EMC® NetWorker®

Version 9.0.x

Installation Guide

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EMC²

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Preface

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions that are described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your EMC technical support professional if a product does not function correctly or does not function as described in this document.

Note

This document was accurate at publication time. Go to EMC Online Support (https://support.emc.com) to ensure that you are using the latest version of this document.

Purpose

This document describes how to install and remove the NetWorker software.

Audience

This document is part of the NetWorker documentation set and is intended for use by system administrators during the installation and setup of the NetWorker software.

Revision history

The following table presents the revision history of this document.

Table 1 Revision history

Revision	Date	Description
01	September 24, 2015	First release of this document for NetWorker 9.0
02	October 7, 2015	Updated the section "Determining the Java version on Linux" in the Software Requirements chapter
03	November 13, 2015	Updated the section "Reviewing the OS-X requirements" with the new directory locations in the OS-X installation chapter Updated the section "Uninstalling the software by using wmic" in the Windows Installation chapter
04	December 16, 2015	Updated the section Troubleshooting silent installation and uninstallation Removed content about how to remove the NetWorker software by using `wmic.exe` on Windows Core Server Updated the HP-UX Installation chapter to reflect that nfiles configuration changes apply to HP-UX 11iv2 and not HP-UX 11v3
05	December 23, 2015	Updated NetWorker and NetWorker Extended Client package names to 9.0.0.2

Table 1 Revision history (continued)

Revision	Date	Description
06	January 22, 2016	• Add references to specific package names to the installation instructions in various operating system chapters. • Added topic for Linux x64 installation package requirements
07	April 15, 2016	Seventh release of this document for EMC NetWorker 9.0. Changes include: • Updates to section "An error occurred while validating user credentials. Verify that NetWorker Authentication Service is running." in the chapter "Troubleshooting NMC GUI and NetWorker server connection issues" • Updates to the section "TCP/IP requirements" in the chapter "Software Requirements"
08	June 29, 2016	Eighth release of this document for EMC NetWorker 9.0.x. Changes include updates that apply to the NetWorker 9.0.1 release.
09	Nov 10, 2016	Ninth release of this document for EMC NetWorker 9.0.x. Changes include updates to the "TCPIP requirements" section of the Software Requirements chapter.

Related documentation

The NetWorker documentation set includes the following publications, available on EMC Online Support:

- *EMC NetWorker Online Software Compatibility Guide*
  Provides a list of client, server, and storage node operating systems supported by the EMC information protection software versions. You can access the guide at https://support.emc.com. From the Support by Product pages, search for NetWorker using "Find a Product", and then select the Install, License, and Configure link.
- *EMC NetWorker Administration Guide*
  Describes how to configure and maintain the NetWorker software.
- *EMC NetWorker Network Data Management Protocol (NDMP) User Guide*
  Describes how to use the NetWorker software to provide data protection for NDMP filers.
- *EMC NetWorker Cluster Integration Guide*
  Contains information related to configuring NetWorker software on cluster servers and clients.
- *EMC NetWorker Installation Guide*
  Provides information on how to install, uninstall, and update the NetWorker software for clients, storage nodes, and servers on all supported operating systems.
- *EMC NetWorker Updating from a Previous Release Guide*

Describes how to update the NetWorker software from a previously installed release.

- *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 Command Reference Guide*
  Provides reference information for NetWorker commands and options.
- *EMC NetWorker Data Domain Boost Integration Guide*
  Provides planning and configuration information on the use of Data Domain devices for data deduplication backup and storage in a NetWorker environment.
- *EMC NetWorker Performance Optimization Planning Guide*
  Contains basic performance tuning information for NetWorker.
- *EMC NetWorker Server Disaster Recovery and Availability Best Practices Guide*
  Describes how to design and plan for a NetWorker disaster recovery. However, it does not provide detailed disaster recovery instructions. The Disaster Recovery section of the NetWorker Procedure Generator (NPG) provides step-by-step disaster recovery instructions.
- *EMC NetWorker Snapshot Management Integration Guide*
  Describes the ability to catalog and manage snapshot copies of production data that are created by using mirror technologies on EMC storage arrays.
- *EMC NetWorker Snapshot Management for NAS Devices Integration Guide*
  Describes how to catalog and manage snapshot copies of production data that are created by using replication technologies on NAS devices.
- *EMC NetWorker VMware Integration Guide*
  Provides planning and configuration information on the use of VMware in a NetWorker environment.
- *EMC NetWorker Error Message Guide*
  Provides information on common NetWorker error messages.
- *EMC NetWorker Licensing Guide*
  Provides information about licensing NetWorker products and features.
- *EMC NetWorker REST API Getting Started Guide*
  Describes how to configure and use the NetWorker REST API to create programmatic interfaces to the NetWorker server.
- *EMC NetWorker REST API Reference Guide*
  Provides the NetWorker REST API specification used to create programmatic interfaces to the NetWorker server.
- EMC 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 the online help, click **Help** in the main menu.
- EMC NetWorker User Online Help
  Describes how to use the NetWorker User program, which is the Windows client interface, to connect to a NetWorker server to back up, recover, archive, and retrieve files over a network.

Special notice conventions that are used in this document

EMC uses the following conventions for special notices:

NOTICE

Identifies content that warns of potential business or data loss.

Note

Contains information that is incidental, but not essential, to the topic.

Typographical conventions

EMC uses the following type style conventions in this document:

Table 2 Style conventions

Bold	Used for names of interface elements, such as names of buttons, fields, tab names, and menu paths (what the user specifically selects or clicks)
Italic	Used for full titles of publications that are referenced in text
`Monospace`	Used for: • System code • System output, such as an error message or script • Pathnames, file names, prompts, and syntax • Commands and options
Monospace italic	Used for variables
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means “or”
{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate non-essential information that is omitted from the example

Where to get help

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

Product information

For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at https://support.emc.com.

Technical support

Go to EMC Online Support and click Service Center. Several options for contacting EMC Technical Support appear on the site. Note that to open a service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

Online communities

Go to 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.

Your comments

Your suggestions help to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to DPAD.Doc.Feedback@emc.com.

PART 1

Software requirements

This section contains the following chapters:

Chapter 1, "Introduction"

Chapter 2, "Software Requirements"

CHAPTER 1

Introduction

This chapter includes the following topics:

- About the NetWorker product 20
- NetWorker components 20
- NetWorker Authentication Service 21
- NetWorker Server 21
- NetWorker Message Queue Adapter 23
- NetWorker Block-Based Backups 23
- NetWorker Client 23
- NetWorker Extended Client package 23
- NetWorker Storage Node 24
- NMC Server 24
- Datazone 24
- NetWorker REST API 24
- NMC client 25
- NetWorker daemons 25
- Avamar client 26
- EMC Licensing Solution 26

About the NetWorker product

The EMC® NetWorker® product is a storage management software suite that provides backup, recovery, and other services to hosts using a wide variety of operating systems and data types. NetWorker products for different operating systems are interoperable. NetWorker provides the flexibility to design a storage management system that works best with the current computing environment.

The NetWorker software is distributed in these formats:

- In a media kit that contains the software and electronic documentation for several related NetWorker products.
- As a downloadable archive file from the EMC Online Support Site website.

The NetWorker product has these components:

- NetWorker Client
- NetWorker Extended Client
- NetWorker Storage Node
- NetWorker Authentication Service
- NetWorker Block-Based Backup
- NetWorker Message Queue Adapter
- NetWorker Server
- NMC Server (NMC)
- NetWorker Language Packs
- NetWorker License Manager
- NetWorker REST API

Note

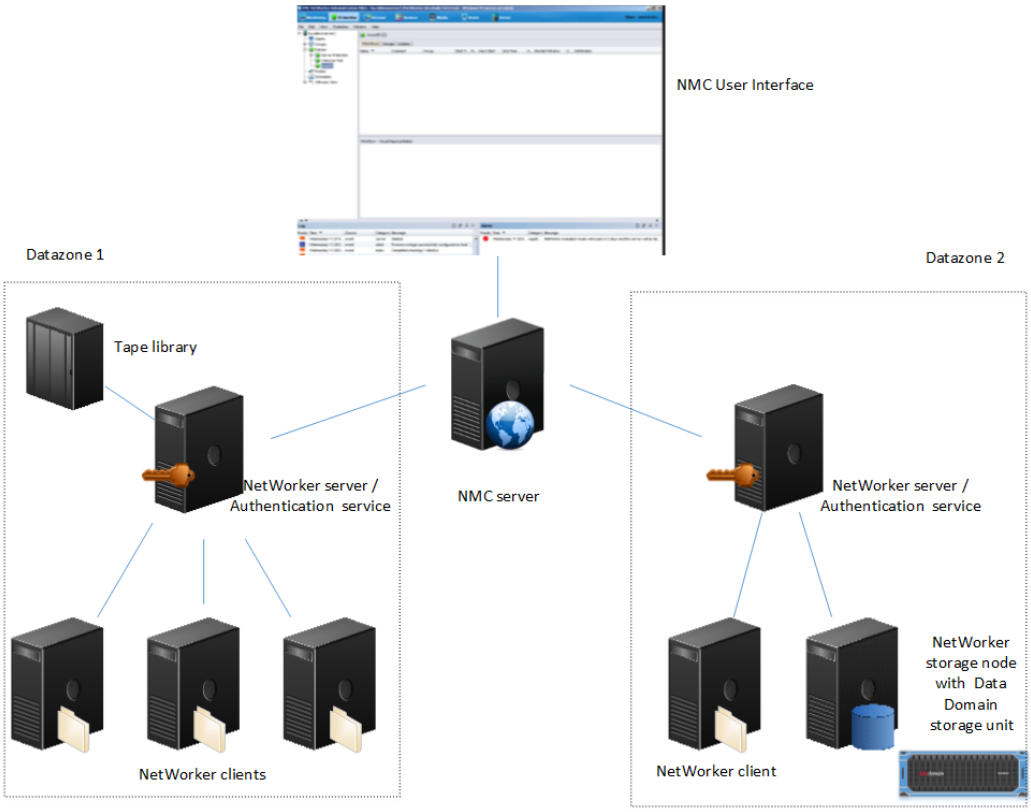
The NetWorker software package also includes the Avamar Client software.

NetWorker components

Several components make up the NetWorker environment and provide the ability to protect against data loss.

The following figure illustrates the main components in a NetWorker environment.

Figure 1 NetWorker components



NetWorker Authentication Service

The NetWorker Authentication Service provides centralized token-based authentication to components in a NetWorker 9.0.x environment. You can configure the NetWorker Authentication Service to use a local user database or external identity providers (LDAP and AD) for authentication.

NetWorker Server

The NetWorker Server provides services to back up and recover the data of any NetWorker host in a datazone. The NetWorker Server also acts as a storage node and can control multiple remote storage nodes.

NetWorker Server databases

The following table summarizes the different databases that a NetWorker Server uses to manage a datazone.

Table 3 NetWorker server database functions

Database	Function
Client File Index (CFI)	Tracks the files that belong to a save set. Each configured NetWorker client has one client file index. The client file indexes can

Table 3 NetWorker server database functions (continued)

Database	Function
	grow to become prohibitively large over time and can negatively impact backup performance.
Media database (mm)	Tracks the following information: • The volume name. • The location of each save set fragment on the physical media (file number/file record). • The backup dates of the save sets on the volume. • The file systems in each save set. **Note** There is only one media database per server. The media database can grow to become prohibitively large over time and negatively impact backup performance.
Jobs (jobsdb)	Stores, for a limited time, information about NetWorker job operations, for example: • Scheduled and queued backup and recovery operations. • Realtime backup and restore related activities. • All NMC server communication. Recovery operations do not require the data that is stored in the jobsdb database.
Resource (resdb)	Stores the configuration information for a NetWorker Server, for example: • NetWorker client backup configurations. • Scheduled recover configurations. • Pool configurations. • Device configurations.
Client push (cpdb)	Stores configuration information for the Client push application.
nsrla	Stores configuration information for the NetWorker Remote Exec (`nsrexecd`) service.

NetWorker Message Queue Adapter

The NetWorker Message Queue Adapter component on the NetWorker Server enables programs to use the message bus to access the NetWorker Server.

The NetWorker Message Queue Adapter daemon (nsrmqd) translates the communications that occur between a message protocol and NetWorker Remote Procedure Call (RPC) functions.

The Backup and Recovery Manager software and the Hyper-V File Level Recovery (FLR) feature in NetWorker Module for Microsoft (NMM) software use the message queue adapter to communicate with the NetWorker Server and NetWorker Server components.

NetWorker Block-Based Backups

Block-Based Backup (BBB) is a NetWorker software feature that enables you to back up data on a Windows or Linux host by traversing a volume or disk at the block level.

When you install the NetWorker software on a Window host, the installation automatically installs the files that the BBB feature requires. On supported 64-bit Linux hosts, install a separate BBB software package to provide a NetWorker host with BBB support.

The *EMC NetWorker Online Software Compatibility Guide* provides more information about operating system support for BBB.

NetWorker Client

The NetWorker Client software communicates with the NetWorker Server to support backup and recover functionality. The NetWorker 9.0.x software provides you with two client packages: a base client package and an extended client package. Install the NetWorker Client software on each host that requires backup and recovery support.

Before you install the NetWorker Client software, ensure that NetWorker supports the specific client operating system and hardware configuration. The *EMC NetWorker Online Software Compatibility Guide* provides the most up-to-date information about compatibility.

NetWorker Extended Client package

The NetWorker software includes an NetWorker Extended Client package, which provides NetWorker hosts with additional feature support.

Install the NetWorker Extended Client package if you require the following functionality on the host:

- NetWorker Snapshot Management (NSM)
- Network Attached Storage (NAS) snapshot
- CLI utilities for server reporting and administration, for example `mminfo`, `nsradmin`, and `nsrinfo`
- Firewall tunneling tools
- Cluster integration scripts

- Custom script integration tools (pre/post save)
- Audit log
- NetWorker Module for Meditech
- SCVMM Data Protection Add-in for NMM
- Recovery of NetWorker Module for Microsfot (NMM) 8.2.x backups by using NMM
- Cloning and staging
- Protectpoint for VMAX
- Protectpoint for Recoverpoint

On Windows hosts, the NetWorker Server or NetWorker Storage Node installation automatically installs the NetWorker Extended Client package. The NetWorker Base Client installation does not install the NetWorker Extended Client package.

On UNIX hosts, install a separate NetWorker Extended Client package to enable additional feature support.

NetWorker Storage Node

NetWorker can back up data to local devices on a NetWorker Server or remote devices on a storage node. A storage node controls storage devices such as tape drives, disk devices, autochangers, and silos.

The NetWorker Server is a local storage node. Use a remote storage node to offload most of the data movement in a backup or a recovery operation from the NetWorker Server. A remote storage node improves performance, but it requires high I/O bandwidth to manage data transfer from local clients or network clients to target devices. The operating system of a remote storage node can differ from the NetWorker Server.

NMC Server

The NetWorker Management Console (NMC) server or Console server is a Java-based web application and database server. The NMC Server manages all NetWorker Servers and Clients. The NMC Server also provides reporting and monitoring capabilities for all NetWorker Servers and Clients in the environment. NMC Server relies on the NetWorker Authentication Service for user account authentication.

Datazone

A NetWorker datazone is composed of a single NetWorker Server, its clients, and storage nodes. You can add additional datazones as backup requirements increase.

NetWorker REST API

The NetWorker REST API is an interface that allows customer to access the NetWorker data protection service and to build client applications that automate NetWorker operations. The *EMC NetWorker REST API Getting Started Guide* describes how to use NetWorker REST API, and the *EMC NetWorker REST API Reference Guide* provides a full description of the API resources.

NMC client

A NetWorker Management Console (NMC) client is any host in the environment that uses a web browser and Java™ Runtime Environment (JRE) to display the NMC Server GUI. Multiple users can access the NMC Server GUI simultaneously, from different browser sessions.

NetWorker daemons

The NetWorker software uses processes on Windows or daemons on UNIX to control and manage NetWorker operations in the datazone.

This table lists the NetWorker daemons for each software component.

Table 4 Daemons on a NetWorker host

Software component	Daemons
NetWorker Authentication Service	`java.exe (Windows)`, `jsvc.exec (UNIX)`
NetWorker Server	`nsrd`, `nsrexecd`, `nsrindexd`, `nsrmmdbd`, `nsrmmd`, `nsrjobd`, `nsrmmgd`, `nsrlcpd`, `nsrlogd`, `nsrsnmd`, `nsrcpd`, `nsrctld`, `nsrdispd` ,`nsrmqd`, `nsrvmwsd`
NetWorker Client	`nsrexecd`
NetWorker Extended Client	`nsrpsd`
NetWorker Storage Node	`nsrexecd`, `nsrmmd`, `nsrlcpd`, `nsrsnmd`
NetWorker Management Console server	`gstd`, `httpd`, `postgres`, `gstsnmptrapd` (optional)

For more information about the NetWorker processes, review the following information:

- The `nsrmmd` daemon or the `nsrmmd.exe` process is present on a NetWorker Server or storage node that has one or more enabled devices.
- The `nsrmmgd` daemon or the `nsrmmgd.exe` process is present on the NetWorker Server when a library is enabled.
- The `nsrlcpd` daemon or the `nsrlcpd.exe` process is present on a NetWorker Server and storage nodes when an attached tape library exists.
- The `nsrcpd` daemon or the `nsrcpd.exe` process is present on the NetWorker Server during a Package Manager software upgrade.

The NMC Server daemon, `gstd`, starts these additional processes:

- `postgres`: The ProgreSQL database daemon on Linux. On Windows, the service associated with the `postgres.exe` process is EMC GST Database Service.
- `httpd`: The web server daemon on Linux. On Windows, the service associated with the `httpd.exe` process is EMCGSTWebService. There are 2 or more `httpd` daemons.

- `gstsnmptrapd`: An optional daemon that is present on a Linux NMC Server when SNMP Trap monitoring is configured for a Data Domain system. On Windows, the service associated with `gstsnmptrapd.exe` process is `gstSndmpTrapd`.

Avamar client

The NetWorker software installation package includes the Avamar client software.

The Avamar client software provides support only to NetWorker hosts that use an Avamar 7.2 or earlier system as a data protection target with a previous release of NetWorker. Install the Avamar client software only when you update a NetWorker 8.2.x or earlier host. The *EMC NetWorker Updating from a Previous Release Guide* provides more information.

EMC Licensing Solution

NetWorker 9.0.x introduces the EMC Licensing Solution, a new EMC standard for licensing in software products. The EMC Licensing Solution uses an EMC License Server and reads a license file to determine which products are licensed and how much storage space to request for each datazone in the environment.

All new installations of NetWorker 9.0.x use the EMC Licensing Solution. The chapter "EMC Licensing Solution" in the *EMC NetWorker Licensing Guide* provides information on how to implement the EMC Licensing Solution for new and upgraded installations of NetWorker 9.0.x. The "EMC Licensing Solution" chapter also describes the new EMC License Server and the use of the license file.

CHAPTER 2

Software Requirements

This chapter includes the following topics:

- NetWorker Authentication Service 28
- Java requirements for a NetWorker server 28
- NMC Server features and system requirements 30
- Multi-locale datazone requirements 30
- TCP/IP requirements 33
- IPv6 protocol 33
- NMC client requirements 34

NetWorker Authentication Service

NetWorker 9.0.x uses the NetWorker Authentication Service to authenticate NetWorker Management Console (NMC) and command line interface (CLI) users.

To use a Linux NetWorker Server, install and configure the NetWorker Authentication Service package on the NetWorker Server host before you install NMC Server software. When you use a Windows NetWorker Server host, the NetWorker Server installation process automatically installs the NetWorker Authentication Service software on the NetWorker Server host.

The NetWorker Authentication Service requires 64-bit Java 8. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

Before you install the NetWorker Server software, ensure that an application does not exist on the NetWorker Server that uses an Apache Tomcat instance on port 8080. The NetWorker Authentication Servicelistens on port 8080 by default. The section "Troubleshooting NMC GUI and NetWorker Server connection issues" provides more information.

Note

If the installation does not detect 64-bit Java 8 on the host, the installation will not continue.

Java requirements for a NetWorker server

The installation for the NetWorker server software and the Linux configuration script for the NetWorker Authentication Service software check for the required Java version on a host. When the process or script does not detect the minimum required Java version (64-bit Java 8u60) on the host, the installation cannot continue. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

The following sections describe how to ensure that you are using the correct version of the Java software on a Windows or Linux NetWorker server.

Determining the Java version on Windows

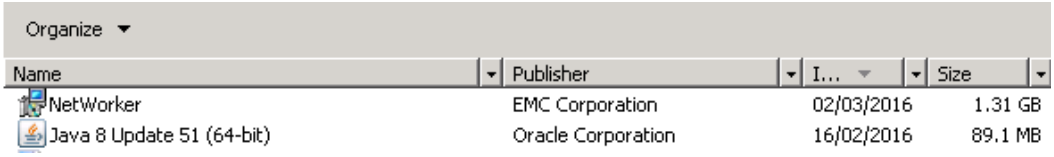
On Windows, the NetWorker server installation checks to ensure that 64-bit Java 8 is installed on the host. If the 64-bit Java 8 is not installed on the host, the NetWorker server installation cannot continue.

To determine which version of Java is installed on the host, perform the following steps.

Procedure

1. In **Control Panel**, select **Programs and Features**.
2. In the list of installed programs, find the Java program. When the host has the 64-bit version of Java installed, (64-bit) appears beside the Java version number. The following image provides an example of a host that has the 64-bit version of Java 8.

Figure 2 Java version



3. If required, download the 64-bit version of Java from the Java website, and then install the Java software.

Determining the Java version on Linux

On Linux, the NetWorker server software installation does not check to ensure that 64-bit Java 8 is installed on the host. After the installation completes, NetWorker daemons will not start correctly if Java is not installed on the host.

Use the `java` command to determine what Java version is on the Linux host.

Procedure

1. From a command prompt, type:

   ```
   java -version
   ```

   For example, when 64-bit JRE 8u45 is installed on the host, output similar to the following appears:

   ```
   java version "1.8.0_45"
   Java(TM) SE Runtime Environment (build 1.8.0_45-b14)
   Java HotSpot(TM) 64-Bit Server VM (build 25.45-b02, mixed
   mode)
   ```

2. If required, download the 64-bit version of Java from the Java website, and then install the Java software.

Set the JAVA_HOME environment variable to JRE 1.8

Before you install the NetWorker software, set the *JAVA_HOME* environment variable to the directory for the 64-bit JRE software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Browse to **Control Panel** > **System** > **Advanced System Settings.**
3. On the **Advanced** tab, click **Environment Variables...**
4. In the **System Variables** section, click **New**.
5. In the **Variable name** field, type `JAVA_HOME`.
6. In the **Variable value** field, type the path to the Java directory.

   For example, `C:\Program Files\Java\jre1.8.0_xx`
7. Click **OK**.
8. Click **OK** to close the **Environment Variables** window, and then click **OK** to close the **System Properties** window.

NMC Server features and system requirements

The NMC Server enables you to manage, monitor, and generate reports for multiple NetWorker Servers across multiple datazones and from a single host.

The NMC Server embeds the following software:

- Apache server, which downloads NMC jar files and starts the NMC Server daemons or services.
- PostgreSQL database, which stores reports and the NMC Server configuration information.

The NMC Server software package is supported on a Linux or Microsoft Windows host. The NMC Server software requires the NetWorker Client software.

You can install the NMC Server software on the NetWorker Server. The minimum system requirement for a NMC Server host is 1 GHz and 512 MB of RAM. However, EMC does not recommend that you install the NMC Server software on a NetWorker Server in the following scenarios:

- When the NetWorker Server manages 50 or more clients.
- When the NMC Server monitors multiple datazones.

Size the NMC Server by using the following calculations, which are based on the number of monitored NetWorker Servers:

- 50 servers—Use an NMC Server with at least Dual 1 GHz processors and no less than 2 GB of RAM.
- 100 servers—Use an NMC Server with at least Dual 1 GHz processors and no less than 4 GB of RAM.
- 200 servers—Use an NMC Server with at least Dual 1 GHz processors and no less than 8 GB of RAM.

Multi-locale datazone requirements

This section provides guidance for your multi-locale datazone NetWorker installation.

The NetWorker software enables you to confiugre hosts to run in different locales and supports a multi-locale datazone. The NetWorker software includes language pack support for French, Japanese, Simplified Chinese, Korean, and English locales.

The NetWorker command line interface (CLI), the NMC server graphical user interface (NMC GUI), and the NetWorker User program are I18N compliant.

In a multi-locale datazone, you can display data and remotely manage the NetWorker environment in the locale that is defined on the local host. NetWorker supports different locales on the local host, the NetWorker server, and the NMC server.

The NetWorker software supports:

- Languages and character sets that the underlying OS supports.
- UTF-8 encoded input and output files.
- Non-English scheduled backup and archive requests.
- Non-English mounts on UNIX hosts. The NetWorker software detects these mounts during an `All` save set backup.
- Directed recovery to a non-English relocation directory.

- Save set recovery of a non-English save set, independent of the locale of the source host.

The *EMC NetWorker Administration Guide* describes how to perform NetWorker tasks in a multi-locale datazone.

General multi-locale considerations

Before you install the NetWorker software in a multi-locale datazone, consider how textual elements might display or what message files support localization."

To view localized textual elements in the CLI, the NMC server GUI, and the NetWorker User application:

- Install the required language font on the operating system of the host that is accessing the application interface.
- Enable the corresponding language locale on the operating system of the host that accesses the application interface.
- Enable the corresponding language locale on the NMC server.
- Install the corresponding language pack, which is included with the NetWorker software package, on the NetWorker Client, NetWorker Server, NetWorker Storage Node, and NMC Server.

Note

Textual elements include radio buttons, menu options, dates, times, and numbers.

The NetWorker software does not support locales that the operating system defines or code sets that remap characters that have a special meaning for file systems, for example De_DE.646. Depending on the file system, these special characters might include the forward slash (/), the backward slash (\), the colon (:), or the period(.).

When the non-English font is unavailable on the NMC client, the NMC GUI renders the localized textual elements in English or the elements might appear as illegible.

The CLI displays the data correctly when the current locale supports the characters and the encoding. However, when the user and system locales do not match on a Windows host, characters might display incorrectly.

The `nsr_render_log` command enables you to render English log file messages to the locale of the user that runs the command. The *EMC NetWorker Command Reference Guide* or the UNIX man pages describe how to use the `nsr_render_log` command.

Message files that support localization include:

- `daemon.raw` file—The main NetWorker log file.
- `nsrcpd.raw` file—The client push log.
- `gstd.raw` file—The NMC server log file.
- `networkr.raw` file—The Windows recovery log file.

The *EMC NetWorker Administration Guide* describes how to view raw log files.

Windows requirements for multiple locales

Before you install the NetWorker software on a Windows host in a multi-locale NetWorker datazone, review the following general locale requirements.

