Documentation

HiPath OpenOffice ME/EE
HiPath Cordless IP

Service Manual

A31003-C1010-S100-2-7620

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1 Introduction and Important Notes

1.1 Safety Information and Warnings

Work on communication systems and devices may **only** be carried out by qualified persons.

For the purposes of safety information and warnings, qualified persons are persons who are authorized to place into operation, ground, and label systems, devices, and lines in accordance with applicable safety procedures and standards.

It is absolutely essential that you read and understand the following safety information and warnings before starting installation and implementation work on the communication system or device.

You should also carefully read and observe all safety information and warnings on the communication systems and devices themselves.

Familiarize yourself with emergency numbers.

Types of safety information and warnings

The following grades of safety information/warnings are used in this manual:

DANGER

Indicates an immediate danger that could result in death or serious injury.

WARNING

Indicates a general danger that could result in death or serious injury.

CAUTION

Indicates a danger that could result in injury.

NOTE: Indicates situations that could result in damage to property and/or loss of data.

Symbols for specifying the source of danger more exactly

The following symbols are not usually used in the manual. They explain symbols that may be depicted on the communication systems and equipment.

* electrostatically sensitive devices

1.2 Correct Use

The communications system may only be used for the purpose described in this document and only in connection with the additional devices and components as recommended and permitted by
Siemens Enterprise Communications GmbH & Co. KG under Trademark License of Siemens AG 2008.
The proper use of the communications system assumes correct transport,storage, assembly and setup as well as careful operation and maintenance.

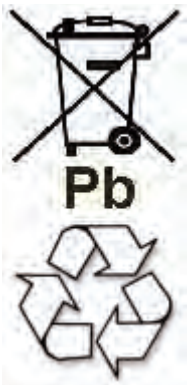
1.3 Proper disposal and recycling

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

The correct disposal and separate collection of your old appliance will help prevent potential negative consequences for the environment and human health. It is a precondition for reuse and recycling of used electrical and electronic equipment.

For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service, the shop where you purchased the product or your sales representative.

The statements quoted above are only fully valid for equipment which is installed and sold in the countries of the European Union and is covered by the directive 2002/96/EC. Countries outside the European Union may have other regulations regarding the disposal of electrical and electronic equipment.



Used accumulators and batteries with this sign are valuable economic goods and must be recycled. Used accumulators and batteries that are not recycled must be disposed of as hazardous waste with full observance of all regulations.

1.4 Standards and Guidelines on Installation

1.4.1 Labeling

This device complies with the EU guideline 1999/5/EEC as confirmed by the CE certificate.

This device has been manufactured in accordance with our certified environmental management system (ISO 14001). This process ensures that energy consumption and the use of primary raw materials are kept to a minimum, thus reducing waste production.

1.5 Data Protection and Data Security

This system processes and uses personal data for purposes such as call detail recording, displays, and customer data acquisition.

In Germany, the processing and use of such data is subject to various regulations, including those of the Federal Data Protection Law (Bundesdatenschutzgesetz, BDSG). For other countries, please follow the appropriate national laws.

The aim of data protection is to protect the rights of individuals from being adversely affected by use of their personal data.

In addition, the aim of data protection is to prevent the misuse of data when it is processed and to ensure that one's own interests and the interests of other parties which need to be protected are not affected.

The customer is responsible for ensuring that the system is installed, operated and maintained in accordance with all applicable labor laws and regulations and all laws and regulations relating to data protection, privacy and safe labor environment.

Employees of Siemens Enterprise Communications GmbH & Co. KG are bound to safeguard trade secrets and personal data under the terms of the company's work rules.

In order to ensure that the statutory requirements are consistently met during service – whether on-site or remote – you should always observe the following rules. You will not only protect the interests of your and our customers, you will also avoid personal consequences.

A conscientious and responsible approach helps protect data and ensure privacy:

- Ensure that only authorized persons have access to customer data.
- Take full advantage of password assignment options; Never give passwords to an unauthorized person orally or in writing.
- Ensure that no unauthorized person is able to process (store, modify, transmit, disable, delete) or use customer data in any way.
- Prevent unauthorized persons from gaining access to storage media, such as backup CDs or log printouts. This applies to service calls as well as to storage and transport.
- Ensure that storage media which are no longer required are completely destroyed. Ensure that no sensitive documents are left unprotected.

Work closely with your customer contact; this promotes trust and reduces your workload.

1.6 Documentation Feedback

If you have questions that are not answered by this document:

- Internal employees should contact their National Support Center.
- Customers should contact their retailer or the Siemens Customer Support Center.

When you call, state the title, ID number, and issue of the document.

Example:

- **Title:** HiPath Cordless IP, Service Documentation
- **ID number:** A31003-C1010-S100-1-7620
- **Issue:** 1

2 Overview

The HiPath Cordless IP solution extends the scope of the DECT standard introduced for voice communication, making it now available for Voice over IP infrastructures.

The radio range covered by the HiPath Cordless IP system is made up of DECT IP base stations that together form either an seamless network of overlapping and synchronous radio cells or individual radio islands. The size of a radio cell depends on local/structural factors.

Voice over IP infrastructures are connected via the SIP protocol. In their capacity as mobile communication solutions, DECT radio cells are therefore an optimal enhancement to SIP-compliant Voice over IP systems.

The DECT IP base stations support seamless handover in ongoing voice connections, that is, moving from one radio cell to another during a call with a DECT handset. The roaming function is also available for mobile stations.

HiPath Cordless IP also supports the DECT protocol GAP (Generic Access Profile) and the radio protocol PN-CAP. The basic function scope required by ETSI is thus extended to include a number of Siemens-specific features.

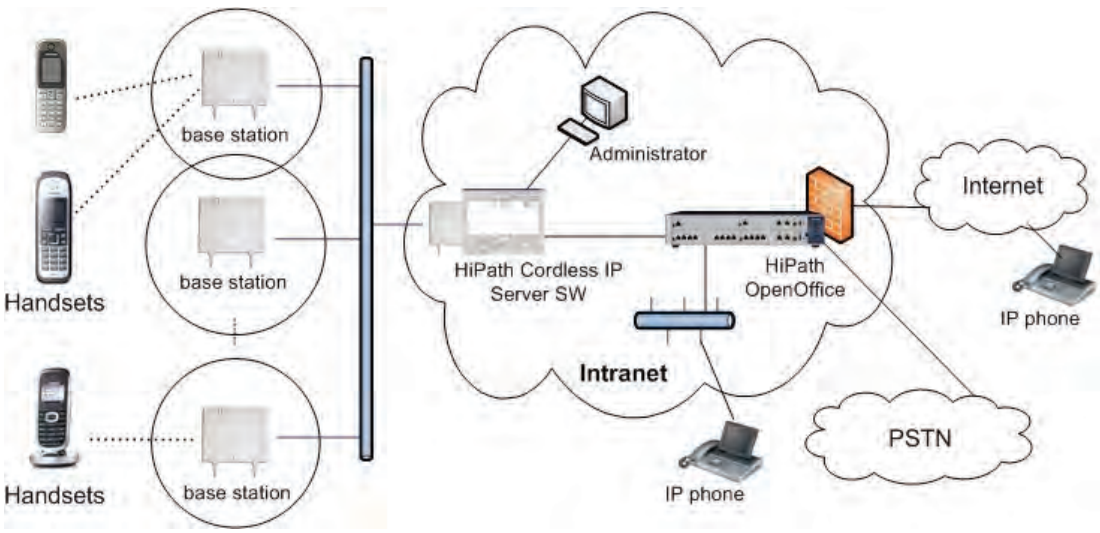


Figure 1 General Overview of the HiPath Cordless IP System

The HiPath Cordless IP System contains the following main components, see also Figure 1:

- **Handset**: Gigaset professional DECT handsets with PN-CAP functionality
- **BSIP1**: DECT IP Basestations with GAP/ PN-CAP functionality to the handset and IP interface to the Ethernet network.
- **HiPath Cordless IP Server SW**: central Server SW component for control of the DECT IP Basestations, SIP interworking with the communication server, and the common administration and configuration interface of the whole HiPath Cordless IP solution.

2.1 Einleitung

The HiPath Cordless IP solution is designed as a DECT system with an SIP interface to the communication server.

The following platforms are supported with the current release

- HiPath OpenOffice EE from V1.0
- HiPath OpenOffice ME from V1.0

2.1.1 DECT IP Base Station (BSIP1)

DECT IP base stations combine to form a network of radio cells. Roaming between radio cells is possible for DECT handsets during a voice connection if the radio cells are synchronized and overlap.

DECT IP base stations come with all necessary software for the DECT and IP functions. This software is configured and administered via the HiPath Cordless IP server software.

2.1.2 HiPath Cordless IP Server Software

HiPath Cordless IP server software is installed once on a system and runs on a DECT IP base station. It supports the following functions:

Function: Router and protocol converter

The HiPath Cordless IP server software serves as the interface between the IP DECT base stations and the communication server.

It manages the voice connections between the communication server and the relevant DECT IP base station and converts these into a data format that can be reed by the DECT IP base stations. At DECT layer the media packets are enhanced with DECT signaling (time frame, frequency) information. The HiPath Cordless IP Server SW converts incoming RTP media data into UDP packets via DECT codec G726.

Only HiPath Cordless IP Server SW knows, at which DECT IP Basestation a special DECT handset is located. For the communication server or any other phone, the HiPath Cordless IP Server SW is the endpoint. Whenever a handset performs a handover, this process is invisible outside the HiPath Cordless IP System. In the view of the communication server the HiPath Cordless IP Server SW is like a Gateway User-Agent that manages lots of handsets. Handsets use the HiPath Cordless IP server software for registration at the communication server. This software regulates the check-in procedure for the DECT handsets and their management.

Function: Configuration and administration interface

All administrative functionality for the DECT IP Basestations as well as for HiPath Cordless IP Server SW itself is performed via a Web Based Management to the HiPath Cordless IP Server SW, i.e., all DECT IP Basestations are administered via HiPath Cordless IP Server SW.

Function: Synchronization management

DECT IP base stations must be perfectly synchronized as a prerequisite for seamless handover. If the DECT IP base stations are synchronized, they combine to form a seamless handover cluster. The synchronization management function only works in this cluster. Additional clusters are possible but not synchronized. Seamless handover is not possible between different asynchronous clusters.

In DECT systems with line-switched connections such as HiPath Cordless systems, the synchronization information needed for synchronizing the DECT IP base stations is obtained from the UP0 connection. This is not possible in the HiPath Cordless IP system.

