




Dell DR Series System

Release Notes for Version 3.2.0.2



Notes, cautions, and warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

© 2016 Dell Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. Dell and the Dell logo are trademarks of Dell Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

2016 - 06

Rev. A19

Contents


1 Release notes.....	4
Upgrade notes.....	4
Checking system information.....	4
Product licensing.....	5
Supported software and hardware.....	5
What's new in this release.....	5
3.2.0.2 Release.....	5
3.2.0.1 Release.....	5
3.2 Release.....	6
Open issues.....	7
Known issues and resolutions.....	9
Resolutions for earlier releases.....	10
2 Third party components.....	36
GPL (GNU General Public License) 2.0.....	36
GNU (General Public License) 3.0.....	40
GNU (Lesser General Public License) 3.0.....	48
Open SSL License	50
The MIT License (MIT)	51
Copyright Notices.....	51
3 Getting help.....	55
Other information you may need.....	55
Contacting Dell.....	55
Locating Service Tag of your system.....	56
Documentation feedback.....	56



Release notes



These Release Notes are intended to supplement the Dell DR Series system documentation to provide last minute information available for the current release of the DR Series system software. For a complete list of available DR Series system documentation, see the topic, "Other Information You May Need," at the end of these Release Notes.

The Release Notes contain details about the pre-installed system software on the Dell DR Series systems, including details about the latest updates, known issues and resolutions, and other information.

-  **NOTE:** For instructions on configuring DR Rapid devices, see the *Dell DR Series System Administrator Guide*. This guide is available at dell.com/support/home by selecting your specific DR Series system.
-  **NOTE:** It is recommended that you check at dell.com/support/home for the latest versions of the DR Series system documentation available from Dell.

Upgrade notes

This topic contains important information for users who are upgrading to software version 3.2.0.2.

-  **NOTE:** This release of the DR Series system software is intended for the DR2000v, DR4000, DR4100 and DR6000 systems. (It is not intended for use on the DR4300e, DR4300 or DR6300 systems.)
- You can use NetVault Backup 9.2, 10.0, 10.01, 10.0.5, or 11.0 with this DR Series code release. If you need the latest RDA fixes, Dell recommends to use NetVault Backup 11.0 with release 3.2.0.2.
 -  **NOTE:** After installing NetVault Backup 11.0, ensure that the RDA plug-in integrated with NetVault Backup 11.0 is used, or install 3.2.0.2 plug-ins.
- If you use NetBackup, you must set the optimized synthetic attribute flag on the disk pool if you want to implement optimized synthetic backups. This applies to containers created in 2.1 only. For details, see the topic, "Configuring NetBackup for Optimized Synthetic Backups," in the *Dell DR Series System Administrator Guide*.
- If you are running the 3.0 or 3.1 driver for Rapid NFS and Rapid CIFS, you must update it to the 3.2.0.2 driver.

The following information is for users who are upgrading from software version 2.1.

- If you have the 2.x RDA with OST plug-in installed, you **must** uninstall it, and then install the 3.x version of the plug-in. This is because the name of the plug-in has changed since version 3.0.0.1.

Checking system information

Before troubleshooting issues with a DR Series system, ensure that the installed DR Series system software is up to date. The related drivers, software, and firmware are available at dell.com/support.

To download the latest drivers and firmware for your system, follow the steps below:

1. Go to dell.com/support and enter your service tag or browse to your product.
2. Click **Drivers and Downloads**.
3. Click **View All Drivers**.
4. Confirm that you have the correct product to begin the search for all the related drivers, software, and firmware.

For information about how to check the current version of the DR Series system software installed, see the *Dell DR Series System Administrator Guide* or the *Dell DR Series System Command Line Reference Guide* at dell.com/support/home.

Product licensing

If you currently have a DR Series system product license, no additional license is required. If you did not receive your license or require assistance, please visit <https://support.quest.com/contact-us/licensing>.

Supported software and hardware

For a complete list of the supported hardware and software for the Dell DR Series system, see the *Dell DR Series System Interoperability Guide*. You can download this guide by visiting dell.com/support/home and selecting your specific DR Series system, which opens the product support page to view product documentation for your system.

What's new in this release

This release includes enhancements and maintenance fixes for the DR Series system software. Refer to the topic, "Known Issues and their Resolutions," for detailed information on the maintenance fixes included in this release.

3.2.0.2 Release

The following list describes the new features and enhancements in the current 3.2.0.2 release:

- **Increased capacity availability for the DR2000v system** — This release adds the ability to support 12 TiB capacity in the DR2000v. Refer to the *Dell DR Series System Interoperability Guide* for detailed information about the increased capacity availability and the supported platforms and operating systems for the DR2000v.
- **Hyperscale version of the DR2000v** — A DR Series hardware system with a Hyperscale license can now function as a regular DR Series system with full DR Series capabilities.
- **DR2000v registration with DR Series system hardware** — This version of the DR2000v can be registered with a DR Series hardware system running either 3.2.0.2 or 3.2.6.1 release versions of the DR Series software.
- **New cleaner statistic for CLI** — When using the `stats -cleaner` CLI command, the last time the cleaner completed is now displayed.

3.2.0.1 Release

For your reference, the following list describes the features and enhancements that were included in the previous 3.2.0.1 release:

- **FIPS support** — FIPS 140-2 support has been added.
- **HTTPS requirement** — Starting with release 3.2.0.1, the DR Series system Web interface is accessible via HTTPS only; all HTTP calls to port 80 are redirected to HTTPS (port 443). This requires JavaScript as a prerequisite for browsers. If you attempt to access the DR Series system on port 80 with JavaScript disabled, you are asked to enable JavaScript and the following message appears in the browser:

```
This application cannot run with JavaScript disabled. Please enable JavaScript.
```
- **NVRAM patch** — A new hardware check has been added in this release to detect super capacitor failure.
- **Samba patch** — This release includes the Samba patch that addresses the Samba "CVE-2015-0240" vulnerability.
- **Configurable RDA opdup retries** — In the event of a connection failure, the number of RDA opdup retries is now configurable. Instructions for configuration are listed as follows.

For Windows:



- a. Create registry key HKLM\SOFTWARE\Dell\RDA\RdaOpdupRetries of type DWORD, and assign a value that is equal to the number of retries.
- b. Start duplication, and run the command, `tcpkill`, for the opdup connection multiple times to verify the retry.

For Unix:

- a. Stop the NetVault service.
- b. Export "OCA_RDA_OPDUP_RETRIES" by setting it to the desired number of retries.
- c. Start the NetVault service.
- d. Start duplication and run the command, `tcpkill`, for the opdup connection multiple times to verify the retry.


- **Updated daily container stats report** —

A field called "Latest mtime of replicated files" has been added to the daily container stats report. You can optionally configure the DR Series system to send this report every day. This additional field specifies the latest modification time of the last file that is in-sync with the target. It implies that all files, which had final modifications completed prior to the time shown in the report, are also in-sync with the target.

You can enable the daily container stats report when you register the system by clicking the button, **Notify me of [DR Series] daily container stats reports**.

You can also manage the daily container stats report via CLI by using the following commands:

- To enable/disable the daily report, use the following command:
`alerts --email --daily_report <yes/no>`
- To setup the specific time you want your daily report to get generated, use the following command:
`alerts --email --daily_report_time <time>`

 **NOTE: Daily reports must first be enabled before the report time can be set. You can use both options together. The default time is midnight. The time input should be in 0-24 HR format.**

- **Updated RDA platform support** — With Release 3.2.0.1 of the DR Series system software and NetVault Backup 11.0, RDA is supported on the Solaris Sparc and Intel platforms. A standalone RDA installer is also available.
- **CIFS and NFS accelerator support for NetBackup 7.7** — NetBackup 7.7 has been tested for CIFS and NFS accelerators.
- **RMAN Oracle support** — RMAN Oracle 12C is now supported.
- **Updated Veeam feature support** — The following advanced features of Veeam 9 have been qualified.
 - Instant VM recovery
 - Per VM backup file chains
 - Recovery performance optimization
 - Active full with backup copy job
 - Optimized merge process
- **Moonwalk 9.3 support** — Moonwalk 9.3 update1 has been qualified for CIFS and NFS.
- **HP Data Protector support** — HP Data Protector 9 has been qualified for this release.
- **vRanger 7.3 support** — vRanger 7.3 has been qualified with the default RDA plugin.

3.2 Release

For your reference, the following list describes the features and enhancements that were added in the 3.2 release:

- **Virtual Tape Library** — This release of DR Series system supports the creation of four virtual tape library (VTL) containers. This is a new container type introduced in this release. The VTL emulation will be for two types of libraries:
 - a. The Standard STK L700 library with 10 Ultrium 3850 LTO4 drives

- b. An OEM – Dell version of the same library.

Each library will be initially instantiated with 10 tapes of either of the following tapes sizes 10GB, 50GB, 100GB, 200GB, 400GB and 800GB. Additional capability is provided to append new media (tapes) as required.

