

# EMC® NETWORKER® TECHNICAL GUIDANCE TO UPGRADING

EMC® NetWorker®  
Release 8.0 and later

## Technical Guidance to Upgrading

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This technical note contains important information about upgrading your EMC® NetWorker® environment. For the latest information regarding issues related to installation and upgrades please refer to the NetWorker Installation and Upgrade page on the EMC Support website at <https://support.emc.com/products/NetWorker/>

Documentation for NetWorker 8.0, 8.0 SP1 and 8.0 SP2 can be downloaded from **support.emc.com** by selecting **NetWorker** from the **Support by Product** page and clicking **Documentation**.

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**NOTICE**

The purpose of this document is to ensure that differences between NetWorker 8.0 and later and previous releases are fully understood in advance, to help ensure a successful upgrade. Before installing or updating to NetWorker release 8.0.x, review the NetWorker release 8.0 installation guide, administration guide, and other documentation.

[“Documentation” on page 48](#) lists the complete NetWorker release 8.0 documentation set.

This technical note applies primarily to upgrades from NetWorker releases 7.6.x to NetWorker 8.0.x. A direct upgrade from a release previous to NetWorker 7.6 to NetWorker 8.0 and later is not recommended due to the change increases for each version. Instead, a step upgrade is recommended.

In all cases, upgrades of large complex, scripted or customized environments should use test environments where possible and be prepared for process and workflow changes.

## Revision history

This technical note was originally published in June 2012. [Table 1 on page 2](#) presents the revision history of this document.

**Table 1** Revision history

Date	Description
October 11, 2013	<ul style="list-style-type: none"> <li>Updated for the release of NetWorker 8.0 SP2.</li> </ul>
December 14, 2012	<ul style="list-style-type: none"> <li>Updated for the release of NetWorker 8.0 SP1. Updated sections include:               <ul style="list-style-type: none"> <li><a href="#">“New Features in NetWorker 8.0 SP1” on page 5</a></li> <li><a href="#">“Known problems and limitations related to upgrading” on page 38</a></li> </ul> </li> </ul>
August 3, 2012	<ul style="list-style-type: none"> <li>Updated section <a href="#">“Operating system connectivity tuning” on page 33</a></li> </ul>
June 27, 2012	<ul style="list-style-type: none"> <li>NetWorker 8.0 RA released.</li> </ul>

## Considerations prior to updating the NetWorker server

Before updating the NetWorker server to release 8.0 from any prior version consider the following:

- ◆ On the NetWorker server, the update process performs a database conversion of the jobsdb database and modifies the resource database, nsrdb, and also performs a conversion of the NMC server database. Therefore, special considerations must be given if downgrading a NetWorker 8.0 server.

Modifications to the nsrdb resource database include:

- The removal of all read-only devices. For example, the update process removes the read-only device for AFTD and Data Domain devices.
- A new backup level, synthetic full, replaces the consolidate backup level. Group resources that use the consolidate backup level before an update, will not have a backup level after you update the NetWorker server software to version 8.0.

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**Note:** The *NetWorker 8.0 Administration Guide* describes how to perform a synthetic full backup.

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- For an AFTD only, the update process automatically adds the name of a NetWorker device to the Device Access Information attribute for the device.

On the Console server, the update process converts the SQL Anywhere 9.0 database to a SQL Anywhere 12 format

The sections “Downgrading a NetWorker Server” and “Downgrading the NMC server” in the *NetWorker 8.0 Installation Guide* describe how to downgrade a NetWorker 8.0 and NMC 8.0 server to the NetWorker 7.6.x version.

- ◆ Uninstall the previous version of NetWorker before installing the NetWorker 8.0 software.
- ◆ All storage nodes in the data zone must be updated to NetWorker 8.0 before the NetWorker server is updated.
- ◆ The NetWorker software automatically generates and adds the required update enabler code to the NetWorker server configuration database. This enabler cannot be removed. The update enabler code expires 45 days after the NetWorker server update, unless capacity based licensing is used. Contact EMC Licensing within 45 days of upgrading the NetWorker server to permanently authorize the update enabler. The *NetWorker 8.0 Licensing Guide* provides more information about how to authorize an update enabler and how to use the capacity based license model.

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**Note:** If the required update enabler expires or the auth code is not applied, the NetWorker software will not function at the new release level.

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## Interoperability considerations prior to upgrading

When preparing to update the NetWorker software, review the following interoperability considerations:

- ◆ A NetWorker 8.0 server is not compatible with a NetWorker 7.6.x or earlier storage node. Update all NetWorker storage nodes to NetWorker 8.0 *before* updating the NetWorker server. NetWorker 7.6.x or earlier storage nodes are disabled by a NetWorker 8.0 server.
- ◆ A NetWorker 7.5.x server cannot be directly updated to NetWorker 8.0. Update the NetWorker server and storage node software to version 8.0 in the following order:
  - Update the NetWorker 7.5.x server to version 7.6.x.
  - Update all of the NetWorker storage nodes to version 8.0. [“Determining the NetWorker storage node version” on page 27](#) provides information on how to determine the versions of the storage nodes.
  - Update the NetWorker server software to version 8.0.
- ◆ A direct upgrade from a NMC 7.5.x server to 8.0 is possible only if the NMC server is not also the NetWorker server. Update the NMC server to version 8.0 before updating the NetWorker server.
- ◆ A NetWorker 8.0 storage node is compatible with a NetWorker 7.6.x server.
- ◆ A NetWorker 8.0 client is compatible with a NetWorker 7.5.x and 7.6.x server. NetWorker 7.5.x and 7.6.x clients are compatible with a NetWorker 8.0 server.
- ◆ If the host operating system of a NetWorker server, storage node, or client will also be updated, update the operating system first, then update the NetWorker software.
- ◆ During an NMC server update from 7.6.x to version 8.0, the NMC server database is converted to the newer format. This conversion is automatically performed by a special migration utility (**gstdbupgrade.sh**) during the installation process. Before updating the NMC server to version 8.0 consider the following:
  - The conversion of large NMC databases might take more than one hour, although most conversions complete in under one hour.
  - The current filesystem that contains the NMC database directory must have available space that equals double the size of the current database.
- ◆ The NMC server software is not supported on the following operating systems that were previously supported:
  - HP-UX 11i v2, HP-UX 11iv3
  - Windows 2003, 2003 SP1, 2003 R2
  - AIX 5.2, AIX 5.3
  - Solaris 9

If the NMC server in the datazone is on one of these operating systems, the software cannot be updated to version 8.0. Install a new NMC server in the datazone on a supported operating system. The *NetWorker Software Compatibility Guide* on

<http://support.emc.com> provides more information on supported NMC server operating systems. To provide historical reports, keep the old NMC server at the previous NetWorker version.

- ◆ In NetWorker 8.0, synthetic full backup replaces consolidated backup. NetWorker 8.0 and later does not support the **Consolidate** backup level. During an upgrade from a previous release of the NetWorker server software to a NetWorker 8.0 server, the **consolidate** level name that was specified in the **Level** attribute of the **Group** resource is reset to NULL. To perform a synthetic full backup, in the **Level** attribute of the **Group** resource, select **synth\_full** or **incr\_synth\_full**. The *NetWorker 8.0 Administration Guide* provides detailed information on how to perform a synthetic full backup.

Review the “Updating” chapter of the *NetWorker 8.0 Installation Guide* to prepare the NetWorker server and NMC server software for updating to release 8.0 and later.

## New Features in NetWorker 8.0 SP2

The NetWorker 8.0 SP2 software does not contain any new features. The *NetWorker 8.0 and Service Pack Release Notes* provide information on fixes contained in this release.

## New Features in NetWorker 8.0 SP1

The EMC NetWorker 8.0 SP1 release provides significant functional enhancements, including support for the following:

- ◆ [“Visual differences” on page 5](#)
- ◆ [“Workflow differences” on page 7](#)

### Visual differences

The following visual changes have been introduced with NetWorker release 8.0 SP1:

- ◆ [“VMware visual enhancements” on page 5](#)
- ◆ [“Solaris AMD added to Software Distribution wizard support” on page 6](#)
- ◆ [“Auto-configuration of NDMP backups” on page 6](#)

### VMware visual enhancements

#### VM display name now visible in winworkr during recovery

When performing a VM recovery in winworkr, previously the VM display name did not appear, even if the option to show the VM display name was selected during backup. In NetWorker 8.0 SP1, the display name for the VM to be restored now appears in the winworkr program.

#### Configuring CBT using the variable VADP\_DISABLE\_CBT

In NetWorker 8.0 SP1 and later, a new variable **VADP\_DISABLE\_CBT** allows you to control the enabling or disabling of CBT. The *NetWorker and VMware Integration Guide* provides more information.

## **Solaris AMD added to Software Distribution wizard support**

The Solaris AMD architecture has been added to the Server and Client supported list for the Software Distribution wizard.

## **Auto-configuration of NDMP backups**

Previously, NDMP backups required manual configuration to offload DSA workload and activities to storage nodes and clients. When not configured appropriately, NDMP data travels to the storage node via the NetWorker server and the NetWorker server must then handle index processing, creating performance issues. Large NDMP index conversion operations need to share the NetWorker server which is typically busy with other backup operations, leading to performance issues.

NetWorker 8.0 SP1 supports auto-configuration of NDMP backups by automating the selection of resources and offloading of the index conversion.

## Workflow differences

The following workflow changes have been introduced with NetWorker release 8.0 SP1:

- ◆ [“VMware enhancements” on page 7](#)
- ◆ [“NPIV supported for tape device and jukebox” on page 8](#)
- ◆ [“Avamar 6.1 client support” on page 8](#)
- ◆ [“LTO-6 tape device support” on page 8](#)
- ◆ [“LTO device default block size increases to 256 KB” on page 8](#)

## Support for Windows 8, Windows Server 2012, and UEFI for Windows

NetWorker 8.0 SP1 provides Windows System State and File System backup and recovery support for Windows 8 clients, and Windows Server 2012 (including non-optimized backup and recovery for Windows Server 2012 deduplicated volumes), and for UEFI-based systems running Windows.

Optimized backup of data deduplication volumes on Windows Server 2012 is not supported. The NetWorker Release Notes provide more information.

## Windows BMR for Windows 8 clients and Windows 2012 server

Windows Bare Metal Recovery (BMR) is available for Windows 8 and Windows Server 2012 operating systems. This support includes a new Windows Bare Metal Recovery wizard in the NetWorker Management Console.

## VMware enhancements

The VMware integration with NetWorker 8.0 SP1 includes the following enhancements.

### Support for vSphere 5.1

NetWorker 8.0 SP1 supports vSphere 5.1 as part of the NetWorker integration with VMware. vSphere 5.1 requires the NetWorker 8.0 SP1 or later client on the VADP proxy.

**Note:** NetWorker 8.0. SP1 ships with VDDK 5.0 build 427917. The *NetWorker Software Compatibility Guide* provides an interoperability matrix containing VADP Proxy, vSphere and ESX version compatibility with the NetWorker server.

### Recovery of a VM which already exists in the environment by allowing a name change

In NetWorker releases previous to 8.0 SP1, a recover of the virtual machine fails if the virtual machine already exists in the specified ESX or VC server. If you did not want to delete the original VM, the VM had to be removed from the inventory, and the datastore folders associated with the VM renamed.

This is no longer required in NetWorker 8.0 SP1. A VM that already exists in the environment can be recovered by changing the name of the VM.

## **NPIV supported for tape device and jukebox**

NetWorker now supports N\_Port ID Virtualization (NPIV), allowing multiple systems to share a single physical Fibre Channel port. This support includes tape devices and jukeboxes, and allows jukeboxes to be configured in an AIX LPAR environment (AIX versions 6.1 and 7.1).

## **Avamar 6.1 client support**

NetWorker 8.0 SP1 supports the Avamar client version 6.1.

## **LTO-6 tape device support**

NetWorker 8.0 SP1 supports the configuration of LTO-6 tape devices.

## **LTO device default block size increases to 256 KB**

In NetWorker 8.0 SP1 and later, the default block size for an LTO device increases from 128 KB to 256 KB. When NetWorker labels a new or used volume in an LTO device and the Device block size attribute of the device is the handler default, then the label operation uses a 256 KB block size. Increasing the default LTO block size results in Data Domain VTL deduplication ratios improving by up to 15%, and physical tape device write speed over higher-latency SAN links improving by an average 30%.