DECT-based synchronization ("synchronization over the air")

This method to synchronize overlapping radio cells runs under SW control within the DECT part of the DECT IP Basestation. The HiPath Cordless IP Server SW is acting only as admin point that notices when a base station has lost its synchronization.

The DECT IP base station must be located in the overlap area of the DECT IP base station that it wants to synchronize with over the DECT interface. For every DECT IP Basestation the synchronization "Master" have to be configured by the configuration Interface of the HiPath Cordless IP Server SW. DECT information for synchronization are exchanged directly between the DECT IP Basestations.

A DECT IP base station can also be synchronized with other DECT IP base stations as this increases the synchronism available in the cluster. It is important to avoid synchronization loops.

In the event of loss of synchronization, the DECT IP base station stops accepting calls once all ongoing calls that were being conducted on the asynchronous DECT IP base station have ended and then it re-synchronizes the asynchronous DECT IP base station.

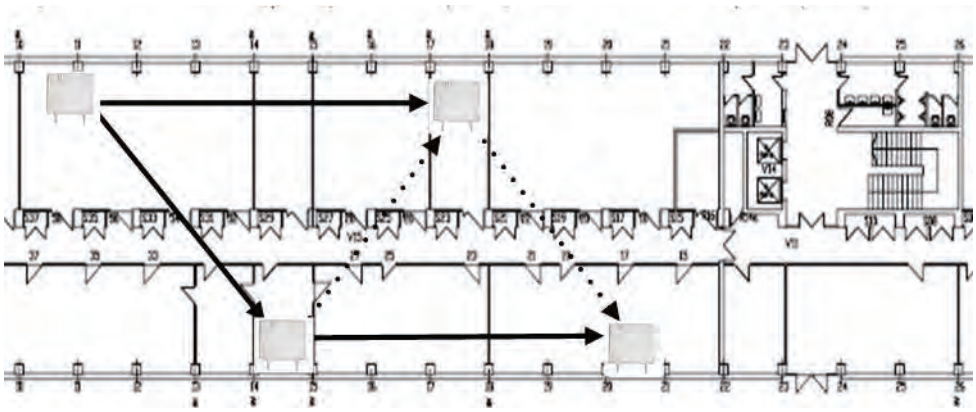


Figure 2 Optimum system synchronization over DECT

Standard synchronization

Alternative synchronization if standard synchronization fails

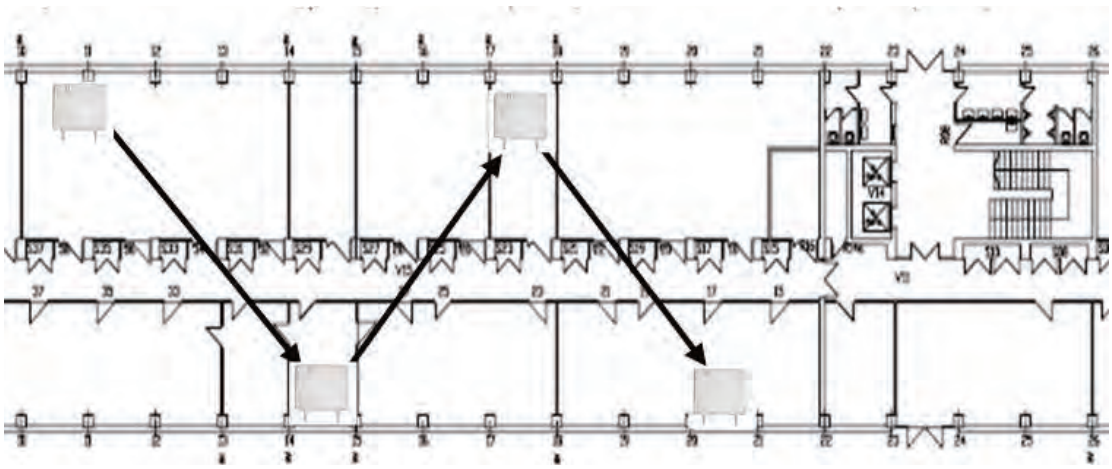


Figure 3 Not optimally synchronized, each DECT IP base station has only one synchronization partner

This data is transported in a VPN tunnel to ensure that the signaling and voice data in active voice connections between a DECT IP base station and HiPath Cordless IP software is protected against manipulation and interception. For the VPN encryption IPSec is used.

The DECT IP base stations are set up in communication with the HiPath Cordless IP server software. As soon as a new DECT IP base station is connected to the Ethernet, it starts to send multicast packets with its MAC address. The HiPath Cordless IP server software then activates and takes over control of the DECT IP base station. The HiPath Cordless IP server software then sends the DECT IP base station an IP address for communication purposes as well as its own IP address as a future target address for data traffic.

2.1.2.1 Communication Interfaces

The following picture gives an overview of the protocols used between DECT Handset, DECT IP Basestation, HiPath Cordless IP Server SW and the communication server.

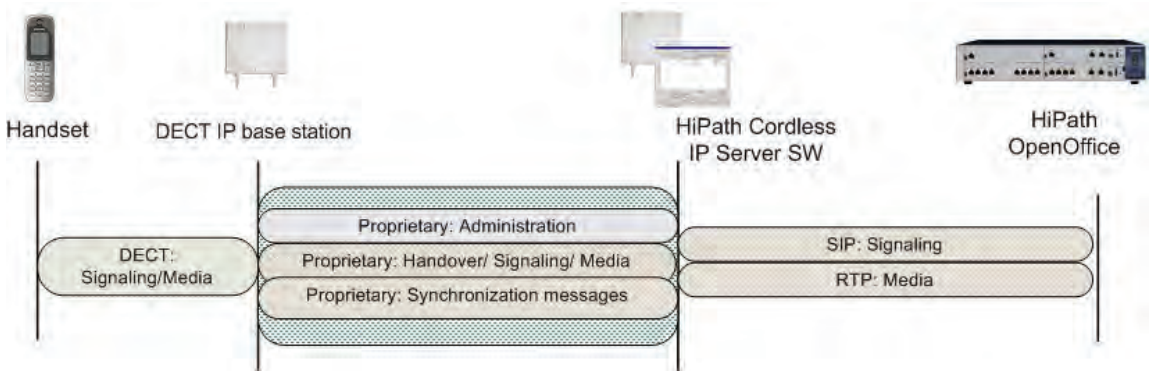


Figure 4 Protocols of the path between Handset and Communication Server

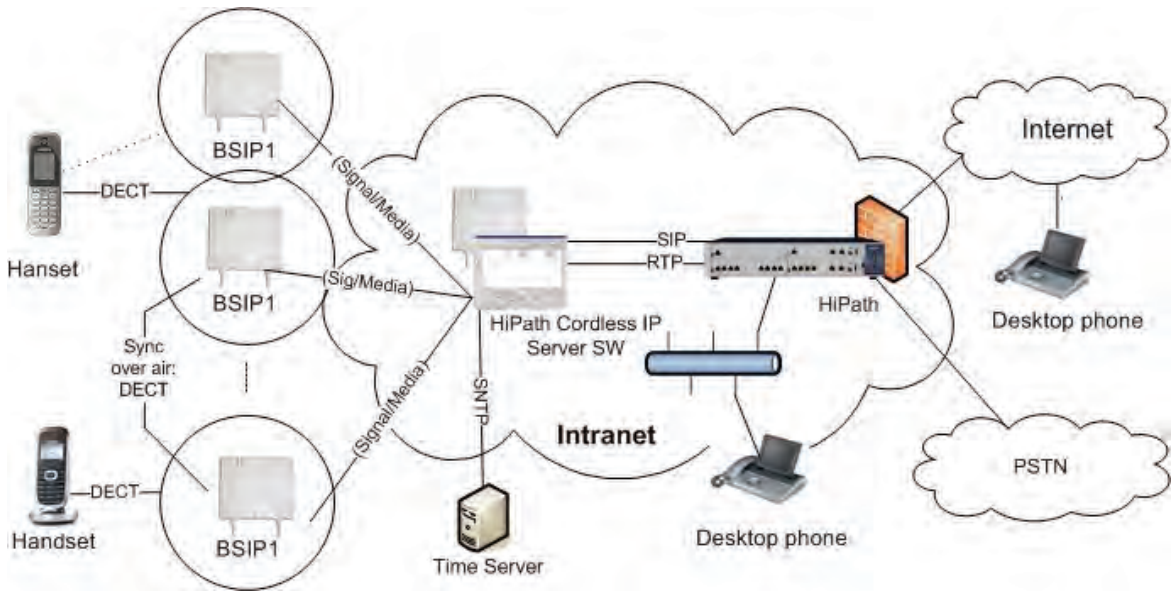


Figure 5 Depicts all communication channels of the HiPath Cordless IP System

The following list gives an overview of all communication-channels within the HiPath Cordless IP System:

DECT Handset - User: Gigaset professional DECT Handsets with PN-CAP functionality

DECT Handset - BSIP1: In this multicell DECT system, a call can be handed over seamlessly from one BSIP1 to the other. If seamless handover/ roaming is impossible and the signal quality is decreasing, at a certain point the handset can send a warning tone and the connection breaks off.

BSIP1 - BSIP1: An accurate synchronization is needed between DECT IP Basestation for seamless handover.

BSIP1 - HiPath Cordless IP Server SW: BSIP1 is able to handle a tunnel to the HiPath Cordless IP Server SW, in which the voice data of all active calls and all signaling data is transported. The connection between BSIP1 and HiPath Cordless IP Server SW is system-specific, i.e., this protocol is IP based and performs UDP streaming both ways.

HiPath Cordless IP Server SW - communication server: The SIP interface between the HiPath Cordless IP Server SW and the communication server is standard based. Seen from the communication server the DECT over IP System is a set of SIP subscribers represented by a GW User-Agent, which is the HiPath Cordless IP Server SW connected to the DECT handsets, i.e. the subscribers are the DECT handsets.

2.2 System Configuration

The voice and signaling data (RTP/SIP) are always routed over the HiPath Cordless IP server software because this is the only software that supports a routing and protocol converter function.

Scenarios are also possible where the HiPath Cordless IP server software is installed a number of times per communication server. Such scenarios do not support seamless handover between the different clusters formed with synchronous DECT IP base stations. Cascading is not available at present for communication server software.

2.2.1 Scenario - HiPath Cordless IP server software is activated on a DECT IP base station

All DECT IP base stations always also support the same functions as HiPath Cordless IP server software. This means that in principle, all DECT IP base stations can perform HiPath Cordless IP server software functions in addition to the actual DECT functionality. The HiPath Cordless IP server software must be activated before the DECT IP base station can perform this function.