- **Support for NDMP and iSCSI backup protocols for VTLs** — VTLs can be accessed by either NDMP or iSCSI protocols. The DR VTL will be represented as an iSCSI target to iSCSI software initiators running on media server operating systems. In the case of NDMP, the DR will host a NDMP tape server which will provide access to the VTLs serviced by the NDMP tape server. For supported Data management applications for both NDMP and iSCSI VTL access, see the *Dell DR Series System Interoperability Guide* version 3.2.
- **Encryption of Data at Rest** — Data backed up to the DR appliance can now be optionally saved in an encrypted format. When the encryption option is enabled, data is encrypted before it is saved to disk. The DR supports Industry standard FIPS 140-2 compliant 256-bit Advanced Encryption Standard (AES) encryption algorithm for encrypting and decrypting the user data. Key management is done via Static mode or an internal mode. In static mode, a global, fixed key is used to encrypt all data. In internal mode, lifecycle management s performed where keys are rotated at periodic intervals which can be set by the administrator.
- **RFE: Continue OFSCK from nearest logical point if it has been stopped during regular run (OFSCK restartability)** — In this release OFSCK has been enhanced to restart from the point it left, if it is interrupted due to a crash or any other reason. The restartability is currently provided in phase-1 of OFSCK where datastores are being crawled.
- **Replication: Performance improvement for overwrites and appends** — As part of improving the replication process a change has been made wherein only the changed blockmap entries for replicated data files is sent over the wire in lieu of the entire blockmap. This improves the replication performance and replication completion issues seen for constantly updating source data files are alleviated.
- **Replication: Multi Connection support (hidden feature, can be enabled through customer env)** — In prior releases a single connection is maintained between the source and target container pair. This enhancement is being added to enable multiple TCP connections over which replication or RDA opd-up can occur in parallel, between a pair of containers. The number of connections increased is per container for container replication. The maximum TCP connections will be 64. It can be set through env variable (REPL_CLNT_MAX_CONNS).
- **250 million file support** — This release will now support up to 250 million files for DR appliances hosting internal drives greater than 2TB.
- **Hyperscale: Supports DR4x00 and DR6000 as a License server for DR2000VMs (up to 3000)** — This release will now support DR4x00 and DR6000 systems as license server for up to 3000 DR2000v systems.
- **RFE: Provide per-job de-dupe stats at RDA/OST plug-in** — Supported Symantec (OST) and Dell (RDA) Data Management Applications will now report de-dupe savings as part of backup logs and events.
- **RFE: Enhance ODIV to report when the container was last verified for Data Integrity** — Advanced Data protection reporting will show when the container was last verified for Data integrity.
- **Container creation Wizard in GUI** — This release has a new wizard for creation of containers and assigning relevant properties such as protocol and DMA access and marker types assignments.
- **Support for Rapid CIFS and Rapid NFS on all platforms** — This release has support for Rapid CIFS and Rapid NFS on DR4x00, DR6000 and DR2000v platforms.

Open issues

The following table lists the open issues in the current release.

ID	Issue	Workaround
27538	Secure connection error occurs in Firefox when navigating to the DR Series system page: "Error code: sec_error_reused_issuer_and_serial"	Delete your old exception and use temporary exceptions for subsequent visits to the DR Series system page. To delete your old exception: 1. In the Firefox window, click the <Firefox> button and then click <Options>. For Windows , click <Tools> and



ID	Issue	Workaround
		<p>then click <Options>. For Linux, click <Edit> and then <Preferences>.</p> <ol style="list-style-type: none"> 2. Select the <Advanced> panel. 3. Click the <Encryption> tab. 4. Click <View Certificates> to open the Certificate Manager window. 5. In the Certificate Manager window, click the <Servers> tab. 6. Identify the item that corresponds to the site that generates the error. Note: The Certificate Authority (CA) for that server, the CA name, appears above the site name. 7. Click the server certificate that corresponds to the site that generates the error and press <Delete>. 8. Click <OK> when prompted to delete the exception. 9. Click the <Authorities> tab and select the the item that corresponds to the CA that you noted earlier and then press <Delete>. 10. Click <OK> when prompted to delete the exception.
		<p>To add a temporary exception to allow access to the page:</p> <ol style="list-style-type: none"> 1. When you go to the iDRAC page, you will see an Untrusted error. 2. Click the <I Understand the Risks> link at the bottom of the error. 3. Click <Add Exception> to open the Add Security Exception window. 4. Click <Get Certificate> to enter information for the Certificate Status section of the Add Security Exception window. 5. Clear the selection for <Permanently store this exception item>. 6. Click <Confirm Security Exception> to close the Add Security Exception window.
27278	On Solaris, the standalone package installation conflicts with existing packages.	<p>If you are trying to upgrade the RDA plugin on Solaris, the command, pkgadd, will prompt for conflicting files. Respond 'y' for yes to the following prompts for installation to complete successfully.</p> <p>Do you want to install these conflicting files [y,n,?,q] y</p> <p>Do you want to continue with the installation of <DellRDSPlugin-64bit> [y,n,?]y</p>
24597	CIFS usage graph shows that there are CIFS writes, when running iSCSI I/O only.	<p>The stats reported on the iSCSI graph are accurate. Due to a bug false stats getting reported on the CIFS chart which can be ignored. This issue will be fixed in the upcoming 3.2 hot-fix.</p>
23709	Changing machine host name doesn't get updated in all components	<p>This issue does not cause known failures to the normal operation of the DR and can be ignored. It will be fixed in a future release.</p>

ID	Issue	Workaround
23641	Cannot join into domain by adding DR into multiple OUs	In the authenticate command type as follows: <code>--ou topLevelOU/middleLevelOU/LowerLevelOU/TargetOU</code>
20553	Specific umount options do not work for Rapid NFS.	The -l and -f options are not supported in the rdnfs umount procedure.
20426	Replication traffic that is configured to go through an assigned bond may still run through the default bond (bond0).	If you want to run replication traffic through another bond interface, contact Technical Support to update the route.
18837	Manual modifications made to the Rapid NFS rdnfs.cfg file are not preserved between plug-in updates.	Manually modify the rdnfs.cfg again after upgrading the plug-in.
17294	An NVBU backup will stop if the DR Series system goes into maintenance mode as it moves into a read-only condition when this occurs.	Restart the datacopy operation after the DR Series system enters the operational mode.
17206	Advanced networking allows you to change the IP of an interface that is part of a replication link.	Understand your current configuration before adding new advanced networking configuration so that you do not impact the current system configuration.
16280	When you try to get replication statistics, the system displays the <code>Software error: Use of uninitialized value in division (/) at helper.pl line 3548 error.</code>	This is due to the replication target not being in an operational state. Correct the replication target and refresh or use the CLI. The information is available by using the command line. We will correct this error in a future release.
16053	After you install the Rapid CIFS plugin and replication operations are performed, you receive a blue screen and the following error: <code>STOP 0x00000027 (parameter1, parameter2, parameter3, parameter4) RDR_FILE_SYSTEM</code>	This is a Microsoft bug that occurs on shared network resources on a computer that is running Windows Server 2008 R2 or Windows 7. To fix, see Microsoft Knowledge Base article 2584874.

Known issues and resolutions

The following table lists known issues and the related resolutions for the current DR Series system release.

ID	Issue	Resolution
28032	The DR4000 crashes when breaking a replication relationship and running fsck.	This issue has been addressed in 3.2.0.2.
27847	RDNFS plugin issue with Oracle Linux 7.0.	This issue has been addressed in 3.2.0.2.
27736, 27671	Replication fix for large configurations.	This issue has been addressed in 3.2.0.2.
26191	System cleaner timeout fix.	This issue has been addressed in 3.2.0.2.
28439	After updating to release 3.2.0.1, the fan speed was 8K but should be 10K by default.	This has been fixed in release 3.2.0.2.



Resolutions for earlier releases

The following table lists known issues, descriptions, and related solutions or workarounds for earlier releases of the DR Series system.

ID	Issue	Description	Workaround/Solution
20870	RPC replication errors may be seen during replication from source DR Series system to target DR Series system.		The primary and secondary replication target should have the same MTU setting. Replication proceeds once the MTU is set to the same as the replica target. This recommendation has been added to the <i>Dell DR Series System Administrator's Guide</i> in release 3.2.0.1.
27074	iSCSI VTL configuration with IBM Tivoli Storage Manager 7.1.1 fails at audit tape library.		Corrected in release 3.2.0.1.
27074	Symantec Backup Exec inventory issue.		Corrected in release 3.2.0.1.
27013	Issue with an ofsck refcount record boundary calculation.		Corrected in release 3.2.0.1.
26721	NDMP VTL device offline issue.		Corrected in release 3.2.0.1.
26548	Kernel panic fix for VTL running in parallel with other protocol heavy replication.		Addressed in release 3.2.0.1.
26493	Option added to increase RDA retry capability in registry working with Tech Support.		Addressed in release 3.2.0.1.
26282	Support for RDA for Sparc.		Addressed in release 3.2.0.1.
26265	DR plugin DelIDRLogSvc service does not always stop when uninstalling NetVault.		Corrected in release 3.2.0.1.
26190	Various VTL updates for release 3.2.6 ported to 3.2.0.1 code.		Addressed in release 3.2.0.1.
26128	RFE: OFSCK: re-organized refcnt record structure to optimize disk space.		Addressed in release 3.2.0.1.
26113	NFS fix for moujnt during stats call.		Corrected in release 3.2.0.1.
25958	Veeam ingest and replication issue for large file overwrite corner case.		Corrected in release 3.2.0.1.
25860	NetVault Backup stats file takes a long time in closing.		Corrected in release 3.2.0.1.
25675	ocafsd crashed on cleaner code due to corner case.		Corrected in release 3.2.0.1.
25591	Space handling improvements related to global space thresholds and per enclosure thresholds for Rapid NFS and Rapid CIFS.		Addressed in release 3.2.0.1.
25584	Improved seeding for CIFS on slow networks		Addressed in release 3.2.0.1.
25393	Cleaner is now set to run during idle time even when not in schedule. Since the machine is idle		Addressed in release 3.2.0.1.

