

# Reconfiguring SS7 Network, Creating and Defining GT Routing

## OPERATING INSTRUCTION

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# 1 Introduction

## 1.1 Overview

This document describes, using an example, how to configure Global Title Translation. The example shows how to configure a subscriber number for incoming messages by creating a GT Translator and assigning its Entityset reference. A GT can be translated to a Local or Remote SAP/SPC within a network.

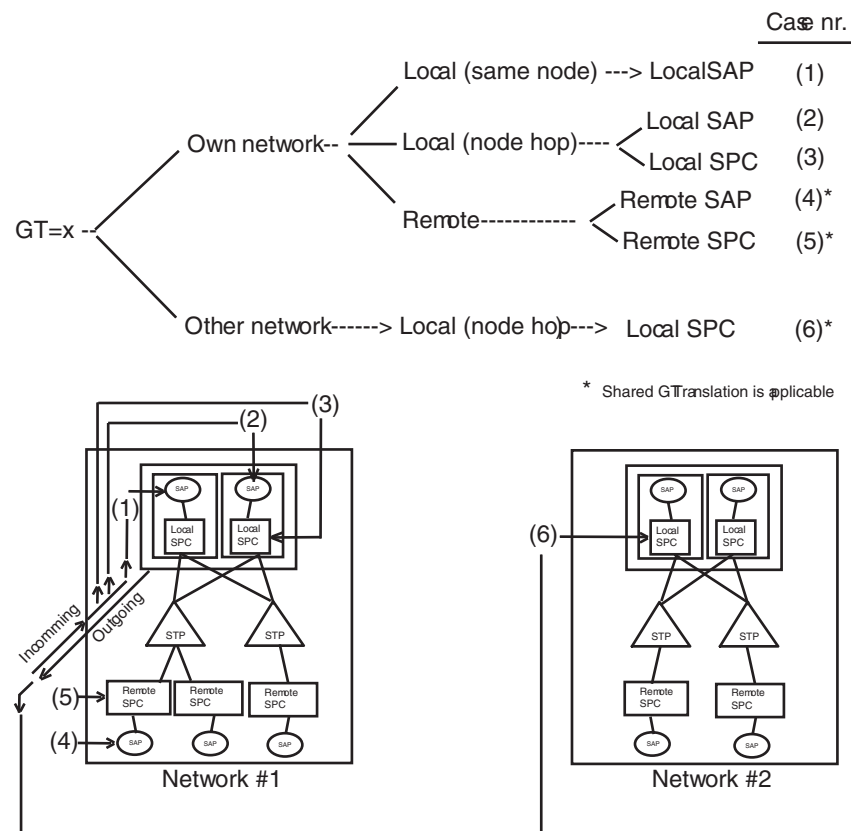


Figure 1 Example of two Networks, showing GT Translation of Incoming and Outgoing Messages

## 1.2 Prerequisites

### 1.2.1 Documents

For more information, see the following documents:

- For configuration parameter information, see SCCP Information Model.
- Configuring SS7 Signaling Network, SCCP, M3.



### **1.2.2 Tools**

Not applicable.

### **1.2.3 Conditions**

The following condition must apply before this procedure can be started:

- An existing configuration with the Signaling Connection Control Part (SCCP) and Message Transfer Part - Layer 3 (M3) stack layers is completed.

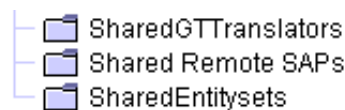


## 2 Procedure

In the Signaling Manager, a Global Title Translation (GTT) can be configured in two ways:

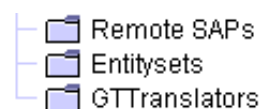
### Shared GTT

Using the following shared elements of the **Network #x** in Navigation pane:



### Node GTT

Using the following elements of the **LocalSPC: y** instance of the **Network #x** in Navigation pane:



**Node GTT** can be used for all the cases (1) – (6) shown in Figure 1 but **Shared GTT** is only applicable for cases (4) – (6). The procedure is the same in both GTT cases, except that the elements used for **Shared GTT** are **Shared Remote SAPs**, **Shared Entitysets** and **Shared GT Translators**.