- When non-UTF8 data from a UNIX host uses encoding that Windows does not support natively, for example, euc-jp, the data from the UNIX host does not appear correctly in the NMC GUI on the Windows host.
- The **NetWorker User** program displays textual elements, dates, times, and numbers that are based on the **Regional and Language Options** settings in the **Control Panel**.
- For the French locale and other Latin 1 languages, the NetWorker application uses code page 1252. If the code page for a Windows terminal session is not 1252, CLI commands might not work correctly. For example, when a code page mismatch occurs between the terminal console and the `recover` command, NetWorker cannot mark or add some files when using `recover` command. An error message similar to the following appears: `<filename> not in index`. To resolve this issue, type **`chcp=1252`** at the Windows command prompt, then type the `recover` command.

UNIX requirements for multiple locales

Before you use a UNIX host to connect to the NMC server in a multi-locale NetWorker datazone, review the following information, which describes how to use non-ASCII installation directories and how to display non-textual elements.

- NetWorker does not support a non-ASCII installation directory. Create a symbolic link between the `/nsr` folder to a non-ASCII directory.
- To display non-English textual elements, the dates, the times, and the numbers in the NMC GUI, ensure that you:
  - Install the NetWorker language package on the client.
  - Define the *LC_ALL* and *LANG* environment variables from a console window, to match the installed NetWorker language pack.
    For example, on a Solaris host:
    - To use the French NetWorker language pack, type:

      ```
      setenv LANG fr
      setenv LC_ALL fr
      ```

    - To use the Japanese NetWorker language pack, type:

      ```
      setenv LANG ja
      setenv LC_ALL ja
      ```

    - To use the Simplified Chinese NetWorker language pack, type:

      ```
      setenv LANG zh
      setenv LC_ALL zh
      ```

    - To use the Korean NetWorker language pack, type:

      ```
      setenv LANG ko
      setenv LC_ALL ko
      ```

TCP/IP requirements

The NetWorker software requires that you install and configure TCP/IP on each host.

Before you install the NetWorker software, ensure that the configuration meets the following requirements:

- The `/etc/hosts` file on each Solaris and Linux NetWorker host must contain an entry for the IPv4 loopback address. For example, on Linux, the `/etc/hosts` file contains the following entries by default:

  ```
  127.0.0.1 localhost localhost.localdomain localhost4
  localhost4.localdomain4
  ```

  Note

  NetWorker does not require changes to the `hosts` file on Windows hosts. It is recommended that you use the default hosts file settings for the IPv4 loopback address on Windows hosts.

- The NetWorker server, when configured as a DHCP client, must use a reserved address that is synchronized with DNS.
- The name of the host that the `hostname` command returns on the system must matche the name that the IP address resolves to when using the `nslookup` command.
- OS tools, for example, the `nslookup` command, must resolve the IP address of the host to the same hostname that you defined for the NIC that NetWorker uses.
- The hostname must not contain an underscore character (_).

Note

On a Linux NetWorker Server, the NetWorker daemons cannot start when the IP address 127.0.0.1 is inaccessible on the loopback interface. This requirement is true even in an IPv6-only environment.

IPv6 protocol

Internet Protocol version 6 (IPv6) is a next generation Internet protocol that is used concurrently with IPv4 or in a pure IPv6 environment. IPv6 increases the number of available IP addresses and adds improvements to routing and network autoconfiguration.

Consider the following information about IPv6 that is relevant to a NetWorker datazone:

- The OS displays IPv6 addresses as eight groups of 16-bit hexadecimal values that are separated by colons (:).
  For example: `2001:0db8:85a3:0000:0000:8a2e:0370:7334`
- Most newer operating systems configure the IPv6 loopback interface by default. To determine if the IPv6 loopback interface is configured on the host, use the `ifconfig` command on UNIX and the `ipconfig` command on Windows.

Note

On UNIX systems, the device name of the loopback interface is usually `lo` or `lo0`.

- NetWorker does not support temporary or link-local IPv6 addresses.
- The client backup fails when the client IPv6 address is not stored in DNS or in the hosts file, or when the address is not added to the client resource.
  When the operating system configures the IPv6 loopback interface, ensure that the following requirements are met:
  - The `hosts` file on each NetWorker host must have an entry that associates the IPv6 loopback interface (::1) with the localhost. Add the IPv6 loopback interface entry before the IPv4 loopback entry (127.0.0.1 localhost)
    For example:

    ```
    ::1 localhost
    127.0.0.1 localhost localhost.localdomain
    ```
  - The IPv6 loopback entry must remain in the `hosts` file when the host is operating in a pure IPv4, pure IPv6, or dual stack configuration.

NMC client requirements

An NMC client is any host in the datazone in which you use a web browser to connect to the NMC GUI to manage the NMC server and NetWorker servers.

The following table summarizes the supported Java (JRE) versions and browsers for each supported NMC client operating system.

Table 5 Supported NMC clients and JRE versions

Operating system	Supported JRE and browsers
Linux x86 (32-bit) RHEL 6, 7 SLES 10, 11	• JRE 1.8.x • Mozilla Firefox
Linux em64T & AMD64 (64-bit), RHEL 5, 6, 7, SLES 11, 12	• JRE 1.8.x • Mozilla Firefox
Mac OS X 10.7, 10.8, 10.9	• Firefox
Solaris 10 ,11 & 12 for Solaris SPARC, Solaris Opteron (64-bit)	• JRE 1.8.x • Mozilla Firefox
Windows 7, Windows 2008, Windows 2008 R2 for x86, em64T & AMD64 (64-bit)	• JRE 1.8.x • Microsoft Internet Explorer 7 • Mozilla Firefox
Windows 8, 8.1 and Windows Server 2012, 2012 R2	• JRE 1.8.x • Microsoft Internet Explorer 10 in Desktop mode only
Windows 10	• JRE 1.8.x

Table 5 Supported NMC clients and JRE versions (continued)

Operating system	Supported JRE and browsers
	• Microsoft IE EDGE

PART 2

Linux installation

This section contains the following chapters:

Chapter 3, "CentOS, OEL, SuSE, RedFlag Asianux, and RHEL Installation"

Chapter 4, "Debian and Ubuntu Client Installation"

Chapter 5, "Fedora Client Installation"

CHAPTER 3

CentOS, OEL, SuSE, RedFlag Asianux, and RHEL Installation

This chapter includes the following topics:

- Road map for installing the NetWorker software 40
- Preparing the Linux target host 40
- Installing the NetWorker software 43
- Installing the NMC server 52
- Uninstalling the NetWorker software 55

Road map for installing the NetWorker software

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

1. The Software Requirements chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating system.
2. Preparing the Linux target host describes how to back up the operating system configuration file and configure the target host to support NetWorker.
3. Install the NetWorker software:
   - Installing the NetWorker software describes how to install the NetWorker client, storage node, and server software.
   - Installing the NMC server describes how to install the NMC server software.
4. The Verify the Installation chapter describes how to test the NetWorker software functionality.
5. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Preparing the Linux target host

Before you install the NetWorker software, create a backup of the operating system configuration file and configure the target host to support NetWorker.

Procedure

1. To create a backup copy of the operating system configuration files, type the following command:

   ```
   cp /etc/rpc /etc/rpc.orig
   cp /etc/ld.so.conf /etc/ld.so.conf.orig
   ```

2. Ensure that the PATH variable for the root and user accounts contains the `/usr/sbin` directory.

Linux x64 installation package requirements

The NetWorker installation for all supported x64 Linux operating systems and versions requires two packages that the default OS installation might not include.

Manually download and install the following Linux OS packages before you install the NetWorker software. The NetWorker installation fails when these two packages do not exist on the host:

- `compat-libstdc++-33-3.2.3-68.1.x86_64.rpm` or later
- `compat-libstdc++-33-3.2.3-68.1.x86.rpm` or later

RHEL 7 and CentOS package requirements

The NetWorker installation requires some packages that the default OS installation might not include.

Manually download and install the following Linux OS packages. The NetWorker installation fails when these packages do not exist on the host:

- `ksh`
- `glibc.i686 0:2.17-55.el7 or later`
- `nss-softokn-freebl.i686 0:3.15.4-2.el7 or later`

Note

For PowerPC (PPC) hosts, install the 32-bit Pluggable Authentication Modules (PAM) library, `pam-1.1.8-12.el7_1.1.ppc` or later, on the host. NetWorker requires the 32-bit package, even when the 64-bit PAM package exists on the host.

SuSE package requirements

The NetWorker software has OS package dependencies. The default SuSE installation does not contain all the operating system packages that the NetWorker software requires.

When you use the `rpm` command to install the NetWorker software, the installation displays a list of missing required OS packages. You must install the required packages before you install the NetWorker software.

For example, when you run the `rpm` command to install the NetWorker software on a default installation, output similar to the following might appear:

```
rpm -ivh lgtoclnt-9.0-1.x86_64.rpm
error: Failed dependencies:
libcap.so.1()(64bit) is needed by lgtoclnt-9.0-1.x86_64
libstdc++.so.5()(64bit) is needed by lgtoclnt-9.0-1.x86_64
libstdc++.so.5(CXXABI_1.2)(64bit) is needed by
lgtoclnt-9.0-1.x86_64
libstdc++.so.5(GLIBCPP_3.2)(64bit) is needed by
lgtoclnt-9.0-1.x86_64
libstdc++.so.5(GLIBCPP_3.2.2)(64bit) is needed by
lgtoclnt-9.0-1.x86_64
```

To resolve this issue, install the following OS packages, and then run the `rpm` command again:

- `compat-libstdc++-33-3.2.3-68.1.x86_64.rpm`
- `libcap1-1.10-47.1.x86_64.rpm`

Default directory locations

Before you install the NetWorker software, you should become aware of the default directory locations and space requirements for the binary files, the databases, and the log files on the target host.

Review the following table to ensure that you have sufficient disk space to install the NetWorker and NetWorker Authentication Service software.

Note

You can change these directory locations on all supported Linux operating systems except Debian and Ubuntu.

Table 6 Linux default file locations and space requirements

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390
NetWorker Authentication Service (emcauthc)	`/opt/nsr/authc`	Not applicable	65 MB	Not applicable	Not applicable

Client (lgtoclnt)	`/usr/lib`
	`/usr/sbin`
	`/usr/bin`
	`/opt/nsr`
		29 MB
		55 MB
		31 MB
		16 MB
			50 MB
			78 MB
			33 MB
			21 MB
				1.6 MB
				37MB
				16 MB
				20.0 KB
					1.6 MB
					41 MB
					18 MB
					20.0 KB

Storage node (lgtonode)	`/usr/lib` `/usr/sbin`	Not applicable	11 MB 67 MB	Not applicable	Not applicable
Server (lgtoserv)	`/usr/sbin`	Not applicable	71 MB	Not applicable	Not applicable
Man pages (lgtoman)	`/usr/share`	1.7 MB	1.8 MB	1.8 MB	Not applicable

French language pack (lgtofr)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		44 KB
		8.0 KB
		1.9 MB
		6.9 MB
			44 KB
			8.0 KB
			1.9 MB
			8.2 MB
				Not applicable	Not applicable

Japanese language pack (lgtoja)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		52 KB
		8.0 KB
		1.8 MB
		9.4 MB
			52 KB
			8.0 KB
			1.8 MB
			9.4 MB
				Not applicable	Not applicable

Korean language pack (lgtoko)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		40 KB
		8.0 KB
		1.7 MB
		8.5 MB
			40 KB
			8.0 KB
			1.7 MB
			8.5 MB
				Not applicable	Not applicable

Simplified Chinese language pack (lgtozh)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		36 KB
		8.0 KB
		1.4 MB
		8.0 MB
			36 KB
			8.0 KB
			1.4 MB
			6.9 MB
				Not applicable	Not applicable

Table 6 Linux default file locations and space requirements (continued)

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390
Client file index, media database, resource database	/nsr	Varies	Varies	Varies	Varies

Changing the default directory locations

Complete the following procedure to change the default location of the configuration, logs, and database files.

Procedure

1. Create a symbolic link from the new directory to the /nsr directory.
2. Create another /nsr directory on a disk with sufficient space:

   mkdir ***/disk2/nsr***

3. Link the new directory to the /nsr directory:

   ln **-s** ***/disk2/nsr /nsr***

Installing the NetWorker software

Use the yum command or the rpm installation application to install the client, the storage node, the server software, and optional packages, such as the man pages and the language packages.

Installing the NetWorker client software

Use the rpm installation application or yum command to install the NetWorker Client software.

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 7 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux s390	nw901_linuxs390.tar.gz	38 MB	39 MB
Linux s390x	nw901_linuxs390x.tar.gz	111 MB	115 MB
Linux IBM PowerPC	nw901_linux_ppc64.tar.gz	31 MB	32 MB

Table 7 Size of compressed and uncompressed files (continued)

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	`nw901_linux_x86.tar.gz`	312 MB	320 MB
Linux x86-64	`nw901_linux_x86_64.tar.gz`	1.01 GB	1.06 GB

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

3. From the directory that contains the extracted NetWorker software packages, use the `rpm` installer application or the `yum` command to install the NetWorker packages.
   - To use the `yum` command, type:

     ```
     yum localinstall --nogpgcheck lgtoclnt-nw*.rpm
     optional_package [optional_package]...
     ```

     where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

     NOTICE

     When the `yum` program cannot install required packages, the `yum` command fails and provides a list of missing packages. Manually install the requried packages, and then run the `yum` command again.

   - To use the `rpm` installation application, type:

     ```
     rpm -ivh lgtoclnt-nw*.rpm optional_package
     [optional_package]...
     ```

     where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

     Note

     When the operating system packages that NetWorker requires are missing, the `rpm` command provides a list of missing packages and does not install the NetWorker software. Manually install the missing packages, and then run the `rpm` command again.

Table 8 Optional NetWorker packages

Package	Description
Extended client package	lgtoxtdclnt*.rpm
Adapter software	`lgtoadpt*.rpm` **Note** The lgtoadpt package is required when NMM clients are in the datazone.
Block Based Backup software	`lgtobbb-nw*.rpm` **Note** Before you install the BBB software, ensure that you install the OS `lsb` package. On RHEL, install the `lsb` package. On SUSE, install the `lsb-release` package.
Avamar client software	`AvamarClient-linux*.rpm` **Note** Install this package only when updating NetWorker 8.2.x and earlier hosts that use Avamar as a data protection target.
Man pages	`lgtoman*.rpm`
Simplified Chinese language support	`lgtozh*.rpm`
French language support	`lgtofr*.rpm`
Japanese language support	`lgtoja*.rpm`
Korean language support	`lgtoko*.rpm`

4. Start the NetWorker daemons by typing the following command:

   `/etc/init.d/networker start`

5. To confirm that the NetWorker daemons have started on the host, from a command prompt type: **`/etc/init.d/networker status`**.

   Output similar to the following appears when the daemons are started:

```
+--o nsrexecd (11417)
+--o nsrlogd (11682)
```

Installing the NetWorker storage node software

Use the `yum` command or the `rpm` installation application to install the NetWorker Storage Node software, the required NetWorker Client and NetWorker Extended Client packages, and optional packages such as the man pages and the language packages.

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 9 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	`nw901_linux_x86.tar.gz`	312 MB	320 MB
Linux x86-64	`nw901_linux_x86_64.tar.gz`	1.01 GB	1.06 MB

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

3. From the directory that contains the extracted NetWorker software packages, use the `rpm` installer application or the `yum` command to install the NetWorker packages.
   - To use the`yum` command, type:

     ```
     yum localinstall --nogpgcheck lgtoclnt-nw*.rpm
     lgtoxtdclnt*.rpm lgtonode*.rpm optional_package
     [optional_package]...
     ```

     where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

     NOTICE

     When the `yum` command cannot install missing package dependencies, the command fails and provides a list of missing packages. Manually install the package dependencies, and run the `yum` command again.

   - To use `rpm` installation application, type:

     ```
     rpm -ivh lgtoclnt-nw*.rpm lgtoxtdclnt*.rpm lgtonode*.rpm
     optional_package [optional_package]...
     ```

     where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

Note

When the operating system packages that NetWorker requires are missing, the `rpm` command provides a list of missing packages and does not install the NetWorker software. Manually install the missing packages, and then run the `rpm` command again.

Note

NetWorker packages have dependencies on each other. Specify the required packages in the order as it appears above. Specify optional packages after the required packages.

Table 10 Optional NetWorker packages

Package	Description
Adapter software	`lgtoadpt*.rpm` **Note** The lgtoadpt package is required when NMM clients are in the datazone.
Block Based Backup software	`lgtobbb-nw*.rpm` **Note** Before you install the BBB software, ensure that you install the OS `lsb` package. On RHEL, install the `lsb` package. On SUSE, install the `lsb-release` package.
Avamar client software	`AvamarClient-linux*.rpm` **Note** Install this package only when updating NetWorker 8.2.x and earlier hosts that use Avamar as a data protection target.
Man pages	`lgtoman*.rpm`
Simplified Chinese language support	`lgtozh*.rpm`
French language support	`lgtofr*.rpm`
Japanese language support	`lgtoja*.rpm`
Korean language support	`lgtoko*.rpm`

4. Start the NetWorker daemons by typing the following command:

   ```
   /etc/init.d/networker start
   ```

Installing the NetWorker server software

Use the `rpm` or `yum` command to install the NetWorker Serversoftware and optional packages, such as the man pages and the language packages. After you install the NetWorker server software, run the `/opt/nsr/authc-server/scripts/authc_configure.sh` configuration script to configure the NetWorker Authentication Service.

Before you begin

Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files.
Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 11 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	`nw901_linux_x86.tar.gz`	312 MB	320 MB
Linux x86-64	`nw901_linux_x86_64.tar.gz`	1.01 GB	1.06 MB

Procedure

1. Connect to the host with the root account.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.
3. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

4. From the directory that contains the extracted NetWorker software packages, use the `rpm` installer application or the `yum` command to install the NetWorker packages.
   - To use the `yum` command, type:

     ```
     yum localinstall --nogpgcheck lgtoclnt*.rpm lgtoxtdclnt*.rpm
     lgtonode*.rpm lgtoserv*.rpm lgtoauthc*.rpm optional_package
     [optional_package]...
     ```

     where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

NOTICE

When the `yum` program cannot install missing package dependencies, the `yum` command fails and provides a list of missing packages. Manually install the package dependencies, and run the `yum` command again.

- To use the `rpm` installation application, type:

  `rpm -ivh lgtoclnt*.rpm lgtoxtdclnt*.rpm lgtonode*.rpm lgtoserv*.rpm lgtoauthc*.rpm` ***`optional_package [optional_package]...`***

  where *optional_package [optional_package]...* is a list of optional packages. The following table provides a list of the optional packages that you can install.

  Note

  When the operating system packages that NetWorker requires are missing, the `rpm` command provides a list of missing packages and does not install the NetWorker software. Manually install missing the packages, and then run the `rpm` command again.

Table 12 Optional NetWorker packages

Package	Description
Adapter software	`lgtoadpt*.rpm` **Note** The lgtoadpt package is required when NMM clients are in the datazone.
Block Based Backup software	`lgtobbb-nw*.rpm` **Note** Before you install the BBB software, ensure that you install the OS `lsb` package. On RHEL, install the `lsb` package. On SUSE, install the `lsb-release` package.
Avamar client software	`AvamarClient-linux*.rpm` **Note** Install this package only when updating NetWorker 8.2.x and earlier hosts that use Avamar as a data protection target.
Man pages	`lgtoman*.rpm`
Simplified Chinese language support	`lgtozh*.rpm`

Table 12 Optional NetWorker packages (continued)

Package	Description
French language support	`lgtofr*.rpm`
Japanese language support	`lgtoja*.rpm`
Korean language support	`lgtoko*.rpm`

5. To start the NetWorker Authentication Service configuration script, type `/opt/nsr/authc-server/scripts/authc_configure.sh`.
6. The installation process will install an Apache Tomcat instance and create a non-root user, *nsrtomcat*, to start the Apache Tomcat instance. If your system has special user security requirements, you may receive the error `"ERROR: User nsrtomcat does not have read permission at path /nsr/authc/conf"`, indicating that the user *nsrtomcat* does not have the necessary permissions to the conf directory. Ensure that the system administrator provides the user with this required permission.
7. At the **Specify the directory where the Java Standard Edition Runtime Environment software is installed** prompt, Press **Enter** to accept the default location, `/usr/java/latest`.
8. The configuration process uses port 9090 for communication. If the configuration process detects that the port is in use, a warning similar to the following appears: `Warning: Port 9090 is already in use`.

   Perform the following steps to specify a different port.

   a. At the **Do you wish to specify a different port number** prompt, press **Enter** to accept the default response, **Yes**.

   b. At the **Specify the port that Apache Tomcat should use for communication?** prompt, specify the port number.

   Note

   Valid port numbers are between **1024** and **49151**. If the configuration process detects that the port that you specified is in use, a prompt asks if you want to select a different port number.

9. At the **Specify the keystore password** prompt, type the keystore password.

   Note

   Ensure that the password is at least six characters.

10. At the **Confirm the password** prompt, type the keystore password.
11. At the **Specify an initial password for administrator** prompt, type a password for the administrator user account. You will use this password to log in to the NMC server.

    Ensure the password complies with the following minimum requirements:

    - Nine characters

- One uppercase letter
- One lowercase letter
- One special character
- One numeric character

12. At the **Confirm the password** prompt, type the password for the administrator account.

    The configuration script configures the NetWorker Authentication Service, creates an account named administrator account that you will use to log into the NMC server, and creates a new OS user named *nsrtomcat*.

    Note

    The NetWorker Authentication Services uses the *nsrtomcat* account to perform internal operations only.

13. Start the NetWorker daemons by typing the following command:

    `/etc/init.d/networker start`

14. To confirm that the NetWorker daemons have started, from a command prompt, type the **`/etc/init.d/networker status`** command.

    For a NetWorker server, the `nsrctld` daemon starts. The `nsrctld` daemon starts other processes that the NetWorker server requires. Output similar to the following appears when the daemons are started:

```
+--o nsrctld (29021)
   +--o epmd (29029)
   +--o rabbitmq-server (29034)
       +--o beam (29038)
           +--o inet_gethost (29144)
               +--o inet_gethost (29145)
   +--o jsvc (29108)
       +--o jsvc (29114)
   +--o nsrd (29123)
       +--o java (29135)
       +--o nsrmmdbd (29828)
       +--o nsrindexd (29842)
       +--o nsrdispd (29853)
       +--o nsrjobd (29860)
       +--o nsrvmwsd (29968)
   +--o connectemc (29131)
   +--o eventservice.ru (29154)
       +--o jsvc (29158)
           +--o jsvc (29159)
   +--o java (29838)
       +--o node-linux-x64- (29885)
+--o nsrexecd (29004)
   +--o nsrlogd (29899)
   +--o nsrsnmd (30038)
```

    If you do not see this output, type **`/etc/init.d/networker start`**

15. License the NetWorker server. The Verify the Installation chapter provides more information.

Deploying a VMware template for the host

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique

information for each host in a datazone. Before you create a VMware template for NetWorker hosts, perform the following steps to delete the NSRLA database on the host that you will use to create the VM template.

Procedure

1. To stop the NetWorker processes, type the following command from a prompt:

   ```
   /etc/init.d/networker stop
   ```

2. To confirm that the NetWorker processes are not running, type the following command from a prompt:

   ```
   ps -ef | grep /usr/sbin/nsr
   ```

3. Delete the `/nsr/res/nsrladb` directory.
4. Create the VMware template.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Post-installation consideration for st tape devices

By default, the Linux kernel configures up to a maximum of 128 st tape devices. As a result, the `inquire` command and the `Scan for Devices` option in the NMC GUI display a maximum of 128 st devices.

To resolve this issue and increase the maximum number of allowable st devices that the OS can create:

1. Modify the st module of the Linux kernel.
2. Recompile the kernel.

The *EMC NetWorker Administration Guide* provides additional information.

The Linux documentation describes how to change the *ST_MAX_TAPES* definition and how to perform a kernel reconfiguration, kernel rebuild, and kernel installation.

Installing the NMC server

To manage the NetWorker server, install the NMC server software on one host in the datazone and complete the following tasks.

NMC server requirements

The following table provides a list of the default file locations.

Table 13 Linux NMC server default file locations and space requirements

NetWorker package	Location	Space for Linux x86	Space for Linux em64T and AMD64
NMC server (LGTOnmc)	`/opt/lgtonmc`	167 MB	167 MB

The NMC server software supports the following operating systems:

- RHEL 5, 6, and 7 (64-bit)
- SuSE 10 and 11 (64-bit)
- CentOS 5 and 6 (64-bit)
- OEL 5 (64-bit)

Note

You might require UTF-8 converters for the operating system.

The *EMC NetWorker Online Software Compatibility Guide* provides the latest information on supported NMC server operating systems.

Installing the NMC server software

To install the NMC server software, perform the following steps.

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 14 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86-64	`nw901_linux_x86_64.tar.gz`	1.01 GB	1.06 GB

Procedure

1. Connect to the NetWorker host as root.
2. If the NetWorker client software exists on the host, from a command prompt, use the `ps` command to confirm that the NetWorker Remote Exec daemon, `nsrexecd`, appears as a started process. For example:

   ```
   ps -ef | grep nsr
   ```

   Output similar to the following appears when the `nsrexecd` daemon is started on a NetWorker client:

   ```
   root 15882 13794 0 16:53 pts/2 00:00:00 /usr/sbin/nsrexecd
   ```

   If you do not see the `nsrexecd` daemon, type:

   ```
   /etc/init.d/networker start
   ```

3. Download the NetWorker software package from the EMC Online Support website to a temporary location.
4. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

5. Use the `yum` or `rpm` utility to install the NMC software from the directory that contains the extracted NetWorker software packages:

- To use `yum`, type the following command:

  `yum` **`localinstall --nogpgcheck`** ***`[lgtoclnt*.rpm]`*** **`lgtonmc*.rpm`**

  where you specify *lgtoclnt*.rpm* only if you did not previously install the NetWorker client software.

  Note

  If `yum` cannot install missing package dependencies, `yum` fails and provides a list of missing packages. Manually install the package dependencies and then run the `yum` command again.

- To use `rpm`, type the following command:

  `rpm -ivh` ***`[lgtoclnt*.rpm]`*** **`lgtonmc*.rpm`**

  where you specify *lgtoclnt*.rpm* only if you did not previously install the NetWorker client software.

  Note

  When the OS packages that NetWorker requires are missing, the `rpm` command provides a list of missing packages and does not install the NetWorker software. Manually install missing package dependencies, and then run the `rpm` command again.

Configuring the NMC server software

Use the `nmc_config` command to configure the NMC server software program.

Before you begin

Before you start the NMC configuration script, ensure that the `nsrexecd` daemon is running on the NMC host and the NetWorker daemons are running on the NetWorker Server. Use the `/etc/init.d/networker status` command to confirm that the daemons are started. If required, use the `/etc/init.d/networker start` command to start the NetWorker daemons. The configuration requires communication with processes on the NetWorker Server. When the NMC Server is not the NetWorker Server, ensure that the NMC Server can communicate with the NetWorker Server.

