

Dell EMC NetWorker

Version 19.1

Installation Guide

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Preface

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

If a product does not function correctly or does not function as described in this document, contact a technical support professional.

 **Note:** This document was accurate at publication time. To ensure that you are using the latest version of this document, go to the Support website <https://www.dell.com/support>.

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
03	July 10, 2019	RHEL and SuSE package requirements are updated.
02	June 03, 2019	Removed the reference of Java 9.
01	May 20, 2019	First release of this document for NetWorker 19.1 .

Related documentation

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

- *NetWorker E-LAB Navigator*
Provides compatibility information, including specific software and hardware configurations that NetWorker supports. To access E-LAB Navigator, go to <https://elabnavigator.emc.com/eln/elhome>.
- *NetWorker Administration Guide*
Describes how to configure and maintain the NetWorker software.
- *NetWorker Network Data Management Protocol (NDMP) User Guide*
Describes how to use the NetWorker software to provide data protection for NDMP filers.
- *NetWorker Cluster Integration Guide*
Contains information related to configuring NetWorker software on cluster servers and clients.
- *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.


- *NetWorker Updating from a Previous Release Guide*
Describes how to update the NetWorker software from a previously installed release.
- *NetWorker Release Notes*
Contains information on new features and changes, fixed problems, known limitations, environment and system requirements for the latest NetWorker software release.
- *NetWorker Command Reference Guide*
Provides reference information for NetWorker commands and options.
- *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.
- *NetWorker Performance Optimization Planning Guide*
Contains basic performance tuning information for NetWorker.
- *NetWorker Server Disaster Recovery and Availability Best Practices Guide*
Describes how to design, plan for, and perform a step-by-step NetWorker disaster recovery.
- *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 storage arrays.
- *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.
- *NetWorker Security Configuration Guide*
Provides an overview of security configuration settings available in NetWorker, secure deployment, and physical security controls needed to ensure the secure operation of the product.
- *NetWorker VMware Integration Guide*
Provides planning and configuration information on the use of VMware in a NetWorker environment.
- *NetWorker Error Message Guide*
Provides information on common NetWorker error messages.
- *NetWorker Licensing Guide*
Provides information about licensing NetWorker products and features.
- *NetWorker REST API Getting Started Guide*
Describes how to configure and use the NetWorker REST API to create programmatic interfaces to the NetWorker server.
- *NetWorker REST API Reference Guide*
Provides the NetWorker REST API specification used to create programmatic interfaces to the NetWorker server.
- *NetWorker 19.1 with CloudBoost 19.1 Integration Guide*
Describes the integration of NetWorker with CloudBoost.
- *NetWorker 19.1 with CloudBoost 19.1 Security Configuration Guide*
Provides an overview of security configuration settings available in NetWorker and Cloud Boost, secure deployment, and physical security controls needed to ensure the secure operation of the product.

- **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.
- **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

The following conventions are used 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

The following type style conventions are used in this document:

Table 2 Style conventions

Bold	Used for interface elements that a user specifically selects or clicks, for example, names of buttons, fields, tab names, and menu paths. Also used for the name of a dialog box, page, pane, screen area with title, table label, and window.
<i>Italic</i>	Used for full titles of publications that are referenced in text.
Monospace	Used for: <ul style="list-style-type: none"> • System code • System output, such as an error message or script • Pathnames, file names, file name extensions, prompts, and syntax • Commands and options
<i>Monospace italic</i>	Used for variables.
Monospace bold	Used for user input.
[]	Square brackets enclose optional values.
	Vertical line indicates alternate selections. The vertical line means or for the alternate selections.
{ }	Braces enclose content that the user must specify, such as x, y, or z.
...	Ellipses indicate non-essential information that is omitted from the example.

You can use the following resources to find more information about this product, obtain support, and provide feedback.

Where to find product documentation

- <https://www.dell.com/support>
- <https://community.emc.com>

Where to get support

The Support website <https://www.dell.com/support> provides access to product licensing, documentation, advisories, downloads, and how-to and troubleshooting information. The information can enable you to resolve a product issue before you contact Support.

To access a product-specific page:

1. Go to <https://www.dell.com/support>.
2. In the search box, type a product name, and then from the list that appears, select the product.

Knowledgebase

The Knowledgebase contains applicable solutions that you can search for either by solution number (for example, KB000xxxxxx) or by keyword.

To search the Knowledgebase:

1. Go to <https://www.dell.com/support>.
2. On the **Support** tab, click **Knowledge Base**.
3. In the search box, type either the solution number or keywords. Optionally, you can limit the search to specific products by typing a product name in the search box, and then selecting the product from the list that appears.

Live chat

To participate in a live interactive chat with a support agent:

1. Go to <https://www.dell.com/support>.
2. On the **Support** tab, click **Contact Support**.
3. On the **Contact Information** page, click the relevant support, and then proceed.

Service requests

To obtain in-depth help from Licensing, submit a service request. To submit a service request:

1. Go to <https://www.dell.com/support>.
2. On the **Support** tab, click **Service Requests**.

Note: To create a service request, you must have a valid support agreement. For details about either an account or obtaining a valid support agreement, contact a sales representative. To get the details of a service request, in the *Service Request Number* field, type the service request number, and then click the right arrow.

To review an open service request:

1. Go to <https://www.dell.com/support>.
2. On the **Support** tab, click **Service Requests**.
3. On the **Service Requests** page, under **Manage Your Service Requests**, click **View All Dell Service Requests**.

Online communities

For peer contacts, conversations, and content on product support and solutions, go to the Community Network <https://community.emc.com>. Interactively engage with customers, partners, and certified professionals online.

How to provide feedback

Feedback helps to improve the accuracy, organization, and overall quality of publications. You can send feedback to DPAD.Doc.Feedback@emc.com.

CHAPTER 1

Introduction

This chapter includes the following topics:

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About the NetWorker product


The 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 Online Support 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

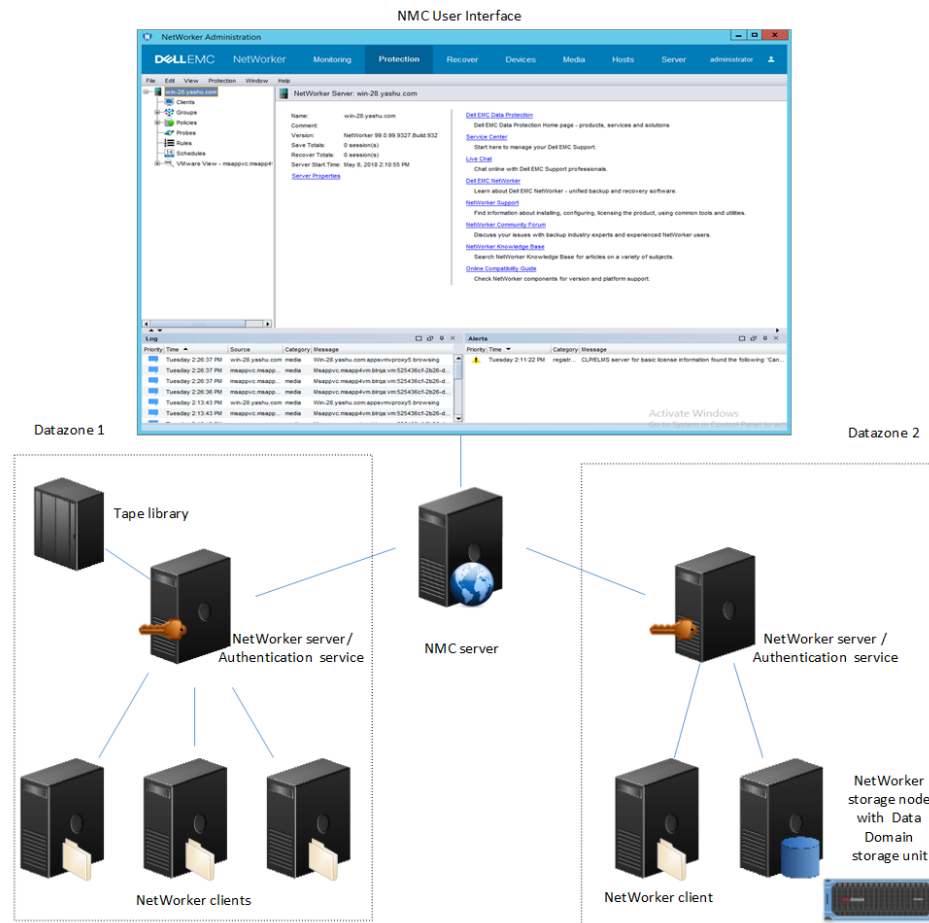
 **Note:** The NetWorker software package does not include the Avamar client software. To install Avamar client, see *Avamar Installation Guide*.

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 19.1 environment. You can configure the NetWorker Authentication Service to use a local user database or external identity providers (LDAP, LDAPS, and AD) for authentication.


NetWorker Server

The NetWorker Server is a collection of processes and programs that are installed on a host that performs NetWorker services. 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 grow to become prohibitively large over time and can negatively impact backup performance.
Media database (mm)	Tracks the following information: <ul style="list-style-type: none"> • 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. <p> Note: There is only one media database per server.</p> <p>The media database can grow to become prohibitively large over time and negatively impact backup performance.</p>
Jobs (jobsdb)	Stores, for a limited time, information about NetWorker job operations, for example: <ul style="list-style-type: none"> • Scheduled and queued backup and recovery operations. • Realtime backup and restore related activities. • All NMC server communication. <p>Recovery operations do not require the data that is stored in the jobsdb database.</p>
Resource (resdb)	Stores the configuration information for a NetWorker Server, for example: <ul style="list-style-type: none"> • v 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 (nsrmaq) 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 Windows 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 *NetWorker E-LAB Navigator* provides more information about operating system support for BBB.

NetWorker Base Client (NetWorker Client)

The NetWorker Client software communicates with the NetWorker Server to support backup and recover functionality. The 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 *NetWorker E-LAB Navigator* 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` 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 Microsoft (NMM) 8.2.3 and 8.2.4 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 application and database server. The NMC Server manages all NetWorker Servers and Clients. The NMC Server provides reporting and monitoring capabilities for all NetWorker Servers and Clients in the environment. The 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 *NetWorker REST API Getting Started Guide* describes how to use NetWorker REST API, and the *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 NetWorker Runtime Environment or 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, nsrmmmd, nsrjobd, nsrmmgd, nsrlcpd, nsrlogd, nsrsnmd, nsrncpd, nsrctld, nsrdispd, nsrmmqd, nsrvmsd
NetWorker Client	nsrexecd
NetWorker Extended Client	nsrpsd
NetWorker Storage Node	nsrexecd, nsrmmmd, nsrlcpd, nsrsnmd
NetWorker Management Console server	gstd, httpd, postgres, tomcat, gstsnptrapd (optional)

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

- The `nsrmmmd` daemon or the `nsrmmmd.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 media manager 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 `nsrncpd` daemon or the `nsrncpd.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 PostgreSQL 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 EMC GST Web service. There are 2 or more `httpd` daemons.
- `gstsnptrapd`: 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 EMC GST Trap Handler.

Note: On Windows platform, after NetWorker server upgrade, the NetWorker services fail to start, and the daemon.raw logs a message notifying that RabbitMQ service failed to start. To fix this issue, you must delete the RabbitMQ folder located in `C:\Windows\System32\config\systemprofile\AppData\Roaming` file path and restart the services.

Dell EMC Licensing Solution

NetWorker 9.0.x and later servers use the Dell EMC Licensing Solution.

The Dell EMC Licensing Solution is a licensing standard that stores all licensing information for the environment in one license file, which is stored on both the NetWorker server and, if using a served license, the License Server.

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

Front-end Capacity Estimation

NetWorker supports an automatic reporting mechanism that communicates with Dell EMC's Usage Intelligence portal. You must install the EMC Secure Remote Services (ESRS) appliance version 3.20.20.08 or later from the [ESRS Virtual Edition Product Page](#), and configure NetWorker to communicate with the appliance. Review the [ESRS v3 Installation Training](#) video for details about how to install the ESRS appliance.

The ESRS RAP resource can be configured to send periodic license, configuration and usage information to Dell EMC as well as track the liveness of NetWorker servers. Several reports are sent, the details of the reports are extracted from command line tools.

The command line tool `nsrcapinfo`, generates an estimate of the total data protected in a NetWorker datazone. The capacity estimate uses a simple heuristic where it measures the maximum full backup for each application type and each client in the datazone, this is defined as the client's capacity. The sum of each individual client's capacity provides a capacity estimate for the entire datazone. Configuration information is extracted from the RAP database through the command line tool `nsrcapinfo`. The `nsrcapinfo` tool automatically hides sensitive information like passwords, but can also be configured to hide other information that customers may not wish to share with Dell EMC.

The *NetWorker Command Reference Guide* provides more details on `nsrcapinfo`.

CHAPTER 2

Software Requirements

This chapter includes the following topics:

- [NetWorker Authentication Service](#).....28
- [NMC Server Features and System Requirements](#)..... 28
- [Multi-locale Datazone Requirements](#).....29
- [Data Domain System Requirements](#)..... 31
- [TCP/IP Requirements](#)..... 31
- [NetWorker Management Web UI Browser Requirements](#).....32
- [NMC Browser and JRE Requirements](#).....32

NetWorker Authentication Service


NetWorker 19.1 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 automatically installs the NetWorker Authentication Service software on the NetWorker Server host.

The NetWorker Authentication Service requires NetWorker Runtime Environment or 64-bit Java 8. Before you start the NetWorker Server installation, install the Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.

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 9090. The NetWorker Authentication Service listens on port 9090 by default. The section "Troubleshooting NMC GUI and NetWorker Server connection issues" provides more information.

 **Note:** If the installation does not detect NetWorker Runtime Environment, 64-bit Java 8 on the host, the installation will not continue.

NMC Server Features and System Requirements

The NetWorker Management Console server (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 a 2 CPU processor and 8GB of RAM.

If NMC server is handling a large scale NetWorker server with a large number of users, then size the NMC server with 32 GB RAM and 8 core CPU, with greater than or equal to 1.5 GHz.

It is recommended that you install the NMC Server software on a host that is not the NetWorker Server in the following scenarios:

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

Multi-locale Datazone Requirements

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

The NetWorker software enables you to configure 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 *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 *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.
- `nsrccd.raw` file—The client push log.
- `gstd.raw` file—The NMC server log file.
- `networkr.raw` file—The Windows recovery log file.

The *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, `eur-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
```

Data Domain System Requirements

NetWorker supports Data Domain systems with a minimum version of DDOS 5.7.

Before you install the NetWorker software on the NetWorker hosts, ensure that all Data Domain systems run a supported DDOS version. The *NetWorker E-LAB Navigator* provides more information about the supported DDOS versions.

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
```

- On Windows hosts, NetWorker does not require changes to the `hosts` file. 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 match the name that the IP address resolves to when using the `nslookup` command.
- Forward and reverse DNS lookups for the host are successful.
- 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.

NetWorker Management Web UI Browser Requirements

You can install NetWorker Management Web UI and configure it to manage the NetWorker servers.

The following are the supported web browsers for NetWorker Management Web UI:

- Google Chrome
- Mozilla Firefox
- Microsoft Edge
- Microsoft Internet Explorer 11
- Safari


NMC Browser and JRE 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 .

Table 5 Supported Browsers and JRE versions

Browsers	JRE Version 64 Bit
<ul style="list-style-type: none"> • Mozilla Firefox • Chrome • Safari • Microsoft IE • Microsoft IE Edge 	<ul style="list-style-type: none"> • 8 • 9

 **Note:** JRE requirements are not applicable when you install NetWorker Runtime Environment.

PART 1

Linux Installation

This chapter includes the following topics:

[Chapter 3, "CentOS, OEL, SuSE and RHEL Installation"](#)

[Chapter 4, "Debian and Ubuntu Installation"](#)

[Chapter 5, "Fedora client installation"](#)

CHAPTER 3

CentOS, OEL, SuSE and RHEL Installation

This chapter includes the following topics:

- [Road Map for Installing the NetWorker Software](#)..... 36
- [Determining the initialization system](#).....36
- [Preparing the Linux Target Host](#)..... 36
- [Installing the NetWorker Software](#).....39
- [Installing the NMC server](#).....54
- [Uninstalling the NetWorker software](#)..... 61

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 *NetWorker Licensing Guide* provides information.

Determining the initialization system

The NetWorker RPMs will automatically install the application start up related scripts based on the initialization system running on your machine. You can identify the initialization system that is running on your Linux system by running the following procedure:

Procedure

1. Run the command - `ps -p 1`

If you are running a sysVinit system, then you will see the following output:

```
[root@ /]# ps -p 1
  PID  TTY      TIME    CMD
   1   ?        00:02:48  init
```

If you are running a systemd system, then you will see the following output:

```
[root@ /]# ps -p 1
  PID  TTY      TIME    CMD
   1   ?        00:02:48  systemd
```

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.

3. If the SELinux on your Linux system is in “enforcing” mode then you must change is to “permissive” by running the command `setenforce permissive`

Note: After the installation is complete, you must revert the SELinux to default value, that is, the value before the installation of RPMs

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.i686.rpm` or later

RHEL 7 and later 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.e17` or later
- `nss-softokn-freebl.i686 0:3.15.4-2.e17` or later
- `libncursesw.so.5`

Note: For PowerPC (PPC) hosts, install the 32-bit Pluggable Authentication Modules (PAM) library, `pam-1.1.8-12.e17_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-19.1-0.x86_64.rpm
error: Failed dependencies:
libcap.so.1() (64bit) is needed by lgtoclnt-19.1-0.x86_64
libstdc++.so.5() (64bit) is needed by lgtoclnt-19.1-0.x86_64
libstdc++.so.5(CXXABI_1.2) (64bit) is needed by
lgtoclnt-19.1-0.x86_64
libstdc++.so.5(GLIBCXX_3.2) (64bit) is needed by
lgtoclnt-19.1-0.x86_64
```

libstdc++.so.5 (GLIBCPP_3.2.2) (64bit) is needed by
lgtocInt-19.1-0.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`

 **Note:** For SLES 15, there is a dependency on `libncursesw`.

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.

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

Table 6 Linux default file locations

NetWorker package	Location
NetWorker Authentication Service (emcauthc)	/opt/nsr/authc
Client (lgtocInt)	/usr/lib /usr/sbin /usr/bin /opt/nsr
Storage node (lgtonode)	/usr/lib /usr/sbin
Server (lgtoserv)	/usr/sbin
Man pages (lgtoman)	/usr/share
French language pack (lgtofr)	/usr/lib /usr/sbin /usr/share /opt/nsr
Japanese language pack (lgtolja)	/usr/lib /usr/sbin /usr/share /opt/nsr
Korean language pack (lgtoko)	/usr/lib

Table 6 Linux default file locations (continued)

NetWorker package	Location
	/usr/sbin /usr/share /opt/nsr
Simplified Chinese language pack (lgtozh)	/usr/lib /usr/sbin /usr/share /opt/nsr
Client file index, media database, resource database	/nsr

Changing the Default Directory Locations

To store the configuration, log, and database files on file system that has more free disk space than the / file system, create a symbolic link from a new directory to the /nsr directory.

Procedure

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

For example:

```
mkdir /disk2/nsr
```

3. Link the new directory to the /nsr directory, by typing the following command:

```
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.

Table 7 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux IBM PowerPC	nw19.1_linux_ppc64.tar.gz	26 MB	26 MB
Linux IBM PowerLE	nw_linux_ppc64le.tar	48 MB	48 MB
Linux x86	nw19.1_linux_x86.tar.gz	256 MB	261 MB
Linux x86-64	nw19.1_linux_x86_64.tar.gz	1.12 GB	1.26 GB

Procedure

1. Download the NetWorker software package from the 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 typing the `tar` command.

