EMC® NetWorker® Module for Databases and Applications
Version 9.0.x

Installation Guide
302-001-784
REV 07
<table>
<thead>
<tr>
<th></th>
<th>TABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Revision history............................................................................... 7</td>
</tr>
<tr>
<td>2</td>
<td>Style conventions............................................................................... 9</td>
</tr>
<tr>
<td>3</td>
<td>Typical hosts and software in the NMDA environment............................ 12</td>
</tr>
<tr>
<td>4</td>
<td>Software directory on the DVD................................................................ 15</td>
</tr>
<tr>
<td>5</td>
<td>Zipped download file and software directory for install....................... 17</td>
</tr>
<tr>
<td>6</td>
<td>NetWorker startup commands on UNIX and Linux....................................... 18</td>
</tr>
<tr>
<td>7</td>
<td>Command to register the wizard......................................................... 22</td>
</tr>
<tr>
<td>8</td>
<td>Linking and unlinking commands for Oracle library file on UNIX or Linux.... 32</td>
</tr>
<tr>
<td>9</td>
<td>Linking and unlinking commands for Sybase ASE library file on AIX, Linux, Solaris... 34</td>
</tr>
<tr>
<td>10</td>
<td>Additional steps to enable NMDA for a 32-bit application...................... 51</td>
</tr>
</tbody>
</table>
As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

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

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

Purpose
This document describes how to install, update, and uninstall the EMC NetWorker Module for Databases and Applications (NMDA) release 9.0.x.

Audience
This document is intended for system administrators or database administrators (DBAs) who are responsible for installing software and maintaining backup and recovery systems for databases or applications.

Users of this guide must be familiar with the following topics:

- Backup, recovery, databases, applications, and network terminology
- Backup and recovery procedures
- Disaster recovery procedures

Revision history
The following table presents the revision history of this document.

Table 1 Revision history

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07</td>
<td>July 23, 2018</td>
<td>Updated the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <a href="#">Linking and unlinking NMDA in a MySQL environment</a> on page 30—Added this topic in Chapter 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <a href="#">Linking NMDA in a MySQL environment</a> on page 30—Updated this topic about linking NMDA in the MySQL environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <a href="#">Unlinking NMDA in a MySQL environment</a> on page 31—Added this topic about unlinking NMDA from the MySQL environment.</td>
</tr>
<tr>
<td>06</td>
<td>February 15, 2017</td>
<td>Updated the following information:</td>
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<tr>
<td></td>
<td></td>
<td>• <a href="#">Road map to install or update NMDA on a database or application host</a> on page 17—Updated step 7 with requirements for the NetWorker Remote Exec daemon or service.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <a href="#">Road map to post-installation procedures</a> on page 21—Updated step 3 with requirements for the wizard registration, and added step 4.</td>
</tr>
<tr>
<td>Revision</td>
<td>Date</td>
<td>Description</td>
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<tr>
<td></td>
<td></td>
<td>• Installing NMDA on AIX systems on page 24—Updated step 1, and added details to step 4 about verifying the wizard registration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on HP-UX systems on page 25—Updated step 1, and added details to step 4 about verifying the wizard registration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on Linux systems on page 26—Updated step 1, and added details to step 5 about verifying the wizard registration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on Solaris systems on page 27—Updated step 1, and added details to step 5 about verifying the wizard registration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uninstalling NMDA on UNIX or Linux systems on page 36—Added step 2 with a requirement for the NetWorker Remote Exec daemon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on Microsoft Windows on page 40—Updated step 1, and added details to step 7 about verifying the wizard registration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uninstalling NMDA on Microsoft Windows on page 46—Added step 3 with a requirement for the NetWorker Remote Exec service.</td>
</tr>
<tr>
<td>05</td>
<td>December 27, 2016</td>
<td>Updated the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on Microsoft Windows on page 40—In step 2, added information about the silent installation method, and deleted the statement that a message appears about how to start the configuration wizard after the installation completes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maintaining the installation on Microsoft Windows on page 46—Corrected the topic content, starting at step 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uninstalling NMDA on Microsoft Windows on page 46—In step 4, added information about the silent uninstallation method.</td>
</tr>
<tr>
<td>04</td>
<td>June 29, 2016</td>
<td>Updated the following information for the release of NMDA 9.0.1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Changed the NMDA version number to 9.0.x in the guide title.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Changed 9.0 references to 9.0.x throughout the guide, as appropriate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Accessing NMDA from the EMC website on page 16—Updated the Windows software package names in step 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installing NMDA on AIX systems on page 24—Updated the detail about the <code>lslpp</code> command output in the first bullet in step 2.</td>
</tr>
<tr>
<td>03</td>
<td>April 25, 2016</td>
<td>Updated the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Linking NMDA in a MySQL environment on page 30—Created this topic to contain information that was previously under &quot;Database or application server software&quot; in Chapter 1. Updated the information with details on the mysqlclient library installation for MySQL 5.7.</td>
</tr>
<tr>
<td>02</td>
<td>November 12, 2015</td>
<td>Updated the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Linking NMDA to the Sybase ASE server on AIX, Linux, and Solaris on page 33—Added step 4 to enable NMDA backups with Sybase 16.0 SP02 on AIX and Solaris SPARC.</td>
</tr>
<tr>
<td>01</td>
<td>September 24, 2015</td>
<td>Initial release of NMDA 9.0.</td>
</tr>
</tbody>
</table>
Related documentation
You can find additional EMC publications for this product release and related NetWorker products at EMC Online Support.


The following additional documentation might be useful:
- Database or application server documentation
- Database or application backup and recovery documentation

**Special notice conventions that are used in this document**
EMC uses the following conventions for special notices:

**NOTICE**
Identifies content that warns of potential business or data loss.

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

**Typographical conventions**
EMC uses the following type style conventions in this document:

**Table 2 Style conventions**

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Used for names of interface elements, such as names of buttons, fields, tab names, and menu paths (what the user specifically selects or clicks)</td>
</tr>
<tr>
<td><strong>Italic</strong></td>
<td>Used for full titles of publications that are referenced in text</td>
</tr>
<tr>
<td>Monospace</td>
<td>Used for:</td>
</tr>
<tr>
<td></td>
<td>• System code</td>
</tr>
<tr>
<td></td>
<td>• System output, such as an error message or script</td>
</tr>
<tr>
<td></td>
<td>• Pathnames, file names, prompts, and syntax</td>
</tr>
<tr>
<td></td>
<td>• Commands and options</td>
</tr>
<tr>
<td><em>Monospace italic</em></td>
<td>Used for variables</td>
</tr>
<tr>
<td><strong>Monospace bold</strong></td>
<td>Used for user input</td>
</tr>
<tr>
<td>[ ]</td>
<td>Square brackets enclose optional values</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>{ }</td>
<td>Braces enclose content that the user must specify, such as x or y or z</td>
</tr>
<tr>
<td>...</td>
<td>Ellipses indicate non-essential information that is omitted from the example</td>
</tr>
</tbody>
</table>

**Where to get help**
EMC support, product, and licensing information can be obtained as follows:
Product information
For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at https://support.emc.com.

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

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

Your comments
Your suggestions help to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to DPAD.Doc.Feedback@emc.com.
CHAPTER 1

Getting Started

This chapter includes the following topics:

- NMDA software requirements ................................................................. 12
- Installation checklists ............................................................................... 14
- Accessing the NMDA software ................................................................. 15
- Installation road maps ............................................................................... 17
NMDA software requirements

EMC® NetWorker® Module for Databases and Applications (NMDA) is a NetWorker add-on module that provides data protection services for the supported DB2, Informix, Lotus Domino/Notes, MySQL, Oracle, and Sybase ASE databases.

The following table lists the hosts and software that you might require for NMDA services.

Note

Before you install NMDA, install both the NetWorker base client and extended client software packages on the database server host.

Table 3 Typical hosts and software in the NMDA environment

<table>
<thead>
<tr>
<th>Host</th>
<th>Required software</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetWorker server</td>
<td>• NetWorker base and extended client</td>
</tr>
<tr>
<td></td>
<td>• NetWorker storage node</td>
</tr>
<tr>
<td></td>
<td>• NetWorker server</td>
</tr>
<tr>
<td>NetWorker storage node</td>
<td>• NetWorker base and extended client</td>
</tr>
<tr>
<td></td>
<td>• NetWorker storage node</td>
</tr>
<tr>
<td>NetWorker Management Console (NMC) server</td>
<td>• NetWorker base and extended client</td>
</tr>
<tr>
<td></td>
<td>• NMC server</td>
</tr>
<tr>
<td>Each supported database server (NMDA host)</td>
<td>• Supported database or application server</td>
</tr>
<tr>
<td></td>
<td>• NetWorker base and extended client</td>
</tr>
<tr>
<td></td>
<td>• NMDA</td>
</tr>
<tr>
<td></td>
<td>• For snapshot operations with Oracle ASM, EMC Replication Manager software</td>
</tr>
</tbody>
</table>

Review the following software descriptions to plan the installation requirements.

The bitness (32-bit or 64-bit) of NMDA software that is required depends on the bitness of the database or application server being protected.

With one exception, you require 32-bit NMDA to support a 32-bit database or application server and 64-bit NMDA to support a 64-bit database or application server, regardless of the operating system bitness. The exception is that 32-bit NMDA supports both 32-bit and 64-bit Sybase ASE on AIX and Solaris SPARC.

If only 32-bit database or application servers are installed on a 64-bit system, then you only need to install 32-bit NMDA on the system.

If both 32-bit and 64-bit database or application servers are installed on the same system, refer to the sections in this guide about NMDA with mixed 32-bit and 64-bit databases and applications.

The EMC NetWorker Online Software Compatibility Matrix at [http://compatibilityguide.emc.com:8080/CompGuideApp/](http://compatibilityguide.emc.com:8080/CompGuideApp/) provides details about the operating systems and software versions that are required for NMDA services.
The **EMC NetWorker Installation Guide** describes how to install the NetWorker server, storage node, client, and NMC software.

**Database or application server software**

Ensure that the supported DB2, Informix, Lotus Domino/Notes, MySQL, Oracle, or Sybase ASE database or application server is installed on an operating system that supports the NetWorker client and NMDA version to be installed on that host.

If you install NMDA in a non-English environment, ensure that you meet the following requirements:

- The host operating system supports internationalization (I18N).
- The database or application software provides the required National Language Support (NLS) or globalization support.
- The database or application software is configured with the required non-ASCII character set.

