Documentation

HiPath 4000 V5
IP Solutions - HiPath 4000 SoftGate

Service Documentation

A31003-H3150-S104-2-7620

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Reference No.: A31003-H3150-S104-2-7620

Service Manual HiPath 4000 V5 - IP Solutions - HiPath 4000 SoftGate - Contents

1 Overview

1.1 Purpose of This Document

This document provides an overview of HiPath 4000 SoftGate in HiPath 4000 V5. It describes how to install and configure the operating system and the HiPath 4000 SoftGate software for the first time. Detailed information on further administration options such as HiPath Assistant, HiPath Manager, IPDA (Internet Protocol Distributed Architecture), WBM (Web-Based Management), and features such as HiPath Feature Access (HFA), etc. can be found in the relevant application documents.

1.2 Restrictions

- HiPath 4000 SoftGate 1000 is only released on project sepcific basis (PSR needed).
- HiPath 4000 SoftGate is the only application that runs on the Linux machine (no toher application is allowed to run co-located on the machine).
- HiPath 4000 SoftGate is only supported for cPCI platforms (the same prereq-uisite as in HiPath 4000 V4 (1 GB memory for DSCXL, NCUI4, etc.)).
- **Kein** Viren-Scanner für HiPath 4000 SoftGate aktiv.
- Signaling and payload encryption (SPE) for subscribers and SIP trunking is not supported (see Chapter 10, “Signalling and Payload Separation (SPE) for HiPath 4000 SoftGate”).
- Analogue connectivity for voice and fax is not done via AP 1120 HFA but using SIP Media Gateways Mediatrix 41xx and 44xx.
- Analogue modem connectivity is not supported.
- QDC is not supported.
- No support of H.323 trunking and CorNet IP trunking.
- Codec G.723 is not supported.
- T.38 fax is not supported. Fax must be transmitted with G.711.
- A maximum number of 83 HiPath 4000 SoftGates 50/1000 or IP Access Points can bei connected to one HiPath 4000 system.
- Signalling Survivability is not supported for HiPath 4000 SoftGate 1000. Survivability option for HiPath 4000 SoftGate 1000 is AP emergency.
- Limitations to DMC (see Chapter 8, “Direct Media Connect (DMC)”):

- The vNCUI on the HiPath 4000 SoftGate does not support DMC.
- End-to-end payload can also be achieved to a native SIP trunk (depending on the trunk profile).
- The MediaCapabilities (e.g. codecs) can be renegotiated/changed between the SIP partners (on the HiPath 4000 SoftGate) even after the DMC connection has been established.
- If a SIP device or a SIP native trunk on the 4000 SoftGate communicates with an DMC endpoint (not the DMC proxy!), then a **MediaRelay** is activated between them on the HiPath 4000 SoftGate. This corresponds to an RTP proxy which always routes the media stream (RTP) via the HiPath 4000 SoftGate.
- If a SIP device or SIP native trunk on the HiPath 4000 SoftGate communicates with a DMC proxy on the common gateway, then the MediaCapabilities are passed on transparent and an E2E payload connection is established. However due to the restrictions of the DMC proxies on the CGW, it is not possible to renegotiate codecs.

MediaRelay

MediaRelay is a Media proxy of the Media server in the HiPath 4000 SoftGate that is controlled via the signalling software of the HG 3500.

1.3 Features

HiPath 4000 SoftGate offers the following features:

- HiPath 4000 SoftGate is available in two versions:
  - HiPath 4000 SoftGate 50: up to 50 ports for IP subscribers (HFA and SIP subscribers) or SIP trunking (native SIP / SIP-Q)
  - HiPath 4000 SoftGate 1000: up to 1000 ports for IP subscribers (HFA and SIP subscribers) or SIP trunking (native SIP / SIP-Q)
- Pure software solution
- Runs on standard server hardware (Fujitsu Siemens Computer®, IBM®)
- Operated with the Suse Linux Enterprise (SLES 10 SP2) standard operating system
- Administration via HiPath 4000 Assistant/Manager
- Integration in HiPath 4000 networks
- Supports native SIP and SIP-Q trunking

- Analogue and fax connection via Mediatrix 41xx SIP gateway (in conjunction with HiPath 4000 SoftGate 50) or AP 3700 (in conjunction with HiPath 4000 SoftGate 1000)
- Supports DMC (see Chapter 8, “Direct Media Connect (DMC)”) and T.38 fax.

WICHTIG: When connecting a fax adapter, DMC must be connected for this device (only then is transmission with T.38 possible).

- Supports ISDN calls in the public network. PSTN connections are conducted via Mediatrix SIP gateways.
- S0 connection via Mediatrix 44xx SIP gateways
- Integrated media server
- Video integration with OpenScape VHD terminals (see Chapter 7, “Video Connections”)
- End-to-end payload connections between native SIP trunks and SIP stations
- Supports HiPath 4000 IPDA survivability options: signaling survivability and connection to existing AP emergency servers
- SIP service provider functions. The SIP service provider connection is integrated in the application. The firewall and SBC (session border control) configuration is dependent on the customer network and NAT (network address translation).

1.4 Scenarios

1.4.1 Architectural Overview

Figure 1 *Scenario with HiPath 4000 SoftGate 50 and HiPath 4000 SoftGate 1000*

Components and systems	Description
HHS HiPath Host System	HiPath 4000 V5 system
HiPath 4000 SoftGate 50	For small branches with up to 50 phones
HiPath 4000 SoftGate 1000	For large sites with 1000 phones
SIP gateways (Mediatrix®)	For analog and ISDN connections
HFA phones	VoIP telephony with wide-ranging features
SIP phones	Native SIP phones
SBC	Session border controller
AP3700	Gateway for analog and ISDN connections

Table 1 *Component description for a HP4k-only scenario*

1.4.2 HiPath 4000 SoftGate 50 - PSTN Access with Mediatrix 44xx Digital Gateway

Figure 2 *SoftGate 50 - PSTN access with Mediatrix 44xx digital gateway*

1.4.3 HiPath 4000 SoftGate 50 - PSTN Access with OpenOffice EE

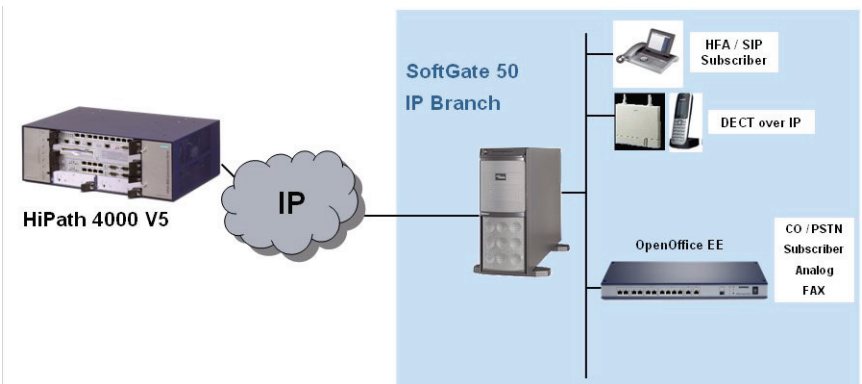

Figure 3 *SoftGate 50 - PSTN access with OpenOffice EE*

1.4.4 HiPath 4000 SoftGate 50 - SIP Service Provider Connection

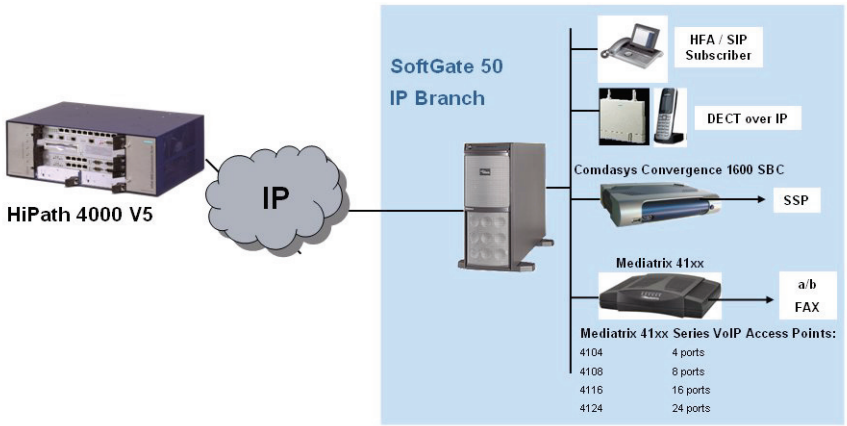

Figure 4 *SoftGate 50 - SIP service provider connection with Comdasys Convergence SBC*

1.4.5 HiPath 4000 SoftGate 1000 - PSTN Access with AP 3x00 / AP 3x00 IP

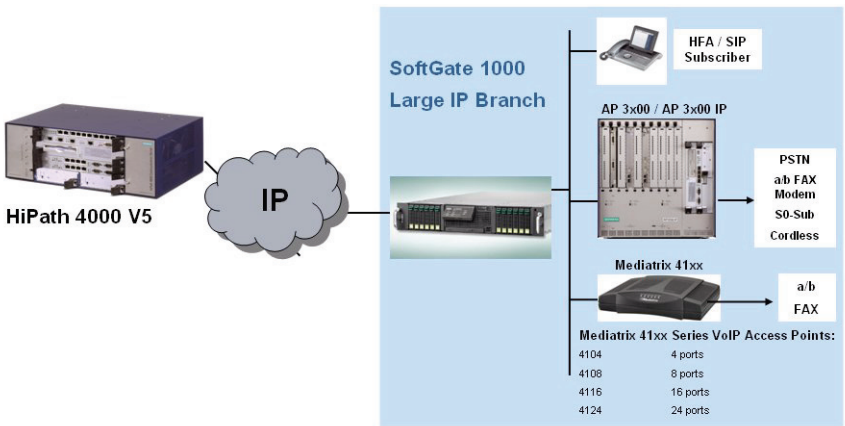

Figure 5 *SoftGate 1000 - trunk connection via AP 3x00/AP 3x00 IP*

1.4.6 HiPath 4000 SoftGate 1000 - SIP Service Provider Connection

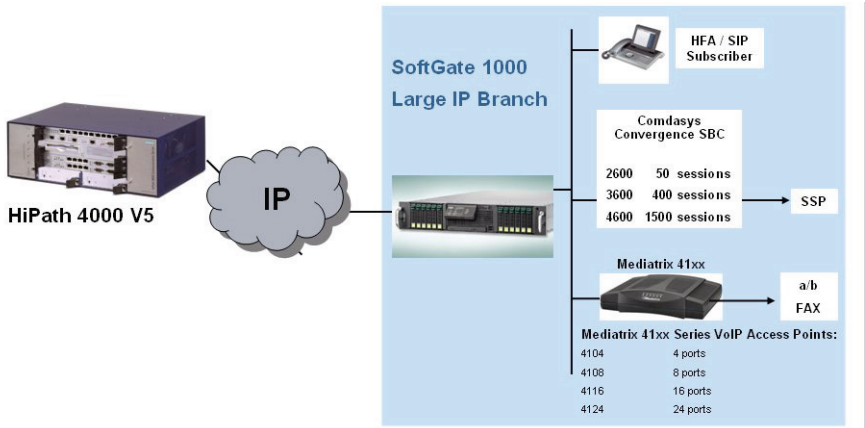

Figure 6 *SoftGate 1000 - SIP service provider connection with Comdasys Convergence SBC*

1.5 Hardware

1.5.1 HiPath 4000 V5 System

- HW platforms supported:
  - 600 ECS with cPCI conversion server
  - cPCI platforms
- Minimum hard disk size in cPCI systems is 60 GB.

1.5.2 HiPath 4000 SoftGate 50

- Recommended HW platforms:
  - FSC Primergy TX 150 S6
  - IBM X3200
- HFA or SIP phones
- Mediatrix 44xx or 41xx gateway required for:
  - PSTN connection
  - Fax connection

  - S0 data connection

1.5.3 HiPath 4000 SoftGate 1000

- Recommended HW platform: FSC Primergy RX 300 or IBM 3650
- HFA or SIP phones
- Mediatrix 44xx or 41xx gateway required for:
  - PSTN connection
  - Fax connection
  - S0 data connection

1.6 Restrictions

For HiPath 4000 SoftGate 50 and HiPath 4000 SoftGate 1000:

- Analog modem connections are not supported.
- The maximum number of HiPath 4000 SoftGate 50/1000s or IP access points that can be connected to a HiPath 4000 system is 83.
- Signaling and payload encryption for stations and SIP trunking are not supported.
- QDC is not supported.
- H.323 IP trunking or CorNet IP trunking are not supported.
- Codec G.723 is not supported.

For HiPath 4000 SoftGate 50 only:

- Up to 50 configurable phones.
- Provider access requires Mediatrix 44xx gateways (up to 4 S0 lines) or direct SIP provider connections.

For HiPath 4000 SoftGate 1000 only

- Up to 1000 configurable phones.
- Provider access requires AP 3700 IP or direct SIP provider connections.
- Up to 120 parallel connections.

2 Installing the Operating System

2.1 Preparing for Installation

2.1.1 Media Required

The following media are needed for installation:

- USB stick (formatted with VFAT or FAT32 file system, size unspecified)
- SUSE Linux Enterprise Server 10 (SLES10) software on DVD (part number: P31003-P1431-P1)
- HiPath 4000 SoftGate application on DVD (part number: P31003-P1431-P1)
- External USB DVD drive (for installation on FSC Primergy RX300 S4)

2.1.2 Preparing a USB Stick

Prepare the USB stick for automatic installation as follows:

1. Format the USB stick with VFAT (Linux) or FAT32 (Windows).
2. Copy the following entire directory from the second DVD supplied with the HiPath 4000 SoftGate application to the USB stick:

   `/autoyast`
3. The `/autoyast` folder has a subfolder for every authorized computer type, each containing the file `autoinst.xml`. On the USB stick, open the folder for the computer you want to install `/autoyast/<computer type>` and copy the file `autoinst.xml` to `/`.

2.2 Installing the OS on the FSC Primergy TX150 S6 Server

IMPORTANT: Both hard disks must be available when installing the operating system. When installation is complete, these two hard disks are bound together in a RAID configuration. If one of the hard disk is replaced, the new and the old hard disks must be synchronized at operating system level.

2.2.1 BIOS Configuration

2.2.1.1 Deactivating Software RAID

The Fujitsu Siemens Primergy TX 150 S6 server is configured as software RAID, which must be deactivated via the BIOS. Proceed as follows:

1. Use the cursor keys in the BIOS menu to select the "Advanced" menu.

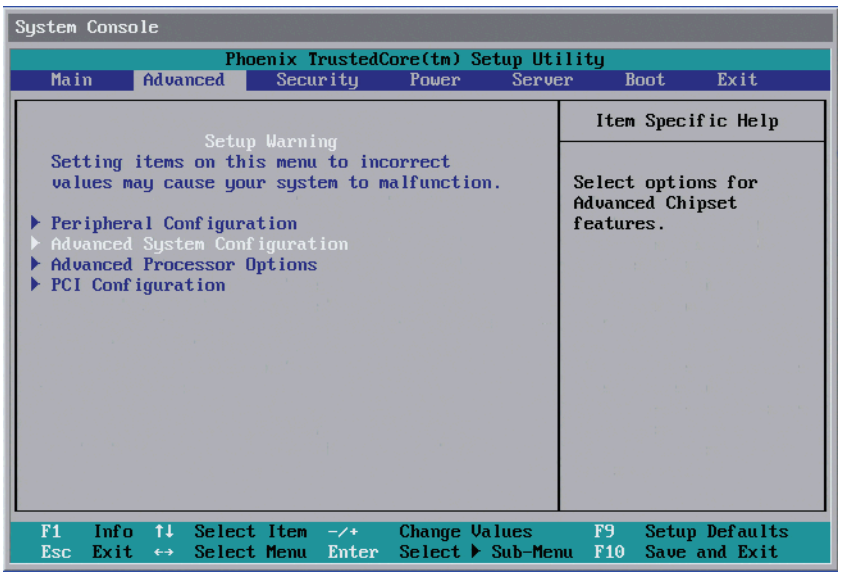

Figure 7 "Advanced" menu in the BIOS menu

2. Use the cursor keys to select the "Advanced System Configuration" submenu.

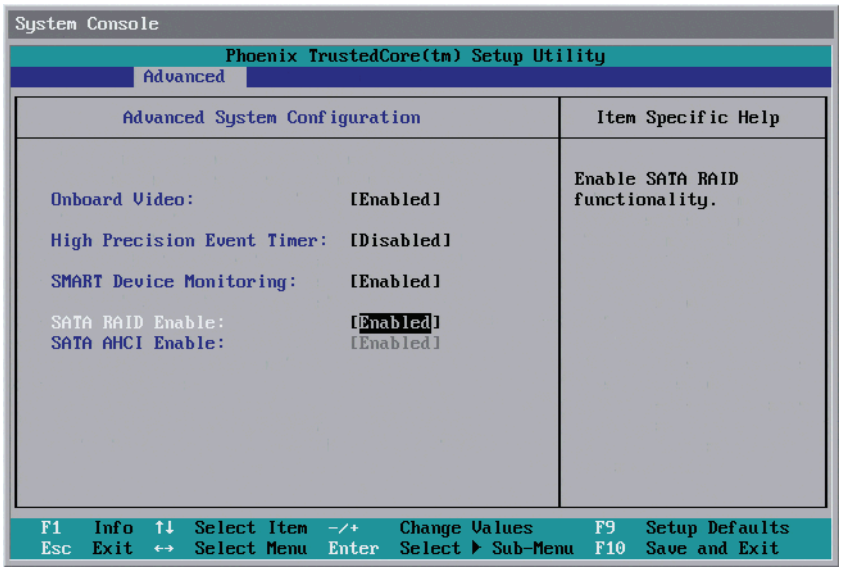

Figure 8 *"Advanced System Configuration" menu in the "Advanced" menu*

3. Press **Enter** to change the entry "SATA RAID Enable" to "Disabled".

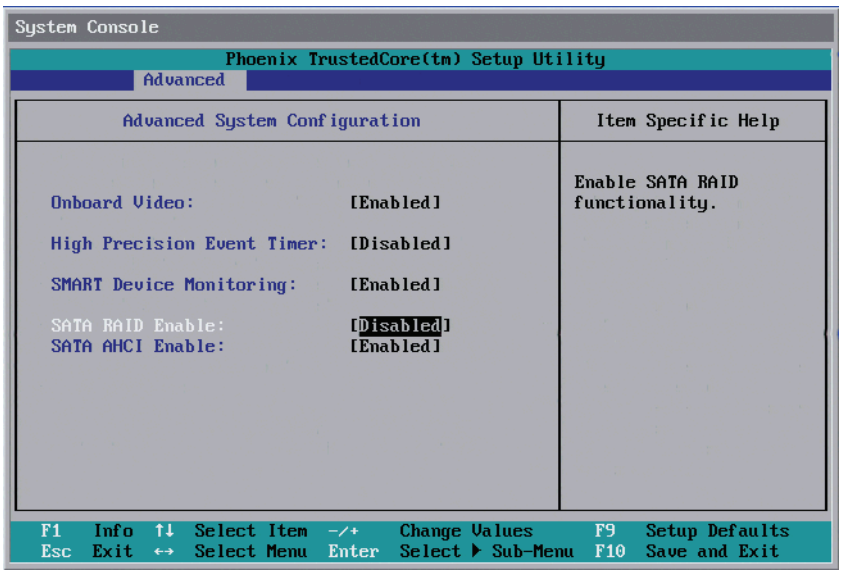

Figure 9 *"Advanced System Configuration" menu in the "Advanced" menu*

4. Press **ESC** to quit the menus.
5. Use the cursor keys in the BIOS menu to select the "Exit" menu.

6. Select "Changes & Exit" in the "Save" submenu.

IMPORTANT: The BIOS system's software RAID configuration is not compatible with the latest SUSE Linux Enterprise Server 10 SP2 distribution.
RAID 1 mirroring is configured during automatic installation for a redundant system based on this form of mirroring.
The RAID system then runs on the basis of the operating system and requires no further configuration.

2.2.1.2 Checking/Changing the Boot Sequence

This section describes how to check and change the boot sequence:

1. Activate the server.
2. Press **F2** after startup.
   – The BIOS menu appears.

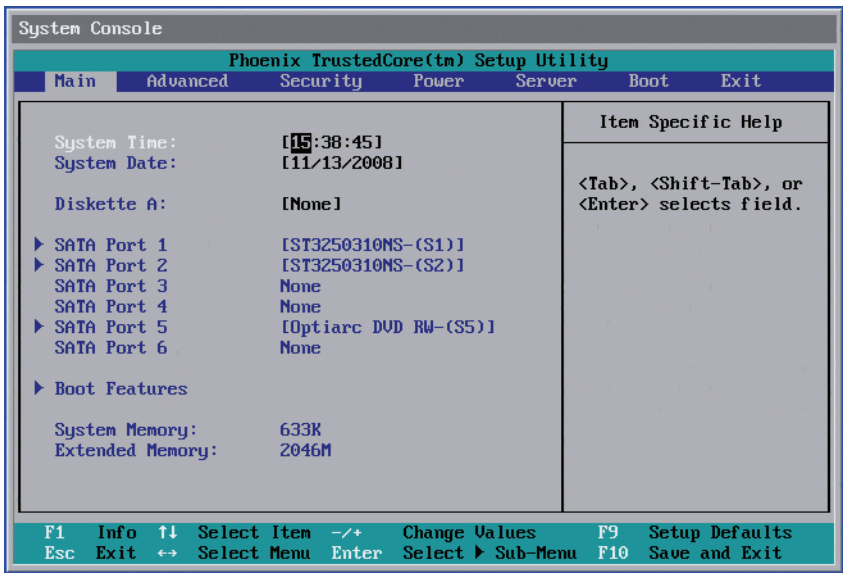

Figure 10 BIOS FSC Primergy TX 150 S6

3. Use the cursor keys to select the "Boot" menu.

   – An overview of the boot sequence is displayed.

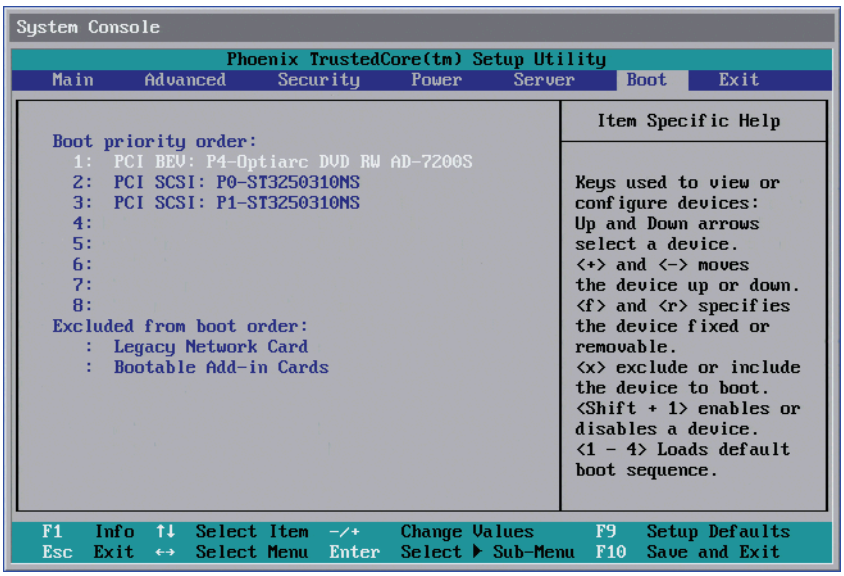

Figure 11 "Boot" menu in the BIOS menu

4. Check if the DVD drive is listed first and "BootManage PXE" (PXE = Preboot eXecution Environment) is last.

   – If so, press **ESC** to quit the "Boot" menu.

   – If not, use the cursor keys to select the DVD drive and press **<+>** to move it to first position.

   – Use the cursor keys to select the entry "BootManage PXE" and press **<->** to move it to last position.

IMPORTANT: The TX 150 S6 server features a BootManage PXE (Preboot eXecution Environment) for automatic booting from a server. The BootManage PXE is not needed for this installation, which is why it should be listed last in the boot sequence.

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5. Press **ESC** to quit the "Boot" menu.

2.2.2 Installing SUSE Linux Enterprise Server 10

The installation of the SUSE Linux Enterprise Server 10 distribution is fully automatic and requires no further entries or configuration.

Proceed as follows:

1. Activate the server.
2. Insert the DVD supplied with SUSE Linux Enterprise 10 Service Pack 2 into the DVD drive.
3. The SLES 10 SP 2 menu starts automatically from the DVD.

IMPORTANT: If the DVD does not start automatically, check the BIOS configuration, see Section 2.2.1, “BIOS Configuration”.

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4. Insert the configured USB stick (see Section 2.1.2, “Preparing a USB Stick”) in the USB port.
5. Select the "Installation" menu item.

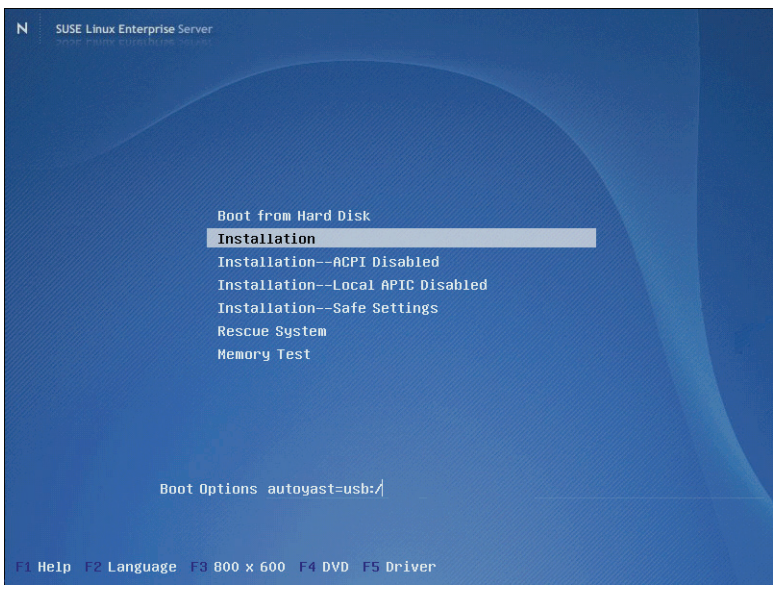

Figure 12 SLES "Installation" menu

6. Press **F2** to change the language as appropriate.

7. Enter the following command in the command prompt:

   `autoyast=usb:/`

   IMPORTANT: This entry in the command prompt requires that the `autoinst.xml` file generated specially for this computer type be located in the USB stick's `/` folder, see Section 2.1.2, "Preparing a USB Stick".

8. Press **Enter** to start the installation operation.
9. Remove the USB stick before the system automatically restarts.
10. After the restart, log on to the system with the following access data:

    user: root

    password: Siemens_2000

11. You can modify specific settings such as monitor, resolution, etc. with "yast2".
12. Following successful installation, reset the boot sequence in the BIOS, placing the hard disk in first position, see Section 2.2.1.2, "Checking/ Changing the Boot Sequence".

2.3 Installing the OS on the FSC Primergy RX300 S4 server

2.3.1 BIOS Configuration

The Fujitsu Siemens Primergy RX300 S4 server does not feature an integrated DVD drive. Installation is therefore performed via an external USB DVD drive.

2.3.1.1 Checking/Changing the Boot Sequence

1. Activate the server.

Figure 13 Splash screen the first time the server is activated

2. Press **F2** after startup.

   The BIOS menu appears.

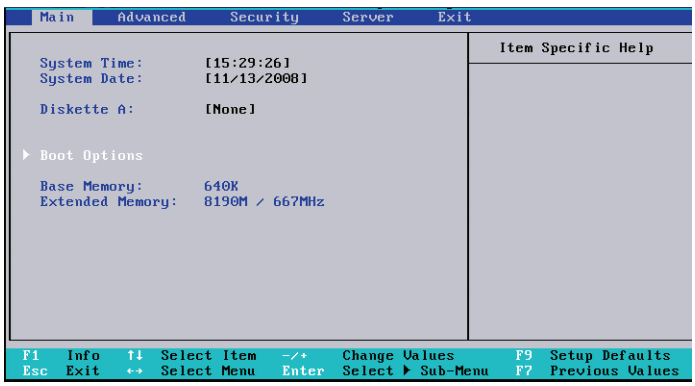

Figure 14 BIOS menu in FSC Primergy RX300 S4

3. Use the cursor keys in the main menu to select the "Boot Options" submenu.
4. Confirm with **Enter**.

   The "Boot Options" menu appears.

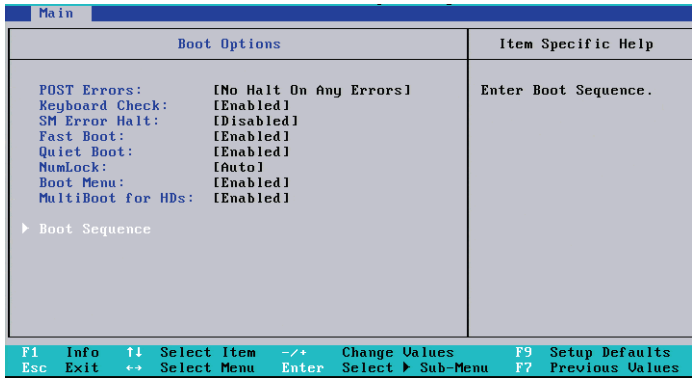

Figure 15 "Boot Options" menu

5. Select the "Boot Sequence" submenu in the "Boot Options" menu.
6. Confirm with **Enter**.

   An overview of the boot sequence is displayed.

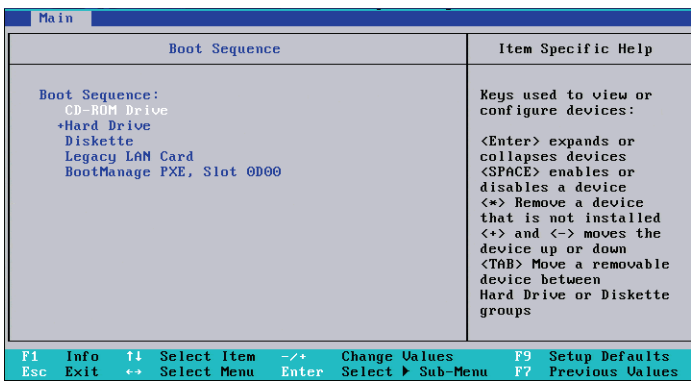

Figure 16 "Boot Sequence" menu

7. Check if the DVD or CD drive is listed first and "BootManage PXE" (PXE = Preboot eXecution Environment) is last.

   – If so, press **ESC** to quit the "Boot" menu and proceed with the next step "Activating Hardware RAID", see Section 2.3.1.2, “Activating Hardware RAID”.

   – If not, use the cursor keys to select the CD drive and press **<+>** to move it to first position.

   – Use the cursor keys to select the entry "BootManage PXE" and press <-> to move it to last position.

IMPORTANT: The `CD-ROM Drive` entry may not appear in the "Boot Sequence" menu during first installation. In this case, it is replaced by the entry `USB`.
This entry must be listed first in the boot sequence.

The RX 300 S4 server features a BootManage PXE (Preboot eXecution Environment) for automatic booting from a server. The BootManage PXE is not needed for this installation, which is why it should be listed last in the boot sequence.

8. Keep pressing **ESC** until the main menu appears.

2.3.1.2 Activating Hardware RAID

1. Use the cursor keys in the BIOS menu to select the "Advanced" menu.

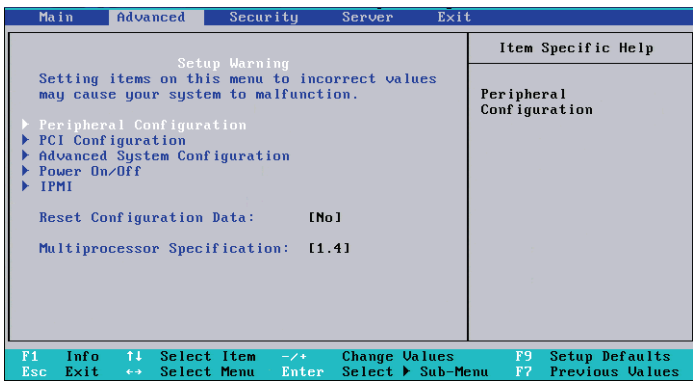

Figure 17 "Advanced" menu in the BIOS menu

2. Use the cursor keys to select the "Peripheral Configuration" submenu.
3. Confirm with **Enter**.

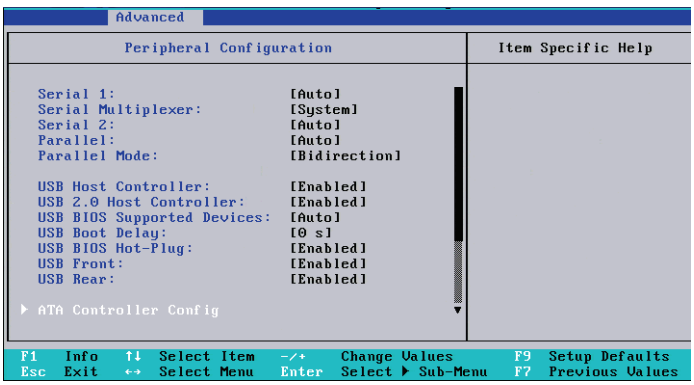

Figure 18 "Peripheral Configuration" submenu

4. Use the cursor keys to select the "ATA Controller Config" submenu.
5. Confirm with **Enter**.

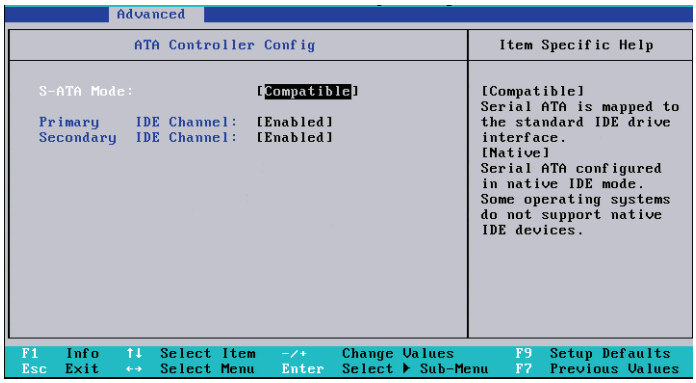

Figure 19 "ATA Controller Config" submenu

6. Use the cursor keys to select the option "S-ATA MODE".
7. Press **Enter** to open the selection menu.

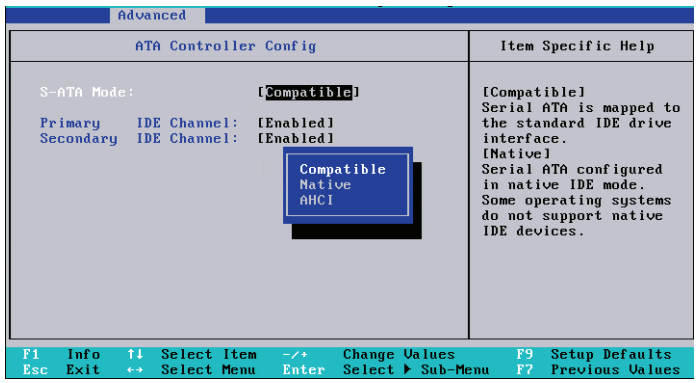

Figure 20 "ATA Controller Config" submenu with the "S-ATA Mode" selection menu

8. Press **Enter** to select "Compatible" mode.
9. Confirm with **Enter**.
10. Press **ESC** to switch back to the main menu.
11. Use the cursor keys to select the "Exit" menu.

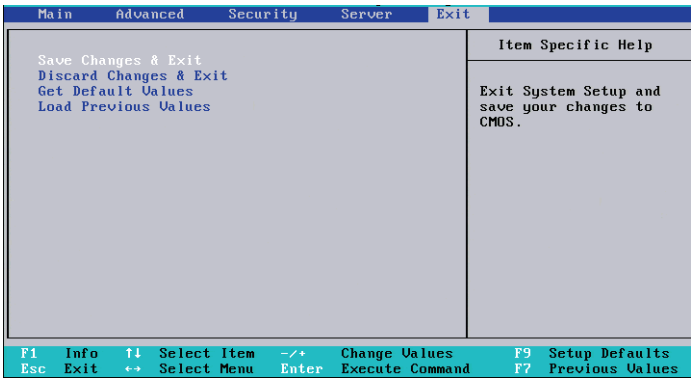

Figure 21 "Exit" menu

12. Use the cursor keys to select the "Save Changes & Exit" submenu.

2.3.2 Configuring the SAS Controller

Proceed as follows to configure the SAS controller:

1. Activate the server.
2. Press **F2** after startup.
3. Press the key combination **CTRL** + **C** immediately.

   The configuration mask appears.

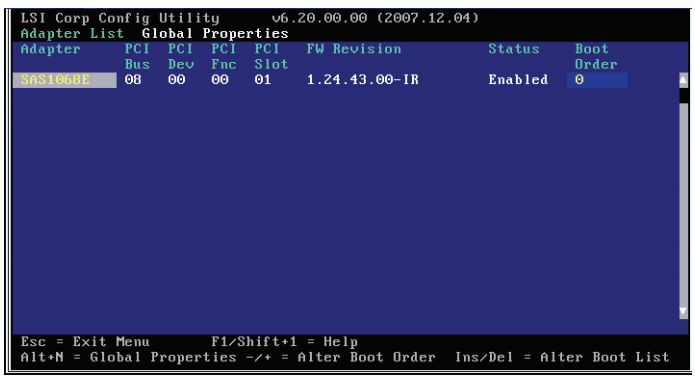

Figure 22 Config Utility

4. Use the cursor keys in the main menu to select the SAS controller.
5. Confirm with **Enter**.

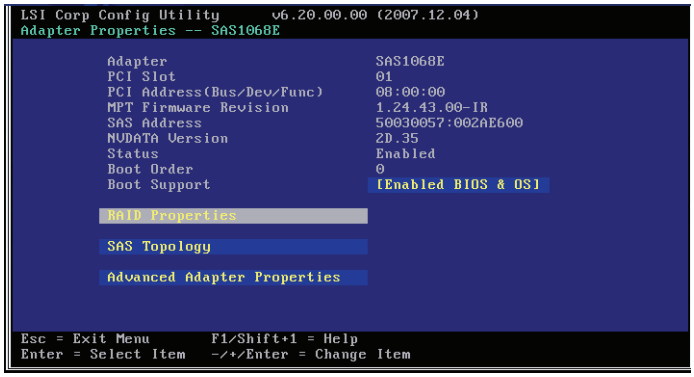

Figure 23 SAS Controller

6. Use the cursor keys to select the entry "RAID Properties".
7. Confirm with **Enter**.

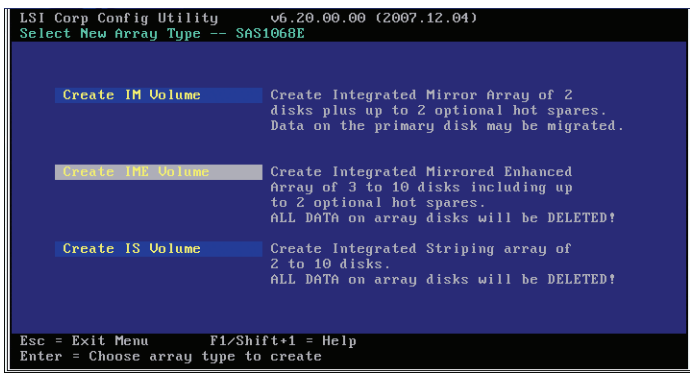

Figure 24 RAID Properties

8. Use the cursor keys to select the function "Create IME Volume".
9. Confirm with **Enter**.

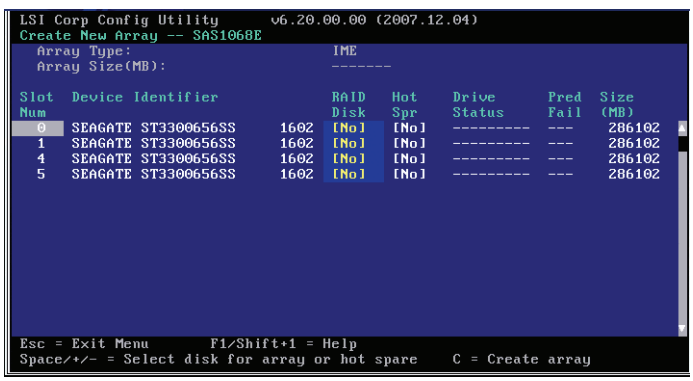

Figure 25 Create New Array

10. Add each hard disk to the array:
    - Use the cursor keys to select the entry [No] in the "RAID Disk" column.
    - Use the **Space** key to switch the entry to [Yes] for every hard disk.

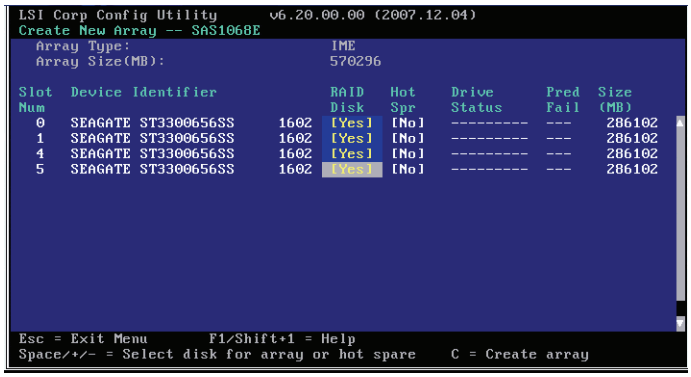

Figure 26 Create New Array

11. Press **c** to create the array.
12. Press **ESC** to switch back to the main menu.

Figure 27 Create and save new array

13. Use the cursor keys to select the entry "Save changes then exit this menu".

14. Press **ESC** to quit the menu.

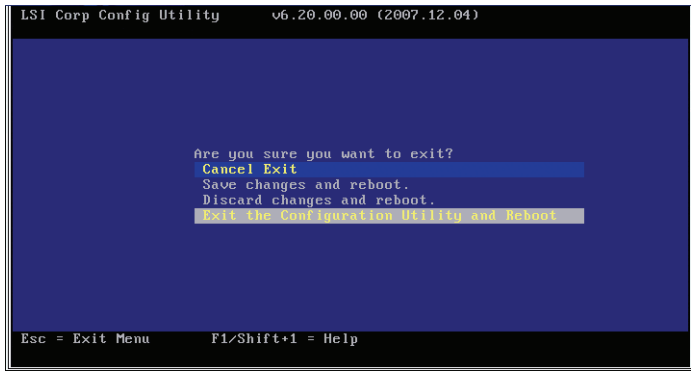

Figure 28 Exiting the configuration utility

15. Use the cursor keys to select the entry "Exit Configuration Utility and Reboot".
16. Press **ESC** to quit the menu.

2.3.3 Installing SUSE Linux Enterprise Server 10

The installation of the SUSE Linux Enterprise Server 10 distribution is fully automatic and requires no further entries or configuration.

Proceed as follows:

1. Activate the server.
2. Insert the DVD supplied with SUSE Linux Enterprise 10 Service Pack 2 into the DVD drive.
3. The SLES 10 SP 2 menu starts automatically from the DVD.

IMPORTANT: If the DVD does not start automatically, check the BIOS configuration, see Section 2.3.1, “BIOS Configuration”.

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4. Insert the configured USB stick (see Section 2.1.2, “Preparing a USB Stick”) in the USB port.
5. Select the "Installation" menu item.

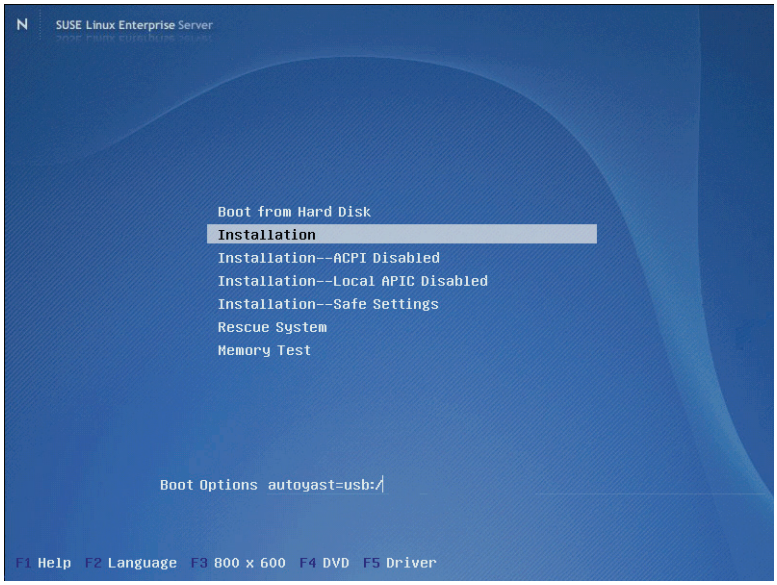

Figure 29 SLES "Installation" menu

6. Press **F2** to change the language as appropriate.
7. Enter the following command in the command prompt:

   `autoyast=usb:/`

   IMPORTANT: This entry in the command prompt requires that the `autoinst.xml` file generated specially for this computer type be located in the USB stick's `/` folder, see Section 2.1.2, "Preparing a USB Stick".

8. Press **Enter** to start the installation operation.
9. Remove the USB stick before the system automatically restarts.
10. After the restart, log on to the system with the following access data:

    user: root

    password: Siemens_2000

11. You can modify specific settings such as monitor, resolution, etc. with "yast2".
12. Following successful installation, reset the boot sequence in the BIOS, placing the hard disk in first position, see Section 2.3.1.1, "Checking/ Changing the Boot Sequence".

2.4 Installing the OS on the IBM x3250 M2 Server

The IBM server x3250 M2 only has a single hard disk. As a result, no further software or hardware RAID settings are needed.

2.4.1 BIOS Configuration

Checking/changing the boot sequence

This section describes how to check and change the boot sequence:

1. Activate the server.
2. Press **F1** after startup.

   The BIOS menu appears.

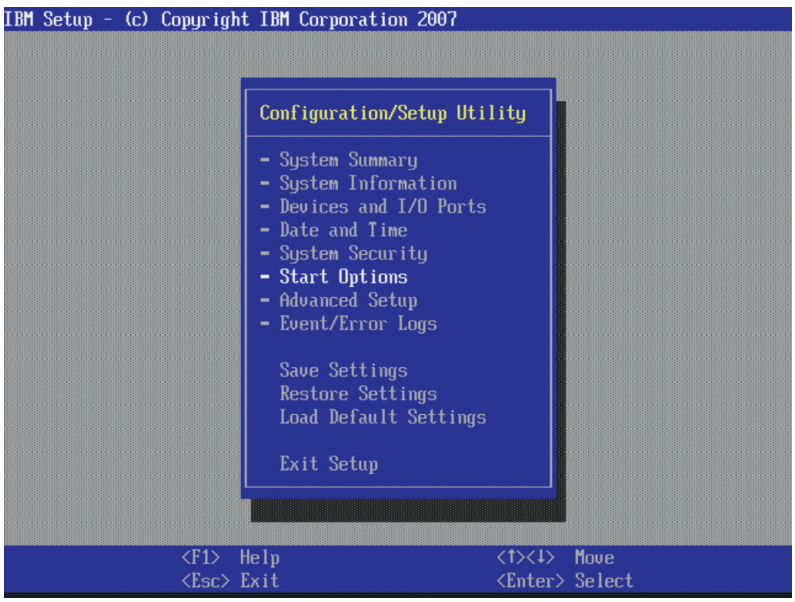

Figure 30 BIOS menu in IBM x3250 M2

3. Use the arrow keys to select the "Start Options" menu item and confirm with **Enter**.

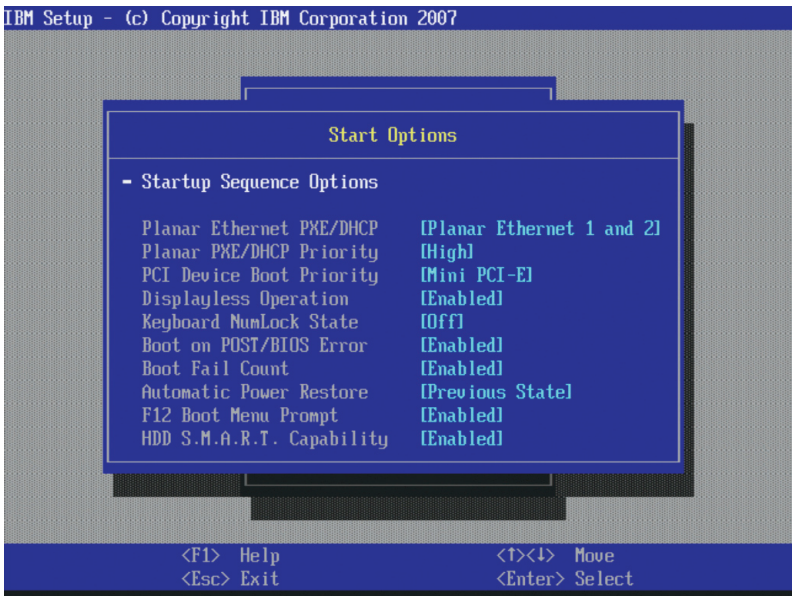

Figure 31 "Start Options" menu in the BIOS menu

4. Select "Startup Sequence Options" and confirm with **Enter**.

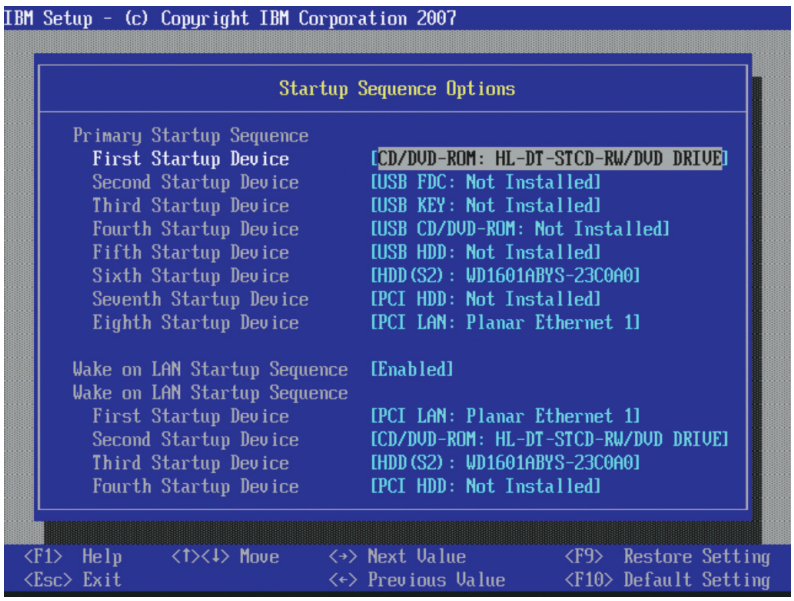

Figure 32 "Startup Sequence Options" menu in the "Start Options" menu

5. Set the entry "CD/DVD-ROM" in the list as "First Startup Device".

6. Press **ESC** to quit all menus until the "Exit Setup" mask appears.

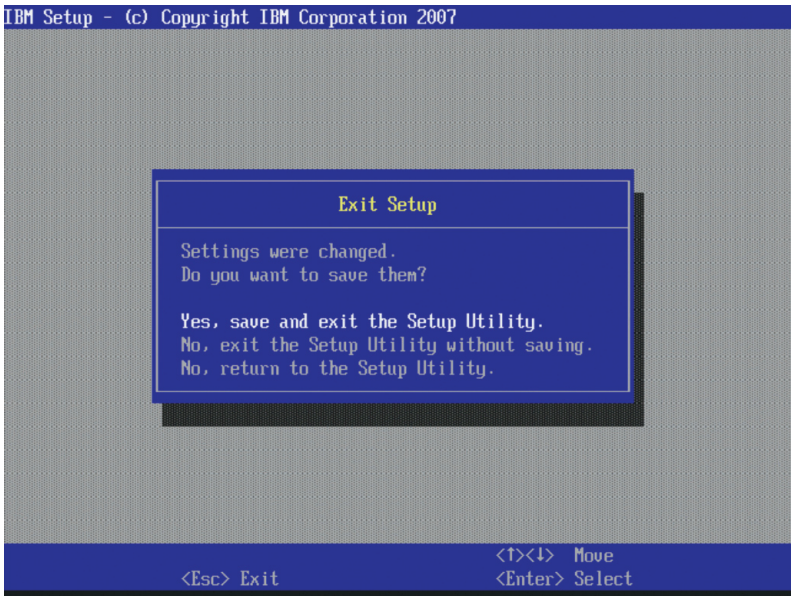

Figure 33 The BIOS system's Exit mask

7. Select the entry "Yes, save and exit the Setup Utility".
8. Press **Enter** to quit the BIOS.

2.4.2 Installing SUSE Linux Enterprise Server 10

The installation of the SUSE Linux Enterprise Server 10 distribution is fully automatic and requires no further entries or configuration.

Proceed as follows:

1. Activate the server.
2. Insert the DVD supplied with SUSE Linux Enterprise 10 Service Pack 2 into the DVD drive.
3. The SLES 10 SP 2 menu starts automatically from the DVD.

IMPORTANT: If the DVD does not start automatically, check the BIOS configuration, see Section 2.3.1, "BIOS Configuration".

---

4. Insert the configured USB stick (see Section 2.1.2, "Preparing a USB Stick") in the USB port.
5. Select the "Installation" menu item.

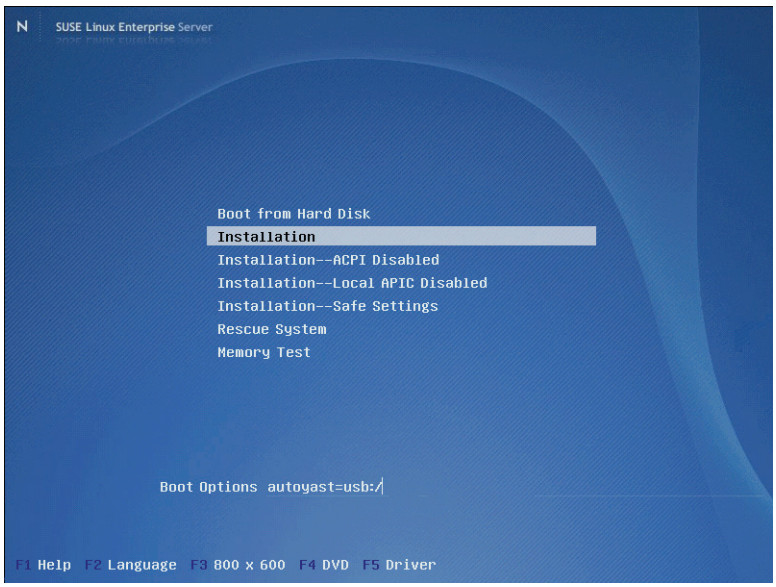

Figure 34 SLES "Installation" menu

6. Press **F2** to change the language as appropriate.
7. Enter the following command in the command prompt:

   `autoyast=usb:/`

   IMPORTANT: This entry in the command prompt requires that the `autoinst.xml` file generated specially for this computer type be located in the USB stick's `/` folder, see Section 2.1.2, "Preparing a USB Stick".

8. Press **Enter** to start the installation operation.
9. Remove the USB stick before the system automatically restarts.
10. After the restart, log on to the system with the following access data:

    user: root

    password: Siemens_2000

    IMPORTANT: The keyboard for this IBM server was set to American/English in the `autoinst.xml` file. This should be borne in mind when logging on.

11. You can modify specific settings such as monitor, resolution, etc. with "yast2".
12. Following successful installation, reset the boot sequence in the BIOS, placing the hard disk in first position, see Section 2.4.1, "Checking/changing the boot sequence".

2.5 OS on the IBM x3650 T Server

2.5.1 BIOS Configuration

2.5.1.1 Checking/Changing the Boot Sequence

This section describes how to check and change the boot sequence:

1. Activate the server.
2. Press **F2** after startup.

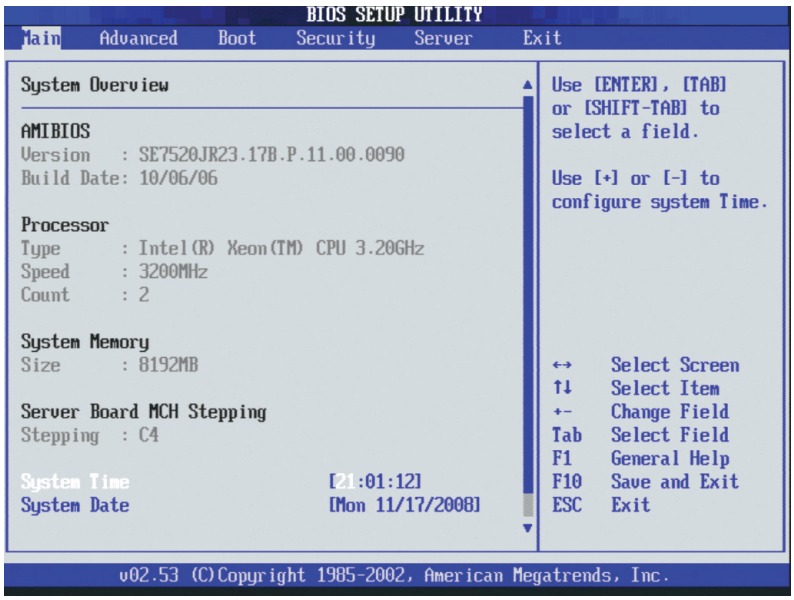

Figure 35 BIOS menu in IBM x3650 T

3. Select the "Boot" menu and confirm with **Enter**.

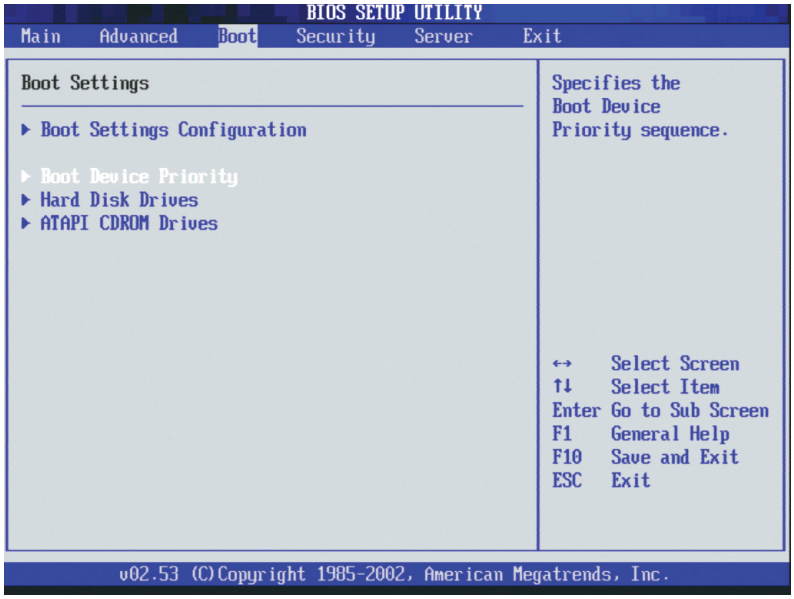

Figure 36 The BIOS system's "Boot" menu

4. Select "Startup Sequence Options" and confirm with **Enter**.

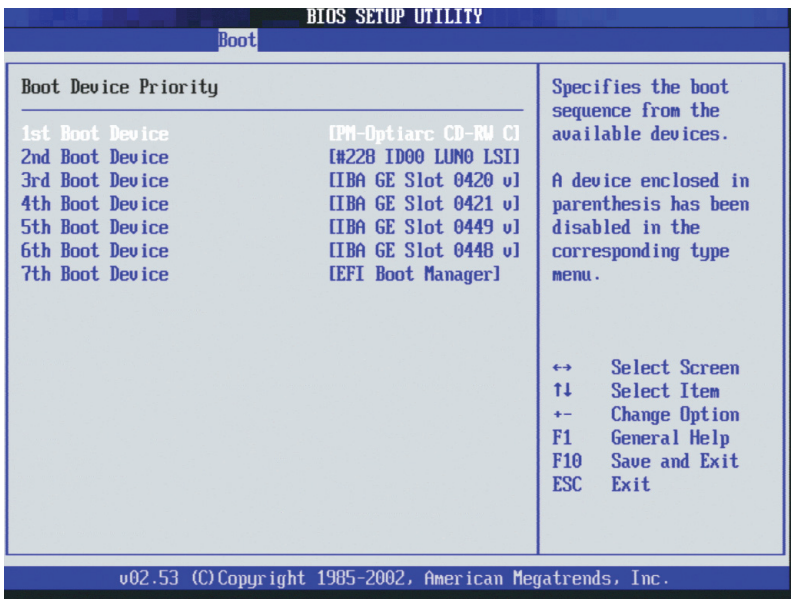

Figure 37 "Startup Sequence Options" menu

5. Set the entry "CD-RW" in the list as "1st Boot Device".
6. Press **ESC** to quit all menus, save all changes and quit the BIOS.

2.5.1.2 Configuring the Hard Disk Controller

Proceed as follows to

configure the hard disk controller:

1. Activate the server.

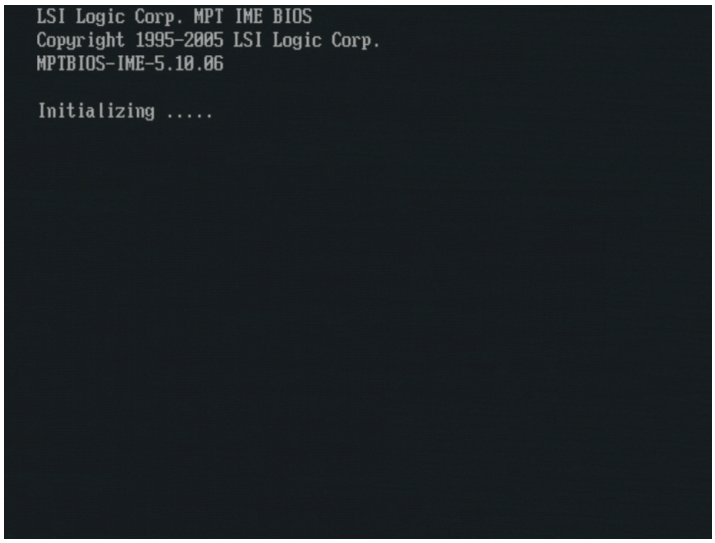

Figure 38 Loading the BIOS for the hard disk controller

2. Press **CTRL + C** when the following screen appears.

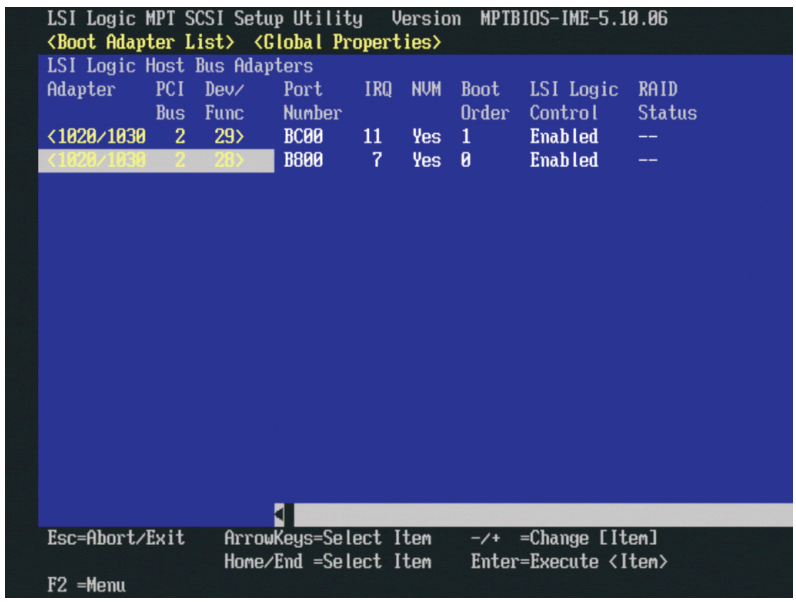

Figure 39 BIOS menu in the hard disk controller

3. Select the lower entry "28" in the "Dev / Func" column and confirm with **Enter**.

Figure 40 Hard disk controller settings

4. Select "RAID Properties" and confirm with **Enter**.

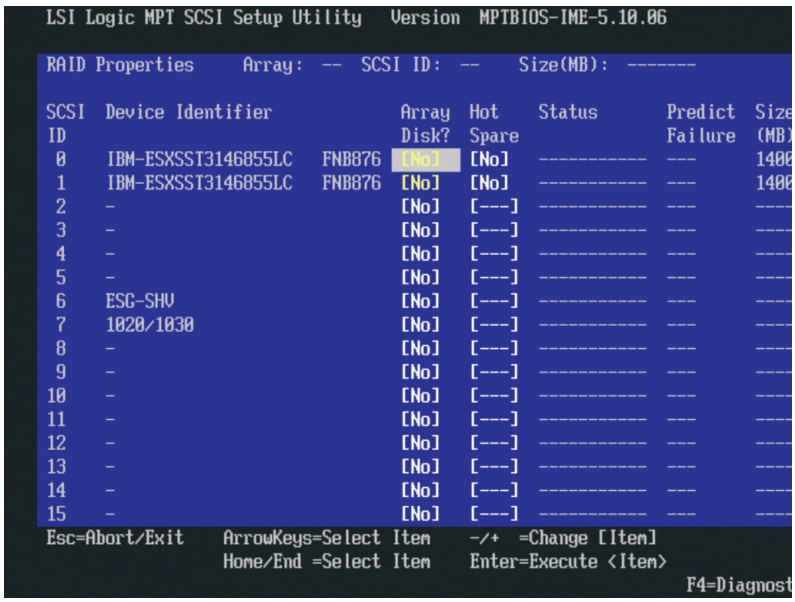

Figure 41 RAID Properties submenu

5. Add each hard disk to the array:
   - Use the cursor keys to select the entry [No] in the "Array Disk" column.
   - Use the **Space** key to switch the entry to [Yes] for every hard disk.

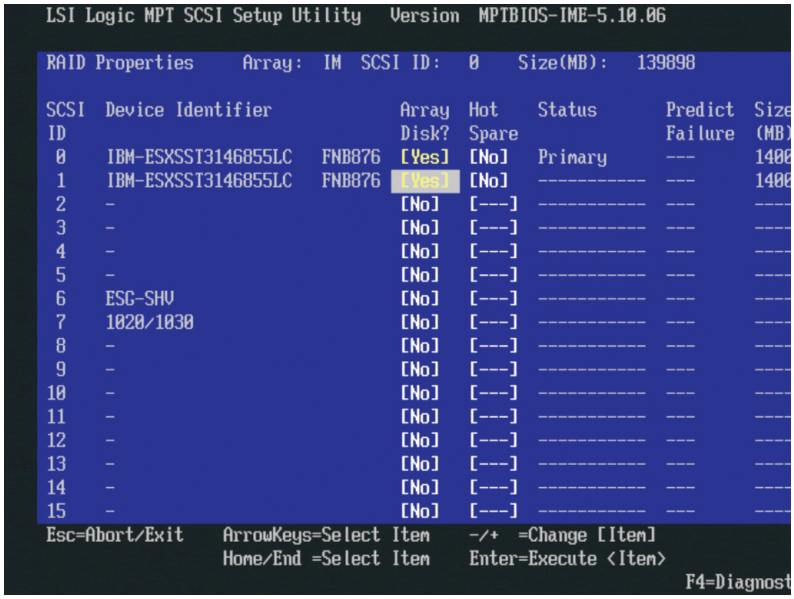

Figure 42 Every hard disk was added to the array

6. Press the **ESC** key to quit the configuration menu.

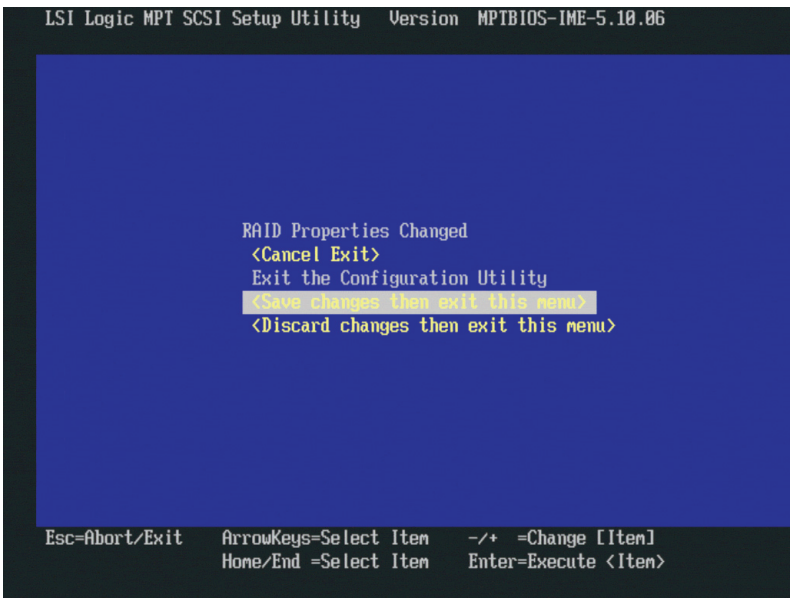

Figure 43 Exit mask

7. Select "Save changes then exit this menu" and confirm with **Enter**.

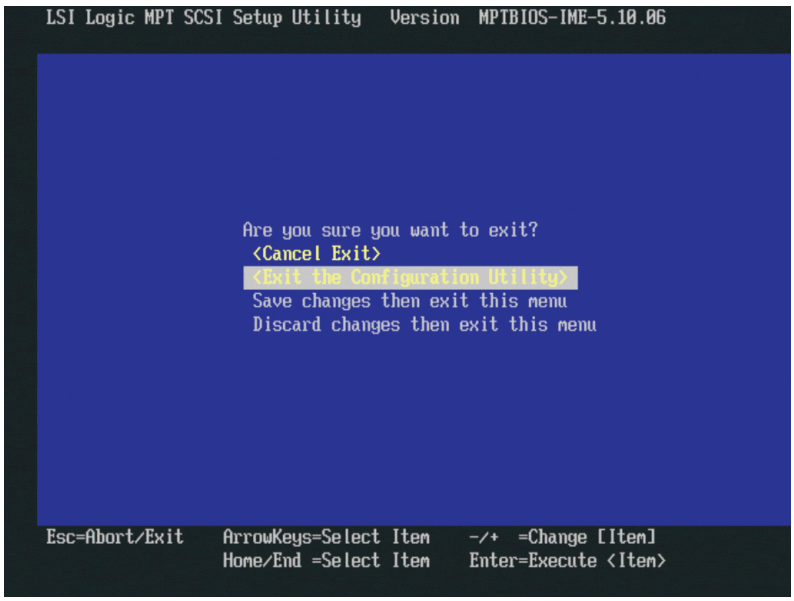

Figure 44 Prompt

8. Press the **ESC** key to quit the menu.
9. Use the arrow keys to select "Exit the Configuration Utility".
10. Confirm with **Enter**.

2.5.2 Installing SUSE Linux Enterprise Server 10

The installation of the SUSE Linux Enterprise Server 10 distribution is fully automatic and requires no further entries or configuration.

Proceed as follows:

1. Activate the server.
2. Insert the DVD supplied with SUSE Linux Enterprise 10 Service Pack 2 into the DVD drive.
3. The SLES 10 SP 2 menu starts automatically from the DVD.

IMPORTANT: If the DVD does not start automatically, check the BIOS configuration, see Section 2.3.1, “BIOS Configuration”.

---

4. Insert the configured USB stick (see Section 2.1.2, “Preparing a USB Stick”) in the USB port.
5. Select the "Installation" menu item.

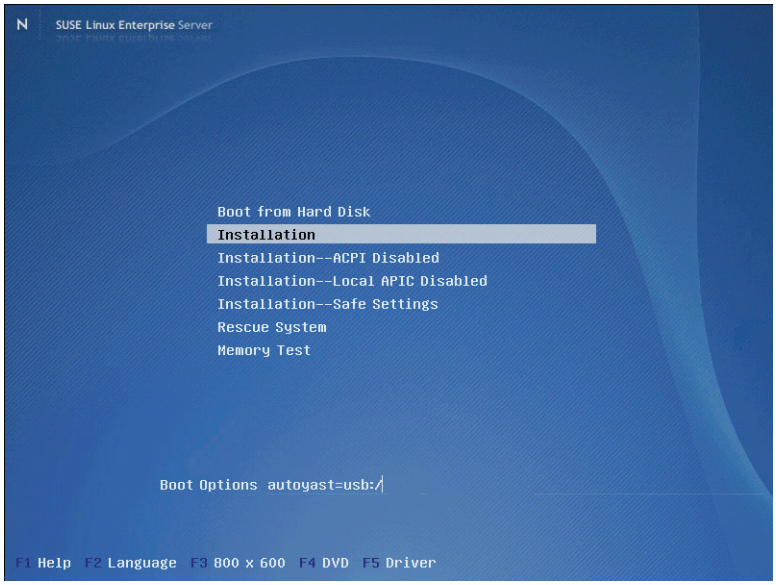

Figure 45 SLES "Installation" menu

6. Press **F2** to change the language as appropriate.
7. Enter the following command in the command prompt:

   `hwprobe=+cpuemu autoyast=usb:/`

IMPORTANT: **The screen will switch off during installation and will not switch on again if `hwprobe=+cpuemu` is omitted. This renders the system as a whole unusable.**

IMPORTANT: This entry in the command prompt requires that the `autoinst.xml` file generated specially for this computer type be located in the USB stick's `/` folder, see Section 2.1.2, "Preparing a USB Stick".

---

8. Press **Enter** to start the installation operation.
9. Remove the USB stick before the system automatically restarts.
10. After the restart, log on to the system with the following access data:

    user: root

    password: Siemens_2000

IMPORTANT: The keyboard for this IBM server was set to American/English in the `autoinst.xml` file. This should be borne in mind when logging on.

---

11. You can modify specific settings such as monitor, resolution, etc. with "yast2".
12. Following successful installation, reset the boot sequence in the BIOS, placing the hard disk in first position, see Section 2.5.1.1, “Checking/ Changing the Boot Sequence”.

3 Installing the HiPath 4000 SoftGate Application

IMPORTANT: All entries described in this section must be performed in a LINUX console (shell).

3.1 Preparing for Installation

Perform the following actions before you install the application.

1. Insert the second software DVD supplied with HiPath 4000 SoftGate in the DVD drive.
2. After you insert the DVD, a new subfolder named after it, e.g. *softGate*, is created under /media/.
3. Switch to the folder that corresponds to the DVD you inserted:

   e.g.: **cd /media/*softGate***

3.1.1 Installing the Java 6 Runtime Environment

Java 6 Runtime Environment is required for the HiPath 4000 SoftGate application. The installation file is supplied as a self-extracting and self-installing RPM package on the second software DVD supplied with HiPath 4000 SoftGate.

IMPORTANT: Java 6 Runtime Environment is also available directly from Sun Microsystems® at: http://java.sun.com/javase/downloads

Proceed as follows to install the Runtime Environment:

1. Copy the package `jre-6u<version>-linux-i586-rpm.bin` to a temporary folder, such as `/tmp`.

   IMPORTANT: `<version>` stands for the current subversion, such as: `chmod a+x jre-6u`**`7`**`-linux-i586.bin`

2. Change to this temporary directory and run the following commands:

   chmod a+x jre-6u<version>-linux-i586.bin

   ./jre-6u7-linux-i586-rpm.bin

   The license conditions are displayed.

3. Press the **Space** key to confirm license conditions.

   The final input prompt appears:

   `Do you agree to the above license terms? [yes or no]`

4. Confirm with **`[yes]`**.

   The Runtime Environment decompresses and installs automatically.

5. Use the following command to check that installation was successful:

   `java version`

   – The version displayed should match the version installed.

   – There must be an identically named subfolder under `/usr/java`, for instance
   /`usr/java/jre1.6.0_07`.

   – Similarly, the link `/usr/java/latest` must refer to this folder.

3.1.2 Installing the Customer License Agent

The Customer License Agent (CLA) must be installed on every HiPath 4000 SoftGate computer **before** the HiPath 4000 SoftGate. The installation file is supplied as a self-extracting and self-installing RPM package on the second software DVD supplied with HiPath 4000 SoftGate. CLAs are not supported in the network.
The current name of the RPM package is as follows: `cla-v1-r9.0.0.i586rpm`.

For instructions on how to install the CLA, refer to the software release note.

IMPORTANT: The Linux user ID used for installation is automatically set as the CLA admin account (in this case: "root") when installing the CLA.
PAM must be configured to enable CLA to perform user ID/password verification with Linux resources. This takes place during the installation of HiPath 4000 SoftGate. Prior to this, this CLA cannot be administered with a CLM (Customer License Manager).

---

1. Switch to the folder that corresponds to the DVD you inserted:

   e.g.: **`cd /media/`*`softGate`***

2. Run the following command:

```
rpm -iv cla-v1-r9.1.0.i586rpm
```

IMPORTANT: The file name of the rpm file depends on the CLA version. The CLA version on the DVD can be newer than the one mentioned in the documentation.

The software self-extracts and self-installs.

3. Install the license via CLM (Customer License Manager).
   - CLM can be installed on another computer in the network or on the local host after CLA installation.
   - The license can alternatively be imported by copying the license file to the CLA import directory (see CLA release note).
   - The "Locking ID" in the license file must always be HiPath 4000 SoftGate's MAC address.

IMPORTANT: The 30-day grace period begins when HiPath 4000 SoftGate is started.

IMPORTANT: If there is a CLM installed locally before the CLA is installed, then the CLA installation does not create a CLA admin account. In this case, you can either just use the local CLM (with no account) or create an account via the local CLM (for more information, refer to the CLM manual).

For more information:

- HLM homepage:

  https://intranet.enterprise.siemens.com/Content%20Sites%20V2/Corporate/SEN_Shared_Services/Sales_Enabling/HLM.aspx?sc_lang=en

- Manuals:

  https://intranet.enterprise.siemens.com/Content%20Sites%20V2/Corporate/SEN_Shared_Services/Sales_Enabling/HLM/HLM_Support/Support_Download_Area.aspx#general

- Sitemap:

  https://intranet.enterprise.siemens.com/Content%20Sites%20V2/Corporate/SEN_Shared_Services/Sales_Enabling/HLM/HLM_Support/Support_Sitemap.aspx

3.2 Installing the HiPath 4000 SoftGate Software for the First Time

IMPORTANT: The HiPath 4000 SoftGate image is provided as an RPM package on the second installation DVD (top level) under the following current name: `softgate-5.0-0.i586.rpm`

IMPORTANT: Administrator rights (root) are needed to perform installation.

Proceed as follows to install the software package:

1. Ensure that you are in the parent folder on the DVD you installed:
2. Run the following command:

   `rpm -Uhv --force softgate-5.0-0.i586.rpm`

   The software self-extracts and self-installs.

3.2.1 Configuring HiPath 4000 SoftGate

The SoftGate-specific configuration parameter must be provided after you install HiPath 4000 SoftGate RPM.

The SoftGate must also be configured at the HiPath 4000. Ideally, this is done with IPDA Wizard in HiPath 4000 Assistant.

Service personnel familiar with the configuration of access points in HiPath 4000 can perform this activity "manually" by editing the configuration file `initialcfg.xml` and sending the AMO batch to the HiPath 4000.

Before the administrator takes on the task of configuring the SoftGate, he needs to decide which ethernet port will be used and which designation it has in Linux e.g eth0, eth1,...etc.

The administrator has to make sure that this LAN cable is attached to the right port. This can be verified by the status of the port. The status of the port can be checked with **YAST > Hardware > Hardware Information > Network Interface > Ethernet Network Interface > Recources -> Link**.

If there was a previous LAN configuration on this port, then the administrator has 2 choices:

1. Delete this configuration in **YAST > Network Devices > Network Card > Next** (Traditional method with ifup) **> Delete** (the choosen network card) **> Finish**

or

2. change the parameter **InitConfigLan** to **1** by editing the configuration file `initialcfg.xml`. This will delete the existing configuration and replace it with the new SoftGate configuration.

After the successful installation of the LAN configuration, the SoftGate sets the parameter **InitConfigLan** to **0**.

IMPORTANT: DHCP is not allowed to be configured on the Ethernet interface which SoftGate will be using.

The following section describes the IPDA Wizard procedure and serves as reference information on the structure of the configuration file.

3.2.1.1 Adding/Configuring HiPath 4000 SoftGate with the IPDA Wizard

The procedure for configuring HiPath 4000 SoftGate applications is the same as the procedure for configuring a hardware access point. The operator control sequence starts with a prompt, querying the access point type.

1. Activate IPDA Wizard in HiPath 4000 Assistant.

   Configuration Management > IPDA Assistant

2. Select **Access Point Configuration**.

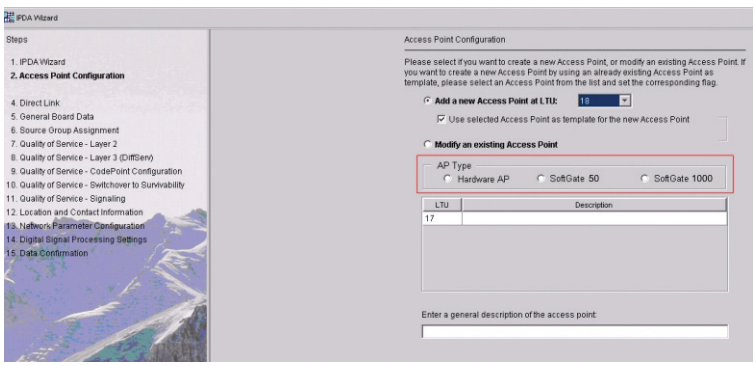

Figure 46 IPDA Wizard: Access Point Configuration

3. Select the radio button for the HiPath 4000 SoftGate you want the configure (**HiPath 4000 SoftGate 50** or **HiPath 4000 SoftGate 1000**).

4. Configure IP address of the SoftGate server

   Network Link: Enter the IP address of the SoftGate server in the field **Network IP Address of the Access Point**.

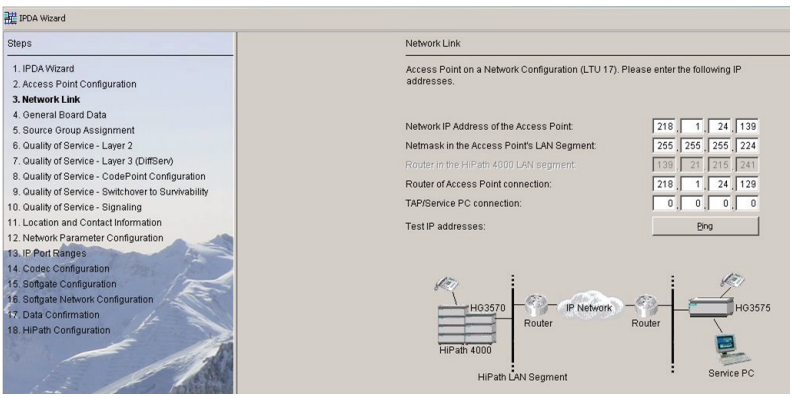

Figure 47 IP address configuration - network link

Direct Link: Enter the IP address of the SoftGate server in the field **Internal IP address of the Access Point**.

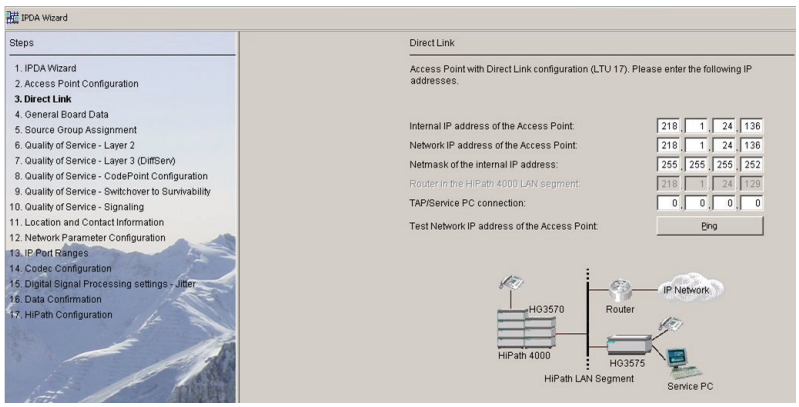

Figure 48 IP address configuration - direct link

5. Follow the IPDA Wizard prompts and proceed with the ensuing configuration steps.

   a) Example for Softgate network configuration with one LAN interface (**SoftGate Network Configuration**)

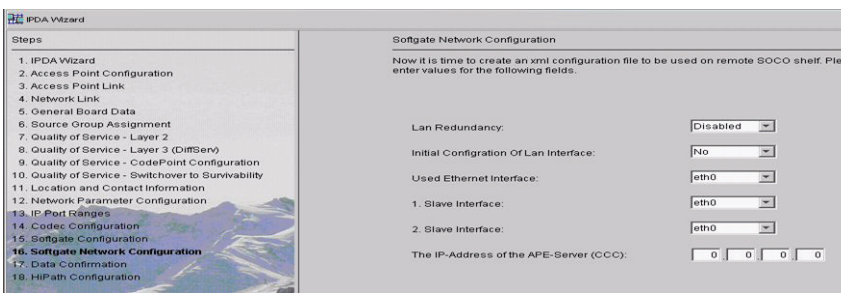

Figure 49 IPDA Wizzard - SoftGate Network Configuration without LAN redundancy

b) Example for Softgate network configuration with LAN redundancy (**SoftGate Network Configuration**)

For more information on LAN redundancy please refer to Chapter 9, “LAN Redundancy”.

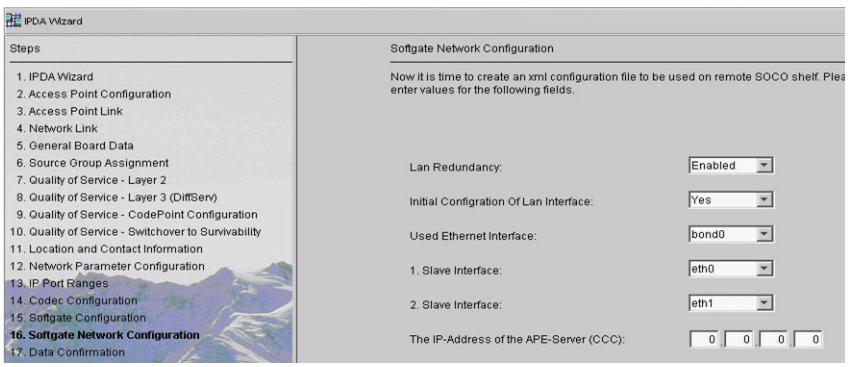

Figure 50 IPDA Wizzard - SoftGate Network Configuration with LAN redundancy

6. The configuration file is transferred once you have finished the configuration with IPDA Wizard.

3.2.1.2 Editing the HiPath 4000 SoftGate Configuration File

IMPORTANT: The manual configuration of the SoftGate configuration file may only be performed by service personnel who are familiar with access-point configuration. This is because changing the configuration file means modifying the AMO batch sent to the HiPath 4000. Use IPDA Wizard in HiPath 4000 Assistant to install and configure HiPath 4000 SoftGate.

1. A template for the configuration file is available in the following path:

   `/opt/soco/config/templates/initialcfg.xml`

Template for the configuration file (initialcfg.xml)

```
<!-- initialcfg.xml -->
<softGateInitialConfiguration>

<!-- general settings -->
<Property name="lanRedundancy"  value="1" />
<Property name="initConfigLAN"  value="1" />
<Property name="lanInterface"   value="bond0" />
<Property name="slave0"         value="eth0" />
```

```
<Property name="slave1"          value="eth1" />
<Property name="ethLinkMode"     value="0" />

<!-- NCUI base address (payload/only for IPDA direct link) -->
<Property name="ipAddrEth"       value="198.16.16.150" />
<Property name="netmaskEth"      value="255.255.255.0" />
<Property name="mtuSizeEth"      value="1500" />
<Property name="vlanTag"         value="0" />
<Property name="vlanId"          value="0" />
<Property name="defaultGateway" value="22.1.1.1" />

<!-- NCUI signaling address (for direct link, identical with
NCUI base address for IPDA networking) -->
<Property name="ipAddrSig"       value="22.1.1.18" />
<Property name="netmaskSig"      value="null" />
<Property name="serverPortSig"   value="4000" />
<Property name="tosLan"          value="72" />
<Property name="ipAddrCCA"       value="198.16.16.130" />
<Property name="ipAddrCCB"       value="198.16.16.131" />
<Property name="ipAddrCCC"       value="0.0.0.0" />
</softGateInitialConfiguration>
```

2. Use an editor of your choice to change the `initialcfg.xml` file (see also Table 2, “Assigning initialcfg.xlm parameters to AMO parameters”) and then copy it to the folder:

   `/opt/soco/config`

Assigning configuration parameters to AMO parameters

Description	AMO	AMO parameter	XML name	Example
LAN Redundancy disabled	-	-	lanRedundancy	0
Used Ethernet Interface	-	-	lanInterface	eth0
LAN Redundancy enabled	-	-	lanRedundancy	1
Used Ethernet Interface	-	-	lanInterface	bond0
1. Slave Interface	-	-	slave0	eth0

Table 2 Assigning initialcfg.xlm parameters to AMO parameters

Description	AMO	AMO parameter	XML name	Example
2. Slave Interface	-	-	slave1	eth1
LAN interface configuration mode	-	-	initConfigLAN	0
IP address selected ethernet Interface	NL: APRT DL: UCSU	NL: APIPADR DL: LSRTADR	ipAddrEth	10.44.1.50
Netmask selected ethernet Interface	NL: APRT DL: UCSU	NL: NETMASK DL: NETMASK	netmaskEth	255.255.255.0
MTU Size selected ethernet Interface	-	-	mtuSizeEth	1500
enable/disable VLAN-tagging (signaling connection)	STMIB (MTYP=NCUI2)	VLAN	vlanTag	0
VLAN-ID value (signaling connection)	STMIB (MTYP=NCUI2)	VLANID	vlanId	0
Bitrate and mode of selected ethernet interface	STMIB (MTYP=NCUI2)	BITRATE	ethLinkMode	36
Default Gateway of SoftGate	UCSU	APRTADR	defaultGateway	10.44.1.100
IP Address Signaling	NL/DL: APRT	NL/DL: APIPADR	ipAddrSig	10.44.200.5
Netmask Signaling connection	NL/DL: APRT	NL/DL: NETMASK	netmaskSig	255.255.255.240
Server Port Signaling Connection	-	-	serverPortSig	4000
	STMIB (MTYP=NCUI2)	TOSLAN	tosLan	104
IP address CCA	SIPCO	CCAADR	ipAddrCCA	10.44.1.11
IP address CCB	SIPCO	CCBADR	ipAddrCCB	0.0.0.0
APE IP address CCC			ipAddrCCC	0.0.0.0

Table 2 Assigning initialcfg.xlm parameters to AMO parameters

Description of the network configuration parameters and the meaning of their values

Description	XML name	Value	Meaning
LAN Redundancy	lanRedundancy	0	LAN Redundancy disabled
		1	LAN Redundancy enabled
Used Ethernet Interface	lanInterface	eth0 til eth<n>	Designated name of one network interface
		bond0	Name of the redundant network interface (the used MAC address will be the MAC address of the first slave interface slave0)
1. Slave Interface	slave0	eth0 til eth<n>	Name of the first network interface for building a redundant network interface.
2. Slave Interface	slave1	eth0 til eth<n>	Name of the second network interface for building a redundant network interface.
LAN interface configuration mode	initConfigLAN	0	The existing lan interface configuration will be used and only changes are made if needed.
		1	This will delete the existing LAN interface configuration and replace it with the SoftGate configuration. (e.g. used for changing into redundancy mode and back) After the successful installation of the LAN configuration, the SoftGate sets the parameter **InitConfigLAN** to **0**.

Table 3 Network configuration parameters - Description and meaning of their values

3.3 Starting the SoftGate Program for the First Time

The SoftGate program runs in the background as a Linux daemon.

To start the SoftGate daemon for the first time after installation, run the following command:

```
/etc/init.d/socod start
```

IMPORTANT: The SoftGate daemon is entered as a service during RPM installation of the SoftGate package.
This ensures that the SoftGate daemon starts after every Linux startup.

3.4 Stopping the SoftGate Program

To stop the SoftGate daemon, run the following command:

```
cd /etc/init.d
./socod stop
```

4 HiPath 4000 SoftGate Upgrade

The functionalities of both the virtual HG 3575 and the virtual HG3500 (HFA/SIP) are contained in the HiPath 4000 SoftGate image. All functionalities are therefore always upgraded at the same time in a HiPath 4000 SoftGate upgrade.

The upgrade is performed either via **LW Update Manager** (see Section 4.1, “Upgrade via LW Update Manager”) or via the board’s local **WBM** application (see Section 4.2, “Upgrade via the Local WBM in HiPath 4000 SoftGate”).

4.1 Upgrade via LW Update Manager

The HiPath 4000 SoftGate image can be transferred either with the LW Update Manager or with the PCHI tool on the RMX hard disk.

- HiPath 4000 SoftGate image (RPM format with OMF 386 header):

  `softgate-5.0-0.i586.rpm.abs`

- Directory on the RMX hard disk:

  `:A1H1E:/APSP/LTG/LGA0/`

  under:

  `PZKSGW50`

LW Update Manager

1. Start the file transfer operation with the Assistant’s Loadware Update Manager:

   HiPath 4000 Assistant V5 > Expert Mode > LW Update Manager

Figure 51 HiPath 4000 Assistant: LW Upgrade Manager

2. Select the HiPath 4000 SoftGate that you want to upgrade from the list of boards.

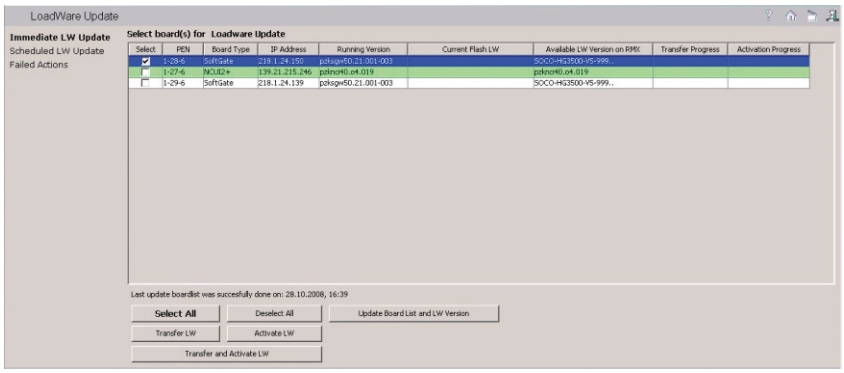

Figure 52 HiPath 4000 Assistant: Loadware Update

3. The following options are now available:

   - **Transfer LW** button: The loadware is transferred but not activated. You can press the **Activate LW** button either now or later to activate the loadware on the required boards.
   - **Transfer and Activate LW** button: The loadware is transferred and activated.

IMPORTANT: Please note that the board is briefly removed from service when the loadware is being activated.

4.2 Upgrade via the Local WBM in HiPath 4000 SoftGate

1. Activate the local Web-Based Management application.

   To do this, select **HiPath 4000 Assistant V5 > Expert Mode > Web-Based Management for HG35xx** or activate the application in the browser with the IP address of HiPath 4000 SoftGate, e.g. https://218.1.24.139.

Figure 53 WBM - Login

2. Log on with user: TRM, HP4k-DEVEL, ... and the corresponding password.
3. Transfer the HiPath 4000 SoftGate image with an OMF 386 header:

`softgate-5.0-0.i586.rpm.abs`

Select the **Software Update** menu.

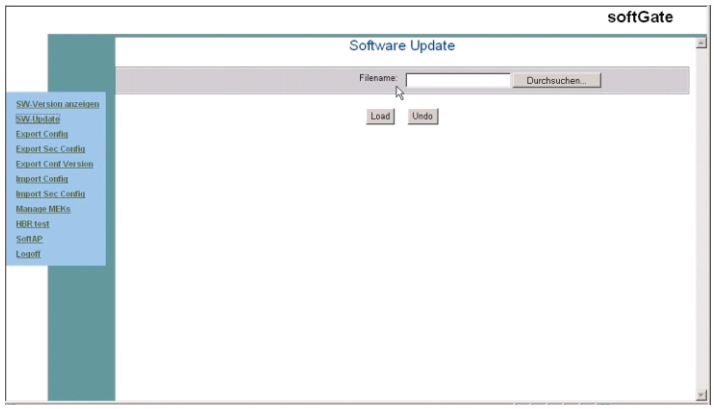

Figure 54 WBM - Software Update

4. Click the **Browse** button to enter the HiPath 4000 SoftGate image in the "Filename" field.

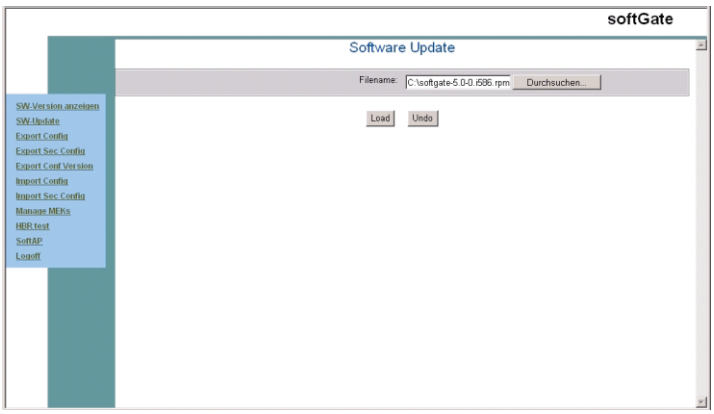

Figure 55 WBM - Software Update: Entering a file

5. Press **Load** to load the HiPath 4000 SoftGate image.

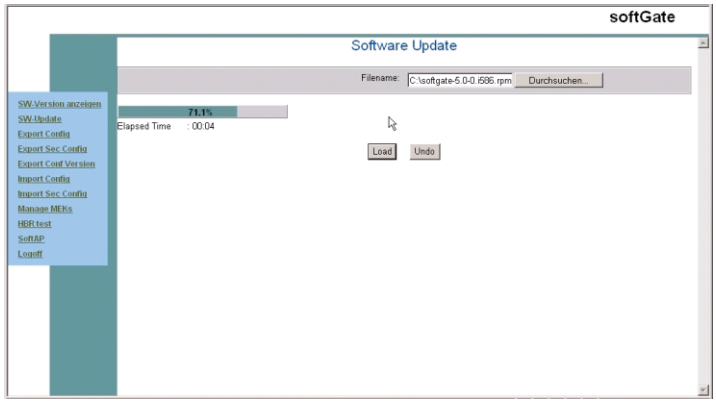

Figure 56 WBM - Software Update: Loading a file

6. Press the **Activate** button to activate the software.

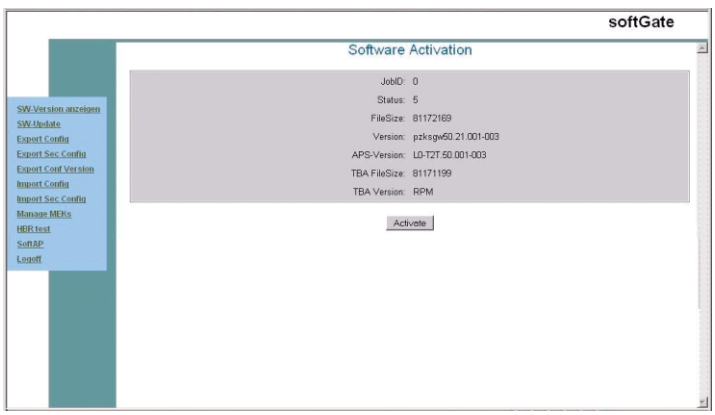

Figure 57 WBM - Software Activation

5 Mediatrix Gateways - Configuration Notes

This section describes, using screenshots, how to configure specific Mediatrix gateway parameters based on a specific application scenario.

IMPORTANT: For information on how to configure gateways for the first time with the IP address, etc., refer to the documentation supplied with the Mediatrix gateways. The screenshots displayed depict the Mediatrix gateway's web interface.
More information is available directly from Mediatrix at:
http://www.mediatrix.com or
https://support.mediatrix.com/DownloadPlus/Download.asp

5.1 ISDN (S0) Subscriber and Trunking (Mediatrix 44xx)

A Mediatrix 4400 gateway can simultaneously support both an ISDN subscriber line and a line to the private network.

5.1.1 Requirements

- Every station at a Mediatrix gateway must be configured as an SIP subscriber in the HiPath 4000.
- Mediatrix 44xx gateways do not support telephony features for ISDN phones.
- Refreshing is not supported for ISDN phone displays.
- ISDN connections are only supported if Mediatrix 44xx gateways are used. These are:
  - MXGW 4402 and
  - MXGW 4404

  with two or four BRI ports (Basic Rate Interface = ISDN S0).
- ISDN data connections are only supported for stations or trunks that are configured on the same HiPath 4000 SoftGate.
- All gateways should be synchronized with a common clock. For instance, the gateways receive the clock pulse via a direct connection to the public network or via an internal ISDN S0 line (layer-0 connection) to another synchronized gateway, as shown in the sample scenario.
- Subscriber calls (i.e. for incoming calls from Mediatrix gateway subscribers) always have to supply their calling number (internal/extension number).

– If the ISDN terminal does not do this, calling number insertion can also be configured in the Mediatrix gateway as required. A configuration of this kind is possible in the Mediatrix gateway (e.g. based on the ISDN port).

– The connection of multiple ISDN subscribers via an ISDN bus to a Mediatrix gateway ISDN port may not be straightforward – unless a distinction can be made between the subscribers based on call type (bearer type).

5.1.2 Sample Scenario with Two Mediatrix 4402 Gateways

In this sample scenario, one Mediatrix gateway is used for subscribers, while the other is used for trunking to the public network.

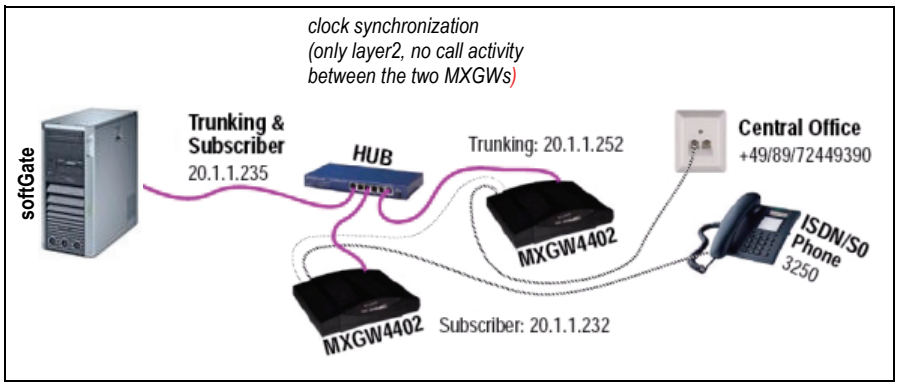

Figure 58 HiPath 4000 SoftGate scenario with two Mediatrix gateways

This type of scenario is an alternative to the configuration of subscribers and trunking within a single gateway. It avoids the problems of shared gateway usage. The disadvantage of this scenario is that it always needs two gateways, even if there is only one subscriber and one trunk (trunk group). Each gateway has an additional PRI port dedicated to clock synchronization.

5.1.3 Configuration Notes

The figures in this section depict the configuration in the sample scenario.

IMPORTANT: For more information on activating the web interface and on the individual masks and parameters, refer to the documentation provided with the relevant Mediatrix gateway.

5.1.3.1 Subscriber Gateway

Overview

- Network -> Host
- Network -> Interfaces
- SIP -> Gateways
- SIP -> Servers
- SIP -> Registrations
- ISDN -> Basic Rate Interface
- Telephony -> Call Routing Config

Network -> Host

Set **Static** for the host domain, the default gateway, the DNS source and the SNTP source.

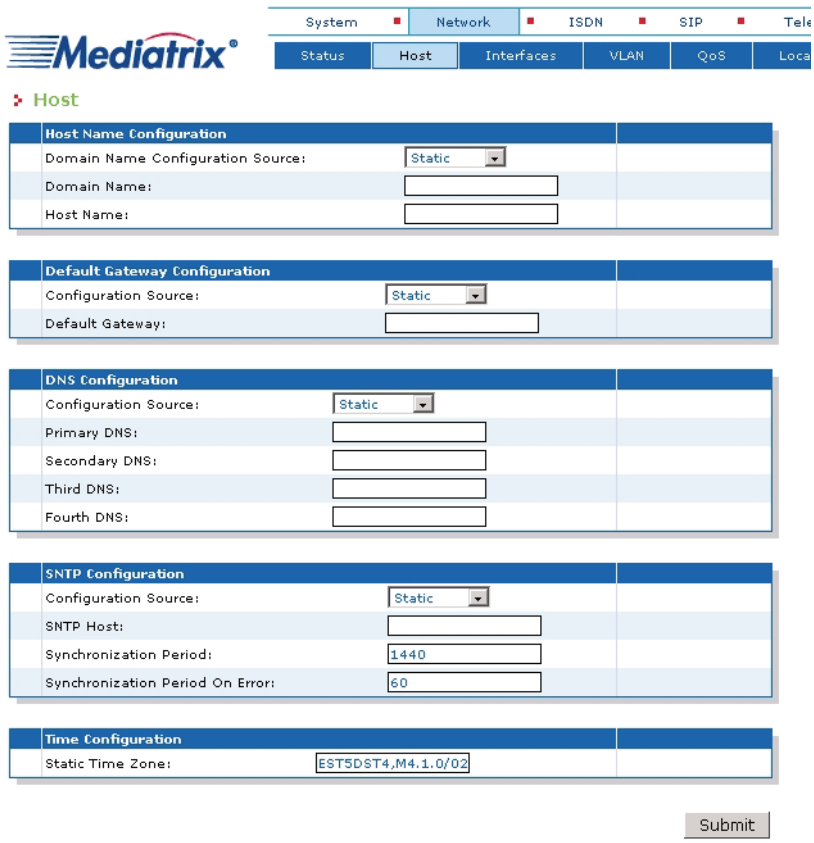

Figure 59 Mediatrix 44xx Gateway (Subs.) - Network -> Host

Network -> Interfaces

The network interfaces should be configured with unique LAN IP addresses. A Mediatrix 4400 gateway can support up to 48 network interfaces.

IMPORTANT: Care must be taken when assigning IP addresses to ensure that they can be reached by HiPath 4000 SoftGate.

A HiPath 4000 SoftGate (or vHG3500)can only operate one network interface in the Mediatrix gateway. It may be necessary to configure subscriber and trunking scenarios over a network interface.

Configure a "subscriber interface" in this mask.

IMPORTANT: The name "Subscriber" can be chosen at random and does not yet define usage.

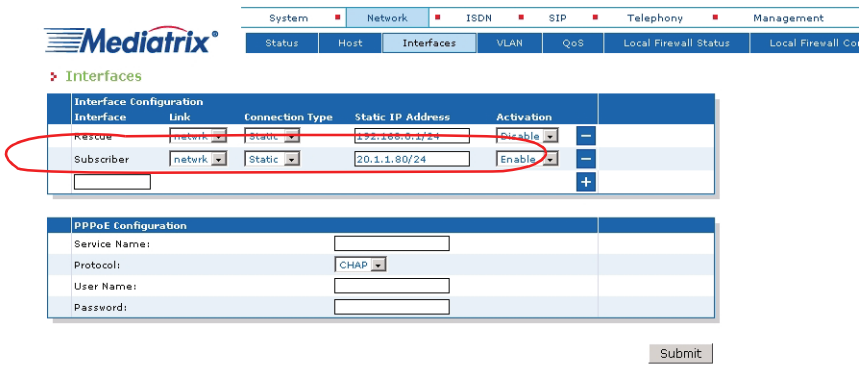

Figure 60 Mediatrix 44xx Gateway (Subs.) - Network -> Interfaces

SIP -> Gateways

Select the value **Subscriber** in the "SIP Gateway Configuration" field.

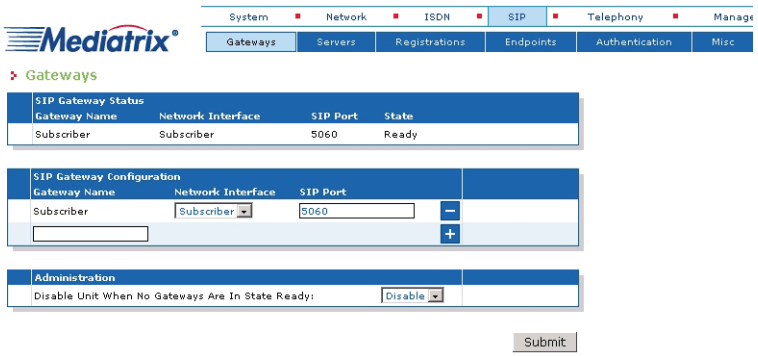

Figure 61 Mediatrix 44xx Gateway (Subs.) - SIP -> Gateways

SIP -> Servers

Enter values for "Registrar Host " and "Proxy Host" in the "SIP Default Servers" field.

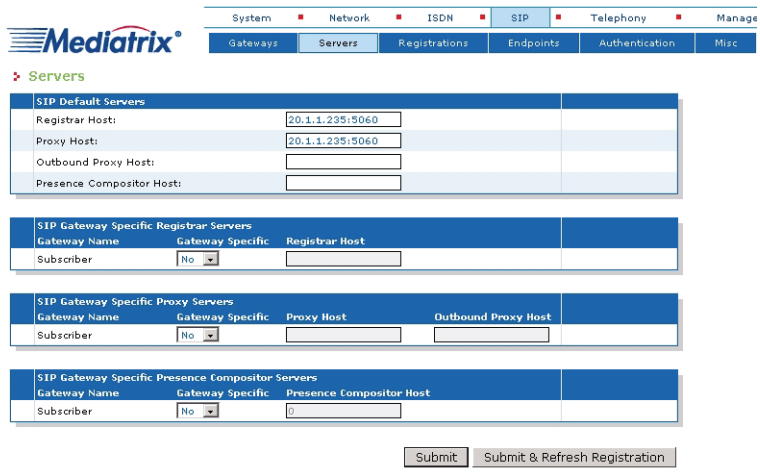

Figure 62 Mediatrix 44xx Gateway (Subs.) - SIP -> Servers

SIP -> Registrations

Enter the phone numbers of the ISDN stations for registration at the SIP server. Add the subscriber terminals and select the SoftGate subscriber. The "User Name" field contains the telephone number.

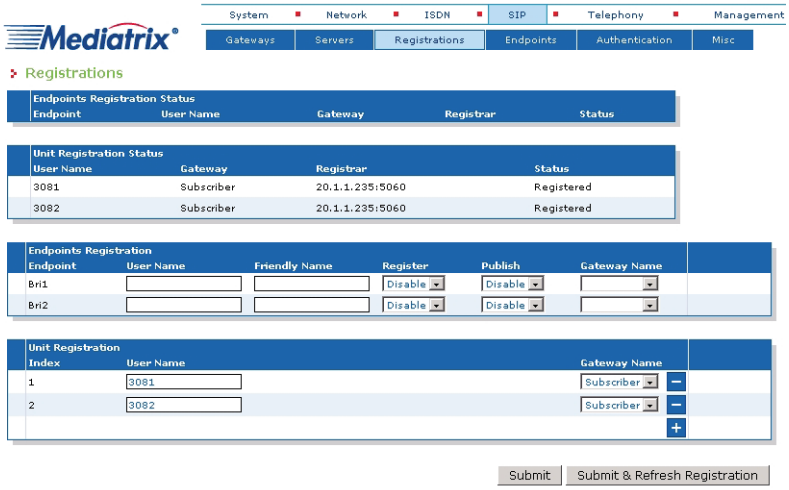

Figure 63 Mediatrix 44xx Gateway (Subs.) - SIP -> Registrations

ISDN -> Basic Rate Interface

Configure the ISDN parameters for every interface that should be used.

- Endpoint Type: **NT**
- Connection Type: e.g.: **Point To Multipoint**

In a subscriber-only scenario, the other interfaces are generally identical to the first one. "Exclusive B-Channel Selection" is usually enabled.

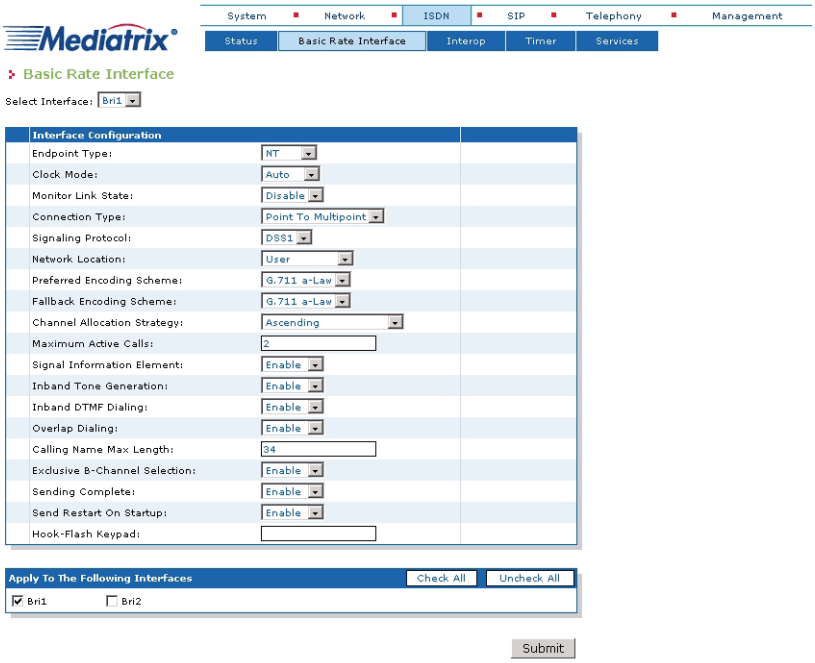

Figure 64 Mediatrix 44xx Gateway (Subs.) - ISDN -> Basic Rate Interface

Telephony -> Call Routing Config

Use this mask to define how calls from/to the VoIP network should be routed to the ISDN telephones.

The example shows a configuration with two stations (3081 and 3082), which are both connected over an ISDN bus to the gateway's BRI2. This example assumes that both subscribers supply their station numbers. This example shows a number of exceptional configurations for CLIR that are usually only used very rarely. The Mediatrix gateway also has a default selection for using CLIR.

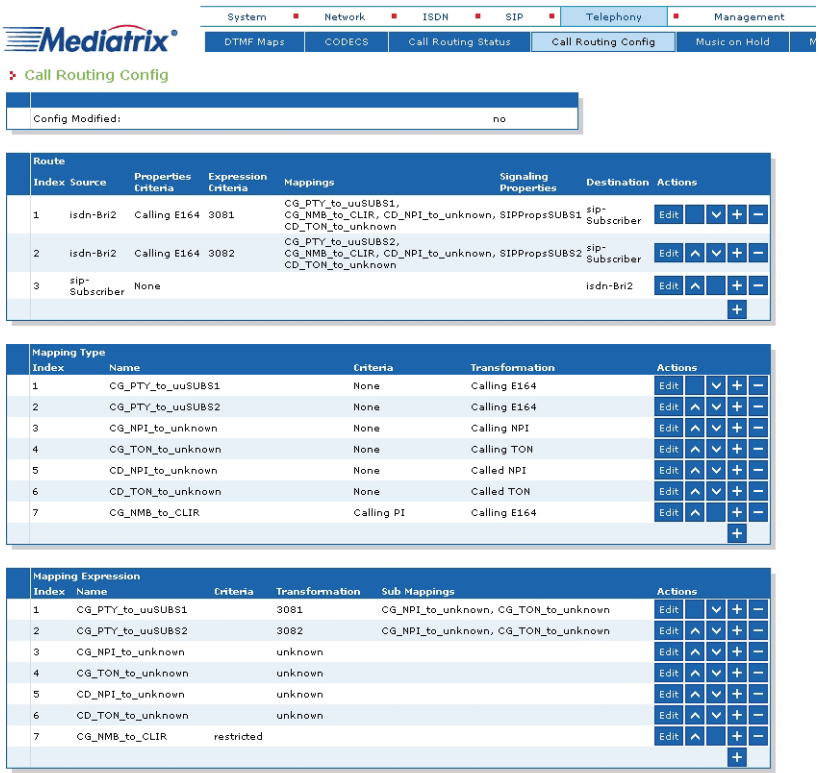

Figure 65 Mediatrix 44xx Gateway (Subs.) - Telephony -> Call Routing Config 1

The "RequestLineWithCdPtyNmb" configuration may be needed in certain situations for SIP protocol synchronization between the Mediatrix gateway and HiPath 4000 SoftGate.

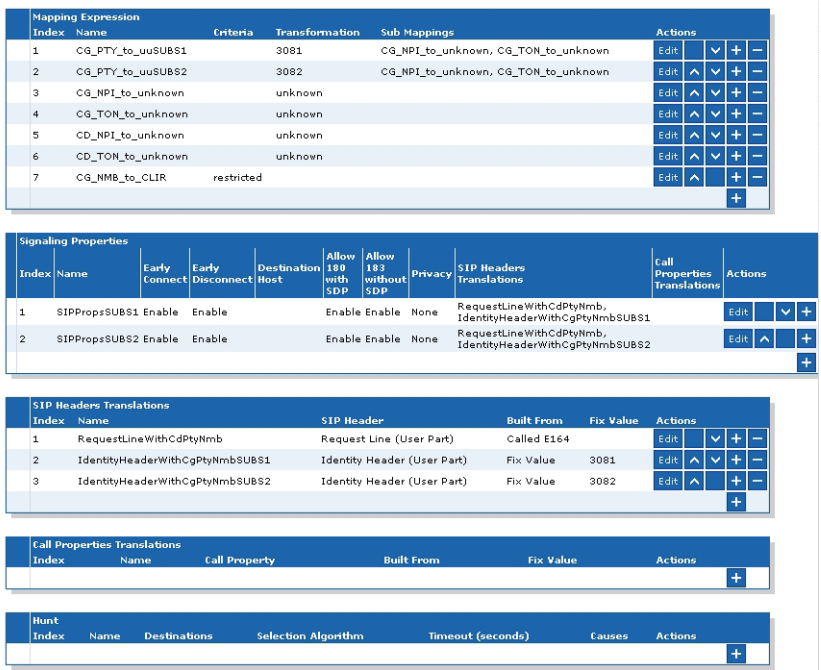

Figure 66 Mediatrix 44xx Gateway (Subs.) - Telephony -> Call Routing Config 2

5.1.3.2 Trunking Gateway

Overview

- Network -> Host
- Network -> Interfaces
- SIP -> Gateways
- SIP -> Servers
- SIP -> Registrations
- ISDN -> Basic Rate Interface
- Telephony -> Call Routing Config

Network -> Host

Set "Static" for the host domain, the default gateway, the DNS source and the SNTP source.

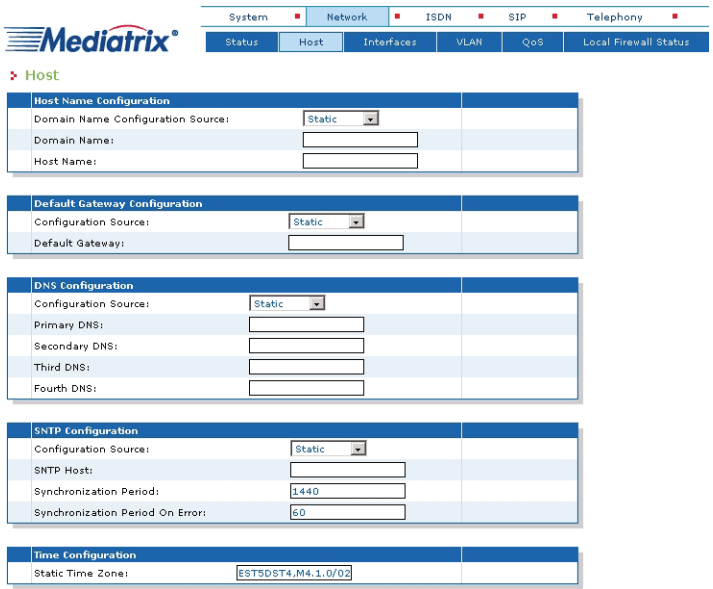

Figure 67 Mediatrix 44xx Gateway (Trunking) - Network -> Host

Network -> Interfaces

The network interfaces should be configured with unique LAN IP addresses. Theoretically, a Mediatrix 4400 gateway can support up to 48 network interfaces.

IMPORTANT: Care must be taken when assigning IP addresses to ensure that they can be reached by HiPath 4000 SoftGate.

A HiPath 4000 SoftGate (or vHG3500)can only operate one network interface in the Mediatrix gateway. It may be necessary to configure subscriber and trunking scenarios over a network interface.

Configure a "trunking interface" in this mask.

IMPORTANT: The name "Trunking" can be chosen at random and does not yet define usage.

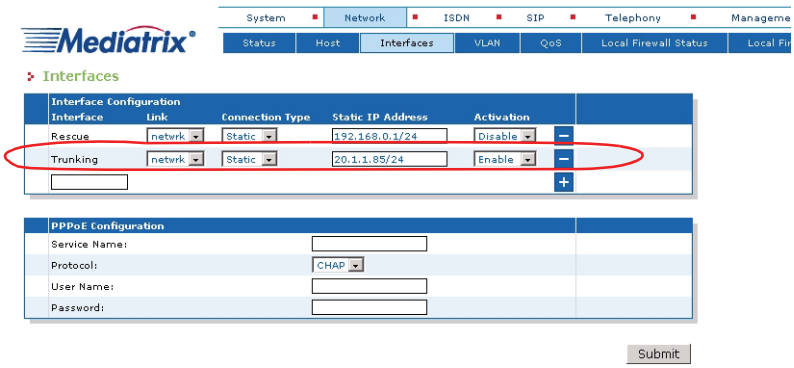

Figure 68 Mediatrix 44xx Gateway (Trunking) - Network -> Interfaces

SIP -> Gateways

Select the value **Trunking** in the "SIP Gateway Configuration" field.

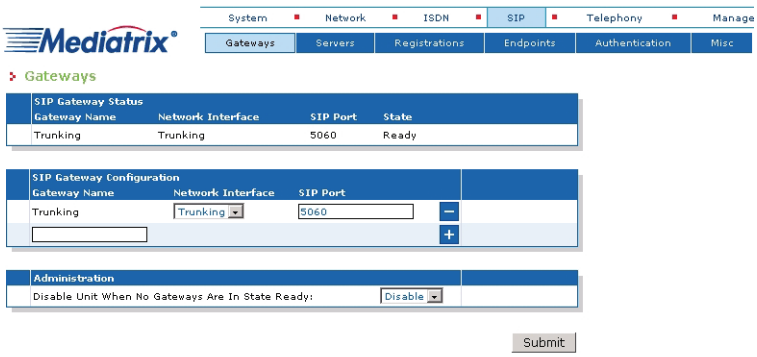

Figure 69 Mediatrix 44xx Gateway (Trunking) - SIP -> Gateways

SIP -> Servers

Enter the value for "Proxy Host" in the "SIP Default Servers" field area.

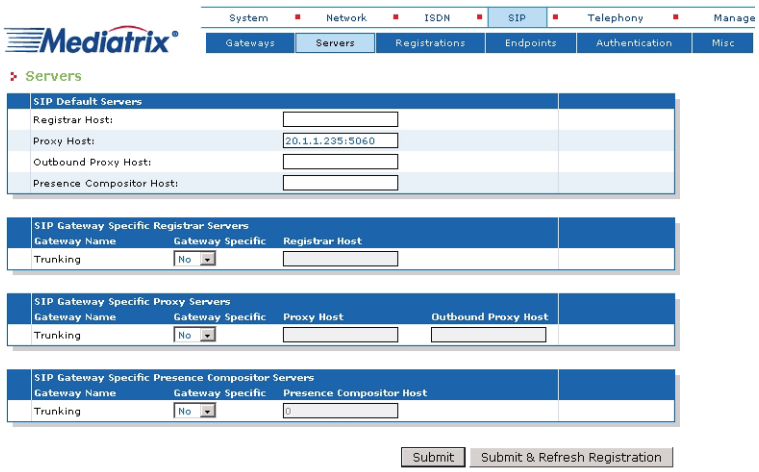

Figure 70 Mediatrix 44xx Gateway (Trunking) - SIP -> Servers

SIP -> Registrations

There are no endpoints in the trunking configuration, which is why registration is not necessary.

IMPORTANT: As the Mediatrix gateway only supports native SIP (not SIP-Q), a registration mechanism is not provided for trunking.

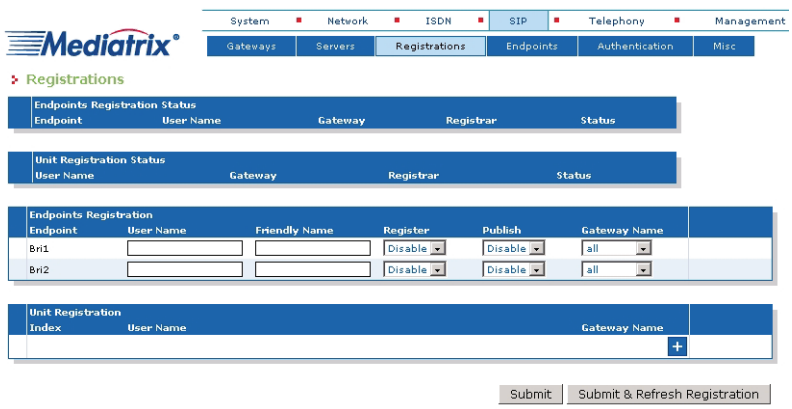

Figure 71 Mediatrix 44xx Gateway (Trunking) - SIP -> Registrations

ISDN -> Basic Rate Interface

Configure the ISDN parameters for every interface that should be used.

- Endpoint Type: **TE**
- Connection Type: e.g.: **Point To Point**

The ISDN trunking partner/CO provider protocol should be used, where applicable, to ensure that the "Exclusive B-Channel Selection" field is enabled for both interfaces.

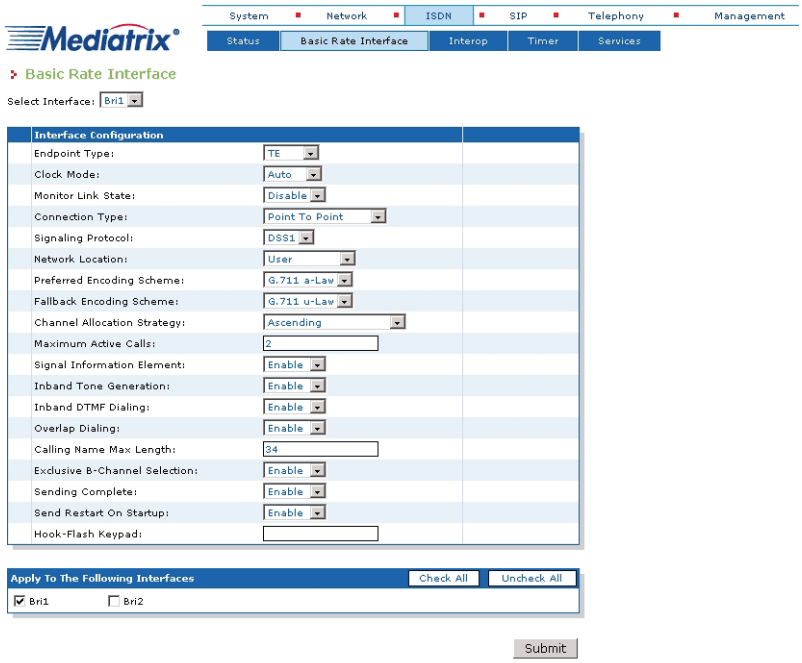

Figure 72 Mediatrix 44xx Gateway (Trunking) - ISDN -> Basic Rate Interface

Telephony -> Call Routing Config

The Mediatrix gateway's "Telephony - Call Routing Config" setting is not used in the general scenario for CO trunks (especially not for differentiation based on E.164 number). Station number handling is usually configured in the HiPath system.

If a Mediatrix gateway is configured for subscribers and CO trunking via the same HiPath 4000 SoftGate (vHG3500), these two aspects cannot be distinguished on the basis of different LAN interfaces on the Mediatrix gateway. In this case, "Call Routing" must be configured in the Mediatrix gateway based on the station numbers. Tie line digits should be used here in CO trunking calls for distinction in the Mediatrix gateway and these digits should be added/removed on the basis of the station numbers.

Use this mask to define how calls from/to the VoIP network should be routed to the public network.

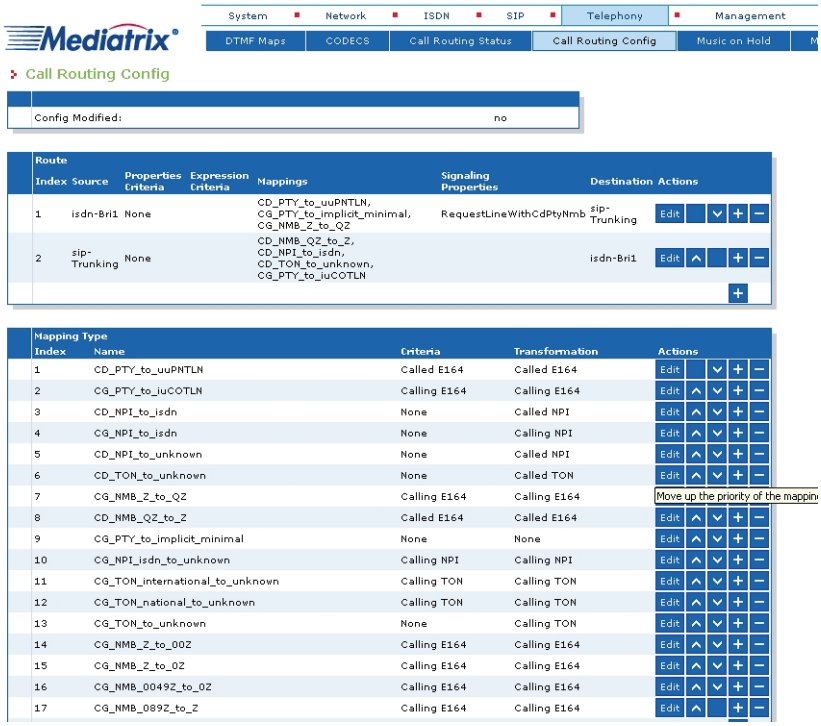

Figure 73 Mediatrix 44xx Gateway (Trunking) - Telephony -> Call Routing Config 1

The example shows how station numbers are handled in the Mediatrix gateway. This is usually configured in the HiPath host system.

The example also shows the procedure mentioned for handling tie numbers (here: 39).

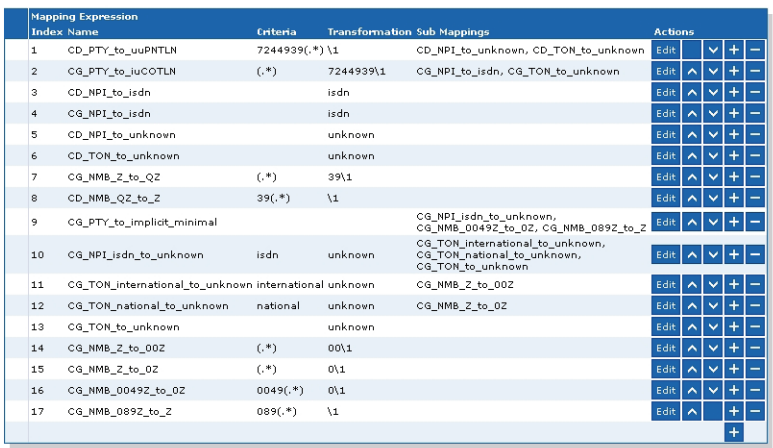

Figure 74 Mediatrix 44xx Gateway (Trunking) - Telephony -> Call Routing Config 2

5.2 ISDN (S0) Data Connections (Mediatrix 44xx)

5.2.1 Requirements for ISDN (S0) Data (Connections)

IMPORTANT: For basic information on installing S0 data scenarios refer to the description of how to install S0 subscribers and S0 trunking scenarios.
This section describes the special requirements for S0 data connections that also have to be taken into consideration.

- ISDN data connections are only supported if Mediatrix 44xx gateways are used. These are:
  - MXGW 4402,
  - MXGW 4404

  with two or four BRI ports (Basic Rate Interface = ISDN S0).
- ISDN data connections are only supported for stations or trunks that are configured on the same HiPath 4000 SoftGate.

  IMPORTANT: Direct Media over LAN (DMC) is not possible for S0 data connections.

- All ISDN S0 gateways for data connections should be synchronized with a common clock. For instance, the gateways receive the clock pulse via a direct connection to the public network or via an internal ISDN line (layer-2 connection) to another synchronized gateway.

5.2.2 Sample Scenario with Two Mediatrix 44xx Gateways

In this sample scenario, one Mediatrix gateway is used for subscribers, while the other is used for trunking to the public network.

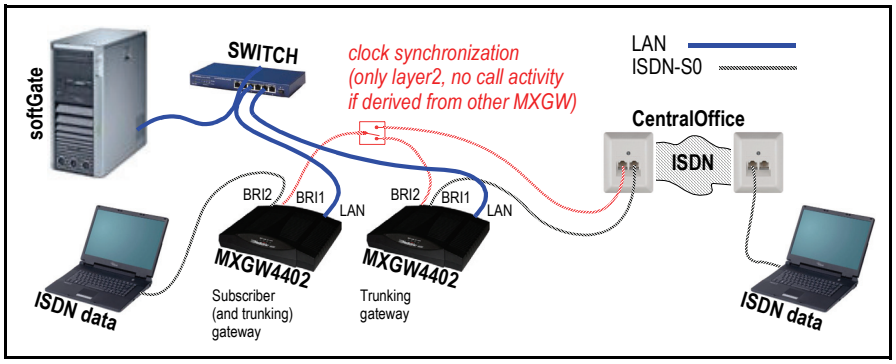

Figure 75 HiPath 4000 SoftGate scenario with two Mediatrix gateways

This type of scenario is an alternative to the configuration of subscribers and trunking within a single gateway. This clock synchronization method is also needed if more than four ISDN S0 ports are to be configured (up to four S0 ports are available on a single Mediatrix gateway).

5.2.3 Configuration Notes

IMPORTANT: For more information on activating the web interface and on the individual masks and parameters, refer to the documentation provided with the relevant Mediatrix gateway.

5.2.3.1 Trunking Gateway

Overview

- ISDN -> Basic Rate Interface (BRI 1)
- ISDN -> Basic Rate Interface (BRI 2)
- ISDN -> Status
- Codec Parameter Trunking and Subscriber Gateway

ISDN -> Basic Rate Interface (BRI 1)

The trunking gateway is linked to the public network via the BRI 1 port and synchronizes itself with the clock pulse received.

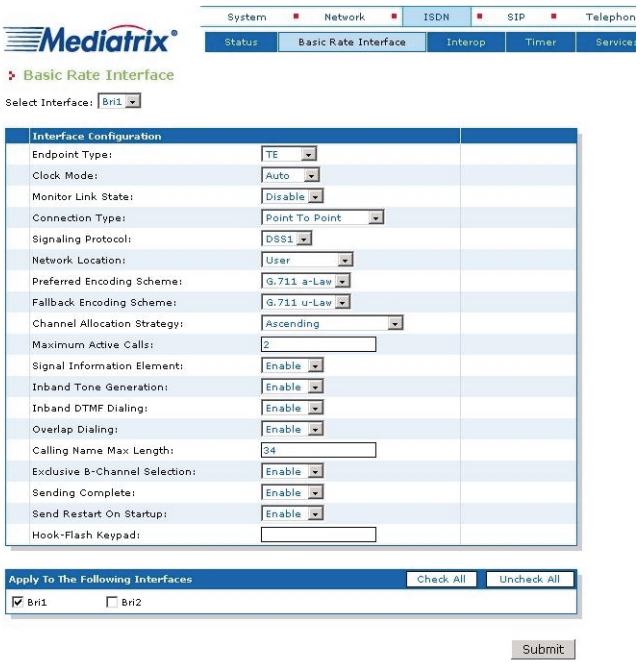

Figure 76 Mediatrix Gateway Trunking - ISDN -> Basic Rate Interface 1

ISDN -> Basic Rate Interface (BRI 2)

The BRI 2 port is used to forward the clock pulse to the subscriber gateway.

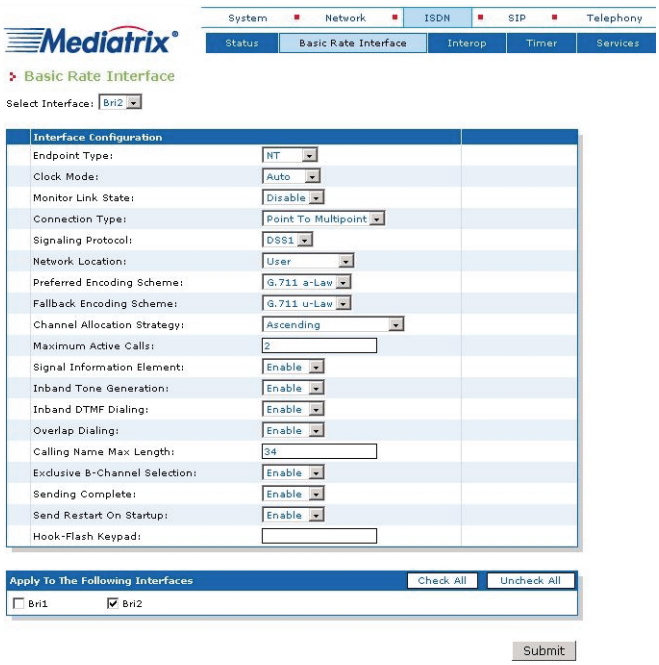

Figure 77 Mediatrix 44xx Gateway Trunking - ISDN -> Basic Rate Interface 2

ISDN -> Status

A status window indicates that clocking is performed via the BRI1 port which is connected to the public network. It also shows that the link on the BRI 2 port for transferring the clock pulse to the subscriber gateway is working (layer-3 signaling is not used for this link).

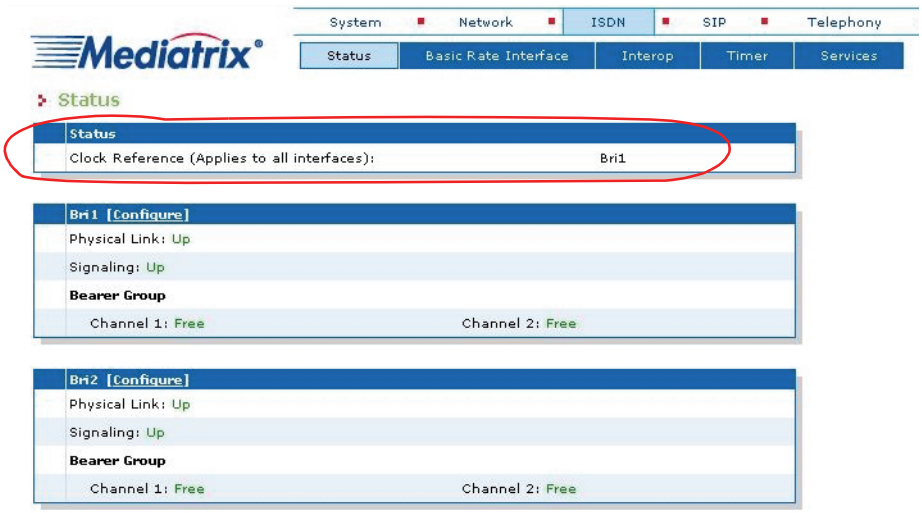

Figure 78 Mediatrix 44xx Gateway Trunking - ISDN -> Status

5.2.3.2 Subscriber Gateway

Overview

- ISDN -> Basic Rate Interface (BRI 1)
- ISDN -> Status
- Codec Parameter Trunking and Subscriber Gateway

ISDN -> Basic Rate Interface (BRI 1)

The subscriber gateway is linked to the trunking gateway (alternatively also to the public network) via the BRI 1 port without layer-3 signaling and synchronizes itself with the indirect clock pulse.

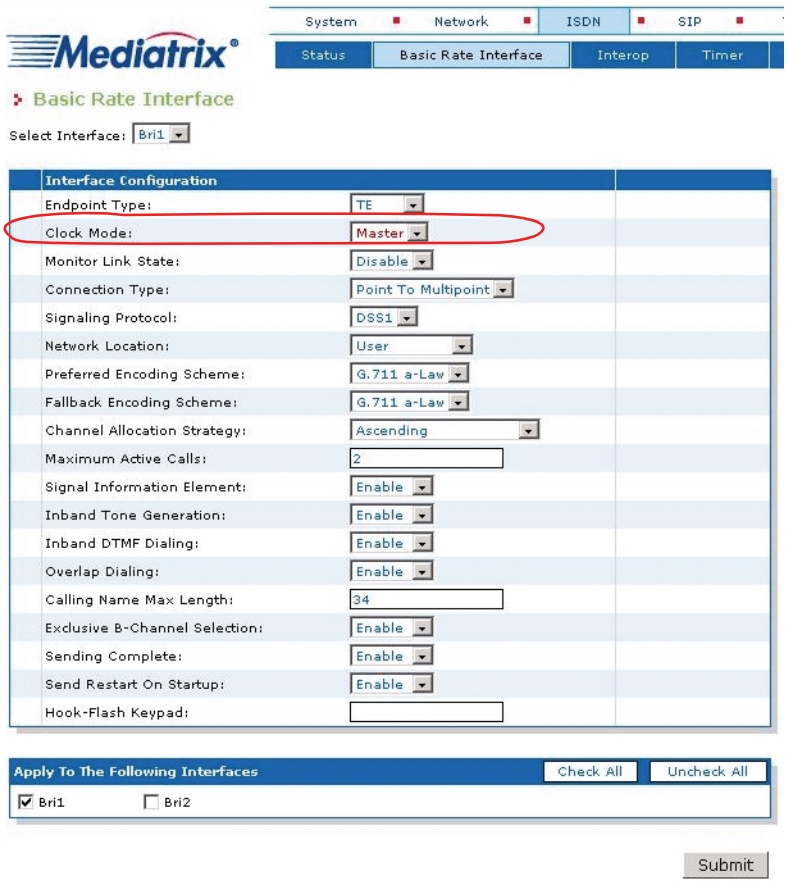

Figure 79 Mediatrix 44xx Gateway Subscriber - -> Basis Rate Interface 1

ISDN -> Status

A status window indicates that clocking is performed via the BRI1 port which is clocked either directly or indirectly via the public network.

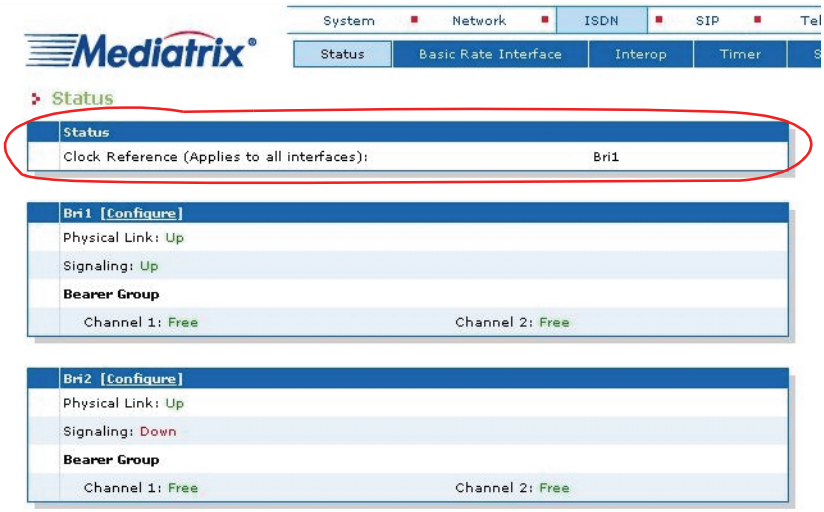

Figure 80 Mediatrix 44xx Gateway Subscriber - ISDN -> Status

5.2.3.3 Codec Parameter Trunking and Subscriber Gateway

The settings in the CODECS mask are identical for both gateways.

- Bearer-type mapping must be set to "ITC unrestricted" for the "Codec ClearMode".
- The "ITC" field must contain the value **unrestricted**.
- The setting in the "Jitter Buffer" field can be used to improve the data transmission quality if the delay time does not have to be optimized.

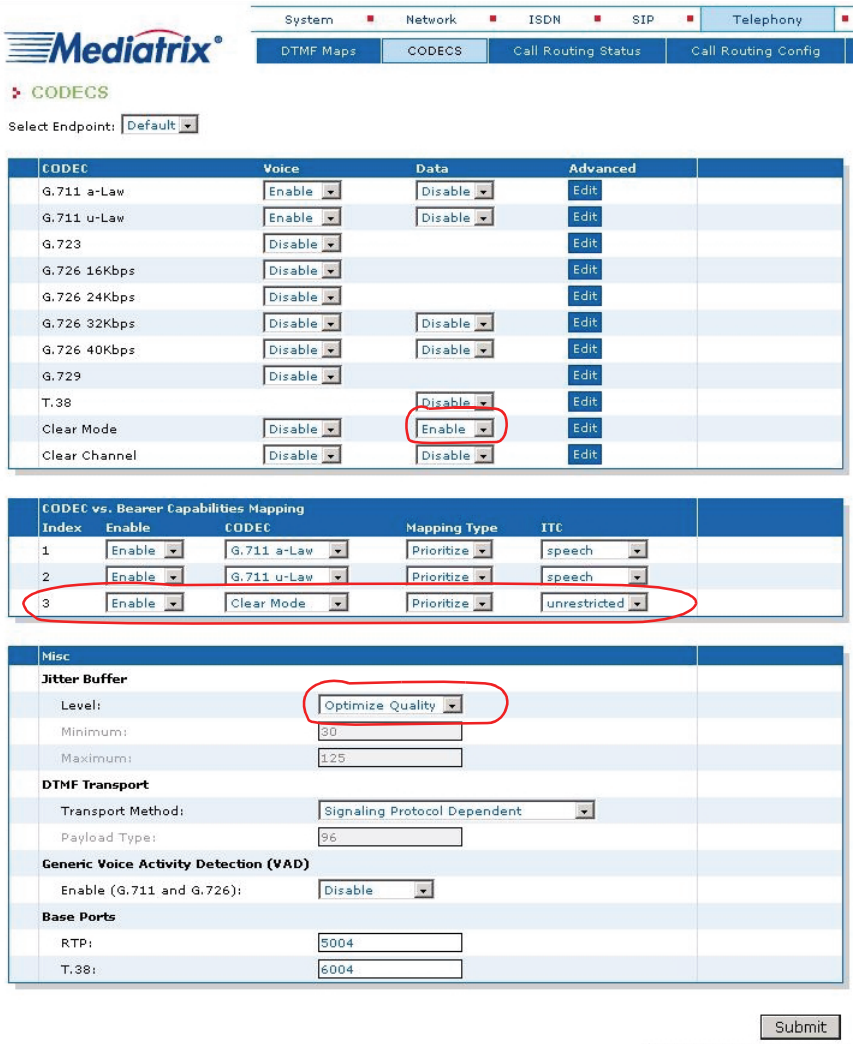

Figure 81 *Mediatrix 44xx Gateway Subscriber and Trunking - Telephony -> CODECS*

5.3 Analog Stations (Mediatrix 41xx)

Analog stations for the "Voice" or "Fax" service can be configured at a Mediatrix 41xx gateway. The following gateways are supported: Mediatrix 4104, 4108, 4116, 4124.

5.3.1 Analog Station Requirements

Analog stations in a Mediatrix 41xx gateway must be configured as SIP subscribers in HiPath 4000.

5.3.2 Configuration Notes

IMPORTANT: For more information on activating the web interface and on the individual masks and parameters, refer to the documentation provided with the relevant Mediatrix gateway.

Overview

- Management ->Admin
- Management -> Network Settings
- Management -> Configuration File
- Management -> Firmware Download
- SIP -> Configuration
- SIP -> Interop
- Telephony -> CODEC
- Telephony -> CODEC (Fax)
- Telephony -> Call Forward
- Telephony -> Services
- Telephony -> Misc
- Device Info -> Monitoring
- Configuring the flash key
- Configuring static IP addresses
- Backing up the configuration

Management ->Admin

Configure the parameters for line administration.

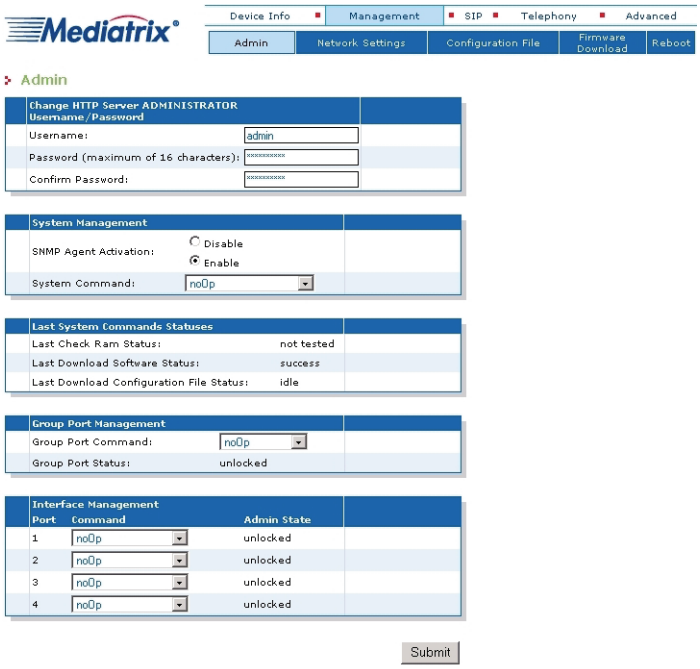

Figure 82 Mediatrix 41xx Gateway - Management -> Admin

Management -> Network Settings

Configure the parameters for network settings in this mask. Configure the IP address, subnet mask, default router and SNMP port.

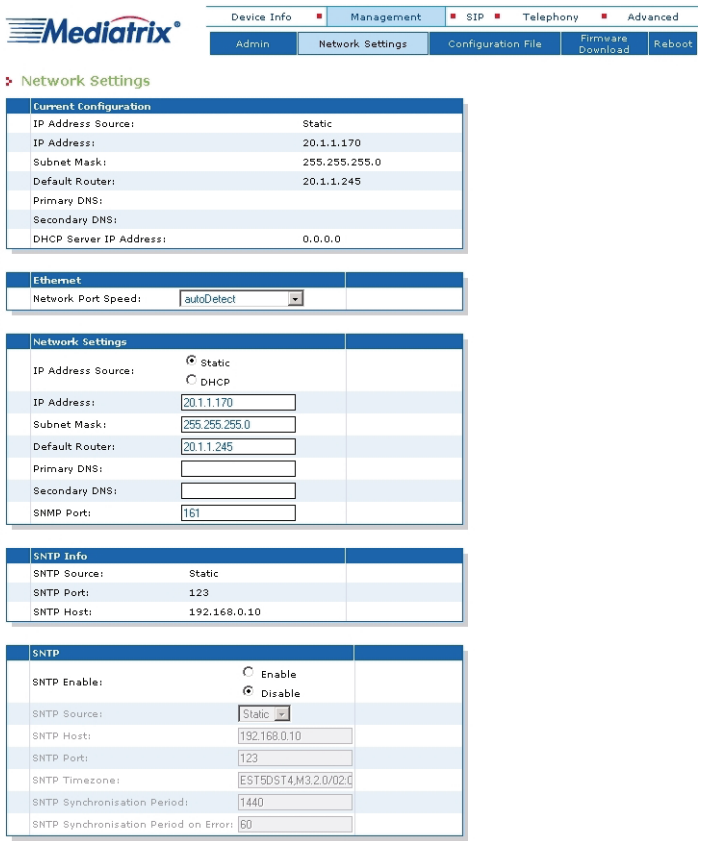

Figure 83 Mediatrix 41xx Gateway - Management -> Network Settings

Management -> Configuration File

The download parameters for the configuration file are administered in this mask. Enter the values for the configuration file server (host and port).

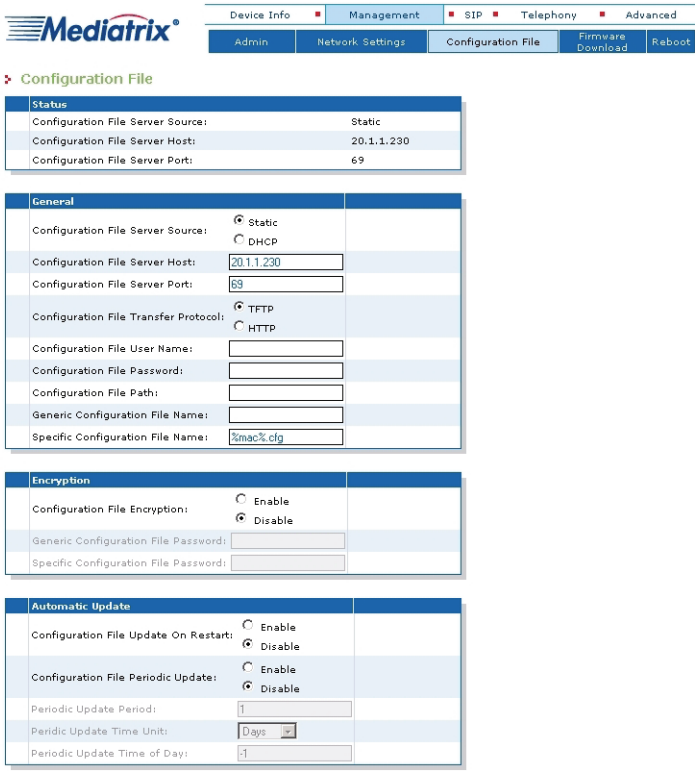

Figure 84 Mediatrix 41xx Gateway - Management -> Configuration File

Management -> Firmware Download

The download parameters for the firmware are administered in this window.

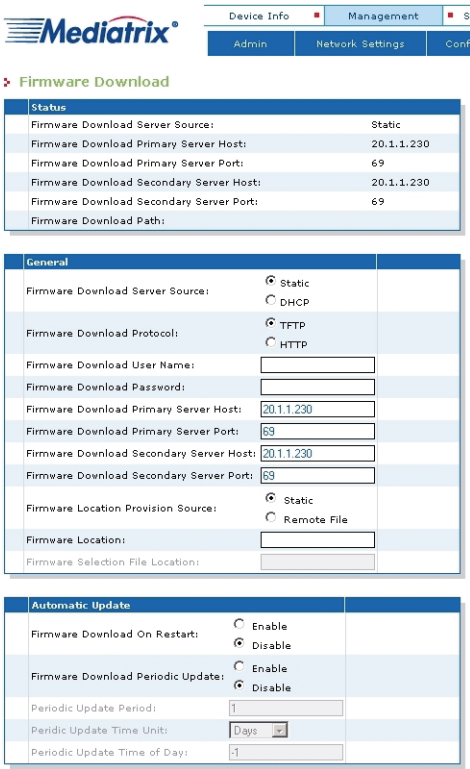

Figure 85 Mediatrix 41xx Gateway - Management -> Firmware Download

SIP -> Configuration

The parameters for the SIP server and the SIP user agent are administered in this mask. Enter the IP address and port number of the SIP server. The station number and name can be entered for every subscriber. This data is also used to display caller ID information.

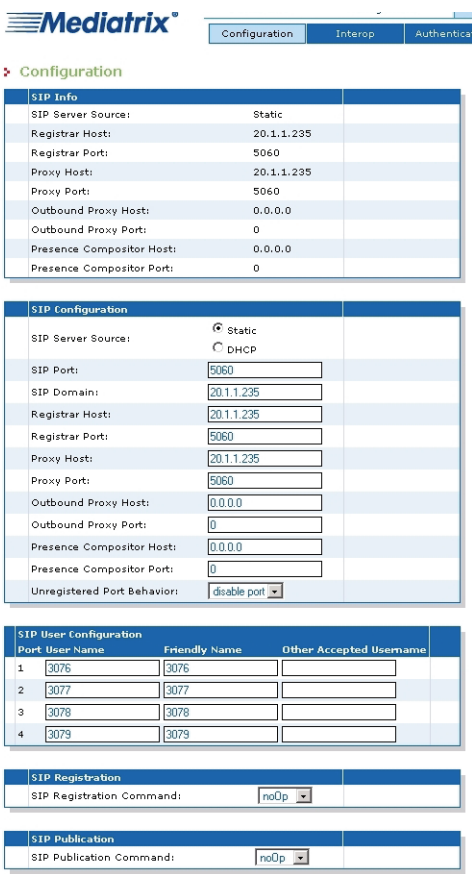

Figure 86 Mediatrix 41xx Gateway - SIP -> Configuration

SIP -> Interop

You can set the "Penalty Box Timer" for subscriber response failure in the "Penalty Box" section in this mask. Enable "UDP" under "SIP Transport".

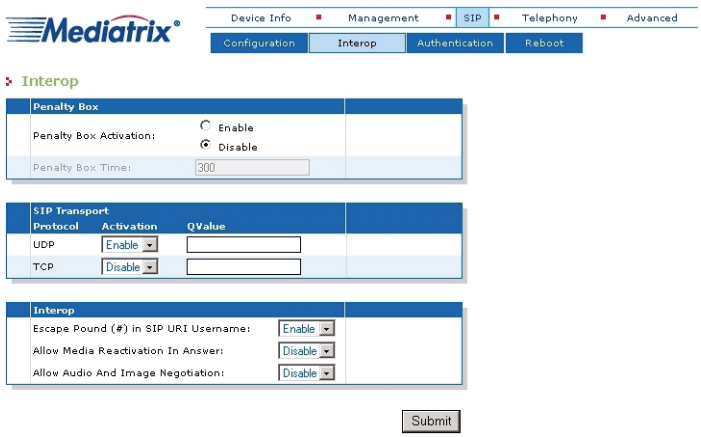

Figure 87 Mediatrix 41xx Gateway - SIP -> Interop

SIP -> Authentication

This mask allows you to enter subscriber authorization with user name and password to guarantee the desired level of security.

Telephony -> Digit Maps

This mask allows you to configure digit maps. Leave the default settings in the fields.

Telephony -> CODEC

Codec parameters are set in this mask (next two screenshots). The preferred codec is G.711-PCMA.

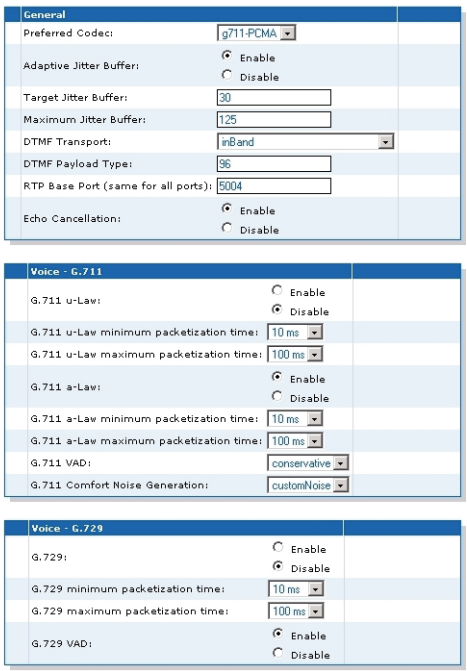

Figure 88 Mediatrix 41xx Gateway - Telephony -> CODEC (1)

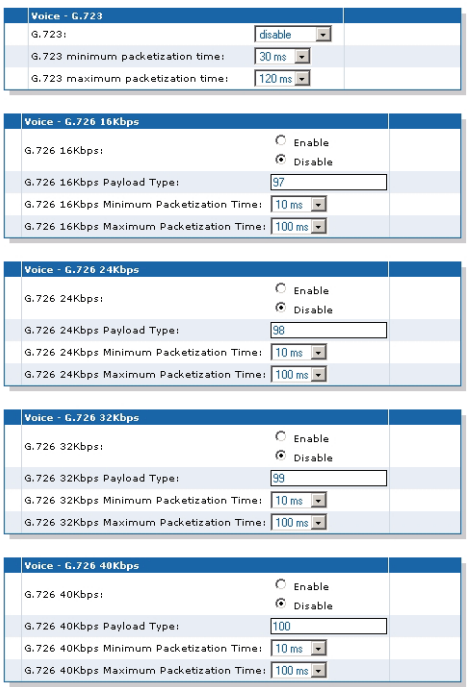

Figure 89 Mediatrix 41xx Gateway - Telephony -> CODEC (2)

Telephony -> CODEC (Fax)

The fax functionality should also be set in addition to telephony codec settings in the Codec mask.

IMPORTANT: If T.38 is deactivated for fax transmission, the codec G729 must also be deactivated.

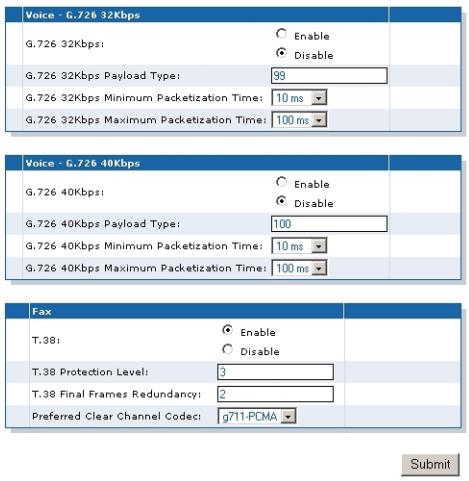

Figure 90 Mediatrix 41xx Gateway - Telephony -> CODEC (Fax)

Telephony -> Call Forward

The settings for call forwarding are entered in the Codec mask.

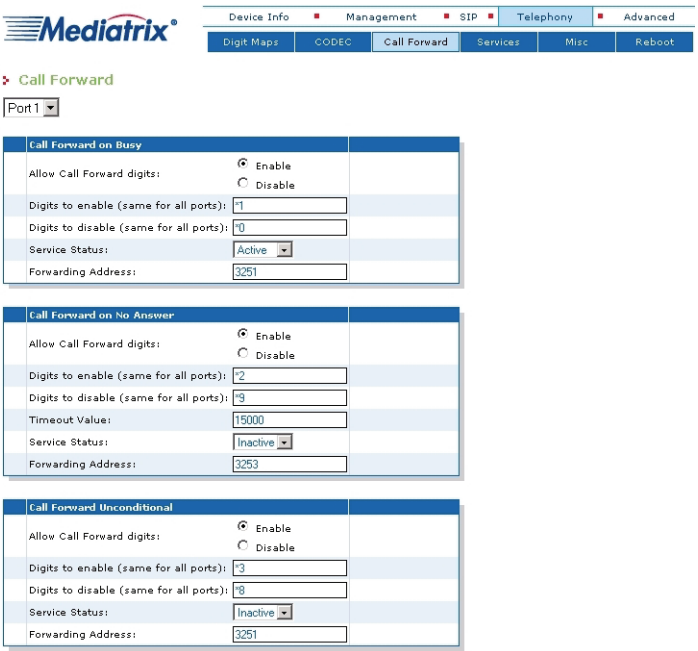

Figure 91 Mediatrix 41xx Gateway - Telephony -> Call Forward

Telephony -> Services

Telephony feature settings such as Conference, Call Waiting, Second Call, etc. are entered in this mask.

Figure 92 Mediatrix 41xx Gateway - Telephony -> Services

Telephony -> Misc

This mask allows you to configure country settings and custom tones.

- Country Selection germany1 = permanent dial tone
- Country Selection germany2 = interrupted dial tone (3 short beeps)

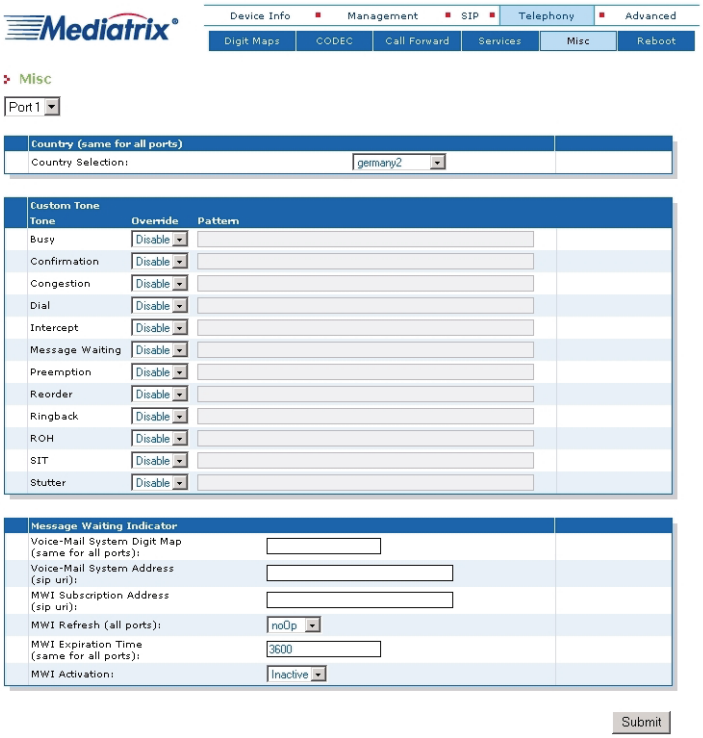

Figure 93 Mediatrix 41xx Gateway - Telephony -> Misc

Device Info -> Monitoring

This mask allows you to enter the following values to activate the syslog daemon.

- Syslog Configuration Source: Static
- Static Syslog Host: 20.1.1.230
- Static Syslog Port: 514
- Syslog Max. Severity: Debug

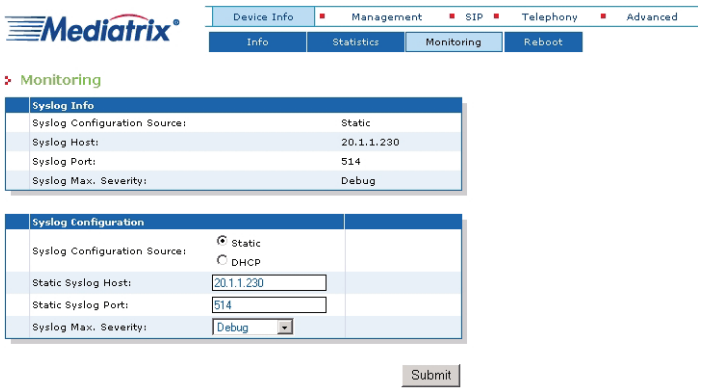

Figure 94 Mediatrix 41xx Gateway - Device Info -> Monitoring

Configuring the flash key

The flash key can be used as an alternative to quickly pressing the handset contact for operating phone features in analog phones. Depending on the analog terminal used, flash pulse transmission may not continue for long enough and the gateway may not receive it correctly. The minimum and maximum pulse duration can be set via SNMP in the MIB (Management Information Base). The following variables must be modified for this in the MIB:

- fxsMIB: fxsFlashHookDetectionDelayMin and
- fxsFlashHookDetectionDelayMax

IMPORTANT: For more information, refer to the Mediatrix documentation: "Mediatrix 4100 Series Analog Access Devices, Reference Manual" at
http://www.mediatrix.com or
https://support.mediatrix.com/DownloadPlus/Download.asp

Configuring static IP addresses

Although the gateway is configured with a static IP address, it is also possible to set "obtain from DHCP server" for an IP address.