For example:

```
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 lgtocInt-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.

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

- To use the `rpm` installation application, type one of the following commands:

- To install the NetWorker software in the default location, type:

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

- To install the NetWorker software in a non-default location, type:

```
rpm -ivh --relocate /usr=/path lgtocInt-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.
- *path* is an existing directory in which to install the NetWorker software.

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	<code>lgtotdclnt*.rpm</code>
Adapter software	<code>lgtoadpt*.rpm</code> Note: The <code>lgtoadpt</code> package is required when NMM clients are in the datazone.
Block Based Backup software	<code>lgtobbb-nw*.rpm</code> Note: Before you install the BBB software, ensure that you install the OS <code>lsb</code> package. On RHEL, install the <code>lsb</code> package. On SUSE, install the <code>lsb-release</code> package.
Man pages	<code>lgtoman*.rpm</code>
Simplified Chinese language support	<code>lgtozh*.rpm</code>
French language support	<code>lgtofr*.rpm</code>
Japanese language support	<code>lgtoja*.rpm</code>
Korean language support	<code>lgtoko*.rpm</code>

4. For installations to a non-default location only, perform the following actions:
 - a. Modify the `PATH` variable for the root account to include the `bin` and `sbin` subdirectories.
 For example, if the non-default location is `/nw`, add `/nw/bin:/nw/sbin` to the `PATH` variable.
 - b. Modify the `LD_LIBRARY_PATH` variable to include the `/lib/nsr` directory.
 For example, if the non-default location is `/nw`, type

```
LD_LIBRARY_PATH=/nw/lib/nsr
```
5. Confirm that the NetWorker daemons have started, by typing the command below, based on the initialization system running on your Linux machine :
 - `sysvinit—/etc/init.d/networker status`
 - `systemd—systemctl status networker`

Installing the software NetWorker Storage Node

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.

Table 9 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86	nw19.1_linux_x86.tar.gz	256 MB	261 MB
Linux x86-64	nw19.1_linux_x86_64.tar.gz	1.12 GB	1.26 GB

Procedure

1. Download the NetWorker software package from the 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 typing the `tar` command.

For example:

```
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 lgtoclnw-nw*.rpm
lgtotdclnt*.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.

i **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 one of the following commands:
 - To install the NetWorker software in the default location, type:


```
rpm -ivh lgtoclnw-nw*.rpm lgtotdclnt*.rpm lgtonode*.rpm
optional_package [optional_package]...
```
 - To install the NetWorker software in an alternate location, type:

```
rpm -ivh --relocate /usr=/path lgtoclnw-nw*.rpm
lgtotdclnt*.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.
- *path* is an existing directory in which to install the NetWorker software.

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.

For more information on NetWorker packages, refer to the *NetWorker E-LAB Navigator*.

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.
Man pages	lgtoman*.rpm
Simplified Chinese language support	lgtozh*.rpm
French language support	lgtofr*.rpm
Japanese language support	lgtolja*.rpm
Korean language support	lgtoko*.rpm

4. For installations to a non-default location only, perform the following actions:
 - a. Modify the *PATH* variable for the root account to include the `bin` and `sbin` subdirectories.

For example, if the non-default location is `/nw`, add `/nw/bin:/nw/sbin` to the `PATH` variable.

- b. Modify the `LD_LIBRARY_PATH` variable to include the `/lib/nsr` directory.

For example, if the non-default location is `/nw`, type

```
LD_LIBRARY_PATH=/nw/lib/nsr
```

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

Initialization system	Command
sysvinit	<code>/etc/init.d/networker start</code>
systemd	<code>systemctl start networker</code>

Installing the NetWorker Server Software

Use the `rpm` or `yum` command to install the NetWorker Server software 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 Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.

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.

Note: To use Data Domain with NetWorker, the NetWorker server hostname should be in lower case. Data Domain functions with lowercase and DD Cloud tier operations fails if it is mixed case.

Procedure

1. Connect to the host with the root account.
2. Download the NetWorker software package from the 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 typing the `tar` command.

For example:

```
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 lgtocln*.rpm lgtotdclnt*.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.

i **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 one of the following commands:

- To install the NetWorker software in the default location, type:

```
rpm -ivh lgtocln*.rpm lgtotdclnt*.rpm lgtonode*.rpm
lgtoserv*.rpm lgtoauthc*.rpm optional_package
[optional_package]...
```

- To install the NetWorker software to an alternate location, type:

```
rpm -ivh --relocate /usr=/path
lgtocln*.rpm lgtotdclnt*.rpm lgtonode*.rpm lgtoserv*.rpm
optional_package [optional_package]...
```

i **Note:** The installation process does not relocate NetWorker Authentication Service files.

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.
- *path* is an existing directory in which to install the NetWorker software.

i **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 11 Optional NetWorker packages

Package	Description
Adapter software	lgtoadpt*.rpm i Note: The lgtoadpt package is required when NMM clients are in the datazone.
Block Based Backup software	lgtobbb-nw*.rpm i 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.
Man pages	lgtoman*.rpm
Simplified Chinese language support	lgtozh*.rpm

Table 11 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`.

Note: You can run the configuration script in silent mode. The `authc_configure` UNIX man page and the *NetWorker Command Reference Guide* provides detailed information about how to run the script in silent mode.

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, `/opt/nre/java/latest`.

Note: If you are using JRE, then the default location is `/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.
Specify a password that contains at least six characters and does not contain dictionary words.
10. At the **Confirm the password** prompt, type the keystore password.
11. (Optional) If the password for the Java Common Truststore on the host is not the default password `changeit`, then the **Specify the password for the Java**

Common Truststore at /opt/nre/java/latest/jre/lib/security/cacerts prompt appears. Type the Java Common Truststore password.

12. 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 long
- One uppercase letter
- One lowercase letter
- One special character
- One numeric character

13. 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 Service uses the *nsrtomcat* account to perform internal operations only.

14. For installations to a non-default location only, perform the following actions:
 - a. Modify the *PATH* variable for the root account to include the *bin* and *sbin* subdirectories.
For example, if the non-default location is */nw*, add */nw/bin:/nw/sbin* to the *PATH* variable.
 - b. Modify the *LD_LIBRARY_PATH* variable to include the */lib/nsr* directory.
For example, if the non-default location is */nw*, type

```
LD_LIBRARY_PATH=/nw/lib/nsr
```

- c. Create a symbolic link for the *cst* folder. For example, if the non-default location is */nw*, type:

```
ln -s /nw/opt/nsr/cst /opt/nsr/cst
```

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

Initialization system	Command
sysvinit	<code>/etc/init.d/networker start</code>
systemd	<code>systemctl start networker</code>

16. To confirm that the NetWorker daemons have started on the host, from a command prompt type:

Initialization system	Command
sysvinit	<code>/etc/init.d/networker status</code>
systemd	<code>systemctl status networker</code>

Initialization system	Command
-----------------------	---------

- License the NetWorker Server. The Verify the Installation chapter provides more information.

Silent Installation of the NetWorker Server Software

Run `authc_configure` with the `-silent` option to install the NetWorker Server software in silent mode.

Before you begin

Before you start the NetWorker Server installation, install the Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.

Procedure

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

For example:

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

- 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 lgtocln*.rpm lgtotdclnt*.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 one of the following commands:
 - To install the NetWorker software in the default location, type:

```
rpm -ivh lgtocln*.rpm lgtotdclnt*.rpm lgtonode*.rpm
lgtoserv*.rpm lgtoauthc*.rpm optional_package
[optional_package]...
```

- To install the NetWorker software to an alternate location, type:

```
rpm -ivh --relocate /usr=/path
lgtocln*.rpm lgtotdclnt*.rpm lgtonode*.rpm lgtoserv*.rpm
optional_package [optional_package]...
```


Note: The installation process does not relocate NetWorker Authentication Service files.

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.
- *path* is an existing directory in which to install the NetWorker software.

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.

5. To complete the configuration of NetWorker Authentication Service, run the `authc_configure.sh` script in silent mode: `/opt/nsr/authc-server/scripts/authc_configure.sh -silent <response file>`, and then specify the configuration parameters in the response file.

The following tables lists the parameters:

Table 12 NetWorker Server silent installation configuration parameters

Parameter	Description
EMC_JAVADIR	Specifies the directory that contains the required 64-bit Java installation files.
EMC_TCUSER	Specifies the OS user that will run the Apache Tomcat server. For a silent installation, you must create the operating system user account before you run the script.
EMC_TCPORT	Specifies the port that Apache Tomcat server should use for communication. The default port number is 9090.
EMC_CREATEKEYSTORE	Specifies if the configuration process should create a new keystore file.
EMC_TCKEYSTORE	Specifies the full path to an existing keystore file, or the full path to a new keystore file that the configuration process will create.
EMC_TCKEYPASSWORD	Specifies the password for the keystore file. The password requires a minimum of six characters.
EMC_LOCALADMIN_PASSWORD	Specifies the password for the administrator account. The NetWorker Authentication Service creates a default local user account called administrator. The user account needs an initial password, which requires nine characters with at least one upper case, one lower case, one number, and one special character.
EMC_CACERTS_PASSWORD	Specifies the password for the Java Common Truststore located at <code><JRE_DIR>/lib/security/cacerts</code>
EMC_DATADIR	Specifies the directory for the NetWorker Authentication Service local database.

Table 12 NetWorker Server silent installation configuration parameters (continued)

Parameter	Description
EMC_TRUSTSTOREPASSWORD	Specifies the client truststore password. The password requires a minimum of six characters.
EMC_TCALIASPASSWORD	Specifies the password for tomcat SSL certificate.
EMC_SAMLALIASPASSWORD	Specifies the password for SAML token certificate.
EMC_KEEBOOT	Indicates if authc server has to be started or not.

An example for the response file.

```
EMC_JAVADIR=/opt/java/jre1.8.0_101
EMC_TCUSER=tomcat
EMC_TCPORT=9090
EMC_CREATE_TCKEYSTORE=y
EMC_TCKEYSTORE=$OPTDIR/tomcat/conf/authc.keystore
EMC_TCKEYPASSWORD=changeme
EMC_TRUSTSTOREPASSWORD=changeme
EMC_TCALIASPASSWORD=changeme
EMC_SAMLALIASPASSWORD=changeme
EMC_CACERTS_PASSWORD=changeme
EMC_DATADIR=$OPTDIR/tomcat/data
EMC_LOCALADMIN_PASSWORD=changeme
EMC_KEEBOOT=n
```

6. License the NetWorker Server. The Verify the Installation chapter provides more information.

Install the NetWorker Management Web UI software on the NetWorker server

Use the `lgtonwuiserv` rpm to install the NetWorker Management Web UI software on a NetWorker server.

Before you begin

You must have `lgtoserv` installed on the host machine.

Procedure

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

For example:

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

4. From the directory that contains the unzipped NetWorker software packages, use the `rpm` installer application to install the NetWorker Management Web UI package.

Note: There is dependency on lgtonserv to install lgtonwuiserv. If the lgtonserv is not present in the host machine, then the installation fails.

```
[root@NetWorker /]# rpm -ivh lgtonwuiserv-18.x.x86_64.rpm

[root@nwuiserv]# rpm -ivh lgtonwuiserv-18.x.x86_64.rpm
Preparing...
##### [100%]
 1:lgtonwuiserv
##### [100%]

NOTE: To complete configuration execute the following
script as root:
      /opt/nwui/scripts/nwui_configure.sh
```

5. To start the `/opt/nwui/scripts/nwui_configure.sh` configuration script, type `/opt/nwui/scripts/nwui_configure.sh`.
6. At the **Specify the host name of the NetWorker Authentication Service** host prompt, specify the authentication server address.

Note: The NetWorker authentication service host address should be same as that of NetWorker server's authentication server.

7. At the **Specify the host name of the NetWorker Server to be Managed by NWUI** prompt, specify the NetWorker server host IP address or hostname that is be managed by NetWorker Management Web UI.
8. At the **Specify the port for Authentication service on NetWorker Server** prompt, specify the port number of the NetWorker Authentication Service on the NetWorker server that is to be managed by NetWorker Management Web UI.

Note:

- If the NetWorker Authentication Service server that is being used is same as that of the NetWorker server being managed by NetWorker Management Web UI, then the **Authentication Host** and **NetWorker Server Host** field will have the same IP address or the hostname.
- The NetWorker Management Web UI should be of the same version as that of the NetWorker Server that is running NetWorker Authentication Service.
- The **NetWorker Server Authentication Port** and the **Authentication Host** are required fields. You must type the port number and the NetWorker server host IP address or hostname before proceeding with the installation.

The installation completed successfully.

Install the NetWorker Management Web UI software without the NetWorker server

Use the lgtonwui rpm to install the NetWorker Management Web UI software on a machine that is not running a NetWorker server.

Procedure

1. Connect to the host with the root account.
2. Download the NetWorker Management Web UI software package from the 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 typing the `tar` command.

For example:

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

4. From the directory that contains the extracted NetWorker software packages, use the `rpm` installer application to install the NetWorker Management Web UI package.

```
[root@NetWorker /]# rpm -ivh lgtonwui-19.x.x86_64.rpm

[root@blrv076d180 /]# rpm -ivh lgtonwui-19.x.x86_64.rpm
Preparing... #####
[100%]
1:lgtonwui #####
[100%]

NOTE: To complete configuration execute the following script as
root:
/opt/nwui/scripts/nwui_configure.sh
```

5. To start the `/opt/nwui/scripts/nwui_configure.sh` configuration script, type `/opt/nwui/scripts/nwui_configure.sh`.
6. At the **Specify the directory where the Java Standard Edition Runtime Environment software is installed** prompt, Press **Enter** to accept the default location, `/opt/nre/java/latest`.
7. The configuration process uses the hostname of the server as the default Apache Tomcat hostname and port 9090 as default Apache Tomcat port. The port 9090 is used 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.

i **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.

8.
 - If the keystore file exists then at the **Do you want to use the existing keystore /nsr/nwui/conf/nwui.keystore** prompt,
 - a. Type `Y`
 - b. On the **Specify password for the existing keystore** prompt, type the keystore password.
 - If the keystore file does not exist, then the installation process creates a keystore file.
 - a. On the **Specify the keystore password** prompt, type the keystore password.
 - b. On the **Confirm the password** prompt, type the keystore password.
9. At the **Specify the host name of the NetWorker Authentication Service host** prompt, specify the Authentication server address.

10. At the **Specify the port number that the NetWorker Authentication Service uses for communication** prompt, press **Enter** to accept the default response, **Yes**.
11. At the **Specify the host name of the NetWorker Server to be Managed by NWUI** prompt, specify the NetWorker server host IP address or hostname that is to be managed by NetWorker Management Web UI.
12. At the **Specify the port for Authentication service on NetWorker Server** prompt, specify the port number of the NetWorker Authentication Service on the NetWorker server that is to be managed by NetWorker Management Web UI.

Note: If the NetWorker Authentication Service server that is being used is same as that of the NetWorker server being managed by NetWorker Management Web UI, then the **Authentication Host** and **NetWorker Server Host** field will have the same IP address or the hostname.

13. If the services are not started automatically, then start the NetWorker Management Web UI daemons by typing the following command:

Initialization system	Command
sysvinit	<code>/etc/init.d/nwui start</code>

14. To confirm that the NetWorker Management Web UI daemons have started on the host, from a command prompt type:

Initialization system	Command
sysvinit	<code>/etc/init.d/nwui status</code>

Results

You can access the NetWorker Management Web UI by using following link:
https://<IP_address_or_hostname>.9090/nwui

After you finish

Enable javascript on the web browser before launching the NetWorker Management Web UI.

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 process, type the following command from a prompt:

Initialization system	Command
sysvinit	<code>/etc/init.d/networker stop</code>
systemd	<code>systemctl stop networker</code>

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 *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

About this task

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

Table 13 Linux NMC server default file locations

NetWorker package	Location
NMC server (LGTOnmc)	/opt/lgtonmc


The NMC server software supports the following operating systems:

Table 14 Supported Operating system and JRE versions

Operating system	Supported JRE and browsers
Linux x86 (32-bit) RHEL 6, 7, 7.6 SLES 11, 12, 12 SP4 x64	<ul style="list-style-type: none"> • JRE 1.8.x • Mozilla Firefox
Linux em64T & AMD64 (64-bit), RHEL 6, 7, SLES 11, 12	<ul style="list-style-type: none"> • JRE 1.8.x • JRE 9.x

Table 14 Supported Operating system and JRE versions (continued)

Operating system	Supported JRE and browsers
	<ul style="list-style-type: none"> • Mozilla Firefox
Mac OS X 10.13, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12	<ul style="list-style-type: none"> • Firefox • Safari
Solaris 10, 11, 12 for Solaris SPARC, Solaris Opteron (64-bit)	<ul style="list-style-type: none"> • JRE 1.8.x • Mozilla Firefox
Windows 7, for x86, em64T & AMD64 (64-bit)	<ul style="list-style-type: none"> • JRE 1.8.x • JRE 9.x • Microsoft Internet Explorer 7 • Mozilla Firefox
Windows 8, 8.1, Windows 10, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019 x64	<ul style="list-style-type: none"> • JRE 1.8.x • JRE 9.x • Firefox • Microsoft Internet Explorer 10 in Desktop mode only

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

The *NetWorker E-LAB Navigator* 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.

Table 15 Size of compressed and uncompressed files

Operating system	Package name	Compressed file size	Uncompressed file size
Linux x86-64	nw19.1_linux_x86_64.tar.gz	1.12 GB	1.26 GB

About this task

 **Note:** You cannot install the NMC Server software to a non-default location.

Procedure

1. Connect to the NetWorker host as root.

- If the NetWorker 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:

Initialization system	Command
<code>sysvinit</code>	<code>/etc/init.d/networker start</code>
<code>systemd</code>	<code>systemctl start networker</code>

- Download the NetWorker software package from the Online Support website to a temporary location.
- Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.

For example:

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

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

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

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

where you specify `lgtocInt*.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 [lgtocInt*.rpm] lgtonmc*.rpm
```

where you specify `lgtocInt*.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 in `sysvinit` or `systemctl status networker` in `systemd` to confirm that the daemons are started. If required, use the `/etc/init.d/networker start` command in `sysvinit` or `systemctl start networker` in `systemd` 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.

If you are using self or CA signed certificates, then you must place the https certificates and key file in a location where non root user (`nsrnmcc`) have read permissions. It is recommended to place the files in `/opt/lgtonmc/apache/conf/` location.

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. You can either create a new certificate or choose an existing certificate to configuring the SSL,
 - From the Do you want to create new(cn) certificate or use existing(ue) certificate [cn]?, type **cn** and press **Enter** to create a new certificate.
 - From the Do you want to create new(cn) certificate or use existing(ue) certificate [cn]?, type **ue** and press **Enter** to use existing certificate.
 - From the Specify the path of certificate file for https configuration :, type the certificate file location.
 - From the Specify the path of key file for https configuration :, type the key file location.
4. 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`.
5. On the Do you want to migrate data from a previous 8.x.x release prompt, type **n**.
6. 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.

7. When prompted to start the NMC Server daemons, type **y**.

8. Confirm that the daemons have started, by typing the following command: `ps -ef | grep lgtonmc`.

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

```
nsrnmcc 7190 1 0 Nov23 ? 00:00:06 /opt/lgtonmc/bin/gstd
nsrnmcc 7196 1 0 Nov23 ? 00:00:00 /opt/lgtonmc/apache/bin/
httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nsrnmcc 7197 7196 0 Nov23 ? 00:00:00 /opt/lgtonmc/
apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nsrnmcc 7212 1 0 Nov23 ? 00:00:00 /opt/lgtonmc/postgres/
11.1/bin/postgres -D /nsr/nmc/nmcdb/pgdata
root 18176 18141 0 02:47 pts/0 00:00:00 grep lgtonmc
```

Silent Configuration of the NMC Server Software

After you install the NetWorker Management Console package, you must run the `nmc_config` script to complete the NMC configuration. It is located in the `/opt/lgtonmc/bin` directory. You can either run the script interactively or in silent mode..