**NetWorker server software**

Install a supported version of the NetWorker server software on the NetWorker server host. The NetWorker server host is usually a separate host, but the server host can also be the NMDA host.

You might require specific NetWorker server versions to support specific NMDA features as described in the **EMC NetWorker Module for Databases and Applications Release 9.0.x Release Notes**.

Use a supported version of the NetWorker server that works with the NetWorker client version installed on the NMDA host. The operating systems that are used must support the NetWorker server version.

**NMC server software**

Install a supported version of the NMC software on a network host to provide a user interface with the NetWorker software and NMDA.

**NetWorker storage node software**

Install a supported version of the NetWorker storage node software on the host that manages the backup storage devices. You can configure a NetWorker storage node on the same host as the NetWorker server, on the same host as NMDA (to support backups to a local device), or on a separate host.

Use a supported version of the NetWorker storage node that works with the NetWorker client version that is installed on the NMDA host and the NetWorker server. The operating systems that are used must support the NetWorker storage node version.

**NetWorker client software**

Install a supported version of the NetWorker client software on the supported database or application server host before you install NMDA on that host. Install both the NetWorker base client and extended client software packages.

NMDA can use the NetWorker Snapshot Management (NSM) feature to provide a high-availability storage environment for snapshot backups and restores of DB2 and Oracle data. To enable the snapshot-based operations, install the NetWorker base client and extended client software packages on both of the following hosts:
The mount host can be either of the following hosts:

- A separate host, to offload the data transfer from the database host
- The same host as the database or application host

Note
Some operating systems and volume managers require that you configure a mount host on a separate host from the database or application host. For example, Veritas Volume Manager (VxVM) and Linux Logical Volume Manager (LVM) do not support the use of the database or application host as the mount host. The *EMC NetWorker Snapshot Management Integration Guide* provides a full list of restrictions and details.

**NMDA software**

Install NMDA on a supported database server or application server.

For Oracle ASM snapshot backups and restores with EMC Replication Manager, also install NMDA on the mount host.

**Replication Manager software**

Due to an Oracle limitation, you cannot back up Oracle ASM by using NSM. To enable the snapshot backups with Oracle ASM, the EMC Replication Manager server software must work with the Replication Manager agent software that is installed on both of the following hosts:

- Oracle server
- A mount host (data mover), which can be a NetWorker storage node

The EMC Replication Manager documentation describes the installation procedures.

**Installation checklists**

Review the following checklists to ensure that you have the required materials for the NMDA installation procedures.

**Documents**

You can find the required information in the following documents:

- *EMC NetWorker Module for Databases and Applications Installation Guide* for the existing version, if you are updating from a previous NMDA version to NMDA 9.0.x
- *EMC NetWorker Module for Databases and Applications Release 9.0.x Release Notes*
- *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide*
- *EMC NetWorker Administration Guide* for the supported NetWorker release
- *EMC NetWorker Online Software Compatibility Matrix*
Installation media

Use one of the following installation media:

- DVD from the EMC Information Protection and Availability Product Families Media Kit
- If you download the software, the EMC Online Support website

License enablers

Enabler codes or licenses activate the functionality of the NMDA software and are sold separately.

Note

Without an enabler code, you can only evaluate the software that is obtained from the DVD or the EMC website.

The *EMC NetWorker Licensing Guide* describes licensing. The *EMC Price Guide* describes the licensing requirements for NetWorker modules.

Accessing the NMDA software

The NMDA software is distributed on DVD media and on the EMC website.

Accessing NMDA from the DVD media

The DVD is in the EMC Information Protection and Availability Product Families Media Kit. The kit contains the software and online documentation for related products.

You can access the NMDA software files from the NetWorker Module DVD on a host with a local DVD drive.

Procedure

1. Log in to the host as the root user on UNIX or Linux, or as the local administrator user on Windows.
2. Insert and then mount the NetWorker Module DVD in the DVD drive:
   - On UNIX or Linux, mount the DVD drive:
     ```
     mount /dev/DVD_drive_name /mount_point
     ```
   - On Windows, select the DVD drive in Windows Explorer.
3. Go to the directory that contains the software as shown in the following table.


   Table 4 Software directory on the DVD

<table>
<thead>
<tr>
<th>Operating system (NMDA bitness)</th>
<th>Software directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX (32-bit)</td>
<td>/mount_point/nmda/aixpower_32</td>
</tr>
</tbody>
</table>
Table 4 Software directory on the DVD (continued)

<table>
<thead>
<tr>
<th>Operating system (NMAD bitness)</th>
<th>Software directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX (64-bit)</td>
<td>/mount_point/nmda/aixpower_64</td>
</tr>
<tr>
<td>HP Itanium (64-bit)</td>
<td>/mount_point/nmda/hpux11_ia64</td>
</tr>
<tr>
<td>HP PA-RISC (64-bit)</td>
<td>/mount_point/nmda/hpux11_64</td>
</tr>
<tr>
<td>Linux 390x (64-bit)</td>
<td>/mount_point/nmda/linuxs390x</td>
</tr>
<tr>
<td>Linux x64 (64-bit)</td>
<td>/mount_point/nmda/linux_x86_64</td>
</tr>
<tr>
<td>Linux x86 (32-bit)</td>
<td>/mount_point/nmda/linux_x86</td>
</tr>
<tr>
<td>Solaris x64 (64-bit)</td>
<td>/mount_point/volume_label/nmda/solaris_amd64</td>
</tr>
<tr>
<td>Solaris SPARC (32-bit)</td>
<td>/mount_point/volume_label/nmda/solaris_32</td>
</tr>
<tr>
<td>Solaris SPARC (64-bit)</td>
<td>/mount_point/volume_label/nmda/solaris_64</td>
</tr>
<tr>
<td>Windows x64 (64-bit)</td>
<td>DVD_drive_letter:\nmda\win_x64</td>
</tr>
<tr>
<td>Windows x86 (32-bit)</td>
<td>DVD_drive_letter:\nmda\win_x86</td>
</tr>
</tbody>
</table>

Accessing NMDA from the EMC website

You can download the NMDA software files from the EMC Online Support website.

**Procedure**

1. Log in to the host as the root user on UNIX or Linux, or as the local administrator user on Windows.
2. Create a temporary installation download directory in a local file system with sufficient free disk space to contain both the downloaded software package and the software installation files that are extracted from the package.

   The *EMC NetWorker Online Software Compatibility Matrix* at http://compatibilityguide.emc.com:8080/CompGuideApp/ provides details about the operating systems and the database and application software that NMDA supports.

   Complete the following steps on EMC Online Support:

   a. Select **DOWNLOADS**.

      The Downloads page appears.

   b. In the **Products** field, type *NetWorker Module for Databases and Applications*.

4. Download the NMDA release 9.0.x software file to the temporary directory that you created.

5. Extract the installation files from the downloaded software package:

   - On UNIX or Linux:
a. Uncompress the downloaded package by typing the `gunzip` command with the `file_name.tar.gz` name for the specific download file name:

```
gunzip file_name.tar.gz
```

b. Extract the software from the uncompressed, tarred file:

```
tar -xvpBf file_name.tar
```

The extraction lists the distribution software files on the screen.

c. Remain in the directory for the installation.

- On Windows:
  a. Unzip the downloaded software package as shown in the following table.
  b. Go to the correct directory as shown in the following table.

<table>
<thead>
<tr>
<th>Downloaded software file</th>
<th>Directory for install</th>
</tr>
</thead>
<tbody>
<tr>
<td>nmdd90x_win_x64.zip, where x is the service pack number</td>
<td>win_x64</td>
</tr>
<tr>
<td>nmdd90x_win_x86.zip, where x is the service pack number</td>
<td>win_x86</td>
</tr>
</tbody>
</table>

## Installation road maps

Follow the proper road map to install NMDA:

- Road map to install or update NMDA on a database or application host
- Road map to update NMDA remotely with the Package Manager
- Road map to perform the post-installation procedures

### Road map to install or update NMDA on a database or application host

To install or update NMDA on a database or application host in any of the following configurations, complete the procedure as follows:

- Single host
- Active-passive cluster
- Active-active application cluster, such as DB2 Database Partitioning Feature (DPF), DB2 pureScale, Informix Multi-node Active Clusters for High Availability or High Availability Clusters (MACH), Oracle Real Application Clusters (RAC), and Sybase ASE Cluster Edition

**Note**

Install NMDA on each node host in a cluster that performs backup and recovery operations.

Procedure

1. Review the Installation checklists on page 14 and verify that you have the required documentation, installation media, and license information.

2. If you installed Informix Storage Manager (ISM) on the host, uninstall ISM according to the instructions in Uninstalling ISM on an Informix Server on page 55.

3. Ensure that you have installed the NetWorker client software on the host. The client version must support the NMDA version to be installed.

4. Access the NMDA software as described in Accessing the NMDA software on page 15, and then ensure that you are in the correct directory.

   **Note**
   If you do not start the installation from the correct directory, the installation might fail.

5. Ensure that no backups or restores are running on the database server or application server. You do not need to shut down the database or application during the installation.

6. Uninstall any previous version of NMDA according to the instructions in the installation guide for the module version.

   **NOTICE**
   Do not use an upgrade option on the platform, for example, the `rpm -U` command on Linux.

7. Before the NMDA installation, ensure that the NetWorker Remote Exec daemon, `nsrexecd`, is running on UNIX or Linux, or the NetWorker Remote Exec service, `nsrexecd.exe`, is running on Windows.

   To verify that the NetWorker Remote Exec daemon or service is running:
   - On UNIX or Linux, type the following command
     
     ```bash
     ps -ef | grep nsrexecd
     ```
   - On Windows, use either Component Services or Task Manager.

   If the NetWorker Remote Exec daemon or service is not running:
   - To start the NetWorker Remote Exec daemon on UNIX or Linux, log in as root, and type the appropriate startup command from the following table.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Startup command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris, Linux</td>
<td><code>/etc/init.d/networker start</code></td>
</tr>
<tr>
<td>HP-UX</td>
<td><code>/sbin/init.d/networker start</code></td>
</tr>
<tr>
<td>AIX</td>
<td><code>/etc/rc.nsr</code></td>
</tr>
</tbody>
</table>

   - To start the NetWorker Remote Exec service on Windows, perform the following steps:
a. Log in as a Windows Administrator.

b. Right-click **My Computer**, and select **Manage**.

c. Expand **Configuration**, and select **Services**.

d. Right-click the **NetWorker Remote Exec Service**, and select **Start**.