You can remove all DHCP options with UMN (unit manager network), an element management system:

1. Right-click the gateway's MAC address in UMN. A context menu appears.
2. Select the action **Remove all DHCP options**.

IMPORTANT: For more information, refer to the Mediatrix documentation: "Mediatrix 4100 Series Analog Access Devices, Reference Manual" at http://www.mediatrix.com or https://support.mediatrix.com/DownloadPlus/Download.asp

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Backing up the configuration

The configuration cannot be backed up via the Mediatrix web interface. This is only possible via UMN.

1. Right-click the gateway's MAC address in UMN. A context menu appears.
2. Select the option **Configuration File -> transfer from unit**.

This command creates a configuration file in the UMN directory. The file name corresponds to the MAC address of the gateway.

IMPORTANT: For more information, refer to the Mediatrix documentation: "Mediatrix 4100 Series Analog Access Devices, Reference Manual" at http://www.mediatrix.com or https://support.mediatrix.com/DownloadPlus/Download.asp

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6 Installing the "Comdasys Convergence 1600" Session Border Controller

A **s**ession **b**order **c**ontroller (**SBC**) is needed to protect SoftGate's IP network from unauthorized access via the Internet.

SBC is needed for:

- **N**etwork **a**ddress **t**ranslation (**NAT**)
- Firewall
- Hunting

The session border controller is implemented for native SIP trunking connections to an SIP service provider, for instance.

Voice over IP settings on the "VOICE-OVER-IP" tab

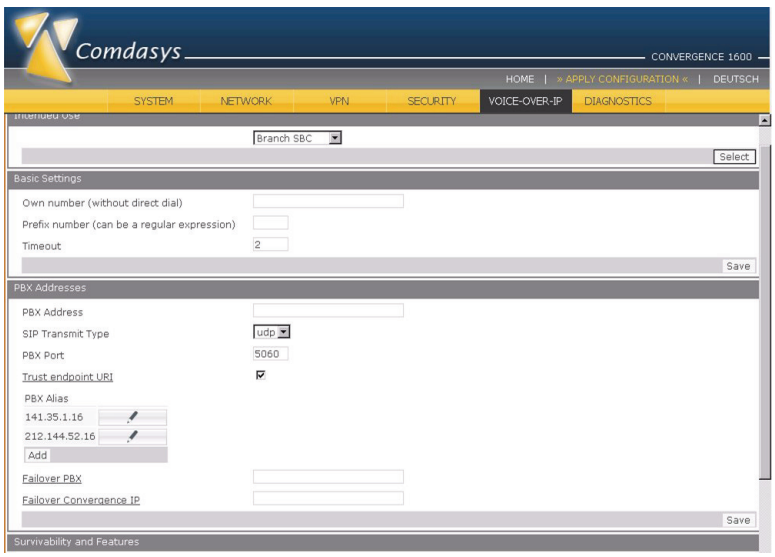


Figure 95 SBC - VOICE-OVER-IP > Type of use and Provider IP address

Intended Use

Branch SBC

PBX Addresses

Click **Add** to insert the provider's IP address, such as212.144.52.16 for ARCOR.

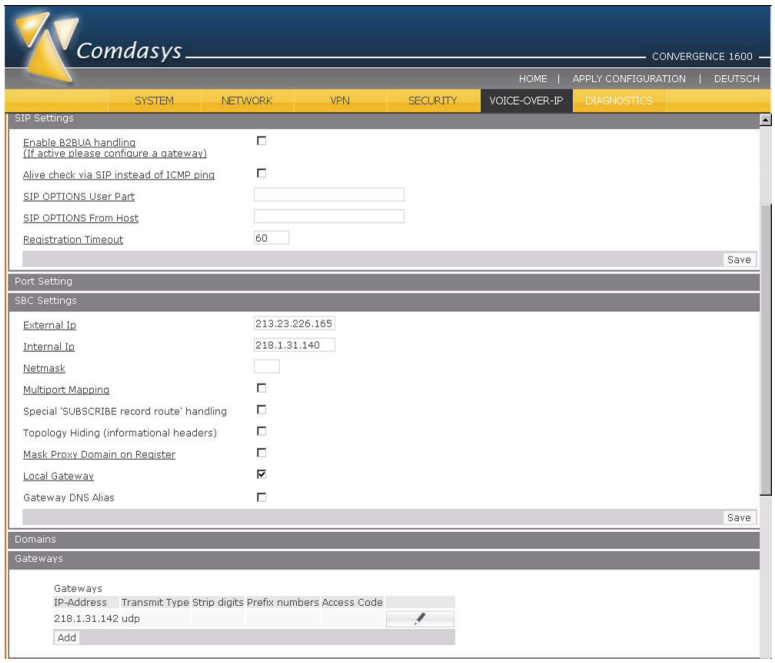


Figure 96 SBC - VOICE-OVER-IP > IP addresses

SBC Settings

- **External Ip**: WAN address of SBC
- **Internal Ip**: LAN address of SBC

Gateways

Click **Add** to insert the IP addresses of all vHG3500s.

Security settings on the "SECURITY" tab

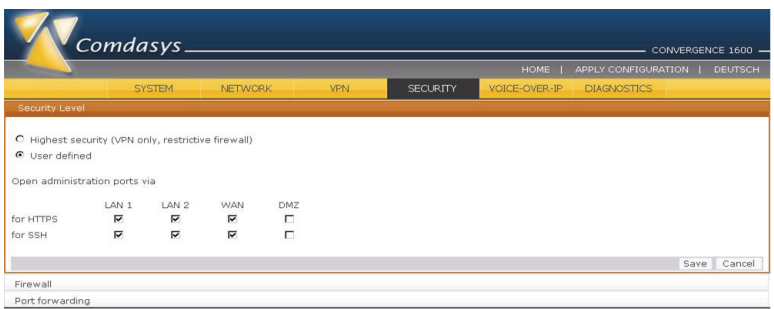


Figure 97 SBC - SECURITY > Security Level

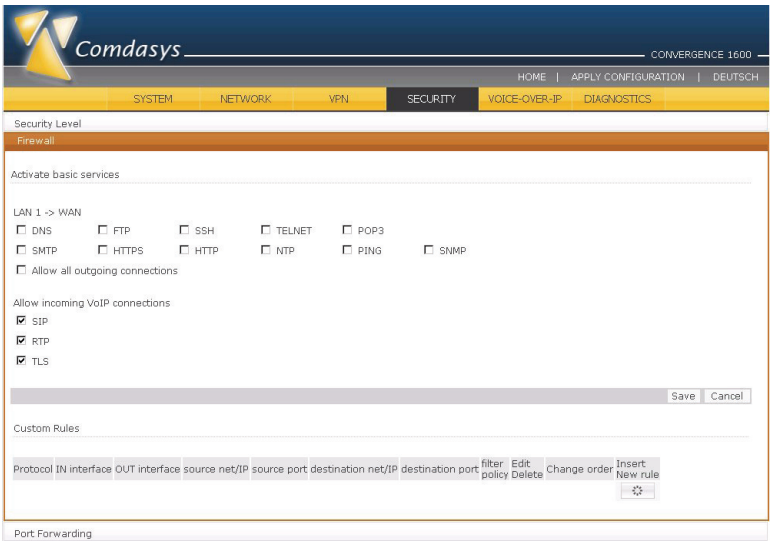


Figure 98 SBC - SECURITY > Firewall

Network settings on the "NETWORK" tab

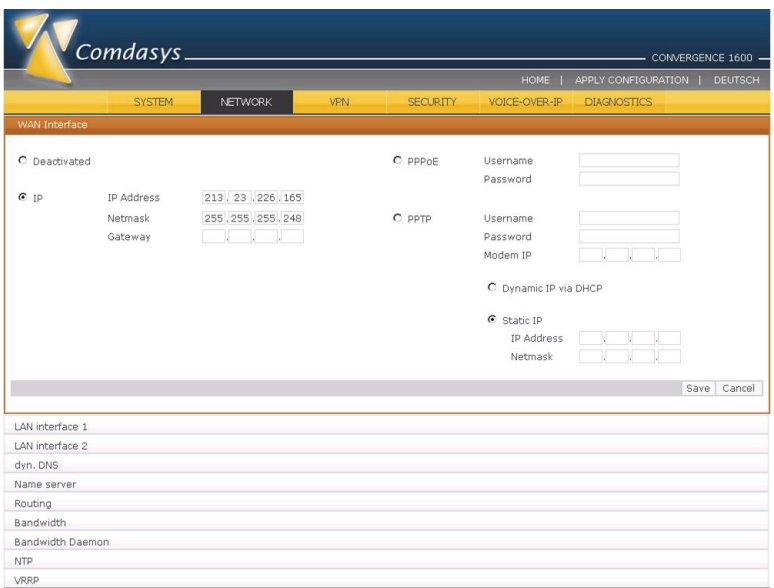


Figure 99 SBC - NETWORK > WAN Interface

WAN interface

The WAN IP address of the SBC must be entered in the field **IP Address**.

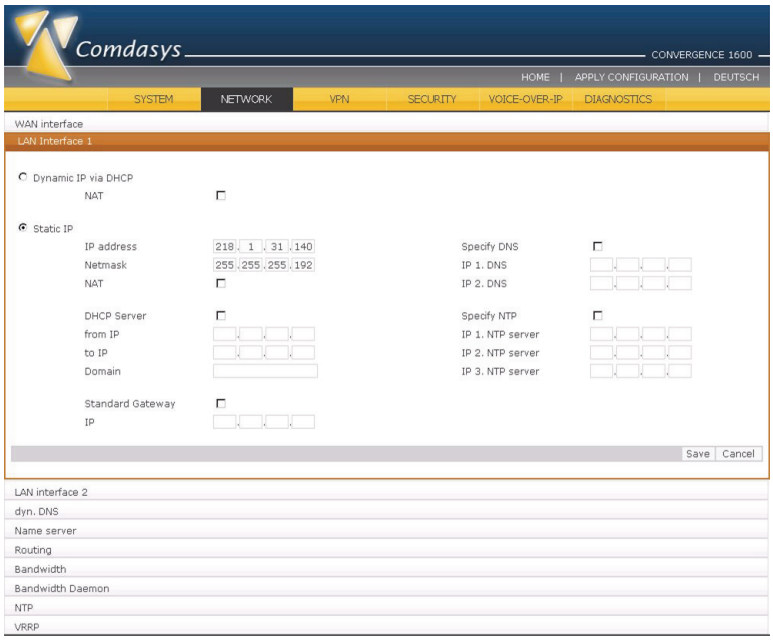


Figure 100 SBC - NETWORK > LAN Interface 1

LAN Interface 1

The LAN IP address of the SBC must be entered in the field **IP Address**.

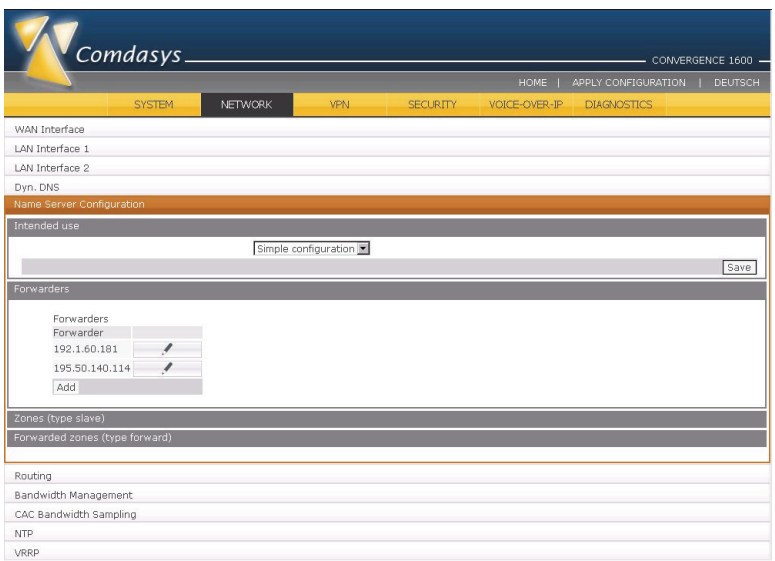


Figure 101 SBC - NETWORK > Forwarders

Forwarders

Example of a name server with the IP address 192.1.60.181 or 195.50.140.114.

System settings on the "SYSTEM" tab

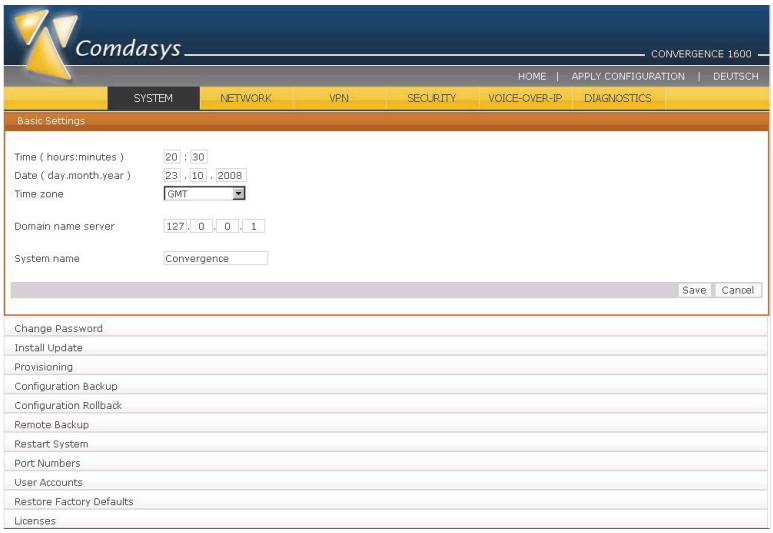


Figure 102 SBC - SYSTEM > Basic Settings

The time (**Time**), date (**Date**), time zone (**Time zone**), domain name server (**Domain name server**) and system name (**System name**) are entered here.

7 Video Connections

HiPath 4000 SoftGate offers video support for internal SIP video endpoints. These endpoints allow high-definition video and audio transmission.

The SIP video endpoints can be connected directly to a HiPath 4000 or to networked HiPath 4000 systems as long as DMC connections between the video endpoints are guaranteed (see Section 7.1, “Prerequisite”).

The system treats SIP video endpoints as normal SIP subscribers.

7.1 Prerequisite

- A video connection can only ever be set up together with a DMC connection.
- All video endpoints must support DMC call flows.

7.2 Restrictions

- No interworking with HFA video endpoints and TDM video endpoints.
- Video is only possible for DMC slave connections, that is, video is not supported for native SIP lines and non-HiPath 4000 SIP-Q lines.
- A video connection cannot be added to an existing audio connection and SDP re-negotiation cannot be performed (e.g. video/audio codecs) if the DMC connection is already ongoing.
- The DMC connection is interrupted if a feature such as hold or transfer is used. Video connections cannot be established while these functions are active. The DMC connection is only re-established and video connections can only be set up when these features have been deactivated.
- Since ongoing DMC connections do not support SDP re-negotiation, no applications are supported in conjunction with a video connection (e.g. remote camera control).

7.3 Video Endpoints Supported

The following video endpoints are supported:

- OpenScape VHD 100,
- OpenScape VHD 400 and
- OpenScape VHD 600

7.4 Scenarios

- High-definition video and audio transmission for conferences
- Peer-to-peer video communication with SIP-based video connections

7.5 Features

A distinction is made between features in connections only between video endpoints and between video endpoints and audio-only endpoints.

7.5.1 Connections Between Video Endpoints

- Peer-to-peer video communication
- 3-party video conference
- Support for other features (such as CLIP, CLIR, COLP, COLR) depends on the video endpoint used.

7.5.2 Connections Between Video Endpoints and Audio-Only Endpoints

Active feature support for video endpoints - features are initiated by the video endpoint for the audio endpoint:

- 3-party conference with audio and video endpoints

  Scenarios:

  – An audio endpoint is added to an existing video connection between two video endpoints => the video connection between the two video endpoints stays alive.

  – A video endpoint is added to an existing voice connection between an audio and a video endpoint => a video connection is set up between the two video endpoints.

Passive feature support for video endpoints - features are initiated by the audio-only endpoint for the video endpoint:

- Basic audio call
- Local SIP 3-party conference
- All SIP features enabled for the video endpoints used.

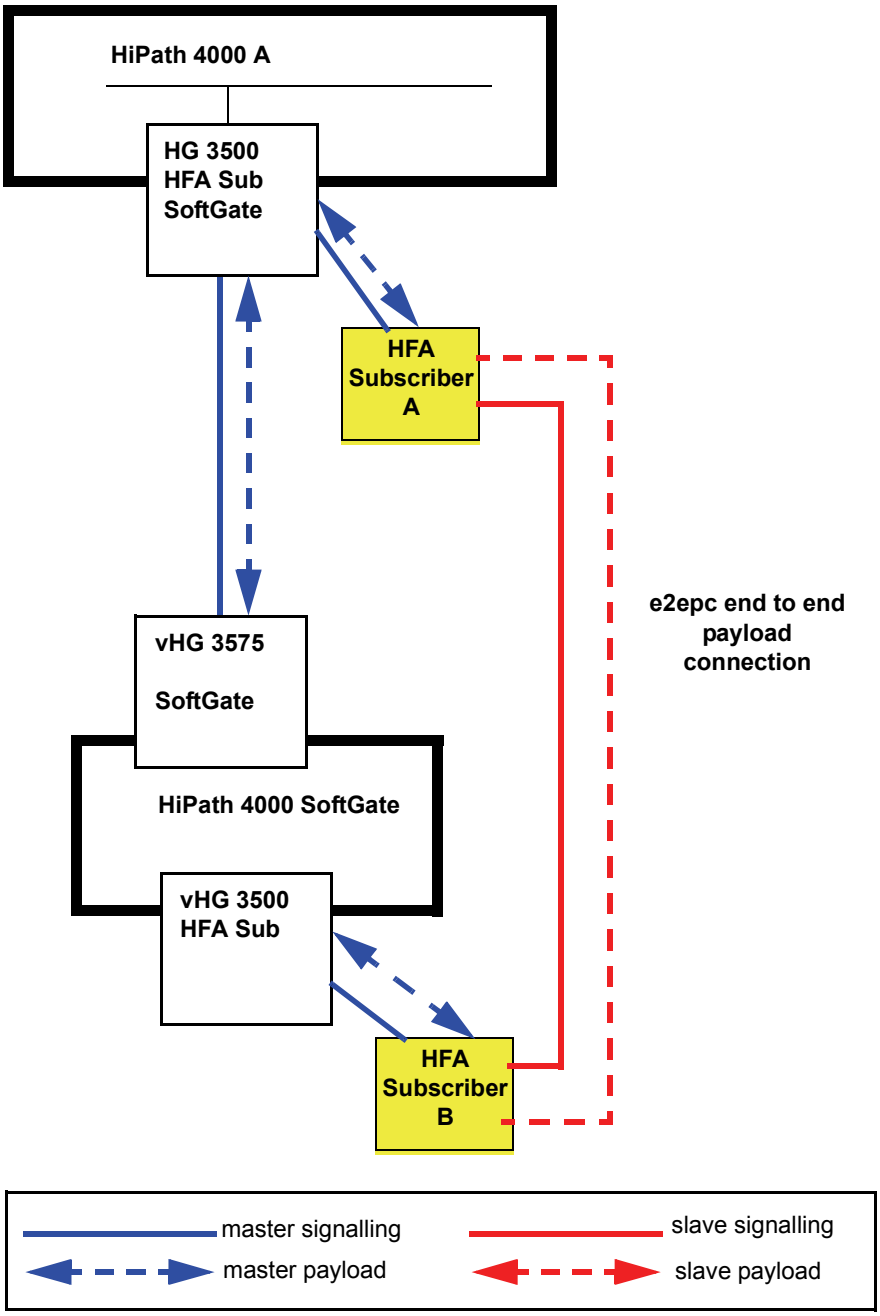
7.6 Configuration

Since video endpoints are treated as normal SIP subscribers, they are also configured as such in the system.

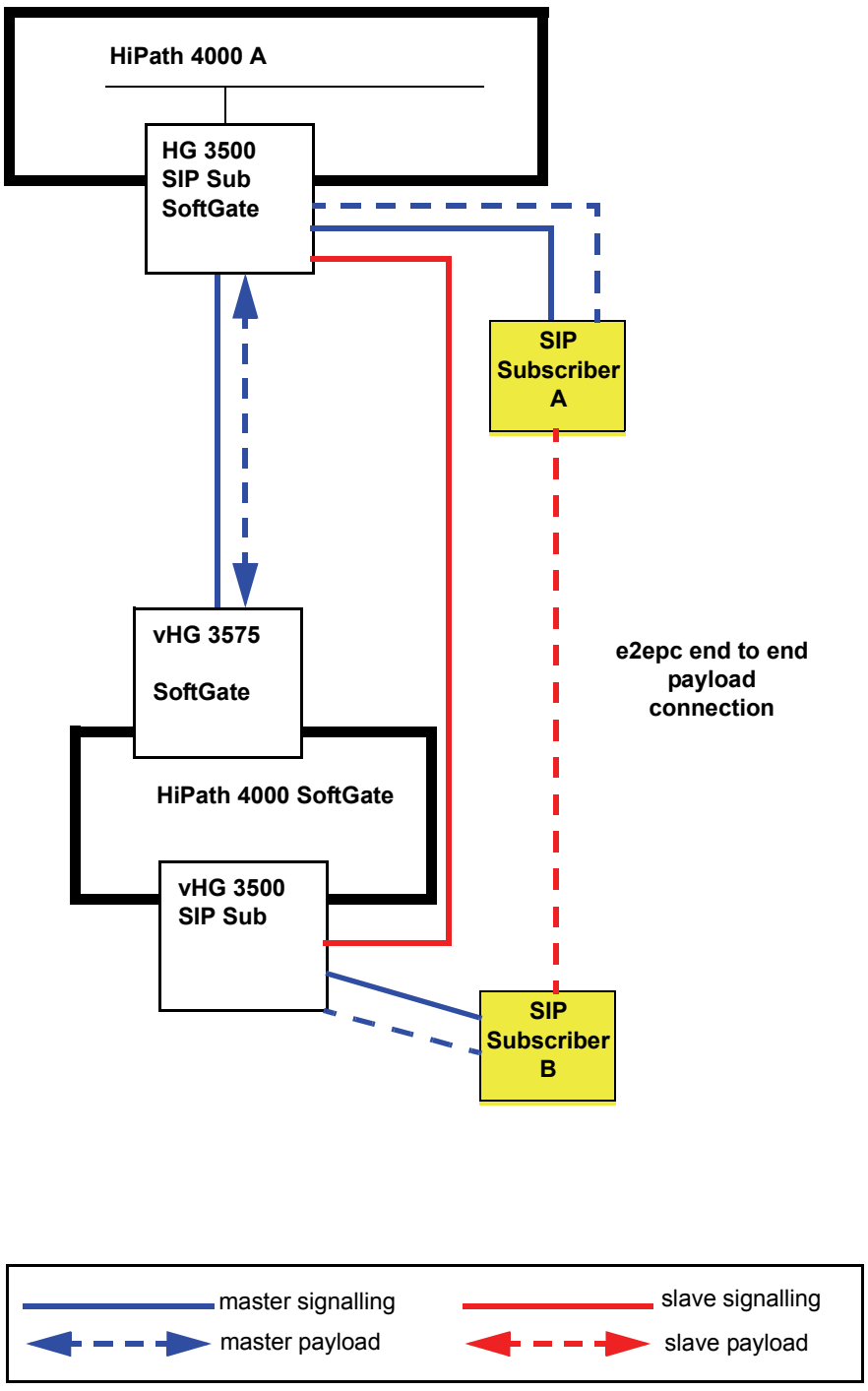
For information on how to configure SIP subscribers, refer to Chapter 8, “SIP Subscriber” in the document "SIP Connectivity".

8 Direct Media Connect (DMC)

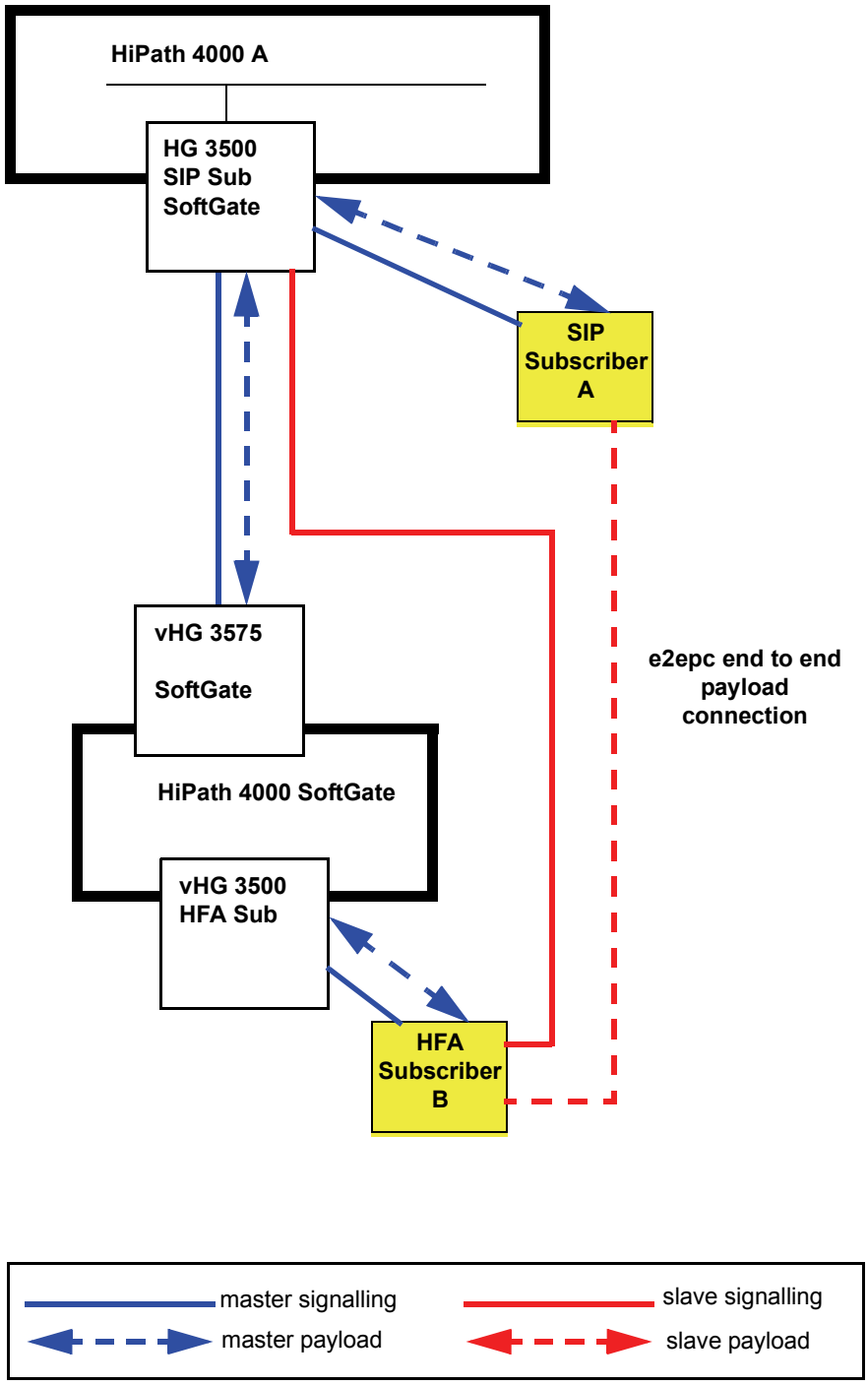
Example 1: HFA Subscriber A at HiPath 4000 A calls HFA Subscriber B at HiPath 4000 SoftGate



Example 2: SIP Subscriber A in HiPath 4000 A calls SIP Subscriber B at HiPath 4000 SoftGate

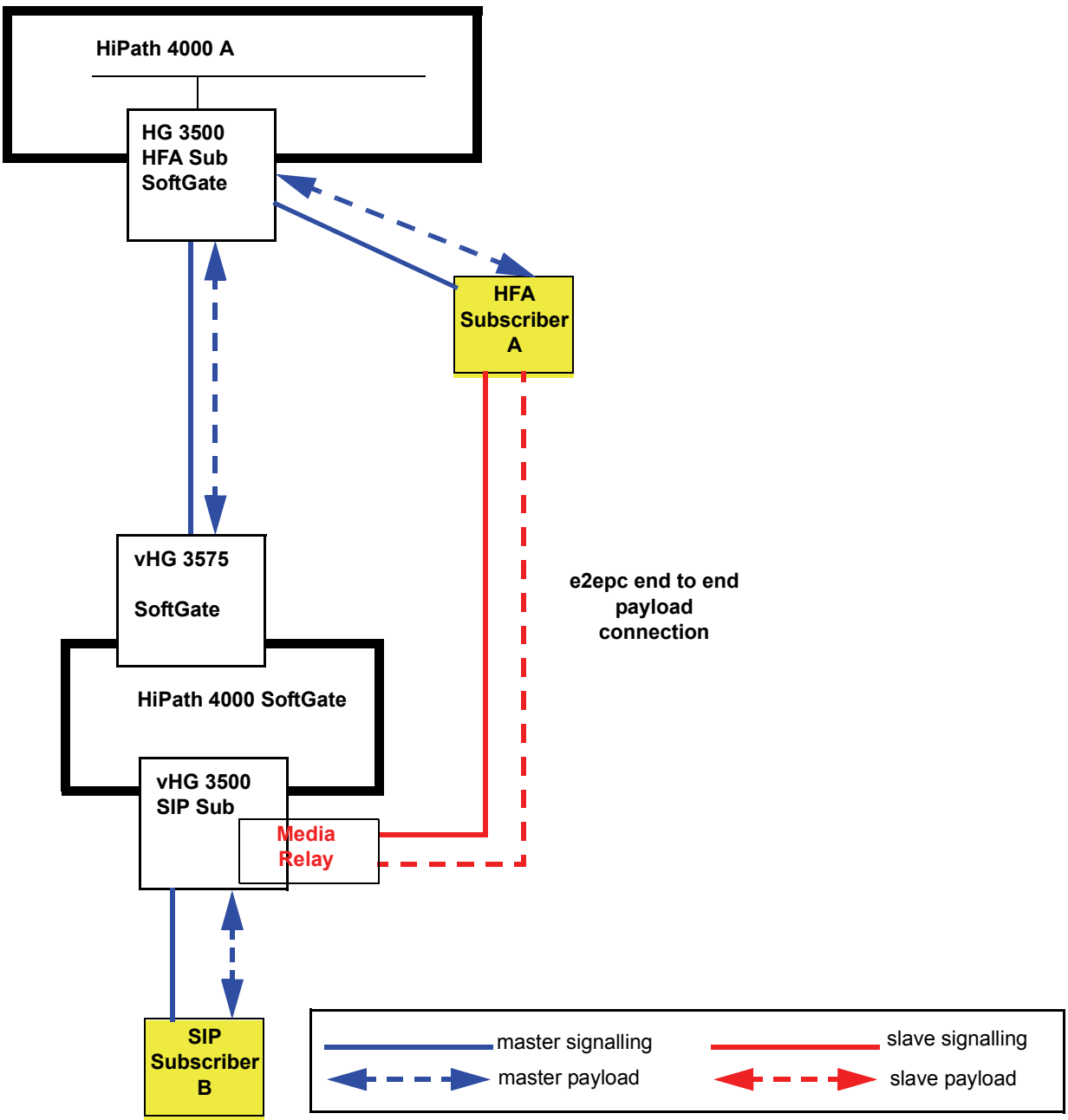


Example 3: SIP Subscriber A at HiPath 4000 A calls HFA Subscriber B at HiPath 4000 SoftGate

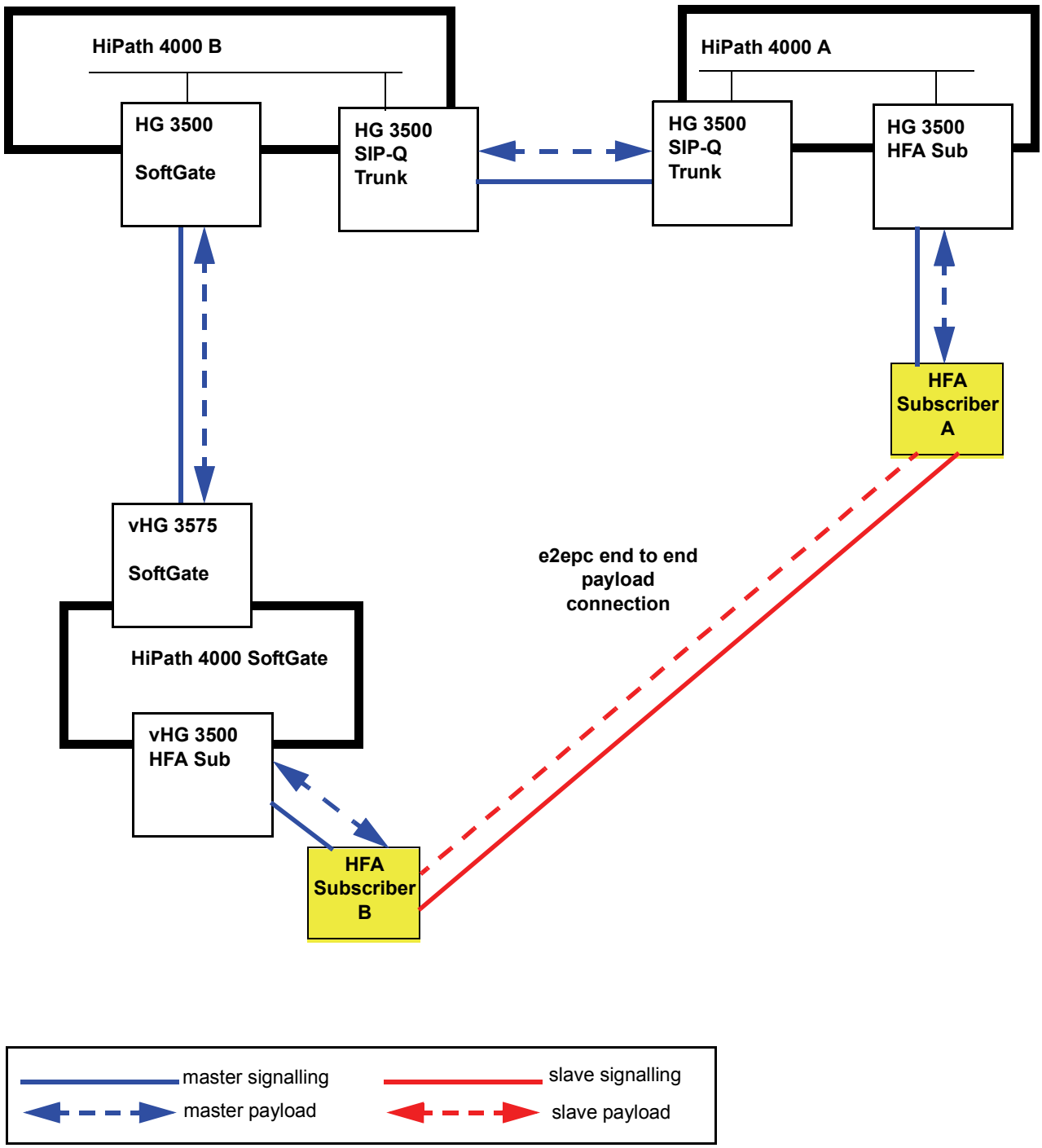


Example 4: HFA Subscriber A at HiPath 4000 A calls SIP Subscriber B at HiPath 4000 SoftGate

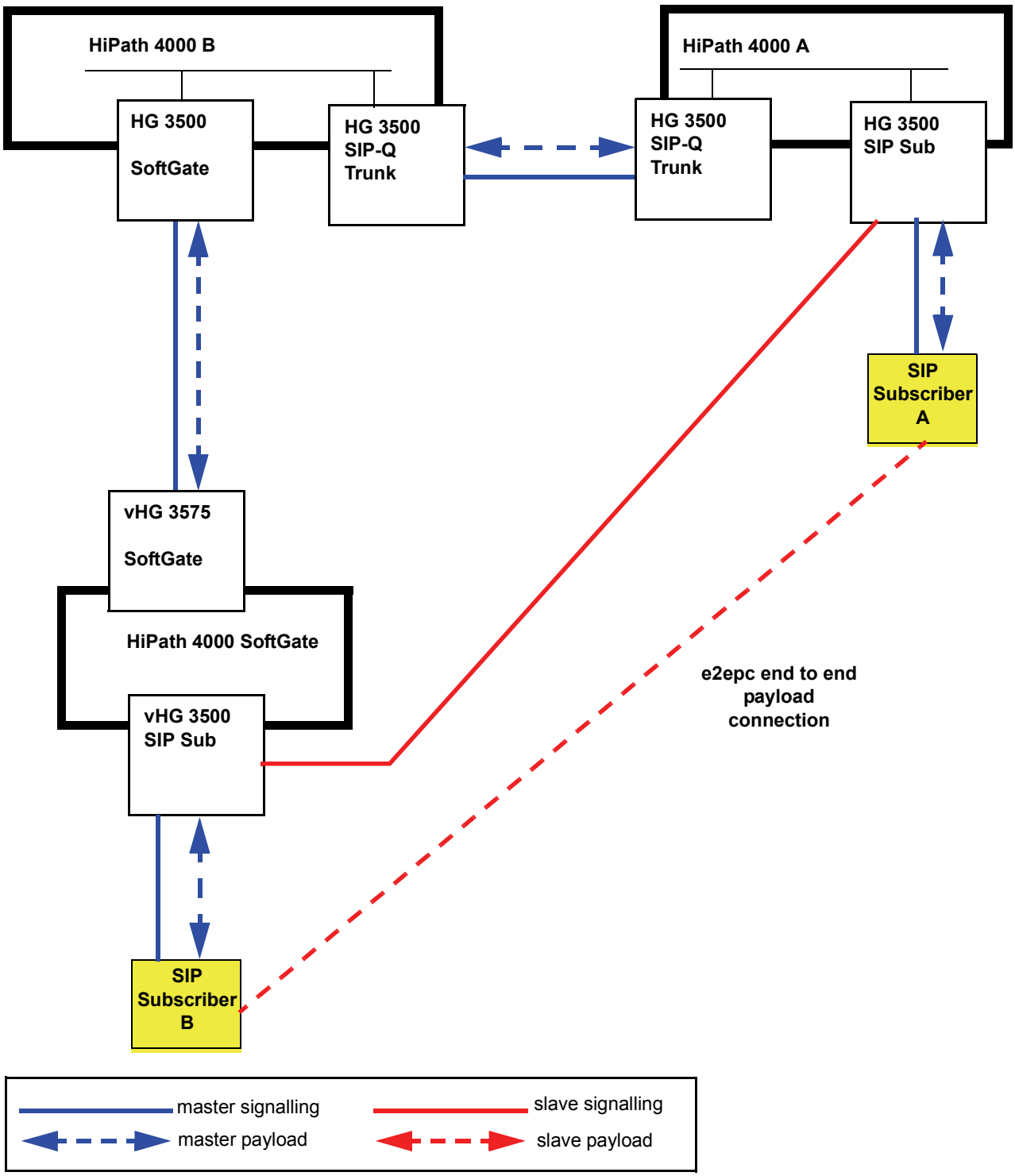
Kommuniziert ein SIP-Device oder SIP native Trunk am HiPath 4000 SoftGate mit einem DMC-Endpoint (nicht DMC-Proxy!), dann wird immer ein Media Relay am HiPath 4000 SoftGate dazwischen geschalten. Dies entspricht einem RTP-Proxy der den Media-Stream (RTP) immer über das HiPath 4000 SoftGate leitet.



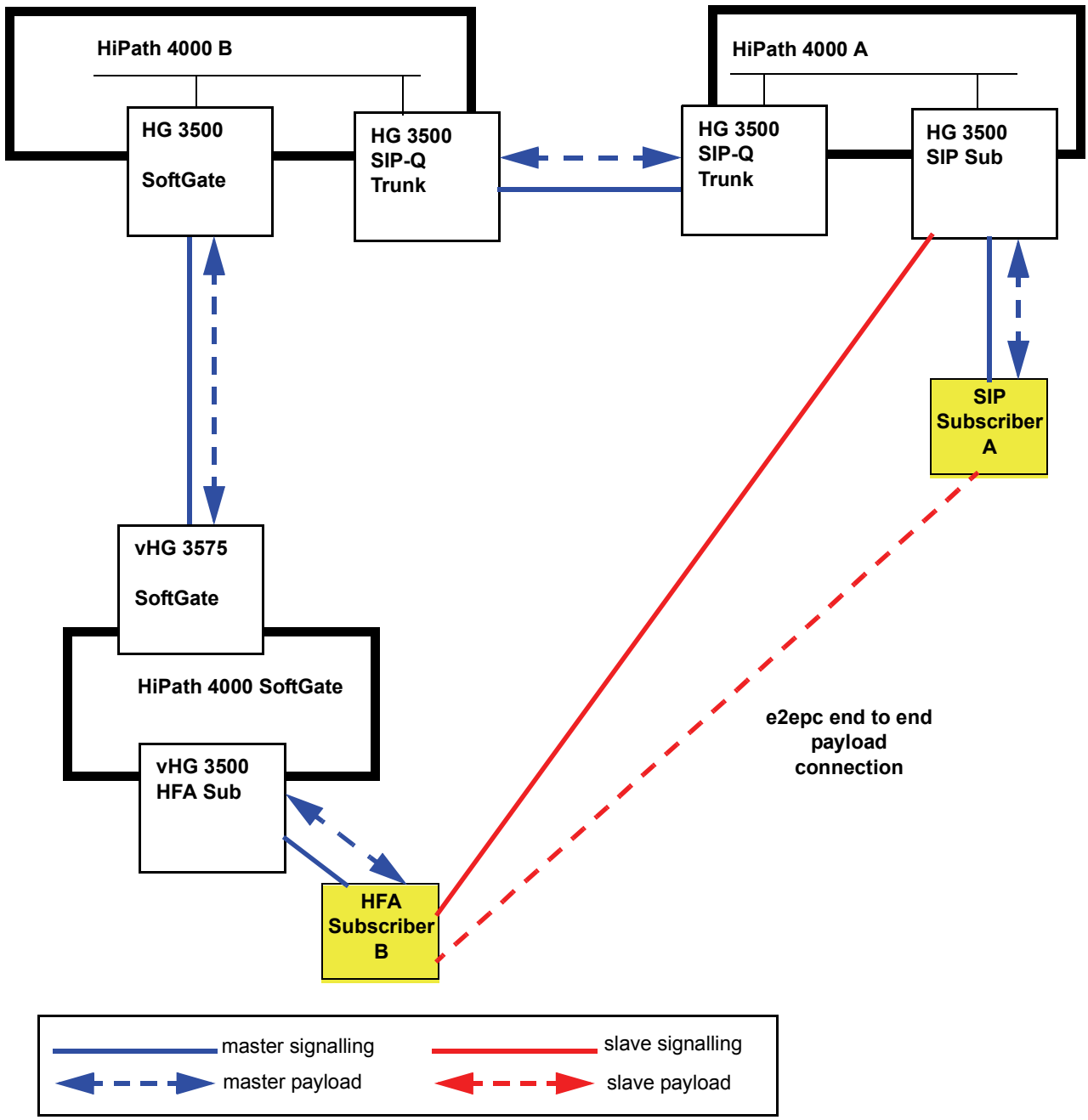
Example 5: HFA Subscriber A at HiPath 4000 A calls HFA Subscriber at HiPath 4000 SoftGate



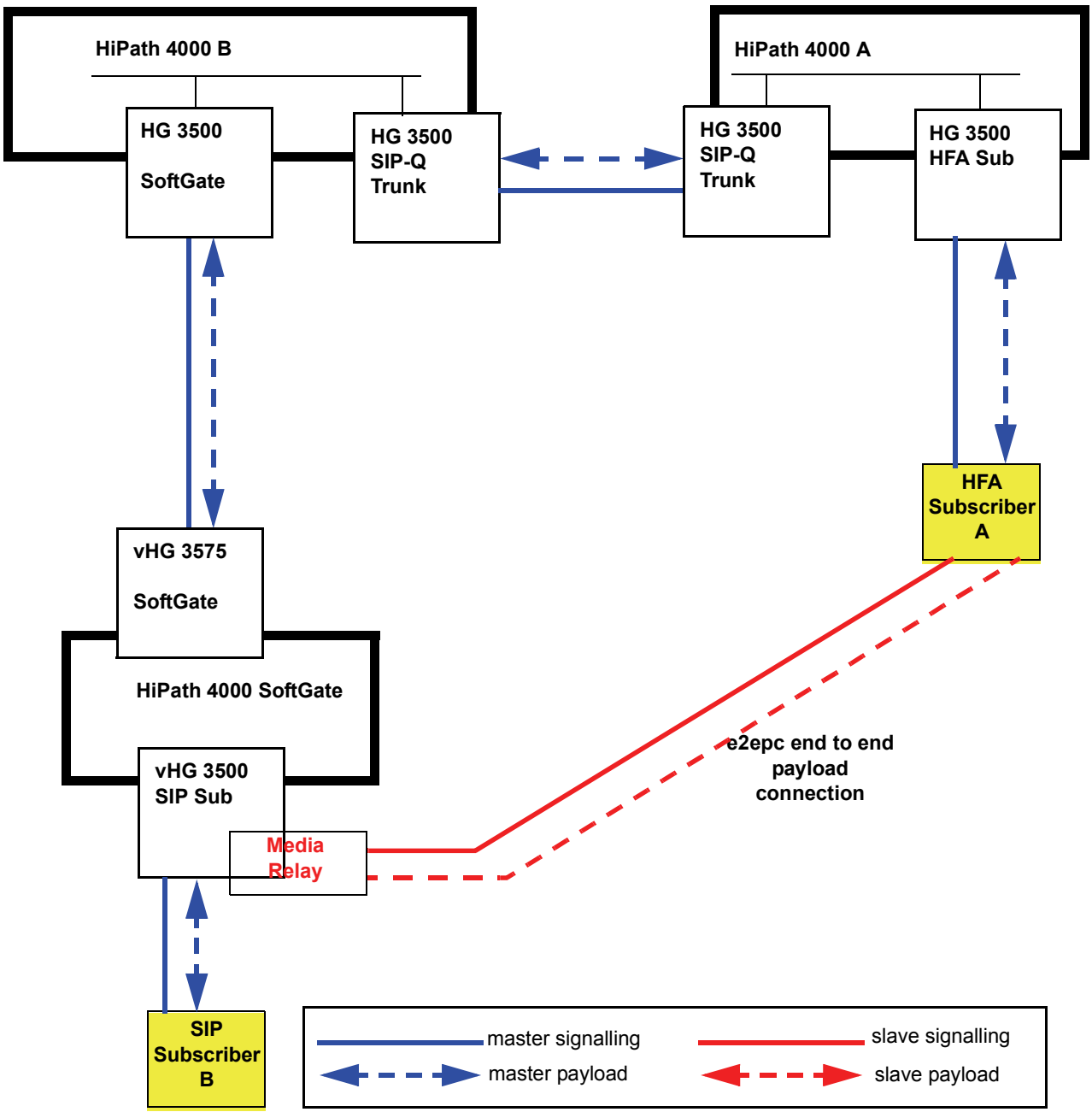
Example 6: SIP Subscriber A at HiPath 4000 A calls SIP Subscriber at HiPath 4000 SoftGate



Example 7: SIP Subscriber A at HiPath 4000 A calls HFA Subscriber B at HiPath 4000 SoftGate



Example 8: HFA Subscriber A at HiPath 4000 A calls SIP Subscriber B at HiPath 4000 SoftGate



9 LAN Redundancy

For increased resilience, HiPath 4000 SoftGate can be connected with two LAN cables to different switches/router.

Scenarios when SoftGate server is starting up

Both LAN cabels are connected

LAN port 1 (1. Slave interface) will always be activated. LAN port 2 (2. Slave interface) will be on standby.

Scenario: Only one LAN cable is connected

The connected LAN port (LAN1 or LAN2) will be used.

Scenario when board is active

If the active LAN port is disconnected/disabled by peer or equipment (when both LAN ports are connected):

- The Linux OS activates the standby LAN port.
- The "new" active LAN port sends a GRATUITOUS ARP with the same MAC and IP addresses as the "old" port.
- When the SoftGate Application switches ports, the payload will be lost for < 2 sec - all active connections will be saved and **NOT** disconnected.
- If the "old" port comes up again, no port switchback will be performed.

10 Signalling and Payload Separation (SPE) for HiPath 4000 SoftGate

To use **s**ignalling and **p**ayload **e**ncryption (**SPE**) for HiPath 4000 SoftGate a **M**aster **E**ncryption **K**ey (**MEK**) has to be configured like for a normal access point. For a normal AP this is done with the **C**ommand **L**ine **I**nterface (**CLI**). The HiPath 4000 SoftGate does not have a CLI therefore the process is a little different.

10.1 Configuration

Scenario 1: Activate a HiPath 4000 SoftGate at a HiPath 4000 host system that has alreayd SPE activated

IMPORTANT: Please pay attention to the sequence!

IMPORTANT: Don't start the HiPath 4000 SoftGate because it will fail!

1. Use the MEK client administration in HiPath 4000 Assistant and update the board list to see your new HiPath 4000 SoftGate.

   Expert Mode > MEK Administration > section **Manual MEK Distribution >** button **Update board list**

2. Configure a MEK manually for this HiPath 4000 SoftGate. This will transmit the MEK to the RMX.

   The HiPath 4000 SoftGate has configured 3 default MEKs.

   In the HiPath host system oen of these MEKs has to be configured. This has to be done like a normal AP via HiPath 4000 Assistant.

   Expert Mode > MEK Administration > sections **Configure Automatic MEK Distribution** and **Manual MEK Distribution**

   For more information on MEK administration, refer to the administration manual „HiPath 4000 Assistant V5, MEK Administration“ (http://apps.g-dms.com:8081/techdoc/de/P31003H3450M1440100A9/index.htm).

3. Now you can start up the HiPath 4000 SoftGate.

4. It is recommended to create now a specific MEK for the HiPath 4000 SoftGate.

Scenario 2: SPE is neither activated on HiPath 4000 SoftGate nor at HiPath 4000 host system

The following steps have to be performed for activating SPE for HiPath 4000 SoftGate.

IMPORTANT: Please pay attention to the sequence!

---

1. Switch on HiPath 4000 host system and all HiPath 4000 SoftGates configured in the system.
2. Distribute **M**aster **E**ncryption **K**ey (**MEK**) via HiPath 4000 Assistant to **all** HiPath 4000 SoftGates.

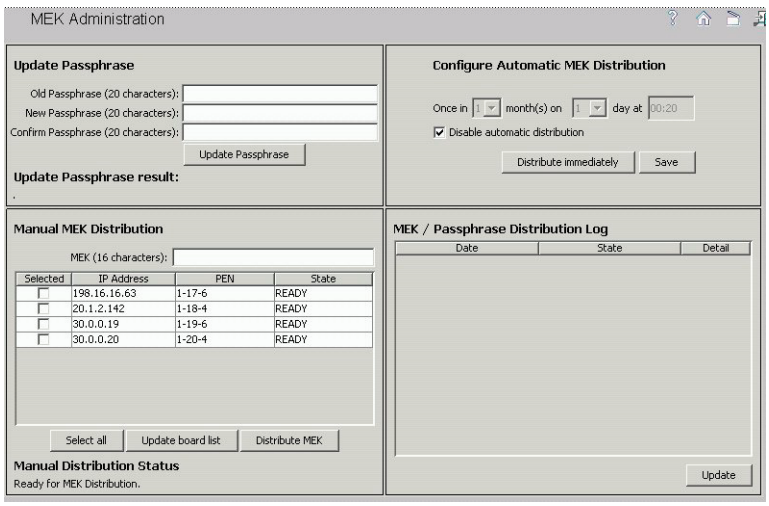
   This will

   - configure the MEK in the RMX for all APs regardless of their state and
   - transmit the MEK to all HiPath 4000 SoftGate.

   The MEK must be set first on the vNCUI boards and then on the HiPath host system.

   The MEK is configured via HiPath 4000 Assistant:

   Expert Mode > MEK Administration > sections **Configure Automatic MEK Distribution** and **Manual MEK Distribution**



   For more information on MEK administration, refer to the administration manual „HiPath 4000 Assistant V5, MEK Administration“ (http://apps.g-dms.com:8081/techdoc/de/P31003H3450M1440100A9/index.htm).

3. Check the Log from MEK client and see if any HiPath 4000 SoftGate failed.

   Expert Mode > MEK Administration > section **MEK / Passphrase Distribution Log**

4. After MEKs are configured for all HiPath 4000 SoftGates successfully you can activate SPE.

   The HiPath 4000 SoftGate encryption is activated with AMO SIPCO, parameter **IPDAENCR**:

   ```
   CHANGE-SIPCO:TYPE=SECURITY,IPDAENCR=YES;
   ```

   IPDAENCR (YES/NO): Signaling and voice encryption for IPDA/HiPath 4000 SoftGate connections.

   SPE activation for HiPath 4000 SoftGates fails when MEKs are not configured for all HiPath 4000 SoftGates (refer to point 1 to 3).

10.2 Restrictions

- If SPE is activated in the HiPath 4000 host system and no default MEK is assigned to the HiPath 4000 SoftGate, the HiPath 4000 SoftGate won't start.
- Secure Trace is not supported for HiPath 4000 SoftGate.
- Only the trunking connection between HiPath 4000 host system (HG 3500, function HG3570) and HiPath 4000 SoftGate (vHG 3575) is encrypted.For subscribers and SIP trunking signalling and payload encryption (SPE) is not supported.

Abbreviations

ACC	Access Point Connection Control
AP	Access Point
APE	Access Point Emergency
BRI	Basic Rate Interface (ISDN S0)
CGW	Common Gateway, e.g. HG 3500
CLA	Customer License Agent
CLM	Customer License Manager
CO	CentralOffice (Deutsche Telekom)
DLS	Deployment and License Server
DMC	Direct Media Connection (VoIP)
E2E	End-to-End
HFA	HiPath Feature Access
HHS	HiPath Host System
HMS	HiPath Media Server
HW	Hardware
IMP	IPDA Media Proxy
IMS	Integrated MediaServer
IPDA	IP Distributed Architecture
ISDN	Integrated Services Digital Network
JRE	Java Runtime Environment
LS	Local Survivability
LW	Loadware
MEK	Master Encryption Key
MXGW	Mediatrix Gateway
NAT	Network Address Translation
PBX	Private Branch Exchange
PEP	Proprietary Encryption Protocol (for IPDA signalling)
PSTN	Public Switching TDM Network
PXE	Preboot eXecution Environment
QDC	Quality of Service Data Collection
QoS	Quality of Service
SBC	Session Border Controller
SIP	Session Initiation Protocol
VoIP	Voice over IP

WBM Web-Based Management

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