ID	Issue	Description	Workaround/Solution
		cleaning will occur; it will be stopped if I/O is started.	
25135	Let cleaner finish if it is in runonce mode even if there is a cleaner schedule stop.		Addressed in release 3.2.0.1.
25091	cifs_jobuf_alloc fix for iSCSI.		Addressed in release 3.2.0.1.
24998	Fixed complex replication deadlock scenario involving overwrites and aborts.		Addressed in release 3.2.0.1.
24855	VTL subsystem starts if container name contains "ISCSI" or "NDMP" even though the container type is not 'vtl'.		Corrected in release 3.2.0.1.
24809	Corner case fix for cascaded replication.		Addressed in release 3.2.0.1.
24738	Validate the timestamps in mds supplied by user.		Addressed in release 3.2.0.1.
24701	DR VTL was showing support for hardware encryption, which is not accurate. Removed this option as Symantec was allowing encryption setting. (SPIN, SPOUT and publishing in MODE SENSE)		Corrected in release 3.2.0.1.
24689	Some of the documentation PDF links were not working in the DR Series system GUI.		Corrected in release 3.2.0.1.
24579	Unable to log in using domain user starting with letter "j".		Corrected in release 3.2.0.1.
24571	Enclosure showing as "Not Configured" when another enclosure is added, which changed ID numbers.		Corrected in release 3.2.0.1.
23887	Corner case where cleaner schedule will not stop cleaner from running, nor does the cleaner stop command.		Corrected in release 3.2.0.1.
23797	NDMP user name must be changed to ndmp_user in GUI.		Addressed in release 3.2.0.1.
24312	Certain hypervisor host NICs will perform poorly and may require a driver update to fully support VMQ feature.		<p>Note that this works as designed. To resolve this issue you should check on your Hypervisor host NIC feature list and update the driver to the latest version.</p> <p>For example, Broadcom NetXtreme I and NetXtreme II Ethernet adapter needs to get driver update to 17.6.0 or above to add VMQ support, otherwise you may experience performance degradation during normal operations.</p> <p>Driver for NetXtreme I and NetXtreme II Ethernet adapter: http://www.dell.com/support/home/us/en/19/Drivers/DriversDetails?</p>



ID	Issue	Description	Workaround/Solution
20539	After installing Rapid CIFS Filter Driver, an incorrect driver version is displayed.		<p>driverId=CYKKJ&osCode=MWS80&fileId=3197327398&languageCode=EN&categoryId=NI</p> <p>Firmware for NetXtreme I and NetXtreme II Ethernet adapter: http://www.dell.com/support/home/us/en/19/Drivers/DriversDetails?driverId=P32M4&osCode=MWS80&fileId=3197328666&languageCode=EN&categoryId=NI</p> <p>If at the end of successful installation, the version of the driver loaded (which can be checked using rdcifsctl.exe driver -q) is lower than the version of the installed package (listed under Control Panel > Installed products), then you should restart the machine. This issue can occur if the system fails to rename/delete driver files under the system folder.</p>
20456	Installation of SSL Certificate file in the GUI failed on Internet Explorer (IE) when using Remote Desktop.		<p>When uploading the certificate file, the GUI uses the file name with the whole path, which works when uploading on a local system. When using RDP, in the IE browser settings, you need to disable the "Include local directory path .." setting, as follows.</p> <ol style="list-style-type: none"> 1. Under Internet Options > Security, in the "Internet" or "Intranet" area, click Custom Level. 2. In the Security settings, scroll down to Include local directory path when uploading files to a server and ensure it is not selected. 3. Click OK and the refresh the browser.
20424	The following message may appear on the console: "vx_nospace..." even if the system still has space.		<p>This message is a result of trying to allocate a large contiguous block. The</p>



ID	Issue	Description	Workaround/Solution
20188	When using cascaded replication for a large number of files (1M+), it may appear to take some time to see the actual files on the secondary target.		<p>allocation of the contiguous block might fail, in which case, allocation continues without trying to keep the file contiguous. The vx_nospace error may appear, and this message can be safely ignored.</p> <p>Namespace resync has to complete on the source and primary target and then data transfer has to start on both before transferring to the secondary target. Once the namespace resync completes on the first replication pair, resync then starts on the second replication pair. Until the namespace resync completes on the second pair, no data is transferred. This ensures the namespace resync completes faster and the snapshot can be deleted faster.</p>
20009	User is able to create/write a file/directory in the share/container even though the user has only read permissions (file-level/security-level) on the share.		You can block write/create operations for a particular domain user by adding an extra 'Deny' 'write' acl for that user. (This issue occurs on the Windows 2008 client.)
19552	When there is no data to replicate (for example, replication state is INSYNC), replication statistics might indicate a target is running out of disk space even though the target has enough space.		This occurs because the replication process detected target space full condition when there is pending data to be replicated, but, at a later time, that pending data was removed and replication was insync. We do not query target disk state when replication is idle. On a similar note, we might not indicate target space full condition when there is no data to replicate as well. An error state in the replication statistics makes sense only when replication is not in sync.



ID	Issue	Description	Workaround/Solution
19485	Adding a host name does not work if you use a FQDN and the host name has letters in it.		You can add names as long as the name is made only of numbers and it is not a FQDN where a period is used in the name string.
19186	If you change the hostname or the domain name after setting up the DR Rapid plug-in, then you may get the wrong backup mode pass-through or de-dupe.		Uninstall and then reinstall the DR Rapid plug-in for this information to be set correctly.
18848	In the Internet Explorer 9 and 10 browsers, when you navigate to a DR Series system from within Global View , and then log out of that system and return to Global View , you are logged out of the machine running the Global View .		This issue does not occur with any other supported browser. For browser information, see the <i>Dell DR Series System Interoperability Guide</i> .
18178	The AIO-Stress tool fails when using Rapid NFS.		Rapid NFS, which uses FUSE, does not support AIO.
18501	Rapid NFS performance drops significantly with parallel NFS ingest from same client.		When using Rapid NFS on your client, it is suggested that you do not run NFS from the same client to the DR Series system in parallel as this will affect your overall performance.
18144	A <code>File name too long</code> error is displayed after trying to create a directory structure that exceeded 522 directories.		The limit on a path within a mount point is 4096 bytes.
18022	Windows 2008 and newer servers cannot assign local users (other than administrator) to Access Control Lists (ACLs). Windows 2008 and later does not query the local users on the DR Series platform.		Assign ACLs to the built-in Administrator user on the DR Series platform if using Windows 2008 and later.
17661	If the cable is removed from a network interface and the network is restarted, the interface does not get an IP. If you then reinsert the cable, you must restart the network to get an IP.		Ensure that the interfaces that you want to add or modify are connected when making Advanced Networking changes. To restart the network, type <code>network --restart</code> at the CLI command line.
17193	DR Rapid critical message <code>Alert RDS Restore failed</code> reported on DR4x00 system. In addition to the error, an event is generated internally in the DR Rapid plug-in when the read operation fails		The DR Rapid plug-in generates events for any kind of read failures.
16745, 17621	If you have the same client for OST and RDS operations and you manually update the client		To work around the issue, use a different client for OST


ID	Issue	Description	Workaround/Solution
	connections, unexpected messages are displayed as: [root@swwsys-49 ~]# stats --clients --type RDA RDA Client(s) Type plug-in OS Backup Software Last Access Connection(s) Mode r310-sys-39 RDS -- -- -- -- 0 Default [root@swwsys-49 ~]# ost --update_client --name r310- sys-39 --mode auto Client is connected with default values. Please update to non-default values. In Linux systems, the RDS plug-in installation fails if the OST plug-in is already installed in the system		and RDS rather than sharing the same machine for both protocols.
16660	When BE has an issue connecting to the server, it may not return detailed errors to the OST plug-in.		See the client log files for the detailed information on the connection failure.
16427	When upgrading your system using the iDRAC, if the upgrade package also contains new iDRAC firmware, the upgrade fails to complete.		Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
16053	After you install the Rapid CIFS plugin and replication operations are performed, you receive a blue screen and the following error: STOP 0x00000027 (parameter1, parameter2, parameter3, parameter4) RDR_FILE_SYSTEM		This is a Microsoft bug that occurs on shared network resources on a computer that is running Windows Server 2008 R2 or Windows 7. To fix, see Microsoft Knowledge Base article 2584874.
9433	Global hot spare is not automatically configured after replacing the GHS drive in slot 0.		If the global hot spare is replaced, run maintenance by using the --make_standby command to make the drive a global hot spare. Contact Dell Technical Support for this action.
24416	RM recovery errors when expansion enclosures are attached.		Corrected in version 3.2.
24134	Server signing reporting errors.		Corrected in version 3.2.
24081, 24080, 24079, 24047, 23676, 23252, 23229, 23067, 23016,	Various RDCIFS stability improvements under heavy load.		Addressed in version 3.2.



ID	Issue	Description	Workaround/Solution
22710, 21455			
23876, 21453	Eth speed may show value on unused interfaces. "N/A" is now shown for speed and duplex setting on unused interfaces.		Corrected in version 3.2.
23702	WAM2 fan improvements.		Addressed in version 3.2.
22581, 22478	DR2000v evaluation license errors in GUI.		Corrected in version 3.2.
22531	GUI refresh error "An error occurred while trying to retrieve Graph."		Corrected in version 3.2.
22104	Likewise failed to start due to setname resolution issue.		In this case, use the IP to avoid the error in code.
22004	RDA improvements for OpDup handling.		Addressed in version 3.2.
21733, 19476, 18558	Improvements made in replication overwrite logic for large file workflows that append the file while being replicated.		Addressed in version 3.2.
21514	Issues with Global View when alternating between administrator and domain user.		Corrected in version 3.2.
20928, 21980	Cleaner error occurs on upgrading 1.X to 3.X.		In version 3.2, the Cleaner now handles this condition without technical support intervention.
20585, 20584, 20581,2 0466, 20465, 19200	Various security improvements.		Addressed in version 3.2.
20296	GUI would not accept CIFS password.		Addition of special characters is now allowed in the user password field for CIFS in version 3.2.
19849	Advanced networking shows gateways that are invalid		Corrected in version 3.2.
19214, 17141	Special characters may be accepted that prevent e-mail or fields in content dialog boxes from working.		In version 3.2, these special characters are no longer allowed.
14855	Option to hide or unhide a CIFS share		Addressed in version 3.2.
14700	VTL support for NDMP and iSCSI protocols.		Addressed in version 3.2.
14695	UPS power down details are now documented in the <i>Dell DR Series Administrator's Guide</i>		Addressed in version 3.2.