**Note:** If a GT Translation is applicable for all the Local SPCs (local nodes) within a network, it is recommended to define it as a Shared GTT, since that leads to less duplication. The following sections explain the procedure used to define GT Translators for a Local GTT, that is at **Local Sign Point** level, but the same procedure may also be used to define Shared ones which reside at the **Network** level.

### 2.1 Add Remote SAP

The steps in this section are used to configure a GT translation to a certain SAP (Signaling Access Point, in this case a subsystem) of a Remote Sign Point. In Figure 1 this corresponds to case 4.

The steps in this section explain the procedure used to define Remote SAPs used for a **Node GTT**, that is at **Local Sign Point** level. The procedure for the Shared ones is the same, but, in that case, the element resides at the **Network** level.

1. Expand **Signaling System** and the underlying structure to view the configuration.
2. Add an element on **Remote SAPs** of **SCCP** (or **Shared Remote SAPs**) of the **Network #x**. An instance of a Remote SAP, called **RemoteSPC: [undef] SSN: [undef]** is added.



**Note:** As can be seen in the name of the added **RemoteSPC: [undef] SSN: [undef]**, the **Remote Sign Point** reference and SSN value of the Remote SAP are not set by default.

3. Select the added Remote SAP instance, for example **RemoteSPC: [undef] SSN: [undef]**, and assign the **Remote Sign Point** reference. The name of the added Remote SAP element is updated, for example **RemoteSPC: 777 SSN: [undef]** if Remote SPC: 777 is selected as Remote Sign Point.
4. Edit the SSN property of the added Remote SAP. The name of the added Remote SAP element is updated, for example to **RemoteSPC: 777 SSN: 6** if 6 is set as the value of the SSN property.

**Note:** Remote SAP can be removed. Select the Remote SAP instance, press right mouse button and choice "Remove" in the pop-up menu.

## 2.2 Add Entityset

The steps in this section explain the procedure used to define Entitysets for a **Node GTT**, that is at **Local Sign Point** level. The procedure for the Shared ones is the same but, in that case, the element resides at the **Network** level.

1. Expand **Signaling System** and the underlying structure to view the configuration.
2. Add an element on the **Entitysets** of **SCCP** or the **Shared Entitysets** of the **Network #x**. An instance of an Entityset, called **Prim:[undef]** is added.

**Note:** As can be seen in the name of the added **Prim:[undef]**, the **Primary SAP** reference is not set by default.

3. Select the added Entityset instance, for example **Prim:[undef]**, and assign the **Primary SAP** reference. The name will be updated, for example to **Prim:LocalSPC: 111 SSN: 44** if LocalSPC: 111 SSN: 44 **Local SAP** is selected as the Primary SAP

Depending on whether the added Entityset element is an instance of Shared or not, the **Local SAPs**, **Remote SAPs**, **Local Sign Points** or **Remote Sign Points** are available as **Primary SAP** reference. Depending on the case, specified in Figure 1, an appropriate element can be used for the GT Translation defined as Primary SAP.

| Primary SAP            | Meaning  |
|------------------------|--|
| Local SAP              | GT is translated to a Local Subsystem                        |
| Local SAP (other node) | GT is translated to a Local Subsystem on an other local node |





|                        |  |
|------------------------|--|
| Remote SAP             | GT is translated to a Subsystem on a Remote SPC.<br><br>In this case the <b>Primary Termination Indicator</b> property of the <b>GT Translator</b> addressing this Entityset should probably be set. |
| Local SPC              | GT is translated to a Subsystem of a Local Sign Point using the SSN in the message   |
| Local SPC (other node) | GT is translated to the next hop, in this case an other local node   |
| Remote SPC             | GT is translated to the next hop, that is next Remote Sign Point.  |