**Note**

If you do not start the NetWorker Remote Exec daemon or service before the NMDA installation, then the automatic registration of the NMDA configuration wizard might not occur and the wizard might fail to detect if NMDA is installed. **Road map to post-installation procedures** on page 21 describes the manual wizard registration.

8. If you want to install NMDA on a system that runs both a 32-bit and 64-bit database or application that NMDA supports, follow the instructions in **NMDA with Mixed 32-bit and 64-bit Databases and Applications** on page 49.

For example, follow the instructions for a mixed 32-bit/64-bit system if the same host runs both 32-bit and 64-bit Lotus Domino or runs both 32-bit Sybase ASE and 64-bit DB2.

**Note**

On HP Itanium, if you installed Sybase ASE 15.5 or later and Sybase ASE 15.0.3 on the same system, follow the instructions in **NMDA with Mixed 32-bit and 64-bit Databases and Applications** on page 49. The ASE Backup Server is 64-bit in the 15.5 and later releases and the server is 32-bit in earlier releases.

If the system runs a single database or application or if the system runs multiple databases or applications that are all supported by a single NMDA package, then skip this step.

9. If you performed step 8, then skip this step. Otherwise, install NMDA by following the instructions for the operating system in the correct chapter:

   - **UNIX and Linux Installation** on page 23
   - **Microsoft Windows Installation** on page 39

**Note**

If only 32-bit database or application servers are installed on a 64-bit system, then you only need to install 32-bit NMDA on the system.

After the software installation completes, a message appears about how to start the NMDA scheduled backup configuration wizard. The *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide* describes the wizard.

10. Perform all the required post-installation procedures. **Road map to post-installation procedures** on page 21 provides details.

**Road map to update NMDA with the Package Manager**

You can update NMDA on one or more NMDA hosts by using the Package Manager feature from a centralized NetWorker server. You can perform the update with the
Package Manager or the `nsrpush` command. When you use the Package Manager, NMDA must not be installed on the NetWorker server.

**Note**
Cluster environments do not support updates with the Package Manager. You cannot use the Package Manager to update 32-bit NMDA on a 64-bit operating system.

The *EMC NetWorker Updating from a Previous Release Guide* describes the Package Manager, including the following procedures:

- Viewing software that is installed on NetWorker clients.
- Performing and monitoring the updates.
- Managing the repository of media kits that the Package Manager uses to install the software from the NetWorker server.

**Note**
To add an NMDA release to the Package Manager repository, follow the instructions in the *EMC NetWorker Updating from a Previous Release Guide*. If you use the `nsrpush` command, type the complete product name as "NetWorker Module for Databases and Applications" with the quotation marks.

Complete the following steps to update NMDA with the Package Manager.

**Procedure**

1. Review the Installation checklists on page 14.
2. Ensure that you meet the following requirements:
   - NMDA 1.5 or later is installed on the NMDA host, and the operating systems support the Package Manager. You cannot perform an update of earlier NMDA releases.
     
     The *EMC NetWorker Updating from a Previous Release Guide* at EMC Online Support describes the operating systems that support the Package Manager feature on the NMDA host.
   - The NMDA client host contains a supported version of the NetWorker client software.
   - The remote NetWorker server is release 9.0 or later. The NetWorker client on the NMDA host is release 8.1 or later.
   - The user that performs the update is both an NMC administrator and a member of the application administrator's user group on the NetWorker server.
3. Before you start an update, ensure that all backups and restores are stopped on the client to be updated.

**Note**
The Package Manager might stop and restart the NetWorker client `nsrexed` daemon or service during the installation.

4. On the NetWorker server, perform the update of the NMDA client by using the Package Manager feature or the `nsrpush` command.

   The *EMC NetWorker Updating from a Previous Release Guide* provides more information.
5. Perform all the required post-installation procedures on the client host. **Road map to post-installation procedures** on page 21 provides details.

**Road map to post-installation procedures**

After you have installed or updated NMDA, either directly on a local host or by remote installation with Package Manager, complete the installation by performing any required post-installation procedures.

**Procedure**

1. If you are installing NMDA for the first time on the host, register and enable NMDA to work with the NetWorker software.
   
   The *EMC NetWorker Licensing Guide* describes licensing and enabling of software.
   
   The *EMC Price Guide* describes the licensing requirements for NetWorker modules.

2. If you perform snapshot backups for Oracle ASM on the host, install and enable the required Replication Manager agent software on the NMDA host and the mount host.
   
   The Replication Manager server software must exist on a separate host.

3. Ensure that the automatic wizard registration succeeded:
   
   a. Log in as the root user (UNIX or Linux) or system administrator (Windows).
   
   b. At a new command prompt, type the appropriate command:
      
      - On UNIX or Linux, type the following command:
        
        ```
        nseradmin -p nsrexecd
        ```
      
      - On Windows, type the following command:
        
        ```
        nseradmin.exe -p nsrexecd
        ```
   
   c. At the `nseradmin>` prompt, type the following command:
      
      ```
      print type: NSR remote agent
      ```
   
   Check that the command output includes the correct values for "backup type" (database or application type that you want to protect) and "product version" (version of NMDA that you installed). You can run the `exit` command to return to the original console.
   
   If the command output is missing or does not contain the correct values, then the NetWorker Remote Exec service (the `nsrexecd` or `nsrexecd.exe` program) was not running during the NMDA installation. Perform one of the following corrective actions:
      
      - Start the NetWorker Remote Exec service, and then reinstall NMDA.
      
      - Register the wizard manually by typing the appropriate command from the following table.
Note

To unregister the wizard manually, use the command from the table but replace the -i option with -u.

Table 7 Command to register the wizard

<table>
<thead>
<tr>
<th>Database or application</th>
<th>Wizard registration command</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>nsrdb2ra(.exe) -i</td>
</tr>
<tr>
<td>Informix</td>
<td>nsrifmxra(.exe) -i</td>
</tr>
<tr>
<td>Lotus</td>
<td>nsrlotusra(.exe) -i</td>
</tr>
<tr>
<td>MySQL</td>
<td>nsrmysqlra(.exe) -i</td>
</tr>
<tr>
<td>Oracle</td>
<td>nsrorara(.exe) -i</td>
</tr>
<tr>
<td>Sybase ASE</td>
<td>nsrsybra(.exe) -i</td>
</tr>
</tbody>
</table>

4. On UNIX or Linux, to ensure the success of backups and restores, check that the /nsr/apps directory and its subdirectories have the 01777 permissions.

The NMDA installation sets the permissions to 01777 for /nsr/apps and its subdirectories. These permissions are required for non-root database users to create temporary files and logs during backups and restores. The sticky bit is also set to ensure that the files can be removed only by the file owners. For example, the permissions appear as follows:

```
drwxrwxrwt 6 root root 4096 Dec 22 12:17 /nsr/apps
```

5. Configure the NMDA software.

The *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide* provides details.
CHAPTER 2
UNIX and Linux Installation

This chapter includes the following topics:

- Installing NMDA on AIX systems................................................................. 24
- Installing NMDA on HP-UX systems............................................................. 25
- Installing NMDA on Linux systems.............................................................. 26
- Installing NMDA on Solaris systems............................................................ 27
- Linking and unlinking NMDA in the environment on UNIX or Linux .......... 28
- Uninstalling NMDA on UNIX or Linux systems......................................... 36
Installing NMDA on AIX systems

Install NMDA on an AIX system by running the `installp` command line interface (CLI) program or the AIX System Management Interface Tool (SMIT), which is a graphical user interface (GUI) program.

Procedure

1. Complete the initial steps in Installation road maps on page 17. Ensure that you meet the following requirements:
   - You are logged in as the root user.
   - No backups or restores are running.
   - The `nsrexecd` daemon is running. You can check the daemon status by running the `ps -ef | grep nsrexecd` command.
   - You are in the correct directory that contains the NMDA installation files.

2. Run either the `installp` CLI program or the SMIT GUI program:
   - To run the CLI program, type the following command:
     ```bash
     installp -a -d /dir_pathname LGTOnmda.rte
     ```
     where `/dir_pathname` is the complete pathname of the correct directory that contains the installation software as described in Accessing the NMDA software on page 15.
     
     To verify that the installation succeeded, type the following command:
     ```bash
     lslpp -L all | grep -i lgtonmda
     ```
     If the `lslpp` command output includes LGTOnmda.rte, then the installation succeeded.
   - To run the SMIT GUI program, perform the following steps:
     a. Type the following command:
        ```bash
        smitty install_latest
        ```
     b. In the Entry Field, type the location of the NMDA installation software as the complete pathname of the directory that is described in Accessing the NMDA software on page 15.
     c. Select the option SOFTWARE to install.
     d. Type yes in response to the following prompts:
        ```bash
        Accept new license agreements?
        Preview new license agreements?
        ```
     e. Select F4=List to display the list of the NMDA software packages.
     f. Select `LGTOnmda.rte` to install the NMDA software.
     g. Select Install and Update Software.
     h. Press Enter to begin the installation.
3. Link NMDA to the database server environment by completing the steps in Linking and unlinking NMDA in the environment on UNIX or Linux on page 28.

4. Return to the installation road map to perform any post-installation procedures. As part of these procedures, ensure that the NMDA automatic wizard registration succeeded by using the following commands:

```
nsradmin -p nsredec
nsradmin> print type: NSR remote agent
```

Road map to post-installation procedures on page 21 provides complete details.

## Installing NMDA on HP-UX systems

Install NMDA on an HP-UX system by using the `swinstall` command to run the command line interface (CLI) or the graphical user interface (GUI) program.

### Procedure

1. Complete the initial steps in Installation road maps on page 17. Ensure that you meet the following requirements:
   - You are logged in as the root user.
   - No backups or restores are running.
   - The `nsredec` daemon is running. You can check the daemon status by running the `ps -ef | grep nsredec` command.
   - You are in the correct directory that contains the NMDA installation files.