**Note:** Volumes will not write at the new block size until the volume is labeled with NetWorker 8.0 SP1.



## New features in NetWorker 8.0

The EMC NetWorker 8.0 release provides significant functional enhancements, including support for the following:

- ◆ [“Visual differences” on page 9](#)
- ◆ [“Workflow differences” on page 15](#)

### Visual differences

The following visual changes have been introduced with NetWorker release 8.0:

- ◆ [“Stopping a session from NMC” on page 9](#)
- ◆ [“New storage node attributes in NMC to enable storage node resource” on page 9](#)
- ◆ [“Multiple resource editing in NMC” on page 10](#)
- ◆ [“Multi-Tenancy Facility option” on page 11](#)
- ◆ [“Client direct attribute to enable DFA in NMC” on page 11](#)
- ◆ [“Device Access Information attribute in NMC” on page 12](#)
- ◆ [“Probing and cloning jobs status/completion added to Savegrp reporting in NMC” on page 12](#)
- ◆ [“Synthetic full backups in NMC” on page 13](#)
- ◆ [“NDMP client configuration options in NMC” on page 13](#)
- ◆ [“NMM client configuration support in Client Configuration wizard” on page 14](#)
- ◆ [“Checkpoint restart backups for NDMP client in NMC” on page 14](#)

### Stopping a session from NMC

A NetWorker session (backup, synthetic full backup, clone, and recovery sessions) can now be stopped from NMC, even if the session was started from the command line. Cancel the session by highlighting the session, right-clicking and selecting **Stop** from the drop-down.

Cancelling a session from NMC does not impact any other group operations running.

### New storage node attributes in NMC to enable storage node resource

Storage node resources can now be enabled or disabled within the NMC Storage Node details pane under the Devices tab. Two new attributes, **Enabled/Disabled** and **Ready**, are visible in the window. Highlight the storage node resource, then right-click the resource to select Enable/Disable from the drop-down. You can also select multiple storage nodes to enable/disable more than one resource at the same time.

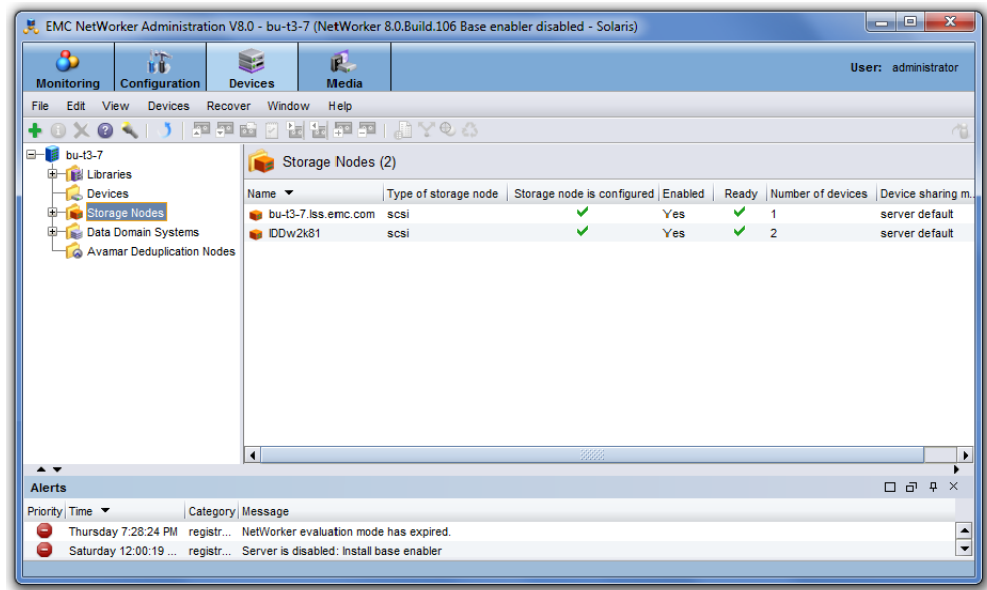


Figure 1 Storage Node details pane

## Multiple resource editing in NMC

Within NMC's Configuration view, you can edit an attribute for multiple resources at the same time. For example, to change the backup schedule for all clients within a group from the default to "Full Every Friday," select each client resource row in the window, then place the cursor in the column you want to change. The color of the column will change when the cursor is in the column. Right-click in that column, then select from the options available in the drop-down menu. The options include **Edit**, **Add to** and **Remove from**, depending on the column selected.

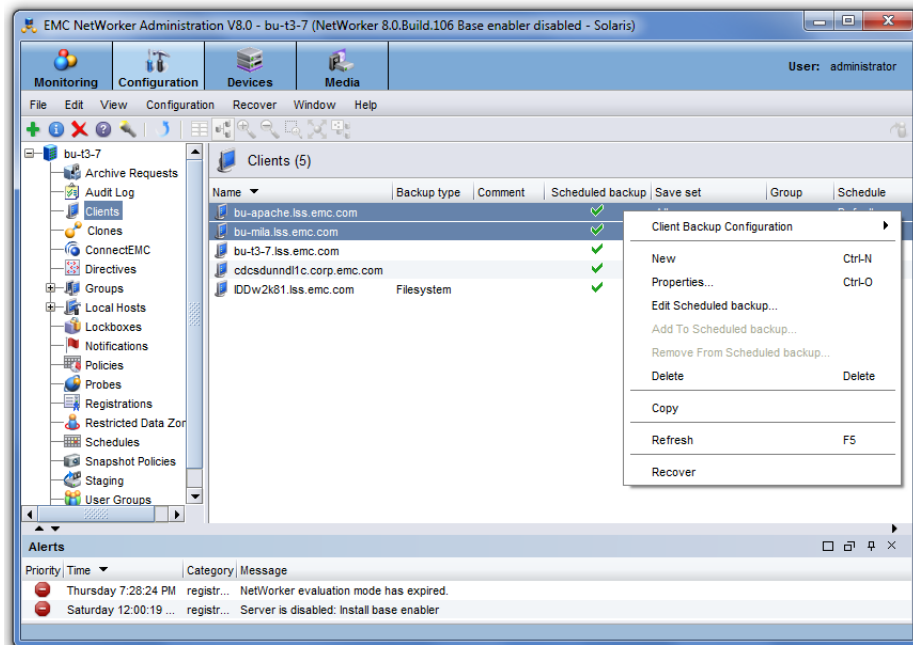


Figure 2 Multiple resource editing in NMC

**Note:** You can only select the columns that appear in the window. If the column you want to edit for multiple resources is not in view, add the column by right-clicking on a table header and selecting **Add Column** from the drop-down, then selecting from the list of available attributes.

## Multi-Tenancy Facility option

The Multi-Tenancy Facility option allows you to create restricted data zones so that users can concurrently use a single NetWorker data zone without being able to view data, backups, recoveries, or modify each other's virtual data zones. Tenant Administrators within a restricted data zone cannot see the information managed at the global data zone level, or the information managed for other restricted data zones.

To enable the Multi-Tenancy Facility feature, configure the new Restricted Data Zone resource on the NetWorker server. A restricted data zone is associated with its own NetWorker resources.

**Note:** NetWorker Module for Microsoft Application (NMM) is not supported within a Restricted Data Zone.

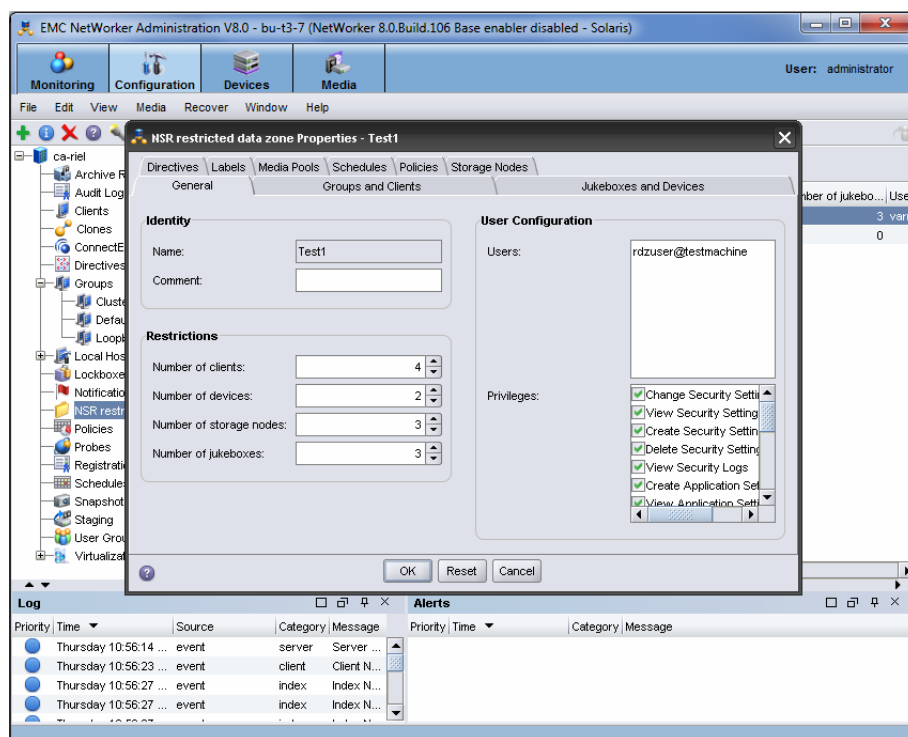


Figure 3 Restricted data zone properties window

## Client direct attribute to enable DFA in NMC

A new attribute, Client Direct, allows you to enable direct file access (DFA) for the client resource so that client backups can bypass the storage node and send deduplicated backup data directly to DD Boost storage devices, or send non-deduplicated backup data directly to AFTD storage. You can select the Client Direct option in the Client Properties window in NMC. Client Direct is enabled by default.

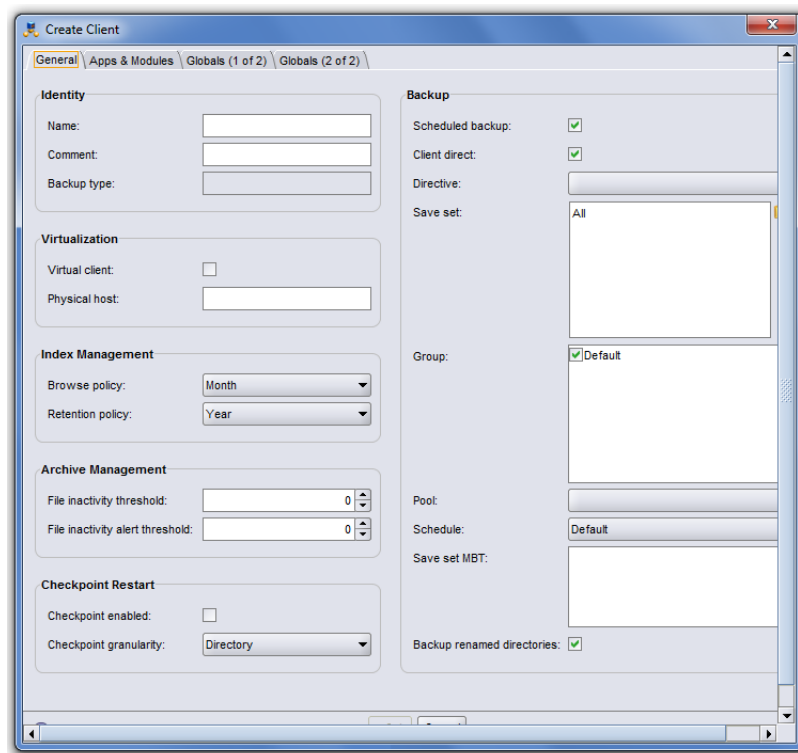


Figure 4 Client Direct attribute in the Client Properties window in NMC

## Device Access Information attribute in NMC

The Device Access Information attribute is a new attribute available when creating new devices in NMC. In this attribute, specify the complete path to the device directory. You can provide alternate paths for the Storage node and for Client Direct clients, as shown in the following:

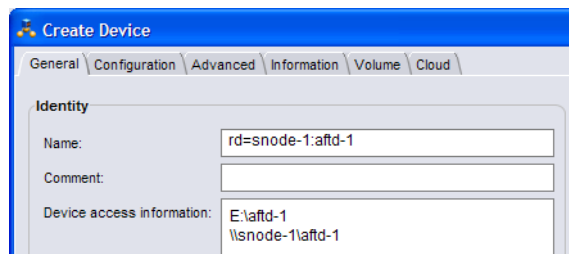


Figure 5 Device access information attribute in NMC

## Probing and cloning jobs status/completion added to Savegrp reporting in NMC

Savegrp reporting in the Monitoring window of NMC now includes job status and % completion for probing and cloning in addition to profiling and saving.

Probing and cloning tables appear in the Group Details dialog box.

## Synthetic full backups in NMC

A synthetic full backup combines a full backup and subsequent incremental backups to form a new full backup, reducing recovery time because the data is restored from the single synthetic full backup, instead of from a combination of the last full backup and the incremental backups that follow it. After the first synthetic full backup, the next synthetic full backup (or synthetic full with catch-up incremental) combines the previous synthetic full backup and subsequent incremental backups.

A synthetic full backup is the same as a traditional full backup. The Synthetic full sessions appear in the Monitoring window in NMC, along with Recover, Save, Clone, and Browse sessions.



