP server types: To display information about LDAP server connection status for all server types, complete the following step.

Step	Action
1	From the Data ONTAP command line, enter the following command: <pre>netstat</pre> Result: Both Active Directory and non-Active Directory LDAP server connection state information is shown on port 389 (or the non-default value assigned using the <code>ldap.port</code> option).

Displaying Active Directory LDAP server information: To display information about current Active Directory LDAP server connections and Active Directory LDAP server selection preferences, complete the following step.

Step	Action
1	From the Data ONTAP command line, enter the following command: <pre>cifs domaininfo</pre> Result: Following the list of domain controller connections and domain controller selection preferences, a list of Active Directory LDAP server connections is displayed, followed by the list of LDAP server selection preferences.

Troubleshooting Active Directory LDAP server connections: To log Active Directory LDAP server connection attempts, complete the following step.

Step	Action
1	From the Data ONTAP command line, enter the following command: <pre>options cifs.trace_dc_connection</pre> Result: Information about attempts to connect Active Directory LDAP servers are entered in the system log.

Active Directory LDAP server connection pooling and selection

Data ONTAP performs the following operations to improve LDAP performance:

- ◆ Active Directory LDAP server connections are pooled on a per-domain basis.
- ◆ When no response is received from the current LDAP server, subsequent connections are made to the next best available LDAP server.
- ◆ Once every minute, Data ONTAP checks to determine whether a better LDAP server became available.
- ◆ Every four hours, Data ONTAP queries the available Active Directory LDAP servers and reorders the list, sorting servers in the following order:
 - ❖ Preferred servers, left in the order specified by the `prefdc` command
 - ❖ Favored servers, sorted by the fastest response time
 - ❖ Other Active Directory LDAP servers, sorted by fastest response time

Changes to the Storage Management Guide

About this section

This section provides replacement text for sections of the Data ONTAP 6.5 *Storage Management Guide* that have been

- ◆ Updated to reflect changes in Data ONTAP 6.5.1
- ◆ Identified to require further explanation
- ◆ Found to be in error

Use this information to update and/or replace the existing text, as described in each section.

vol create **-r *raid_group_size*** **description**

The following `vol create` syntax description on page 114 has changed:

```
vol create volname [-m] [-t {raid_4|raid_dp}]  
[-r raid_group_size] disk_list
```

Replace the description for the `-r raid_group_size` option with the following:

raid-group-size is the maximum number of disks (LUNs) that you want RAID groups created in this volume to have. If the last created RAID group contains fewer disks (LUNs) than the value specified, any new disks (LUNs) that are added to this volume are added to this RAID group until it has the number of disks (LUNs) specified. After that, a new RAID group is created for any additional disks (LUNs) added to the volume.

Types of LDAP **servers supported**

Replace the section titled “Types of LDAP servers supported,” on page 271 with the following section.

A partial list of LDAP servers that are supported by Data ONTAP include the following:

- ◆ Netscape® servers
- ◆ iPlanet servers
- ◆ OpenLDAP servers
- ◆ Novell® eDirectory servers

Specifying LDAP servers

In Step 1 of the procedure “Specifying LDAP servers” on page 272, make the following command syntax correction (space-separated rather than comma-separated server names).

Original syntax	Correct syntax
options ldap.servers “ <i>name</i> [, <i>name</i>]”	options ldap.servers “ <i>name</i> [<i>name</i>]”

Specifying preferred servers

In Step 1 of the procedure “Specifying preferred servers” on page 272, make the following command syntax correction (space-separated rather than comma-separated server names).

Original syntax	Correct syntax
options ldap.servers.preferred “ <i>name</i> [, <i>name</i>]”	options ldap.servers.preferred “ <i>name</i> [<i>name</i>]”

Prerequisites for turning quotas on

In the section “Prerequisites for turning quotas on” on page 361, the requirement for the /etc/quotas file to have no errors or misspellings has been removed. The presence of an invalid user, group, or qtree name no longer prevents quota initialization from succeeding. Invalid entries are flagged at the console and in the /etc/messages file.

Booting gFiler gateways

The gFiler gateways are configured to boot from 32-MB or 256-MB PC CompactFlash™ cards. If you upgraded your gFiler gateways for Data ONTAP 6.5 or later, either your 32-MB CompactFlash cards have been repartitioned as described in the *Upgrade Guide*, or you have upgraded to 256-MB CompactFlash cards.

If you reboot your gFiler, the system reboots by default in normal mode. You can also invoke a boot menu that enables you to reboot in alternative modes for the following reasons:

- ◆ To correct configuration problems
- ◆ To recover from a lost password
- ◆ To correct certain disk configuration problems

To boot or reboot an upgraded gFiler, complete the following steps.

