



All-IP CDMA2000®
iCell® S-RAN System

S-RAN Release 2.x.x Guide

Part Number D02639GS

2

S-RAN INSTALLATION AND INITIAL CONFIGURATION

This chapter explains the general S-RAN installation and initial configuration process.



Caution:

*The procedures described in this chapter are performed by, or under the guidance of, Star Solutions. They are included here for informational purposes. **Refer to the release notes** included with each software upgrade package for any changes to the installation and initial configuration procedure.*

Installation and Initial Configuration

These instructions cover initial installation and upgrades. Steps marked with **[Initial Installation Only]** are applicable only during an initial installation and not during an upgrade. Steps marked with **[Upgrade Only]** are applicable only during an upgrade and not during an initial installation.



Caution:

The upgrade steps in this section apply only to upgrades from S-RAN Release 2.0.0 and higher. To upgrade from earlier releases, contact Star Solutions Customer Service.

In addition, S-RAN and the Provisioning Server can be installed on the the same system or on separate systems. Steps marked with **[Initial Installation on Separate System Only]** are applicable only during initial installation of the S-RAN or Provisioning Server on a dedicated system.



If you are installing S-RAN and the Provisioning Server on the same system, install S-RAN first, then add the Provisioning Server. Refer to the Provisioning Server Release Notes for the procedure.

- [Initial Installation Only]** Install CentOS 5.2 on a suitable system.
- Log in to the target S-RAN host as root.
- [Initial Installation Only]** Edit `/etc/ld.so.conf` and add these lines at the top:

```
/lib  
/usr/lib
```
- Gather the RPM packages and copy them to a non-temporary local directory on the S-RAN, such as `/root/rje` (create it if it does not exist).

- 5 Verify the RPMs:
 - a Enter:

```
# cat *.md5sum
```
 - b Enter:

```
# md5sum *.rpm
```
 - c Compare the results. If the checksums match, continue.
- 6 **[Upgrade Only]** Stop the S-RAN services:

```
# service sran-snmpd stop
# service snmptrapd stop
# service snmpd stop
# service sipran stop
```
- 7 **[Initial Installation Only]** Delete net-snmp-5.4.1-2:

```
# rpm -e net-snmp-5.4.1-2.i386.rpm
```
- 8 **[Initial Installation Only]** Install lm_sensors:

```
# rpm -ivh lm_sensors-2.10.0-3.1.i386.rpm
```
- 9 **[Initial Installation Only]** Install net-snmp-5.3.1-19.e15:

```
# rpm -ivh net-snmp-5.3.1-19.e15.i386.rpm
```
- 10 **[Initial Installation Only]** Install net-snmp-perl:

```
# rpm -ivh net-snmp-perl-5.3.1-19.e15.i386.rpm
```
- 11 **[Initial Installation Only]** Install net-snmp-5.4.1-2:

```
# rpm -ivh net-snmp-5.4.1-2 --force --nodeps
```
- 12 **[Initial Installation Only]** Install perl-XML-LibXML-Common:

```
# rpm -ivh perl-XML-LibXML-Common-0.13-8.2.2.i386.rpm
```
- 13 **[Initial Installation Only]** Install perl-XML-Namespacesupport:

```
# rpm -ivh perl-XML-Namespacesupport-1.09-1.2.1.noarch.rpm
```
- 14 **[Initial Installation Only]** Install perl-XML-SAX:

```
# rpm -ivh perl-XML-SAX-0.14-5.noarch.rpm
```
- 15 **[Initial Installation Only]** Install perl-XML-LibXML:

```
# rpm -ivh perl-XML-LibXML-1.58-5.i386.rpm
```
- 16 **[Initial Installation Only]** Install php5:

```
# rpm -ivh php5-5.2.3-2.i386.rpm
```
- 17 **[Upgrade Only]** Back up the /usr/local/uswitch/conf directory for the previous S-RAN version.
- 18 Install uswitch, substituting the current version for x.x.x-x:

```
# rpm -ivh uswitch-x.x.x-x.i386.rpm --force --nodeps
```
- 19 Install sipran, substituting the current version for x.x.x-x:

```
# rpm -ivh sipran-x.x.x-x.i386.rpm --force --nodeps
```