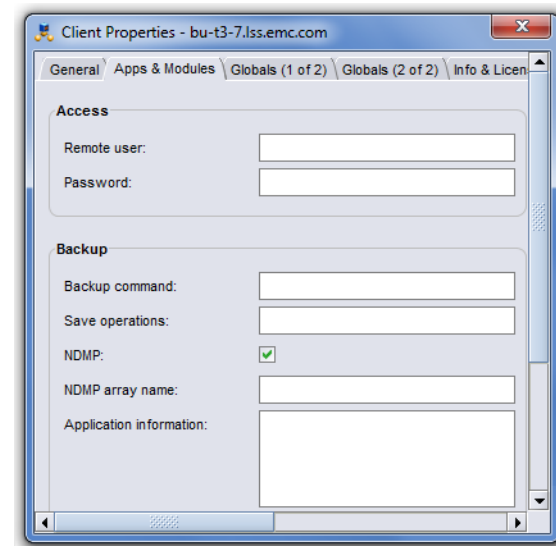
**Figure 6** Synthetic full sessions in the NMC Monitoring window

You can schedule synthetic full backups from the Schedule resource in NMC, or set up the backup in the **Client Properties** page of the Client Configuration wizard.

**Note:** You cannot create synthetic full backups from full, level, or incremental backups created with NetWorker versions prior to NetWorker 8.0. This feature supports file system backup only.

## NDMP client configuration options in NMC

When configuring a NDMP client, an option is now available in the Client Properties window to enable browsing of the NDMP host file system for save set selection. To browse the NDMP file system, select the NDMP checkbox in the **Apps & Modules** tab of the Client Properties, and specify a Remote user and password.



**Figure 7** NDMP option in Apps & Modules tab of NMC

After performing these actions, the Choose Directory dialog box displays, containing the NDMP host file system for selection.

## Checkpoint restart backups for NDMP client in NMC

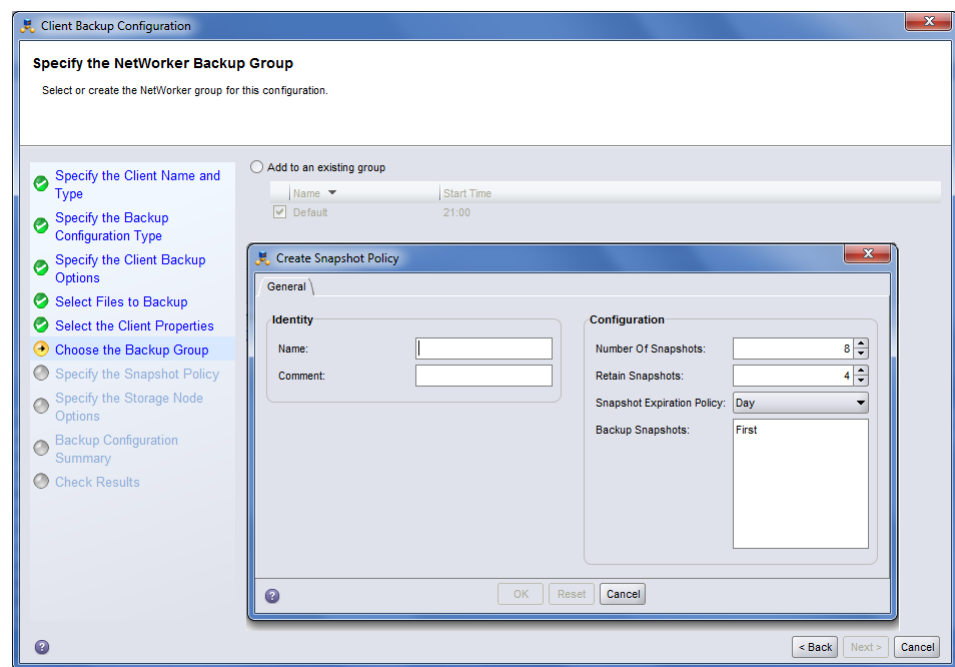
NetWorker 8.0 supports checkpoint restart for NDMP NetApp Clients, providing the ability to perform checkpoint restart for a failed backup of a NetApp filer.

To configure the NDMP client for checkpoint restart, select the **Checkpoint enabled** option under the General tab for the Client resource in NMC. Chapter 2, “Backing Up Data” and Chapter 20, “NetWorker support for NDMP” of *NetWorker Administration Guide* provide more information and considerations when setting up NDMP clients for checkpoint restart.

If either the NetWorker server or the NetWorker host initiating the NDMP backup is an earlier version, then the checkpoint restart feature is not supported for the NDMP NetApp backup.

## NMM client configuration support in Client Configuration wizard

The NMC Client Backup Configuration has been enhanced to support configuration of NMM clients. To support configuring the NMM clients, the **Specify the NetWorker Backup Group** page of the wizard displays the snapshot information, and a new wizard page, **Specify the Snapshot Policy**, allows you to create a new snapshot policy.



**Figure 8** Client Configuration wizard changes for NMM clients

From the NMC Configuration tab, the Group table displays existing groups with Snapshot enabled for NMM client and existing groups without Snapshots enabled for non-NMM client.

## Workflow differences

The following workflow differences have been introduced with NetWorker 8.0:

- ◆ “NetWorker server in LDAP or AD mode” on page 15
- ◆ “Windows Disaster Recovery now Windows Bare Metal Recovery (Windows BMR)” on page 16
- ◆ “Changes to User Group resources” on page 16
- ◆ “Audit Logging and Accountability” on page 16
- ◆ “Changes to the syslog configuration file” on page 16
- ◆ “Strong authentication recommended between NMC Console and the NetWorker server” on page 16
- ◆ “NMC uses SQL iAnywhere 12 database as server database” on page 17
- ◆ “Device workflow changes” on page 17
- ◆ “NetWorker support for ASR disaster recovery of Windows XP and 2003 clients” on page 18
- ◆ “Report home” on page 19
- ◆ “License management enhancements” on page 19
- ◆ “New savegroup failure notification” on page 19
- ◆ “Automatic volume relabel” on page 19
- ◆ “Filtering the savegroup completion report messages” on page 19
- ◆ “Restricting backup and recover access to a NetWorker server” on page 20
- ◆ “New file (/nsr/nsrrc) for NetWorker environment variables” on page 20
- ◆ “HomeBase agent no longer included in the NetWorker software installation package” on page 20
- ◆ “Preference given to read-only devices for recovery” on page 20
- ◆ “Ability to rollover the daemon.raw file in real time” on page 20
- ◆ “New compression directive (compressasm) supported by NetWorker” on page 20
- ◆ “Passwords no longer used in command line arguments” on page 20
- ◆ “Number of persistent device names can now exceed 1024 SCSI devices on Linux” on page 21
- ◆ “Support for enabling of SELinux on Linux platforms” on page 21
- ◆ “Java not included with the NetWorker software” on page 21

## NetWorker server in LDAP or AD mode

NetWorker 8.0 provides the ability to distribute a Lightweight Directory Access Protocol (LDAP) or a Microsoft Active Directory server (AD) configuration from the NMC server to any NetWorker server that is managed by the NMC server. This puts the NetWorker server in

LDAP or AD mode. In this mode, a NetWorker server authorizes users based on the LDAP or AD group that they belong to (provided those LDAP or AD groups have been configured as part of the “external roles” attribute).

## Windows Disaster Recovery now Windows Bare Metal Recovery (Windows BMR)

In previous versions of NetWorker, the automated offline recovery solution was called Windows Disaster Recovery (Windows DR). As of NetWorker 8.0, this feature is now referred to as Windows Bare Metal Recovery (Windows BMR).

## Changes to User Group resources

The following changes have been made to the User Group resources:

- ◆ A new attribute, “External Roles” in the User Groups resource, is used to map LDAP or AD groups into a NetWorker server 'Usergroup'. This in turn determines what NetWorker server-side privileges the LDAP or AD authenticated NetWorker user receives.
- ◆ NetWorker 8.0 has three new Administrators User Groups : **Security Administrators**, **Application Administrators**, and **Database Administrators**. While the **Security Administrators** and **Application Administrators** Usergroup cannot be customized, the **Database Administrators** Usergroup does allow customization.

In previous releases of NetWorker, a single Administrators group existed (whose **users** attribute mirrored the entries in the **administrator** attribute of the NSR resource ).

- ◆ The Administrators list attribute in the Server resource is independent of User Group membership. Changes to the Administrators list are not reflected in any Administrators User Group resource.

More information about User Group and Privileges is provided in the Managing server access section of the *NetWorker Administration Guide*. For more information about LDAP or AD configurations, refer to the Console Server Management chapter in the *NetWorker Administration Guide*.

## Audit Logging and Accountability

NetWorker 8.0 provides a centralized logging mechanism to log security-related events that occur for each NetWorker datazone. This mechanism is called audit logging. Appendix H, “NetWorker Accountability”, of the *NetWorker Administration Guide* provides information.

## Changes to the syslog configuration file

The NetWorker 8.0 software does not modify the `/etc/syslog.conf` file to force the logging of NetWorker messages to operating system log files. The section “Log settings” in Appendix H of the *NetWorker Administration Guide* provides more information.

## Strong authentication recommended between NMC Console and the NetWorker server

In NetWorker 8.0 and higher, the NMC Console host uses strong (nsrauth) authentication to communicate with the NetWorker server host. Legacy authentication, oldauth, is not recommended. By default, all NetWorker hosts use nsrauth Authentication and will fall back to oldauth (weak) authentication if nsrauth does not work. However, if you are



upgrading and the **nsrexecd** service on the NMC Console server or the NetWorker server was set up to use oldauth authentication exclusively, you should change it to use nsrauth authentication.

More information is provided in the *NetWorker 8.0 Release Notes*.

## NMC uses SQL iAnywhere 12 database as server database

The NMC server database is a SQL Anywhere database. The NMC 8.0 server embeds SQL Anywhere version 12. The NMC 7.6.x and earlier server software embeds SQL Anywhere version 9.

## Device workflow changes

NetWorker 8.0 introduces the following device changes for AFTD and Data Domain Boost devices:

### New daemon (nsrsnmd) for device management

A new daemon, **nsrsnmd**, provides an RPC-based service to manage all of the device operations that the **nsrmmmd** process handles on behalf of the nsrd process on the NetWorker server. This daemon is automatically invoked by nsrd as required, ensuring that the necessary device operations are actually performed when needed by nsrd.

**Note:** Only one nsrsnmd service runs on each storage node with configured and enabled devices.

### Device read-write functionality

Unlike earlier NetWorker releases, the 8.0 release does not create read-only mirror devices for AFTD and DD Boost devices. NetWorker 8.0 provides both write and read functionality on existing and new devices. The NetWorker 8.0 installation removes legacy read-only mirror devices.

#### NOTICE

If you downgrade NetWorker, devices created with NetWorker 8.0 will be unavailable and legacy devices and data will require manual reconstruction. Consult the *NetWorker Installation Guide* before downgrading.

### Device access information

The configuration of AFTD and DD Boost device identity is designed to handle multiple accesses:

- ◆ Each device is identified with a single NetWorker storage volume.
- ◆ Each device is defined by a single access path, although the access path may be represented in different ways for different client hosts.
- ◆ Each device may be created multiple times by giving each copy of the device a different name as an alias.

The devices access information attribute allows you to specify the complete path to the device directory when creating devices in NMC. More details are provided in the section [“Device Access Information attribute in NMC” on page 12](#).

## Licensing changes for Data Domain storage

Unlike earlier releases, NetWorker 8.0 Data Domain storage software enablers support multiple interfaces and network identities. In earlier releases, it was recommended to use an ifgroup software configuration of NICs on the Data Domain system to allow storage nodes to use the same network identity with a single Data Domain Storage system Enabler. Bandwidth aggregation is still a valid reason to use ifgroup configuration for DD Boost devices.

## Device sessions performance

AFTD and DD Boost devices use multiple concurrent nsrmmmd (data mover) processes per device and multiple concurrent save sessions (streams or threads) per nsrmmmd process. Optimal device configuration for backup or clone operations reduces the number of active devices required and thereby reduces the impact on Data Domain performance and maintenance.

Session load should be balanced among the available devices so that new sessions attach to devices with the least load. To enable optimum performance, adjustments can be made to the device Target sessions, Max sessions, and Max nsrmmmd count attributes.

## Client Direct feature

Client Direct, also known as direct file access (DFA), is a NetWorker feature that enables clients to send backup data over an IP network directly to AFTD or DD Boost storage devices, bypassing the NetWorker storage node. The storage node manages the devices used by the backup clients but does not handle the backup data.

The Client Direct feature is always used when it is available, and is set in the NMC Client Configuration wizard, as displayed in [“Client direct attribute to enable DFA in NMC” on page 11](#).