Step	Action	
1	If....	Then...
	Your gFiler is turned on	From the system console, enter the following command: <code>reboot</code> Result: The gFiler begins the boot process.
	Your gFiler is turned off	Turn on your gFiler. Result: The gFiler begins the boot process.
2	If....	Then...
	You want the gFiler to boot automatically in normal mode	Allow the gFiler to reboot uninterrupted until the following prompt appears: <code>root logged in from console</code> You are done.
	You want to select from a menu of alternative boot modes	When prompted to do so, press Ctrl-C to display the boot menu. Result: The gFiler displays the following boot menu: 1) Normal Boot 2) Boot without /etc/rc 3) Change Password 4) Initialize all disks 5) Maintenance mode boot Selection (1-5)?

Step	Action	
3	Choose one of the boot types shown in the following table by entering the corresponding number.	
	Task	Boot type
	Boot the gFiler normally.	Normal boot (1)
	Troubleshoot and repair configuration problems. Note_____ Booting without /etc/rc causes the gFiler to use only default options settings; disregard all options settings you put in /etc/rc; and disable some services, such as <code>syslog</code>. _____	Boot without /etc/rc (2)
	Perform some volume and disk operations and get detailed volume and disk information. Maintenance mode is special for the following reasons: ◆ Most normal functions, including file system operations, are disabled. ◆ A limited set of commands is available for diagnosing and repairing disk and volume problems. ◆ You exit Maintenance mode with the <code>halt</code> command. To reboot the appliance, enter boot after the firmware <code>ok</code> prompt.	Maintenance mode boot (5)

Changes to the Data ONTAP 6.5 File Access Management Guide

About this section

This section provides replacement text for sections for the Data ONTAP 6.5 *File Access Management Guide* for sections that have been

- ◆ Identified to require further explanation
- ◆ Found to be in error

Use the information in this section to update and/or replace the existing text.

Windows password change correction

Page 88 of the *Data ONTAP File Access Management Guide* indicates that the `cifs changefilerpwd` command changes the gFiler password once every week. The `cifs changefilerpwd` command schedules the gFiler domain (computer) account password to be changed one time only, as soon as the domain controller is available. (It might take several minutes for this change to be made across the network.)

WebDAV home directories supplement

The following information supplements the information provided in Chapter 6, “File Access Using WebDAV.”

HTTP feature support: Data ONTAP WebDAV implementation supports your HTTP configuration settings, such as redirect rules, authentication, and access restrictions. To use WebDAV, you need to have HTTP service enabled and configured. For information about enabling and configuring HTTP, see Chapter 5, “File Access Using HTTP” in the *Data ONTAP File Access Management Guide*.

CIFS feature support: Data ONTAP WebDAV implementation supports CIFS home directories when you have valid CIFS and HTTP licenses, and you have enabled and configured CIFS home directories. For information about enabling and configuring home directories, see Chapter 3, “File Access Using CIFS”, in the *Data ONTAP File Access Management Guide*.

Note

Data ONTAP WebDAV implementation does not support home directory features for virtual IP addresses. URLs that specify a virtual IP address as the host are not resolved.

Pointing a WebDAV client to a home directory

To point a WebDAV client to a home directory, complete the following step.

Step	Action
1	In the navigation (or default directory) field of your WebDAV client, enter the URL using the following syntax: <pre>http://host[:port]/~</pre> <i>host</i> is the host name or IP address for the gFiler. <i>port</i> is the port through which you want to access the gFiler. ~ is the tilde character (used to specify a user home directory). Example: <pre>http://eng_filer.lab.company.com/~</pre> <pre>http://10.120.83.104:80/~</pre>

Enabling the WebDAV feature

The procedure for enabling WebDAV on page 383 is incorrect. Replace it with the following procedure.

Step	Action
1	From the command line, enter the following command: <pre>options webdav.enable on off</pre>

Changes to the Data ONTAP 6.5 Command Reference

Missing options on `nlm.trace` manual page

The following option is not listed in the `options(1)` manual page:

options nlm.trace: Enables, with the value `on`, tracing of asynchronous Network Lock Manager requests and requests blocked by a conflict that requires the server to make callbacks to the client. Traced information is recorded in the `syslog`. Use this option for debugging file locking problems, particularly in environments with clients that make asynchronous file locking requests, such as HP-UX® and AIX®. The default value for this option is `off`.

This option takes effect immediately when it is enabled and is persistent across gFiler reboots, until it is disabled.

Note

Use tracing carefully because it generates a large amount of data. Persistent use can result in numerous console and log messages.

Misplaced options on `nfs.mountd.trace` manual page

The `options(1)` manual page description for the `nfs.mountd.trace` option is incorrectly appended to the description for the `nfs.mount_rootonly` option. The description for `nfs.mountd.trace` follows.

nfs.mountd.trace: When enabled, with the value `on`, all mount requests are logged. This option is intended to help debug denied mount requests. Valid values for this option are `on` (enabled) or `off` (disabled). The default value for this option is `off`, to avoid too many messages.

This option takes effect immediately when it is enabled and is persistent across gFiler reboots, until it is disabled.

Missing version support on `nfs` manual page

The `nfs(8)` manual page does not mention NFS version 4 as a supported NFS version. NFSv4 is supported for NetApp storage appliances, although the write delegation feature is not supported.