2. To run either the CLI or GUI program, type the `swinstall` command:
   - To run the `swinstall` CLI program, type the following command:
     ```
     swinstall -x mount_all_filesystems=false -s /dir_pathname/LGTOnmda.pkg NMDA
     ```
     where `/dir_pathname` is the complete pathname of the directory that contains the software installation files as described in Accessing the NMDA software on page 15.
   - To run the `swinstall` GUI program, type the following command:
     ```
     swinstall -x mount_all_filesystems=false -i -s /dir_pathname/LGTOnmda.pkg NMDA
     ```
     where `/dir_pathname` is the complete pathname of the directory that contains the software installation files as described in Accessing the NMDA software on page 15. Perform the following steps in the GUI program:
     a. From the Actions menu, select Install (analysis).
        When the analysis is complete, a Ready with Warnings message appears. The message is normal.
     b. Click OK to continue the installation.
The NMDA installation on HP-UX stores informational messages including installation errors in the `/var/adm/sw/swagent.log` file. If an error occurs during the installation, check this file to obtain details about the error.

3. Link NMDA to the database server environment by completing the steps in Linking and unlinking NMDA in the environment on UNIX or Linux on page 28.

4. Return to the installation road map to perform any post-installation procedures. As part of these procedures, ensure that the NMDA automatic wizard registration succeeded by using the following commands:

```
nssadmin -p nsrexecd
nsrexecd>
```

```
print type: NSR remote agent
```

Road map to post-installation procedures on page 21 provides complete details.

## Installing NM<sup>DA</sup> on Linux systems

Install NM<sup>DA</sup> on a Linux system by running the `rpm` command. Install NM<sup>DA</sup> in the same directory as the NetWorker client software.

### Procedure

1. Complete the initial steps in Installation road maps on page 17. Ensure that you meet the following requirements:
   - You are logged in as the root user.
   - No backups or restores are running.
   - The `nsrexecd` daemon is running. You can check the daemon status by running the `ps -ef | grep nsrexecd` command.
   - You are in the correct directory that contains the NM<sup>DA</sup> installation files.

2. To install NM<sup>DA</sup>, type the required `rpm` command, for example:
   - On Linux s390x (zLinux) 64-bit:
     ```
     rpm -ivh lgtonmda-9.0.0.0-1.s390x.rpm
     ```
   - On Linux x64:
     ```
     rpm -ivh lgtonmda-9.0.0.0-1.x86_64.rpm
     ```
   - On Linux x86:
     ```
     rpm -ivh lgtonmda-9.0.0.0-1.i686.rpm
     ```

3. To verify that the installation was successful, type the `rpm -aq` command:

   ```
   rpm -aq | grep lgto
   ```
The command output must include the proper lines, for example:

```
lgtoclint-9.0.0.0-1
lgtoxtdcint-9.0.0.0-1
lgtonmda-9.0.0.0-1
```

4. Link NMDA to the database server environment by completing the steps in Linking and unlinking NMDA in the environment on UNIX or Linux on page 28.

5. Return to the installation road map to perform any post-installation procedures. As part of these procedures, ensure that the NMDA automatic wizard registration succeeded by using the following commands:

```
nsradmin -p nsrexecd
nsradmin> print type: NSR remote agent
```

Road map to post-installation procedures on page 21 provides complete details.

---

## Installing NMDA on Solaris systems

Install NMDA on a Solaris system by running the `pkgadd` command.

### Procedure

1. Complete the initial steps in Installation road maps on page 17. Ensure that you meet the following requirements:
   
   - You are logged in as the root user.
   - No backups or restores are running.
   - The `nsrexecd` daemon is running. You can check the daemon status by running the `ps -ef | grep nsrexecd` command.
   - You are in the correct directory that contains the NMDA installation files.

   **Note**
   
   If the Solaris system has Solaris zones (containers) and NMDA is to run on a sparse root zone, install NMDA on the global zone and on each required sparse root zone.

2. Type the required `pkgadd` command:

   ```
   pkgadd -d /dir_pathname LGTOnmda
   ```

   where `/dir_pathname` is the complete pathname of the directory that contains the LGTOnmda package.

3. Type `y` when prompted whether to continue the installation.

   The system installs the software in the same directory as the NetWorker client software.

4. Link NMDA to the database server environment by completing the steps in Linking and unlinking NMDA in the environment on UNIX or Linux on page 28.
5. Return to the installation road map to perform any post-installation procedures. As part of these procedures, ensure that the NMDA automatic wizard registration succeeded by using the following commands:

```
nsradmin -p nsrexecd
nsradmin> print type: NSR remote agent
```

Road map to post-installation procedures on page 21 provides details.

**Linking and unlinking NMDA in the environment on UNIX or Linux**

After you install NMDA on UNIX or Linux as described in the preceding topics of this chapter, perform an additional procedure to link NMDA to the database environment. Before you uninstall NMDA, also remove the link. Use the correct instructions that follow to perform the linking or unlinking procedure for the database:

- Linking NMDA in a DB2 environment
- Linking and unlinking NMDA in an Informix environment
- Linking and unlinking NMDA in an Oracle environment
- Linking and unlinking NMDA in a Sybase ASE environment

**Note**

In a Lotus Domino or MySQL environment, you do not require the linking or unlinking procedure to install or uninstall NMDA.

**Linking NMDA in a DB2 environment**

**NOTICE**

You must not set the DB2_VENDOR_INI registry variable. Also, if the $INSTHOME/sqllib/cfg/vendor.cfg file exists, either remove the file or remove all the NMDA parameter settings from the file.

You do not require unlinking steps to uninstall NMDA in a DB2 environment.

After you install NMDA on a DB2 server, use the `db2set` command to check if the DB2_VENDOR_INI registry variable is set. The `db2set` command displays all the variable settings.

You must complete the required steps to implement the changes on the DB2 server.

**Procedure**

1. Log in as the DB2 user.
2. Remove the $INSTHOME/sqllib/cfg/vendor.cfg file, or edit the file and remove all the NMDA parameter settings.
3. Unset the DB2_VENDOR_INI variable:
   a. Stop the database instance with the `db2stop` command.
b. Unset the DB2_VENDOR_INI registry variable with the `db2set` command:

```bash
db2set DB2_VENDOR_INI=
```

c. Restart the database instance with the `db2start` command.

---

**Linking and unlinking NMDA in an Informix environment**

Perform the required link or unlink procedure in an Informix environment:
- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

**Linking NMDA to the Informix server environment**

After you install NMDA, link NMDA to the Informix server environment.

**Procedure**

1. Log in as the Informix user.
2. Edit the Informix $ONCONFIG file and set the BAR_BSALIB_PATH variable to the full pathname of the NMDA libnsrifmx (XBSA) library.
   - The default library pathname is `/usr/lib/libnsrifmx.xx` where `xx` is the platform-specific extension:
     - `sl` on HP-UX 64-bit systems
     - `so` on Linux and other UNIX systems
3. Update the `sm_versions` file (Informix user password required) by typing the following command:

   ```bash
   echo "1|1.0.1|nwbsa|1" >> $INFORMIXDIR/etc/sm_versions
   ```

   This action updates the NMDA Informix library links. Without the required values, ON-Bar commands fail and the following message appears:

   ```bash
   ERROR: Version 1.0.1 of the XBSA shared library is not compatible with version 1 of ON-Bar.
   ```
4. Restart the IDS server to apply the $ONCONFIG file changes.

**Unlinking NMDA from the Informix server environment**

Before you uninstall NMDA, unlink NMDA from the Informix server environment.

**Procedure**

1. Log in as the Informix user.
2. Edit the Informix $ONCONFIG file and remove the setting from the BAR_BSALIB_PATH variable.
3. Restore the copy of the `sm_versions` file that Informix stored in `$INFORMIXDIR/etc/sm_versions.std`.
4. Restart the IDS server to apply the $ONCONFIG file changes.
Linking and unlinking NMDA in a MySQL environment

Perform the required link or unlink procedure in a MySQL environment:

- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

Linking NMDA in a MySQL environment

Ensure that you meet the following requirements for MySQL support with NMDA on a MySQL database server host:

- A supported version of MySQL Enterprise Backup (MEB) software is installed on the MySQL server host, as detailed in the *EMC NetWorker Module for Databases and Applications Release Notes*.
- MySQL client library *libmysqlclient.so* version 18 (MySQL 5.5 and 5.6) or version 20 (MySQL 5.7) is installed on the MySQL server host, and the corresponding symbolic link is created.

Complete the following steps to install the MySQL client library *libmysqlclient.so* version 18 or 20 on the MySQL host and create the corresponding symbolic link.

Procedure

1. To install MySQL *libmysqlclient.so* version 18 or 20, download the appropriate package from the Oracle support website, and then install the package on the MySQL server host:
   - For MySQL version 5.5 or 5.6 with *libmysqlclient.so.18*, install *MySQL-shared-advanced-version.rpm*, where *version* depends on the Linux operating system and MySQL version in use.
   - For MySQL version 5.7 with *libmysqlclient.so.20*, install *mysql-commercial/libs-version.rpm*, where *version* depends on the Linux operating system and MySQL version in use. The *libmysqlclient.so.20* libraries are installed in /usr/lib/mysql (32-bit) or /usr/lib64/mysql (64-bit).

2. For MySQL version 5.7, create a symbolic link from the file named *libmysqlclient.so* to the actual library file. For MySQL 5.5 and 5.6, this step is required only if you installed the MySQL library in a nondefault location:
   - If you installed the MySQL 5.5 or 5.6 library in a nondefault location:
     - On 32-bit Linux, type the following command:
       ```bash
       ln -s <install_pathname>/libmysqlclient.so.18 /usr/lib/libmysqlclient.so
       ```
     - On 64-bit Linux, type the following command:
       ```bash
       ln -s <install_pathname>/libmysqlclient.so.18 /usr/lib64/libmysqlclient.so
       ```
   - If you installed the MySQL 5.7 library in the default location:
- On 32-bit Linux, type the following command:

```
ln -s /usr/lib/mysql/libmysqlclient.so.20 /usr/lib/
libmysqlclient.so
```

- On 64-bit Linux, type the following command:

```
ln -s /usr/lib64/mysql/libmysqlclient.so.20 /usr/lib64/
libmysqlclient.so
```

- If you installed the MySQL 5.7 library in a nondefault location:
  - On 32-bit Linux, type the following command:

```
ln -s <install_pathname>/libmysqlclient.so.20 /usr/lib/
libmysqlclient.so
```

  - On 64-bit Linux, type the following command:

```
ln -s <install_pathname>/libmysqlclient.so.20 /usr/lib64/
libmysqlclient.so
```

To verify the version of the installed MySQL client library, use the `ls -lart` command. For example:

- On 32-bit Linux:

```
ls -lart /usr/lib/libmysqlclient*
```

- On 64-bit Linux:

```
ls -lart /usr/lib64/libmysqlclient*
```

Unlinking NMDA in a MySQL environment

Before you uninstall NMDA, unlink NMDA from the MySQL environment. Use the `rm` command to remove any `libmysqlclient.so` symbolic link that you created manually for the NMDA installation.