For Data Domain systems, the Client Direct feature leverages the DD Boost DSP component, which is installed as part of the NetWorker 8.0 client software. During backup, the DSP software on the client deduplicates the backup data before the Client Direct component sends the deduplicated data directly to the DD Boost devices. By working together, the DD Boost and Client Direct features can provide highly efficient data deduplication, transmission, and storage for multiple concurrent client backup operations. Backup bottlenecks are removed from the storage node and network bandwidth is better utilized.

Client Direct backups can be recovered by using traditional storage node functionality and conversely traditional storage node backups can be recovered by using Client Direct functionality if available.

## NetWorker support for ASR disaster recovery of Windows XP and 2003 clients

Beginning with NetWorker 8.0 clients, ASR backup for Windows XP Professional and Windows Server 2003 is no longer supported. However, ASR recovery using pre-NetWorker 8.0 client ASR save sets is still supported.

For bare metal recovery protection of NetWorker clients that run Windows Server 2008 and Windows 7 and later supported Windows operating systems, refer to the chapter “Windows Bare Metal Recovery” in the *NetWorker Administration Guide*.

## Report home

The report home feature is enabled by default during the installation of the NetWorker server and requires email capability on the NetWorker server. This connection enables the delivery of NetWorker configuration information to EMC Support when an event in the NetWorker software triggers a default notification. No other information or client data is sent to EMC Support.

By default, a NetWorker event is triggered and an email is sent that includes the NSR RAP attribute data.

## License management enhancements

NetWorker License Manager (NLM) now provides views of license use records, allowances, and capacity information in the Setup tab of the NMC Administration window. Administrators can create and modify allowances using the new NLM folders. Additionally, capacity license reports are now available in the Reports tab, and a License Compliance Summary report displays in the Configuration task view.

## New savegroup failure notification

A new preconfigured notification alerts a user when a backup fails to start at the scheduled time. By default, the report is sent:

- ◆ To the savegrp.log file for a Windows NetWorker server.
- ◆ By email to the root account of the UNIX NetWorker server.

The "Notifications" section in the *NetWorker Administration Guide* provides further details.

## Automatic volume relabel

NetWorker 8.0 introduces the ability to schedule the automatic relabeling of eligible volumes in a pool. In prior releases, volumes would be relabeled at the time of backup or clone and only when the selection criteria was met.

Automatically relabeling a recyclable volume provides the following benefits:

- ◆ Volume relabelling outside of the backup window without the need for a scripted solution.
- ◆ Appendable volumes available at the time of a backup or clone, resulting in faster backup and clone completion times.

The "Managing volumes in a media pool" section in the *NetWorker Administration Guide* provides further details.

## Filtering the savegroup completion report messages

NetWorker 8.0 introduces the ability to filter the savegroup completion messages on a UNIX NetWorker server based on a user defined filter file using a new **nsrscm\_filter** command. The "Filtering Savegroup completion report messages" section in the *NetWorker Administration Guide* and the man page provide further details.

## Restricting backup and recover access to a NetWorker server

NetWorker 8.0 introduces a new attribute to configure a NetWorker server to not accept any new backup or recover sessions in preparation of a NetWorker daemon shutdown or server reboot. The "Restrict backup and recover access to the NetWorker server" section in the *NetWorker Administration Guide* provides further information around how to prevent the NetWorker server from accepting new backup and recover sessions.

## New file (/nsr/nsrrc) for NetWorker environment variables

NetWorker 8.0 introduces support for a new NetWorker environment variable file, /nsr/nsrrc. Sourcing of this file occurs before starting the NetWorker processes. In previous releases of NetWorker, environment variables were commonly specified in the NetWorker startup script. These startup script files were overwritten when a software upgrade or reinstall occurred. The new /nsr/nsrrc file is not removed when upgrading or reinstalling the software.

Variables added to this file must also be added to the NSRLA resource or they will not be picked up by saves spawned by **nsrexecd**.

Chapter 5, "Backup to tape and VTL", of the *NetWorker Administration Guide* provides further details regarding the creation and use of this new file with the appropriate NetWorker environment variables.

## HomeBase agent no longer included in the NetWorker software installation package

In NetWorker 8.0, the HomeBase agent software is not bundled with the NetWorker packages.

## Preference given to read-only devices for recovery

In NetWorker 8.0, if the required volume is not already loaded into a device, preference is given to mount the volume in an eligible read-only device, if one is available.

## Ability to rollover the daemon.raw file in real time

In NetWorker 8.0, a new environment variable provides automatic rollover and truncation of the daemon.raw and gstd.raw files when these files exceed the maximum defined size. The Log file size management section in the *NetWorker Administration Guide* provides more details on how to configure and use this feature.

## New compression directive (compressasm) supported by NetWorker

The **compressasm** directive compresses files so that they use less network bandwidth and fewer volumes. The following three types of compression are supported:

- ◆ default NetWorker compression
- ◆ gzip compression
- ◆ bzip2 compression

## Passwords no longer used in command line arguments

The use of passwords in command line arguments has been discontinued. Instead, authentication and authorization of the user occurs upon executing the command.

## Number of persistent device names can now exceed 1024 SCSI devices on Linux

Previously, NetWorker supported up to 1024 persistent device names for tape and media changer devices on Linux. This limit has been removed.

## Support for enabling of SELinux on Linux platforms

Previously, mandatory access control architecture SELinux required disabling on Red Hat 5 and 6. With NetWorker 8.0, you can now enable SELinux for Linux platforms.

## Java not included with the NetWorker software

Java is not included with the NetWorker install. When installing the Console server software, a minimum JRE version of 1.6 is required, depending on the operating system. Java is required to run the Console GUI, but is optional for the NMC server.

If you do not have the required Java version installed, go to the Java website to download and install the appropriate JRE version. The NMC console cannot be started until the appropriate JRE version is installed.

# Upgrading from a NetWorker 7.5.x release

The following section provides information relevant to upgrades from a NetWorker 7.5.x release to NetWorker 8.0.

## Features introduced with NetWorker 7.6.x releases

The technical note *Technical Guidance to Upgrading to NetWorker 7.6.x* describes features that were introduced in the NetWorker 7.6, 7.6 SP1 and 7.6 SP2 releases, and is available on <https://support.emc.com>. The NetWorker 7.6.x Release Notes, also include information on features introduced in NetWorker 7.6 SP3.

## Features introduced in NetWorker 8.0

Review the list of features in the section [“New features in NetWorker 8.0” on page 9](#) and consider how these changes may impact your existing configuration. In many cases, the changes provide additional benefits or options. Although these new options may require additional effort, they are worth considering and should be part of the upgrade or planned for future implementation.

## Step upgrade of the NetWorker server

A NetWorker 7.5.x server cannot be directly updated to NetWorker 8.0. Update the NetWorker server and storage node software to version 8.0 in the following order:

- ◆ Update the NetWorker 7.5.x server to version 7.6.x.
- ◆ Update all of the NetWorker storage nodes to version 8.0. [“Determining the NetWorker storage node version” on page 27](#) provides information on how to determine the versions of the storage nodes.
- ◆ Update the NetWorker server software to version 8.0.

A NMC 7.5.x server that is not also the NetWorker server can be directly updated to NMC 8.0. Update the NMC server to version 8.0 before updating the NetWorker server.

## Update enabler automated when upgrading from NetWorker 7.5.x to NetWorker 8.0

Manually applying an update enabler is not necessary to move from a NetWorker 7.5 release to NetWorker 8.0. When the step upgrade is performed, no update enabler is required for the NetWorker 7.5.x to NetWorker 7.6.x upgrade, For the NetWorker 7.6.x to NetWorker 8.0 upgrade, the update enabler is automated.

## NetWorker client and server compatibility

Make note of the following NetWorker 7.5.x and 8.0 client and server compatibility:

- ◆ A NetWorker 8.0 client is compatible with a NetWorker 7.5.x server.
- ◆ A NetWorker 7.5.x client is compatible with a NetWorker 8.0 server.

## Back up NETWORKER.cfg file prior to upgrading from any version previous to NetWorker 7.5 Service Pack 2

When upgrading from any version of NetWorker previous to 7.5 Service Pack 2, the **NETWORKER.cfg** file must be backed up on each client and used to replace the new **NETWORKER.cfg** file created after the upgrade, in order to maintain user preferences.

## Reconfiguring Console authentication for LDAP if NMC fails to start after update

If a NetWorker 7.5.x Console server is configured to use LDAP for authentication and you are updating to release 8.0, in some cases NMC may fail to start after the update. If this occurs, the **gstd.raw** file in the Console's logs directory contains the message "acm: External directory library initialization failed".

### Workaround

Reset the Console authentication configuration and reconfigure LDAP by performing the following steps:

1. Ensure that the **gstd** service is not running. If **gstd** is running, stop the service.
2. Go to *<NMC install directory>/cst*.
3. Delete the files **Config.xml**, **csp.clb**, **csp.clb.bak** and **upgrade\_cst.tag**, if present.
4. Copy **Config.xml.template** to **Config.xml**.
5. Start the Console.

The Console starts in native authentication mode.

6. Log in as Console's 'administrator' user with the password that was last set for this user before switching to LDAP mode.
7. Go to **Setup > Configure Login Authentication** and configure LDAP again.

# Updating from a NetWorker 7.6.x release

The following section provides information for updating to NetWorker 8.0 from a NetWorker 7.6.x release, and includes the following topics:

- ◆ [“Features introduced in NetWorker 8.0” on page 23](#)
- ◆ [“Operating system support” on page 23](#)
- ◆ [“NetWorker Management Console changes” on page 23](#)
- ◆ [“Licensing” on page 24](#)
- ◆ [“Networking” on page 25](#)
- ◆ [“LDAP/AD support enhancements” on page 25](#)
- ◆ [“Devices” on page 25](#)
- ◆ [“VMware changes” on page 26](#)
- ◆ [“Modules” on page 26](#)
- ◆ [“Command line, logs and environment” on page 26](#)

## Features introduced in NetWorker 8.0

Review the list of features in the section [“New features in NetWorker 8.0” on page 9](#) and consider how these changes may impact your existing configuration. In many cases, the changes provide additional benefits or options. Although these new options may require additional effort, they are worth considering and should be part of the upgrade or planned for future implementation.

---

**Note:** If using NetWorker 7.6, also review the changes that were introduced in NetWorker 7.6 SP1, 7.6 SP2 and 7.6 SP3 releases.

---

## Operating system support

Most platform operating systems supported for NetWorker 7.6.x releases are also supported for NetWorker 8.0, however, if an OS version is end-of-life from the manufacturer, it will not be supported with NetWorker 8.0. Consult the *NetWorker Software Compatibility guide* to ensure all operating system versions are supported for your environment. Consider that clients, storage nodes and servers may have different supported versions or special considerations.

## NetWorker Management Console changes

The NMC installation remains largely unchanged from NetWorker 7.6.x versions. However, the Console software contains the following changes.

## User Interface

Changes to the NMC user interface for NetWorker 8.0 improve configuration and administration of the NetWorker data zone. These changes include new configuration wizards, additional usability features such as drag and drop, and field and window customization. In addition, a number of new fields and parameters are now available that may have been hidden or not provided in earlier versions.

The section [“Visual differences” on page 9](#) provides an overview of these changes.

In most cases, upgrading maintains existing configuration settings and sets appropriate defaults. However, additional knowledge or research may be required for new configurations or for changes to existing configurations in order to ensure optimized settings for your environment.

## Installation Host

NMC is an important component used to administer, monitor and diagnose multiple NetWorker datazones. Consideration therefore should be given to the location and capability of the NMC host. EMC recommends that this host be dedicated and separate to other NetWorker components such as the NetWorker server or Storage node. Review the current NMC host and consider upgrading or relocating to improve performance or availability.

---

**Note:** The operating system type and version of the host may be different to that of the NetWorker server and may also have different support than other NetWorker components. Consult the *NetWorker Software Compatibility Guide*.

---

## Java versions supported

NMC requires Java, which is installed on the client(s) used to access the NMC server and administer NetWorker. Versions of Java previous to 6.0 may not be compatible with NetWorker 8.0. Remove or update Java on all the systems that access the NMC server.

---

**Note:** NetWorker 8.0 no longer includes Java as part of the installation. Download and install Java from the [Oracle website](#).

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## Licensing

Changes to licensing fall into two areas, these are upgrade enablers and the introduction of new licensing or changes to licensing parameters.

### Update enablers

Upgrading from a NetWorker 7.6.x release to any other version of NetWorker 7.6.x does not require an update enabler. When upgrading from NetWorker 7.6.x to 8.0, NetWorker automatically generates an update enabler which remains valid for a period of 45 days. Update enablers must be authorized before they expire to maintain full data protection functionality of the NetWorker server.

