HP Network Node Manager i Software

For the Windows® and Linux operating systems

Software Version: NNMi 10.00

Upgrade Reference

Document Release Date: May 2014
Software Release Date: May 2014

Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notice

© Copyright 2008–2014 Hewlett-Packard Development Company, L.P.

Trademark Notices

Adobe® is a trademark of Adobe Systems Incorporated.

HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32 and 64-bit configurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

Intel® is a trademark of Intel Corporation in the U.S. and other countries.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Oracle and Java are registered trademarks of Oracle and/or its affiliates.

Red Hat® Enterprise Linux Certified is a registered trademark of Red Hat, Inc. in the United States and other countries.

UNIX® is a registered trademark of The Open Group.

Oracle Technology — Notice of Restricted Rights

Programs delivered subject to the DOD FAR Supplement are 'commercial computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement. Otherwise, programs delivered subject to the Federal Acquisition Regulations are 'restricted computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the restrictions in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

For the full Oracle license text, see the license-agreements directory on the NNMi product DVD.

Acknowledgements

This product includes software developed by the Apache Software Foundation. (http://www.apache.org)

This product includes software developed by the Indiana University Extreme! Lab. (http://www.extreme.indiana.edu)

Available Product Documentation

In addition to this guide, the following documentation is available for NNMi:

- *HP Network Node Manager i Software Documentation List*—Available on the HP manuals web site. Use this file to track additions to and revisions within the NNMi documentation set for this version of NNMi. Click a link to access a document on the HP manuals web site.
- *HP Network Node Manager i Software Installation Guide*—Available for each supported operating system on the product media and the NNMi management server.
- *HP Network Node Manager i Software Deployment Reference*—Available on the HP manuals web site.
- *HP Network Node Manager i Software Release Notes*—Available on the product media and the NNMi management server.
- *HP Network Node Manager i Software System and Device Support Matrix*—Available on the product media and the NNMi management server.
- *HP Network Node Manager iSPI Network Engineering Toolset Planning and Installation Guide*—Available on the NNM iSPI NET diagnostics server product media.

To check for recent updates or to verify that you are using the most recent edition of a document, go to:

http://h20230.www2.hp.com/selfsolve/manuals

This site requires that you register for an HP Passport and sign in. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Support

Visit the HP Software Support Online web site at:

www.hp.com/go/hpsoftwaresupport

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport user ID, go to:

http://h20229.www2.hp.com/passport-registration.html

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

Contents

About This Guide . . . 9
What Is in This Guide? . . . 9
Path Conventions Used in This Document . . . 11
Revision History . . . 11

Upgrading from NNMi 8.0x or 8.1x 13

Upgrading the NNMi Management Server in Place from 8.0x or 8.1x . . . 15
Start from NNMi 8.0x . . . 15
Upgrade an Existing NNMi Management Server to NNMi 9.1x . . . 15

Upgrading to a Different NNMi Management Server from 8.0x or 8.1x . . . 17
Start from NNMi 8.0x . . . 17
Upgrade to a Different NNMi Management Server . . . 17

Moving NNMi from Red Hat Linux 4.6 to 5.2 or 5.3 . . . 19
Changing NNMi from Red Hat Linux 4.6 to Red Hat Linux 5.2 or 5.3 . . . 19

Migrating NNMi Oracle Data . . . 23
Migrating NNMi Oracle Data . . . 23

Additional Upgrade Information . . . 25
Configuration Differences . . . 25
Functionality Differences . . . 26

Application Failover and Upgrading from NNMi 8.x to NNMi 9.0x . . . 29
Application Failover and Upgrading to NNMi 9.00 . . . 29
Application Failover and NNMi Patches . . . 31

High Availability and Upgrading from NNMi 8.1x to NNMi 9.0x . . . 33
Upgrading NNMi under HA from NNMi 8.1x to NNMi 9.01 . . . 33
Unconfiguring NNMi from an HA Cluster . . . 36
Unconfiguring NNMi from an HA Cluster . . . 36
Running NNMi with the Existing Database Outside HA . . . 39
Patching NNMi under HA . . . 40

Upgrading from NNMi 9.0x to NNMi 9.1x 43

Upgrading the NNMi Management Server in Place . . . 45
Upgrade an Existing NNMi 9.0x Management Server to NNMi 9.1x . . . 45

Upgrading to a Different NNMi Management Server 47
Upgrade to a Different NNMi Management Server 47
Moving NNMi from Windows 2003 to Windows 2008 49
Changing NNMi from Windows 2003 to Windows 2008 49
Migrating NNMi Oracle Data 53
Migrating NNMi Oracle Data 53
Additional Upgrade Information 55
Configuration Differences 55
Application Failover 56
MIBs 57
Functionality Differences 57
Application Failover and Upgrading to NNMi 9.1x 59
Application Failover and NNMi Patches 62
Applying Patches for Application Failover (Shut Down Both Active and Standby) 62
Applying Patches for Application Failover (Keep One Active NNMi Management Server) 64
Application Failover and Restarting the NNMi Management Servers 66
Application Failover Control after a Communication Failure 66
Application Failover and Recovery from a Previous Database Backup (Embedded Database Only) . 66
Upgrading NNMi under HA from NNMi 9.0x to NNMi 9.10 69
Upgrade NNMi with the Embedded Database on the Windows, Linux, or Solaris Operating System 69
Upgrade NNMi with the Embedded Database on the HP-UX Operating System 72
Upgrade NNMi with Oracle on All Supported Operating Systems 73
Upgrading from NNMi 9.0x to NNMi 9.10 (Global Network Management) 75
NNMi Versions Supported by Global Network Management 75
Global Network Management Upgrade Steps 75

Upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x 77

Important Prerequisite Steps for Upgrading with an Oracle Database 80
Upgrading the NNMi Management Server in Place 81
Upgrade an Existing NNMi Management Server to NNMi 9.2x 81
Upgrading to a Different NNMi Management Server 83
Upgrade to a Different NNMi Management Server 83
Moving NNMi from Windows 2003 to Windows 2008 85
Changing NNMi from Windows 2003 to Windows 2008 85
Moving NNMi to RHEL 5.4 or Later 89
Moving NNMi to RHEL Version 5.4 or Later 89
Migrating NNMi Oracle Data 93
Migrating NNMi Oracle Data 93

Additional Upgrade Information 95
Configuration Differences 95
Application Failover 97
MIBs 97
Functionality Differences 97

Application Failover and Upgrading to NNMi 9.20 99
Application Failover and Upgrading from NNMi 9.0x or 9.1x 99
Embedded Database 99
Oracle Database 102
Application Failover and NNMi Patches 104
Applying Patches for Application Failover (Shut Down Both Active and Standby) 104
Applying Patches for Application Failover (Keep One Active NNMi Management Server) 106

High Availability and Upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.20 109
Upgrade NNMi with the Embedded Database on all Supported Operating Systems 109
Upgrade NNMi with Oracle on all Supported Operating Systems 112
Unconfiguring NNMi from an HA Cluster 112
Running NNMi Outside HA with the Existing Database 115
Patching NNMi under HA 116

Upgrading Global and Regional Managers to NNMi 9.2x 119
NNMi Versions Supported by Global Network Management 119
Global Network Management Upgrade Steps 119

Upgrading from NNMi 9.1x or 9.2x to NNMi 10.00 121

Upgrading the NNMi Management Server in Place 127
Upgrade an Existing NNMi Management Server to NNMi 10.00 127

Upgrading to a Different NNMi Management Server 129
Upgrade to a Different NNMi Management Server 129

Moving NNMi from the HP-UX or Solaris Operating System 131
Changing NNMi from HP-UX or Solaris to Linux 131

Moving NNMi to RHEL 6.4 or Later 135
Changing NNMi to RHEL Version 6.4 or Later 135

Migrating NNMi Oracle Data 139
Migrating NNMi Oracle Data 139

Application Failover and Upgrading to NNMi 10.00 141
Application Failover and Upgrading from NNMi 9.1x or NNMi 9.2x 141
Embedded Database 141
Oracle Database 144
Application Failover and NNMi Patches 146
Applying Patches for Application Failover (Shut Down Both Active and Standby) 147
Applying Patches for Application Failover (Keep One Active NNMi Management Server) 148

Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x 151
NNMi Versions Supported by Global Network Management 151
Global Network Management Upgrade Steps 151
Upgrading from NNMi 9.1x to NNMi 10.00 151
Upgrading from NNMi 9.2x to NNMi 10.00 152
High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00 153
Upgrade NNMi with the Embedded Database on all Supported Operating Systems 153
Upgrade NNMi with Oracle on all Supported Operating Systems 156
Unconfiguring NNMi from an HA Cluster 157
Running NNMi Outside HA with the Existing Database 159
Patching NNMi under HA 160
We appreciate your feedback! 163

About This Guide

This chapter contains the following topics:

- What Is in This Guide?
- Path Conventions Used in This Document
- Revision History

What Is in This Guide?

This guide contains information for upgrading from the following HP Network Node Manager i Software (NNMi) versions to NNMi 10.00:

- Upgrading from NNMi 8.0x or 8.1x on page 13
- Upgrading from NNMi 9.0x to NNMi 9.1x on page 43
- Upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x on page 77
- Upgrading from NNMi 9.1x or 9.2x to NNMi 10.00 on page 121

Also see *NNMi 10.00 Upgrade Path Requirements* available at: **http://h20230.www2.hp.com/selfsolve/manuals**

This guide is for an expert system administrator, network engineer, or HP support engineer with experience deploying and managing networks in large installations.

Note that NNMi refers to HP Network Node Manager i Software (including all 8.x and all 9.x releases of NNMi and NNMi Advanced).

Before using this guide, make sure you have completed the following tasks:

- You have installed the version of NNMi from which you are upgrading using either of the following:
  - *HP Network Node Manager Installation Guide*
  - *HP Network Node Manager i Software Installation Guide*
  - *HP Network Node Manager i Software Interactive Installation Guide*

- You have reviewed the concepts described in the NNMi help and the deployment information in the *NNMi Deployment Reference* for a general understanding of NNMi functions.
- You understand how to use the NNMi console.

For up-to-date, downloadable copies of NNMi documentation, go to:

http://h20230.www2.hp.com/selfsolve/manuals

The information in this guide was formerly published in the *NNMi Deployment Reference*.

HP updates this guide between product releases, as new information becomes available. For information about retrieving an updated version of this document, see Available Product Documentation on page 3.

Path Conventions Used in This Document

For commands located in the NNMi `bin` directory, this document does not include the command path. The NNMi `bin` directory is located as follows:

- *Windows Server 2008*: `<drive>\Program Files\HP\HP BTO Software\bin`
- *Linux*: `/opt/OV/bin`

This document primarily uses the following two NNMi environment variables to reference file and directory locations. This list shows the default values. Actual values depend on the selections that you made during NNMi installation.

- *Windows Server 2008*:
  - `%NnmInstallDir%`: `<drive>\Program Files\HP\HP BTO Software`
  - `%NnmDataDir%`: `<drive>\ProgramData\HP\HP BTO Software`

  On Windows systems, the NNMi installation process creates these system environment variables, so they are always available to all users.

- *Linux*:
  - `$NnmInstallDir`: `/opt/OV`
  - `$NnmDataDir`: `/var/opt/OV`

  On Linux systems, you must manually create these environment variables if you want to use them.

Additionally, this document references some of the NNMi environment variables that you can source as part of your user log-on configuration on the NNMi management server. These variables are of the form `NNM_*`. For information about this extended list of NNMi environment variables, see “Other Available Environment Variables” in the *NNMi Deployment Reference*.

Revision History

The following table lists the major changes for each new release of this document.

Document Release Date	Description of Major Changes
May 2014 (10.00)	Initial release

Upgrading from NNMi 8.0x or 8.1x

To upgrade from NNMi 8.0x to NNMi 9.20, you must first upgrade to NNMi 8.1x.

To upgrade from NNMi 8.1x to NNMi 10.00, you must first upgrade to NNMi 9.0x, and then upgrade to either NNMi 9.1x or NNMi 9.2x, before upgrading to NNMi 10.00.

You can upgrade NNMi according to the information shown in Table 1. For best results, upgrade to NNMi 8.1x patch 8 or newer before upgrading to NNMi 9.0x. The information shown in Table 1 assumes you have NNMi 8.10 or newer installed on the NNMi management server.

Table 1 Supported NNMi Upgrades

NNMi Version	Upgrade to NNMi 9.0x
8.10	Supported
8.1x Patch 1 or newer	Supported

If you plan to upgrade an earlier version of NNMi 8.1x that is running in an NNMi application failover or HA (High Availability) configuration, the supported upgrade path is to temporarily unconfigure HA or application failover, upgrade the NNMi management server to NNMi 9.00, then reconfigure HA or application failover. For detailed information, see the Upgrading NNMi under HA from NNMi 8.1x to NNMi 9.01 on page 33.

See Table 2 to view the supported upgrade paths to NNMi 8.10.

Table 2 Supported NNMi Upgrades (to NNMi 8.10)

Current Version	**Upgrade to NNMi 8.02**	**Upgrade to NNMi 8.03 or higher ***	**Upgrade to NNMi 8.10**
NNMi 8.01	Supported	Supported	Install NNMi version 8.10.
NNMi 8.02	NA	Supported	Install NNMi version 8.10.
NNMi 8.03 or higher *	NA	NA	Install NNMi version 8.10.

* Excluding NNMi 8.1x. To install NNMi patches, see the patch installation instructions.

There are several upgrade scenarios you could encounter. This section contains the following chapters:

- Upgrading the NNMi Management Server in Place from 8.0x or 8.1x, which describes the following upgrade scenario:
  - Upgrading from NNMi 8.0x to NNMi 8.1x or NNMi 8.1x to NNMi 9.00 on the same hardware and operating system.
- Upgrading to a Different NNMi Management Server from 8.0x or 8.1x, which describes the following upgrade scenario:
  - Upgrading from NNMi 8.0x to NNMi 8.1x or NNMi 8.1x to NNMi 9.00 on the same version operating system.
- Moving NNMi from Red Hat Linux 4.6 to 5.2 or 5.3. NNMi 9.00 does not support Red Hat Linux 4.6. You must change the operating system to Red Hat Linux 5.2 or 5.3 before migrating to NNMi 9.00.
- Migrating NNMi Oracle Data. Explains the steps to take to move the Oracle data used by your NNMi management server from one Oracle database instance to another.
- Additional Upgrade Information. Explains some areas that NNMi 9.0x differs from earlier versions of NNMi.

For information about moving an NNMi management server, see the *NNMi Deployment Reference*.

Upgrading the NNMi Management Server in Place from 8.0x or 8.1x

This chapter describes the process for upgrading an existing NNMi management server to NNMi 9.0x.

This chapter contains the following topics:

- Start from NNMi 8.0x
- Upgrade an Existing NNMi Management Server to NNMi 9.1x

Start from NNMi 8.0x

Upgrade the NNMi management server to version 8.10 or later. Continue with the instructions shown in Upgrade an Existing NNMi Management Server to NNMi 9.1x on page 15.

Upgrade an Existing NNMi Management Server to NNMi 9.1x

Read the *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Installation Guide* and Additional Upgrade Information on page 25 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

The following steps explain how to upgrade an NNMi management server to NNMi 9.1x. The following steps assume you have NNMi 8.10 or later running on the NNMi management server.

1. Backup the NNMi management server using the `nnmbackup.ovpl` script. Do this as a precaution, as you would only use this backup in the unlikely event oa failed migration. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage.

2 *Oracle Database Only*: If the NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration

3 *Oracle Database Only*: Use the `nnmconfigexport.ovpl` script to back up configuration information from the NNMi management server. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nmconfigexport.ovpl* or *nnmconfigimport.ovpl* reference pages, or the UNIX manpages.

Never edit a file exported with the `nnmconfigexport.ovpl` script before using the `nnmconfigimport.ovpl` script to import the file.

4 Install NNMi 9.0 on the NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

5 Verify that the information from the NNMi management server migrated successfully.

Upgrading to a Different NNMi Management Server from 8.0x or 8.1x

This chapter describes the process for upgrading to NNMi version 9.0x on a new system while maintaining the configuration of the existing NNMi management server.

This chapter contains the following topics:

- Start from NNMi 8.0x
- Upgrade to a Different NNMi Management Server

Start from NNMi 8.0x

Upgrade the NNMi management server to version 8.10 or later. Continue with the instructions shown in Upgrade to a Different NNMi Management Server on page 17.

Upgrade to a Different NNMi Management Server

Read the NNMi 8.1x *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Installation Guide* and Additional Upgrade Information on page 25 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

The following steps explain how to copy data from an existing NNMi management server to a target NNMi management server. The following steps assume you have NNMi 8.10 or higher running on the existing NNMi management server.

If you want to change the Oracle database server, complete that process before or after the upgrade to NNMi 8.1x. For information, see Migrating NNMi Oracle Data on page 23.

1. As a precaution, back up the existing (source) NNMi 8.1x management server using the `nnmbackup.ovpl` script. Label this backup for 8.1x. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 8.1x.
2. If the existing (source) NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi 8.1x data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.
3. Install NNMi 9.00 and the latest consolidated patch (if any) on the source NNMi management server using instructions from the *HP Network Node Manager i Software Installation Guide*.

   Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.
4. Verify that NNMi 9.1x is working correctly on the source NNMi management server.
5. Back up NNMi 9.1x on the source NNMi management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.1x. You will need it to copy data to the target NNMi management server. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.1x.
6. Install NNMi 9.20 and the latest consolidated patch (if any) on the target NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*. To migrate the data from step 5, the target NNMi management server must be running the same operating system version. NNMi does not support data migration to an NNMi management server running on a different operating system.
7. Use the `nnmrestore.ovpl` script to copy NNMi database information to the target server. For more information, see the *nnmrestore.ovpl* reference page, or the UNIX manpage.
8. Obtain and install a new license on the target NNMi management server.
9. Verify that the information from the target NNMi management server migrated successfully from the existing NNMi management server.

Moving NNMi from Red Hat Linux 4.6 to 5.2 or 5.3

NNMi 9.00 does not support Red Hat Linux 4.6. You must change the operating system to Red Hat Linux 5.2 or 5.3 before migrating to NNMi 9.00.

Use the information in this chapter if you have NNMi 8.1x patch 6 or later running on a Red Hat Linux 4.6 server, and need to change the operating system to Red Hat Linux 5.2 or 5.3.

This chapter contains the following topic:

Changing NNMi from Red Hat Linux 4.6 to Red Hat Linux 5.2 or 5.3

Changing NNMi from Red Hat Linux 4.6 to Red Hat Linux 5.2 or 5.3

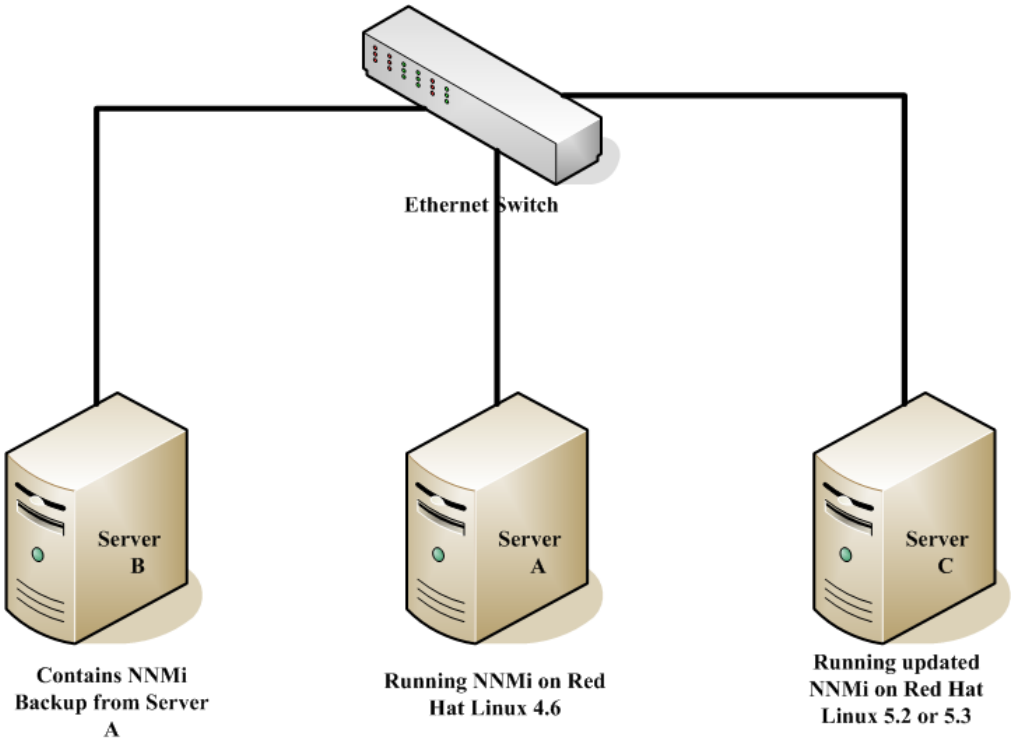
To complete the following steps, you must have NNMi 8.1x patch 6 or later running on a Linux Red Hat 4.6 server. To check the NNMi version number, note the current patch level in the **About Network Node Manager i-series** window. Verify that the version is `8.13.006` or later. If the version is earlier than that, do not proceed. You need to install NNMi 8.1x patch 6 or later before proceeding.

To change an NNMi management server running NNMi 8.1x patch 6 or later from Red Hat Linux 4.6 to Red Hat Linux 5.2 or 5.3, follow these steps:

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running Linux Red Hat 4.6.
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running Linux Red Hat 5.2 or 5.3. This NNMi management server can be the same hardware as the current `Server A`.

   Make sure the `/etc/hosts` file on the new NNMi management server contains the following entry:

   ```
   127.0.0.1 localhost
   ```



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target /tmp/bak/all`** command to complete a full NNMi backup.

   For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install Red Hat Linux 5.2 or 5.3.

   As an alternative to using `Server C`, reformat the disk on `Server A` and install Red Hat Linux 5.2 or 5.3. If you do that, substitute `Server A` for `Server C` for the remaining steps.

5 On `Server C`, install NNMi 8.10.

   See *Installing NNMi 8.10 on Red Hat 5.2* in the *NNMi 8.1x Patch 4 Installation Guide for Linux* for information about completing this step.

6 On `Server C`, install 8.1x patch 6 or later. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

7 On `Server B`, copy the NNMi backup to `Server C`.

8 On `Server C`, run the **`nnmrestore.ovpl -force -source /tmp/bak/all`** command to complete a full NNMi restore.

   For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the UNIX manpage.

   Use the command options that match the backup you completed in step 2

9 NNMi associates its license keys with a server's IP address. If the IP address for `Server C` is different from the IP address of `Server A`, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

Migrating NNMi Oracle Data

Suppose you must move the Oracle data used by your NNMi management server from one Oracle database instance to another. One example of this is to move NNMi data from an Oracle 10g database to an Oracle 11g database. The information in this chapter explains the steps to take to complete this work.

Migrating NNMi Oracle Data

Suppose you have NNMi running in one of the following configurations:

- NNMi 8.1x with the latest patch connected to an Oracle 10g database and you must upgrade to NNMi 9.0x.
- NNMi 9.1x connected to an Oracle 10G or Oracle 11G database.

The Oracle database instance migration you must complete could include combinations of the following requirements:

- The existing Oracle instance can be running Oracle 10G or 11G.
- The new Oracle instance can be running Oracle 10G or 11G. You cannot move an existing Oracle 11G instance back to Oracle 10G.
- The new Oracle instance can be located on the original server or on a different server and hostname.

NNMi 8.1x cannot connect to an Oracle 11G server.

To complete the migration of the NNMi Oracle data, complete the following steps:

1. As root or administrator, run the following command to stop NNMi: **`ovstop -c`**.
2. Use Oracle tools to move or copy the NNMi data from the existing Oracle server to the new server. Refer to Oracle documentation for additional information.

This Oracle data migration can be an in-place upgrade from Oracle 10 to Oracle 11 on the same server. Oracle provides database migration tools for converting Oracle 10 data into the Oracle 11 format.

3 *Only complete this step if the new Oracle server has a different hostname than the previous Oracle server.* On the NNMi management server, reconfigure NNMi to point to the new Oracle server by completing the following steps:

a Edit the datasource configuration file shown :

It is important that you complete the following steps accurately, or jboss will not correctly connect to the Oracle 11G database.

— *Windows*: `%NNM_JBOSS%\server\nms\deploy\nms-ds.xml`

— *UNIX*: `$NNM_JBOSS/server/nms/deploy/nms-ds.xml`

b Change the following attribute to reflect your new server

OLD:
<connection-url>jdbc:oracle:thin:@*EXISTING_FQDN*:*EXISTING_ORACLE_PORT*:*EXISTING_SID* </connection-url>

NEW:
<connection-url>jdbc:oracle:thin:@NEW_*FQDN*:*NEW_PORT*:*NEW_SID*</connection-url>

4 Complete one of the following actions:

If you are upgrading from NNMi 8.1x to NNMi 9.0x, perform that migration now, following the installation instructions in the *HP Network Node Manager i Software Installation Guide*.

If you are already using NNMi 9.0x, follow these steps to restart NNMi and complete the Oracle database move/migration:

a Run the following command on the NNMi management server to restart NNMi: **`ovstart -c`**

b Run the following command on the NNMi management server to check if all of the services are started and operating correctly: **`ovstatus -v`**

Additional Upgrade Information

This chapter describes some changes between NNMi 9.00 and earlier NNMi versions. This chapter contains the following topics:

- Configuration Differences
- Functionality Differences

Configuration Differences

After upgrading, you can find many of the configuration files from earlier version of NNMi in new locations.

