

HP Network Node Manager iSPI for IP Multicast

for the HP-UX, Linux, Solaris, and Windows® operating system

Software Version: 9.20

Deployment Reference

Document Release Date: May 2012

Software Release Date: May 2012



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, 2010-2012 Hewlett-Packard Development Company, L.P.

Trademark Notices

Acrobat® 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.

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

Oracle and Java are registered trademark of Oracle Corporation and/or its affiliates.

UNIX® is a registered trademark of The Open Group.

Acknowledgements

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>). Portions Copyright © 1999-2003 The Apache Software Foundation. All rights reserved.

This product includes ASM Bytecode Manipulation Framework software developed by Institut National de Recherche en Informatique et Automatique (INRIA). Copyright © 2000-2005 INRIA, France Telecom. All Rights Reserved.

This product includes Commons Discovery software developed by the Apache Software Foundation (<http://www.apache.org/>). Copyright © 2002-2008 The Apache Software Foundation. All Rights Reserved.

This product includes Netscape JavaScript Browser Detection Library software, Copyright © Netscape Communications 1999-2001

This product includes Xerces-J xml parser software developed by the Apache Software Foundation (<http://www.apache.org/>). Copyright © 1999-2002 The Apache Software Foundation. All rights reserved.

This product includes software developed by the Indiana University Extreme! Lab (<http://www.extreme.indiana.edu/>). Xpp-3 Copyright © 2002 Extreme! Lab, Indiana University. All rights reserved.

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

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 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 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

1	Introducing the NNM iSPI for IP Multicast	9
	Preparing for Deployment	9
	Environment Variables Used in the NNM iSPI for IP Multicast Documents	10
2	Deploying the NNM iSPI for IP Multicast	13
	Deploy the NNM iSPI for IP Multicast and NNMi Together	13
	Deploy the NNM iSPI for IP Multicast in an NNMi Environment	14
	Using Single Sign-On with NNMi	15
	Deploy the NNM iSPI for IP Multicast with the NNM iSPI Performance for Metrics/NPS	16
	Installing and Upgrading the NNM iSPI for IP Multicast in an HA Cluster	19
	Installing the NNM iSPI for IP Multicast	19
	Configuring an HA Cluster on a Set of Systems with NNMi and iSPI	19
	Installing the NNM iSPI for IP Multicast in an Existing NNMi HA Cluster Environment	23
	Licensing	26
	Upgrading the NNM iSPI for IP Multicast in an HA Cluster	27
	Remove the NNM iSPI for IP Multicast from a High Availability Cluster Environment	30
	Deploy the NNM iSPI for IP Multicast in an Application Failover Environment	31
	Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Oracle Database	31
	Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Embedded Database	32
	Deploy the NNM iSPI for IP Multicast with the NNM iSPI for MPLS	33
	Deploy the NNM iSPI for IP Multicast in Global Network Management Environment	34
	Deploying NNMi and NNM iSPI for IP Multicast on the Global Manager and Regional Manager Management Server	35
	Deploying NNMi on the Global Manager and NNMi and NNM iSPI for IP Multicast on the Regional Manager Management Server	36

Deploying NNMi and the NNM iSPI for IP Multicast on the Global Manager and
NNMi on the Regional Manager Management Server 37
Deploying the Regional Manager in the Application Failover Environment 38

1 Introducing the NNM iSPI for IP Multicast

HP Network Node Manager i Software Smart Plug-in for IP Multicast (NNM iSPI for IP Multicast) helps you to extend the capability of NNMi to monitor the overall health of the multicast network.

You can plan the deployment of the NNM iSPI for IP Multicast based on how NNMi is deployed in the environment. While planning the deployment, consider the following areas to achieve an optimum performance of the system:

- Number of IP Multicast nodes, PIM interfaces, and IP Multicast flows.
- Deployment of the NNM iSPI for IP Multicast in a High Availability (HA) environment
- Deployment of the NNM iSPI for IP Multicast in an Application Failover environment
- Deployment of the NNM iSPI for IP Multicast with other iSPIs (NNM iSPI for MPLS and NNM iSPI Performance for Metrics/NPS)
- Deployment of the NNM iSPI for IP Multicast in a Global Network Management (GNM) environment.

Preparing for Deployment

Before you start deploying the NNM iSPI for IP Multicast, you must plan the installation based on your deployment requirements. You must identify the ideal deployment scenario among the supported configurations and ensure that all the prerequisites are met before you begin the installation process.

Factors that impact the deployment of the NNM iSPI for IP Multicast include the type of database configured with NNMi and the size of the network that you want to monitor. In addition, ensure to install the latest NNMi patches before installing the NNM iSPI for IP Multicast.

Read the following NNMi documents before you start installing and configuring the NNM iSPI for IP Multicast:

- *HP Network Node Manager i Software Deployment Guide, 9.20*
- *HP Network Node Manager i Software Release Notes, 9.20*
- *HP Network Node Manager i Software Support Matrix, 9.20*

In addition, read the following iSPI for IP Multicast documents before you start deploying the NNM iSPI for IP Multicast:

- *HP Network Node Manager Smart Plug-in for IP Multicast Installation Guide, 9.20*
- *HP Network Node Manager Smart Plug-in for IP Multicast Release Notes, 9.20*
- *HP Network Node Manager Smart Plug-in for IP Multicast Support Matrix, 9.20*

For current versions of all documents listed here, go to:

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

Environment Variables Used in the NNM iSPI for IP Multicast Documents

The NNM iSPI for IP Multicast documents use the following NNMi environment variables to refer to file and directory locations. The default values are listed here. Actual values depend upon the selections made during NNMi installation.

