

# Configure SS7 for AAA

## OPERATING INSTRUCTIONS

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Configure SS7 for AAA



# 1 Introduction

This document is a guideline that provides an example of configuring the Signaling System #7 (SS7) stack layers for IPWorks AAA.

The SS7 stack configuration is as the prerequisite for the following IPWorks AAA related functions/scenarios

- Wi-Fi Mobility Management (WiFi MM)
- Diameter over SCTP
- Secure Entitlement Server (SES) Support
- Wi-Fi AAA

## 1.1 Target Groups

This document is intended for the installation personnel.

## 1.2 Related Information

Trademark information, typographic conventions, and definition and explanation of abbreviations and terminology can be found in the following documents:

- Trademark Information
- Typographic Conventions
- Glossary of Terms and Acronyms





## 2 Prerequisites

This section describes the prerequisites required for the configuration.

### 2.1 Documents

Before using this document to perform the SS7 configuration, the users are required to read the following documents:

- Signaling Manager User Guide

This document provides common SS7 configurations for IPWorks, for other SS7 configuration, you can refer to the following documents:

- Configuring SS7, SCTP
- Configuring SS7 Signaling Network, SCCP, M3
- Configuring SS7 Signaling Network, M3 IETF
- Configuring SS7 System Components
- Configuring SS7 TCAP
- Reconfiguring SS7 Network, Creating and Defining GT Routing
- Configuring SS7, INAP
- Configuring SS7, MAP

### 2.2 Users

The installation personnel are required to have prior knowledge about:

- Intermediate UNIX and Linux skills
- SS7 knowledge

### 2.3 Tool

The stack can be configured by using the GUI tool:

- Signaling Manager: It is a Java tool delivered with the TE stack.

**Note:** Ensure that the target host supports GUI mode.



## 2.4 Condition

Before configuring SS7, make sure that the following conditions are met:

- Ensure that the SS7 CAF is installed and running normally on PL-3 and PL-4:

```
# cmw-status -v su | grep -i ss7 -A 4

safSu=SC-2,safSg=2N,safApp=ERIC-ss7caf.mgmt
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
--
safSu=SC-1,safSg=2N,safApp=ERIC-ss7caf.mgmt
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
--
safSu=PL-4,safSg=NWA,safApp=ERIC-ss7caf.core
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
--
safSu=PL-4,safSg=2N,safApp=ERIC-ss7caf.netwcontrol
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
--
safSu=PL-3,safSg=NWA,safApp=ERIC-ss7caf.core
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
--
safSu=PL-3,safSg=2N,safApp=ERIC-ss7caf.netwcontrol
  AdminState=UNLOCKED(1)
  OperState=ENABLED(1)
  PresenceState=INSTANTIATED(3)
  ReadinessState=IN-SERVICE(2)
```

For more information about how to check IPWorks software information, refer to [View Software Information](#).





## 3 Preparation

This section provides the preparation procedures that need to be done before SS7 configuration.

### 3.1 Configuring Signaling Manager

To configure the tool Signaling Manager, do the following:

1. Log on to the SC-1.

```
# ssh root@<MIP_OAM_IP>
```

2. On the SC-1, check whether PL-3 and PL-4 IP addresses are correct in the file `/etc/hosts`.

```
# vi /etc/hosts
```

```
169.254.100.4 PL-4
169.254.100.3 PL-3
```

3. Configure `cp.manager.address` in the Signaling Manager configuration file `signmgr.cnf`.

```
# vi /opt/sign/etc/signmgr.cnf
```

```
cp.manager.address=ss7cafcpmaddress:6669
```

Save the file and exit.

4. Check if the Signaling Manager can be started on SC-1.

```
# /opt/sign/EABss7050/bin/signmgrui -own.conf /opt/sign/etc/signmgr.cnf &
```

**Note:**

- If the JAVA cannot be found, use the command `export JAVA_HOME=/opt/sign/EABss7069/jre`
- If no X11 DISPLAY variable was set, try to log out the SC-1, and then log on again by using the `-X` option:

```
# ssh -X root@<MIP_OAM_IP>
```



## 3.2 Starting from Template Configuration File

The SS7 configuration template file contains the default configuration information for IPWorks AAA. Before the SS7 configuration, you need to start Signaling Manager from the template.

1. Log on to SC-1.

```
# ssh root@<MIP_OAM_IP>
```

2. Copy the SS7 template files.

```
# scp root@SC-1:/opt/ipworks/common/others/*.cim /opt/sign/cnf_template/
```

3. Start the Signaling Manager on the SC-1 if it is not started yet.

```
# /opt/sign/EABss7050/bin/signmgrui -own.conf /opt/sign/etc/signmgr.conf &
```

4. After the main **Signaling Manager** window pops up, select **File > Open** from the menu bar, then select template.cim file in the **Template** tab.

Select /opt/sign/cnf\_template/SS7CAF\_wifi\_wifimm\_ses\_sctp.om.cim.

5. Select **Tools > Expert Mode** and **Tools > Configuration Mode > Initial**.

**Note:** **Expert Mode** enables all the properties to be visible in the Signaling Manager.



## 4 SS7 Network Plan

This section provides the SS7 network plan that is associated with the SS7 configuration for different IPWorks AAA functions.

The basic SS7 configuration is set in the SS7 configuration template file. To realize one or more IPWorks AAA related functions, you need to adapt the configuration to site-specific SS7 network. Meanwhile, according to actual requirement, you might also need to remove unused functions from the default configuration template. Both IPv4 and IPv6 are supported to work with CUDB.

For more information about the configurations, see Section 5 on page 9.

Table 1 and Table 2 list all configuration parameters values according to different AAA functions. These configurations will be applied in Section 5 on page 9.

**Note:** The following parameter values are used as examples in this document. Except for the value of SSN for "Local" site type, other values might be changed according to customer's network plan.

Table 1 SS7 Network Plan - Part 1

Function	Site Type	SSN	SPC	SCTP Port	SCTP IP
Diameter over SCTP	Local	-	-	2905 2906	10.170.63.117 <sub>(1)</sub>
Wi-Fi AAA	Local	149	100	2905 2906	10.170.63.117 <sub>(1)</sub>
	Remote	6	200	2905	10.175.185.11 <sub>(2)</sub>
Wi-Fi MM	Local	147	100	2905 2906	10.170.63.117 <sub>(1)</sub>
	Remote	6	202	2905	10.175.161.190 <sub>(2)</sub>
SES	Local	7	100	2905 2906	10.170.63.117 <sub>(1)</sub>
	Remote	6	203	2905	10.175.161.115 <sub>(2)</sub>

(1) SS7 eVIP traffic IP address <VIP\_SS7\_IP1>

(2) Remote SP IP address

For more information about these IP addresses, refer to the section Exported IP Addresses in IPWorks Network Connectivity Overview.



Table 2 SS7 Network Plan - Part 2

Function	Translation Type (TT)	Numbering Plan (NP)	Nature of Address (NOA)	Number Series (NS)	Primary Termination Indicator (PTI)	Entityset (ES)
Wi-Fi AAA	Wildcard	E.212	International number	460*	Change to "Route on SSN"	RemoteSPC: 200, SSN:6
Wi-Fi MM	40	E.212	International number	4343*	Change to "Route on SSN"	RemoteSPC: 202, SSN:6
SES	40	E.212	International number	240*	Change to "Route on SSN"	RemoteSPC: 203, SSN:6



## 5 Procedure

This section provides an example of configuring SS7 for AAA, including the following topics:

- Section 5.1 Removing SS7 Configuration of Wi-Fi AAA on page 9
- Section 5.2 Removing SS7 Configuration of Wi-Fi MM on page 10
- Section 5.3 Removing SS7 Configuration of SES on page 11
- Section 5.4 Removing SS7 Configuration for Diameter over SCTP Only Used on page 12
- Section 5.5 Configuring SS7 for Diameter over SCTP on page 12
- Section 5.6 Configuring SS7 for Wi-Fi AAA on page 13
- Section 5.7 Configuring SS7 for Wi-Fi MM on page 15
- Section 5.8 Configuring SS7 for SES on page 17
- Section 5.9 Validating and Restarting SS7 Stack on page 18
- Section 5.10 Verifying Stack Configuration on page 19

There's no dependence on the SS7 configurations for the IPWorks functions. The functions Wi-Fi AAA, Wi-Fi MMM, SES use the same SCTP instance.

Choose appropriate procedures to follow in order to satisfy actual requirement.

SS7 supports IPv6. If you want to enable IPv6, use IPv6 address in the follow configure process.

### 5.1 Removing SS7 Configuration of Wi-Fi AAA

When the Wi-Fi AAA function is not used, you can choose to remove the configuration from the default SS7 configuration template in Signaling Manager.

Remove the Wi-Fi AAA related parameters values according to the following table:

Table 3 Removing Wi-Fi AAA

Operation Sequence	Navigation Pane
1	TCAP > TCAP > TCAP Subsystems > <b>TCAP Subsystem:149 Network # 1</b>
2	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > <b>4,*6,4,460*--&gt; Prim:RemoteSPC: 200, SSN: 6</b>



Operation Sequence	Navigation Pane
3	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Entitysets > <b>Prim:RemoteSPC: 200, SSN: 6</b>
4	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > <b>RemoteSPC: 200, SSN: 6</b>
5	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Local SAPs > <b>LocalSPC: 100, SSN: 149</b>
6	Sign Networks > Network #1 > Remote Sign Points > <b>NetworkID: 1, RemoteSPC: 200</b>
7	Sign Networks > Network #1 > SCCP SAPs > <b>Network #1, SSN: 149</b>
8	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#1 Type:IPSP serves RemoteAS#40001</b>
9	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#2 Type:IPSP serves RemoteAS#40001</b>
10	M3UA IETF > M3UA > Remote ASes > <b>RemoteAS#40001 RC:0</b>
11	M3UA IETF > M3UA > Local SPs > <b>LocalSP#1 Type:IPSP serves LocalAS#1</b>
12	M3UA IETF > M3UA > Local SPs > <b>LocalSP#2 Type:IPSP serves LocalAS#1</b>
13	M3UA IETF > M3UA > Local ASes > <b>LocalAS#1 LocalSPC: 100</b>

After all the values are removed, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

## 5.2 Removing SS7 Configuration of Wi-Fi MM

When the Wi-Fi MM function is not used, you can choose to remove the configuration from the default SS7 configuration template in Signaling Manager.