- 20 [Initial Installation Only]** Install `sran-snmp`, substituting the current version for `x.x.x-x`.
- ```
rpm -ivh sran-snmp-x.x.x-x.i386.rpm --force
```
- 21** Install `sran-ems`, substituting the current version for `x.x.x-x`:
- ```
# rpm -ivh sran-ems-x.x.x-x.i386.rpm --force
```
- 22** Restart the HTTP daemon:
- ```
service httpd restart
```
- 23** Set the S-RAN version:
- a** Enter:
- ```
# cd /usr/local/
```
- b** Enter, substituting the current version for `x.x.x.x`:
- ```
service sipran setver vx.x.x.x
```
- 24 [Initial Installation Only]** Comment out a line in `/etc/sudoers`:
- a** Edit `/etc/sudoers`.
- b** Insert a `#` before the `Defaults requiretty` line:
- ```
#Defaults    requiretty
```
- c** Save changes and close file.
- 25 [Initial Installation Only]** Add a line for the Provisioning Server to `/etc/hosts`.
- 26** Verify that an S-RAN software license is installed. Check `/etc` for a `.lic` file. If `/etc/sran-<hostname>.lic` is not present, contact Star Solutions.
- 27** Start the S-RAN services:
- ```
service sipran start
service snmpd start
service snmptrapd start
service sran-snmpd start
```



*After the initial installation, these services start automatically when the system starts.*

- 28** Configure S-RAN using EMS:
- a** From a web browser, go to **`http://<s-ran_ip_addr>/ems`**
- b** Log in to the S-RAN EMS as administrator.
- c** Click **Status**.
- d** Click the **Configure** icon for SIPRAN. The S-RAN Configuration page appears. See [Figure 8](#) for an example.

Figure 8 Example S-RAN Configuration Page

**SMS - Short Message Service**

Number of SMS retries

Retry timeout (in milliseconds)

**SPMC - Subscriber Provisioning Management**

Provisioning Server IP address

Provisioning Server port

Access Point

**CODEC - Licensed Transcoding Codecs**

Licensed codecs  EVRC  EVRC-B  EVRC-WB  
 G.729  G.729A  G.729B

Other licensed codecs

**SNMP - SNMPv2c Traps for Alarm, Statistic and Status**

Send SNMP traps for  Alarms  Statistics  Status

IPaddress:Port





Destination 1

Destination 2

Destination 3

S-RAN SNMP Server

**BSC & BTS - All available BSC and BTS for this S-RAN**

| Element | IP address    | Edit                                                                                  | Delete                                                                                |
|---------|---------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| BSC     | 172.25.143.23 |  |  |
| BTS     | 172.25.142.29 |  |  |

**e** In *SPMC - Subscriber Provisioning Management*:

- Enter the Provisioning Server IP address.
- Enter the Provisioning Server listening port number.
- Enter the Access Point (the S-RAN hosting the EMS) name.