ID	Issue	Description	Workaround/Solution
22168	RDCIFS was listed as supported on Windows 2003 in the <i>Dell DR Series System Interoperability Guide</i> , but this is inaccurate. Windows 2003 does not support the command set required to support RDCIFS.		Updated the <i>Dell DR Series System Interoperability Guide</i> for 3.1.2 to reflect the correct support of RDCIFS.
22145	RDS OpDup was failing across the firewall as the TCP connection timed out during extended idle times. In this release, we have added keep alive on the RDS OpDup path connection.		Corrected in version 3.1.2.
21748	DR2000v FS was failing during boot on some legacy Intel and AMD processors.		Corrected in version 3.1.2.
20766	DR Series deployment using a static IP may come up in maintenance mode during initial boot as default IP is not being assigned.		Corrected in version 3.1.2.
21893	Bash Security Fix - BASH Remote Code Execution Vulnerability (ShellShock).		Corrected in version 3.1.1.
21873	During an upgrade from 2.x to 3.x under some unusual corner cases, the latest configuration database did not get backed up and tech support had to correct the database.		Corrected in version 3.1.1.
21765	System with in-sync replication would show pending bytes.		Corrected in version 3.1.1.
21690	During seeding, a network interruption caused failure of seeding. When deleting a container and attempting to reboot the system, the system entered Maintenance Mode.		Corrected in version 3.1.1.
21667, 21079, 21000	Slow performance occurred on noisy networks.		Additional TCP options were enabled in the 3.1.1 release for more effective TCP error recovery.
21601	A Perc issue occurred if the drive greater than 2TB sent a UnitAttention check condition to the Perc in descriptor format. This could cause the drive to be taken offline.		Corrected in version 3.1.1 with new Perc firmware (21.3.0-0009).
21538	Packet retransmissions may occur with replication packets.		Customers should turn off Deep Packet Inspection on replication packets (especially port 9916), including GAV(gateway antivirus), IPS (Intrusion Prevention Service), Anti-Spyware, etc. To deal with TCP retransmission issues, the following is a check list for troubleshooting packet



ID	Issue	Description	Workaround/Solution
			<p>retransmission on the Sonicwall side:</p> <ol style="list-style-type: none"> 1. Check MTU settings. The MTU settings are located as follows: <ul style="list-style-type: none"> • Firmware 6.x: Click Advanced > Ethernet tab. Scroll to the bottom of the page and enter the desired MTU size. • SonicOS Standard: Click Network -> Settings -> Ethernet Tab. • SonicOS Enhanced: Click Network -> Interfaces. Click the Configure icon next to the WAN interface. Click the Advanced tab. <div style="margin-left: 20px;">  NOTE: It is recommended to check the 'Fragment outbound packets larger than WAN MTU' if the MTU is set below the default of 1500. Use the 'Update' button to process the changes entered. Reboot Sonicwall to make the change effective. </div> 2. Fragment Packet Handling should be enabled. 3. Pre-shared Key mismatch should be checked. 4. Check the gateway IP address and firewall name or serial number specified in the VPN policy on each end of the tunnel.

ID	Issue	Description	Workaround/Solution
			<ol style="list-style-type: none"> 5. Disable the hardware accelerator from the diagnostics page. 6. Lower the encryption settings. 7. Check the upstream device configuration. 8. Check for the NAT Traversal option. 9. On the computer where GVC is installed, make sure the NAT Traversal option is disabled under Connection Properties --> Peers --> Edit --> NAT - Traversal.
21468	If the IP address changed you could not modify a broken replication connection in the GUI.		Corrected in version 3.1.1.
21405	A Solaris client running made an invalid request to UDP which caused the DR to go into Maintenance Mode.		Corrected in version 3.1.1.
21382	Adding a machine to Global View did not work under some rare conditions due to invalid characters getting persisted into the config file.		Corrected in version 3.1.1.
21349	Replication Disconnect Alerts could occur during replication on slower LAN connections or noisy networks. A tunable parameter has been added (for tech support) that can be increased to remove the alert for transient failures.		Corrected in version 3.1.1.
21314, 21277, 21204	Replication race condition that could result in a core file on DR when using Veeam or SQL.		Corrected in version 3.1.1.
21181	In the GUI, after a successful registration, license registration details do not appear to be updated when you to try to edit and save registration details.		Corrected in version 3.1.1.
21075	After running advanced networking commands, the --show output displays incorrect MAC.		Corrected in version 3.1.
20177	Global View does not work if a group name contains the "\$" character.		Corrected in version 3.1.
20832	The RDA plugin details tab displays as a plugin for Symantec OST. It should be updated to show as a plugin for NetVault.		Corrected in version 3.1.
20767, 18176	When a DR Series system is part of the Global View database and you change the DR Series system's name by using the <code>system --</code>		Corrected in version 3.1.



ID	Issue	Description	Workaround/Solution
		<code>setname</code> command (and not from the GUI), the new name is not reflected.	
20763	System configuration screen displays DHCP although it is set to static.		Corrected in version 3.1.
20762, 20626	While performing recovery using USB, it is not possible to recover with the payload on the DR Series system. The payload on the USB is used; and, if the version on the USB is higher, the recovery process upgrades the DR Series system. The recovery process should use the payload on the DR Series system such that system is restored to the same version.		Corrected in version 3.1. Now, the recovery operation will only use the payload on the DR Series system. The reset operation will pick up the payload on the USB.
20755	Extra entries are displayed in Global View after a hostname is changed for a managed unit.		Corrected in version 3.1.
20705	Need to enable DR2000v as replication target.		Corrected in version 3.1.
20689	Need to handle overwrites of old format blockmaps remaining after an upgrade to 3.x.		Corrected in version 3.1.
20627	Under certain conditions, "replication is disconnected" error occurs when running replication between two systems with no scheduling.		Corrected in version 3.1.
20565	After direct upgrade from 1.1.0.x or lower to 3.0.x, replication does not work if the upgrade occurred before the containers were in sync.		Corrected in version 3.1.
20284	Dell OpenManage Server Administrator contains a cross-site scripting vulnerability.		Corrected in version 3.1. Now, port 1311 used by Dell Open Manager is blocked.
20067, 20036	DR Series system upgrade process may fail due to an error condition on the server LifeCycle Controller - Unified Server Configurator.		These packages are optional in version 3.1, so if they fail to load it will not stop the unit from operating.
20064	Incorrect or out of date statistics may be displayed when replication is stopped or a connection is disconnected in a cascaded replication.		Corrected in version 3.1.
19851	CIFS container paths display incorrectly with advanced networking.		Corrected in version 3.1.
19848	OST installer does not work with NBU 7.6		Corrected in version 3.1.
19791, 19775	The incorrect IP address displays on the system configuration screen in the GUI.		Corrected in version 3.1.
19762	Add the ability to mount subdirectories.		Added in version 3.1.
19756	CLI Online Help shows "RDA" in a few places where it should show "RDS"		Corrected in version 3.1.

ID	Issue	Description	Workaround/Solution
19655	smbd fix for unique corner case that causes a core		Corrected in version 3.1.
19614	Need to remove error reporting on the following errors: OST images not found and vRanger errors		Corrected in version 3.1.
19576	If you set up two bond interfaces with two different subnets but use the same static IP address, the configuration service fails.		Corrected in version 3.1.
19233	Need to clear the error, "file system is corrupt and please run consistency checker," after a system --init		Corrected in version 3.1.
19184	During container delete, cleaner does not start.		Corrected in version 3.1.
19091	Cannot collect diagnostics if an upgrade fails.		Corrected in version 3.1. Using the "diagnostics --start --service" command can start the diagnostic service if it is down after upgrade failure. Once the service is up, diagnostics can be collected.
18833	The Reboot link is enabled after a DR Series system software upgrade.		Corrected in version 3.1. The Reboot link is enabled during upgrade and has now been disabled during upgrade. It can be selected once the upgrade is complete.
18742, 18629	With CIFS, backups are failing, with error "The specified network name is no longer available..." after upgrade.		Corrected in version 3.1.
18664	On the DR Series system log on page, if you enter an invalid user name, the <code>Your password was not correct</code> error displays.		Corrected in version 3.1. The correct error message is now displayed.
18661	If you power on a new MD1200 expansion enclosure (that is cabled in) while the base DR Series system is operational, the machine may go into maintenance mode with the following reason error code: <code>One of the storage enclosure has become offline, please power-off the appliance, fix the connectivity issues and power-on the appliance.</code>		Corrected in version 3.1.
18154	Include racadm in DR image so that the DRAC settings can be managed from inside of the OS instead of lifecycle controller.		Corrected in version 3.1.
18124	Ability to get encryption on OST replication op-dup traffic.		Added in version 3.1.



ID	Issue	Description	Workaround/Solution
17586		After the DR Rapid device is created, you cannot change the number of streams supported for the device.	Corrected in NVBU 10.0.
17437		During a DR Rapid datacopy operation if optimized duplication-replication fails, a non-optimized replication is performed when the devices are available again.	Corrected in version 3.1.1.
17355		The Dell PowerVault MD1200 Expansion Shelf Setup Guide displays incorrect configurations for the DR Series system.	Corrected in version 3.1.
17076		The NetVault GUI crashes if the datacopy operation fails due to a network error.	Corrected in NVBU 10.0.
15573		Need to address potential vulnerability prone to cross-site scripting attacks.	Corrected in version 3.1.
15570		Need to disable SSLv2 on port 443.	Corrected in version 3.1.
13271		Ability to provide observable data on cleaner production	Added in version 3.1.
20111		Intermittent timeouts on OST backup, OST OPDUP replication and native DR replication.	Corrected in the 3.0.0.2 release.
19984, 19979		After upgrade to 3.0.0.1 some replication disconnection errors are seen.	Corrected in the 3.0.0.2 release.
19773		If you install the 3.0.0.1 RDA plugin from the DR Series system and then try to uninstall in Windows 2008 R2, you get an error.	Corrected in the 3.0.0.2 release.
19759		After creating or deleting a container, the CLI command <code>stats --system</code> and the GUI are not responding.	Corrected in the 3.0.0.2 release.
19491		Error occurs when replicating a large file (1 TB+) along with 10 million+ small files. Scatter_repl_io error under a very specific ingest pattern mixing very large and very small write operations.	Corrected in the 3.0.0.2 release.
19528, 8049		Cannot create a container starting with a number.	Container names must start with a letter. Container names starting with a number are not supported.
19250		When using the CLI to create a container, this container is created with a marker setting of none.	If you are using a backup application that requires a marker, set the appropriate marker using the CLI command. If this is not done, then the savings level will not be optimal. You can set the marker in the GUI at the same time you are creating the container.