Procedure

1. Start the configuration script, by typing the following command:

   `/opt/lgtonmc/bin/nmc_config`

2. If the NetWorker services are not started on the NMC Server, the `NetWorker services are not running on this host. Do you want to start them now?` prompt appears. To start the NetWorker services, press **Enter**.
3. From the `Specify the user for the database server` prompt, type the name of a non-root user that will start the embedded PostgreSQL database on the NMC Server. To use the default username **`postgres`**, press **Enter** .
4. If the user does not exist, the `User` *`username`* `is not a local user, Do you want to create this user?` prompt appears. To create a new user account, type **`Y`**.

   The installation creates a new OS user, in disabled mode. NMC uses this user account to start the Postgres database.

5. From the `Specify the directory to use for the NMC database` prompt, specify a path or press **Enter** to accept the default path `/nsr/nmc/nmcdb`.
6. On the `Do you want to migrate data from a previous 8.x.x release` prompt, type **n**.
7. From the `Specify the host name of the NetWorker Authentication Service host` prompt, specify the name of the NetWorker Server that you want to use for NMC and NetWorker Server user authentication.

   Note

   If the configuration script does not detect the NetWorker Authentication Service on the host that you specified, or the authentication service does not use the default port 9090, a warning message appears. The configuration script prompts you to specify a different authentication server host. Type **Y** and when prompted, type the hostname and port of the NetWorker Authentication Service host.

8. When prompted to start the NMC Server daemons, type **y**.
9. To confirm that the NMC server daemons have started, from a command prompt, type: `ps -ef | grep lgtonmc`.

   Output similar to the following appears when the daemons have started:

```
root 3064 1 0 10:03 ? 00:00:01 /opt/lgtonmc/bin/gstd
dbuser 3329 1 0 10:04 ? 00:00:00 /opt/lgtonmc/
postgres/bin/postgres -D /opt/lgtonmc/nmcdb/pgdata
root 3969 1 0 10:04 ? 00:00:00 /opt/lgtonmc/apache/bin/
httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nobody 3970 3969 0 10:04 ? 00:00:00 /opt/lgtonmc/
apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
```

Uninstalling the NetWorker software

Use the `rpm -e` *package_name* command to remove individual NetWorker software packages or all NetWorker software packages simultaneously. For information about using `rpm`, refer to the `rpm` man page.

To uninstall the NetWorker software, complete the following procedure.

Procedure

1. Log in to the target host as root.
2. Connect to the NetWorker host with the root account.
3. View a list of the installed NetWorker packages by typing the following command:

   `rpm` **`-qa | grep lgto`**

   The following table lists the package names that are associated with the different NetWorker components.

Table 15 NetWorker package names on Linux

Component	Package name
NetWorker Server	lgtoserv
NetWorker Authentication Service	lgtoauthc
NetWorker Storage Node	lgtonode
NMC Server	lgtonmc
NetWorker License Manager	lgtolicm
NetWorker Client NetWorker Extended Client	lgtoclnt lgtoxtdclnt
NetWorker Message Queue Adapter	lgtoadpt
NetWorker Block-Based Backup add-on	lgtobbb
Man pages	lgtoman
French language support	lgtofr
Japanese language support	lgtoja
Korean language support	lgtoko
Simplified Chinese language support	lgtozh

4. Remove the NetWorker packages by using the `rpm -e` command:

   `rpm -e package_name package_name package_name`

   NOTICE

   The NetWorker software packages have dependencies on each other. Remove the packages in the following order: `lgtolicm, lgtoserv, lgtonode, lgtonmc, lgtoclnt, lgtobbb, lgtoadpt, lgtoxtdclnt, lgtoauthc`. The man pages and language packages do not have any dependencies. You can remove these packages in any order.

   For example, to remove the NetWorker packages from the NMC server, type:

   `rpm -e lgtonmc lgtoclnt`

   For example, to remove the NetWorker packages from a NetWorker server that is also the NMC server, type:

   `rpm -e lgtoserv lgtonode lgtonmc lgtoclnt lgtoxtdclnt lgtobbb lgtoadpt lgtoauthc`

5. If there is no plan to update or reinstall the software packages, remove the `/nsr` directory.

CHAPTER 4

Debian and Ubuntu Client Installation

This chapter includes these topics:

- Road map for installing the NetWorker client software 58
- Preparing the Linux target host 58
- Installing the NetWorker client packages 60
- Deploying a VMware template for the host 62
- Post-installation consideration for st tape devices 62
- Uninstalling the NetWorker software 63

Road map for installing the NetWorker client software

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

1. The Software Requirements chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating systems.
2. Preparing the Linux target host describes how to create a backup of the operating system configuration file and configure the target host to support NetWorker.
3. Installing the NetWorker client packages describes how to install the NetWorker client software.
4. Post installation considerations for st tape devices describes how to configure st tape devices.
5. The Verify the Installation chapter describes how to test the NetWorker software functionality.
6. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Preparing the Linux target host

Before you install the NetWorker software, create a backup of the operating system configuration file and configure the target host to support NetWorker.

Procedure

1. To create a backup copy of the operating system configuration files, type the following command:

   ```
   cp /etc/rpc /etc/rpc.orig
   cp /etc/ld.so.conf /etc/ld.so.conf.orig
   ```

2. Ensure that the PATH variable for the root and user accounts contains the `/usr/sbin` directory.

Linux x64 installation package requirements

The NetWorker installation for all supported x64 Linux operating systems and versions requires two packages that the default OS installation might not include.

Manually download and install the following Linux OS packages before you install the NetWorker software. The NetWorker installation fails when these two packages do not exist on the host:

- `compat-libstdc++-33-3.2.3-68.1.x86_64.rpm` or later
- `compat-libstdc++-33-3.2.3-68.1.x86.rpm` or later

Default directory locations

Before you install the NetWorker software, you should become aware of the default directory locations and space requirements for the binary files, the databases, and the log files on the target host.

Review the following table to ensure that you have sufficient disk space to install the NetWorker and NetWorker Authentication Service software.

Note

You can change these directory locations on all supported Linux operating systems except Debian and Ubuntu.

Table 16 Linux default file locations and space requirements

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390
NetWorker Authentication Service (emcauthc)	`/opt/nsr/authc`	Not applicable	65 MB	Not applicable	Not applicable

Client (lgtoclnt)	`/usr/lib`
	`/usr/sbin`
	`/usr/bin`
	`/opt/nsr`
		29 MB
		55 MB
		31 MB
		16 MB
			50 MB
			78 MB
			33 MB
			21 MB
				1.6 MB
				37MB
				16 MB
				20.0 KB
					1.6 MB
					41 MB
					18 MB
					20.0 KB

Storage node (lgtonode)	`/usr/lib` `/usr/sbin`	Not applicable	11 MB 67 MB	Not applicable	Not applicable
Server (lgtoserv)	`/usr/sbin`	Not applicable	71 MB	Not applicable	Not applicable
Man pages (lgtoman)	`/usr/share`	1.7 MB	1.8 MB	1.8 MB	Not applicable

French language pack (lgtofr)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		44 KB
		8.0 KB
		1.9 MB
		6.9 MB
			44 KB
			8.0 KB
			1.9 MB
			8.2 MB
				Not applicable	Not applicable

Japanese language pack (lgtoja)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		52 KB
		8.0 KB
		1.8 MB
		9.4 MB
			52 KB
			8.0 KB
			1.8 MB
			9.4 MB
				Not applicable	Not applicable

Korean language pack (lgtoko)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		40 KB
		8.0 KB
		1.7 MB
		8.5 MB
			40 KB
			8.0 KB
			1.7 MB
			8.5 MB
				Not applicable	Not applicable

Simplified Chinese	`/usr/lib`	36 KB	36 KB	Not applicable	Not applicable

Table 16 Linux default file locations and space requirements (continued)

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390

language pack (lgtozh)	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		8.0 KB
		1.4 MB
		8.0 MB
			8.0 KB
			1.4 MB
			6.9 MB		

Client file index, media database, resource database	`/nsr`	Varies	Varies	Varies	Varies

Installing the NetWorker client packages

Use the `dpkg` program to install the NetWorker client software. To install the operating system packages that the NetWorker client software requires, use the `apt-get` program.

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 17 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	`nw901_linux_x86.tar.gz`	312 MB	320 MB
Linux x86-64	`nw901_linux_x86_64.tar.gz`	1.01 GB	1.06 MB

NOTICE

Ubuntu 10 requires the libstdc++5 package, but the Ubuntu software package repository does not include this package. Before you install the NetWorker client software, download and install the libstdc++5 package for Debian.

The following table lists the software packages that are required for each installation type, and the order of package installation.

Table 18 List of software packages

Installation type	Packages
Client software and Extended Client software	lgtoclnt*.deb lgtoxtdclnt*.deb
Avamar Client software	AvamarClient-debian*.deb

Table 18 List of software packages (continued)

Installation type	Packages
	Note Install this package only when you are updating an NetWorker 8.2.x and earlier host that use Avamar as a data protection target.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

3. From a command prompt, type the `dpkg` command. For example:

   ```
   dpkg -i package package...
   ```

   NOTICE

   For Ubuntu, use `sudo` to run the `dpkg` command.

   For example, to install the NetWorker Client and Extended Client, type the following command:

   ```
   dpkg -i lgtoclnt_9.0_amd64.deb lgtoxtdclnt_9.0_amd64.deb
   ```

   If the required operating system packages are missing, dependency errors similar to the following appear:

   ```
   Unpacking lgtoclnt (from lgtoclnt_9.0_amd64.deb) ...
   dpkg: dependency problems prevent configuration of
   lgtoclnt:
   lgtoclnt depends on ksh | pdksh; however:
   Package ksh is not installed.
   Package pdksh is not installed.
   lgtoclnt depends on libstdc++5; however:
   Package libstdc++5 is not installed.
   lgtoclnt depends on libxp6; however:
   Package libxp6 is not installed.
   dpkg: error processing lgtoclnt (--install):
   dependency problems - leaving unconfigured
   Errors were encountered while processing:
   lgtoclnt
   ```

4. To install missing packages, type the `apt-get` command.

   For example,

   ```
   sudo apt-get -f upgrade
   ```

The `apt-get` command automatically completes the NetWorker software installation.

5. To confirm that the `nsrexecd` process starts, type the following command:

   ```
   ps -ef | grep nsrexecd
   ```

   If the `nsrexecd` daemon does not appear in the output, start the `nsrexecd` process by typing the following command : `sudo nsrexecd`

Deploying a VMware template for the host

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique information for each host in a datazone. Before you create a VMware template for NetWorker hosts, perform the following steps to delete the NSRLA database on the host that you will use to create the VM template.

Procedure

1. To stop the NetWorker processes, type the following command from a prompt:

   ```
   /etc/init.d/networker stop
   ```

2. To confirm that the NetWorker processes are not running, type the following command from a prompt:

   ```
   ps -ef | grep /usr/sbin/nsr
   ```

3. Delete the `/nsr/res/nsrladb` directory.
4. Create the VMware template.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Post-installation consideration for st tape devices

By default, the Linux kernel configures up to a maximum of 128 st tape devices. As a result, the `inquire` command and the `Scan for Devices` option in the NMC GUI display a maximum of 128 st devices.

To resolve this issue and increase the maximum number of allowable st devices that the OS can create:

1. Modify the st module of the Linux kernel.
2. Recompile the kernel.

The *EMC NetWorker Administration Guide* provides additional information.

The Linux documentation describes how to change the *ST_MAX_TAPES* definition and how to perform a kernel reconfiguration, kernel rebuild, and kernel installation.

Uninstalling the NetWorker software

To uninstall the NetWorker software, complete the following procedure.

Procedure

1. Log in to the target host as root.
2. Stop the the `nsrexecd` daemon, by typing the following command:

   `nsr_shutdown`

3. To uninstall the NetWorker client software, use the `dpkg` command.

   For example, to remove the NetWorker Client software, type the following command:

   ```
   dpkg -r lgtoclnt
   ```

4. If no plan exists to update or reinstall the NetWorker software, use the `dpkg -P` command to remove the NetWorker configuration files.

   For example, to remove the NetWorker configuration files for the NetWorker Client software, type the following command:

   ```
   dpkg -P lgtoclnt
   ```

CHAPTER 5

Fedora Client Installation

This chapter includes the following topics:

- Road map for installing the NetWorker client software 66
- Preparing the Linux target host 66
- Installing the NetWorker client packages 68
- Deploying a VMware template for the host 70
- Post-installation consideration for st tape devices 70
- Uninstalling the NetWorker software 70

Road map for installing the NetWorker client software

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

1. The Software Requirements chapter lists the general requirements and considerations that are relevant to each supported Windows and UNIX operating system.
2. Preparing the Linux target host describes how to create a backup of the operating system configuration file and configure the target host to support NetWorker.
3. Installing the NetWorker client packages describes how to install the NetWorker client software.
4. The Verify the Installation chapter describes how to test the NetWorker software functionality.
5. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Preparing the Linux target host

Before you install the NetWorker software, create a backup of the operating system configuration file and configure the target host to support NetWorker.

Procedure

1. To create a backup copy of the operating system configuration files, type the following command:

   ```
   cp /etc/rpc /etc/rpc.orig
   cp /etc/ld.so.conf /etc/ld.so.conf.orig
   ```

2. Ensure that the PATH variable for the root and user accounts contains the `/usr/sbin` directory.

Linux x64 installation package requirements

The NetWorker installation for all supported x64 Linux operating systems and versions requires two packages that the default OS installation might not include.

Manually download and install the following Linux OS packages before you install the NetWorker software. The NetWorker installation fails when these two packages do not exist on the host:

- `compat-libstdc++-33-3.2.3-68.1.x86_64.rpm` or later
- `compat-libstdc++-33-3.2.3-68.1.x86.rpm` or later

Default directory locations

Before you install the NetWorker software, you should become aware of the default directory locations and space requirements for the binary files, the databases, and the log files on the target host.

Review the following table to ensure that you have sufficient disk space to install the NetWorker and NetWorker Authentication Service software.

Note

You can change these directory locations on all supported Linux operating systems except Debian and Ubuntu.

Table 19 Linux default file locations and space requirements

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390
NetWorker Authentication Service (emcauthc)	`/opt/nsr/authc`	Not applicable	65 MB	Not applicable	Not applicable

Client (lgtoclnt)	`/usr/lib`
	`/usr/sbin`
	`/usr/bin`
	`/opt/nsr`
		29 MB
		55 MB
		31 MB
		16 MB
			50 MB
			78 MB
			33 MB
			21 MB
				1.6 MB
				37MB
				16 MB
				20.0 KB
					1.6 MB
					41 MB
					18 MB
					20.0 KB

Storage node (lgtonode)	`/usr/lib` `/usr/sbin`	Not applicable	11 MB 67 MB	Not applicable	Not applicable
Server (lgtoserv)	`/usr/sbin`	Not applicable	71 MB	Not applicable	Not applicable
Man pages (lgtoman)	`/usr/share`	1.7 MB	1.8 MB	1.8 MB	Not applicable

French language pack (lgtofr)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		44 KB
		8.0 KB
		1.9 MB
		6.9 MB
			44 KB
			8.0 KB
			1.9 MB
			8.2 MB
				Not applicable	Not applicable

Japanese language pack (lgtoja)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		52 KB
		8.0 KB
		1.8 MB
		9.4 MB
			52 KB
			8.0 KB
			1.8 MB
			9.4 MB
				Not applicable	Not applicable

Korean language pack (lgtoko)	`/usr/lib`
	`/usr/sbin`
	`/usr/share`
	`/opt/nsr`
		40 KB
		8.0 KB
		1.7 MB
		8.5 MB
			40 KB
			8.0 KB
			1.7 MB
			8.5 MB
				Not applicable	Not applicable

Simplified Chinese	`/usr/lib`	36 KB	36 KB	Not applicable	Not applicable

Table 19 Linux default file locations and space requirements (continued)

NetWorker package	Location	Space for Linux x86	Space for Linux x64	Space for Linux PPC64	Space for Linux s390
language pack (lgtozh)	/usr/sbin /usr/share /opt/nsr	8.0 KB 1.4 MB 8.0 MB	8.0 KB 1.4 MB 6.9 MB		
Client file index, media database, resource database	/nsr	Varies	Varies	Varies	Varies

Installing the NetWorker client packages

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 20 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	nw901_linux_x86.tar.gz	312 MB	320 MB
Linux x86-64	nw901_linux_x86_64.tar.gz	1.01 GB	1.06 MB

This table lists the available NetWorker software packages.

Table 21 List of NetWorker software packages

Installation type	Packages
Client software and Extended Client software	lgtoclnt*.rpm lgtoxtdclnt*.rpm
Man pages	lgtoman*.rpm
Simplified Chinese language support	lgtozh*.rpm
French language support	lgtofr*.rpm
Japanese language support	lgtoja*.rpm
Korean language support	lgtoko*.rpm

Complete the following steps to install the NetWorker software on the Fedora operating system. Perform additional steps to resolve package dependency issues.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   `tar -xzf` ***`file_name`*****`.tar.gz`**

3. Install the missing package dependencies, with the exception of `libcap.so.1`.

   a. To identify missing dependencies, type the `yum` command with the `localinstall` option.

   For example:

   ```
   yum localinstall lgtoclnt*.rpm
   Packages skipped because of dependency problems:
   compat-libstdc++-33-3.2.3-68.1.x86_64 from fedora
   glibc-2.14.90-24.fc16.9.i686 from updates
   ksh-20120801-1.fc16.x86_64 from updates
   libXp-1.0.0-16.fc15.x86_64 from fedora
   nss-softokn-freebl-3.13.5-1.fc16.i686 from updates
   ```

   Note

   The `yum` command does not successfully install the NetWorker software.

   b. To install the missing package dependencies, type the `yum` command with the `install` option.

   For example:

   `yum install` *compat-libstdc++-33 ksh libXp glibc-2.14.90-24.fc16.9.i686*

   When you specify the glib package, use the full package name to ensure the correct glib package installs and not the glibc-2.14.90-24.fc16.9.x86_64 package.

4. To confirm that you resolved all missing package dependencies, with the exception of `libcap.so.1`, type the `rpm` command.

   For example, to determine what pacckages are missing for the NetWorker Client software, type the following command:

   ```
   rpm -ivh lgtoclnt*.rpm
   error: Failed dependencies:
   libcap.so.1 is needed by lgtoclnt-8.1-1.i686
   ```

5. To install the NetWorker software and ignore the `libcap.so.1` dependency, type the `rpm` command with the `--nodeps` option.

   For example,

   `rpm -ivh --nodeps` *package [package]...*

   where *package [package]...*is a list of the software package that is required for the installation type.

   For example, to install the man pages during a NetWorker client install, type:

```
rpm -ivh --nodeps lgtoclnt*.rpm lgtoman*.rpm
```

Deploying a VMware template for the host

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique information for each host in a datazone. Before you create a VMware template for NetWorker hosts, perform the following steps to delete the NSRLA database on the host that you will use to create the VM template.

Procedure

1. To stop the NetWorker processes, type the following command from a prompt:

   ```
   /etc/init.d/networker stop
   ```

2. To confirm that the NetWorker processes are not running, type the following command from a prompt:

   ```
   ps -ef | grep /usr/sbin/nsr
   ```

3. Delete the `/nsr/res/nsrladb` directory.
4. Create the VMware template.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Post-installation consideration for st tape devices

By default, the Linux kernel configures up to a maximum of 128 st tape devices. As a result, the `inquire` command and the `Scan for Devices` option in the NMC GUI display a maximum of 128 st devices.

To resolve this issue and increase the maximum number of allowable st devices that the OS can create:

1. Modify the st module of the Linux kernel.
2. Recompile the kernel.

The *EMC NetWorker Administration Guide* provides additional information.

The Linux documentation describes how to change the *ST_MAX_TAPES* definition and how to perform a kernel reconfiguration, kernel rebuild, and kernel installation.

Uninstalling the NetWorker software

Use the `rpm -e package_name` command to remove individual NetWorker software packages or all NetWorker software packages simultaneously. For information about using `rpm`, refer to the `rpm` man page.

Procedure

1. Connect to the NetWorker host with the root account.
2. To view a list of the installed NetWorker packages, type the following command:

   ```
   rpm -qa | grep lgto
   ```

3. To remove the NetWorker packages, type the `rpm -e` command:

   rpm -e package_name package_name package_name

   For example, to remove the NetWorker client packages, type:

   rpm -e lgtoclnt

   The following table provides a list of the package names that are associated with the different NetWorker components.

Table 22 NetWorker package names on Linux

Component	Package name
Client	lgtoclnt
Man pages	lgtoman
French language support	lgtofr
Japanese language support	lgtoja
Korean language support	lgtoko
Simplified Chinese language support	lgtozh

4. If you do not plan to update or reinstall the packages, remove the `/nsr` directory.

PART 3

Windows installation

This section contains the following chapters:

Chapter 6, "Microsoft Windows Installation"

Chapter 7, "Microsoft Windows Silent Installations"

Chapter 8, "Changing the Microsoft Windows Installation or moving to another installation type"

CHAPTER 6

Microsoft Windows Installation

This chapter includes the following topics:

- Road map for installing the NetWorker and NMC software on Windows 76
- Reviewing the NetWorker requirements for Windows 76
- Installing the NetWorker software 78
- Installing the NMC server software on Windows 87
- Adjusting antivirus software settings 96
- Deploying a VMware template for the host 96
- Uninstalling the software 97

Road map for installing the NetWorker and NMC software on Windows

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

Procedure

1. The Software Requirements chapter provides the general requirements and considerations relevant to each supported Windows operating system.
2. Reviewing the NetWorker requirements for Windows details the NetWorker software requirements.
3. Install the NetWorker software:
   - Installing the NetWorker software describes how to install the NetWorker server, storage node, client, and extended client software.
   - Installing the NMC server software describes how to install the NMC server software.
4. The Verify and Troubleshooting the Installation chapter describes how to test the NetWorker software functionality.
5. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Reviewing the NetWorker requirements for Windows

Review the information in this section before you install NetWorker on the Windows 2008 or the Windows 2012 operating systems.

General considerations

Before you install the NetWorker software on a Windows host, review the following information.

- When you install the NetWorker software on a File Allocation Table (FAT) partition, do not disable long name support.
- The WiX installation stores the entire installation program in memory, even when you install a single NetWorker software component.
- Install the latest Microsoft Windows update and critical patches.

Package disk space requirements

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.

The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 23 Size of compressed and uncompressed files

Package	Package name	Compressed file	Uncompressed file
Windows x64	nw90_win_x64.zip	637 MB	688 MB
Windows x86	nw90_win_x86.zip	232 MB	266 MB

Location and disk space requirements

Before you install the NetWorker software, review the disk space and location requirements.

The following table specifies the default location and space requirements for the NetWorker software in a Microsoft Windows environment.

Table 24 Microsoft Windows default file locations and space requirements

NetWorker files	Location	Space for x86	Space for x64
Client files	`Program Files \EMC NetWorker \nsr`	264 MB	383 MB
NMC	`Program Files \EMC NetWorker \Management`	Not applicable	148 MB
Storage node	`Program Files \EMC NetWorker \nsr`	319 MB	319 MB
Server	`Program Files \EMC NetWorker \nsr`	Not applicable	439 MB

Client file index, media database, and resource database files	`Program Files \EMC NetWorker \nsr\index`
	`Program Files \EMC NetWorker \nsr\mm`
	`Program Files \EMC NetWorker \nsr\res`
		Varies	Varies

The *EMC NetWorker Online Software Compatibility Guide* on the EMC Online Support Site, provides the most up-to-date information on supported operating systems.

Windows 2012 considerations

The NetWorker server, storage node, and client software does not support Windows 2012 R2 Foundation Edition as a guest operating system on Hyper-V.

For more information, see http://technet.microsoft.com/en-us/library/jj679892.aspx.

Windows 2008 requirements

Before you install the NetWorker 9.0 and later software on a Windows 2008 and Windows 2008 R2 server, review the following requirements.

- NetWorker 9.0 and later supports Windows 2008 64-bit and Windows 2008 R2 64-bit as a NetWorker Server, Storage Node, and cCient. NetWorker 9.0 and later supports a Windows 2008 32-bit storage node and client.
- Use NetWorker Module for Microsoft Applications (NMM) to back up Hyper-V hosts.
- Enable Windows Error Reporting (WER).
  WER replaces the Dr. Watson user dumps used in earlier releases of Windows and enables you to collect full User-Mode Dumps after an application failure. MSDN describes how to configure WER to collect user-mode dumps.
- Enable Data Execution Prevention (DEP) to protect essential Windows programs and services, perform the following steps:
  1. Click **Start** > **Control Panel** > **System and Security** > **System** > **Advanced system settings**.
  2. Click **Advanced** > **Performance** > **Settings** > **Data Execution Prevention**.
  3. Select **Turn on DEP for essential Windows programs and services only**.
  4. Click **OK**.

NetWorker server and storage node tape device requirements

When you configure a SAN tape device on a Windows NetWorker Server or a Storage Node, disable Test Unit Ready (TUR). Microsoft KB article 842411 describes how to disable TUR.

Installing the NetWorker software

The following section describes how to install the NetWorker client, server, and storage node software as well as the optional NetWorker software packages, such as the language packages, on Windows Server or Windows Server Core.

When you extract the NetWorker software for Windows, the following packages appear:

- In the `...\nw_win_x64\win_x64` directory:
  - `AvamarClient-windows-x86_64-7.2.100-288.msi`. The Avamar client package enables backups to a NetWorker host that, in previous versions, used an Avamar host as a backup target.
- In the `...\nw_win_x64\win_x64\networkr` directory:
  - `NetWorker-9.0.1.0.exe`. The full installation package, which enables you to install the NetWorker Server, Storage Node, Client, and NetWorker Authentication Service. This package also enables you to install the NetWorker

License Manager server, the Avamar client, the NMC Server, and language packs. When you install the NetWorker Server or Storage Node software, the installation process also installs the NetWorker Extended Client package.

- `lgtoclnt-9.0.1.0.exe`. A reduced installation package enables you to install the NetWorker Client software. It is recommended that you use the reduced installation package to install NetWorker on a client host. When you use this package instead of the full installation package, the installation is quicker, with less overhead and smaller disk space requirements. The smaller package size takes less time to copy to target hosts.
- `lgtoxtdclnt-9.0.1.0.exe`. The NetWorker Extended Client package enables you to install extended client features.

Note

Installing the NMC server software on Windows provides detailed information about how to install the NMC Server software with the NetWorker software.

Installing the NetWorker base client

The following steps describe how to install the base NetWorker client. It is recommended that you use the `lgtoclnt-9.0.1.0.exe` package to install the NetWorker software on a client host.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The Windows x64 package name is `nw901_win_x64.zip`. The Windows x86 package name is `nw901_win_x86.zip`.The "Package disk space requirements" section provides more information about disk space requirements.
3. Extract the NetWorker packages from the `nw901_win_x64.zip` file or `nw901_win_x86.zip` file to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker packages, run `lgtoclnt-9.0.1.0.exe`.
6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. On the **Change Install Location** page, click **Change**, select the directory to install the NetWorker software, and then click **Next**.
8. (Optional) On the **Configuration Checks Options** page, select **Run System Configuration Checker**, and then click **Check**.

   The installation analyzes the host and displays status information in the **Results of Configuration Checks** page. Select **Open Detailed Report** to review detailed information about the configuration checks, and then click **Next**.

