

*InCharge*TM

Installation Instructions for MPLS/VPN Manager

Version 1.0



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Installing MPLS and the Patch

This document provides instructions for installing the InCharge MPLS/VPN Manager (MPLS) and the SAM 6.2 patch for RPSM and MPLS. It also provides instructions for post-installation tasks, including configuration.

The supported platforms for MPLS are:

- Solaris 8
- Solaris 9
- Windows 2000 Service Pack 4 or later

Prerequisites:

- You must have root or administrative privileges on the local host to perform the installation.
- MPLS requires the installation of the 6.2 InCharge Service Assurance Management (SAM) Suite.
- MPLS requires the installation of the 6.2 Global Console.
- MPLS requires the installation of the 6.2 InCharge IP Management Suite.

For information about using MPLS, see the *InCharge MPLS/VPN Manager User's Guide*.

In this document, the term **BASEDIR** represents the location where InCharge software is installed.

- For UNIX, this location is: `/opt/InCharge<n>/<productsuite>`.
- For Windows, this location is: `C:\InCharge<n>\<productsuite>`.

The `<n>` represents the InCharge software platform version number. The `<productsuite>` represents the InCharge product suite that the product is part of.

About the Patch

The SAM 6.2 patch for RPSM and MPLS is provided on your MPLS CD-ROM. It is located in the *MAPSUPPORT* directory as the *C21920.SUN-ALL.tar.Z* (UNIX) or the *C21920.WIN-ALL.zip* file (Windows).

The patch applies the following new files to your existing SAM directory:

- *InCharge6/SAM/smarts/local/conf/ics/dxa-bgp-ics.conf*
- *InCharge6/SAM/smarts/local/conf/ics/dxa-ospf-ics.conf*
- *InCharge6/SAM/smarts/local/conf/ics/dxa-mpls-vpn-ics.conf*
- *InCharge6/SAM/smarts/local/lib/libsm_bgp_ext13.so*
- *InCharge6/SAM/smarts/local/lib/libsm_ospf_ext13.so*
- *InCharge6/SAM/smarts/local/lib/libsm_mplsvpn_sam.so*

To install the SAM 6.2 patch for RPSM and MPLS, see [Installation Instructions for MPLS and the Patch](#) on page 2. Subsequent configuration tasks for MPLS assume that the patch has been applied.

Installation Instructions for MPLS and the Patch

Perform the following steps to install the InCharge MPLS/VPN Manager (MPLS) and the SAM 6.2 patch for RPSM and MPLS.

- 1 Login as root (UNIX) or Administrator (Windows).
- 2 From your MPLS CD-ROM in the *MAPSUPPORT* directory, copy the *C21920.SUN-ALL.tar.Z* or the *C21920.WIN-ALL.zip* file to the existing *InCharge6/SAM/smarts* directory.
- 3 Apply the SAM 6.2 patch for RPSM and MPLS to the InCharge Service Assurance Management (SAM) Suite. Unpack the *tar.Z* file or the *.zip* file from the *InCharge6/SAM/smarts* directory.

Solaris:

```
cd /opt/InCharge6/SAM/smarts
zcat C21920.SUN-ALL.tar.Z | tar xvf -
```

Windows:

Open the *C21920.WIN-ALL.zip* file in Winzip and extract the file to the *C:\InCharge6\SAM\smarts* directory.

- 4 For MPLS, create the root InCharge directory for your platform.

Solaris: `/opt/InCharge6`

Windows: `C:\InCharge6`

- 5 Create the product suite subdirectory (**BASEDIR**).

Solaris: `/opt/InCharge6/MPLS`

Windows: `C:\InCharge6\MPLS`

- 6 Create the `/smarts` directory.

Solaris: `/opt/InCharge6/MPLS/smarts`

Windows: `C:\InCharge6\MPLS\smarts`

- 7 From your MPLS CD-ROM in the MPLS directory, copy the `solaris2.8-sparc.tar.Z` file or the `winnt-i386.zip` file to the `InCharge6/MPLS/smarts` directory.