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 in `sysvinit` or `systemctl status networker` in `systemd` to confirm that the daemons are started. If required, use the `/etc/init.d/networker start` command in `sysvinit` or `systemctl start networker` in `systemd` 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.

If you are using self or CA signed certificates, then you must place the `https` certificates and key file in a location where non root user (`nsrnmcc`) have read permissions. It is recommended to place the files in `/opt/lgtonmc/apache/conf/` location.

About this task

To run the configuration script in silent mode, use the `-silent` option and then specify a response file that contains all of the needed configuration parameters.

Procedure

1. Run the `nmc_config` script in silent mode: `/opt/lgtonmc/bin/nmc_config.sh -silent <response file>`, and then specify the configuration parameters in the response file.

The following tables lists the parameters:

Table 16 NMC Server silent installation configuration parameters

Parameter	Description
LGTO_DBUSER	Specifies the database user name.
R	
LGTO_HTTPPORT	Specifies the port that the web server uses for its communication.
ORT	

Table 16 NMC Server silent installation configuration parameters (continued)

Parameter	Description
LGTO_GSTPORT	Specifies the port that the GST server uses for its communication.
LGTO_DBSRVPORT	Specifies the port that the Database server uses for its communication.
LGTO_DATADIR	Specifies the NMC database directory.
LGTO_OVERWRITE	Specifies whether the old database has to be retained or overwritten.
LGTO_NSRRDIR	Specifies the path where NetWorker Binaries are installed.
LGTO_AUTHHOST	Specifies the hostname of the NetWorker Authentication Service host.
LGTO_AUTHPORT	Specifies the port number that the NetWorker Authentication Service uses for communication.
LGTO_USEEXISTCERT	Indicates whether existing certificate & key file has to be used for https configuration.
LGTO_HTTPSCERT	Specifies the certificate file path for https configuration. This value is required if LGTO_USEEXISTCERT is 'y'.
LGTO_HTTPSKEY	Specifies the key file path for https configuration. This value is required if LGTO_USEEXISTCERT is 'y'.
LGTO_KEEPOOT	Indicates if nmc services has to be started or not.

An example for the response file.

```

LGTO_DBUSER=nsrnm
LGTO_HTTPPORT=9000
LGTO_GSTPORT=9001
LGTO_DBSRVPORT=5432
LGTO_DATADIR=/opt/lgtonmc/nmcd
LGTO_OVERWRITE=y
LGTO_NSRRDIR=/usr/sbin
LGTO_AUTHHOST=localhost
LGTO_AUTHPORT=9090
LGTO_USEEXISTCERT=n
LGTO_KEEPOOT=n

```

Troubleshooting NMC installation and configuration issues

This section describes how to troubleshoot and resolve common NMC installation and configuration issues.

ERROR: Command /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcd failed

This message appears when the `nmc_config` command is initializing the NMC server database.

Error messages similar to the following appear in the `/nsr/nmc/nmcdb/pgdata/db_output.log` file:

```
Auto configuration failed 6729:error:0200100D:system
library:fopen:Permission
denied:bss_file.c:126:fopen('/space/tpkgs/openssl/098zc/
install/openssl.cnf','rb')
6729:error:2006D002:BIO routines:BIO_new_file:system
lib:bss_file.c:131: 6729:error:0E078002:configuration file
routines:DEF_LOAD:system lib:conf_def.c:199:
```

Error messages similar to the following appear in the `/opt/lgtonmc/logs/install.log` file:

```
waiting for server to start..... stopped waiting pg_ctl:
could
not start server Examine the log output. 107558:gstdbinit: The
binary '/opt/lgtonmc/postgres/bin/pg_ctl' did not launch or
complete successfully
```

When you manually run the command `/opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcdb`, the following error appears: `/opt/lgtonmc/bin/gstdbinit: error while loading shared libraries: libltdl.so.3: cannot open shared object file: No such file or directory`

This issue appears when the `LD_LIBRARY_PATH` variable is not correctly set.

To resolve this issue, perform the following steps:

1. Determine the NMC installation path, by default the NMC installation path is `/opt/lgtonmc`.
2. Add the NMC `odbc` directory to the `LD_LIBRARY_PATH` variable. For example, when the NMC installation path is the default location, type the following command:

```
export LD_LIBRARY_PATH=/opt/lgtonmc/postgres/odbc
```

3. Initialize the NMC database, by typing the following command:

```
NMC_installation_path/bin/gstdbinit -U nsrnmc -n 5432
NMC_installation_path/nmcdbXX
where: NMC_installation_path is /opt/lgtonmc by default and XX is a number
that you specify to create a new subdirectory.
For example, if the NMC server uses the default location and the /opt/
lgtonmc/nmcdb1 directory exists, type the following command:
/opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /opt/lgtonmc/nmcdb2
```

4. Start the NMC database, by typing the following command:

```
NMC_installation_path/postgres/bin/pg_ctl -D NMC_installation_path/
nmcdbXX/pgdata -l logfile start
where: NMC_installation_path is /opt/lgtonmc by default and nmcdbXX is the
subdirectory that you created in the previous step.
For example, if the NMC server uses the default location and the nmcdb directory
nmcdb2, type:
/opt/lgtonmc/postgres/11.1/bin/pg_ctl -D /opt/lgtonmc/nmcdb2/pgdata
-l logfile start
```

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.

About this task

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 lgt*
```

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

Table 17 NetWorker package names on Linux

Component	Package name
NetWorker Server	lgtoserv
NetWorker Authentication Service	lgtoauthc
NetWorker Storage Node	lgtonode
NMC Server	lgtomc
NetWorker License Manager	lgtolicm
NetWorker Client	lgtocln
NetWorker Extended Client	lgtotdclnt
NetWorker Message Queue Adapter	lgtoadpt
NetWorker Block-Based Backup add-on	lgtobbb
Man pages	lgtoman
French language support	lgtofr
Japanese language support	lgtolja
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`, `lgtomc`, `lgtocln`, `lgtobbb`, `lgtoadpt`, `lgtotdclnt`,

`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 lgtocInt
```

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

```
rpm -e lgtoserv lgtonode lgtonmc lgtocInt lgtoxtdcInt 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 Installation

This chapter includes these topics:

- [Road map for installing the NetWorker client software](#)..... 64
- [Preparing the Linux Target Host](#)..... 64
- [Installing the NetWorker Storage Node and Client Packages](#)..... 66
- [Deploying a VMware template for the host](#)..... 67
- [Uninstalling the NetWorker software](#)..... 68

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. [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 *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.
3. If the SELinux on your Linux system is in “enforcing” mode then you must change it to “permissive” by running the command `setenforce permissive`

 **Note:** After the installation is complete, you must revert the SELinux to default value, that is, the value before the installation of RPMs

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.i686.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.

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

Table 18 Linux default file locations

NetWorker package	Location
NetWorker Authentication Service (emcauthc)	/opt/nsr/authc
Client (lgtoclt)	/usr/lib /usr/sbin /usr/bin /opt/nsr
Storage node (lgtoserv)	/usr/lib /usr/sbin
Server (lgtoserv)	/usr/sbin
Man pages (lgtoman)	/usr/share
French language pack (lgtofr)	/usr/lib /usr/sbin /usr/share /opt/nsr
Japanese language pack (lgtolja)	/usr/lib /usr/sbin /usr/share /opt/nsr
Korean language pack (lgtoko)	/usr/lib /usr/sbin /usr/share /opt/nsr
Simplified Chinese language pack (lgtozh)	/usr/lib /usr/sbin

Table 18 Linux default file locations (continued)

NetWorker package	Location
	/usr/share /opt/nsr
Client file index, media database, resource database	/nsr

Installing the NetWorker Storage Node and Client Packages

Use the `dpkg` program to install the NetWorker storage node and client software. To install the operating system packages that the NetWorker storage node and 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.

About this task

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

Table 19 List of software packages

Installation type	Packages
Client software, Storage node and Extended Client software	lgtocInt*.deb, lgtonode*.deb, lgtotdclnt*.deb

Procedure


1. Download the NetWorker software package from the 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 typing the `tar` command.

For example:

```
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 only, type the following command:

```
dpkg -i lgtocInt_19.1_amd64.deb
```

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

```
dpkg -i lgtocln19.1_amd64.deb lgtonode_19.1_amd64.deb
lgtotdclnt_19.1_amd64.deb
```

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

```
(Reading database ... 66809 files and directories
currently installed.)
Preparing to unpack lgtocln19.1_amd64.deb...
Unpacking lgtocln19.1 (19.1) over (19.1)
Preparing to unpack lgtonode_19.1_amd64.deb ...
Unpacking lgtonode (19.1) over (19.1) ...
Preparing to unpack lgtotdclnt_19.1_amd64.deb ...
Unpacking lgtotdclnt (19.1) over (19.1) ...
Setting up lgtocln19.1 (19.1) ...
update-rc.d: warning: start and stop actions are no longer
supported; falling back to defaults
Setting up lgtonode (19.1) ...
Setting up lgtotdclnt (19.1) ...
Processing triggers for libc-bin (2.27-3ubuntu1) ...
```

4. 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`

5. Verify whether the packages are installed correctly by running the command; `sudo apt list --installed | grep -i lgt`

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 process, type the following command from a prompt:

Initialization system	Command
<code>sysvinit</code>	<code>/etc/init.d/networker stop</code>
<code>systemd</code>	<code>systemctl stop networker</code>

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 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 lgtocInt
```

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 lgtocInt
```

CHAPTER 5

Fedora client installation

This chapter includes the following topics:

- [Road map for installing the NetWorker client software](#)..... 70
- [Preparing the Linux Target Host](#)..... 70
- [Installing the NetWorker client packages](#)..... 72
- [Deploying a VMware template for the host](#)..... 73
- [Uninstalling the NetWorker software](#)..... 74

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 *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.
3. If the SELinux on your Linux system is in “enforcing” mode then you must change is to “permissive” by running the command `setenforce permissive`

 **Note:** After the installation is complete, you must revert the SELinux to default value, that is, the value before the installation of RPMs

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.i686.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.

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

Table 20 Linux default file locations

NetWorker package	Location
NetWorker Authentication Service (emcauthc)	/opt/nsr/authc
Client (lgtocInt)	/usr/lib /usr/sbin /usr/bin /opt/nsr
Storage node (lgtocode)	/usr/lib /usr/sbin
Server (lgtoserv)	/usr/sbin
Man pages (lgtoman)	/usr/share
French language pack (lgtofr)	/usr/lib /usr/sbin /usr/share /opt/nsr
Japanese language pack (lgtolja)	/usr/lib /usr/sbin /usr/share /opt/nsr
Korean language pack (lgtoko)	/usr/lib /usr/sbin /usr/share /opt/nsr
Simplified Chinese language pack (lgtzh)	/usr/lib /usr/sbin /usr/share

Table 20 Linux default file locations (continued)

NetWorker package	Location
	/opt/nsr
Client file index, media database, resource database	/nsr

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.

About this task

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 lgtoxtclnt*.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 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 typing the `tar` command.

For example:

```
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 packages are missing for the NetWorker Client software, type the following command:

```
rpm -ivh lgtocln*.rpm
error: Failed dependencies:
libcap.so.1 is needed by lgtocln-8.1-1.i868
```

- 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 lgtocln*.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 process, type the following command from a prompt:

Initialization system	Command
sysvinit	<code>/etc/init.d/networker stop</code>

Initialization system	Command
systemd	systemctl stop networker

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 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 lgtocInt
```

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	lgtocInt
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 2

Windows Installation

This chapter includes the following topics:

[Chapter 6, "Microsoft Windows Installation"](#)

[Chapter 7, "Microsoft Windows Silent Installations"](#)

[Chapter 8, "Changing the NetWorker installation type 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](#)..... 78
- [Reviewing the NetWorker requirements for Windows](#)..... 78
- [Installing the NetWorker software](#)..... 80
- [Installing the NetWorker Server software](#)..... 83
- [Installing the NetWorker Storage Node software](#).....85
- [Installing the NetWorker base client](#).....87
- [Installing the NMC server software on Windows](#)..... 91
- [Install the NetWorker Management Web UI software](#)..... 99
- [Adjusting antivirus software settings](#)101
- [Deploying a VMware template for the host](#)..... 101
- [Uninstalling the software](#)..... 102

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.

About this task

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 the Installation chapter and the Troubleshooting NMC GUI and NetWorker Server Connection Issues chapter describes how to test the NetWorker software functionality.
5. Enable and register the NetWorker products. The *NetWorker Licensing Guide* provides information.


Reviewing the NetWorker requirements for Windows

Review the information in this section before you install NetWorker on the Windows operating system.

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.

 **Note:** To use Data Domain with NetWorker, the NetWorker server hostname should be in lower case. Data Domain functions with lowercase and DD Cloud tier operations fails if it is mixed case.

Package disk space requirements

Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the 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	784 MB	838 MB
Windows x86	nw90_win_x86.zip	227 MB	249 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	C:\Program Files \EMC NetWorker \nsr	110 MB	125 MB
NMC	C:\Program Files \EMC NetWorker \Management	Not applicable	255 MB
Storage node	C:\Program Files \EMC NetWorker \nsr	142 MB	142 MB
Server	C:\Program Files \EMC NetWorker \nsr	Not applicable	808 MB
Client file index, media database, and resource database files	C:\Program Files \EMC NetWorker \nsr\index C:\Program Files \EMC NetWorker \nsr\mm C:\Program Files \EMC NetWorker \nsr\res	Minimum of 2 GB	Minimum of 2 GB

The *NetWorker E-LAB Navigator* on the Online Support website, 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>.

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.

Set the JAVA_HOME environment variable to JRE 1.8

Before you install the NetWorker software, if NRE is not installed then 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.

Installing the NetWorker software

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

When you unzip the NetWorker software for Windows, the following packages are displayed:

- In the `...\nw_win_x64\win_x64\networkr` directory:
 - `NetWorker-19.1.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 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-19.1.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.

- `lgtoxtdcInt-19.1.exe`. The NetWorker Extended Client package enables you to install extended client features. `lgtoxtdcInt-19.1.exe` package consists binaries that are related to NetWorker, scripts and binaries that are required for the cluster environment and NAS Snapshot management component. For more information about the components present in the NetWorker Extended Client package, see the *Command Reference Guide*.

Table 25 Components available in NetWorker Extended Client package

Commands	Description
<code>nsrwatch</code>	A curses based tool to monitor the activity of NetWorker servers.
<code>jobquery</code>	The <code>jobquery</code> command is a command-line based program that is used to query NetWorker server's jobs database. Its interface is similar to that of <code>nsradmin</code> program.
<code>mminfo</code>	The <code>mminfo</code> command reports information about NetWorker media and save sets. It can produce several different reports depending on the flags specified.
<code>mmlocate</code>	The <code>mmlocate</code> command is used to access and manage the volume location information that is contained in the media database.
<code>mmpool</code>	The <code>mmpool</code> command is used to access pool information stored in the NetWorker server's media database. This command can also be used to delete all the volumes in a particular pool.
<code>nsrarchive</code>	The <code>nsrarchive</code> command can archive files, directories, or entire file system to the NetWorker server.
<code>nsrcapinfo</code>	The <code>nsrcapinfo</code> command reads <code>saveinfo</code> information from either an input .XML file that is generated by the <code>mminfo</code> command or directly from the <code>nsrmmdbd</code> command.
<code>nsrinfo</code>	The <code>nsrinfo</code> command generates reports about the contents of a client file index.
<code>nsrmm</code>	The <code>nsrmm</code> is a command line interface that is used by NetWorker servers and storage nodes to manage the media and devices (tapes, disks, and files).
<code>nsrrpcinfo</code>	The <code>nsrrpcinfo</code> makes an RPC call to a NetWorker RPC server and reports what it finds.
<code>nsrrecomp</code>	The <code>nsrrecomp</code> command is a command-line based program that is used to query the Net- Worker server's jobs database and the recover logfiles to display a recover completion report.
<code>nsrretrieve</code>	The <code>nsrretrieve</code> command is used to restore archive save sets from a NetWorker server.

Table 25 Components available in NetWorker Extended Client package (continued)

Commands	Description
<code>nwinstcreate</code>	The <code>nwinstcreate</code> command is used to create NetWorker instance information.
<code>nsrnassnap</code>	The <code>nsrnassnap</code> command is a NetWorker client side command that is used by <code>savegrp</code> to perform NAS device snapshot management related commands for file system and application backups.
<code>nsrnassnapck</code>	The <code>nsrnassnapck</code> command is a NetWorker client utility to delete and validate NAS snapsets.
<code>nsrnassnap_discover</code>	The <code>nsrnassnap_discover</code> command is a NetWorker client command to perform NAS device snapshot discovery.
<code>nsrnassnap_index</code>	The <code>nsrnassnap_index</code> command is a NetWorker client command to perform NAS device snapshot content indexing.
<code>nsrnassnap_recover</code>	The <code>nsrnassnap_recover</code> command can be used to recover data from a NAS-based snapshot save set.
<code>nsrnassnap_save</code>	The <code>nsrnassnap_save</code> command can be used to backup data on a NAS device file system to a save set.
<code>nsrsnapadmin</code>	The <code>nsrsnapadmin</code> command is a command-line based program to perform operations on NetWorker snapsets.
<code>nsrpsd</code>	The <code>nsrpsd</code> daemon provides an RPC-based snapshot that is related save and recover service.
<code>nsrsnap_save</code>	The <code>nsrsnap_save</code> command can be used to backup data to a snap set or a save set.
<code>nsrsnap_recover</code>	The <code>nsrsnap_recover</code> command can be used to recover data from a snap set or a save set. It enables users to recover data from tape or a point-in-time snapshot.
<code>nsrsnap</code>	The <code>nsrsnap</code> command is a NetWorker client side binary and is used by <code>savegrp</code> to perform snapshot management related commands for file system and application backups.
<code>nsrsnapck</code>	The <code>nsrsnapck</code> command is a NetWorker client side utility to delete and validate snapsets.
<code>nsrsnapagent</code>	Temporary service active during snapshot backup and recovery operations, and provides snapshot management functions to import and assign drive letters to a snapshot
<code>nsrsnapbwragent</code>	Temporary service active during snapshot backup operations that provides the ability to read the file system on the snapshot."

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 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 Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.

About this task

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 Online Support website to a temporary location.

The package name is `nw191_win_x64.zip`. Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the 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 `nw191_win_x64.zip` to a temporary location on the target host.
4. In the directory that contains the unzipped NetWorker software, run `NetWorker-19.1.exe`.

Note: While you can run the `NetWorker-19.1.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the `.zip` file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

5. In the **Welcome Wizard** 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, perform the following steps:
 - Select the **Server and client** option.

- To install additional language packs, select **Language packs**.
8. To accept the default installation location, click **Next**.
 9. Review the **Notice** window, 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 is displayed. Select the required language packs, and then click **Install**.
 11. (Required) The **Configure NetWorker Authentication Service** page is displayed in the following scenarios:
 - The default NetWorker Authentication port, 9090 is in use. In the **Apache Tomcat Port** field, type another port number for Tomcat to use, and then click **Next**.
 - The default password for the Java Common Truststore on the host is not the default password (*changeit*). When the password is not *changeit*, the installation displays a **JRE Certificate Store Error** window. Click **Ok**, and then in the **Trust store password** field, type the password for the Java Common Truststore, and then click **Next**.

Note: The NetWorker installation process will not create user for installing and starting Apache Tomcat.

12. In the **Configure NetWorker Authentication Service Keystore** page, specify a password for the keystore file, and then click **Next**.

