

# Documentation

**HiPath 4000 V5**

**IP Solutions - Large Enterprise Gatekeeper (LEGK)**

Service Manual

A31003-H3150-S104-1-7620

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# 1 General Information

## 1.1 Overview

The Large Enterprise Gatekeeper (LEGK) is new as of HiPath 4000 V2.0 feature. It is the first ever function of its kind to be offered by the HiPath product family.

The feature is part of the call processing software and has two functions:

1. Gatekeeper function

IP address resolution mechanism for IP trunking using the STMI2/4 (HG 3500) board as hardware.

2. Resource Management

This function monitors network component usage for controlling IPDA scenarios, HFA and direct media connections. In V2.0, Resource Management is not activated for IP trunking.

The two functions can be implemented completely independently.

The mechanism for IP address resolution (Gatekeeper function) is switchable in all network nodes while the Resource Manager is active in all network nodes by default. If the Resource Manager is not configured, the bandwidth is assumed to be unlimited for analysis purposes.

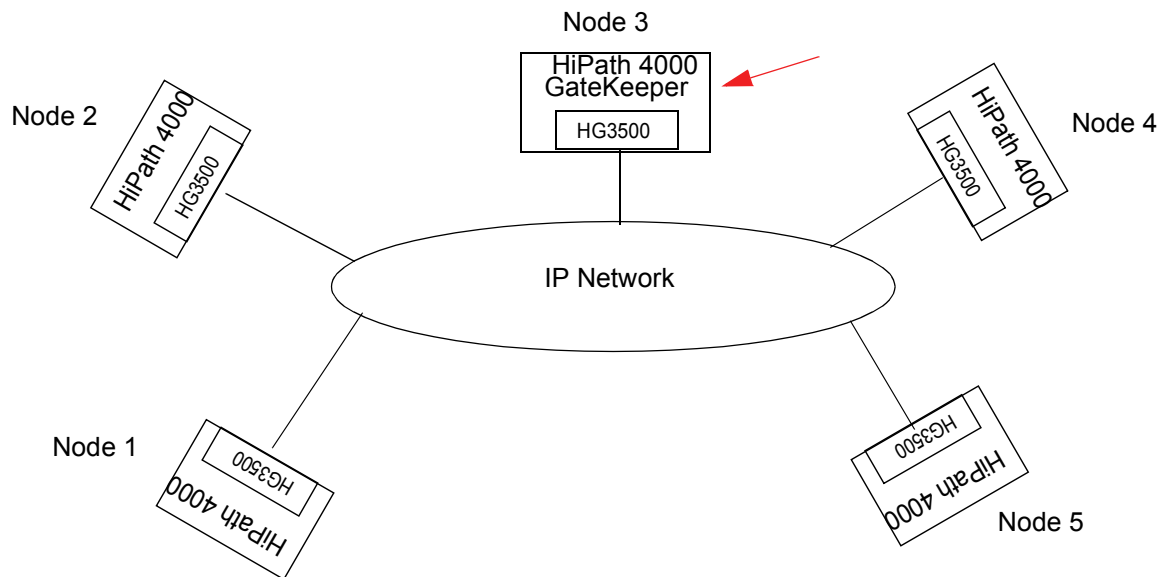


Figure 1-1 Example: HiPath 4000 V2.0 Network with **one** central LEGK

## 1.2 Gatekeeper Function

### 1.2.1 General

The Gatekeeper function is used to allocate the IP address of a destination gateway to a dialed extension (IP address resolution). In earlier versions of IP trunking (HiPath 4000 V1.0, RG 2500/HG 3550 V1.X), this task was either performed by a routing table on each gateway or by one (or more) central gatekeepers (HiPath 5000 IP Trunking Gatekeeper). The Large Enterprise Gatekeeper (LEGK) performs this function in HG 3500.

The essential difference between LEGK and the previous version is that this task was fully integrated in the LCR function in HiPath 4000 (HiPath 4000 V2.0 or higher). The LEGK is therefore neither an external server nor a host in the IP network. The LEGK is a new processor **within** the HiPath 4000 call processing software. The Gatekeeper function is consequently fully configured using AMO commands. The Web Based Management (WBM) tool in HG 3500 is only needed for special settings, for example, codec selection and QoS.

The LEGK can be activated at every HiPath 4000 (HiPath 4000 V2.0 or higher) in the network. Alternatively, you can configure the LEGK on a specific HiPath 4000 if you want to centralize IP address resolution. Mixed scenarios in which some systems are operated with LEGK and some without are feasible, for example, for redundancy to the central LEGK.

### 1.2.2 Key Terms

#### 1.2.2.1 Remote Gateway

A remote gateway is an HG 3500 that is configured in a HiPath 4000 V4 system without gatekeeper and that must register with an external gatekeeper for address resolution.

The remote gateways in Figure 1-1 are the gateways in the nodes 1, 2, 4 and 5.

#### 1.2.2.2 Local Gateway

The local gateway is an HG 3500 that is configured in a HiPath 4000 V4.0 with gatekeeper.

The local gateways in Figure 1-1 is the gateway in node 3.

#### 1.2.2.3 Registration

All remote gateways that want to use the IP address resolution mechanism have to register with their assigned gatekeeper over a local gateway. These remote gateways must be administered with the gatekeeper in the HiPath 4000 system (HiPath 4000 V2.0 or higher) for this. Please ensure that all gateways to be registered are assigned the appropriate authorization (REGGW) in the gateway attributes.

In Figure 1-1, the gateways for nodes 1, 2, 4 and 5 must be administered in node 3 with LEGK. Each remote gateway can be assigned a primary and secondary gatekeeper (to guarantee redundancy for security reasons). The primary gatekeeper has the local IP address, the secondary gatekeeper gets the IP address of another HG 3500. Each remote gateway basically interfaces with the primary gatekeeper assigned. The secondary gatekeeper serves as a backup and automatically takes over address resolution if the primary gatekeepers cannot be reached.



Please note that a remote gateway can only register to **one** local gateway!

#### **1.2.2.4 Security**

The H.225 connection (RAS – Registration, Admission, Status) between gateway and gatekeeper can be secured with H.235 security.

#### **1.2.2.5 IP Address Resolution**

A called party number is routed via LCR to an IP address in the destination gateway. IP address resolution can be configured in a HiPath 4000 V2.0 system with LCR and provides a service for local and remote gateways.

### **1.3 Gatekeeper Restrictions**

The Large Enterprise Gatekeeper can only be operated in a HiPath 4000 V2.0 system with a HG 3550 V2.0 board (as of HiPath 4000 V4.0 with HG 3500).

In an IP trunking network featuring both HG 3550 V1.0 and HG 3550 V2.0 boards, you would need a HiPath 4000 node with both HG 3550 V1.0 and V2.0 boards. All calls between an HG 3550 V1 and an HG 3550 V2 gateway must then be routed over this node. The TDM for this node is then the interface between HG 3550 V1 and V2.

Figure 1-2 depicts a constellation of this kind. In this example, node 3 serves as the hardware interface between HG 3550 V1 and HG 3550 V2. In node 3, the LEGK only recognizes the HG 3550 V2 board and the HG 3550 V1 gateway is configured in the same way as in HiPath 4000 V1.

#### **Maximum configuration:**

Up to 15 local and 15 remote gateways (HG 3500 from another HiPath 4000) can be registered with the LEGK.

It is also possible to enter up to 1000 gateways (HG 3500 or HG1500 (V5.0 onwards)) in the routing table. Gateways that are not registered with the LEGK, such as HG 1500 V5.0, are configured using their IP address and a station number qualification.

## General Information

### Gatekeeper Restrictions

It is recommended that the HG 3500 gateways register with their respective local gatekeeper.

Expansion dimensions:

- up to 15 gateways per HiPath 4000 V2.0 system
- the maximum network size is determined by the expansion limits of the individual systems with support of the HiPath 4000 configurator.

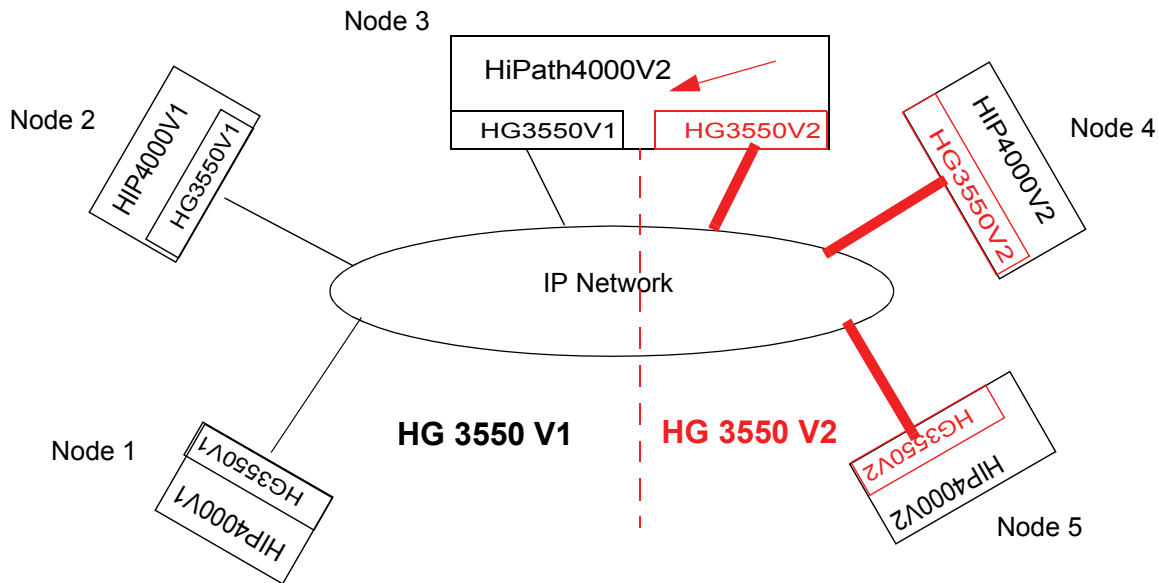


Figure 1-2 Mixed scenario with HG 3550 V1 and V2. Node 3 is the interface.



## 2 Guidelines for Installing an IP Feature

### Phase 1:

- Diagram of the customer IP network
- Create a HiPath 4000 network plan with all gateways, access points, HFA terminals
- Define the number of LEGKs and HG 3500 gateways required
- Map the HiPath 4000 network plan to the customer IP network
- Perform network analysis with the help of the IP service tool to determine the network's VoIP capability.
- Confirm the feasibility of the IP components planned

### Phase 3:

- Configure the straightforward LEGK function without resource management. LEGK is not needed if the customer only purchased an IPDA or HFA solution.
- Connection test for address resolution without resource management. Appropriate test for the IPDA and HFA features.

## Guidelines for Installing an IP Feature

### 3 Configuring the Feature

The HiPath 4000 Large Enterprise Gatekeeper (LEGK) is a new feature for IP trunking address resolution and general Resource Manager for data transfer in IP networks. The configuration of this feature is broken down into the following steps which are to be performed in consecutive sequence:

- Configuration: Database flexama memory - Section 3.3, “Configuring the FLEXAMA Memory in the Database”, on page 3-15
- Configuration: HG 3500 - Section 3.4, “Configuring a HiPath HG 3500 on the LAN Segment”, on page 3-20
- Configuration: HG 3500 directory numbers - Section 3.5, “Configuring the HG 3500 Directory Number”, on page 3-39
- Configuration: LCR digit analysis - Section 3.6, “Configuring IP Trunking in the LCR”, on page 3-41
- Configuration: Gateway registration - Section 3.7, “Administering Gateway Registration Data”, on page 3-47
- Configuration: Network topology - Section 3.8, “Resource Manager and Network Topology”, on page 3-56
- Configuration: Subscriber, trunk and tie trunk connections in the local switch - Section 3.10, “Configuring Circuits and Terminals”, on page 3-77

The LEGK feature must be taken into consideration when configuring IP trunking. If IP trunking is already available, it must be re-generated.

If the IP trunking version available is from HiPath 4000 V1.0 (HG 3550 V1.0), the feature cannot be used for this gateway.

The following sections contain configuration examples and detailed explanations of all requisite AMOs and AMO parameters. A distinction is made between



configuration with HiPath 4000 Manager/Assistant (Configuration Manager) or



AMO-based configuration.

The Large Enterprise Gatekeeper can be implemented in all HiPath 4000 system configurations. An LEGK can either be implemented in all nodes or in a single node in a HiPath 4000 network.

## Configuring the Feature

### Sequence of Generation

For clarification purposes, LEGK administration is also described using a number of typical configuration scenarios: Section 3.12, “Configuration Examples”, on page 3-80

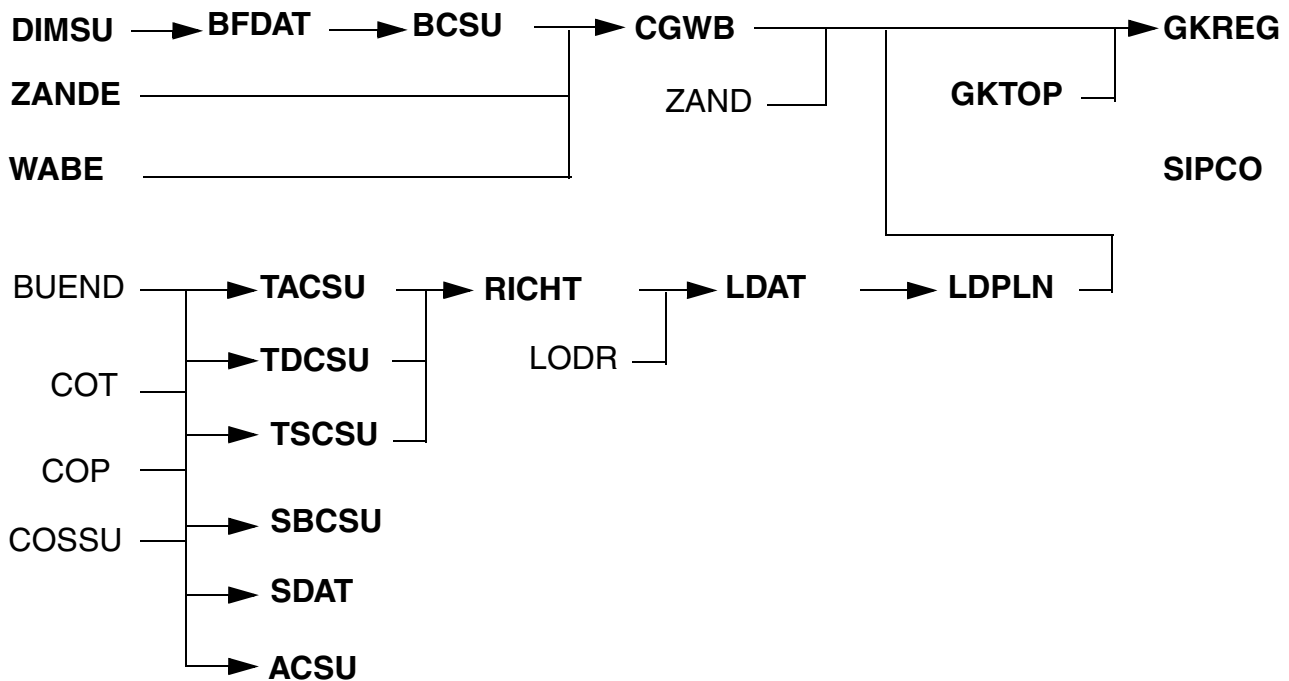
### 3.1 Sequence of Generation

This section describes the basic sequence for generating the “Large Enterprise Gatekeeper” feature. This description focuses first and foremost on the AMOs that were extended for the purpose of administering the feature. These AMOs are shown in bold typeface.

The other AMOs displayed are also involved in the generation process but were not extended for the specific feature. The existing generation sequence is used here.

In the course of configuration, the AMOs GKREG and GKTOP do not check if the resources used, such as sectors, sector path, clusters, LCR dial plan numbers, node numbers, external gateways, etc. are already configured.

The user is responsible for the consistency of the IP network’s administered topology resources (for example, bandwidth, B-channels, etc.). This task is not supported by the AMO GKTOP with plausibility checks.



#### **Important**

The AMOs do not check the specified gatekeeper configuration data for plausibility or network-wide consistency. This is one of the technician’s network planning tasks.

## 3.2 Activating the Large Enterprise Gatekeeper

This step is only necessary if you do **not** want to run a Large Enterprise Gatekeeper for least cost routing and Resource Manager on the local HiPath 4000 system. The feature is active by default.

If you do not want a gatekeeper at the local HiPath 4000 system, then the feature must be deactivated in the system before HG 3500 is installed. The GATEKPR parameter in the AMO ZANDE is used for this.



### Note

You cannot enable or disable the gatekeeper function at a HiPath 4000 system by simply activating or deactivating the AMO ZANDE once HG 3500 generation is complete.

Instead, you must remove all STMI2/4 HG 3500 boards, activate/deactivate the ZANDE parameter, and finally reinstall the boards. This sequence is necessitated by the different configurations of feature-specific data.

### Generation

#### AMO ZANDE

The AMO ZANDE is used on every HiPath 4000 system to specify whether or not this feature should be used.



Configuration with the AMO ZANDE can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)



`ADD-ZANDE : TYPE=ALLDATA , GATEKPR=YES ;`

This command specifies that the LEGK address resolution function (AMO GKREG) should be operated and administered at the local HiPath 4000 system. The Resource Manager is not dependent on this command and can always be operated.

## Configuring the Feature

### Activating the Large Enterprise Gatekeeper

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
ZANDE	GATEKPR	d	Gatekeeper Konfigurierung Diese Parameter muss auf NEIN gesetzt werden wenn eine PBX ohne Gatekeeper betrieben werden soll. Standardmäßig wird JA, d.h. also ein Gatekeeper wird an der lokalen PBX betrieben, eingerichtet.
	GATEKPT	e	Gatekeeper configuration This Parameter must be set to NO when a PBX has to operate without a gatekeeper. Default value is YES, that means a gatekeeper will be configured on the local PBX.

Table 3-1 AMO ZANDE parameters in the CHANGE branch under TYPE=ALLDATA

### Display



Displaying with the AMO ZANDE can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**

with AMO

(see AMO command)



DISPLAY-ZANDE:TYPE=ALLDATA;

Use this command to output all central parameters in the ALLDATA branch, including the gatekeeper parameter.

### 3.3 Configuring the FLEXAMA Memory in the Database

First of all, a certain volume of feature-specific memory should be provided. You can only start to configure the gatekeeper data after this memory has been created with the AMO DIMSU.

The values specified with ADD-DIMSU become effective immediately.

#### 3.3.1 Number of Internal and External Gateways

This step is used to configure a table containing general administrative data for all internal and external gateways in the network. An entry is required for each gateway.



**Important**

You can skip this section if there is no gatekeeper configured at the local HiPath 4000 system (AMO ZANDE: GATEKPR=NO).

**Add:**



```
ADD-DIMSU:TYPE=SYSTEM,GWREG=25;
```

Use this command to set the number of network-based gateways (in our case 25) that can address the Large Enterprise Gatekeeper.

**Display:**



```
DISPLAY-DIMSU:TYPE=SYSTEM;
```

Use this command to output all system parameters including the number of gateways permitted.



```
DISPLAY-DIMSU:TYPE=ALL,PARAM=GWREG;
```

Use this command to output only the number of gateways permitted.

## Configuring the Feature

### Configuring the FLEXAMA Memory in the Database

#### 3.3.2 Number of Internal HG 3500 Gateways in a System

This step is used to configure a table containing data for the internal gateways in every HiPath 4000 system. An entry is required for each gateway.

##### Add:



```
ADD-DIMSU:TYPE=SYSTEM,CGW=6;
```

Use this command to set the maximum number of HG 3500 (in our case, 6).

##### Display:



```
DISPLAY-DIMSU:TYPE=SYSTEM;
```

Use this command to output all system parameters including the number of internal gateways permitted.



```
DISPLAY-DIMSU:TYPE=ALL,PARAM=CGW;
```

Use this command to output only the number of internal gateways permitted.

#### 3.3.3 Number of LCR Digit Patterns for Digit Pattern Pools 1 through 8

This step configures the number of LCR digit patterns permitted in each of the eight available digit pattern pools. Up to 64,000 digit patterns are permitted in each pool. The digit patterns configured are evaluated during IP trunking as part of least cost routing.



##### Important

You can skip this section if there is no gatekeeper configured at the local HiPath 4000 system (AMO ZANDE: GATEKPR=NO).

In this case, the default configuration is sufficient with LCR pool 1 and dial plan 0.



**Add:**



```
ADD-DIMSU:TYPE=NETWORK,LDPLN1=50000,LDPLN2=12000,LDPLN4=5600;
```

Use this command to set the maximum number of LCR digit patterns per digit pattern pool, in our case:

- 50,000 digit patterns in digit pattern pool 1
- 12,000 digit patterns in digit pattern pool 2
- 5,600 digit patterns in digit pattern pool 4

**Display:**



```
DISPLAY-DIMSU:TYPE=NETWORK;
```

Use this command to output all parameters associated with network-wide features, including the number of digit pattern schemes in digit pattern pools 1 through 8.



```
DISPLAY-DIMSU:TYPE=ALL,PARAM=LDPLN2;
```

Use this command to output only the number of LCR digit pattern schemes permitted in pool 2.

### **3.3.4 Number of Cache Elements for Cache Pools 1 through 8**

This step configures the number of cache elements permitted in each of the eight available cache pools. Up to 6,400 cache elements are permitted in each pool.



**Important**

You can skip this section if there is no gatekeeper configured at the local HiPath 4000 system (AMO ZANDE: GATEKPR=NO).

## Configuring the Feature

### *Configuring the FLEXAMA Memory in the Database*

#### **Add:**



```
ADD-DIMSU:TYPE=NETWORK,LDPLN1=5000,LDPLN2=120,LDPLN4=100;
```

Use this command to set the maximum number of cache elements per digit pattern pool, in our case:

- 5,000 digit patterns in digit pattern pool 1
- 120 digit patterns in digit pattern pool 2
- 100 digit patterns in digit pattern pool 4

#### **Display:**



```
DISPLAY-DIMSU:TYPE=NETWORK;
```

Use this command to output all parameters associated with network-wide features, including the number of cache elements in cache pools 1 through 8.



```
DISPLAY-DIMSU:TYPE=ALL,PARAM=LDPLNC1;
```

Use this command to output only the number of cache elements permitted in cache pool 1.

### **3.3.5 Sector Path Numbers in the IP Network**

This step configures the maximum sector path number permitted in the IP network. Up to 64,000 sector paths are possible.

Configured sector path numbers and sector path descriptions are only valid at the local HiPath 4000 V2.0 system and are required by the Resource Manager.

#### **Add:**



```
ADD-DIMSU:TYPE=SYSTEM,SCTPATH=650;
```

Use this command to set the maximum number of sector path numbers (in our case, 650).

**Display:**



```
DISPLAY-DIMSU:TYPE=SYSTEM;
```

Use this command to output all system parameters including the maximum sector path number permitted.



```
DISPLAY-DIMSU:TYPE=ALL,PARAM=SCTPATH;
```

Use this command to output the maximum sector path number permitted.

## Configuring the Feature

### *Configuring a HiPath HG 3500 on the LAN Segment*

## 3.4 Configuring a HiPath HG 3500 on the LAN Segment

The HiPath HG 3500 module (STMI2/4) establishes the payload connections between the central HiPath 4000 system and the HiPath 4000 LAN segment.

- HiPath HG 3500 boards may be implemented both in peripheral shelves (LTU 1-15) in the central system and in access points (LTU 17-99). You can implement the same number of HG 3500 gateways that you configured with the AMO DIMSU (see Section 3.3.2, “Number of Internal HG 3500 Gateways in a System”, on page 3-16).
- Multiple HG 3500 modules can be implemented in a HiPath 4000 system.
- All HG 3500 modules must be connected at the HiPath 4000 LAN segment.
- The HG 3500 hardware is the STMI2/4 board. This board can simultaneously offer IP trunking, a WAML circuit, IPDA function, HFA function and SIP subscriber function. The type and number of circuits or B channels available in each case is set with the AMO BFDAT.

A HiPath 4000 LAN segment is that part of the customer network where the central system's IP components and directly connected (that is, not via router) access points are installed.

### 3.4.1 Configuring the HG 3500 Gateway

You must first configure the local LAN segment. Next you must install each HG 3500 gateway.

#### 3.4.1.1 Configuring the HG 3500 Board

The configuration example applies to the HiPath 4000 V2.0 system with gatekeeper on the left (“N 1”). The HG 3500 to be administered with the relevant configuration data is colored yellow. The gatekeeper (CUSIP=192.168.2.11) in the partner system “N 2” is colored in a lighter shade of yellow and will be described in more detail later in conjunction with the AMOs GKREG and GKTOP.

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

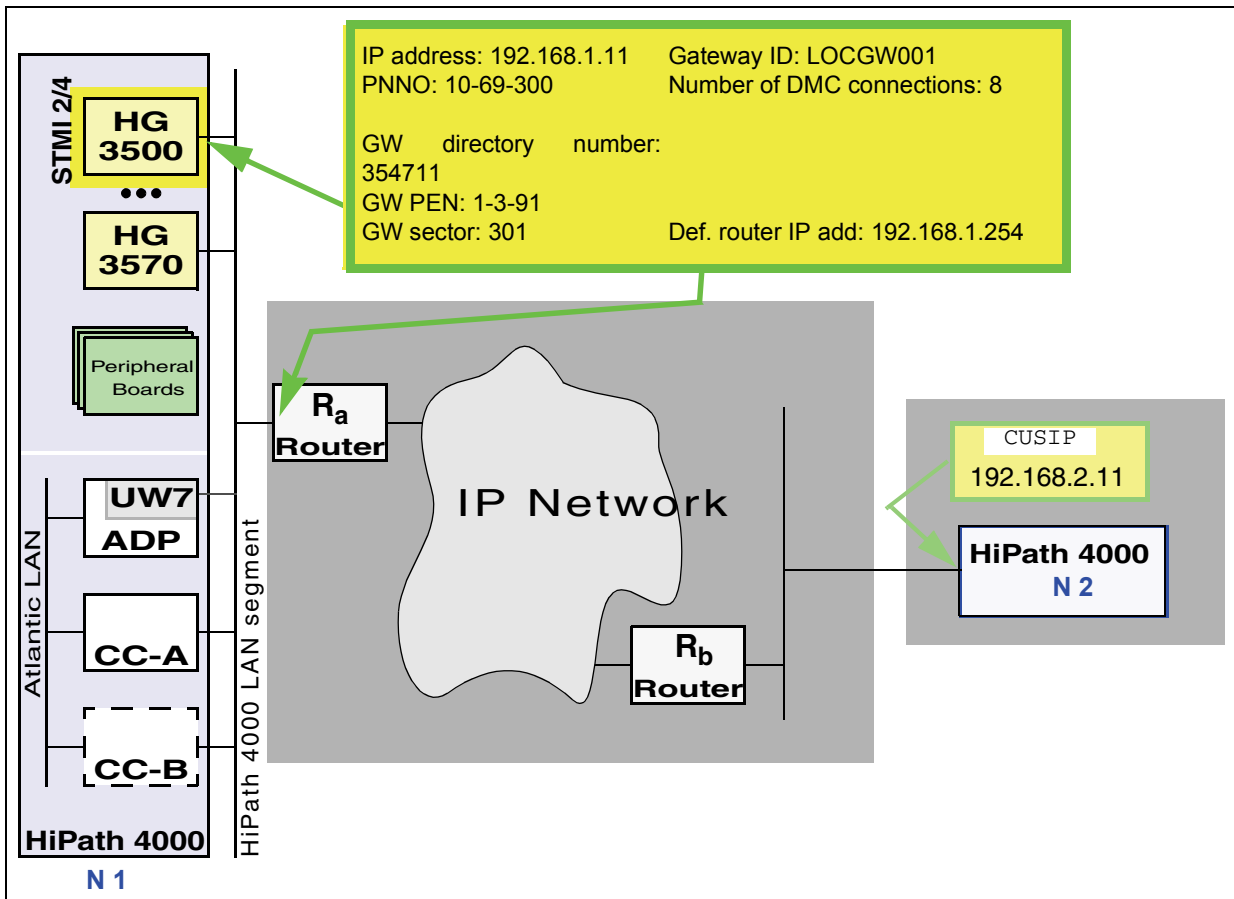


Figure 3-1 Configuring a HiPath HG 3500 gateway

ADD-BFDAT:	FCTBLK=1, BRDBCHL=BCHL60&BCHL120;	FUNCTION=HG3550,
CHANGE-BFDAT:	CONFIG=CONT, FUNCTION=HG3550, UNITS=3;	FCTBLK=1, LINECNT=1,
CHANGE-BFDAT:	CONFIG=OK, ANSW=YES;	FCTBLK=1,
ADD-BCSU:	MTYPE=IPGW, LTU=3, PARTNO=Q2316-X10, FCTBLK=1,	LTG=1, SLOT=91, FCTID=1, BCHL3550=30;
ADD-CGWB:	MTYPE=CGW, SLOT=91,	LTU=3, IPADR=192.168.1.11,

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

NETMASK=255.255.255.0;		
CHANGE-CGWB:	MTYPE=CGW, SLOT=91, GWID1=LOCGW001;	LTU=3, TYPE=GWDATA,
CHANGE-CGWB:	MTYPE=CGW, SLOT=91, GWNO=3,	LTU=3, TYPE=LEGKDATA, GWDIRNO=354711;
CHANGE-CGWB:	MTYPE=CGW, SLOT=91, DMCCONN=8;	LTU=3, TYPE=DMCDATA,
CHANGE-CGWB:	MTYPE=CGW, SLOT=91, DEFRT=192.168.1.254;	LTU=3, TYPE=GLOBIF,

## Generation

A HiPath HG 3500 board is configured via 3 AMOs: BFDAT, BCSU and CGWB.

### AMO BFDAT

The configuration of the functional blocks for the HG 3500 board is done with the AMO BFDAT.



#### Configuration Management --> System Data --> Board --> CGW Function Block

Click **New**, enter data and click **Save**.



ADD-BFDAT:FCTBLK=1,FUNCTION=HG3550,BRDBCHL=BCHL60&BCHL120;

CHANGE-BFDAT:CONFIG=CONT,FCTBLK=1,FUNCTION=HG3550,  
LINECNT=1,UNITS=3;

CHANGE-BFDAT=CONFIG=OK,FCTBLK=1,ANSW=YES;

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
BFDAT	ANTW	d	ANTW=JA Block-Konfiguration abschließen

Tabelle 3-2 AMO BFDAT parameters

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	ANSW	e	ANSW=YES Finish block configuration
	ANZEINH	d	Anzahl der vordefinierten Blöcke mit ausgewählter Funktion pro Satz.
	UNITS	e	Defines the number of predefined blocks with the selected function per line.
	ANZSATZ	d	Anzahl der funktionsbezogenen Sätze.
	LINECNT	e	Defines the number of lines related to the selected function.
	BKANANZ	d	Block fuer Baugruppe mit 60 und/oder 120 B-Kanälen
	BRDBCHL	e	Dedicates the block for boards with 60 and/or 120 b-channels
	CONFIG	d	CONFIG=WEITER Weitere Block-Konfiguration möglich CONFIG=OK Block-Konfiguration abschließen
	CONFIG	e	CONFIG=CONT Continue block configuration CONFIG=OK Finish block configuration
	FCTBLK	d	Dieser Index beschreibt den Funktionsblock welcher auf dem Common Gateway konfiguriert werden soll. Anhand des Funktionsblocks wird die Konfiguration der benötigten physikalischen Lines (Sätze der Baugruppe) festgelegt.
	FCTBLK	e	This index describes the function block which should be configured on the common gateway board. With that index the amount of needed physical lines (board circuits) is calculated.

Tabelle 3-2 AMO BFDAT parameters

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	FUNCTION	d	Dieser Parameter legt das Konfigurationsprofil des CGW fest. Dabei muss die evtl. benötigte HG3570 Funktion als erste angeführt werden. Falls ein bestimmter Line-Bereich für die Funktionen HG3530, HG3540 oder HG3550 vorreserviert werden soll, muss die entsprechende Funktion am Ende stehen und mit dem Wert HG35xxR abgeschlossen sein. Die Funktion STANDBY kann nur als Einzel-Funktion konfiguriert werden.
	FUNCTION	e	This parameter defines the configuration profile of the common gateway board. If HG3570 functionality is used, it must be configured at first position. If a prereservation of a certain line range of functions HG3530, HG3540 or HG3550 is desired, this function must be at the end of the profile just suffixed by the according HG35xxR value. The function STANDBY can only be configured as single function.

Tabelle 3-2 AMO BFDAT parameters

## AMO BCSU

The modules are configured in the system and activated with the AMO BCSU.



**Configuration Management --> System Data --> Board --> Board**

Click **New**, enter data and **Save**.



```
ADD-BCSU:MTYPE=IPGW,LTG=1,LTU=3,SLOT=91,PARTNO=Q2316-X10,  
FCTID=1,FCTBLK=1,BCHL3550=30;
```

```
CHANGE-BCSU:TYPE=HWYBDL,LTU=3,SLOT=81,PARTNO=Q2316-X10,  
HWYBDL=A;
```

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
BCSU	TYP	d	TYP=IPGW Common Gateway Baugruppe
	MTYPE	e	MTYPE=IPGW Common gateway board

Tabelle 3-3 AMO BCSU parameters



## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	LTG	d	LTG-Nummer Parameter kann entfallen - oder muss auf 1 gesetzt werden.
	LTG	e	Line/Trunk Group Number Parameter can be omitted - or must be set to 1.
	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 eingesetzt wird. Die HG 3500 darf nur in den Rahmen des HiPath 4000 Zentralsystems (LTU 1..15) eingesetzt werden. Der Rahmen muss mit einer LTUCX Baugruppe ausgestattet sein.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged. An HG 3500 may only be used in a shelf of the HiPath 4000 central system (LTU 1..15). The shelf must be equipped with a LTUCX board.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	SACHNR	d	Sachnummer der HG 3500-Baugruppe
	PARTNO	e	Part Number of the HG 3500 Board
	FCTID	d	Function ID
	FCTID	e	Function ID
	FCTBLK	d	Function Block Index
	FCTBLK	e	Function block index
	BKAN3550	d	Anzahl der B-Kanäle für die HG3550 Funktion
	BCHL3550	e	Amount of b-channels for HG3550 function
	HWYBDL	d	Highway Bündel Die HG 3500 / STM12/4 Baugruppe unterstützt die Wideband Technologie. Deshalb muss der Baugruppe entweder das Highway Bündel A (default) oder F zugewiesen werden.
	HWYBDL	e	Highway bundle The HG 3500 / STM12/4 board supports wideband technology. Thus either highway bundle A (default) or F must be assigned to this board.

Tabelle 3-3 AMO BCSU parameters

#### AMO CGWB

Use the ADD branch to make the individual settings necessary for operating the HG 3500 board. Global and Ethernet-specific board data is configured. This data is not loaded to the board until the board is activated or deactivated and then re-activated (RESTART-BSSU).

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

The CHANGE branch MTYPE=CGW allows you to set a number of parameters that are located in different branches. Data from the branches TYPE=GWDATA, TYPE=DMCDATA, and TYPE=LEGKDATA is also needed for startup.

The specification of a GWNO depends on the operating scenario set (see AMO ZANDE)

- PBX with LEGK
- PBX without LEGK

Operation in mixed mode is not possible.

A gateway number is required if the gatekeeper is configured at the local PBX and you want to register the gateway here.

A gateway number is not required if a gateway registers at a foreign PBX's gatekeeper. If entered, a gateway number would be ignored.

The sector number for an IP gateway (GWSECTNO) is only used by Resource Manager and is therefore only necessary if the gateway has to register at a foreign PBX's gatekeeper.

### Adding Ethernet-specific board data



#### Configuration Management --> System Data --> Board --> Board

Click **Search** and select **Board Name=STMI2** or **Board Name=STMI4**.

Make the settings on the **STMI Board Data** tab and **Save**.

#### Configuration Management --> System Data --> Maintenance --> Board Maintenance

Click **Search** and select **STMI**.

Click **Execute** on the **Action** pull-down menu, select **Restart** and confirm with **OK**.



```
ADD-CGWB:LTU=3, SLOT=91, IPADDR=192.168.1.11,  
NETMASK=255.255.255.0;
```

The HG 3500 must be restarted in order for this change to become effective. Use  
RESTART-BSSU:ADDRTYPE=PEN, LTU=3, SLOT=91;



#### Note

Established connections are cleared down as a result!

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
CGWB	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	IPADR	d	IP-Adresse der HG 3500 im Kunden LAN Legt die IP-Adresse fest, über die ein HG 3500 Gateway am HiPath 4000 LAN-Segment erreicht werden soll.
	IPADR	e	IP-Address of HG 3500 on customer LAN Assigns the address with which a HG 3500 gateway can be reached on the HiPath 4000 LAN-segment.
	NETMASK	d	Netzmaske des LAN-Segmentes
	NETMASK	e	Netmask of LAN-segment
	MUSTER	d	Ruhebitmuster Der Default-Wert ist 213 (dezimal)
	PATTERN	e	Idle Pattern Default value is 213 (decimal)

Table 3-4 AMO CGWB parameters



**Note**

Before administering the `ADD-CGWB` command, use **ping** to check that the gateway IP address given to you by the administrator is reachable.

*CUSIP* must not respond as this would indicate that the corresponding address has already been assigned.

*CUSIP* must be set differently for every HG 3500. The AMO does not verify if this rule is observed.

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

#### TYPE=GWDATA - Changing gateway identification



##### Configuration Management --> System Data --> Board --> Board

Click **Search** and select **Board Name=STMI2** or **Board Name=STMI4**.

Make the settings on the **STMI2-IGW Board Data** tab and **Save**.

##### Configuration Management --> System Data --> Maintenance --> Board Maintenance

Click **Search** and select **STMI**.

Click **Execute** on the **Action** pull-down menu, select **Restart** and confirm with **OK**.



```
CHANGE-CGWB: MTYPE=CGW, TYPE=GWDATA, LTU=3, SLOT=91,  
GWID1=INTGW001;
```

The HG 3500 must be restarted in order for this change to become effective. Use  
RESTART-BSSU: ADDRTYPE=PEN, LTU=3, SLOT=91;  
for this.



#### Note

Established connections are cleared down as a result!

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
CGWB	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	GWID1	d	Gateway Identifikation 1. Teil Die Gateway Identifikation ist der 1. Teil einer beliebigen 64 Zeichen langen Zeichenkette. Die Eingabe ist CASE-sensitiv.
	GWID1	e	Gateway Identifikation 1. part A gateway identification is the 1. part of an individual 64 character long characterstring. The input is CASE-sensitive.

Table 3-5 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=GWDATA

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
STMIB	GWID2	d	Gateway Identifikation 2. Teil Die Gateway Identifikation ist der 2. Teil einer beliebigen 64 Zeichen langen Zeichenkette. Die Eingabe ist CASE-sensitiv.
STMIB	GWID2	e	Gateway Identifikation 2. part A gateway identification is the 2. part of an individual 64 character long characterstring. The input is CASE-sensitive.

Table 3-5 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=GWDATA

### Resetting the parameters to default values

You can reset the initialization settings with the command:

```
CHANGE-CGWB:MTYPE=INITCGW,TYPE=GWDATA;
```

### TYPE LEGKDATA - Changing the gateway directory number



**Configuration Management --> System Data --> Board --> Board**  
Click **Search** and select **Board Name=STMI2** or **Board Name=STMI4**.  
Make the settings on the **STMI2-IGW Board Data** tab and **Save**.

**Configuration Management --> System Data --> Maintenance --> Board Maintenance**

Click **Search** and select **STMI**.

Click **Execute** on the **Action** pull-down menu, select **Restart** and confirm with **OK**.



```
CHANGE-CGWB:MTYPE=CGW,TYPE=LEGKDATA,LTU=3,SLOT=91,  
GWNO=3,GWDIRNO=354711;
```

The HG 3500 must be restarted in order for this change to become effective. Use  
**RESTART-BSSU:ADDRTYPE=PEN,LTU=3,SLOT=91;**  
for this.



#### Note

Established connections are cleared down as a result!

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
CGWB	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	GWNR	d	Gateway Nummer Die Gateway Nummer dient zur Identifikation der HG 3500 und ist immer erforderlich, wenn ein Gatekeeper an der lokalen PBX betrieben wird. Verfügt die lokale PBX über keinen Gatekeeper so wird auch keine Gateway Nummer benötigt Der Default-Wert ist 0 (dezimal)
	GWNO	e	Gateway number A gateway number is used to identify a HG 3500 and it necessary, when a gatekeeper is operating on the lokal PBX. Is there no gatekeeper working on the lokal PBX then no gateway number is needed Default value is 0 (decimal)
	GWRNR	d	Gateway Rufnummer Legt eine Rufnummer fest, mit der das Gateway an der lokalen PBX erreichbar ist. Die Rufnummer muß eigens mit dem AMO WABE und Kennzahlpunkt QUER eingerichtet werden.
	GWSTNO	e	Gateway station number Assigns an access code, with which a gateway can be reached on the local PBX. The access code must be specially configured with AMO WABE and DAR = QUER.
	REGEXTGK	d	Gateway Registrierung an einem remote Gatekeeper Damit wird gesteuert, ob sich ein Gateway an einem remote Gatekeeper registrieren darf.
	REGEXTGK	e	Gateway registration at remote gatekeeper Controls, if a gateway is permitted to register at a remote gatekeeper.

Table 3-6 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=LEGKDATA

## Resetting the parameters to default values

Resetting the CGWB parameters for the LEGKDATA is neither helpful nor supported. You can only set other values with the command:

```
CHANGE-CGWB: MTYPE=STMI2IGW, TYPE=LEGKDATA, ..... ;
```

## TYPE DMCDATA - Changing the number of DMC connections



### Configuration Management --> System Data --> Board --> Board

Click **Search** and select the board. Make the settings on the **STMI Board Data** tab and **Save**.

### Configuration Management --> System Data --> Maintenance --> Board Maintenance

Click **Search** and select **STMI**.

Click **Execute** on the **Action** pull-down menu, select **Restart** and confirm with **OK**.



```
CHANGE-CGWB: MTYPE=CGW, TYPE=DMCDATA, LTU=3, SLOT=91,
              DMCCONN=8;
```

The HG 3500 must be restarted in order for this change to become effective. Use **RESTART-BSSU: ADDRTYPE=PEN, LTU=3, SLOT=91;** for this.



### Note

Established connections are cleared down as a result!

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
CGWB	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.

Table 3-7 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=DMCDATA

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	DMCCONN	d	Anzahl der möglichen DMC Verbindungen Legt den Maximalwert der möglichen DMC Verbindungen für die HG 3500 fest.
	DMCCONN	e	Number of possible DMC connections Assigns the maximum number of possible DMC connections for the HG 3500.

Table 3-7 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=DMCDATA

### Resetting the parameters to default values

You can reset the initialization settings with the command:

```
CHANGE-CGWB:MTYPE=INITCGW,TYPE=DMCDATA;
```

### TYPE GLOBIF - Changing the default router IP address



#### Configuration Management --> System Data --> Board --> Board

Click **Search** and select the board. Make the settings on the **STMI2-IGW Board Data** tab and **Save**.

#### Configuration Management --> System Data --> Maintenance --> Board Maintenance

Click **Search** and select **STMI**.

Click **Execute** on the **Action** pull-down menu, select **Restart** and confirm with **OK**.



```
CHANGE-CGWB:MTYPE=CGW,TYPE=GLOBIF,LTU=3,SLOT=91,  
DEFRT=192.168.1.254;
```

The HG 3500 must be restarted in order for this change to become effective. Use **RESTART-BSSU:ADDRTYPE=PEN,LTU=3,SLOT=91;** for this.



#### Note

Established connections are cleared down as a result!



AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	DEFRT	d	IP-Adresse der Default Routers Der Default-Wert ist 0.0.0.0
	DEFRT	e	Default router IP-address Default value is 0.0.0.0

Table 3-8 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=GLOBIF

### Resetting the parameters to default values

You can reset the initialization settings with the command:

```
CHANGE-CGWB:MTYPE=INITCGW,TYPE=GLOBIF;
```

### TYPE GKDATA - Changing IP addresses for primary and secondary gateways

This step is only necessary if there is no gatekeeper configured on the local HiPath system and a gateway should register at a foreign PBX's gatekeeper. Use this command to enter the IP addresses of the relevant gateways.



#### **Configuration Management --> System Data --> IPDA --> IPDA Access Point**

Click **Search** and select the access point, change data and **Save**.



```
CHANGE-CGWB:MTYPE=CGW,TYPE=GKDATA,LTU=3,SLOT=91,
PRIGKIP=192.168.1.90,PRIGKPN=1719,
PRIGKID1=PRIMARYRASMANAGERID;
```

In this case, only a primary gatekeeper is assigned.

The HG 3500 must be restarted in order for this change to become effective. Use  
 RESTART-BSSU:ADDRTYPE=PEN,LTU=3,SLOT=91;.

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment



**Note:** Established connections are cleared down as a result!

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
CGWB	LTU	d	LTU-Nummer des Rahmens, in dem die HG 3500 gesteckt ist.
	LTU	e	Line/Trunk Unit Number of the shelf where the HG 3500 is plugged.
	EBT	d	Einbauteilung des Steckplatzes der HG 3500
	SLOT	e	Slot where the HG 3500 resides.
	PRIGKIP	d	IP Adresse der HG 3500 des primär anzusprechenden Gatekeeper Jeder Gatekeeper wird durch eine IP-Adresse adressiert.
	PRIGKIP	e	IP address of the HG 3500 for the primary addressed gatekeeper Every gatekeeper is addressed by it's own IP address
	PRIGKPN	d	Portnummer der HG 3500 Die Portnummer für HG 3500 ist standardmäßig 1719.
	PRIGKPN	e	Portnumber of HG 3500 The default portnumber for a HG 3500 is .1719.
	PRIGKID1	d	ID des primär anzusprechenden Gatekeeper - 1. Teil Der Default-Wert ist "PrimaryRASManagerID". Die Eingabe ist CASE-sensitiv.
	PRIGKID1	e	ID of the primary addressed gatekeeper - 1. part Default value is "PrimaryRASManagerID". The input is CASE-sensitive.
	PRIGKID2	d	ID des primär anzusprechenden Gatekeeper - 2. Teil Die Eingabe ist CASE-sensitiv.
	PRIGKID2	e	ID of the primary addressed gatekeeper - 2. part The input is CASE-sensitive.
	SECGKIP	d	IP Adresse der HG 3500 des sekundär anzusprechenden Gatekeeper Jeder Gatekeeper wird durch eine IP-Adresse adressiert.

Table 3-9 AMO CGWB parameters in the CHANGE branch under MTYPE=CGW, TYPE=GKDATA

## Resetting the parameters to default values

You can reset the initialization settings with the command:

```
CHANGE-CGWB: MTYPE=INITCGW,TYPE=GKDATA;
```

## Display:

### AMO BCSU

When configuring a HG 3500, the distribution and number of available IP connections (B channels) is defined with the HG 3500 FCTID in the AMO BCSU.

In contrast to NCUI4 and STMI2/4, no supplementary information, such as IP address, B channels, etc., is output for a HG 3500 gateway.



Displaying can be performed with the HiPath 4000 Assistant, Boards window.



```
DISPLAY-BCSU:TAB,1,LTU Number,Slot;
```

The AMO outputs typical board data for the common gateway.

```
DIS-BCSU:TBL,1,3,91;
```

```
H500: AMO BCSU STARTED
```

```
ADDRESS : LTG 1 LTU 3 SOURCE GROUP 1
```

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----									
				S H AL-					
	ASSIGNED	MODULE	FCT	E	W	ARM	INSERTED	HW-	MODULE
PEN	MODULE	TYPE	ID	C	Y	NO	MODULE	STATE INFO	STATUS
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----									
91	Q2316-X10	STMI2	1	A	0	*	Q2316-X10	-05 -	READY
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----									
	IP ADDRESS : 192.168. 1. 11					B-CHANNELS : 120		BCHLCNT : 120	
	BLOCK NO : 1					PRERESERVED LINES ASSIGNED : NO			
	1. FUNCT : STMI2-IPGW					1 LINES		B-CHANNELS : 30 BCHLCNT : 30	
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----									

### AMO CGWB

## Configuring the Feature

### Configuring a HiPath HG 3500 on the LAN Segment



Displaying with the AMO CGWB can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)



`DISPLAY-CGWB:CGW,<LTU Number>,<Slot>;`

The AMO outputs all HG 3500 specific data.

Values must be configured for the following data to ensure correct operation:

- Ethernet interface
- Gateway data
- Gatekeeper-specific data

#### Delete:

#### AMO BCSU



Deletion with the AMO BCSU can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)



`DELETE-BCSU:PER,,LTU Number,Slot,Part Number;`

The AMO deletes the specified board from the HiPath 4000 system.

#### AMO CGWB

The AMO does not feature a DELETE branch. The configuration data modified with the AMO CGWB (TYPE=LEGKDATA) for a local gateway is deleted when deleting the AMO GKREG.

This data can be restored at any time with the AMOs CGWB and GKREG.

#### Resetting the parameters to default values:

- Resetting the CGWB parameters for the LEGKDATA is neither helpful nor supported.
- You can reset the initialization settings for individual data types with the command:

`CHANGE-CGWB:MTYPE=INITCGW,TYPE=<param>;`

- You can reset the initialization settings for all data types with the command:

`CHANGE-CGWB:MTYPE=INITCGW,TYPE=ALL;`

### 3.4.1.2 Configuring HG 3500 Circuits

You must configure the appropriate number of circuits for every common gateway board based on its configuration (see AMO BFDAT: parameter FCTBLK). As for all circuits, the **AMO TDCSU** is used for this.

Please note that this step requires a number of HG 3500 specific parameters that are grouped together for all AMO commands in the branch EVN=HG3550IP.

The parameter DMCALLWD is used to define whether or not this circuit can be used in a **direct media connection**.

Please note that you may have to configure the necessary circuit data (for example, circuit and line parameters, trunk groups, etc.) in advance using the relevant AMOs.

Each circuit in HG 3500 must have a separate trunk group.

### 3.4.1.3 Changing the HG 3500 Gateway Registration

The HiPath 4000 system does not support a direct change of the gateway registration type from remote to internal gatekeeper, and vice versa. Furthermore, the AMO ZANDE parameter GATEKPR must not be changed while a gateway is configured. This may cause major disruptions during operation!

Since the AMO CGWB has no DELETE branch, the AMO BCSU must be used to delete the internal HG 3500 configuration data and the extended board data.

- In a PBX **with/without** gatekeeper, the HG 3500 gateway(s) must always be deleted first and then reconfigured. Please note that in such a case all gateways will be registered either internally (PBX with gatekeeper) or remotely (PBX without gatekeeper).
  - Changing registration of gateway(s) from “internal” to “remote”:  
Delete gateway(s) with AMO GKREG and AMO BCSU, change the GATEKPR parameter to NO and reconfigure the gateway with AMO BFDAT, AMO BCSU and AMO CGWB.
  - Change registration of gateway(s) from “remote” to “internal”:  
Delete the gateway(s) with AMO GKREG and AMO BCSU, change the GATEKPR parameter to YES and reconfigure the gateway with AMO BFDAT, AMO BCSU, AMO CGWB and AMO GKREG.
- In a PBX **with** gatekeeper, the registration of some special, local gateway(s) can be changed from internal to remote:  
  
Delete the gateway data with AMO GKREG and then reconfigure the gateway with AMO CGWB (**REGEXTGK=YES**) !
- In a PBX **with** gatekeeper, an additional, local gateway can be configured for remote registration:

## Configuring the Feature

### *Configuring a HiPath HG 3500 on the LAN Segment*

Configure the gateway with AMO BFDAT, AMO BCSU and AMO CGWB (**REGEXT-GK=YES**) !

For further information about registering a HG 3500 gateway see Section 3.7, “Administering Gateway Registration Data”, on page 3-47.

### 3.5 Configuring the HG 3500 Directory Number

Every HG 3500 requires a directory number with which it can be contacted in the gatekeeper's HiPath 4000 system. The AMO CGWB presents the directory number to the HG 3500 (command: `ADD-CGWB:MTYPE=CGW,LTU=<number>,SLOT=<number>,TYPE=LEGKDATA,GWDIRNO=<GW directory number>;`).

A HG 3500 that has to register at a foreign HiPath 4000 system with gatekeeper does not have to have an entry its own HiPath 4000 system's digit analysis scheme. However, the directory number must be configured under the GATEWAY digit analysis result or, if the number contains more than six digits, in the LCR in the system **with** gatekeeper.

The DPLN entry for a remote HG 3500 at the HiPath 4000 system with gatekeeper requires the associated gateway number as supplementary information. This is administered, that is, the relevant DPLN entry is entered or deleted with the AMO GKREG in the course of configuration or deletion. This ensures that operation can only start if the gateway is correctly configured in the LEGK administration.

The HG 3500s own directory number must come from the station's numbering plan.

The gateway directory number must be configured under the TIE digit analysis result (TSC connection) in a HG 3500 that has to register at the local HiPath 4000. A gateway number is not essential as supplementary information in this case.

The DPLN entry for a HG 3500 (GATEWAY digit analysis result) can only be deleted after the gateway number has been removed. Use the AMO GKREG to delete the gateway from the LEGK administration.

#### Generation

##### AMO WABE

Configure the directory number of a **remote** HG 3500 in the local system, that is, the gateway must register at the local LEGK. In this case, the gateway must be configured with the GATEWAY digit analysis result.



Configuration can be performed with HiPath 4000 Manager/Assistant in the Extension window (TYPE=GATEWAY).



`ADD-WABE:CD=35101,DAR=GATEWAY;`

For the predefined traffic situations, the remote gateway's directory number (35101) is configured as the gateway digit analysis result in the digit analysis scheme.

## Configuring the Feature

### *Configuring the HG 3500 Directory Number*

Configure the directory number of a remote HG 3500 in the system with gatekeeper, that is, the gateway can register at the local gatekeeper. In this case, the gateway must be configured with the TIE digit analysis result.



Configuration can be performed with HiPath 4000 Manager/Assistant in the Extension window (TYPE=TIE).



```
ADD-WABE:CD=452001,DAR=TIE;
```

For the predefined traffic situations, the local gateway's directory number (452001) is configured as the tie line digit analysis result in the digit analysis scheme.

### **Display:**



Configuration can be performed with HiPath 4000 Manager/Assistant in the Extension window.



```
DISPLAY-WABE:GEN,Directory Number;
```

The AMO outputs data on the specified directory number.

### **Delete:**



Configuration can be performed with HiPath 4000 Manager/Assistant in the Extension window.



```
DELETE-WABE:CD,Station Number,,Digit Analysis Result;
```

The AMO deletes the required directory number for the specified digit analysis result.



### 3.6 Configuring IP Trunking in the LCR

When resolving addresses for TDM connections, an LCR route is administered as destination address information and is subsequently used to determine the LODEN of a remote circuit for CO or TIE connections.

To satisfy the requirements of IP address resolution, new parameters for destination gateways (GW1 to GW5) are administered in the LCR data with the AMO LDAT. Information on destination gateways 1...5 consists of:

- a) the gateway number
- b) the sector path number

The gateway number can be used to determine the IP address of the destination gateway and therefore to reach every required HiPath 4000 system in the customer's IP network.

Enter all sectors to be crossed between the source and destination gateway under the sector path number. It does not contain the sector numbers of the source and destination gateway.

There are no multiple paths for this path type. In other words, there is only one defined path. To avoid having to configure an unnecessary number of sector paths, you can also specify a sector path that was defined for DMC here. If this is a multiple path, a search is performed here for the correct sector path segment. For the sake of clarity, however, separate sector paths should be defined for IP trunking and DMC.

The IP address resolution administration concept is embedded in the existing LCR device search and can be performed with the same AMOs (namely the AMOs RICHT, LDAT, and LD-PLN).

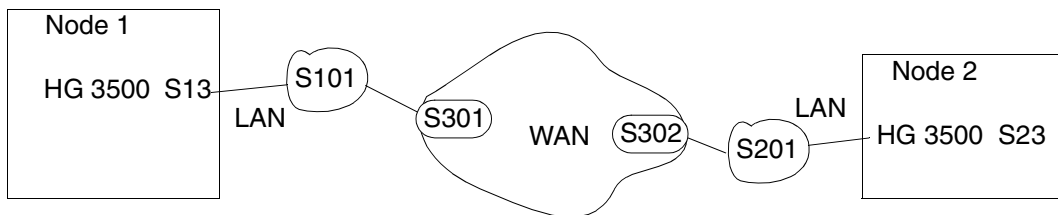


Figure 3-2 Example for sector path description

An outgoing seizure from gateway S13 to gateway S23 uses the following sector path:

**S13 --> S23:** S101,S301,S302,S201

#### Generation

#### AMO RICHT

## Configuring the Feature

### Configuring IP Trunking in the LCR

Use the branch `MODE=LRTENEW` to configure the LCR route for IP trunking. Alternatively, the trunk group number can be left out when configuring IP address resolution for a remote gateway (HiPath 4000 V2.0 system without gatekeeper) because B channels do not have to be seized at the gatekeeper's PBX in this case.



Configuration can be performed with HiPath 4000 Manager/Assistant in the LCR Route window.



```
ADD-RICHT:MODE=LRTENEW, LRTE=35, LSVC=ALL,  
          NAME="STMI2 3-91", DNNO=1-69-300, REROUT=NO,  
          ROUTATT=NO, EMCYRTT=NO, PDNNO=10-69-300,  
          CHARCON=NEUTRAL, CONFTONE=NO, RERINGRP=NO;
```

Route 35 is configured on PEN 3-91 for all services for HG 3500; no trunk group number was entered.

## AMO LDAT

Use this AMO to configure the necessary LCR route elements for IP trunking for an LCR route.

Every route element can contain up to five destination gateways from remote HiPath 4000 V2.0 systems. The parameters GW1 through GW5 define the connection setup sequence, that is, first the path described in GW1 and so on until finally the path in GW5.

If five destination gateways is not sufficient, then a new route element must be configured and in addition, the value `LRTGCONT` must be specified in the parameter `LATTR`. This creates five additional destination gateways for the same route element. All data associated with the route element already created is automatically adopted independently of the current AMO input.

As in the past, multiple route elements can also be configured with different LCR parameters for an LCR route. In this case, the parameter `LATTR` must not contain the value `LRTGCONT`.

The trunk group number can be left out. If a trunk group number is specified, all trunk-group-specific data is also adopted.



Configuration can be performed with HiPath 4000 Manager/Assistant in the LCR Route Element window.



```
ADD-LDAT:LROUTE=35,LSVC=ALL,LVAL=1,ODR=2,LAUTH=1,  
CARRIER=1,ZONE=TIE01,LATTR=WCHREG,VCCYC=4,  
GW1=1-1;
```

A route element is created for route 35 with path data for destination gateway 1.

```
ADD-LDAT:LROUTE=35,LVAL=1,ODR=2,LAUTH=1,LATTR=LCRCONT,  
GW1=6-16;
```

If the path data for all five destination gateways is entered in a route element for route 35, this follow-up command can be used to create another route element with the path data, for example, for the sixth destination gateway.

### **AMO LDPLN**

Use this AMO to configure the LCR digit pattern for each destination gateway in the HiPath 4000 V2.0 systems in a customer network.

Up to 2,048 dial plans can be configured. But first, the required dial plan numbers must be administered with the AMO LDPLN. Dial plan number 0 is an exception. This configures fixes and cannot be administered in the branch LCRCOS=LCRADM. Random digit patterns can be configured here immediately.

If you want to save the LCR digit pattern under a dial plan number other than 0, then this must be configured before the first entry. The branch LCRCONF=LCRVADM is used for this. In the following AMOs, the user only uses the dial plan number (0-2047).

A dial plan number greater than the permanently set plan 0 is usually only needed if a gatekeeper is configured at the local system.



Configuration can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.



```
ADD-LDPLN:LCRCONF=LCRADM, DIPLNUM=2,LWMPPOOL=1;
```

Dial plan number 2 is configured on the first unused dial plan in LCR digit pattern pool 1.

Use the following step to configure the required digit pattern.



Configuration can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.

## Configuring the Feature

### Configuring IP Trunking in the LCR



```
ADD-LDPLN:LCRCONF=LCRPATT,DIPLNUM=2,LDP="00891242390",  
LAUTH=1,PINP=N;
```

The digit pattern 00891242390 is created under dial plan number 2.

A digit pattern that leads to a gateway is an exception.

If a gateway directory number cannot be resolved with the dial plan (DPLN), it must be administered in the LCR dial plan DIPLNUM=0. The following command is required for this (see also Section 3.5, "Configuring the HG 3500 Directory Number", on page 3-39).



Configuration can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.



```
ADD-LDPLN:LCRCONF=LCRPATT,DIPLNUM=0,  
LDP="008973114711",GWNO=7,LAUTH=3;
```

The gateway directory number 008973114711 is assigned to destination gateway 7.

### Display:

#### AMO RICHT



Displaying can be performed with HiPath 4000 Manager/Assistant in the LCR Route window.



```
DISPLAY-RICHT:MODE=LRTE,LRTE=35;
```

The AMO outputs the LCR routing data for LRTE 35.

#### AMO LDAT



Displaying can be performed with HiPath 4000 Manager/Assistant in the LCR Route Element window.



```
DISPLAY-LDAT:KIND=LCR,LROUTE=35;
```

The AMO outputs the routing data configured for all configured route elements for LCR route 35.

#### AMO LDPLN

Display the internal administration configuration for dial plan number 2.



Displaying can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.



`DISPLAY-LDPLN:LCRCONF=LCRADM,DIPLNUM=2;`

The AMO outputs the administrative data LWMPOOL, DIALPLN and INFO for dial plan number 2.

Displaying the digit pattern configured for gateway 7.



Displaying can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.



`DISPLAY-LDPLN:LCRCONF=LDP,GWNO=7;`

The AMO outputs the digit pattern data configured for gateway 7.

#### **Delete:**

#### **AMO RICHT**



Deletion can be performed with HiPath 4000 Manager/Assistant in the LCR Route window.



`DELETE-RICHT:MODE=LRTE,LRTE=35;`

The AMO deletes LCR route 35.

#### **AMO LDAT**



Deletion can be performed with HiPath 4000 Manager/Assistant in the LCR Route Element window.

## Configuring the Feature

### Configuring IP Trunking in the LCR



```
DELETE-LDAT:KIND=LROUTE,LROUTE=35;
```

The AMO deletes all route elements and data for LCR route 35.

#### **OR**

```
DELETE-LDAT:KIND=LRTEL,LROUTE=35,LRTEL=1,GWIDX=2;
```

The AMO deletes only the second gateway entry for LCR route 35 in route element 1.

The last gateway in an LCR route element cannot be deleted with GWIDX. In this case, the entire route element (LRTEL) must be deleted.

### **AMO LDPLN**

Delete the internal administration configuration for dial plan number 2.

A dial plan number can only be deleted after all digit patterns have been deleted.



Deletion can be performed with HiPath 4000 Manager/Assistant in the LCR Digit Pattern window.



```
DELETE-LDPLN:LCRCONF=LCRADM,DIPLNUM=2;
```

The AMO deletes dial plan number 2. Data can no longer be accessed on these dial plans. Dial plan number 2 should be reconfigured when next required.

Delete the digit pattern configured for a dial plan number.



Deletion can be performed with HiPath 4000 Manager/Assistant in the Extension window.



```
DELETE-LDPLN:LCRCONF=LCRPATT,DIPLNUM=6,LDP="0307469412";
```

The AMO deletes the digit pattern 0307469412 configured for gateway 6.

## 3.7 Administering Gateway Registration Data

Each gateway (local or remote) that needs a gatekeeper for IP address resolution must register at this gatekeeper. Gateway-specific administration data must be configured for this on a HiPath 4000 system on which the gatekeeper is active.

A local gateway, that is, a gateway in the same HiPath 4000 system as the gatekeeper, must have been configured in advance with the AMO STMIB. The gateway number, the gateway directory number, the IP address, and the port number are saved in the administration data and can no longer be modified with the AMO GKREG. The choice of data actually configured depends on whether or not you want to operate a gatekeeper in the system (AMO ZANDE). This is because of the different storage locations used for configuration data. Please note the AMO STMIB advisories for displaying irrelevant parameters. For example, the gateway number is unimportant in a system without gatekeeper and, if specified, is ignored.

External gateway data can only be administered with the AMO GKREG. In this case, the AMO enters the gateway number as supplementary information in the DPLN data. The gateway number can be displayed with the AMO WABE, but it cannot be modified.

A gateway that was configured as an internal gateway cannot be transformed into an external gateway by changing the gateway attribute (INTGW --> EXTGW). Gateways that are configured as external gateways cannot be transformed into internal gateways either. To do this, you must first completely delete and then reconfigure the gateway.

The attributes INTGW and EXTGW may not be set simultaneously.

Gateways that were not configured cannot register at the gatekeeper and are therefore omitted from IP trunking address resolution and Resource Manager.

The AMO GKREG cannot be executed on systems without gatekeeper function. This operation is always interrupted with an F01 error message.

### 3.7.1 Configuring a Local Gateway

---

ADD-GKREG :	GWNO=1 ,	GWATTR=INTGW&HG3550V2 ,
	DPLN=0 ,	DIPLNUM=0 ,
	LAUTH=1 ;	

---



Configuration with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)

## Configuring the Feature

### Administering Gateway Registration Data



```
ADD-GKREG: GWNO=1, GWATTR=INTGW&HG3550V2, DPLN=0,  
           DIPLNUM=0, LAUTH=1;
```

The data specified is assigned to gateway number 1.

### 3.7.2 Configuring a Remote Gateway for Registration

---

```
ADD-GKREG:      GWNO=2,      GWATTR=EXTGW&HG3550V2&REGGW,  
                GWDIRNO=413100,  GWIPADDR=192.168.2.11,  
                DIPLNUM=0,      DPLN=0,  
                LAUTH=1;
```

---



Configuration with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)



```
ADD-GKREG: GWNO=2, GWATTR=EXTGW&HG3550V2&REGGW,  
           GWDIRNO=413100, GWIPADDR=192.168.2.11,  
           DIPLNUM=0, DPLN=0, LAUTH=1;
```

The data specified is assigned to gateway number 2.



#### Note

Before administering the `ADD-GKREG` command, use **ping** to check that the IP address of the remote gateway is reachable.

It *should* be reachable - otherwise this address is not used.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKREG	GWNR	d	Nummer des Gateway unter dem es in der Gatekeeper Verwaltung eingerichtet werden soll
	GWNO	e	Gateway Number with which it will be configured in the gatekeeper administration.

Table 3-10 AMO GKREG parameters in the ADD branch



AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	GWATTR	d	Attribute die einem Gateway zugeordnet werden können
	GWATTR	e	Attributes which can be assigned to a gateway
	GWIPADR	d	IP-Adresse der HG 3500 im Kunden LAN Legt die IP-Adresse fest, über die ein HG 3500 Gateway am Hi-Path 4000 LAN-Segment erreicht werden soll.
	GWIPADDR	e	IP-Address of HG 3500 on customer LAN Assigns the address with which a HG 3500 gateway can be reached on the HiPath 4000 LAN-segment.
	GWRNR	d	remote Gateway Rufnummer Legt eine Rufnummer fest, mit der das Gateway an der remote PBX erreichbar ist. Die Rufnummer muß zuvor mit dem AMO WABE und Kennzahlpunkt GATEWAY eingerichtet werden. Für Gateways die sich nicht registrieren müssen ist der WABE-Eintrag nicht erforderlich.
	GWSTNO	e	remote Gateway station number Assigns an access code, with which a gateway can be reached on the remote PBX. The access code must be specially configured before with AMO WABE and DAR = GATEWAY. The DAR entry ist not necessary for gateways which must not register.
	WAPLNUM	d	Nummer des LCR Wählplanes Legt eine LCR Wählplan Nummer fest die mit dem AMO LDPLN konfiguriert wurde.
	DIALPLNO	e	Number of a LCR Dial plan Assigns a LCR dialplan number which has been configured with AMO LDPLN.
	WABE	d	WABE Gruppe
	DAR	e	DAR group.
	LBER	d	LCR Berechtigung
	LATTR	e	LCR authorization.

Table 3-10 AMO GKREG parameters in the ADD branch

### 3.7.3 Configuring a Remote Gateway without Registration

```
ADD-GKREG:          GWNO=3,              GWATTR=EXTGW&HG3550V2,
                   GWDIRNO=455400,        GWIPADDR=192.168.10.50,
```

## Configuring the Feature

### Administering Gateway Registration Data

```
DIPLNUM=0 ,          DPLN=0 ,  
LAUTH=1 ;
```

A connection can be set up to unregistered remote gateways if the IP address was configured with the AMO LDAT and AMO GKREG.



#### Note

LEGK address resolution is not available, however, for a gateway of this kind.



Configuration with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**

with AMO

(see AMO command)



```
ADD-GKREG : GWNO=3 , GWATTR=EXTGW&HG3550V2 ,  
GWIPADDR=192.168.10.50 , GWDIRNO=455400 ,  
DIPLNUM=0 , DPLN=0 , LAUTH=1 ;
```

The data specified is assigned to gateway number 3.



#### Note

Before administering the ADD-GKREG command, use **ping** to check that the IP address of the remote gateway is reachable.

It *should* be reachable - otherwise this address is not used.

### 3.7.4 Testing the Function of LEGK Address Resolution and IP Connections



#### Important

Once you have configured the AMO GKREG, the system status allows you to set up and test VoIP connections in the network. We recommend performing these tests before you configure the Resource Manager to ensure that address resolution is working.

Connections can be checked by simply dialing configured stations.

If you are unable to set up connections, use the HiPath IP Service Tool's diagnostic options to perform troubleshooting.

The AMO GKREG's Display function can also be used for diagnostics. Use this function to check if all gateways are correctly registered, for example.

### 3.7.5 Changing Gateway Registration Data

---

```
CHANGE-GKREG:      GWNO=2 ,      GWATTR=EXTGW&HG3550V2 ,
                   DIPLNUM=1 ,      DPLN=4 ,
                   LAUTH=2 ;
```

---



Configuration with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
 with AMO  
 (see AMO command)



```
CHANGE-GKREG: GWNO=2 , GWATTR=EXTGW&HG3550V2 ,
              DIPLNUM=1 , DPLN=4 , LAUTH=2 ;
```

This command changes the gateway attributes, the dial plan number, the DPLN group, and the LCR authorization for gateway 2.

Unfortunately, LEGK administration is not over when you set the correct IP address for all gateways during installation. Restructuring the customer's IP network is part of day-to-day business and affects gateway addressing.

It is impossible to avoid operating interruptions - albeit short - when changing IP addresses. Address changes must therefore be carefully planned to minimize the effects on HiPath 4000 system users.



**Caution**

Changing the gateway IP address can have a serious effect on the live system, including subscriber unavailability. If a change is necessary, we recommend establishing a change sequence so that no HiPath 4000 systems are overlooked.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKREG	GWNR	d	Nummer des Gateway unter dem es in der Gatekeeper Verwaltung eingerichtet werden soll

Table 3-11 AMO GKREG parameters in the CHANGE branch

## Configuring the Feature

### Administering Gateway Registration Data

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	GWNO	e	Gateway Number with which it will be configured in the gatekeeper administration.
	GWATTR	d	Attribute die einem Gateway zugeordnet werden können
	GWATTR	e	Attributes which can be assigned to a gateway
	GWIPADR	d	IP-Adresse der HG 3500 im Kunden LAN Legt die IP-Adresse fest, über die ein HG 3500 Gateway am Hi-Path 4000 LAN-Segment erreicht werden soll.
	GWIPADDR	e	IP-Address of HG 3500 on customer LAN Assigns the address with which a HG 3500 gateway can be reached on the HiPath 4000 LAN-segment.
	GWRNR	d	remote Gateway Rufnummer Legt eine Rufnummer fest, mit der das Gateway an der remote PBX erreichbar ist. Die Rufnummer muß zuvor mit dem AMO WABE und Kennzahlpunkt GATEWAY eingerichtet werden.
	GWSTNO	e	remote Gateway station number Assigns an access code, with which a gateway can be reached on the remote PBX. The access code must be specially configured before with AMO WABE and DAR = GATEWAY.
	WAPLNUM	d	Nummer des LCR Wählplanes Legt eine LCR Wählplan Nummer fest die mit dem AMO LDPLN konfiguriert wurde.
	DIALPLNO	e	Number of a LCR Dial plan Assigns a LCR dialplan number which has been configured with AMO LDPLN.
	WABE	d	WABE Gruppe
	DAR	e	DAR group.
	LBER	d	LCR Berechtigung
	LATTR	e	LCR authorization.

Table 3-11 AMO GKREG parameters in the CHANGE branch

### 3.7.6 Deleting Gateways

---

DELETE-GKREG: GWNO=2 ;

---



Deletion with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO (see AMO command)



DELETE-GKREG:GWNO=2;

This command deletes gateway 2 from the gatekeeper administration.

Deleting a gateway removes all data from the gatekeeper administration. If the gateway to be deleted is a remote gateway, the gateway number is removed from the DPLN data.

A local gateway can only be reinserted by reconfiguration with the AMOs STMIB (TYPE=LEGKDATA) and GKREG.

An external gateway can only be reinserted by re-configuration with the AMO GKREG.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKREG	GWNR	d	Nummer des Gateway unter dem es in der Gatekeeper Verwaltung gelöscht werden soll
	GWNO	e	Gateway Number with which it will be deleted in the gatekeeper administration.

Table 3-12 AMO GKREG parameters in the DELETE branch

### 3.7.7 Displaying Gateways

There are three ways to display a gateway:

- by gateway number
- by gateway attributes
- by the gateway IP address

All gateway data is always output.

DISPLAY-GKREG:GWNO=2;



Displaying with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
with AMO  
(see AMO command)

## Configuring the Feature

### Administering Gateway Registration Data



```
DISPLAY-GKREG:GWNO=2;
```

This command outputs the administrative data configured for gateway 2.

The data configured for internal gateways with the AMO STMIB (for example, directory number, IP address) is also displayed when outputting gateway data. It is **not** specially flagged. The IN-TGW gateway attribute informs the user that not all data was configured with the AMO GKREG.

The EXTGW gateway attribute shows that all data was configured with the AMO GKREG.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKREG	GWNR	d	Nummer des Gateway unter dem es in der Gatekeeper Verwaltung eingerichtet werden soll
	GWNO	e	Gateway Number with which it will be configured in the gatekeeper administration.
	GWATTR	d	Attribute die einem Gateway zugeordnet werden können
	GWATTR	e	Attributes which can be assigned to a gateway
	GWIPADR	d	IP-Adresse der HG 3500 im Kunden LAN Legt die IP-Adresse fest, über die ein HG 3500 Gateway am Hi-Path 4000 LAN-Segment erreicht werden soll.
	GWIPADDR	e	IP-Address of HG 3500 on customer LAN Assigns the address with which a HG 3500 gateway can be reached on the HiPath 4000 LAN-segment.

Table 3-13 AMO GKREG parameters in the DISPLAY branch

### 3.7.8 Regenerating Gateways

There are three ways to regenerate a gateway:

- by gateway number
- by gateway attributes
- by the gateway IP address

---

```
REGENERATE-GKREG:GWNO=1;
```

---



Regeneration with the AMO GKREG can only be executed in expert mode.

**Expert Mode --> HiPath 4000 --> HiPath 4000 Expert Access --> Open ...<IP>**  
 with AMO (see AMO command)



REGENERATE-GKREG:GWNO=1;

This command regenerates the “add” command for gateway 1.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKREG	GWNR	d	Nummer des Gateway unter dem es in der Gatekeeper Verwaltung eingerichtet werden soll
	GWNO	e	Gateway Number with which it will be configured in the gatekeeper administration.
	GWATTR	d	Attribute die einem Gateway zugeordnet werden können
	GWATTR	e	Attributes which can be assigned to a gateway
	GWIPADR	d	IP-Adresse der HG 3500 im Kunden LAN Legt die IP-Adresse fest, über die ein HG 3500 Gateway am Hi-Path 4000 LAN-Segment erreicht werden soll.
	GWIPADDR	e	IP-Address of HG 3500 on customer LAN Assigns the address with which a HG 3500 gateway can be reached on the HiPath 4000 LAN-segment.

Table 3-14 AMO GKREG parameter in the REGENERATE branch

## 3.8 Resource Manager and Network Topology

Resource Manager can be performed without LEGK address resolution (AMO GKREG) in the HiPath 4000 system, for example, in IPDA scenarios.



The use of the Resource Manager is only supported for stand alone systems with HFA and IPDA.

The use of the Resource Manager in a HiPath 4000 networking environment needs a project specific release (PSR).

### 3.8.1 General

Resource Manager administers, monitors and evaluates two types of resource for the IPDA and DMC features:

- the available bandwidth in a specific network segment and its connection-specific capacity and
- the (DSP) gateway channels.

Resource Manager (RM) is available and active on every HiPath 4000 V2.0 system. Without administration data, the RM assumes that unlimited bandwidth is available for the network and the gateways. RM needs to be familiar with the actual topology of the IP network to be able to calculate the required bandwidth.

In HiPath 4000 V2.0, network topology administration only comprises defining the IPDA sector path for internal master connections.

The administrative units for resources are sectors with unique numbering in the network. A gateway or a random segment in the IP network can be assigned to a sector. The user can decide which physical network-based components are included in a shared sector. To simplify administration, we recommend grouping segments with the highest bandwidth levels and concentrating on segments with minimal resources (for example, narrow-band connections to the WAN).

Explanation of important terms



**Cluster**      The position of endpoints in the network is dictated by their membership of a sector. To simplify administration, terminals (telephones, circuits) with identical call processing availability are grouped together in clusters. A cluster can be made up of, for example,

- all TDM terminals and TDM circuits at an AP
- all TDM terminals and TDM circuits in the HHS
- all HFA terminals in the HHS and connected to the same LAN
- all HFA terminals in an AP and connected to the same LAN
- etc.

HFA terminals can be assigned to different clusters even if they are configured at a single board. This happens when the terminals themselves are connected to different LAN/WAN sectors.

**Sector:**      A sector is a customer network segment that was defined during network planning and that is used for Resource Manager and path resolution. You can omit the bandwidth specification when configuring a sector. The RM then assumes that the bandwidth available for this sector is unlimited.

**Sector path:** A sector path describes a path through the customer LAN and WAN from a source gateway to a destination gateway. A sector path is made up of a number of individual segments that are linked together by the RM in accordance with specific rules. This path is controlled by the attributes of the individual sectors and possibly their position in the network from the RM perspective.

You cannot prevent the administration of gateway channels by the RM by entering an AMO command. You can display the load on a gateway by assigning a sector to that gateway. It is not possible to record data.

The Resource Manager is not designed to search for paths to a particular point in the IP network (for example, a destination gateway). Rather, it is assumed that there are unique and pre-defined paths known as sector paths. To the RM it is not possible to follow IP network routing where alternative sectors are crossed. It is not possible to record data.

A sector path between two endpoints is made up of a number of individual segments that are linked together by the RM in accordance with specific rules. This sector path is controlled by the attributes of the individual sectors and possibly the position of these sectors in the network from the RM perspective.



The Resource Manager is not needed to set up IP trunking or IPDA connections. However, incorrect administration can prevent connection setup, even if sufficient resources are available.

## 3.8.2 Information on Configuration

The following is an explanation of a number of important parameters that govern Resource Manager (AMO GKTOP).

### 3.8.2.1 Parameters in the TYPE = RESMGMT1 Branch

The basic data for a sector and the node ID for the associated HiPath 4000 system are configured in this branch.

A distinction is made here between the three sector types - *GW*, *LAN*, and *WAN* - that must be configured as sector attributes. The following is a description of additional attributes:

**SECATTR:** *OWN & EXCL*

The sector is administered by the RM of its own node (EXCLUSIVE).

**SECATTR:** *UPDATE*

The current resource capacity in this sector is reported to other RMs (capacity reporting). This is generally performed for sectors with the OWN attribute. In special situations where two foreign RMs are not connected to each other but rather to the own RM, the UPDATE attribute in a sector with the attribute FOREIGN1/2 is responsible for forwarding the saved sector resource information.

**SECATTR:** *FOREIGN1 & EXCL*

The sector is administered by an (EXCL) RM in the foreign node (FOREIGN1). The current capacity of this sector's resources is reported to the RM (capacity reporting) if the UPDATE attribute is set.

**SECATTR:** *FOREIGN2*

The attribute should be set in all sectors that represent an IP trunking gateway (HG3550) that can reach the local node in the incoming direction and that do not have a gatekeeper in their nodes. Please also note the information on administering the LAN/WAN sectors connected in Section 3.12.1.2, "Sector for IP Trunking with Gateways in Nodes Without Gatekeeper".

**SECATTR:** *HHS/AP*

These alternative attributes can only be set in addition to the GW attribute and identify the shelf type where the GW is located.

**SECATTR:** *NODMC*

This attribute can be set together with LAN or WAN and ensures that a request for a DMC connection is rejected by the RM if a sector in a DMC sector path contains a sector with this attribute (see also Section 3.12.1.4, "Preventing DMC connections").

The following table contains a simple overview of the attribute combinations permitted and to be set for the individual sector types (GW or LAN/WAN; the sector type is also a sector attribute).

Each line in the table specifies which attributes can be combined with which. In both sector-type groups, the initial attribute (OWN/FOREIGN1/2) chosen dictates which additional attributes should be set.

- > An attribute that can be used without restriction is marked with "X".
- > Attributes marked "O" in a group surrounded by double vertical lines can only be set as an alternative. In both cases, at least one attribute must be set for each group.

Sector Attribute	OWN	FOREIGN1	FOREIGN2	APP	HHS	EXCL	UPDATE	NODMC
Sector Type								
GW	O			O	O	X	A	
		O	O			X		
LAN WAN	O					O	A	A
		O				O		A

**GWLAN:** Sector number of the LAN connected to the gateway.  
The sector number is always needed if the attribute GW (sector-type gateway) is set. This value is also needed for a gateway in a foreign RM. If the sector type is LAN or WAN, specify 0 here or do not make any entry.

The following parameters can be omitted depending on the application (sector types/attributes).

**SECPANO1:** Sector path number for a path that routes to this sector from the HHS in the local node for internal connections.



This sector path should only be defined for the sector types that feature the OWN sector attribute.

All sectors that will be crossed in order to reach this sector from an HHS must be entered under this sector path number. Start with the sector next to the HHS and finish with the one farthest away.

## Configuring the Feature

### *Resource Manager and Network Topology*

If the sector type to be administered is a LAN or WAN, its sector number should not be included as the endpoint in the sector path (as in GW).

The sector path number = 0 for the LAN directly at the HHS.

If the gateway is configured in the HHS, the specification of a sector path number is dependent on the configuration.

If there is **no** IPDA configuration in the node but rather just IP trunking boards (HG3550), the LAN sector where the HG3550 is connected should not be used for internal connections, that is, you cannot define an SECPANO1 attribute for the gateway sector and connected LAN sector (see Section 3.12.1.1, “LAN Sector Configuration on HHS”).

If the node does have an IPDA configuration, an entry is required under SECPANO1 for the IP trunking gateway HG3550 (see Section 3.12.1.1, “LAN Sector Configuration on HHS”).

No useful sector paths can be defined for a sector with the SHORTCUT attribute. The path number here is consequently also 0 (see Figure 3-11 Preventing DMC connections on specific sector paths).

Multiple paths are not permitted for the sector paths under this parameter (see Figure 3-10 Sector path administration with multiple sector paths), that is, there is only one defined path.

**SECPANO2:** Sector path number for a path to a foreign sector for DMC connections.



This sector path should be defined for the GW sector type that features the FOREIGN1 sector attribute.

**O R**

This sector path should be specified for the LAN sector type if it contains the FOREIGN1 attribute and there are DMC-compliant HFA terminals connected to this LAN sector.

All sectors that will be crossed in order to reach this sector from the local node for a DMC connection must be entered under this path number (See Section 3.12.1.1, “LAN Sector Configuration on HHS”).

Specify the sectors to be crossed starting at the own node and finishing with the endpoint. The sector numbers of the start- and endpoints must not be included in the sector path.

This path may be identical to the sector path for IP trunking (see AMO LDAT) and only needs to be defined once.

If there are multiple sector paths from the own node for reaching the endpoint, enter the relevant complete paths under the path number as a multiple path (see Figure 3-10 Sector path administration with multiple sector paths). The RM selects the valid sector path for a DMC connection.

**SECPANO3:** Sector path number of a path as a back reference to the source gateway in IP trunking connections.



This sector path should be defined for the GW sector type that features the FOREIGN1 sector attribute and if the local node associated with this IP trunking gateway can be reached in the incoming direction.

All sectors that are crossed between the outgoing seized IP trunking gateway and the incoming seized IP trunking gateway in the own node must be entered under this path number.

Specify the sectors to be crossed starting at the source gateway and finishing with the gateway in the own node. The sector numbers of the start- and endpoints must not be included in the sector path.

If there are multiple sector paths for reaching multiple gateways in the own node from the source gateway, enter the relevant complete paths under the path number as a multiple path (see Section 3.12.1.3, “Sector path administration with multiple sector paths”). The RM selects the valid sector path for the IP trunking connection.

### **3.8.2.2 Parameters in the TYPE = RESMGMT2 Branch**

The physical node numbers of the HiPath 4000 partner systems are configured for the shared sectors in this branch.

### **3.8.2.3 Parameters in the TYPE = IPDA Branch**

**GWSEC:** The gateway sector number is 0 for clusters on the HHS. For clusters at an AP, the gateway sector number is the number that was assigned to the shelf's gateway (NCUI, HG3575). In clusters with HFA phones, the gateway sector number is the number of the AP gateway where the HFA board (HG3530) is configured. This is also the case if the phones are connected to different LAN/WAN sectors in the network (see also the HFASEC parameter).

## Configuring the Feature

### *Resource Manager and Network Topology*

**HFASEC:** The value is always 0 for clusters with TDM phones/trunks.  
For clusters with HFA phones, enter the sector number of the LAN/WAN where the HFA phones are connected.

### 3.8.3 Restrictions

- RESMAN buffer should never contain a route with more than 16 sectors . You can display the RESMAN buffer via AMO DEBUG.
- **Only** WAN sectors are supported for bandwidth calculation and **not** LAN sectors.
- Each **RESMGMT1** from AMO GKTOP must contain the AMO ZAND **PKNNO** under the **PKNNO** parameter, i.e. this is **not** the AMO KNDEF entry.
- IP Trunking is not supported.
- The bandwidth is **always** calculated as configured, i.e. from HHS in direction of the AP. If the call is between two APs the routes are overlaid (compared) to establish the true route.
- If no HHS is present a dummy HHS should be configured to allow correct calculation.
- AMO SBCSU **IPCODEC** must be configured for HFA phones to calculate the bandwidth correctly.
- When a DMC connection is made the bandwidth is not reduced if the CODEC is of a lower quality until the call is disconnected. If the bandwidth is more i.e. a higher bandwidth is used for the DMC connection the value is increased normally.
- When using AMO KCSU no bandwidth reservation will be made during ringing state (first by connect)

### 3.8.4 Configuring the Network Topology

Before starting to administer the network topology with AMOs, we recommend creating a network plan for overview purposes.

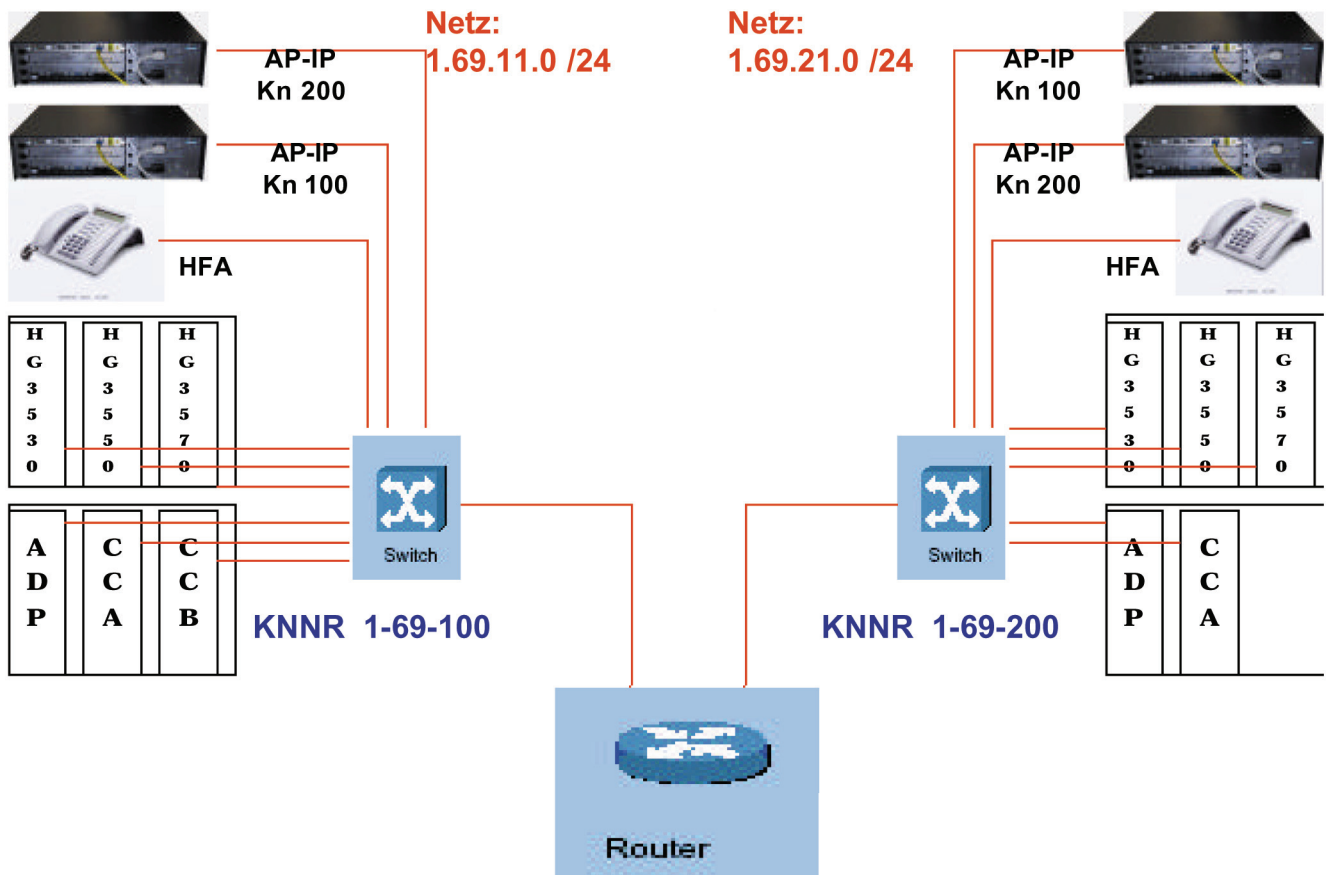


Figure 3-3 Overview of an existing IP network in the Training Institute

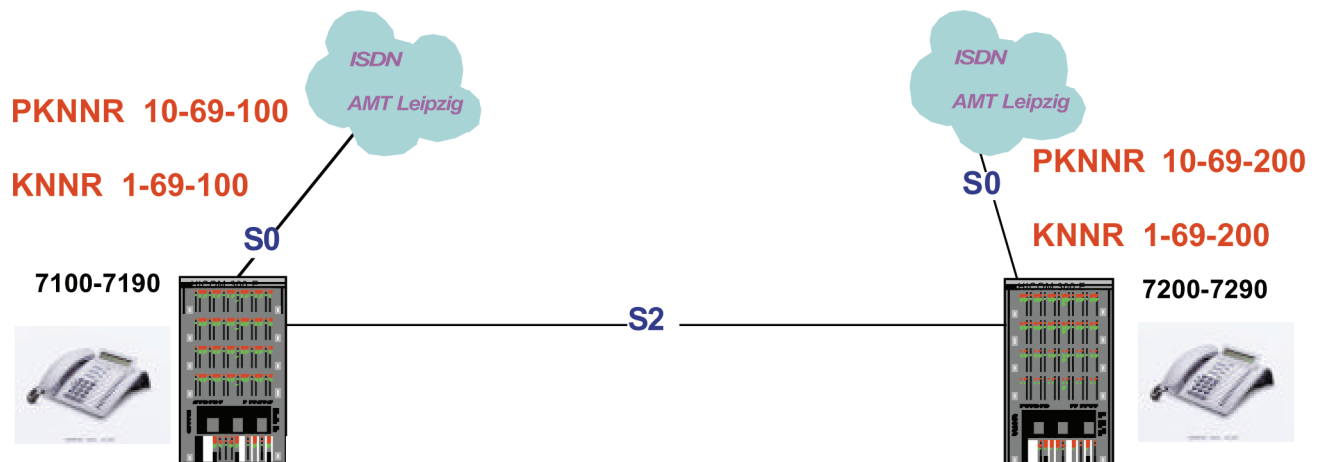


Figure 3-4 Overview of an existing TDM network in the Training Institute

# Configuring the Feature

## Resource Manager and Network Topology

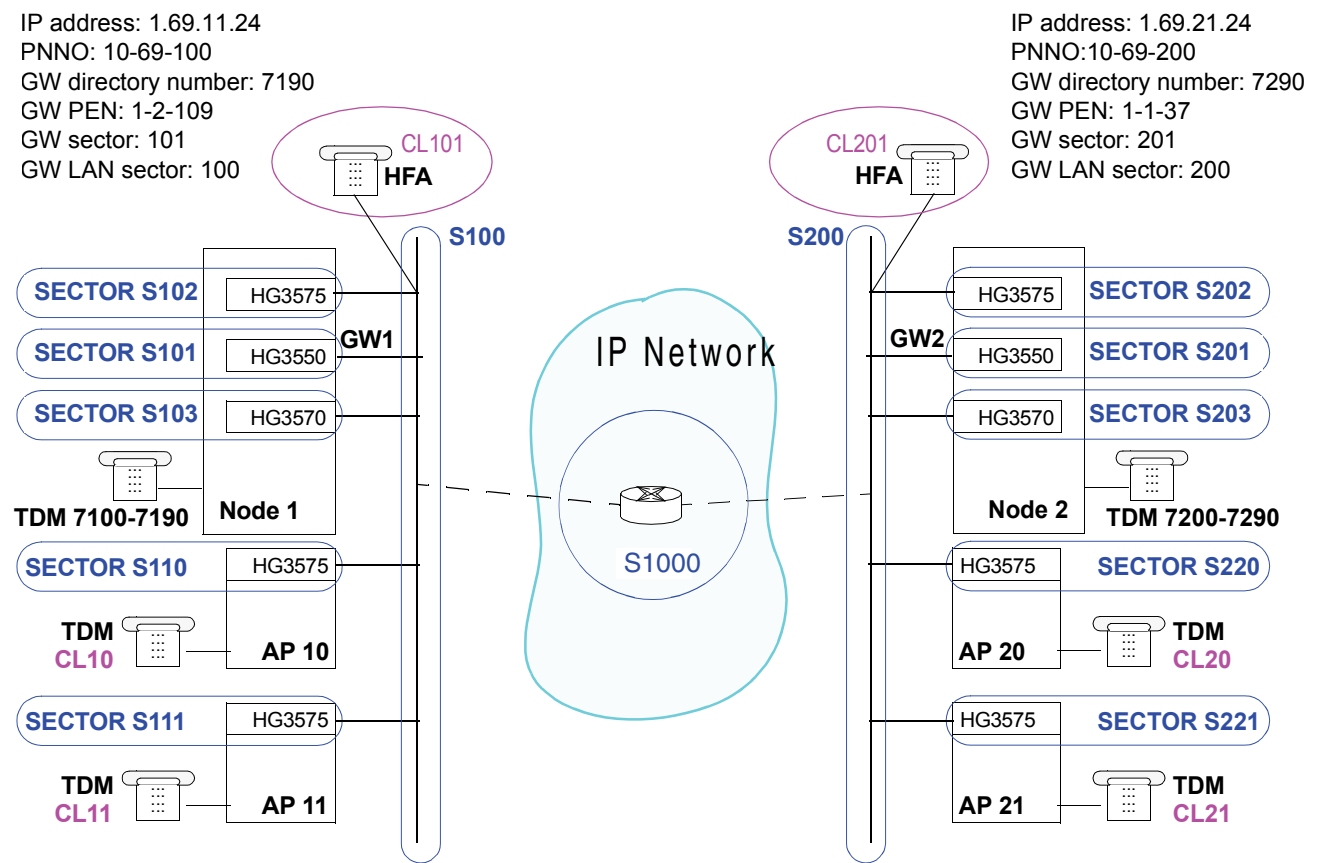


Figure 3-5 Network plan with IP and TDM networks in the Training Institute for LEGK ad-  
ministration

### 3.8.4.1 Configuring Resource Manager

Configuring a sector with Resource Manager on a HiPath 4000 system.

ADD-GKTOP:	TYPE=RESMGMT1,	SECNO=1000,
	SECATTR=LAN&EXCL&UPDATE,	PNNO=10-69-100,
	BANDWI="1000",	INFO="SECTOR1000";
ADD-GKTOP:	TYPE=RESMGMT2,	SECNO=1000,
	PNNO=10-69-200;	

 Configuration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)





```
ADD-GKTOP:TYPE=RESMGMT1,SECNO=1000,PNNO=10-69-100,
SECATTR=LAN&EXCL&UPDATE,BANDWI="1000"
INFO="SHARED SECTOR1000";
```

The TYPE=RESMGMT1 command configures all resource data associated with a sector that should be administered by the Resource Manager in the local HiPath 4000 system.

The TYPE=RESMGMT2 command allows you to prefigure the administration of shared sectors. This feature is not yet available in HiPath 4000 V2.0. At a later point, this command allows you to administer the Resource Manager in the partner HiPath 4000 system.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	SEKNR	d	Sektor Nummer Nummer des Sektors der vom lokalen Ressourcen- Manager verwaltet wird.
GKTOP	SECNO	e	Sector number Number of a sector which is adminstered by the local ressource manager.
GKTOP	SEKATTR	d	Attribute die einem Sektor zugeordnet werden können
GKTOP	SECATTR	e	Attributes which can be assigned to a sector
GKTOP	PKNNR	d	Physikalische Knotennummer zur eindeutigen Identifizierung im Netz (konfiguriert mit AMO ZAND) Die Knotennummer kann 1- bis 3-stufig sein. Format: <level2>-<level1>-<level0>
GKTOP	PNNO	e	Physical node number for unambiguos identification in network (configured by AMO ZAND) The node number can have 1 to 3 levels. Format: <level2>-<level1>-<level0>
GKTOP	BANDBR	d	Bandbreite für Master Verbindungen in kBit/s
GKTOP	BANDW	e	Bandwidth for master connections in kBit/s
GKTOP	GWLAN	d	Sektor Nummer des LAN-Sektors mit dem das HG 3550 V2.0 Gateway verbunden ist
GKTOP	GWLAN	e	Sector number of LAN sector to which the HG 3550 V2.0 gateway is connected

Table 3-15 AMO GKTOP parameters in the ADD branch under TYPE=RESMGMT1

## Configuring the Feature

### Resource Manager and Network Topology

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	SEKPFNR1	d	Sektor-Pfad Nummer des Pfades vom Hicom Host Shelf zu einem anderen unter eigener Verwaltung stehender LAN-Sektor.
GKTOP	SECPANO1	e	Sector pathnumber of a path from Hicom Host Shelf to an other under own control being LAN sector.
GKTOP	SEKPFNR2	d	Sektor-Pfad Nummer des Pfades für DMC Verbindungen Dieser Sektor-Pfad beschreibt den Weg vom eigenen Hicom Host Shelf über alle benützten LAN-Sektoren zu einem remote Gateway
GKTOP	SECPANO2	e	Sector pathnumber of a path for DMC connections This sector path describes the way starting from the own Hicom Host Shelf through all used LAN sectors to a remote gateway
GKTOP	SEKPFNR3	d	Sektor-Pfad Nummer des Pfades von einem remote Gateway zum eigenen Gateway (Path-home).
GKTOP	SECPANO3	e	Sector pathnumber for a path from a remote gateway back to the local gateway (path-home)..
GKTOP	INFO	d	Beliebiger Informationstext für das Service maximal 50 Zeichen
GKTOP	INFO	e	Individual information text for service maximum of 50 characters

Table 3-15 AMO GKTOP parameters in the ADD branch under TYPE=RESMGMT1

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	SEKNR	d	Sektor Nummer Nummer des Sektors der auch von einem fremden Ressourcen-Manager verwaltet wird. Der Sektor muß ein "geteilter"-Sektor sein.
GKTOP	SECNO	e	Sector number Number of a sector which is adminstered also by a remote resource manager. This sector must be a "shared" sector.
GKTOP	PKNNR	d	Physikalische Knotennummer zur eindeutigen Identifizierung im Netz (konfiguriert mit AMO ZAND) Die Knotennummer kann 1- bis 3-stufig sein. Format: <level2>-<level1>-<level0>

Table 3-16 AMO GKTOP parameters in the ADD branch under TYPE=RESMGMT2

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	PNNO	e	Physical node number for unambiguous identification in network (configured by AMO ZAND) The node number can have 1 to 3 levels. Format: <level2>-<level1>-<level0>

Table 3-16 AMO GKTOP parameters in the ADD branch under TYPE=RESMGMT2



**Important**

The branch TYPE=RESMGMT2 is not required for administration in HiPath 4000 V2.0 since the sectors in the RM are administered EXCLUSIVELY from one HiPath system.

### 3.8.4.2 Configuring the IP Trunking Path Description for External Master Connection

---

ADD-GKTOP:                   TYPE=SECPATH,   SECPANO=2101,  
                                   SECDE=1001&1000&1003&1005;



Configuration with the AMO GKTOP can only be executed in expert mode.  
 Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
 (see AMO command)



ADD-GKTOP:TYPE=SECPATH, SECPANO=2101,  
                                   SECDE=1001&1000&1003&1005;

The TYPE=SECPATH command configures sector path 2101 consisting of the LAN/WAN sectors 1000, 1001, 1003, and 1005 for the master connection.



**Important**

The sector path description must not contain the source and destination gateway sectors.

## Configuring the Feature

### Resource Manager and Network Topology

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	SEKPFNR	d	Sektor-Pfad Nummer zu einer Sektor-Pfad Beschreibung Nummer des Sektor-Pfades, der einen Weg zwischen 2 Endpunkten im Netz beschreibt.
GKTOP	SECPANO	e	Sector pathnumber to a sector-path-description Number of a sector path which describes the way between 2 endpoints in the network
GKTOP	SEKBE	d	Sektor-Pfad Beschreibung Legt den Weg aufgrund der zu durchlaufenden Netz-Sektoren fest mit dem ein remote Gateway erreicht werden kann
GKTOP	SECDE	e	Sector-path-description Defines, based on the needed network sectors, the way with which a remote gateway can be accessed

Table 3-17 AMO GKTOP parameters in the ADD branch under TYPE=SECPATH

#### 3.8.4.3 Configuring the IP Trunking Path Description for Internal Master Connection

---

```
ADD-GKTOP:                TYPE=IPDA,                CLUSTID=101,  
                           GWSEC=101;
```

---



Configuration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
ADD-GKTOP:TYPE=IPDA,CLUSTID=101,GWSEC=101;
```

This command configures cluster 101 with gateway sector 101. An HFA sector is not configured.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
GKTOP	CLUSTID	d	Cluster Nummer Ein Cluster beschreibt eine Gruppe von Endgeräten oder Sätzen mit gleicher Erreichbarkeit (z.B. alle TDM-Endgeräte auf einem HHS, all Teilnehmer auf einer HFA-Baugruppe oder alle TDM-Endgeräte auf einem Acces Point)
GKTOP	CLUSTID	e	Cluster number A cluster describes a group of users or trunks of similar type of reachability (e.g. all TDM devices on a HHS, all subscriber on a HFA board or all TDM devices on an access point)
GKTOP	HFASEK	d	HFA-Sektor Nummer Legt den Weg aufgrund der zu durchlaufenden Netz-Sektoren fest mit dem ein remote Gateway erreicht werden kann
GKTOP	HFASEC	e	HFA sectornumber Defines, based on the needed network sectors, the way with which a remote gateway can be accessed
GKTOP	GWSEK	d	Sektor Nummer des Gateways Legt den Sektor fest, in dem sich das HG 3550 V2.0 Gateway befindet.
GKTOP	GWSEC	e	Sector number of gateway Assigns the sector in which the HG 3550 V2.0 gateway resides.

Table 3-18 AMO GKTOP parameters in the ADD branch under TYPE=IPDA

### 3.8.5 Changing the Network Topology

### 3.8.5.1 Changing Resource Manager

```
CHANGE-GKTOP:      TYPE=RESMGMT1,          SECNO=101,
                   BANDWI="12500",         SECPANO3=2111;
```



Changing with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
CHANGE-GKTOP:TYPE=RESMGMT1,SECNO=101,BANDWI="12500",
             SECPANO3=2111;
```

This command changes the bandwidth and the sector path home for sector 101.

## Configuring the Feature

### Resource Manager and Network Topology

#### 3.8.5.2 Changing the IP Trunking Path Description for External Master Connection

---

```
CHANGE-GKTOP:      TYPE=SECPATH,                      SECPANO=2101,
                   SECIDX=3                            SECNEW=1004,
                   MODE=INS;
```

---



Changing with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
CHANGE-GKTOP:TYPE=SECPATH,SECPANO=2101,SECIDX=3,
              SECNEW=1004,MODE=INS;
```

This command inserts a new sector, 1004, after sector 1003 in sector path 2101.



#### Caution

The source and destination gateway sectors must not be inserted in the sector path description.

#### 3.8.5.3 Changing the IP Trunking Path Description for Internal Master Connection

---

```
CHANGE-GKTOP:      TYPE=IPDA,                          CLUSTID=101,
                   HFASEC=100,                          GWSEC=0;
```

---



Changing with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
CHANGE-GKTOP:TYPE=IPDA,CLUSTID=101,HFASEC=100,GWSEC=0;
```

This command changes the HFA sector to 100 and deletes the gateway sector for cluster 101.

## 3.8.6 Deleting the Network Topology

### 3.8.6.1 Deleting Resource Manager

---

```
DELETE-GKTOP:          TYPE=RESMGMT1,          SECNO=1000;
```

---



Deletion with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DELETE-GKTOP:TYPE=RESMGMT1,SECNO=1000;
```

This command deletes sector 1000 with all static and dynamic data.



#### **Important**

The branch TYPE=RESMGMT2 is not required for administration in HiPath 4000 V2.0 since the sectors in the RM are administered EXCLUSIVELY from one HiPath system.

### 3.8.6.2 Deleting the IP Trunking Path Description for External Master Connection

---

```
DELETE-GKTOP:          TYPE=SECPATH,          SECPANO2101=13;
```

---



Deletion with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DELETE-GKTOP:TYPE=SECPATH,SECPANO=2101;
```

This command deletes sector path 2101.

### 3.8.6.3 Deleting the IP Trunking Path Description for Internal Master Connection

---

```
DELETE-GKTOP:          TYPE=IPDA,          CLUSTID=101,
```

---

## Configuring the Feature

### *Resource Manager and Network Topology*



Deletion with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DELETE-GKTOP:TYPE=IPDA,CLUSTID=101;
```

This command deletes cluster 101.

## 3.8.7 Displaying the Network Topology

### 3.8.7.1 Displaying all Topology Data

---

```
DISPLAY-GKTOP:          TYPE=ALL,          SCOPE=ALL;
```

---



Displaying with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DISPLAY-GKTOP:TYPE=ALL,SCOPE=ALL;
```

This command outputs both static and dynamic data for all sectors configured.

### 3.8.7.2 Displaying Resource Manager

---

```
DISPLAY-GKTOP:          TYPE=RESMGMT1,      SECNO=1000;
```

---



Displaying with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DISPLAY-GKTOP:TYPE=RESMGMT1,SECNO=1000;
```

This command outputs all static and dynamic data configured for sector 1000. To this end, "shared" sectors are also assigned the resource status administered by resource managers in remote HiPath 4000 systems.





**Important**

The branch TYPE=RESMGMT2 is not required for administration in HiPath 4000 V2.0 since the sectors in the RM are administered EXCLUSIVELY from one HiPath system.

### 3.8.7.3      **Displaying the IP Trunking Path Description for External Master Connection**

---

```
DISPLAY-GKTOP:            TYPE=SECPATH,                            SECPANO2101=13;
```

---



Displaying with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DISPLAY-GKTOP:TYPE=SECPATH,SECPANO=2101;
```

This command outputs sector path description 2101.

### 3.8.7.4      **Displaying the IP Trunking Path Description for Internal Master Connection**

---

```
DISPLAY-GKTOP:            TYPE=IPDA,                              CLUSTID=101,
```

---



Deletion with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
DISPLAY-GKTOP:TYPE=IPDA,CLUSTID=101;
```

This command outputs the data for cluster 101.

## 3.8.8      **Regenerating the Network Topology**

### 3.8.8.1      **Regenerating all Topology Data**

---

```
REGENERATE-GKTOP:            TYPE=ALL,
```

---

## Configuring the Feature

### *Resource Manager and Network Topology*



Regeneration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
REGENERATE-GKTOP:TYPE=ALL;
```

This command regenerates the "add" commands for all topology data.

#### 3.8.8.2 Regenerating Resource Manager

---

```
REGENERATE-GKTOP:      TYPE=RESMGMT1,      SECNO=1000;
```

---



Regeneration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
REGENERATE-GKTOP:TYPE=RESMGMT1, SECNO=1000;
```

This command regenerates the "add" command for the static data from sector 1000.



#### **Important**

The branch TYPE=RESMGMT2 is not required for administration in HiPath 4000 V2.0 since the sectors in the RM are administered EXCLUSIVELY from one HiPath system.

#### 3.8.8.3 Regenerating the IP Trunking Path Description for External Master Connection

---

```
REGENERATE-GKTOP:      TYPE=SECPATH,      SECPANO=2101
```

---



Regeneration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
REGENERATE-GKTOP:TYPE=SECPATH, SECPANO=2101;
```

This command regenerates the "add" command for sector path 2101.

#### **3.8.8.4      Regenerating the IP Trunking Path Description for Internal Master Connection**

---

```
REGENERATE-GKTOP:            TYPE=IPDA;
```

---



Regeneration with the AMO GKTOP can only be executed in expert mode.  
Expert Mode --> HiPath 4000 Expert Access --> Open ...<IP> with AMO  
(see AMO command)



```
REGENERATE-GKTOP: TYPE=IPDA;
```

This command outputs the data for all configured clusters.

## Configuring the Feature

### *Configuring Circuits and Terminals*

## 3.9 Configuring Circuits and Terminals

### 3.9.1 Configuring Circuits

This feature does not change the underlying configuration of the analog (AMO TACSU) and digital line trunks (AMO TDCSU) or special circuits (TSCSU).

The following extension was performed in this AMO's ADD and CHANGE branches:

1 new value was added to the parameter CLASSMRK:

- HG3550: Bandwidth control for integrated HG 3550 IP gateway

### 3.9.2 Configuring Terminals

This feature does not change the underlying configuration of the terminal data (AMO SDAT) and attendant console (AMO ACSU).

The following extension was performed in this AMO's ADD and CHANGE branches:

1 new value was added to the parameter CLASSMRK:

- HG3550: Bandwidth check for HG 3550 IP trunk

The parameter IPCODEC was also added to the AMO SBCSU. This can be used to set the codec type for IP terminals. The value G711PREF is designed as the default value for STMI2-HFA terminals.

## **3.10 Configuring Circuits and Terminals**

### **3.10.1 Configuring Circuits**

This feature does not change the underlying configuration of the analog (AMO TACSU) and digital line trunks (AMO TDCSU) or special circuits (TSCSU).

Parameter CLASSMRK is set to „HG3550: Bandwidth control for integrated HG 3550 IP gateway“.

### **3.10.2 Configuring Terminals**

This feature does not change the underlying configuration of the terminal data (AMO SDAT) and attendant console (AMO ACSU).

Parameter CLASSMRK is set to „HG3550: Bandwidth check for HG 3550 IP trunk“.

The parameter IPCODEC was also added to the AMO SBCSU. This can be used to set the codec type for IP terminals. The value G711PREF is designed as the default value for STMI2/4-HFA terminals.

## Configuring the Feature

### Changing the System Bandwidths

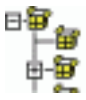
#### 3.11 Changing the System Bandwidths

You can use the AMO SIPCO to change the default bandwidths set for IP connections under TYPE=BANDW.

A default bandwidth (in kilobits) established on the basis of previous experience was permanently set in the existing table for every codec type and sample size. These values can be changed with the AMO SIPCO.

##### Add:

Example: Change the setting for entry no. 3 to 90 kilobits



##### Configuration Management --> System Data --> IPDA --> IPDA System Data

Click **Search**, deactivate the **Enable Autonegotiation** check box under **Type of Service** on the **Bandwidth Data** tab, enter **Speed** and **Mode**, and **Save**.



```
CHANGE-SIPCO:TYPE=BANDW,TBLIDX=3,BWRES=90;
```

This command changes the bandwidth for index 3 to 90 kilobits.

Example: Restore the default values for the entire table



```
CHANGE-SIPCO:TYPE=BANDW,TBLIDX=0,STANDBW=Y;
```

This command resets the entire table to the defined system bandwidths.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
SIPCO	TBLIDX	d	Index eines Eintrages in der Bandbreitentabelle
	TBLIDX	e	Index of an entry in the bandwidth encoding time table
	BWRES	d	neuer Wert für reservierte Bandbreite in kBit
	BWRES	e	new value for reserved bandwidth in kBit
	STANDBW	d	Rücksetzen auf Standardwerte Wird BWRES=0 angegeben so wird die gesamte Tabelle auf die Standardwerte zurückgesetzt sonst nur der angegebene Index.

Table 3-19 AMO SIPCO parameters in the CHANGE branch under TYPE=BANDW

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
	STANDBW	e	reset to default values Is BWRES=0 entered then the whole table is reset to the default values, otherwise only the entered tableindex..

Table 3-19 AMO SIPCO parameters in the CHANGE branch under TYPE=BANDW

**Delete:**

Example: Delete index 5 in the system bandwidth table



`DELETE-SIPCO:TYPE=BANDW,TBLIDX=5;`

This command deletes the bandwidth for table index 5.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
SIPCO	TBLIDX	d	Index eines Eintrages in der Bandbreitentabelle
	TBLIDX	e	Index of an entry in the bandwidth encoding time table

Table 3-20 AMO SIPCO parameters in the DISPLAY branch under TYPE=BANDW

**Display:**

Example: Output the set system bandwidth table



`DISPLAY-SIPCO:TYPE=BANDW;`

This command outputs all configured entries from the system bandwidth table.

AMO	Parameter	Sprache/ Language	Beschreibung/ Description
SIPCO	TBLIDX	d	Index eines Eintrages in der Bandbreitentabelle
	TBLIDX	e	Index of an entry in the bandwidth encoding time table

Table 3-21 AMO SIPCO parameters in the DISPLAY branch under TYPE=BANDW

3.12 Configuration Examples

3.12.1 Information on Configuring Resource Manager

3.12.1.1 LAN Sector Configuration on HHS

Figure 3-6 Sector path administration for the sector paths SECPATH 1 to 3

Example a:

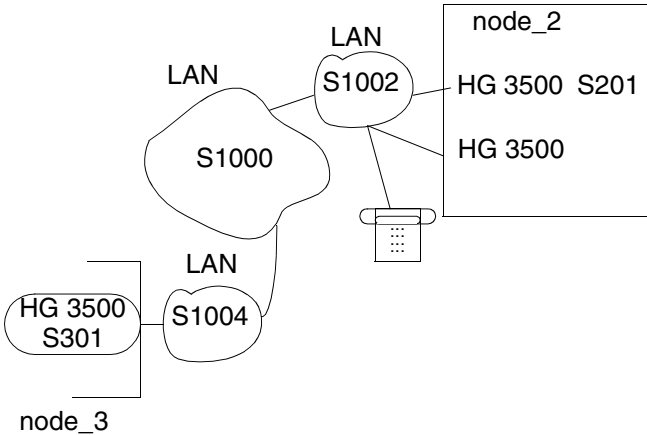


Figure 3-7 Sector path administration for the sector paths SECPATH 1 to 3

Example a does not contain an IPDA configuration. Sector S1002 is nearest to the HHS but only connected to the IP trunking gateway HG 3500. It has no effect on internal connections in the Resource Manager. The most important ADD commands are listed below:

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =201,  
SECATTR = OWN&HHS&GW&EXCL&UPDATE,PNNO = 2-1-300,  
BANDWI = "10000",GWLAN =1002;  
  
ADD-GKTOP:TYPE = RESMGMT1,SECNO =301,  
SECATTR = FOREIGN1&HHS&GW&EXCL,PNNO = 1-1-211,  
BANDWI="5000",GWLAN=1004,SECPANO2 = 2311,SECPANO3 = 3201;
```



```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1000,  
SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-1-300,  
BANDWI="10000",
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1002,  
SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-1-300,  
BANDWI="10000",
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1004,  
SECATTR=FOREIGN1&LAN&EXCL,PNNO =1-1-211,BANDWI = "10000";
```

### Sector path for DMC connections to GW 3

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2311,SECDE=1002&1000&1004;
```

### Sector path for the master connection GW 2 -> GW 3 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2301,SECDE=1002&1000&1004;
```

### Incoming seizure from GW 3 -> GW 2 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3201,SECDE=1004&1000&1002;
```

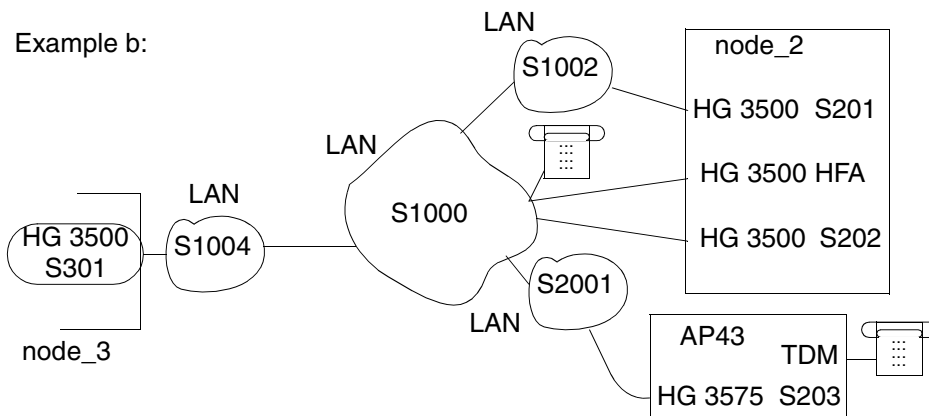


Figure 3-8 Sector path administration for the sector paths SECPATH 1 to 3

Example b contains both IP trunking and an IPDA configuration. Sectors S1002 and S1000 are both connected to the HHS. The position of S1002 in the network must be redefined as a result of IPDA configuration. Sector S1000 is the only sector connected to the HHS. The sectors S1002 and S2001 are connected to sector S1000 and are used for internal connections in the Resource Manager. This results in additional configurations (displayed in bold) unavailable in Example a for S1002 and for DMC connections to the gateway S301. The most important commands are listed below:

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =201,  
SECATTR = OWN&HHS&GW&EXCL&UPDATE,PNNO = 2-1-300,  
BANDWI = "4000",GWLAN =1002,SECPANO1=2201;
```

## Configuring the Feature

### Configuration Examples

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =202,  
SECATTR = OWN&HHS&GW&EXCL&UPDATE,PNNO = 2-1-300,  
BANDWI = "4000",GWLAN = 1000;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =203,  
SECATTR = OWN&AP&GW&EXCL&UPDATE,PNNO = 2-1-300,  
BANDWI="4000",GWLAN=2001,SECPANO1 = 2043,
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =301,  
SECATTR = FOREIGN1&HHS&GW&EXCL,PNNO = 1-1-211,  
BANDWI="5000",GWLAN=1004,SECPANO2 = 2311,SECPANO3 = 3201;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1002,  
SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-1-300,  
BANDWI="1000",SECPANO1=121;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =2001,  
SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-1-300,  
BANDWI="4500",SECPANO1 = 121;
```

Sector path to own HHS from sector 1002 and 2001

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=121,SECDE=1000;
```

Sector path from own gateway HG 3500 S201 to own HHS

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2201,SECDE=1002&1000;
```

Sector path from own HHS to AP 43

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2043,SECDE=1000&2001;
```

Sector path for DMC connections to GW S301

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2311,SECDE=1000&1004;
```

Sector path for the master connection GW S201-> GW S301 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2301,SECDE=1002&1000&1004;
```

Incoming seizure from GW S3013 -> GW S201 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3201,SECDE=1004&1000&1002;
```

### 3.12.1.2 Sector for IP Trunking with Gateways in Nodes Without Gatekeeper

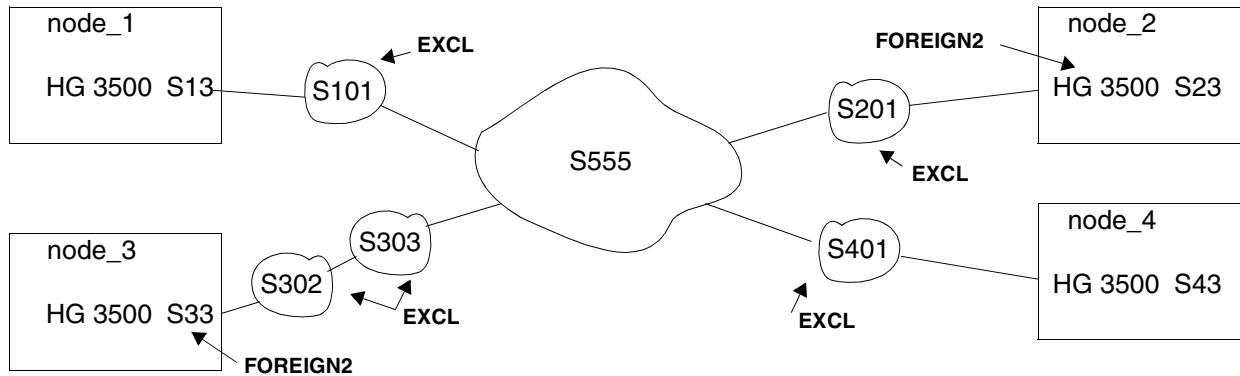


Figure 3-9 Sector administration in nodes without gatekeeper

In a network consisting of four nodes, systems 2 and 3 have no gatekeeper. All systems can reach each other. It does not matter which gatekeeper is used by the two remote gateways for registration for subsequent administration with the AMO GKTOP.

Basically, the remote gateway sectors should be configured with the FOREIGN2 attribute in all nodes.

### 3.12.1.3 Multiple Sector Path

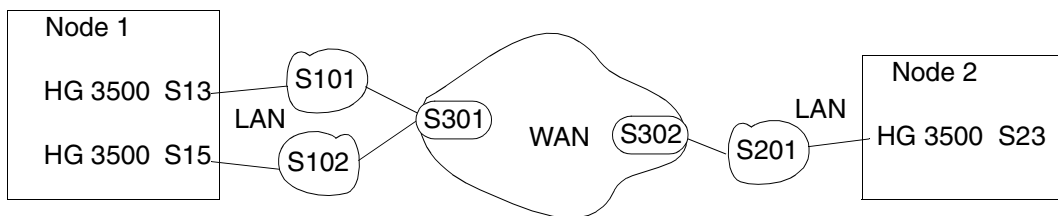


Figure 3-10 Sector path administration with multiple sector paths

Use the following AMO GKTOP commands to administer sector 23 in node 1 for the gateway in node 2 (represented by S23). The commands for the other sectors are not listed here:

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =23,SECATTR=GW&EXCL&FOREIGN1,
SECPANO3=23, PNNO = 2-...,BANDWI ="1000",GWLAN=S201;
```

An incoming seizure from gateway S23 can end at gateways S13 or S15 in node 1. There are two different sector paths for this

1. S23 --> S13: S201,S302,S301,S101 and
2. S23 --> S15: S201,S302,S301,S102)

Both sector paths must be defined in sector path number 23:

## Configuring the Feature

### Configuration Examples

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=23,
SECDE=S201&S302&S301&S101&S201&S302&S301&S102;
```

If you want gateway S23 to be reachable in the case of DMC connections, the command should also contain a definition for the SECPANO2 parameter which should also feature both alternative paths:

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =23,...,SECPANO2=24,SECPANO3=23,...;
ADD-GKTOP:TYPE = SECPATH,SECPANO=24,
SECDE=S101&S301&S302&S201&S102&S301&S302&S201;
```

#### 3.12.1.4 Preventing DMC connections

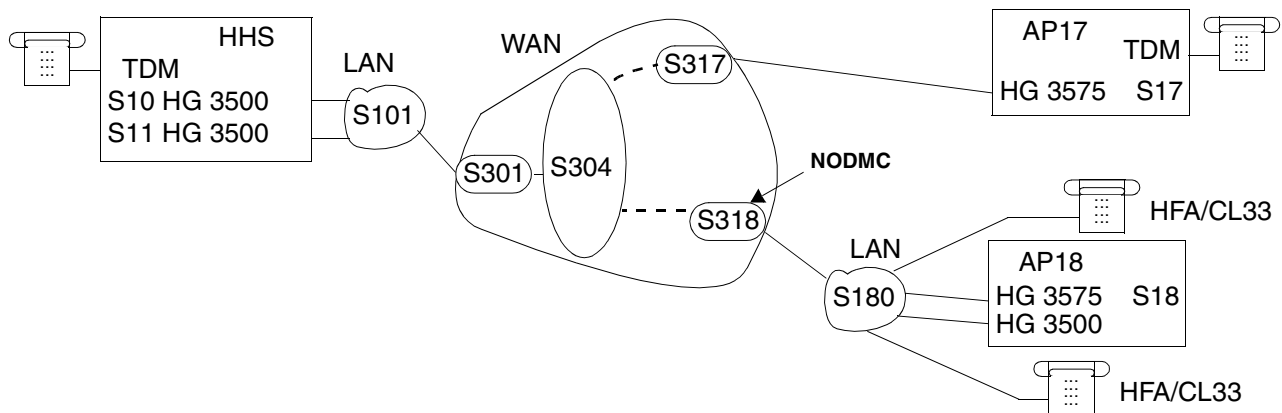


Figure 3-11 Preventing DMC connections on specific sector paths

The KEINDMC attribute, for example, must be set in the following scenario:

You want to allow DMC connections to be set up in the local LAN S180 but not between the WAN access point S318 and other APs or the HHS. This can be done by setting the KEINDMC attribute in sector S318.

The Resource Manager then rejects the request for a DMC connection for the master connection of an HFA phone in cluster 33 to an Optiset at AP17 (S317-S304-S318-S180-S180).

Configuration in the AMO GKTOP (only the sectors in the above example are listed):

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =318,
SECATTR=WAN&OWN&EXCL&NODMC, PNNO =...,
BANDWI="250",SECPANO1=318;
```

### **3.12.2 Two Gatekeepers in a Network Consisting of Three HiPath 4000 V2.0 Systems**

The following configuration example was provided by LEGK Development and shows a test configuration.

In this scenario, the HiPath 4000 V2.0 system with GW 2 or GW 3 performs the gatekeeper and Resource Manager function while the system with GW4 only runs the Resource Manager.

In addition to TDM terminals, node 2 features an IPDA configuration with an access point (AP 43). Node 3 features the TDM terminals as well as a number of HFA phones while node 4 only features TDM terminals.

The LAN sectors are administered in the following nodes. The LAN sectors 1000 and 1004 are administered exclusively from node 3. The LAN sector 1001 is administered exclusively from node 4 and LAN sector 1002 exclusively from node 2. LAN sector 2001 is also only administered by node 2 because this is where AP 43 is located.

The HFA terminals in node 3 are grouped together in cluster 301 and the TDM terminals at AP 43 are grouped together in cluster 43. TDM terminals connected directly to the HiPath 4000 V2.0 system do not require a cluster ID.

## Configuring the Feature

### Configuration Examples

IP address: 192.168.1.250  
 PNNO: 1-2-301  
 GW directory number: 493401  
 GW PEN: 1-2-109  
 GW sector: 401  
 GW LAN sector: 1001

IP address: 192.168.1.105  
 PNNO: 2-1-300  
 GW directory number: 492401  
 GW PEN: 1-1-37  
 GW sector: 201  
 GW LAN sector: 1002

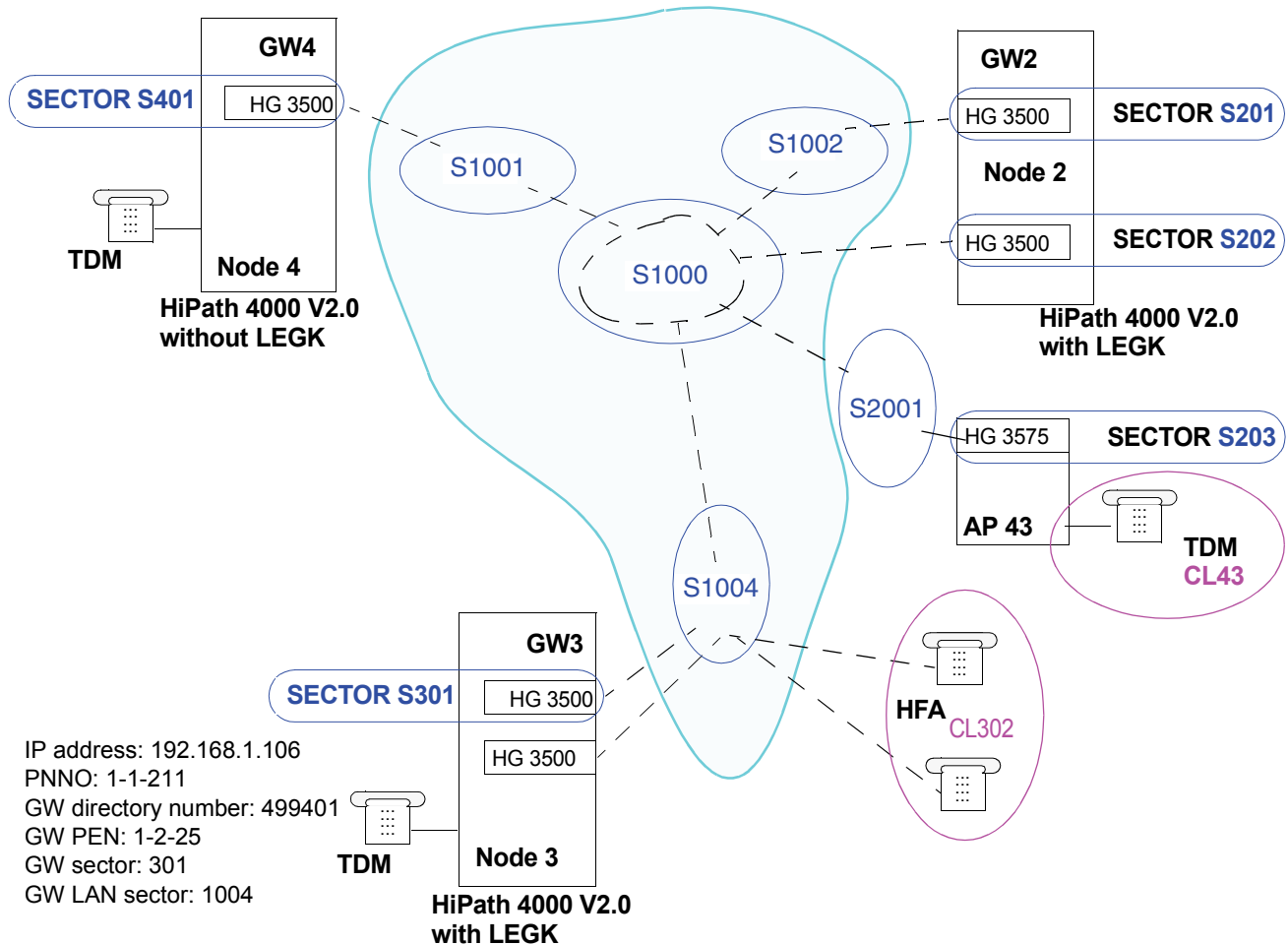


Figure 3-12 Example of a network consisting of two systems with GK and 1 system without GK

The following lists some of the resulting sector paths (MC= master connection, DMC= the associated DMC connection):

MC: TDM3 - TDM4 = S1004,S1000,S1001  
MC: CL302-TDM3 = S1004  
MC: CL302 - TDM4 = S1004,S1004,S1000,S1001 ==> DMC: S1004,S1000,S1001  
MC: CL302 - CL43 = S1004,S1004,S1000,S1002,S1000,S2001  
==> DMC: S1004,S1000,S2001

It is assumed here that the HG 3500 gateways have already been configured.

### **3.12.2.1 Configuration Batch for the First HiPath 4000 System with Gatekeeper**

For ease of recognition, LEGK-specific parameters or extensions in existing AMO commands are displayed in **bold** in the following configuration examples. Normal font is used for the commands associated with the new AMOs GKREG and GKTOP.

#### **Configuring the gatekeeper and local gateway 3 in node 1-1-211**

Assign the FLEXAMA memory for the number of internal gateways and number of gateways that are allowed to register at the gatekeeper.

ADD-DIMSU:TYPE=SYSTEM, **CGW=1, GWREG=100**;

Make sure that the central gatekeeper option is active

CHA-ZANDE:TYPE=ALLDATA, **GATEKPR=YES**;

Configure the number of DMC connections and gateway ID for HG 3500

CHA-CGWB:MTYPE=CGW, LTU=2, SLOT=25, TYPE=DMCDATA, **DMCCONN=10**;

CHA-CGWB:MTYPE=CGW, LTU=2, SLOT=25, TYPE=GWDATA, **GWID1=LOCW80E06**;

Gateway number = 3, enter the gateway directory number in the LEGK administration data

CHA-CGWB:MTYPE=CGW, LTU=2, SLOT=25, **TYPE=LEGKDATA, GWNO=3, GWDIRNO=499401**;

Configure the local gateway directory number in the digit analysis for DAR = tie line

ADD-WABE: **CD=499401, DAR=TIE**;

Configure the gateway administration data for gateway 3

ADD-GKREG:GWNO=3, GWATTR=INTGW&HG3550V2, DIPLNUM=0, DPLN=1, LAUTH=1;

Configure the gateway directory number in the LCR digit analysis (for TSC connections)

ADD-

LDPLN:LCRCONF=LCRPATT, **DIPLNUM=0, LDP="499401"**, LROUTE=300, LAUTH=1, PINDP=N;

Configure the LCR data for path resolution to destination gateways 2 and 4. Setting the sector path to 0 in the parameter GWx ensures that the bandwidth is not checked by the Resource Manager

## Configuring the Feature

### Configuration Examples

ADD-

LDAT:LROUTE=252,L SVC=ALL,LVAL=1,TGRP=300,ODR=299,LAUTH=1,CARRIER=1,ZONE=TIE  
08,LATTR=WCHREG,VCCYC=4,**GW1=2-0**;

ADD-

LDAT:LROUTE=252,L SVC=ALL,LVAL=1,TGRP=300,ODR=299,LAUTH=1,CARRIER=1,ZONE=TIE  
08,LATTR=WCHREG,VCCYC=4,**GW1=4-0**;

### Configuring remote gateway 4 (without LEGK) in node 1-1-211 with registration at GW3

Configure the remote gateway directory number in the digit analysis for DAR = tie line

ADD-WABE:**CD=493401,DAR=GATEWAY**;

Configure the gateway administration data for gateway 4

ADD-

GKREG:GWNO=4,GWATTR=EXTGW&REGGW&HG3550V2,GWIPADDR=192.168.1.250,GWDIRNO=493  
401,DIPLNUM=0,DPLN=1,LAUTH=1;

### Configuring remote gateway 2 in the node 1-1-211 WITHOUT registration at GW3

Configure the gateway administration data for gateway 2

ADD-

GKREG:GWNO=,GWATTR=EXTGW&HG3550V2,GWIPADDR=192.168.1.105,GWDIRNO=492401,DIP  
LNUM=0,DPLN=1,LAUTH=1;



#### Note:

You have now successfully configured the LEGK in node 1-1-211 and can now check connection setup in nodes 2 and 4. As the Resource Manager has not yet been configured, the system assumes that unlimited bandwidth is available.

### Configuring the topology

Assign the FLEXAMA memory for the maximum number of sector paths permitted

ADD-DIMSU:TYPE=SYSTEM,**SCTPATH=5000**;

Extend the route element to GW 2 in the LCR to include a sector path for master connection

CHA-LDAT:LROUTE=251,LRTTEL=1,**GW1=2-3201**;

Extend the route element to GW 4 in the LCR to include a sector path for master connection

CHA-LDAT:LROUTE=252,LRTTEL=1,**GW1=4-3401**;

Configure gateway sectors 20x, 301, 401 \*/



```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =301,SECATTR=OWN&HHS&GW&EXCL&UPDATE,PNNO  
=1-1-211,BANDWI="5000",GWLAN=1004;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =201,SECATTR=FOREIGN1&HHS&GW&EXCL,PNNO =2-  
1-300,BANDWI="10000",GWLAN=1002,SECPANO2 = 3211,SECPANO3 = 2301;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 202,SECATTR = FOREIGN1&HHS&GW& EXCL,PNNO  
= 2-1-300,BANDWI = "10000",GWLAN = 10000,SECPANO2 = 3212;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 203,SECATTR = FOREIGN1&AP&GW& EXCL,PNNO =  
2-1-300,BANDWI = "10000",GWLAN = 2001,SECPANO2 = 3213;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =401,SECATTR=FOREIGN2&HHS&GW&EXCL,PNNO =1-  
2-301,BANDWI="10000",GWLAN=1001,SECPANO2 = 3411,SECPANO3 = 4301;
```

Configure additional sectors important for the HiPath system



**Note**

In the following configuration commands, a bandwidth of 1000 is specified for the LAN sectors. This is quite restricted (approximately 10 IP trunking connections) but sufficient for test purposes.