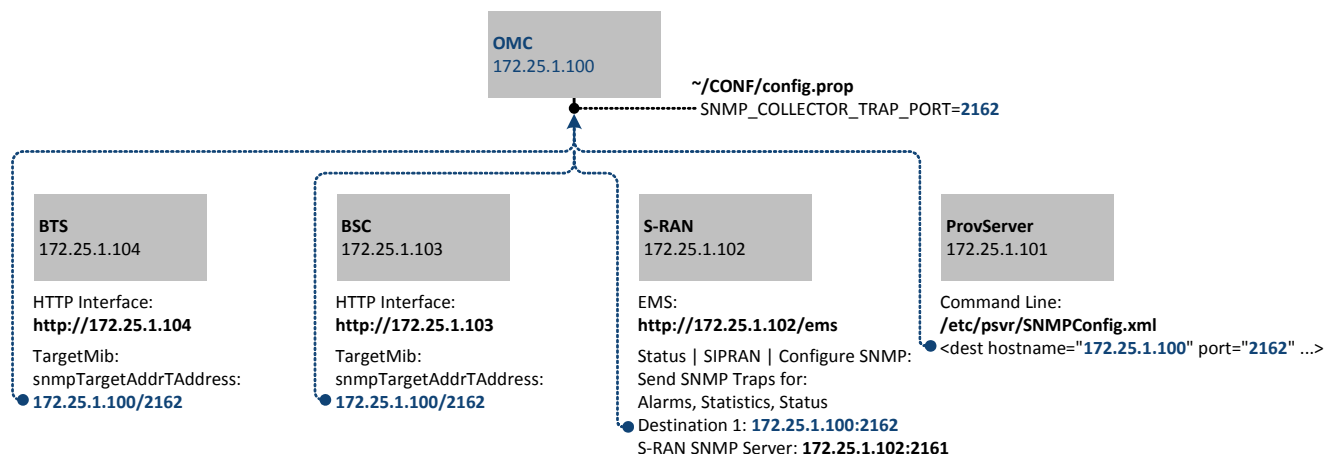
**f** In *CODEC - Licensed Transcoders*, select the codecs that the S-RAN is licensed to use (see `/etc/sran-<hostname>.lic`).

**g** In *SNMP - SNMPv2c Traps for Alarms, Statistics and Status*:

- Select whether to send SNMP traps for Alarms, Statistics, and/or Status.
- Enter IP address and port numbers of up to three SNMP trap destinations.
- Enter the S-RAN SNMP Server address (this is the S-RAN's IP address) and port number.

See [Figure 9](#) for an example SNMP network configuration.

Figure 9 Example S-RAN Network SNMP Configuration



**h** In *BSC & BTS* - All available BSCs and BTSs for this S-RAN:

- Click **Add**.
- From BSC or BTS, select the Element type (BSC or BTS) and enter its IP address.
- Repeat until all BSCs and BTSs for the S-RAN are added.

**i** Click **Submit**.

**j** Click **Status** in the left-side navigation frame.

**k** Click **Refresh** and watch for the Operational Status to change to Enabled. The Provisioning Server must be running for the S-RAN to become enabled.

**29** Restart the S-RAN services. See [step 6](#) and [step 27](#).

**30** Configure OMC to monitor the S-RAN/BSC/BTS. Continue with [OMC Configuration](#).

**OMC Configuration** This section explains how to add S-RAN network elements to the OMC and how to set up reachthrough access from the OMC to the S-RAN network elements.

### Adding S-RAN Network Elements to OMC

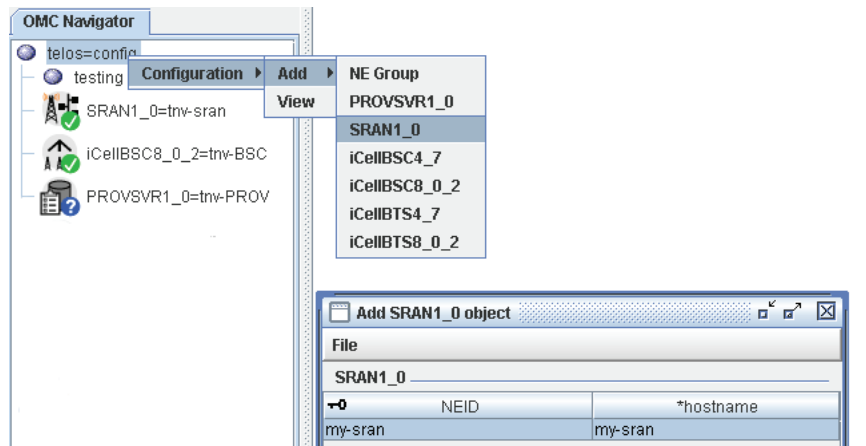
Each S-RAN network element, with the exception of the Mobility Server, must be added manually to the OMC.