Remove the Wi-Fi MM related parameters values according to the following table:

Table 4 Removing Wi-Fi MM

Operation Sequence	Navigation Pane
1	ETSI MAP > ETSIMAP > ETSIMAP Subsystems > <b>ETSIMAP Subsystem: 147</b>
2	TCAP > TCAP > TCAP Subsystems > <b>TCAP Subsystem:147 Network # 1</b>
3	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > <b>4,40,6,4,4343*--&gt; Prim:RemoteSPC: 202, SSN: 6</b>
4	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Entitysets > <b>Prim:RemoteSPC: 202, SSN: 6</b>
5	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > <b>RemoteSPC: 202, SSN: 6</b>
6	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Local SAPs > <b>LocalSPC: 100, SSN: 147</b>
7	Sign Networks > Network #1 > Remote Sign Points > <b>NetworkID: 1, RemoteSPC: 202</b>
8	Sign Networks > Network #1 > SCCP SAPs > <b>Network #1, SSN: 147</b>
9	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#3 Type:IPSP serves RemoteAS#40003</b>



Operation Sequence	Navigation Pane
10	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#4 Type:IPSP serves RemoteAS#40003</b>
11	M3UA IETF > M3UA > Remote ASes > <b>RemoteAS#40003 RC:0</b>
12	M3UA IETF > M3UA > Local SPs > <b>LocalSP#5 Type:IPSP serves LocalAS#3</b>
13	M3UA IETF > M3UA > Local SPs > <b>LocalSP#6 Type:IPSP serves LocalAS#3</b>
14	M3UA IETF > M3UA > Local ASes > <b>LocalAS#3 LocalSPC: 100</b>

After all the parameters are removed, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

## 5.3 Removing SS7 Configuration of SES

When the SES function is not used, you can choose to remove the configuration from the default SS7 configuration template in Signaling Manager.

Remove the SES related parameters values according to the following table:

Table 5 Removing SES

Operation Sequence	Navigation Pane
1	ETSI MAP > ETSIMAP > ETSIMAP Subsystems > <b>ETSIMAP Subsystem: 7</b>
2	TCAP > TCAP > TCAP Subsystems > <b>TCAP Subsystem:7 Network # 1</b>
3	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > <b>4,40,6,4,240*--&gt; Prim:RemoteSPC: 203, SSN: 6</b>
4	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Entitysets > <b>Prim:RemoteSPC: 203, SSN: 6</b>
5	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > <b>RemoteSPC: 203, SSN: 6</b>
6	Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Local SAPs > <b>LocalSPC: 100, SSN: 7</b>
7	Sign Networks > Network #1 > Remote Sign Points > <b>NetworkID: 1, RemoteSPC: 203</b>
8	Sign Networks > Network #1 > SCCP SAPs > <b>Network #1, SSN: 7</b>
9	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#5 Type:IPSP serves RemoteAS#40004</b>
10	M3UA IETF > M3UA > Remote SPs > <b>RemoteSP#6 Type:IPSP serves RemoteAS#40004</b>
11	M3UA IETF > M3UA > Remote ASes > <b>RemoteAS#40004 RC:0</b>
12	M3UA IETF > M3UA > Local SPs > <b>LocalSP#7 Type:IPSP serves LocalAS#4</b>
13	M3UA IETF > M3UA > Local SPs > <b>LocalSP#8 Type:IPSP serves LocalAS#4</b>
14	M3UA IETF > M3UA > Local ASes > <b>LocalAS#4 LocalSPC: 100</b>



After all the parameters are removed, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

## 5.4 Removing SS7 Configuration for Diameter over SCTP Only Used

In case that only the function Diameter over SCTP is used, you can choose to remove the parameters values according to the following table:

Table 6 Removing Other SS7 Configurations

Operation Sequence	Navigation Pane
1	M3UA IETF > <b>M3UA</b>
2	Sign Networks > <b>Network # 1</b>
3	TCAP > <b>TCAP</b>
4	System Components > System Components > ECM > ECM > Services > Traffic > Processes > <b>GEN RP</b>
5	System Components > System Components > OAM > OAM > Process Types > BE > Modules > <b>MTPL3</b>
6	System Components > System Components > OAM > OAM > Process Types > BE > Modules > <b>SCCP</b>
7	System Components > System Components > OAM > OAM > Process Types > BE > Modules > <b>TCAP</b>
8	System Components > System Components > OAM > OAM > Process Types > BE > Modules > <b>ETSI MAP</b>
9	System Components > System Components > OAM > OAM > Process Types > NMP > Modules > <b>MTPL3</b>
10	System Components > System Components > OAM > OAM > Process Types > NMP > Modules > <b>SCCP</b>
11	ETSI MAP > <b>ETSI MAP</b>

## 5.5 Configuring SS7 for Diameter over SCTP

Perform the following procedures to fulfill the example network that is described in Section 4 on page 7.

**Note:** When only the function Diameter over SCTP is used, it is necessary to perform the following procedures:

- Section 5.4 Removing SS7 Configuration for Diameter over SCTP Only Used on page 12

### 5.5.1 Configuring SCTP

Set the value of SCTP according to the following table:





Table 7 Configuring SCTP

Navigation Pane	Operation Pane Properties	Value
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #1 > Port Number	Port	2905
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #1 > SCTP Local Address	Address	10.170.63.117
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #2 > Port Number	Port	2906
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #2 > SCTP Local Address	Address	10.170.63.117

## 5.5.2 Validating and Restarting SS7 Stack

After all the values are set, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

## 5.6 Configuring SS7 for Wi-Fi AAA

Perform the following procedures to fulfill the example network that is described in Section 4 on page 7.

**Note:** When only the function Wi-Fi AAA is used, it is necessary to perform the following procedures:

- Section 5.2 Removing SS7 Configuration of Wi-Fi MM on page 10
- Section 5.3 Removing SS7 Configuration of SES on page 11

### 5.6.1 Configuring Sign Networks

Set the value of Sign Networks according to the following table:

Table 8 Configuring Sign Networks

Navigation Pane	Operation Pane Properties	Value
Sign Networks > Network #1 > Remote Sign Points	Remote SPC	200
Sign Networks > Network #1 > Local Sign Points	Local SPC	100
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > RemoteSPC: 200, SSN: 6	Subsystem Number	6



Navigation Pane	Operation Pane Properties	Value
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > 4,*6,4,460*--> Prim:RemoteSPC: 200 SSN: 6	Translation Type	Wildcard
	Numbering Plan	E.212 (Land mobile)
	Nature of Address	International number
	Number Series	460*
	Primary Termination Indicator	Change to 'Route On SSN'.
	Entityset	Prim:RemoteSPC: 200 SSN: 6

## 5.6.2 Configuring M3UA IETF

Set the value of the M3UA IETF according to the following table:

Table 9 Configuring M3UA IETF

Navigation Pane	Operation Pane Properties	Value
M3UA IETF > M3UA > Remote SPs > RemoteSP#1 Type:IPSP serves RemoteAS#40001	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#2 Type:IPSP serves RemoteAS#40001	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#1 Type:IPSP serves RemoteAS#40001 > Remote SP Address	Address	10.175.185.11
M3UA IETF > M3UA > Remote SPs > RemoteSP#2 Type:IPSP serves RemoteAS#40001 > Remote SP Address	Address	10.175.185.11

## 5.6.3 Configuring SCTP

Set the value of SCTP according to the following table:

Table 10 Configuring SCTP

Navigation Pane	Operation Pane Properties	Value
SCTPs > SCTP FE	Use All Local Addresses	Yes
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #1	Port Number	2905
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #1 > SCTP Local Address	Address	10.170.63.117
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #2	Port Number	2906
SCTPs > SCTP FE > SCTP End Points > FE: IP Address Table #2 > SCTP Local Address	Address	10.170.63.117



### 5.6.4 Validating and Restarting SS7 Stack

After all the values are set, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

### 5.6.5 Verifying Stack Configuration

See Section 5.10 Verifying Stack Configuration on page 19.

## 5.7 Configuring SS7 for Wi-Fi MM

Perform the following procedures to fulfill the example network that is described in Section 4 on page 7.

**Note:** When only the function Wi-Fi MM is used, it is necessary to perform the following procedures:

- Section 5.1 Removing SS7 Configuration of Wi-Fi AAA on page 9
- Section 5.3 Removing SS7 Configuration of SES on page 11

### 5.7.1 Configuring ETSI MAP

Set the value of ETSI MAP according to the following table:

Table 11 Configuring ETSI MAP

Navigation Pane	Operation Pane Properties	Value
ETSI MAP > ETSIMAP	ML Timer	600

### 5.7.2 Configuring Sign Networks

Set the value of Sign Networks according to the following table:

Table 12 Configuring Sign Networks

Navigation Pane	Operation Pane Properties	Value
Sign Networks > Network #1 > Remote Sign Points	Remote SPC	202
Sign Networks > Network #1 > Local Sign Points	Local SPC	100
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > RemoteSPC: 202, SSN: 6	Subsystem Number	6



Navigation Pane	Operation Pane Properties	Value
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > 4,40,6,4,4343*--> Prim:RemoteSPC: 202 SSN: 6	Translation Type	40
	Numbering Plan	E.212 (Land mobile)
	Nature of Address	International number
	Number Series	4343*
	Primary Termination Indicator	Change to 'Route On SSN'.
	Entityset	Prim:RemoteSPC: 202 SSN: 6

### 5.7.3 Configuring M3UA IETF

Set the value of the M3UA IETF according to the following table:

Table 13 Configuring M3UA IETF

Navigation Pane	Operation Pane Properties	Value
M3UA IETF > M3UA > Remote SPs > RemoteSP#3 Type:IPSP serves RemoteAS#40003	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#4 Type:IPSP serves RemoteAS#40003	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#3 Type:IPSP serves RemoteAS#40003 > Remote SP Address	Address	10.175.161.190
M3UA IETF > M3UA > Remote SPs > RemoteSP#4 Type:IPSP serves RemoteAS#40003 > Remote SP Address	Address	10.175.161.190

### 5.7.4 Configuring SCTP

See Section 5.6.3 Configuring SCTP on page 14.

### 5.7.5 Validating and Restarting SS7 Stack

After all the values are set, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

### 5.7.6 Verifying Stack Configuration

See Section 5.10 Verifying Stack Configuration on page 19.



## 5.8 Configuring SS7 for SES

Perform the following procedures to fulfill the example network that is described in Section 4 on page 7.