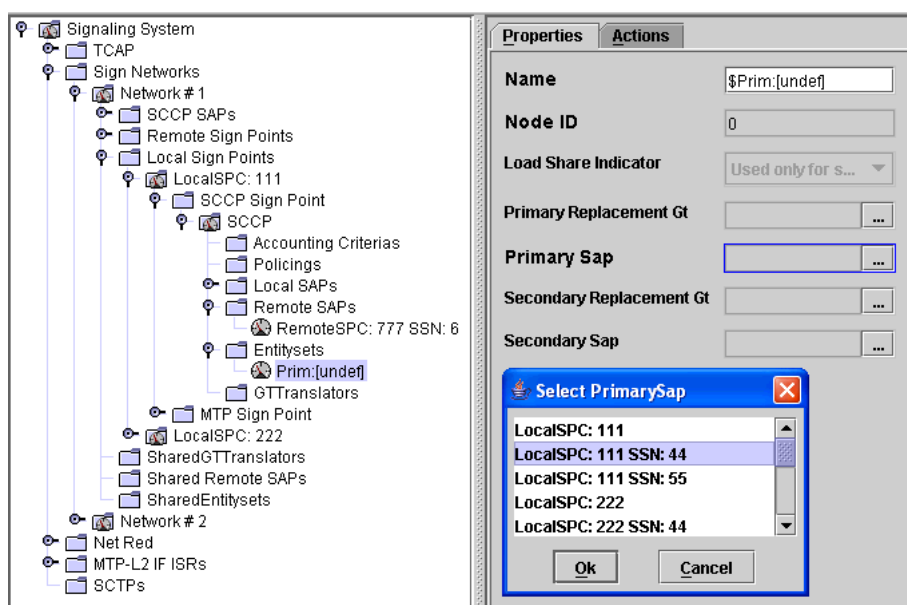


Figure 2 Select Primary SAP Instances

Its name will be updated with the selected Primary SAP name.

**Note:** Perform the next step if you need to define a **Secondary SAP** reference which is backup for the **Primary SAP** reference or Load sharing, if that is the value of the **Load Share Indicator** property of the Entityset element.

4. Select the added Entityset instance, for example **Prim:LocalSPC: 111 SSN: 44**, and assign the **Secondary SAP** reference. The name will be updated with the SecondarySAP reference, for example **Prim:LocalSPC: 111 SSN: 44,Sec:RemoteSPC: 777 SSN: 6** if RemoteSPC: 777 SSN: 6 Remote SAP is selected as the Secondary SAP.

**Note:** Entityset can be removed. Select the Entityset instance, press right mouse button and choice "Remove" in the pop-up menu.

All, or some, of the **Local SAPs**, **Remote SAPs**, **Local Sign Points** or **Remote Sign Points** are available as **Secondary SAP** references from the Entityset instance,

depending on if the added Entityset is Shared or not. Each has a special meaning which can be used in different scenarios of GT translation, see.

## 2.3 Add Destination Entity

The steps in this section explain the procedure used to define Destination Entities that reside under an Entityset that is at **Local Sign Point** level. The procedure for the Shared Entitysets is the same, except that the element resides at the **Network** level.

Destination Entities shall be added if loadsharing over more than **Primary SAP** and **Secondary SAP** is desired. Each Destination Entity represents a destination for the **Gt Translator** that uses the **Entityset** holding this **Destination Entity** instance. The **SAP** and **Replacement GT** in this instance has the same functionality as the **Primary** and **Secondary** in the **Entityset** and can be seen as an extension to the **Entityset** instance.

1. Expand **Signaling System** and the underlying structure to view the configuration.
2. Add an element on the **Destination Entity** of the created **Entityset**. An instance of a Destination Entity, called **[undef]** is added.

**Note:** As can be seen in the name of the added **[undef]**, the **SAP** reference is not set by default.

3. Select the added Destination Entity instance, and assign the **SAP** reference. The name will be updated, for example to **LocalSPC: 111 SSN: 66** if **LocalSPC: 111 SSN: 66 Local SAP** is selected as the SAP.