Specify a password that contains at least six characters and does not contain dictionary words.

13. Click **Install**. The installation progress bar is displayed 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 logfile.

"Monitoring and troubleshooting silent installations and uninstalls" provides more information about each logfile that the installation creates.

Note: For NetWorker Servers only, if the installation cannot start the `nsrcd` service, the following error message might be displayed:

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

If you see this message, confirm the `JAVA_HOME` environment variable setting. For more information, see 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.

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 from a PowerShell window type the `get-service nsr*` command.

The "NetWorker daemons section" in the Introduction 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 NetWorker Storage Node software

The following section describes how to install the NetWorker Storage Node software. The NetWorker Storage Node installation also installs the NetWorker Client and 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 Online Support website to a temporary location.

The Windows x86 package name is `nw191_win_x86.zip`. The Windows x64 package name is `nw191_win_x64.zip`. The section "Package disk space requirements" provides more information.

3. Extract the NetWorker packages that are found in the `nw191_win_x64.zip` or `nw191_win_x86.zip` file, to a temporary location on the target host.
4. In the directory that contains the unzipped NetWorker software, run `NetWorker-19.1.exe`.

Note: While you can run the `NetWorker-19.1.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the `.zip` file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

5. In the **Welcome Wizard** 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, perform the following steps:
 - Select the **Storage node** option.
 - To install additional language packs, select **Language packs**.
8. To accept the default installation location, click **Next**.
9. If you selected the optional **Language Packs** component, the **Wizard Language Pack** page is displayed. Select the required language packs, and then click **Install**.
10. Click **Install**. The installation progress bar is displayed 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 logfile.

"Monitoring and troubleshooting silent installations and uninstalls" provides more information about each logfile that the installation creates.

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

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

If you see this message, confirm the `JAVA_HOME` environment variable setting. For more information, see 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.

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 from a PowerShell window type the `get-service nsr*` command.

The "NetWorker daemons section" in the Introduction chapter provides a list of the NetWorker daemons.

Installing the NetWorker base client


The following steps describe how to install the base NetWorker client. It is recommended that you use the `lgtocln-19.1.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 Online Support website to a temporary location.

The Windows x64 package name is `nw191_win_x64.zip`. The Windows x86 package name is `nw191_win_x86.zip`. The "Package disk space requirements" section provides more information about disk space requirements.

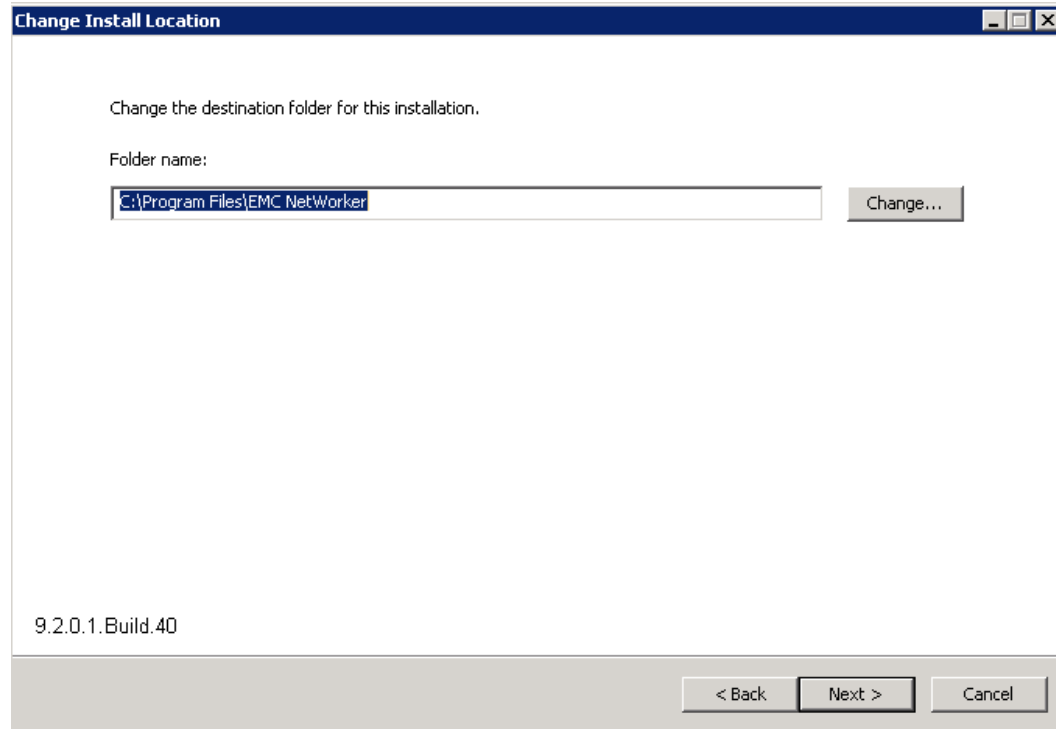
3. Extract the NetWorker packages from the `nw191_win_x64.zip` file or `nw191_win_x86.zip` file to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker packages, run `lgtocln-19.1.exe`.

 **Note:** If you used Windows Explorer to copy the files in the zip file from a network share to the client host, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

6. In the **Welcome Wizard** 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**.

The following figure shows the **Change Install Location** page with the default directory selected.

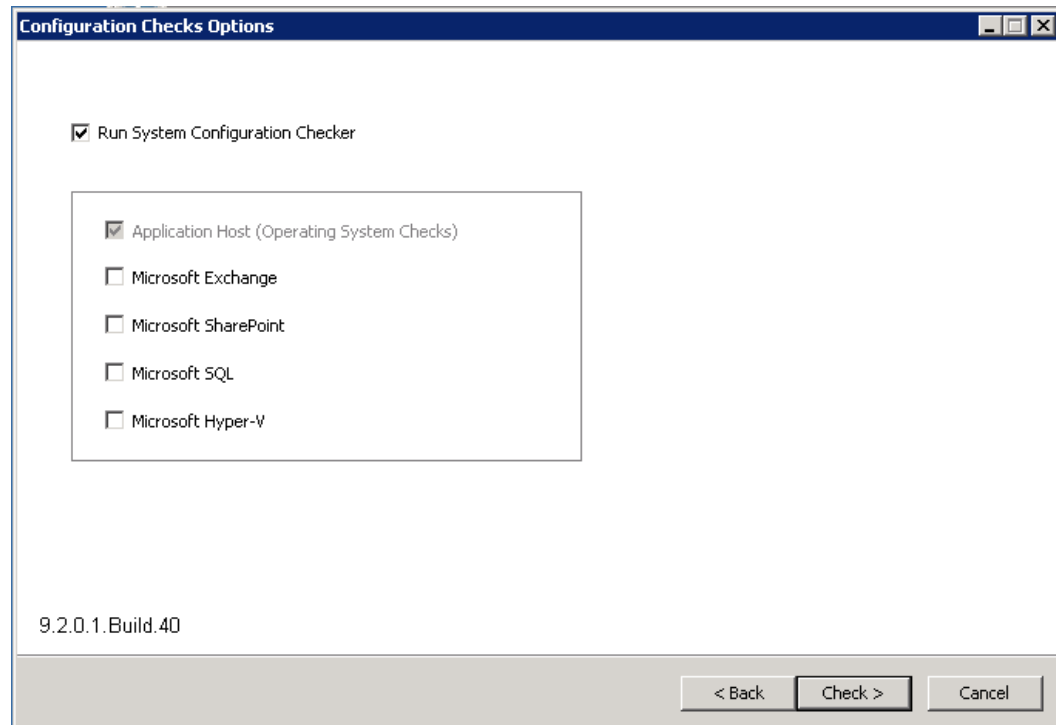
Figure 2 Change Install Location page



8. (Optional) On the **Configuration Checks Options** page, select **Run System Configuration Checker**, and then click **Check**.

The following figure shows the **Configuration Checks Options** page.

Figure 3 Configuration Checks Options



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 describes how to install and configure the NetWorker License Manager software.
 - To install additional language packs, select **Language packs**.
11. If you selected the optional **Language Packs** component, the **Wizard Language Pack** page is displayed. Select the required language packs, and then click **Install**.
12. Click **Install**. The installation progress bar is displayed 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 logfile.

"Monitoring and troubleshooting silent installations and uninstalls" provides more information about each logfile that the installation creates.

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

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

If you see this message, confirm the `JAVA_HOME` environment variable setting. For more information, see 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.

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` 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 Microsoft (NMM) 8.2.3 and 8.2.4 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 `lgtoxtoclnt-19.1.exe`

 **Note:** If you used Windows Explorer to copy the files in the zip file from a network share to the client host, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

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 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.

NetWorker Management Console(NMC) version 19.1 and above ships with Postgres version 11.xx which has a dependency on Microsoft Visual Studio 2015/2017 runtime. Ensure that the required runtime is installed before installing NMC server. Runtime installation is required on Windows Server 2012 R2. The runtime is included in Windows Server 2016 and 2019 and separate installation is not required. You can either get the latest windows updates or install the security updates and the Visual C++ Redistributable for Visual Studio 2015 or 2017 in the following sequence:

1. KB2919442
2. KB2919355
3. KB2999226
4. Install Visual C++ Redistributable for Visual Studio 2015 or 2017

If the dependencies are not installed, then

- New installation of NMC server and an upgrade from NMC version 8.x fails.
- If you are upgrading from NMC version 9.x, then the installation retains Postgres version 9.2.xx.

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 software on a Microsoft Windows host or Windows Server Core host.

About this task

Procedure

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


The package name is `nw191_win_x64.zip`. The "Package disk space requirements" section provides more information about disk space requirements.

3. Extract the NetWorker packages found in `nw191_win_x64.zip` to a temporary location on the target host.
4. In the directory that contains the unzipped NetWorker software, run `NetWorker-19.1.exe`.

Note: While you can run the `NetWorker-19.1.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in

the .zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

5. In the **Welcome Wizard** 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, 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 describes how to install and configure the NetWorker License Manager software.
8. Review the licensing notice that is displayed, and then click **OK**.
9. If you selected the optional **Language Packs** component, the **Wizard Language Pack** page is displayed. Select the required language packs, and then click **Install**.

10. In the **NMC Options** page, perform the following steps:

- a. (Optional) Type the path to install the NMC Server software.

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

- b. When the host is not a NetWorker server, in the **Authentication Host** field, type the name of one of the NetWorker 19.1 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 specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.

- c. When the host is not a NetWorker server, in the **Authentication Port** field, type the port number that is used by the NetWorker Authentication Service. The default port number is 9090.

- d. Click **Next**.

11. In the **Configuring SSL certificate** page, select one of the following options:

- Select **Create certificate** to create a certificate.
- Select **Existing certificate** to upload an existing certificate and key.

 **Note:** If HTTPS is already configured, then the fields are autopopulated.

12. If a Security Alert message is displayed, perform the following steps:

- a. Click **View Certificate**, and then select **Install Certificate**.
The **Certificate Import Wizard** screen is displayed.
 - 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**.
13. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:
 - **Database Destination Folder**. The default location is "C:\Program Files\EMC NetWorker\Management\nmddb"
 - **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 in use. For example, the NMC server uses port **5432** for TDS protocol communications with the NMC database. The preferred port for the Data Protection Advisor (DPA) product is **9002**.
 - **Web server port**. This port is used by the embedded HTTP server. The default port is 9000.
 14. 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 that originates from a different 8.1.x or 8.2.x NMC Server, select **Migrate the Database Manually**. When you select this option, specify the path to the Unload Database.

Note: Before you can manually migrate data to a new NMC Server, ensure that the Unload Database resides locally on the new NMC Server or in a remote location that is accessible to the new NMC Server.
 - To enable 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.
 15. Click **Install**. The installation progress bar is displayed 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 logfile.

"Monitoring and troubleshooting silent installations and uninstalls" provides more information about each logfile that the installation creates.

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

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

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

16. (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.

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

17. To complete the installation, click **Finish**.
18. 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 section of the Introduction 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` 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 Microsoft (NMM) 8.2.3 and 8.2.4 backups by using NMM
- Cloning and staging
- ProtectPoint for VMAX
- ProtectPoint for Recoverpoint

"Installing the Extended Client" in the *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 Serversoftware on a Microsoft Windows host or Windows Server Core host. When you install the NetWorker Server software, the installation also installs the NetWorker Client, Storage Node, BBB, and Extended Client software.

Before you begin

Before you start the NetWorker Server installation, install the Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.


About this task

Procedure

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


The package name is `nw191_win_x64.zip`. Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the 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 `nw191_win_x64.zip` to a temporary location on the target host.
4. In the directory that contains the unzipped NetWorker software, run `NetWorker-19.1.exe`.


 **Note:** While you can run the `NetWorker-19.1.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in

the .zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

5. In the **Welcome Wizard** 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, 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 describes how to install and configure the NetWorker License Manager software.
8. Review the **Notice** window, which describes the NetWorker License Server requirements, and then click **OK**.
9. (Required) The **Configure NetWorker Authentication Service** page is displayed in the following scenarios:
 - The default NetWorker Authentication port, 9090 is in use. In the **Apache Tomcat Port** field, type another port number for Tomcat to use, and the click **Next**.
 - The default password for the Java Common Truststore on the host is not the default password (*changeit*). When the password is not *changeit*, the installation displays a **JRE Certificate Store Error** window. Click **Ok**, and then in the **Trust store password** field, type the password for the Java Common Truststore, and then click **Next**.

 **Note:** The NetWorker installation process will not create user for installing and starting Apache Tomcat.

10. In the **Configure NetWorker Authentication Service Keystore** page, specify a password for the keystore file, and then click **Next**.

Specify a password that contains at least six characters and does not contain dictionary words.

11. In the **NMC Options** page, perform the following steps:
 - a. (Optional) Type the path to install the NMC Server software.
The default location is: `C:\Program Files\EMC NetWorker\Management`
 - b. Optional, in the **Authentication Port** field, type a new port number for the NetWorker Authentication Service. The default port number is 9090.
 - c. Click **Next**.
12. If a Security Alert message is displayed, perform the following steps:

- a. Click **View Certificate**, and then select **Install Certificate**.
The **Certificate Import Wizard** screen is displayed.
 - 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**.
13. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:
 - **Database Destination Folder**. The default location is "C:\Program Files\EMC NetWorker\Management\nmddb"
 - **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 in use. For example, the NMC server uses port **5432** for TDS protocol communications with the NMC database. The preferred port for the Data Protection Advisor (DPA) product is **9002**.
 - **Web server port**. This port is used by the embedded HTTP server. The default port is 9000.
 14. Click **Next**.
 15. 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 that originates from a different 8.1.x or 8.2.x NMC Server, select **Migrate the Database Manually**. When you select this option, specify the path to the Unload Database.

Note: Before you can manually migrate data to a new NMC Server, ensure that the Unload Database resides locally on the new NMC Server or in a remote location that is accessible to the new NMC Server.
 - To enable 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.
 16. Click **Install**. The installation progress bar is displayed 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 logfile.

"Monitoring and troubleshooting silent installations and uninstalls" provides more information about each logfile that the installation creates.

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

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

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

17. (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.

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

18. To complete the installation, click **Finish**.
19. 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 section of the Introduction 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.

Install the NetWorker Management Web UI software

You can manage the NetWorker by using the NetWorker Management Web UI.


Procedure

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

 **Note:** 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 **nw19.x_win_x64.zip** to a temporary location on the target host.
4. In the directory that contains the unzipped NetWorker software, run **NWUI-19.x-x64.exe**
5. In the **Welcome Wizard** page, select **I agree to the license terms and agreements**, and then click **Next**.
6. In the **Configuration options** page, perform the following steps:
 - a. (Optional) Type the path to install the NetWorker Management Web UI software.

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

 **Note:** The configuration fields are disabled when you are installing the NetWorker Management Web UI software on the NetWorker server.


- b. In the **Authentication Host** field, type the name of one of the NetWorker 19.1 servers running authentication service that the NetWorker Management Web UI will use for authentication. Ensure NetWorker services are started on the NetWorker Server.
- c. In the **Authentication Port** field, type the NetWorker Authentication Service port number. The default port number is 9090.
- d. In the **NetWorker Server Host** field, type the NetWorker server host IP address or hostname that is to be managed by NetWorker Management Web UI.
- e. In the **NetWorker Server Authentication Port** field, type the port number of the NetWorker Authentication Service on the NetWorker server that is to be managed by NetWorker Management Web UI .

 **Note:**

- If the NetWorker Authentication Service server that is being used is same as that of the NetWorker server being managed by NetWorker Management Web UI, then the **Authentication Host** and **NetWorker Server Host** field will have the same IP address or the hostname.
- The NetWorker Management Web UI should be of the same version as that of the NetWorker Server that is running NetWorker Authentication Service.

- The **NetWorker Server Authentication Port** and the **Authentication Host** are required fields. You must type the port number and the NetWorker server host IP address or hostname before proceeding with the installation.

- f. Click **Next**.
7. If a Security Alert message is displayed, perform the following steps:
 - a. Click **View Certificate**, and then select **Install Certificate**.
The **Certificate Import Wizard** screen is displayed.
 - 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**.
8. If the host is a NetWorker Server then go to [step 10](#).
9. (Required) The **Configure NetWorker Management Web UI Server** page is displayed in the following scenarios:
 - The default port 9090 is in use. In the **Apache Tomcat Port** field, type another port number for Tomcat to use, and then click **Next**.
 - The default password for the Java Common Truststore on the host is not the default password (*changeit*). When the password is not *changeit*, the installation displays a **JRE Certificate Store Error** window. Click **Ok**, and then in the **Trust store password** field, type the password for the Java Common Truststore, and then click **Next**.
10. In the **Configure NetWorker Management Web UI Server Keystore** page, you can either create a password for a keystore file or select an existing keystore file.
 - To create a keystore file, in the **Configure NetWorker Management Web UI Server Keystore** page, specify a password for keystore file, and then click **Install**.
 - To select an existing keystore file, in the **Configure NetWorker Management Web UI Server Keystore** page, specify a password for the existing keystore file, and then click **Install**.
11. To complete the installation, click **Finish**.

 **Note:** If the NetWorker Management Web UI Server service is not started automatically, then you must start the service manually from the **Windows Services Manager**.

Results

You can access the NetWorker Management Web UI by using following link:
[https:// <IP_address_or_hostname>.9090/nwui](https://<IP_address_or_hostname>.9090/nwui)

After you finish

Enable javascript on the web browser before launching the NetWorker Management Web UI.

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.

About this task

Configure the antivirus software so it does not perform the following actions:

- 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.
- 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
- 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.

About this task

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 then select **Manage**.
2. Expand **Services and Applications**, and then 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.

About this task

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 no programs, such as Windows Explorer, are accessing the directories or the files in `NetWorker_install_path` directory.

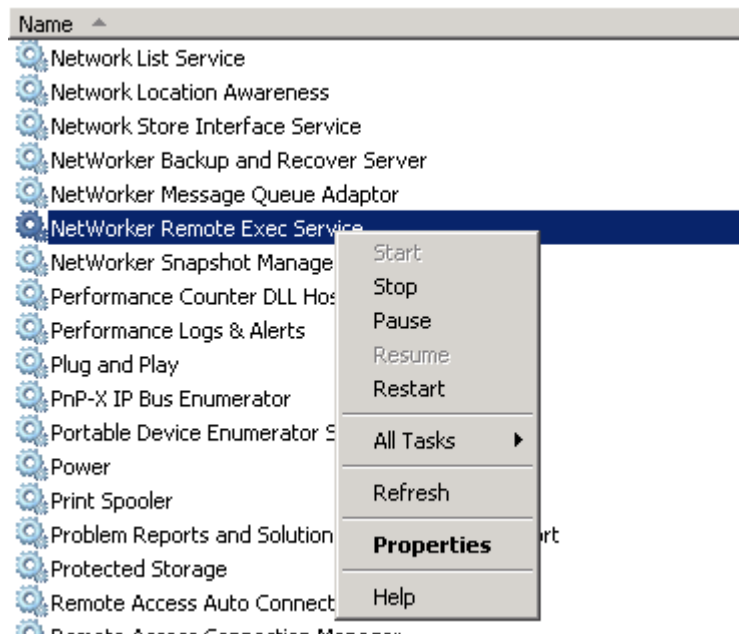
The default installation path for the NetWorker software is `C:\Program Files\EMC NetWorker`.