**Note:** When only the function SES is used, it is necessary to perform the following procedures:

- Section 5.1 Removing SS7 Configuration of Wi-Fi AAA on page 9
- Section 5.2 Removing SS7 Configuration of Wi-Fi MM on page 10

### 5.8.1 Configuring ETSI MAP

Set the value of ETSI MAP according to the following table:

Table 14 Configuring ETSI MAP

Navigation Pane	Operation Pane Properties	Value
ETSI MAP > ETSIMAP	ML Timer	600

### 5.8.2 Configuring Sign Networks

Set the value of Sign Networks according to the following table:

Table 15 Configuring Sign Networks

Navigation Pane	Operation Pane Properties	Value
Sign Networks > Network #1 > Remote Sign Points	Remote SPC	203
Sign Networks > Network #1 > Local Sign Points	Local SPC	100
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > Remote SAPs > RemoteSPC: 203, SSN: 6	Subsystem Number	6
Sign Networks > Network #1 > Local Sign Points > NodeID:0, LocalSPC: 100 > SCCP Sign Point > SCCP > GT Translators > 4,40,6,4,240*---> Prim:RemoteSPC: 203 SSN: 6	Translation Type	40
	Numbering Plan	E.212 (Land mobile)
	Nature of Address	International number
	Number Series	240*
	Primary Termination Indicator	Change to 'Route On SSN'.
	Entityset	Prim:RemoteSPC: 203 SSN: 6

### 5.8.3 Configuring M3UA IETF

Set the value of the M3UA IETF according to the following table:



Table 16 Configuring M3UA IETF

Navigation Pane	Operation Pane Properties	Value
M3UA IETF > M3UA > Remote SPs > RemoteSP#5 Type:IPSP serves RemoteAS#40004	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#6 Type:IPSP serves RemoteAS#40004	Port	2905
M3UA IETF > M3UA > Remote SPs > RemoteSP#5 Type:IPSP serves RemoteAS#40004 > Remote SP Address	Address	10.175.161.115
M3UA IETF > M3UA > Remote SPs > RemoteSP#6 Type:IPSP serves RemoteAS#40004 > Remote SP Address	Address	10.175.161.115

#### 5.8.4 Configuring SCTP

See Section 5.6.3 Configuring SCTP on page 14.

#### 5.8.5 Validating and Restarting SS7 Stack

After all the values are set, validate the configuration and then restart SS7 stack to make the configuration take effect, see Section 5.9 Validating and Restarting SS7 Stack on page 18.

#### 5.8.6 Verifying Stack Configuration

See Section 5.10 Verifying Stack Configuration on page 19.

### 5.9 Validating and Restarting SS7 Stack

**Note:** To ensure that IPWorks can provide SS7 related services after SS7 is configured, it is recommended to do the validation and restart of SS7 Stack.

To validate and restart the SS7 stack, do the following:

1. Validate the configuration by selecting **Edit > Validate**.
2. If there are validation errors, click **Results** to view error description and go to the respective configuration.
3. Select **Tools > Process View... > Configure** in the process view dialog box, and select **Initial Configuration** to make any update take effect.
4. Restart SS7 Stack on SC-1.



```
amf-adm restart safSu=SC-1,safSg=2N,safApp=ERIC-ss7caf.mgmt
```

```
amf-adm restart safSu=SC-2,safSg=2N,safApp=ERIC-ss7caf.mgmt
```

```
amf-adm restart safSu=PL-3,safSg=2N,safApp=ERIC-ss7caf.netwc  
ontrol
```

```
amf-adm restart safSu=PL-3,safSg=NWA,safApp=ERIC-ss7caf.core
```

```
amf-adm restart safSu=PL-4,safSg=2N,safApp=ERIC-ss7caf.netwc  
ontrol
```

```
amf-adm restart safSu=PL-4,safSg=NWA,safApp=ERIC-ss7caf.core
```

5. Select **File > Connect** and make sure that the status is **Active** in the status bar.
6. Save the configuration file as another name by selecting **File> Save As**.
7. Close the Signaling Manager.

## 5.10 Verifying Stack Configuration

Before verifying stack configuration, make sure that the values in Table 1 are configured correctly, and all stack processes in remote host are running.

To verify whether the stack configuration is correct, do the following:

**Note:** Perform the steps on both the local and remote hosts.

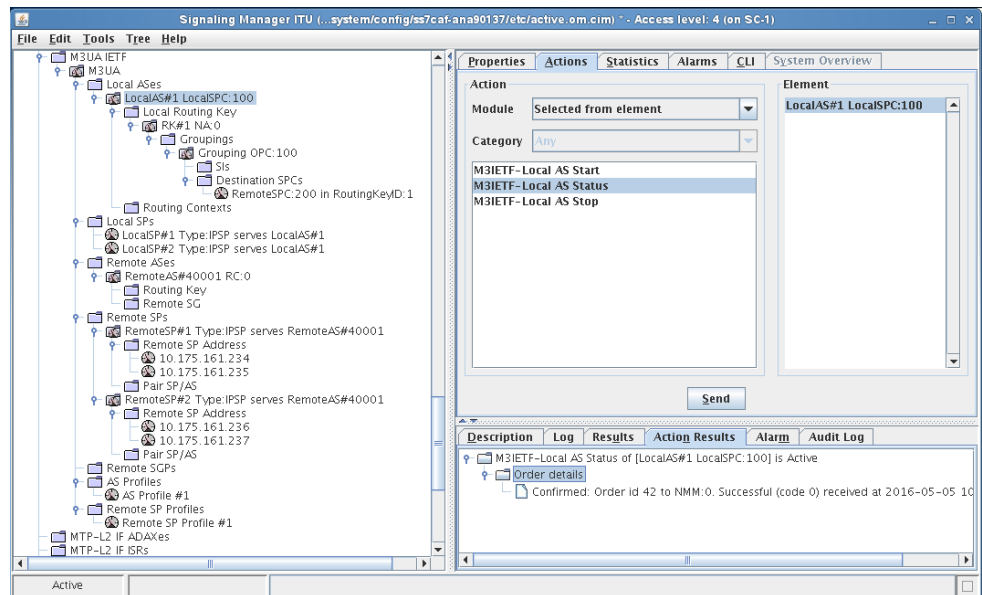
1. Start Signaling Manager.

```
# /opt/sign/EABss7050/bin/signmgrui -own.conf /opt/sign/etc/sig  
nmgr.cnf &
```

2. Send status by following the below table based on different functions.

Function	Navigation Pane	Operation
Wi-Fi AAA	M3UA IETF > M3UA > Local ASes > LocalAs#1 LocalSPC:100	Click <b>Actions</b> > select <b>M3IETF-Local AS Status</b> > click <b>Send</b>
Wi-Fi MM	M3UA IETF > M3UA > Local ASes > LocalAs#3 LocalSPC:100	
SES	M3UA IETF > M3UA > Local ASes > LocalAs#4 LocalSPC:100	

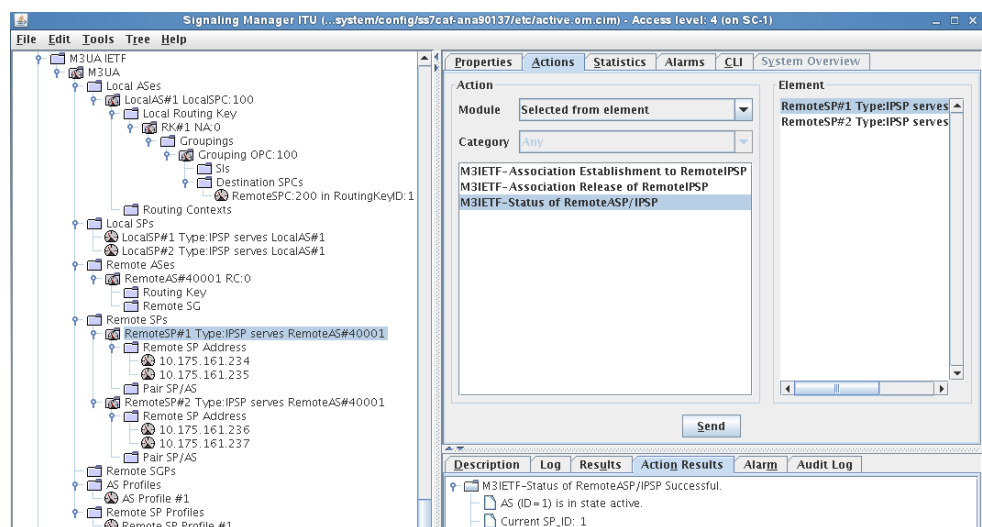
Example:



3. Send status by following the below table based on different functions.

Function	Navigation Pane	Operation
Wi-Fi AAA	M3UA IETF > Remote SPs > RemoteSP#1 Type:IPSP servers RemoteAS#40001	Click <b>Actions</b> > select <b>M3IETF-Status of RemoteASP/IPSP</b> > click <b>Send</b>
Wi-Fi MM	M3UA IETF > Remote SPs > RemoteSP#5 Type:IPSP servers RemoteAS#40005	
SES	M3UA IETF > Remote SPs > RemoteSP#7 Type:IPSP servers RemoteAS#40004	

Example:







4. Check if the selected process status is active in the **Action Results** tab in the information pane.





## 6 Post Activities

After configuring SS7 on the IPWorks node, configure the SS7/SCTP stack on the peer node and check if the two nodes can communicate.





## 7 Appendix A: Opening Trace Log

This section describes how to start and use the Trace Viewer Tool (TvTool).

**Note:** If the users receive a message indicating that the Java command is not found, set the environment variable for Java as follows.

```
# export JAVA_HOME=/opt/sign/EABss7069/jre
```

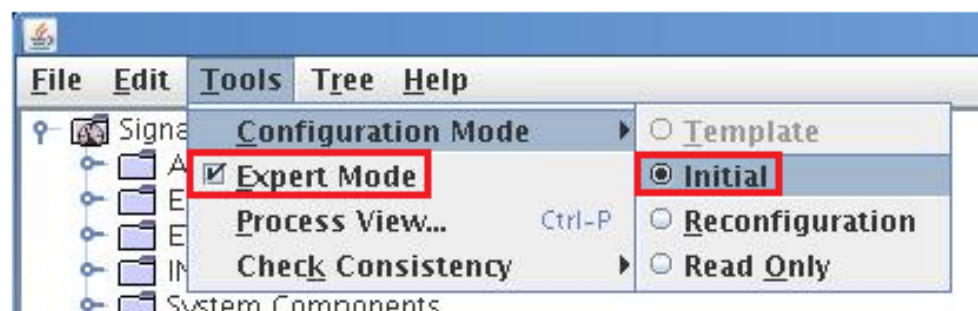
```
# export PATH=$JAVA_HOME/bin:$PATH
```

If the users log out and in the system, the above commands must be executed again.