   Note

   The Configuration Checker option only appears in the Base Client Installation Wizard.

9. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   NOTICE

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

10. In the **Wizard Options** page, optionally perform the following steps:
    - To install the License manager server software, select **NetWorker License Manager**.
      The *EMC NetWorker License Manager Installation and Administration Guide* describes how to install and configure the NetWorker License Manager software.
    - To install additional language packs, select **Language packs**.
    - To install the Avamar Client software, select **Avamar client** .

      Note

      Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

11. If you selected the optional **Language Packs** component, the **Wizard Language Pack Page** page appears. Select the required language packs, and then click **Install**.
12. Click **Install**. The installation progress bar appears and you might see the progress window for several minutes. When the installation completes, the **Complete the Setup** page provides the status of the installation and a link to the master setup log file.

    "Monitoring and troubleshooting silent installations and uninstallations" provides more information about each log file that the installation creates.

    Note

    For NetWorker Servers only, if the installation cannot start the `nsrd` service, the following error message might appear:

    ```
    Service 'NetWorker Backup and Recover Server' (nsrd) failed to start.
    Verify that you have sufficient priveleges to start system services.
    ```

    If you see this message, confirm the *JAVA_HOME* environment variable setting. For more information, refer to the "Troubleshooting NMC GUI and NetWorker Server connection issues" section.

13. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:
    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
    - To add a NetWorker Server that is not listed in the **Available Servers** list:

a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.

b. Click **Add**.

- To browse for available NetWorker Servers:

  a. Click **Update List**.

  b. From the **Available Servers** list, select a NetWorker Server.

- To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

  The `NetWorker_installation_directory\res\servers` file contains a list of trusted NetWorker Servers.

Note

If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the `servers` file becomes the default NetWorker Server for the host.

14. To complete the **NetWorker Server Selection** page, click **OK**.
15. To complete the installation, click **Finish**.

After you finish

The NetWorker installation package includes an NetWorker Extended Client package, which provides additional feature support for NetWorker clients. If you require any of the following functionality, install the NetWorker Extended Client package:

- NetWorker Snapshot Management (NSM)
- Network Attached Storage (NAS) snapshot
- CLI utilities for server reporting and administration, for example `mminfo`, `nsradmin`, and `nsrinfo`
- Firewall tunneling tools
- Cluster integration scripts
- Custom script integration tools (pre/post save)
- Audit log
- NetWorker Module for Meditech
- SCVMM Data Protection Add-in for NMM
- Recovery of NetWorker Module for Microsfot (NMM) 8.2.x backups by using NMM
- Cloning and staging
- Protectpoint for VMAX
- Protectpoint for Recoverpoint

Installing the NetWorker Extended Client

After you install the NetWorker Client software, perform the following steps to install the NetWorker Extended Client software.

Procedure

1. In the directory that contains the extracted NetWorker software, run `lgtoxtdclnt-9.0.1.0.exe`
2. On the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Install**.
3. On the **Complete the Setup** page, click **Finish**.

Installing the NetWorker Storage Node software by using the NetWorker installer

The following section describes how to install the NetWorker Storage Node software. The NetWorker Storage Node installation also installs the NetWorker Clientand NetWorker Extended Client software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The Windows x86 package name is `nw901_win_x86.zip`. The Windows x64 package name is `nw901_win_x64.zip`. The section "Package disk space requirements" provides more information.
3. Extract the NetWorker packages that are found in the `nw901_win_x64.zip` or `nw901_win_x86.zip` file, to a temporary location on the target host.
4. In the directory that contains the extracted NetWorker software run `NetWorker-9.0.1.0.exe`.

   Note

   While you can run the `NetWorker-9.0.1.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host.

5. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
6. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   NOTICE

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

7. In the **Wizard Options Page** page, perform the following steps:
   - Select the **Storage node** option.
   - To install additional language packs, select **Language packs**.

- To install the Avamar Client software, select **Avamar client** .

Note

Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

8. To accept the default installation location, click **Next** .
9. If you selected the optional **Language Packs** component, the **Wizard Language Pack Page** page appears. Select the required language packs, and then click **Install**.
10. Click **Install**. The installation progress bar appears and you might see the progress window for several minutes. When the installation completes, the **Complete the Setup** page provides the status of the installation and a link to the master setup log file.

    "Monitoring and troubleshooting silent installations and uninstallations" provides more information about each log file that the installation creates.

Note

For NetWorker Servers only, if the installation cannot start the `nsrd` service, the following error message might appear:

```
Service 'NetWorker Backup and Recover Server' (nsrd) failed to start.
Verify that you have sufficient priveleges to start system services.
```

If you see this message, confirm the *JAVA_HOME* environment variable setting. For more information, refer to the "Troubleshooting NMC GUI and NetWorker Server connection issues" section.

11. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:
    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
    - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
      b. Click **Add**.
    - To browse for available NetWorker Servers:
      a. Click **Update List**.
      b. From the **Available Servers** list, select a NetWorker Server.
    - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

      The *`NetWorker_installation_directory`*`\res\servers` file contains a list of trusted NetWorker Servers.

Note

If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the `servers` file becomes the default NetWorker Server for the host.

12. To complete the installation, click **Finish**.
13. Ensure that the NetWorker daemons start by opening **Task Manager**, or use the `get-service nsr*` command from a PowerShell window.

    The NetWorker daemons chapter provides a list of the NetWorker daemons.

Installing the NetWorker server software

The following section describes how to install the NetWorker Server software. When you install the NetWorker Server software, the installation process also installs the NetWorker Client, NetWorker Storage Node, NetWorker Block-Based Backup, and NetWorker Extended Client software.

Before you begin

Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

When you install the NMC Server software on the NetWorker Server, you install both options simultaneously. The section "Installing the NMC Server software with the NetWorker Server software" describes how to install the NMC Server and NetWorker Server software on the same host.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The package name is `nw901_win_x64.zip`. Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.
3. Extract the NetWorker packages found in `nw90_win_x64.zip` to a temporary location on the target host.
4. In the directory that contains the extracted NetWorker software run `NetWorker-9.0.1.0.exe`.

   Note

   While you can run the `NetWorker-9.0.1.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host.

5. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
6. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   NOTICE

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

7. In the **Wizard Options Page** page, perform the following steps:
   - Select the **Server and client** option.
   - To install additional language packs, select **Language packs**.
   - To install the Avamar Client software, select **Avamar client** .

     Note

     Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

8. To accept the default installation location, click **Next** .
9. If you selected the optional **Language Packs** component, the **Wizard Language Pack Page** page appears. Select the required language packs, and then click **Next**.
10. (Required) If NetWorker detects that port 9090 is in use, the **Configure NetWorker Authentication Service** page appears with the option to specify another port. Type another port number for Tomcat to use, and then click **Next**.
11. In the **Configure NetWorker Authentication Service Keystore** page, specify a password for the keystore file, then click **Next**.

    Ensure that the password is at least six characters.

12. In the **NetWorker Authentication Service - Service Options** page, perform the following steps:
    a. Specify the password for the authentication service administrator account.

       Ensure the password complies with the following minimum requirements:
       - Nine characters
       - One uppercase letter
       - One lowercase letter
       - One special character
       - One numeric character

       Note

       You will use the administrator account to log in to the NMC Server.

    b. Select the option **Start service at the end of the configuration**, then click **Next**.
13. Click **Install**. The installation progress bar appears and you might see the progress window for several minutes. When the installation completes, the

Complete the Setup page provides the status of the installation and a link to the master setup log file.

"Monitoring and troubleshooting silent installations and uninstallations" provides more information about each log file that the installation creates.

Note

For NetWorker Servers only, if the installation cannot start the `nsrd` service, the following error message might appear:

```
Service 'NetWorker Backup and Recover Server' (nsrd) failed to start.
Verify that you have sufficient priveleges to start system services.
```

If you see this message, confirm the *JAVA_HOME* environment variable setting. For more information, refer to the "Troubleshooting NMC GUI and NetWorker Server connection issues" section.

---

14. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:
    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
    - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
      b. Click **Add**.
    - To browse for available NetWorker Servers:
      a. Click **Update List**.
      b. From the **Available Servers** list, select a NetWorker Server.
    - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

      The *`NetWorker_installation_directory`*`\res\servers` file contains a list of trusted NetWorker Servers.

    Note

    If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

    The first entry in the `servers` file becomes the default NetWorker Server for the host.
15. To complete the installation, click **Finish**.
16. Ensure that the NetWorker daemons start by opening **Task Manager**, or use the `get-service nsr*` command from a PowerShell window.

    The NetWorker daemons chapter provides a list of the NetWorker daemons.

After you finish

For NetWorker Server installations only, license the NetWorker Server. The Verifying and Troubleshooting the Installation chapter provides more information.

Installing the NMC server software on Windows

The following section describes how to install the NMC server software. The NetWorker server, storage node, or client software installation process provides you with an option to install the NMC server software.

Note

The Base client installation package does not provide you with the option to install the NMC server software. Use the full installation package to install the NetWorker client and NMC server software.

Installing the NMC server software with the NetWorker client or storage node software

This section describes how to install the NMC server software with the NetWorker client or storage node software on a Microsoft Windows host or Windows Server Core host.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The package name is `nw901_win_x64.zip`. The "Package disk space requirements" section provides more information about disk space requirements.
3. Extract the NetWorker packages found in `nw90_win_x64.zip` to a temporary location on the target host.
4. In the directory that contains the extracted NetWorker software run `NetWorker-9.0.1.0.exe`.

   Note

   While you can run the `NetWorker-9.0.1.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host.

5. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
6. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   NOTICE

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

7. In the **Wizard Options Page** page, perform the following steps:
   - Select the **Client** option.
   - Select the **NetWorker Management Console** option.
   - To install additional language packs, select **Language packs**.
   - To install the License manager server software, select **NetWorker License Manager**.
     The *EMC NetWorker License Manager Installation and Administration Guide* describes how to install and configure the NetWorker License Manager software.
   - To install the Avamar Client software, select **Avamar client** .

     Note

     Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.
8. To accept the default installation location, click **Next** .
9. If you selected the optional **Language Packs** component, the **Wizard Language Pack Page** page appears. Select the required language packs, and then click **Install**.
10. In the **NMC Options** page, perform the following steps:
    a. Type the path to install the NMC Server software.

       The default location is: `C:\Program Files\EMC NetWorker \Management`

    b. In the **Authentication Host** field, type the name of one of the NetWorker 9.0.x servers that the NMC Server will manage. Ensure NetWorker services are started on the NetWorker server.

       The NetWorker Server that you specify authenticates access to the NMC Server. When you log in to the NMC Server, you will specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.

    c. In the **Authentication Port** field, specify the port number used by the NetWorker Authentication Service. The default port number is 9090.
11. Click **Next**. If a Security Alert message appears, perform the following steps:
    a. Click **View Certificate**, then select **Install Certificate**.

       The **Certificate Import Wizard** screen appears.

    b. Click **Next**.

    c. Select **Place all certificates on the following store**, and then click **Browse**.

    d. In the **Select Certificate Store** page, select **Trusted Root Certificate Authorities**, and then click **OK**.

    e. Click **Next**.

    f. Click **Finish**.

    g. If you are prompted to install the certificate, click **Yes**.

    h. In the **Certificate Import Wizard** page, click **OK**.

    i. In the **Certificate** page, click **OK**.

j. In the **Security Alert** page, click **Yes**.

12. (Optional) In the **NMC Database Options** page, modify the following configuration options, and the click **Next**:

    - **Database Destination Folder**. The default location is" `C:\Program Files\EMC NetWorker\Management\nmcdb`
    - **Client Service port**. The default port is 9001.

      Note

      To use different port numbers, type the new port numbers (between **1024** and **49151**). Do not use port numbers that are already in use. For example: The NMC server uses port **5432** for TDS protocol communications with the NMC database. The preferred port for EMC Data Protection Advisor product is **9002**.

    - **Web server port**, which is used by the embedded HTTP server. The default port is 9000.

13. In **NMC Database Migration** page, select how you want to migrate the data from an 8.1.x or 8.2.x NMC server:

    - To start the NMC Server with a new database, select **Skip the Migration**.

      Note

      If you skip the migration, you cannot migrate the database after the update completes.

    - To import data from an NMC database, which originates from a different NMC 8.1.x or NMC 8.2.x server, select **Migrate the Database Manually**. When you select this option, specify the same path to the Unload Database that you used with the `gstdbunload` command. The section "Manually migrating the NMC database" describes how to use the `gstdbunload` command.

      Note

      You can only manually migrate data that you have already converted on the NMC 8.1.x or NMC 8.2.x server and then copied the Unload Database to a location that is accessible to this NMC server.

    - To allow the update to convert and migrate the NMC database on this host, select **Migrate the Database Automatically**. Accept the default directory location or specify a location that has sufficient disk space to store the converted database. To store the converted database, the conversion requires free disk space equal to twice the size of the original database.

14. Click **Install**. The installation progress bar appears and you might see the progress window for several minutes. When the installation completes, the **Complete the Setup** page provides the status of the installation and a link to the master setup log file.

    "Monitoring and troubleshooting silent installations and uninstallations" provides more information about each log file that the installation creates.

Note

For NetWorker Servers only, if the installation cannot start the `nsrd` service, the following error message might appear:

```
Service 'NetWorker Backup and Recover Server' (nsrd) failed to start.
Verify that you have sufficient priveleges to start system services.
```

If you see this message, confirm the *JAVA_HOME* environment variable setting. For more information, refer to the "Troubleshooting NMC GUI and NetWorker Server connection issues" section.

15. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:
    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
    - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
      b. Click **Add**.
    - To browse for available NetWorker Servers:
      a. Click **Update List**.
      b. From the **Available Servers** list, select a NetWorker Server.
    - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

      The *`NetWorker_installation_directory`*`\res\servers` file contains a list of trusted NetWorker Servers.

    Note

    If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

    The first entry in the `servers` file becomes the default NetWorker Server for the host.
16. To complete the installation, click **Finish**.
17. Ensure that the NetWorker daemons start by opening **Task Manager**, or use the `get-service nsr*` and `get-service gst*` commands from a PowerShell window.

    The NetWorker daemons chapter provides a list of the NetWorker daemons.

After you finish

The NetWorker Storage Node installation automatically installs the NetWorker Extended Client software. The NetWorker Client installation does not install the NetWorker Extended Client software.

The NetWorker installation package includes an NetWorker Extended Client package, which provides additional feature support for NetWorker clients. If you require any of the following functionality, install the NetWorker Extended Client package:

- NetWorker Snapshot Management (NSM)
- Network Attached Storage (NAS) snapshot
- CLI utilities for server reporting and administration, for example `mminfo`, `nsradmin`, and `nsrinfo`
- Firewall tunneling tools
- Cluster integration scripts
- Custom script integration tools (pre/post save)
- Audit log
- NetWorker Module for Meditech
- SCVMM Data Protection Add-in for NMM
- Recovery of NetWorker Module for Microsfot (NMM) 8.2.x backups by using NMM
- Cloning and staging
- Protectpoint for VMAX
- Protectpoint for Recoverpoint

"Installing the Extended Client" in the *EMC NetWorker Installation Guide* provides more information.

Installing the NMC server software with the NetWorker server software

This section describes how to install the NMC server software with the NetWorker server software on a Microsoft Windows host or Windows Server Core host. When you install the NetWorker server software, the installation process also installs the NetWorker client, storage node, BBB, and extended client software.

Before you begin

Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The package name is `nw901_win_x64.zip`. Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.
3. Extract the NetWorker packages found in `nw90_win_x64.zip` to a temporary location on the target host.

4. In the directory that contains the extracted NetWorker software run `NetWorker-9.0.1.0.exe`.

   Note

   While you can run the `NetWorker-9.0.1.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host.

5. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
6. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   NOTICE

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

7. In the **Wizard Options Page** page, perform the following steps:
   - Select the **Server and client** option.
   - Select the **NetWorker Management Console** option.
   - To install additional language packs, select **Language packs**.
   - To install the License manager server software, select **NetWorker License Manager**.
     The *EMC NetWorker License Manager Installation and Administration Guide* describes how to install and configure the NetWorker License Manager software.
   - To install the Avamar Client software, select **Avamar client** .

     Note

     Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

8. To accept the default installation location, click **Next** .
9. Review the **Notice** window that appears, which describes the NetWorker License Server requirements, and then click **OK**.
10. If you selected the optional **Language Packs** component, the **Wizard Language Pack Page** page appears. Select the required language packs, and then click **Next**.
11. (Required) If NetWorker detects that port 9090 is in use, the **Configure NetWorker Authentication Service** page appears with the option to specify another port. Type another port number for Tomcat to use, and then click **Next**.
12. In the **Configure NetWorker Authentication Service Keystore** page, specify a password for the keystore file, then click **Next**.

    Ensure that the password is at least six characters.

13. On the **Configure NetWorker Authentication Service** window, specify the password for the authentication service administrator account.

    Ensure the password complies with the following minimum requirements:

- Nine characters
- One uppercase letter
- One lowercase letter
- One special character
- One numeric character

Note

You will use the administrator account to log in to the NMC Server.

14. In the **NMC Options** page, perform the following steps:
    a. Type the path to install the NMC Server software.

       The default location is: `C:\Program Files\EMC NetWorker\Management`

    b. In the **Authentication Host** field, type the name of one of the NetWorker 9.0.x servers that the NMC Server will manage. Ensure NetWorker services are started on the NetWorker server.

       The NetWorker Server that you specify authenticates access to the NMC Server. When you log in to the NMC Server, you will specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.

    c. In the **Authentication Port** field, specify the port number used by the NetWorker Authentication Service. The default port number is 9090.
15. Click **Next**. If a Security Alert message appears, perform the following steps:
    a. Click **View Certificate**, then select **Install Certificate**.

       The **Certificate Import Wizard** screen appears.

    b. Click **Next**.
    c. Select **Place all certificates on the following store**, and then click **Browse**.
    d. In the **Select Certificate Store** page, select **Trusted Root Certificate Authorities**, and then click **OK**.
    e. Click **Next**.
    f. Click **Finish**.
    g. If you are prompted to install the certificate, click **Yes**.
    h. In the **Certificate Import Wizard** page, click **OK**.
    i. In the **Certificate** page, click **OK**.
    j. In the **Security Alert** page, click **Yes**.
16. (Optional) In the **NMC Database Options** page, modify the following configuration options, and the click **Next**:
    - **Database Destination Folder**. The default location is" `C:\Program Files\EMC NetWorker\Management\nmcdb`
    - **Client Service port**. The default port is 9001.

Note

To use different port numbers, type the new port numbers (between **1024** and **49151**). Do not use port numbers that are already in use. For example: The NMC server uses port **5432** for TDS protocol communications with the NMC database. The preferred port for EMC Data Protection Advisor product is **9002**.

- **Web server port**, which is used by the embedded HTTP server. The default port is 9000.

17. Click **Next**.
18. In **NMC Database Migration** page, select how you want to migrate the data from an 8.1.x or 8.2.x NMC server:
    - To start the NMC Server with a new database, select **Skip the Migration**.

      Note

      If you skip the migration, you cannot migrate the database after the update completes.

    - To import data from an NMC database, which originates from a different NMC 8.1.x or NMC 8.2.x server, select **Migrate the Database Manually**. When you select this option, specify the same path to the Unload Database that you used with the `gstdbunload` command. The section "Manually migrating the NMC database" describes how to use the `gstdbunload` command.

      Note

      You can only manually migrate data that you have already converted on the NMC 8.1.x or NMC 8.2.x server and then copied the Unload Database to a location that is accessible to this NMC server.

    - To allow the update to convert and migrate the NMC database on this host, select **Migrate the Database Automatically**. Accept the default directory location or specify a location that has sufficient disk space to store the converted database. To store the converted database, the conversion requires free disk space equal to twice the size of the original database.
19. Click **Install**. The installation progress bar appears and you might see the progress window for several minutes. When the installation completes, the **Complete the Setup** page provides the status of the installation and a link to the master setup log file.

    "Monitoring and troubleshooting silent installations and uninstallations" provides more information about each log file that the installation creates.

Note

For NetWorker Servers only, if the installation cannot start the `nsrd` service, the following error message might appear:

```
Service 'NetWorker Backup and Recover Server' (nsrd) failed to start.
Verify that you have sufficient priveleges to start system services.
```

If you see this message, confirm the *JAVA_HOME* environment variable setting. For more information, refer to the "Troubleshooting NMC GUI and NetWorker Server connection issues" section.

20. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:
    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
    - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
      b. Click **Add**.
    - To browse for available NetWorker Servers:
      a. Click **Update List**.
      b. From the **Available Servers** list, select a NetWorker Server.
    - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

      The *`NetWorker_installation_directory`*`\res\servers` file contains a list of trusted NetWorker Servers.

    Note

    If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

    The first entry in the `servers` file becomes the default NetWorker Server for the host.
21. To complete the installation, click **Finish**.
22. Ensure that the NetWorker daemons start by opening **Task Manager**, or use the `get-service nsr*` and `get-service gst*` commands from a PowerShell window.

    The NetWorker daemons chapter provides a list of the NetWorker daemons.

After you finish

For NetWorker Server installations only, license the NetWorker Server. The Verifying and Troubleshooting the Installation chapter provides more information.

Adjusting antivirus software settings

Undesirable behavior might occur if you do not tune the antivirus software that is installed on a Windows host for backup environments.

Configure the antivirus software to:

- Not scan files that the backup software opens for backup.
  For example:
  - Clear the **Opened for Backup in the Advanced Auto-Protect** option for Norton Antivirus.
  - Clear the **Opened for Backup in the Scan Items** on the McAfee **On-Access Scan Properties** window.
- Not monitor the following directories:
  - `C:\Program Files\EMC or C:\Program files\Legato`
  - `C:\Program Files\EMC NetWorker\nsr\res or C:\Program Files \Legato\nsr\res`
  - `C:\Program Files\EMC NetWorker\nsr\mm or C:\Program Files \Legato\nsr\mm`
  - `C:\Program Files\EMC NetWorker\nsr\Index or C:\Program Files\Legato\nsr\index`
- Not monitor AFTD directories.

Deploying a VMware template for the host

Review this section if you create a VMware template of the host, which you use to deploy multiple virtual machines.

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique information for each host in a datazone.

Procedure

1. Right-click **My Computer** and select **Manage**.
2. Expand **Services and Applications** and select **Services**.
3. Right-click the `NetWorker Remote Exec` service and select **Stop**.
4. Delete the `C:\Program Files\EMC NetWorker\nsr\res\nsrladb` directory.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Uninstalling the software

The steps to remove the NetWorker software differ depending on which installation binary you used to install the software.

Uninstalling the NetWorker and NMC server software on Windows

When you install the NetWorker and NMC server software, the products appear as a single package called NetWorker.

To remove the NetWorker software and NMC server software, uninstall the NetWorker program.

Procedure

1. Log in to the target host as the local administrator.
2. Ensure that there are no programs, such as Windows Explorer, accessing the directories or the files in `NetWorker_install_path` directory.

   The default installation path for the NetWorker software is `C:\Program Files\EMC NetWorker`.
3. Right-click **My Computer** and select **Manage**.
4. Expand **Services and Applications** and select **Services**.
5. Right-click **NetWorker Remote Exec Service** and select **Stop**.

   Note

   On a NetWorker server, the **NetWorker Remote Exec Service** stops the **NetWorker Backup and Recovery** and the **NetWorker Message Queue Adaptor** services. On an NMC server, the **NetWorker Remote Exec Service** also stops the **EMC GST Service**.
6. From the **Control Panel** select **Program and Features**.
7. On the **Program and Features** window, select **NetWorker**.
8. Click **Uninstall**.

   The **Install Modification** window appears.
9. Select **Remove**.

   A progress bar appears.
10. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.

    The "Troubleshooting silent uninstallations" section provides more information about all of the log files created by the uninstallation process.
11. If you will not update or reinstall the NMC or NetWorker software packages, remove the `NetWorker_install_path` directory. If you will not reinstall the NetWorker Authentication Service package, remove the `NetWorker_Authentication_Service_installation_path` directory.
12. On each host that you use to access the NMC GUI, delete the NetWorker Management Console desktop shortcut.

Uninstalling the NetWorker Base Client and Extended Client

When you install the NetWorker base client and extended client software, they appear as separate programs on a Windows host.

Procedure

1. Log in to the target host as the local administrator.
2. Ensure that there are no programs, such as Windows Explorer, accessing the directories or the files in `NetWorker_install_path` directory.

   The default installation path for the NetWorker software is `C:\Program Files\EMC NetWorker`.
3. From the **Control Panel** select **Program and Features**.
4. If the Extended Client software was installed on this host, perform the following steps:
   a. Select **NetWorker Extended Client**, and then click **Uninstall**.
   b. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.
   c. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.
5. On the **Uninstall or change a program** window, select **NetWorker Client**, and then click **Uninstall**.
6. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.
7. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.

   The "Troubleshooting silent uninstallations" section provides more information about all of the log files created by the uninstallation process.

Uninstalling the software by using NetWorker-9.0.1.0.exe on Windows Core Server

The following section describes how to remove the NetWorker and NMC server software when the NetWorker installation package is available on the host.

Procedure

1. Log in to the target host as the local administrator.
2. From the `networkr` subdirectory in the temporary NetWorker installation directory, run `NetWorker-9.0.1.0.exe`:
   - On 32-bit hosts: `...\win_x86\networkr`
   - On 64-bit hosts: `...\win_x64\networkr`
   - On 64-bit Itanium hosts: `...\win_ia64\networkr`
3. On the **Choose Setup Language** window, select a language, and then click **OK**.
4. On the **Welcome to NetWorker Maintenance** window, click **Next**.
5. On the **Maintenance Type** window, click **Remove** > **Next**.

When you use Maintenance Mode to uninstall the NetWorker software on an NMC server, the uninstall process removes the NMC server software first, and then removes the NetWorker software.

6. In the **Ready to Remove** window, do not select the **Remove NetWorker Metadata** option.

   Do not select the **Remove NetWorker Metadata** option in the following scenarios:

   - When you perform a NetWorker or NMC server software update.
   - When you reinstall the NetWorker software.

   By default, the **Remove NetWorker Metadata** checkbox is clear. Clearing this option ensures that all the NetWorker configuration files, such as client file indexes, media database, logs, and resource files are retained for a future installation of the NetWorker software package.

   When you clear the **Remove NetWorker Metadata** checkbox, the following NetWorker files remain in the `NetWorker_installation_dir\nsr` directory after the software is uninstalled:

   - All log files
   - All deduplication data
   - All index entries
   - All mm entries
   - All res files
   - All files in the directory
   - All files in the debug directory

7. Click **Remove**, and then click **Finish**.

CHAPTER 7

Microsoft Windows Silent Installations

This chapter includes the following topics:

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- Installing the NMC software by using a silent install 105
- Installing the NetWorker server software by using a silent install 108
- Silent installation examples 114
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Installing the NetWorker client and storage node software by using a silent install

The following section describes how to perform a silent install of the NetWorker software.

Before you begin

Download the NetWorker software package from the EMC Online Support website to a temporary location.