ID	Issue	Description	Workaround/Solution
19087	In daily statistics, we report that the compression savings is 0 percent. This is simply a reporting issue.		This is correct behavior, as option has been removed from daily report. Use the following workaround to get the deduplication and compression percentage: Use <code>stats --system</code> or use Global View Savings (mouse over the Savings column).
18857	When replicating between a large number of containers using a many to one relationship, some replication machines are displayed as Disconnected in the Peer Status screen.		This is simply a display issue and the replications eventually go into an Online or Replicating status.
18865	In some rare instances, changing the time and timezone at the same time caused the system to go into maintenance mode.		Corrected in the 3.0.0.1 release.
18833	The Reboot link is enabled after a DR Series system software upgrade.		Corrected in the 3.1 release. The Reboot link is enabled during upgrade and has now been disabled during upgrade. It can be selected once the upgrade is complete.
18664	On the DR Series system log on page, if you enter an invalid user name, the <code>Your password was not correct</code> error displays.		Corrected in the 3.1 release. The correct error message is now displayed.
18712	OST plug-in failure occurred using BE2010 and BE2012.		Corrected in the 3.0.0.1 release.
18706	Improve ingest performance during the cleaner compaction phase for situations in which ingest and cleaner are running at the same time.		Corrected in the 3.0.0.1 release
18540	The OST plug-in was not seen in the Windows Media server Add-Remove Programs.		When you had multiple users for a Backup Exec server, they were able to run jobs while logged in as a different user. However, the only person that could see if the OST plug-ins were installed and what version was running, or were able to uninstall the plug-in, was the original user who was logged on when the plug-in was installed. Corrected in the 3.0.0.1 release



ID	Issue	Description	Workaround/Solution
18453	The error message that resulted from executing the container -- delete --name [container_name] command when the container was not empty needed more information.		Corrected in the 3.0.0.1 release
18452	Update the GUI help menu to include other DR Series system documents in addition to the DR Series Administrator Guide.		Corrected in the 3.0.0.1 release.
18451	A wrong message displayed when you entered the wrong container name in the connection -- disable command. When you issued a connection -- disable --name [name of container that does not exist on the DR] --type OST the following message appeared: Failed to update connection entry - Container "use a container name that is not a container on the DR" is not configured with OST connection type.		Corrected in the 3.0.0.1 release. The message more accurately describes the error condition.
18393	When the machine was down or rebooted, the usage graph information was not collected and you saw a blank in the usage graphs upon reboot.		Corrected in the 3.0.0.1 release.
18375	When you widen the scope to over ten hours or more, the maximum CIFS connections reduced, and the usage graph statistical output was not accurate.		Corrected in the 3.0.0.1 release. The graph now uses MAX aggregate instead of AVERAGE to calculate max values. This change was implemented for all graphs (not only for CIFS connections).
18338	After naming a DR and successfully joining the domain, a Windows server within the domain using domain credentials could not access DR containers. DR containers are configured to allow access to that client; however, you could only access the container by using DR local administrator credentials. This was caused by you renaming the DR during configuration or changing the name in the GUI or CLI by issuing the #system --setname --name <with a name exceeding 15 characters>.		When changing the DR host name, the GUI will display a message that no more than 15 characters are allowed as a host name.
18325	When using Advanced Networking and configuring 2 bonds it showed the same host name for both IP addresses.		Corrected in the 3.0.0.1 release.
18275	After upgrading your system, backup jobs failed and containers became inaccessible due to the DR Series system leaving the domain.		Corrected in the 3.0.0.1 release.
18215	If you created a CIFS user named root or service, you could not delete it.		Corrected in the 3.0.0.1 release.
18151, 17997, 14534	Addition of additional DMA markers and changes to marker code for the DMAs that need marker detection. The BridgeHead, Networker and Unix_Dump markers must be set explicitly on a container and are not part of the Auto marker option.		Corrected in the 3.0.0.1 release. The Auto setting (default) will recognize markers for the 2.X supported DMACommVault TSM ARCserve HP_DataProtector.



ID	Issue	Description	Workaround/Solution
			Newer Markers must be explicitly set using the appropriate selection BridgeHead, Networker or Unix_Dump.
18070	The command <code>-system -- show --hardware grep -i NIC</code> does not list 1 Gb NICs if you have 10 Gb in the system.		Corrected in the 3.0.0.1 release.
18001	The <code>-.bashrc</code> is missing <code>rda</code> from the complete <code>-F</code> line.		Corrected in the 3.0.0.1 release.
17999	During a system upgrade, the software upgrade stopped because it exited the CLI shell.		A message has been added instructing you to not interrupt the upgrade process.
17863	After upgrading your system, you are prompted to reboot. The GUI will indicate that the reboot takes up to 10 minutes, which is the best case scenario. It can actually take up to 30 minutes, during which time your user interface can appear frozen.		Corrected in the 3.0.0.1 release.
17796	When the total number of Domain Controllers is very large, issues can occur when you try to add the machine to the domain.		Corrected in the 3.0.0.1 release.
17702	The RDS plug-in download page does not list the hybrid installer for the Windows operating system. It only lists the individual installers for the 32-bit and 64-bit platforms.		Corrected in the 3.0.0.1 release.
17672	You are unable to change default NetVault RDA password from the GUI when you use the system for the first time and no clients are connected.		Corrected in the 3.0.0.1 release.
17660	You get a platform not supported error when you upgrade the SUSE 11 NVBU plug-in from 32-bit to 64-bit on the same system.		Corrected in the 3.0.0.1 release.
17637	Ability to move the Integrated Dell Remote Access Controller (iDRAC) from the built-in device to the LOM devices.		Use the command <code>maintenance -- remote_access --enable -- device lomX</code> .
17586	After the RDA device is created, you cannot change the number of streams supported for the device.		In release 3.1, for NVBU 10.0, this issue has been corrected. For NVBU 9.2, Tech Support has a process to change the streams.
17622	In Linux systems, the RDS standalone plug-in uninstalled and removed shared libraries under <code>oca-libs</code> making RDA devices unusable on the NetVault Backup server. If the RDS standalone package is uninstalled, NetVault Backup will stop working unless you install another RDA standalone package of		Corrected in the 3.0.0.1 release.



ID	Issue	Description	Workaround/Solution
		different version or upgrade NVBU again (if new NVBU version is not present, upgrade to the same NVBU version already installed on the machine).	
17440, 16835, 14516	Various browser issues. You were unable to select a row properly in Chrome. IE10 with Document Mode IE7 Standards did not display the Capacity chart. Chrome displayed a Request unsuccessful message when you tried to fix a password issue in the wizard.		Corrected in the 3.0.0.1 release.
15609, 17349, 18558	Improvements on savings between SRC and TGT for some specific backup workflows.		Corrected in the 3.0.0.1 release.
15492	Would like the GUI to show savings factor on the dashboard in addition to just showing percentage savings.		Corrected in the 3.0.0.1 release.
15267	Improvements to the file system consistency checker for some rare corner case scenarios.		Corrected in the 3.0.0.1 release.
14727	Compression in the Best savings mode has been improved.		Corrected in the 3.0.0.1 release. The Compression option has been removed from the GUI and is now modified by using the command line interface only.
12362	If the unit was booted with only one PS and then a second PS was plugged in, the state was not shown as being changed.		Corrected in the 3.0.0.1 release.
8520	Make other documentation available by using the GUI Help menu.		Additional documentation, such as the CLI and Interop guides, are now available in Help.
8490	The usage graph legends were long and had similar colors, which could be confusing.		Corrected in the 3.0.0.1 release. Filters have been added to allow you to choose one or more options to be shown.
7041	You could not complete an NFS mount on a Solaris client.		Corrected in the 3.0.0.1 release.
18218	Under certain failure scenarios, the DR Series system entered maintenance mode every few minutes when using Auto markers.		Corrected in the 2.1.0.2 release.
18189	Intermittently during upgrade, certain firmware components reported the firmware version improperly. This caused the upgrade code to report a failure.		Corrected in the 2.1.0.2 release.

ID	Issue	Description	Workaround/Solution
17821	Cannot configure an individual interface in the GUI.		This is expected behavior; the CLI must be used for advanced networking operations. In release 2.1.0.1, the GUI was updated to prevent usage of Edit Interface when an interface is disabled. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17820	ARCserve 16 support not documented in <i>Dell DR Series System Interoperability Guide</i> .		Corrected in the 2.1.0.1 release.
17791	“Warning: No loadable sections found in added symbol-file system-supplied DSO” error occurs when data deletion and the cleaner are running simultaneously.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17790	“Warning: No loadable sections found in added symbol-file system-supplied DSO” error occurs during deduplication.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17788	Restore Manager fails during init mode if Mac address changed.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17772	Backup Exec 2010 crashes in libstspidell.dll.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17766	“Program terminated with signal 6, Aborted” error occurs during replication.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17765	The <code>alerts --email</code> commands fail to write to the database.		Corrected in the 2.1.0.1 release. Upgrade the DR code using the CLI or GUI using the normal network interface and not the iDRAC.
17515	The command <code>stats --clients --type</code> does not work in the CLI.		Corrected in the 2.1.0.1 release.