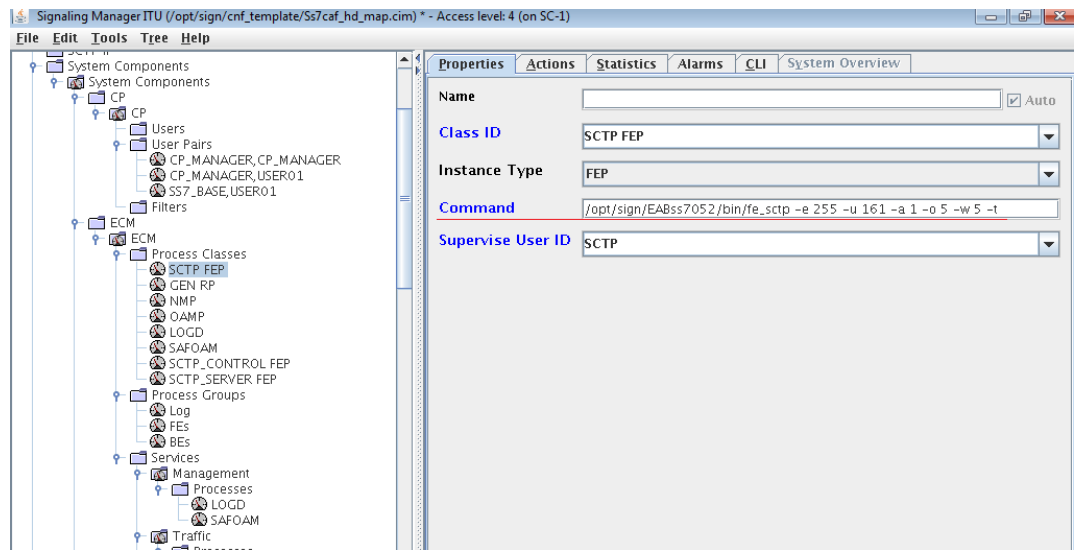
1. Start the Signaling Manager.

```
# /opt/sign/EABss7050/bin/signmguir \
-own.conf /opt/sign/etc/signmgr.cnf &
```

2. Open the Expert Mode and Initial Configuration Mode in Signaling Manager.



3. Change the start command line for your interested module process as shown in the following figure by adding -t.



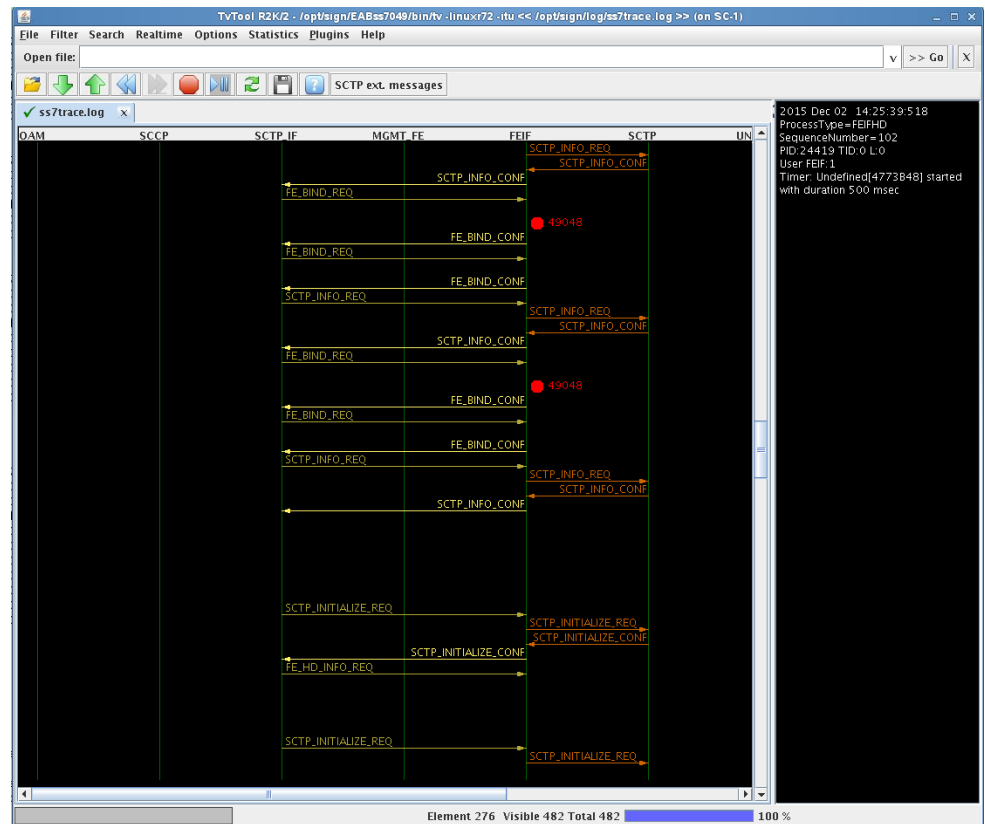
4. Restart the stack to enable the modification.
5. Copy EABss7049 from PL node to SC node if it is not installed on SC node.
6. The SS7 trace log directory is /opt/sign/log/ss7trace.log. Open the trace log:

```
# scp -r root@PL-3:/opt/sign/EABss7049 /opt/sign
```

```
# /opt/sign/EABss7049/bin/tvtool -f /opt/sign/log/ss7trace.log
```

7. Let the program run in the background:

```
# /opt/sign/EABss7049/bin/tvtool -f /opt/sign/log/ss7trace.log  
&
```







8

Appendix B: Examples of Removing Instance

This section provides the example figures to show how the operation looks like in Signaling Manager.