- 8 Install MPLS. Unpack the `tar.Z` file or the `.zip` file from the `InCharge6/MPLS/smarts` directory.

Solaris:

```
cd /opt/InCharge6/MPLS/smarts/
zcat solaris2.8-sparc.tar.Z | tar xvf -
```

Windows:

Open the `winnt-i386.zip` file in Winzip and extract the file to the `C:\InCharge6\MPLS\smarts` directory.

- 9 Set up RogueWave software from the `InCharge6/MPLS/smarts/lib` directory. Issue the command for your platform.

Solaris:

```
# /opt/InCharge6/MPLS/smarts/lib/ln -s libtls4d.so.7.11 ▼
▲ libsm_rwtool_mt.so
```

Windows:

```
C:\InCharge6\MPLS\smarts\lib copy tls704d.dll ▼
▲lib_rwtools_mt.dll
```

▼▲ Indicates the command must be typed as one line.

- 10** Set up the environment variables with the **runcmd** command from the *InCharge6/MPLS/smarts/bin* directory. Issue the command for your platform.

Solaris:

```
# /opt/InCharge6/MPLS/smarts/bin/runcmd
```

Windows:

```
C:\InCharge6\MPLS\smarts\bin\runcmd.exe
```

- 11** For MPLS, replicate the SM_FIXED directories to the */local* directory.

Solaris:

Execute the following command from the *InCharge6/MPLS/smarts/bin* directory:

```
# SM_LICENSE=null ./smartsd sm_cloneDir
```

Windows:

On the command line, execute the following commands from the *InCharge6/MPLS/smarts/bin* directory:

```
set SM_LICENSE=null
.\smartsd sm_cloneDir
```

- 12** Initialize the *runcmd_env.sh* file. Open the file with the *sm_edit* utility as follows:

Solaris:

```
# /opt/InCharge6/MPLS/smarts/bin>./sm_edit conf/runcmd_env.sh
```

Windows:

```
C:\InCharge6\MPLS\smarts\bin>.\sm_edit conf\runcmd_env.sh
```

Then, add the following lines to the file:

```
SM_BROKER=localhost:426
SM_LICENSE=/opt/InCharge6/MPLS/smarts/local/conf/trial.dat
SM_SNMP_BUG_COMPATIBLE=TRUE
```

- 13** Reset ownerships (Solaris only). Type:

```
cd /opt/InCharge6/MPLS/
chown -R root:bin *
```


14 Initialize directories under the */smarts* directory:

Solaris:

```
mkdir -p /local/repos
mkdir -p /local/repos/broker
mkdir -p /local/logs
mkdir -p /local/repos/icf
```

Windows:

```
mkdir /local/repos
mkdir /local/repos/broker
mkdir /local/logs
mkdir /local/repos/icf
```

15 Set permissions on directories (Solaris only):

```
chmod 4777 smarts/local/repos/broker
chmod 4777 smarts/local/repos/icf
```

16 Install the *sm_serviced* program (Solaris only).

- Change the directory to the *InCharge6/MPLS/smarts/bin* directory.

```
cd /opt/InCharge6/MPLS/smarts/bin
```

- Open the *ic-serviced* script with the *sm_edit* utility:

```
# /opt/InCharge6/MPLS/smarts/bin>./sm_edit script/ic-serviced
```

In the *ic-serviced* script, edit the value **BASEDIR** to */opt/InCharge6/MPLS/smarts*, save your modification, and close the editor.

- Copy the *ic-serviced* script to the */etc/init.d* directory:

```
cp /opt/InCharge6/MPLS/smarts/local/script/ic-serviced ▼
▲ /etc/init.d/ic-serviced
```

▼▲ Indicates the command must be typed as one line.