ID	Issue	Description	Workaround/Solution
17329	Correct the race condition in monitoring the subsystem that can place the unit in maintenance mode.		Corrected in the 2.1 release. Race condition is identified.
17371	There is an error with the web server response code under a special condition.		Corrected in the 2.1 release.
14751	The UI can sometimes show all the interfaces at 10 G or 1 G specification depending on the network ports that are connected and active.		Corrected in the 2.1 release. This interface is redesigned.
17315	SMBD core in security inheritance handling on upgraded container.		Corrected in the 2.1 release.
17226	The GUI wizard displays an error when configuring static IP.		Corrected in the 2.1 release.
17216	Security SSL is updated.		Corrected in the 2.1 release.
17070	HP Data Protector Marker support is added.		Corrected in the 2.1 release.
10552	The GUI and CLI must allow the user to see the files that are getting replicated.		Corrected in the 1.1 release. Added active files tables to the statistics container pages.
15758	Ability to edit the hosts file using the CLI.		Corrected in the 2.1 release. Provided a method to update the hosts file via the CLI using the <code>network --host --add</code> command.
15908	All 6 interfaces for 1G option on the DR4100 system are not shown in GUI.		Corrected in the 2.1 release. All interfaces are now displayed in the GUI for various configuration options.
15943	The contact information does not display in the GUI after the submit button is clicked if mail relay host is not configured.		Corrected in the 2.1 release. Corrected the logic to not send the notification if the email relay host is not set.
15947	The wrong error message is displayed when removing all the NTP servers from the GUI.		Corrected in the 2.1 release.
16262	A wrong command syntax is seen for the <code>ost --limit</code> command		Corrected in the 2.1 release.
16322	For better support capability, ocafsd dumps on diagnostics must be allowed.		Corrected in the 2.1 release.
16515	Pending bytes for replication must be displayed.		Corrected in the 2.1 release. Provided pending bytes in the <code>stats --replication</code> output.

ID	Issue	Description	Workaround/Solution
16516	Extracting stack trace in the diagnostics bundle functionality must be added for better support diagnostics.		Corrected in the 2.1 release. The functionality has been added to the diagnostic gathering routine.
16916	Replication fails due to the firewall packet inspection and modification.		Corrected in the 2.1 release. Added replication checksum to all packets. The firewall vendor can be engaged if necessary to modify inspection parameters for replication traffic.
16963	Functionality required to change the behavior on update to disable the root user if it is enabled.		During any upgrade, the root user login is disabled (if it is enabled) which is an interface only Technical Support uses.
17167	The title in a few of the disk usage graphs must be made consistent with the others.		Corrected in the 2.1 release.
17184	Cannot install the BUE 32-bit plugin.		Corrected in the 2.1 release.
10849, 11520, 11636, 7752, 14892, 15297, 15667, 15945	Required support for Advanced Networking feature to allow configuration of multiple networks on a single unit.		Corrected in the 2.1 release.
14228, 16165	Service mode ocafsck reports only the first error in that stream.		Corrected in the 2.1 release. Improved the ocadsck logic to report all errors that occur in a stream.
15058, 15956	FS cache modifications and improvements are required.		Corrected in the 2.1 release.
15967, 16005	The core directories are not cleaned up after the diagnostic cleanup routine.		Corrected in the 2.1 release.
16441, 17067	On a specific container, replication appears to stop at 99 percent and then restarts.		Corrected in the 2.1 release. Corrected the race condition in the code that caused the issue.
16707, 13296	Unable to add a domain name that contains an underscore.		Corrected in the 2.1 release.
16937, 16904, 16806	Replication fails in a specific scenario when trying to decompress a file created in 1.x and replicated in 2.x.		Corrected in the 2.1 release. Resolved the issue in the decompression logic that caused the issue.



ID	Issue	Description	Workaround/Solution
7752, 14697, 15925	Advanced Networking support replication over other interfaces required.		Corrected in the 2.1 release. Support for Advanced Networking feature to allow configuration of multiple networks on a single unit.
16144	Critical event shows "Datacheck detected potential namespace inconsistency. Run file system scan as soon as possible."	Maintenance mode alarm falsely triggered due to code returning enoent instead of ebusy.	Corrected in the 2.1 release.
16679	File system stat call consumes more cycles than expected.	Performance enhancement for file system stat call.	Corrected in the 2.1 release.
16670	Deduplication failure in a specific ingest workflow.	Failure during inline deduplication when accessing many offsets. This results in a system core.	Corrected in the 2.0.1.1 release.
16655/1 6486	Relay server does not work when using an IP instead of a name.	When setting the relay server you were limited to using only its name.	Corrected in the 2.0.1.1 and 2.1 releases, respectively. You can now use a name, IP or FQDN.
16498	32-bit OST plugin for NBU is missing from 2.0.1.0 build. GUI URL pointing to 64-bit plugin.	When using release 2.0.1.0, the 32-bit OST plugin is missing. The URL for this plugin points to the 64-bit version.	Corrected in the 2.1 release. You now have access to both plugins.
16425	GUI incorrectly displaying DNS suffix as none.	GUI incorrectly displaying DNS suffix as none. In the CLI this is displayed correctly.	Corrected the issue in the script file that was parsing this information.
16420	Unable to install plugin on specific 32-bit Windows2013 NBU server.	Was unable to install a new driver over the top of an existing driver in some cases.	Corrected in the 2.1 release with updates to the package installer.
16381	Cleanup of log file messages referencing sdb5.	In some situations, lots of messages were added to the log files.	Corrected in the 2.1 release.
16247	<code>scatter_repl_io</code> time out experienced during replication.	During replication, the system showed a <code>scatter_repl_io</code> error.	Corrected the issue in the replication code.
16426	After upgrade from 1.x to 2.x, the GUI prompted for reboot but reboot did not occur on the first try.	When upgrading from 1.x to 2.x from the UI, the reboot does not appear to reboot the system.	Before clicking the reboot button in the UI, refresh the browser and to resolve the issue.

ID	Issue	Description	Workaround/Solution
			You can also do the upgrade from the CLI if you wish to work around this issue.
16083	Dell DR4100 system comes up in an error state due to additional power supply sensors that are discovered with newer iDRAC firmware.	This was caused by a new version of the iDRAC firmware which discovered additional sensors.	Corrected the issue in the Hardware Monitor code.
15795	There is no message instructing user to upgrade the Client OST plugin when DR4X00 FW is upgraded.	Added messaging to the UI so that during the upgrade the user is told to also upgrade the OST plugin if OST is being used.	Added messaging to inform the user to upgrade the plug also.
15695	GUI "Usage" page doesn't show any stats graphs in a special case.	If the client machine and the DR are not in the same time zone, then the usage graphs may not show the stats for some period.	We now use the time zone of the server rather than the client running the browser.
15275	Windows OST plug-in install fails on a DC.	Installing the OST plug-in on a DC fails.	The code now supports this option.
15067	Handle the '.' as part of the NETBIOS name.	Domain join to the AD domain controller is ok but access to DR4000 share fails. Handle/allow '.' in NETBIOS name. Access from windows client using test.com \administrator . smb.conf: workgroup = TEST.COM realm = ad.test.com administrator@sws ys-84 > authenticate -- show Domain: ad.test.com Login group: test.com \domain users administrator@sws ys-84 >	Corrected the code path to allow '.' for domain login groups.
14959	System did not come to operational state after upgrade due hardware monitor failing to start.	Intermittently after an upgrade the unit does not come into an operational state and remained in maintenance mode.	Added code to check the status of the SNMPD before starting the hardware monitor which resolves this issue.



ID	Issue	Description	Workaround/Solution
14957	Support bundles can be large. We need to support options to gather more specific info in these special situations.	<p>Add following new options for diagnostics collection.</p> <ul style="list-style-type: none"> <code>--logs</code> — Collect only logs and system configuration. <code>-cores</code> —Collect only cores <code>--auto_diags <#></code> — Collect only specified number of previous auto diagnostics. <code>--tcp_dump</code> — Collect tcp dump report. <p>The <code>auto_diags</code> option is hidden since this is a very special use case.</p>	<p><code>diagnostics --help</code> <code>collect Usage:</code></p> <pre>diagnostics -- collect [--name <name>] [--reason <reason>] [--force] [--dset] [--logs] [--cores] [--tcp_dump] [-- all]</pre>
14949	CLI expansion license was showing up as “In Use: No” even though the expansion license was installed.	Corrected the CLI command <code>system --show --license -verbose</code> to display the license in the correct state.	<pre>[root@swwsys-221 ~]# system --show --license --verbose Feature ID: 3 Description: 27TB Status: Enabled Entitlement ID: Start Date: End Date: Is Eval: No In Use: Yes</pre>
14897	OST limiter throughput below the set value.	The throttling speed limits that can be set using the DR Series system CLI commands (<code>replication --limit --speed</code>) would not match the set replication bandwidth limits.	Corrected some minor issues with the OST limits to correct this issue.
14889	Add the option to the CLI to show if the SNMP Trap’s email is on or off.	Added additional option to <code>alerts --show -email</code> command.	Added additional option to <code>alerts --show -email</code> command to show status of Trap’s e-mail.
14845	<code>system --upgrade</code> command fails with an error message: Upgrade image not found.	After replacing a hardware CRU or FRU, the DR may come up in support mode with a request to upgrade the hardware.	The GUI and CLI now place the uploaded SW package into the same directory so upon HW replacement this same image can be utilized to upgrade the new

ID	Issue	Description	Workaround/Solution
14724	Replication speed limits not throttling as expected.	The throttling speed limits that can be set using the DR Series system CLI commands (<code>replication --limit --speed</code>) would not match the set replication bandwidth limits.	component when necessary with no special user action required. Corrected some minor issues with the replication limits to address this issue.
13537	Dell DR4100 system enclosure hot add fails in Release 2.0.	Attempting to perform a "hot add" of an external expansion shelf enclosure in a DR4000 or DR4100 system fails because this is not a supported method of operation in the 2.0 product release. To prevent this error/failure condition from occurring, observe the following best practice: Ensure that before an external expansion shelf enclosure is cabled to and powered on to a Release 2.0 DR4000 or DR4100 system only after the DR Series system has been powered down.	The workaround is to observe the following best practice for connecting an external expansion shelf enclosure to a Release 2.0 DR4000 or DR4100 system: <ul style="list-style-type: none"> • Power off the DR4000 or DR4100 system (this is a requirement for 2.0 with Dell OpenManage 7.1). • Connect the cabling between the external expansion shelf enclosure and the DR4000 or DR4100 system. • Power on the external expansion shelf enclosure. • Power on the DR4000 or DR4100 system.
13580	User intervention is required when booting up a system that was rebooted due to a shelf going offline.	This condition can occur when an external expansion shelf enclosure goes offline, which requires that the DR Series system be rebooted. During the DR Series system boot up, it halts in the PowerEdge RAID Controller (PERC) H800 configuration process, and prompts you to press <F> to import the Foreign Disks .	To resolve this issue, press <F> to import the Foreign Disks , and allow the boot up process for the DR Series system to complete and boot normally. Once the process completes normally, the DR Series system will come up, and enter its Operational mode.
13790	DR Series system performance drops when background initialization runs on an external expansion shelf.	Whenever an external expansion shelf enclosure is added to the DR Series system, this	There is no workaround for BGI. This is a one-time only process that occurs when an