3. Right-click **My Computer**, and then select **Manage**.
4. Expand **Services and Applications**, and then select **Services**.
5. Right-click **NetWorker Remote Exec Service**, and then 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**.

The following figure shows how to stop the **NetWorker Remote Exec Service** service.

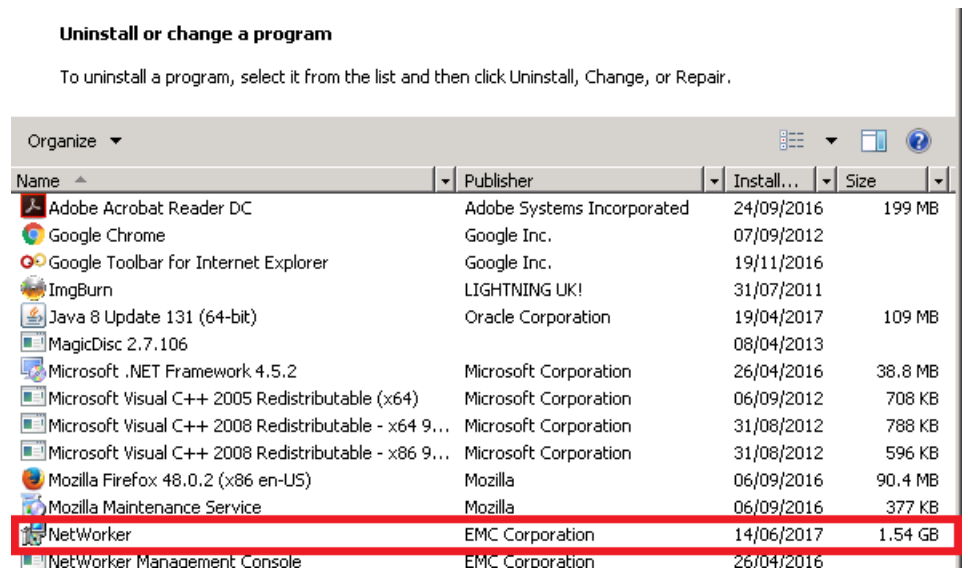
Figure 4 Stopping the NetWorker Remote Exec Service



6. From the **Control Panel**, select **Program and Features**.
7. On the **Program and Features** window, select **NetWorker**.

The following figure shows the **Program and Features** window with the **NetWorker** package highlighted.

Figure 5 Removing the NetWorker software package



8. Click **Uninstall**.
The **Install Modification** window appears.
9. Select **Remove**.
A progress bar appears.
10. In 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 the log files that the uninstallation process creates.

11. If you do not plan to update or reinstall the NMC Server or NetWorker software packages, remove the `NetWorker_install_path` directory. If you do not plan to 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 Client and NetWorker Extended Client software, they appear as separate programs on a Windows host.

Procedure

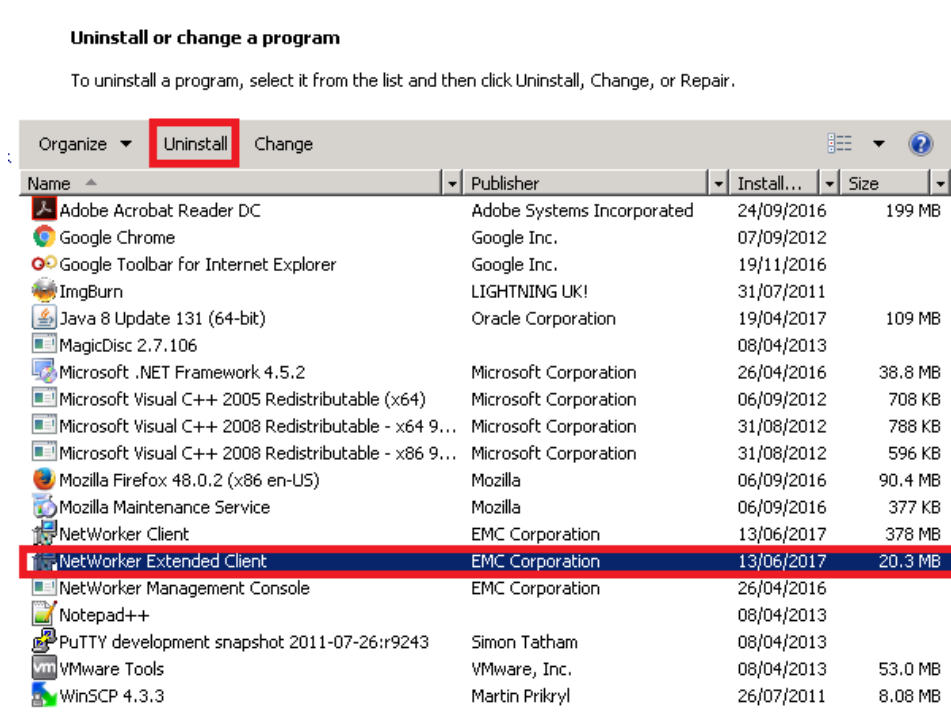
1. Log in to the target host as the local administrator.
2. Ensure no programs, such as Windows Explorer, are accessing the directories or the files in `NetWorker_install_path` directory.

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**.

The following figure shows the **Uninstall or change a program** window with the NetWorker Extended Client highlighted.

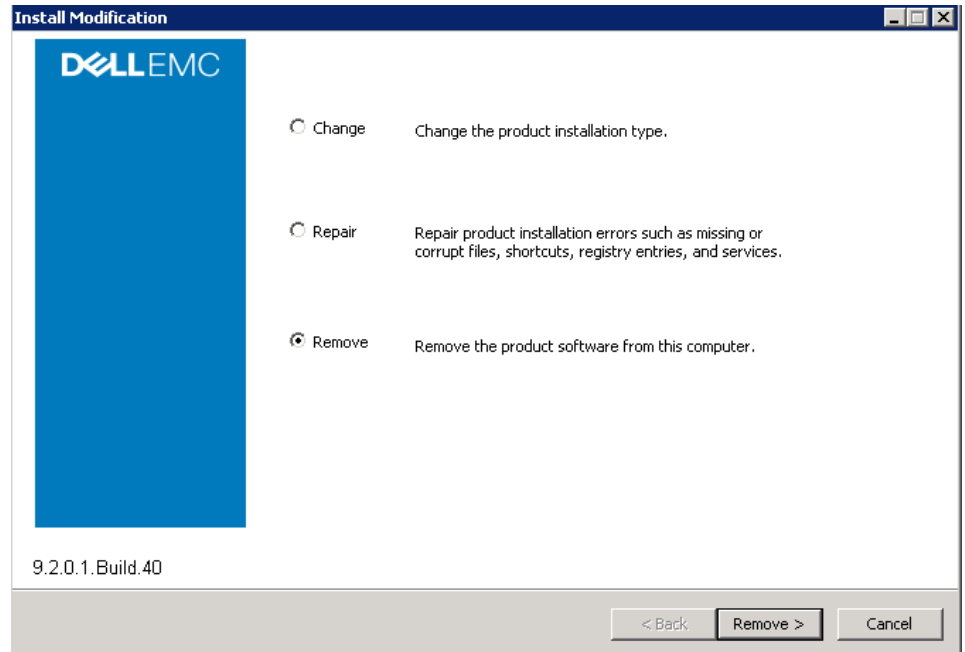
Figure 6 Uninstall the NetWorker Extended Client software



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

The following figure shows the **Installation Modification** window.

Figure 7 Installation Modification



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

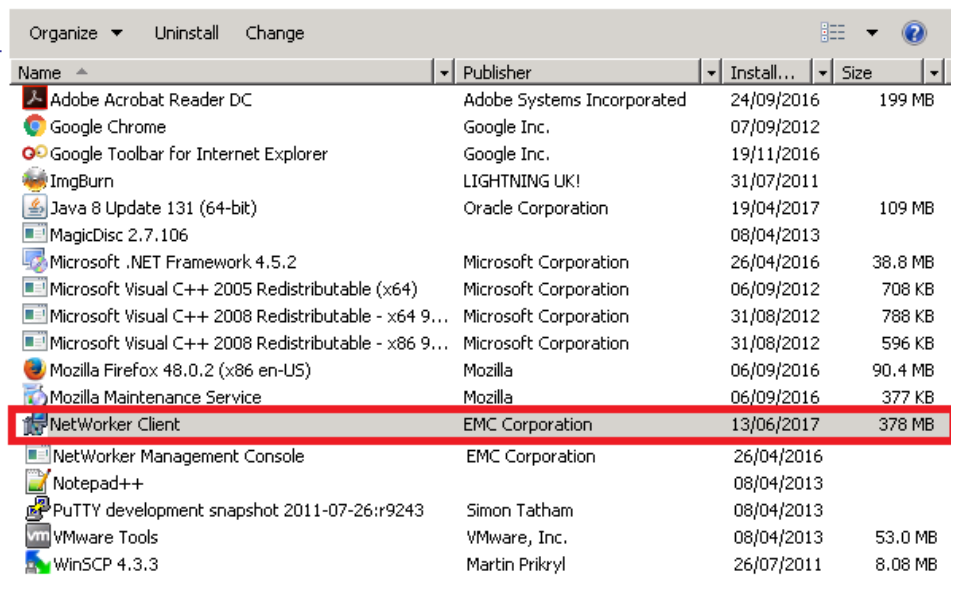
5. In the **Uninstall or change a program** window, select **NetWorker Client**, and then click **Uninstall**.

The following figure shows the **Uninstall or change a program** window with the NetWorker Client software highlighted.

Figure 8 Uninstall the NetWorker Client software

Uninstall or change a program

To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.



6. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.
7. In 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 the log files that the uninstallation process creates.

Uninstalling the software by using the installation file 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.

About this task

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-19.1.exe`:
 - On 32-bit hosts: `...\win_x86\networkr`
 - On 64-bit hosts: `...\win_x64\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 removes the NMC Server software first, and then removes the NetWorker software.

6. In the **Ready to Remove** window, the **Remove NetWorker Metadata** option is clear.

In the following scenarios ensure that the **Remove NetWorker Metadata** option is cleared:

- When you perform a NetWorker or NNMC Server software update.
- When you reinstall the NetWorker software.

By default, the **Remove NetWorker Metadata** checkbox is clear, which 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 the **Remove NetWorker Metadata** checkbox is clear, 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:

- [Installing the NetWorker Server software by using silent install](#)..... 110
- [Uninstalling the NetWorker software by using silent uninstallation](#).....115
- [Using SMS to install or uninstall the NetWorker software](#)..... 115

Installing the NetWorker Server software by using silent install

The following section describes how to perform a silent installation of the NetWorker Server software. Before you start the NetWorker Server installation, install the Java provided in NetWorker Runtime Environment or the latest version of the 64-bit Java 8 on the host.

Before you begin

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

Note: Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the 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-19.1.exe` program in the directory where you extracted the NetWorker installation software.
2. Use the `NetWorker-19.1.exe` command to install the software:

```
NetWorker-19.1.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, if the installation requires a restart.
- `/forcerestart` ensures that a restart occurs after the installation completes, if the installation requires a restart.
- `/promptrestart` ensures that a user prompt appears when the installation 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 creates the main log file and all other installation log files in the `C:\users\username\AppData\Local\temp` directory.

Note: You must specify the path and filename. If you do not specify a filename, the installation does not start.

The following tables summarize the supported installation options.

Note: Installation options do not require the `/` prefix, and option names are case sensitive.

Table 26 NetWorker Server installation options

Installation option	Description
<code>InstallLevel=300</code>	Required. Specifies that the installation level is for a NetWorker Server server. The following are the values:

Table 26 NetWorker Server installation options (continued)


Installation option	Description
	<ul style="list-style-type: none"> • 300 - Server installation. • 200 - Node installation. • 100 - Client installation.
AdminPassword=password	<p>Required. Specifies the administrator account for the NetWorker Authentication Service. Ensure the password complies with the following minimum requirements:</p> <ul style="list-style-type: none"> • Nine characters long • One uppercase letter • One lowercase letter • One special character • One numeric character <p> Note: You will use the administrator account to log in to the NMC Server.</p>
KSFPassword=password	<p>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.</p>
TSFPassword=password	<p>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 the NetWorker Authentication Service. Specify a password that contains at least six characters and does not contain dictionary words.</p>
CacertsPassword=password	<p>Required. Specifies the password for the Java Common Truststore (cacerts).</p>
CreateKSFNew=1/0	<p>Optional. Determines whether the installation creates a keystore file or uses an existing keystore file.</p> <ul style="list-style-type: none"> • To create keystore file, specify a value of 1. • To instruct the installation 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 <p>When you do not specify this option, the installation defaults to a value of 1.</p>
KSFPath=path	<p>Optional. Specifies the path to the keystore file. When you do not specify this option, the installation uses the default path to the keystore file, C:\Program Files\EMC\Authc\tomcat\conf\authc.keystore</p>

Table 26 NetWorker Server installation options (continued)





Installation option	Description
<code>TCCertExistCacerts=yes/no</code>	Required. Determines whether the <code>emcauthctomcat</code> certificate is in the <code>cacerts</code> file. The default value is <i>no</i> . If the Java is already installed, then the value should be <i>yes</i> .
<code>AuthCInstallFolder =path</code>	Optional. Specifies a non-default installation location for the NetWorker Authentication Service software. When you do not specify this option, the installation uses the default location, <code>C:\Program Files\EMC\Authc</code>  Note: When you specify a path that includes spaces, enclose the path in "quotation marks".
<code>TCPort=port_number</code>	Optional. Specifies the port number that applications, such as, the NMC Server use to connect to the NetWorker Authentication Service. When you do not specify this option, the installation uses the default port number 9090.
<code>AuthcDb=path</code>	Optional. Specifies the path to install the NetWorker Authentication Service Tomcat database files. When you do not specify this option, the installation uses the default, <code>C:\Program Files\EMC\Authc\tomcat\data</code>
<code>EnablePs=1/0</code>	Optional. Determines whether the installation sets the PowerSnap service to autostart. <ul style="list-style-type: none"> To enable autostart of the PowerSnap service, specify a value of 1. To disable autostart of the PowerSnap, specify a value of 0. When you do not specify this option, the installation uses the default value of 1.
<code>InstallFolder=path</code>	Optional. Specifies a non-default installation location for the NetWorker software. When you do not specify this option, the installation uses the default location, <code>C:\Program Files\EMC NetWorker\nsr</code>  Note: When you specify a path that includes spaces, enclose the path in "quotation marks".
<code>NwFirewallConfig=1/0</code>	Optional. Determines whether the installation configures firewall rules for NetWorker. <ul style="list-style-type: none"> To configure firewall rules, specify a value of 1. To instruct the installation to not configure firewall rules, specify a value of 0.  Note: When you do not specify this option, the installation defaults to a value of 1.
<code>StartServices=1/0</code>	Optional. Determines whether the installation starts the NetWorker services after the installation completes.

Table 26 NetWorker Server installation options (continued)

Installation option	Description
	<ul style="list-style-type: none"> To start the services, specify a value of 1. To instruct the installation process not to 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 Authentication Service services. <p>Note: When you do not specify this option, the installation defaults to a value of 1.</p>
<code>AuthCStartServices=yes/no</code>	<p>Optional. Determines whether the installation starts the NetWorker Authentication Service service after the installation completes.</p> <ul style="list-style-type: none"> To start the service, specify a value of Yes. To instruct the installation process not to 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. <p>Note: When you do not specify this option, the installation defaults to a value of Yes.</p>
<code>EnableLicenseManager=1/0</code>	<p>Optional. Determines whether the installation installs the NetWorker License Manager (LLM) server option.</p> <p>Note: Do not install LLM on a NetWorker server.</p> <ul style="list-style-type: none"> To install LLM, specify a value of 1. To instruct the installation not to install LLM, specify a value of 0. <p>Note: When you do not specify this option, the installation defaults to a value of 0.</p>
<code>OptionGetNMC=1/0</code>	<p>Optional. Determines whether the installation installs the NMC Server software after the NetWorker software installation completes.</p> <ul style="list-style-type: none"> To install NMC Server, specify a value of 1. <p>Note: When you choose to also install the NMC Server, you can define additional NMC-specific options. The NMC Server installation options table provides more information.</p> <ul style="list-style-type: none"> To instruct the installation not to install NMC Server, specify a value of 0. <p>Note: When you do not specify this option, the installation defaults to a value of 0.</p>
<code>OptionLANGPACK=1/0</code>	<p>Optional. Determines whether the installation installs optional language packs during a NetWorker Authentication Service software installation. The</p>

Table 26 NetWorker Server installation options (continued)

Installation option	Description
	<p>NetWorker software always installs the English language pack.</p> <ul style="list-style-type: none"> • To install the language packs, specify a value of 1, then specify a value of 1 for the appropriate language packs: <ul style="list-style-type: none"> ▪ French—LangPackFR ▪ Japanese—LangPackJA ▪ Korean—LangPackKO ▪ Chinese—LangPackZH • To instruct the installation not to install the language packs, specify a value of 0. <p> Note: When you do not specify this option, the installation defaults to a value of 0.</p>
InstallBbb=1/0	Optional. Determines whether the installation installs the NetWorker BBB software.
NmcInstallFolder =path	Optional. Specifies the installation location for the NMC software. The default location is, “C:\Program Files\EMC NetWorker\Management”
DbFolder =path	Optional. Specifies the NMC database location. The default location is, “C:\Program Files\EMC NetWorker\nsr\nmddb”
ConsolePort=port_number	Optional. Specifies the NMC client service port.
AuthHost=localhost	Optional. Specifies the authentication server address.
AuthPort=port_number	Optional. Specifies the authentication port.
WebPort=port_number	Optional. Specifies the web server port.
DbUpgradeRequired=yes/no	Optional. Determines whether the NMC DB upgrade is required.
KeepDbData=yes/no	Optional. Determines whether the installation overwrites the existing NMC database.

For example, run the following command to install NetWorker Server with

```
NMC: /> NetWorker-18.0.0.0.exe /s /q /v /l
'C:\cygwin64\tmp\NWinstall.log'
'InstallFolder=c:\folder_name\nsr' InstallLevel=300
HomebaseInstall=0 NoHba=1 InstallBbb=0 StartServices=0
NwFirewallConfig=1 NwInstallLevel=300
'AuthCInstallFolder=c:\folder_name\nsr\authc-server'
'AuthCdb=c:\folder_name\nsr\authc-server\tomcat\data'
CreateKSFNew=yes KSFPasswd=KSFPass-1
TSFPasswd=TSFPass-1 AdminPasswd=EMCadmin-1
CacertsPasswd=changeit TCCertExistCacerts=yes
OptionGetNMC=1 'NmcInstallFolder=c:\folder_name\nmc'
'DbFolder=c:\folder_name\nmc\nmddb' ConsolePort=9001
```