### Licensing Changes

All existing licenses remain valid for upgrades to NetWorker 8.0. In some cases, where a new module or version is changed due to incompatibility, the license entitlement may change. Examples of this include older modules such as NetWorker module for Exchange



(NME) or NetWorker module for Oracle (NMO), where the same license entitlement allows for use of the replacement product. NetWorker Module for Databases and Applications (NMDA) for NMO, and NetWorker module for Microsoft applications (NMM) for NME

More information on licensing changes and new licenses are provided in the *NetWorker Licensing Guide*.

## Networking

Networking remains a critical element of successful and reliable operation for NetWorker components. Existing environments should be free from network errors and have adequate bandwidth and latency. NetWorker relies on DNS to validate and communicate to all elements of the infrastructure, as well as clients and storage nodes. Later versions of NetWorker include a number of changes, enhancements and new functionality that also relies on a well configured and adequate network infrastructure. Ensure that no networking issues exist prior to upgrade to ensure a smooth and reliable transition.

## LDAP/AD support enhancements

NetWorker 8.0 provides enhancements to LDAP and AD support. This includes the ability for both NMC and the NetWorker server to authenticate using LDAP or AD. As part of the upgrade you may need to consider the configuration of LDAP/AD with NMC and the NetWorker server. This may also require additional effort to ensure that existing local users are present or transitioned to LDAP.

**Note:** LDAP-S is not supported

## Firewall

NetWorker 8.0 introduces a number of architectural changes that impact the number of ports required for various operations, affecting existing environments that are configured within a firewall environment. The *NetWorker Administration Guide* provides more information on firewall and port usage.

## Devices

For tape environments or file type devices (FTDs), no significant changes to functionality or performance have been made for NetWorker 8.0. For Data Domain VTL, improvements were introduced from NetWorker release 7.6 SP3 and later that provide improved performance for multiplexed backups. These improvements are described in the *NetWorker Administration Guide*.

Most of the device changes introduced with NetWorker 8.0 involve AFTD and DDBoost devices, and are identified in the section [“New features in NetWorker 8.0” on page 9](#).

Read-only devices (.RO), common for all AFTD and DDBoost devices, are no longer used or created for new devices. Existing AFTD and DDBoost devices will have the .RO device removed as part of the upgrade process. The media database is also updated to remove the entries relating to the .RO device(s). The save sets remain on the main read/write device and recoveries can still be performed from this device.

Disk backup enhancements in NetWorker 8.0 allow for concurrent read/write sessions as well as the ability for the same device to be used by multiple hosts. The name of the device is no longer linked to the path used to access the device, although the device name is the same as it was before upgrading. There are also changes to the management of devices and the number of **nsrmmmd** processes that can be started. A new parameter (Max MMD's) is also introduced and is automatically populated during the upgrade.

Existing configurations continue to function without additional change. Review your current configuration to ensure that these performance gains can be optimized. It is recommended to delay these changes until completion of a successful upgrade.

## VMware changes

NetWorker 8.0 supports VADP, which was introduced with NetWorker 7.6 SP2 to replace the VCB method of securing VMware data.

VCB configurations continue to be available with NetWorker 8.0. However, it is recommended to migrate to VADP since VCB support from VMware is being dropped and is not likely to be supported in future versions of NetWorker.

## Modules

A review of the *NetWorker Software Compatibility Guide* is recommended to ensure that existing configurations remain supported with NetWorker 8.0.

Note that for NMM, which is used for the protection of Microsoft applications such as Exchange, SharePoint and Hyper-V, NetWorker 8.0 only supports the latest version, NMM 2.4. Upgrade to NMM 2.4 prior to any NetWorker server upgrade. The NetWorker Storage node and client software should also be upgraded on the NMM application hosts.

## Command line, logs and environment

For new installations, Windows users should note that the Install path has changed. Default configurations should remain unaffected, however, customized configurations or scripted solutions may require changes to accommodate this change.

For UNIX and Linux systems, NetWorker 8.0 introduces the ability to save environment variables in a new file, `/nsr/nsrrc`. This file is automatically read during start-up, so if using customized start-up scripts, environment variables should be moved to this new file. Also, environment variables added to this file must be added to the NSRLA attribute Environment Variables List. Windows systems are not affected by this change.

Logs remain in the same location and are preserved during upgrade. There is a new audit log, however this can be located on a central system and is not required on the server. The space required for the logs should be reviewed as part of the upgrade process to ensure sufficient space.

## Technical Considerations for upgrading

Review the following documentation before upgrading to ensure that your environment meets the requirements:

- ◆ Software Compatibility Guide
- ◆ Hardware Compatibility Guide.

Ensure that the current operating systems, applications and hardware devices in your environment are supported with the latest version of NetWorker before upgrading.

If the operating systems of your current NetWorker server and storage nodes are not supported with NetWorker 8.0, upgrade your operating system before upgrading the NetWorker application.

Start the upgrade with the NetWorker server and storage nodes. NetWorker clients can be upgraded in phases after the server and storage nodes are upgraded.

For detailed step by step instructions to upgrade a NetWorker server, storage node and/or client to 8.0 including pre-requisite and interoperability requirements, download the new **NetWorker Procedure Generator** on the EMC Online Support site at <https://support.emc.com>. This Windows application allows you to generate a precise upgrade procedure that can be viewed with Microsoft Word. Currently, upgrade procedures are available for Windows, Solaris and Linux.

### Backup of NetWorker 8.0 and later client cannot be recovered to a NetWorker 7.6.x or earlier client

On Windows operating systems, a backup of a NetWorker 8.0 or later client cannot be recovered to a pre-NetWorker 8.0 client.

### Determining the NetWorker storage node version

Before updating the NetWorker server software, update all NetWorker storage nodes to the NetWorker 8.0 software. NetWorker 7.6.x and earlier storage nodes are disabled by a NetWorker 8.0 server.

To determine the version of the NetWorker software installed on the storage nodes in a datazone, use the **nsradmin** application:

1. From a command prompt on the NetWorker server, type:

```
nsradmin
```

2. From the **nsradmin** prompt, set the attribute type to **nsr storage node**:

```
nsradmin> . type: nsr storage node
```

3. From the **nsradmin** prompt, display the hostname of the storage node and the version of the NetWorker software installed on the storage node:

```
nsradmin> show name;version
```

4. From the **nsradmin** prompt, display the a list of all storage nodes in the datazone and the corresponding version of the NetWorker software:

```
nsradmin> print
```

## Using the new compressasm directive for gzip and bzip2 compression

In addition to the default NetWorker compression, a new compression directive, `compressasm`, supports the use of `gzip` and `bzip2` compression.

For `gzip` compression, specify the `-gzip` argument with a compression level from 1 to 9. If no level is specified, the default value is 6:

```
+compressasm -gzip 3: .
```

For `bzip2` compression, specify the `-bzip2` argument with a compression level from 1 to 9. If no level is specified, the default value is 9:

```
+compressasm -bzip2 4: .
```

Both `gzip` and `bzip2` compression support compression levels 1 to 9, with 1 providing the least compression and 9 providing the most compression. Added compression uses more CPU resources and therefore, could increase backup times. Both `gzip` and `bzip2` compression cannot be used with the `aes` encryption ASM.

Consider the following when using **compressasm**:

- ◆ This ASM does not compress directories
- ◆ The amount of compression achieved is data-dependent
- ◆ This ASM can use considerable CPU resources, so its benefits could be limited on low-powered systems
- ◆ Some storage devices such as cloud devices and deduplication devices have their own encryption capabilities. If such a device is already set up to compress data, then using the `compressasm` will likely yield no added benefit.

## NetWorker catalog consistency checking

Before updating, ensure the NetWorker's catalog consistency by running the following commands:

- ◆ `nsrim -X`
- ◆ `nsrck -m`
- ◆ `nsrck -L6`

## Servers and storage nodes should be upgraded together

It is considered best practice to upgrade servers and storage nodes to the same release level. It is also best practice to upgrade storage nodes prior to upgrading servers.

## Changing parallelism settings

The client parallelism attribute for a NetWorker client is set to 12 by default. This value can cause problems with interoperability features such as Avamar, EMC Celerra backups, and VSS backups. Before changing the client parallelism attribute on NetWorker clients, review the section “Parallelism and Multiplexing” in the *NetWorker Administration Guide*.

## Manually removing data left behind from a partial uninstall of NetWorker software on Microsoft Windows

When performing a partial uninstall of the NetWorker software by using the **Add/Remove Programs** option in the Windows Control Panel, if **Change** is selected, certain folders, files, and registry keys remain on the system. This occurs when the **Remove NetWorker Metadata** checkbox was left unselected.

To remove this data:

1. Open Windows Explorer, and delete **%SystemDrive%\Program Files\EMC NetWorker\nsr**.
2. Open the Windows Registry Editor, and delete `<|HKEY_CURRENT_USER\Software\EMC NetWorker`.

If **Remove** is selected, the checkbox will not appear and a partial uninstall is performed.

## Install Solaris 10 Encryption Kit on Solaris 10 AMD64 and Intel

When installing or upgrading to NetWorker Release 8.0 on Solaris 10 AMD64 or Intel, ensure that the Solaris 10 Encryption kit is already installed on that host. This kit includes the packages SUNWcrman, SUNWcry, and SUNWcryr, and is available from the official SUN Solaris web downloads at <http://www.sun.com/download/index.jsp?tab=2>. Scroll down under "S" to find the link to the Solaris 10 Encryption Kit.

Failure to install this kit prior to the installation of NetWorker will result in NetWorker NOT functioning on the Solaris 10 AMD and Intel platforms.

## Install Secure Storage library for lockbox creation on HP-UX ia64

When you create a lockbox entry (using either nsradmin, NMC, or the client configuration wizard) on HP-UX ia64, lockbox entry creation fails with an error indicating that the Secure Storage Library was not initialized. This is due to a missing library, libccme.sl.

A hot fix containing the missing library libccme.sl has been provided in `/usr/src/patches/2009/NW110377/NW/7.6/hp11ia64`. Instructions for installing the hot fix are provided in the ReadMe file at `/usr/src/patches/2009/NW110377/README`.

## Update enablers automated when license expires

With NetWorker 7.6 and later, if an update enabler is required, the NetWorker software automatically adds the required update enabler code to its configuration. After the update enabler is added, the NetWorker server generates an alert and displays the alert in NMC (and in nsrwatch) to notify that this enabler needs to be authorized within 45 days. You must contact EMC Licensing within 45 days to permanently authorize the update enabler.

## Mac OS X installation changes

Starting with NetWorker 7.6 Service Pack 1, the NetWorker client for Mac OS X now uses `launchd` instead of `SystemStarter` to manage the NetWorker daemons (`nsrexecd`). Note the following changes:

- ◆ the NetWorkerUninstall script is now located in /usr/sbin instead of /Library/Receipts/NetWorker/Contents/Resources/NetWorkerUninstall
- ◆ to restart nsrexecd, run `launchctl start com.emc.NetWorker` instead of `SystemStart start NetWorker`.
- ◆ to shut down nsrexecd, only the -l option is supported; `nsr_shutdown` is no longer used to shut down nsrexecd.

## Linux package requirements

Ensure that these packages are installed before installing openmotif on all Linux architectures:

- ◆ `expat-1.95.7-4.s390.rpm`
- ◆ `libstdc++-3.4.6-11.s390.rpm`
- ◆ `freetype-2.1.9-8.el4.6.s390.rpm`
- ◆ `fontconfig-2.2.3-13.el4.s390.rpm`
- ◆ `xorg-x11-Mesa-libGL-6.8.2*.rpm`
- ◆ `xorg-x11-libs-6.8.2*.rpm`

To install the required libraries on Red Hat or SuSE platforms:

1. Determine if the following Linux packages are already installed:

---

**Note:** If you have access to "yum" repositories on your system you can simply type the following command for automatic validation and installation of the latest version of a particular package: `# yum install <package_name>` Where <package\_name> refers to the package requirements listed in the steps below.

---

- a. openmotif:

```
rpm -qa | grep openmotif
```

- b. `compat-libstdc++-33-3.2.3-47.3` or later

```
rpm -qa | grep compat-libstdc++
```

- c. `glibc-2.3.4` or later:

```
rpm -qa | grep glibc
```

---

**Note:** If configuring more than 32 VLAN NICs, install `glibc 2.5-12` or later.

---

- d. (Red Hat only) `libXp.so.6` and `libXm.so.3`:

```
#ls -l /usr/X11R6/lib/libXp.so.6  
#ls -l /usr/X11R6/lib/libXm.so.3
```

---

**Note:** By default, these libraries are not part of the operating system. On Red Hat Linux 4, libXp.so.6 is installed with the xorg-x11-deprecated-libs rpm. These packages are in Red Hat Linux 5, but are not selected by default. To select these packages, when installing Red Hat 5, in the Optional Packages in X Software Development Packages, individually select libXp.so.6 and libXm.so.3.