ID	Issue	Description	Workaround/Solution
14126	Do not connect an external expansion shelf enclosure to a DR Series system prior to upgrading to the 2.0 release.	<p>causes a one-time only impact to the DR Series system performance. The impact is a result of the background initialization (BGI) process running for an external expansion shelf (the system RAID disks require such initialization). BGI can take approximately 2 hours for a 3 Terabyte (TB) external expansion shelf enclosure to complete.</p> <p>System issues occur if any DR4000 systems running the pre-2.0 release system software connect and power on any external expansion shelf enclosure, and then upgrade to the DR Series system 2.0 release software. To prevent this condition, observe the following best practice:</p> <ul style="list-style-type: none"> • An expansion shelf enclosure should only be powered on and connected to a DR4000 system after the system has been upgraded to the 2.0 release software. • Follow the recommended sequence of operations listed in the Workaround/Solution section. 	<p>external expansion shelf enclosure is added. During BGI that is associated with the addition of an external expansion shelf enclosure, you should expect that performance for the DR Series system will be slower than usual.</p> <p>To resolve this issue, observe the following best practice for upgrading earlier DR4000 systems to the 2.0 release software (this must be done prior to connecting and powering on an external expansion shelf enclosure):</p> <ol style="list-style-type: none"> 1. Upgrade the DR4000 system with the release 2.0 system software. 2. Power off the DR4000 system (required for 2.0 with Dell OpenManage 7.1). 3. Connect the external expansion shelf (or shelves) with cabling to the DR4000 system. 4. Power on the external expansion shelf (or shelves). 5. Power on the DR4000 system.
14427	The Google Chrome browser reports that the upgrade page is unresponsive during a file upload.	<p>The Google Chrome browser displays a Page(s) Unresponsive dialog, which indicates it is in a "waiting" mode when uploading the DR4000 system software payload needed for the upgrade. The Page(s) Unresponsive dialog allows only two options:</p>	<p>There is no workaround at this time. Dell recommends that you click Wait and allow sufficient time for the uploading of the DR4000 system software upgrade to complete.</p>

ID	Issue	Description	Workaround/Solution
14895	Restore Manager needs to add a message to remove the USB key after the operating system installation completes.	<ol style="list-style-type: none"> 1. Click the DR4000 system software upgrade in the dialog list box, and click Kill pages. 2. Click Wait. <p>The USB key used during the Dell DR Restore Manager operating system installation process can be overwritten if it is not removed after successfully installing the operating system.</p>	<p>To prevent the overwriting of the USB key, when the operating system installation is successful, it is recommended that you observe the following best practices:</p> <ol style="list-style-type: none"> 1. Remove the USB key. 2. Reboot the system.
14920	Kernel panic due to soft lockup after killing power to the enclosure.	<p>A softlock error condition can occur if an active data ingest is in progress and any active external expansion shelf enclosure loses both of its power supplies. Because an error associated with inflight write data is detected, the DR Series system performs a "kernel panic" and reboots. During the reboot, if the external expansion shelf enclosure was already powered on and there was active inflight data in the PERC controller cache, the DR Series system remains in the BIOS window.</p>	<p>The workaround to resolve this issue is to perform the following:</p> <ol style="list-style-type: none"> 1. Follow the instructions displayed on the BIOS console or contact Dell Support for assistance. 2. Import the Foreign Configuration. 3. Accept the Configuration. 4. Do not run the configuration utility (as this will clear the configuration). 5. Ensure that you follow these instructions explicitly or you will lose your data.



Third party components

This product contains the third-party components listed below. For third-party license information, go to <http://software.dell.com/legal/license-agreements.aspx>.

Source code for some components can be found at <http://opensource.dell.com>.

Copyright notices can be found below at [Copyright Notices](#).

Component	License	Notes
keyutils utility 1.2.1.el5	GPL (GNU General Public License) 2.0	A copy of the license can be found below at GNU (Lesser General Public License) 3.0
libtalloc2 2.0.8.24.1	GPL (GNU General Public License) 3.0	A copy of the license can be found below at GNU (Lesser General Public License) 3.0
libsigc++20 2.2.4.2.1.el6	GPL (GNU General Public License) 2.0	A copy of the license can be found below at GNU (Lesser General Public License) 3.0
libxml++ 2.30.0.1.el6	GPL (GNU General Public License) 2.0	A copy of the license can be found below at GPL (GNU General Public License) 2.0
Linux SCSI target framework	GPL (GNU General Public License) 2.0	A copy of the license can be found below at GPL (GNU General Public License) 2.0
mhVTL	GPL (GNU General Public License) 2.0	A copy of the license can be found below at GPL (GNU General Public License) 2.0
OpenSSL 1.0.1e	OpenSSL License	This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/) A copy of the license can be found below at Open SSL License
Samba 3.5	GPL (GNU General Public License) 3.0	A copy of the license can be found below at GNU (General Public License) 3.0
Xmlsec1 2.12.8.el6	MIT	A copy of the license can be found below at The MIT License (MIT)
xmlsec1-openssl 2.12.8.el6	OpenSSL License	A copy of the license can be found below at Open SSL License

GPL (GNU General Public License) 2.0

GNU GENERAL PUBLIC LICENSE VERSION 2

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.
You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.
2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:



- a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
 - b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
 - c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.
3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:
 - a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.
 4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
 5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do



not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED



ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

[one line to give the program's name and a brief idea of what it does.] Copyright (C) [year] [name of author]

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author

Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w`.

This is free software, and you are welcome to redistribute it under certain conditions; type `show c` for details.

The hypothetical commands `show w` and `show c` should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w` and `show c`; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

[signature of Ty Coon], 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.

GNU (General Public License) 3.0

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. [<http://fsf.org/>] Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the



GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you".

"Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.



1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep

intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a. The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

- a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
- c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
- d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.



- e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a. Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b. Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c. Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or
- d. Limiting the use for publicity purposes of names of licensors or authors of the material; or



- e. Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f. Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.



11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

[one line to give the program's name and a brief idea of what it does.] Copyright (C) [year] [name of author]

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see [<http://www.gnu.org/licenses/>].



Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
[program] Copyright (C) [year] [name of author] This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see [<http://www.gnu.org/licenses/>].

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read [<http://www.gnu.org/philosophy/why-not-lgpl.html>].

GNU (Lesser General Public License) 3.0

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. [<http://fsf.org/>] Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a. under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or



- b. under the GNU GPL, with none of the additional permissions of this License applicable to that copy.
3. Object Code Incorporating Material from Library Header Files.
- The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:
- a. Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
 - b. Accompany the object code with a copy of the GNU GPL and this license document.
4. Combined Works.
- You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:
- a. Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.
 - b. Accompany the Combined Work with a copy of the GNU GPL and this license document.
 - c. For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.
 - d. Do one of the following:
 - 1. Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.
 - 2. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.
 - e. Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)
5. Combined Libraries.
- You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:
- a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.
 - b. Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.
6. Revised Versions of the GNU Lesser General Public License.
- The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.



Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

Open SSL License

/* =====

Copyright (c) 1998-2011 The OpenSSL Project. All rights reserved.

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 notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, 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 OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT "AS IS" AND ANY EXPRESSED 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 OpenSSL PROJECT OR ITS 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.

* =====

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)

All rights reserved.

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com). The implementation was written so as to conform with Netscapes SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL



code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used.

This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

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 copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, 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 acknowledgement: "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)" The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-).
4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``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 AUTHOR 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.

The license and distribution terms for any publically available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution licence [including the GNU Public Licence.]

*/

The MIT License (MIT)

The MIT License (MIT)

Copyright (c) 2007 James Newton-King

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE. THE SOFTWARE.