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1000,SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =1-  
1-211,BANDWI = "1000",SECPANO1 = 130;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1001,SECATTR=FOREIGN1&LAN&EXCL,PNNO =1-2-  
301,BANDWI = "1000",SECPANO1 = 131;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 1002,SECATTR = FOREIGN1&LAN& EXCL,PNNO =  
2-1-300,BANDWI = "1000";
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 1004,SECATTR = FOREIGN1&LAN&  
EXCL&UPDATE,PNNO = 1-1-211,BANDWI = "1000";
```

## Configuring sector paths

Sector path to own HHS from sector 1000

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=130,SECDE=1004;
```

Sector path to own HHS from sector 1001

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=131,SECDE=1000&1004;
```

Sector path for the master connection GW 3 -> GW 4 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3401,SECDE=1004&1000&1001;
```

Sector path for DMC connections to GW 4

## Configuring the Feature

### Configuration Examples

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3411,SECDE=1004&1000&1001;
```

Sector path for the master connection GW 3 -> GW 2 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3201,SECDE=1004&1000&1002;
```

Sector path for DMC connections to GW 2

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3211,SECDE=1004&1000&1002;
```

Sector path for DMC connections to HG 3500

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3212,SECDE=1004&1000;
```

Sector path for the DMC connection to HG 3575

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3213,SECDE=1004&1000&2001;
```

Sector path for incoming seizure from GW 2 -> GW 3 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2301,SECDE=1002&1000&1004;
```

Sector path for incoming seizure from GW 4 -> GW 3 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=4301,SECDE=1001&1000&1004;
```

## Configuring clusters

Configure cluster 302 for HFA terminals in node 1-1-211

```
ADD-GKTOP:TYPE = IPDA,CLUSTID=302,HFASEC=1004;
```

### 3.12.2.2 Configuration Batch for the HiPath 4000 System without Gatekeeper

There is no LEGK configured in this node. Path resolution in this system is performed in the node 1-1-211 (primary) or 2-1-300 (secondary). The Resource Manager is available irrespective of where path resolution is performed.

#### Configuring gateway 4 in node 1-2-301:

Assign the FLEXAMA memory for the number of internal gateways

```
ADD-DIMSU:TYPE=SYSTEM,CGW=1;
```

Make sure that the central gatekeeper option is **NOT** active, the RM is available irrespective of this

```
CHA-ZANDE:TYPE=ALLDATA,GATEKPR=NO;
```

Assign a primary (node 1-1-211) and a secondary gatekeeper (node 2-1-300) for address resolution

CHA-

CGWB:MTYPE=CGW,LTU=2,SLOT=109,TYPE=GKDATA,PRIGKIP=192.168.1.106,PRIGKPN=1719,PRIGKID1="LOCGW80E06",SECGKIP=192.168.1.105,SECGKPN=1719,SECGKID1="LOCGW6HX05";

CHA-CGWB:MTYPE=CGW,LTU=2,SLOT=109,TYPE=DMCDATA,DMCCONN=10;

CHA-CGWB:MTYPE=CGW,LTU=2,SLOT=109,TYPE=GWDATA,GWID1=LOCGW80X04;

CHA-CGWB:MTYPE=CGW,LTU=2,SLOT=109,TYPE=LEGKDATA,GWDIRNO=493401,;

Configure the local gateway directory number in the digit analysis for DAR = tie line

ADD-WABE:CD=493401,DAR=TIE;

Configure the gateway directory number in the LCR digit analysis (for TSC connections)

ADD-

LDPLN:LCRCONF=LCRPATT,DIPLNUM=0,LDP="493401",LROUTE=300,LAUTH=1,PINDP=N;

## Configuring the outgoing routes to other remote gateways as DAR=tie line in node 1-2-301

### Gateway 2

ADD-WABE:CD=924,DAR=TIE;

### Gateway 3

ADD-WABE:CD=994,DAR=TIE;

/\* Configure the outdial rule because the tie number is also transferred (if openly numbered) \*/

ADD-LODR:ODR=240,CMD=ECHO,FIELD=1;

ADD-LODR:ODR=240,CMD=ECHO,FIELD=2;

ADD-LODR:ODR=240,CMD=END;

You do not have to configure the AMO LDAT (parameters GW1 - GW5) because path resolution is not performed in the HiPath 4000 system.



#### Note:

You have now successfully configured the node 1-2-301 and can check connection setup in nodes 2 and 3. As the Resource Manager has not yet been configured, the system assumes that unlimited bandwidth is available.

## Configuring the topology

Assign the FLEXAMA memory for the maximum number of sector paths permitted

## Configuring the Feature

### Configuration Examples

ADD-DIMSU:**SCTPATH=10000**;

#### Configure gateway sectors 20x, 301, 401

ADD-GKTOP:TYPE = RESMGMT1,SECNO =201,SECATTR = FOREIGN1&HHS&GW&EXCL,PNNO =2-1-300,BANDWI="10000",GWLAN=1002,SECPANO2 = 4211,SECPANO3 = 2401;

ADD-GKTOP:TYPE = RESMGMT1,SECNO = 202,SECATTR = FOREIGN1&HHS&GW& EXCL,PNNO = 2-1-300,BANDWI = "10000",GWLAN = 10000,SECPANO2 = 4212;

ADD-GKTOP:TYPE = RESMGMT1,SECNO = 203,SECATTR = FOREIGN1&AP&GW& EXCL,PNNO = 2-1-300,BANDWI = "10000",GWLAN = 2001,SECPANO2 = 4213;

ADD-GKTOP:TYPE = RESMGMT1,SECNO =301,SECATTR = FOREIGN1&HHS&GW&EXCL,PNNO =1-1-211,BANDWI="10000",GWLAN=1004,SECPANO2 = 4311,SECPANO3 = 3401;

ADD-GKTOP:TYPE = RESMGMT1,SECNO =401,SECATTR=OWN&GW&HHS&EXCL&UPDATE,PNNO =1-2-301,BANDWI="10000",GWLAN=1001;

Configure additional sectors important for the HiPath system

ADD-GKTOP:TYPE = RESMGMT1,SECNO =1000,SECATTR=FOREIGN1&LAN&EXCL,PNNO = 1-1-211,BANDWI ="1000";

ADD-GKTOP:TYPE = RESMGMT1,SECNO = 1001,SECATTR = OWN&LAN&EXCL&UPDATE,PNNO = 2-301-1000,BANDWI = "1000";

ADD-GKTOP:TYPE = RESMGMT1,SECNO =1002,SECATTR=FOREIGN1&LAN&EXCL,PNNO = 2-1-300,BANDWI ="1000";

ADD-GKTOP:TYPE = RESMGMT1,SECNO = 1004,SECATTR = FOREIGN1&LAN& EXCL,PNNO = 1-1-211,BANDWI = "1000",SECPANO2 = 4312;

## Configuring sector paths

#### Sector path for DMC connections to GW 2

ADD-GKTOP:TYPE = SECPATH,SECPANO=4211,SECDE=1001&1000&1002;

#### Sector path for DMC connections to HG 3500

ADD-GKTOP:TYPE = SECPATH,SECPANO = 4212,SECDE=1001&1000;

#### Sector path for DMC connections to HG 3575

ADD-GKTOP:TYPE = SECPATH,SECPANO=4213,SECDE=1001&1000&2001;

#### Sector path for DMC connections to GW 3

ADD-GKTOP:TYPE = SECPATH,SECPANO=4311,SECDE=1001&1000&1004;

#### Sector path for incoming seizure from GW 2 -> GW 4

ADD-GKTOP:TYPE = SECPATH,SECPANO=2401,SECDE=1002&1000&1001;

Sector path for incoming seizure from GW 2 -> GW 4

ADD-GKTOP:TYPE = SECPATH,SECPANO=3401,SECDE=1004&1000&1001;

Sector path for DMC connections to the HFA phones CL302 in node 4

ADD-GKTOP:TYPE = SECPATH,SECPANO = 4312,SECDE=1001&1000;

### **3.12.2.3 Configuration Batch for a Second LEGK**

#### **Configuring the gatekeeper and local gateway 2 in node 2-1-300**

Assign the FLEXAMA memory for the number of internal gateways and number of gateways that are allowed to register at the gatekeeper.

ADD-DIMSU:TYPE=SYSTEM,**CGW=1,GWREG=100**;

Make sure that the central gatekeeper option is active

CHA-ZANDE:TYPE=ALLDATA,**GATEKPR=YES**;

Configure the number of DMC connections and gateway ID for HG 3500

CHA-CGWB:MTYPE=CGW,LTU=1,SLOT=37,TYPE=DMCDATA,**DMCCONN=10**;

CHA-CGWB:MTYPE=CGW,LTU=1,SLOT=37,TYPE=GWDATA,**GWID1=LOCGW80E07**;

Gateway number = 2, enter the gateway directory number in the LEGK administration data

CHA-CGWB:MTYPE=CGW,LTU=2,SLOT=25,**TYPE=LEGKDATA,GWNO=2,GWDIRNO=492401**;

Configure the local gateway directory number in the digit analysis for DAR = tie line

ADD-WABE:**CD=492401,DAR=TIE**;

Configure the gateway administration data for gateway 2

ADD-GKREG:GWNO=2,GWATTR=INTGW&HG3550V2,DIPLNUM=0,DPLN=1,LAUTH=1;

Configure the gateway directory number in the LCR digit analysis

ADD-

LDPLN:LCRCONF=LCRPATT,**DIPLNUM=0,LDP="492401"**,LROUTE=200,LAUTH=1,PINDP=N;

Configure the LCR data for path resolution to destination gateways 3 and 4. Setting the sector path to 0 in the parameter GWx ensures that the bandwidth is not checked by the Resource Manager

ADD-

LDAT:LROUTE=251,LSVC=ALL,LVAL=1,TGRP=200,ODR=299,LAUTH=1,CARRIER=1,ZONE=TIE  
08,LATTR=WCHREG,VCCYC=4,**GW1=3-0**;

## Configuring the Feature

### Configuration Examples

ADD-

LDAT:LROUTE=252,LSVC=ALL,LVAL=1,TGRP=200,ODR=299,LAUTH=1,CARRIER=1,ZONE=TIE08,LATTR=WCHREG,VCCYC=4,**GW1=4-0**;

### Configuring remote gateway 4 (without LEGK) in the node 2-1-300 with registration at GW2.

ADD-WABE:**CD=493401,DAR=GATEWAY**;

ADD-

GKREG:GWNO=4,GWATTR=EXTGW&REGGW&HG3550V2,GWIPADDR=192.168.1.250,GWDIRNO=493401,DIPLNUM=0,DPLN=0,LAUTH=1;

### Configuring remote gateway 3 in the node 2-1-300 WITHOUT registration at GW2

Configure the gateway administration data for gateway 2

ADD-

GKREG:GWNO=3,GWATTR=EXTGW&HG3550V2,GWIPADDR=192.168.1.106,GWDIRNO=499401,DIPLNUM=0,DPLN=1,LAUTH=1;



#### Note:

You have now successfully configured the LEGK in node 2-1-300 and can now check connection setup in nodes 3 and 4. As the Resource Manager has not yet been configured, the system assumes that unlimited bandwidth is available.

### Configuring the topology

Assign the FLEXAMA memory for the maximum number of sector paths permitted

ADD-DIMSU:TYPE=SYSTEM,**SCTPATH=5000**;

Extend the route element to GW 3 in the LCR to include a sector path for master connection

CHA-LDAT:LROUTE=251,LRTTEL=1,**GW1=3-2301**;

Extend the route element to GW 4 in the LCR to include a sector path for master connection

CHA-LDAT:LROUTE=252,LRTTEL=1,**GW1=4-2401**;

Configure gateway sectors 20x, 301, 401

ADD-GKTOP:TYPE = RESMGMT1,SECNO = 201,SECATTR =  
OWN&HHS&GW&EXCL&UPDATE,PNNO = 2-1-300,BANDWI = "10000",GWLAN = 1002;

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =202,SECATTR = OWN&HHS&GW&EXCL&UPDATE,PNNO  
= 2-1-300,BANDWI = "1000",GWLAN = 1000;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 203,SECATTR = OWN&AP&GW&EXCL,PNNO = 2-1-  
300,BANDWI = "4000",GWLAN = 2001,SECPANO1 = 2043;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 301,SECATTR= FOREIGN1&HHS&GW&EXCL,PNNO =  
1-1-211,BANDWI = "5000",GWLAN=1004,SECPANO2 = 2311,SECPANO3 = 3201;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =401,SECATTR=FOREIGN2&HHS&GW&EXCL,PNNO =1-  
2-301,BANDWI="1000",GWLAN=1001,SECPANO2 = 2411,SECPANO3 = 4201;
```

Configure additional sectors important for the HiPath system

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO = 1000,SECATTR = FOREIGN1&LAN& EXCL,PNNO =  
1-1-211,BANDWI = "1000";
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1001,SECATTR=FOREIGN1&LAN&EXCL,PNNO =1-2-  
301,BANDWI = "1000",SECPANO1 = 121;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1002,SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-  
1-300,BANDWI = "1000",SECPANO1 = 121;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =1004,SECATTR=FOREIGN1&LAN&EXCL,PNNO =1-1-  
211,BANDWI = "1000",SECPANO = 2312;
```

```
ADD-GKTOP:TYPE = RESMGMT1,SECNO =2001,SECATTR=OWN&LAN&EXCL&UPDATE,PNNO =2-  
1-300,BANDWI = "4500",SECPANO = 121;
```

## **Configuring sector paths**

**Sector path to own HHS from sector 1001, 1002, and 2001**

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=121,SECDE=1000;
```

**Sector path from own HHS to AP 43**

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2043,SECDE=1000&2001;
```

**Sector path for the master connection GW 2 -> GW 4 (IP trunking)**

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2401,SECDE=1002&1000&1001;
```

**Sector path for DMC connections to GW 4**

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2411,SECDE=1000&1001;
```

**Sector path for the master connection GW 2 -> GW 3 (IP trunking)**

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2301,SECDE=1002&1000&1004;
```

**Sector path for DMC connections to GW 3**

## Configuring the Feature

### *Service Notes for Resource Management in Systems and Networks*

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2311,SECDE=1000&1004;
```

Incoming seizure from GW 3 -> GW 2 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=3201,SECDE=1004&1000&1002;
```

Incoming seizure from GW 4 -> GW 2 (IP trunking)

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=4201,SECDE=1001&1000&1002;
```

Sector path for DMC connections to the HFA phones CL302 (HFA sector 1004) in node 3

```
ADD-GKTOP:TYPE = SECPATH,SECPANO=2312,SECDE=1000;
```

## Configuring clusters

Access point shelf AP 43

```
CHA-STMIB:NCUI2,43,GWSECTOR,203;
```

Configure cluster 43 for TDM terminals on AP 43

```
ADD-GKTOP:TYPE=IPDA,CLUSTID=43,GWSEC=203;
```



#### **Note:**

You have now successfully configured all network components for the Gatekeeper function and Resource Manager in the three HiPath 4000 V2.0 systems and can use IP connections by dynamically monitoring the bandwidth available in the sectors crossed.

## 3.13 Service Notes for Resource Management in Systems and Networks

1. **Question:** I have a system with multiple access points. Only one or two of these are connected via a WAN path to the broadband LAN that connects the HiPath host system and all other APs. Resource Management is needed for this connection. Is the Resource Management function guaranteed if I only administer the relevant APs, the associated sector paths and the HFA subscribers?

**Answer:** No, if Resource Management is needed in a system, **all** endpoints (APs, HFA subscribers, sector paths) must be configured according to the rules of Resource Management. However, the bandwidth restriction only needs to be set for the relevant IP endpoints (sectors).

2. **Question:** IP trunking is used to connect multiple systems in a network. Resource Management is only needed in one system and is therefore configured in this system. To ensure that DMC connections are possible from other systems to this one, it is necessary to



define the endpoints in this system by means of sector numbers. Does Resource Management as a result now have to be configured in all systems of the network, even though it is not needed for connections within the network?

**Answer:** No, the AMO ZAND (HiPath 4000 V4 Release 1 and higher) features a switch that only needs to be activated in the system with Resource Management and that lets you dispense with the configuration of Resource Management in the other systems.

**Note:** This switch may only be used in conjunction with a project-specific release by the PM.

**Function:** To calculate resources correctly, RM needs the sector numbers of the two endpoints involved in the connection. The change means that if the sector number of the remote endpoint is missing at connection setup, a substitute sector number is used.

Simplified administration only works for connections from remote systems if there is exactly one output and input per sector (for example, the common sector on IP trunking gateways on HHS), see Figure 3-13 Sample configuration.

Configuration:

HiPath4000 V3.0: S10795 (special patch)

HiPath 4000 V4: Activate with `AENDERN-ZAND:TYP=RESERVE,ELNUM=167,AK-TIV=JA;`

The number of the sector permanently set is 2400. It must be configured in the system as follows with Resource Management:

```
EINR-GKTOP:TYP=RESMGMT1,SEKNR=2400,SEKATTR=LAN&FREMDER1&EXKLUSIV,  
PKNNR=<not evaluated>,[BANDBR=<nothing>],[GWLAN=<nothing>],  
[SEKPFNR1=<nothing>],SEKPFNR2=SKT.Path number for DMC,  
[SEKPFNR3=<nothing>],INFO=Dummy sector for DMC;
```

A suitable sector path for the dummy sector is generally already configured. If not, then it must be configured now:

```
EINR-GKTOP:TYP=SEKPFAD,SEKPFNR=Sector path number for DMC,  
SEKBE=<Sector number of the input/output's LAN sector>;
```

In addition, dynamic bandwidth calculation must be deactivated in systems not using the Resource Management function.

```
AEND-DIAGS:PROCID=CC,KOMP=DB,S09=EIN;
```

## Configuring the Feature

### Service Notes for Resource Management in Systems and Networks

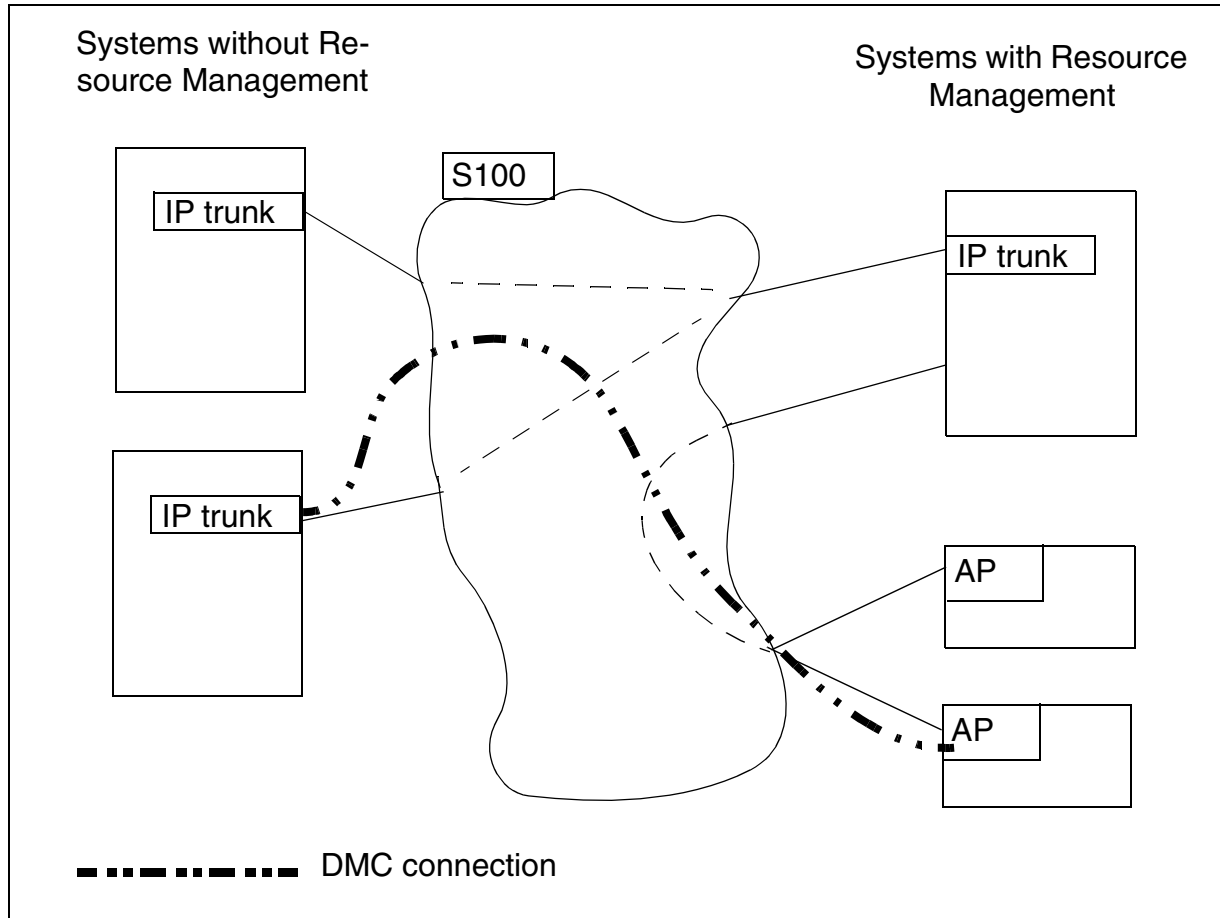


Figure 3-13 Sample configuration

Configuration commands in a system with Resource Management as depicted above:

EINR-

GKTOP:TYP=RESMGMT1,SEKNR=2400,SEKATTR=LAN&FREMDER1&EXKLUSIV,SEKPFNR2=1999,,INFO=Dummy sector for DMC;

EINR-GKTOP:TYP=SEKPFAD,SEKPFNR=1999,SEKBE=100;

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