

*InCharge*TM

Installation Instructions for Routing Protocol Services Manager

Version 1.0



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Installing RPSM and the Patch

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

The supported platforms for RPSM 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.
- RPSM requires the installation of the 6.2 InCharge Service Assurance Management (SAM) Suite.
- RPSM requires the installation of the 6.2 Global Console.
- RPSM requires the installation of the 6.2 InCharge IP Management Suite.

For information about using RPSM, see the *InCharge Routing Protocol Services 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 RPSM 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 RPSM and the Patch](#) on page 2. Subsequent configuration tasks for RPSM assume that the patch has been applied.

Installation Instructions for RPSM and the Patch

Perform the following steps to install the InCharge Routing Protocol Services Manager (RPSM) and the SAM 6.2 patch for RPSM and MPLS.

- 1 Login as root (UNIX) or Administrator (Windows).
- 2 From your RPSM 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 RPSM, create the root InCharge directory for your platform.

Solaris: `/opt/InCharge6`

Windows: `C:\InCharge6`

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

Solaris: `/opt/InCharge6/RPSM`

Windows: `C:\InCharge6\RPSM`

- 6 Create the `/smarts` directory.

Solaris: `/opt/InCharge6/RPSM/smarts`

Windows: `C:\InCharge6\RPSM\smarts`

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

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

Solaris:

```
cd /opt/InCharge6/RPSM/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\RPSM\smarts` directory.

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

Solaris:

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

Windows:

```
C:\InCharge6\RPSM\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/RPSM/smarts/bin* directory. Issue the command for your platform.

Solaris:

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

Windows:

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

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

Solaris:

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

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

Windows:

On the command line, execute the following commands from the *InCharge6/RPSM/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/RPSM/smarts/bin>./sm_edit conf/runcmd_env.sh
```

Windows:

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

Then, add the following lines to the file:

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

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

```
cd /opt/InCharge6/RPSM/
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/RPSM/smarts/bin` directory.

```
cd /opt/InCharge6/RPSM/smarts/bin
```

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

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

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

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

```
cp /opt/InCharge6/RPSM/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
```

RPSM Post-Installation Tasks

Post-installation tasks include:

- License considerations.
- Configure RPSM to use Border Gateway Protocol (BGP) or Open Shortest Path First (OSPF), and to send RPSM notifications to a Service Assurance Global Manager.
- Start RPSM and restart the Global Manager with additional libraries.
- Update the Global Console.
- Configure trap processing.
- Configure syslog messages.

License Considerations

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

Configuration Tasks

You can configure RPSM to use either BGP or OSPF. If you wish to use both BGP and OSPF, you need to deploy separate RPSMs; one for each protocol.

For each RPSM, you must set configuration parameters in the following files:

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

Configuration instructions are as follows:

- 1 For RPSM, the *LOCAL.import* file is provided for BGP and OSPF. It is located in the respective directory, *InCharge6/RPSM/smarts/conf/bgp* or *InCharge6/RPSM/smarts/conf/ospf*.

Use the `sm_edit` utility to edit the `LOCAL.import` file. 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` sessions, the `LOCAL.import` file will be saved to the `local/conf/bgp` or `local/conf/ospf` directory.

For additional information about the `LOCAL.import` file, see [Notes About the LOCAL.import File](#) on page 12.

- 2 For the Service Assurance Management Suite, you need to add `DomainType` entries for RPSM 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` entries. The minimum certainties and smoothing intervals are set to the same value as set for AM (or PM).

```
DomainType
{
    ConfFile           = "dxa-bgp-ics.conf";
    MinimumCertainty  = 0.24;
    SmoothingInterval = 65;
    Name               = "INCHARGE-BGP";
}
DomainType
{
    ConfFile           = "dxa-ospf-ics.conf";
    MinimumCertainty  = 0.24;
    SmoothingInterval = 65;
    Name               = "INCHARGE-OSPF";
}
```

Note: The data exchange files for RPSM 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 RPSM and restart the Global Manager.

RPSM for BGP

- 1 To start RPSM for BGP, install the RPSM program as a service with the **sm_service install** command:

Solaris:

```
▼# /opt/InCharge6/RPSM/smarts/bin/sm_service install --force
--name=ic-bgp-server
--startmode=runonce
/opt/InCharge6/RPSM/smarts/bin/sm_server
--name=INCHARGE-BGP --config=bgp --output ▲
```

Windows:

```
▼C:\InCharge6\RPSM\smarts\bin\sm_service install --force
--name=ic-bgp-server
--startmode=runonce
C:\InCharge6\RPSM\smarts\bin\sm_server
--name=INCHARGE-BGP --config=bgp --output ▲
```

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

- 2 Start the service:

Solaris:

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

Windows:

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

RPSM for OSPF

- 1 Before starting RPSM for OSPF, set the following environment variable in `InCharge6/RPSM/smarts/local/conf/runcmd_env.sh`:

```
SM_SNMP_ALWAYS_ABLE_TO_POLL=Y
export SM_SNMP_ALWAYS_ABLE_TO_POLL=Y
```

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

Solaris:

```
▼# /opt/InCharge6/RPSM/smarts/bin/sm_service install --force
--name=ic-ospf-server
--startmode=runonce
--env=SM_SNMP_ALWAYS_ABLE_TO_POLL=Y
/opt/InCharge6/RPSM/smarts/bin/sm_server
--name=INCHARGE-OSPF --config=ospf --output ▲
```