**Note:**

- In order to use **Destination Entities** the **Loadshare Indicator** in its Entityset must be set to **Load Sharing** and the **Secondary SAP** must be used.
- The number of allowed **Destination Entities** is either 2, 4, 8 or 16 (0, 2, 6 or 14 Destination Entities of **Other** entity type). This means that it is possible to loadshare between 1, 2, 4, 8 or 16 **SAPs** when Primary and Secondary SAPs are included as well.

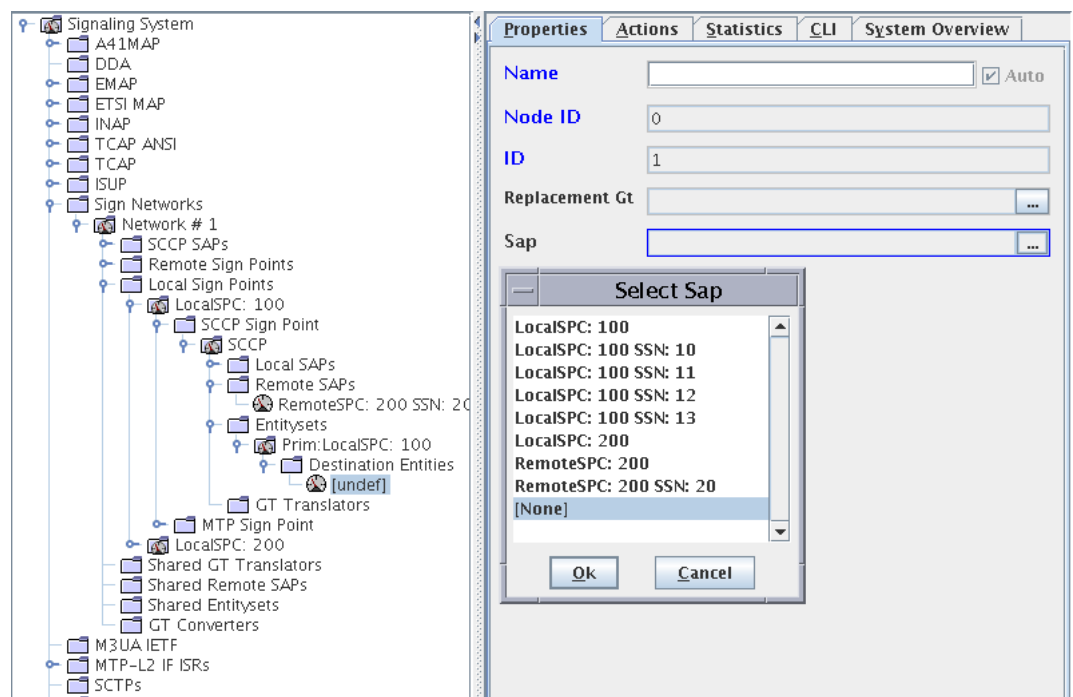


Figure 3 Select SAP Instances

**Note:** Destination Entity can be removed. Select the Destination Entity instance, press right mouse button and choice "Remove" in the pop-up menu.

## 2.4

### Add GT Translator

The steps in the section explains the procedure used to define GT Translators for a Local GTT, that is at **Local Sign Point** level. The procedure for the Shared ones is the same but the element resides at the **Network** level.

1. Add an element on **GT Translators** of **SCCP** or **Shared GT Translators** of the **Network #x**. An instance of a GT Translator, called **TT:-1,NP:-1,NA:-1,NS:** will be added.

**Note:** As can be seen in the name of the added **TT:-1,NP:-1,NA:-1,NS:**, the **Entityset** reference and the **Translation Type, Numbering Plan, Nature of Address, and Number Series** properties are not set by default.

2. Select the added GT Translator instance and set the **Translation Type, Numbering Plan, Nature of Address, and Number Series** properties. Not all of them have to be set, depending on which GTI that is desired.