- Set up links for the *ic-serviced* script:

```
ln -s /etc/init.d/ic-serviced /etc/rc3.d/S90ic-serviced
ln -s /etc/init.d/ic-serviced /etc/rc0.d/K98ic-serviced
ln -s /etc/init.d/ic-serviced /etc/rc1.d/K98ic-serviced
```

- Initialize the */pipes* directory:

```
mkdir -p /var/smarts/pipes
```

- Set ownership and permissions on the directory:

```
chown -R root:bin /var/smarts  
chmod -R 770 /var/smarts
```

MPLS Post-Installation Tasks

Post-installation tasks include:

- License considerations.
- Configure MPLS and to send MPLS notifications to a Service Assurance Global Manager.
- Start MPLS and restart the Global Manager with additional libraries.
- Update the Global Console.

License Considerations

The current version of InCharge MPLS does not require additional license file entries.

Configuration Tasks

To configure MPLS, you must set configuration parameters in the following files:

- *LOCAL.import*
- *ics.conf*

Configuration instructions are as follows:

- 1 Use the `sm_edit` utility to edit the *LOCAL.import* file located in the *InCharge6/MPLS/smarts/conf/mpls* directory. At the bottom of the *LOCAL.import* file, you:
 - Must uncomment the last two lines of code that refer to INCHARGE-AM and INCHARGE-SA as objects.
 - Might need to modify these default InCharge Manager names to match the names of your InCharge IP Availability Manager and Global Manager. If you are running multiple InCharge Availability Managers, add additional entries of the form `InChargeDomain::<domain manager name>` for each one of them.

Note: At the conclusion of your `sm_edit` session, the `LOCAL.import` file will be saved to the `local/conf/mpls` directory.

For additional information about the `LOCAL.import` file, see [Notes About the LOCAL.import File](#) on page 10.

- 2 For the Service Assurance Management Suite, you need to add a `DomainType` entry for MPLS to the Global Manager's `ics.conf` file. Use the `sm_edit` utility to edit the `ics.conf` file, located in the `InCharge6/SAM/smarts/conf/ics` directory.

Add the following `DomainType` entry. The minimum certainties and smoothing intervals are set to the same value as set for AM (or PM).

```
DomainType
{
    ConfFile           = "dxa-mpls-vpn-ics.conf";
    MinimumCertainty   = 0.24;
    SmoothingInterval  = 65;
    Name               = "INCHARGE-MPLS";
}
```

Note: The data exchange files for MPLS and other files are provided by the SAM 6.2 patch for RPSM and MPLS.

For more information about the `ics.conf` file, see the *InCharge Service Assurance Manager Configuration Guide*.

Starting InCharge Products

Use the `sm_service` facility to start MPLS and restart the Global Manager.

- 1 Before starting MPLS, set the following environment variables in `InCharge6/MPLS/smarts/local/conf/runcmd_env.sh`, as described in [Setting up the CLI Adapter on page 10](#):

```
EXPECT_USERID
export EXPECT_USERID
EXPECT_PASSWORD
export EXPECT_PASSWORD
EXPECT_ENABLE
export EXPECT_ENABLE
```

- 2 Install the MPLS program as a service with the **sm_service install** command:

Solaris:

```
▼# /opt/InCharge6/MPLS/smarts/bin/sm_service install --force
--name=ic-mpls-server
--startmode=runonce
/opt/InCharge6/MPLS/smarts/bin/sm_server
--name=INCHARGE-MPLS --config=mpls-vpn --output ▲
```

Windows:

```
▼C:\InCharge6\MPLS\smarts\bin\sm_service install --force
--name=ic-mpls-server
--startmode=runonce
C:\InCharge6\MPLS\smarts\bin\sm_server
--name=INCHARGE-MPLS --config=mpls-vpn --output ▲
```

▼▲ Indicates the command must be typed as one line.

- 3 Start the service:

Solaris:

```
# /opt/InCharge6/MPLS/smarts/bin>./sm_service start ▼
▲ic-mpls-server
```

Windows:

```
C:\InCharge6\MPLS\smarts\bin>./sm_service start ▼
▲ic-mpls-server
```

Restarting the Global Manager

For the Global Manager, you need to load additional libraries (models).