Use the appropriate `rm` command to remove the symbolic link:

- For 32-bit NMDA, run the following command:

```
rm /usr/lib/libmysqlclient.so
```

- For 64-bit NMDA, run the following command:

```
rm /usr/lib64/libmysqlclient.so
```

Linking and unlinking NMDA in an Oracle environment

Perform the required link or unlink procedure in an Oracle environment:

- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.
Linking NMDA to the Oracle server environment

Note
You do not need to shut down and restart Oracle instances to perform this procedure.

After you install NMDA, link NMDA to the Oracle server environment.

Procedure
1. Log in as the $ORACLE_HOME owner.
2. Create the symbolic link by using one of the following options:
   - If you installed NMDA in the default directory, type the required commands that are listed in the following table.
   - If you installed NMDA in a nondefault directory, perform one of the following actions:
     - Copy the libnsrora.xx library file to the default directory /usr/lib, and type the required linking commands that are listed in the following table.
     - Without copying the libnsrora.xx library file to the default directory /usr/lib, type the linking commands that are listed in the following table to link the libnsrora.xx file in the nondefault installation directory /relocation_path/lib.

Note
The commands apply only to Oracle base releases. The commands might vary for patched releases of the Oracle server.

Table 8 Linking and unlinking commands for Oracle library file on UNIX or Linux

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Create or remove link</th>
<th>Install: create the symbolic link</th>
<th>Uninstall: remove the symbolic link</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>Create link</td>
<td>% cd $ORACLE_HOME/lib</td>
<td>% ln -s /usr/lib/libnsrora.a libobk.a</td>
</tr>
<tr>
<td></td>
<td>Remove link</td>
<td>% cd $ORACLE_HOME/lib</td>
<td>% rm libobk.a</td>
</tr>
<tr>
<td>HP PA-RISC</td>
<td>Create link</td>
<td>% cd $ORACLE_HOME/lib</td>
<td>% ln -s /usr/lib/libnsrora.sl libobk.sl</td>
</tr>
<tr>
<td></td>
<td>Remove link</td>
<td>% cd $ORACLE_HOME/lib</td>
<td>% rm libobk.sl</td>
</tr>
<tr>
<td>HP Itanium</td>
<td>Create link</td>
<td>% cd $ORACLE_HOME/lib</td>
<td>% ln -s /usr/lib/libnsrora.so libobk.so</td>
</tr>
<tr>
<td>Linux s390x</td>
<td></td>
<td>If not relocated:</td>
<td></td>
</tr>
<tr>
<td>Linux x64</td>
<td></td>
<td>% ln -s /usr/lib/libnsrora.so</td>
<td></td>
</tr>
<tr>
<td>Linux x86</td>
<td></td>
<td>If relocated:</td>
<td></td>
</tr>
</tbody>
</table>
Table 8 Linking and unlinking commands for Oracle library file on UNIX or Linux (continued)

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Create or remove link</th>
<th>Install: create the symbolic link</th>
<th>Uninstall: remove the symbolic link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris SPARC</td>
<td></td>
<td>% ln -s /relocation_path/lib/libnsrora.so libobk.so</td>
<td></td>
</tr>
<tr>
<td>Solaris x64</td>
<td></td>
<td>Remove link</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>% cd $ORACLE_HOME/lib</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>% rm libobk.so</td>
</tr>
</tbody>
</table>

Unlinking NMDA from the Oracle server environment

Before you uninstall NMDA, unlink NMDA from the Oracle server environment.

Procedure

1. Log in as the $ORACLE_HOME owner.
2. Type the required commands that are listed in Table 8 on page 32 to remove the link.
3. If you copied the libnsrora.xx library file from the installation location to the default directory /usr/lib, remove the library from the default directory.

Linking and unlinking NMDA in a Sybase ASE environment

Perform the required link or unlink procedure in a Sybase ASE Backup Server environment:

- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

Linking NMDA to the Sybase ASE server on AIX, Linux, and Solaris

After you install NMDA on a Sybase ASE server, link NMDA to the server environment.

Procedure

1. Log in as the Sybase ASE user.
2. Create the symbolic link by using one of the following options:
   - If you installed NMDA in the default directory, type the required commands that are listed in the following table.
   - If you installed NMDA in a nondefault directory, perform one of the following actions:
     - Copy the libnarsyb.xx library file to the default directory, and type the required linking commands that are listed in the following table.
     - Without copying the libnarsyb.xx library file to the default directory, type the linking commands that are listed in the following table to link the libnarsyb.xx file in the nondefault installation directory /relocation_path/lib.
Table 9  Linking and unlinking commands for Sybase ASE library file on AIX, Linux, Solaris

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Create or remove link</th>
<th>Install: create the symbolic link</th>
<th>Uninstall: remove the symbolic link</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>Create link</td>
<td>% cd $SYBASE/$SYBASE_ASE/lib</td>
<td></td>
</tr>
<tr>
<td>Linux x64</td>
<td></td>
<td>If not relocated:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>% ln -s /usr/lib/libnsrsyb.so libnsrsyb.so</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If relocated:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>% ln -s /relocation_path/lib/libnsrsyb.so libnsrsyb.so</td>
<td></td>
</tr>
<tr>
<td>Linux x86</td>
<td>Remove link</td>
<td>% cd $SYBASE/$SYBASE_ASE/lib</td>
<td></td>
</tr>
<tr>
<td>Solaris SPARC</td>
<td></td>
<td>% rm libnsrsyb.so</td>
<td></td>
</tr>
<tr>
<td>Solaris x64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. On SuSE Linux, if the LANG environment variable is set to POSIX, then create the /nsr/nsrrc file if it does not exist. Also set LANG in the file to one of the locales that the Sybase server supports. If you do not have a preferred locale value, set LANG to C:

```bash
# cat /nsr/nsrrc
LANG=C
export LANG
```

After you set the environment variable, restart the NetWorker client. The *EMC NetWorker Administration Guide* provides details about the NetWorker software.

4. With Sybase 16.0 SP02, Sybase delivers a 64-bit backup server in addition to a 32-bit backup server. The backup server script points to the 64-bit backup server by default. To enable NMDA backups on AIX and Solaris SPARC, change the script to point to the 32-bit backup server.

For example, the default backup script is as follows:

```bash
#!/bin/sh
# Error log path: /space2/sybase/ASE-16_0/install/sybase160_BS.log
# Maximum number of network connections: 25
# Maximum number of server connections: 20
# Interfaces file path: /space2/sybase/interfaces
# Multibuf executable path: /space2/sybase/ASE-16_0/bin/sybmultbuf
# Backup Server name: sybase160_BS
# /space2/sybase/ASE-16_0/bin/backupserver \
-1 /space2/sybase/ASE-16_0/install/sybase160_BS.log \
-N25 \
-C20 \
-I /space2/sybase/interfaces \
-M /space2/sybase/ASE-16_0/bin/sybmultbuf \
-S sybase160_BS
```

Change two lines in the script to point to the 32-bit backup server:
Linking NMDA to the Sybase ASE server on HP Itanium

Sybase changed the bitness of the ASE Backup Server for HP Itanium processors between ASE releases 15.0.3 and 15.5:

- ASE 15.0.3 has a 32-bit server and requires the NMDA 32-bit libnsrsyb.so library.
- ASE 15.5 or later has a 64-bit server and requires the NMDA 64-bit libnsrsyb.so library.

Note

Regardless of the Sybase ASE version, the NMDA installation on HP Itanium places only the libnsrsyb.so (64-bit) library file in the NMDA installation directory. To ensure that you link the correct library, perform the required procedure for the ASE version.

Linking NMDA to ASE 15.0.3 on HP Itanium

The NMDA installation does not place the required 32-bit libnsrsyb32.so library file in the installation directory.

Copy the libnsrsyb32.so library file to the installation directory and link the library file to the Sybase ASE server.

Procedure

1. As the root user, go to the directory that contains the NMDA installation files as described in Accessing the NMDA software on page 15.

2. Copy the 32-bit NMDA Sybase ASE library file to the installation directory:

   ```
   cp 32-bit/sybase/libnsrsyb32.so /usr/lib/libnsrsyb32.so
   ```

   Note

   When you uninstall NMDA, first remove this library manually.

3. As the Sybase ASE user, type the following commands to link the library file to the Sybase ASE server:

   ```
   cd $SYBASE/$SYBASE_ASE/lib
   ln -s /usr/lib/libnsrsyb32.so libnsrsyb.so
   ```
Linking NMDA to ASE 15.5 or later on HP Itanium

The NMDA installation places the required 64-bit libnsrysb.so file in the installation directory.

As the Sybase ASE user, type the following commands to link the library to the Sybase ASE server:

```
cd $SYBASE/$SYBASE_ASE/lib
ln -s /usr/lib/libnsrsyb.so libnsrsyb.so
```

Unlinking NMDA from the Sybase ASE server

Before you uninstall NMDA, unlink NMDA from the Sybase ASE server environment.

Procedure

1. Log in as the Sybase ASE user.
2. For Sybase ASE 15.0.3 on HP Itanium, remove the libnsrsyb32.so file from the installation directory.
3. Type the required commands from Table 9 on page 34 to remove the link.

Uninstalling NMDA on UNIX or Linux systems

Note

If you installed NMDA to support the coexistence of 32-bit and 64-bit databases and applications on the same host, perform the procedure for Uninstalling 32-bit NMDA on a 32-bit/64-bit system on page 53.

To uninstall NMDA in any of the following configurations, complete the procedure as follows:

- Single host
- Active-passive cluster
- Active-active application cluster, such as DB2 DPF, DB2 pureScale, Informix MACH, Oracle RAC, or Sybase ASE Cluster Edition

When you uninstall NMDA in a cluster, perform the uninstall procedure on each node of the cluster that contains the NMDA software.

Procedure

1. Ensure that no backups or restores are running.
2. Ensure that the NetWorker Remote Exec daemon, nsrexeclcd, is running.

Note

If the NetWorker Remote Exec daemon is not running during the uninstallation, the NMDA wizard information (not the binary) is left on the local host.

3. Unlink NMDA from the database environment according to the instructions in Linking and unlinking NMDA in the environment on UNIX or Linux on page 28.
4. As the root user, uninstall NMDA according to the following uninstall instructions for the AIX, HP-UX, Linux, or Solaris operating system.
Uninstalling NMDA on AIX systems

Uninstall NMDA on an AIX system by running the `installp` command or the SMIT GUI program.