Note

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

Procedure

1. From a command prompt, browse to the `NetWorker-9.0.1.0.exe` program in the directory where you extracted the NetWorker installation software.
2. Use the `NetWorker-9.0.1.0.exe` command to install the software:

   `NetWorker-9.0.1.0.exe` ***`installation_switches installation_options....`***
   where *installation_switches* include:

   - **`/s /q`** suppresses all UI output.
   - **`/v`** enables verbose mode.
   - **`/norestart`** suppresses a restart after the installation completes.
   - **`/forcerestart`** ensures that a restart occurs after the installation process completes.
   - **`/promptrestart`** ensures that a user prompt appears when the installation process requires a restart.
   - **`/l filename`** enables you to specify a location for the main log file. When you do not include the **`/l filename`** option, the installation and uninstallation processes creates the main log file and all other installation log files in the `C:\users\`*`username`*`\AppData\Local\temp` directory.

   The following tables summarize the supported installation options for each installation type.

   Note

   Installation options do not require the / prefix and option names are case sensitive.

Table 25 NetWorker client and storage node installation options

Installation option	Description
`InstallLevel=`*`level`*	Required. Specifies the level that is associated with the NetWorker installation type: • 100 is the install level for a client • 200 is the install level for a storage node
`InstallFolder=`*`path`*	Optional. Specifies a non-default installation location for the NetWorker software. When you do not specify this option, the installation process uses the default location `C:\Program Files\EMC NetWorker\nsr` **Note** When you specify a path that includes spaces, enclose the path in quotes.
`ConfigureFirewall=`*`1/0`*	Optional. Determines whether the installation process configures firewall rules for NetWorker. • To configure firewall rules, specify a value of 1. • To not configure firewall rules, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 1.
`StartServices=`*`1/0`*	Optional. Determines whether the installation process starts the NetWorker services after the installation completes. • To start the services, specify a value of 1. • To not start the services, specify a value of 0. When you start the services manually, ensure that you start the NetWorker Authentication Service service before the NetWorker server services. **Note** When you do not specify this option, the installation process defaults to a value of 1.
`EnableLicenseManager=`*`1/0`*	Optional. Determines whether the installation process installs the NetWorker License Manager (LLM) server option.

Table 25 NetWorker client and storage node installation options (continued)

Installation option	Description
	Note Do not install LLM on a NetWorker server. • To install LLM, specify a value of 1. • To not install LLM, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.
`OptionGetNMC=`*`1/0`*	Optional. Determines whether the installation process installs the NMC software after the NetWorker software installation completes. • To install NMC, specify a value of 1. **Note** When you choose to also install NMC, you can define additional NMC specific options. The NMC server installation options table provides more information. • To not install NMC, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.
`OptionLANGPACK=`*`1/0`*	Optional. Determines whether the installation process installs optional language packs during a NetWorker server software installation. • To install the language packs, specify a value of 1. • To not install the language packs, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.
`InstallBbb=`*`1/0`*	Optional. Determines whether the installation process configures the host for Block Based Backup (BBB) support. • To configure BBB, specify a value of 1. • To not configure BBB, specify a value of 0.

Table 25 NetWorker client and storage node installation options (continued)

Installation option	Description
	Note When you do not specify this option, the installation process defaults to a value of 1.

Example 1 Performing a silent installation of a NetWorker client

To install the NetWorker client software and log installation messages to the `C:\Program Files\EMC NetWorker\logs\installation.log` file, type the following command:

```
NetWorker-9.0.1.0.exe /s /v /q /l "C:\Program Files\EMC NetWorker\nsr
\logs\installation.log" InstallLevel=100
```

Installing the NMC software by using a silent install

Follow these steps to perform a silent install of the NMC software.

Before you begin

Download the NetWorker software package from the EMC Online Support website to a temporary location.

Note

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

Procedure

1. From a command prompt, browse to the `NetWorker-9.0.1.0.exe` program in the directory where you extracted the NetWorker installation software.
2. Use the `NetWorker-9.0.1.0.exe` command to install the software:

   `NetWorker-9.0.1.0.exe` ***`installation_switches installation_options....`***
   where *installation_switches* include:

   - **`/s /q`** suppresses all UI output.
   - **`/v`** enables verbose mode.
   - **`/norestart`** suppresses a restart after the installation completes.
   - **`/forcerestart`** ensures that a restart occurs after the installation process completes.
   - **`/promptrestart`** ensures that a user prompt appears when the installation process requires a restart.

- **`/l filename`** enables you to specify a location for the main log file. When you do not include the **`/l filename`** option, the installation and uninstallation processes creates the main log file and all other installation log files in the `C:\users\username\AppData\Local\temp` directory.

The following tables summarize the supported installation options for each installation type.

Note

Installation options do not require the / prefix and option names are case sensitive.

To perform a silent installation of the NMC server software, install at a minimum, the NetWorker client software with the **`OptionGetNMC`** option.

Table 26 NMC server installation options

Installation option	Description
`InstallLevel=`*`level`*	Required. Specifies the level associated with the NetWorker installation type: • 100 is the install level for a client • 200 is the install level for a storage node • 300 is the install level for a server **Note** The NetWorker server installation options table provides a list of required and optional installation options for a NetWorker server installation.
`OptionGetNMC=1`	Required. Instructs the installation process to install the NMC software as a part of the NetWorker software installation process.
`DbUsername=`*`username`*	Required. The username for the Postgres database.
`DbPassword=`*`password`*	Required. The password for the Postgres username.
`DbFolder=`*`path`*	Optional. Specifies a non-default installation location for the Postgres database files. When you do not specify this option, the installation process uses the default location `C:\Program Files\EMC NetWorker\nsr\nmc\nmcdb` **Note** When you specify a path that includes spaces, enclose the path in quotes.
`NmcInstallFolder=`*`path`*	Optional. Specifies a non-default installation location for the NMC software. When you do not specify this option, the installation process uses the default location `C:\Program Files\EMC NetWorker \Management`

Table 26 NMC server installation options (continued)

Installation option	Description
	Note When you specify a path that includes spaces, enclose the path in quotes.
WebPort=*port_number*	Optional. Specifies the port to use when connections are made to the NMC GUI. When you do not specify this option, the installation process uses the default port 9000.
ConsolePort=*port_number*	Optional. Specifies the port that the embedded web server uses for communication. When you do not specify this option, the installation process uses the default port 9001.
AuthHost=*hostname*	Optional. The name of that host that runs the NetWorker Authentication Service. Use this option to specify the name of the NetWorker server, when the NMC server is not the NetWorker server. **Note** If the NMC server manages multiple NetWorker server, consider the following information: • Specify only one NetWorker server to be the NetWorker Authentication Service host for the NMC server.

Example 2 Performing a silent install of the NMC server and NetWorker client software

To install the NMC server software and the NetWorker client software, set the NMC Postgres password for the default Postgres account, and start the services after the installation completes, type the following:

```
NetWorker-9.0.1.0.exe /s /v /q InstallLevel=100 OptionGetNMC=1
DbPassword=db_password AdminPassword=authc_admin_password
KSFPassword=ksf_password TSFPassword=tsf_password AuthHost=hostname
```

Note

If the NMC server software manages multiple NetWorker servers, you must setup the trust between the NMC server and each NetWorker server that you do not configure as the authentication host. Optional, adding additional NetWorker servers to the NMC server provides more information.

Installing the NetWorker server software by using a silent install

The following section describes how to perform a silent install of the NetWorker software. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the *JAVA_HOME* environment variable.

Before you begin

Download the NetWorker software package from the EMC Online Support website to a temporary location.

Note

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

Procedure

1. From a command prompt, browse to the `NetWorker-9.0.1.0.exe` program in the directory where you extracted the NetWorker installation software.
2. Use the `NetWorker-9.0.1.0.exe` command to install the software:

   `NetWorker-9.0.1.0.exe` ***`installation_switches installation_options....`***
   where *installation_switches* include:

   - **`/s /q`** suppresses all UI output.
   - **`/v`** enables verbose mode.
   - **`/norestart`** suppresses a restart after the installation completes.
   - **`/forcerestart`** ensures that a restart occurs after the installation process completes.
   - **`/promptrestart`** ensures that a user prompt appears when the installation process requires a restart.
   - **`/l filename`** enables you to specify a location for the main log file. When you do not include the **`/l filename`** option, the installation and uninstallation processes creates the main log file and all other installation log files in the `C:\users\`*`username`*`\AppData\Local\temp` directory.

   The following tables summarize the supported installation options for each installation type.

   Note

   Installation options do not require the / prefix and option names are case sensitive.

Table 27 NetWorker server installation options

Installation option	Description
`InstallLevel=300`	Required. Specifies that the installation level is for a NetWorker server.
`AdminPassword=password`	Required. Specifies the administrator account for the NetWorker Authentication Service. Ensure the password complies with the following minimum requirements: • Nine characters • One uppercase letter • One lowercase letter • One special character • One numeric character **Note** You will use the administrator account to log in to the NMC Server.
`KSFPassword=password`	Required. Specifies the password for the NetWorker Authentication Service keystore file. Specify a password that contains at least six characters and does not contain dictionary words.
`TSFPassword=password`	Required. Specifies the password for the NetWorker Authentication Service truststore file. The truststore stores the public certificates that the Java client uses to interact with NetWorker Authentication Service. Specify a password that contains at least six characters and does not contain dictionary words.
`CreateKSFNew=1/0`	Optional. Determines whether the installation processes creates keystore file or uses an existing keystore file. • To create keystore file, specify a value of 1. • To instruct the installation process to use an existing keystore file, specify a value of 0. If the existing keystore file is not the default keystore file for NetWorker Authentication Service, specify the `KSFPath=path` When you do not specify this option, the installation process defaults to a value of 1.

Table 27 NetWorker server installation options (continued)

Installation option	Description
KSFPath=*path*	Optional. Specifies the path to the keystore file. When you do not specify this option, the installation process uses the default path to the keystore file `C:\ProgramFiles\EMC\Authc\tomcat\conf\authc.keystore`
AuthCInstallFolder =*path*	Optional. Specifies a non-default installation location for the NetWorker Authentication Service software. When you do not specify this option, the installation process uses the default location `C:\Program Files\EMC\Authc` **Note** When you specify a path that includes spaces, enclose the path in quotes.
TCPort=*port_number*	Optional. Specifies the port number that applications such as NMC server use to connect to the NetWorker Authentication Service. When you do not specify this option, the installation process uses the default port number 9090.
AuthcDb=*path*	Optional. Specifies the path to install the NetWorker Authentication Service tomcat database files. When you do not specify this option, the installation process uses the default `C:\Program Files\EMC\Authc\tomcat\data`
EnablePs=*1/0*	Optional. Determines whether the installation process sets the PowerSnap service to autostart. • To enable autostart of the PowerSnap service, specify a value of 1. • To not enable autostart of the PowerSnap, specify a value of 0. When you do not specify this option, the installation process uses the default value of 1.
InstallFolder=*path*	Optional. Specifies a non-default installation location for the NetWorker software. When you do not specify this option, the installation process uses the default location `C:\Program Files\EMC NetWorker\nsr`

Table 27 NetWorker server installation options (continued)

Installation option	Description
	Note When you specify a path that includes spaces, enclose the path in quotes.
`ConfigureFirewall=1/0`	Optional. Determines whether the installation process configures firewall rules for NetWorker. • To configure firewall rules, specify a value of 1. • To instruct the installation process to not configure firewall rules, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 1.
`StartServices=1/0`	Optional. Determines whether the installation process starts the NetWorker services after the installation completes. • To start the services, specify a value of 1. • To instruct the installation process to not start the services, specify a value of 0. When you start the services manually, ensure that you start the NetWorker Authentication Service service before the NetWorker server services. **Note** When you do not specify this option, the installation process defaults to a value of 1.
`AuthCStartServices=yes/no`	Optional. Determines whether the installation process starts the NetWorker Authentication Service service after the installation completes. • To start the service, specify a value of Yes. • To instruct the installation process to not start the service, specify a value of No. When you start the services manually, ensure that you start the NetWorker Authentication Service service before the NetWorker server services.

Table 27 NetWorker server installation options (continued)

Installation option	Description
	Note When you do not specify this option, the installation process defaults to a value of Yes.
`EnableLicenseManager=1/0`	Optional. Determines whether the installation process installs the NetWorker License Manager (LLM) server option. **Note** Do not install LLM on a NetWorker server. • To install LLM, specify a value of 1. • To instruct the installation process to not install LLM, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.
`OptionGetNMC=1/0`	Optional. Determines whetherthe installation process installs the NMC software after the NetWorker software installation completes. • To install NMC, specify a value of 1. **Note** When you choose to also install NMC, you can define additional NMC specific options. The NMC server installation options table provides more information. • To instruct the installation process to not install NMC, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.
`OptionLANGPACK=1/0`	Optional. Determines whether the installation process installs optional language packs during a NetWorker server software installation. The NetWorker software always installs the English language pack. • To install the language packs, specify a value of 1, then specify a value of 1 for the appropriate language packs: ▪ French—LangPackFR

Table 27 NetWorker server installation options (continued)

Installation option	Description
	▪ Japanese—LangPackJA ▪ Korean—LangPackKO ▪ Chinese-LandPackZH • To instruct the installation process to not install the language packs, specify a value of 0. **Note** When you do not specify this option, the installation process defaults to a value of 0.

Example 3 Performing a silent installation on a host that is the NetWorker and NMC server

Note

When you install the NetWorker server software, install the NetWorker Authentication Service software.

To install the NetWorker server and NMC server software, set the NMC postgres password for the default Postgres account, install the optional French language pack, and start the services after the installation completes, type the following command:

```
NetWorker-9.0.1.0.exe /s /v /q InstallLevel=300 OptionGetNMC=1
DbPassword=db_password OptionLANGPACK=1 LangPackFR=1
AdminPassword=authc_admin_password
KSFPassword=ks_passwordTSFPassword=ts_password
```

where:

- *authc_admin_password* is the password that is assigned to the administrator account for the NetWorker Authentication Service.
  Ensure the password complies with the following minimum requirements:
  - Nine characters
  - One uppercase letter
  - One lowercase letter
  - One special character
  - One numeric character
- *ks_password* is the keystore file password.
  Specify a password that contains at least six characters and does not contain dictionary words.
- *ts_password* is the truststore file password.
  Specify a password that contains at least six characters and does not contain dictionary words.

After you finish

For NetWorker Server installations only, license the NetWorker Server. The Verifying and Troubleshooting the Installation chapter provides more information.

Silent installation examples

Example 4 Performing a silent installation of a NetWorker client

The following command performs an installation with these configuration options:

- Installs the NetWorker client software
- Enables autostart on the PowerSnap service
- Configures the Windows firewall
- Logs installation messages to the `C:\Program Files\EMC NetWorker\logs\installation.log` file

```
NetWorker-9.0.1.0.exe /s /v /q /l "C:\Program Files\EMC NetWorker\nsr
\logs\installation.log" InstallLevel=100 ConfigureFirewall=1
EnablePs=1
```

Example 5 Performing a silent installation of a host that is the NetWorker and NMC server

---

Note

When you install the NetWorker server software, also install the NetWorker Authentication Service software.

The following command performs an installation with these configuration options:

- Installs the NetWorker server and NMC server software
- Sets the NMC Postgres password for the default Postgres account
- Configures the firewall exceptions
- Installs the optional language packs
- Starts the services after the installation completes

```
NetWorker-9.0.1.0.exe /s /v /q InstallLevel=300 ConfigureFirewall=1
OptionGetNMC=1 DbPassword=db_password OptionLANGPACK=1
AdminPassword=authc_admin_password
KSFPassword=ksf_passwordTSFPassword=tsf_password
```

where:

- *authc_admin_password* is the password that is assigned to the administrator account for the NetWorker Authentication Service.
  Ensure the password complies with the following minimum requirements:

Example 5 Performing a silent installation of a host that is the NetWorker and NMC server (continued)

  - Nine characters
  - One uppercase letter
  - One lowercase letter
  - One special character
  - One numeric character
- *ksf_password* is the keystore file password.
  Specify a password that contains at least six characters and does not contain dictionary words.
- *tsf_password* is the truststore file password.
  Specify a password that contains at least six characters and does not contain dictionary words.

Uninstalling the NetWorker software by using a silent uninstall

To perform a silent or unattended uninstall of the NetWorker software, use the same program that you used to silently install the software.

Procedure

1. From a command prompt, browse to the folder that contains the program file. For example the `NetWorker-9.0.1.0.exe` file.

   NOTICE

   The program files are in `networkr`, which is a subfolder of the folder where you extracted the NetWorker installation software.

2. Use the program file command to uninstall the software. For example:

   `NetWorker-9.0.1.0.exe` **`/uninstall /s /v /q /l`** ***`filename`***

   where *installation_switches* include:

   - **`/s /q`** suppresses all UI output.
   - **`/v`** enables verbose mode.
   - **`/l filename`** enables you to specify a location for the main log file. When you do not include the **`/l filename`** option, the installation and uninstallation processes creates the main log file and all other installation log files in the `C:\users\`*`username`*`\AppData\Local\temp` directory.

Monitoring and troubleshooting silent installations and uninstallations

When you start the `NetWorker-9.0.1.0.exe` command, one or two `NetWorker-9.0.1.0.exe` processes appear in the Windows Task Manager. The

installation and uninstallation processes create log files that contain messages about the progress of the action performed on each component. When the `NetWorker-9.0.1.0.exe` command completes, the processes in Windows Task Manager disappear.

Log files

Note

If you do not specify a file name after the `/l` switch, the installation or uninstallation process creates the log files in the `C:\users\`*`username`*`\AppData\Local\temp` directory.

The following log files contain information about the status of each action performed on a component.

- `NetWorker_`*`date_time`*`.log`—The main log file, which provides a summary of status messages and errors that were encountered during the installation or removal process. This log file appears for each type of NetWorker software installation.
- `NetWorker_`*`date_time`*`_NMC.log`—The log file that contains the messages that pertain to the installation or removal of the NMC software.
- `NetWorker_`*`date_time`*`_NwClient.log`—The log file that contains the messages that pertain to the installation or removal of the NetWorker Client software. This log file appears when you remove the NetWorker server, storage node, client, and NMC software.
- `NetWorker_`*`date_time`*`_NwExtClient.log`—The log file that contains the messages that pertain to the installation or removal of the extended client software. This log file appears when you install or remove the NetWorker server and storage node software.
- `NetWorker_`*`date_time`*`_NwStorageNode.log`—The log file that contains the messages that pertain to the installation or removal of the storage node software. This log file appears when you install or remove the NetWorker server and storage node software.
- `NetWorker_`*`date_time`*`_NwServer.log`—The log file that contains the messages that pertain to the installation or removal of the server software. This log file appears when you install or remove the NetWorker server software.
- `NetWorker_`*`date_time`*`_AuthC.log`—The log file that contains the messages that pertain to the installation or removal of the NetWorker Authentication Service software. This log file appears when you install or remove the NetWorker server software.
- `NetWorker_`*`date_time`*`_CfgChk.log`—The installation log file that contains the messages that pertain to Configuration Checker Wizard. The Base Client installation process provides an option to run the Configuration Checker Wizard.
- `NetWorker_`*`date_time`*`_component_rollback.log`—The installation log file that contains messages that pertain to a roll back of any NetWorker component. This log file appears when the installation process encounters an issue that results in the removal of any component that was installed before the issue was encountered.

Troubleshooting installation issues

After an installation completes, perform the following steps to determine the status of the installation process.

1. Browse to **Control Panel** > **Programs and Features** applet to confirm that the NetWorker software appears as an installed product. The following table describes which programs should appear for each installation package.

   Table 28 Installed products for each installation type

Installation package used	Installed products
`NetWorker-9.0.1.0.exe`	NetWorker
`lgtoclnt-9.0.1.0.exe`	NetWorker Client
`lgtoxtdclnt-9.0.1.0.exe`	NetWorker Extended Client **Note** This package only appears when you manually install the package, after installing the NetWorker client package.

2. If the NetWorker product did not install, review the log files for further information.

   a. Review the main installation log file, `NetWorker_date_time.log` and search for errors. This log file indicates which component package caused the failure. For example, if the NetWorker Authentication Service package failed to install during the NetWorker server installation process, error messages similar to the following may appear:

   ```
   Error 0x80070643: Failed to install MSI package.
   Error 0x80070643: Failed to execute MSI package.
   Error 0x80070643: Failed to configure per-machine MSI
   package.
   Applied execute package: AuthC, result: 0x80070643,
   restart: None
   Error 0x80070643: Failed to execute MSI package.
   ```

   b. Review the installation component installation log file for detailed information about why the component installation failed.

   c. If Technical Support requires the installation log files, provide all the installation log files. For example, select the main log file and all the component log files, then right-click and select **Send-To** > **Compressed (Zip) folder**. Send Support the Zip file that contains the installation log files.

Troubleshooting NetWorker Authentication Service installation error messages

This section provides a list of common error messages encountered when the NetWorker Authentication Service installation fails to complete.

Keystore password must be at least six characters

This message appears when you do not specify the TSFPassword option, or you specified a password that is less than six characters in length.

Key password must be at least six characters
This message appears when you do not specify the KSFPassword option, or you specified a password that is less than six characters in length.

Troubleshooting uninstallation issues

After an uninstallation completes, perform the following steps to determine the status of the uninstallation process.

1. Browse to **Control Panel** > **Programs and Features** applet to confirm that the NetWorker software does not appear as an installed product. The following table describes which programs appear for each installed installation package.

   Table 29 Installed products for each installation type

Installation package used	Installed products
`NetWorker-9.0.1.0.exe`	NetWorker
`lgtoclnt-9.0.1.0.exe`	NetWorker Client
`lgtoxtdclnt-9.0.1.0.exe`	NetWorker Extended Client **Note** This package only appears when you manually install the package, after installing the NetWorker client package.

2. If the NetWorker product did not uninstall, review the log files for further information.
   a. Review the main installation log file, `NetWorker_`*`date_time`*`.log` and search for errors. This log file indicates which component package caused the failure.
   b. Review the uninstallation component log file for detailed information about why the component uninstallation process failed.
   c. If Technical Support requires the log files, provide all the uninstallation log files. For example, select the main log file and all the component log files, then right-click and select **Send-To** > **Compressed (Zip) folder**. Send Support the Zip file that contains the installation log files.

CHAPTER 8

Changing the Microsoft Windows Installation or moving to another installation type

This chapter includes the following topics:

- Changing the installation type and adding additional features.....120
- Post Installation steps.....122

Changing the installation type and adding additional features

NetWorker does not support the ability to use the **Change** option in the **Windows Programs and Features** applet to change the installation type of a NetWorker host or to install additional features. Instead, you remove the NetWorker software on the host, and re-install the NetWorker software. During the installation process, install the wanted installation options by following the steps in the Microsoft Windows Installation chapter.

For example, you cannot use the **Change** option for the following installation type changes:

- NMC server to a NetWorker storage node
- NMC server to a NetWorker server
- NetWorker server to a NetWorker client
- NetWorker server to a NetWorker storage node
- NetWorker server to an NMC server
- NetWorker storage node to a NetWorker server
- NetWorker storage node to a NetWorker client

Before you remove the existing NetWorker software, review the following list for a summary of packages that might appear in the Windows Programs and Features applet on a NetWorker host:

- NetWorker Client—This package name appears when you use the `lgtoclnt-9.0.1.0.exe` package to install the NetWorker base client.
- NetWorker Extended Client—This package name appears when you use the `lgtoxtdclnt-9.0.1.0.exe` package to install the NetWorker Extended client.
- NetWorker—This package name appears when you use the `NetWorker-9.0.1.0.exe` package to install the NetWorker server, NetWorker storage node, or NMC server software.

Changing the installation type for a NetWorker base client

To move to another installation type from a NetWorker base client, remove the NetWorker client software, and then use the `NetWorker-9.0.1.0.exe` package to install the NetWorker server, NMC server, or storage node software.

Procedure

1. Log in to the target host as the local administrator.
2. Ensure that there are no programs, such as Windows Explorer, accessing the directories or the files in `NetWorker_install_path` directory.

   The default installation path for the NetWorker software is `C:\Program Files\EMC NetWorker`.
3. From the **Control Panel** select **Program and Features**.
4. If the Extended Client software was installed on this host, perform the following steps:

   a. Select **NetWorker Extended Client**, and then click **Uninstall**.

b. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.

c. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.

5. On the **Uninstall or change a program** window, select **NetWorker Client**, and then click **Uninstall**.
6. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.
7. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.

   The "Troubleshooting silent uninstallations" section provides more information about all of the log files created by the uninstallation process.
8. In the directory that contains the extracted NetWorker software, run `NetWorker-9.0.1.0.exe`.

   Note

   While you can run the `NetWorker-9.0.1.0.exe` package from a network location, to improve the time it takes to complete the installation copy the file to a location that is local to the target host.

9. Follow the steps in the Microsoft Windows Installation chapter to install the required NetWorker software installation type and components.

Changing the installation type for a NetWorker server, NMC server, or NetWorker storage node

To change the installation type for a NetWorker server, NMC server or storage node, remove the NetWorker Server program software and then use the `lgtoclnt-9.0.0.0.exe` or `NetWorker-9.0.0.0.exe` package to install the wanted installation type.

Procedure

1. Log in to the target host with a local administrator user.
2. From **Control Panel** > **Programs** > **Uninstall a Program**, select the NetWorker program and select **Uninstall**.
3. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.

   A progress bar appears.
4. On the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.

   The "Troubleshooting silent uninstallations" section provides more information about all of the log files created by the uninstallation process.
5. In the directory that contains the extracted NetWorker base client or NetWorker software, run `lgtoclnt-9.0.1.0.exe` or `NetWorker-9.0.1.0.exe`.

Note

While you can run `lgtoclnt-9.0.1.0.exe` or `NetWorker-9.0.1.0.exe` from a network location, to improve the time it takes to complete the installation copy the file to a location that is local to the target host.

6. Follow the steps in the Microsoft Windows Installation chapter to install the required NetWorker software installation type.

Post Installation steps

After you change the installation type of a NetWorker host, complete the following procedure.

- After you change the installation type of a NetWorker client or storage node to a NetWorker server, update the `servers` file on each to reflect the new NetWorker server. The *EMC NetWorker Administration Guide* provides information on how to modify the servers file.
- After you change the installation type of a NetWorker server to a NetWorker client or storage node perform the following tasks:
  - In the **Client Properties** window, on the **Globals (1 of 2)** tab, update the **Server network Interface** attribute for each client configuration, as required, with the network interface of the new NetWorker server.
  - Remove the following directories:
    - `C: \Program Files\EMC NetWorker\nsr\mm`
    - `C:\Program Files\EMC NetWorker\nsr\index`
- After you change the installation type of a NetWorker storage node to a NetWorker client, modify the following resource attributes on the NetWorker server:
  - Remove the Media Pool device restrictions that are defined for devices on the storage node.
  - On the **Devices** window of NMC, remove all the storage node devices.
  - On the **Client Properties** window, on the **Globals (2 of 2)** tab, update the following attributes for each client, as required:
    - **Storage nodes**
    - **Recover storage nodes**
  - On the **Storage node** properties window under the **Configuration** tab, update the **Clone storage nodes** attribute for all the storage nodes, as required.