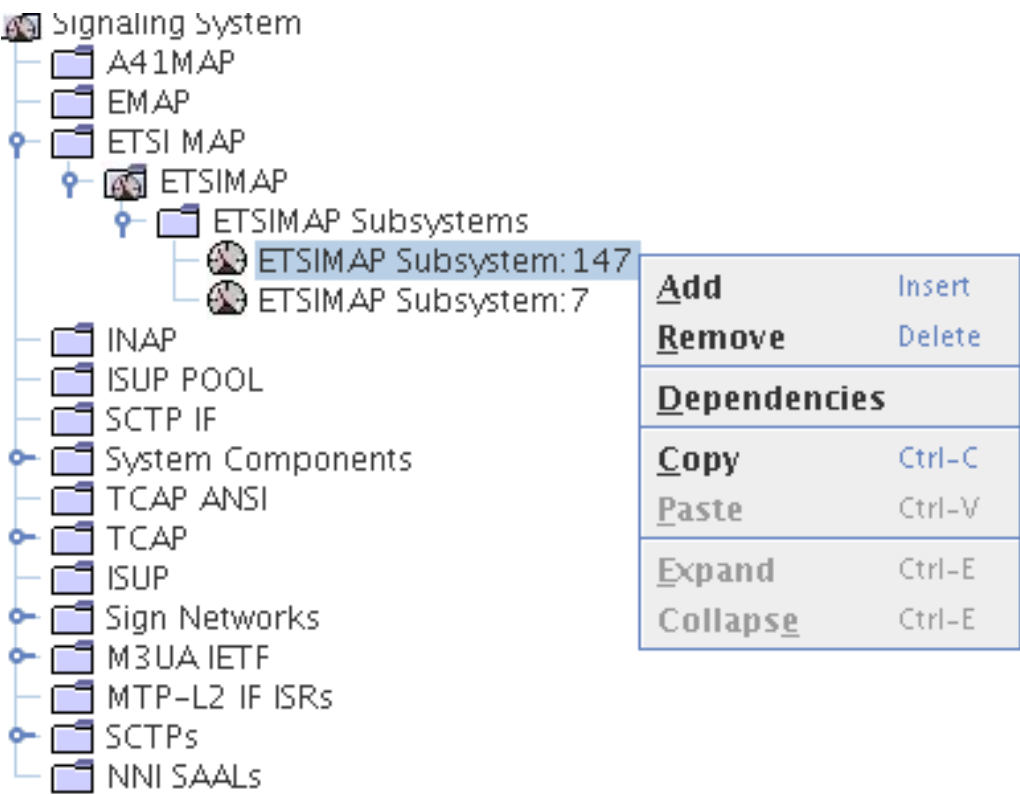


Figure 1 Remove an ETSIMAP Subsystem Instance

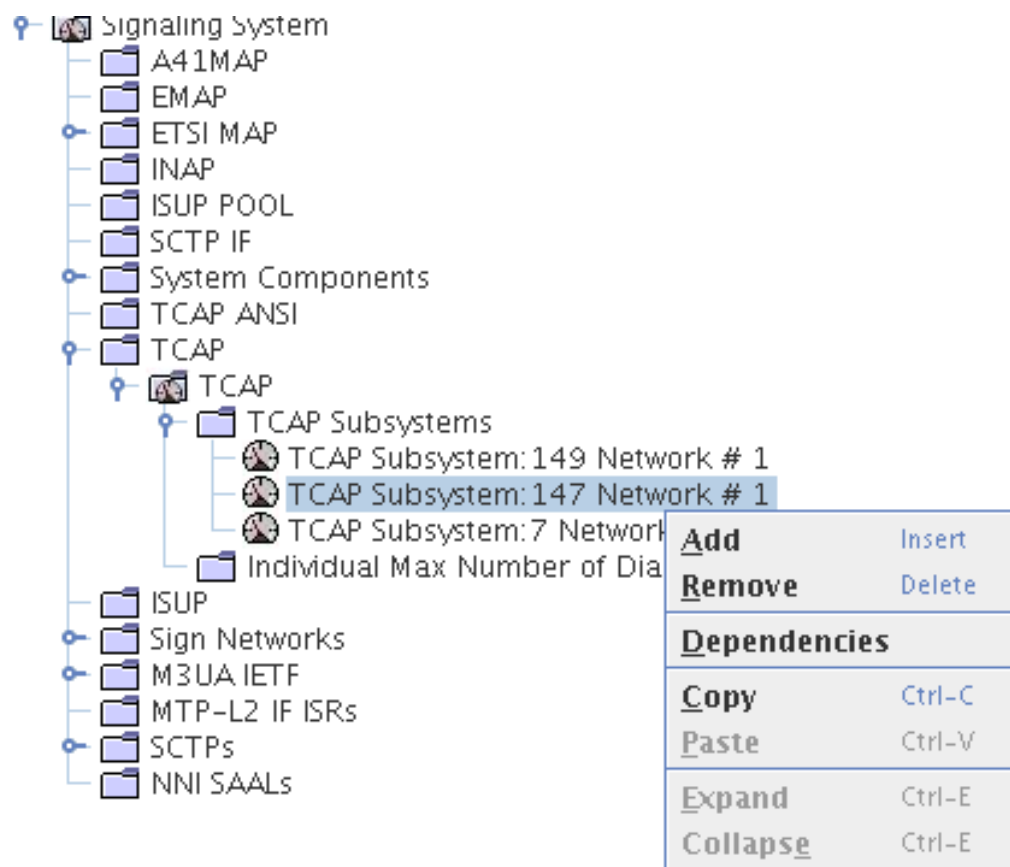


Figure 2 Remove a TCAP Subsystem Instance

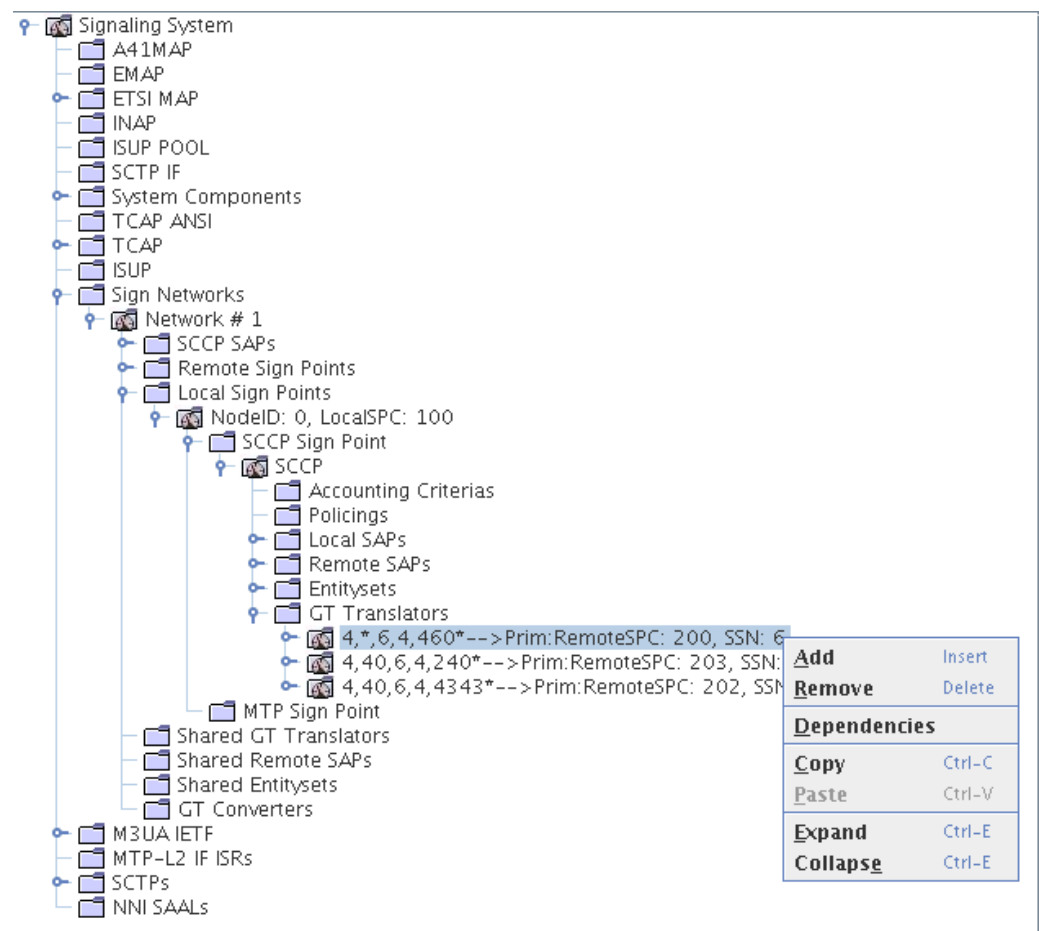


Figure 3 Remove a GI Translator Instance

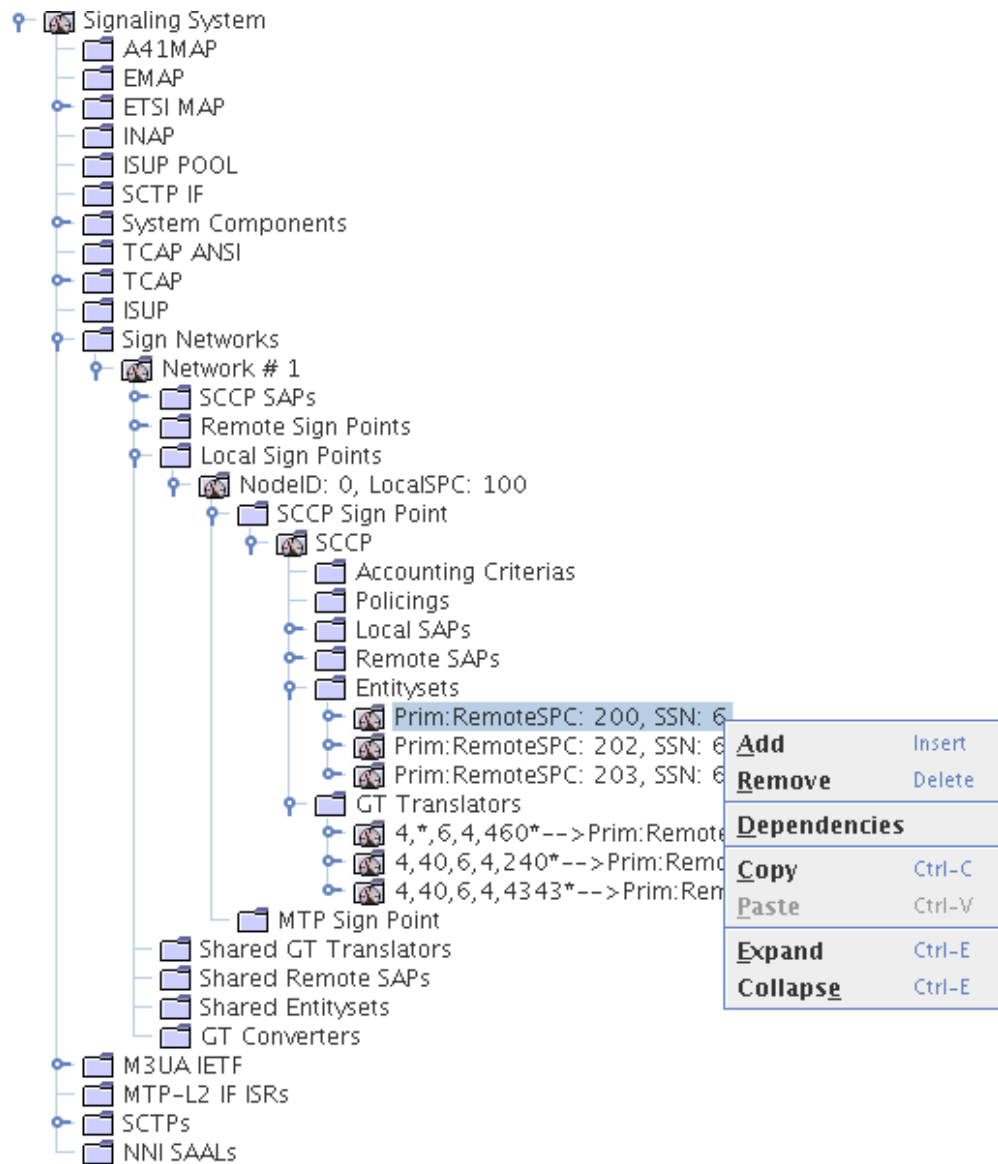


Figure 4 Remove an SCCP Entityset Instance

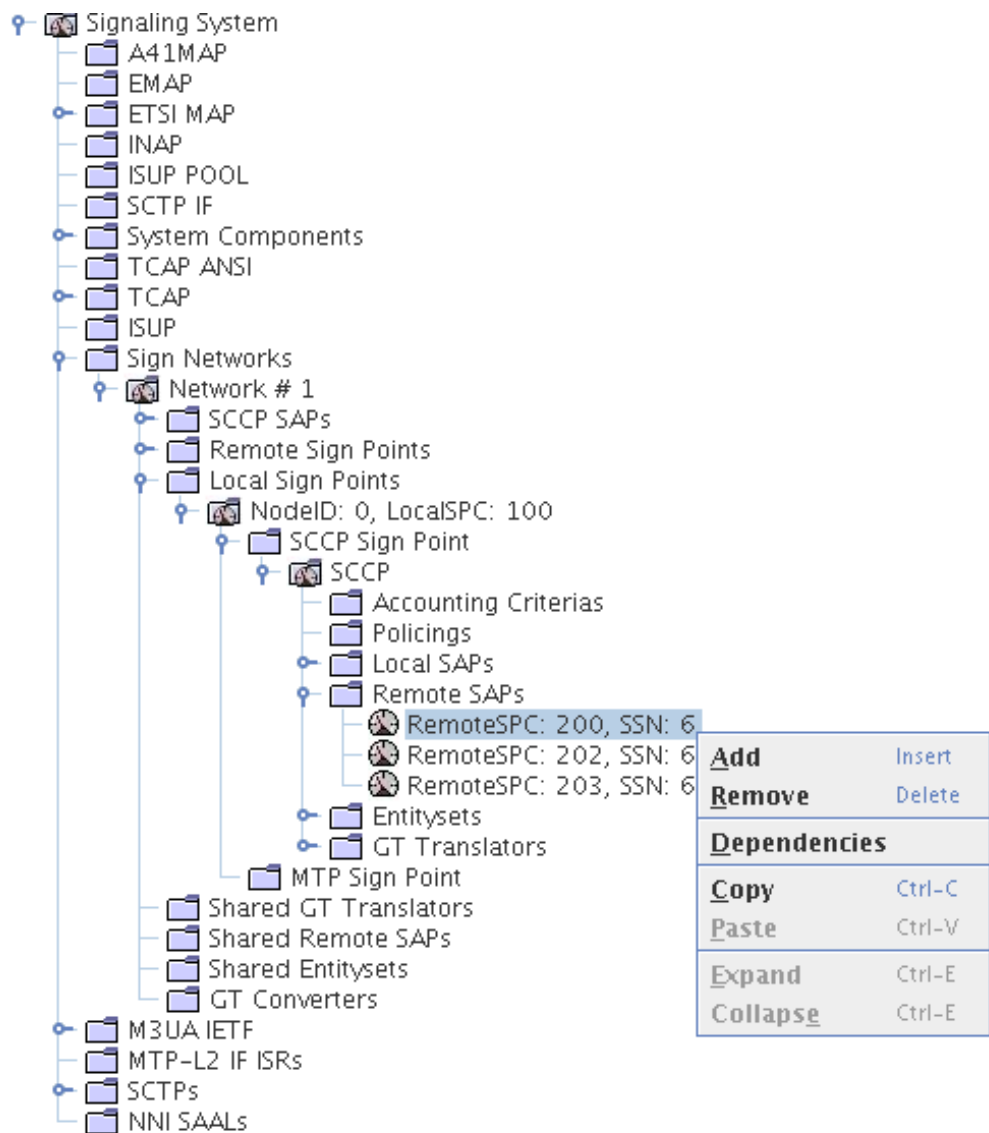


Figure 5 Remove a Remote SPC Instance

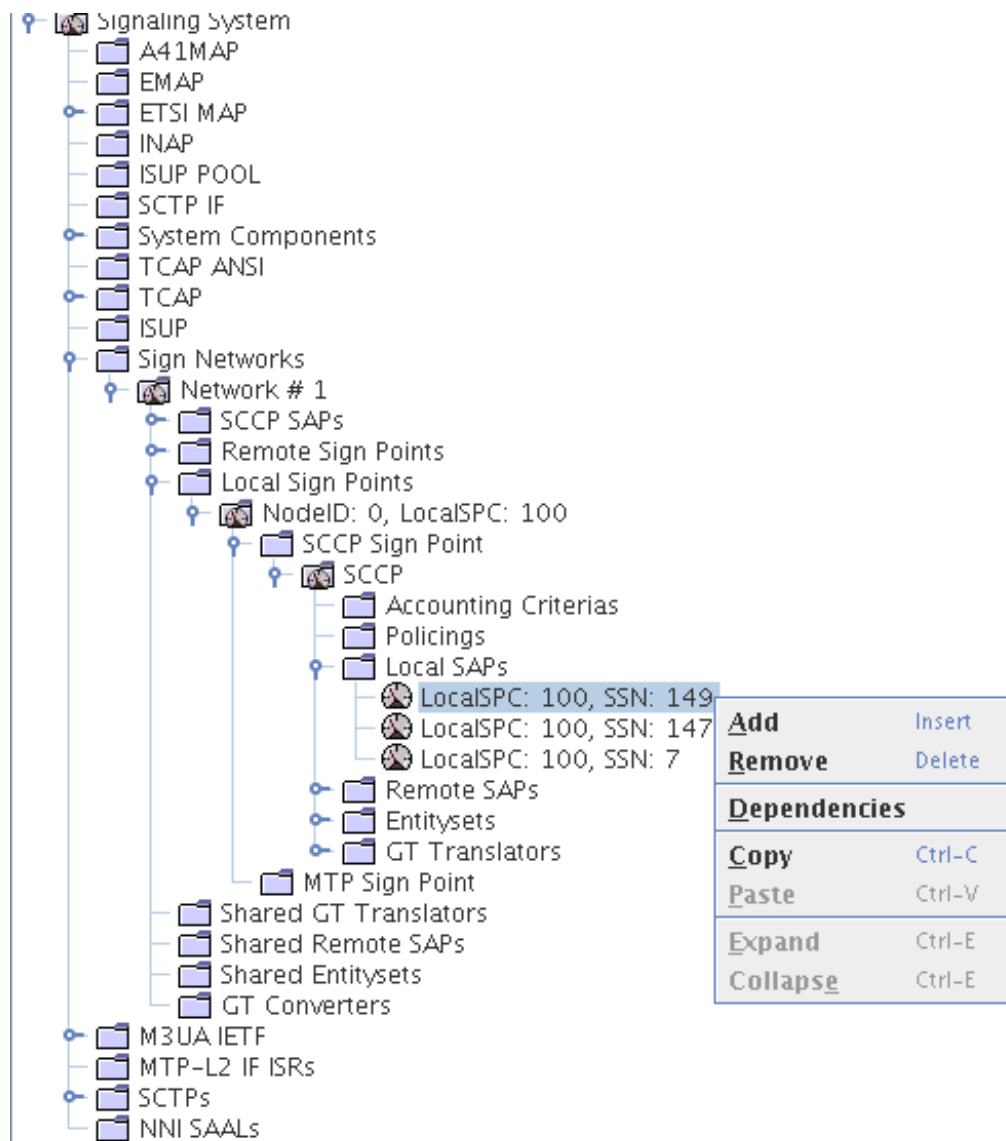