- 1 Check the existing service installation invocation. For example, issue:

```
# sm_service show ic-sam-server --cmdline
```

- 2 Add the library to the existing service invocation. Notice the **--model** option in the following examples.

Solaris:

```
▼# /opt/InCharge6/SAM/smarts/bin/sm_service install
--force --name=ic-sam-server --startmode=runonce
/opt/InCharge6/SAM/smarts/bin/sm_server
--name=INCHARGE-SA --config=ics --output
--model=sm_mplsvpn_sam ▲
```

Windows:

```
▼C:\InCharge6\SAM\smarts\bin\sm_service install
--force --name=ic-sam-server --startmode=runonce
C:\InCharge6\SAM\smarts\bin\sm_server
--name=INCHARGE-SA --config=ics --output
--model=sm_mplsvpn_sam ▲
```

▼▲ Indicates the command must be typed as one line.

3 Start the service for the Global Manager:**Solaris:**

```
# /opt/InCharge6/SAM/smarts/bin>./sm_service start ▼
▲ic-sam-server
```

Windows:

```
C:\InCharge6\SAM\smarts\bin>.\sm_service start ▼
▲ic-sam-server
```

Updating the Global Console

The SAM 6.2 patch for RPSM and MPLS supplies a new version of *masterpiece.jar* and installs it in the *local/classes* directory of the SAM Suite. The new *masterpiece.jar* file enables the presentation of new MPLS and VPN map views.

Note: The new *masterpiece.jar* file may be used in other installations of the Global Console, on any operating system, to allow operators to activate the new views without installing the entire product.

Setting up the CLI Adapter

Note: For Windows, Command Line Interface discovery is currently not supported by InCharge MPLS/VPN Manager. For an MPLS-enabled device to be correctly discovered, it must support the following MIBs: MPLS-LSR-MIB and MPLS-VPN-MIB. On Windows, set the attribute ProhibitCLI to TRUE in the file *local/conf/mpls-vpn/LOCAL.import*.

For certain devices, you may need to support a Command Line Interface in lieu of SNMP discovery. For this function, you need to set these environment variables in *InCharge6/MPLS/smarts/local/conf/runcmd_env.sh* according to the credentials set in the network:

- EXPECT_USERID
- EXPECT_PASSWORD
- EXPECT_ENABLE

All devices that require CLI need to have the same userid, password, and EXPECT_ENABLE values.

If credentials are set up such that any of the above is not prompted for, you still need to set a value for that variable (for example, EXPECT_ENABLE=dummy).

Notes About the LOCAL.import File

The *LOCAL.import* file is provided in the *InCharge6/MPLS/smarts/conf/mpls* directory.

The file is shipped with most lines commented out.

In general, the *LOCAL.import* file identifies the InCharge Managers (AM and SAM) as well as the parameters used by applications:

- ASI_Manager::MPLSVPN-Manager

MPLS reads this file at start-up time.

The file identifies the default names of the InCharge Managers (AM and SAM). You must specify the names of your InCharge Managers prior to starting MPLS. The last two lines of the file contain these identifications as described in [Configuration Tasks](#) on page 6.

The configuration information is set and saved in the repository the very first time MPLS is started. If you wish to modify the application in the `ASI_Manager` class, you may do so via the Domain Manager Administration Console or the Domain Manager command line interface (`dmctl`), and then (optionally) save the repository.

The MPLS parameters are:

RUN-TIME PARAMETERS	DESCRIPTION
ProhibitCLI	Disables CLI discovery.
TEST PARAMETERS	
AutoDiscover	Indicates that once synchronization with AM is completed, device probing (discovery) may commence immediately. If set to <code>FALSE</code> , devices are added to the pending list but discovery will have to be triggered manually.
numberProbeThreads	Number of concurrent probe threads used by discovery. This is useful in unit testing discovery.
TraceSNMPInstrumentation, TraceDiscovery, TraceEvents, TraceTraps and TraceSyslog	Activate traces of internal components within the server.

Table 1: MPLS Parameters for the `LOCAL.import` File