The NNMi installation process creates the following system environment variables:

- On Windows:
 - `%NnmInstallDir%`: <drive>\Program Files\HP\HP BTO Software
 - `%NnmDataDir%`: <drive>\ProgramData\HP\HP BTO Software
- On UNIX:

- *\$NnmInstallDir*: /opt/OV
- *\$NnmDataDir*: /var/opt/OV

2 Deploying the NNM iSPI for IP Multicast

The NNM iSPI for IP Multicast and NNMi must be installed on the same management server. To install and configure NNMi on a management server, see the *NNMi Installation Guide and Deployment Reference Guide*.

You can deploy the NNM iSPI for IP Multicast for the following scenarios:

- Installing NNMi and NNM iSPI for IP Multicast together on a single server. NNMi and NNM iSPI for IP Multicast are both configured together.
- Installing the NNM iSPI for IP Multicast in a system where NNMi is already installed and configured.
- Installing the NNM iSPI for IP Multicast in a Global Network Management environment.
- Installing NNMi, iSPI Performance for Metrics/ Network Performance Server (NPS), and NNM iSPI for IP Multicast on the same management server.
- Installing NNMi and NNM iSPI for IP Multicast on a management server and the NNM iSPI Performance for Metrics/ NPS in a dedicated server.

Deploy the NNM iSPI for IP Multicast and NNMi Together

To deploy NNMi and the NNM iSPI for IP Multicast on a management server, follow these steps:

- 1 Complete the NNMi installation process.
- 2 Create a New User with the Web Service Client Role from the NNMi console.

For more information about creating users, see *NNMi Help, Configure User Accounts (User Account Form)*.



Make sure to use the same database type (Postgres Embedded database or Oracle) as NNMi when you are installing the NNM iSPI for IP Multicast.

- 3 Install the NNM iSPI for IP Multicast, 9.20. For more information, see the NNM iSPI for IP Multicast *Installation Guide*.
- 4 Start the IP Multicast processes by using the command: **ovstart -c mcastjboss**.
- 5 After installing the NNM iSPI for IP Multicast and starting the IP Multicast processes, log on to the NNMi console, and then verify the availability of the IP Multicast workspace and IP Multicast views.
- 6 Seed the IP Multicast nodes from the NNMi console. The discovery process starts after you seed the nodes and multicast capability of nodes are discovered along with the other capabilities of the nodes. For more information, see *NNMi Online Help*.
- 7 Wait for sometime till the NNM iSPI for IP Multicast nodes are discovered. Navigate to the NNMi console to verify the availability of the IP Multicast workspace, IP Multicast views, and IP Multicast configuration workspace.

Deploy the NNM iSPI for IP Multicast in an NNMi Environment

To deploy the NNM iSPI for IP Multicast on a management server where NNMi is already installed and configured, follow these steps:

- 1 Install the NNM iSPI for IP Multicast on a management server where NNMi is already installed, running, and nodes are discovered.



Make sure to use the same database type (Postgres Embedded or Oracle) as NNMi when you are installing the NNM iSPI for IP Multicast.

- 2 Start the IP Multicast process by using the command: **ovstart -c mcastjboss**.

- 3 You can start the discovery process to discover the IP Multicast nodes from the discovered NNMi nodes in any *one* of the following ways:
 - Select all the IP Multicast nodes from NNMi inventory workspace and start the configuration poll. For more information, see *Help for NNMi*.
 - Wait for the next NNMi discovery cycle to rediscover the nodes and also start the discovery of the NNM iSPI for IP Multicast nodes.
 - Run the command **nmsmulticastdisco.ovpl** to discover all multicast nodes.
- 4 After installing the NNM iSPI for IP Multicast, log on to the NNMi console, and then verify the availability of the IP Multicast workspace, IP Multicast views, and IP Multicast configuration workspace.

Using Single Sign-On with NNMi

You can configure HP Network Node Manager i Software (NNMi) single sign-on (SSO) to facilitate access to the NNM iSPI for IP Multicast Configuration workspace from the NNMi console without needing to log on again. SSO is not enabled during installation or when you upgrade from the previous versions.

To enable SSO:

For Windows:

- 1 Edit the `%NnmDataDir%\shared\nnm\conf\props\nms-ui.properties` file. Change **com.hp.nms.ui.sso.isEnabled= "false"** to **com.hp.nms.ui.sso.isEnabled = "true"**.
- 2 Run the **nnmssso.ovpl -reload** script.
- 3 Run the **nmsmulticastssoreload.ovpl** script.

For UNIX:

- 1 Edit the `$NnmDataDir/shared/nnm/conf/props/nms-ui.properties` file. Change **com.hp.nms.ui.sso.isEnabled= "false"** to **com.hp.nms.ui.sso.isEnabled = "true"**.
- 2 Run the **nnmssso.ovpl -reload** script.

3 Run the `nmsmulticastssoreload.ovpl` script.

For more information about SSO, see *NNMi Deployment Reference, Using Single Sign-On*.

Deploy the NNM iSPI for IP Multicast with the NNM iSPI Performance for Metrics/NPS

You must install NNMi 9.20, the NNM iSPI for IP Multicast 9.20, NNM iSPI Performance for Metrics/Network Performance Server 9.20 to view the IP Multicast reports. You can deploy these products in the following scenarios:

- Installing NNMi, iSPI for IP Multicast, and the NNM iSPI Performance for Metrics/NPS on the same server.
- Installing the NNM iSPI for IP Multicast and NNMi on a management server and the NNM iSPI Performance for Metrics/NPS on a dedicated server.