The following system limits apply in this scenario based on resource availability in BSIP1:

- up to 10 DECT IP base stations
- up to 10 parallel calls

These system limits apply to each cluster of synchronous DECT IP base stations where seamless handover is possible. In the HiPath Cordless IP Server Software database a maximum of 99 Gigaset professional handsets can be configured. 50 handsets out of the 99 handsets (see calculation above) can be registered in the HiPath Open Office.

2.3 DECT IP Base Station Data

Table 1 Technical data DECT IP base station

Parameter	DECT IP base station BSIP1	Outdoor case
DECT Interface		
Max. amount of DECT channels	120	
DECT Signalling	GAP/ PN-CAP	
IP Interface		
Network connection	Ethernet 10/100 Base T	

Table 1 Technical data DECT IP base station

Parameter	DECT IP base station BSIP1	Outdoor case
PoE class	Class 2 according IEE802.3af	
Power consumption	< 6,5 W; PoE Class 2	
Max. Voice channels	12 (bei G.711)	
Codecs	G.711/ G.726	
QoS	802.1 p/q	
Echo Cancellation	yes	
DHCP Option	DCHP on or local entry of IP addresses	
SW Distribution	SW Download/ Update central via HiPath Cordless IP Server SW	
Miscellaneous		
Dimensions (W x H x D in mm)	202 x 256 x 90	296 x 256 x 90
Weight	ca. 0,5 kg	ca. 1,0 kg
Operating Temperature	Indoors: 0 ^{o}C bis + 40 ^{o}C	Outdoors (with outdoor housing): - 25 ^{o}C bis + 40 ^{o}C
Storage temperatur range	-5 ^{o}C bis + 45 ^{o}C	
Relative humidity	–	bis 95 %

Figure 6 DECT IP base station BSIP1 (Item number: U30807-S5494-X)

2.3.1 Outdoor Case

A DECT IP base station must be installed in a weatherproof outdoor case to guarantee radio coverage in outdoor areas, for example on factory sites. The outdoor case is suitable for mounting on house walls, roofs or masts.

The outdoor case already used for the HiPath Cordless base station BS4 is also used for DECT IP base stations (part number: S30122-X7469-X2).

If using the DECT IP base station outdoors, lightning and overvoltage protection must be provided and guaranteed for the DECT IP base station itself as well as for the feeder into the DECT IP base station and the building. In compliance with EN 61000-4-5, the power supply inlet on the DECT IP base station offers up to 0.5 KV overvoltage protection.

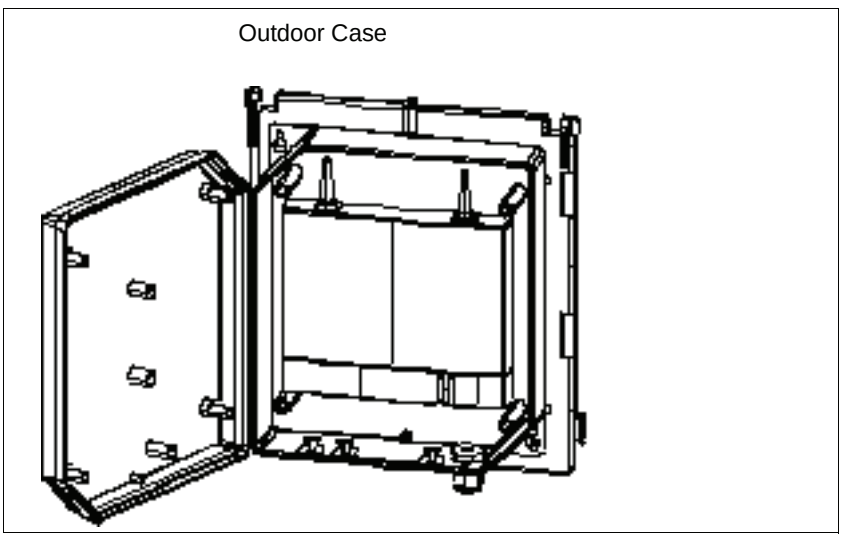


Figure 7 Outdoor case with DECT IP base station

2.3.2 Powering the DECT IP Base Stations

The DECT IP base station can be powered in two different ways:

- Power-over-Ethernet (PoE) Class 2 to 802.3af
- Power-over-Ethernet: PoE injectors

A PoE injector is used if PoE cannot be made available in the network. The PoE injector must be 802.3af-compatible. Pre-tested and released PoE injectors are available as optional features within the scope of the HiPath Cordless IP solution.

The IEEE802.3af standard allows the PoE Injector to be in any location between the switch and the BSIP1. The maximum allowed distance between the switch and the BSIP1 for IEEE802.3 compliance is 100 m. It is typical to deploy the PoE Injector close to the switch, since by doing this one can use a single UPS (central power supply) to backup both the switch and the PoE Injector.

If overall efficiency is more important than centralized backup and/or management, it makes sense to place the PoE Injector closer to the BSIP1, since the power dissipated at the cable between the PoE Injector and the BSIP1 is directly proportional to the length of this cable ($P = I^2 * R$).

Figure 8 PoE Injector

2.4 Network Requirement

Voice connections only work properly over IP networks if the IP network satisfies all general VoIP network requirements in terms of delay, loss and guaranteed quality of service features.

The following conditions should also be assured for the DECT IP base stations and the HiPath Cordless IP server software in the IP network:

- they have to be part of the same Ethernet segment, a layer-3 routing via an IP router is not supported,
- no devices use the Network Address Translation (NAT) Ethernet segment
- Minimum 2 priority classes acc. to IEEE 802.1 p/q in the IP Network possible
- Use of 100 Mbps full duplex for all switched LAN ports
- as the solution operates with standard IP addresses, these must be freely available in the IP network. Refer to Chapter 5.2.1 for this IP address.

Failure to satisfy these conditions can result in delays in the IP network. This leads to synchronization and voice quality problems in the DECT handsets.

3 Planning a HiPath Cordless IP System

When planning a cordless system, the position of the base station is critical for system performance. The load should be optimized using locations with a high call volumes and radio coverage.

3.1 Planning According to Call Traffic Load

- The borders of base station radio cells should not be located in high traffic areas because changing base stations during a call (handover) increases traffic load.
- The best base should be as unique as possible to avoid frequent switching.

10 Voice channels with 100 mErl/user (low traffic)		
Grad of Service (GoS)	0,1 %	1 %
Traffic	3,09 Erl	4,46 Erl
User	31	45
10 Voice channels with 150 mErl/user (normal traffic)		
Grad of Service (GoS)	0,1 %	1 %
Traffic	3,09 Erl	4,46 Erl
User	21	30
10 Voice channels with 200 mErl/user (high traffic)		
Grad of Service (GoS)	0,1 %	1 %
Traffic	3,09 Erl	4,46 Erl
User	15	22

Table 2 Recommended amount of users at 10 voice channels

3.2 General

DECT IP Base station (BSIP1)

DECT IP base stations are logically connected to the HiPath Cordless IP server software over LAN connections. This software is connected to the communication server via the SIP interface.

- Base station range
  - Ethernet cable range (see also Chapter 2.4 for network requirements between DECT IP base stations and the HiPath Cordless IP server software)
  - Spatial distance
    The distance which must be maintained between the different installation points of the base stations is dependent on
    - the range
    - the traffic capacity of the radio cells.
      You can increase the number of simultaneous calls in a radio cell by overlapping radio cells (overload).
    - Distance
      For synchronization over DECT, the DECT IP base stations you want to synchronize with each other must be able to exchange their management information (beacons). For this to work, they must be located in the areas where their radio cells overlap.
  - Overlap areas inside/outside buildings (see following chapter), measurement results (RSSI points) (see Section 7.2.1)

Radio measurement techniques are used to determine the radio range of DECT IP base stations.

DECT IP base stations inside buildings

- Please note that the base station's connection cable can be repositioned as necessary (connection cable plus reserve loop to be factored in).

DECT IP base stations in areas outside buildings (e.g. campuses).

- The base station must be installed in the outdoor case for use is exterior areas.
- Make sure that adequate lightning and overvoltage protection is provided for the cable feeder into the building and the DECT IP base station

- Radio propagation

  Radio propagation is negatively influenced by

- obstructions with strong absorption qualities (brick walls, dividing walls, ceilings, furniture, steel cabinets, bathroom units, elevators, wire-reinforced glass, leaded windows, blinds and others)
- reflective stationary obstructions (brick buildings, reinforced concrete buildings, buildings with metal sheathing)
- reflective moving obstructions (people, animals, vehicles)

3.3 Propagation Conditions for Radio Traffic

Radio wave propagation in the DECT frequency range is quasioptical. This means that a wave is hindered in its propagation if it hits a solid surface and is thereby reflected to a greater or lesser extent. This reflection is dependent on the physical qualities of the medium.

In the case of conductive materials, the penetration depth into the medium is determined mainly by the magnetic quality and the electrical conductivity.

- Metals with a high degree of conductivity
  These include copper or steel and prevent most DECT frequency radio waves from penetrating, reflecting them in the same way as a mirror reflects light.
- Modern construction materials (exceptions, see above)
  These have relatively poor conductivity levels with the result that electromagnetic waves, even if attenuated, still can pass through. Thus, radio traffic is possible within and through buildings.
- Attenuation qualities
  of the construction materials vary greatly resulting in different ranges depending on the propagation direction and the construction material penetrated.
  - Wood (dry and unprocessed), glass, plastics (N-conductor) — negligible attenuation
  - Brick walls, wood (damp and processed, for example, particle board) — medium range of attenuation
  - Reinforced concrete, glass with metal reinforcement/coating — greatest attenuation

  This attenuation is mitigated by openings, especially by windows in the buildings as long as they do not have wire-reinforced or metal-plated glass.

The different levels of radio propagation give rise to various scenarios in which radio cells are formed:

- in the open with visibility
- industrial sites with reinforced concrete buildings and buildings with metal facades

- indoor areas in buildings made of brick and light construction materials
- indoor areas in reinforced concrete buildings with diverse interior layout, for example.

3.3.1 In the Open with Visibility

In this scenario, the electromagnetic waves are subject to the lowest amount of attenuation with the result that they produce the greatest radio wavelength.

In principle, base stations in such a scenario produce a radio coverage range with a radius of up to 300 m.

This, however, is usually not possible, since trees, bushes and moving obstructions, such as, people, animals, and vehicles in the direct propagation route can significantly reduce propagation.

NOTE: A base station installed in an attic directly beside a dormer window (no metal reinforcement in the window pane) is the alternative to the outdoor housing for coverage of the outdoor area.
Choose the mounting location carefully:
The base station is often exposed to extreme environmental temperatures, for example, direct sunlight or extreme cold.

3.3.2 Industrial Sites

Buildings of varying structural materials may be found here, including those:

- of light construction materials,
- of brick,
- of reinforced concrete,
- with metal facades.

The distances between the buildings, however, are rarely greater than 100 m. In this scenario, outdoor base stations are practical for covering the outdoor area.

- Buildings of brick or light construction materials
  are generally penetrable, but the magnetic field reception behind the walls is extremely low, resulting, quasioptically, in a shadowed area.

  For example, in the case of a base station installed on the southern side of a brick building, the range limit on the northern side would be attained immediately or after just a few meters, owing to the insertion loss.

Up to 100 m of the outdoor area can also be supplied through the windows. For this purpose, the base station must be set up on an upper floor (> 3rd floor, that is two levels above ground floor). Low-lying obstructions near the base station, such as, vehicles or a garage (one or two cars) do not, in this case, cause significant interference.

- Reinforced concrete buildings and/or metal facades:
  These have proven to be limiting factors. Penetration into the building is only possible through windows (up to about 2 m into the building in the case of standard size windows). The windows cannot be made from wire-reinforced or metal-plated glass.

  Wave conduction is possible in alleys between buildings as well as along streets. This results in a larger radio area.

3.3.3 Indoor Areas in Buildings in Brick and Light Construction Materials

- Insertion loss values

  In the case of walls of brick or light construction materials, insertion loss values are relatively small so that even dividing walls of up to 30 m can be penetrated.

- Vertical attenuation

  This is dependent on the ceiling type. In this case, reinforced concrete ceilings that offer higher attenuation in particular compared to brick play a decisive role in range evaluation.

  These ceilings are dimensioned based on the purpose of the building, for example,

  – single-family residence

  – apartment building

  – office building

  – theater

  and so the insertion loss a_e also differs accordingly; see Table 3.

Table 3 Insertion loss (a_e)/range loss in the radio area

Insertion object	a_e (dB)	Range loss (%)
Brick wall, 10 to 12 cm	2.5	~ 43.5
Brick wall, 24 cm, small windows	4	~ 60
Brick wall, 63 to 70 cm	4.0 to 4.5	~ 60 to 64
Drywall	1.3 to 2.3	~ 26.5 to 41
Gaseous-concrete wall	6.6	~ 78
Glass wall	2	~ 37
Wire-reinforced glass wall	8	~ 84
Reinforced concrete ceiling (residence)	6 to 9	~ 75 to 87
Two reinforced concrete ceilings	26	~ 99.5
Three reinforced concrete ceilings	46	100

NOTE: These values show clearly that propagation within buildings is hindered much less in a horizontal direction than in a vertical direction.
This must be taken into consideration when installing the base station.

3.3.4 Indoor Areas in Reinforced Concrete Buildings with Diverse Interior Layout

Indoor areas in reinforced concrete buildings can give rise to different scenarios, depending on the interior layout.

- **Scenario 1** - Large factory halls (for manufacturing or office space)

  These are either not partitioned (e.g. manufacturing halls) or have mobile partitions reaching half way to the ceiling (office).

  – Propagation conditions

    Favorable in this scenario because intervisibility is more frequent than, for example, in buildings divided into individual offices with no line of sight between the base station and mobile telephones.

- **Scenario 2** - Interior in buildings of brick and light construction materials

  – Propagation conditions

Similar to buildings with brick outer walls.
However, due to industrial sector requirements, the dimensions of reinforced concrete ceilings in these buildings are such that insertion loss values are considerably higher than in brick buildings.

NOTE: The resulting unfavorable vertical wave propagation must be taken into consideration when installing the base station.

- **Scenario 3** - Interior with concrete walls and steel dividing walls

  These areas also usually include the heavily steel-reinforced areas of

  – stairwells,

  – bathroom areas,

  – supply shafts, as well as

  – elevator shafts.

  Table 4 shows several insertion loss values which are relevant to this scenario, along with the corresponding capacity loss data for the radio area.

Table 4 Insertion loss (a_e)/range loss in the radio area

Insertion object	a_e (dB)	Range loss (%)
Concrete wall, interior, 10 cm	6	~ 75
Concrete wall, double, 2 x 20 cm	17	~ 97.5
Concrete wall, 25 to 30 cm	9.4 to 16	~ 88 to 97.5
Reinforced concrete ceiling	12 to 14	~ 91 to 96
Two reinforced concrete ceilings	35 to 47	100
Three reinforced concrete ceilings	42 to 53	100
Steel wall with wire-reinforced glass	6.5 to 10	~ 75.5 to 90
Steel walls, extending to ceiling, 3.5 m dist.	31 to 41	100

  – Propagation conditions

    Horizontal and vertical values are approximately the same. It has been determined that in this type of building, transmission usually takes place along corridors if steel divider walls are installed.

    As the relatively high insertion loss values show, individual rooms are increasingly supplied via reflection if multiple metal walls are in the direct path.

    Concrete walls cause similar conditions to those described above. Elevator shafts and stairwells must therefore often have their own base station if they are to be included in the HiPath Cordless IP range.

3.4 Determining the Installation Site

3.4.1 Indoors

3.4.1.1 In Buildings of Brick or Light Construction Materials

- Horizontal direction
  A base station must be installed at least every 50 m.
- Central installation in the building
  The general rules must be observed.
- Vertical coverage
  Care must be taken to ensure that no more than two reinforced concrete ceilings are in the direct propagation route between the base station and the area of movement of the handsets.
  Other base stations must then be set up in the radio cells if necessary, based on the concentration of stations or the number of handsets.

Assuming that the distribution of handsets in buildings will be fairly uniform, additional base stations should preferably be installed on the floors above or below the minimum required base stations (see Figure 9).

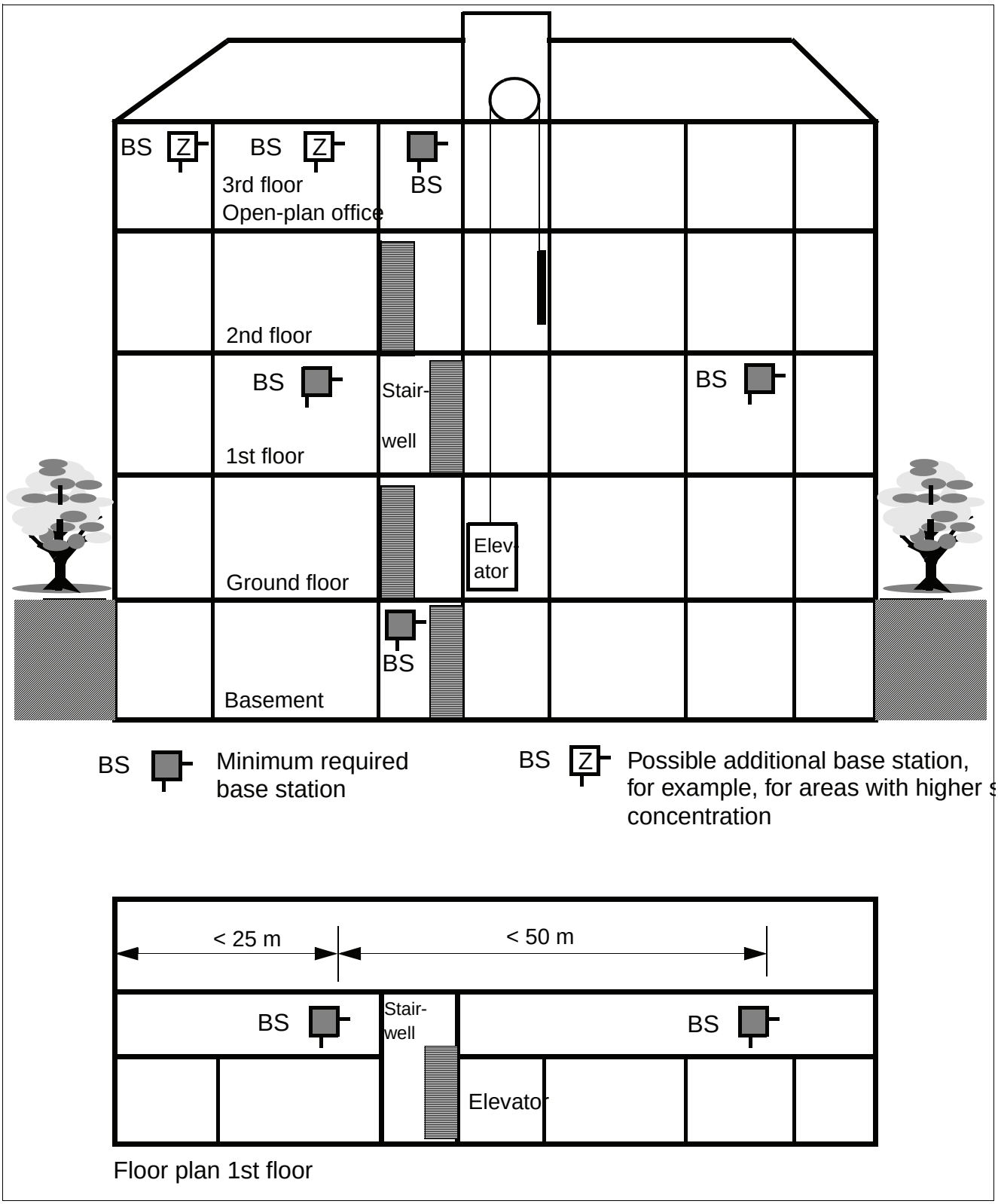


Figure 9 Base station distribution in buildings of brick and light construction materials

3.4.1.2 In Steel/Concrete Buildings

- For interiors of brick or light construction materials (Figure 10)
  - Horizontal direction
    A base station must be installed at least every 50 m.
  - Central installation in the building
    The general rules must be observed.
  - Vertical coverage
    Care must be taken to ensure that not more than one reinforced concrete ceiling is in the direct propagation route between the base station and the area where the mobile telephones are used. Adequate coverage cannot otherwise be guaranteed.
    - Stairwells,
    - elevator shafts and
    - supply shafts

    in these buildings usually have strongly-reinforced concrete walls and stairs. Areas such as these, with poor propagation conditions, often require additional base stations.
  - If additional base stations are needed because of a large number of mobile telephones, see Figure 10.

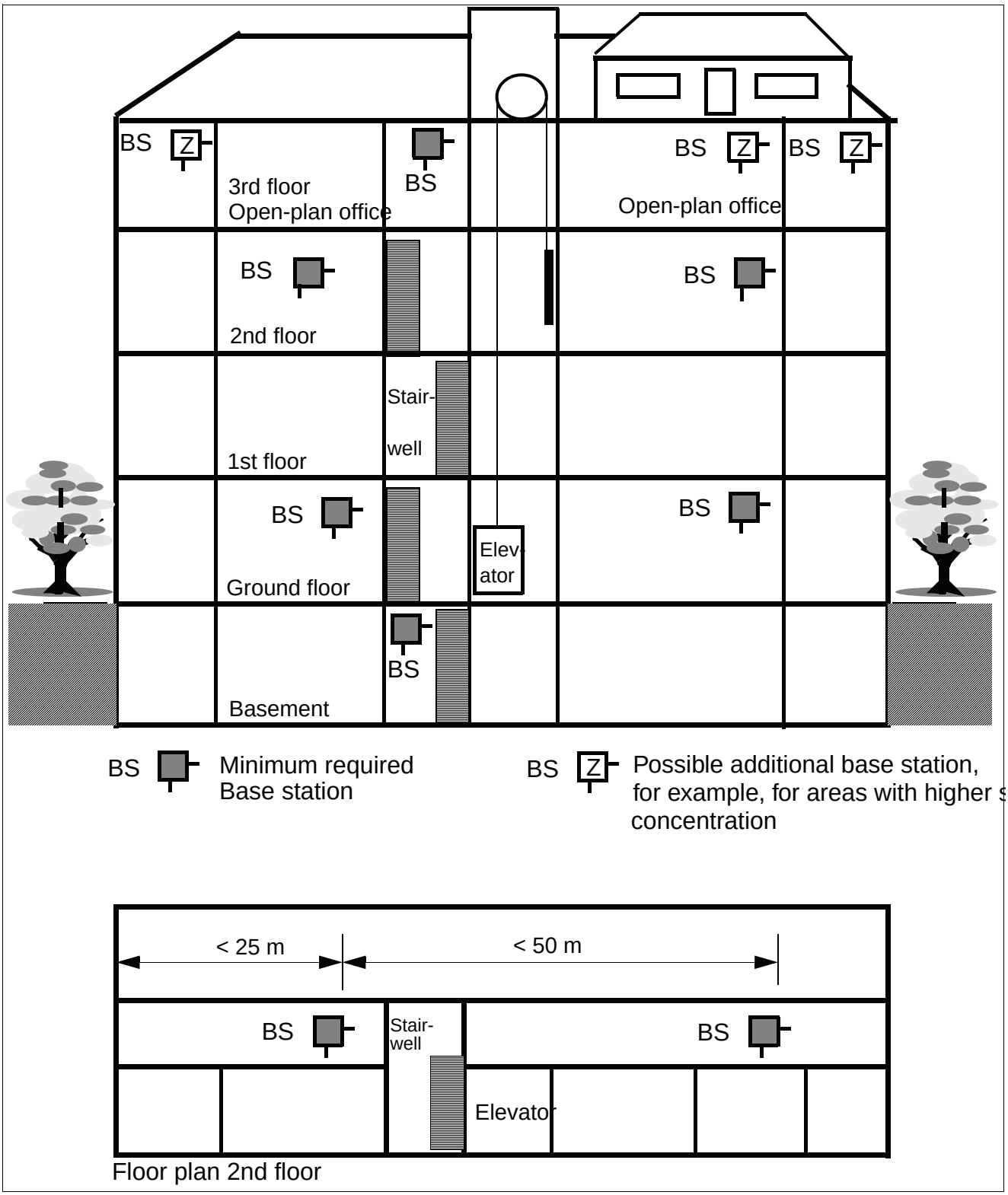


Figure 10 Base station distribution in interiors of brick and light construction materials

- For interiors with concrete and steel dividing walls (Figure 11)
  - Central installation in the building
    The general rules must be observed.
  - Horizontal direction
    Because of the relatively high attenuation of concrete and steel dividing walls, a base station must be installed in these buildings at least every 25 m.
  - Vertical coverage
    Care must be taken to ensure that not more than one reinforced concrete ceiling is in the direct propagation route between the base station and the area where the mobile telephones are used. Adequate coverage cannot otherwise be guaranteed. For
    - stairwells,
    - elevator shafts and
    - supply shafts

    additional base stations are also often necessary.
    In the case of elevators, a base station can be installed in the elevator cabin itself.
  - If additional base stations are needed because of a large number of mobile telephones, see Figure 11.

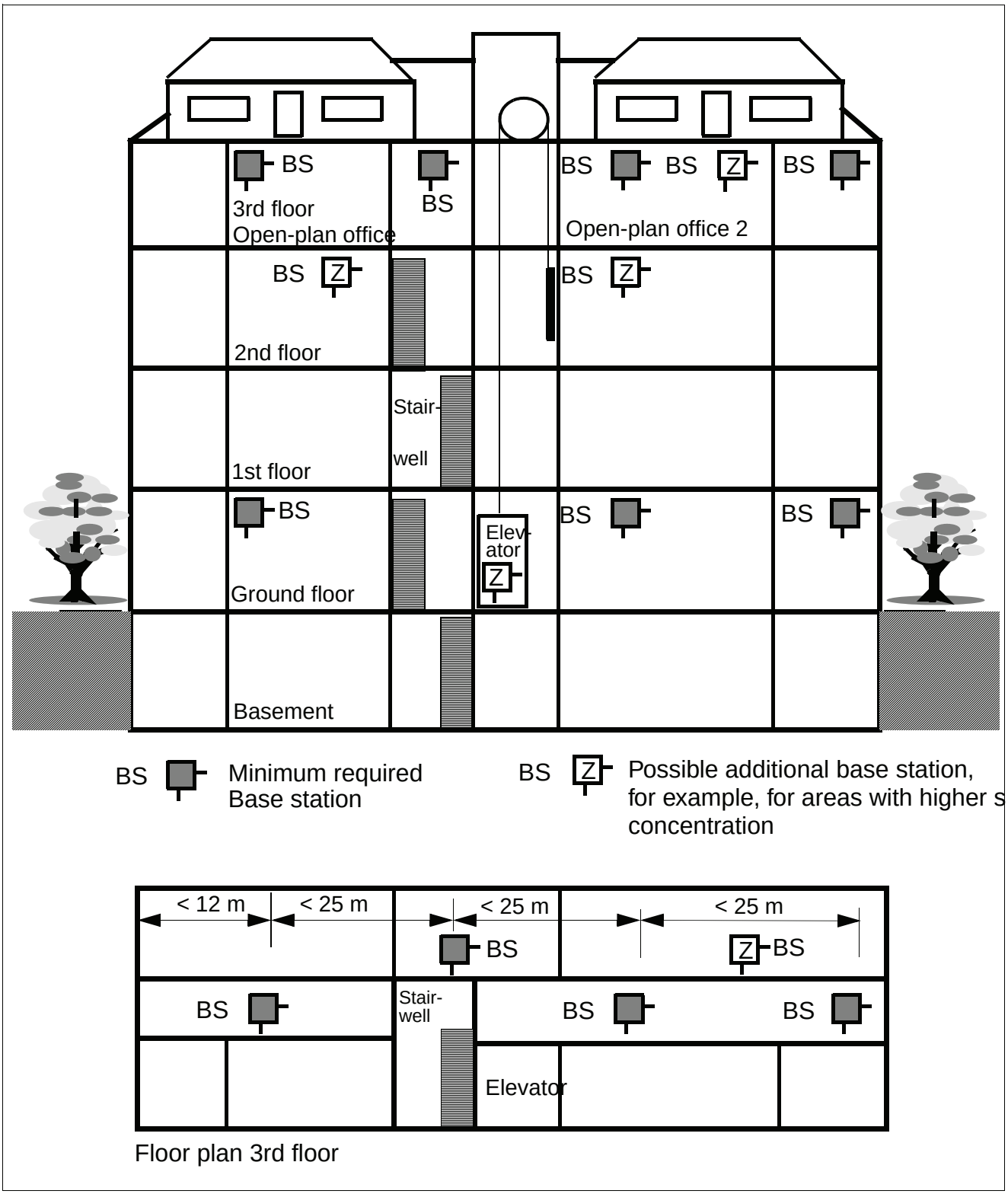


Figure 11 Base station distribution in interiors with concrete and steel dividing walls

3.4.1.3 Factory Halls and Open-Plan Offices

- Within halls or open-plan offices (Figure 10)

  Good transmission qualities.

  For a hall which is 100 m long, one centrally located base station, suspended freely from the ceiling (mast, plastic chain), may be sufficient.

CAUTION

The base station should not be installed on a reinforced concrete pillar because the pillar creates a partial shadow which means that a clear line of sight no longer exists.
In this case, two base stations must be installed 50 m to 75 m apart.

In the case of outer walls or interior siding and/or hall ceilings made of metal (or metal-clad), it may be necessary to increase the number of base stations and distribute them in such a way as to virtually exclude radio interference through reflections.

3.4.2 Outdoors

- Base station with outdoor housing (Figure 12)

  Only base stations with weather-resistant housing are suitable for radio coverage out of doors, e.g. on factory sites.

  – Installation

    A base station can be installed on a mast made of wood, plastic or concrete (not metal), on the roof of a building (preferably made of brick or light construction materials) or on the wall of a house.

  – The mast used must be stable and wind-resistant.

NOTE: Choose the installation site to allow maximum visibility from the base station to the service area.

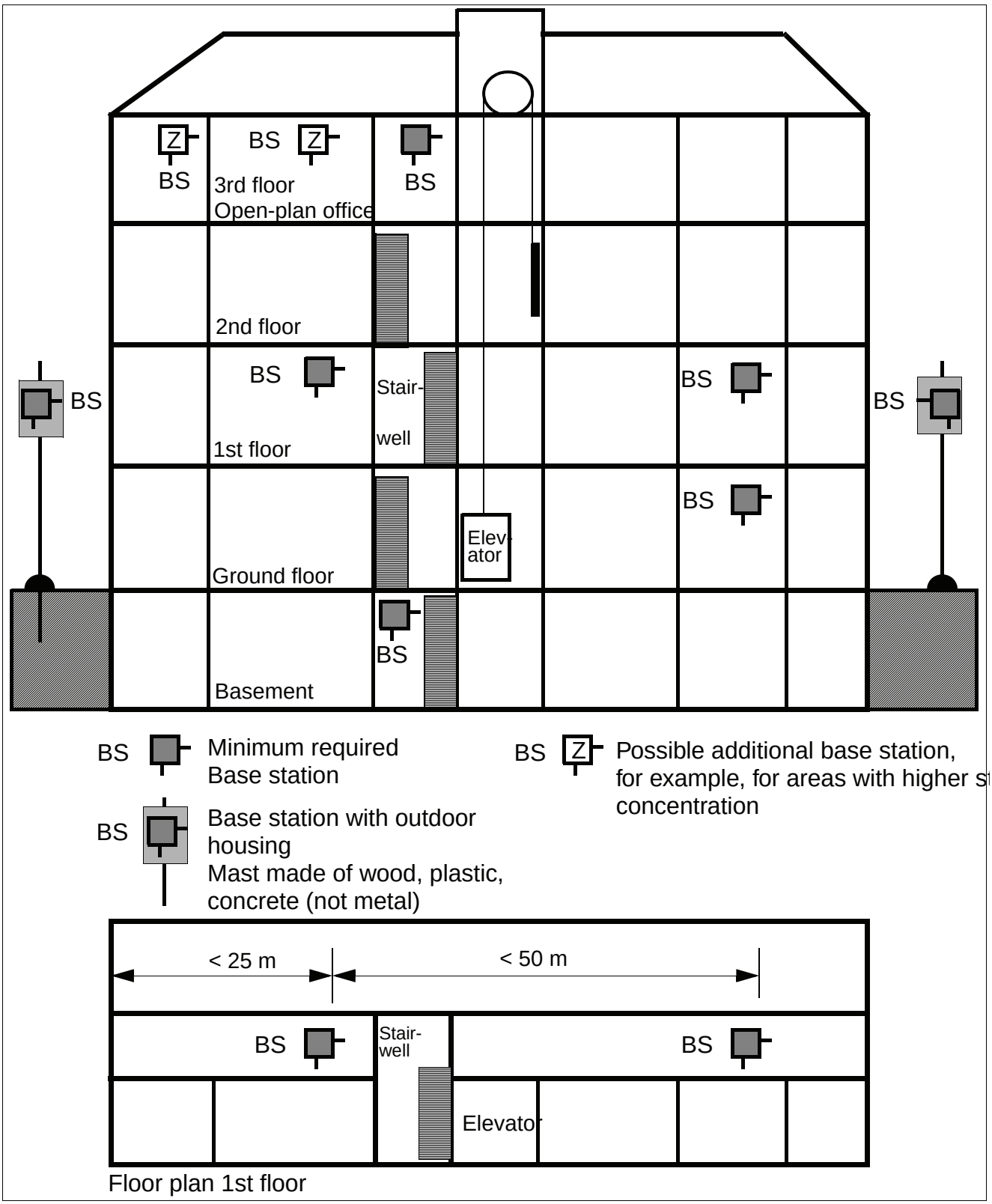


Figure 12 Base station distribution for base stations with housing for outdoor use

Example: Planning an outdoor area (Figure 13)

NOTE: A base station installed in an attic directly beside a dormer window (no metal reinforcement in the window pane) is the alternative to outdoor housing for coverage of the outdoor area.

- Planning

  A site plan, for example, with a scale of 1:300 or 1:1000 is helpful for determining the base station installation site.

  – The customer's preferred radio area should be indicated on the map (subject to customer confirmation).

  – Additional information about the types and heights of buildings is also helpful.

  – Radio coverage can be adequately determined with the aid of the site plan and the information above.

- Site plan, see Figure 13

  This plan depicts a company's grounds with buildings A to G. It includes the type of construction and heights of these buildings.

  – Bird's eye perspective
  It is relatively simple to find the point which offers the best possible view of the grounds without any obstructions.

  Placement around the buildings C, E, F, and G is not feasible since the view from these buildings extends only to a few neighboring buildings.

  The view from buildings A and B is better.

  In the example, the decision was made to place the base station at building B rather than A. Note that the areas between buildings C and E as well as F, G, and A are covered. The radio waves can pass through brick building A, so that an area of about 10 meters beyond will still be covered.

  In practice, coverage can also be assumed for other outdoor areas as waves pass through the windows.

- Reinforced concrete buildings or constructions with metal facades act as limiting factors. Areas behind these buildings are quasioptically blocked and must be considered not covered by the radio waves.

- Brick buildings
  can usually be penetrated so that significant parts of them are reached by the radio waves.
  The supply range, however, often stops less than 10 meters beyond these buildings.

- Streets
  act as conductors making greater ranges possible along them.

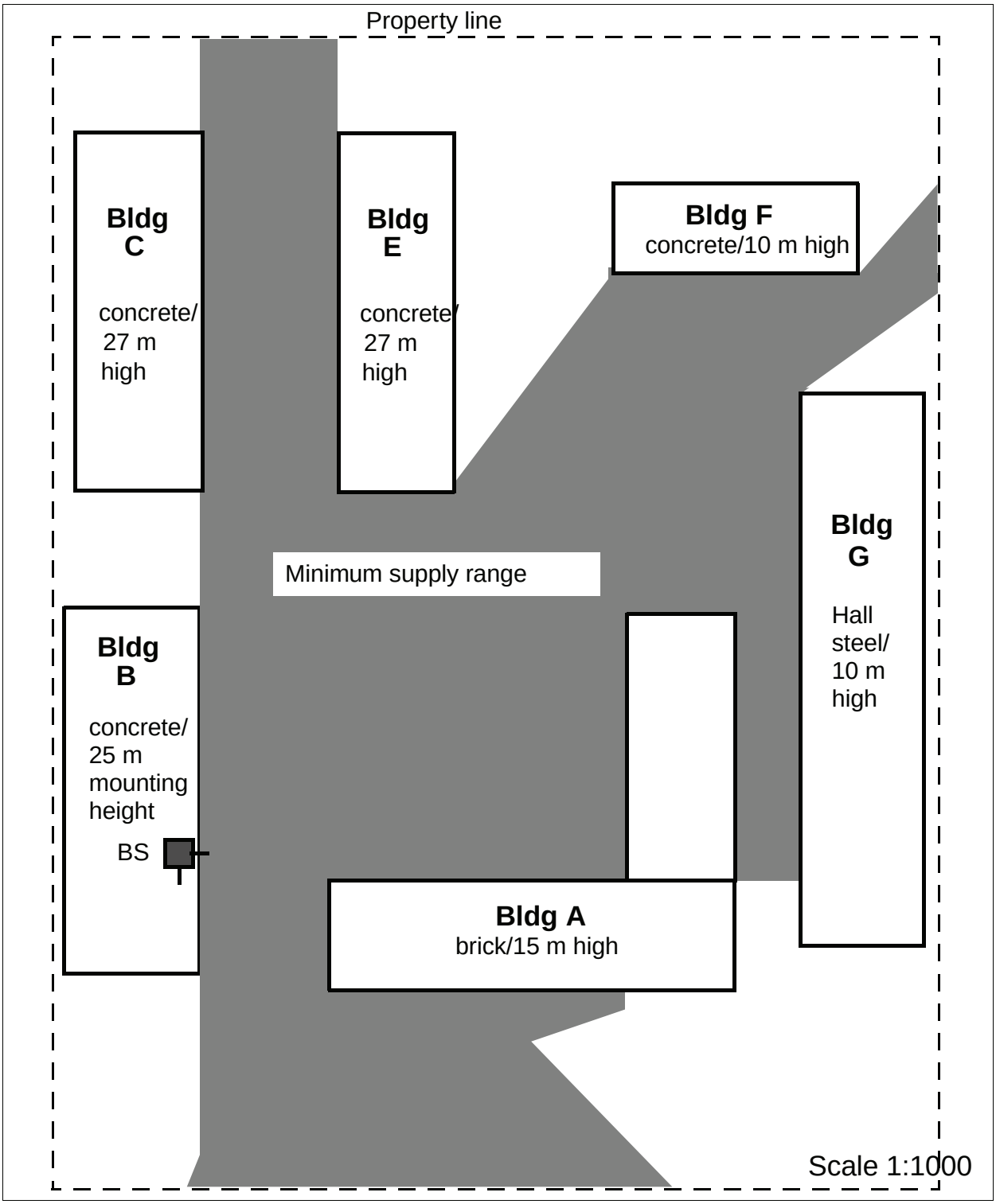


Figure 13 Base station distribution for coverage of an outdoor area

3.5 Installing Base Stations

3.5.1 Ethernet Connection Cable

The DECT IP base stations are mounted using Ethernet cables that are terminated with an 8-pin shielded RJ45 connector. The feedthrough in the DECT IP base station's protective cover is 14 mm in diameter. Please take this dimension into account when choosing the RJ45 connector.

3.5.2 Where Not To Install DECT IP base stations

CAUTION

Security zones
Areas designated by the customer as security zones, such as, intensive care units in hospitals or areas behind fire doors.

- **Ambient temperature/humidity**
  - Ambient temperature from +0°C to +40°C
    Avoid direct sunlight.
  - In damp places, such as bathrooms, laundry rooms, or in the immediate vicinity of heat sources (for example, heaters).
- **Radio area restriction**
  - In wall recesses or on thick or concrete and metal walls, if the radio supply area is behind them.
  - A base station mounted on a steel or concrete pillar cannot supply the radio area which lies behind the pillar.
- In lowered ceilings of metal (conductive materials, for example, carbon fibres).
- On metal walls
  Only if there is a safety distance of > 10 cm.
- On metal storage shelves
  Only if there is a safety distance of > 3 m.

- **Electromagnetic compatibility (EMC)**
  - The installation site should not be in the immediate vicinity of other electronic equipment, such as, regular (corded) telephones, hi-fi systems or office or microwave equipment. Only if there is a safety distance[1] of > 1 m.
  - Directly beside neon/phosphorous lighting tubes, fire alarms, switchgear cabinets, transformer housings, motor housings.
    Only if there is a safety distance[1] of > 1 m.
  - Directly beside antennas of other communication systems.
    Only if there is a safety distance[1] of > 3 m.

3.5.3 Where Should DECT IP base stations be installed?

- Freely accessible,
  - but near the ceiling (> 0.5 m away from the ceiling).
    (This prevents the base station being blocked by furniture.)
- As centrally as possible in buildings,
  - for example, in corridors or on walls of directly adjacent rooms (in the case of buildings of light construction materials).
- Outdoor areas

  may be part of the coverage area.

NOTE: When planning the installation of base stations in buildings (determining the installation site), architectural plans (scale of about 1:1000) which show the structural type of the building can be very helpful.

  - Near windows facing in the direction of the outdoor area to be covered.
  - Outdoor housing, see Section 3.5.6.

1. The safety distance isolates the installation from other equipment, thus improving the electromagnetic compatibility (EMC).

3.5.4 Indoors

3.5.4.1 Wall Mounting

The base station must be freely accessible.

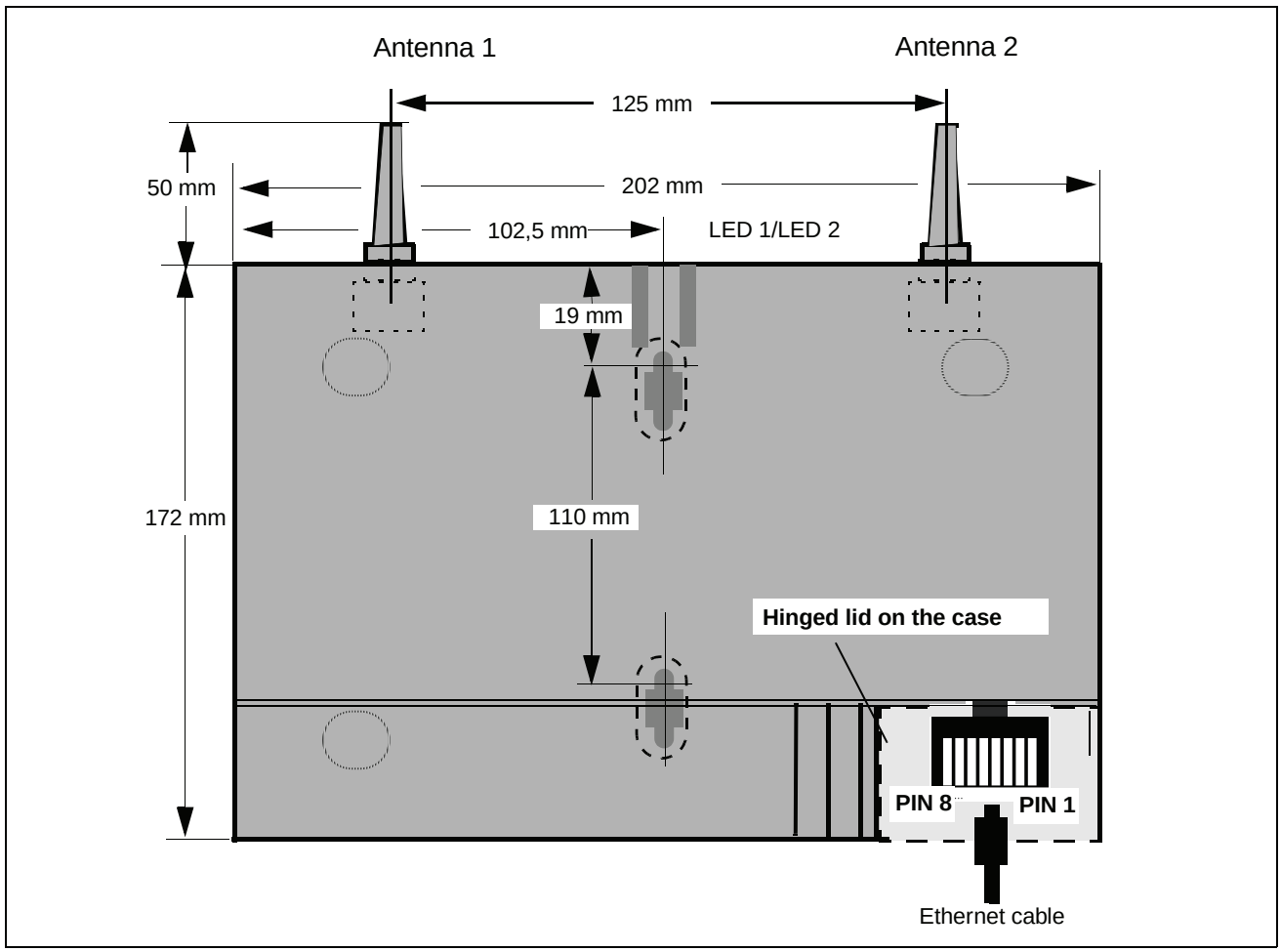
NOTE: When installing a DECT IP base station, the antennas should face downward.

– Antenna position	Antennas pointing towards open space, in direction of radio area
– DECT IP Base station mounting position	vertical/180° rotated
– Mounting	Mounting material not included in scope of supply

– Two wall anchors with 5 mm diameter, two screws with 3.5 mm diameter.

1. Drill two holes (5 mm diameter) 110 mm apart in the wall where the base station is to be mounted. Insert the wall anchors in the hole (see Figure 18).
2. Screw in the screws in such a manner that a clearance of about 4 mm remains between the head of the screw and the mounting wall. Different mounting material may be needed depending on the composition of the mounting wall, for example, wood screws for wooden walls.

   Alternative: You can use the housing feet openings in the base plate of the base station for mounting on wall hooks.
3. Mount the base station on the screw heads or wall hooks.



3.5.4.2 Ethernet Socket Allocation in the DECT IP Base Station

PIN	Signal MDI	Signal MDI-X
1	Tx+ (V+)	Rx+ (V-)
2	Tx- (V+)	Rx- (V-)
3	Rx+ (V-)	Tx+ (V+)
4	V+	V+
5	V+	V+
6	Rx- (V-)	Tx- (V+)
7	V-	V-
8	V-	V-

Table 5 Belegung der Ethernetbuchse

3.5.5 Tools/Aids

The tools and aids listed below will be required when carrying out the activities described in the following sections. However, they are not included in the delivery scope.

Table 6 Tools/aids

Designation	**Application**
Crosstip screwdriver size 3	To attach installation plate, sun shield
Crosstip screwdriver size 2	To attach mast blocks/mast installation of outdoor housing
Triangle head screwdriver M 6	To attach and close the housing/outdoors
Aids	
Masonry drill, 8 mm diameter	To drill holes for wall installation, housing/outdoors
Masonry drill, 5 mm diameter	To drill holes for wall installation, housing/indoors

3.5.6 Outdoors

NOTE: The base station contains an overvoltage protector.

- Features of the outdoor housing
  - No special grounding necessary.
    The outdoor housing is made of 100% plastic.
  - Cable feeder entry.
  - Protection against direct sunlight.
  - Base station protection at ambient temperature between -25°C and +40°C (can be operated without heating, +sunlight).
- Figure 14 shows the components of the outdoor housing.
  - The outdoor housing is supplied preinstalled.
  - The necessary installation material is supplied loose.
  - Install the outdoor housing on a mast or on masonry/wood/brick walls.
  - Connect the cable from the communication system (see Section 3.5.4.2).

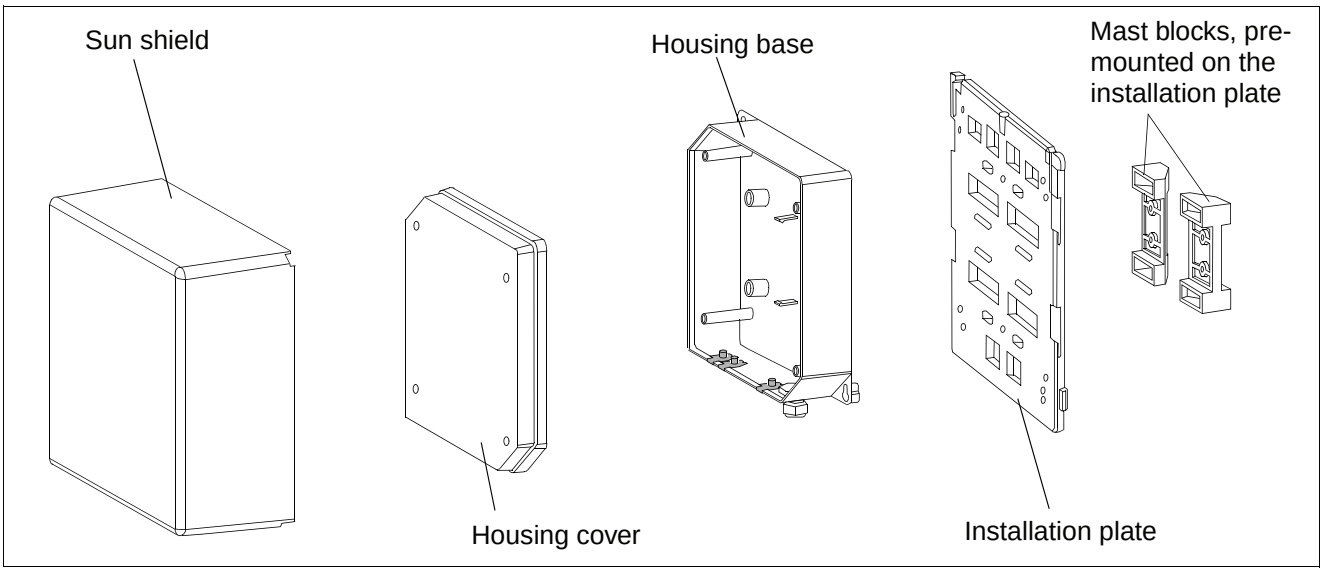


Figure 14 Components for outdoor installation

3.5.6.1 Preparatory Tasks

The following tasks must be performed with appropriate tools before installing the outdoor housing:

1. Release the sun shield catches and remove the sun shield.
2. Loosen the special screws that connect the base of the outdoor housing to the mounting plate and remove the outdoor housing.
3. Open the outdoor housing (four M6 triangle head bolts in the cover).
4. Remove the hinged lid to connection plug X1.
5. Install the base station in the recess provided for this purpose making sure it locks into place (listen for the latching noise).