**Procedure**

1. Ensure that you have completed the steps in Uninstalling NMDA on UNIX or Linux systems on page 36 for the initial part of the uninstall procedure.
2. Use one of the following methods to uninstall NMDA:
   - Use the command line interface by typing the following command:
     
     ```bash
     installp -u LGTOonmda.rte
     ```
   - Use the SMIT GUI program:
     a. Type the following `smitty` command:
     
     ```bash
     smitty remove
     ```
     b. Select `F4=List` to display a list of the installed software packages.
     c. Select the package to uninstall:
     
     ```bash
     LGTOonmda.rte
     ```
     d. Set the `PREVIEW Only` option to `No`.
     e. Press `Enter` to uninstall NMDA.
     f. Exit the SMIT GUI program.

Uninstalling NMDA on HP-UX systems

Uninstall NMDA on an HP-UX system by using the `swinstall` command to run the command line interface (CLI) or the graphical user interface (GUI) program.

**Procedure**

1. Ensure that you have completed the steps in Uninstalling NMDA on UNIX or Linux systems on page 36 for the initial part of the uninstall procedure.
2. Use one of the following methods to uninstall NMDA:
   - Use the command line interface by typing the following command:
     
     ```bash
     swremove NMDA
     ```
   - Use the `swremove` GUI program:
a. Type the following `swremove` command:

```
swremove -i NMDA
```

b. Select **Actions** > **Remove (analysis)**.

c. To complete the uninstall when the system analysis is complete, click **OK**.

d. To confirm the uninstall, click **Yes**.

### Uninstalling NMDA on Linux systems

Uninstall NMDA on a Linux system by running the `rpm` command.

**Procedure**

1. Ensure that you have completed the steps in Uninstalling NMDA on UNIX or Linux systems on page 36 for the initial part of the uninstall procedure.

2. Type the following command:

```
rpm -e lgtonmda
```

**Note**

On Linux, uninstall NMDA before you uninstall the NetWorker client software.

### Uninstalling NMDA on Solaris systems

Uninstall NMDA on a Solaris system by running the `pkgrm` command.

**Procedure**

1. Ensure that you have completed the steps in Uninstalling NMDA on UNIX or Linux systems on page 36 for the initial part of the uninstall procedure.

**Note**

To uninstall NMDA on Solaris zones, first uninstall NMDA on the global zone, and then uninstall NMDA on each required sparse root zone.

2. Type the following command:

```
pkgrm LGTOnmda
```

3. Type `y` when prompted.

The software is uninstalled from the directory that contains the NetWorker client software.
CHAPTER 3
Microsoft Windows Installation

This chapter includes the following topics:

- Installing NMDA on Microsoft Windows ............................................................. 40
- Linking and unlinking NMDA in the environment on Windows .............................. 42
- Maintaining the installation on Microsoft Windows ............................................. 46
- Uninstalling NMDA on Microsoft Windows ....................................................... 46
Installing NMDA on Microsoft Windows

Install NMDA on a Windows system by running the NMDA Setup program,
win_x64\networkr\NMDA.exe.

Procedure

1. Complete the initial steps in Installation road maps on page 17. Ensure that you
meet the following requirements:
   - You are logged in as an administrator.
   - No backups or restores are running.
   - The nsrexecd.exe service is running. You can check the service status by running either Component Services or Task Manager.
   - You are in the correct directory that contains the NMDA installation files.

2. Install NMDA by using one of the following methods:
   - Setup program method with installation wizard:
     a. Run the NMDA Setup program, win_x64\networkr\NMDA.exe, and
        follow the instructions that the installation wizard provides.

        **Note**

        If the NMDA Setup program detects no NetWorker client program files,
        the program displays an error message and exits without installing
        NMDA.

     b. To exit the Setup program, click Finish.

   - Silent installation method:
     Run the NMDA.exe command with the appropriate command options:

     ```cmd
     NMDA.exe <installation_options>
     ```

     where `<installation_options>` includes the following options:

     - `/s /q` suppresses all the UI output.
     - `/passive` displays the progress bar only during the installation.
     - `/repair` runs a repair or (if the software is not installed) an installation.
     - `/l <pathname>` specifies the log file pathname. Enclose `<pathname>` in
double quotes if it includes a space. The default directory for the log file
is C:\users\username\AppData\Local\temp.

     For example, the following command performs a silent NMDA installation
that logs messages in the C:\Program Files\EMC NetWorker\nsr
\logs\nmda_installation.log file:

     ```cmd
     NMDA.exe /s /q /l "C:\Program Files\EMC NetWorker\nsr\logs\nmda_installation.log"
     ```

When the NMDA package has the same bitness as the NetWorker client
package that is installed on the system, the NMDA program files are installed in
the same directory as the NetWorker client program files,
NetWorker_install_path\bin.

When you install a 32-bit NMDA package on 64-bit Windows with a 64-bit
NetWorker client package, the NMDA program files are installed in
%SystemDrive%\Program Files (x86)\Legato\nsr\bin, regardless of
where the NetWorker client program files are installed.

3. Verify that the system Path environment variable includes the required
directories, including the NetWorker client installation directory and NMDA
installation directory. For example:

b. On the Advanced tab, click Environment Variables.
c. In the System Variables section, verify the Path variable. The Path variable
must include the following directories:
   • NetWorker client installation directory, for example,
     NetWorker_install_dir\bin.
   • NMDA installation directory, as described in step 2.

Note
The directory pathname can include spaces, but there cannot be spaces
before or after the pathname.

d. If you modified the Path variable, restart the NetWorker Remote Exec
Service (the program nsrexcdd.exe).

4. Restart the database server, if required:
   • If you installed the NetWorker client software for the first time in a
     particular directory on a DB2, Oracle, or a Sybase ASE server before you
     installed NMDA, then restart the DB2, Oracle, or Sybase ASE server
     instance.
   • If you installed 32-bit NMDA for the first time with a 64-bit NetWorker client
     on a Sybase ASE server and you will perform Client Direct backups to a Data
     Domain device, restart the Sybase ASE server.

5. If you installed a 32-bit NMDA package on 64-bit Windows with a 64-bit
NetWorker client package, then restart the NetWorker Remote Exec Service
(the program nsrexcdd.exe).

6. Link NMDA to the database or the application server environment by
   completing the steps in Linking and unlinking NMDA in the environment on
   Windows on page 42.

7. Return to the installation road map to perform any post-installation procedures.
   As part of these procedures, ensure that the NMDA automatic wizard
registration succeeded by using the following commands:

   nsradmin.exe -p nsrexcdd
   nsradmin> print type: NSR remote agent

Road map to post-installation procedures on page 21 provides complete details.
Linking and unlinking NMDA in the environment on Windows

After you install NMDA on Windows as described in the preceding part of this chapter, perform an additional procedure to link NMDA to the database or application environment. Before you uninstall NMDA, also remove the link.

Use the correct instructions that follow to perform the linking or unlinking procedure for the database or application:

- Linking NMDA in a DB2 environment
- Linking and unlinking NMDA in an Informix environment
- Linking and unlinking NMDA in a Lotus Notes environment (optional)
- Linking and unlinking NMDA in a Sybase ASE environment

Note

In an Oracle environment, you do not require the linking or unlinking procedure to install or uninstall NMDA.

Linking NMDA in a DB2 environment

**NOTICE**

You must not set the DB2_VENDOR_INI registry variable. Also, if the %INSTHOME% \sqllib\cfg\vendor.cfg file exists, either remove the file or remove all the NMDA parameter settings from the file.

You do not require unlinking steps to uninstall NMDA in a DB2 environment.

After you install NMDA on a DB2 server, use the `db2set` command to check if the DB2_VENDOR_INI registry variable is set. The `db2set` command displays all the variable settings. For example:

```
C:\Program Files\IBM\SQLLIB\BIN>db2set
DB2ACCOUNTNAME=CORP\brownr1
DB2INSTOWNER=CA-RBROWN-4
DB2PORTRANGE=60000:60003
DB2INSTPROF=C:\PROGRAMDATA\IBM\DB2\DB2COPY1
DB2COMM=TCP/IP
```

Complete the following steps to implement the changes on the DB2 server.

**Procedure**

1. Log in as the DB2 user.
2. Remove the %INSTHOME%\sqllib\cfg\vendor.cfg file, or edit the file and remove all the NMDA parameter settings.
3. Stop the database engine with the `db2stop` command.
4. Unset the DB2_VENDOR_INI variable with the `db2set` command:

   ```
   db2set DB2_VENDOR_INI=
   ```
5. If the stack size for the `db2syscs.exe` file is less than 1024, use the `db2hdr.exe` utility to increase the stack size to a minimum of 1024. For example:

```bash
C:\Program Files\IBM\SQLLIB\BIN> ..\misc\db2hdr db2syscs.exe /s 1024,32
```

**Note**

Insufficient stack size can cause backup failure with the error SQL2079N return code 30.

6. Restart the database engine with the `db2start` command.

### Linking and unlinking NMDA in an Informix environment

Perform the required link or unlink procedure in an Informix environment:
- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

#### Linking NMDA to the Informix server environment

After you install NMDA, link NMDA to the Informix server environment.

**Procedure**

1. Log in as the Informix user.
2. Edit the Informix `%ONCONFIG%` file and set the `BAR_BSALIB_PATH` variable to the full pathname of the NMDA `libxbsa.dll` (XBSA) library.

   The default library pathname is `NetWorker_install_path\bin\libxbsa.dll`.

3. Use the `type` command to ensure that the `sm_versions` file in the `%INFORMIXDIR%\etc` directory includes the following line, and if it does not, change it:

   ```
   type sm_versions
   1|1.0.1|nwbsa|1
   ```

   This action updates the NMDA Informix library links. Without the required values, ON-Bar commands fail and the following message appears:

   ```
   ERROR: Version 1.0.1 of the XBSA shared library is not compatible with version 1 of ON-Bar.
   ```

4. Restart the IDS server to apply the `%ONCONFIG%` file changes.
Unlinking NMDA from the Informix server environment

Before you uninstall NMDA, unlink NMDA from the Informix server environment.

**Procedure**

1. Log in as the Informix user.
2. Edit the Informix \%ONCONFIG\% file and unset the BAR_BSALIB_PATH variable.
3. Restore the copy of the *sm_versions* file that Informix stored in \%INFORMXIDIR\%\etc\sm_versions.std.
4. Restart the IDS server to apply the \%ONCONFIG\% file changes.