---

- e. (SuSE 10 only) libcap1-1.10-10.1.i586.rpm:

```
rpm -qa | grep libcap
```

- f. Pdksh (not required for Red Hat Enterprise Linux 5):

```
rpm -qa | grep pdksh
```

Red Hat Advanced Server 2: pdksh-5.2.14-13.i386.rpm or later

Red Hat Enterprise Linux 3: dksh-5.2.14-21.i386.rpm or later

Red Hat Enterprise Linux 4: dksh.5.2.14-30.i386.rpm or later.

SuSE 8 and 9 Itanium processor: pdksh-5.2.14-19i386.rpm

SuSE 8 and 9 x86: pdksh-5.2.14-532.i386.rpm

SuSE 10: pdksh-5.2.14-801.i586.rpm or later

---

**Note:** If the zh\_CN.utf8 locale is used, ensure that both the founder-simplified-0.20040419-6.1.noarch.rpm and the ttf-founder-traditional-0.20040419-6.1.noarch.rpm packages are also installed.

---

2. Download any required missing packages to a temp folder on the Linux computer. The operating system website provides download details specific to the operating system.

3. Change to the temp directory where the packages are downloaded.

4. Unzip the packages:

```
gunzip file_name.gzip
```

5. Untar the packages:

```
tar -xvf file_name.tar
```

6. Install the packages:

```
rpm -ivh file_name
```

7. Remove the packages from the temp directory.

## HP-UX package requirements

Ensure that packages on the following HP-UX systems have been downloaded and installed.

### HP-UX RISC package requirements

The NetWorker services cannot be started on an HP-UX RISC system until the following patches are downloaded from the HP web site:

- ◆ QPK1123(B.11.23.0712.070a) 1185010 Quality Pack Depot
- ◆ PHSS\_37492

To obtain these patches, go to <http://itrc.hp.com> and click on patch database . You must provide an appropriate username and login to download the patches.

### HP-UX 11.23 package requirements

PHSS\_37500 and its dependency patch PHSS\_39101 must be installed and changes are required to be made in the nsswitch.conf file and /etc/hosts file or nsrexecd will core dump after installing or upgrading to NetWorker 7.6.x.

To download the patch and update the configuration and hosts file:

1. Go to the HP web site at <http://itrc.hp.com> and download PHSS\_37500 and PHSS\_39101. You must provide an appropriate username and login to download the patch.
2. Run the patch to install.

### HP-UX 11iv1 package requirements

The IPv6NCF11i package is included in HP-UX 11.23 and later. For HP-UX 11i v1, IPv6NCF11i must be installed from the HP website:

1. Locate the IPv6NCF11i packages on the HP website.
2. Install the first depot, J4256AA\_A.02.01.01\_HP-UX\_B.11.11\_32\_64.depot.
3. Type the following command:

```
swinstall -x autoreboot=true -s  
$PWD/J4256AA_A.02.01.01_HP-UX_B.11.11_32_64.depot \*
```

4. Install the second depot, IPv6NCF11i\_B.11.11.0705\_HP-UX\_B.11.11\_32+64.depot.
5. Type the following command:

```
swinstall -x autoreboot=true -x enforce_dependencies=false -s  
$PWD/IPv6NCF11i_B.11.11.0705_HP-UX_B.11.11_32+64.depot
```

**Note:** If the NetWorker services on an HP-UX version previous to 11.23 are started without installing the packages, the nsrexecd daemon may not start. This will result in a core dump, and return the error message "Unable to find library libip6.sl".

### TOUR packages for HP-UX 11iv1, HP-UX11iv2, HP 11.23 and lower

Install the TOUR 2.0 packages, available from the HP web site, using the following steps:

1. Navigate to the HP web site and search for the TOUR 2.0 packages.
2. Install the first depot, J4256AA\_A.02.01.01\_HP-UX\_B.11.11\_32\_64.depot.
3. Run the following command:

```
swinstall -x autoreboot=true -s  
$PWD/J4256AA_A.02.01.01_HP-UX_B.11.11_32_64.depot \*
```

4. Install the second depot, IPv6NCF11i\_B.11.11.0705\_HP-UX\_B.11.11\_32+64.depot.



5. Run the following command:

```
swinstall -x autoreboot=true -x
enforce_dependencies=false -s
$PWD/IPv6NCF11i_B.11.11.0705_HP-UX_B.11.11_32+64.depot
```

### Required package for CDI support

PHKL\_36312 is required on the NetWorker server and storages for CDI support on devices. To download the patch:

1. Go to the HP web site at <http://itrc.hp.com> and download PHKL\_36312. You must provide an appropriate username and login to download the patch.
2. Run the patch to install.

### HP-UX Package Requirements for NetWorker Management Console

- ◆ The following patches are required to run NMC on an HP-UX server:
- ◆ HP-UX 11i v1: PHSS\_38154
- ◆ GOLDBASE11i for HP-UX 11i vi (GOLDBASE11i is a bundle contained in GOLDQPK11i, available on the HP Support Plus CDs)
- ◆ HP-UX 11i v2: PHSS\_38134
- ◆ HP-UX 11i v3: PHSS\_38135

## Operating system connectivity tuning

NetWorker now uses two file descriptors for each active session. Since the maximum number of sessions on a backup server is limited to 512 sessions, setting the number of available file descriptors to 1048 is sufficient for all environments. Note that some operating systems have a value of 256.

For systems with NICs capable of handling TCP packets at a lower level, you can enable TCP offloading on the operating system to:

- ◆ Increase overall bandwidth utilization
- ◆ Decrease the CPU load on the system

**Note:** TCP hardware offloading is beneficial if it works properly. However, not all NICs that market offloading capabilities are fully compliant with the standard. CRC mismatches may occur, resulting in increased retransmits. Monitor for errors if TCP offloading is enabled. If disabling is required, run the following:

```
# ethtool -K eth0 tso off
```

EMC also recommends increasing the network interface card queue length. Most new network interface cards already have this as a default.

```
# ifconfig eth0 txqueuelen 1000
```

## Recommended settings for UNIX and Linux

### Kernel parameter tuning for all UNIX and Linux systems

EMC recommends that for all UNIX and Linux systems, the following kernel parameters should be increased. The amount that these parameters should be increased is relative to the physical memory of the system; however, you should consider increasing these to at least twice the default settings.

- ◆ `maxfiles` (number of file descriptors per process)
- ◆ `maxsiz` (size of stack segment)
- ◆ `maxmsg` (message sizes)
- ◆ `nfiles/nflocks` (the number of file descriptors/locks)
- ◆ `semmax` (the number of semaphore sets available)
- ◆ `shmmax` (shared memory)

The following settings are recommended for specific UNIX and Linux operating systems:

#### AIX

Increase TCP buffers by modifying the `tcp_sendspace` and `tcp_recvspace` parameters to **524288**.

#### Solaris

Use the `ndd -set /dev/tcp` command to set the following values:

```
tcp_conn_req_max_q 1024
```

This parameter sets the maximum number of pending, non-processed TCP requests.

```
tcp_conn_req_max_q0 4096
```

Normally, this setting is four times the `tcp_conn_req_max_q` parameter.

```
tcp_time_wait_interval 60000
```

This allows Solaris to free connections faster once they are closed.

#### HP-UX

EMC recommends increasing the `max_thread_proc` kernel parameter from 64 to at least **256**, and `nfile` to at least **4096**.

#### TRU64

Under `/etc/sysconfigtab`, please set the following values:

socket:

```
somaxconn = 65535
```

```
sominconn = 65535
```

proc:

```
open_max_hard = 32768
```

```
open_max_soft = 32768
```

ipc:

```
sem_mni = 1024
```

```
sem_msl = 512
```

```
sem_opm = 512
sem_ume = 512
shm_allocate_striped = 1
shm_max = 2139095040
shm_min = 1
shm_mni = 256
shm_seg = 256
```

```
inet:
tcbhashnum = 16
tcbhashsize = 8192
```

## Linux

To increase the connection backlog (hash tables) to a maximum allowed value, modify the following parameters in `/etc/sysctl.conf` as follows:

```
net.ipv4.tcp_max_syn_backlog = 8192
net.core.netdev_max_backlog = 8192
```

To increase the memory size available for TCP buffers, modify the parameters as follows:

```
net.core.rmem_max = 16777216
net.core.wmem_max = 16777216
net.ipv4.tcp_rmem = 4096 87380 16777216
net.ipv4.tcp_wmem = 4096 65536 16777216
```

The following keepalive values are recommended:

```
net.ipv4.tcp_keepalive_intvl = 30
net.ipv4.tcp_keepalive_probes = 10
net.ipv4.tcp_keepalive_time = 3420
```

The following timeout after improper close is recommended:

```
net.ipv4.tcp_fin_timeout = 60
```

The following RPC value is provided:

```
sunrpc.tcp_slot_table_entries = 64
```

## Connectivity and DNS name resolution

Please check your DNS to determine if both forward and reverse lookups are properly configured across your environment for each IP address that is configured on your hosts, even if it is not used by NetWorker. Also, if your DNS is connected to a 100MBit Ethernet network while your backup network is 1GigaBit Ethernet, there will be performance implications under heavy loads, where multiple clients are accessing the DNS at the same time.

## Dedicated host for the NetWorker Management Console server

EMC highly recommends dedicating a host machine for the NetWorker Management Console (NMC) server. If your environment is small (less than 50 clients), you may be able to install the NMC server on the same server that hosts the NetWorker server.

## Hardware Requirements for the NetWorker server and storage nodes

As a general rule of thumb, the NetWorker server and the storage nodes should not use virtual memory (page or swap), which will decrease performance and will mean that physical memory is not available to process I/Os flowing through the server. A base recommendation of 8 GB of memory is a good starting point for all NetWorker servers and storage nodes.

CPU requirements: Please calculate 10MH/z of CPU cycles for every 1 MB of data that is flowing across the server. For example, if the intention is to push 300 MBs through a specific server under heavy load, you would need at least 3 GHz of CPU cycles ( $300 \times 10 = 3\text{GHz}$ ). In addition, you should add 30% to that calculation to make sure that maximum of 70% of the CPU is being used under heavy load. If more than 70% of the cycles are being utilized, the CPU response time increases dramatically and may impact processing performance significantly.

## Backup Policies

Because there are a number of new disk and tape technologies available for backup, this represents an excellent opportunity to consider changing your backup policies.

In general, EMC recommends a backup policy that consists of:

- ◆ A full backup every month
- ◆ A differential backup (level 1) every weekend between full backups
- ◆ Incremental backups between differentials

In terms of recoverability speeds, this backup policy works as well as a full backup every weekend and incremental backups between fulls, while providing significant advantages because less data is backed up on a daily basis, which means less backup target capacity is being used. This decreases the chances of backup failures and makes cloning much more affordable.

## Firewall considerations

### Data Domain port requirements

Regardless of the network connections used, communication and backup through a firewall requires the use of specific ports and protocols. Ensure that the following ports are open between the Data Domain NetWorker and NMC servers:

- ◆ TCP 111 (NFS portmapper)
- ◆ TCP 161 (for NMC server to query for alerts and statistics)
- ◆ TCP 162 (SNMPTRAP for NMC server to receive traps to monitor status and events)
- ◆ TCP 2049 (NFS)
- ◆ TCP 2051 (Replication, if clone-controlled replication is used, Data Domain to Data Domain systems)
- ◆ TCP xxxx (select a random port for NFS mountd, 2052 is the default)

On the Data Domain system, run the following command from SE mode:

```
# nfs set mountd-port xxxx
```

Restart the Data Domain system.

The Data Domain system provides functionality to review your network configuration and capabilities, as well as SSH telnet to help diagnose issues.

## ATMOS Cloud port requirements

The TCP ports 80 and 443 must be open to use an Atmos COS device. These ports are required to allow outgoing communication from the NetWorker server to the Atmos server. If a proxy server is configured in the environment, an exception might also be required to ensure unrestricted access. If ports 80 and 443 are not open, device operations will fail with the error, "Atmos label operation failed: Failed to write cloud label: Couldn't connect to server".

## Client port requirements

The NetWorker client process, **nsrexecd**, uses four ports. If the NetWorker client is also the Audit Log server, an additional port is required for the **nsrlogd** process.

### Client Configuration Wizard

The NetWorker Client Configuration wizard uses one port for each open user interface on the NetWorker client. This is a dynamic port that is closed when the wizard is closed. These ports are selected from the port range configured by using **nsrports**.

## Storage node port requirements

If a storage node is in the DMZ, a total of 4 + the number of jukeboxes + 2 x (number of tape drives) need to be opened. For example, for a storage node that has a tape library with four drives, you would need 13 ports ( $4 + 1 + 2 \times 4 = 13$ ). If more than one storage node is in the DMZ, the range of ports will be shared among all the storage nodes in the DMZ. Therefore, you should open the range of ports required for the storage node with the most number of tape drives.

## Service port requirements

To calculate service ports requirements for a NetWorker 7.6 or later server, use 12 + the number of jukeboxes + 2 x (number of tape drives) should to be opened. NetWorker also uses an additional service port for software distribution.