Copyright Notices

Components

libtalloc2 utility

Copyright (C) Andrew Tridgell 2004-2005

Copyright (C) Stefan Metzmacher 2006



Components

	Copyright (C) Jelmer Vernooij <jelmer@samba.org> 2008
Libxml2	Copyright (C) 1992, 1993, 1994, 1995, 1996, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006 Free Software Foundation, Inc. Copyright (C) 2000 Gary Pennington and Daniel Veillard. Copyright 1991 by the Massachusetts Institute of Technology Copyright (C) 2000 Bjorn Reese and Daniel Veillard.
Linux SCSI target framework	Copyright (C) 2007 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2008 Alexander Nezhinsky <nezhinsky@gmail.com> Copyright (C) 2006-2007 Pete Wyckoff <pw@osc.edu> Copyright (C) 2007 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2008 Ronnie Sahlberg <ronniesahlberg@gmail.com> Copyright (C) 2002-2003 Ardis Technolgies <roman@ardistech.com> Copyright (C) 2005-2007 Ming Zhang <blackmagic02881@gmail.com> Copyright (C) 2005-2007 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2005-2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2007 Pete Wyckoff <pw@osc.edu> Copyright (C) 2002-2003 Ardis Technolgies <roman@ardistech.com> Copyright (C) 2002-2003 Ardis Technolgies <roman@ardistech.com>, Copyright (C) 2001-2003 InterOperability Lab (IOL) University of New Hampshire (UNH) Copyright (C) 2005 Dmitry Yusupov Copyright (C) 2005 Alex Aizman Copyright (C) 2006-2007 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2006-2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2007 Dennis Dalessandro (dennis@osc.edu) Copyright (C) 2007 Ananth Devulapalli (ananth@osc.edu) Copyright (C) 2007 Pete Wyckoff (pw@osc.edu) Copyright (C) 2010 Voltaire, Inc. All rights reserved. Copyright (C) 2010 Alexander Nezhinsky (alexandern@voltaire.com) Copyright (C) 2006 FUJITA Tomonori <tomof@acm.org> Copyright (c) Alan Smithee. Copyright (c) Andrew McDonald <andrew@mcdonald.org.uk> Copyright (c) Jean-Francois Dive <jef@linuxbe.org> Copyright (C) 2008 Mark Harvey markh794@gmail.com Copyright (c) 2004 Cisco Systems, Inc. Copyright (C) 2004 Dmitry Yusupov, Alex Aizman maintained by open-iscsi@googlegroups.com Copyright (C) 2004-2007 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2005-2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2007 Mark Harvey <markh794@gmail.com> Copyright (C) 2010 Nicholas A. Bellinger <nab@linux-iscsi.org> Copyright (C) 2011 Alexander Nezhinsky <alexandernf@mellanox.com> Copyright (C) 2010 FUJITA Tomonori <tomof@acm.org> Copyright (C) 2013 Nippon Telegraph and Telephone Corporation. Copyright (C) 2011 Alexander Nezhinsky <alexandern@voltaire.com> Copyright (C) 2007 Davide Libenzi Copyright (C) 2013 Dan Lambright <dlambrig@redhat.com> Copyright (C) 2006-2007 FUJITA Tomonori <tomof@acm.org>

Components

	Copyright (C) 2006-2007 Mike Christie <michaelc@cs.wisc.edu> Copyright (C) 2008 FUJITA Tomonori <tomof@acm.org>
mhVTL	Copyright (C) 2009 - 2010 Kevan Rehm Copyright (C) 2005 - 2013 Mark Harvey Copyright (C) 1992 Eric Youngdale
OpenSSL	Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com). All rights reserved. Copyright remains Eric Young's Copyright 2005 Nokia. All rights reserved. Copyright (C) 2006, Network Resonance, Inc. Copyright (C) 2011, RTFM, Inc. (c) Copyright 1999 Bodo Moeller. All rights reserved. (c) Copyright 1999 Bodo Moeller. All rights reserved Copyright (c) 1999-2002 The OpenSSL Project. All rights reserved. Copyright (c) 2004, Richard Levitte <richard@levitte.org> All rights reserved. Copyright (c) 1999-2010 The OpenSSL Project. All rights reserved. (C) Copyright Microsoft Corp. 1993. All rights reserved. Copyright (C) 1995-1997 Eric Young (eay@cryptsoft.com) All rights reserved. Copyright (c) 2003 The OpenSSL Project. All rights reserved. Copyright (c) 2007 KISA(Korea Information Security Agency). All rights reserved. Copyright (c) 2004 Kungliga Tekniska H\F6gskolan (Royal Institute of Technology, Stockholm, Sweden). Copyright (c) 2005 The OpenSSL Project. All rights reserved Copyright (c) 2008 Andy Polyakov appro@openssl.org Copyright 2006 NTT (Nippon Telegraph and Telephone Corporation) . ALL RIGHTS RESERVED. Copyright (c) 2002 Bob Beck <beck@openbsd.org> Copyright (c) 2002 Theo de Raadt Copyright (c) 2002 Markus Friedl All rights reserved. Copyright (c) 2010-2010 Intel Corp. Author: Vinodh.Gopal@intel.com Copyright (c) 1986 by Sun Microsystems, Inc. Copyright 2011 Google Inc. Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com) All rights reserved. Copyright (c) 2005 Hewlett-Packard Development Company, L.P.
Samba	Copyright (c) 2003 SuSE Linux AG, Nuernberg, Germany. All rights reserved. Copyright (C) Stefan (metze) Metzmacher 2002 Copyright (C) Andrew Tridgell 2004 Copyright (C) Andrew Tridgell 2001-2003 Copyright (C) Andrew Bartlett <abartlet@samba.org> 2009 Copyright (C) Andrew Tridgell 2005 Copyright (C) Andrew Tridgell 2003-2005 Copyright (C) Stefan (metze) Metzmacher 2004 Copyright (C) Stefan (metze) Metzmacher 2004 Copyright (C) Andrew Tridgell 2005 Copyright (C) Andrew Tridgell 1992-2005 Copyright (C) Martin Pool 2002 Copyright (C) Jelmer Vernooij 2002 Copyright (C) James J Myers 2003 <myersjj@samba.org> Copyright (C) Stefan (metze) Metzmacher 2004 Copyright (C) Andrew Tridgell 1998 Copyright (C) Andrew Tridgell 1992-2003 Copyright (C) James J Myers 2003 <myersjj@samba.org> Copyright (C) Andrew Tridgell 2003 Copyright (C) James J Myers 2003 <myersjj@samba.org> Copyright (C) Andrew Tridgell 1992-2005 Copyright (C) James J Myers 2003 <myersjj@samba.org> Copyright (C) Stefan (metze) Metzmacher 2004-2005 Copyright (C) David Disseldorp 2008 <ddiss@sgi.com> Copyright (C) Stefan (metze) Metzmacher 2008 Copyright (C) 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 Copyright (C) 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 Free Software Foundation, Inc. Copyright tridge@samba.org 2002-2003




Components

Copyright metze@samba.org 2004 Copyright (C) tridge@samba.org Copyright (C) metze@samba.org Copyright (C) 2001 by Martin Pool <mbp@samba.org> Copyright (C) Jim McDonough (jmcd@us.ibm.com) 2003. Copyright (C) Stefan Metzmacher 2003 Copyright (C) Andrew Tridgell 2009 Copyright (C) Andrew Tridgell 2004 Copyright (C) Andrew Bartlett <abartlet@samba.org> 2004-2005 Copyright (C) Stefan Metzmacher 2008 Copyright (C) Jelmer Vernooij 2006 Copyright (C) Tim Potter 2004 Copyright (C) Stefan Metzmacher 2005 Copyright (C) 2004 Jelmer Vernooij, jelmer@samba.org Copyright (C) 2008 Matthias Dieter Wallnöfer, mwallnoefer@yahoo.de Copyright (C) Anatoliy Atanasov 2009 Copyright (C) Andrew Tridgell 2009 Copyright (C) Stefan Metzmacher 2004 Copyright (C) Stefan Metzmacher 2009 Copyright (C) Andrew Tridgell 2009 Copyright (C) Volker Lendecke 2005 Copyright (C) Andrew Bartlett <abartlet@samba.org> 2004-2008 Copyright (C) Stefan Metzmacher <metze@samba.org> 2005 Copyright (C) Matthias Dieter Wallnöfer 2009 Copyright (C) Jelmer Vernooij <jelmer@samba.org> 2004,2007 Copyright (C) Andrew Bartlett <abartlet@samba.org> 2004-2005 Copyright (C) Matthias Dieter Wallnöfer 2009 Copyright (C) Stefan (metze) Metzmacher 2006 Copyright (C) Stefan (metze) Metzmacher 2004-2006 Copyright (C) Stefan (metze) Metzmacher 2005 Copyright (C) 2008 Jelmer Vernooij, jelmer@samba.org Copyright (C) 2008 Wilco Baan Hofman, wilco@baanhofman.nl Copyright (C) Guenther Deschner 2006 Copyright (C) Wilco Baan Hofman 2008 Copyright (C) 2001 Andrew Tridgell (from samba3 ads.c) Copyright (C) 2001 Remus Koos (from samba3 ads.c) Copyright (C) 2001 Andrew Bartlett (from samba3 ads.c) Copyright (C) 2008 Jelmer Vernooij, jelmer@samba.org Copyright (C) 2008 Wilco Baan Hofman, wilco@baanhofman.nl Copyright © Jelmer Vernooij <jelmer@samba.org> 2008 Copyright (C) Andrew Tridgell 2005 Copyright © Jelmer Vernooij <jelmer@samba.org> 2008 Copyright (C) Stefan Metzmacher 2006 Copyright (C) Andrew Tridgell 2005 Copyright (C) Andrew Bartlett <abartlet@samba.org> 2008



Getting help

Other information you may need


 **WARNING:** The following table lists the documentation available for the Dell DR Series systems. The documentation listed is available at dell.com/support/home by browsing and selecting your specific DR Series system. For more information about DR Series system hardware, see the safety and regulatory information that shipped with your DR Series system. Warranty information might be included as a separate document.

Document	Description
<i>Dell DR Series System Getting Started Guide</i>	Provides an overview of how to set up the physical DR Series system hardware and includes technical specifications.
<i>Dell DR Series System Owner's Manual</i>	Provides information about DR Series system hardware features, troubleshooting the DR Series system hardware, and installing or replacing DR Series system hardware components.
<i>Dell DR2000v Deployment Guide</i>	Provides information about deploying the virtual DR Series system, DR2000v, on supported virtual platforms.
<i>Dell DR Series System Administrator Guide</i>	Provides information about managing backup and replication operations using the DR Series system software and GUI.
<i>Dell DR Series System Interoperability Guide</i>	Provides detailed information about system drive capacities and supported hardware and software for the DR Series systems.
<i>Dell DR Series System Command Line Reference Guide</i>	Provides information about managing DR Series system data backup and replication operations using the DR Series system command line interface (CLI).

 **NOTE:** Always check for the latest documentation and document updates at dell.com/support/home and select your specific DR Series system. Read any document updates first because they often supersede information in other documents.

 **NOTE:** Read the release notes first because they contain the most recently documented information about features and known issues for a specific product release.

Contacting Dell

 **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer-service issues, go to dell.com/support.



Locating Service Tag of your system

Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the front of the system by pulling out the information tag. Alternatively, the information may be on a sticker on the chassis of the system. This information is used by Dell to route support calls to the appropriate personnel.

Documentation feedback

Click the **Feedback** link in any of the Dell documentation pages, fill out the form, and click **Submit** to send your feedback.