Linking and unlinking NMDA in a Lotus Notes environment

Perform the required link or unlink procedure in a Lotus Notes environment:

- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

You require these procedures on Windows only when you want to use the NMDA Lotus document-level restore through the Lotus Notes client GUI to restore deleted or modified Notes documents.

**Note**

The 32-bit NMDA Windows package must be installed on the Notes client host.

Linking NMDA to Lotus Notes

After you install NMDA, you can add the document-level recovery feature to the Lotus Notes client software. The *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide* describes the feature.

Complete the following steps to add the document-level recovery feature.

**Procedure**

1. Exit the Lotus Notes client or administrator GUI.
2. Copy the *nsrdoclb.dll* file from the NMDA software directory to the Notes directory that contains the *notes.ini* file, which is typically %SystemDrive% \Lotus\Notes.
3. In the Notes directory, add the following line to the *notes.ini* file:

   ```
   AddInMenus=nsrdoclb.dll
   ```

   If an AddInMenus item exists, you can place a comma after it and add your item as follows:

   ```
   AddInMenus=command.dll, nsrdoclb.dll
   ```

4. Start the Lotus Notes client software.

   The Lotus Notes client **Actions** menu displays the following choices:
Unlinking NMDA from Lotus Notes

Before you uninstall NMDA, remove the NMDA document-level recovery feature from the Notes Client software.

Procedure

1. Exit the Lotus Notes client or administrator GUI.
2. In the Notes directory, remove the following line from the notes.ini file:
   
   ```text
   AddInMenus=nsrdoclb.dll
   ```
3. Delete the nsrdoclb.dll file from the Notes directory, which is typically %SystemDrive%\Lotus\Notes.
4. Start the Lotus Notes client software.
   
The recovery items previously added to the Lotus Notes client Actions menu are removed.

Linking and unlinking NMDA in a Sybase ASE environment

Perform the required link or unlink procedure in a Sybase ASE Backup Server environment:

- After you install NMDA, perform the procedure to link NMDA.
- Before you uninstall NMDA, perform the procedure to unlink NMDA.

Linking NMDA to the Sybase ASE server environment

Copy the libnsrsyb.dll file from the NetWorker location to the Sybase ASE location.

Procedure

1. Go to the directory that contains the NMDA installed files, NetWorker_install_path\bin.
2. Copy the libnsrsyb.dll file to the %SYBASE%\%SYBASE_ASE%\lib directory.

Unlinking NMDA from the Sybase ASE server environment

Before you uninstall NMDA, remove the link to the Sybase ASE server environment.

Procedure

1. Open the %SYBASE%\%SYBASE_ASE%\lib directory.
2. Delete the libnsrsyb.dll entry.
Maintaining the installation on Microsoft Windows

To repair an NMDA installation on a Microsoft Windows system, complete the following steps.

Procedure

1. Log in as the Windows system local administrator user.
2. Ensure that no backups or restores are running.
3. Go to the directory that contains the NMDA installation files as described in Accessing the NMDA software on page 15.
4. Run the `win_x64\networkr\NMDA.exe` program.
5. In the Installation Modification dialog box, select Repair, and then click Repair to begin the installation. The Setup program reinstalls the NMDA files as required.
6. In the Complete the Setup dialog box, click Finish to exit the wizard.
7. If you changed the system Path variable, restart the Windows system and verify that any required database instances and services are restarted.

Uninstalling NMDA on Microsoft Windows

Note

If you installed NMDA to support the coexistence of 32-bit and 64-bit databases and applications on the same host, perform the procedure for Uninstalling 32-bit NMDA on a 32-bit/64-bit system on page 53.

To uninstall NMDA in any of the following configurations, complete the procedure as follows:

- Single host
- Active-passive cluster
- Active-active application cluster, such as DB2 DPF, Informix MACH, Oracle RAC, or Sybase ASE Cluster Edition

When you uninstall NMDA in a cluster, perform the uninstall procedure on each node of the cluster that contains the NMDA software.

Procedure

1. Log in as the Windows system local administrator user on the NMDA host.
2. Ensure that no backups or restores are running.
3. Ensure that the NetWorker Remote Exec service, `nsrexed.exe`, is running.

Note

If the NetWorker Remote Exec service is not running during the uninstallation, the NMDA wizard information (not the binary) is left on the local host.

4. Unlink NMDA from the database or application environment according to the instructions in Linking and unlinking NMDA in the environment on Windows on page 42.
5. Uninstall NMDA by using one of the following methods:

**Note**

You do not need to shut down a database to uninstall NMDA.

- Setup program method with installation wizard:
  
  a. Go to the directory that contains the NMDA installation files as described in *Accessing the NMDA software* on page 15, and then run the *win_x64\networkr\NMDA.exe* program.
  
  b. In the *Installation Modification* dialog box, select *Remove*, and then click *Remove*. The Setup program uninstalls the NMDA files as required.
  
  c. In the *Complete the Setup* dialog box, click *Finish* to exit the wizard.

- Silent uninstallation method:
  
  Run the *NMDA.exe* command with the appropriate command options:

```
NMDA.exe /uninstall <uninstallation_options>
```

where `<uninstallation_options>` includes the following options:

- `/s /q` suppresses all the UI output.
- `/l <pathname>` specifies the log file path name. Enclose `<pathname>` in double quotes if it includes a space. The default directory for the log file is `C:\users\username\AppData\Local\temp`.

For example, the following command performs a silent NMDA uninstallation that logs messages in the `C:\Program Files\EMC NetWorker\nsr\logs\nmda_uninstallation.log` file:

```
NMDA.exe /uninstall /s /q /l "C:\Program Files\EMC NetWorker\nsr\logs\nmda_uninstallation.log"
```

- Windows Control Panel method:
  
  a. In the *Windows Control Panel* window, select *Add or Remove Programs* or *Programs and Features*, depending on the Microsoft Windows version.
  
  b. In the *Add or Remove Programs* window, select *NetWorker Module for Databases and Applications* and click *Remove*.
CHAPTER 4

NMDA with Mixed 32-bit and 64-bit Databases and Applications

This chapter includes the following topics:

- Coexistence of 32-bit and 64-bit databases and applications.........................50
- Installing NMDA to enable 32-bit and 64-bit coexistence..................................50
- Uninstalling 32-bit NMDA on a 32-bit/64-bit system........................................53
Coexistence of 32-bit and 64-bit databases and applications

NMDA supports combinations of 32-bit and 64-bit database and application software that are installed on the same 64-bit system.

For example, NMDA supports the following combinations:

- 32-bit Lotus Domino and 64-bit Lotus Domino servers on a 64-bit Linux system
- 32-bit Informix and 64-bit Oracle servers on a 64-bit Windows system

Refer to the documentation for the database or application that you are using for details about the versions of 32-bit and 64-bit application software that can coexist on the same system.

The *EMC NetWorker Module for Databases and Applications Release 9.0.x Release Notes* describes additional support limitations.

The following topics describe how to install and uninstall NMDA on a system with both 32-bit and 64-bit databases or applications:

- Installing NMDA to enable 32-bit and 64-bit coexistence
- Uninstalling 32-bit NMDA on a 32-bit/64-bit system

The *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide* provides configuration instructions and special considerations for NMDA in an environment with both 32-bit and 64-bit databases and applications.

Installing NMDA to enable 32-bit and 64-bit coexistence

To install NMDA on a 64-bit operating system where both 32-bit and 64-bit databases or applications are running, install 64-bit NMDA and enable NMDA for 32-bit use.

**Procedure**

1. If you install 32-bit NMDA on the system, uninstall NMDA with the required procedure:
   - Uninstalling NMDA on UNIX or Linux systems on page 36
   - Uninstalling NMDA on Microsoft Windows on page 46

2. Install 64-bit NMDA for the operating system. The following chapters provide details for each operating system:
   - Chapter 2, UNIX and Linux Installation
   - Chapter 3, Microsoft Windows Installation

   After the software installation completes, a message appears about how to start the NMDA scheduled backup configuration wizard. The *EMC NetWorker Module for Databases and Applications Release 9.0.x Administration Guide* describes the wizard.

3. Go to the 32-bit directory under the directory that contains the NMDA installation package for the operating system as described in Accessing the NMDA software on page 15.

4. Manually copy the 32-bit files that are listed in the following table to the specified location for each 32-bit database or application on the system.

5. Complete the software linking and post-installation procedures for the 32-bit NMDA software components if required:
- Linking and unlinking NMDA in the environment on UNIX or Linux on page 28
- Linking and unlinking NMDA in the environment on Windows on page 42
- Road map to post-installation procedures on page 21

Use the program file name that is listed in the following table when performing these steps. For example, to link the 32-bit NMDA Sybase component to the Sybase ASE server on AIX:

```
cd $SYBASE/$SYBASE_ASE/lib
ln -s /usr/lib/libnsrsyb32.so libnsrsyb.so
```

**Note**

- IBM does not support 32-bit DB2 software on 64-bit UNIX or Linux.
- Oracle does not support 32-bit Oracle software on 64-bit UNIX, Linux, or Windows.