## Connection ports

In busy environments with more than 200 saves running at the same time, it is best to let operating system handle port assignment rather than restricting the range within NetWorker. This is done by setting the connection port range to 0-0 (for example, nsrports -C 0-0).

New installations of NetWorker automatically set the connection port range to 0-0. Upgrades to 7.4 and later will maintain the setting that existed prior to the upgrade.

## Microsoft Windows Firewall Handling

Detection of Windows firewall occurs during NetWorker installation, and the user will be prompted to enable firewall support. If the user chooses to configure firewall support, the NetWorker installation will create an exception for the NetWorker software. To confirm the exception at the end of the installation, users can go to the Properties of the Local Area Connection -> Advanced -> Settings. Under the Exceptions tab of the Windows Firewall window, there will be an entry for NetWorker client.

Note: To troubleshoot firewall configuration issues on Windows, a debug log is created in %temp%\nwmsivbs.log.

## Device Configuration

For a detailed discussion of best practices on how to configure tape devices for usage by NetWorker server and storage nodes, see the *Configuring Tape Devices for EMC NetWorker Technical Note*, part number 300-008-352 REV A01. Ask your professional services representative for details.

## Known problems and limitations related to upgrading

This section describes known limitations related to upgrading in the NetWorker family of releases. The *NetWorker 8.0 and Service Packs Release Notes* provide a full list of known limitations.

Unless the entry for a known limitation indicates that it is resolved for a specific release, the limitation applies to the release in which it is identified *and* all subsequent releases. If a limitation is resolved, it will also be identified in the fixed bugs table for the release in which it is resolved.

[Table 2 on page 38](#) identifies problem issues and limitations that apply to upgrades to NetWorker 8.0 and later.

**Table 2** Limitations when upgrading to NetWorker release 8.0 and later (page 1 of 2)

Issue number	Description of limitation	Operating system affected
<a href="#">“NW136850” on page 39</a>	Using Client Configuration wizard to configure NetWorker 7.6 SP3 or earlier client fails when server is NetWorker 8.0 SP1	All
<a href="#">“NW136616” on page 40</a>	Creating NetWorker 8.0 clients using Client Configuration wizard fails if NetWorker server is not version 8.0	All
<a href="#">“NW138204” on page 40</a>	NetWorker storage node device properties continue to include Read-only devices after upgrade from NetWorker 7.6 SP2	Windows
<a href="#">“NW137334” on page 40</a>	Write completion delay on backups performed using NetWorker 7.6.x server and NetWorker 8.0 storage node	Linux
<a href="#">“NW136874” on page 40</a>	Read-only device of AFTD not mounted if AFTD configured on pre-NetWorker 7.6 SP3 server using NetWorker 8.0 storage node	AIX, Linux
<a href="#">“NW135055” on page 40</a>	Consolidate level not supported, use synth_full or incr_synth_full instead	Solaris
<a href="#">“NW133500” on page 41</a>	NetWorker client (nsrexecd) does not start after recovering VSS save sets from a previous release	Windows
<a href="#">“NW133490” on page 41</a>	VSS backup performed with NetWorker 7.6 SP2 cannot be recovered using NetWorker 7.6 SP3 or later	Windows
<a href="#">“NW136068” on page 41</a>	Notification commands moved from /usr/ucb to /usr/bin on Solaris 11	Solaris
<a href="#">“NW134987” on page 41</a>	Client resource cannot be created for a NetWorker 7.6 SP3 client using the NMC Client Configuration wizard when the NMC version is at NetWorker 7.6 SP2 or earlier	Solaris
<a href="#">“NW133542” on page 42</a>	Deduplication (Avamar and Data Domain) not supported in NetWorker 7.6 SP3 running on AIX 7.1 platform	AIX
<a href="#">“NW131771” on page 42</a>	Reboot of the VADP proxy host required after upgrading from NetWorker 7.6 SP2 to NetWorker 7.6 SP3 if VDDK 1.2.1 was installed prior to upgrade	Windows

**Table 2** Limitations when upgrading to NetWorker release 8.0 and later (page 2 of 2)

Issue number	Description of limitation	Operating system affected
<a href="#">“NW122973” on page 42</a>	Alert not displayed in NMC on the first day of evaluation license	Windows
<a href="#">“NW129515” on page 43</a>	Glibc-locale-32bit package required on 64-bit SuSE Linux system to run NMC	Linux
<a href="#">“NW119766” on page 43</a>	Changes to handling of the nwclust.pl script when upgrading to NetWorker 7.6 SP2 in an AutoStart 5.4 and later cluster	All
<a href="#">“NW124590” on page 43</a>	Error appears if syslogd is not being used as the default program logger	Linux
<a href="#">“NW122342” on page 44</a>	Warning message appears when starting NetWorker services on UNIX	UNIX
<a href="#">“NW129735” on page 44</a>	Incorrect proxy information displayed in NMC for VM client resource after upgrading the NetWorker server to 7.6 SP2	Windows
<a href="#">“NW125084” on page 44</a>	NetWorker uninstallation on VADP proxy host	Windows
<a href="#">“NW120324” on page 45</a>	Data Domain systems do not display in NMC Enterprise window or NetWorker Administration Devices window upon reinstalling NMC after a complete uninstall	Solaris, Windows
<a href="#">“NW124547” on page 45</a>	HomeBase Agent 6.2.1 does not automatically install as part of NetWorker Client installation on Red Hat Enterprise Linux 5.5 and later	Linux
<a href="#">“NW113316” on page 45</a>	Upgrade of NMC for NetWorker 7.4 Service Pack 5 to release 7.6 may result in core dump on AIX	AIX
<a href="#">“NW110327” on page 46</a>	nsrjobd running after uninstallation of NetWorker on Windows	Windows
<a href="#">“LGTsc32944” on page 46</a>	Library disabled after upgrading from NetWorker 7.4 release	AIX
<a href="#">“LGTsc15490” on page 47</a>	Upgrading on Linux with rpm -Uvh not working correctly	Linux
<a href="#">“LGTsc08958” on page 47</a>	JRE version mismatch causes authentication error, stops GSTD	Solaris

### Using Client Configuration wizard to configure NetWorker 7.6 SP3 or earlier client fails when server is NetWorker 8.0 SP1

#### NW136850

After the NetWorker servers are upgraded to NetWorker 8.0 SP1, using the NMC Client Configuration wizard to configure a NetWorker 7.6 SP3 and earlier NetWorker Client will fail.

If the NetWorker servers are upgraded to NetWorker 8.0 SP1, ensure that the NetWorker client is upgraded to a minimum NetWorker 7.6 SP4.

### **Creating NetWorker 8.0 clients using Client Configuration wizard fails if NetWorker server is not version 8.0**

**NW136616**

Creating a NetWorker 8.0 client using the NMC Client Configuration wizard fails if the NetWorker server is a version previous to 8.0.

#### **Workaround**

Manually create the client.

### **NetWorker storage node device properties continue to include Read-only devices after upgrade from NetWorker 7.6 SP2**

**NW138204**

After upgrading from NetWorker 7.6 SP2 to NetWorker 8.0, the NetWorker storage node Device properties continue to include read-only (.RO) devices that existed previously in the device count. If any user scripts rely on this value, these scripts may require updating.

The number of devices adjusts to the current number after shutting down and restarting NMC.

### **Write completion delay on backups performed using NetWorker 7.6.x server and NetWorker 8.0 storage node**

**NW137334**

When a backup is performed using a NetWorker 7.6.x server and a NetWorker 8.0 storage node, write completion does not occur until several minutes after the savegrp reports the backup completed successfully. If a recovery is attempted within that time window, the recovery will not start until the write completion notice has been written to the logs.

### **Read-only device of AFTD not mounted if AFTD configured on pre-NetWorker 7.6 SP3 server using NetWorker 8.0 storage node**

**NW136874**

When an AFTD is configured on a NetWorker server previous to NetWorker 7.6 SP3 using a NetWorker 8.0 storage node, the read-only device of the AFTD does not get mounted.

#### **Workaround**

The read-only device must be mounted manually.

### **Consolidate level not supported, use synth\_full or incr\_synth\_full instead**

**NW135055**

NetWorker release 8.0 does not support the consolidate backup level. During an upgrade from a previous release of the NetWorker server software to a NetWorker 8.0 server, the consolidate level name that was specified in the Level attribute of the Group resource in the previous version of the NetWorker software is reset to NULL.

To perform a synthetic full backup, in the Level attribute of the Group resource, select synth\_full or incr\_synth\_full. The *NetWorker Administration Guide* provides detailed information on how to perform a synthetic full backup.



## NetWorker client (nsrexecd) does not start after recovering VSS save sets from a previous release

**NW133500**

The NetWorker client process (**nsrexecd**) does not start after performing a recovery of VSS save sets that were backed up using a NetWorker release 7.5 SP4 or earlier (for example, if a NetWorker 7.5 SP4 VSS backup is recovered using NetWorker 8.0).

### Workaround

Reinstall the previous version of NetWorker to perform the VSS recovery, and then upgrade the NetWorker client to the latest version and perform a full backup.

## VSS backup performed with NetWorker 7.6 SP2 cannot be recovered using NetWorker 7.6 SP3 or later

**NW133490**

A VSS backup that was performed using NetWorker 7.6 SP2 cannot be recovered using NetWorker 7.6 SP3 or later. The VSS system file recovery fails with an error similar to the following:

```
VSS BCD BOOT FILES has not been successfully recovered.
```

### Workaround

After performing the upgrade, a **Full** level backup of the system must be performed so that the VSS system save sets can be recovered.

**Note:** Only the VSS system save sets cannot be recovered from the NetWorker 7.6 SP2 backup; all other data can be recovered using the normal recovery procedure.

## Notification commands moved from /usr/ucb to /usr/bin on Solaris 11

**NW136068**

Notification commands such as mail and logger have been moved from /usr/ucb to /usr/bin on Solaris 11. As a result, messages are not updated.

### Workaround

Create symbolic links to point to the new location of the commands, as in the following:

```
# mkdir /usr/ucb
# ln -s /usr/bin/logger /usr/ucb/logger
# ln -s /usr/bin/mail /usr/ucb/mail
```

## Client resource cannot be created for a NetWorker 7.6 SP3 client using the NMC Client Configuration wizard when the NMC version is NetWorker 7.6 SP2 or earlier

**NW134987**

Creating a Client resource for a NetWorker 7.6 SP3 client using the NMC Client Configuration wizard fails if the NMC version is 7.6 SP2 or earlier, due to differences in certification between NetWorker 7.6 SP2 and earlier and the NetWorker 7.6 SP3 client software.

### Workaround

Perform one of the following as a workaround:

- ◆ Use the NMC client properties or **nsradmin** to create the NetWorker Client.
- ◆ Upgrade the NMC version to NetWorker 7.6 SP3.

### Deduplication (Avamar and Data Domain) not supported in NetWorker 7.6 SP3 running on AIX 7.1 platform

**NW133542**

Due to libraries that are not supported by the AIX 7.1 platform, deduplication (Avamar and Data Domain features) cannot be used in NetWorker 7.6 SP3 running on AIX 7.1.

### Reboot of the VADP proxy host required after upgrading from NetWorker 7.6 SP2 to NetWorker 7.6 SP3 if VDDK 1.2.1 was installed prior to upgrade

**NW131771**

NetWorker 7.6 SP3 provides support for vSphere 5 without any additional changes or updates. However, if upgrading from NetWorker 7.6 SP2 to NetWorker 7.6 SP3 and the VDDK version installed with NetWorker 7.6 SP2 is 1.2.1, a reboot of the VADP proxy host is required.

Use the following steps:

1. Select the NetWorker 7.6 SP3 package for upgrading. NetWorker 7.6 SP2 will be uninstalled from the system and you will be prompted to reboot.
2. Reboot the VADP proxy host.
3. Manually install NetWorker 7.6 SP3.

---

**Note:** During this process, ensure that you do not delete the nsr folder from the Windows system.

---

### NMC client browser OS and JRE Requirements table: Link to download JRE 1.6 on HP-UX has changed

The NMC client web interface provides vendor specific links to download the Java Runtime Environment (JRE) 1.6 if the JRE 1.6 is not already installed on the NMC client.

The URL for downloading JRE 1.6 on HP-UX has recently been changed by the vendor. The correct URL is now:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPUXJDKJRE60>

### Alert not displayed in NMC on the first day of evaluation license

**NW122973**

When NetWorker is installed using an evaluation license and NMC is started, NMC does not display an alert in the Monitoring tab indicating an evaluation license is being used. This problem only occurs on the first day of use; on subsequent days, this alert is displayed in NMC.