Figure 6 Remove a Local SPC Instance

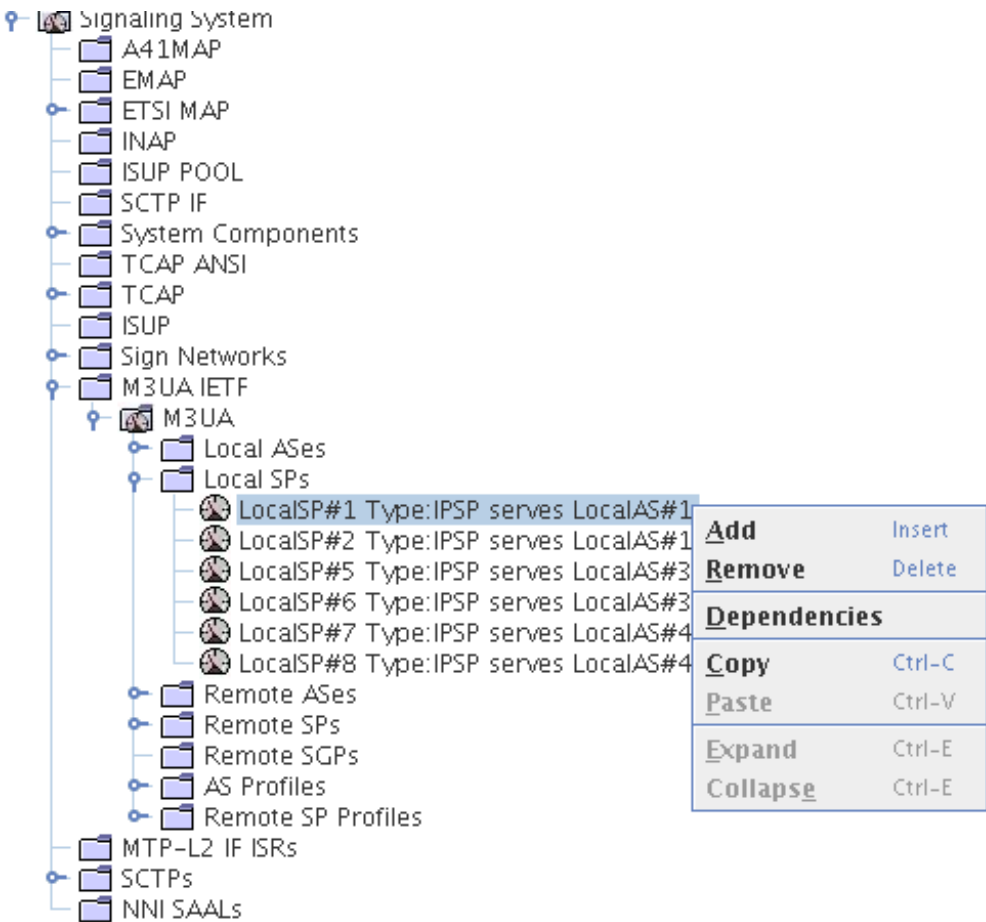


Figure 7 Remove Local SP Instance

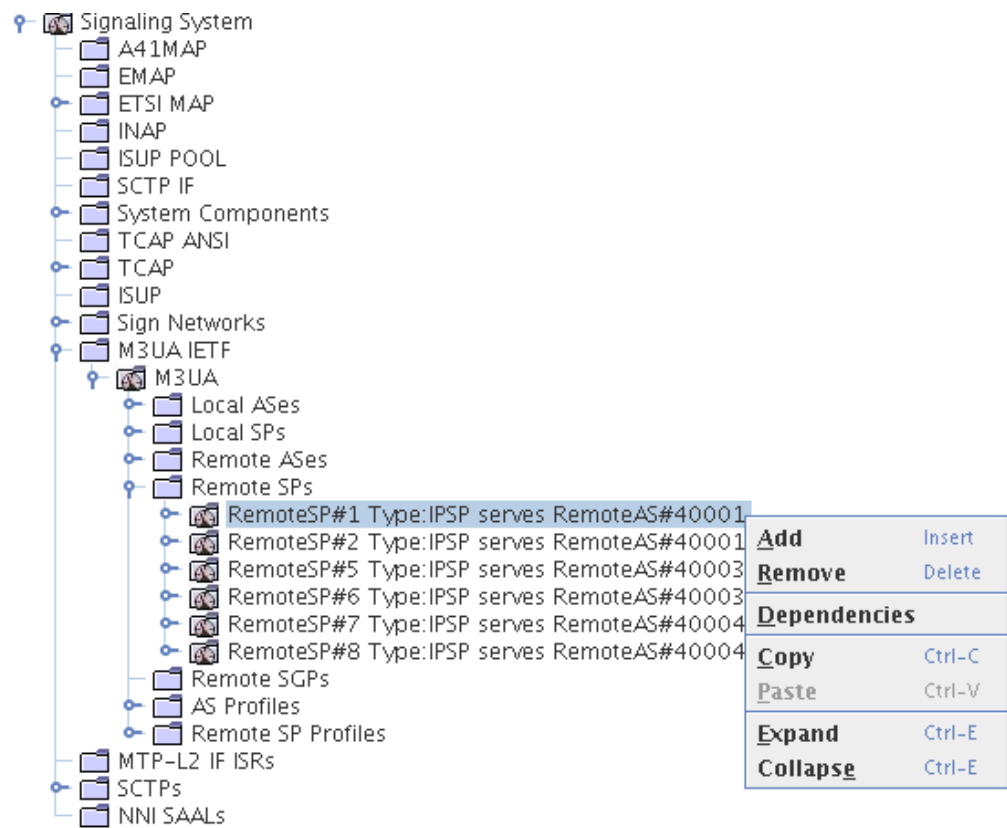


Figure 8 Remove a Remote SP Instance



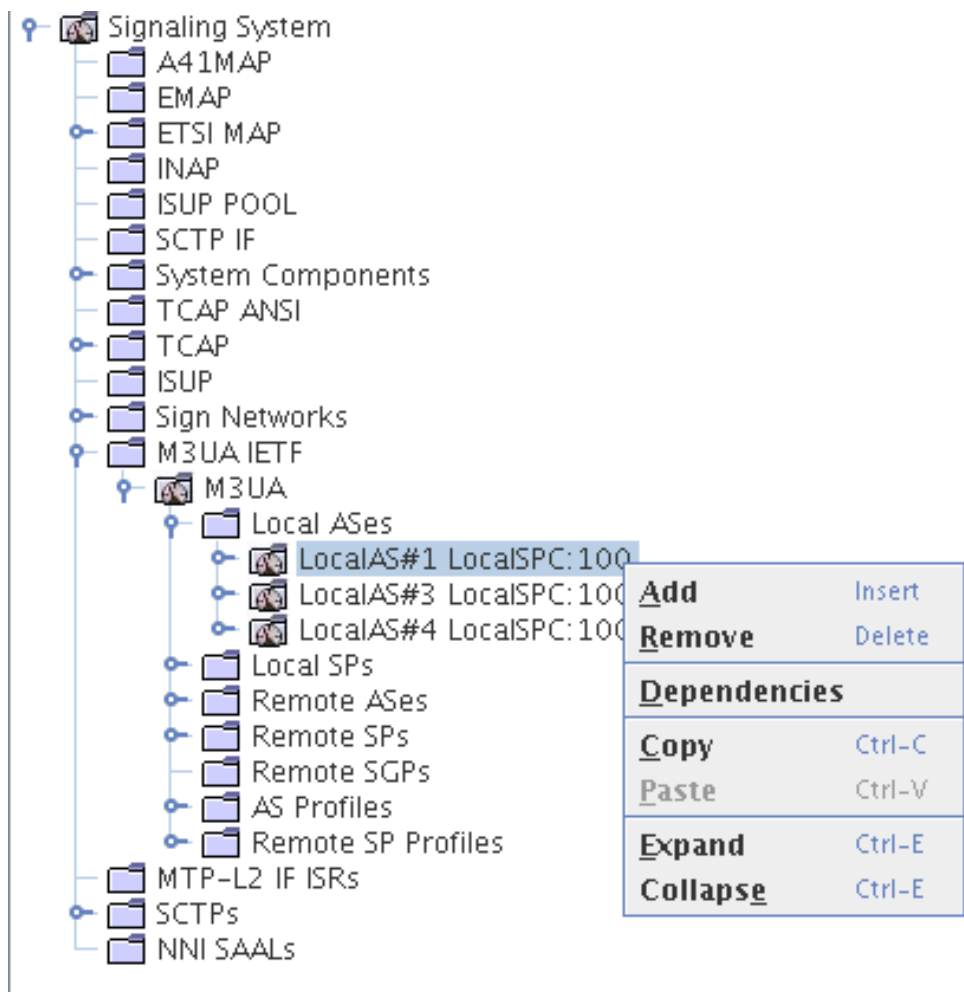


Figure 9 Remove a Local AS Instance

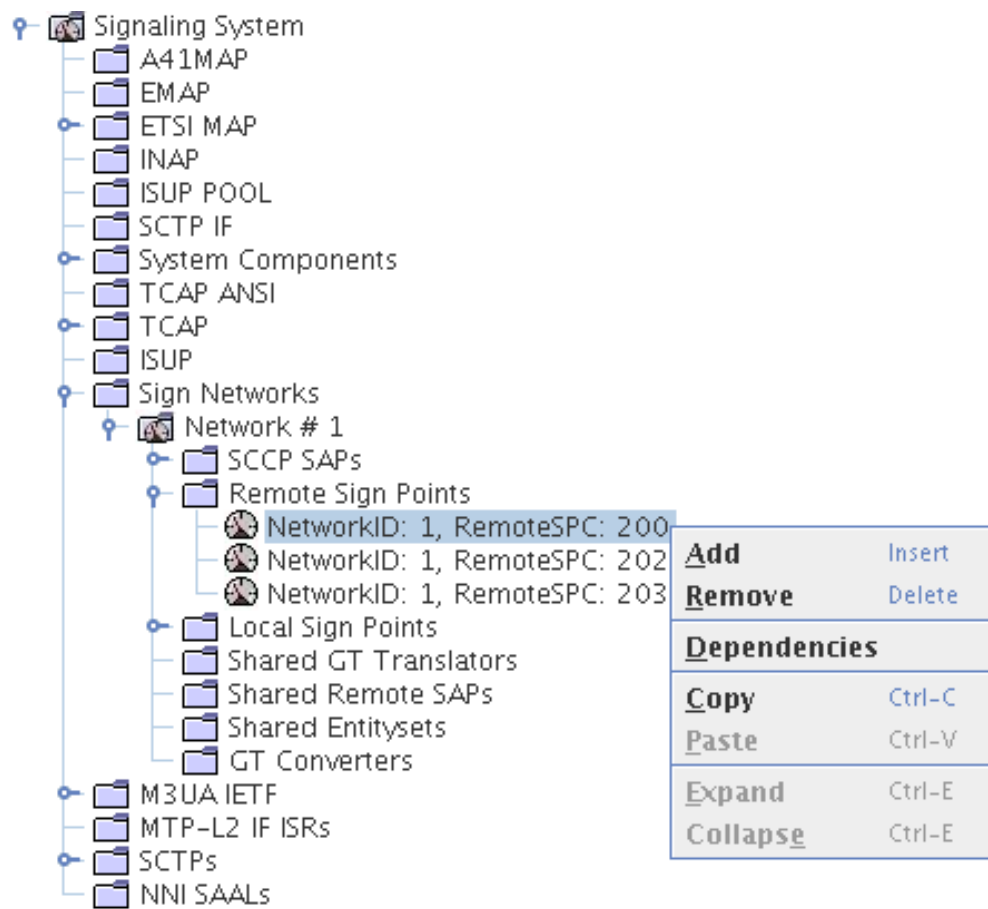


Figure 10 Remove a Remote Sign Point Instance



📁 Signaling System

📁 A41MAP

📁 EMAP

📁 ETSI MAP

📁 INAP

📁 ISUP POOL

📁 SCTP IF

📁 System Components

📁 TCAP ANSI

📁 TCAP

📁 ISUP

📁 Sign Networks

📁 Network # 1

📁 SCCP SAPs

📁 Remote Sign Points

📁 Local Sign Points

📁 Shared GT Translators

📁 Shared Remote SAPs

📁 Shared Entitysets

📁 GT Converters

📁 M3UA IETF

📁 MTP-L2 IF ISRs

📁 SCTPs

📁 NNI SAALs

📁 Network # 1, SSN: 149

📁 Network # 1, SSN: 147

📁 Network # 1, SSN: 7

<b>Add</b>	Insert
<b>Remove</b>	Delete
<b>Dependencies</b>	
<b>Copy</b>	Ctrl-C
<b>Paste</b>	Ctrl-V
<b>Expand</b>	Ctrl-E
<b>Collapse</b>	Ctrl-E