To deploy all the products on the same management server, follow these steps:

- 1 Install NNMi, 9.20.
- 2 Install the NNM iSPI Performance for Metrics/NPS. 9.20. For information about the steps to install, see *HP NNMi iSPI Performance for Metrics / NPS Installation Guide*.

3 Install the NNM iSPI for IP Multicast, 9.20.



Always install the NNM iSPI Performance for Metrics/NPS and then install the NNM iSPI for IP Multicast. If you have installed NNMi and NNM iSPI for IP Multicast before installing NPS and NNM iSPI Performance for Metrics, remove the `<Extension Pack>.processed` copy from the following location.

- UNIX:
`<$NnmDataDir>/shared/perfSpi/datafiles/extension/final` folder.
- Windows
`<%NnmDataDir%>\shared\perfSpi\datafiles\extension\final` folder.

Replace the `<extension pack>` in the `<Extension Pack>.processed` copy with the following:

- IP_Multicast_Flow
- IP_Multicast_Interface

After removing the file, the extension packs are installed automatically.

To deploy NNMi and NNM iSPI for IP Multicast on the same management server and the NNM iSPI Performance for Metrics/NPS on a dedicated server, follow these steps:

- 1 Install NNMi, 9.20 and NNM iSPI for IP Multicast, 9.20 on the same management server.
- 2 Install the NNM iSPI Performance for Metrics/ NPS, 9.20 on a dedicated server.

- 3 Complete the necessary configurations for NNMi, iSPI for IP Multicast and iSPI Performance for Metrics/NPS.



Always install the NNM iSPI Performance for Metrics/NPS and then install the NNM iSPI for IP Multicast. If you have installed NNMi and NNM iSPI for IP Multicast before installing NPS and iSPI Performance for Metrics, remove the `<Extension Pack>.processed` copy from the following location:

- On UNIX
`<$NnmDataDir>/shared/perfSpi/datafiles/extension/
final` folder.
- On Windows
`<%NnmDataDir%>\shared\perfSpi\datafiles\extension\fi
nal` folder.

Replace the `<extension pack>` in the `<Extension Pack>.processed` copy with the following extension pack:

- IP_Multicast_Flow
- IP_Multicast_Interface

After removing the file, the extension packs are installed automatically.

After you complete the installations, the NNM iSPI for IP Multicast introduces the following extension packs on the Metrics console:

Extension Pack Name	Purpose
IP_Multicast_Interface	Shows report for IP multicast traffic passing through the multicast nodes and Protocol-Independent Multicast (PIM) interfaces on the network.
IP_Multicast_Flow	Shows report for the IP multicast traffic for the selected flows.

The extension packs use data collected by the NNM iSPI for IP Multicast. Make sure that the NNM iSPI Performance for Metrics/ NPS is up and running. To view the IP Multicast reports from the NNMi console, click **Actions -> HP NNM iSPI Performance -> Reporting - Report Menu**. The iSPI Performance for Metrics console appears with the IP Multicast metrics and you can generate the IP Multicast reports.

After you uninstall the NNM iSPI for IP Multicast, the extension packs introduced by the NNM iSPI for IP Multicast are not removed. If the NNM iSPI Performance for Metrics is running, the extension packs introduced by the NNM iSPI for IP Multicast, still appear. You must remove the extension packs manually before you start installing the NNM iSPI for IP Multicast again. For more information, see *Troubleshooting the NNM iSPI for IP Multicast* section from the NNM iSPI for IP Multicast *Installation Guide*.

Installing and Upgrading the NNM iSPI for IP Multicast in an HA Cluster

You can install NNMi and NNM iSPI for IP Multicast in a High Availability (HA) environment to achieve redundancy in your monitoring setup. The prerequisites to configure the NNM iSPI for IP Multicast in an HA environment is similar to NNMi. For information, see *NNMi Deployment Reference* guide.

Installing the NNM iSPI for IP Multicast

You can configure the NNM iSPI for IP Multicast for the following scenarios:

- Install NNMi and the NNM iSPI for IP Multicast in your environment before configuring NNMi to run under HA. See [Configuring an HA Cluster on a Set of Systems with NNMi and iSPI](#) on page 19.
- Install and configure the NNM iSPI for IP Multicast in an existing NNMi HA cluster environment. See [Installing the NNM iSPI for IP Multicast in an Existing NNMi HA Cluster Environment](#) on page 23.

Configuring an HA Cluster on a Set of Systems with NNMi and iSPI

If you have NNMi and the NNM iSPI for IP Multicast installed on at least two systems, you can create an HA cluster and configure NNMi and the iSPI to run under HA.

You can configure NNMi and NNM iSPI for IP Multicast on the primary node and secondary node in an HA environment. For more information on how to install NNMi in an HA environment, see *NNMi Deployment Reference*.

To configure the NNM iSPI for IP Multicast on the primary node, follow these steps:

- 1 Install NNMi and NNM iSPI for IP Multicast on each system. See the *NNMi Installation Guide* and the *NNM iSPI for IP Multicast Installation* guide for more information.
- 2 Configure the HA software on the systems and configure NNMi to run under HA. See the *NNMi Deployment Reference* for information on configuring NNMi to run under HA. Do not start the resource group while configuring NNMi to run under the HA (do not run the `nnmhastartrg.ovpl` command).
- 3 Configure the NNM iSPI for IP Multicast on the primary (active) node:

- a Run the following command to find the virtual hostname:

```
nnmofficialfqdn.ovpl
```

- b Modify the following files from the `$NnmdataDir/shared/multicast/conf` or `%NnmdataDir%\shared\multicast\conf` to replace the host name with the virtual FQDN for the following parameters:

File Name	Variable Name
<code>nms-multicast.jvm.properties</code>	<code>-Dnmsas.server.security.keystore.alias</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.Nnm.hostname</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.spi.hostname</code>

- c Modify the `server.properties` file from the `%nnmdatadir%\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory to reflect the virtual FQDN of the NNMi management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- d Modify the `login-config.xml` file from the `%nnminstalldir%\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory to reflect the virtual FQDN of the NNMi management server (for the `module-option` element).

- e Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

```
/var/opt/OV/shared/multicast/conf
```

For Windows:

```
%NnmDataDir%\shared\multicast\conf
```

- f Run the following command to start the NNMi HA resource group:

— *For Windows:*

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

— *For UNIX:*

```
/opt/OV/misc/nnm/ha/nnmhastartrg.ovpl NNM  
<resource_group>
```

For more information, see *NNMi Deployment Reference* guide.

The NNM iSPI for IP Multicast and NNMi must start after this step. If NNMi or the NNM iSPI for IP Multicast does not start, see *Troubleshooting the HA Configuration* from *NNMi Deployment Reference*.

- g Run the following command to configure the NNM iSPI for IP Multicast to run under the HA cluster:

— *For Windows:*

```
%NnmInstallDir%\misc\nnm\ha\nnmhaconfigure.ovpl NNM  
-addon MULTICAST
```

— *For UNIX:*

```
/opt/OV/misc/nnm/ha/nnmhaconfigure.ovpl NNM -addon  
MULTICAST
```

- 4 Configure the NNM iSPI for IP Multicast on the secondary (passive) node:

- a Install NNMi with NNM iSPI for IP Multicast on the secondary node. Make sure the secondary node has a separate Fully Qualified Domain Names (FQDN) during the installation. See the *NNMi Installation Guide* and the *HP Network Node Manager iSPI for IP Multicast Software Installation Guide* for more information.

- b Run the following command to find the virtual hostname:
`nmofficialfqdn.ovpl`
- c Modify the following files from the `$NnmdataDir/shared/multicast/conf` or `%NnmdataDir%\shared\multicast\conf` to replace the host name with the virtual FQDN for the following parameters:

File Name	Variable Name
<code>nms-multicast.jvm.properties</code>	<code>-Dnmsas.server.security.keystore.alias</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.Nnm.hostname</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.spi.hostname</code>

- d Modify the `server.properties` file from the `%nnmdatadir%\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory to reflect the virtual FQDN of the NNMI management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- e Modify the `login-config.xml` file from the `%nnminstallldir%\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory to reflect the virtual FQDN of the NNMI management server (for the `module-option` element).
- f Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

`/var/opt/OV/shared/multicast/conf`

For Windows:

`%NnmDataDir%\shared\multicast\conf`

- g Run the following commands to configure the NNMI iSPI for IP Multicast on the secondary node to run under the HA cluster:

— For Windows:

```
%NnmInstallDir%\misc\nm\ha\nmhaconfigure.ovpl NNM
-addon MULTICAST
```

— For UNIX:

```
/opt/OV/misc/nnm/ha/nnmhaconfigure.ovpl NNM -addon  
MULTICAST
```

- 5 Repeat [step 4](#) on page 21 on all passive nodes if you have additional passive nodes in the HA cluster.
- 6 Verify that the NNM iSPI for IP Multicast is successfully registered by running the following command:

- *On Windows:*

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

- *On UNIX/Linux:*

```
/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM  
-get NNM_ADD_ON_PRODUCTS
```

Installing the NNM iSPI for IP Multicast in an Existing NNMi HA Cluster Environment

You can configure the NNM iSPI for IP Multicast on the primary node and secondary node in an NNMi HA cluster environment. For more information on how to install NNMi in an HA environment, see *NNMi Deployment Reference* guide.

- 1 Make sure that NNMi is running on the primary server.
- 2 Put the NNMi resource group to the HA maintenance mode by placing the maintenance file under the following directory:

```
%nnmdatadir%\hacluster\<resource_group_name>  
$NnmDataDir/hacluster/<resource_group_name>
```

- 3 Run `ovstatus -c` to make sure that `ovjboss` is running.
- 4 Install the NNM iSPI for IP Multicast on the primary (active) node in the cluster, but do *not* start the iSPI.
- 5 Run the following command to find the virtual hostname:

```
nnmofficialfqdn.ovpl
```

- 6 Make sure that the following files from the `$NnmdataDir/shared/multicast/conf` or `%NnmdataDir%\shared\multicast\conf` contain the virtual FQDN for the following parameters :

File Name	Variable Name
<code>nms-multicast.jvm.properties</code>	<code>-Dnmsas.server.security.keystore.alias</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.Nnm.hostname</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.spi.hostname</code>

- h Make sure that the `server.properties` file from the `%nnmdatadir%\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory contains the virtual FQDN of the NNMi management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- i Make sure that the `login-config.xml` file from the `%nnminstalldir%\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory contains the virtual FQDN of the NNMi management server (for the `module-option` element).
- j Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

`/var/opt/OV/shared/multicast/conf`

For Windows:

`%NnmDataDir%\shared\multicast\conf`

- 7 Remove the maintenance file that you added in [step 2](#) on page 23.
- 8 Initiate a failover to a secondary (passive) node in the cluster where you want to install the NNMi iSPI for IP Multicast. Make sure that NNMi fails over and runs on the secondary server successfully.
- 9 On this system, follow these steps:
 - a Put the NNMi resource group to the HA maintenance mode by placing the maintenance file under the following directory:


```
%nnmdatadir%\hacluster\<resource_group_name>
```


`$(NnmDataDir)/hacluster/<resource_group_name>`

- b** Run `ovstatus -c` to make sure that `ovjboss` is running.
- c** Install the NNM iSPI for IP Multicast on this server, but do *not* start the iSPI.
- d** Make sure that the following files from the `/var/opt/OV/shared/multicast/conf` or `$(NnmDataDir)\shared\multicast\conf` contain the virtual FQDN for the following parameters :

File Name	Variable Name
<code>nms-multicast.jvm.properties</code>	<code>-Dnmsas.server.security.keystore.alias</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.Nnm.hostname</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.spi.hostname</code>

- e** Make sure that the `server.properties` file from the `$(nnmdatadir)\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory contains the virtual FQDN of the NNMi management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- f** Make sure that the `login-config.xml` file from the `$(nnminstalldir)\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory contains the virtual FQDN of the NNMi management server (for the `module-option` element).
- g** Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

`/var/opt/OV/shared/multicast/conf`

For Windows:

`$(NnmDataDir)\shared\multicast\conf`

- h** Remove the maintenance file that you added in [step a](#) on page 24.
- 10** If you have multiple nodes in the cluster, fail over to another passive server, and then repeat [step a](#) on page 24 through [step h](#) on page 25.

- 11 Fail over to the server that was active when you started this procedure. Make sure that NNMi and NNM iSPI for IP Multicast are running.
- 12 Run the following command on the active server first, and then on all passive servers:

— *For Windows:*

```
%NnmInstallDir%\misc\nnm\ha\nnmhaconfigure.ovpl NNM  
-addon MULTICAST
```

— *For UNIX:*

```
/opt/OV/misc/nnm/ha/nnmhaconfigure.ovpl NNM -addon  
MULTICAST
```

- 13 Verify that the NNM iSPI for IP Multicast is successfully registered by running the following command:

• *On Windows:*

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

• *On UNIX/Linux:*

```
/opt/OV/misc/nnm/ha/nnmhaclusterinfo.ovpl -config NNM  
-get NNM_ADD_ON_PRODUCTS
```

Licensing

You require two licenses to run the NNM iSPI for IP Multicast in an HA cluster:

- One production license tied to the IP address of one of the physical cluster nodes
- One non-production license tied to the virtual IP address of the NNMi HA resource group

After obtaining these licenses for the NNM iSPI for IP Multicast, follow the procedure in the *Licensing NNMi in an HA Cluster* section in the *NNMi Deployment Reference*.

Upgrading the NNM iSPI for IP Multicast in an HA Cluster

To upgrade the NNM iSPI for IP Multicast to the version 9.20 in an HA cluster, follow these steps:

- 1 On the primary (active) node in the cluster, follow these steps:
 - a Put the NNMi resource group to the HA maintenance mode by placing the maintenance file under the following directory:

```
%nnmdatadir%\hacluster\<resource_group_name>  
$NnmDataDir/hacluster/<resource_group_name>
```
 - b Upgrade NNMi to the version 9.20. For more information, see the *NNMi Upgrade Reference, 9.20*.
 - c Run `ovstart -c ovjboss` to start NNMi jboss .
 - d Upgrade the NNM iSPI for IP Multicast to the version 9.20.
 - e Make sure that the following files from the `/var/opt/OV/shared/multicast/conf` or `%NnmdataDir%\shared\multicast\conf` contain the virtual FQDN for the following parameters :

File Name	Variable Name
nms-multicast.jvm.properties	-Dnmsas.server.security.keystore.alias
nnm.extended.properties	com.hp.ov.nms.spi.multicast.Nnm.hostname
nnm.extended.properties	com.hp.ov.nms.spi.multicast.spi.hostname

- f Make sure that the `server.properties` file from the `%nnmdatadir%\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory contains the virtual FQDN of the NNMi management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- g Make sure that the `login-config.xml` file from the `%nnminstalldir%\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory contains the virtual FQDN of the NNMi management server (for the `module-option` element).

- h Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

`/var/opt/OV/shared/multicast/conf`

For Windows:


`%NnmDataDir%\shared\multicast\conf`

- 2 On the secondary (passive) node in the cluster, follow these steps:
 - a Put the NNMi resource group to the HA maintenance mode by placing the maintenance file under the following directory:

`%nnmdatadir%\hacluster\<resource_group_name>`

`$NnmDataDir/hacluster/<resource_group_name>`

- b Upgrade NNMi to the version 9.20.
- c Make sure that NNMi is *not* running.
- d Upgrade the NNM iSPI for IP Multicast to the version 9.20.

 The NNM iSPI for IP Multicast displays two error messages: create db user and create DB. Ignore these errors and continue with the installation.

- e Make sure that the following files from the `/var/opt/OV/shared/multicast/conf` or `%NnmdataDir%\shared\multicast\conf` contain the virtual FQDN for the following parameters :

File Name	Variable Name
<code>nms-multicast.jvm.properties</code>	<code>-Dnmsas.server.security.keystore.alias</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.Nnm.hostname</code>
<code>nnm.extended.properties</code>	<code>com.hp.ov.nms.spi.multicast.spi.hostname</code>

- f Make sure that the `server.properties` file from the `%nnmdatadir%\nmsas\multicast` or `/var/opt/OV/nmsas/multicast` directory contains the virtual FQDN of the NNMi management server for the `java.rmi.server.hostname` and `nmsas.server.net.hostname.private` parameters).
- g Make sure that the `login-config.xml` file from the `%nninstalldir%\multicast\server\conf` or `/opt/OV/multicast/server/conf` directory contains the virtual FQDN of the NNMi management server (for the `module-option` element).
- h Modify the relevant files in the following directory with the up-to-date information on both the primary and secondary cluster nodes:

For UNIX:

```
/var/opt/OV/shared/multicast/conf
```

For Windows:

```
%NnmDataDir%\shared\multicast\conf
```

- 3 Repeat [step 2](#) on page 28 on each passive node.
- 4 Remove the `maintenance` file from all passive nodes in the cluster.
- 5 Stop all the processes on primary server by running `ovstop -c`.
- 6 Run the `Nnmhastartrg.ovpl` command on the primary server. Once the resource group is online and all the processes are running, remove the `maintenance` file from the primary server.



When the Primary system fails-over to the Secondary standby system, the cluster software may bring down the NNMi on Primary unless it is a system failure. In such a scenario, sometimes the `ovstop` on "mcastjboss" may not be successful. After the fail-over from one cluster member to other member, make sure that the NNMi and NNM iSPI for IP Multicast are stopped successfully on the failed system. Terminate the java process of mcastjboss. The corresponding java process for mcastjboss can be found using the `"ps"` command on Unix or *Task Manager* on Windows.



The timeout parameters on Cluster software must be tuned during the HA deployment. The important timeout parameters for Veritas Cluster Software are `OfflineTimeout`, `OnlineTimeout`, and `MonitorTimeout`. In the case of Windows Cluster Manager software, consider tuning `Pending Timeout` and `Deadlock Timeout` parameters. These parameters are to be modified accordingly when two or more iSPI add-on products are installed as well.

Remove the NNM iSPI for IP Multicast from a High Availability Cluster Environment

To remove the NNM iSPI for IP Multicast from an HA cluster environment, first remove the NNM iSPI for IP Multicast from the secondary node and then from the primary node.

To remove the NNM iSPI for IP Multicast from an HA cluster environment, follow these steps:

- 1 Remove the NNM iSPI for IP Multicast by running the following command:

- Windows:

```
%NnmInstallDir%\misc\nnm\ha\nnmhaunconfigure.ovpl NNM  
-addon MULTICAST
```

- For UNIX:

```
$NnmInstallDir/misc/nnm/ha/nmhaunconfigure.ovpl NNM -addon  
MULTICAST
```



Run this command on the passive node first, and then on the active node as well.

- 2 Remove NNMi from an HA cluster environment. For information, see *NNMi Deployment Reference*.

Deploy the NNM iSPI for IP Multicast in an Application Failover Environment

You can deploy the NNM iSPI for IP Multicast in an application failover environment by selecting the database from the following scenarios:

Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Oracle Database

Scenario 1: In this deployment scenario, consider that you want to install the NNM iSPI for IP Multicast with NNMi and then configure application failover on NNMi.

- 1 Install NNMi in the primary server mode on the server 1 and install NNMi in the secondary server mode on the server 2.



If you are using Oracle as the database, NNMi provides you options to install NNMi on the primary and secondary server modes for deployment in an application failover or a high availability environment.

- 2 Start NNMi on server 1.
- 3 Install the NNM iSPI for IP Multicast on server 1 with Oracle database by following the steps listed in the *HP NNM iSPI for IP Multicast Installation Guide*.
- 4 Merge the keystores on one server and copy the keystores to both the primary and the secondary servers. For information, see the *NNMi Deployment Reference Guide* for instructions.
- 5 After the installation of the NNM iSPI for IP Multicast, install the NNM iSPI for IP Multicast non production license on server 1.
- 6 Stop NNMi on server 1.
- 7 Start NNMi on server 2.
- 8 Install the NNM iSPI for IP Multicast in the secondary server mode on the server 2 with the same database instance, user name, and password as configured on the server 1. For more information, see *HP NNM iSPI for IP Multicast Installation Guide*.

- 9 Install the non production license available for the NNM iSPI for IP Multicast on server 2.
- 10 Configure the NNM iSPI for IP Multicast for an application failover between server 1 and server 2. The steps to configure the NNM iSPI for IP Multicast for application failover are similar to the steps to configure NNMi for application failover. For information about how to configure the iSPI for application failover, see *NNMi Deployment Reference Guide*.

Scenario 2: In this scenario, consider that you want to install the NNM iSPI for IP Multicast after configuring NNMi in an application failover environment:

- 1 Remove configuration for application failover from the NNMi primary and secondary servers.
- 2 Restore the old keystore and truststore specific to the primary server and the secondary server.
- 3 Install the NNM iSPI for IP Multicast on both primary and secondary servers following the steps discussed in Scenario 1.
- 4 Install the non production licenses available for the NNM iSPI for IP Multicast installed on a server 1 and a server 2.
- 5 Configure the NNM iSPI for IP Multicast for an application failover. For information about how to configure the iSPI for application failover, see *NNMi Deployment Reference Guide*.

Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Embedded Database

Scenario 1: In this scenario, consider that you want to install the NNM iSPI for IP Multicast and NNMi in an application failover mode:

- 1 Install NNMi and NNM iSPI for IP Multicast on the primary server and the secondary server.
- 2 Install the NNM iSPI for IP Multicast non production licenses on both the servers.
- 3 Follow instructions given in the *NNMi Deployment Reference Guide* to configure NNMi in application failover mode. After this, the NNM iSPI for IP Multicast automatically gets configured in the application failover mode.

Scenario 2: In this scenario, consider that you want to install the NNM iSPI for IP Multicast after configuring NNMi in an application failover mode:

- 1 Remove the NNMi application failover configuration from the primary and secondary server.
- 2 Restore the old keystore and truststore specific to the primary server and the secondary server. For information, see the *NNMi Deployment Reference Guide*.
- 3 Install the NNM iSPI for IP Multicast on both the primary and the secondary servers.
- 4 Install the NNM iSPI for IP Multicast non production license on both the servers.
- 5 Configure the NNM iSPI for IP Multicast for application failover.
- 6 Configure NNMi in the application failover mode. For more information about the steps to configure NNMi, see *NNMi Deployment Reference Guide*.

Deploy the NNM iSPI for IP Multicast with the NNM iSPI for MPLS

The NNM iSPI for IP Multicast helps you to monitor the multicast services in the network. If the multicast services are used over an MPLS cloud, the integration of the NNM iSPI for IP Multicast and MPLS provides the collaborative monitoring of MVPN topology.

The NNM iSPI for MPLS helps you to monitor the Provider Edge (PE) routers discovered in an MVPN topology. The PE routers are configured with the multicast-enabled VRF (MVRF) capabilities and use the multicast services to transmit data.

Navigate from the NNM iSPI for MPLS to the NNM iSPI for IP Multicast to view the tree of multicast traffic in the core network (cloud between the PE routers). The multicast tree shows the default and data Multicast Distribution Tree (MDTs). For more information, see the *NNM iSPI for MPLS Online Help, Overview of the Multicast VPN (MVPN) and IP Multicast View*.

To deploy the NNM iSPI for IP Multicast with the NNM iSPI for MPLS, follow the steps:

- 1 Install NNMi 9.20.
- 2 Install the NNM iSPI for IP Multicast, 9.20.
- 3 Install the NNM iSPI for MPLS, 9.20.

There is no order to deploy the iSPIs (iSPI for MPLS or iSPI for IP Multicast) on a management server.

Deploy the NNM iSPI for IP Multicast in Global Network Management Environment

You can deploy the NNM iSPI for IP Multicast in a Global Network Management (GNM) environment. The NNM iSPI for IP Multicast uses the capabilities of NNMi Global Manager (NNMi GM) and provides a centralized view to monitor the multiple sites. The NNM iSPI for IP Multicast allows you to configure the regional manager connections by using the **IP Multicast Configuration** workspace. After the connection is established, view and monitor the IP Multicast nodes from the NNM iSPI for IP Multicast inventory (GM). For more information about how to configure the NNM iSPI for IP Multicast regional managers, see the NNM iSPI for IP Multicast *Online Help*.

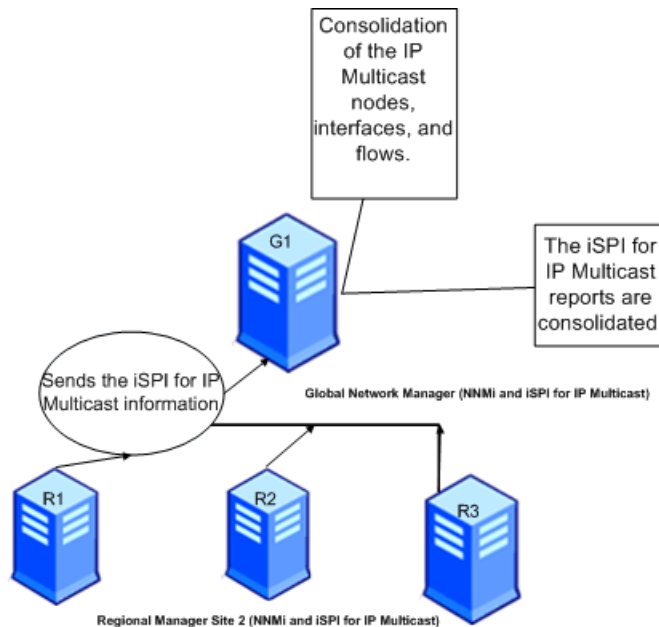
You can deploy NNMi and NNM iSPI for IP Multicast in a GNM environment for the following scenarios:

- Both NNMi and NNM iSPI for IP Multicast are configured on the global manager server and regional manager servers.
- NNMi is configured on the global manager server and NNMi and NNM iSPI for IP Multicast are configured on the regional manager servers.
- Both NNMi and NNM iSPI for IP Multicast are configured on the global manager server and only NNMi is configured on the regional manager server.

Deploying NNMi and NNM iSPI for IP Multicast on the Global Manager and Regional Manager Management Server

You can install and configure NNMi and the NNM iSPI for IP Multicast on the global manager and regional managers. For information about the configuration steps, see *NNMi and NNM iSPI for IP Multicast Online Help*.

The following figure represents a deployment scenario, where NNMi and NNM iSPI for IP Multicast is configured on the global manager (G1) and regional managers (R1, R2, and R3):



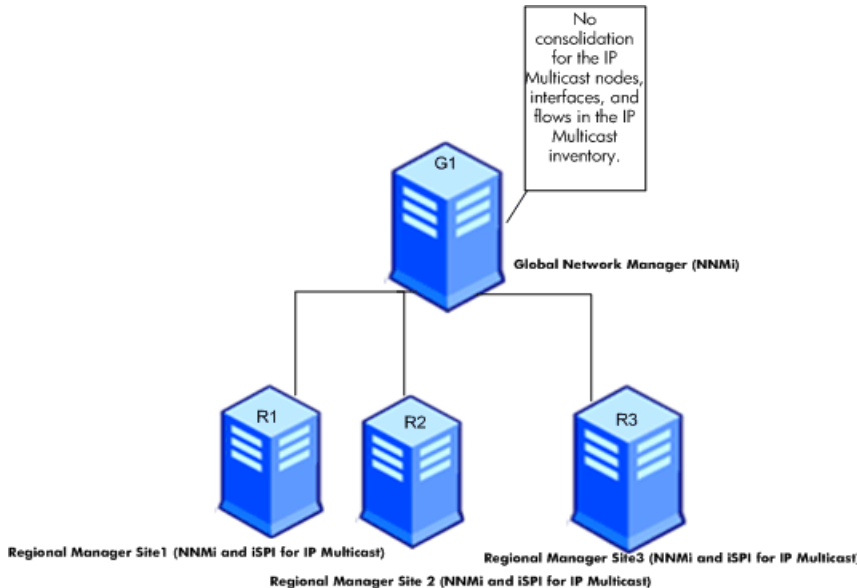
In this deployment scenario, all the regional managers (R1, R2, and R3) send the IP Multicast information to the global manager (G1). You can view the following information from G1:

- Consolidated IP Multicast topology. The status of the IP Multicast nodes, interfaces, and PIM neighbors is calculated again in the global manager environment.
 - Consolidated IP Multicast reports.
- You must install NNM iSPI Performance for Metrics/Network Performance Server to view the IP Multicast reports.

Deploying NNMi on the Global Manager and NNMi and NNM iSPI for IP Multicast on the Regional Manager Management Server

You can install and configure NNMi on the global manager and NNMi and NNM iSPI for IP Multicast on the regional managers. For information about the configuration steps, see the *NNMi and NNM iSPI for IP Multicast Online Help*.

The following figure represents a deployment scenario, where NNMi is configured on the global manager (G1). NNMi and the NNM iSPI for IP Multicast are configured on the regional managers (R1, R2, and R3):

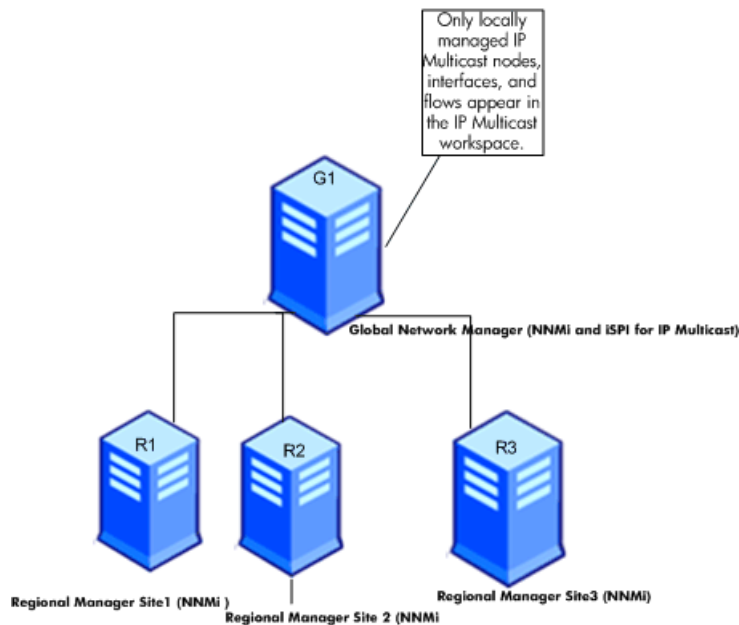


In this deployment scenario, all the regional managers (R1, R2, and R3) discover the IP Multicast nodes, interfaces, and flows. The NNM iSPI for IP Multicast is not available on G1 so there is no communication established between G1 and regional managers for the NNM iSPI for IP Multicast. Thus, the Multicast nodes, interfaces, and flows from the regional managers are not available in the G1 inventory. In addition, no aggregated IP Multicast reports are available in the IP Multicast (GNM) inventory.

Deploying NNMi and the NNM iSPI for IP Multicast on the Global Manager and NNMi on the Regional Manager Management Server

You can install and configure NNMi and the NNM iSPI for IP Multicast on the global manager and only NNMi on the regional managers. For information about the configuration steps, see in the *NNMi and NNM iSPI for IP Multicast Online Help*.

The following figure represents a deployment scenario, where NNMi and NNM iSPI for IP Multicast are configured on the global manager (G1) and NNMi on the regional managers (R1, R2, and R3):



In this deployment scenario, only the locally managed IP Multicast nodes, interfaces, and flows are available in the IP Multicast inventory (G1).

Deploying the Regional Manager in the Application Failover Environment

When the NNM iSPI for IP Multicast regional manager is in the Application failover environment, use the **ORDER** parameter to decide the priority to establish the connection.

To use the regional manager in an application failover environment, follow these steps:

- 1 Configure the regional manager connection using IP Multicast configuration workspace.
- 2 Add the two regional manager connections and provide the two hostnames.
- 3 Use the **ORDER** parameter to give different values to the two regional managers.

Whenever there is an application fail-over available on the regional manager, the GNM establishes the next connection with the lowest order value.

You can configure the regional manager in the application failover environment by using the steps documented in the [Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Oracle Database on page 31](#) and [Deploying the NNM iSPI for IP Multicast in an Application Failover Environment with Embedded Database on page 32](#).