Windows:

```
▼C:\InCharge6\RPSM\smarts\bin\sm_service install --force
--name=ic-ospf-server
--startmode=runonce
--env=SM_SNMP_ALWAYS_ABLE_TO_POLL=Y
C:\InCharge6\RPSM\smarts\bin\sm_server
--name=INCHARGE-OSPF --config=ospf --output ▲
```

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

- 3 Start the service:

Solaris:

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

Windows:

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

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

From a shell script enter the following to invoke RPSM for OSPF:

```
export SM_SNMP_ALWAYS_ABLE_TO_POLL=Y
sm_server --name=INCHARGE-OSPF --config=ospf --output --daemon
```

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_bgp_ext13 --model=sm_ospf_ext13 ▲
```

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_bgp_ext13 --model=sm_ospf_ext13 ▲
```

-
- ▼▲ 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
```

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

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 BGP and OSPF map views.

By default, the display of the BGP or OSPF maps is not enabled. You need to select BGP and OSPF Connectivity as console operations. Use the Global Manager Administration Console to modify the console operations for user profiles. Close the Global Console and open it again to view the BGP or OSPF maps. For more information about the Global Manager Administration Console and user profiles, see the *InCharge Service Assurance Manager Configuration Guide*.

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.

Configuring Trap Processing

RPSM for BGP and RPSM for OSPF accept traps from ports specified in their respective *LOCAL.import* file.

By default, the *trapPort* variable is commented out in the *trapd.conf* file, located in the *InCharge6/SAM/smarts/conf/icoi* directory of the SAM Suite. You should set this value and configure trap forwarding to forward the traps to the designated ports (generally from the OI trap receiver).

To forward BGP traps, add the following entry in your *trapd.conf* file:

```
#          BGP Snmp v2 traps
FORWARD: *.*.*.* .1.3.6.1.2.1.15.7 * * host:port
#          BGP Snmp v1 traps
FORWARD: *.*.*.* .1.3.6.1.2.1.15 * * host:port
#          CiscoMgmt trap for reconfiguration
FORWARD: *.*.*.* .1.3.6.1.4.1.9.9.43.2 * * host:port
```

To forward OSPF traps, add the following entry in your *trapd.conf* file:

```
#          OSPF traps for non-cisco devices
FORWARD: *.*.*.* .1.3.6.1.2.1.14.16.2 * * host:port
#          CiscoMgmt trap for reconfiguration
FORWARD: *.*.*.* .1.3.6.1.4.1.9.9.43.2 * * host:port
```

One reminder: The *trapd.conf* file used for forwarding must have the entries:

```
ENABLE_FWD: TRUE
MATCH: all
```

Configuring Syslog Processing

RPSM for BGP and RPSM for OSPF accept system log (syslog) messages by parsing (“tailing”) the file specified in their respective *LOCAL.import* file. By default, the SyslogName variable is commented out. You should set this value and configure syslog forwarding to forward the syslog messages to the specified file.

Note: The SyslogName variable identifies the syslog file to be parsed. Another variable, SyslogFileName, identifies the syslog file to be read. Do NOT set the SyslogFileName variable, which is used primarily for testing and verification.

By default, the system is set up to parse the syslog file by the server process.

In some cases, it may not be possible to send syslog messages to the appropriate host. One such example is when syslog messages are sent to a different system executing a Service Assurance Adapter Platform server.

The solution to this configuration is to execute an adapter process on the system running the Service Assurance Adapter Platform. For the `sm_adapter --tail` option, specify the fully-qualified name of the file containing the syslog messages.

RPSM for BGP

```
sm_adapter --name=INCHARGE-BGP-SYSLOG -s INCHARGE-BGP \  
--output=BGP-SYSLOG --daemon --tail=[absolute file name] \  
bgp/bgp-syslog.asl
```

RPSM for OSPF

```
sm_adapter --name=INCHARGE-OSPF-SYSLOG -s INCHARGE-OSPF \  
--output=OSPF-SYSLOG --daemon --tail=[absolute file name] \  
ospf/ospf-syslog.asl
```

Notes About the LOCAL.import File

The *LOCAL.import* file is provided in the configuration directories of RPSM:

- *InCharge6/RPSM/smarts/conf/bgp*
- *InCharge6/RPSM/smarts/conf/ospf*

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::BGP-Manager
- ASI_Manager::OSPF-Manager

RPSM 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 RPSM. 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 RPSM 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 RPSM parameters are:

RUN-TIME PARAMETERS	DESCRIPTION
trapPort	Port number traps are received on. By default, the value of 0 is set preventing trap processing from taking place.
SyslogName	Identifies the syslog file name to be tailed by the syslog receiver executing in this server.
MinimumReprobePeriod	The number of seconds a discovery request will be pended once we receive a trap or syslog message indicating the need to rediscover the device. This parameter, by default is set to 1800, thus batching the discovery process for multiple devices. In a demo or a lab situation, this parameter should be overridden and set to 0.
TEST PARAMETERS	
AutoDiscover	Indicates that once synchronization with AM is completed, device probing (discovery) may commence immediately. If set to FALSE, devices are added to the pending list but discovery will have to be triggered manually.
SyslogFileName	Identifies the file to be read-in by the syslog receiver. This is used for unit testing only. For run-time use the SyslogName below.
numberProbeThreads	Number of concurrent probe threads used by discovery. This is useful in unit testing discovery.

RUN-TIME PARAMETERS	DESCRIPTION
trapPort	Port number traps are received on. By default, the value of 0 is set preventing trap processing from taking place.
TraceSNMPInstrumentation, TraceDiscovery, TraceEvents, TraceTraps and TraceSyslog	Activate traces of internal components within the server.

Table 1: RPSM Parameters for the LOCAL.import File