PART 4

UNIX Installation

This section includes the following chapters:

Chapter 9, "AIX Installation"

Chapter 10, "HP-UX Installation"

Chapter 11, "Solaris Installation"

CHAPTER 9

AIX Installation

This chapter includes the following topics:

- Road map for installing the NetWorker software on AIX 126
- Reviewing the operating system requirements for AIX 126
- Changing the default directory locations 127
- Installing the NetWorker software 129
- Installing the AIX driver for DD Boost-over-FC feature 130
- Uninstalling the NetWorker software on AIX 131

Road map for installing the NetWorker software on AIX

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

1. Software Requirements lists the general requirements and considerations relevant to each supported Windows and UNIX operating systems.
2. Reviewing the operating system requirements for AIX outlines the software requirements to consider when installing NetWorker on the AIX operating system.
3. Changing the default directory locations lists the default directory locations.
4. Installing the NetWorker software describes how to install the NetWorker storage node and client software.
5. Verify the Installation describes how to test the NetWorker software functionality.

Reviewing the operating system requirements for AIX

Before you install the NetWorker software on AIX, review the operating system and IPv4 considerations.

Packages disk space requirements for AIX

Download the NetWorker software package from the EMC Online Support website to a temporary location.

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.
The compressed package is 212 MB and the uncompressed size is 642 MB.

AIX 6.1 requirements

On AIX 6.1, system limits or memory management issues can cause core dumps and performance degradation during NetWorker operations.

To prevent these issues on AIX 6.1 TL04, install the hotfix for AIX APAR IZ65501.

IPv4 requirements

By default the AIX name resolver performs a host look up by both the IPv4 and the IPv6 addresses.

Review the following information about IP addressing requirements on AIX.

- If either IP address fails to resolve locally, the operating system requests the address from the DNS Server.
- If you did not configure IPv6 addressing, then the DNS Server request times out and return a failure message.
- If the time out wait time is too long, some NetWorker commands can have a delayed response and then time out.
  To prevent the time out of NetWorker commands, change the default name resolution lookup behavior to prevent IPv6 look ups. AIX uses three methods to configure the name resolution mechanism. Ensure that each method does not try to perform IPv6 look ups:

- *NSORDER* environment variable.
  From the command prompt, type:

  ```
  env
  ```

  If the *NSORDER* variable is not `NSORDER=local,bind4`, type:

  ```
  export NSORDER=local,bind4
  ```

- `/etc/irs.conf` file.
  Ensure that the `hosts` entries are:

  ```
  hosts local
  hosts dns4
  ```

- `/etc/netsvc.conf` file.
  Ensure that the hosts entry is:

  ```
  hosts=local, bind4
  ```

Changing the default directory locations

You cannot change the installation location of the NetWorker software, but you can change the location of the configuration, logs, and database files. The AIX `installp` utility installs the NetWorker software. This utility does not enable you to change the installation location of the NetWorker binaries.

The NetWorker software installs the binaries in the `/usr/bin` directory. If there is insufficient disk space to install the NetWorker software, the AIX `installp` utility allocates more disk space, to complete the software installation. The `/nsr` directory contains the NetWorker configuration, logs, and database files.
This table lists the default location and space requirements for the NetWorker software.

Table 30 AIX default file locations and space requirements

NetWorker package	Location	Space

Client (lgtoclnt)	`/opt/nsr`
	`/usr/bin`
	`/usr/lib`
	`/usr/lpp`
		11 MB
		156 MB
		87 MB
		40 KB

Storage node (lgtonode)	`/usr/bin`
	`/usr/lib`
	`/usr/lpp`
		91 MB
		18 MB
		28 KB

Man pages (lgtoman)	`/usr/lpp` `/usr/share`	36 KB 2 MB
French Language Pack (lgtofr)	`/opt/nsr` `/usr/bin`	5 MB 4 KB

Table 30 AIX default file locations and space requirements (continued)

NetWorker package	Location	Space
	/usr/lib /usr/lpp /usr/share	32 KB 44 KB 2 MB
Japanese Language Pack (lgtoja)	/opt/nsr /usr/bin /usr/lib /usr/lpp /usr/share	7 MB 4 KB 40 KB 44 KB 2 MB
Korean Language Pack (lgtoko)	/opt/nsr /usr/bin /usr/lib /usr/lpp /usr/share	6 MB 4 KB 28 KB 44 KB 2 MB
Simplified Chinese Language Pack (lgtozh)	/opt/nsr /usr/bin /usr/lib /usr/lpp /usr/share	6 MB 4 KB 24 KB 40 KB 1 MB
Client file index, media database, resource database, and log files	/nsr	varies

To change the location of the configuration, log, and database files, perform the following steps to create a symbolic link from the new directory to the /nsr directory.

Procedure

1. Create another /nsr directory on a disk with sufficient space:

   ```
   mkdir /disk2/nsr
   ```

2. Link the new directory to the /nsr directory:

   ```
   ln -s /disk2/nsr /nsr
   ```

3. Before you install the NetWorker software, ensure that:

- The PATH variable for the root and user accounts contains the `/usr/bin` directory.
- There is sufficient disk space to install the NetWorker software.

Installing the NetWorker software

The following section describes how to install the client, the storage node, and optional software such as the man pages and language packs on an AIX host.

The following table lists the software packages that are required for each installation type.

Table 31 List of NetWorker packages required for each installation type

Installation type:	Packages:
Client software Extended client software	`LGTOnw.clnt.rte` `LGTOnw.xtdclnt.rte`

Storage Node software	`LGTOnw.clnt.rte`
	`LGTOnw.xtdclnt.rte`
	`LGTOnw.node.rte`

Man pages	`LGTOnw.man.rte`
Simplified Chinese language support	`LGTOnw.zh.rte`
French language support	`LGTOnw.fr.rte`
Japanese language support	`LGTOnw.ja.rte`
Korean language support	`LGTOnw.ko.rte`

Procedure

1. Log in to the target host as root.
2. Create a backup copy of the operating system configuration files:

   ```
   cp /etc/rpc /etc/rpc.orig
   cp/etc/inittab /etc/inittab.orig
   ```

3. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The package name is `nw901_aixpower.tar.gz`. The compressed package size is 214 MB and the uncompressed size is 699 MB.

4. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

5. Use the `installp` program to install the NetWorker software from the command prompt.

For example:

```
installp -a -d /dir_pathname package [package]...
```

where:

- */dir_pathname* is the complete pathname of the directory that contains the installation software.

  For example, if you extract the NetWorker software packages to the `/software` directory, the *dir_pathname* is `/software/aixpower`.

- *package [package]...* is a list of the software package that is required for the installation type.

  For example, to install the NetWorker storage node software, the man pages and the Japanese language pack, type:

  ```
  installp -a -d /nw_packages/aixpower LGTOnw.clnt.rte
  LGTOnw.node.rte LGTOnw.man.rte LGTOnw.ja.rte
  ```

6. Confirm that you successfully installed the required packages for each installation type:

   ```
   lslpp -L all | grep -i lgto*
   ```

Installing the AIX driver for DD Boost-over-FC feature

The DD Boost-over-FC feature supports AIX 7.1. For a NetWorker Storage node that uses DD Boost devices, install the AIX DDdfc device driver that is bundled in the NetWorker installation package.

Procedure

1. Log in to the host as root.
2. Use the `installp` program to install the DD Boost-over-FC driver from the command prompt.

   For example:

   ```
   installp -a -d package_directory_path DDdfc.rte
   ```

   where *package_directory_path* is the complete pathname of the directory that contains the NetWorker installation software and the `DDdfc.1.0.0.4.bff` driver file.

   For example, if you extract the NetWorker software packages to the `/nw_packages` directory, the *package_directory_path* is `/nw_packages/aixpower`.

   For example, to install the DD Boost-over-FC driver version 1.0.0.4 when you extracted the NetWorker software to a directory named `nw_packages`, type:

   ```
   installp -a -d /nw_packages/aixpower DDdfc.rte
   ```

Uninstalling the NetWorker software on AIX

To uninstall the NetWorker software, complete the following procedure. Use the `installp` or the `smitty` utility to uninstall the NetWorker software.

The following table provides a list of the installed packages for each installation type.

Table 32 Select NetWorker software packages to uninstall

Installation type	Software packages
Client software	LGTOnw.clnt.rte
Storage node software	LGTOnw.node.rte LGTOnw.clnt.rte
Man pages	LGTOnw.man.rte
NetWorker License Manager	LGTOnw.licm.rte
French language support	LGTOnw.fr.rte
Japanese language support	LGTOnw.ja.rte
Korean language support	LGTOnw.ko.rte
Simplified Chinese language support	LGTOnw.zh.rte

Procedure

1. Log in to the target host as root.
2. Use the `lslpp` command to get a list of installed NetWorker software packages:

   ```
   lslpp -L all | grep -i lgto*
   ```

3. Use `installp -u` to remove the software packages:

   ```
   installp -u package [package]...
   ```

   For example, to uninstall the client software and the French language pack, type:

   ```
   installp -u LGTOnw.fr.rte LGTOnw.clnt.rte
   ```

   Note

   When removing multiple NetWorker software packages, specify the LGTOnw.clnt.rte package last.

4. To confirm the package removal, type:

   ```
   lslpp -L all | grep -i lgto*
   ```

5. If there is no plan to update or reinstall the software packages, remove the `/nsr` directory.

CHAPTER 10

HP-UX Installation

This chapter includes the following topics:

- Road map for installing the NetWorker software on HP-UX 134
- Reviewing NetWorker requirements for HP-UX 134
- Changing default directory locations 136
- HP-UX: Installing the NetWorker client and storage node software 136
- Uninstalling the NetWorker software on HP-UX 138

Road map for installing the NetWorker software on HP-UX

Use this road map to install the NetWorker software, on a host that does not have a previous version of the NetWorker software installed.

1. The Software Requirements chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating systems.
2. Reviewing NetWorker requirements for HP-UX details HP specific requirements and considerations.
3. Changing default directory locations lists the default directory locations.
4. Installing the NetWorker software describes how to install the NetWorker storage node and client software.
5. The Verify the Installation chapter describes how to test the NetWorker software functionality.
6. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Reviewing NetWorker requirements for HP-UX

Review the following software considerations and requirements for the NetWorker software on supported HP-UX operating systems.

General requirements

Before you install the NetWorker software on HP-UX, perform the following tasks.

- Review the *EMC NetWorker Online Software Compatibility Guide* for the latest information about supported HP-UX operating systems for each NetWorker installation type.
- Ensure that the kernel parameter *maxfiles_lim* has a minimum value of **8192**.
- Ensure that the `/etc/nsswitch.conf` file contains an ipnodes policy:

  `ipnodes=files`

  Note

  If you do not specify an ipnodes policy, the NetWorker daemons fail to start with a message similar to the following:

  ```
  lgtolmd: Failed to resolve the IPv6 localhost address ::1. Please
  verify an entry for the IPv6 localhost address exists in your /etc/
  hosts file and an "ipnodes" policy has been added to your /etc/
  nsswitch.conf file.
  ```

Package disk space requirements

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.

The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 33 Size of compressed and uncompressed files

Operating system	Package name	Compressed file	Uncompressed file
HP-UX	`nw901_hpux11_64.tar.gz`	135 MB	397 MB
HP-UX Itanium	`nw901_hpux11_ia64.tar.gz`	216 MB	945 MB

HP-UX 11iv3 requirements

Before you install the NetWorker software on HP-UX 11iv3, review the following considerations:

- If you use stape on an HP-UX11iv3 NetWorker storage node, install patch PHKL_36312 or later.
  This enhances tape device compatibility.
- For HP-UX NetWorker servers and storage nodes that use tape devices, install PHKL_41474 or higher.
  This is required for CDI support.
- If you backup the `/dev` directory to a local HP-UX 11iv3 storage node, then the backup may fail and the system may fail to respond.
  To avoid this issue, implement one of these options:
  - Do not back up the `/dev` directory.
  - Do not specify ALL in the client `Save Set` attribute.
  - Do not use a directive to exclude the `/dev` directory from the backup.
  - Do not specify save sets that include the `/dev` directory in the backup.
  - Use a remote storage node.

HP-UX 11iv2 requirements

Before you install the NetWorker software on HP-UX 11iv2, perform the following tasks.

1. install the following patches on the host.
   - PHSS_37500
   - PHSS_39101
2. Set the *nfile* value according to the following formula:
   - The *nfile* setting + (*number of expected concurrent save times*)
   - The minimum value for the number of expected concurrent save times is 50.

   For example:

   `nfile = 1 X 50`

HP-UX on PA-RISC requirements

Before you install the NetWorker client software on HP-UX PA-RISC, install the following patches on the host.

- QPK1123(B.11.23.0712.070a) 1185010 Quality Pack Depot
- PHSS_37492

Changing default directory locations

NetWorker installs the binaries in the `/opt/networker/bin` directory. The `/nsr` directory contains the NetWorker configuration, logs, and database files.

You cannot change the location of the NetWorker binaries, configuration, log files, and databases.

Before you install the NetWorker software, ensure that the PATH variable for the root and user account contains the `/opt/networker/bin` directory.

HP-UX: Installing the NetWorker client and storage node software

Use `swinstall` to install the client, storage node, and optional packages such as the man pages and language packs on HP-UX 11.x , or HP-UX 11i platforms on IPF.

The `swinstall` utility uses the character mode or the System Administration Manager (SAM) utility. The character mode `swinstall` screens contain the same information as the SAM utility. The same choices are made with both formats.

The following table summarizes the NetWorker software packages that each NetWorker component requires.

Table 34 HP-UX software packages

To install the:	Select these packages:
Client software Extended client software	NWr-Client NWr-XtdClient
Storage node software	NWr-Client NWr-XtdClient NWr-Node
Man pages	NWr-Man
French language support	NWr-FR
Japanese language support	NWr-JA
Korean language support	NWr-KO
Simplified Chinese language support	NWr-ZH

Follow these steps to install the NetWorker client and storage node software.

Procedure

1. Create a backup copy of the `rpc.org` configuration file:

   ```
   cp /etc/rpc /etc/rpc.org
   ```

2. Log in to the target host as root.
3. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   Note

   Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

   The following table provides you with information about the size of the compressed and uncompressed files, and the name of the package to install on each operating system.

Table 35 Size of compressed and uncompressed files

Operating system	Package name	Compressed file	Uncompressed file
HP-UX	`nw901_hpux11_64.tar.gz`	135 MB	397 MB
HP-UX Itanium	`nw901_hpux11_ia64.tar.gz`	216 MB	945 MB

4. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   ```
   tar -xzf file_name.tar.gz
   ```

5. At the command prompt, type:

   ```
   swinstall &
   ```

   Note

   If you use the character interface, do not include the & symbol.

6. Press **Enter**.
7. On the **Specify Source** window, provide the location of the NetWorker installation files:
   a. In the **Source Depot Type** field, press **Enter** and select **Local Directory.**
   b. In the **Source Host Name** field, ensure that the hostname of the target host is selected.
   c. In the **Source Depot Path** field, type the full path of the `NetWorker.pkg` file.

      For example:

```
/tmp/hpux11_ia64/NetWorker.pkg
```

8. Click **OK**.
9. On the **SD Install - Software Selection** window, select and mark the software packages that are required for the installation type.

   Optionally, select **Avamar client** to install the Avamar client software.

   Note

   Select this option only when you update NetWorker 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

10. Press **Enter**.
11. On the **Actions** menu, click **Install**.
12. Verify the status of the install analysis.
    - To review the log file and verify that the `swinstall` program did not encounter errors, click **Logfile**.
    - Correct any problems before you continue the installation.
13. To continue with the installation, click **OK**.
14. To review the log file for error or warning messages that are generated during installation, click **Logfile**.
15. When the installation completes, click **Done**.
16. Exit `swinstall`.
17. Optional, to verify that NetWorker installed correctly, type the following in the command prompt:

    ```
    swlist | grep -i networker
    ```

    Output similar to the following should appear:

    ```
    NetWorker 9.0 NetWorker
    ```

18. Optional, to verify that the Avamar client installed correctly, type the following in the command prompt:

    ```
    swlist | grep -i avamar
    ```

    Output similar to the following should appear:

    ```
    hpuxclnt 7.2.100-401 Avamar client
    ```

Uninstalling the NetWorker software on HP-UX

To uninstall the NetWorker software, complete the following procedure.

Use the `swremove` utility to uninstall the NetWorker software.

Procedure

1. Log in to the target host as root.
2. Shut down the NetWorker daemons:

   ```
   nsr_shutdown
   ```

3. Confirm that all the NetWorker daemons stop:

   ```
   ps -ef | grep nsr
   ```

4. To start the NetWorker software removal process, type:

   ```
   swremove &
   ```

   NOTICE

   If you are using the character interface, do not include the & symbol.

5. On the **Software Selection** window, select the NetWorker software that you want to remove.
6. On the **Actions** window, select **Remove**.

   This runs an analysis of the remove operation.

7. To confirm that the analysis did not detect any problems:

   a. Click **Logfile**.

   b. Fix any reported problems before you continue with the operation.

8. On the **Remove Analysis** window, click **OK** to continue the remove operation.
9. On the **Remove** window, click **Done**.
10. On the **File** menu, select **Exit**.
11. Verify that all the files are removed from `/opt/networker` directory.
12. If there is no plan to update or reinstall the software packages, remove the `/nsr` directory.

CHAPTER 11

Solaris Installation

This chapter includes the following topics:

- Road map for installing the NetWorker software on Solaris 142
- Reviewing the NetWorker requirements for Solaris 142
- Consider the NetWorker default directories 144
- Installing the NetWorker client and storage node packages 146
- Deploying a VMware template for the host 148
- Uninstalling the NetWorker on Solaris 148

Road map for installing the NetWorker software on Solaris

Use this road map to install the NetWorker software on a host that does not have a previous version of the NetWorker software installed.

1. The Software Requirements chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating systems.
2. Reviewing the NetWorker requirements for Solaris details Solaris specific requirements.
3. Consider the NetWorker default directories lists the default directory locations.
4. Installing the NetWorker client and storage node packages describes how to install the NetWorker storage node and client software.
5. The Verify the Installation chapter describes how to test the NetWorker software functionality.

Reviewing the NetWorker requirements for Solaris

Before you install NetWorker on Solaris, review the package disk space requirements, and software requirements for Solaris 10 and Solaris zone support.

Package disk space requirements

Download the NetWorker software package from the EMC Online Support website to a temporary location.

Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.

The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 36 Size of compressed and uncompressed files

Operating system	Package names	Compressed file	Uncompressed file
Solaris x86	`nw901_solaris_x86.tar.gz`	138 MB	528 MB
Solaris 64-bit SPARC	`nw901_solaris_64.tar.gz`	352 MB	1.23 GB
Solaris x64/AMD64	`nw901_solaris_amd64.tar.gz`	143 MB	720 MB

Solaris 10 requirements

Before you install NetWorker on Solaris 10, review the following requirements.

- Disable TCP Fusion on each Solaris 10 NetWorker storage node.
  1. Add the following line, to the `/etc/system` file:

     ```
     set ip:do_tcp_fusion = 0
     ```

2. Restart the host.

- For a storage node in a Solaris 10 whole root zone, ensure that:
  - All devices are in a single NetWorker datazone.
  - All storage nodes are running Solaris 10 update 5 or later, to provide shared SCSI command support.

  Note

  The *Configuring Tape Devices for EMC NetWorker Technical Note*, available on the EMC Online Support Site describes how to configure devices in a whole root zone.

- Install the operating system patches that are required for each architecture. Before installing the required operating system patches, consider the following:
  - Some Sun patches might have dependencies on other Sun patches. Ensure that the host meets all dependencies before applying the patch.
  - The Sun patches detailed in the following table specify the patch version that first contained the fix. Over time, these Sun patches might become obsolete and replaced with a newer patch revision. In these instances, install the latest patch revision. The SunSolve website provides detailed information about patch dependencies and download information.

The following table provides a summary of architecture specific patch requirements.

Table 37 Solaris 10 Sun patch requirements

Architecture	Required patch	Reason
Z86/Sparc	• Sun patch 102712-01 or later on Sparc • Sun patch 102711-01 or later on x86	Backups of large save sets may fail on Solaris 10 systems when you use an Intel Gigabit Ethernet card e1000g driver. **Note** Solaris 10 update 4 and later includes this patch.

Solaris zone requirements

NetWorker supports global, whole root, and sparse root zone configurations. Before you install NetWorker in a Solaris zone, review the following information.

Table 38 Solaris 10 Sun patch requirements

Architecture	Required patch
Sparse root zone requirements	A NetWorker client supports sparse root zones on Solaris 10. Before you install the NetWorker client software in each sparse root zone, install the same version of the NetWorker software in the global zone. Create a client instance for the global zone and each sparse root zone.

Table 38 Solaris 10 Sun patch requirements (continued)

Architecture	Required patch
	The *EMC NetWorker Administration Guide* describes how to create a NetWorker client.
Global zone requirements	A NetWorker storage node including a dedicated storage node, and the client software support a Solaris global zone. Special ALL save sets are available to back up a global zone client when you install NetWorker in the global zone. "Using the save set all to back up particular file systems" *EMC NetWorker Administration Guide* describes when to use the special ALL save sets.
Whole root zone considerations	The NetWorker storage node including a dedicated storage node and the client software support a Solaris whole root zone. When you install NetWorker in a whole root zone, the NetWorker software is not required in the global zone.

Consider the NetWorker default directories

You cannot change the installation location of the NetWorker software, but you can change the location of the configuration, logs, and database files. The NetWorker binaries are installed in the `/usr/sbin` directory and the NetWorker configuration, logs, and database files are located in the `/nsr` directory.

The following table specifies the default location and space requirements for the NetWorker software on a Solaris host.

Table 39 Default file locations and space requirements for Solaris

NetWorker package	Location	Space for Solaris x86	Space for Solaris x64	Space for Solaris AMD 64
Client (LGTOclnt)	`/opt/nsr`	11 MB	11 MB	11 MB
	`/usr/openwin`	8 KB	8 KB	8 KB
	`/usr/bin`	30 MB	66 MB	50 MB
	`/usr/sbin`	74 MB	143 MB	122 MB
	`/usr/lib/nsr`	12 MB	87 MB	79 MB
Storage node (LGTOnode)	`/usr/sbin`	n/a	135 MB	102 MB

Table 39 Default file locations and space requirements for Solaris (continued)

NetWorker package	Location	Space for Solaris x86	Space for Solaris x64	Space for Solaris AMD 64
	/usr/lib/nsr		21 MB	15 MB
Man pages (LGTOman)	/share/man	2.3 MB	2.2 MB	2.2 MB
French language pack (LGTOfr)	/opt/nsr /usr/lib /usr/sbin /share/man	2.7 MB 32 KB 8 KB 2.3 MB	5.7 MB 32 KB 8 KB 2.3 MB	5.7 MB 32 KB 8 KB 2.3 MB
Japanese language pack (LGTOja)	/opt/nsr /usr/lib /usr/sbin /share/man	3.2 MB 40 KB 8 KB 2.2 MB	6.8 MB 40 KB 8 KB 2.2 MB	6.8 MB 40 KB 8 KB 2.2 MB
Korean language pack (LGTOko)	/opt/nsr /usr/lib /usr/sbin /share/man	2.8 MB 32 KB 8 KB 2.1 MB	6.0 MB 32 KB 8 KB 2.1 MB	6.0 MB 32 KB 8 KB 2.1 MB
Simplified Chinese language pack (LGTOzh)	/opt/nsr /usr/lib /usr/sbin /share/man	2.1 MB 24 KB 8 KB 1.9 MB	5.7 MB 24 KB 8 KB 1.9 MB	5.7 MB 24 KB 8 KB 1.9 MB
Client file index, media database, resource database	/nsr	varies	varies	varies

Use the following procedure to change the location of the /nsr directory by creating a symbolic link from the new directory to the /nsr directory.

Procedure

1. Create another directory, on a disk with sufficient space:

   ```
   mkdir /disk2/nsr
   ```

2. Link this directory to the /nsr directory:

   ```
   ln -s /disk2/nsr /nsr
   ```

3. Ensure that the *PATH* variable for the root and user accounts contains the /usr/sbin directory.

4. Ensure that there is sufficient disk space to install the NetWorker files in the default location.

Installing the NetWorker client and storage node packages

This section describes how to install the client and storage node software packages and the optional packages. For example, the man pages, extended client, and language packs.

Procedure

1. Log in to the target host as root.
2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.

   The following table provides you with information about the size of the compressed and uncompressed files, and the name of the package to install on each operating system.

Table 40 Size of compressed and uncompressed files

Operating system	Package names	Compressed file	Uncompressed file
Solaris x86	`nw901_solaris_x86.tar.gz`	138 MB	528 MB
Solaris 64-bit SPARC	`nw901_solaris_64.tar.gz`	352 MB	1.23 GB
Solaris x64/AMD64	`nw901_solaris_amd64.tar.gz`	143 MB	720 MB

3. Change to the temporary location that contains the software package, and then unzip and extract the files by using the `tar` command:

   `tar -xzf file_name.tar.gz`

4. Create a backup copy of the `rpc.org` configuration file:

   `cp /etc/rpc /etc/rpc.org`

5. Display the list of available installation packages:

   `pkgadd -d path_to_install_files`
   The following packages are available:

```
1 LGTOclnt NetWorker Client (sparc) 9.0.0.2.Build.xxx
2 LGTOfr NetWorker French Language Pack (sparc)
9.0.0.2.xxx
3 LGTOja NetWorker Japanese Language Pack (sparc)
9.0.0.2.xxx
4 LGTOko NetWorker Korean Language Pack (sparc)
9.0.0.2.xxx
5 LGTOlicm NetWorker License Manager(sparc) 9.0.0.2.xxx
6 LGTOman NetWorker Man Pages (sparc) 9.0.0.2.xxx
7 LGTOnode NetWorker Storage Node (sparc) 9.0.0.2.xxx
8 LGTOxtdclnt NetWorker Extended Client (sparc)
```