- After upgrading, you can find most properties files that influence NNMi 9.00 behavior at the following locations:
  - *Windows*: %NNM_DATA%\shared\nnm\conf\props
  - *Windows*: %NNM_DATA%\conf\nnm\props
  - *UNIX*: $NNM_DATA/shared/nnm/conf/props
  - *UNIX*: $NNM_DATA/conf/nnm/props/
- To modify the ovjboss process startup JVM options, such as heap size, edit the following file:
  - *Windows*: `%NNM_DATA%\shared\nnm\conf\props\ovjboss.jvmargs`
  - *UNIX*: `$NNM_DATA%/shared/nnm/conf/props/ovjboss.jvmargs`
- To modify trap server properties, edit the following file:
  - *Windows*: `%NNM_DATA%\shared\nnm\conf\props\nnmtrapserver.properties`
  - *UNIX*: `$NNM_DATA/shared/nnm/conf/props/nnmtrapserver.properties`

- During an upgrade to NNMi 9.00, NNMi preserves the `nms-jboss.properties` file contents. The `ovjboss.jvm.properties` file has a new location:
  - *Windows*: `%NNM_DATA%\shared\nnm\conf\props\nms-jboss.properties`
  - *UNIX*: `$NNM_DATA/shared/nnm/conf/props/nms-jboss.properties`
- To modify application failover properties, edit the following file:
  - *Windows*: `%NNM_DATA%\shared\nnm\conf\props\nms-jboss.properties`
  - *UNIX*: `$NNM_DATA/shared/nnm/conf/props/nms-jboss.properties`
- To modify port properties that were located in the port.properties file, edit the following file:
  - *Windows*: `%NNM_DATA%\conf\nnm\props\nms-local.properties`
  - *UNIX*: `$NNM_DATA/conf/nnm/props/nms-local.properties`
- You now select node group status using a check box on the **Node Group** configuration form. After you upgrade an NNMi management server, NNMi retains the existing node groups the way they were before the upgrade.

Functionality Differences

- Many commands and scripts now require a username and password to run. For more information, see the reference page or the UNIX manpage for the command or script you want to run.
- NNMi does not start the `nmsdbmgr` process if it is using an Oracle database.
- Dampening settings are no longer disabled out-of-the-box.
  - Dampening is turned on for most management events.
- You can use the `nnmsetdampenedinterval.ovpl` script to adjust the dampening interval. This script sets the dampening interval for all management event configurations. See the *nnmsetdampenedinterval.ovpl* reference page or the UNIX manpage for more information.
  - After upgrading, the `nnmsetdampenedinterval.ovpl` script is most useful for any of the integrations that use the NNMi northbound interface:
    - NNMi northbound interface
    - NNMi Integration Module for Netcool Software
    - HPOM agent implementation of the HP NNMi-HPOM integration

    For dampening, write down the value of the **Holding Period** parameter for the integration configuration before installing NNMi 9.00. After upgrading, run the `nnmsetdampenedinterval.ovpl` script to apply this value across NNMi.
  - If you upgrade to NNMi 9.00, and have a different dampening period set (something other than 6 minutes), you can globally reset all dampened intervals to a different value using the `nnmsetdampenedinterval.ovpl` script.

    This is a manual step. It does not happen automatically during an upgrade.

- NNMi 9.00 does not include the NodeUp management event incident. The upgrade to NNMi 9.00 retains the incident configuration, but the NNMi root cause analysis no longer triggers the NodeUp incident.
  - If you need notification that a node is up, associate a lifecycle transition action with the CLOSED lifecycle state of the NodeDown incident. In most cases, you can transfer the action for the NodeUp incident REGISTERED state to the NodeDown incident CLOSED state with little or no change.
  - Integrations that use the NNMi northbound interface (including the NNMi Integration Module for Netcool Software), can receive traps that indicate when a NodeDown incident has been closed.
- NNMi 9.00 adds the **Calculate Status** setting to the **Node Group** configuration form. Upgrading to NNMi 9.00 selects the **Calculate Status** check box for all existing node groups.
  - Consider disabling the **Calculate Status** setting for large node groups, particularly the **Network Infrastructure Devices** node group, as node group status calculation can be expensive resource-wise for large environments.
  - See *Check Status Details for a Node Group* in the NNMi help for information about checking status for a node group.
- After upgrading to NNMi 9.00, NNMi uses ICMP (ping) of management addresses.
- You can configure State Poller data collection to be based on an ICMP (ping) response, or to be based on SNMP data.
- Device profile configuration upgrades from NNMi 8.x can modify some settings. If you do not want these values modified during an upgrade, change the **Author** field to some value different from `HP Network Node Manager`.
- URL action configuration upgrades from NNMi 8.x can modify some settings. If you do not want these values to be modified during an upgrade, change the **Author** field to some value different from `HP Network Node Manager`.
- NNMi 9.00 adds a configuration form for the HPOM agent implementation of the HP NNMi-HPOM integration. For long-term maintenance purposes, it is recommended that you transfer the integration configuration from the **HP NNMi–Northbound Interface Destination** form to the **HP NNMi–HPOM Agent Destination** form. After transferring the configuration, delete the destination from the **HP NNMi–Northbound Interface Destination** form.
- Most processes now log messages to the `nnm.0.0.log` file, instead of to separate log files for each component. For more information, see “NNMi Logging” in the *NNMi Deployment Reference*.

Application Failover and Upgrading from NNMi 8.x to NNMi 9.0x

Application Failover and Upgrading to NNMi 9.00

If you plan to upgrade an earlier version of NNMi 8.1x that is running in an NNMi application failover configuration, the supported upgrade path is to temporarily unconfigure application failover, upgrade the NNMi management server to NNMi 9.00, then reconfigure application failover.

To upgrade NNMi management servers configured for application failover, follow these steps:

1. As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.
2. As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.
3. As a precaution, on the active NNMi management server, complete the following steps:
   a. Run the **`nnmcluster`** command.
   b. Embedded database only: After NNMi prompts you, type **`dbsync`**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

      `ACTIVE_DB_BACKUP`: This means that the active `NNMi management server is performing a new backup.`
      `ACTIVE_NNM_RUNNING`: This means that the active NNMi management server completed the backup referred to by the previous message.
      `STANDBY_READY`: This shows the previous status of the standby NNMi management server.
      `STANDBY_RECV_DBZIP`: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
      `STANDBY_READY`: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

4. Run the **nnmcluster -halt** command on the active NNMi management server. This shuts down all `nnmcluster` processes on both the active and standby NNMi management servers.
5. To verify there are no nnmcluster nodes running on either server, *complete the following steps on both the active and standby NNMi management servers*.
   a. Run the **nnmcluster** command.
   b. Verify that there are no nnmcluster nodes present except the one marked `(SELF)`.
   c. Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.
6. *Complete the following steps on both the active and standby NNMi management servers* to disable application failover:
   a. Edit the following file:
   - *Windows*: `%NNM_SHARED_CONF%\ov.conf`
   - *UNIX*: `$NNM_SHARED_CONF/ov.conf`

   b. Comment out the `com.hp.ov.nms.cluster.name` parameter.
   c. Write down the value of the `com.hp.ov.nms.cluster.name` parameter. You need that value in a later step.
   d. Save your changes.
7. Upgrade the active NNMi management server using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.
8. Run the **ovstart** command on the active NNMi management server.
9. Upgrade the standby NNMi management server by following the instructions in the *HP Network Node Manager i Software Interactive Installation Guide*.
10. Run the **ovstart** command on the standby NNMi management server.
11. *Complete the following steps on both the active and standby NNMi management servers:*
    a. Run the **ovstop** command.
    b. Edit the following file:
    - *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
    - *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

    c. Type in the value of the `com.hp.ov.nms.cluster.name` parameter you wrote down in step c on page 30.
    d. Uncomment the `com.hp.ov.nms.cluster.name` parameter.
    e. Save your changes.
12. Run the **ovstart** command on the active NNMi management server only. To verify that this step is complete, run the **nnmcluster -display** command o the active NNMi management server and look for an `ACTIVE_NNM_RUNNING` message.
13. After you complete step 12 on the active NNMi management server, run the ovstart command on the standby NNMi management server to finish enabling application failover.

14 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the upgrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

15 If you are using Linux NNMi management servers, run the following command on both the active and standby NNMi management servers:
`chmod 777 /var/opt/OV/shared/perfSpi/datafiles/nnm_details.xml`

Application Failover and NNMi Patches

To apply patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.

3 As a precaution, on the active NNMi management server, do the following steps:

   a Run the **`nnmcluster`** command.

   b Embedded database only: After NNMi prompts you, type **`dbsync`**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

   `ACTIVE_DB_BACKUP`: This means that the active `NNMi management server is performing a new backup.`
   `ACTIVE_NNM_RUNNING`: This means that the active NNMi management server completed the backup referred to by the previous message.
   `STANDBY_READY`: This shows the previous status of the standby NNMi management server.
   `STANDBY_RECV_DBZIP`: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
   `STANDBY_READY`: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

4 Run the **`nnmcluster -halt`** command on the active NNMi management server. This shuts down all `nnmcluster` processes on both the active and standby NNMi management servers.

5 To verify there are no nnmcluster nodes running on either server, *complete the following steps on both the active and standby NNMi management servers*.

   a Run the **`nnmcluster`** command.

   b Verify that there are no nnmcluster nodes present except the one marked `(SELF)`.

   c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

6 On the active NNMi management server, comment out the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file.

   a Edit the following file:

- *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
- *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b. Comment out the `com.hp.ov.nms.cluster.name` parameter.

c. Save your changes.

7. Apply the NNMi patch to the active NNMi management server using the instructions provided with the patch.
8. On the active NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file.

   a. Edit the following file:

   - *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
   - *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

   b. Uncomment the `com.hp.ov.nms.cluster.name` parameter.

   c. Save your changes.
9. Run the **`ovstart`** command on the active NNMi management server.
10. Verify that the patch installed correctly on the active NNMi management server by viewing information on the **Product** tab of the **Help > System Information** window in the NNMi console.
11. Run the **`nnmcluster -dbsync`** command to create a new backup.
12. On the standby NNMi management server, comment out the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 31 through step c on page 32.
13. Apply the NNMi patch to the standby NNMi management server.
14. On the standby NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown instep a on page 32 through step c on page 32.
15. Run the **`ovstart`** command on the standby NNMi management server.
16. If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.
17. If you are using Linux NNMi management servers, run the following command on both the active and standby NNMi management servers:
    `chmod 777 /var/opt/OV/shared/perfSpi/datafiles/nnm_details.xml`

High Availability and Upgrading from NNMi 8.1x to NNMi 9.0x

Upgrading NNMi under HA from NNMi 8.1x to NNMi 9.01

This procedure references the NNMi 8.1x version of this document for making changes to the NNMi management server before upgrading NNMi. The *NNMi Deployment Guide* for NNMi 8.1x is available from **http://h20230.www2.hp.com/selfsolve/manuals**. See Available Product Documentation on page 3 for more information.

To upgrade from NNMi 8.1x under HA to NNMi 9.01 under HA, upgrade the active node, fail over from the active node to the passive node, and then upgrade the second node. Follow these steps:

1. Ensure that the fully-qualified domain name is correctly set on each NNMi management server in the NNMi HA resource group. On each NNMi management server, run the following command:

   ```
   nnmofficialfqdn.ovpl -t
   ```

   - If the returned value is the virtual hostname of the NNMi HA resource group, continue with step 2 of this procedure.
   - If the returned value is not the virtual hostname of the NNMi HA resource group, update the configuration of each NNMi management server in the HA cluster as described in the *NNMi Deployment Guide* for NNMi 9.2x. (See "Changing the Hostname or Domain Name of an NNMi Management Server" in the "Changing the NNMi Management Server" chapter.)

   In the referenced procedure, do not rename or reboot the NNMi management server.

2. Use the nnmbackup.ovpl command, or another database command, to back up all NNMi data. For example:

   ```
   nnmbackup.ovpl -type offline -scope all -target nnmi_backups
   ```

   For more information about this command, see the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 Ensure that the NNMi 8.1x configuration is consistent across all HA nodes by forcing a failover, in turn, to each of the passive nodes.

4 Ensure that all nodes in the NNMi 8.1x HA cluster are running NNMi 8.1x Patch 8 or a higher version of NNMi 8.1x.

If necessary, upgrade each system to the latest NNMi 8.1x consolidated patch. Follow the instructions in the "Patching NNMi under HA" section of the "Configuring NNM i-series Software in a High Availability Cluster" chapter in the most recent NNMi 8.1x version of the *NNMi Deployment Guide*.

5 Determine which node in the NNMi 8.1x HA resource group is active:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

The remainder of this procedure refers to the currently active node (the node identified by the `nnmhaclusterinfo.ovpl` command) as server X and the currently passive node as server Y.

6 On server X (which is the original active node), disable NNMi HA resource group monitoring by creating the following maintenance file:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

The first line of the `maintenance` file must contain only the single word: `NORESTART`

7 On server X, upgrade NNMi:

a Stop NNMi:

```
ovstop -c
```

b Install NNMi 9.00 as described in Upgrading from NNMi 8.0x or 8.1x on page 13.

The NNMi database on the shared disk is upgraded to the format of the new NNMi product version at this time.

c Apply the latest consolidated NNMi patch as described in the patch installation instructions.

d Upgrade all add-on NNM iSPIs to version 9.00 as described in the installation guide or the deployment guide for each NNM iSPI.

e Apply the latest consolidated patch for each installed NNM iSPI as described in the patch installation instructions.

If your environment includes standalone NNM iSPIs, you must also upgrade those products to version 9.00 for correct functionality. You can complete those upgrades after completing this procedure.

8 On server Y (which is still operating as the passive node), disable HA resource group monitoring by creating the following maintenance file:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

The first line of the `maintenance` file must contain only the single word: `NORESTART`

9 Move control of the NNMi HA resource group to server Y:

- *MSFC* or *MSCS*:
  - On server X, take the NNMi HA resource group offline.
  - On server X, move the NNMi HA resource group to server Y.
  - On server Y, bring online all resources *except* the resource group application.
- *VCS*:
  - On server X, take the NNMi HA resource group offline.
  - On server X, move the NNMi HA resource group to server Y.
  - On server Y, bring online all resources *except* the resource group application.

10 On server Y (which is now the active node), upgrade NNMi:

a Install NNMi 9.00 as described in Upgrading from NNMi 8.0x or 8.1x on page 13.

b Apply the latest consolidated NNMi patch as described in the patch installation instructions.

c Upgrade all add-on NNM iSPIs to version 9.00 as described in the installation guide or the deployment guide for each NNM iSPI.

d Apply the latest consolidated patch for each installed NNM iSPI as described in the patch installation instructions.

11 If the HA cluster includes multiple passive nodes, repeat step 8 through step 10 for each passive node.

12 *Optional*. Force a failover from server Y to server X so that the node that was active before the upgrade process is again the active node.

13 Start NNMi:

```
ovstart
```

14 Verify that NNMi started correctly:

```
ovstatus -c
```

All NNMi services should show the state RUNNING.

15 On all servers, delete the maintenance file:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

Unconfiguring NNMi from an HA Cluster

Unconfiguring NNMi from an HA Cluster

The process of removing an NNMi node from an HA cluster involves undoing the HA configuration for that instance of NNMi. You can then run that instance of NNMi as a standalone management server, or you can uninstall NNMi from that node.

If you want to keep NNMi configured for high availability, the HA cluster must contain one node that is actively running NNMi and at least one passive NNMi node. If you want to completely remove NNMi from the HA cluster, unconfigure the HA functionality on all nodes in the cluster.

To completely unconfigure NNMi from an HA cluster, follow these steps:

1. Determine which node in the HA cluster is active. On any node, run the following command:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

2. On each passive node, unconfigure any add-on NNM iSPIs from the HA cluster.

   For information, see the documentation for each NNM iSPI.

3 On any node in the HA cluster, verify that the add-on NNM iSPIs on all passive nodes have been unconfigured from the HA cluster:

- *Windows*:

  **%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl **
  -config NNM -get NNM_ADD_ON_PRODUCTS

- *UNIX*:

  **$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl **
  -config NNM -get NNM_ADD_ON_PRODUCTS

The command output lists the add-on iSPI configurations in the format *<iSPI_PM_Name>*[*hostname_list*]. For example:

```
PerfSPIHA[hostname1, hostname2]
```

At this time, only the active node hostname should appear in the output. If a passive node hostname appears in the output, repeat step 2 until this command output includes only the active node hostname.

4 On each passive node, unconfigure NNMi from the HA cluster:

- *Windows*:

  **%NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM **
  <resource_group>

- *UNIX*:

  **$NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM **
  <resource_group>

This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

5 On each passive node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC* or *MSCS*: In Windows Explorer, delete the %NnmDataDir%\hacluster*<resource_group>*\ folder.
- *VCS*:

  rm -rf /var/opt/OV/hacluster/*<resource_group>*

6 On the active node, unconfigure any add-on NNM iSPIs from the HA cluster.

For information, see the documentation for each NNM iSPI.On any node in the HA cluster, verify that the add-on NNM iSPIs on all nodes have been unconfigured from the HA cluster:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-config NNM -get NNM_ADD_ON_PRODUCTS
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-config NNM -get NNM_ADD_ON_PRODUCTS
```

If any hostname appears in the output, repeat step 6 until this command output indicates that no iSPIs are configured.

7 On the active node, stop the NNMi HA resource group:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhastoprg.ovpl NNM \
<resource_group>
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhastoprg.ovpl NNM \
<resource_group>
```

This command does not remove access to the shared disk. Nor does it unconfigure the disk group or the volume group.

8 On the active node, unconfigure NNMi from the HA cluster:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM \
<resource_group>
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM \
<resource_group>
```

This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

9 On the active node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC* or *MSCS*: In Windows Explorer, delete the `%NnmDataDir%\hacluster\<resource_group>\` folder.
- *VCS*:

```
rm -rf /var/opt/OV/hacluster/<resource_group>
```

10 Unmount the shared disk.

- If you want to reconfigure the NNMi HA cluster at some point, you can keep the disk in its current state.

- If you want to use the shared disk for another purpose, copy all data that you want to keep (as described in Running NNMi with the Existing Database Outside HA on page 39), and then use the HA product commands to unconfigure the disk group and volume group.

Running NNMi with the Existing Database Outside HA

If you want to run NNMi outside HA on any node with the existing database, follow these steps:

1. On the active node (if one still exists), ensure that NNMi is not running:

   ovstop

   Alternatively, check the status of the `ovspmd` process by using Task Manager (Windows) or the `ps` command (UNIX).

2. On the current node (where you want to run NNMi outside HA), verify that NNMi is not running:

   ovstop

   To prevent data corruption, make sure that no instance of NNMi is running and accessing the shared disk.

3. (UNIX only) Activate the disk group:

   vgchange -a e *<disk_group>*

4. Use the appropriate operating system commands to mount the shared disk. For example:

   - *Windows*: Use Windows Explorer.
   - *UNIX*: `mount /dev/vgnnm/lvnnm /nnmmount`

5. Copy the NNMi files from the shared disk to the node:

   - *Windows*:

     **%NnmInstallDir%\misc\nnm\ha\nnmhadisk.ovpl NNM **
     -from *<HA_mount_point>*

   - *UNIX*:

     **$NnmInstallDir/misc/nnm/ha/nnmhadisk.ovpl NNM **
     -from *<HA_mount_point>*

6 Use the appropriate operating system commands to unmount the shared disk. For example:

- *Windows*: Use Windows Explorer.
- *UNIX*: `umount /nnmmount`

7 (UNIX only) Deactivate the disk group:

```
vgchange -a n <disk_group>
```

8 Obtain and install the permanent production license keys for the physical IP address of this NNMi management server.

9 Start NNMi:

```
ovstart -c
```

NNMi is now running with a copy of the database that was formerly used by the NNMi HA resource group. Manually remove from the NNMi configuration any nodes that you do not want to manage from this NNMi management server.

Patching NNMi under HA

To apply a patch for NNMi, work in HA maintenance mode. Follow these steps:

1 Determine which node in the HA cluster is active:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

2 On the active node, put the NNMi HA resource group into maintenance mode as described in "Putting an HA Resource Group into Maintenance Mode" in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

3 On all passive nodes, put the NNMi HA resource group into maintenance mode as described in "Putting an HA Resource Group into Maintenance Mode" in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

4 On the active node, follow these steps:

a Stop NNMi:

```
ovstop -c
```

b Back up the shared disk by performing a disk copy.

c *Optional*. Use the nnmbackup.ovpl command, or another database command, to back up all NNMi data. For example:

```
nnmbackup.ovpl -type offline -scope all -target nnmi_backups
```

For more information about this command, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference*.

d Apply the appropriate NNMi and NNM iSPI patches to the system.

e Start NNMi:

```
ovstart -c
```

f Verify that NNMi started correctly:

```
ovstatus -c
```

All NNMi services should show the state RUNNING.

5 On each passive node, apply the appropriate patches to the system.

Never run the ovstart or ovstop commands on a secondary (backup) cluster node.

6 On all passive nodes, take the NNMi HA resource group out of maintenance mode as described in “Removing an HA Resource Group from Maintenance Mode” in the *NNMi Deployment Reference*.

7 On the active node, take the NNMi HA resource group out of maintenance mode as described in “Removing an HA Resource Group from Maintenance Mode” in the *NNMi Deployment Reference*.

Upgrading from NNMi 9.0x to NNMi 9.1x

You can upgrade NNMi according to the information show in Table 3. The information shown in Table 3 assumes you have NNMi 9.0x or newer installed on the NNMi management server.

Table 3 Supported NNMi Upgrades

NNMi Version	Upgrade to NNMi 9.1x
NNMi 9.0x	Supported
NNMi 9.0x Patch 1	Supported
NNMi 9.0x Patch 2 (NNMi 9.01)	Supported
NNMi 9.0x Patch 3	Supported
NNMi 9.0x Patch 4 or newer	Supported

If you are upgrading from NNMi 9.0x or 9.1x and you also have the Master or Leaf Collector for the NNM iSPI Performance for Traffic installed on the NNMi management server, you must upgrade to NNMi 9.1x patch 5 (or later) and NNM iSPI Performance for Traffic 9.10 patch 2 (or later) before upgrading to NNMi 9.20. Failure to do so will result in the loss of all traffic data.

To upgrade from NNMi 9.0x to NNMi 9.1x, you must upgrade directly to NNMi 9.1x. During an upgrade from NNMi 9.0x to NNMi 9.1x, the installation script provides an opportunity to install patches, such as NNMi 10.00 (or newer patch level).

If you plan to upgrade an earlier version of NNMi 9.0x that is running in an NNMi application failover configuration, the supported upgrade path is to temporarily unconfigure application failover, upgrade the NNMi management server to NNMi 9.1x,and then reconfigure application failover. For detailed information, see Application Failover and Upgrading to NNMi 9.1x on page 59.

If you plan to upgrade an earlier version of NNMi 9.0x that is running under high availability (HA), see Upgrading NNMi under HA from NNMi 9.0x to NNMi 9.10 on page 69.

If you plan to upgrade NNMi management servers configured in a global network management environment see Upgrading from NNMi 9.0x to NNMi 9.10 (Global Network Management) on page 75.

If you plan to upgrade a Linux NNMi management server from NNMi 9.0x to NNMi 9.1x, you must import the HP public key into the Linux RPM database before installing NNMi 9.1x. To do this, point your browser to the following location and follow the instructions:

`https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning`

There are several upgrade scenarios you could encounter. This section contains the following topics:

- Upgrading the NNMi Management Server in Place, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.0x to NNMi 9.1x on the same hardware and operating system.
- Upgrading to a Different NNMi Management Server, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.0x to NNMi 9.1x on the same version operating system.
- Moving NNMi from Windows 2003 to Windows 2008. NNMi 9.10 does not support Windows 2003. You must change the operating system to Windows 2008 before upgrading to NNMi 9.10.
- Migrating NNMi Oracle Data. Explains the steps to take to move the Oracle data used by your NNMi management server from one Oracle database instance to another.
- Additional Upgrade Information. Explains some areas that NNMi 9.1x differs from earlier versions of NNMi.

Upgrading the NNMi Management Server in Place

This chapter describes the process for upgrading an existing NNMi 9.0x management server to NNMi 9.1x.

This chapter contains the following topic:

- Upgrade an Existing NNMi 9.0x Management Server to NNMi 9.1x

Upgrade an Existing NNMi 9.0x Management Server to NNMi 9.1x

Read the NNMi 9.1x *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 55 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

Read the *HP Network Node Manager i Software System and Device Support Matrix* for the NNMi software you are upgrading to before continuing. You can obtain a copy of this document at http://h20230.www2.hp.com/selfsolve/manuals. You must have an HP Passport User ID to access this web site.

The following steps explain how to upgrade an NNMi management server to NNMi 9.1x. The following steps assume you have NNMi 9.0x running on the NNMi management server.

1. Back up the NNMi management server using the `nnmbackup.ovpl` script. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage.

2 *Oracle Database Only*: If the NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration

3 *Oracle Database Only*: Use the `nnmconfigexport.ovpl` script to back up configuration information from the NNMi management server. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nmconfigexport.ovpl* or *nnmconfigimport.ovpl* reference pages, or the UNIX manpages.

Never edit a file exported with the `nnmconfigexport.ovpl` script before using the `nnmconfigimport.ovpl` script to import the file.

4 Install NNMi 9.1x on the NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

5 Verify that the information from the NNMi management server migrated successfully.

Upgrading to a Different NNMi Management Server

This chapter describes the process for upgrading to NNMi 9.1x on a new system while maintaining the configuration of the existing NNMi management server.

This chapter contains the following topic:

- Upgrade to a Different NNMi Management Server

Upgrade to a Different NNMi Management Server

Read the NNMi 9.1x *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 55 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

The following steps explain how to copy data from an existing NNMi management server to a target NNMi management server. The following steps assume you have NNMi 9.0x running on the existing NNMi management server.

If you want to change the Oracle database server, complete that process before or after the upgrade to NNMi 10.00. For information, see Migrating NNMi Oracle Data on page 53.

1. As a precaution, back up the existing (source) NNMi 9.0x management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.0x. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.0x.
2. If the existing (source) NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi 9.0x data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

3 Install NNMi 9.1x and the latest consolidated patch (if any) on the source NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

4 Verify that NNMi 9.1x is working correctly on the source NNMi management server.

5 Back up NNMi 9.1x on the source NNMi management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.1x. You will need it to copy data to the target NNMi management server. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.1x.

6 Install NNMi 9.1x and the latest consolidated patch (if any) on the target NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*. To migrate the data from step 5, the target NNMi management server must be running the same operating system version. NNMi does not support data migration to an NNMi management server running on a different operating system.

7 Use the `nnmrestore.ovpl` script to copy NNMi database information to the target server. For more information, see the *nnmrestore.ovpl* reference page, or the UNIX manpage.

8 Obtain and install a new license on the target NNMi management server.

For information, see “Licensing NNMi” in the *NNMi Deployment Reference*.

9 Verify that the information from the target NNMi management server migrated successfully from the existing NNMi management server.

Moving NNMi from Windows 2003 to Windows 2008

NNMi 9.10 does not support Windows 2003. You must change the operating system to Windows 2008 before migrating to NNMi 9.10.

Use the information in this chapter if you have NNMi 9.0x patch 3 or later running on a Windows 2003 server, and need to change the operating system to Windows 2008.

This chapter contains the following topic:

Changing NNMi from Windows 2003 to Windows 2008

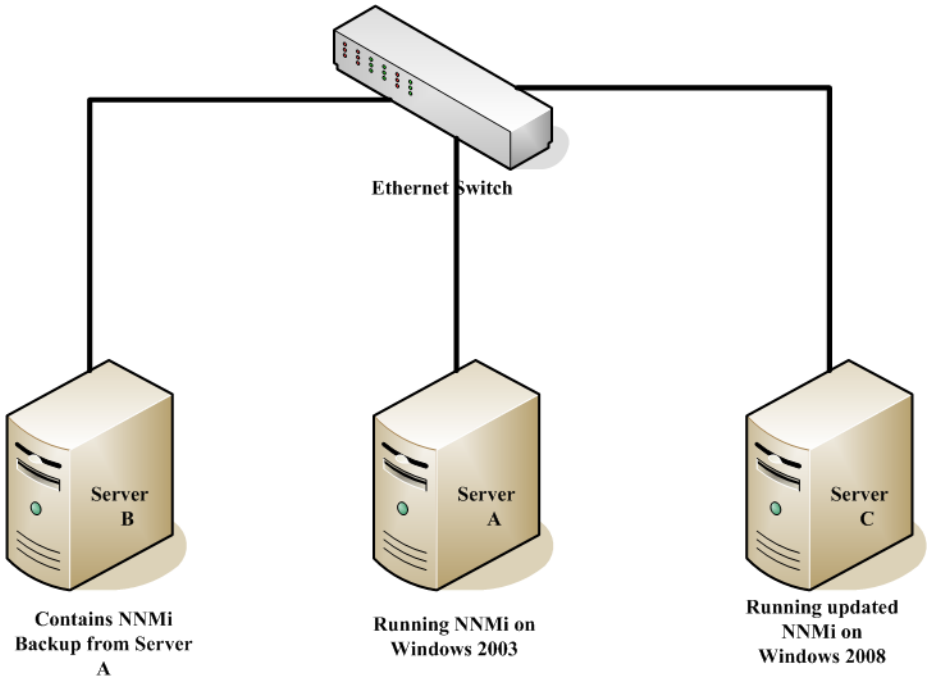
Changing NNMi from Windows 2003 to Windows 2008

To complete the following steps, you must have NNMi 9.0x patch 3 or later running on a Windows 2003 server. To check the NNMi version number, note the current patch level in the **Help->About HP Network Node Manager i Software** window. Verify that the version is 9.01.003 or later. If the version is earlier than that, do not proceed. Install NNMi 9.0x patch 3 or later before proceeding.

To change an NNMi management server running NNMi 9.0x patch 3 or later from Windows 2003 to Windows 2008, follow these steps:

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running Windows 2003.
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running Windows 2008. This NNMi management server can be the same hardware as the current `Server A`.

     Make sure the `hosts` file on the new NNMi management server contains the following entry: **`127.0.0.1 localhost`**



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target`** ***`temporary_location`*** command to complete a full NNMi backup.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install Windows 2008.

As an alternative to using `Server C`, reformat the disk on `Server A` and install Windows 2008. If you do that, substitute `Server A` for `Server C` for the remaining steps.

5 On `Server C`, install NNMi 9.0x patch 3 or later. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

6 During the NNMi installation on server C, the installation script might assign ports that differ from the server B configuration. During the configuration restore on Server C, this might create port conflicts. To remedy this, do the following:

a On `Server C`, navigate to the following directory: `%$NNM_CONF%\nnm\props\`

b On `Server C`, copy the `nms-local.properties` file to `nms-local.properties.save in` a temporary location.

c On `Server B`, copy the NNMi backup to `Server C`.

d On `Server C`, run the **`nnmrestore.ovpl -force -source`** ***`temporary_location`*** command to complete a full NNMi restore.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the UNIX manpage.

Use the command options that match the backup you completed in step 2

e On Server C, compare the nms-local.properties.save file from the temporary location to the nms-local.properties file located in the following directory: %NNM_CONF%\nnm\props\

Resolve any port conflicts, making changes to the nms-local.properties located in the above directory. Make sure to keep the jboss.http.port (NNMi web server port) and jboss.https.port (NNMi HTTPS web server port) values that were chosen during the NNMi installation on Server C.

f Restart NNMi:

```
ovstop

ovstart
```

7 NNMi associates its license keys with a server's IP address. If the IP address for Server C is different from the IP address of Server A, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

8 On Server C, install NNMi 9.10.

Migrating NNMi Oracle Data

If you plan to move the Oracle data in NNMi to Oracle 11G. The information in this chapter explains the steps to take to complete this work.

Migrating NNMi Oracle Data

Suppose you have NNMi running in one of the following configurations:

- NNMi 9.0x with the latest patch connected to an Oracle 10G database and you must upgrade to NNMi 9.10.
- NNMi 9.0x with the latest patch connected to an Oracle 11G database and you must upgrade to NNMi 9.10.

The Oracle database instance migration you must complete could include combinations of the following requirements:

- The existing Oracle instance running on NNMi 10.00 can be running Oracle 10G or 11G.
- The new Oracle instance running on NNMi 9.10 must be running Oracle 11G.
- The new Oracle instance can be located on the original server or on a different server and hostname.

To complete the migration of the NNMi Oracle data, complete the following steps:

1. As root or administrator, run the following command to stop NNMi: **`ovstop -c.`**
2. Use Oracle tools to move or copy the NNMi data from the existing Oracle server to the new server. See your Oracle documentation for additional information.

   This Oracle data migration can be an in-place upgrade from Oracle 10 to Oracle 11 on the same server. Oracle provides database migration tools for converting Oracle 10 data into the Oracle 11 format.

3. *Only complete this step if the new Oracle server has a different hostname than the previous Oracle server.* On the NNMi management server, reconfigure NNMi to point to the new Oracle server by completing the following steps:

a Edit the datasource configuration file shown :

It is important that you complete the following steps accurately, or jboss will not correctly connect to the Oracle 11G database.

— *Windows*: `%NNM_JBOSS%\server\nms\deploy\nms-ds.xml`

— *UNIX*: `$NNM_JBOSS/server/nms/deploy/nms-ds.xml`

b Change the following attribute to reflect your new server

OLD:
<connection-url>jdbc:oracle:thin:@*EXISTING_FQDN*:*EXISTING_ORACLE_PORT*:*EXISTING_SID* </connection-url>

NEW:
<connection-url>jdbc:oracle:thin:@NEW_*FQDN*:*NEW_PORT*:*NEW_SID*</connection-url>

4 Complete one of the following actions:

If you are upgrading from NNMi 9.2x to NNMi 9.10, perform that migration now, following the installation instructions in the *HP Network Node Manager i Software Installation Guide*.

If you are already using NNMi 9.10, follow these steps to restart NNMi and complete the Oracle database move/migration:

a Run the following command on the NNMi management server to restart NNMi: **`ovstart -c`**

b Run the following command on the NNMi management server to check if all of the services are started and operating correctly: **`ovstatus -v`**

Additional Upgrade Information

This chapter describes some changes between NNMi 9.10 and earlier NNMi versions. This chapter contains the following topics:

- Configuration Differences
- MIBs
- Functionality Differences

Configuration Differences

- User groups replace NNMi roles for limiting user access within the NNMi console. User accounts can be mapped to multiple user groups.
  - For signing in to the NNMi console, each user account must be mapped to at least one of the NNMi-provided user groups. These groups are equivalent to the function of the NNMi role in previous releases.
  - In a multi-tenancy environment, each user account can be mapped to one or more custom user groups that provide access to a subset of the topology objects.

  For more information, see "NNMi Security and Multi-Tenancy" in the *NNMi Deployment Reference*.
- The NNMi integration for retrieving user information from a directory service can now retrieve multiple group names per user.
  - For configuration option 2 (only user names and passwords in the directory service), existing integrations with a directory service continue to work without modification to the `ldap.properties` configuration file.
  - For configuration option 3 (all user information in the directory service), the following information applies:
    - In a single tenant environment (all NNMi console users can access all topology objects), existing integrations with a directory service continue to work without modification to the `ldap.properties` configuration file.

If you add any new NNMi user groups in the directory service, you must update the `ldap.properties` configuration file to the new model for retrieving user information from a directory service.

  - In a multi-tenancy environment, update the `ldap.properties` configuration file to the new model for retrieving user information from a directory service.
  - For information about updating the `ldap.properties` configuration file, see "Changing the Directory Service Access Configuration to Support the NNMi Security Model" in the *NNMi Deployment Reference*.

- NNMi 10.00 deprecates the following `ldap.properties` configuration file parameters. They will become unsupported in a future release:
  - roleAttributeID
  - roleAttributeIsDN
  - roleNameAttributeID

- After upgrading to NNMi 10.00, the following security and multi-tenancy configuration applies:
  - All nodes are assigned to the Default Tenant and the Default Security Group.
  - All users can access all nodes in the NNMi topology and all incidents.

  This default configuration matches the object access available in NNMi 9.2x. For information about customizing object access, see "NNMi Security and Multi-Tenancy" in the *NNMi Deployment Reference*.
- If the HP NNMi—HP NA integration was configured on a NNMi 9.0x management server, the process of upgrading to NNMi 10.00 disables the configuration. For more information, see "Integration Configuration Upgraded from NNMi 9.0x" in the *NNMi Deployment Reference*.

Application Failover

NNMi 9.0x supported either a UDP or a TCP solution for the application failover feature. NNMi 10.00 only supports the TCP solution. If you used the UDP application failover solution for NNMi 9.0x, and are upgrading to NNMi 10.00, the upgrade script converts your application failover configuration to the TCP solution. You must add the hostnames of all nodes in the cluster to the `com.hp.ov.nms.cluster.member.hostnames` parameter in the `nms-cluster.properties` file. For more information see "Configuring NNMi for Application Failover" in the *NNMi Deployment Reference*.

For the application failover feature to function correctly, the active and standby servers must have unrestricted network access to each other. NNMi 10.00 includes some port changes, so you might need to modify your firewall configuration. For more information see "NNMi 9.10 and Well-Known Ports" in the *NNMi Deployment Reference*.

MIBs

If you loaded additional MIBs into earlier versions of NNMi that are not standards compliant or have dependencies on other MIB files, they might not migrate successfully. If a MIB does not migrate successfully, the trap configurations continue to work, however you might not be able to browse that MIB as you could before the migration.

If you suspect that some MIBs did not migrate, check the following directory for a `failed` subdirectory that contains the MIB file or files, failure details, and a log file with a name that associates it with the MIB file or files:

- *Windows*: `%NNM_DATA%\tmp\nnm9xMibMigrate`
- *UNIX*: `$NNM_DATA/tmp/nnm9xMibMigrate`

Use the files contained in the above directories to determine why the MIBs did not migrate, then reload those MIBs.

Functionality Differences

To review information about new features included in NNMi 10.00, see the *What's New In This Version* section of the *NNMi Release Notes*.

Application Failover and Upgrading to NNMi 9.1x

If you plan to upgrade an earlier version of NNMi 9.0x that is running in an NNMi application failover configuration, the supported upgrade path is to temporarily unconfigure application failover, upgrade each of the NNMi management servers to NNMi 9.1x, then reconfigure application failover.

To upgrade NNMi management servers configured for application failover, follow these steps:

1. As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.
2. As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.
3. *Embedded database only*: Complete the following steps on the active NNMi management server. Completing these steps will speed up the standby NNMi management server startup shown in step 7 on page 60:
   a. Run the **`nnmcluster`** command.
   b. After NNMi prompts you, type **`dbsync`**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

      `ACTIVE_DB_BACKUP`: This means that the active NNMi management server is performing a new backup.
      `ACTIVE_NNM_RUNNING`: This means that the active NNMi management server completed the backup referred to by the previous message.
      `STANDBY_RECV_DBZIP`: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
      `STANDBY_READY`: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.
4. Run the **`nnmcluster -shutdown`** command on the standby NNMi management server. This shuts down all `nnmcluster` processes on the standby NNMi management server.
5. To verify there are no nnmcluster nodes running on the standby NNMi management server, *complete the following steps on the standby NNMi management server*.

a. Run the **nnmcluster** command.

b. Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

c. Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.

6. *Complete the following steps on the standby NNMi management server* to temporarily disable application failover:

   a. Edit the following file:

   - *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
   - *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

   b. Comment out the `com.hp.ov.nms.cluster.name` parameter.

   c. Save your changes.

7. Start, then stop processes on the standby NNMi management server.

   a. Run the **ovstart** command on the standby NNMi management server. Running the **ovstart** command causes the standby NNMi management server to import the transaction logs from the active NNMi management server.

   b. After the **ovstart** command completes, run the **ovstatus -v** command. All NNMi services should show the state `RUNNING`.

   c. Run the **ovstop** command on the standby NNMi management server.

8. Upgrade the standby NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the standby NNMi management server to iSPI versions that support NNMi 10.00.

You now have the former active NNMi management server running NNMi 9.0x and the former standby NNMi management server running NNMi 9.1x. You have both of these NNMi management servers running independently with no database synchronization. That means you have both NNMi management servers monitoring the network in parallel. Do not leave these NNMi management servers in this configuration for more than a few hours, as this configuration is a violation of the non-production license installed on the former standby node.

To complete the upgrade, and remedy this situation, select a time to upgrade the former active node to NNMi 10.00. Have the operators temporarily use the former standby node to monitor the network while you complete the upgrade.

The remainder of this procedure assumes you plan to retain the database information from the former active node and discard the database information from the former standby node.

9. Run the **nnmcluster -halt** command on the former active NNMi management server.

10. To verify there are no nnmcluster nodes running on the former active NNMi management server, *complete the following steps on the former active NNMi management server*.

    a. Run the **nnmcluster** command.

b Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

11 *Complete the following steps on the former active NNMi management server* to temporarily disable application failover:

a Edit the following file:

- *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
- *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

Upgrade the former active NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the former active NNMi management server to iSPI versions that support NNMi 10.00.

Now you have two servers running NNMi 9.1x, but they are still independent since the databases are not synchronized.

12 Complete the following steps on the former active NNMi management server:

a Run the **`ovstop`** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

13 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former active NNMi management server. It is now the active node.

14 Instruct the operators to begin using the active node to monitor the network.

The former standby NNMi management server discards all of the database activity occurring during the maintenance window, from step step 9 on page 60 through step 13 on page 61

15 Complete the following steps on the former standby NNMi management server:

a Run the **`ovstop`** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Uncomment the `com.hp.ov.nms.cluster.name` parameter.

d Save your changes.

16 Run either the **ovstart** or **nnmcluster -daemon** command on the former standby NNMi management server.

This NNMi management server becomes the standby node, and receives a copy of the database from the active node.

17 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the ugrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

18 If you are using UNIX NNMi management servers, run the following command on both the active and standby NNMi management servers:
chmod 777 /var/opt/OV/shared/perfSpi/datafiles/nnm_details.xml

Application Failover and NNMi Patches

Both NNMi management servers must be running the same NNMi version and patch level. To add patches to the active and standby NNMi management servers, use one of the following procedures:

- Applying Patches for Application Failover (Shut Down Both Active and Standby)
  Use this procedure when you are not concerned with an interruption in network monitoring.
- Applying Patches for Application Failover (Keep One Active NNMi Management Server)
  Use this procedure when you must avoid any interruptions in network monitoring.

Applying Patches for Application Failover (Shut Down Both Active and Standby)

This procedure results in both NNMi management servers being non-active for some period of time during the patch process. To apply patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **nnmconfigexport.ovpl** script on both the active and standby NNMi management servers before proceeding. For information, see “Best Practice: Save the Existing Configuration” in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see “Backup Scope” in the *NNMi Deployment Reference*.

3 As a precaution, on the active NNMi management server, do the following steps:

a Run the **nnmcluster** command.

b Embedded database only: After NNMi prompts you, type **dbsync**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

ACTIVE_DB_BACKUP: This means that the active NNMi management server is performing a new backup.
ACTIVE_NNM_RUNNING: This means that the active NNMi management server completed the backup referred to by the previous message.
STANDBY_READY: This shows the previous status of the standby NNMi management server.
STANDBY_RECV_DBZIP: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
STANDBY_READY: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

4. Run the **nnmcluster -halt** command on the active NNMi management server. This shuts down all nnmcluster processes on both the active and standby NNMi management servers.
5. To verify there are no nnmcluster nodes running on either server, *complete the following steps on both the active and standby NNMi management servers*.
   a. Run the **nnmcluster** command.
   b. Verify that there are no nnmcluster nodes present except the one marked (SELF).
   c. Run **exit** or **quit** to stop the interactive nnmcluster process you started in step a.
6. On the active NNMi management server, comment out the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file.
   a. Edit the following file:
      — *Windows*: %NNM_SHARED_CONF%\props\nms-cluster.properties
      — *UNIX*: $NNM_SHARED_CONF/props/nms-cluster.properties
   b. Comment out the com.hp.ov.nms.cluster.name parameter.
   c. Save your changes.
7. Apply the NNMi patch to the active NNMi management server using the instructions provided with the patch.
8. On the active NNMi management server, uncomment the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file.
   a. Edit the following file:
      — *Windows*: %NNM_SHARED_CONF%\props\nms-cluster.properties
      — *UNIX*: $NNM_SHARED_CONF/props/nms-cluster.properties
   b. Uncomment the com.hp.ov.nms.cluster.name parameter.
   c. Save your changes.
9. Run the **ovstart** command on the active NNMi management server.
10. Verify that the patch installed correctly on the active NNMi management server by viewing information on the **Product** tab of the **Help > System Information** window in the NNMi console.
11. Run the **nnmcluster -dbsync** command to create a new backup.
12. On the standby NNMi management server, comment out the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file as shown in step a on page 63 through step c on page 63

13 Apply the NNMi patch to the standby NNMi management server.

14 On the standby NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 63 through step c on page 63.

15 Run the **`ovstart`** command on the standby NNMi management server.

16 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

17 If you are using UNIX NNMi management servers, run the following command on both the active and standby NNMi management servers:
`chmod 777 /var/opt/OV/shared/perfSpi/datafiles/nnm_details.xml`

Applying Patches for Application Failover (Keep One Active NNMi Management Server)

This procedure results in one NNMi management server always being active during the patch process.

This process results in continuous monitoring of the network, however NNMi loses the transaction logs occurring during this patch process.

To apply NNMi patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.

3 To synchronize the two databases, run the following command on either of the NNMi management servers:
`nnmcluster -dbsync`

The **`dbsync`** option works on an NNMi management server using the embedded database. Do not use the **`dbsync`** option on an NNMi management server configured to use an Oracle database.

4 To monitor the progress, run the following command on both the active and standby NNMi management servers:
`nnmcluster -display`
Wait until the active NNMi management server reverts to `ACTIVE_NNM_RUNNING` and the standby NNMi management server reverts to `STANDBY_READY`. before continuing.

5 To disable the cluster, run the following command on the active NNMi management server:
`nnmcluster -disable`

6 Stop the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
`nnmcluster -shutdown`

7 Make sure the following processes and services terminate before continuing:

   — `postgres`

   — `ovjboss`

8 Make sure the `nnmcluster` process terminates before continuing. If the `nnmcluster` process will not terminate, manually kill the `nnmcluster` process only as a last resort.

9 Edit the following file on the standby NNMi management server:

   Windows: `%nnmDataDir%\shared\nnm\conf\props\nms-cluster.properties`

   UNIX: `$nnmDataDir/shared/nnm/conf/props/nms-cluster.properties`

10 Comment out the cluster name by placing a **#** at the front of the line, then save your changes:
#com.hp.ov.nms.cluster.name = NNMicluster

11 Install the NNMi patch on the standby NNMi management server.

12 Shut down the cluster on the active NNMi management server by running the following command on the activeNNMi management server:
nnmcluster -halt

13 Make sure the `nnmcluster` process terminates. If it does not terminate within a few minutes, manually kill the `nnmcluster` process.

14 On the standby NNMi management server, uncomment the cluster name from the `nms-cluster.properties` file.

15 Start the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
nnmcluster -daemon

16 Install the NNMi patch on the active NNMi management server.

17 Uncomment the entry in the `nms-cluster.properties` file on the active NNMi management server.

18 Start the active NNMi management server using the following command:
nnmcluster -daemon

19 To enable the cluster, run the following command on the active NNMi management server:
nnmcluster -enable

20 To monitor the progress, run the following command on both the active and standby NNMi management servers:
nnmcluster -display
Wait until the active NNMi management server finishes retrieving the database from the standby NNMi management server.

21 After the active NNMi management server opens `STANDBY_READY`, run the following command on the active NNMi management server:
nnmcluster -acquire

22 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

23 If you are using UNIX NNMi management servers, run the following command on both the active and standby NNMi management servers:
`chmod 777 /var/opt/OV/shared/perfSpi/datafiles/nnm_details.xml`

Application Failover and Restarting the NNMi Management Servers

You can restart the standby NNMi management server at any time with no special instructions. If you restart both the standby and active NNMi management servers, restart the active NNMi management server first.

To restart either the active or the standby NNMi management server, do the following.

1 Run the **`nnmcluster -disable`** command on the NNMi management server to disable the application failover feature.

2 Restart the NNMi management server.

   a Run the **`ovstop`** command on the NNMi management server.

   b Run the **`ovstart`** command on the NNMi management server.

3 Run the **`nnmcluster -enable`** command on the NNMi management server to enable the application failover feature.

Application Failover Control after a Communication Failure

When there is a communication failure between the two nodes, both nodes will become an active node and, therefore, a controller of its new group. After a communication failure between two remote nodes is resolved, JGroups determines which member of the new single cluster becomes the controller based on the lowest IP address. The controller determines which node is the Active member (this node is always the node on which the controller is running). NNMi starts on the Active member. This functionality is subject to change in future releases.

Application Failover and Recovery from a Previous Database Backup (Embedded Database Only)

To restore your NNMi database from an original backup when active and standby NNMi management servers are configured for application failover, follow these steps:

1 Run the **`nnmcluster -halt`** command on the active NNMi management server.

2 Delete or move the following directory on both the active and standby NNMi management servers:

- *Windows*: `%NnmDataDir%\shared\nnm\databases\Postgres_standby`
- *UNIX*: `$NnmDataDir/shared/nnm/databases/Postgres_standby`

3 Restore the database on the active NNMi management server:

   a Modify the following file to comment out the cluster name:

      — *Windows*:
      `%NnmDataDir%\shared\nnm\conf\props\nms-cluster.properties`

— *UNIX*: `$NnmDataDir/shared/nnm/conf/props\nms-cluster.properties`

b Restore the database as normal. See “Same System Restore” in the *NNMi Deployment Reference*.

c Run the **`ovstop`** command on the active NNMi management server.

d Modify the following file to uncomment the cluster name:

- *Windows*: `%NnmDataDir%\shared\nnm\conf\props\nms-cluster.properties`
- *UNIX*: `$NnmDataDir/shared/nnm/conf/props/nms-cluster.properties`

4 Run the **`ovstart`** command on the active NNMi management server.

5 Wait until the active NNMi management server generates a new backup. To verify that this step is complete, run the **`nnmcluster -display`** command and look for an `ACTIVE_NNM_RUNNING` message.

6 Run the **`ovstart`** command on the standby NNMi management server. The standby NNMi management server copies and extracts the new backup. To verify that this step is complete, run the **`nnmcluster -display`** command and look for a `STANDBY_READY` message.

Upgrading NNMi under HA from NNMi 9.0x to NNMi 9.10

Follow the appropriate procedure for your environment:

- Upgrade NNMi with the Embedded Database on the Windows, Linux, or Solaris Operating System on page 69
- Upgrade NNMi with the Embedded Database on the HP-UX Operating System on page 72
- Upgrade NNMi with Oracle on All Supported Operating Systems on page 73

Upgrade NNMi with the Embedded Database on the Windows, Linux, or Solaris Operating System

As of NNMi 9.10, Serviceguard is no longer supported on the UNIX operating system. If NNMi is currently running under Serviceguard HA, you cannot follow the procedure in this section. Instead, unconfigure NNMi from HA as described in "Unconfiguring NNMi from an HA Cluster" in the *NNMi Deployment Reference*, upgrade NNMi on all nodes, and then configure NNMi to run under a supported HA product as described in "Configure NNMi for HA" in the *NNMi Deployment Reference*. Alternatively, you can configure NNMi for NNMi application failover as described in "Configuring NNMi for Application Failover" in the *NNMi Deployment Reference*.

On the Windows, Linux, or Solaris operating system, to upgrade from NNMi 9.0x under HA to NNMi 9.1x under HA, upgrade the passive node, fail over from the active node to the passive node, and then upgrade the second node. Follow these steps:

1. Ensure that the NNMi 9.0x configuration is consistent across all HA nodes by forcing a failover, in turn, to each of the passive nodes.
2. Determine which node in the NNMi 9.0x HA cluster is active:
   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

   - *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

The remainder of this procedure refers to the currently active node as server X and the currently passive node as server Y.

Each resource shown in the cluster manager must use a separate resource monitor:

a. Using the cluster manager, right-click each service displayed beneath **Services and applications**.

b. Select **Properties**.

c. Select **Advanced Policies**.

d. Select **Run this resource in a separate Resource Monitor**.

e. Click **OK** to save your work.

3. On server Y, upgrade NNMi:

a. Disable HA resource group monitoring by creating the following maintenance file:

— *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`

— *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

The file can be empty.

b. Upgrade NNMi to the current version as described in Upgrading from NNMi 9.0x to NNMi 9.1x on page 43.

c. Verify that the upgrade completed without error.

d. Upgrade all add-on NNM iSPIs to version 9.10.

To complete an offline upgrade on Network Performance Server (NPS) or NNM iSPI Performance for Metrics HA nodes, unconfigure the node from the HA cluster.

In *addon* mode (where the NNMi management server and the NNM iSPI operate in the same HA cluster), run the following command:
`$NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM -addon PerfSPIHA`

In *standalone* mode, run the following command
`$NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl PerfSPIHA`
After this script completes, follow the instructions for upgrading the NPS or NNM iSPI Performance for Metrics in a non-HA environment.

After completing the upgrade, stop all NPS processes; from a newly opened command shell, run the following script:
`$NnmInstallDir/opt/OV/NNMPerformanceSPI/bin/stopALL.ovpl`

When completing step d, do NOT reconfigure HA until after you finish upgrading the primary node.

For more information, see the documentation for each NNM iSPI.

If your environment includes standalone NNM iSPIs, you must also upgrade those products to version 9.10 for correct functionality. You can complete those upgrades after completing this procedure.

4 If the HA cluster includes multiple passive nodes, repeat step 3 for each passive node.

5 On server X, upgrade NNMi:

NNMi will be unavailable for approximately 20 to 60 minutes while the database is upgraded during the failover to server Y. You can schedule this step to occur at a convenient time for system maintenance.

a If you are upgrading NPS or NNM iSPI Performance for Metrics HA nodes, do the following:

- Disable resource group monitoring by creating the following maintenance file:
  Windows: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
  Linux: `$NnmDataDir/hacluster/<resource_group>/maintenance`
  The file can be empty.
- Complete the NPS upgrade
- Enable resource group monitoring by removing the `maintenance` file.

b Force a failover to server Y.

The NNMi database on the shared disk is upgraded to the format of the new NNMi product version at this time.

c Run the following command and view the displayed results. Check that all of the displayed NNMi and ovjboss processes are running without error.

- **`ovstatus -c`**
- **`ovstatus -v ovjboss`**

NNMi might not be fully up since the maintenance file will report the resource <resource group>-APP as being online. To verify that the startup completed successfully, make sure that the `ovstart` process is no longer running.
To do this, use Task Manager on Windows NNMi management servers or run the **`ps -ef | grep ovstart`** command on UNIX NNMi management servers.

If the displayed NNMi and ovjboss processes show errors, check the latest additions to the Release Notes at sg-pro-ovweb.austin.hp.com/nnm/NNM9.10/releasenotesupdate.htm for possible solutions.

d Disable HA resource group monitoring by creating the following maintenance file on server X:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

The file can be empty.

e Upgrade NNMi to the current version as described in Upgrading from NNMi 9.0x to NNMi 9.1x on page 43.

f Verify that the upgrade completed without error.

g Upgrade all add-on NNM iSPIs to version 9.10. This step does not apply to NNM iSPI Performance for Metrics, as you completed that upgrade in step a on page 71.

For information, see the documentation for each NNM iSPI.

h Delete the maintenance file on server Y:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

6 Optional. Complete step b and step c on server X to force a failover from server Y to server X so that the node that was active before the upgrade process is again the active node.

7 Delete the maintenance file on server X:

- *Windows*: `%NnmDataDir%\hacluster\<resource_group>\maintenance`
- *UNIX*: `$NnmDataDir/hacluster/<resource_group>/maintenance`

Upgrade NNMi with the Embedded Database on the HP-UX Operating System

On the HP-UX operating system, upgrading NNMi includes migrating the Postgres database from the 32-bit version to the 64-bit version. For this reason, NNMi must be taken out of operation for the duration of the upgrade process.

NNMi will be unavailable for approximately 30 to 60 minutes during this upgrade procedure.

On the HP-UX operating system, to upgrade from NNMi 9.0x under HA to NNMi 9.1x under HA, upgrade the active node to update the embedded database, and then upgrade the passive node while NNMi is still in maintenance mode. Follow these steps:

1 Ensure that the NNMi 9.0x configuration is consistent across all HA nodes by forcing a failover, in turn, to each of the passive nodes.

2 Ensure that all nodes are running NNMi 9.0x Patch 2 (9.01) or a higher version of NNMi 9.0x.

If necessary, upgrade each system to the latest NNMi 9.0x consolidated patch. Follow the instructions in the "Upgrading NNMi under HA from NNMi 8.1x to NNMi 9.01" section of the "Configuring NNMi in a High Availability Cluster" chapter in the most recent NNMi 9.0x version of the *NNMi Deployment Reference*.

3 Determine which node in the NNMi 9.0x HA cluster is active:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

The remainder of this procedure refers to the currently active node as server X and the currently passive node as server Y.

4 On server X, disable HA resource group monitoring by creating the following maintenance file:

`$NnmDataDir/hacluster/<resource_group>/maintenance`

The file can be empty.

5 On server X, upgrade NNMi:

a Upgrade NNMi to the current version as described in Upgrading NNMi under HA from NNMi 9.0x to NNMi 9.10 on page 69.

The database upgrade occurs during this step.

b To verify that the upgrade completed correctly, enter the following command:

```
ovstart
```

All NNMi services should show the state RUNNING.

c Upgrade all add-on NNM iSPIs to version 9.10.

For information, see the documentation for each NNM iSPI.

If your environment includes standalone NNM iSPIs, you must also upgrade those products to version 9.10 for correct functionality. You can complete those upgrades after completing this procedure.

6 On server Y, upgrade NNMi:

a Upgrade NNMi to the current version as described in Upgrading from NNMi 9.0x to NNMi 9.1x on page 43.

b Verify that the upgrade completed without error.

c Upgrade all add-on NNM iSPIs to version 9.10.

For information, see the documentation for each NNM iSPI.

7 If the HA cluster includes multiple passive nodes, repeat step 6 for each passive node.

8 On server X, delete the maintenance file:

```
$NnmDataDir/hacluster/<resource_group>/maintenance
```

Upgrade NNMi with Oracle on All Supported Operating Systems

To upgrade NNMi for HA in an Oracle environment, follow the procedure described in Upgrade NNMi with the Embedded Database on the Windows, Linux, or Solaris Operating System on page 69.

Upgrading from NNMi 9.0x to NNMi 9.10 (Global Network Management)

NNMi Versions Supported by Global Network Management

If a global manager is connected to a regional manager running NNMi 9.0x patch 2 or earlier, SNMP queries between the global and regional manager do not work. To remedy this, upgrade the regional manager to NNMi 9.0x patch 3 or later. To achieve the best results, the global manager should be the same version and NNMi patch level as the regional manager. HP supports an NNMi 9.1x global manager connected to an NNMi 9.0x regional manager.

Global Network Management Upgrade Steps

To upgrade NNMi management servers configured in a global network management environment, upgrade the NNMi management servers in the following order:

1. Upgrade the global manager from NNMi 9.0x to NNMi 9.1x.
2. Upgrade the regional managers from NNMi 9.0x to NNMi 9.1x.

The global network management feature continues to function while you complete the upgrades, but some of the new NNMi 9.1x features might not work on the global NNMi management server until you complete the upgrades on the regional NNMi management servers.

Upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x

For information about upgrading from NNMi 8.1x to NNMi 9.2x, see Upgrading from NNMi 8.0x or 8.1x on page 13.

If you are upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x and you are using an Oracle database, see Important Prerequisite Steps for Upgrading with an Oracle Database on page 80.

You can upgrade NNMi according to the information shown in Table 4. The information shown in Table 4 assumes you have NNMi 9.0x Patch 5 or newer installed on the NNMi management server.

Table 4 Supported NNMi Upgrades

NNMi Version	Upgrade to NNMi 9.2x
NNMi 9.0x Patch 5 or newer	Supported
NNMi 9.1x Patch 3 or newer	Supported

To upgrade from NNMi 9.0x or 9.1x to NNMi 9.2x, you must upgrade directly to NNMi 9.2x. During an upgrade from NNMi 9.0x or 9.1x to NNMi 9.20, the installation script provides an opportunity to install patches for NNMi 9.20, as applicable.

If you are upgrading from NNMi 9.0x or 9.1x and you also have the Master or Leaf Collector for the NNM iSPI Performance for Traffic installed on the NNMi management server, you must upgrade to NNMi 9.10 patch 3 (or later) and NNM iSPI Performance for Traffic 9.10 patch 2 (or later) before upgrading to NNMi 9.20. Failure to do so will result in the loss of all traffic data.

If you plan to upgrade an earlier version of NNMi 9.0x or NNMi 9.1x to NNMi 9.20, and if that same system had been running NNMi 8.1x at some time in the past, the upgrade might incorrectly set the `HostNameMatchManagementIP` property to `false`. The `HostNameMatchManagementIP` property exists in the `nms-disco.properties` file. In most cases, you will prefer the value of this property to be `true`. If you want it to remain `true`, check this file after the upgrade completes, and correct the value if necessary. The `nms-disco.properties` file is located in the `%nnmdatadir%\shared\nnm\conf\props` folder (Windows) or `$NnmDataDir/shared/nnm/conf/props` directory (UNIX).

If you plan to upgrade an earlier version of NNMi that is running in an NNMi application failover configuration, the supported upgrade path is to temporarily unconfigure application failover, upgrade the NNMi management server to NNMi 9.2x,and then reconfigure application failover. For detailed information, see Application Failover and Upgrading to NNMi 9.20 on page 99.

If you added com.sun.management.jmxremote.* properties to any of the properties files in the following directories, NNMi does not retain these values during an upgrade to NNMi 9.2x:

- *Windows*: `%NNM_DATA%\shared\nnm\conf\props`
- *UNIX*: `$NNM_DATA/shared/nnm/conf/props`

NNMi 9.2x ignores any com.sun.management.jmxremote.* properties you add to the properties files in these directories.

If you plan to upgrade an earlier version of NNMi that is running under high availability (HA), see High Availability and Upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.20 on page 109.

If you plan to upgrade NNMi management servers configured in a global network management environment see Upgrading Global and Regional Managers to NNMi 9.2x on page 119.

If you plan to upgrade a Linux NNMi management server from NNMi 9.0x or 9.1x to NNMi 9.2x, you must import the HP public key into the Linux RPM database before installing NNMi 9.2x. To do this, point your browser to the following location and follow the instructions:

`https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning`

If you created a User Group in NNMi 9.1x called `globalops`, then that group, in NNMi 9.2x, will now have access to all topology objects. If that behavior is not what you desire, then you should rename that User Group before upgrading to NNMi 9.2x.

If you have NNMi 9.0x integrated with NA 9.00 and plan to upgrade NNMi from NNMi 9.0x to NNMi 9.10, you must disable the NNMi-NA integration and uninstall the NNMi connector before upgrading. To do this, follow the instructions shown in "Integration Configuration Upgraded from NNMi 9.0x" in the *NNMi—Network Automation Integration Guide*.

Note the following:

- NNMi automatically resynchronizes topology, state, and status following an upgrade.
- Avoid stopping NNMi during the resynchronization. To help ensure resynchronization has completed, NNMi should remain running for several hours following the upgrade. The actual time required depends on the number of nodes and the volume of state changes and trap data received while performing the resynchronization.

  If NNMi must be stopped before the resynchronization is finished, the resynchronization should be run again and allowed to complete.

  To perform a manual resynchronization of the entire management server, run:
  `nnmnoderediscover.ovpl -all -fullsync`

A non-SNMP node that is not reachable generates a Node Down or a Node or Connection Down incident. The Non-SNMP Node Unresponsive incident is no longer generated.

NNMi uses tenancy to support networks with overlapping address domains that may exist within static Network Address Translation (NAT), dynamic Network Address Translation (NAT), or Port Address Translation (PAT) areas of your network management domain. If you have such networks, note the following with regard to upgrading:

- L2 connections that previously existed for nodes between tenants will be removed.
- Subnets that previously spanned multiple tenants will be split into two (or more) subnets.
- Router Redundancy Groups that previously spanned multiple tenants will be split.
- Any connections between tenants other than the Default Tenant are deleted on upgrade.
- Nodes that were previously considered duplicates across tenants may no longer be considered duplicates.

There are several upgrade scenarios you could encounter. This section contains the following chapters:

- Upgrading the NNMi Management Server in Place on page 81, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.1x or NNMi 9.1x to NNMi 9.2x on the same hardware and operating system.
- Upgrading to a Different NNMi Management Server on page 83, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.1x or NNMi 9.1x to NNMi 9.2x on the same version operating system.
- Moving NNMi from Windows 2003 to Windows 2008. NNMi 9.20 does not support Windows 2003. You must change the operating system to Windows 2008 before upgrading to NNMi 9.20.
- Migrating NNMi Oracle Data. Explains the steps to take to move the Oracle data used by your NNMi management server from one Oracle database instance to another.
- Upgrading Global and Regional Managers to NNMi 9.2x. Explains the requirements for upgrading in Global Network Management environments.
- High Availability and Upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.20. Explains the requirements for upgrading in High Availability environments.
- Application Failover and Upgrading to NNMi 9.20 on page 99. Explains the requirements for upgrading in Application Failover environments.
- Additional Upgrade Information. Explains some areas that NNMi 9.2x differs from earlier versions of NNMi.

Important Prerequisite Steps for Upgrading with an Oracle Database

To prevent a failure when upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x using an Oracle database, follow the steps in this section before performing the upgrade.

Before running the following pre-upgrade steps, perform a database backup of the NNMi schema. For more information, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference*.

1. On the NNMi management server, run the following command: `ovstop`
2. Log on to Oracle as the NNMi database user and run the following SQL statements:

```
ALTER TABLE nms_region_comm_string ADD (ordering NUMBER(10));
DECLARE
   CURSOR region_cur IS
      SELECT DISTINCT region, COUNT(1) num_regs
      FROM nms_region_comm_string
      GROUP BY region;
   v_ordering NUMBER(10);
BEGIN
   FOR region_rec IN region_cur
   LOOP
      IF region_rec.num_regs > 1 THEN
         v_ordering := 5;
         FOR order_rec IN
            (
               SELECT id FROM nms_region_comm_string
               WHERE region = region_rec.region
            )
            LOOP
               UPDATE nms_region_comm_string
               SET ordering = v_ordering
               WHERE id = order_rec.id;
               v_ordering := v_ordering + 5;
            END LOOP;
      END IF;
   END LOOP;
   COMMIT;
END;
```

3. Upgrade to NNMi 9.2x, following the upgrade procedures in this document.
4. After the upgrade, verify your communication configuration settings. The product adds its own ordering values to SNMP community strings for regions. Change these values to something suitable for your environment and settings.

Upgrading the NNMi Management Server in Place

This chapter describes the process for upgrading an existing NNMi management server to NNMi 9.2x.

This chapter contains the following topic:

- Upgrade an Existing NNMi Management Server to NNMi 9.2x

Upgrade an Existing NNMi Management Server to NNMi 9.2x

Read the NNMi 9.2x *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 95 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

Read the *HP Network Node Manager i Software System and Device Support Matrix* for the NNMi software you are upgrading to before continuing. You can obtain a copy of this document at http://h20230.www2.hp.com/selfsolve/manuals. You must have an HP Passport User ID to access this web site.

The following steps explain how to upgrade an NNMi management server to NNMi 9.2x. The following steps assume you have NNMi 9.0 patch 5 or NNMi 9.1 patch 3, or later, running on the NNMi management server.

1. Back up the NNMi management server using the `nnmbackup.ovpl` script. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage.
2. *Oracle Database Only*: If the NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration

3 *Oracle Database Only*: Use the `nnmconfigexport.ovpl` script to back up configuration information from the NNMi management server. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nmconfigexport.ovpl* or *nnmconfigimport.ovpl* reference pages, or the UNIX manpages.

Never edit a file exported with the `nnmconfigexport.ovpl` script before using the `nnmconfigimport.ovpl` script to import the file.

4 Install NNMi 9.2x on the NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

5 Verify that the information from the NNMi management server migrated successfully.

After upgrading NNMi with the embedded database, and ensuring that the upgrade was successful, check for the existence of the following directory on the NNMi management server:

- *Windows*: `%NnmDataDir%\shared\nnm\databases\Postgres.9.0`
- *UNIX*: `$NnmDataDir/shared/nnm/databases/Postgres.9.0`

If the `Postgres.9.0` directory exists on the NNMi management server, you can delete it to free up disk space. Note that this directory might be present even if you are upgrading from a version of NNMi that is newer than NNMi 9.0.

Upgrading to a Different NNMi Management Server

This chapter describes the process for upgrading to NNMi 9.2x on a new system while maintaining the configuration of the existing NNMi management server.

This chapter contains the following topic:

- Upgrade to a Different NNMi Management Server

Upgrade to a Different NNMi Management Server

Read the NNMi 9.2x *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 95 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

The following steps explain how to copy data from an existing NNMi management server to a target NNMi management server. The following steps assume you have NNMi 9.0 patch 5 or NNMi 9.1 patch 3, or later, running on the existing NNMi management server.

If you want to change the Oracle database server, complete that process before or after the upgrade to NNMi 10.00. For information, see Migrating NNMi Oracle Data on page 93.

1. As a precaution, back up the existing (source) NNMi 9.0x or 9.1x management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.0x or 9.1x. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.0x or 9.1x.

2 If the existing (source) NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi 9.0x or 9.1x data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

3 Install NNMi 9.2x and the latest consolidated patch (if any) on the source NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

4 Verify that NNMi 9.2x is working correctly on the source NNMi management server.

5 Back up NNMi 9.2x on the source NNMi management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.2x. You will need it to copy data to the target NNMi management server. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.2x.

6 Install NNMi 9.2x and the latest consolidated patch (if any) on the target NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*. To migrate the data from step 5, the target NNMi management server must be running the same operating system version. NNMi does not support data migration to an NNMi management server running on a different operating system.

7 Use the `nnmrestore.ovpl` script to copy NNMi database information to the target server. For more information, see the *nnmrestore.ovpl* reference page, or the UNIX manpage.

8 Obtain and install a new license on the target NNMi management server.

For information, see “Licensing NNMi” in the *NNMi Deployment Reference*.

9 Verify that the information from the target NNMi management server migrated successfully from the existing NNMi management server.

Moving NNMi from Windows 2003 to Windows 2008

NNMi 9.2x does not support Windows 2003. You must change the operating system to Windows 2008 or Windows 2008 R2 before migrating to NNMi 9.2x.

Use the information in this chapter if you have NNMi 9.0x or NNMi 9.1x running on a Windows 2003 server, and need to change the operating system to Windows 2008.

This chapter contains the following topic:

Changing NNMi from Windows 2003 to Windows 2008

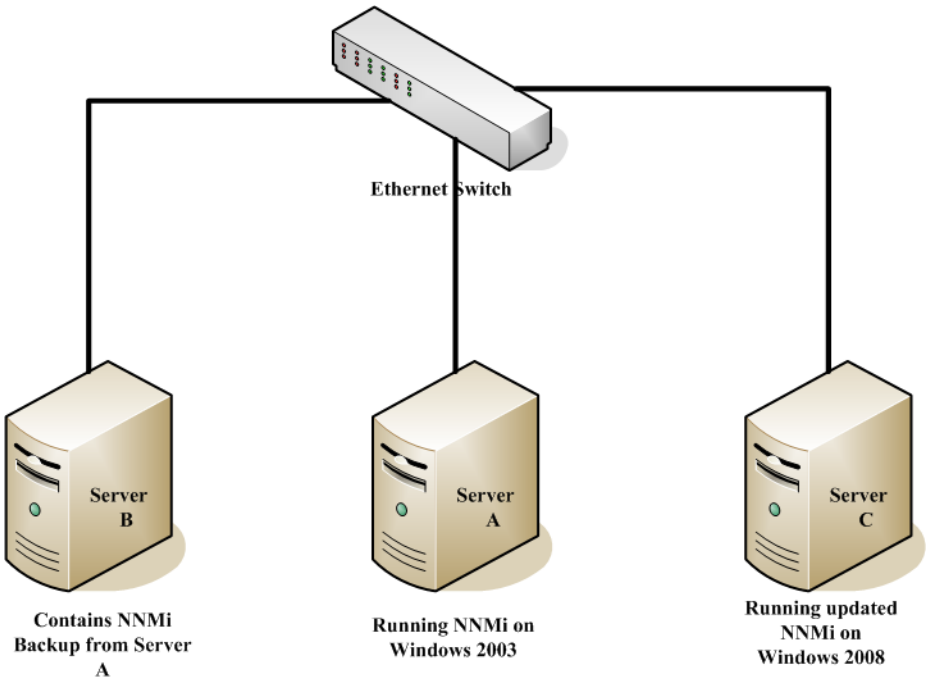
Changing NNMi from Windows 2003 to Windows 2008

To complete the following steps, you must have NNMi 9.0x or NNMi 9.1x running on a Windows 2003 server. To check the NNMi version number, note the current patch level in the **Help->About HP Network Node Manager i Software** window. Verify that the version is 9.01.005 or later. If the version is earlier than that, do not proceed. You need to install NNMi 9.0x (latest patch) before proceeding.

To change an NNMi management server running NNMi 9.0x or NNMi 9.1x from Windows 2003 to Windows 2008, follow these steps:

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running Windows 2003.
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running Windows 2008. This NNMi management server can be the same hardware as the current `Server A`.

     Make sure the `hosts` file on the new NNMi management server contains the following entry: **`127.0.0.1 localhost`**



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target`** ***`temporary_location`*** command to complete a full NNMi backup.

   For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install Windows 2008.

   As an alternative to using `Server C`, reformat the disk on `Server A` and install Windows 2008. If you do that, substitute `Server A` for `Server C` for the remaining steps.

5 On `Server C`, install NNMi 9.0x patch 5 or later. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

6 During the NNMi installation on server C, the installation script might assign ports that differ from the server B configuration. During the configuration restore on Server C, this might create port conflicts. To remedy this, do the following:

   a On `Server C`, navigate to the following directory: `%$NNM_CONF%\nnm\props\`

   b On `Server C`, copy the `nms-local.properties` file to `nms-local.properties.save in` a temporary location.

   c On `Server B`, copy the NNMi backup to `Server C`.

   d On `Server C`, run the **`nnmrestore.ovpl -force -source`** ***`temporary_location`*** command to complete a full NNMi restore.

      For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the UNIX manpage.

   Use the command options that match the backup you completed in step 2

e On Server C, compare the nms-local.properties.save file from the temporary location to the nms-local.properties file located in the following directory: %NNM_CONF%\nnm\props\

Resolve any port conflicts, making changes to the nms-local.properties located in the above directory. Make sure to keep the nmsas.server.port.web.http (NNMi web server port) and nmsas.server.port.web.https (NNMi HTTPS web server port) values that were chosen during the NNMi installation on Server C.

f Restart NNMi:

```
ovstop

ovstart
```

7 NNMi associates its license keys with a server's IP address. If the IP address for Server C is different from the IP address of Server A, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

8 On Server C, install NNMi 9.2x.

Moving NNMi to RHEL 5.4 or Later

NNMi 9.2x does not support Red Hat Enterprise Linux (RHEL) versions earlier than version 5.4. You must change the operating system to RHEL version 5.4 or later before migrating to NNMi 9.2x.

Use the information in this chapter if you have NNMi 9.0x or NNMi 9.1x (latest patch) running on a RHEL server (version 4.x), and need to change the operating system to RHEL version 5.4 or later.

If you have a version of RHEL that is 5.x, but earlier than 5.4, use the **`yum`** update command to update RHEL to version 5.4 or later.

This chapter contains the following topic:

Moving NNMi to RHEL 5.4 or Later

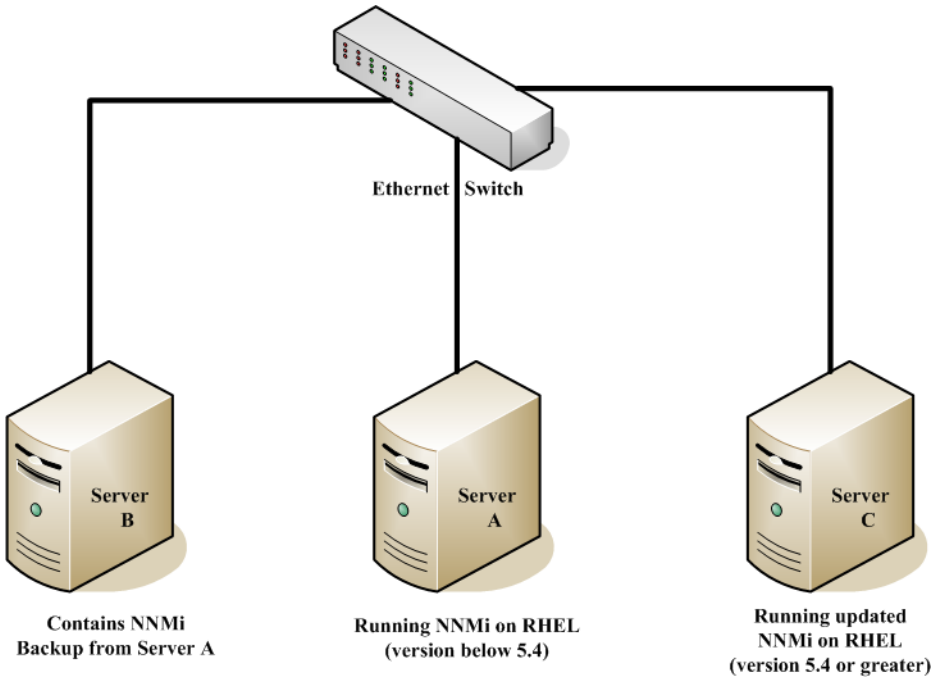
Moving NNMi to RHEL Version 5.4 or Later

To complete the following steps, you must have NNMi 9.0x or NNMi 9.1x (latest patch) running on a RHEL server (versions earlier than 5.4). To check the NNMi version number, note the current patch level in the **Help->About HP Network Node Manager i Software** window. Verify that the version is 9.01.005 or later, or 9.11.003 or later. If the version is earlier than that, do not proceed. You need to install NNMi 9.0x or NNMi 9.1x (latest patch) before proceeding. See Upgrading from NNMi 9.0x or 9.1x to NNMi 9.2x on page 77 for the latest supported patch numbers.

To change an NNMi management server running NNMi 9.0x or NNMi 9.1x (latest patch) from RHEL (version 4.x) to RHEL version 5.4 or later follow these steps:

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running RHEL (version earlier than 5.4).
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running RHEL 5.4 or later. This NNMi management server can be the same hardware as the current `Server A`.

Make sure the `hosts` file on the new NNMi management server contains the following entry: **`127.0.0.1 localhost`**



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target`** ***`temporary_location`*** command to complete a full NNMi backup.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install RHEL 5.4 or later.

As an alternative to using `Server C`, reformat the disk on `Server A` and install RHEL 5.4 or later. If you do that, substitute `Server A` for `Server C` for the remaining steps.

5 On `Server C`, install the same NNMi version as what was running on `Server A`. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

You cannot back up with one version of NNMi and restore to a different version of NNMi. Therefore, Server C must be the identical NNMi version, including patch level, as Server A.

6 During the NNMi installation on `Server C`, the installation script might assign ports that differ from the `Server B` configuration. During the configuration restore on `Server C`, this might create port conflicts. To remedy this, do the following:

a On `Server C`, navigate to the following directory: `$NNM_CONF/nnm/props/`

b On `Server C`, copy the `nms-local.properties` file to `nms-local.properties.save in` a temporary location.

c On `Server B`, copy the NNMi backup to `Server C`.

d On Server C, run the **nnmrestore.ovpl -force -source *temporary_location*** command to complete a full NNMi restore.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the UNIX manpage.

Use the command options that match the backup you completed in step 2.

e On Server C, compare the nms-local.properties.save file from the temporary location to the nms-local.properties file located in the following directory: $NNM_CONF/nnm/props/

Resolve any port conflicts, making changes to the nms-local.properties located in the above directory. Make sure to keep the jboss.http.port (NNMi web server port) and jboss.https.port (NNMi HTTPS web server port) values that were chosen during the NNMi installation on Server C.

f Restart NNMi:

```
ovstop
ovstart
```

7 NNMi associates its license keys with a server's IP address. If the IP address for Server C is different from the IP address of Server A, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

8 On Server C, install NNMi 9.2x.

Migrating NNMi Oracle Data

If you plan to move the Oracle data in NNMi to Oracle 11G. The information in this chapter explains the steps to take to complete this work.

Migrating NNMi Oracle Data

Suppose you have NNMi running in one of the following configurations:

- NNMi 9.0x or NNMi 9.1x with the latest patch connected to an Oracle 10G database and you need to upgrade to NNMi 9.2x.
- NNMi 9.0x or NNMi 9.1x with the latest patch connected to an Oracle 11G database and you need to upgrade to NNMi 9.2x.

The Oracle database instance migration you need to complete could include combinations of the following requirements:

- The existing Oracle instance running on NNMi 9.2x can be running Oracle 10G or 11G.
- The new Oracle instance running on NNMi 9.2x must be running Oracle 11G.
- The new Oracle instance can be located on the original server or on a different server and hostname.

To complete the migration of the NNMi Oracle data, complete the following steps:

1. As root or administrator, run the following command to stop NNMi: **`ovstop -c.`**
2. Use Oracle tools to move or copy the NNMi data from the existing Oracle server to the new server. Refer to Oracle documentation for additional information.

   This Oracle data migration can be an in-place upgrade from Oracle 10 to Oracle 11 on the same server. Oracle provides database migration tools for converting Oracle 10 data into the Oracle 11 format.

3. *Only complete this step if the new Oracle server has a different hostname than the previous Oracle server.* On the NNMi management server, reconfigure NNMi to point to the new Oracle server by completing the following steps:

a. Edit the datasource configuration file shown :

It is important that you complete the following steps accurately, or jboss will not correctly connect to the Oracle 11G database.

- *Windows*: `%NNM_JBOSS%\server\nms\deploy\nms-ds.xml`
- *UNIX*: `$NNM_JBOSS/server/nms/deploy/nms-ds.xml`

b. Change the following attribute to reflect your new server

OLD:
<connection-url>jdbc:oracle:thin:@*EXISTING_FQDN*:*EXISTING_ORACLE_PORT*:*EXISTING_SID* </connection-url>

NEW:
<connection-url>jdbc:oracle:thin:@NEW_*FQDN*:*NEW_PORT*:*NEW_SID*</connection-url>

4. Complete one of the following actions:

If you are upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.2x, perform that migration now, following the installation instructions in the *HP Network Node Manager i Software Installation Guide*.

If you are already using NNMi 9.2x, follow these steps to restart NNMi and complete the Oracle database move/migration:

a. Run the following command on the NNMi management server to restart NNMi: **`ovstart -c`**

b. Run the following command on the NNMi management server to check if all of the services are started and operating correctly: **`ovstatus -v`**

After upgrading to NNMi 9.2x, if you want to change your Oracle server, do the following:

1. Stop the NNMi management server using the following command: **`ovstop`**
2. Edit the following file:
   - *Windows*: `%nnmdatadir%\shared\nnm\conf\props\nnm-server.properties`
   - *UNIX*: `$NnmDataDir/shared/nnm/conf/props/nnm-server.properties`
3. Look for three lines that resemble the following:

   com.hp.ov.nms.oracle.host = <*Oracle server hostname*>

   com.hp.ov.nms.oracle.port = <*Oracle port* >

   com.hp.ov.nms.oracle.sid = <*Oracle SID* >
4. Edit the three values to include the values associated with the new Oracle server.
5. Use the `nnmchangedbpw.ovpl` command to set the Oracle name and password.
6. Start the NNMi management server using the following command: **`ovstart`**

Additional Upgrade Information

This chapter describes some changes between NNMi 9.20 and earlier NNMi versions. This chapter contains the following topics:

- Configuration Differences
- MIBs
- Functionality Differences

Configuration Differences

- User groups replace NNMi roles for limiting user access within the NNMi console. User accounts can be mapped to multiple user groups.
  - For signing in to the NNMi console, each user account must be mapped to at least one of the NNMi-provided user groups. These groups are equivalent to the function of the NNMi role in previous releases.
  - In a multi-tenancy environment, each user account can be mapped to one or more custom user groups that provide access to a subset of the topology objects.

  For more information, see "NNMi Security and Multi-Tenancy" in the *NNMi Deployment Reference*.
- The NNMi integration for retrieving user information from a directory service can now retrieve multiple group names per user.
  - For configuration option 2 (only user names and passwords in the directory service), existing integrations with a directory service continue to work without modification to the `ldap.properties` configuration file.
  - For configuration option 3 (all user information in the directory service), the following information applies:
    - In a single tenant environment (all NNMi console users can access all topology objects), existing integrations with a directory service continue to work without modification to the `ldap.properties` configuration file.

If you add any new NNMi user groups in the directory service, you must update the `ldap.properties` configuration file to the new model for retrieving user information from a directory service.

- In a multi-tenancy environment, update the `ldap.properties` configuration file to the new model for retrieving user information from a directory service.
- For information about updating the `ldap.properties` configuration file, see "Changing the Directory Service Access Configuration to Support the NNMi Security Model" in the *NNMi Deployment Reference*.

— NNMi 9.2x deprecates the following `ldap.properties` configuration file parameters. They will become unsupported in a future release:

- roleAttributeID
- roleAttributeIsDN
- roleNameAttributeID

- After upgrading to NNMi 9.2x, the following security and multi-tenancy configuration applies:

  — All nodes are assigned to the Default Tenant and the Default Security Group.

  — All users have access to all nodes in the NNMi topology and to all incidents.

  This default configuration matches the object access available in NNMi 9.1x. For information on customizing object access, see "NNMi Security and Multi-Tenancy" in the *NNMi Deployment Reference*.

- If the HP NNMi—HP NA integration was configured on a NNMi 9.0x management server, the process of upgrading to NNMi 9.2x disables the configuration. For more information, see the *NNMi—Network Automation Integration Guide*.

- Upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.2x might incorrectly set the `HostNameMatchManagementIP` property to false.

  If you plan to upgrade an earlier version of NNMi 9.0x or NNMi 9.1x to NNMi 9.20, the upgrade might incorrectly set the `HostNameMatchManagementIP` property to `false`. The `HostNameMatchManagementIP` property exists in the `nms-disco.properties` file.

  In most cases, you will prefer the value of this property to be `true`. If you want it to remain `true`, check this file after the upgrade completes, and correct the value if necessary. The nms-disco.properties file is located in the `%NnmDataDir%\shared\nnm\conf\props` folder (Windows) or the `$NnmDataDir/shared/nnm/conf/props` (UNIX) directory.

  If you change the value of the `HostNameMatchManagementIP` property, for the changes to take effect, you must restart the NNMi management server as follows:

  a Run the ovstop command on the NNMi management server.

  b Run the ovstart command on the NNMi management server..

  When making file changes under HA, you must make the changes on both nodes in the cluster. For NNMi using HA configurations, if the change requires you to stop and restart the NNMi management server, you must put the nodes in maintenance mode before running the ovstop and ovstart commands.

Application Failover

NNMi 9.0x supported either a UDP or a TCP solution for the application failover feature. NNMi 10.00 only supports the TCP solution. If you used the UDP application failover solution for NNMi 9.0x, and are upgrading to NNMi 9.2x, the upgrade script converts your application failover configuration to the TCP solution. You must add the hostnames of all nodes in the cluster to the `com.hp.ov.nms.cluster.member.hostnames` parameter in the `nms-cluster.properties` file. For more information see "Configuring NNMi for Application Failover" in the *NNMi Deployment Reference*.

For the application failover feature to function correctly, the active and standby servers must have unrestricted network access to each other. NNMi 9.2x includes some port changes, so you might need to modify your firewall configuration. For more information see "NNMi 9.20 and Well-Known Ports" in the *NNMi Deployment Reference*.

MIBs

If you loaded additional MIBs into earlier versions of NNMi that are not standards compliant or have dependencies on other MIB files, they might not migrate successfully. If a MIB does not migrate successfully, the trap configurations continue to work, however you might not be able to browse that MIB as you could prior to the migration.

If you suspect that some MIBs did not migrate, check the following directory for a `failed` subdirectory that contains the MIB file or files, failure details, and a log file with a name that associates it with the MIB file or files:

- *Windows*: `%NNM_DATA%\tmp\nnm9xMibMigrate`
- *UNIX*: `$NNM_DATA/tmp/nnm9xMibMigrate`

Use the files contained in the above directories to determine why the MIBs did not migrate, then reload those MIBs.

Functionality Differences

To review information about new features included in NNMi 9.2x, see the "What's New In This Version" section of the *NNMi Release Notes*.

Application Failover and Upgrading to NNMi 9.20

Application Failover and Upgrading from NNMi 9.0x or 9.1x

If you plan to upgrade an earlier version of NNMi that is running in an NNMi application failover configuration, follow the steps in the appropriate section below based on the database you are using.

Embedded Database

To upgrade NNMi management servers configured for application failover and using the embedded database, follow these steps:

1. As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.

   As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.

2. Complete the following steps on the active NNMi management server. Note that NNMi must be running for the following `nnmcluster` steps to work. Completing these steps will speed up the standby NNMi management server startup shown in step 6 on page 100:

   a. Run the **`nnmcluster`** command.

   b. After NNMi prompts you, type **`dbsync`**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

      `ACTIVE_DB_BACKUP`: This means that the active NNMi management server is performing a new backup.
      `ACTIVE_NNM_RUNNING`: This means that the active NNMi management server completed the backup referred to by the previous message.
      `STANDBY_RECV_DBZIP`: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
      `STANDBY_READY`: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

c Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.

3 Run the **nnmcluster -shutdown** command on the standby NNMi management server. This shuts down all `nnmcluster` processes on the standby NNMi management server.

4 To verify there are no nnmcluster nodes running on the standby NNMi management server, *complete the following steps on the standby NNMi management server*.

a Run the **nnmcluster** command.

b Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

c Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.

5 *Complete the following steps on the standby NNMi management server* to temporarily disable application failover:

a Edit the following file:

– *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

– *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

c Save your changes.

6 Create the `NnmDataDir/tmp/postgresTriggerFile`.

Note the following:

— The file you create must not have a .**txt** extension.

— This file is empty and removed by Postgres when it starts.

7 Start, then stop processes on the standby NNMi management server.

a Run the **ovstart** command on the standby NNMi management server. Running the **ovstart** command causes the standby NNMi management server to import the transaction logs from the active NNMi management server.

b After the **ovstart** command completes, run the **ovstatus -v** command. All NNMi services should show the state `RUNNING`.

c Run the **ovstop** command on the standby NNMi management server.

8 Upgrade the standby NNMi management server to NNMi 9.20 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the standby NNMi management server to iSPI versions that support NNMi 9.20.

You now have the former active NNMi management server running NNMi 9.0x or NNMi 9.0x and the former standby NNMi management server running NNMi 9.20. You have both of these NNMi management servers running independently with no database synchronization. That means you have both NNMi management servers monitoring the network in parallel. Do not leave these NNMi management servers in this configuration for more than a few hours, as this configuration is a violation of the non-production license installed on the

former standby node.

To complete the upgrade, and remedy this situation, select a time to upgrade the former active node to NNMi 9.20. Have the operators temporarily use the former standby node to monitor the network while you complete the upgrade.

The remainder of this procedure assumes you plan to retain the database information from the former active node and discard the database information from the former standby node.

9 Run the **`nnmcluster -halt`** command on the former active NNMi management server.

10 To verify there are no nnmcluster nodes running on the former active NNMi management server, *complete the following steps on the former active NNMi management server*.

a Run the **`nnmcluster`** command.

b Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

11 *Complete the following steps on the former active NNMi management server* to temporarily disable application failover:

a Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

Upgrade the former active NNMi management server to NNMi 9.2x using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the former active NNMi management server to iSPI versions that support NNMi 9.20.

Now you have two servers running NNMi 9.2x, but they are still independent since the databases are not synchronized.

12 Complete the following steps on the former active NNMi management server:

a Run the **`ovstop`** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

The NNMi upgrade procedure does not preserve commented-out properties. Therefore, you must retype the cluster name.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

13 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former active NNMi management server. It is now the active node.

14 Instruct the operators to begin using the active node to monitor the network.

The former standby NNMi management server discards all of the database activity occurring during the maintenance window, from step 9 on page 101 through step 13 on page 102.

15 Complete the following steps on the former standby NNMi management server:

a Run the **`ovstop`** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

16 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former standby NNMi management server.

This NNMi management server becomes the standby node, and receives a copy of the database from the active node.

17 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the upgrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Oracle Database

You must upgrade NNMi management servers separately because two NNMi management servers cannot be simultaneously connected to the same Oracle database.

To upgrade NNMi management servers configured for application failover and using an Oracle database, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see ”Best Practice: Save the Existing Configuration” in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see ”Backup Scope” in the *NNMi Deployment Reference*.

3 Run the **`nnmcluster -halt`** command on the standby NNMi management server. This shuts down all `nnmcluster` processes on both the active and standby NNMi management server.

4 To verify there are no nnmcluster nodes running on either the active or standby NNMi management server, *complete the following steps on the standby NNMi management server*.

a Run the **`nnmcluster`** command.

b Verify that the only nnmcluster node present is one marked (SELF).

c Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.

5 *Complete the following steps on the standby NNMi management server* to temporarily disable application failover:

a Edit the following file:

- *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
- *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

c Save your changes.

6 Upgrade the standby NNMi management server to NNMi 9.2x using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the standby NNMi management server to iSPI versions that support NNMi 9.2x.

You now have the former standby NNMi management server with NNMi 9.20 installed, and the former active NNMi management server with NNMi 9.0x or NNMi 9.0x installed.

7 Run the **ovstop** command on the former standby NNMi management server to disconnect the NNMi management server from the Oracle database.

8 *Complete the following steps on the former active NNMi management server* to temporarily disable application failover:

a Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

9 Upgrade the former active NNMi management server to NNMi 9.20 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the former active NNMi management server to iSPI versions that support NNMi 9.2x.

Now you have two servers with NNMi 9.20 installed.

10 Complete the following steps on the former active NNMi management server:

a Run the **ovstop** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

The NNMi upgrade procedure does not preserve commented-out properties. Therefore, you must retype the cluster name.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

11 Run the **ovstart** or **nnmcluster -daemon** command on the former active NNMi management server. It is now the active node.

12 Complete the following steps on the former standby NNMi management server:

f Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *UNIX*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

g Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

h Uncomment the `com.hp.ov.nms.cluster.name` parameter.

i Save your changes.

13 Run either the **ovstart** or **nnmcluster -daemon** command on the former standby NNMi management server.

This NNMi management server becomes the standby node.

14 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the upgrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Application Failover and NNMi Patches

Both NNMi management servers must be running the same NNMi version and patch level. To add patches to the active and standby NNMi management servers, use one of the following procedures:

- Applying Patches for Application Failover (Shut Down Both Active and Standby)
  Use this procedure when you are not concerned with an interruption in network monitoring.
- Applying Patches for Application Failover (Keep One Active NNMi Management Server)
  Use this procedure when must avoid any interruptions in network monitoring.

Applying Patches for Application Failover (Shut Down Both Active and Standby)

This procedure results in both NNMi management servers being non-active for some period of time during the patch process. To apply patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **nnmconfigexport.ovpl** script on both the active and standby NNMi management servers before proceeding. For information, see ”Best Practice: Save the Existing Configuration” in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see ”Backup Scope” in the *NNMi Deployment Reference*.

3 As a precaution, on the active NNMi management server, do the following steps:

a Run the **nnmcluster** command.

b Embedded database only: After NNMi prompts you, type **dbsync**, then press Enter. Review the displayed information to make sure it includes the following messages:

ACTIVE_DB_BACKUP: This means that the active NNMi management server is performing a new backup.
ACTIVE_NNM_RUNNING: This means that the active NNMi management server completed the backup referred to by the previous message.
STANDBY_READY: This shows the previous status of the standby NNMi management server.
STANDBY_RECV_DBZIP: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
STANDBY_READY: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

4 Run the **nnmcluster -halt** command on the active NNMi management server. This shuts down all nnmcluster processes on both the active and standby NNMi management servers.

5 To verify there are no nnmcluster nodes running on either server, *complete the following steps on both the active and standby NNMi management servers*.

a Run the **nnmcluster** command.

b Verify that there are no nnmcluster nodes present except the one marked (SELF).

c Run **exit** or **quit** to stop the interactive nnmcluster process you started in step a.

6 On the active NNMi management server, comment out the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file.

a Edit the following file:

— *Windows*: %NNM_SHARED_CONF%\props\nms-cluster.properties

— *UNIX*: $NNM_SHARED_CONF/props/nms-cluster.properties

b Comment out the com.hp.ov.nms.cluster.name parameter.

c Save your changes.

7 Apply the NNMi patch to the active NNMi management server using the instructions provided with the patch.

8 On the active NNMi management server, uncomment the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file.

a Edit the following file:

— *Windows*: %NNM_SHARED_CONF%\props\nms-cluster.properties

— *UNIX*: $NNM_SHARED_CONF/props/nms-cluster.properties

b Uncomment the com.hp.ov.nms.cluster.name parameter.

c Save your changes.

9 Run the **ovstart** command on the active NNMi management server.

10 Verify that the patch installed correctly on the active NNMi management server by viewing information on the **Product** tab of the **Help > System Information** window in the NNMi console.

11 Run the **nnmcluster -dbsync** command to create a new backup.

12 On the standby NNMi management server, comment out the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 105 through step c on page 105.

13 Apply the NNMi patch to the standby NNMi management server.

14 On the standby NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 105 through step c on page 105.

15 Run the **`ovstart`** command on the standby NNMi management server.

16 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Applying Patches for Application Failover (Keep One Active NNMi Management Server)

This procedure results in one NNMi management server always being active during the patch process.

This process results in continuous monitoring of the network, however NNMi loses the transaction logs occurring during this patch process.

To apply NNMi patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.

3 Run **`nnmcluster`** on one of the nodes.

4 Enter **`dbsync`** on the NNMi management server used in the previous step to synchronize the two databases.

The **`dbsync`** option works on an NNMi management server using the embedded database. Do not use the **`dbsync`** option on an NNMi management server configured to use an Oracle database.

5 Wait until the active NNMi management server reverts to `ACTIVE_NNM_RUNNING` and the standby NNMi management server reverts to `STANDBY_READY`. before continuing.

6 Exit or quit from the **`nnmcluster`** command.

7 Stop the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
`nnmcluster -shutdown`

8 Make sure the following processes and services terminate before continuing:

— `postgres`

— `ovjboss`

9 Make sure the `nnmcluster` process terminates before continuing. If the `nnmcluster` process will not terminate, manually kill the `nnmcluster` process only as a last resort.

10 Edit the following file on the standby NNMi management server:

Windows: `%nnmDataDir%\shared\nnm\conf\props\nms-cluster.properties`

UNIX: `$nnmDataDir/shared/nnm/conf/props/nms-cluster.properties`

11 Comment out the cluster name by placing a **#** at the front of the line, then save your changes:
`#com.hp.ov.nms.cluster.name = NNMicluster`

12 Install the NNMi patch on the standby NNMi management server.

13 At this point, the standby NNMi management server is patched but stopped, and the active NNMi management server is unpatched but running. Stop the active NNMi management server and immediately bring the standby NNMi management server online to monitor your network.

14 Shut down the cluster on the active NNMi management server by running the following command on the activeNNMi management server:
`nnmcluster -halt`

15 Make sure the `nnmcluster` process terminates. If it does not terminate within a few minutes, manually kill the `nnmcluster` process.

16 On the standby NNMi management server, uncomment the cluster name from the `nms-cluster.properties` file.

17 Create the `NnmDataDir/tmp/postgresTriggerFile`.

Note the following:

— The file you create must not have a .**txt** extension.

— This file is empty and removed by Postgres when it starts.

18 Start the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
`nnmcluster -daemon`

19 Install the NNMi patch on the active NNMi management server.

20 At this point, the previous active NNMi management server is patched but offline. Bring it back into the cluster (as the standby NNMi management server) by performing the following:

a Uncomment the entry in the `nms-cluster.properties` file on the active NNMi management server.

b Start the active NNMi management server using the following command:
`nnmcluster -daemon`

21 To monitor the progress, run the following command on both the active and standby NNMi management servers:
`nnmcluster`

Wait until the previous active NNMi management server finishes retrieving the database from the previous standby NNMi management server.

22 After the previous active NNMi management server displays `STANDBY_READY`, run the following command on the previous active NNMi management server:
`nnmcluster -acquire`

23 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

High Availability and Upgrading from NNMi 9.0x or NNMi 9.1x to NNMi 9.20

Follow the appropriate procedure for your environment:

- Upgrade NNMi with the Embedded Database on all Supported Operating Systems on page 109
- Upgrade NNMi with Oracle on all Supported Operating Systems on page 112

Upgrade NNMi with the Embedded Database on all Supported Operating Systems

Upgrading NNMi includes upgrading the Postgres database software to a newer version. For this reason, NNMi must be taken out of operation for the duration of the upgrade process.

NNMi will be unavailable for approximately 30 to 60 minutes during this upgrade procedure.

To upgrade from NNMi 9.0x or NNMi 9.1x under HA to NNMi 9.2x under HA, upgrade the active node to update the embedded database, and then upgrade the passive node while NNMi is still in maintenance mode. Follow these steps:

1. Ensure that the NNMi 9.0x or NNMi 9.1x configuration is consistent across all HA nodes by forcing a failover, in turn, to each of the passive nodes.
2. For NNMi 9.0x, ensure that all nodes are running NNMi 9.0x Patch 5 or a higher version. For NNMi 9.1x, use patch 3 or higher.

   If necessary, upgrade each system to the appropriate consolidated patch.
3. Check the `ov.conf` files on both systems to ensure that they have the correct values. The `ov.conf` file is available in the following location:

   - *Windows*: `%NnmDataDir%\shared\nnm\conf`
   - *UNIX*: `$NnmDataDir/shared/nnm/conf`
4. Determine which node in the NNMi 9.0x or NNMi 9.1x HA cluster is active:

   - *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

The remainder of this procedure refers to the currently active node as server X and the currently passive node as server Y.

5 For Windows systems, perform the following:

a On server X, stop the *<resource group>*-app resource.

b Check the Access Control Lists (ACLs) on the file %NnmDataDir%\hacluster*<resource group>*\hamscs.vbs (be sure to remember these).

c Save the hamscs.vbs file.

d Copy the %NnmInstallDir%\misc\nnm\ha\nnmhamscs.vbs script to a temporary directory where you can edit the file.

e Open the copy of the nnmhamscs.vbs file and change all references for product_name to be **NNM**. You can reference the original script for the value. Save the nnmhamscs.vbs file.

f As Administrator, copy the updated nnmhamscs.vbs script to %NnmDataDir%\hacluster*<resource group>*\hamscs.vbs.

g Check the ACLs again to ensure that they are the same as before.

h Start the *<resource group>*-app resource.

i Verify that the resource comes online. If not, check the cluster logs to see if there are any syntax errors. (You can use the following command to generate a cluster log: cluster log /gen. If you must specify a folder, you can do so using the following syntax: cluster log /gen /copy:*<my folder>*.)

6 On server X, disable HA resource group monitoring by creating the following maintenance file:

- *Windows*:

```
%NnmDataDir%\hacluster\<resource_group>\maintenance
```

Ensure that the maintenance file does not have a .txt extension, which can occur if the file has been edited with a text editor, such as Notepad.

- *UNIX*:

```
$NnmDataDir/hacluster/<resource_group>/maintenance
```

The file can be empty.

7 On server X, upgrade NNMi:

a Upgrade NNMi to the current version as described in this manual.

The database upgrade occurs during this step.

b To verify that the upgrade completed correctly, enter the following command:

```
ovstatus
```

All NNMi services should show the state RUNNING.

c Upgrade all add-on NNM iSPIs to version 9.20.

For information, see the documentation for each NNM iSPI.

If your environment includes standalone NNM iSPIs, you must also upgrade those products to version 9.20 for correct functionality. You can complete those upgrades after completing this procedure.

8 For Windows systems, do the following:

a Copy the updated `nnmhamscs.vbs` script (see step f within step 5) from Server X to `%NnmDataDir%\hacluster\<resource group>\hamscs.vbs` on Server Y.

b Check the ACLs to ensure that they are the same as before.

9 On server X, run the following command:
`nnmhadisk.ovpl NNM -replicate <HA_mount_point>`

10 On server Y, disable HA resource group monitoring by creating the following maintenance file:

- *Windows*:

  `%NnmDataDir%\hacluster\<resource_group>\maintenance`

Ensure that the `maintenance` file does not have a `.txt` extension, which can occur if the file has been edited with a text editor, such as Notepad.

- *UNIX*:

  `$NnmDataDir/hacluster/<resource_group>/maintenance`

The file can be empty.

11 On server Y, upgrade NNMi:

a Upgrade NNMi to the current version as described in this manual.

b Verify that the upgrade completed without error.

c Upgrade all add-on NNM iSPIs to version 9.20.

For information, see the documentation for each NNM iSPI.

12 If the HA cluster includes multiple passive nodes, repeat step 11 for each passive node.

13 On server X, delete the maintenance file:

- *Windows*:

  `%NnmDataDir%\hacluster\<resource_group>\maintenance`

- *UNIX*:

  `$NnmDataDir/hacluster/<resource_group>/maintenance`

14 Perform the following post-installation steps:

a Verify that the following variables are set:

NNM_INTERFACE

HA_MOUNT_POINT

NNM_ADD_ON_PRODUCTS

HA_LOCALE (not required if running in C)

These variables are defined in the following locations:

Veritas:

```
/opt/VRTSvcs/bin/hagrp -display | grep UserStrGlobal
```

Windows: Using `regedit`, the values are in the following location:

`HKEY_LOCAL_MACHINE\Cluster\Groups\<group>\Parameters`

b If the variables are not set, you can run the following commands for each missing value:

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set NNM_INTERFACE <value for NNM_INTERFACE>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set HA_MOUNT_POINT <value for HA_MOUNT_POINT>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set NNM_ADD_ON_PRODUCTS <value for NNM_ADD_ON_PRODUCTS>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set HA_LOCALE <value for HA_LOCALE>`

HA_LOCALE is only needed if you are attempting to use a localized language.

15 For all Linux HA upgrades, run the following sets of commands, as applicable for your system:

— *RHEL*:

`rm /etc/rc.d/rc*.d/S98netmgt`

`rm /etc/rc.d/rc*.d/K01netmgt`

— *SuSE*:

`rm /etc/init.d/rc*.d/S98netmgt`

`rm /etc/init.d/rc*.d/K01netmgt`

When using Windows Server 2008 R2, the Network Name resource may have the name "Network Name". This name should be the short name for the virtual IP address. If applicable, change the name as follows:

1 Using Failover Cluster Management, select the Network Name resource.

2 Right-click and select **Properties**.

3 Change the name.

Upgrade NNMi with Oracle on all Supported Operating Systems

To upgrade NNMi for HA in an Oracle environment, follow the procedure described in Upgrade NNMi with the Embedded Database on all Supported Operating Systems on page 109.

Unconfiguring NNMi from an HA Cluster

The process of removing an NNMi node from an HA cluster involves undoing the HA configuration for that instance of NNMi. You can then run that instance of NNMi as a standalone management server, or you can uninstall NNMi from that node.

If you want to keep NNMi configured for high availability, the HA cluster must contain one node that is actively running NNMi and at least one passive NNMi node. If you want to completely remove NNMi from the HA cluster, unconfigure the HA functionality on all nodes in the cluster.

To completely unconfigure NNMi from an HA cluster, follow these steps:

1. Determine which node in the HA cluster is active. On any node, run the following command:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

2. On each passive node, unconfigure any add-on NNM iSPIs from the HA cluster.

   For information, see the documentation for each NNM iSPI.

3. On any node in the HA cluster, verify that the add-on NNM iSPIs on all passive nodes have been unconfigured from the HA cluster:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -config NNM -get NNM_ADD_ON_PRODUCTS
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
     -config NNM -get NNM_ADD_ON_PRODUCTS
     ```

   The command output lists the add-on iSPI configurations in the format *<iSPI_PM_Name>*[*hostname_list*]. For example:

   ```
   PerfSPIHA[hostname1, hostname2]
   ```

   At this time, only the active node hostname should appear in the output. If a passive node hostname appears in the output, repeat step 2 until this command output includes only the active node hostname.

4. On each passive node, unconfigure NNMi from the HA cluster:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM \
     <resource_group>
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM \
     <resource_group>
     ```

   This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

5. On each passive node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

   If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC*: In Windows Explorer, delete the `%NnmDataDir%\hacluster\<resource_group>\` folder.
- *VCS*:

  ```
  rm -rf /var/opt/OV/hacluster/<resource_group>
  ```

- *RHCS*:

  ```
  rm -rf /var/opt/OV/hacluster/<resource_group>
  ```

6 On the active node, unconfigure any add-on NNM iSPIs from the HA cluster.

For information, see the documentation for each NNM iSPI. On any node in the HA cluster, verify that the add-on NNM iSPIs on all nodes have been unconfigured from the HA cluster:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
  -config NNM -get NNM_ADD_ON_PRODUCTS
  ```

- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
  -config NNM -get NNM_ADD_ON_PRODUCTS
  ```

If any hostname appears in the output, repeat step 6 until this command output indicates that no iSPIs are configured.

7 On the active node, stop the NNMi HA resource group:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhastoprg.ovpl NNM \
  <resource_group>
  ```

- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhastoprg.ovpl NNM \
  <resource_group>
  ```

This command does not remove access to the shared disk. Nor does it unconfigure the disk group or the volume group.

8 On the active node, unconfigure NNMi from the HA cluster:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM \
  <resource_group>
  ```

- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM \
  <resource_group>
  ```

This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

9 On the active node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC*: In Windows Explorer, delete the `%NnmDataDir%\hacluster\<resource_group>\` folder.

- *VCS*:

  rm -rf /var/opt/OV/hacluster/*<resource_group>*

- *RHCS*:

  rm -rf /var/opt/OV/hacluster/*<resource_group>*

10 Unmount the shared disk.

- If you want to reconfigure the NNMi HA cluster at some point, you can keep the disk in its current state.
- If you want to use the shared disk for another purpose, copy all data that you want to keep (as described in Running NNMi Outside HA with the Existing Database on page 115), and then use the HA product commands to unconfigure the disk group and volume group.

Running NNMi Outside HA with the Existing Database

If you want to run NNMi outside HA on any node with the existing database, follow these steps:

1 On the active node (if one still exists), ensure that NNMi is not running:

ovstop

Alternatively, check the status of the `ovspmd` process by using Task Manager (Windows) or the `ps` command (UNIX).

2 On the current node (where you want to run NNMi outside HA), verify that NNMi is not running:

ovstop

To prevent data corruption, make sure that no instance of NNMi is running and accessing the shared disk.

3 (UNIX only) Activate the disk group, for example:

vxdg import *<disk_group>*

4 Use the appropriate operating system commands to mount the shared disk. For example:

- *Windows*: Use Server Manager—>Disk Management.
- *UNIX*: `mount /dev/vgnnm/lvnnm /nnmmount`

5 Copy the NNMi files from the shared disk to the local disk:

- *Windows*:

  **%NnmInstallDir%\misc\nnm\ha\nnmhadisk.ovpl NNM **
  -from *<HA_mount_point>*

- *UNIX*:

  **$NnmInstallDir/misc/nnm/ha/nnmhadisk.ovpl NNM **
  -from *<HA_mount_point>*

6 Use the appropriate operating system commands to unmount the shared disk. For example:

- *Windows*: Use Windows Explorer.
- *UNIX*: `umount /nnmmount`

7 (UNIX only) Deactivate the disk group, for example:

```
vxdg deport <disk_group>
```

8 Obtain and install the permanent production license keys for the physical IP address of this NNMi management server as described in the "Licensing NNMi" chapter in the *NNMi Deployment Reference*.

9 Start NNMi:

```
ovstart -c
```

NNMi is now running with a copy of the database that was formerly used by the NNMi HA resource group. Manually remove from the NNMi configuration any nodes that you do not want to manage from this NNMi management server.

Patching NNMi under HA

To apply a patch for NNMi, work in HA maintenance mode. Follow these steps:

1 Determine which node in the HA cluster is active:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

2 On the active node, put the NNMi HA resource group into maintenance mode as described in “Putting an HA Resource Group into Maintenance Mode” in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

3 On all passive nodes, put the NNMi HA resource group into maintenance mode as described in “Putting an HA Resource Group into Maintenance Mode” in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

4 On the active node, follow these steps:

a Stop NNMi:

```
ovstop -c
```

b Back up the shared disk by performing a disk copy.

c *Optional*. Use the nnmbackup.ovpl command, or another database command, to back up all NNMi data. For example:

```
nnmbackup.ovpl -type offline -scope all -target nnmi_backups
```

For more information about this command, see “NNMi Backup and Restore Tools” in the *NNMi Deployment Reference*.

d Apply the appropriate NNMi and NNM iSPI patches to the system.

e Start NNMi:

```
ovstart -c
```

f Verify that NNMi started correctly:

```
ovstatus -c
```

All NNMi services should show the state RUNNING.

5 On each passive node, apply the appropriate patches to the system.

Never run the ovstart or ovstop commands on a secondary (backup) cluster node.

6 On all passive nodes, take the NNMi HA resource group out of maintenance mode as described in "Removing an HA Resource Group from Maintenance Mode" in the *NNMi Deployment Reference*.

7 On the active node, take the NNMi HA resource group out of maintenance mode as described in "Removing an HA Resource Group from Maintenance Mode" in the *NNMi Deployment Reference*.

Upgrading Global and Regional Managers to NNMi 9.2x

NNMi Versions Supported by Global Network Management

If a global manager is connected to a regional manager running NNMi 9.0x patch 2 or earlier, SNMP queries between the global and regional manager do not work. To remedy this, upgrade the regional manager to NNMi 9.0x patch 3 or later. To achieve the best results, the global manager must be the same version and NNMi patch level as the regional manager.

HP does not support a regional manager running NNMi 9.0x or 9.1x connected to a global manager running NNMi 9.20. The global manager and regional managers must be running the same NNMi version.

Global Network Management Upgrade Steps

When upgrading NNMi management servers configured in a global network management environment to NNMi 9.2x, the connections between the global manager and regional managers will drop until both the global and regional managers are upgraded to NNMi 9.2x. For this reason, HP recommends you upgrade all of the servers at approximately the same time to minimize the total downtime.

For example, you might upgrade the NNMi management servers using the following steps:

1. Upgrade the regional managers to NNMi 9.2x and ensure proper operation. The global manager stays disconnected during the regional upgrades.
2. Upgrade the global manager to NNMi 9.2x. The global manager performs a full resynchronization to obtain all events that occurred while the connection between the global manager and the regional managers was down. The effect is the same

as if the administrator were to issue **`nnmnoderediscover.ovpl -all -fullsync`** from the global manager. See the *nnmnoderediscover.ovpl* reference page or the UNIX manpage for more information.

Note the following:

- NNMi automatically resynchronizes topology, state, and status following an upgrade.
- Avoid stopping NNMi during the resynchronization. To help ensure resynchronization has completed, NNMi should remain running for several hours following the upgrade. The actual time required depends on the number of nodes and the volume of state changes and trap data received while performing the resynchronization.

  If NNMi must be stopped before the resynchronization is finished, the resynchronization should be run again and allowed to complete.

  To perform a manual resynchronization of the entire management server, run:
  `nnmnoderediscover.ovpl -all -fullsync`

Upgrading from NNMi 9.1x or 9.2x to NNMi 10.00

You can upgrade NNMi according to the information shown in Table 5. The information shown in Table 5 assumes you have NNMi 9.10 patch 6 or newer installed on the NNMi management server.

Table 5 Supported NNMi Upgrades

NNMi Version	Upgrade to NNMi 10.00
NNMi 9.10 patch 6 or newer	Supported
NNMi 9.20 patch 4 or newer	Supported

To upgrade from NNMi 9.1x or NNMi 9.2x to NNMi 10.00, you must upgrade directly to NNMi 10.00. During an upgrade from NNMi 9.1x or 9.2x to NNMi 10.00, the installation script provides an opportunity to install patches for NNMi 10.00, as applicable.

- If you are upgrading to NNMi 10.00, you must obtain new license keys from the HP Password Delivery Center. If you do not have the required 10.00 license keys installed before running the NNMi installer or you do not enter the required 10.00 license keys during NNMi installation, the NNMi 10.00 installation does not allow you to proceed. See “Licensing NNMi” in the *NNMi 10.00 Interactive Installation Guide* for more information about obtaining new license keys.

- If you are upgrading from NNMi 9.10 or 9.20 to NNMi 10.00 and you also have the Master or Leaf Collector for the NNM iSPI Performance for Traffic installed on the NNMi management server, you must upgrade to NNMi 9.10 patch 6 (or later) and NNM iSPI Performance for Traffic 9.10 patch 2 (or later) before upgrading to NNMi 10.00. Failure to do so will result in the loss of all traffic data.

- If you plan to upgrade an earlier version of NNMi 9.1x to NNMi 10.00, and if that same system had been running NNMi 8.1x at some time in the past, the upgrade might incorrectly set the `HostNameMatchManagementIP` property to `false`. The `HostNameMatchManagementIP` property exists in the `nms-disco.properties` file. In most cases, you will prefer the value of this property to be `true`. If you want it to remain `true`, check this file after the upgrade completes, and correct the value if necessary. The `nms-disco.properties` file is located in the `%nnmdatadir%\shared\nnm\conf\props` folder (Windows) or `$NnmDataDir/shared/nnm/conf/props` directory (UNIX).

If you plan to upgrade an earlier version of NNMi that is running in an NNMi application failover configuration, the supported upgrade path is to temporarily unconfigure application failover, upgrade the NNMi management server to NNMi 10.00, and then reconfigure application failover. For detailed information, see Application Failover and Upgrading to NNMi 10.00 on page 141.

If you added com.sun.management.jmxremote.* properties to any of the properties files in the following directories, NNMi does not retain these values during an upgrade to NNMi 10.00:

- *Windows*: `%NNM_DATA%\shared\nnm\conf\props`
- *UNIX*: `$NNM_DATA/shared/nnm/conf/props`

NNMi 10.00 ignores any com.sun.management.jmxremote.* properties you add to the properties files in these directories.

If you plan to upgrade an earlier version of NNMi that is running HP-UX or Solaris, see Changing NNMi from HP-UX or Solaris to Linux on page 131.

If you plan to upgrade an earlier version of NNMi that is running under high availability (HA), see High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00 on page 153.

If you plan to upgrade NNMi management servers configured in a global network management environment see Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x on page 151.

If you plan to upgrade a Linux NNMi management server from NNMi 9.10 patch 6 or NNMi 9.20 patch 4 to NNMi 10.00, you must import the HP public key into the Linux RPM database before installing NNMi 10.00. To do this, point your browser to the following location and follow the instructions:

`https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning`

If you created a User Group in NNMi 9.2x called `globalops`, then that group, in NNMi 10.00, will now have access to all topology objects. If that behavior is not what you desire, then you should rename that User Group before upgrading to NNMi 10.00.

If you have NNMi 9.0x integrated with NA 9.00 and plan to upgrade NNMi from NNMi 9.0x to NNMi 9.10, you must disable the NNMi-NA integration and uninstall the NNMi connector before upgrading. To do this, follow the instructions shown in "Integration Configuration Upgraded from NNMi 9.0x" in the *NNMi—Network Automation Integration Guide*.

Note the following:

- NNMi automatically resynchronizes topology, state, and status following an upgrade.
- Avoid stopping NNMi during the resynchronization. To help ensure resynchronization has completed, NNMi should remain running for several hours following the upgrade. The actual time required depends on the number of nodes and the volume of state changes and trap data received while performing the resynchronization.

  If NNMi must be stopped before the resynchronization is finished, the resynchronization should be run again and allowed to complete.

  To perform a manual resynchronization of the entire management server, run:
  `nnmnoderediscover.ovpl -all -fullsync`

A non-SNMP node that is not reachable generates a Node Down or a Node or Connnection Down incident. The Non-SNMP Node Unresponsive incident is no longer generated.

NNMi uses tenancy to support networks with overlapping address domains that may exist within static Network Address Translation (NAT), dynamic Network Address Translation (NAT), or Port Address Translation (PAT) areas of your network management domain. If you have such networks, note the following with regard to upgrading:

- L2 connections that previously existed for nodes between tenants will be removed.
- Subnets that previously spanned multiple tenants will be split into two (or more) subnets.
- Router Redundancy Groups that previously spanned multiple tenants will be split.
- Any connections between tenants other than the Default Tenant are deleted on upgrade.
- Nodes that were previously considered duplicates across tenants may no longer be considered duplicates.

If you are upgrading from an earlier version of NNMi, note that existing “node components” will be migrated into two different categories of sensors:

- Node Sensors:
  - CPU
  - MEMORY
  - BUFFERS
  - DISK_SPACE
- Physical Sensors:
  - FAN
  - POWER_SUPPLY
  - TEMPERATURE
  - VOLTAGE
  - BACK_PLANE

If you have edited the java.properties file to change the default behavior of whether the status of existing node components (now called sensors) propagates to the node, you will need to update the java.properties file as described in the following table.

Table 1 Update java.properties

9.1x and 9.2x Property Name	10.00 Property Name
com.hp.ov.nms.apa.NodeComponentNoPropagate ToNodeStatus_FAN	com.hp.ov.nms.apa.PhysSensorNoPropagate ToPhysicalComponentStatus_FAN
NodeComponentNoPropagateToNodeStatus_POWER_ SUPPLY	com.hp.ov.nms.apa.PhysSensorNoPropagate ToPhysicalComponentStatus_POWER_SUPPLY
com.hp.ov.nms.apa.NodeComponentNoPropagate ToNodeStatus_BACKPLANE	com.hp.ov.nms.apa.PhysSensorNoPropagate ToPhysicalComponentStatus_BACKPLANE
com.hp.ov.nms.apa.NodeComponentNoPropagate ToNodeStatus_MEMORY	com.hp.ov.nms.apa.NodeSensorNoPropagate ToNodeStatus_MEMORY
com.hp.ov.nms.apa.NodeComponentPropagate ToNodeStatus_VOLTAGE	com.hp.ov.nms.apa.PhysSensorPropagate ToPhysicalComponentStatus_VOLTAGE
com.hp.ov.nms.apa.NodeComponentPropagate ToNodeStatus_CPU	com.hp.ov.nms.apa.NodeSensorPropagate ToNodeStatus_CPU
com.hp.ov.nms.apa.NodeComponentPropagate ToNodeStatus_TEMPERATURE	com.hp.ov.nms.apa.PhysSensorPropagate ToPhysicalComponentStatus_TEMPERATURE
com.hp.ov.nms.apa.NodeComponentPropagate ToNodeStatus_BUFFERS	com.hp.ov.nms.apa.NodeSensorPropagate ToNodeStatus_BUFFERS
com.hp.ov.nms.apa.NodeComponentPropagate ToNodeStatus_DISK	com.hp.ov.nms.apa.NodeSensorPropagate ToNodeStatus_DISK

There are several upgrade scenarios you could encounter. This section contains the following chapters:

- Upgrading the NNMi Management Server in Place on page 127, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00 on the same hardware and operating system.
- Upgrading to a Different NNMi Management Server on page 129, which describes the following upgrade scenario:
  - Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00 on the same version operating system.
- Changing NNMi from HP-UX or Solaris to Linux on page 131. NNMi 10.00 does not support the HP-UX or Solaris operating systems. You must change the operating system to RHEL 6.4 or later before upgrading to NNMi 10.00.
- Moving NNMi to RHEL 6.4 or Later on page 135. Explains how to move from a version of RHEL that is no longer supported to RHEL 6.4 or later.
- Migrating NNMi Oracle Data on page 139. Explains the steps to take to move the Oracle data used by your NNMi management server from one Oracle database instance to another.
- Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x on page 151. Explains the requirements for upgrading in Global Network Management environments.

- High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00 on page 153. Explains the requirements for upgrading in High Availability environments.
- Application Failover and Upgrading to NNMi 10.00 on page 141. Explains the requirements for upgrading in Application Failover environments.
- Additional Upgrade Information on page 163. Explains some areas that NNMi 10.00 differs from earlier versions of NNMi.

Upgrading the NNMi Management Server in Place

This chapter describes the process for upgrading an existing NNMi 9.1x or NNMi 9.2x to NNMi 10.00.

This chapter contains the following topic:

- Upgrade an Existing NNMi Management Server to NNMi 10.00

If your NNMi management server is running Solaris or UNIX operating system, see Changing NNMi from HP-UX or Solaris to Linux.

If your NNMi management server is running an RHEL version earlier than 6.4, see Changing NNMi to RHEL Version 6.4 or Later.

If you plan to move the Oracle data in NNMi to Oracle 11G, see Migrating NNMi Oracle Data

If your NNMi management server is running in an NNMi application failover configuration, see Application Failover and Upgrading from NNMi 9.1x or NNMi 9.2x.

If your NNMi management server is running in a High Availability environment, see. High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00.

If your NNMi management server is running in a Global Network Management environment, see Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x.

Upgrade an Existing NNMi Management Server to NNMi 10.00

Read the NNMi 10.00 *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 163 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

Read the *HP Network Node Manager i Software System and Device Support Matrix* for the NNMi software you are upgrading to before continuing. You can obtain a copy of this document at http://h20230.www2.hp.com/selfsolve/manuals. You must have an HP Passport User ID to access this web site.

The following steps explain how to upgrade an NNMi management server to NNMi 10.00. The following steps assume you have NNMi 9.1x patch 6 or NNMi 9.2x patch 4, or later, running on the NNMi management server.

1. Back up the NNMi management server using the `nnmbackup.ovpl` script. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage.
2. *Oracle Database Only*: If the NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration
3. *Oracle Database Only*: Use the `nnmconfigexport.ovpl` script to back up configuration information from the NNMi management server. Do this as a precaution, as you would only use this backup in the unlikely event of a failed migration. For more information, see the *nmconfigexport.ovpl* or *nnmconfigimport.ovpl* reference pages, or the UNIX manpages.

Never edit a file exported with the `nnmconfigexport.ovpl` script before using the `nnmconfigimport.ovpl` script to import the file.

4. Install NNMi 10.00 on the NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.

5. Verify that the information from the NNMi management server migrated successfully.

After upgrading NNMi with the embedded database, and ensuring that the upgrade was successful, check for the existence of the following directory on the NNMi management server:

- *Windows*: `%NnmDataDir%\shared\nnm\databases\Postgres.9.0`
- *Linux*: `$NnmDataDir/shared/nnm/databases/Postgres.9.0`

If the `Postgres.9.0` directory exists on the NNMi management server, you can delete it to free up disk space. Note that this directory might be present even if you are upgrading from a version of NNMi that is newer than NNMi 9.0.

Upgrading to a Different NNMi Management Server

This chapter describes the process for upgrading to NNMi 10.00 on a new system while maintaining the configuration of the existing NNMi management server.

This chapter contains the following topic:

- Upgrade to a Different NNMi Management Server

If your NNMi management server is running the Solaris or UNIX operating system, see Changing NNMi from HP-UX or Solaris to Linux.

If your NNMi management server is running an RHEL version earlier than 6.4, see Changing NNMi to RHEL Version 6.4 or Later.

If you plan to move the Oracle data in NNMi to Oracle 11G, see Migrating NNMi Oracle Data

If your NNMi management server is running in an NNMi application failover configuration, see Application Failover and Upgrading from NNMi 9.1x or NNMi 9.2x.

If your NNMi management server is running in a High Availability environment, see. High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00.

If your NNMi management server is running in a Global Network Management environment, see Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x.

Upgrade to a Different NNMi Management Server

Read the NNMi 10.00 *Preinstallation Checklist* chapter in the *HP Network Node Manager i Software Interactive Installation Guide* and Additional Upgrade Information on page 163 before continuing. There are notable changes to the *HP Network Node Manager i Software Interactive Installation Guide*. For example, if you use an Oracle database instance instead of the embedded database, you should set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.

The following steps explain how to copy data from an existing NNMi management server to a target NNMi management server. The following steps assume you have NNMi 9.10 patch 6 or NNMi 9.20 patch 4, or later, running on the existing NNMi management server.

If you want to change the Oracle database server, complete that process before or after the upgrade to NNMi 10.00. For information, see Migrating NNMi Oracle Data on page 139.

1. As a precaution, back up the existing (source) NNMi 9.1x or NNMi 9.2x management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 9.1x or NNMi 9.2x. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 9.1x or NNMi 9.2x.
2. If the existing (source) NNMi management server uses an Oracle database, have your Oracle database administrator back up the NNMi 9.1x or NNMi 9.2x data. As mentioned earlier, have your Oracle database administrator set the FLASHBACK ANY TABLE permission, as this enables NNMi to create restore points during migration.
3. Install NNMi 10.00 and the latest consolidated patch (if any) on the source NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*.

   Oracle Database Only: If your Oracle database administrator does not set the FLASHBACK ANY TABLE permission, you will see a warning about that missing permission after the install completes. You can ignore this warning.
4. Verify that NNMi 10.00 is working correctly on the source NNMi management server.
5. Back up NNMi 10.00 on the source NNMi management server using the `nnmbackup.ovpl` script. Label this backup for NNMi 10.00. You will need it to copy data to the target NNMi management server. For more information, see the *nnmbackup.ovpl* reference page, or the UNIX manpage for NNMi 10.00.
6. Install NNMi 10.00 and the latest consolidated patch (if any) on the target NNMi management server using instructions from the *HP Network Node Manager i Software Interactive Installation Guide*. To migrate the data from step 5, the target NNMi management server must be running the same operating system version. NNMi does not support data migration to an NNMi management server running on a different operating system.
7. Use the `nnmrestore.ovpl` script to copy NNMi database information to the target server. For more information, see the *nnmrestore.ovpl* reference page, or the UNIX manpage.
8. Obtain and install a new license on the target NNMi management server.

   For information, see “Licensing NNMi” in the *NNMi Deployment Reference*.
9. Verify that the information from the target NNMi management server migrated successfully from the existing NNMi management server.

Moving NNMi from the HP-UX or Solaris Operating System

Use the information in this chapter if you have NNMi 9.10 patch 6 or NNMi 9.20 patch 4 running on an HP-UX or Solaris operating system.

NNMi 10.00 does not support the HP-UX or Solaris operating systems. You must change the operating system to a supported Linux operating system (for example, RHEL 6.4 or SuSE 11sp3) before migrating to NNMi 10.00. See the Read the *HP Network Node Manager i Software System and Device Support Matrix* for information about the supported operating systems. You can obtain a copy of this document at http://h20230.www2.hp.com/selfsolve/manuals. You must have an HP Passport User ID to access this web site.

This chapter contains the following topic:

Changing NNMi from HP-UX or Solaris to Linux

Changing NNMi from HP-UX or Solaris to Linux

To complete the following steps, you must have NNMi 9.10 patch 6 or NNMi 9.20 patch 4 running on an HP-UX or Solaris server.

To check the NNMi version number, note the current patch level in the **Help->About HP Network Node Manager i Software** window. Verify that the version is 9.1x, or 9.2x. If the version is earlier than that, do not proceed. You need to install NNMi 9.1x or NNMi 9.2x (latest patch) before proceeding. See Upgrading from NNMi 9.1x or 9.2x to NNMi 10.00 on page 121 for the latest supported patch numbers.

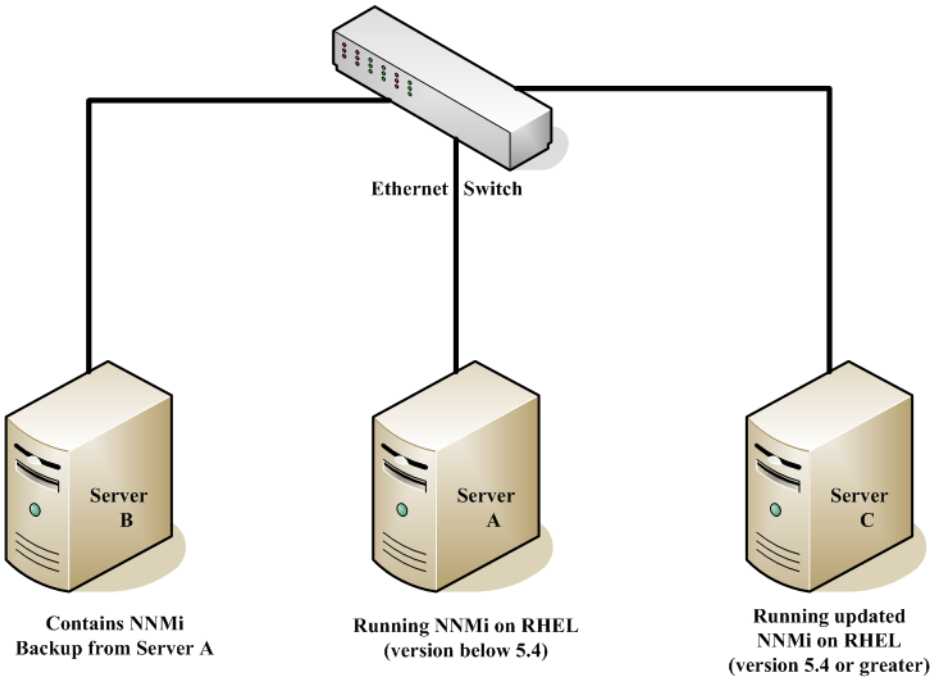
To change an NNMi management server running NNMi 9.1x or NNMi 9.2x (latest patch) from the HP-UX or Solaris operating system, follow these steps:

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running HP-UX or Solaris.
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running RHEL 6.4 or later.

     This NNMi management server CANNOT be the same hardware as the current `Server A`..

See the Network Node Manager i Software (NNMi) Support Matrix located at **http://h20230.www2.hp.com/selfsolve/manuals** for more information about hardware requirements for the RHEL 6.4 or later operating system.

Make sure the `hosts` file on the new NNMi management server contains the following entry: **`127.0.0.1 localhost`**



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target`** ***`temporary_location`*** command to complete a full NNMi backup.

You MUST use the online option.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the UNIX manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install RHEL 6.4 or greater.

5 On `Server C`, install the same NNMi version as what was running on `Server A`. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

You cannot back up with one version of NNMi and restore to a different version of NNMi. Therefore, Server C must be the identical NNMi version, including patch level, as Server A.

If using an Oracle database, select `Secondary Server Installation` during the installation process.

6 During the NNMi installation on `Server C`, the installation script might assign ports that differ from the `Server B` configuration. During the configuration restore on `Server C`, this might create port conflicts. To remedy this, do the following:

a On Server C, navigate to the following directory: $NNM_CONF/nnm/props/

On Server C, copy the nms-local.properties file to nms-local.properties.save in a temporary location.

If you have NNM iSPIs installed, you must also re-install the correct version and patch for each NNM iSPI. For more information, see the 9.x installation documentation for each NNM iSPI.

b On Server B, copy the NNMi backup to Server C.

c On Server C, run the **nnmrestore.ovpl -force -source *temporary_location*** command to complete a full NNMi restore.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the UNIX manpage.

Use the command options that match the backup you completed in step 2.

d On Server C, compare the nms-local.properties.save file from the temporary location to the nms-local.properties file located in the following directory: $NNM_CONF/nnm/props/

Resolve any port conflicts, making changes to the nms-local.properties located in the above directory. Make sure to keep the jboss.http.port (NNMi web server port) and jboss.https.port (NNMi HTTPS web server port) values that were chosen during the NNMi installation on Server C.

e Restart the NNMi management server:

Run the **ovstop** command on the NNMi management server.

Run the **ovstart** command on the NNMi management server.

7 NNMi associates its license keys with a server's IP address. If the IP address for Server C is different from the IP address of Server A, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

8 On Server C, install NNMi 10.00.

To install NNMi 10.00, see the *NNMi 10.00 Interactive Installation Guide* available at **http://h20230.www2.hp.com/selfsolve/manuals**.

Before you install NNMi 10.00, you need to obtain 10.00 license keys. See "Licensing NNMi" in the *NNMi 10.00 Interactive Installation Guide* for more information.

If you have NNM iSPIs installed, see the 10.00 installation documentation for each NNM iSPI.

Moving NNMi to RHEL 6.4 or Later

NNMi 10.00 does not support Red Hat Enterprise Linux (RHEL) versions earlier than version 6.4. You must change the operating system to RHEL version 6.4 or later before migrating to NNMi 10.00.

If you have a version of RHEL that is 6.x, but earlier than 6.4, use the `yum update` command to update RHEL to version 6.4.

Use the information in this chapter if you have NNMi 9.1x patch 6 or NNMi 9.2x patch 4 running on a RHEL server (5.x), and need to change the operating system to RHEL version 6.4 or later.

If you are planning to install any of the NNM iSPIs, see the upgrade documentation for each NNM iSPI before proceeding with the NNMi upgrade.

This chapter contains the following topic:

Changing NNMi to RHEL Version 6.4 or Later

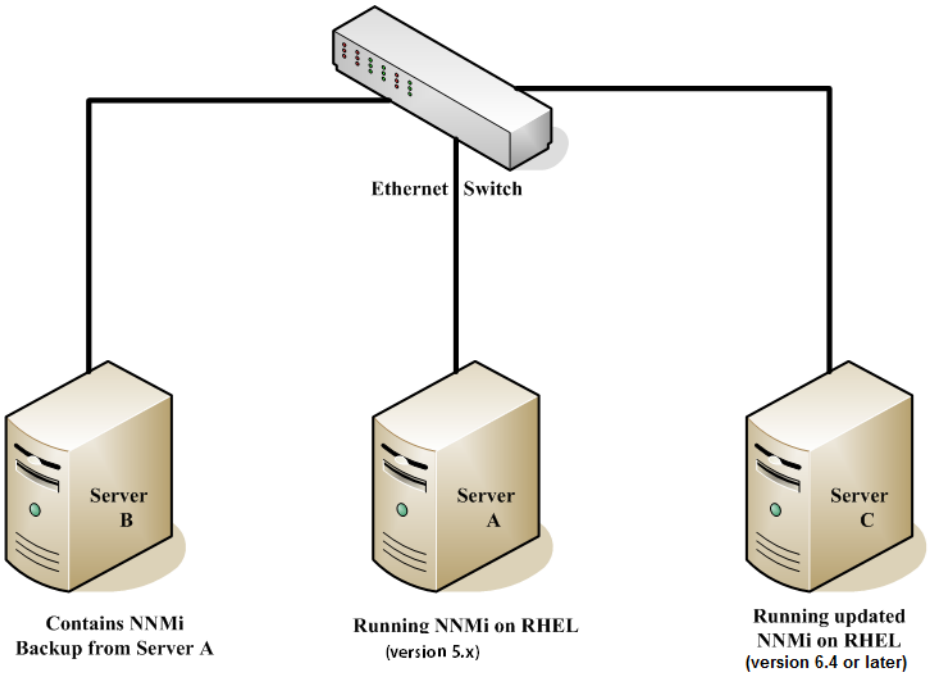
Changing NNMi to RHEL Version 6.4 or Later

To change an NNMi management server running NNMi 9.1x patch 6 or NNMi 9.2x patch 4 from RHEL (5.x) to RHEL version 6.4 or later, follow these steps:

To check the NNMi version number, note the current patch level in the **Help->About HP Network Node Manager i Software** window.

1. Identify three servers that you will use during this procedure:
   - `Server A` is the current NNMi management server running RHEL (version 5.x).
   - `Server B` will hold the NNMi backup files.
   - `Server C` will become the new NNMi management server running RHEL 6.4 or later. This NNMi management server can be the same hardware as the current `Server A`.

Make sure the `hosts` file on the new NNMi management server contains the following entry: **`127.0.0.1 localhost`**



2 On `Server A`, run the **`nnmbackup.ovpl -type online -scope all -target`** ***`temporary_location`*** command to complete a full NNMi backup.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmbackup.ovpl* reference page, or the Linux manpage.

3 On `Server A`, copy the backup you completed in step 2 to `Server B`.

4 On `Server C`, install RHEL 6.4 or later.

As an alternative to using `Server C`, reformat the disk on `Server A` and install RHEL 6.4 or later. If you do that, substitute `Server A` for `Server C` for the remaining steps.

5 On `Server C`, install the same NNMi version as what was running on `Server A`. You must install the same patch level that NNMi `Server A` was at during the backup you completed in step 2.

You cannot back up with one version of NNMi and restore to a different version of NNMi. Therefore, Server C must be the identical NNMi version, including patch level, as Server A.

If using an Oracle database, select `Secondary Server Installation` during the installation process.

6 During the NNMi installation on `Server C`, the installation script might assign ports that differ from the `Server B` configuration. During the configuration restore on `Server C`, this might create port conflicts. To remedy this, do the following:

a On `Server C`, navigate to the following directory: `$NNM_CONF/nnm/props/`

b On Server C, copy the nms-local.properties file to nms-local.properties.save in a temporary location.

If you have NNM iSPIs installed, you must also re-install the correct version and patch for each NNM iSPI. For more information, see the 9.x installation documentation for each NNM iSPI.

7 On Server B, copy the NNMi backup to Server C.

c On Server C, run the **nnmrestore.ovpl -force -source *temporary_location*** command to complete a full NNMi restore.

For more information about which command options to use, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference* and the *nnmrestore.ovpl* reference page, or the Linux manpage.

Use the command options that match the backup you completed in step 2.

d On Server C, compare the nms-local.properties.save file from the temporary location to the nms-local.properties file located in the following directory: $NNM_CONF/nnm/props/

Resolve any port conflicts, making changes to the nms-local.properties located in the above directory. Make sure to keep the jboss.http.port (NNMi web server port) and jboss.https.port (NNMi HTTPS web server port) values that were chosen during the NNMi installation on Server C.

e Restart the NNMi management server:

Run the **ovstop** command on the NNMi management server.

Run the **ovstart** command on the NNMi management server.

8 NNMi associates its license keys with a server's IP address. If the IP address for Server C is different from the IP address of Server A, obtain and install new NNMi license keys. See "Changing the IP Address of a Standalone NNMi Management Server" in the *NNMi Deployment Reference*.

9 On Server C, install NNMi 10.00.

To install NNMi 10.00, see the *NNMi 10.00 Interactive Installation Guide* available at **http://h20230.www2.hp.com/selfsolve/manuals**.

Before you install NNMi 10.00, you need to obtain NNMi 10.00 license keys. See "Licensing NNMi" in the *NNMi 10.00 Interactive Installation Guide* for more information.

If you have NNM iSPIs installed, see the 10.00 installation documentation for each NNM iSPI.

Migrating NNMi Oracle Data

If you plan to move the Oracle data in NNMi to Oracle 11G. The information in this chapter explains the steps to take to complete this work.

Migrating NNMi Oracle Data

Suppose you have NNMi running in one of the following configurations:

- NNMi 9.1x with the latest patch connected to an Oracle 10G database and you need to upgrade to NNMi 10.00.
- NNMi 9.1x with the latest patch connected to an Oracle 11G database and you need to upgrade to NNMi 10.00.

The Oracle database instance migration you need to complete could include combinations of the following requirements:

- The existing Oracle instance running on NNMi 9.1x can be running Oracle 10G or 11G.
- The new Oracle instance running on NNMi 10.00 must be running Oracle 11G.
- The new Oracle instance can be located on the original server or on a different server and hostname.

To complete the migration of the NNMi Oracle data, complete the following steps:

1. As root or administrator, run the following command to stop NNMi: **`ovstop -c.`**
2. Use Oracle tools to move or copy the NNMi data from the existing Oracle server to the new server. Refer to Oracle documentation for additional information.

   This Oracle data migration can be an in-place upgrade from Oracle 10 to Oracle 11 on the same server. Oracle provides database migration tools for converting Oracle 10 data into the Oracle 11 format.

3. *Only complete this step if the new Oracle server has a different hostname than the previous Oracle server.* On the NNMi management server, reconfigure NNMi to point to the new Oracle server by completing the following steps:

a. Edit the datasource configuration file shown :

It is important that you complete the following steps accurately, or jboss will not correctly connect to the Oracle 11G database.

- *Windows*: `%NNM_JBOSS%\server\nms\deploy\nms-ds.xml`
- *Linux*: `$NNM_JBOSS/server/nms/deploy/nms-ds.xml`

b. Change the following attribute to reflect your new server

OLD:
<connection-url>jdbc:oracle:thin:@*EXISTING_FQDN*:*EXISTING_ORACLE_PORT*:*EXISTING_SID* </connection-url>

NEW:
<connection-url>jdbc:oracle:thin:@NEW_*FQDN*:*NEW_PORT*:*NEW_SID*</connection-url>

4. Complete one of the following actions:

If you are upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00, perform that migration now, following the installation instructions in the *HP Network Node Manager i Software Installation Guide*.

If you are already using NNMi 10.00, follow these steps to restart NNMi and complete the Oracle database move/migration:

a. Run the following command on the NNMi management server to restart NNMi: **`ovstart -c`**

b. Run the following command on the NNMi management server to check if all of the services are started and operating correctly: **`ovstatus -v`**

After upgrading to NNMi 10.00, if you want to change your Oracle server, do the following:

1. Stop the NNMi management server using the following command: **`ovstop`**
2. Edit the following file:
   - *Windows*: `%nnmdatadir%\shared\nnm\conf\props\nnm-server.properties`
   - *Linux*: `$NnmDataDir/shared/nnm/conf/props/nnm-server.properties`
3. Look for three lines that resemble the following:

   com.hp.ov.nms.oracle.host = <*Oracle server hostname*>

   com.hp.ov.nms.oracle.port = <*Oracle port* >

   com.hp.ov.nms.oracle.sid = <*Oracle SID* >
4. Edit the three values to include the values associated with the new Oracle server.
5. Use the `nnmchangedbpw.ovpl` command to set the Oracle name and password.
6. Start the NNMi management server using the following command: **`ovstart`**

Application Failover and Upgrading to NNMi 10.00

Application Failover and Upgrading from NNMi 9.1x or NNMi 9.2x

If you plan to upgrade an earlier version of NNMi that is running in an NNMi application failover configuration, follow the steps in the appropriate section below based on the database you are using.

Embedded Database

To upgrade NNMi management servers configured for application failover and using the embedded database, follow these steps:

1. As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.

   As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.

2. Complete the following steps on the active NNMi management server. Note that NNMi must be running for the following `nnmcluster` steps to work. Completing these steps will speed up the standby NNMi management server startup shown in step 6 on page 142:

   a. Run the **`nnmcluster`** command.

   b. After NNMi prompts you, type **`dbsync`**, then press `Enter`. Review the displayed information to make sure it includes the following messages:

      `ACTIVE_DB_BACKUP`: This means that the active NNMi management server is performing a new backup.
      `ACTIVE_NNM_RUNNING`: This means that the active NNMi management server completed the backup referred to by the previous message.
      `STANDBY_RECV_DBZIP`: This means that the standby NNMi management

server is receiving a new backup from the active NNMi management server. `STANDBY_READY`: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.

c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

3 Run the **`nnmcluster -shutdown`** command on the standby NNMi management server. This shuts down all `nnmcluster` processes on the standby NNMi management server.

4 To verify there are no nnmcluster nodes running on the standby NNMi management server, *complete the following steps on the standby NNMi management server*.

a Run the **`nnmcluster`** command.

b Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

5 *Complete the following steps on the standby NNMi management server* to temporarily disable application failover:

a Edit the following file:

– *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

– *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

c Save your changes.

6 If you are upgrading from 9.2x to 10.00, create the following file:

Windows: `%nnmDataDir%/tmp/postgresTriggerFile`

Linux: `$nnmDataDir/tmp/postgresTriggerFile`

Note the following:

— The file must not have a **.txt** extension.

— The file is empty and removed by Postgres when it starts.

7 Start, then stop processes on the standby NNMi management server.

a Run the **`ovstart`** command on the standby NNMi management server. Running the **`ovstart`** command causes the standby NNMi management server to import the transaction logs from the active NNMi management server.

b After the **`ovstart`** command completes, run the **`ovstatus -v`** command. All NNMi services should show the state `RUNNING`.

c Run the **`ovstop`** command on the standby NNMi management server.

8 Upgrade the standby NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the standby NNMi management server to iSPI versions that support NNMi 10.00.

You now have the former active NNMi management server running NNMi 9.1x or NNMi 9.2x and the former standby NNMi management server running NNMi 10.00. You have both of these NNMi management servers running independently with no database synchronization. That means you have both NNMi management servers monitoring the network in parallel. Do not leave these NNMi management servers in this configuration for more than a few hours, as this configuration is a violation of the non-production license installed on the former standby node.

To complete the upgrade, and remedy this situation, select a time to upgrade the former active node to NNMi 10.00. Have the operators temporarily use the former standby node to monitor the network while you complete the upgrade.

The remainder of this procedure assumes you plan to retain the database information from the former active node and discard the database information from the former standby node.

9 Run the **`nnmcluster -halt`** command on the former active NNMi management server.

10 To verify there are no nnmcluster nodes running on the former active NNMi management server, *complete the following steps on the former active NNMi management server*.

   a Run the **`nnmcluster`** command.

   b Verify that there are no (LOCAL) nnmcluster nodes present except the one marked `(SELF)`. There might be one or more (REMOTE) nodes present.

   c Run **`exit`** or **`quit`** to stop the interactive `nnmcluster` process you started in step a.

11 *Complete the following steps on the former active NNMi management server* to temporarily disable application failover:

   a Edit the following file:

      — *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

      — *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

   b Comment out the `com.hp.ov.nms.cluster.name` parameter.

Upgrade the former active NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the former active NNMi management server to iSPI versions that support NNMi 10.00.

Now you have two servers running NNMi 10.00, but they are still independent since the databases are not synchronized.

12 Complete the following steps on the former active NNMi management server:

   a Run the **`ovstop`** command.

   b Edit the following file:

      — *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

      — *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

The NNMi upgrade procedure does not preserve commented-out properties. Therefore, you must retype the cluster name.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

13 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former active NNMi management server. It is now the active node.

14 Instruct the operators to begin using the active node to monitor the network.

The former standby NNMi management server discards all of the database activity occurring during the maintenance window, from step 9 on page 143 through step 13 on page 144.

15 Complete the following steps on the former standby NNMi management server:

a Run the **`ovstop`** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

16 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former standby NNMi management server.

This NNMi management server becomes the standby node, and receives a copy of the database from the active node.

17 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the upgrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Oracle Database

You must upgrade NNMi management servers separately because two NNMi management servers cannot be simultaneously connected to the same Oracle database.

To upgrade NNMi management servers configured for application failover and using an Oracle database, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see ”Best Practice: Save the Existing Configuration” in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see ”Backup Scope” in the *NNMi Deployment Reference*.

3 Run the **nnmcluster -halt** command on the standby NNMi management server. This shuts down all `nnmcluster` processes on both the active and standby NNMi management server.

4 To verify there are no nnmcluster nodes running on either the active or standby NNMi management server, *complete the following steps on the standby NNMi management server*.

a Run the **nnmcluster** command.

b Verify that the only nnmcluster node present is one marked (SELF).

c Run **exit** or **quit** to stop the interactive `nnmcluster` process you started in step a.

5 *Complete the following steps on the standby NNMi management server* to temporarily disable application failover:

a Edit the following file:

- *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`
- *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

c Save your changes.

6 Upgrade the standby NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the standby NNMi management server to iSPI versions that support NNMi 10.00.

You now have the former standby NNMi management server with NNMi 10.00 installed, and the former active NNMi management server with NNMi 9.1x or NNMi 9.2x installed.

7 Run the **ovstop** command on the former standby NNMi management server to disconnect the NNMi management server from the Oracle database.

8 *Complete the following steps on the former active NNMi management server* to temporarily disable application failover:

a Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

b Comment out the `com.hp.ov.nms.cluster.name` parameter.

9 Upgrade the former active NNMi management server to NNMi 10.00 using the instructions located in the *HP Network Node Manager i Software Interactive Installation Guide*.

You must upgrade all of the iSPIs that you have installed on the former active NNMi management server to iSPI versions that support NNMi 10.00.

Now you have two servers with NNMi 10.00 installed.

10 Complete the following steps on the former active NNMi management server:

a Run the **ovstop** command.

b Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

c Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

The NNMi upgrade procedure does not preserve commented-out properties. Therefore, you must retype the cluster name.

d Uncomment the `com.hp.ov.nms.cluster.name` parameter.

e Save your changes.

11 Run the **`ovstart`** or **`nnmcluster -daemon`** command on the former active NNMi management server. It is now the active node.

12 Complete the following steps on the former standby NNMi management server:

f Edit the following file:

— *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

— *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

g Type in the value of the `com.hp.ov.nms.cluster.name` parameter.

h Uncomment the `com.hp.ov.nms.cluster.name` parameter.

i Save your changes.

13 Run either the **`ovstart`** or **`nnmcluster -daemon`** command on the former standby NNMi management server.

This NNMi management server becomes the standby node.

14 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the upgrade process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Application Failover and NNMi Patches

Both NNMi management servers must be running the same NNMi version and patch level. To add patches to the active and standby NNMi management servers, use one of the following procedures:

- Applying Patches for Application Failover (Shut Down Both Active and Standby)
  Use this procedure when you are not concerned with an interruption in network monitoring.
- Applying Patches for Application Failover (Keep One Active NNMi Management Server)
  Use this procedure when must avoid any interruptions in network monitoring.

Applying Patches for Application Failover (Shut Down Both Active and Standby)

This procedure results in both NNMi management servers being non-active for some period of time during the patch process. To apply patches to the NNMi management servers configured for application failover, follow these steps:

1. As a precaution, run the **nnmconfigexport.ovpl** script on both the active and standby NNMi management servers before proceeding. For information, see "Best Practice: Save the Existing Configuration" in the *NNMi Deployment Reference*.
2. As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see "Backup Scope" in the *NNMi Deployment Reference*.
3. As a precaution, on the active NNMi management server, do the following steps:
   a. Run the **nnmcluster** command.
   b. Embedded database only: After NNMi prompts you, type **dbsync**, then press Enter. Review the displayed information to make sure it includes the following messages:

      ACTIVE_DB_BACKUP: This means that the active NNMi management server is performing a new backup.
      ACTIVE_NNM_RUNNING: This means that the active NNMi management server completed the backup referred to by the previous message.
      STANDBY_READY: This shows the previous status of the standby NNMi management server.
      STANDBY_RECV_DBZIP: This means that the standby NNMi management server is receiving a new backup from the active NNMi management server.
      STANDBY_READY: This means that the standby NNMi management server is ready to perform if the active NNMi management server fails.
4. Run the **nnmcluster -halt** command on the active NNMi management server. This shuts down all nnmcluster processes on both the active and standby NNMi management servers.
5. To verify there are no nnmcluster nodes running on either server, *complete the following steps on both the active and standby NNMi management servers*.
   a. Run the **nnmcluster** command.
   b. Verify that there are no nnmcluster nodes present except the one marked (SELF).
   c. Run **exit** or **quit** to stop the interactive nnmcluster process you started in step a.
6. On the active NNMi management server, comment out the com.hp.ov.nms.cluster.name parameter in the nms-cluster.properties file.
   a. Edit the following file:
      — *Windows*: %NNM_SHARED_CONF%\props\nms-cluster.properties
      — *Linux*: $NNM_SHARED_CONF/props/nms-cluster.properties
   b. Comment out the com.hp.ov.nms.cluster.name parameter.
   c. Save your changes.
7. Apply the NNMi patch to the active NNMi management server using the instructions provided with the patch.

8 On the active NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file.

   a Edit the following file:

      — *Windows*: `%NNM_SHARED_CONF%\props\nms-cluster.properties`

      — *Linux*: `$NNM_SHARED_CONF/props/nms-cluster.properties`

   b Uncommont the `com.hp.ov.nms.cluster.name` parameter.

   c Save your changes.

9 Run the **`ovstart`** command on the active NNMi management server.

10 Verify that the patch installed correctly on the active NNMi management server by viewing information on the **Product** tab of the **Help > System Information** window in the NNMi console.

11 Run the **`nnmcluster -dbsync`** command to create a new backup.

12 On the standby NNMi management server, comment out the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 147 through step c on page 147.

13 Apply the NNMi patch to the standby NNMi management server.

14 On the standby NNMi management server, uncomment the `com.hp.ov.nms.cluster.name` parameter in the `nms-cluster.properties` file as shown in step a on page 148 through step c on page 148.

15 Run the **`ovstart`** command on the standby NNMi management server.

16 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Applying Patches for Application Failover (Keep One Active NNMi Management Server)

This procedure results in one NNMi management server always being active during the patch process.

This process results in continuous monitoring of the network, however NNMi loses the transaction logs occurring during this patch process.

To apply NNMi patches to the NNMi management servers configured for application failover, follow these steps:

1 As a precaution, run the **`nnmconfigexport.ovpl`** script on both the active and standby NNMi management servers before proceeding. For information, see ”Best Practice: Save the Existing Configuration” in the *NNMi Deployment Reference*.

2 As a precaution, back up your NNMi data on both the active and standby NNMi management servers before proceeding. For information, see ”Backup Scope” in the *NNMi Deployment Reference*.

3 Run **`nnmcluster`** on one of the nodes.

4 Enter **dbsync** on the NNMi management server used in the previous step to synchronize the two databases.

The **dbsync** option works on an NNMi management server using the embedded database. Do not use the **dbsync** option on an NNMi management server configured to use an Oracle database.

5 Wait until the active NNMi management server reverts to `ACTIVE_NNM_RUNNING` and the standby NNMi management server reverts to `STANDBY_READY`. before continuing.

6 Exit or quit from the **nnmcluster** command.

7 Stop the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
nnmcluster -shutdown

8 Make sure the following processes and services terminate before continuing:

— `postgres`

— `ovjboss`

9 Make sure the `nnmcluster` process terminates before continuing. If the `nnmcluster` process will not terminate, manually kill the `nnmcluster` process only as a last resort.

10 Edit the following file on the standby NNMi management server:

Windows: `%nnmDataDir%\shared\nnm\conf\props\nms-cluster.properties`

Linux: `$nnmDataDir/shared/nnm/conf/props/nms-cluster.properties`

11 Comment out the cluster name by placing a **#** at the front of the line, then save your changes:
#com.hp.ov.nms.cluster.name = NNMicluster

12 Install the NNMi patch on the standby NNMi management server.

13 At this point, the standby NNMi management server is patched but stopped, and the active NNMi management server is unpatched but running. Stop the active NNMi management server and immediately bring the standby NNMi management server online to monitor your network.

14 Shut down the cluster on the active NNMi management server by running the following command on the activeNNMi management server:
nnmcluster -halt

15 Make sure the `nnmcluster` process terminates. If it does not terminate within a few minutes, manually kill the `nnmcluster` process.

16 On the standby NNMi management server, uncomment the cluster name from the `nms-cluster.properties` file.

17 If you are upgrading from 9.2x to 10.00, create the following file:

Windows: `%nnmDataDir%/tmp/postgresTriggerFile`

Linux: `$nnmDataDir/tmp/postgresTriggerFile`

Note the following:

— The file must not have a **.txt** extension.

— The file is empty and removed by Postgres when it starts.

18 Start the cluster on the standby NNMi management server by running the following command on the standby NNMi management server:
`nnmcluster -daemon`

19 Install the NNMi patch on the active NNMi management server.

20 At this point, the previous active NNMi management server is patched but offline. Bring it back into the cluster (as the standby NNMi management server) by performing the following:

   a Uncomment the entry in the `nms-cluster.properties` file on the active NNMi management server.

   b Start the active NNMi management server using the following command:
   `nnmcluster -daemon`

21 To monitor the progress, run the following command on both the active and standby NNMi management servers:
`nnmcluster`

   Wait until the previous active NNMi management server finishes retrieving the database from the previous standby NNMi management server.

22 After the previous active NNMi management server displays `STANDBY_READY`, run the following command on the previous active NNMi management server:
`nnmcluster -acquire`

23 If you installed the NNM iSPI Performance for QA, the NNM iSPI Performance for Metrics, or the NNM iSPI Performance for Traffic; are using the application failover feature; and completed the patch process shown above, run the NNM iSPI enablement script for each NNM iSPI on both the active and standby NNMi management servers.

Upgrading Global and Regional Managers from NNMi 9.1x or NNMi 9.2x

NNMi Versions Supported by Global Network Management

To achieve the best results, the global manager must be the same NNMi version and patch level as the regional manager.

HP does not support a regional manager running NNMi 9.1x or NNMi 9.2x connected to a global manager running NNMi 10.00. The global manager and regional managers must be running the same NNMi version.

Global Network Management Upgrade Steps

The procedure for upgrading to NNMi 10.00 in a global network management environment depends on whether you are upgrading from NNMi 9.1x or NNMi 9.2x. See the following procedures, based on your particular upgrade scenario:

Upgrading from NNMi 9.1x to NNMi 10.00

1. Upgrade the regional managers to NNMi 10.00 and ensure proper operation. The global manager stays disconnected during the regional upgrades.
2. Upgrade the global manager to NNMi 10.00.
3. After the global manager and regional managers are upgraded, the global manager performs a full resynchronization to obtain all events that occurred while the connection between the global manager and the regional managers was down. The effect is the same as if the administrator were to issue **`nnmnoderediscover.ovpl -all -fullsync`** from the global manager. See the *nnmnoderediscover.ovpl* reference page or the UNIX manpage for more information.

Note the following:

- NNMi automatically resynchronizes topology, state, and status following an upgrade.
- Avoid stopping NNMi during the resynchronization. To help ensure resynchronization has completed, NNMi should remain running for several hours following the upgrade. The actual time required depends on the number of nodes and the volume of state changes and trap data received while performing the resynchronization.

  If NNMi must be stopped before the resynchronization is finished, the resynchronization should be run again and allowed to complete.

  To perform a manual resynchronization of the entire management server, run:
  `nnmnoderediscover.ovpl -all -fullsync`

Upgrading from NNMi 9.2x to NNMi 10.00

1. Upgrade the global manager to NNMi 10.00.
2. Upgrade the regional managers to NNMi 10.00 and ensure proper operation. The global manager stays connected during the regional upgrades; however, for some objects (for example, cards and node components), the global manager will not receive any changes from the regional manager until the regional manager is upgraded.

If you are upgrading from NNMi 9.1x or NNMi 9.2x, any existing configurations for layer 2 connectivity of unnumbered interfaces will be migrated automatically.

High Availability and Upgrading from NNMi 9.1x or NNMi 9.2x to NNMi 10.00

Follow the appropriate procedure for your environment:

- Upgrade NNMi with the Embedded Database on all Supported Operating Systems on page 153
- Upgrade NNMi with Oracle on all Supported Operating Systems on page 156

Upgrade NNMi with the Embedded Database on all Supported Operating Systems

Upgrading NNMi includes upgrading the Postgres database software to a newer version. For this reason, NNMi must be taken out of operation for the duration of the upgrade process.

NNMi will be unavailable for approximately 30 to 60 minutes during this upgrade procedure.

To upgrade from NNMi 9.1x or NNMi 9.2x under HA to NNMi 10.00 under HA, upgrade the active node to update the embedded database, and then upgrade the passive node while NNMi is still in maintenance mode. Follow these steps:

1. Ensure that the NNMi 9.1x or NNMi 9.2x configuration is consistent across all HA nodes by forcing a failover, in turn, to each of the passive nodes.
2. For NNMi 9.1x, ensure that all nodes are running NNMi 9.10 patch 6 or a higher version. For NNMi 9.20, use patch 4 or higher.

   If necessary, upgrade each system to the appropriate consolidated patch.
3. Check the `ov.conf` files on both systems to ensure that they have the correct values. The `ov.conf` file is available in the following location:

   - *Windows*: `%NnmDataDir%\shared\nnm\conf`
   - *Linux*: `$NnmDataDir/shared/nnm/conf`
4. Determine which node in the NNMi 9.1x or NNMi 9.2x HA cluster is active:

   - *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *Linux*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

The remainder of this procedure refers to the currently active node as server X and the currently passive node as server Y.

5 For Windows systems, perform the following:

a On server X, stop the *<resource group>*-app resource.

b Check the Access Control Lists (ACLs) on the file %NnmDataDir%\hacluster*<resource group>*\hamscs.vbs (be sure to remember these).

c Save the hamscs.vbs file.

d Copy the %NnmInstallDir%\misc\nnm\ha\nnmhamscs.vbs script to a temporary directory where you can edit the file.

e Open the copy of the nnmhamscs.vbs file and change all references for product_name to be **NNM**. You can reference the original script for the value. Save the nnmhamscs.vbs file.

f As Administrator, copy the updated nnmhamscs.vbs script to %NnmDataDir%\hacluster*<resource group>*\hamscs.vbs.

g Check the ACLs again to ensure that they are the same as before.

h Start the *<resource group>*-app resource.

i Verify that the resource comes online. If not, check the cluster logs to see if there are any syntax errors. (You can use the following command to generate a cluster log: cluster log /gen. If you must specify a folder, you can do so using the following syntax: cluster log /gen /copy:*<my folder>*.)

6 On server X, disable HA resource group monitoring by creating the following maintenance file:

- *Windows*:

```
%NnmDataDir%\hacluster\<resource_group>\maintenance
```

Ensure that the maintenance file does not have a .txt extension, which can occur if the file has been edited with a text editor, such as Notepad.

- *Linux*:

```
$NnmDataDir/hacluster/<resource_group>/maintenance
```

The file can be empty.

7 On server X, to stop NNMi processes, enter the following command:

```
ovstop
```

8 On server X, upgrade NNMi:

a Run the NNMi installer as described in the *HP Network Node Manager i Software Interactive Installation Guide*.

The database upgrade occurs during this step.

b To verify that the upgrade completed correctly, enter the following command:

```
ovstatus
```

All NNMi services should show the state RUNNING.

c Upgrade all add-on NNM iSPIs to version 10.00.

For information, see the documentation for each NNM iSPI.

If your environment includes standalone NNM iSPIs, you must also upgrade those products to version 10.00 for correct functionality. You can complete those upgrades after completing this procedure.

9 For Windows systems, do the following:

a Copy the updated `nnmhamscs.vbs` script (see step f within step 5) from Server X to `%NnmDataDir%\hacluster\<resource group>\hamscs.vbs` on Server Y.

b Check the ACLs to ensure that they are the same as before.

10 On server X, run the following command: **`nnmhadisk.ovpl NNM -replicate <HA_mount_point>`**.

11 On server Y, disable HA resource group monitoring by creating the following maintenance file:

- *Windows*:

  `%NnmDataDir%\hacluster\<resource_group>\maintenance`

Ensure that the `maintenance` file does not have a `.txt` extension, which can occur if the file has been edited with a text editor, such as Notepad.

- *Linux*:

  `$NnmDataDir/hacluster/<resource_group>/maintenance`

The file can be empty.

12 On server Y, upgrade NNMi:

a Run the NNMi installer as described in the *HP Network Node Manager i Software Interactive Installation Guide*.

b To verify that the upgrade completed correctly, enter the following command:

```
ovstatus
```

All NNMi services should show the state RUNNING.

c Upgrade all add-on NNM iSPIs to version 10.00.

For information, see the documentation for each NNM iSPI.

13 If the HA cluster includes multiple passive nodes, repeat step 12 for each passive node.

14 On server X, delete the maintenance file:

- *Windows*:

  `%NnmDataDir%\hacluster\<resource_group>\maintenance`

- *Linux*:

  `$NnmDataDir/hacluster/<resource_group>/maintenance`

15 Perform the following post-installation steps:

a Verify that the following variables are set:

NNM_INTERFACE

HA_MOUNT_POINT

NNM_ADD_ON_PRODUCTS

HA_LOCALE (not required if running in C)

These variables are defined in the following locations:

Veritas:

```
/opt/VRTSvcs/bin/hagrp -display | grep UserStrGlobal
```

Windows: Using `regedit`, the values are in the following location:

`HKEY_LOCAL_MACHINE\Cluster\Groups\<group>\Parameters`

b If the variables are not set, you can run the following commands for each missing value:

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set NNM_INTERFACE <value for NNM_INTERFACE>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set HA_MOUNT_POINT <value for HA_MOUNT_POINT>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set NNM_ADD_ON_PRODUCTS <value for NNM_ADD_ON_PRODUCTS>`

`/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM -set HA_LOCALE <value for HA_LOCALE>`

HA_LOCALE is only needed if you are attempting to use a localized language.

16 For all Linux HA upgrades, run the following sets of commands, as applicable for your system:

— *RHEL*:

`rm /etc/rc.d/rc*.d/S98netmgt`

`rm /etc/rc.d/rc*.d/K01netmgt`

— *SuSE*:

`rm /etc/init.d/rc*.d/S98netmgt`

`rm /etc/init.d/rc*.d/K01netmgt`

When using Windows Server 2008 R2, the Network Name resource may have the name "Network Name". This name should be the short name for the virtual IP address. If applicable, change the name as follows:

1 Using Failover Cluster Management, select the Network Name resource.

2 Right-click and select **Properties**.

3 Change the name.

Upgrade NNMi with Oracle on all Supported Operating Systems

To upgrade NNMi for HA in an Oracle environment, follow the procedure described in Upgrade NNMi with the Embedded Database on all Supported Operating Systems on page 153.

Unconfiguring NNMi from an HA Cluster

The process of removing an NNMi node from an HA cluster involves undoing the HA configuration for that instance of NNMi. You can then run that instance of NNMi as a standalone management server, or you can uninstall NNMi from that node.

If you want to keep NNMi configured for high availability, the HA cluster must contain one node that is actively running NNMi and at least one passive NNMi node. If you want to completely remove NNMi from the HA cluster, unconfigure the HA functionality on all nodes in the cluster.

To completely unconfigure NNMi from an HA cluster, follow these steps:

1. Determine which node in the HA cluster is active. On any node, run the following command:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
     -group <resource_group> -activeNode
     ```

2. On each passive node, unconfigure any add-on NNM iSPIs from the HA cluster.

   For information, see the documentation for each NNM iSPI.

3. On any node in the HA cluster, verify that the add-on NNM iSPIs on all passive nodes have been unconfigured from the HA cluster:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
     -config NNM -get NNM_ADD_ON_PRODUCTS
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
     -config NNM -get NNM_ADD_ON_PRODUCTS
     ```

   The command output lists the add-on iSPI configurations in the format *<iSPI_PM_Name>*[*hostname_list*]. For example:

   ```
   PerfSPIHA[hostname1, hostname2]
   ```

   At this time, only the active node hostname should appear in the output. If a passive node hostname appears in the output, repeat step 2 until this command output includes only the active node hostname.

4. On each passive node, unconfigure NNMi from the HA cluster:

   - *Windows*:

     ```
     %NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM \
     <resource_group>
     ```

   - *UNIX*:

     ```
     $NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM \
     <resource_group>
     ```

   This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

5 On each passive node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC*: In Windows Explorer, delete the `%NnmDataDir%\hacluster\<resource_group>\` folder.
- *VCS*:

  `rm -rf /var/opt/OV/hacluster/<resource_group>`
- *RHCS*:

  `rm -rf /var/opt/OV/hacluster/<resource_group>`

6 On the active node, unconfigure any add-on NNM iSPIs from the HA cluster.

For information, see the documentation for each NNM iSPI. On any node in the HA cluster, verify that the add-on NNM iSPIs on all nodes have been unconfigured from the HA cluster:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
  -config NNM -get NNM_ADD_ON_PRODUCTS
  ```
- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
  -config NNM -get NNM_ADD_ON_PRODUCTS
  ```

If any hostname appears in the output, repeat step 6 until this command output indicates that no iSPIs are configured.

7 On the active node, stop the NNMi HA resource group:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhastoprg.ovpl NNM \
  <resource_group>
  ```
- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhastoprg.ovpl NNM \
  <resource_group>
  ```

This command does not remove access to the shared disk. Nor does it unconfigure the disk group or the volume group.

8 On the active node, unconfigure NNMi from the HA cluster:

- *Windows*:

  ```
  %NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM \
  <resource_group>
  ```
- *UNIX*:

  ```
  $NnmInstallDir/misc/nnm/ha/nnmhaunconfigure.ovpl NNM \
  <resource_group>
  ```

This command removes access to the shared disk but does not unconfigure the disk group or the volume group.

9 On the active node, move the NNMi HA resource group-specific files to a separate location for safe-keeping:

If you do not plan to reconfigure the NNMi HA resource group, you do not need to save a copy of these files, and you can delete them at this time.

- *MSFC*: In Windows Explorer, delete the `%NnmDataDir%\hacluster\<resource_group>\` folder.
- *VCS*:

  `rm -rf /var/opt/OV/hacluster/<resource_group>`
- *RHCS*:

  `rm -rf /var/opt/OV/hacluster/<resource_group>`

10 Unmount the shared disk.

- If you want to reconfigure the NNMi HA cluster at some point, you can keep the disk in its current state.
- If you want to use the shared disk for another purpose, copy all data that you want to keep (as described in Running NNMi Outside HA with the Existing Database on page 159), and then use the HA product commands to unconfigure the disk group and volume group.

Running NNMi Outside HA with the Existing Database

If you want to run NNMi outside HA on any node with the existing database, follow these steps:

1 On the active node (if one still exists), ensure that NNMi is not running:

`ovstop`

Alternatively, check the status of the `ovspmd` process by using Task Manager (Windows) or the `ps` command (UNIX).

2 On the current node (where you want to run NNMi outside HA), verify that NNMi is not running:

`ovstop`

To prevent data corruption, make sure that no instance of NNMi is running and accessing the shared disk.

3 (UNIX only) Activate the disk group, for example:

`vxdg import <disk_group>`

4 Use the appropriate operating system commands to mount the shared disk. For example:

- *Windows*: Use Server Manager—>Disk Management.
- *UNIX*: `mount /dev/vgnnm/lvnnm /nnmmount`

5 Copy the NNMi files from the shared disk to the local disk:

- *Windows*:

  `%NnmInstallDir%\misc\nnm\ha\nnmhadisk.ovpl NNM \`
  `-from <HA_mount_point>`
- *UNIX*:

```
$NnmInstallDir/misc/nnm/ha/nnmhadisk.ovpl NNM \
-from <HA_mount_point>
```

6 Use the appropriate operating system commands to unmount the shared disk. For example:

- *Windows*: Use Windows Explorer.
- *UNIX*: `umount /nnmmount`

7 (UNIX only) Deactivate the disk group, for example:

```
vxdg deport <disk_group>
```

8 Obtain and install the permanent production license keys for the physical IP address of this NNMi management server as described in the "Licensing NNMi" chapter in the *NNMi Deployment Reference*.

9 Start NNMi:

```
ovstart -c
```

NNMi is now running with a copy of the database that was formerly used by the NNMi HA resource group. Manually remove from the NNMi configuration any nodes that you do not want to manage from this NNMi management server.

Patching NNMi under HA

To apply a patch for NNMi, work in HA maintenance mode. Follow these steps:

1 Determine which node in the HA cluster is active:

- *Windows*:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

- *Linux*:

```
$NnmInstallDir/misc/nnm/ha/nnmhaclusterinfo.ovpl \
-group <resource_group> -activeNode
```

2 On the active node, put the NNMi HA resource group into maintenance mode as described in “Putting an HA Resource Group into Maintenance Mode” in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

3 On all passive nodes, put the NNMi HA resource group into maintenance mode as described in “Putting an HA Resource Group into Maintenance Mode” in the *NNMi Deployment Reference*.

Include the `NORESTART` keyword.

4 On the active node, follow these steps:

a Stop NNMi:

```
ovstop -c
```

b Back up the shared disk by performing a disk copy.

c *Optional*. Use the nnmbackup.ovpl command, or another database command, to back up all NNMi data. For example:

```
nnmbackup.ovpl -type offline -scope all -target nnmi_backups
```

For more information about this command, see "NNMi Backup and Restore Tools" in the *NNMi Deployment Reference*.

d Apply the appropriate NNMi and NNM iSPI patches to the system.

e Start NNMi:

```
ovstart -c
```

f Verify that NNMi started correctly:

```
ovstatus -c
```

All NNMi services should show the state RUNNING.

5 On each passive node, apply the appropriate patches to the system.

Never run the ovstart or ovstop commands on a secondary (backup) cluster node.

6 On all passive nodes, take the NNMi HA resource group out of maintenance mode as described in "Removing an HA Resource Group from Maintenance Mode" in the *NNMi Deployment Reference*.

7 On the active node, take the NNMi HA resource group out of maintenance mode as described in "Removing an HA Resource Group from Maintenance Mode" in the *NNMi Deployment Reference*.

We appreciate your feedback!

If an email client is configured on this system, by default an email window opens when you click *here*.

If no email client is available, copy the information to a new message in a web mail client, and then send this message to **ovdoc-nsm@hp.com**.

Product name and version: NNMi 10.00

Document title: *NNMi Upgrade Reference*

Feedback: