HP Network Node Manager i Software Smart Plug-in for MPLS

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

Software Version: 9.00

Installation Guide

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1 Introduction

The HP Network Node Manager i Software Smart Plug-in for MPLS (Multi Protocol Label Switching) (NNMi iSPI for MPLS) extends the capability of NNMi to monitor the network. The iSPI for MPLS presents additional views to indicate the status of discovered MPLS devices and display the overall health of the network.

The iSPI for MPLS, in conjunction with NNMi, performs the following tasks:

- Discovering and monitoring the MPLS-enabled nodes and interfaces.
- Displaying the MPLS-enabled nodes in the MPLS inventory.
- Monitoring the status of the discovered MPLS object in the network.
- Monitoring the MPLS views from Global Network Manager's inventory.
- Monitoring the network by using the topology map views.
- Troubleshooting the network by viewing the MPLS reports.

After you install (and configure) the iSPI for MPLS on the NNMi management station, you can monitor and troubleshoot the problems in your network with by using the MPLS workspace.

The iSPI for MPLS integrates with the iSPI for IP Multicast, RAMS, and iSPI Performance for Quality Assurance to help you monitor the network by using the additional capabilities introduced by these products.

MPLS Workspace

The iSPI for MPLS uses NNMi console to introduce the MPLS-related views to monitor your network. The MPLS views provide the list of discovered MPLS objects. Monitor the health of the MPLS objects by using the MPLS workspace.

The iSPI for MPLS monitors the health of MPLS Layer 3 Virtual Private Network (L3VPN), MPLS Layer 2 VPNs (L2VPNs), Multicast VPNs (MVPNs), MPLS PseudoWire VC, and Traffic Engineering (TE) tunnels. The dynamic views extend the properties of NNMi to perform the fault management for the traffic passing through the MPLS cloud.

You can use the NNMi user-level access for the MPLS workspace. The iSPI for MPLS uses the operator and administrator level security access for various tasks. With the operator-level privileges, you can perform the fault management tasks by monitoring the state, status, and incidents of the all the MPLS objects. With the administrator-level privileges, you can complete all the configuration tasks from the MPLS Configuration workspace.

Related Topics:

For more information about iSPI for MPLS, see the following documentation:

- iSPI for MPLS Online Help—includes information on the views, forms, and map views introduced by the iSPI for MPLS.
- iSPI for MPLS Release Notes
- iSPI for MPLS Support Matrix
- iSPI for MPLS Deployment Guide

2 Before you Begin

Before you start installing the iSPI for MPLS, you must plan the installation based on your deployment requirements. You must identify the ideal deployment scenario among the supported configurations. Make sure that all the prerequisites are met before you begin the installation process.

You can see the following documents before you start the installation process:

- *HP Network Node Manager 9.00 Installation Guide for Windows or HP Network Node Manager 9.00 Installation Guide for UNIX*
- *HP Network Node Manager 9.00 Deployment Guide*
- *HP Network Node Manager 9.00 Release Notes*
- *HP Network Node Manager 9.00 Support Matrix*

Before you begin the iSPI for MPLS installation, follow these steps:

1. Install NNMi. Make sure that NNMi is installed in the environment and running.
2. Install available NNMi patches, if any.
3. Start the iSPI for MPLS installation process.

You install the iSPI for MPLS on the NNMi management station. You can also install the iSPI for MPLS in High-Availability (HA) cluster environments that are supported by NNMi. For information about the steps to install the iSPI for MPLS in HA environment, see the *iSPI for MPLS Deployment Guide*.

Installation Process on the NNMi Management Server

Before installing the iSPI for MPLS on the NNMi management server, you must note down all the configuration-related information of the NNMi installation. These details are required while you install the iSPI for MPLS.

Before installing the iSPI for MPLS, make sure to create the Web service Client user with Administrative privileges for the iSPI for MPLS.

NNMi Port Details

Note down the following port numbers of the NNMi installation:

- Port number of NNMi
- Port number of Java Naming and Directory Interface (JNDI) on the management station

To verify the port details, open the `nms-local.properties` file from the *%NnmDataDir%*`\conf\nnm\props` or *$NnmDataDir*`/conf/nnm/props` directory on the management server, and then note down the following values:

- jboss.http.port for the HTTP port number. The default value is 80.
- jboss.https.port for the HTTPS port number. The default value is 443.
- jboss.jnp.port for the JNDI port number. The default value is 1099.

For more information about the ports used by NNMi, see *NNMi Deployment Guide*.

Database Details

You can choose an external Oracle database instead of the embedded database to store NNMi data. The external Oracle database can reside either on the NNMi management station or on a remote server. You must note down the following details of the NNMi database.

- **Type**: The default embedded database or Oracle database.
- **Port**: The port used by the Oracle database.
- **Hostname**: The fully-qualified domain name of the Oracle server.
- **Oracle Database name**: The name of the Oracle database instance.
- **Oracle Database Username**: The Oracle username created to access NNMi data.

- **Password**: Password for the above user.

Before installing the iSPI for MPLS, make sure to note down the database details if you are using Oracle database or embedded database.

With the iSPI for MPLS, you must use a new Oracle instance, and not the Oracle instance configured with NNMi. Before you create a unique Oracle instance for the iSPI for MPLS, see the Database Installation section in the *HP Network Node Manager i Software Installation Guide* for additional details. If you are using a unique Oracle instance, note down the details for this instance as well.

Preinstallation Tasks

Before you start installing the iSPI for MPLS, complete the following tasks:

Task 1: Create a New User with the Web Service Client Role

Create a user from the NNMi console with the Web Service Client role. This user is used during the installation of the iSPI for MPLS. Do not use the NNMi system account while installing the iSPI for MPLS.

Task 2: *Only for Oracle*. Create a New Oracle Instance

Skip this task if you choose to use the embedded database. You must create a new Oracle instance before installing the iSPI for MPLS. While installing and configuring the iSPI for MPLS, do not use the same Oracle instance that was configured with NNMi.

Preparing for Installation

Before installing the iSPI for MPLS, make sure the management station meets all the hardware and software requirements.

See the *HP Network Node Manager i Software Smart Plug-in for MPLS Support Matrix* and *HP Network Node Manager i Software Smart Plug-in for MPLS Release Notes* documents for complete information about hardware and software requirements and dependencies.

Table 1 Preinstallation Checklist for Hardware and Software Requirements

Requirement	Reference Document	Complete(Yes/No)
Disk space	Support Matrix	Yes
Operating system	Support Matrix	Yes
Database	Support Matrix	Yes

3 Installing the iSPI for MPLS

You can install the iSPI for MPLS on both types of management server—Windows and UNIX. You can use the installation wizard. The installation wizard guides you through the installation process.

Installing on a Windows Management Server

To install the iSPI for MPLS on a Windows management server, follow these steps:

1. Log on to the management server with `Administrator` privileges.
2. Insert the iSPI for MPLS installation media into CD-ROM drive. The CD-ROM must start automatically. If it does not start from the root directory, double-click the `setup.bat` file. The installation wizard opens.

   If the Application requirement check warnings dialog box opens, click and review each warning and take appropriate actions.
3. In the **Introduction** screen, check the iSPI for MPLS information and then click **Next**.
4. On the **License Agreement** page, check the iSPI for MPLS license terms. If you agree with the terms of the license agreement, select I accept…; then click **Next**. The **Product Customization Feature Selection** screen appears.
5. From the **Choose the database type** page, select any *one* of the options:

Make sure to select the same database type (embedded or Oracle) that you have selected while installing NNMi.

- Select **HP Software Embedded Database**, and click **Next**. The **Install Checks** screen appears. Go to step 10 on page 16.
- Select **Oracle**, and click **Next**.

6 *Skip the steps from 6 to 9 if you choose to use the embedded database*. If you select an Oracle database, from the **Choose Database Initialization Preferences** page, choose any one of the following:

Select the same database type (Primary Server or Secondary Server) as NNMi.

- **Primary Server Installation** - Select this option for installing the iSPI for MPLS.
- **Secondary Server Installation** - Select this option for installing the iSPI for MPLS in an Application Failover or High Availability (HA) environment.

7 From **Enter your database server information** page, specify the following information that you have used while creating a new Oracle instance for the iSPI for MPLS:

- **Host** - The fully- qualified domain name of the Oracle server. Type the server name.
- **Port** -The default Oracle port number (1521) appears in the dialog box.
- **Instance** - Type the name of the Oracle database instance.

8 Type the following information that you have used while creating a new Oracle instance for the iSPI for MPLS:

- **Username** - Type the Oracle username created to access MPLS data.
- **Password** - Type the password for the mentioned user.

9 After completing the Oracle database configuration, click **OK**. The **Install Checks** screen appears. If the configuration process reports an error, check the credentials. To type the database instance information again, click the **Previous** button.

10 From the **Install Checks** screen, the wizard checks for the available disk space. The Product Requirements screen shows the required disk space and available disk space on the machine. Check the indicated values.

11 Click **Next**. The **Pre-Install Summary** screen appears.

12 Review the options, and click **Install**. The installation process begins.

13 Specify the following details in the MPLS SPI dialog box:

The NNMi configuration parameters should be same as you have entered while installing NNMi.

Make sure to select the same database type (embedded or Oracle) that you have selected while installing NNMi.

- Information required by MPLSSPI to communicate to NNMi

Specify the values configured with NNMi.

— **NNMi FQDN/IP Address** - The fully-qualified domain name (FQDN) of the NNMi management station. The hostname can be fullyqualified domain name or IP Address. Check the NNMi name from **Help->System Information-> Server.**

— **NNMi HTTP Port** - Specify the port configured with NNMi (default value is 80). To verify the port number, open the `nms-local.properties` file and check the *jboss.http.port* value from the *%NnmDataDir%*`\conf\nnm\props` directory. To update the NNMi port number, see Updating the NNMi Port Number on page 28.

— **NNMi HTTPS Port** - Specify the port configured with NNMi (default value is 443). To verify the port number, open the `nms-local.properties` file and check the *jboss.https.port* value from the *%NnmDataDir%*`\conf\nnm\props` directory. To update the NNMi port number, see Updating the NNMi Port Number on page 28.

— **NNMi Java Naming and Directory Interface (JNDI) Port** - Port number used by the jboss application server for internal communication. Specify the NNMi port number (default value is 1099). To verify the port number, open the `nms-local.properties` file and check the *jboss.jnp.port* value from the *%NnmDataDir%*`\conf\nnm\props` directory.

— **NNMi Username** - Type the Web Service Client username.

— **NNMi Password** - Type the Web Service Client password.

— **Retype Password** - Retype the password to confirm the password.

— **isSecure** - Select the option to enable HTTPS. By default, NNMi uses HTTP. This option specifies the mode of transmission such as secured or unsecured.

- For iSPI for MPLS Configuration Parameters, type the following:

The various cases for the (Fully Qualified Domain Name (FQDN) configuration parameters are listed below:

- The NNMi and iSPI for MPLS must use the same FQDN. If the NNM server is having more than one domain name, installation process chooses one and the iSPI for MPLS installation also must use the same domain name. To find the official FQDN of the NNMi server, use any *one* of following:
  - Run the **`nnmofficialfqdn.ovpl`** command.
  - From the NNMi console, click **Help > About Network Node Manager i Software.**
- At the time of NNMi installation, if you are using the partial domain name as <people> or the IP Address as <xx.xx.xx.xx> and not the fully qualified domain name, the Single Sign-on is disabled.
  - **MPLS FQDN/IP Address** - The FQDN of the NNMi management station.
  - **MPLS HTTP Port** - Type the unsecured port number. The default value is 24040. To modify the value after installing the iSPI for MPLS, open the `nms-mpls.ports.properties` file and check the *Djboss.http.port* value from the *%NnmDataDir%*`\shared\mpls\conf` directory.
  - **MPLS HTTPS Port** - Type the secured port number. The default value is 24043. To modify the value after installing the iSPI for MPLS, open the `nms-mpls.ports.properties` file and check the *Djboss.https.port* value from the *%NnmDataDir%*`\shared\mpls\conf` directory.
  - **JNDI Port** - The default JNDI iSPI port number is 24046. This port number is used by the jboss application server for internal communication. To modify the value after installing the iSPI for MPLS, open the `nms-mpls.ports.properties` file and check the *Djboss.jnp.port* value from the *%NnmDataDir%*`\shared\mpls\conf` directory.

Always select the same mode of transmission for NNMi and iSPI for MPLS.

— **isSecure** - Select the option to enable HTTPS. By default, the iSPI for MPLS uses HTTP. This option specifies the mode of transmission such as secured or unsecured.

14 Click **OK** to proceed with the installation process.

15 When the installation process is complete, click **Done**. After the installation is done, start all the processes and start the discovery process.

You can check the necessary information about the installation from Summary and Details tab. If the installation process fails to complete, you can Rollback the Installation process and start again.

Installing on a UNIX Management Server

To install the iSPI for MPLS on a UNIX management server, follow these steps:

1 Log on to the management server with root privileges.

2 Insert the iSPI for MPLS installation media into the CD-ROM drive. The CD-ROM must start automatically. If the installation does not start, run the command **`./setup`**. The installation wizard opens.

If the Application requirement check warnings dialog box opens, click and review each warning and take appropriate actions.

3 In the **Introduction** screen, check the iSPI for MPLS information and then click **Next**.

4 On the **License Agreement** page, check the iSPI for MPLS license terms. If you agree with the terms of the license agreement, select I accept…; then click **Next**. The **Product Customization Feature Selection** screen appears.

5 From the **Choose the database type** page, select any *one* of the options:

Make sure to select the same database type (embedded or Oracle) that you have selected while installing NNMi.

- Select **HP Software Embedded Database**, and click **Next**. The **Install Checks** screen appears. Go to step 10 on page 20.
- Select **Oracle**, and click **Next**.

6 *Skip the steps from 6 to 9 if you choose to use the embedded database*. If you select an Oracle database, from the **Choose Database Initialization Preferences** page, choose any one of the following:

Select the same database type (Primary Server or Secondary Server) as NNMi.

- **Primary Server Installation** - Select this option for installing the iSPI for MPLS.
- **Secondary Server Installation** - Select this option for installing the iSPI for MPLS in an Application Failover or High Availability (HA) environment.

7 From **Enter your database server information** page, specify the following information that you have used while creating a new Oracle instance for the iSPI for MPLS:

- **Host** - The fully-qualified domain name of the Oracle server. Type the server name.
- **Port** -The default Oracle port number (1521) appears in the dialog box.
- **Instance** - Type the name of the Oracle database instance.

8 Type the following information that you have used while creating a new Oracle instance for the iSPI for MPLS:

- **Username** - Type the Oracle username created to access MPLS data.
- **Password** - Type the password for the mentioned user.

9 After completing the Oracle database configuration, click **OK**. The **Install Checks** screen appears. If the configuration process reports an error, check the credentials. To type the database instance information again, click the **Previous** button.

10 From the **Install Checks** screen, the wizard checks for the available disk space. The Product Requirements screen shows the required disk space and available disk space on the machine. Check the indicated values.

11 Click **Next**. The **Pre-Install Summary** screen appears.

12 Review the options, and click **Install**. The installation process begins.

13 Specify the following details in the MPLS SPI dialog box:

The NNMi configuration parameters should be same as you have entered while installing NNMi.

Make sure to select the same database type (embedded or Oracle) that you have selected while installing NNMi.

- Information required by MPLSSPI to communicate to NNMi

Specify the values configured with NNMi.

— **NNMi FQDN/IP Address** - The fully-qualified domain name (FQDN) of the NNMi management station. The hostname can be fullyqualified domain name or partial hostname or IP Address. Check the NNMi name from **Help->System Information-> Server.**

— **NNMi HTTP Port** - Specify the port configured with NNMi (default value is 80). To modify the port number after installing the iSPI for MPLS, open the `nms-local.properties` file and check the *jboss.http.port* value from the *$NnmDataDir*`\conf\nnm\props` directory. To update the NNMi port number, see Updating the NNMi Port Number on page 28.

— **NNMi HTTPS Port** - Specify the port configured with NNMi (default value is 443). To modify the port number after installing the iSPI for MPLS, open the `nms-local.properties` file and check the *jboss.https.port* value from the *$NnmDataDir*`\conf\nnm\props` directory. To update the NNMi port number, see Updating the NNMi Port Number on page 28.

— **NNMi Java Naming and Directory Interface (JNDI) Port** - Port number used by the jboss application server for internal communication. Specify the NNMi port number (default value is 1099). To modify the port number after installing the iSPI for MPLS, open the `nms-local.properties` file and check the *jboss.jnp.port* value from the *$NnmDataDir*`\conf\nnm\props` directory.

— **NNMi Username** - Type the Web Service Client username.

— **NNMi Password** - Type the Web Service Client password.

— **Retype Password** - Retype the password to confirm the password.

— **isSecure** - Select the option to enable HTTPS. By default, NNMi uses HTTP. This option specifies the mode of transmission such as secured or unsecured.

- For the iSPI for MPLS Configuration parameters, type the following:

The various cases for the (Fully Qualified Domain Name (FQDN) configuration parameters are listed below:

- The NNMi and iSPI for MPLS must use the same FQDN. If the NNM server is having more than one domain name, installation process chooses one and iSPI for MPLS installation must also use the same domain name. To find the official FQDN of the NNMi server, use any *one* of following:
  - Run the **`nnmofficialfqdn.ovpl`** command.
  - From the NNMi console, click **Help > About Network Node Manager i Software.**
- At the time of NNMi installation, if you are using the partial domain name as <people> or the IP Address as <xx.xx.xx.xx> and not the fully qualified domain name, the Single Sign-on is disabled.

— **MPLS FQDN/IP Address** - The FQDN of the NNMi management station.

— **MPLS HTTP Port** - Type the unsecured port number. The default value is 24040. To update the port number, open the `nms-mpls.ports.properties` file and check the *jboss.http.port* value from the *$NnmDataDir*`\shared\mpls\conf` directory.

— **MPLS HTTPS Port** - Type the secured port number. The default value is 24043. To update the port number, open the `nms-mpls.ports.properties` file and check the *jboss.https.port* value from the *$NnmDataDir*`\shared\mpls\conf` directory.

— **JNDI Port** - The default JNDI port number is 24046. This port number is used by the jboss application server for internal communication.

Always select the same mode of transmission for NNMi and iSPI for MPLS.

— **isSecure**: Select the option to enable HTTPS. By default, the iSPI for MPLS uses HTTP. This option specifies the mode of transmission such as secured or unsecured.

14 Click **OK** to proceed with the installation process.

15 When the installation process is complete, click **Done**. After the installation is done, start all the processes and start the discovery process.

The iSPI for MPLS installation process is complete. You can check the necessary information about the installation from Summary and Details tab. If the installation process fails to complete you can Rollback the Installation process and start again.

Steps to Install and Start the iSPI for MPLS

To complete the installation process of the iSPI for MPLS and start all the MPLS views for monitoring the network, follow these steps:

1 Install NNMi. Verify that all the available NNMi patches are installed.

2 Install the iSPI for MPLS.

3 Start the processes for NNMi and iSPI for MPLS.

4 Complete the discovery process. Use the *%InstallDir*`\bin\nmsmplsdisco.ovpl -u <user> -p <password> -all` or *$InstallDir*`/bin/nmsmplsdisco.ovpl -u <user> -p <password> -all` command.

5 After installing the iSPI for MPLS, log on to the NNMi console and verify the MPLS workspace.

6 Perform the necessary configurations such as Exclude Route Targets, VPWS, and Polling Frequencies from the **MPLS Configuration** workspace

Starting and Stopping the NNMi and iSPI for MPLS Processes

To start and stop the iSPI for MPLS, follow these steps:

1 Check the status of the NNMi process using the following command:

```
ovstatus -c ovjboss
```

If the NNMi is not running, start the NNMi process by using the following command:

ovstart -c ovjboss

- Start the MPLS process using the following command:

  ovstart -c mplsjboss

- Stop the MPLS process using the following command:

  ovstop -c mplsjboss

Verifying the NNMi and iSPI for MPLS Processes

Check if the NNMi and MPLS processes are running by using the following command: **ovstatus -c**

Removing the iSPI for MPLS

Before you start uninstalling the iSPI for MPLS, make sure that the MPLS processes are stopped but the NNMi process (ovjboss) is running. If the MPLS process is running, the process exits with an error message.

After you uninstall the iSPI for MPLS, start removing the NNMi.

To uninstall the iSPI for MPLS from a management station, follow these steps:

1. Log on to the management station with the Administrator (for Windows) or root (for UNIX) privileges.
2. Run the following command:

   On Windows:
   %*NnmInstallDir*%\uninstall\HPOvMPLSiSPI\setup.exe

   On UNIX:

   ***$NnmInstallDir*/uninstall/HPOvMPLSiSPI/setup.bin**

A wizard opens.

3 Follow the instructions on the wizard and complete the procedure to remove the product.

4 When the process is complete, click **Done**.

License-related Information

The iSPI for MPLS includes a temporary Instant-On license key that is valid for 60 days after you install the iSPI for MPLS. You must obtain and install a permanent license key as soon as possible.

The three types of the iSPI for MPLS licenses are:

- Instant-on - The Instant-on license is an evaluation license. The valid period of this license is sixty days.
- Points Based - The Points-based license is the actual point consumption by the iSPI for MPLS. The points used appear in the iSPI for MPLS system information.
- Migration - The migration licenses are valid only for the user updating from previous versions (7x.x) of the MPLS SPI.

Checking the License Type

To find the iSPI for MPLS license information, use any *one* of the following:

1 In the NNMi console, click **Help > About Network Node Manager i Software**.

2 In the About Network Node Manager window, click **Licensing Information**.

OR

1 In the NNMi console, click **Help > System Information**.

2 From the System Information box, click **View Licensing Information**.

Checking the MPLS Object-related Point Usage

1. In the NNMi console, click **Help > NNMi iSPI Help ->iSPI for MPLS System Information**.
2. In the iSPI for MPLS window, click the **License Report** tab and **Topology Statistics** tab. The License report tab shows the total points used for the MPLS topology object. The Topology Statistics tab shows the total number of MPLS objects monitored by the iSPI for MPLS.

Obtaining and Installing a Permanent License

After you purchase a software license, install the iSPI for MPLS by using one of the methods:

- At the command prompt from the NNMi management server, use the following:
  - Windows: *%NnmInstallDir%*`\bin\nnmlicense.ovpl <MPLSSPI> -f <license_file>`
  - UNIX: `opt/OV/bin/nnmlicense.ovpl <MPLSSPI> -f <license_file>`
- From the Autopass user interface, use the following:
  - Windows:
    - *%NnmInstallDir%*`\bin\nnmlicense.ovpl MPLSSPI -gui`
    - *%NnmInstallDir%*`\bin\nnmlicense.ovpl MPLSSPI -g`
  - UNIX:
    - `opt/OV/bin/nnmlicense.ovpl MPLSSPI -gui`
    - `opt/OV/bin/nnmlicense.ovpl MPLSSPI -g`

After you install your license from Autopass user interface, close the license window. The license points appear in the iSPI for MPLS system information only after you close the window.

Extend the MPLS Licenses

To extend the licensed capacity, purchase and install an additional iSPI for MPLS license. Contact your HP Sales Representative or your Authorized Hewlett-Packard Reseller for information about the iSPI for MPLS licensing structure and to learn how to add license tiers for enterprise installations.

To obtain additional license keys, go to the HP License Key Delivery Service: **https://webware.hp.com/welcome.asp**

Accessing the Log Files

The iSPI for MPLS stores all the installation-related information into the following directory:

- For Windows: \%Temp%\
- For Unix: /tmp/

List of MPLS log files

The log files are as follows:

- `HPOvMPLSiSPI_9.00.000_HPOvInstaller.txt`
- `preInstall_mpls.log`
- `Pre_Remove_mpls.log`
- `postInstall_mpls.log`
- `postRemove_mpls.log`

Updating the NNMi Port Number

When you install the iSPI for MPLS, type the same NNMi port numbers that you have specified while installing NNMi. If you want to update the NNMi port number while installing the iSPI for MPLS, follow these steps:

1. On the management server, open the `nms-mpls.ports.properties file` from the *%NnmdataDir%*`\shared\mpls\conf` or *$NnmdataDir*/`shared/mpls/conf` directory (depending on the type of the management server) with a text editor.
2. Update the `Djboss.nnm.port` value.
3. On the management server, open the `nms-local.properties file` from the *%NnmdataDir%*`\conf\nnm\props` or *$NnmdataDir*/ `conf/nnm/props` directory (depending on the type of the management server) with a text editor.
4. Update the `com.hp.ov.nms.spi.mpls.Nnm.port` value in the `nms-local.properties` file.

Updating the Security Mode (HTTP to HTTPS)

After installing NNMi and iSPI for MPLS, if you want modify the security mode from HTTPS to HTTP or HTTP to HTTPS without installing NNMi and iSPI for MPLS again, follow these steps:

1. On the management server, open the `nnm.extended.properties file` from the *%NnmdataDir%*`\shared\mpls\conf` or *$NnmdataDir*/ `shared/mpls/conf` directory (depending on the type of the management server) with a text editor.
2. Update the values to true or false from the following:
   - `com.hp.ov.nms.spi.mpls.spi.isSecure=false`
   - `com.hp.ov.nms.spi.mpls.Nnm.isSecure=false`

   If the value is false, the mode of transmission is HTTPS.

Always select the same mode of transmission for NNMi and iSPI for MPLS.

Updating the NNMi System Password

If you modify the NNMi system account credentials after installing the iSPI for MPLS, follow these steps to synchronize the change with the iSPI for IP MPLS setup.

1 Log on to the NNMi management server.

2 Run the following command to copy the NNMi password:

`encryptmplspasswd.ovpl -c mpls`

where:

c - NNMi jboss to iSPI for MPLS jboss communication

mpls (case insensitive)

➤ Only user with root permission can run this script.

3 Restart the iSPI for MPLS with the following commands:

- **`ovstop -c mplsjboss`**
- **`ovstart -c mplsjboss`**

Updating the iSPI for MPLS (Web Service Client Password)

The iSPI for MPLS is configured with Web Service Client Username and Password to communicate with NNMi in the installation process. The user must be added in NNMi with the role of Web Service Client user to use the script to update the password.

➤ Avoid System role for NNMi - iSPI for MPLS communication.

➤ Only user with root permission can run this command.

If you want to update the iSPI for MPLS password, follow these steps:

1 Log on to the NNMi management server.

2 Run the following command:

encryptmplspasswd.ovpl -e <mpls> <password>

The **encryptmplspasswd.ovpl** command helps you update the iSPI for MPLS password.

3 Restart the iSPI for MPLS with the following commands:

- **ovstop -c mplsjboss**
- **ovstart -c mplsjboss**

4 Getting Started with the iSPI for MPLS

After you complete the installation of the iSPI for MPLS in your NNMi environment, you can start monitoring your network with NNMi and iSPI for MPLS. After installing the iSPI for MPLS, you can start the complete discovery process to view the MPLS-enabled nodes and MPLS objects from the MPLS workspace.

Accessing the iSPI for MPLS

You can monitor the network by using the NNMi and iSPI for MPLS. To start the iSPI for MPLS after the initiation of the first discovery polling cycle, follow these steps:

1. Launch the NNMi console.
2. Log on to the NNMi console with one of the following user roles:
   - Administrator
   - Operator level 1
   - Operator level 2
   - Guest
3. In the Workspace pane, click **MPLS**. The MPLS workspace shows the MPLS Inventory. You can start the MPLS forms and map views from the workspace.

Starting the MPLS Discovery Process

The MPLS discovery process starts automatically after NNMi discovery process. To start the complete discovery for the iSPI for MPLS, use the following command:

For Windows: **`%InstallDir/bin/nmsmplsdisco.ovpl -u <user> -p <password> -all`**

For UNIX: **`$InstallDir/bin/nmsmplsdisco.ovpl -u <user> -p <password> -all`**

Accessing the Online Help

The iSPI for MPLS Help provides the iSPI for MPLS related information. The detailed information in the iSPI for MPLS help is organized into the following sections:

- Help for Operators
- Help for Administrators

To access the iSPI for MPLS help, click **Help** -> **Help for NNM iSPIs ->Help for iSPI for MPLS**. The iSPI for MPLS help appears in the NNMi console only if the iSPI for MPLS installation is successful.

The MPLS Online Help provides you the comprehensive information about the MPLS Inventory, MPLS forms, Incidents, and map views.

Accessing the MPLS Configuration workspace

You can perform the following configuration tasks after installing the iSPI for MPLS.

- Configure the Polling Frequencies
- Configure the Router Targets
- Configure the VPWS VPN

- Configure the Regional Manager

Accessing the MPLS Reports

The iSPI for MPLS uses the basic capabilities of the HP NNMi iSPI Performance for Metrics (iSPI Performance for Metrics) and Network Performance Server (NPS) to present the MPLS reports.

The iSPI for MPLS introduces the following extension packs:

- MPLS_LSR_Node
- MPLS_LSR_Interface
- L3_VPN_VRF

The extension pack uses data collected by the iSPI for MPLS. Make sure that NPS and iSPI Performance for Metrics is up and running.

To view the MPLS reports, from the NNMi console, click **Actions-> Report-Reporting Menu**. The iSPI Performance for Metrics console appears with the reports.

For more information, see *Help for iSPI for MPLS Reports and Help for NNMi iSPI Performance for Metrics*.

A Troubleshooting the iSPI for MPLS

This chapter lists the trouble scenarios that you may encounter while installing the iSPI for MPLS and tips to resolve these issues.

Installing the iSPI for MPLS

- *Problem*: The iSPI for MPLS installation process stops abruptly.

  Solution: The installation process is not able to create and copy the folders. Check the error messages and the available disk space. In addition, check if you have necessary permissions on the management server.

- *Problem*: The iSPI for MPLS process appears in the `Failed` state and you are not able to restart the process again.

  Solution: Stop and start ovspmd (all the processes) again. Check **`ovstatus -c`** to verify if the state of the process is changed from `FAILED` state to `RUNNING` state.

  This is a time consuming process but this is the only workaround available to start the processes.

- *Problem*: The extension packs introduced by the iSPI for MPLS fails to start if you install NPS and iSPI Performance for Metrics after installing NNMi and iSPI for MPLS

  Solution: Always install NPS and iSPI Performance for Metrics and then install the iSPI for MPLS. If you have installed NNMi and iSPI for MPLS 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\final folder.

After removing the file, the extension packs are installed automatically

- *Problem*: The iSPI for MPLS jboss stops automatically after the start up or after running for some time. You cannot access the MPLS inventory and URL actions. The following log message appears `jbossServer.log` file:

  ```
  [org.jboss.system.server.Server] Shutting down the server, blockingShutdown: false

  [org.jboss.system.server.Server] Server exit(0) called

  [org.jboss.system.server.Server] Runtime shutdown hook called, forceHalt: true
  ```

  Solution: Stop and start the iSPI for MPLS jboss. Run the following commands:

  - Stop the process: **`ovstop -c mplsjboss`**
  - Start the process: **`ovstart -c mplsjboss`**

Uninstalling the iSPI for MPLS

- *Problem*: Removal process starts but does not complete

  Solution: Stop the iSPI for MPLS process and then start uninstalling the iSPI for MPLS again. You can use the command to stop the iSPI for MPLS processes: **`ovstop -c mplsjboss.`** Check the status again and start uninstalling the iSPI for MPLS.

- *Problem*: After removing the iSPI for MPLS, the memory of the system is still low.

  Solution: Check if the java process is running with the iSPI for MPLS name. Stop and delete these processes manually. These processes increase the memory size.

- *Problem*: After removing the iSPI for MPLS, the status of mplsjboss appears as `Failed`.

  Solution: Run the following commands:

— Stop the process: **`ovstop -c`**

— Start the process: **`ovstart -c`**

If you check the NNMi status again, mplsjboss does not appear in the status.

- *Problem*: After you uninstall the iSPI for MPLS, the extension packs introduced by the iSPI for MPLS are not removed. If the iSPI Performance for Metrics is running, the extension packs introduced by the iSPI for MPLS, still appear. Remove the extension packs manually before you start installing the iSPI for MPLS again.

  Solution: To remove the extension packs completely, follow these steps:

  a Remove the extension packs using the `uninstallExtensionPack.ovpl` command:

  — Windows - *%PerfSPIInstallDir%*/**`NNMPerformanceSPI/bin/uninstallExtensionPack.ovpl -p`**

  — UNIX - *$PerfSPIInstallDir*/**`NNMPerformanceSPI/bin/uninstallExtensionPack.ovpl -p`**

  For example, use the command to uninstall the extension pack, **`uninstallExtensionPack.ovpl -p MPLS_LSR_Interface.`**

  For more information, see *NNMi iSPI Performance for Metrics, 9.0 Installation Guide*.

  b Manually delete the extension packs introduced by the iSPI for MPLS from the following location:

  — For UNIX - *$NnmDataDir*/`shared/perfSpi/datafiles/extension/final.`

  — For Windows 2008/ Windows 2003 - *%NnmDataDir%*\`shared/perfSpi\datafiles\extension/final.`

  c Stop and Start the processes of NNMi iSPI Performance for Metrics.

- *Problem*: For the non-windows platforms, the mplsjboss does not start after increasing the heap size to 4GB and above. The message appears as follows:

  `Could not reserve enough space for object heap.`

  Solution: From the `/var/opt/OV/shared/mpls/conf/nms-mpls.jvm.properties file`, remove the comment from the **`-d64`** flag. The Xmx value is set to 4GB or above.

Additional Troubleshooting Information

The following information helps you to troubleshoot the problem you may encounter after installing the iSPI for MPLS

Linux Platform-related Troubleshooting Guidelines

- *Problem*: For the large scale Linux systems, when the iSPI for MPLS and NNMi open a lot processes and files and the file count reaches to a maximum value, the iSPI for MPLS stops working and is in an unusable state.

  Solution: Increase the number of open files per process by updating the default max open files value. To increase the value, follow these steps:

  a. Update the `limits.conf` file from the `/etc/security/limits.conf` file. Change the value to **`2048`** from the following:

     ```
     Increase the default max open files for NNMi
     soft nofile 2048
     hard nofile 2048
     ```

  b. Save the updated values.

  c. Log out from the system and log on again. This file limit change is only applicable to the new shells.

  d. Restart NNMi from the following commands:

     — **`ovstop -c`**

     — **`ovstart -c`**

     This restart of NNMi is required only if you have already installed NNMi.

Perform these tasks before you start installing NNMi as the installer inherits the new file limits.

- *Problem*: The iSPI for MPLS does not discover IPv6-enabled MPLS nodes for the Linux platform. The `run.sh` file contains the following lines:

  ```
  # Force IPv4 on Linux systems since IPv6 doesn't work
  correctly with jdk5 and lower
  ```

```
if [ "$linux" = "true" ]; then
   JAVA_OPTS="$JAVA_OPTS -Djava.net.preferIPv4Stack=true"
fi
```

Solution: Update the `run.sh` file to enable the discovery of the IPv6-enabled MPLS nodes. To update the run.sh file, follow these steps:

a. Stop the MPLS processes by using the command: **`ovstop -c mplsjboss.`**

b. From the `/opt/OV/nonOV/mpls/jboss/bin/` location, open the `run.sh` file.

c. Update the following line and change the value of `Djava.net.preferIPv4Stack=true` to `Djava.net.preferIPv4Stack=false.`

   The updated lines appear as:

```
# Force IPv4 on Linux systems since IPv6 doesn't work
correctly with jdk5 and lower
if [ "$linux" = "true" ]; then
   JAVA_OPTS="$JAVA_OPTS -Djava.net.preferIPv4Stack=false"
fi
```

d. Restart the MPLS processes by using the command: **`ovstart -c mplsjboss.`**

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