```
9.0.0.2.xxx
9 LGTOzh NetWorker Chinese Language Pack (sparc)
9.0.0.2.xxx
```

6. Specify the package numbers that are required for the installation type.

   NOTICE

   When installing the NetWorker server and storage node software, the package order is important.

   For example:

   - For a NetWorker Client installation, type: `1`
   - For a NetWorker Storage node installation, type: `1,7`

   Optional packages including the language packs, man pages, and extended client are specified in the **Select package** prompt by adding the associated package number after the minimum packages required for the installation type.

   For example:

   To install the man pages and extended client during a NetWorker storage node install, type: `1, 7, 6, 8`

7. When prompted to change the data directory, choose one of the following:
   - Accept the default directory.
   - Specify the directory.
8. The installation prompts you to specify the NetWorker server that can access the host. To update the list:

   a. Type `y`.

   b. Specify the shortname and FDQN for each NetWorker server, one per line, that requires access to the NetWorker host. The first entry in this file becomes the default NetWorker server.

   When all the NetWorker servers are specified, press **Enter** without specifying a NetWorker server name, to complete the process.

   For example:

   ```
   Enter a NetWorker server hostname [no more]: mynwserver
   Enter a NetWorker server hostname [no more]:
   mynwserver.emc.com
   Enter a NetWorker server hostname [no more]:
   ```

   NOTICE

   When no servers are specified, any NetWorker server can back up or perform a directed recovery to the host.

9. After the client package installation completes, the installation process will install any additional packages automatically.

Note

For storage node installations, do not start the NetWorker daemons after the client package installation completes. Start the daemons when the installation process prompts you during the LGTOnode package installation.

10. To confirm that the NetWorker daemons started successfully, type `ps -ef | grep nsr`

Deploying a VMware template for the host

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique information for each host in a datazone. Before you create a VMware template for NetWorker hosts, perform the following steps to delete the NSRLA database on the host that you will use to create the VM template.

Procedure

1. To stop the NetWorker processes, type the following command from a prompt:

   ```
   /etc/init.d/networker stop
   ```

2. To confirm that the NetWorker processes are not running, type the following command from a prompt:

   ```
   ps -ef | grep /usr/sbin/nsr
   ```

3. Delete the `/nsr/res/nsrladb` directory.
4. Create the VMware template.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Uninstalling the NetWorker on Solaris

To uninstall the NetWorker software, complete the following procedure.

The following table provides a list of the package names that are associated with the different NetWorker software packages.

Table 41 NetWorker packages on Solaris

Component	Package name
Storage node	LGTOnode
NetWorker License Manager	LGTOlicm
Client	LGTOclnt
Man pages	LGTOman
French language support	LGTOfr
Japanese language support	LGTOja
Korean	LGTOko

Table 41 NetWorker packages on Solaris (continued)

Component	Package name
Simplified Chinese language support	LGTOzh

NOTICE

When you remove the NetWorker software packages in a sparse root zone, remove the packages from all sparse root zones first, and then remove the packages from the global zone.

Procedure

1. Log in to the target host as root.
2. Shut down the NetWorker daemons when there are no backups and recoveries running. For example:

   ```
   nsr_shutdown
   ```

3. Confirm that the NetWorker daemons stopped:

   ```
   ps -ef | grep nsr
   ```

4. Determine which packages to remove:

   ```
   pkginfo -i | grep LGTO
   ```

5. Remove each LGTO package that is listed in the `pkginfo` output, in the following order:

   ```
   pkgrm LGTOlicm LGTOnode LGTOclnt LGTOman LGTOfr LGTOja LGTOko
   LGTOzh
   ```

6. Exclude packages that are not listed in the `pkginfo` command.
7. Type **y** to confirm the package removal.
8. Type **y** to continue with the package removal.
9. Repeat these last three steps for each package.

   Note

   When removing the NetWorker client software package in a sparse root zone, the removal process might:

   - Report that the uninstall cannot remove files. For example. the following message might appear:

     ```
     pkgrm: ERROR: unable to remove </usr/lib/nsr/product.res>
     ```

   - Report a partial failure. For example. the following message might appear:

     ```
     Removal of <LGTOclnt> partially failed.
     ```

   To remove the NetWorker client software packages in a sparse root zone, use the `pkgrm` program a second time to remove each failed package.

10. If there is no plan to update or reinstall the software packages, remove the `/nsr` directory.

PART 5

OS-X Client Installation

This section contains the following chapter:

Chapter 12, "OS-X Client Installation"

CHAPTER 12

OS-X Client Installation

This chapter includes the following topics:

- Road map for installing the NetWorker software on OS-X 154
- Reviewing the OS-X requirements 154
- Installing the NetWorker client software 154
- Verify the software installation 156
- Deploying VMware template for OS-X hosts 156
- Uninstalling the NetWorker client software on OS-X 157

Road map for installing the NetWorker software on OS-X

Use this road map to install the NetWorker client software on a host that does not have a previous version of the NetWorker software installed.

1. Reviewing the OS-X requirements outlines the software requirements to consider when installing NetWorker on the OS-X operating system.
2. Installing the NetWorker client software describes how to install the NetWorker client software.
3. Verify the software installation describes how to test the NetWorker software functionality.
4. Enable and register the NetWorker products. The *EMC NetWorker Licensing Guide* provides information.

Reviewing the OS-X requirements

Before you install the NetWorker software on the OS-X operating system, review the following information.

The NetWorker software:

- Supports only the NetWorker client on OS-X.
- Supports Mac OS Power PC and Mac OS Intel.
- Supports the following file systems:
  - HFS+ (including journaled)
  - HFS
  - UFS
- Requires 131 MB of free disk space for the software installation process.

Table 42 OS-X Directory and space requirements

Directory	Space required
`/applications`	8 MB
`/usr/local/bin`	51 MB
`/usr/local/sbin`	65 MB
`/usr/local/lib/nsr`	4 MB
`/usr/local/share/man`	2 MB

Installing the NetWorker client software

You can install the NetWorker client software from the Mac Console or from a terminal window.

Installing the NetWorker client from the Mac Console

Complete the following procedure to install the NetWorker client software from the Mac Console.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   The package name is `nw901_macosx.dmg`.

   Note

   Ensure that there is sufficient disk space on the host to contain both the compressed NetWorker software package and the fully uncompressed files.

2. Double-click the `nw901_macosx.dmg` file.

   This mounts the NetWorker software on a NetWorker volume.

3. Double-click the `nw901_macosx.pkg` on the NetWorker volume to launch the NetWorker software.
4. On the **Welcome to the NetWorker Client Installer** window, click **Continue**.
5. On the **End User License and Basic Maintenance Agreement** window, click **Continue**.
6. Click **Agree** to agree to the terms of the software license agreement.
7. Click **Install** to install the NetWorker client on the default volume.

   Optionally, click **Change Install Location...** and select another volume.

8. Click **Close**.

Installing the NetWorker client from a terminal window

Complete the following procedure to install the NetWorker client software from the terminal window.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Mount the volume that contains the NetWorker software.

   For example:

   `hdiutil` **`mount`** ***`path to NetWorker software`***`/`**`MacOSX/NetWorker-dev.dmg`** `/dev/disk5 /Volumes/NetWorker-dev`

3. Change to the directory that contains the NetWorker installation package.

   For example:

   `cd` **`/Volumes/NetWorker-dev`**

4. As a sudo user, use the `installer-pkg` program to install the NetWorker software.

   For example:

   `$` `sudo` **`/usr/sbin/installer -pkg`** ***`/Volumes/NetWorker-dev/`***
   `NetWorker.pkg -target / Password:********`

```
installer: Package name is NetWorker Client
installer: Installing at base path /
installer: The install was successful.
```

Verify the software installation

To verify that the NetWorker client software installed correctly, ensure that the `nsrexecd` daemon is running.

Confirm the `nsrexecd` daemon starts in one of the following ways:

- Use the Mac OS X Activity Monitor application to confirm that the NetWorker client daemon, `nsrexecd` is active on the host.
- From a terminal window, type:

  ```
  ps -ef | grep -i nsr
  ```

  If the `nsrexecd` daemon did not start, as a sudo user, start the daemon from a terminal window.

  For example:

  ```
  $sudo /bin/launchctl start com.emc.NetWorker
  ```

Deploying VMware template for OS-X hosts

Review this section if you create a VMware template of the OS-X host, which you use to deploy multiple virtual machines.

When the NetWorker daemons start on the host, NetWorker creates resources in the NSRLA database. NetWorker operations require that the database contain unique information for each host in a datazone.

Procedure

1. Open the Mac OS-X Terminal application utility.
2. To stop the NetWorker processes type the following command Type the following command to stop the NetWorker process:

   ```
   launchctl unload /Library/LaunchDaemons/com.emc.NetWorker.plist
   ```

   Note

   The `launchd` daemon/agent manager controls the NetWorker processes, and NetWorker configures the processes to run continuously on the host in the background. EMC does not recommend that you manually stop and start NetWorker processes under normal operating conditions.

3. Delete the `/nsr/res/nsrladb` directory.

Results

After you deploy the VMware template and start the virtual machine, NetWorker will generate unique values in the NSRLA resource for the virtual machine.

Uninstalling the NetWorker client software on OS-X

Use the following procedure to uninstall the NetWorker software from a command prompt.

Procedure

1. Ensure that the NetWorker Recovery application is not running.
2. From a terminal window, type the following command:

```
$sudo /usr/sbin/NetWorkerUninstall
```

PART 6

Verifying and Troubleshooting the Installation

This section contains the following chapters:

Chapter 13, "Verify the Installation"

Chapter 14, "Troubleshooting NMC GUI and NetWorker Server Connection Issues"

CHAPTER 13

Verify the Installation

This chapter contains the following topics:

- Road map for using NetWorker for the first time 162
- About the EMC Licensing Solution 162
- Configuring the NMC server to manage additional NetWorker servers 165
- Starting the NMC server GUI for the first time 167
- Starting the NMC client after the first time 173

Road map for using NetWorker for the first time

This section describes how to connect the NMC server and configure the GUI to manage NetWorker servers.

About the EMC Licensing Solution

The EMC Licensing Solution introduced in NetWorker 9.0.1 is an EMC licensing standard that stores all the licensing information for the environment in one file (the license file), which is stored on both the NetWorker server and an EMC License Server. All new installations of NetWorker 9.0.1 use the EMC Licensing Solution.

The section provides an overview of the various components required for setting up the EMC Licensing Solution, including:

- EMC License Server
- License file
- Management of the License Server by using **LMTOOLS** (Windows) or `lmgrd` (Linux).

The *EMC NetWorker Licensing Guide* provides more information about the EMC License Solution.

EMC License Server

After installing NetWorker 9.0.1, install the Windows or Linux 64-bit License server package if you do not already have the License Server installed. The License Server is responsible for managing the EMC licenses and capacity allocation.

NetWorker supports installation of the License Server on the following 64-bit platforms.

Table 43 Supported License Server platforms

Platform	Versions
Windows	Windows 2008, Windows 2012
Linux	Red Hat Enterprise Linux 6.x, SuSE Linux Enterprise Server 10.x, 11.x

Once you install the License Server, you must obtain the license file from EMC Licensing. This file contains the host and port information of the License Server. The License Server is expected to use a default or specific TCP/IP port number. For NetWorker, this default port is 27000. If a specific (non-default) port is used, it must match the port number in the license file. You can set the License Server to listen to an available TCP/IP port, typically in the range of 27000 to 27009.

You can start the License Server by using the LMTOOLS application (on Windows) or the `lmgrd` command (on Linux).

Note

EMC does not recommend running the NetWorker Server and the License Server on the same host. If you do run both on the same host, ensure that you start the NetWorker server before you start the `lmgrd` process.

License file

The EMC Licensing Solution relies on a license file to indicate the NetWorker features and capacity you purchased, or options made available for the purposes of evaluating NetWorker.

When you download the NetWorker software and the EMC License Server software, you must also obtain a license file from EMC Licensing. This file must reside both on a platform that runs the License Server, and is accessible to NetWorker. Therefore, you must store a copy of the file in the License server folder, and in the `/nsr/lic` directory on the NetWorker server. When you copy the license file to this directory on the NetWorker server, you must change the file name to `dpa.lic` if this is not the file name already. The license file is an ASCII text file for which the content is encrypted to prevent tampering or changes.

The license file can contain two types of entitlements -- an update entitlement, if updating from a previous NetWorker release, and a single capacity entitlement, which you can share across two datazones if you do not exceed the capacity purchased. All datazones can point to a single License Server to request capacity.

Management of the EMC License Server

After you install the License Server, a management application is placed on an accessible server. Complete the setup and configuration of the EMC Licensing Solution by using the License Server management application appropriate to your platform.

On Windows, use the **LMTOOLS** application. On Linux, use the command line utility `lmgrd`.

The application should be running constantly to serve licenses to NetWorker. To accomplish this, the application requires the existence of a running vendor daemon, `EMCLM`, which delivers license features to NetWorker and keeps track of counted features. The application automatically manages `EMCLM` by starting, restarting, and stopping the daemon as required. It will also write to the License Server's troubleshoot log file `lmgrd.log` to report errors and license feature activity. The `lmgrd`, `EMCLM`, license, and troubleshoot log files are located in the same directory.

Note

Use the *EMC License Server Installation and Administration Guide* for complete EMC License Server management instructions.

Quick Start: Activating the EMC Licensing Solution

The following section provides an overview of the steps that are required to activate the EMC Licensing Solution in a new installation of NetWorker 9.0, as outlined in more detail in subsequent sections of the *EMC NetWorker Licensing Guide* and the *EMC License Server Installation and Administration Guide*.

Procedure

1. Download the License Server package for the platform from the same location you downloaded the NetWorker software.
2. Install the Windows or Linux 64-bit License Server package. You can install the License Server in the same location as the NetWorker server.
   - On Windows, the package is `EMC_LicenseServer_3.4.0_x64 installer.msi`.

- On Linux, the package is `emclicenseserver-3.4.1-2.x86_64_lsb.rpm`

3. Obtain the license file from EMC Licensing. For a new installation of NetWorker 9.0, this file contains a capacity entitlement.

   You can obtain the file once you provide EMC Licensing with the License Server host/IP information, the required capacity, and the port to use for communication between NetWorker and the License Server if you cannot use the default port 27000. EMC requires this information to create the license file.

4. In the location you installed the License Server:

   a. Create a directory.

   b. Copy the license file to this directory.

   c. Do not rename the license file.

   For example, on the License Server, create the following directories:

   - On Windows: `C:\Program Files\EMC License Server\elms\licenses`
   - On Linux: `/opt/emc/licenses`

   Note

   On Linux, you may be required to complete this step before installing the License Server package.

5. On the NetWorker server:

   a. Copy the license file to the following locations:

      - On Windows: `C:\Program Files\EMC NetWorker\nsr\lic`
      - On Linux: `/nsr/lic`

   b. Rename the file to `dpa.lic` if this is not already the file name.

6. Complete the configuration of the License Server and then start the License Server:

   - On Windows, use **LMTOOLS** or the command line interface.
     An icon for **LMTOOLS** appears on the desktop after the License Server installation.
   - On Linux, use `lmgrd`.

7. In the NMC **Administration** window:

   a. Right-click the server.

   b. Select **Properties**.

8. In the **Server Properties** window:

   a. Change the **CLP Refresh** field to **Yes**.

   b. Ensure that the following fields are populated correctly:

      - CLP license server
      - CLP License Server Port

- Solution ID
- CLP SWID

c. Click **Ok**.

Note

CLP refers to the EMC License Server.

In the NMC **Administration** window, when you click **Server** and then select **Registrations**, the right pane displays an entry for CLP Capacity License that indicates the **Authorized -No expiration date**.

Configuring the NMC server to manage additional NetWorker servers

The NMC server can only use one NetWorker Authentication Service to provide authentication services. When the NMC server manages more than one NetWorker server, configure a trust between each NetWorker server that the NMC server will manage and NetWorker server that will provide authentications services to the NMC server. After you establish each trust, update the user groups on each NetWorker server to include the users and groups that require access to the NetWorker server.

Procedure

1. To establish the trust, type the following command on each NetWorker server that is not local to the NetWorker Authentication Service that NMC users for authentication:

   `nsrauthtrust -H Authentication_service_host -P Authentication_service_port_number`

   where:

   - The location of the `nsrauthtrust` command differs on Linux and Windows:
     - Linux—`/usr/sbin`
     - Windows—`C:\Program Files\EMC NetWorker\nsr\bin`
   - *Authentication_service_host* is the hostname of the NetWorker server that authenticates the NMC server host.
   - *Authentication_service_port_number* is the port number used by the NetWorker Authentication Service. The default port number is 9090.

2. Use the `nsraddadmin` command to grant the NetWorker Authentication Service user groups access to the NetWorker server.

   `nsraddadmin -H Authentication_service_host -P Authentication_service_port_number`

   The `nsraddadmin` command updates the following user groups:

   - Application Administrator—Adds the distinguished name (DN) of the NetWorker Authentication Service Administrators group.

- Security Administrator—Adds the DN of the NetWorker Authentication Service Administrators group.
- Users—Adds the DN of the NetWorker Authentication Service Users group.

3. Optionally, to add other users or groups from the NetWorker Authentication Service to the Application Administrator and Security Administrator user groups on the NetWorker server, you must determine the DN for the user or group, and then use the `nsraddadmin` command with the `-e` option to add the user or group.

   For example, to add a user to the Application Administrator and Security Administrator user groups on the NetWorker server, perform the following steps:

   a. Use the `authc_mgmt` command with the *-e find-all-users* option to display a list of users and the associated user ID in the local user database:

   ```
   authc_mgmt -u administrator -p password -e find-all-users
   The query returns 2 records.
   User Id User Name
   1000 administrator
   1001 Patd
   ```

   Note

   The location of the`authc_mgmt` command differs on Linux and Windows:

   - Linux—`/opt/emc/authc/bin`
   - Windows—`C:\Program Files\EMC\Authc\bin`

   b. Use the `authc_mgmt` command with the *-e find-user* option to display user details for the administrator account, including the user DN:

   ```
   authc_mgmt -u administrator -p password -e find-user -D user-
   id=user_id
   ```

   where *user_id* is the user ID value for the `Patd` account.

   For example:

   ```
   authc_mgmt -u administrator -p 1.Password -e find-user -D
   user-id=1001

   User Id : 1001
   User Name : Patd
   User Domain :
   User First Name: Patrick
   User Last Name : Dunn
   User Email : Patd@local
   User Details :
   User DN : cn=Patd,cn=Users,dc=bu-
   iddnwserver2,dc=IddLab,dc=local
   User Enabled : true
   User Groups : [100, 101]
   ```

   c. Use `nsraddadmin` command to add the user DN of the administrator account to the Application Administrators and Security Administrators user group on each remote NetWorker server, that the NMC server manages:

```
nsraddadmin -e user-dn
```

For example:

```
nsraddadmin -e "cn=Patd,cn=Users,dc=bu-
iddnwserver2,dc=IddLab,dc=local"
Added role 'cn=Patd,cn=Users,dc=bu-
iddnwserver2,dc=IddLab,dc=local' to the 'Application
Administrators' user group.
Added role 'cn=Patd,cn=Users,dc=bu-
iddnwserver2,dc=IddLab,dc=local' to the 'Security
Administrators' user group.
```

The *EMC NetWorker Security Configuration Guide* provides detailed information about how to add additional local database users, LDAP and AD users to the User Group resources on the NetWorker server.

After you finish

The *EMC NetWorker Security Configuration Guide* provides detailed information about how to add additional local database users, LDAP and AD users to the User Group resources on the NetWorker server.

Starting the NMC server GUI for the first time

The NMC server is a Java web-based application that manages NetWorker server operations. An NMC client is a host that connects to the NMC server through a supported web browser, to display the NMC server GUI.

The following sections outline how to prepare the NMC client and how to connect to the NMC server GUI.

Optional, adding additional NetWorker servers to the NMC server

When you installed the NMC server software on a host that is not also a NetWorker server, you provided the hostname of the NetWorker server. The NetWorker server that you specified authenticates user access to the NMC server and the NetWorker server. To manage additional NetWorker servers, establish a trust between the NMC server and the additional NetWorker servers. This trust enables users that are authenticated by the NetWorker Authentication Service on one NetWorker server to access another NetWorker server. Also, add the required user or group accounts to NetWorker User Groups to enable user authorization on the NetWorker server.

Procedure

1. Log in to the remote NetWorker server as an administrator on Windows or as root on UNIX.
2. To establish the trust, type the following command on each NetWorker server that is not local to the NetWorker Authentication Service that NMC users for authentication:

   ```
   nsrauthtrust -H Authentication_service_host -P
   Authentication_service_port_number
   ```

   where:

   - The location of the `nsrauthtrust` command differs on Linux and Windows:

- Linux—`/usr/sbin`
- Windows—`C:\Program Files\EMC NetWorker\nsr\bin`

- *Authentication_service_host* is the hostname of the NetWorker server that authenticates the NMC server host.
- *Authentication_service_port_number* is the port number used by the NetWorker Authentication Service. The default port number is 9090.

3. Use the `nsraddadmin` command to grant the NetWorker Authentication Service user groups access to the NetWorker server.

   ```
   nsraddadmin -H Authentication_service_host -P
   Authentication_service_port_number
   ```

   The `nsraddadmin` command updates the following user groups:

   - Application Administrator—Adds the distinguished name (DN) of the NetWorker Authentication Service Administrators group.
   - Security Administrator—Adds the DN of the NetWorker Authentication Service Administrators group.
   - Users—Adds the DN of the NetWorker Authentication Service Users group.

4. Click **OK**.

Ensuring that the required NMC processes are running on a Linux host

Ensure that the NMC processes `gstd`, `postgres`, and `httpd` are running on the NMC server.

Procedure

1. To confirm that the NMC server daemons have started, from a command prompt, type: `ps -ef | grep lgtonmc`.

   Output similar to the following appears when the daemons have started:

   ```
   root 3064 1 0 10:03 ? 00:00:01 /opt/lgtonmc/bin/gstd
   dbuser 3329 1 0 10:04 ? 00:00:00 /opt/lgtonmc/
   postgres/bin/postgres -D /opt/lgtonmc/nmcdb/pgdata
   root 3969 1 0 10:04 ? 00:00:00 /opt/lgtonmc/apache/bin/
   httpd -f /opt/lgtonmc/apache/conf/httpd.conf
   nobody 3970 3969 0 10:04 ? 00:00:00 /opt/lgtonmc/
   apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
   ```

2. Start the NMC daemons:

   ```
   /etc/init.d/gst start
   ```

   This also starts the `postgres` and `httpd` processes.

   NOTICE

   If the `/etc/init.d/gst` file does not exist, run the `/opt/lgtonmc/bin/nmc_config` script.

Multiple Postgres processes appear. Two or more `httpd` processes appear. The parent `httpd` process runs as root and the child process that is run as the username specified during the installation.

Ensuring that the NMC processes are running on a Windows host

Ensure that the NMC processes `gstd`, `postgres`, and `httpd` are running on the NMC server.

Procedure

1. In **Task Manager**, on the **Processes** tab, confirm that the `gstd`, `httpd`, and `postgres` processes are running.

   Note

   The NMC server software registers the `httpd` as the EMC GST web Service. Two `httpd` processes and multiple postgres process appear when the NMC server is active.

2. If required, start the **EMC GST Service** service.

   This also starts the `postgres` and `httpd` processes.

Preparing to connect to the NMC server

NetWorker 9.0.1 does not support using a browser on the following operating systems to connect to the NMC GUI:

- AIX
- HP-UX
- Solaris

Before you try to connect to the NMC server from a supported host, ensure that JRE is correctly configured.

Enabling temporary internet file caching

Enable the `Temporary internet file caching` attribute in the **Java Control Panel** of the Console client. When you do not enable this option in JRE, `Java WebStart` fails to start.

For Windows Console clients:

1. Browse to **Control Panel** > **Java** > **General** > **Temporary Internet Files** > **Settings** .
2. Ensure that the option **Keep temporary files on my computer** is selected.

For UNIX Console clients:

1. Start the Java web Start Application Manager, `javaws`.
2. Select **Enable temporary internet file caching**.

Windows only, confirming JRE version

For Windows hosts only, ensure that you install the correct JRE program for the installed version of Microsoft Internet Explorer.

- For the 32-bit version of Microsoft Internet Explorer, install the 32-bit version of JRE.
- For the 64-bit version of Microsoft Internet Explorer, install the 64-bit version of JRE.

Use the following procedure to determine the Microsoft Internet Explorer version on the Windows Console client.

Procedure

1. Right click the Microsoft Internet Explorer shortcut and select **Properties**.
2. Review the **Target Location** field.

   The Target Location is:

   - `C:\Program Files (x86)\Internet Explorer\` for the 32-bit version of Microsoft Internet Explorer.
   - `C:\Program Files\Internet Explorer\` for the 64-bit version of Microsoft Internet Explorer.

Adding the NMC server to Exception Site list

Java security settings block the NMC server application.

Add the NMC server address to the JRE Exception site list.

Procedure

1. Open the **Java Control Panel**.
2. On the **Security** tab, select **Edit Site list**.
3. Click **Add**.
4. In the **Location** field, specify the URL to the NMC server in the format `http://server_name:9000`

   where *server_name* is the hostname of the NMC server.

   Note

   If you will connect to the NMC server by using the IP address of the NMC server, add an entry for the IP address in the format `http://ip_address:9000`

5. Click **OK**.
6. On the **Security Warning** window, click **Continue**.
7. Click **OK**.

Connecting to the NMC server GUI

Complete the following procedure to connect to the NMC Server GUI from an NMC client. By default, the NetWorker Authentication Service uses the local user database for user authentication. Specify the NetWorker Authentication Service administrator account to log in to the NMC Server. The *EMC NetWorker Security Configuration Guide*

describes how to configure the NetWorker Authentication Service to use LDAP or AD for user authentication.

Procedure

1. From a supported web browser session, type the URL of the NMC Server:

   `http://`*`server_name`*`:`*`http_service_port`*
   where:

   - *server_name* is the name of the NMC Server.
   - *http_service_port* is the port for the embedded HTTP server. The default HTTP port is 9000.

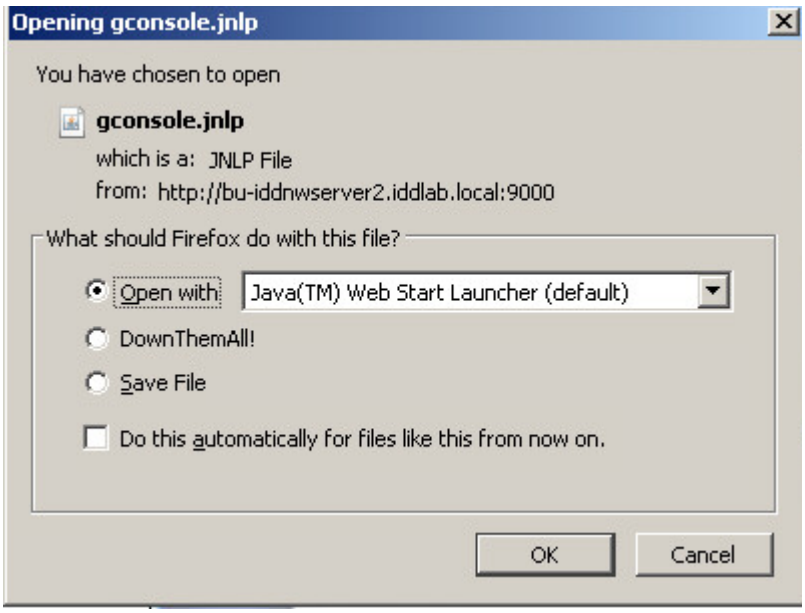
   For example: **`http://houston:9000`**

   The `gconsole.jnlp` file downloads to the host. When the download completes, open the file.

2. When you use Mozilla Firefox on Windows, and the `jnlp` extension is not associated with Java, you are prompted to choose the program that opens the `jnlp` file. Select `Java (TM) Web Start Launcher`. If this application does not appear, browse to the Java 7 folder and select the `javaws.exe` file.

   The following figure provides an example of the file association window that appears with the Mozilla Firefox browser.

Figure 3 Associating a jnlp file with Java (TM) web Start Launcher for Mozilla Firefox



3. In the **Welcome** page, click **Start**.

   Note

   If the **Start** button does not appear but you see a warning message, which states that Java Runtime Environment cannot be detected, click the **here** hyperlink.

4. For Internet Explorer only, if a security warning appears, select **I accept the risks and want to run this application**, then click **Run**.

5. In the **Log in** page, specify the NetWorker Authentication Service administrator username and password, and then click **OK**.
6. In the **Licensing Agreement** page, select **Accept**.
7. If you did not install a support version of JRE on the host, then a prompt to install JRE appears. Cancel the installation, install JRE, and then re-run the installation.
8. In the **Welcome to the NMC Server Configuration Wizard** page, click **Next**.
9. In the **Set authentication server service account for the NMC server** page, review the setting and click **Next**.
10. In the **Define Database Backup Server** page, specify the name of the NetWorker server that will backup the NMC server database, and then click **Next**.
11. In the **Specify a list of managed NetWorker Servers** page:
    a. Specify the names of the NetWorker Server that the NMC Server will manage, one name per line.

    Note

    If the NMC Server is also the NetWorker Server, specify the name of the NetWorker Server.

    b. Leave the default options `Capture Events` and `Gather Reporting Data` enabled.

    Consider the following:

    - Enable the `Capture Events` option to allow the NMC Server to monitor and record alerts for events that occur on the NetWorker Server.
    - Enable the `Gather Reporting Data` option to allow the NMC Server to collect data about the NetWorker Server and generate reports.
12. Click **Finish**. The installation starts the default web browser and connects to the NMC server. The **NetWorker Management Console** window and the **Getting Started** window appear.
13. In the **Enterprise** window, right-click the NetWorker Server, and then select **Launch Application**.

    Note

    If you do not specify any NetWorker Servers in the **Specify a list of managed NetWorker servers** window, then the NMC **Enterprise** window does not display any NetWorker Servers. To add a host, right-click **Enterprise** in the left navigation pane and select **New** > **Host**. The **Add New Host** wizard appears.

Changing the NetWorker servers with access to the host

Use this procedure to define the NetWorker servers that can perform backups and directed recoveries on this host for the listed platforms.

- AIX
- HP-UX

- Linux

By default, any NetWorker server can:

- Backup this host.
- Perform a directed recover to this host.

Use the following procedure to change the NetWorker servers that can access the host.

Procedure

1. Shutdown the NetWorker daemons:

   ```
   nsr_shutdown
   ```

2. Edit or create the following file:

   ```
   /nsr/res/servers
   ```

3. Specify the shortname and FDQN for each NetWorker server, one per line, that require access to the NetWorker host. The first entry in this file becomes the default NetWorker server.

   NOTICE

   When you do not specify any servers, any NetWorker server can backup or perform a directed recovery to the host.

4. Start the NetWorker daemons:
   - AIX: `/etc/rc.nsr`
   - HP-UX: `/sbin/init.d/networker start`
   - Linux: `/etc/init.d/networker start`
5. For AIX and HP-UX only, confirm that the NetWorker daemons started:

   ```
   ps -ef | grep nsr
   ```

Starting the NMC client after the first time

After you use an NMC client to connect to the NMC server, use one of the following methods to access the NMC server again.

Procedure

- Point the browser to the following url:

  `http://server_name:http_service_port`

- Double-click **NetWorker Console** in the Java web Start Application Manager.
- On Windows NMC clients, double-click the **NetWorker Management Console** desktop icon.

  When you use a web browser on a host (NMC client) to connect to the NMC server, ensure that you log in with a valid username and password. Specify the username in one of the following formats:

  - For LDAP/AD authentication: *domain\username*
  - For local user database authentication: *username*

- For tenant configurations: *tenant\domain\username*

CHAPTER 14

Troubleshooting NMC GUI and NetWorker Server Connection Issues

This chapter includes the following topics:

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- Troubleshooting NetWorker daemon or service startup issues.....177
- Troubleshooting NMC GUI and NetWorker server connection issues..... 178

Troubleshooting authorization errors and NetWorker server access issues

This section provides a list of possible causes and resolutions for error messages that are related to NetWorker server authorization issues.

Insufficient permissions

This message appears when you try to perform NetWorker operations, and the username that you used to log in to the NMC server is a member of many operating system groups.

When a user belongs to many groups, the total number of characters in the group names can exceed the buffer size that NetWorker uses to store the group names. NetWorker excludes characters and group names that exceed the buffer size.

To resolve this issue, edit the Usergroup resource to which the user belongs, and then specify the DN for the user in the **External Roles** field.

Token has expired

This message appears when the NMC GUI is open and the token expires for the authenticated user.

To resolve this issue:

1. Click **OK**. The **Enter Credentials** window appears.
2. On the **Enter Credentials** window, specify the password of the user, and then click **OK**. The NetWorker Authentication Service validates the user credentials and if the validation succeeds, generates a new token for the session.

Unable to connect to server: Unable to set user privileges based on user token for SYSTEM: security token has expired

This message appears when the **NetWorker Administration** window is open and the token expires for the authenticated user.

To resolve this issue:

1. Click **OK**. The **NetWorker Administration** window closes.
2. In the Console GUI, select the NetWorker server, and then select **Launch NetWorker Administration**. The **Enter Credentials** window appears.
3. In the **Enter Credentials** window, specify the password of the user, and then click **OK**. The NetWorker Authentication Service validates the user credentials and if the validation succeeds, generates a new token for the session.

Unable to query resource database: security token has expired

This message appears when you run a CLI tool as an authenticated user but the token for the user has expired.

To resolve this issue, run the `nsrlogin` command to generate a new token for the user.

Troubleshooting NetWorker daemon or service startup issues

This section provides a list of possible causes and resolutions for error messages that are related to issues starting NetWorker processes.

Error spawning *NetWorker_Installation_directory*\rabbitmq-server-3.2.4\erts-5.10.4\bin\epmd -daemon (error 0)

This error message appears in the `daemon.raw` file on a Windows NetWorker server when 8.3 filename support is disabled on the drive that contains the NetWorker binaries or the 8.3 short name for the *NetWorker_installation_directory* is absent.

By default, the *NetWorker_installation_directory* structure contains the `EMC NetWorker` directory, which Windows shortens to `EMCNET~1`. When 8.3 filename support is disabled on the drive that contains the NetWorker binaries or the 8.3 short name for the *NetWorker_installation_directory* is absent, Windows cannot find the path to the NetWorker binaries, and NetWorker services fail to start.

Use the `dir` command in the directory that contains the *NetWorker_installation_directory*, to determine if the 8.3 short name is absent for the *NetWorker_installation_directory*.

For example:

- The following `dir` output shows that the `EMC NetWorker` directory does not have an 8.3 name:

```
C:\Program Files>dir /x EMC*
Volume in drive C has no label.
Volume Serial Number is 5C7F-A00F

Directory of C:\Program Files

05/02/2016  10:10 AM    <DIR>                       EMC
NetWorker
```

- The following `dir` output shows that the `EMC NetWorker` directory has the 8.3 name `EMCNET~1`:

```
C:\Program Files>dir /x EMC*
Volume in drive C has no label.
Volume Serial Number is 5C7F-A00F

Directory of C:\Program Files

05/02/2016  10:10 AM    <DIR>          EMCNET~1     EMC
NetWorker
```

To resolve this issue, enable 8.3 filename support, and then set the short name for the *NetWorker_installation_directory*:

1. Ensure that all NetWorker services are stopped.
2. From a command prompt, change to the root directory of the drive that contains the NetWorker installation files.
   For example, **`cd C:\`**
3. Use the `fsutil` command to enable 8.3 filename support.
   For example: **`fsutil behavior set disable8dot3 0`**

4. Use the `fsutil` command to set the short name of the installation directory to the actual name of the installation directory. For example to set the `EMC NetWorker` directory to the short name `EMCNET~1`, type: **`fsutil file setshortname "EMC NetWorker" EMCNET~1`**
5. Type the command "***`NetWorker_installation_dir`***`\nsr\rabbitmq-server-3.2.4\bin\rabbitmq-server.bat" status`**, and then confirm that the output does not display the `Error spawning` message.
6. Start the NetWorker services.

Note

Check each directory name in the path to the *NetWorker_installation_directory*. If a directory name is not a valid 8.3 short name, you must set a short name for it.

Troubleshooting NMC GUI and NetWorker server connection issues

Review this section for information to help you troubleshoot issues that prevent you from connecting to the NMC GUI.

An error occurred while validating user credentials. Verify that NetWorker Authentication Service is running.

This error message appears when the NMC server cannot validate user credentials with the NetWorker Authentication Service.

This message can occur for more than one reason:

- The NetWorker Authentication Service daemon did not start on the NetWorker server that authenticates the NMC server, because another application has started an Apache Tomcat instance on the same service port.
  The following error message also appears in the Catalina log file:

  ```
  SEVERE: Failed to initialize end point associated with
  ProtocolHandler ["ajp-bio-8009"] java.net.BindException:
  Address already in use: JVM_Bind <null>:8009
  ```

  The location of the Catalina log file differs on Windows and Linux:

  - Linux: `/nsr/authc/tomcat/logs/catalina.out`
  - Windows: `C:\Program Files\EMC NetWorker\nsr\authc-server\tomcat\logs\catalina.`*`date`*`.log`

  To resolve this issue, perform the following steps:

  1. Use the `netstat` command on the NetWorker server to determine which application is using the same port as the NetWorker Authentication Service:
     - On Linux: **`netstat -anbo | findstr`** ***`port_number`***
     - On Windows: **`netstat -anp | grep`** ***`port_number`***
  2. Remove the application that starts the other Apache Tomcat instance or change the listening port that the application uses.
  3. Restart the NetWorker processes on the NetWorker server.

Note

The default port number for Apache Tomcat is 8080.

- The firewall configuration prevents the NMC server from contacting the NetWorker Authentication Service on the NetWorker server.

  To resolve this issue, ensure that the firewall rules allow communication between the NMC server and NetWorker server on the port that you configured for the NetWorker Authentication Service. The default port is 9090.

Unable to detect Java Runtime Environment

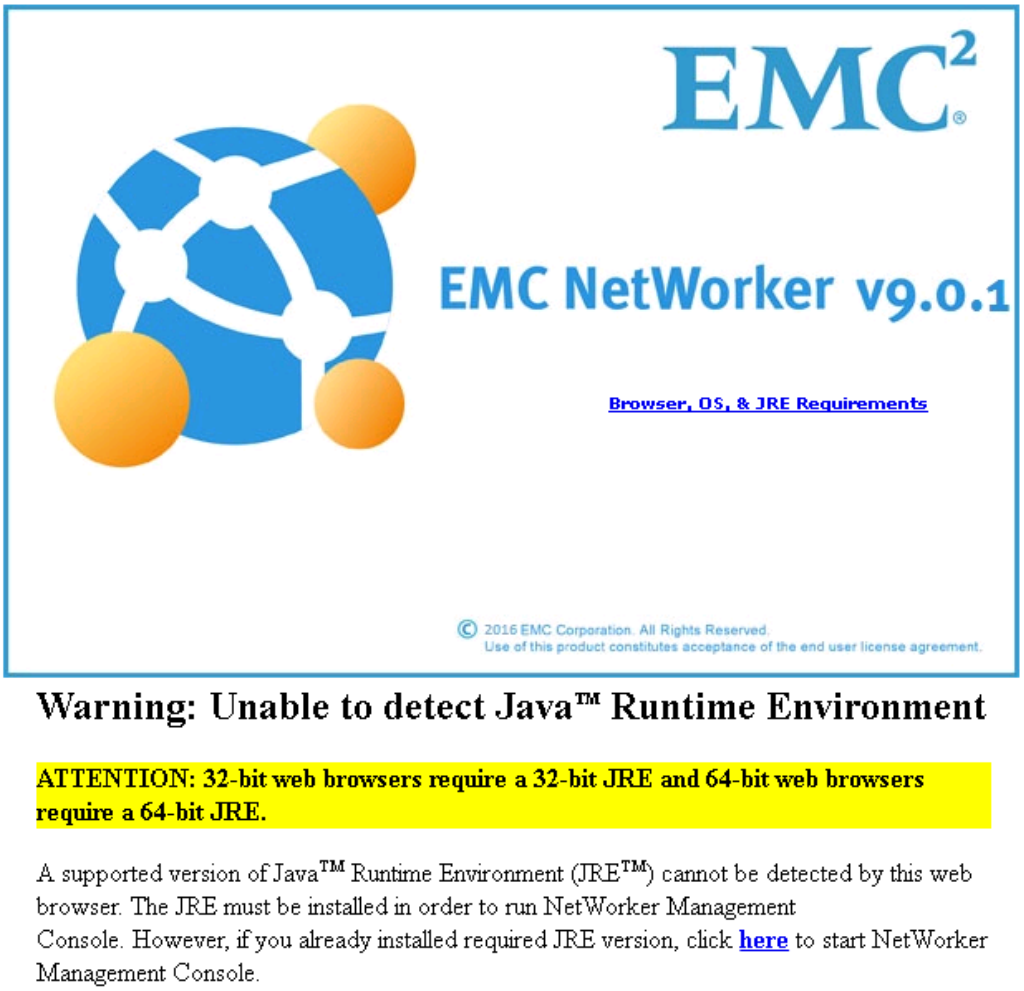
This error message appears on the NMC landing page when you try to connect to the NMC server from a web browser.

Also, the **Start** button does not appear on the landing page, and the following error message appears:

```
Attention: 32-bit web browsers require a 32-bit JRE and 64-bit
web browser require a 64-bit JRE.
```

The following image provides an example of the landing page with the error message.

Figure 4 NMC Landing Page with JRE error message



This message appears when 32-bit JRE is not installed on the machine.

To workaround this issue when you have the 64-bit JRE installed on the host, click the **here** hyperlink to download the `gconsole.jnlp` file, and then use the JNLP file to start the NMC GUI.

To resolve this issue, download the latest update of 32-bit JRE 1.8.

Unable to verify Authentication Server's hostname and/or port

This error message appears when you try to connect to the NMC GUI but the Windows firewall on the NetWorker server is preventing inbound connections by the `java.exe` file.

The following detailed message also appears:

```
If you were prompted, but did not install the certificate, try again
by
selecting view certificate and installing it under root certification
authority.
If no prompt was made for certificate validation, then verify that the
Networker Authentication service is running on the configured host
and port
```

Alternately, this error message might appear:

```
An error occurred while validating user credentials. Verify that
NetWoker Authentication Service is running.
[Failed to connect to NW_SERVER; No error Server Message: Make sure
that server is running.]
```

To resolve this issue, use the `netsh` command to create an inbound rule for the `java.exe` process on the NetWorker server.

For example:

```
netsh advfirewall firewall add rule name="Java - Allow with
Networker 9" dir=in action=allow program="%PATH\java.exe"
enable=yes
```

where *%PATH* is the path to the `java.exe` file. For example, `C:\Program Files\Java\jre1.8.0_73\bin`

Unable to display to Console server web page

If the NMC server web page, for example, `http://houston:9000`, does not display on the NMC client, use the following procedure.

Procedure

1. Verify that the `gstd`, `postgres`, and `httpd` processes are started on the NMC server.
2. Confirm that you specified the correct port number to connect to the NMC server. The default port number that you use to connect to the NMC server is **9000**, but the installation process allows you to specify a different port number.

   To determine the service port:

   a. Review the NMC configuration file on the NMC server. The location of the file differs on Windows and Linux:

      - Linux: `/opt/lgtonmc/etc/gstd.conf`

- Windows: `C:\Program Files\EMC NetWorker\Management\GST\etc\gstd.conf`

b. Confirm the port numbers that are defined for the NMC server:

```
db_svc_port=port_number
http_svc_port=9000
```

c. Try to connect to the NMC server by using the defined port.

3. Review the `gstd.raw` file.

   If the `gstd.raw` file reports the following error, then you must check that the firewall configuration does not block the required ports:

   ```
   Aborting due to: Connection timed out, then confirm that the
   required ports are open on the firewall to enable the console
   client to connect to the Console server.
   ```

   By default, the required ports are:

   - 9000
   - 9001
   - 5432

   The *EMC NetWorker Security Configuration Guide* provides more information about how to determine the required ports for NetWorker hosts.

Unable to connect to the NMC server

An attempt to connect to the NMC server from the web page can fail with the following error messages.

Javascript is required. If security settings of the browser do not allow JavaScript, or JavaScript is disabled, please enable it.

This error message appears when you try to connect to the NMC server with Internet Explorer and JavaScript is disabled.

Use the following procedure to enable JavaScript.

Procedure

1. From the Internet Explorer menu bar, select **Tools** > **Internet Options**.
2. On the **Security** tab, click **Custom level**.
3. In the section **Scripting** > **Active Scripting**, select **Enable**.
4. Click **OK**.

Error: Could not authenticate this username and password

This error message appears when you try to log in to the NMC GUI. To resolve this issue, perform one or more of the following tasks.

- Ensure that you specify the correct username and password.
- Clear the Java Temporary Internet files on the NMC client.

- Delete any desktop shortcuts that were used to connect to the NMC server before the NMC server update, and then re-create the shortcuts.

Error: Problem contacting server (ip_address): Connection timed out: connect

This error occurs when the IP address or hostname of the NMC server changes and you do not reconfigure the `.jnlp` file on the NMC server.

Use the following procedure to reconfigure the `.jnlp` file.

Procedure

1. Log in to the NMC server as root on Linux or administrator on Windows.
2. Run the `gstconfig` command from the following directory location:
   - Linux: `/opt/lgtonmc/bin`
   - Windows: `C:\Program Files\EMC NetWorker\Management\GST\bin`
3. Start the `gstd` daemon on the NMC server.
   - On Linux: `/etc/init.d/gst start`
   - On Windows: Start the EMC GST Service services.

Internal server error when connecting to the NMC server by using the FQDN

Some versions of Internet Explorer 11 cannot connect to the NMC server when you specify the FQDN of the NMC server in the URL.
A message similar to the following appears:

```
Internal Server Error
The server encountered an internal error or misconfiguration
and was unable to complete your request.
Please contact the server administrator, @@ServerAdmin@@ and
inform them of the time the error occurred, and
anything you might have done that may have caused the error to
occur.
More information about this error may be available in the
server error log.
```

To resolve this issue, disable **Enable Enhanced Protected Mode**.

Procedure

1. From the Internet Explorer **Tools** menu, select **Internet Options**.
2. On the **Advanced** tab, in the **Settings** group box, clear **Enable Enhanced Protected Mode**.
3. Close the Internet Explorer application.
4. Open the Internet Explorer application and connect to the NMC server.

Unable to launch NetWorker Management Console

This message appears on an NMC client when the Java Cache was not cleared after an update to the NMC server software.

To resolve this issue, clear the Java Cache on the NMC client.

Error: error while loading shared libraries: libsasl2.so.2: wrong ELF class: ELFCLASS64

This message occurs on 64-bit Linux systems, when you do not install the 32-bit version of the `cyrus-sasl` package.

To resolve this issue, perform the following steps.

Procedure

1. Log in to the NMC server, as root.
2. Install the 32-bit operating system `cyrus-sasl` package.
3. Start the NMC daemons:

   ```
   /etc/init.d/gst start
   ```

   This also starts the `postgres` and `httpd` processes.

   NOTICE

   If the `/etc/init.d/gst` file does not exist, run the `/opt/lgtonmc/bin/nmc_config` script.

   Multiple Postgres processes appear. Two or more `httpd` processes appear. The parent `httpd` process runs as root and the child process that is run as the username specified during the installation.

Unable to start gstd process on NMC server

This section describes how to troubleshoot when the NMC client cannot connect to the NMC server because the `gstd` process does not start.

When the `gstd` daemon does not start on the NMC server, review the following log files to obtain the exact error message:

- `gstd.raw`
- `web_ouput`

The following directories contain the NMC server log files:

- Linux: `/opt/lgtonmc/logs`
- Windows: `C:\Program Files\EMC NetWorker\Management\GST\logs`

Common NMC server start-up errors include the errors that are described in the following sections.

Error: 'Web server exited unexpectedly.'

The following error appears when the httpd process is not running on the Console server.

```
This error appears “Web server exited unexpectedly". Possible
reasons include: previous instance of %s is still running.
Please see 'web_output' file in this product's logs directory
for the web server's output messages.”
```

Common reasons for httpd start-up failures include:

- The httpd web service port, **9000** by default is in use by another process.
- On LINUX, an orphaned httpd process is running on the console server. End the process by sending the SIGTERM signal, `kill -TERM`.
  Do not use the `kill -9` command.

- On Windows, another application is using the Apache server and the httpd daemon requires more time to start up.

Use the following procedure to enable the delayed start option for the EMC gstd process.

Procedure

1. In the **Services** applet:
   a. Right-mouse click the **EMC gstd** service.
   b. Select **Properties**.
2. On the **General** tab, change the **Startup type** to **Automatic (delayed start).**
3. Click **Ok**.
4. Stop the **EMC gstd** service.
5. Start the **EMC gstd** service.
6. When you update the NetWorker software, enable the delayed start setting again.

Error: error while loading shared libraries: libsasl2.so.2: wrong ELF class: ELFCLASS64

This message appears on 64-bit Linux systems when the 32-bit version of the `cyrus-sasl` package is not installed. Use the following procedure to resolve this issue.

Procedure

1. Install the 32-bit version of the `cyrus-sasl` package.
2. Start the `gstd` daemon:

```
/etc/init.d/gst start
```

Error: 'gstd: Internal error: could not get database handle.'

This error appears when the `postgres` process cannot start. Review the `db_output.log` file for specific errors.

Common reasons for this error include the following.

- Insufficient disk space in the file system that contains the NMC database directory.
- An orphaned `postgres` process is running on the NMC server.
  - On Linux, end the process by sending the SIGTERM signal, `kill -TERM`.

    Note

    Do not use `kill -9`.
  - On Windows, stop the EMC GST database service and then start the service.
- The NMC server is running an unsupported version of JRE.

Warning: unable to detect Java Runtime Environment

This message appears when the JRE is not installed on the NMC client.

For Windows only, the JRE version that is installed on the Console client does not match the Microsoft Internet Explorer version.

This message appears on 64-bit Windows systems when you use:

- 64-bit version of the browser to connect to the NMC server, but the 32-bit version of JRE is installed.
- 32-bit version of the browser to connect to the NMC server, but the 64-bit version of JRE is installed.
- To resolve this issue:
  - Install JRE on the NMC client.
  - For Windows only, install the correct JRE program for the installed Microsoft Internet Explorer version.
    - For the 32-bit version of the browser, install the 32-bit version of JRE.
    - For the 64-bit version of the browser, install the 64-bit version of JRE.

Use the following procedure to determine the Microsoft Internet Explorer version on the Windows Console client.

Procedure

1. Right-mouse click the **Microsoft Internet Explorer** shortcut and select **Properties**.
2. Review the **Target Path** field.

   The Target Path is:

   - `C:\Program Files (x86)\Internet Explorer\` for the 32-bit version of Microsoft Internet Explorer.
   - `C:\Program Files\Internet Explorer\` for the 64-bit version of Microsoft Internet Explorer.

Unable to connect to server: Failed to contact using UDP ping

This message appears when the NMC console fails to connect to the NetWorker server because the NetWorker daemons are not running on the NetWorker server.

Cannot log in to the NMC server with Firefox

On a Linux NMC client, a message similar to the following can appear when you use Firefox to log in to the NMCserver.

```
Internal Server Error The server encountered an internal error
or misconfiguration and was unable to complete your request.
Please contact the server administrator, @@ServerAdmin@@ and
inform them of the time the error occurred, and anything you
might have done that may have caused the error. More
information about this error may be available in the server
error log.
```

Use the following procedure to resolve this issue.

Procedure

1. Remove the classic plugin file `libjavaplugin_oji.so` that is located in the Firefox plugins directory and any associated symbolic links.
2. Create a symbolic link to the Java Plugin `libnpjp2.so` file in the Firefox plugins directory:

   ```
   cd Firefox/plugins
   ln -s JRE/lib/arch/libnpjp2.so .
   ```

where:

- *Firefox* is the installation path.
- *JRE* is the Java installation path.
- *arch* is the directory appropriate to the computer architecture.
- For SuSE11 only, install these operating system packages:
  - glibc-locale-2.11.1
  - glibc-locale-32bit-2.11.1

Without these packages, a message similar to the following appears and you cannot log in to the NMC server:

```
Internal Server Error
The server encountered an internal error or
misconfiguration and was unable to complete your request.
Please contact the server administrator, @@ServerAdmin@@
and inform them of the time the error occurred, and
anything you might have done that may have caused the
error. More information about this error may be available
in the server error log.
```

Using IPv6 addresses to connect to the NMC GUI

If the NMC server uses IPv4 and IPv6 addresses, you can configure the JRE application on the host that you use to connect to the NMC GUI to use the IPv6 address to connect to the NMC server.

Perform the following steps on the host that you use to connect to the NMC GUI.

Procedure

1. Close down any web browser session that use Java.
2. Configure the *JAVAWS_VM_ARGS* environment variable.
   - On Windows, perform the following steps:
     a. Browse to **Control Panel** > **System** > **Advanced System Settings.**
     b. On the **Advanced** tab, click **Environment Variables...**
     c. In the **System Variables** section, click **New**.
     d. In the **Variable name** field, specify **`JAVAWS_VM_ARGS`**.
     e. In the **Variable value** field, specify **`-Djava.net.preferIPv6Addresses=true`**
     f. Click **OK** to close the **Environment Variables** window, and then click **OK** to close the **System Properties** window.
   - On Linux and UNIX, type: `export` ***`JAVAWS_VM_ARGS`***`="`**`-Djava.net.preferIPv6Addresses=true`**`"`
3. Start the browser and connect to the NMC GUI.

Unable to connect to server: Unable to set user privileges based on user token for *username*: Unable to validate the security token

This error message appears when you try to connect to a NetWorker server that is not the host that is used to authenticate the NMC users.

To resolve this issue, establish a trust between the NMC server and the NetWorker server, and then configure user access. "Configuring the NMC server to manage additional NetWorker servers" provides more information.

JAVA_HOME environment variable might not be set correctly. Ensure that JAVA_HOME is set to 64-bit JRE directory.

This message appears when the *JAVA_HOME* environment variable is not set to the 64-bit version of the JRE software. On the NetWorker server, the nsrd daemon does not start. During the installation process, the following error message may appear: `Service 'NetWorker Backup and Recover Server' (nsrd) failed to start. Verify that you have sufficient privileges to start system services.` To resolve this issue, set the *JAVA_HOME* environment variable to the directory for the 64-bit JRE software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Browse to **Control Panel** > **System** > **Advanced System Settings.**
3. On the **Advanced** tab, click **Environment Variables...**
4. In the **System Variables** section, click **New**.
5. In the **Variable name** field, type **`JAVA_HOME`**.
6. In the **Variable value** field, type the path to the Java directory.

   For example, `C:\Program Files\Java\jre1.8.0_xx`
7. Click **OK**.
8. Click **OK** to close the **Environment Variables** window, and then click **OK** to close the **System Properties** window.