**Table 10 Additional steps to enable NMDA for a 32-bit application**

<table>
<thead>
<tr>
<th>On this 64-bit operating system</th>
<th>For this 32-bit application</th>
<th>Copy these 32-bit files from the 32-bit directory</th>
<th>To this directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>Informix</td>
<td>informix/libnsrifmx32.so</td>
<td>/usr/lib</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdasv32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdaprobe32</td>
<td>/usr/bin</td>
</tr>
<tr>
<td>Lotus</td>
<td></td>
<td>• nsrdasv32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdaprobe32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• lotus/nsrcrc32</td>
<td>/usr/bin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• lotus/nssrcrc32</td>
<td></td>
</tr>
<tr>
<td>Sybase ASE</td>
<td></td>
<td>sybase/libnsrsyb32.so</td>
<td>/usr/lib</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdasv32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdaprobe32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sybase/nsrsybcc32</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• sybase/nsrsybcc32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sybase/threshold.sql</td>
<td></td>
</tr>
<tr>
<td>HP Itanium</td>
<td>Sybase ASE</td>
<td>sybase/libnsrsyb32.so</td>
<td>/usr/lib</td>
</tr>
<tr>
<td>Linux x64</td>
<td>Informix</td>
<td>informix/libnsrifmx32.so</td>
<td>/usr/lib</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdasv32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• nsrdaprobe32</td>
<td>/usr/sbin</td>
</tr>
</tbody>
</table>

Installing NMDA to enable 32-bit and 64-bit coexistence 51
### Table 10 Additional steps to enable NMDA for a 32-bit application (continued)

<table>
<thead>
<tr>
<th>On this 64-bit operating system</th>
<th>For this 32-bit application</th>
<th>Copy these 32-bit files from the 32-bit directory</th>
<th>To this directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lotus</td>
<td></td>
<td>• nsrdasv32&lt;br&gt;• nsrdaprobe32&lt;br&gt;lotus/nsrdocrc32&lt;br&gt;lotus/nsrnotesrc32&lt;br&gt;lotus/nsrlotusra&lt;br&gt;lotus/nmlra.jar&lt;br&gt;lotus/nmlra_res.jar</td>
<td>/usr/sbin¹</td>
</tr>
<tr>
<td>MySQL</td>
<td></td>
<td>• nsrdasv32&lt;br&gt;• nsrmysqlrc32</td>
<td>/usr/sbin¹</td>
</tr>
<tr>
<td></td>
<td>libnsrmysql32.so</td>
<td>/usr/lib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>libmysqlapi32.so</td>
<td>/usr/lib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>libmysqlapiwrap32.so</td>
<td>/usr/lib</td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td>Rename libmysqlapi32.so in this directory to libmysqlapi.so.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sybase ASE</td>
<td>sybase/libnsrsyb32.so</td>
<td>/usr/lib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• nsrdasv32&lt;br&gt;nsrdaprobe32&lt;br&gt;sybase/nsrsybcc32&lt;br&gt;sybase/nsrsybc32</td>
<td>/usr/sbin¹</td>
<td></td>
</tr>
<tr>
<td>Solaris SPARC</td>
<td>Informix</td>
<td>informix/libnsrifmx32.so</td>
<td>/usr/lib</td>
</tr>
<tr>
<td></td>
<td>• nsrdasv32&lt;br&gt;nsrdaprobe32</td>
<td>/usr/sbin¹</td>
<td></td>
</tr>
<tr>
<td>Lotus</td>
<td></td>
<td>• nsrdasv32&lt;br&gt;nsrdaprobe32&lt;br&gt;lotus/nsrdocrc32&lt;br&gt;lotus/nsrnotesrc32&lt;br&gt;lotus/nsrlotusra</td>
<td>/usr/sbin¹</td>
</tr>
</tbody>
</table>

¹ Note: The installation directory may vary depending on the specific version of the operating system or application.
<table>
<thead>
<tr>
<th>On this 64-bit operating system</th>
<th>For this 32-bit application</th>
<th>Copy these 32-bit files from the 32-bit directory</th>
<th>To this directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sybase ASE</td>
<td></td>
<td>• <code>lotus/nmlra.jar</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <code>lotus/nmlra_res.jar</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>sybase/libnsrsyb32.so</code></td>
<td><code>/usr/lib</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <code>nsrdasv32</code></td>
<td><code>/usr/sbin</code></td>
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<tr>
<td></td>
<td></td>
<td>• <code>nsrdaprobe32</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <code>sybase/nsrsybcc32</code></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• <code>sybase/nsrsybrc32</code></td>
<td></td>
</tr>
<tr>
<td>Windows x64</td>
<td>DB2</td>
<td>• 32-bit <code>\nsrdasv32.exe</code></td>
<td><code>NetWorker_install_path\bin</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\nsrdaprobe32.exe</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\db2\libnsrdb232.dll</code></td>
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<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\db2\nsrdb2rlog32.exe</code></td>
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</tr>
<tr>
<td></td>
<td>Informix</td>
<td>• 32-bit <code>\nsrdasv32.exe</code></td>
<td><code>NetWorker_install_path\bin</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\nsrdaprobe32.exe</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\informix\libxbsa32.dll</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lotus</td>
<td>• 32-bit <code>\nsrdasv32.exe</code></td>
<td><code>NetWorker_install_path\bin</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\nsrdaprobe32.exe</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\lotus\nsrdocrc32.exe</code></td>
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<tr>
<td></td>
<td></td>
<td>• 32-bit <code>\lotus\nsrnnotesrc32.exe</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sybase ASE</td>
<td>Not applicable. 32-bit or 64-bit Sybase ASE cannot coexist with another application on 64-bit Windows.</td>
<td></td>
</tr>
</tbody>
</table>

1 Copy the 32-bit file to `/usr/sbin` or to the same location where 64-bit NMDA was relocated.

### Uninstalling 32-bit NMDA on a 32-bit/64-bit system

Complete the required steps to uninstall NMDA on a system where both 32-bit and 64-bit databases or applications coexist.

#### Procedure
1. Ensure that no backups or restores are running on the NMDA host.
2. Unlink the NMDA 32-bit components that you manually installed according to the following instructions:
   - Linking and unlinking NMDA in the environment on UNIX or Linux on page 28
   - Linking and unlinking NMDA in the environment on Windows on page 42
3. Log in as the root user (UNIX or Linux) or system administrator (Windows).
4. Manually delete the files for the 32-bit database or application that you manually copied during installation as shown in Table 10 on page 51.

5. Uninstall 64-bit NMDA according to the required instructions:
   - Uninstalling NMDA on UNIX or Linux systems on page 36
   - Uninstalling NMDA on Microsoft Windows on page 46
APPENDIX A

Uninstalling ISM on an Informix Server

This appendix includes the following topics:

- ISM software on an Informix server ................................................................. 56
- Uninstalling ISM on UNIX or Linux ............................................................... 56
- Uninstalling ISM on Microsoft Windows ....................................................... 57
ISM software on an Informix server

Informix Storage Manager (ISM) is a storage management software that is packaged and installed with Informix Dynamic Server (IDS).

For Informix servers only, if you installed ISM software, uninstall the software before you install NMDA by using the OS-specific instructions in the following topics:

- Uninstalling ISM on UNIX or Linux
- Uninstalling ISM on Microsoft Windows

Note
Starting with Informix 12.10, Informix Primary Storage Manager (PSM) replaces ISM. When you install NMDA with IDS 12.10, you do not need to uninstall PSM. Follow the linking instructions in the correct linking section of this guide.

Uninstalling ISM on UNIX or Linux

Complete the required steps to uninstall ISM on an Informix server on a UNIX or Linux host.

Procedure

1. Log in as the root user on the NMDA host.
2. Change to the Informix directory:

```
# cd $INFORMIXDIR/bin
```

3. Shut down the ISM daemons:

```
#/ism_shutdown
```

Note
The `ism_shutdown` command does not uninstall ISM. Complete the following steps.

4. Verify that the daemons are shut down:

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

5. Move the ISM executables to a temporary directory. For example:

```
# mkdir ISM.TMP
# mv ism* ISM.TMP
# mv nsr* ISM.TMP
# mv mm* ISM.TMP
# mv save* ISM.TMP
# mv scanner ISM.TMP
```
6. Move the ISM catalogs to a temporary directory:

   # cd $INFORMIXDIR
   # mv ism ism.bak

7. Remove the symbolic link to the ISM catalogs:

   # rm /nsr

8. Remove the call to ism_catalog from the $INFORMIXDIR/bin/onbar script.

9. Remove any references to ISM in the environment variable PATH.

10. Edit the $INFORMIXDIR/etc/$ONCONFIG file, and comment out the following line if it exists:

    #BAR_BSALIB_PATH ISM_library

    Also, comment out any references to the following parameters:

    ISM_DATA_POOL
    ISM_LOG_POOL

---

Uninstalling ISM on Microsoft Windows

There are two methods to uninstall the ISM software on an Informix server that is installed on a Windows host. You can use the IDS Server Setup program or the manual method.

Uninstalling ISM on Windows with the Setup program

The recommended method to uninstall ISM on an Informix server on Windows is to use the IDS Server Setup program, if available.

**Procedure**

1. Launch the IDS Server Setup program.
2. Select **Modify the Installation**.
3. Clear the selection **Informix Storage Manager**.
4. Complete the Setup program to uninstall ISM.
Uninstalling ISM on Windows manually

If the IDS Server Setup program is not available, manually uninstall ISM on an Informix server on Windows.

Procedure

1. Log in as user informix.
2. Type the following command to set the Informix Database server environment variables:
   
   ```
   database-servername.cmd
   ```
3. Change to the ISM directory. For example:
   
   ```
   cd C:\ism\2.2\bin
   ```
4. Set the ISM path variable. For example:
   
   ```
   set ISMDIR=C:\ism\2.2
   ```
5. Shut down the ISM services:
   
   ```
   ism_shutdown -deinstall
   ```
6. Shut down ISM, and then verify that there are no services listed for ISM in Control Panel > Administrative Tools > Services.
7. Rename the directory that contains ISM:
   
   ```
   rename ism ism.bak
   ```
8. Remove the call to ism_catalog from the %INFORMIXDIR%\bin\onbar.bat file.
9. Remove any references to ISM in the environment variable PATH.
   
   Delete the %ISMDIR%\bin directory entry from the user environment variable PATH. For example, change the following PATH setting:
   
   ```
   PATH=C:\installdir;D:\ISM\2.20\bin;C:\msdev
   ```
   
   The changed PATH setting is as follows:
   
   ```
   PATH=C:\installdir;C:\msdev
   ```
10. **Edit the `%INFORMIXDIR%\%ONCONFIG%` file, and comment out the following line, if it exists:**

   ```
   #BAR_BSA_LIB_PATH ISM_library
   ```

   Also comment out any references to the following parameters:

   - `ISM_DATA_POOL`
   - `ISM_LOG_POOL`

11. **Remove the ISM portmapper:**
    
    a. Stop the ISM portmapper service.
    
    b. Type `Regedit`, and then delete the following entry:

   ```
   HKEY_LOCAL_MACHINE\SYSTEM\CURRENTCONTROLSET\SERVICES\PORTMAP
   ```

   Confirm that the Displayname is ISM Portmapper before deleting the entry.

12. **Edit the registry to delete any of the following keys, if present:**

    ![NOTICE]

    Edit the registry with caution. Errors can corrupt the Windows system.

    - `Hkey_Local_Machine\Software\XBSA`
    - `Hkey_Local_Machine\Software\Informix\ISM`
    - `Hkey_Local_Machine\Software\Informix\Informix Storage Manager`

13. Restart the computer.
Uninstalling ISM on an Informix Server