```
WebPort=9000 AuthHost=localhost AuthPort=9090
DbUpgradeRequired=No KeepDbData=no
```

After you finish

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

Uninstalling the NetWorker software by using silent uninstallation

To perform a silent or unattended uninstallation 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-19.1.exe` file.

i **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-19.1.exe /uninstall installation_switches 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 creates the main log file and all other installation log files in the `C:\users\username\AppData\Local\temp` directory.

i **Note:** You must specify the path and filename. If you do not specify a filename, the installation does not start.

Using SMS to install or uninstall the NetWorker software

Use the Microsoft Systems Management Server (SMS) to perform a push installation and removal of the NetWorker software.

About this task

i **NOTICE** For best results, do not use a computer that is running the NetWorker server software as the SMS server host. Configure the SMS server software on a NetWorker client. Refer to the Microsoft SMS documentation for detail information about how to perform SMS procedures, such as creating an installation package or deploying an installation job.

Follow this procedure to use the SMS software to install or remove the NetWorker software.

Procedure


1. Create a shared directory on a local disk on the SMS server.

For example, create a shared directory called `networkr`.

2. Copy all of the files from the appropriate directory on the NetWorker CD-ROM to the directory created in the previous step.

For example, copy all of the files from `\win_x86\networkr` on the CD-ROM to the `networkr` directory on the SMS server.

3. Use the **SMS Administrator Console** to create an installation package from the `NetWorker.sms` package definition file. The definition file is located in the `networkr` directory.

 **NOTICE** The `NetWorker.sms` file is intended to be used as a starting point for a package definition. The Microsoft SMS documentation provides complete instructions on how to customize the package definition for a specific environment.

4. Use the **SMS Administrator Console** to create an installation or uninstallation job for the package you created in the previous step.
5. Deploy the installation or uninstallation job created in the previous step.

CHAPTER 8

Changing the NetWorker installation type or moving to another installation type

This chapter includes the following topics:

- [Installation type and features management](#)..... 118
- [Post installation steps](#).....126

Installation type and features management

NetWorker supports changing the NetWorker host installation type and installing additional features through the **Change** option in the **Windows Programs and Features** window, when you used the `NetWorker-19.1.exe` package to perform the initial installation on the host. If you used the `lgtocln-19.1.exe` package to install the NetWorker client software, you must remove the NetWorker Client and NetWorker Extended Client software, and then use `NetWorker-19.1.exe` to install the NetWorker software with a new installation type.

The package name that appears in the **Windows Programs and Features** window on a NetWorker host helps you to determine which package was used to install the NetWorker software:

- **NetWorker Client.** This package name appears when you use the `lgtocln-19.1.exe` package to install the NetWorker base client.
- **NetWorker Extended Client.** This package name appears when you use the `lgtotdclnt-19.1.exe` package to install the NetWorker Extended Client.
- **NetWorker.** This package name appears when you use the `NetWorker-19.1.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 a NetWorker base client, which was installed by using the `lgtocln` package, to another installation type, remove the NetWorker client software, and then use the `NetWorker-19.1.exe` package to install the NetWorker server, NMC server, or storage node software.

Procedure

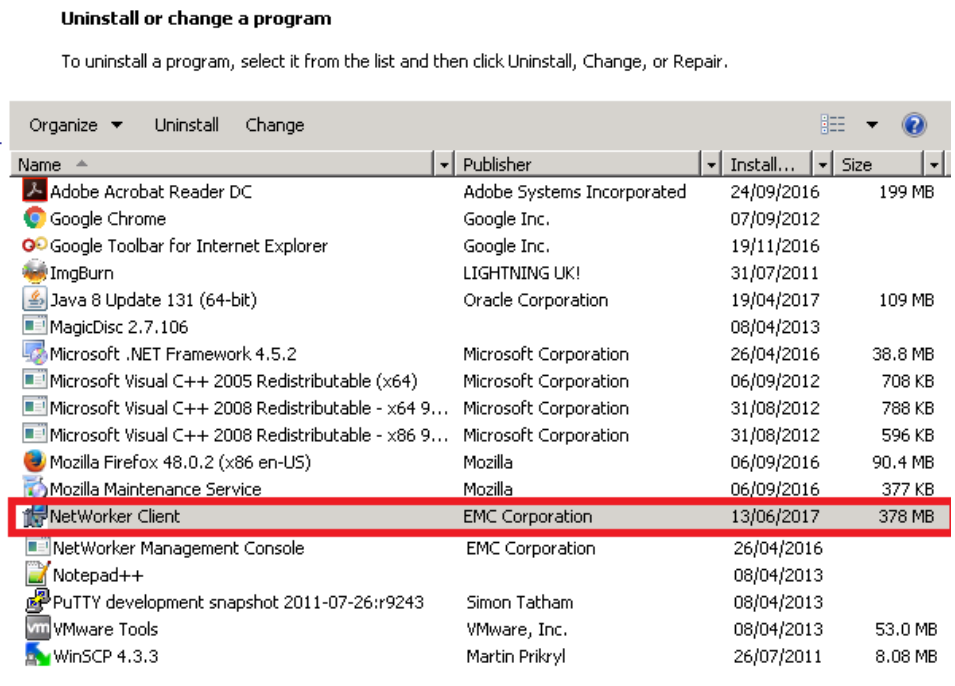
1. Log in to the target host as the local administrator.
2. Ensure no programs, such as Windows Explorer, are accessing the directories or the files in `NetWorker_install_path` directory.

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. In the **Complete the Setup** window, a link to the master setup log file appears. Click **Finish** to close the window.
5. In the **Uninstall or change a program** window, select **NetWorker Client**, and then click **Uninstall**.

The following figure shows the **Uninstall or change a program** window with the NetWorker Client software highlighted.

Figure 9 Uninstall the NetWorker Client software



6. On the **Install Modification** window, leave the default option **Remove** selected, and then click **Remove**.
7. In 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 the log files that the uninstallation process creates.

8. In the directory that contains the extracted NetWorker software, run `NetWorker-19.1.exe`.

Note: While you can run the `NetWorker-19.1.exe` package from a network location, to lessen the installation time, 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 a NetWorker Server, NMC Server, or NetWorker Storage Node into a NetWorker Client

Complete the following steps to change a NetWorker Server, NMC Server, or Storage Node into a NetWorker Client.

Procedure

1. Log in to the target host with a local administrator user.
2. From **Control Panel > Program** select the NetWorker program and then click **Change**.

When you used the `lgtoclnr` package to install the NetWorker base client, the program appears as NetWorker client. When you used the `NetWorker`

package to install the NetWorker or NMC software, the program appears as NetWorker.

3. In the **Install Modification** page, keep the default selection **Change** and then click **Next**.
4. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

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

5. On the **Wizard Options** page, select **Client**. If the **NetWorker Management Console** option is selected, clear the option. Click **Next**.

i **Note:** While you can run `NetWorker-19.1.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.

The **Modification Progress** window appears with the status of the installation.

6. (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.

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

7. To complete the installation, click **Finish**.
8. (Optional) For changes from a NetWorker Server installation, the change process does not remove the NetWorker Server databases. If you will not use this host as a NetWorker Server again, delete the following directories:

- `C:\Program Files\EMC NetWorker\nsr\res\nsrcpd`
- `C:\Program Files\EMC NetWorker\nsr\res\jobsdb`
- `C:\Program Files\EMC NetWorker\nsr\res\nsrdb`
- `C:\Program Files\EMC NetWorker\nsr\mm`

- C:\Program Files\EMC NetWorker\nsr\index
 - C:\Program Files\EMC NetWorker\nsr\authc-server
 - C:\Program Files\EMC NetWorker\nsr\catalogs
9. (Optional) For changes from an NMC Server installation, the change process does not remove the NMC databases. If you will not use this host as an NMC Server again, delete the C:\Program Files\EMC NetWorker\nsr\Management directory.

After you finish

When you change the NetWorker installation type to a NetWorker Client, the process changes the host to a NetWorker Base Client. If you require any of the following functionality, you must 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` 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 Microsoft (NMM) 8.2.3 and 8.2.4 backups by using NMM
- Cloning and staging
- ProtectPoint for VMAX
- ProtectPoint for Recoverpoint

Changing an NMC server or a NetWorker Storage Node into a NetWorker server

Complete the following steps to change an NMC Server or a Storage Node into a NetWorker Server.

Procedure

1. Log in to the target host with a local administrator user.
2. From **Control Panel > Program** select the NetWorker program and then click **Change**.

When you used the `lgtocln` package to install the NetWorker base client, the program appears as NetWorker client. When you used the `NetWorker` package to install the NetWorker or NMC software, the program appears as NetWorker.

3. In the **Install Modification** page, keep the default selection **Change** and then click **Next**.
4. 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.

5. On the **Wizard Options** page, select **Server and Client** to install the NetWorker Server software or **Storage Node** to install the NetWorker Storage Node software. Click **Next**.

Note: While you can run `NetWorker-19.1.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. (Optional) For changes from an NMC Server installation, the change process does not remove the NMC databases. If you will not use this host as an NMC Server again, delete the `C:\Program Files\EMC NetWorker\nsr\Management` directory.
7. Follow the steps in the "Microsoft Windows Installation" chapter to install the NetWorker software.

Changing the NMC server or NetWorker server to a NetWorker storage node

Complete the following steps to change a NetWorker Server or an NMC Server to a Storage Node.

Procedure

1. From **Control Panel > Program** select the NetWorker program and then click **Change**.

When you used the `lgtocInt` package to install the NetWorker base client, the program appears as `NetWorker client`. When you used the `NetWorker` package to install the NetWorker or NMC software, the program appears as `NetWorker`.

2. In the **Install Modification** page, keep the default selection **Change** and then click **Next**.
3. 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.

4. On the **Wizard Options** page, perform the following tasks, and then click **Next**:
 - To change the installation type to a storage node, select **Storage Node**.
 - To change the installation type to a server, select **Server**.
 - Clear the **NetWorker Management Console** option.

Note: While you can run `NetWorker-19.1.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.

The **Modification Progress** window appears with the status of the installation.

5. (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.

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

6. (Optional) For changes from an NMC Server installation, the change process does not remove the NMC databases. If you will not use this host as an NMC Server again, delete the `C:\Program Files\EMC NetWorker\nsr\Management` directory.
7. (Optional) For changes from a NetWorker Server installation, the change process does not remove the NetWorker Server databases. If you will not use this host as a NetWorker Server again, delete the following directories:
 - `C:\Program Files\EMC NetWorker\nsr\res\nsrcpd`
 - `C:\Program Files\EMC NetWorker\nsr\res\jobsdb`
 - `C:\Program Files\EMC NetWorker\nsr\res\nsrdb`
 - `C:\Program Files\EMC NetWorker\nsr\mm`
 - `C:\Program Files\EMC NetWorker\nsr\index`
 - `C:\Program Files\EMC NetWorker\nsr\authc-server`
 - `C:\Program Files\EMC NetWorker\nsr\catalogs`



Changing the NetWorker server, NetWorker Storage Node or NetWorker Client to an NMC server

Complete the following steps to change a NetWorker host to an NMC server, or add the NMC Server to a NetWorker host without changing the NetWorker installation type.

Procedure

1. Log in to the target host with a local administrator user.
2. From **Control Panel > Program** select the NetWorker program and then click **Change**.

When you used the `lgtoclnr` package to install the NetWorker base client, the program appears as `NetWorker client`. When you used the `NetWorker` package to install the NetWorker or NMC software, the program appears as `NetWorker`.

3. In the **Install Modification** page, keep the default selection **Change** and then click **Next**.
4. 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.
5. On the **Wizard Options** page, perform the following steps:
 - a. (Optional) Select a different NetWorker installation type. The NMC server requires at a minimum that you select the NetWorker Client installation type.
 - b. Select **NetWorker Management Console**, and then click **Next**.
 -  **Note:** While you can run `NetWorker-19.1.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 NMC Server software.
7. In the **NMC Options** page, perform the following steps:
 - a. (Optional) Type the path to install the NMC Server software.

The default location is: `C:\Program Files\EMC NetWorker\Management`
 - b. When the host is not a NetWorker server, in the **Authentication Host** field, type the name of one of the NetWorker 19.1 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 specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.
 - c. When the host is not a NetWorker server, in the **Authentication Port** field, type the port number that is used by the NetWorker Authentication Service. The default port number is 9090.
 - d. Click **Next**.
8. If a Security Alert message is displayed, perform the following steps:
 - a. Click **View Certificate**, and then select **Install Certificate**.

The **Certificate Import Wizard** screen is displayed.
 - 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**.
9. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:
- **Database Destination Folder.** The default location is "C:\Program Files\EMC NetWorker\Management\nmddb"
 - **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 in use. For example, the NMC server uses port **5432** for TDS protocol communications with the NMC database. The preferred port for the Data Protection Advisor (DPA) product is **9002**.
 - **Web server port.** This port is used by the embedded HTTP server. The default port is 9000.

10. Click **Change**.

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

Note: A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the change to complete.

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.

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

Post installation steps

After you change the installation type of a NetWorker host, you must perform additional tasks on some NetWorker hosts to support the change.

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

PART 3

UNIX Installation

This chapter includes the following topics:

[Chapter 9, "HP-UX installation"](#)

[Chapter 10, "AIX installation"](#)

[Chapter 11, "Solaris Installation"](#)

CHAPTER 9

HP-UX installation

This chapter includes the following topics:

- [Road map for installing the NetWorker software on HP-UX](#)..... 130
- [Reviewing NetWorker requirements for HP-UX](#).....130
- [Default directory locations](#)..... 132
- [HP-UX: Installing the NetWorker client and storage node software](#).....132
- [Uninstalling the NetWorker software on HP-UX](#)..... 134

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 system.
2. The [Reviewing NetWorker requirements for HP-UX](#) section details HP specific requirements and considerations.
3. The [Changing default directory locations](#) section lists the default directory locations.
4. The [Installing the NetWorker software](#) section 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 *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 *NetWorker E-LAB Navigator* for the latest information about supported HP-UX operating systems for each NetWorker installation type.
- Ensure that the `maxfiles_lim` kernel parameter 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, and a message similar to the following appears:

```
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.
```

- Ensure that the version of OpenSSL on the host is 0.9.8e or later. When earlier versions of OpenSSL are installed on the machine, the nsrexecd daemon will fail to start and error messages similar to the following appear:

```
HP-UX host is running Starting nsrexecd /usr/lib/hpux64/dld.so:
Unsatisfied code symbol
'EVP_CIPHER_CTX_iv_length' in load module
'/opt/networker/lib/hpux64/libcommonssl-9.2.0.so'.
/sbin/init.d/networker[57]: 599 Killed Starting lgtolmd
/usr/lib/hpux64/dld.so: Unsatisfied code symbol
```

```
'EVP_CIPHER_CTX_iv_length' in load module
'/opt/networker/bin/lgtolmd'. /sbin/init.d/networker[61]: 601
Killed
```

 **Note:** To determine the OpenSSL version on the host, type `openssl version`.

Package disk space requirements

Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files.

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

Table 27 Size of compressed and uncompressed files

Operating system	Package name	Compressed file	Uncompressed file
HP-UX	nw19.1_hpux11_64.tar.gz	114 MB	340 MB
HP-UX Itanium	nw19.1_hpux11_ia64.tar.gz	199 MB	860 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 patch enhances tape device compatibility.
- For storage nodes that use tape devices, install patch PHKL_41474 or higher. This patch is required for CDI support.
- If you back up the `/dev` directory to a local HP-UX 11iv3 storage node, the backup might fail and the system might 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.

- Install the following patches on the host:
 - PHSS_37500
 - PHSS_39101
- 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

Default directory locations

NetWorker installs the binary files 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 binary files, configuration files, 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 the `swinstall` utility 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.

About this task

The `swinstall` utility uses the character mode or the System Administration Manager (SAM) utility. The character mode `swinstall` utility 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 28 HP-UX software packages

NetWorker component	Software packages
Client software	NWr-Client
Extended client software	NWr-XtdClient
Storage node software	NWr-Client NWr-XtdClient NWr-Node
Man pages	NWr-Man

Table 28 HP-UX software packages (continued)

NetWorker component	Software packages
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, by typing the following command:

```
cp /etc/rpc /etc/rpc.org
```

2. Log in to the target host as root.
3. Download the NetWorker software package from the Online Support website to a temporary location.

Note: Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

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

For example:

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

5. At the command prompt, type:

```
swinstall &
```

Note: If you use character mode, 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.
10. Press **Enter**.
11. From the **Actions** menu, click **Install**.
12. Verify the status of the install analysis, and then perform the following tasks:
 - 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) Verify that NetWorker installed correctly, by typing the following at the command prompt:

```
swlist | grep -i networker
```

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.

Before you begin

Remove the NetWorker module software including the NMDA and NMSAP module. The module installation guide describes how to uninstall the module software.

About this task

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, by typing the following command:


```
nsr_shutdown
```

3. Confirm that all the NetWorker daemons stop, by typing the following command:

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

4. Start the NetWorker software removal process, by typing the following command:

```
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 action runs an analysis of the removal operation.
7. To confirm that the analysis did not detect any problems, perform the following steps:
 - a. Click **Logfile**.
 - b. Fix any reported problems before you continue with the removal operation.
8. On the **Remove Analysis** window, click **OK** to continue the removal operation.
9. On the **Remove** window, click **Done**.
10. From the **File** menu, select **Exit**.
11. Change to the `/opt/networker` directory and verify that all the files are removed from the directory.
12. If there is no plan to update or reinstall the software packages, remove the `/nsr` directory.

CHAPTER 10

AIX installation

This chapter includes the following topics:

- [Road map for installing the NetWorker software on AIX](#)..... 138
- [Reviewing the operating system requirements for AIX](#)..... 138
- [Changing the default directory locations](#)..... 139
- [Installing the NetWorker software](#)..... 141
- [Installing the AIX driver for DD Boost-over-FC feature](#) 142
- [Uninstalling the NetWorker software on AIX](#)..... 143

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. The "Software Requirements" chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating system.
2. The [Reviewing the operating system requirements for AIX](#) section outlines the software requirements to consider when installing NetWorker on the AIX operating system.
3. The [Changing the default directory locations](#) section lists the default directory locations.
4. The [Installing the NetWorker software](#) section 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 *NetWorker Licensing Guide* provides information.

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 Online Support website website to a temporary location.

Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files.

The compressed package is 204 MB and the uncompressed size is 673 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, the DNS Server request times out and returns a failure message.
- If the time-out wait time is too long, some NetWorker commands can be delayed and will time out.

To prevent NetWorker commands from timing out, change the default name resolution lookup behavior to prevent IPv6 look ups. AIX uses three methods to configure the name resolution mechanism. Ensure that none of the methods 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 binary files.

About this task

The NetWorker software installs the binary files in the `/usr/bin` directory. If insufficient disk space exists 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. The following table lists the default location and space requirements for the NetWorker software.

Table 29 AIX default file locations and space requirements

NetWorker package	Location	Space
Client (lgtocInt)	<code>/opt/nsr</code>	11 MB
	<code>/usr/bin</code>	156 MB
	<code>/usr/lib</code>	87 MB
	<code>/usr/lpp</code>	40 KB
Storage node (lgtonode)	<code>/usr/bin</code>	91 MB
	<code>/usr/lib</code>	18 MB
	<code>/usr/lpp</code>	28 KB
Man pages (lgtoman)	<code>/usr/lpp</code>	36 KB

Table 29 AIX default file locations and space requirements (continued)

NetWorker package	Location	Space
	/usr/share	2 MB
French Language Pack (lgtofr)	/opt/nsr	5 MB
	/usr/bin	4 KB
	/usr/lib	32 KB
	/usr/lpp	44 KB
	/usr/share	2 MB
Japanese Language Pack (lgtoja)	/opt/nsr	7 MB
	/usr/bin	4 KB
	/usr/lib	40 KB
	/usr/lpp	44 KB
	/usr/share	2 MB
Korean Language Pack (lgtoko)	/opt/nsr	6 MB
	/usr/bin	4 KB
	/usr/lib	28 KB
	/usr/lpp	44 KB
	/usr/share	2 MB
Simplified Chinese Language Pack (lgtozh)	/opt/nsr	6 MB
	/usr/bin	4 KB
	/usr/lib	24 KB
	/usr/lpp	40 KB
	/usr/share	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, by typing the following command:

```
mkdir new_directory
```

2. Link the new directory to the /nsr directory, by typing the following command:

```
ln -s new_directory nsr
```

3. Before you install the NetWorker software, ensure that:
 - The PATH variable for the root and user accounts contains the `/usr/bin` directory.
 - Sufficient disk space exists to install the NetWorker software.