Figure 11 Remove SCCP SAP Network Instance

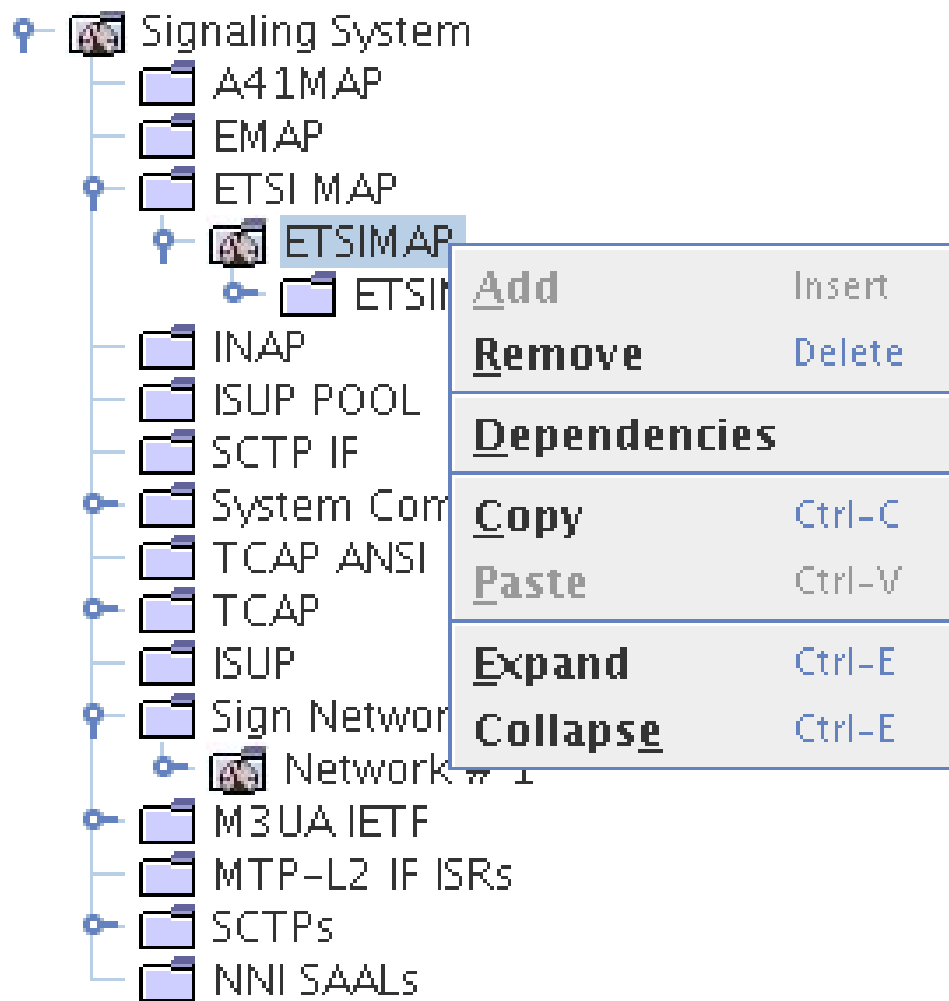


Figure 12 Remove ETSIMAP Instances

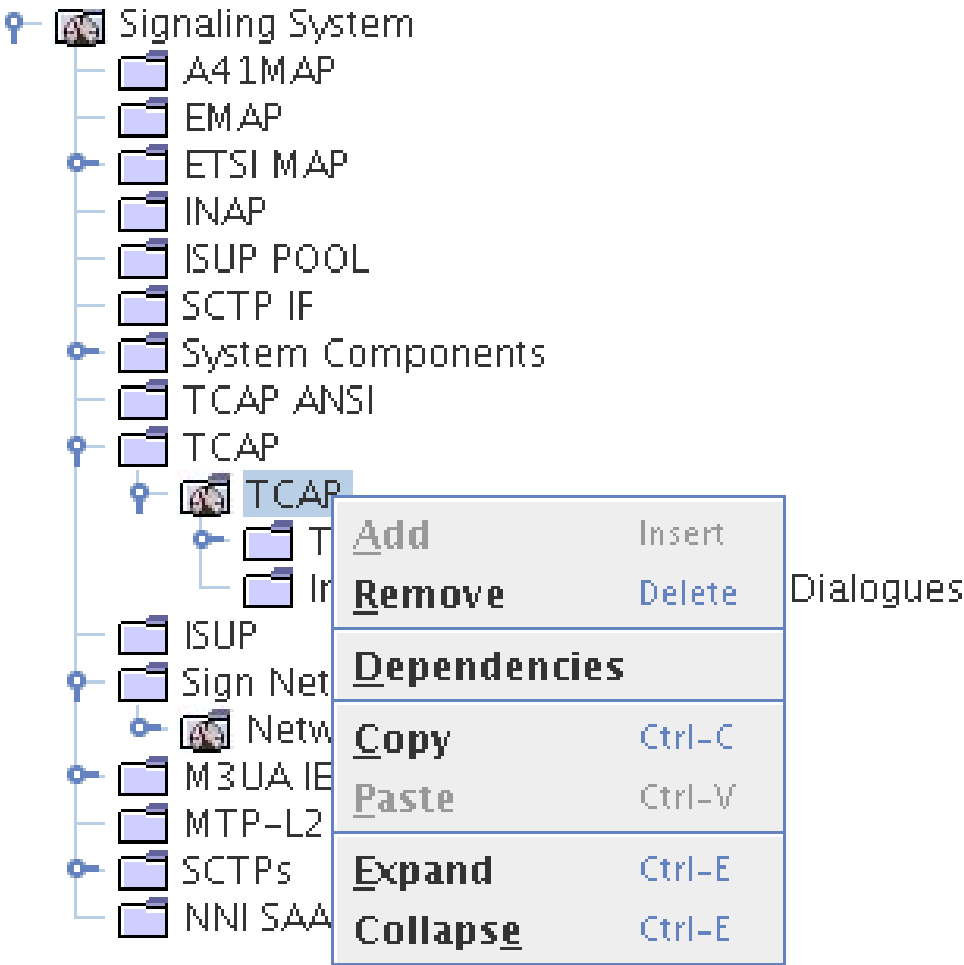


Figure 13 Remove TCAP Instances

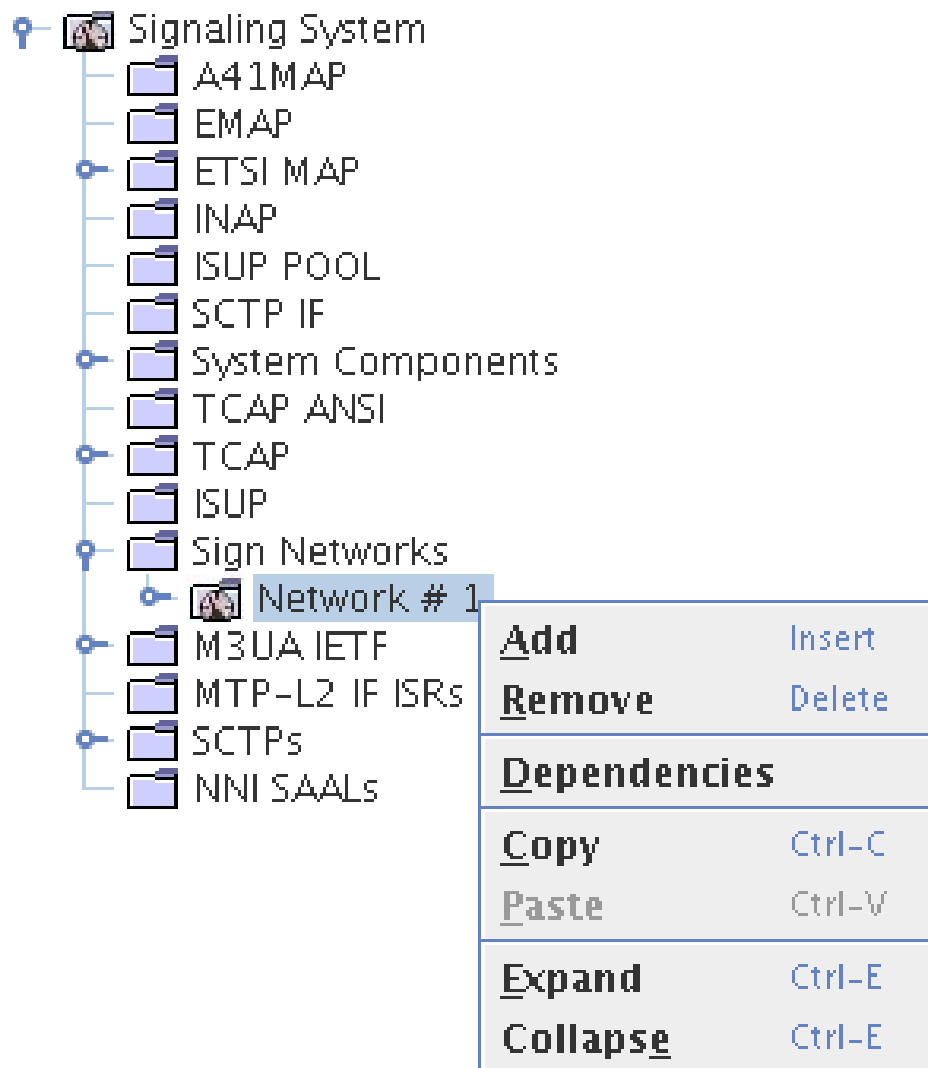


Figure 14 Remove a Sign Network Instance

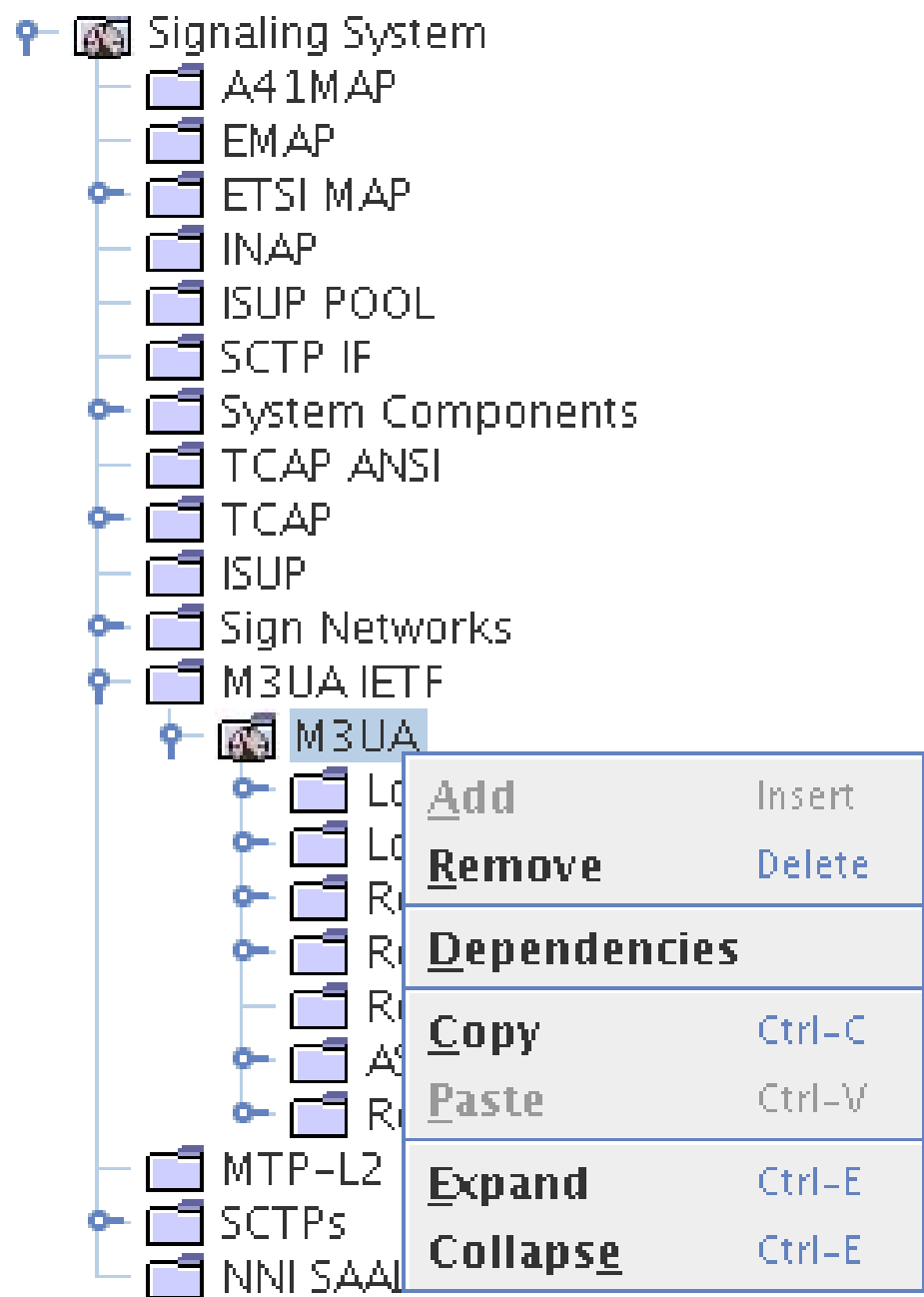


Figure 15 Remove M3UA Instances







## Reference List

### Ericsson Documents

- [1] Trademark Information
- [2] Typographic Conventions
- [3] Glossary of Terms and Acronyms
- [4] Signaling Manager User Guide
- [5] Configuring SS7, SCTP
- [6] Configuring SS7 Signaling Network, SCCP, M3
- [7] Configuring SS7 Signaling Network, M3 IETF
- [8] Configuring SS7 System Components
- [9] Configuring SS7 TCAP
- [10] Reconfiguring SS7 Network, Creating and Defining GT Routing
- [11] Configuring SS7, INAP
- [12] Configuring SS7, MAP
- [13] View Software Information
- [14] IPWorks Network Connectivity Overview