- 1** Start the OMC Client and log in.
- 2** Right-click the root node, **telos=config**.
- 3** From the pop-up menu, click **Configuration | Add**, then:
  - Provisioning Server: **PROVSVR1\_0**
  - S-RAN: **SRAN1\_0**
  - BSC: **iCellBSC8\_x\_x**
  - BTS: **iCellBTS8\_x\_x**

#### 4 Enter an NEID and hostname, then click **Submit**.

The NE is added.

**Figure 10** Adding an S-RAN Network Element Manually to OMC



#### Reachthrough from OMC

The OMC Client allows for reachthrough to element managers and command-line interfaces running on S-RAN network elements. The available reachthrough options are listed under *Launch* in the menu that appears when any network element is right-clicked in the OMC Client.

When the iCell BSC and S-RAN run on the same hardware platform, the HTTP user interface for the BSC and the EMS user interface for S-RAN need to listen on different TCP ports.

The HTTP user interface for the BSC is typically changed to port 8888 during system staging. The HTTP user interface for the BTS is typically changed to 8888 as well for consistency.

**Table 3** Reachthrough from OMC Scenarios

| Reachthrough to        | Launches    | Default Destination   | Port |
|------------------------|-------------|-----------------------|------|
| SRAN (EMS)             | Web browser | http://<srans-ip>/ems | 80   |
| SRAN (Secure)          | PuTTY       | root@<srans-ip>       | 22   |
| PROVSVR (Provisioning) | Web browser | http://<psvr-ip>/spui | 80   |
| PSVR (Secure)          | PuTTY       | root@<psvr-ip>        | 22   |
| iCell-BSC              | Web browser | http://<bsc-ip>       | 80*  |
| iCell-BTS              | Web browser | http://<bts-ip>       | 80*  |

*\*When iCell BSC runs on the same platform as S-RAN, the BSC HTTP listen port is typically changed to 8888. The BTS port is typically changed to 8888 as well for consistency.*

*On the S-RAN/BSC, /home/icell/bss/etc/icell\_httpport.conf specifies the port to use.*

# 3

## S-RAN CONFIGURATION

This chapter explains how to configure the basic S-RAN communications settings. It contains these sections:

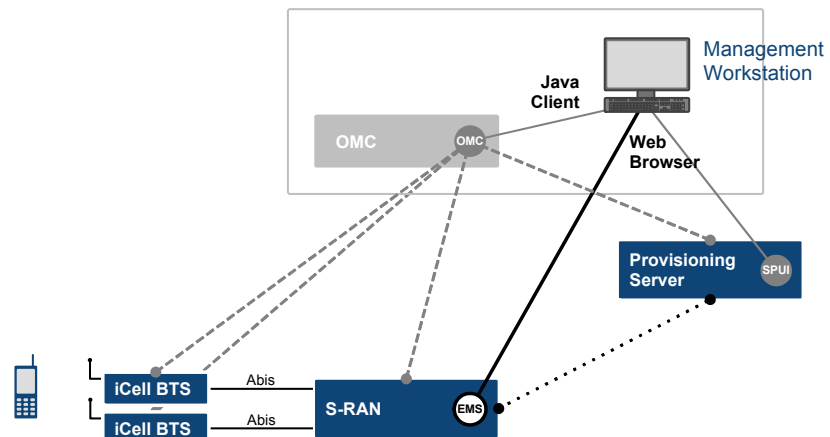
- [Accessing the EMS Interface](#)
- [Configuring the S-RAN System](#)
- [Advanced Configuration](#)

### Accessing the EMS Interface

The web-based Element Management System (EMS) interface is used to configure basic S-RAN communications settings.

The EMS is one of three primary management interfaces for the S-RAN system. The [OMC Server](#) gathers and presents alarms and performance statistics for all BTSs, BSCs, S-RANs, and Provisioning Servers in a system. The [Subscriber Provisioning User Interface](#) (SPUI) is used to provision subscribers at the system, enterprise, and user group levels. See [Figure 11](#) for context.

**Figure 11** Accessing the Web-based EMS Interface



**Logging On to EMS** To access the EMS interface:

- 1 From a web browser, go to:  
`http://<S-RAN_IP_ADDRESS>/ems`



*The default login account is administrator.*



*Only one session can be opened using the same account at the same time.*