Installing the NetWorker software

The following section describes how to install the NetWorker Client, NetWorker Storage Node, and optional software, such as, the man pages and language packs on an AIX host.

About this task

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

Table 30 List of NetWorker packages required for each installation type

Installation type	Package
Client software	LGTONw.clnt.rte
Extended client software	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, by typing the following commands:

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

3. Download the NetWorker software package from the 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 typing the `tar` command.

For example:

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

5. Install the NetWorker software from the command prompt, by using the `installp` program.

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 names that are 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.cInt.rte
LGTONw.node.rte LGTONw.man.rte LGTONw.ja.rte
```

6. Confirm that you successfully installed the required packages for each installation by typing the following command:

```
lsllp -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. Install the DD Boost-over-FC driver from the command prompt, by using the `installp` program.

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.

About this task

The following table provides a list of the installed packages that you must remove for each installation type.

Table 31 NetWorker software packages to uninstall for each installation type

Installation type	Software packages
Client software	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. Get a list of installed NetWorker software packages, by using the `lspp` command:

```
lspp -I all | grep -i lgto*
```

3. Remove the software packages, by typing the following command:

```
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. Confirm the package removal, by typing the following command:

```
lspp -I all | grep -i lgto*
```

5. 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](#)..... 146
- [Reviewing the NetWorker requirements for Solaris](#)..... 146
- [Changing default directory locations](#)..... 148
- [Installing the NetWorker Client and Storage Node packages](#)..... 149
- [Deploying a VMware template for the host](#)..... 151
- [Uninstalling NetWorker on Solaris](#)..... 152

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.

About this task

1. The "Software Requirements" chapter lists the general requirements and considerations relevant to each supported Windows and UNIX operating system.
2. The [Reviewing the NetWorker requirements for Solaris](#) section details Solaris specific requirements.
3. The [Consider the NetWorker default directories](#) section lists the default directory locations.
4. The [Installing the NetWorker client and storage node packages](#) section 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 *NetWorker Licensing Guide* provides information.

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 Online Support website website to a temporary location.

Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files.

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

Table 32 Size of compressed and uncompressed files

Operating system	Package names	Compressed file size	Uncompressed file size
Solaris x86	nw19.1_solaris_x86.tar.gz	71 MB	244 MB
Solaris 64-bit SPARC	nw19.1_solaris_64.tar.gz	219 MB	621 MB
Solaris x64/AMD64	nw19.1_solaris_amd64.tar.gz	150 MB	523 MB

Solaris 10 requirements

Before you install NetWorker on Solaris 10, review the following requirements.


- Install Solaris 10 update 11 or later.
- 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.

 **Note:** The available on the Online Support website describes how to configure devices in a whole root zone.

Solaris zone requirements

NetWorker supports global, whole root, and sparse root zone configurations. Before you install NetWorker in a Solaris zone, review the information in the following table.

Table 33 Solaris zone requirements

Architecture	Required patch
Sparse root zone requirements	<p>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.</p> <p>The <i>NetWorker Administration Guide</i> describes how to create a NetWorker client.</p>
Global zone requirements	<p>A NetWorker Storage Node, including a dedicated storage node, and the NetWorker Client software support a Solaris global zone.</p> <p>Special ALL save sets are available to back up a global zone client when you install NetWorker in the global zone.</p> <p>“Using the save set all to back up particular file systems”</p> <p><i>NetWorker Administration Guide</i> describes when to use the special ALL save sets.</p>
Whole root zone considerations	<p>A NetWorker Storage Node, including a dedicated storage node, and the NetWorker Client software support a Solaris whole root zone.</p>

Table 33 Solaris zone requirements (continued)

Architecture	Required patch
	When you install NetWorker in a whole root zone, the NetWorker software is not required in the global zone.

Changing 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 NetWorker binary files are installed in the `/usr/sbin` directory and the NetWorker configuration, logs, and database files are located in the `/nsr` directory.

About this task

The following table specifies the default location and space requirements for the NetWorker software on a Solaris host.

Table 34 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)	<code>/opt/nsr</code>	11 MB	11 MB	11 MB
	<code>/usr/openwin</code>	8 KB	8 KB	8 KB
	<code>/usr/bin</code>	30 MB	66 MB	50 MB
	<code>/usr/sbin</code>	74 MB	143 MB	122 MB
	<code>/usr/lib/nsr</code>	12 MB	87 MB	79 MB
Storage node (LGTONode)	<code>/usr/sbin</code>	n/a	135 MB	102 MB
	<code>/usr/lib/nsr</code>		21 MB	15 MB
Man pages (LGToman)	<code>/share/man</code>	2.3 MB	2.2 MB	2.2 MB
French language pack (LGTOfr)	<code>/opt/nsr</code>	2.7 MB	5.7 MB	5.7 MB
	<code>/usr/lib</code>	32 KB	32 KB	32 KB
	<code>/usr/sbin</code>	8 KB	8 KB	8 KB
	<code>/share/man</code>	2.3 MB	2.3 MB	2.3 MB
Japanese language pack (LGTJa)	<code>/opt/nsr</code>	3.2 MB	6.8 MB	6.8 MB
	<code>/usr/lib</code>	40 KB	40 KB	40 KB
	<code>/usr/sbin</code>	8 KB	8 KB	8 KB
	<code>/share/man</code>	2.2 MB	2.2 MB	2.2 MB

Table 34 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
Korean language pack (LGTOko)	/opt/nsr	2.8 MB	6.0 MB	6.0 MB
	/usr/lib	32 KB	32 KB	32 KB
	/usr/sbin	8 KB	8 KB	8 KB
	/share/man	2.1 MB	2.1 MB	2.1 MB
Simplified Chinese language pack (LGTOzh)	/opt/nsr	2.1 MB	5.7 MB	5.7 MB
	/usr/lib	24 KB	24 KB	24 KB
	/usr/sbin	8 KB	8 KB	8 KB
	/share/man	1.9 MB	1.9 MB	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, by typing the following command:

```
mkdir new_directory
```
2. Link this directory to the `/nsr` directory, by typing the following command:

```
ln -s new_directory /nsr
```
3. Ensure that the `PATH` variable for the root and user accounts contains the `/usr/sbin` directory.
4. Ensure that sufficient disk space exists to install the NetWorker files in the default location.

Installing the NetWorker Client and Storage Node packages

About this task

This section describes how to install the NetWorker 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 Online Support website to a temporary location.

Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files.

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

For example:

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

4. Create a backup copy of the `rpc.org` configuration file, by typing the following command:

```
cp /etc/rpc /etc/rpc.org
```


5. Display the list of available installation packages, by typing the following command:

```
pkgadd -d path_to_install_files
```

The following packages are available:

```
1 LGTOclnt NetWorker Client (sparc) 19.1.0.0.Build.xxx
2 LGTOfr NetWorker French Language Pack (sparc)
19.1.0.0.xxx
3 LGTOja NetWorker Japanese Language Pack (sparc)
19.1.0.0.xxx
4 LGTOko NetWorker Korean Language Pack (sparc)
19.1.0.0.xxx
5 LGTOlicm NetWorker License Manager(sparc) 19.1.0.0.xxx
6 LGTOman NetWorker Man Pages (sparc) 19.1.0.0.xxx
7 LGTONode NetWorker Storage Node (sparc) 19.1.0.0.xxx
8 LGTOxtclnt NetWorker Extended Client (sparc)
19.1.0.0.xxx
9 LGTOzh NetWorker Chinese Language Pack (sparc)
19.1.0.0.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

You can specify optional packages, including language packs, man pages, and the Extended Client, at the **Select package** prompt. Type the optional package numbers after the required package numbers.

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 options:

- 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 FQDN 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.corp.com
Enter a NetWorker server hostname [no more]:
```

i **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 automatically installs any additional packages.

i **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 process, type the following command from a prompt:

Initialization system	Command
sysvinit	<code>/etc/init.d/networker stop</code>
systemd	<code>systemctl stop networker</code>

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 NetWorker on Solaris

To uninstall the NetWorker software, complete the following procedure.

About this task

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

Table 35 NetWorker packages on Solaris

Component	Package name
NetWorker License Manager	LGTOlicm
Client	LGTOclnt
Man pages	LGTOman
French language support	LGTOfr
Japanese language support	LGTOja
Korean	LGTOko
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 no backups and recoveries are running, by typing the following command at the prompt:

```
nsr_shutdown
```

3. Confirm that the NetWorker daemons stopped, by typing the following command:

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

4. Determine which packages to remove, by typing the following command:

```
pkginfo -i | grep LGTO
```

5. Remove each LGTO package that is listed in the `pkginfo` output by using the `pkgrm` command:

```
pkgrm LGTOlicm LGTOclnt LGTOman LGTOfr LGTOja LGTOko LGTOzh
```

6. Ensure that you remove packages in the order provided in the example, and exclude packages that are not listed in the `pkginfo` command.
7. Confirm the package removal, by typing `y`.
8. Continue with the package removal, by typing `y`.
9. Repeat steps 6-8 for each package.

Note:

- When you remove 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:

```
pkgm: 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 `pkgm` program a second time to remove each failed package.

- When you remove the NetWorker client software, the removal process might fail to remove the LGTONode package. The following error messages might appear:

```
Error: 'can't unload the module: Device busy';
Error: 'ERROR: the sgen driver did not unload properly';
Error: 'pkgm: ERROR: preremove script did not complete success;
```

To remove the LGTONode package, in the preremove script, replace the following line:

```
echo "ERROR: the sgen driver did not unload properly"
EXIT=1
```

with

```
echo "WARNING: sgen.conf modifications will be active after next
reboot."
```

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

PART 4

OS-X Client Installation

This chapter includes the following topics:

[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](#).....158
- [Reviewing the OS-X requirements](#).....158
- [Installing the NetWorker Client software](#)..... 158
- [Verify the software installation](#)..... 160
- [Deploying VMware template for OS-X hosts](#)..... 160
- [Uninstalling the NetWorker Client software on OS-X](#)..... 161

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 *NetWorker Licensing Guide* provides information.

Reviewing the OS-X requirements

This section outlines the software requirements to consider when installing NetWorker on the OS-X operating system.

The NetWorker software:

- Only supports the NetWorker client on OSX.
- Supports Mac OS Power PC and Mac OS Intel.
- Supports the following file systems:
 - HFS+ (including journaled)
 - HFS
 - UFS
- Requires 112 MB of free disk space for the software installation process. The following table outlines the OSX Directory and space requirements.

Table 36 OSX Directory and space requirements

Directory	Space required
/applications	8 MB
/usr/bin	40 MB
/usr/sbin	58 MB
/usr/lib/nsr	4 MB
/usr/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 Online Support website to a temporary location.

The package name is `nw19.1_macosx.dmg`.

 **Note:** Ensure that sufficient disk space exists on the host to store the compressed NetWorker software package and the uncompressed files.

2. Double-click the `nw19.1_macosx.dmg` file.

This action mounts the NetWorker software on a NetWorker volume.

3. Double-click the `NetWorker-19.1.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.
(Optional) 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.
2. Mount the volume that contains the NetWorker software, by typing the following command:

```
hdiutil mount path_to_Networker_package.dmg/nwxxx_macosx.dmg
```

3. Change to the directory that contains the NetWorker installation package, by typing the following command:

```
cd /Volumes/mount
```

4. As a sudo user, install the NetWorker software by typing the following command:

```
$ sudo /usr/sbin/installer -pkg /Volumes/mount/NetWorker.pkg -target /
```

When the installation completes successfully, output similar to the following appears:

```
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 the following command:

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

If the `nsrexecd` daemon did not start, as a `sudo` user, start the daemon from a Terminal window, by typing the following command:

```
$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.

About this task

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:

```
sudo launchctl unload /Library/LaunchDaemons/
com.xyz.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. It is not recommended 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 pkgutil --forget com.emc.networker
```


PART 5

Verifying and Troubleshooting the Installation

This chapter includes the following topics:

[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](#).....166
- [About the Dell EMC Licensing Solution](#).....166
- [Configuring the NMC server to manage additional NetWorker servers](#).....169
- [Starting the NMC server GUI for the first time](#)..... 171
- [Starting the NMC client after the first time](#)..... 179

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 Dell EMC Licensing Solution

The Dell EMC Licensing Solution, available in NetWorker 9.0 and later, is a licensing standard that stores all licensing information for the environment in one license file, which is stored on both the NetWorker server and, if using a served license, the License Server. All installations of NetWorker 9.0 and later use the Dell EMC Licensing Solution available on the Online Support website.

Various components are required to set up the available on the Online Support website. These components include the following items:

- License Server (if using a served license)
- A license file that contains either a Capacity Entitlement or an Update Entitlement.
- Management of the License Server through **LMTOOLS** (Windows) or `lmgrd` (Linux).

Dell EMC License Server (served licenses only)

After you install the NetWorker software, if using a served license install the Windows or Linux 64-bit Dell EMC License Server package. The Dell EMC License Server manages the licenses and capacity allocation.

The following table lists the 64-bit platforms that support installation of the Dell EMC License Server.

Table 37 Supported License Server platforms

Platform	Versions
Windows	Windows Server 2019 x64 , Windows 2012
Linux	Red Hat Enterprise Linux 5.x, 6.x, 7.x, 7.6 SuSE Linux Enterprise Server 11.x, 12.x, SLES 12 SP4 x64

After you install the Dell EMC License Server, you must obtain the license file from Dell EMC Licensing. Only one license file is required per Dell EMC License Server for all datazones. This file contains the host and port information for the Dell EMC License Server. The Dell EMC License Server should use a default or specific TCP/IP port number. For NetWorker, the default port is 27000. If you use a non-default port, this port number must be specified in the license file. You can set the Dell EMC License Server to listen to an available TCP/IP port, typically in the 27000 to 27009 range. It is recommended that, at a minimum, you keep ports 27000 and 27001 open.

You can start the Dell EMC License Server with the LMTOOLS application on Windows or the `lmgrd` command-line utility on Linux.

Note: You can run the Dell EMC License Server on the same server as the NetWorker Management Console. However, it is not recommend that you run the NetWorker Server and the Dell EMC License Server on the same host. If you run

both servers on the same host, ensure that you start the NetWorker Server before you start the `lmgrd` process.

License file

The license file that you receive from Dell EMC Licensing indicates the NetWorker features and capacity you purchased, or the options that will be made available for evaluating NetWorker. The license file additionally indicates whether you are using a served or unserved license. The license file is an encrypted ASCII text file, which prevents tampering with the content or making changes directly in the file.

You can obtain the license file from Dell EMC Licensing after you download and install NetWorker 19.1 and, if required, the Dell EMC License Server software. For served licenses, the license file must reside on a platform that runs the Dell EMC License Server and is accessible to NetWorker. For unserved licenses, only NetWorker Server access is required.

When you receive the license file, perform the following actions:

- For served licenses, store a copy of the file in the Dell EMC License Server folder:
 - On Linux, copy the file to the `opt/emc/licenses/` directory.
 - On Windows, copy the file to the `C:\Program Files\EMC License Server\elms\licenses` folder.
- For served and unserved licenses, launch the **NMC NetWorker Administration** window on the NetWorker Server, right-click the server, and then select **Properties** from the list. In the **Licensing** tab of the **Server Properties** window, browse to and select the license file to populate the **CLP license text** field.

The license file can contain one or both of the following types of entitlements:

- An update entitlement, if you are updating from a previous NetWorker release, and
- A single capacity entitlement, which you can share across multiple datazones.


All datazones can point to a single Dell EMC License Server to request capacity. Only one license file is required per Dell EMC License Server for all datazones.

Management of the Dell EMC License Server (served licenses only)

After you install the Dell EMC License Server, the system places a management application on an accessible NetWorker server. Use the appropriate Dell EMC License Server management application to complete the setup and configuration of the Dell EMC Licensing Solution.

On Windows, use the **LMTOOLS** application. On Linux, use the `lmgrd` command-line utility.

The management application should run constantly to serve licenses to NetWorker. Therefore, the application requires a running `EMCLM` vendor daemon, which delivers license features to NetWorker and tracks counted features. The application automatically manages `EMCLM` by starting, stopping, and restarting the daemon as required. It also writes to the Dell EMC License Server's `lmgrd.log` troubleshooting file to report errors and license-feature activity. The `lmgrd`, `EMCLM`, `license`, and troubleshooting log file are located in the same directory.

 **Note:** Use the *License Server Installation and Administration Guide* for complete Dell EMC License Server management instructions.

Quick Start: Activate the Dell EMC Licensing Solution

The following section provides an overview of the steps that are required to activate the Dell EMC Licensing Solution in a new installation of NetWorker. For more details, see subsequent sections of the *NetWorker Licensing Guide* and the *License Server Installation and Administration Guide*.

Before you begin

Obtain the license file from Dell EMC Licensing. For a new installation of NetWorker, this file contains a Capacity Entitlement. You can obtain the file after you provide Dell EMC Licensing with the License Server host/IP information and the required capacity. If using a served license and you cannot use the default port of 27000 for communication between NetWorker and the License Server, you must also provide the port number. Dell EMC Licensing requires this information to create the license file.

Procedure

1. If using a served license, download the License Server package for the appropriate platform from the same location that you downloaded the NetWorker software from. If using an unserved license, skip to step five.
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. The following table provides the package name for each OS version.

OS	Package name
Windows, Windows server 2019, Windows 10 x86,	EMC_LicenseServer_3.4.0_x64_installer.msi
SuSE 11	emclenseserver-3.4.1-2.x86_64_lsb.rpm
RHEL 6, 7, 7.6, and SuSE 12	emclenseserver-3.5.0-1.x86_64_lsb.rpm
Windows server 2012/2012 R2/2016	DellEMC_LicenseServer_3.6.0_x64.msi
RHEL 6,7, 7.6, CentOS 7 variants, SUSE Linux Enterprise versions 11 and 12, SLES 12 SP3, SLES12 SP4, SLES 15	delllemclenseserver-3.6.0-0.x86_64_lsb.rpm

3. In the location that you installed the License Server, copy the license file to the following directory:

 **Note:** Do not rename the license file.

- On Windows: C:\Program Files\EMC License Server\elms\licenses
- On Linux: /opt/emc/licenses

Note: On Linux, you might be required to complete this step before you install the License Server package.

4. Complete the License Server configuration, 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 the `lmgrd` command-line utility.
5. On the NetWorker server, launch the NMC **Administration** window, right-click the server, and then select **Properties** from the list. The **Server Properties** window appears.
 - a. Select the **Licensing** tab.
 - b. In the **CLP license text** field, click **Browse**.
 - c. Navigate to the location of the license file, and select the license file.
 - d. Click **Validate license**. The **Validate license** button will be disabled until the contents are validated. You can check the status by using the `nsrlic -C` command.
6. In the **Server Properties** window, on the **Licensing** tab, ensure that the following fields have the correct values, and then click **OK**.
 - CLP license server (served license only)
 - CLP License Server Port (served license only)
 - Solution ID
 - CLP SWID

Note: CLP refers to the Dell EMC License Server.

7. In the NMC **Administration** window, click **Server**, and then select **Registrations**. Confirm that 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

About this task

The NMC Server can use only 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 uses 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`
- `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.