Assign the **Entityset** reference.

**Note:** The Nature of Address (NA) property is not used by configurations following the ANSI standard.

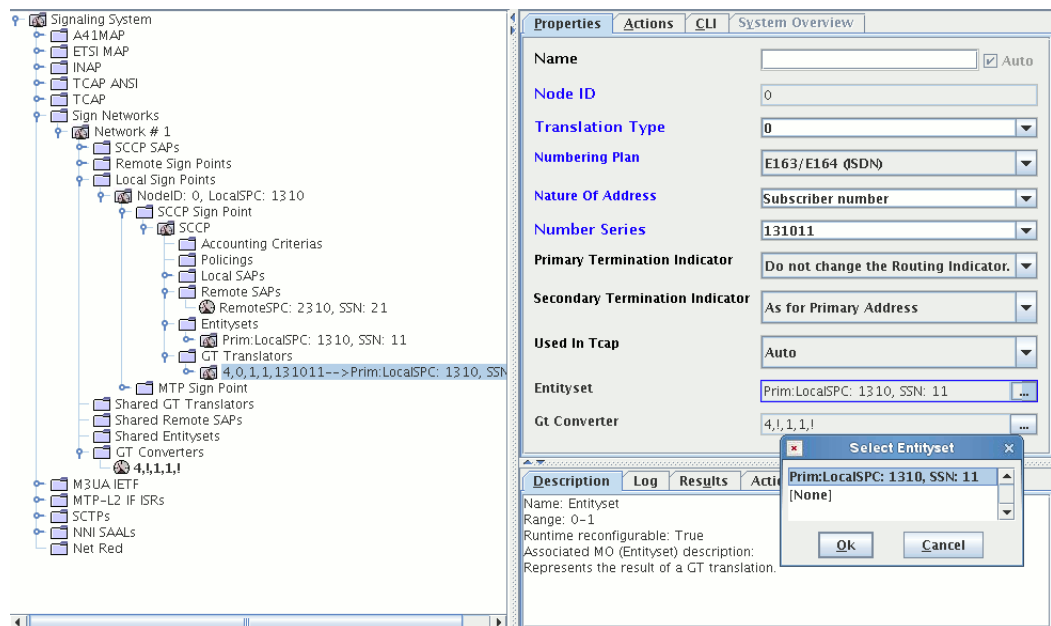


Figure 4 Select Entitysets Which Were Created in “Add Entityset” Step.

Its name will be updated with the set Entityset and its Translation Type, Numbering Plan, Nature of Address, and Number Series properties, for example **4,1,1,1,1234-->Prim:LocalSPC: 111 SSN: 44,Sec:RemoteSPC: 777 SSN: 6**.

**Note:**

- Other properties of the GT Translator instance use default values. These need to be updated if they are not suitable for the configured node.
- GT Translator can be removed. Select the GT Translator instance, press right mouse button and choice "Remove" in the pop-up menu.

## 2.5 Configure GT Replacement

The procedure of GT replacement using Signaling Manager looks like:

1. Add a new **Remote SPC**.
2. Create a new **Shared Entityset** with a **Primary Sap** reference set to the **Remote SPC**, which was created at previous step.
3. Create a new **Shared GT Translator** with a **Entityset** field referenced to the newly created **Shared Entityset**.
4. Create one more new **Shared GT Translator** and set an attribute, which needs to be changed, to necessary value. Set the other attributes to the same values as source **Shared GT Translator** has.



5. In the **Shared Entityset** (which was added at step 2) update the **Primary Replacement GT** field to use the **Shared GT Translator** which was created at step 4.

## 2.6 Verifying Configuration

In order to validate, select **Validate** from the **Edit** menu. The result will be displayed in the Results tab in the Information pane.

If the configuration is not valid, the incorrect properties will be listed in different lines. When a line is selected, Signaling Manger will prompt to the location to edit the property with proper values to make the configuration valid.