## Glibc-locale-32bit package required on 64-bit SuSE Linux system to run NMC

### NW129515

If you are running NMC on a 64-bit SuSe Linux system, the following package needs to be installed:

```
glibc-locale-32bit
```

## Changes to handling of the nwclust.pl script when upgrading to NetWorker 8.0 in an AutoStart 5.4 and later cluster

### NW119766

Starting from release 5.4, AutoStart™ no longer provides the nwclust.pl script. The NetWorker 8.0 release includes the script, but since the location of the script has changed, the lomap script needs to be updated to point to the new location if you are upgrading from a NetWorker version previous to NetWorker 7.6 SP2.

### Workaround

Reconfigure the AutoStart cluster so that the generated lomap script points to the correct location of the nwclust.pl script.

On UNIX:

1. Run the networker.cluster -r
2. Run networker.cluster

On Windows:

1. Run lc\_config -r
2. Run lc\_config

More information on cluster configuration is provided in the *NetWorker Cluster Installation Guide*. The following example shows the generated lomap script on Windows after the cluster configuration:

```
SET FT_DIR=C:\Program Files\EMC\AutoStart\eas54
SET FT_DOMAIN=eas54
"C:\Program Files\EMC\AutoStart\eas54\bin\ftPerl" "C:\Program
Files\EMC NetWorker\nsr\bin\nwclust.pl"
```

**Note:** When performing a new installation of NetWorker 8.0, these steps for upgrading do not apply. Follow the instructions for performing a cluster install provided in the *NetWorker 8.0 Cluster Installation Guide*.

## Error appears if syslogd is not being used as the default program logger

### NW124590

During NetWorker installation on Linux, the following error is shown if the default program error log daemon, **syslogd**, is not being used:

```
/bin/grep: /etc/syslog.conf: No such file or directory
```

For example, if **rsyslogd** is being used instead of **syslogd**, the error message will appear. Both **syslogd** and **rsyslogd** are different standards for logging program error messages. The de facto standard is **syslogd**, but as of Red Hat Enterprise Linux (RHEL 5.2), **rsyslog** is available as part of the core distribution.

NetWorker does not currently support other program loggers at this time and so, NetWorker attempts to modify the **/etc/syslog.conf** file even if it is not installed.

### **Warning message appears when starting NetWorker services on UNIX**

#### **NW122342**

When starting NetWorker services on a UNIX system, a warning message appears if a random number generator (PRNGD) is not running on the host where nsrexecd is being run.

#### **Workaround**

Install a random number generator if one does not already exist on the system.

To check if a PRNGD is running, run the following command on a UNIX system:

```
ps -ef | grep prng
```

An output similar to the following appears:

```
ganaps@bu-ffalo#bash2.03 |~/cvs/nw_7_6_dev/dev/nsr/server> ps -ef |  
grep prng  
root 353 1 0 Sep 30 ? 4:18 /usr/local/sbin/prngd  
/var/run/egd-pool
```

### **Incorrect proxy information displayed in NMC for VM client resource after upgrading the NetWorker server to 7.6 SP2**

#### **NW129735**

After upgrading the NetWorker server from 7.6 SP1 to 7.6 SP2, the VM client resource associated with the VCB proxy does not display the correct information in NMC. For example, if you are using both VADP and VCB proxies, VM client resources that are still associated with VCB proxies will display the VADP proxy when viewing the VM resource in NMC.

The correct information displays in the nsradmin output for the client resource

### **NetWorker uninstallation on VADP proxy host**

#### **NW125084**

When the NetWorker client is uninstalled from the VADP proxy host, a prompt to reboot the system appears. If **No** is selected, and the client is reinstalled without rebooting the system, the VADP backups will fail with the following errors:

```
nsrvadp_save: Failed to start vStorage API driver service.  
nsrvadp_save: Failed to Initialise LibVADP Context.
```

#### **Workaround**

If the NetWorker client is to be reinstalled on the same VADP proxy host, then a system reboot is required before performing a VADP backup or restore again.

## Data Domain systems do not display in NMC Enterprise window or NetWorker Administration Devices window upon reinstalling NMC after a complete uninstall

NW120324

When NMC is uninstalled and the NMC database is removed, upon reinstalling NMC and adding the NetWorker server that has Data Domain devices configured, the Data Domain system does not appear in the NMC Enterprise window or the NetWorker Administration Devices window.

### Workaround

To add one of these hosts to the Enterprise:

1. From the Console window, click **Enterprise**.
2. In the left pane, right-click **Enterprise**, then select **New > Host**. The **Add New Host** wizard appears.
3. Enter a hostname, IP address, DNS name, or WINS name in the Host Name attribute, then click **Next**.

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**Note:** Host names and aliases cannot exceed 80 characters.

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4. Select the server type and click **Next**.
5. Follow the instructions for configuring the selected host type, then click **Finish**.

After Data Domain Systems are added to the Enterprise, they will appear in NMC Enterprise and the NetWorker Administration Devices window under the Data Domain Systems folder for corresponding NetWorker servers.

## HomeBase Agent 6.2.1 does not automatically install as part of NetWorker Client installation on Red Hat Enterprise Linux 5.5 and later

NW124547

The NetWorker 7.6 Service Pack 1 Client installation does not automatically install HomeBase Agent version 6.2.1 on the Red Hat Enterprise Linux version 5.5 and later platform. However, the NetWorker Client Installer does extract the HomeBase package in the `/opt/homebase` folder.

### Workaround

Manually run the `/opt/homebase/setup-homebase.sh` script to install the HomeBase Agent.

## Upgrade of NMC for NetWorker 7.4 Service Pack 5 to release 7.6 may result in core dump on AIX

NW113316

When performing an upgrade from NetWorker 7.4 Service Pack 5 to release 7.6 on AIX, uninstallation of the previous NMC may result in a core dump of the `dbsrv9` process, with a core file created in the `<NMC install dir>/cores/gstd` directory. This has no impact on Console functionality after the upgrade, and can be ignored.

## **NETWORKER.cfg file must be backed up prior to upgrading from any NetWorker version 7.5 Service Pack 1 or earlier**

### **NW110457**

When upgrading from any version of NetWorker 7.5 Service Pack 1 or earlier, the **NETWORKER.cfg** file must be backed up on each client and used to replace the new **NETWORKER.cfg** file created after the upgrade, in order to maintain user preferences.

## **nsrjobd running after uninstallation of NetWorker on Windows**

### **NW110327**

The **nsrjobd** process continues to run after NetWorker has been uninstalled on Windows. As a result, the NetWorker Installation folder cannot be deleted.

#### **Workaround**

Using Task Manager, kill the **nsrjobd** process manually and then delete the NetWorker installation folder.

## **Library disabled after upgrading from NetWorker 7.4 release**

### **LGTsc32944**

After upgrading from a NetWorker 7.4 release, configured libraries may not become available and, after several unsuccessful connection attempts, may be disabled. This may be due to a Control Port change.

#### **Workaround**

To work around this issue:

1. Disable the library
2. Re-scan the Storage node where the failure occurred.
3. Re-enable the library.

The Library now appears in the Ready State.

## **Software distribution feature cannot be used to perform upgrade on some platforms**

### **LGTsc22164**

You cannot perform a NetWorker upgrade using the software distribution feature on the **linux\_ia64**, **linux\_ppc64**, and **solaris\_amd64** client platforms.

## **NetWorker installation directory path longer than 160 characters returns error, but installation still completes successfully**

### **LGTsc17805**

In Windows 2003, when a NetWorker installation directory path is longer than 160 characters, an error message appears during installation. However, if you click **OK** in the error message dialog box, the installation completes successfully. The NetWorker software is then installed in a new directory where the name is the first 160 characters of the folder selected during installation.

The longest pathname currently supported by NetWorker is 160 characters.

### **When upgrading to NetWorker release 7.5 on Windows, you might need to reboot the system**

#### **LGTsc24358**

When upgrading to NetWorker release 7.5 on Windows from a previous release of NetWorker software, you might need to reboot the system.

### **New client's global attributes do not inherit existing client values after upgrading NMC**

#### **LGTsc24076**

After upgrading to the latest version of NMC and launching the Console for the first time, the **Configuration** window appears, prompting you to set the configuration for the Console and to add NetWorker servers. In the **Set Database Backup Server** page, the checkbox **Create client resource on this server** is selected by default. If you click **Finish** with this checkbox selected, the NetWorker software disables the client's global attributes archive services, hard links, and short filenames if enabled prior to the upgrade when the new client resource is created.

#### **Workaround**

Clear the checkbox **Create client resource on this server**.

### **Upgrading on Linux with rpm -Uvh not working correctly**

#### **LGTsc15490**

When upgrading on Linux systems using the **rpm -Uvh *package\_name*** command, the NetWorker startup script, `/etc/init.d/networker`, is not installed.

#### **Workaround**

To upgrade on Linux systems, use the following steps:

1. Uninstall NetWorker packages using **rpm -e**.
2. Install the new versions of NetWorker packages using **rpm -ivh**.

### **JRE version mismatch causes authentication failure, stops GSTD**

#### **LGTsc08958**

After updating the NetWorker release, if the JRE version installed on the system is lower than the JRE version required by NetWorker, NMC cannot be launched and the GSTD process stops with an "authentication failure" error message.

#### **Workaround**

Update to JRE version 1.6 or later.

# Documentation

This section describes the documentation for the following NetWorker releases:

- ◆ [“NetWorker product documentation” on page 48](#)
- ◆ [“NetWorker related documentation” on page 49](#)

## NetWorker product documentation

This section describes the additional documentation and information products that are available with NetWorker.

### **EMC NetWorker Installation Guide**

Provides instructions for installing or updating the NetWorker software for clients, console and server on all supported platforms.

### **EMC NetWorker Cluster Installation Guide**

Contains information related to installation of the NetWorker software on cluster server and clients.

### **EMC NetWorker Administration Guide**

Describes how configure and maintain the NetWorker software.

### **EMC NetWorker Release Notes**

Contains information on new features and changes, fixed problems, known limitations, environment and system requirements for the latest NetWorker software release.

### **EMC NetWorker Licensing Guide**

Provides information about licensing NetWorker products and features.

### **NetWorker Error Message Guide**

Provides information on common NetWorker error messages.

### **NetWorker Performance Optimization Planning Guide**

Contains basic performance planning, tuning, and optimization information for NetWorker environments.

### **NetWorker Command Reference Guide**

Provides reference information for NetWorker commands and options.

### **NetWorker Management Console Online Help**

Describes the day-to-day administration tasks performed in the NetWorker Management Console and the NetWorker Administration window. To view Help, click **Help** in the main menu.



## **NetWorker Avamar Integration Guide**

Provides planning and configuration information on the use of Avamar deduplication nodes within an integrated NetWorker backup and storage management environment.

## **NetWorker Cloning Integration Guide**

Provides planning, practices, and configuration information for using the NetWorker, NMM, and NMDA cloning feature

## **NetWorker Data Domain Deduplication Devices Integration Guide**

Provides planning and configuration information on the use of Data Domain devices for data deduplication backup and storage in a NetWorker environment.

## **NetWorker VMware Integration Guide**

Provides planning and configuration information on the use of VMware within a NetWorker backup and storage management environment.

## **NetWorker User Online Help**

The NetWorker User program is the Windows client interface. Describes how to use the NetWorker User program which is the Windows client interface connect to a NetWorker server to back up, recover, archive, and retrieve files over a network.

## **NetWorker related documentation**

For more information about NetWorker software, refer to this documentation:

### **EMC NetWorker Software Compatibility Guide**

A list of supported client, server, and storage node operating systems for the following software products: AlphaStor, ArchiveXtender, DiskXtender for Unix/Linux, DiskXtender for Windows, Backup Advisor, AutoStart, AutoStart SE, RepliStor, NetWorker, and NetWorker Modules and Options.

### **NetWorker Procedure Generator**

The NetWorker Procedure Generator (NPG) is a stand-alone Windows application used to generate precise user driven steps for high demand tasks carried out by customers, Support and the field. With the NPG, each procedure is tailored and generated based on user-selectable prompts. This generated procedure gathers the most critical parts of NetWorker product guides and combines experts' advice into a single document with a standardized format.

### **Technical Notes and White Papers**

Provides an in-depth technical perspective of a product or products as applied to critical business issues or requirements. Technical Notes and White paper types include technology and business considerations, applied technologies, detailed reviews, and best practices planning.

## Supported NetWorker module and product versions

The *NetWorker Software Compatibility* Guide provides the most up-to-date compatibility information for NetWorker products and modules to be used in conjunction with a NetWorker 8.0 and later client.

## Troubleshooting and getting help

EMC support, product, and licensing information can be obtained as follows.

**Product information** — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Online Support website (registration required) at:

<https://support.emc.com/>

**Technical support** — For technical support, go to EMC Customer Service on the EMC Online Support website. To open a service request through the EMC Online Support website, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

**Online communities** — Visit EMC Community Network at <https://community.EMC.com> for peer contacts, conversations, and content on product support and solutions. Interactively engage online with customers, partners, and certified professionals for all EMC products.

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