For example:

```
nsrauthtrust -H nwserver.corp.com -P 9090
```

2. Grant the NetWorker Authentication Service user groups access to the NetWorker Server, by typing the `nsraddadmin` command:

```
nsraddadmin -H Authentication_service_host -P
Authentication_service_port_number
```

For example:

```
nsraddadmin -H nwserver.corp.com -P 9090
```

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. (Optional) 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 *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 *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 web-based Java 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. Dell EMC recommends you to

use NMC launcher to launch the NMC. For more information on installation of NMC launcher, see NetWorker Runtime Environment Readme Guide

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 specified NetWorker server 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 NetWorker Authentication Service authenticates on one NetWorker server to access another NetWorker server. You must 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 uses 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`
- *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.

For example:

```
nsrauthtrust -H nwserver.corp.com -P 9090
```

3. Grant the NetWorker Authentication Service user groups access to the NetWorker Server, by typing the `nsraddadmin` command:

```
nsraddadmin -H Authentication_service_host -P
Authentication_service_port_number
```

For example:

```
nsraddadmin -H nwserver.corp.com -P 9090
```

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 `gstd`, `postgres`, and `httpd` processes are running on the NMC server.

Procedure

1. Confirm that the daemons have started, by typing the following command: `ps -ef | grep lgtonmc`.

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

```
nsrnmcc 7190 1 0 Nov23 ? 00:00:06 /opt/lgtonmc/bin/gstd
nsrnmcc 7196 1 0 Nov23 ? 00:00:00 /opt/lgtonmc/apache/bin/
httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nsrnmcc 7197 7196 0 Nov23 ? 00:00:00 /opt/lgtonmc/
apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nsrnmcc 7212 1 0 Nov23 ? 00:00:00 /opt/lgtonmc/postgres/
11.1/bin/postgres -D /nsr/nmc/nmcdb/pgdata
root 18176 18141 0 02:47 pts/0 00:00:00 grep lgtonmc
```

2. Start the NMC daemons, by typing the command below, based on the initialization system running on your Linux machine:

- `sysvinit`—`/etc/init.d/gst start`
- `systemd`—`systemctl start gst`

This action also starts the `postgres` and `httpd` processes.

NOTICE If `/etc/init.d/gst` file is missing for `sysvinit` systems or `gst` file is not enabled for `systemd` systems, run the script `- /opt/lgtonmc/bin/nmc_config`

Multiple `Postgres` processes appear. Two or more `httpd` processes appear. By default, these `httpd` processes run as `nsrnmcc`.

Ensuring that the NMC processes are running on a Windows host

Ensure that the NMC `gstd`, `postgres`, and `httpd` processes 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 action also starts the `postgres` and `httpd` processes.

Preparing to connect to the NMC server

You cannot connect to the NMC GUI with any of the following, previously supported, operating systems:

- AIX
- HP-UX
- Solaris

Before you try to connect to the NMC server from a supported host, ensure that JRE is correctly configured.

Note: Post-upgrade, the maximum heap memory configuration resets to default minimum value of the NetWorker. For information on configuration for the scaled setup, see the *Performance Optimization Planning Guide*.

Enable temporary internet file caching

Enable the `Temporary internet file caching` attribute in the **Java Control Panel** of the NMC client. When you do not enable this option in JRE, Java WebStart fails to start.

About this task

For Windows NMC clients:

1. Browse to **Control Panel > Java > General > Temporary Internet Files > Settings**.
2. Ensure that **Keep temporary files on my computer** is selected.

For UNIX NMC clients:

1. Start the Java W Start Application Manager, `javaws`.
2. Select **Enable temporary internet file caching**.

Confirm JRE and Internet Explorer compatibility (Windows only)

For Windows hosts only, ensure that you install the 64-bit JRE program for the 64-bit version of Microsoft Internet Explorer (IE).

About this task

To determine the Microsoft Internet Explorer version on the Windows NMC client, perform the following steps.

Procedure

1. Right-click the Microsoft Internet Explorer shortcut and select **Properties**.
2. Review the **Target Location** field.

The **Target Location** is the following path:

64-bit IE—`C:\Program Files\Internet Explorer\`

Add the NMC server to Exception Site list

Java security settings block the NMC server application.

About this task

Therefore, you must add the NMC server address to the JRE Exception Site list.

Note: These changes are not required if you are using NMC Launcher. For more information on installing NMC launcher, see *NetWorker Runtime Environment Readme Guide*

Procedure

1. Open the **Java Control Panel**.
2. On the **Security** tab, click **Edit Site list**.
3. Click **Add**.
4. In the **Location** field, specify the URL to the NMC server in the format `https://server_name:9000`

where *server_name* is the hostname of the NMC server.

Note: If you connect to the NMC server by using the IP address of the NMC server, add an entry for the IP address in the following format:

```
https://ip_address:9000
```

5. Click **OK**.
6. In the **Security Warning** window, click **Continue**.
7. Click **OK**.

Connecting to the NMC server GUI

About this task

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 *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:

```
https://server_name:https_service_port
```

where:

- *server_name* is the name of the NMC Server.
- *https_service_port* is the port for the embedded HTTP server. The default https port is 9000.

For example: `https://houston:9000`

The `gconsole.jnlp` file downloads to the host. When the download completes, open the file.

2. Optional, associate the `jnlp` file with a program.

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. In the dialog box that appears, select **Open with**, and then select **Java (TM) Web Start Launcher**. If this application does not appear, browse to the Java folder and select the `javaws.exe` file.

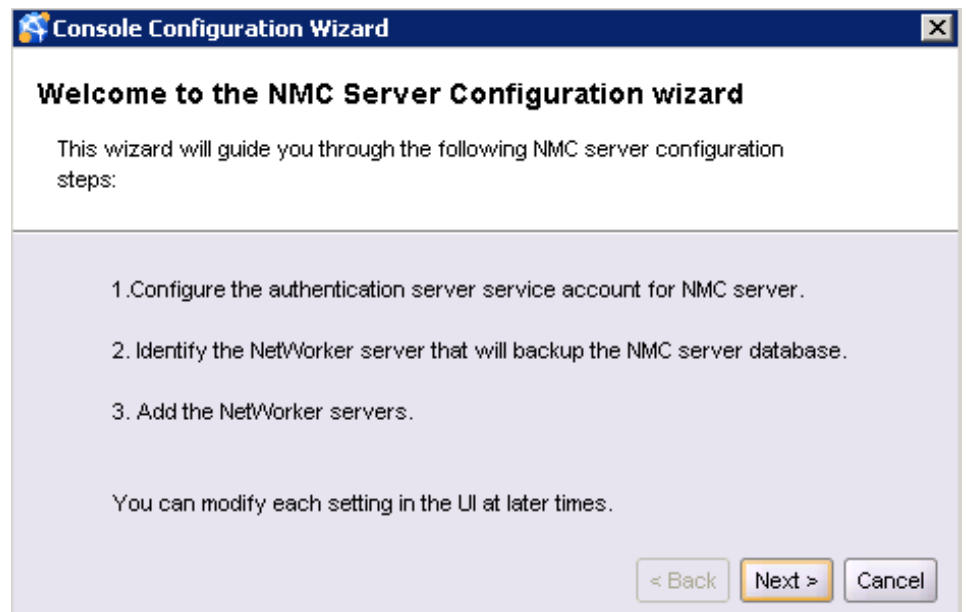
3. On the **Welcome** page, click **Start**.

Note: If the **Start** button does not appear but you see a warning message that 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**, and then click **Run**.
5. On the **Log in** page, specify the NetWorker Authentication Service administrator username and password, and then click **OK**.
6. On the **Licensing Agreement** page, select **Accept**.
7. On the **Welcome to the NMC Server Configuration Wizard** page, click **Next**.

The following figure shows the **Welcome to the NMC Server Configuration Wizard** page.

Figure 10 Welcome to the NMC Server Configuration Wizard page



8. On the **Set authentication server service account for the NMC server** page, review the setting and click **Next**.

The following figure shows the **Set authentication server service account for the NMC server** page.

Figure 11 Set authentication server service account for the NMC Server page

Console Configuration Wizard

Set authentication server service account for the NMC server

The following service account will be created on the Authentication Server.
If the account exists, it will be updated.

Authentication Server:

Port:

Service Account Name:

< Back Next > Cancel

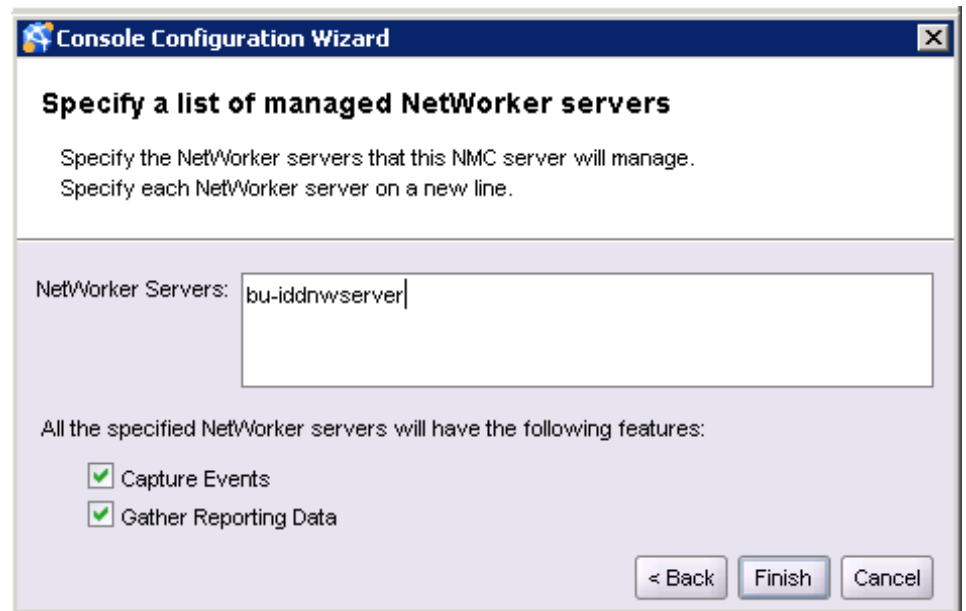
9. On the **Specify a list of managed NetWorker Servers** page:
 - a. Specify the names of the NetWorker Servers that the NMC Server will manage, one name per line.

Note: If the NMC Server is also the NetWorker Server, specify the name of the NetWorker Server.
 - b. Leave the default **Capture Events** and **Gather Reporting Data** options enabled.

Consider the following options:

- To allow the NMC Server to monitor and record alerts for events that occur on the NetWorker Server, select **Capture Events**.
- To allow the NMC Server to collect data about the NetWorker Server and generate reports, select **Gather Reporting Data**.

The following figure shows the **Specify a list of managed NetWorker servers** page.

Figure 12 Specify a list of managed NetWorker servers page

10. Click **Finish**. The installation starts the default web browser and connects to the NMC server. The **NetWorker Management Console** and **Getting Started** windows appear.
11. 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** page, the NMC **Enterprise** window does not display any NetWorker Servers. To add a host, in the left navigation pane, right-click **Enterprise**, and then click **New > Host**. The **Add New Host** wizard appears.

Changing the NetWorker servers that can access the host

About this task

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 a 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, by typing the following command:

```
nsr_shutdown
```

2. Edit or create the `/nsr/res/servers` file.
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 back up or perform a directed recovery to the host.

4. Start the NetWorker daemons. For each of the following operating systems, type the corresponding command:
 - AIX: `/etc/rc.nsr`
 - HP-UX: `/sbin/init.d/networker start`
 - Linux (sysvinit): `/etc/init.d/networker start`
 - Linux (systemd): `systemctl start networker`
5. For AIX and HP-UX only, confirm that the NetWorker daemons started, by typing the following command:

```
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 reaccess the NMC server:

Procedure

- Type the following url in the address bar of the web browser:
`https://server_name:https_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`

Verify the Installation

CHAPTER 14

Troubleshooting NMC GUI and NetWorker Server connection issues

This chapter includes the following topics:

- [Troubleshooting authorization errors and NetWorker server access issues](#)..... 182
- [Troubleshooting NetWorker daemon or service startup issues](#)..... 183
- [Troubleshooting NMC GUI and NetWorker server connection issues](#)..... 185

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 is displayed when the user that you used to log in to the NMC server is a member of many operating system groups and you try to perform NetWorker operations.

When a user belongs to many groups, the total number of characters in the group names can exceed the buffer size that NetWorker allots for 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 is displayed 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 is displayed.
2. In the **Enter Credentials** window, specify the user password, and then click **OK**. The NetWorker Authentication Service validates the user credentials and, if the validation succeeds, generates a new session token.

Unable to connect to server: Unable to set user privileges based on user token for SYSTEM: security token has expired

This message is displayed 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 is displayed.
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 is displayed when you run a CLI tool as an authenticated user but the user token has expired.

To resolve this issue, run the `nsrlogin` command to generate a new token for the user.

Unable to connect to server: Unable to authenticate with server "server-name": Authentication error

This issue is seen if the NMC (gstd) service and NetWorker server (nsrd) service are installed on separate hosts. When you log in to NMC and click the tabs and options the error: "Unable to connect to server: Unable to authenticate with server networker-

server: Authentication error: why = Server rejected credentials” is displayed. This issue arises due to peering conflict or incorrect permission settings.

To resolve the issue, clear the peering information:

1. Run the following command on the NetWorker Server:

```
nsradmin -p nsrexec
p type: nsr peer information; name: nmc-server-name
delete
yes
```

2. Run the following command on the NMC server:

```
nsradmin -p nsrexec
p type: nsr peer information; name: nmc-server-name
delete
yes
```

Note: The hostname is case sensitive. You must use the hostname that is displayed in the NMC console.

If the issue persists, then run the following command on the NetWorker Server:

```
nsrauthtrust -H nmc-server-name -P 9090
nsraddadmin -H nmc-server-name -P 9090
```

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>
NetWorker                                         EMC
```

- 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>
NetWorker                                         EMCNET~1    EMC
```

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.

Issues with GST Database Services

In windows platform, if the GST database services are not running, then check for the following.

1. Check whether the `nmcdb` & `nmcdb11` is present under `<NMCINSTALLDIR>` . The default locatoin is `C:\Program Files\EMC NetWorker\Management\`
2. If the directories are present, then rename `nmcdb` to `nmcdb_bkp` & `nmcdb11` to `nmcdb`.
3. Open the services window (`services.msc`), and then manually start the GST Database services.

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.

There is problem contacting the server, *server_name*. Please verify that server is running.

This error message appears after an upgrade when you attempt to connect to the NMC Server.

The NMC Server daemons are not running and the following error messages appear in the `gstd.log` file when you start the NMC Server daemons:

```
gstd NSR error 111 Unable to get authentication service host name
and port number. A valid host name and port number are required.
gstd NSR error 118 Run the command 'gstauthcfg' in the Console bin
directory to set the authentication service host name and port
number.
gstd NSR warning 39 wakeup error in ACM -- request shutdown
gstd NSR warning 23 *** gstd stopping
```

To resolve this issue, perform the following steps on the NMC Server:

1. From a command prompt change to the directory that contains the NMC Server installation files. The default directory location is `C:\Program Files\EMC NetWorker\Management\GST\bin`.
2. Type the following command: `gstauthcfg.exe -c -h authentication_host -p authentication_port`
where:
 - *authentication_host* is the host name of the NetWorker Server that provides authentication services to the NMC Server.
 - *authentication_port* is the port number used by the NetWorker Authentication Service on the NetWorker Server. The default port number is 9090.
3. Start the `gstd` service.

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. In the situation, 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 | grep port_number`
 - On Windows: `netstat -anp | findstr 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.
- 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.

Tuning the JVM heap memory

You must set the JVM heap memory to a maximum of 1 GB if you are using a 32-bit with a 32 bit JRE.

Procedure

1. Update the `Xmx2048m` parameter in the `jnlp` file on the NetWorker server.

You must change the `Xmx2048m` in `<j2se version="1.8+" java-vm-args="-XX:+IgnoreUnrecognizedVMOptions --add-modules=java.se.ee -Xms256m -Xmx2048m"/>` to `Xmx1024m`

In the example, you can see that the value of `Xmx2048m` is updated to `Xmx1024m`

```
<j2se version="1.8+" java-vm-args="-
XX:+IgnoreUnrecognizedVMOptions
--add-modules=java.se.ee -Xms256m -Xmx1024m"/>
```

2. Restart the NMC (GST) service on the NetWorker server.
3. Restart the NetWorker client.
4. Download the `jnlp` file by using the following link <https://NMC:9000/>
5. Run the `jnlp` file to launch the NMC.

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 NetWorker 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, `https://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, 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 *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.

About this task

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. Click **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.

About this task

- 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.

About this task

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 (sysvinit): `/etc/init.d/gst start`
 - On Linux (systemd): `systemctl start GST`
 - On Windows: Start the EMC GST service.

Internal server error when connecting to the NMC server using the FQDN

About this task

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.

Application blocked for security

This message appears on an NMC client when the Java cache was not cleared after an update to the NMC Server software.

Error messages similar to the following also appear in the message box: Failed to validate certificate. The application will not be executed.

To resolve this issue, clear the Java cache on the NMC client.

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: libssl2.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.

About this task

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, by typing the command below, based on the initialization system running on your Linux machine:
 - `sysvinit—/etc/init.d/gst start`
 - `systemd—systemctl start gst`

This action also starts the `postgres` and `httpd` processes.

NOTICE If `/etc/init.d/gst` file is missing for `sysvinit` systems or `gst` file is not enabled for `systemd` systems, run the script - `/opt/lgtonmc/bin/nmc_config`

Multiple `Postgres` processes appear. Two or more `httpd` processes appear. By default, these `httpd` processes run as `nsrnmcc`.

Unable to start `gstd` process on NMC Server

This section describes how to troubleshoot issues that occur 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_output`

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 NMC Server.

About this task

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:

- Another process is using the default 9000 httpd web service port.
- 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.
 1. In the **Services** applet:
 - a. Right-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:
 - `sysvinit—/etc/init.d/gst start`
 - `systemd—systemctl start gst`

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.

About this task

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`.
i **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.

About this task

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 one of the following combinations:

- 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 NMC client.

Procedure

1. Right-click the **Microsoft Internet Explorer** shortcut and select **Properties**.
2. Review the **Target Path** field.

The target path is on of the following locations:

- 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 GUI fails to connect to the NetWorker Server because the NetWorker daemons are not running on the NetWorker Server.

About this task

To resolve this issue, start the daemons on the NetWorker Server and try to connect to the NetWorker Server again.

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 NMC Server.

About this task

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 plug-in file, `libjavaplugin_oji.so`, which is located in the Firefox plugins directory and remove 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.
```

Trust failure between NMC and gstd

When you launch NMC after `gstd` is reinstalled or upgraded, the following error message appears:

```
The certificate presented by the NMC server on the host <host name>
has changed since the last time this user interface was run. This
could happen if the NMC server on this host was re-installed or if
the NMC server certificate was updated for some reason. Click "Yes"
if you trust the server or "No" to exit.
```

This occurs because of a trust failure between NMC and `gstd`.

To resolve the issue, delete the old certificate from the host before launching NMC. The certificate file (`NMC.ks`) is located under the `<user's_home_directory>/.NMC` directory.

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.

About this task

Perform the following steps on the host that you use to connect to the NMC GUI.

Procedure

1. Close down any web browser sessions 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, type `JAVAWS_VM_ARGS`.
 - e. In the **Variable value** field, type -
`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 authenticates the NMC users.

About this task

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 JRE version. On the NetWorker Server, the `nsrd` daemon does not start. During the installation process, the following error message might 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.

NetWorker displays the earlier version even after an upgrade

The NetWorker version under **Protection > Clients** displays the earlier version for both the server and the client even after an upgrade. This is an expected behavior. The updated version of the server and the client is displayed in the NMC UI only after the first workflow is triggered and completed.