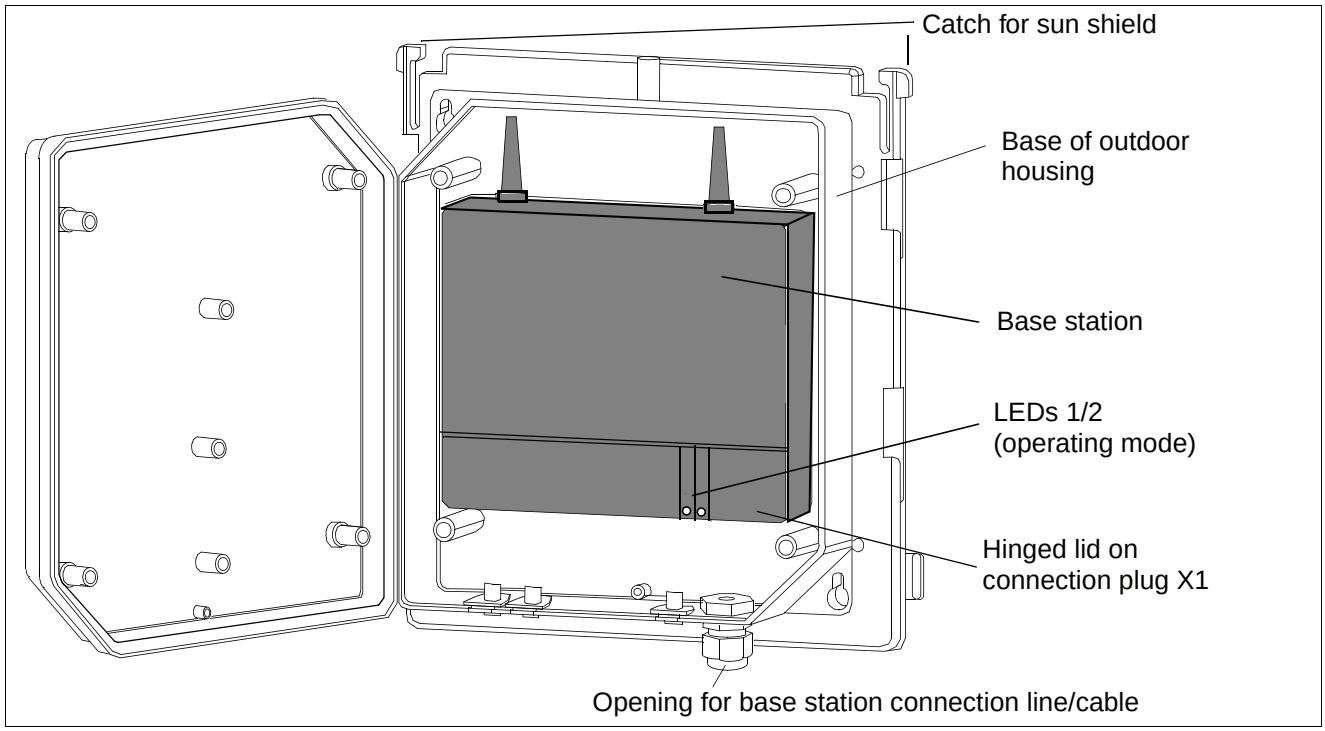


Figure 15 Outdoor housing with base station

3.5.6.2 Mast Installation

Material required (supplied loose): two metal tightening straps.

1. Loosen the mast block fastening screws.
2. Set the distance of the mast blocks to the necessary mast diameter at the required height and tighten the screws.
3. Feed the metal tightening straps through the specially-provided holes in the installation plate, see Figure 16.
4. Attach the base of the outdoor housing to the triangle head bolts on the installation plate.
5. Screw the triangle head bolts tight.
6. If necessary:
   Thread a sealing wire through the lower right fastening hole on the base and the sealing hole on the mounting plate, see Figure 16.
   Seal the wire.

7. Attach the installation plate to the mast at the required height with the metal tightening straps. The mast used must be stable and wind-resistant.

CAUTION

Do not install the base station on steel masts.

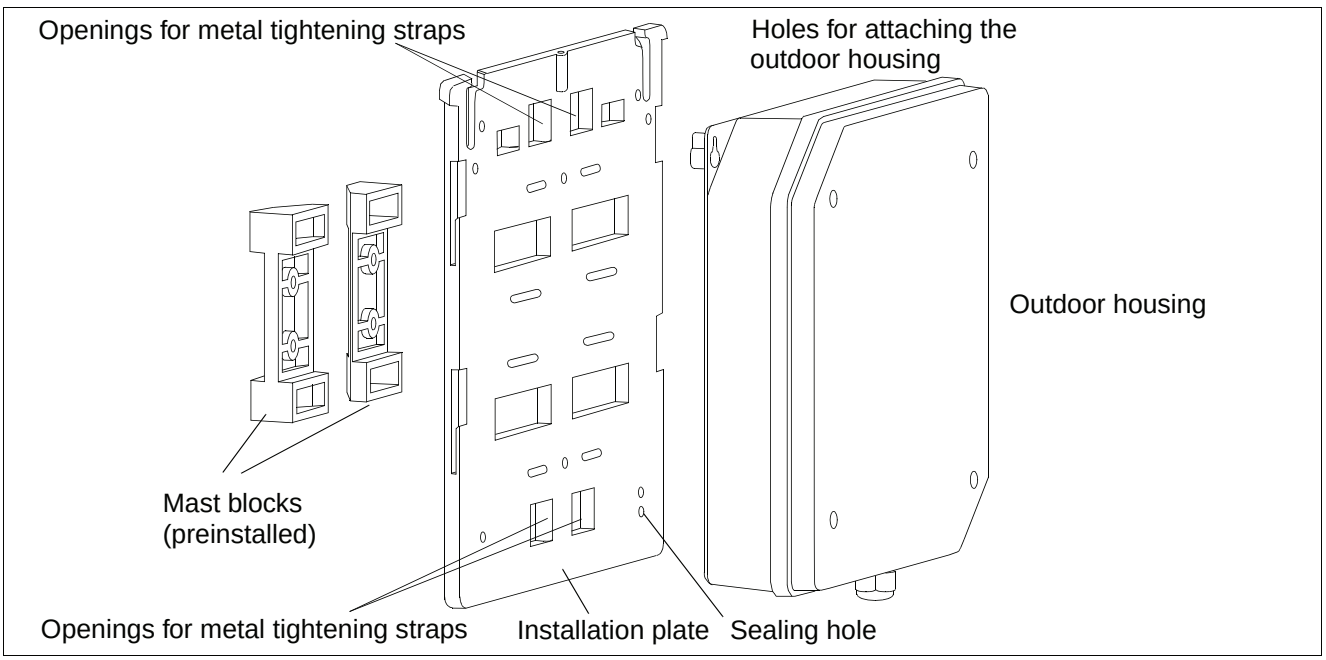


Figure 16 Outdoor housing with mounting plate and mast blocks

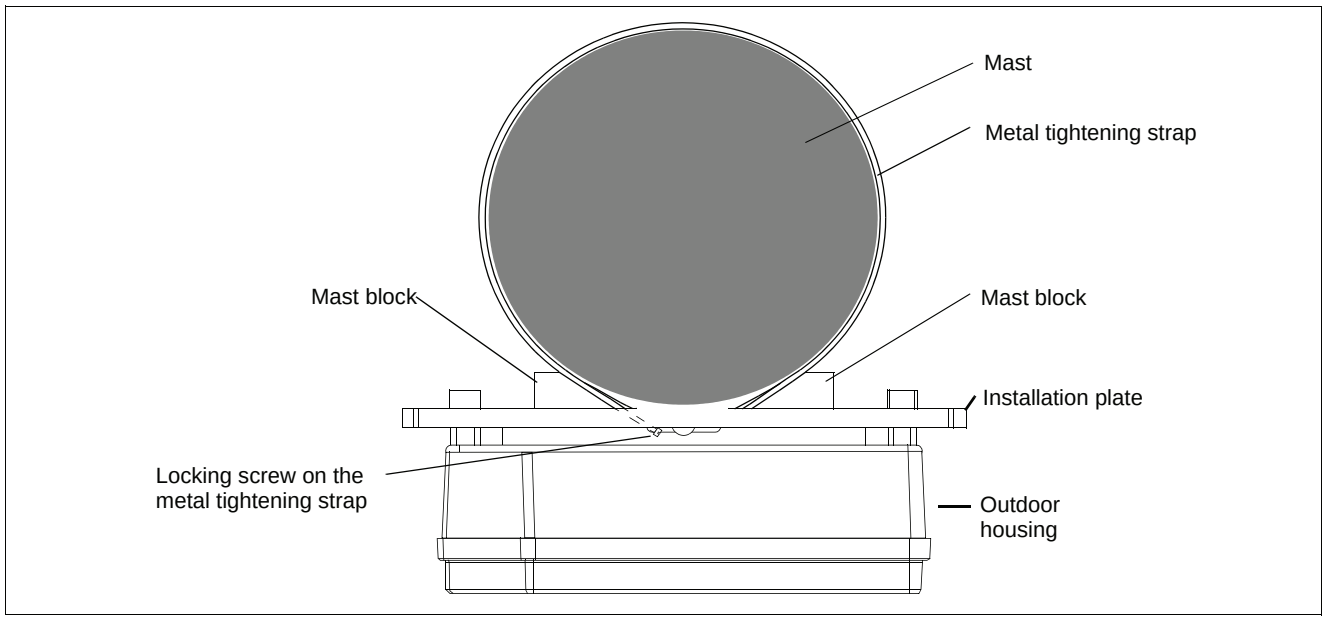


Figure 17 Mast installation – plan view

8. Connect the base station connection cable(s) (see Section 3.5.4.2).
9. Secure the housing cover with the four triangle head bolts.
10. If necessary: lock the sun shield into the spaces on the sides of the installation plate.

3.5.6.3 Wall Installation with Mounting Plate

Material required:

– Two wall anchors of 8 mm diameter, two screws of 6 mm diameter.

NOTE: Different mounting material may be needed depending on the composition of the mounting wall, for example, wood screws for wooden walls.
In such cases, change/purchase the appropriate mounting material.

---

1. Drill two holes (8 mm diameter) in the wall where the base station is to be mounted.
   For dimensions, see Figure 18.
   – Ensure that there is enough room for the mounting plate.
   – Insert the wall anchors in the holes.
2. Remove the mast blocks from the mounting plate.

3. Attach the mounting plate to the wall with the two screws.
4. Attach the base plate of the outdoor housing to the triangle head bolts on the mounting plate.
5. Screw the triangle head bolts tight.
6. If necessary:
   Thread a sealing wire through the lower right fastening hole on the base and the sealing hole on the installation plate and seal it (see Figure 16).
7. Connect the base station connection cable(s) (see Section 3.5.4.2).
8. Secure the housing cover with the four triangle head bolts.
9. If necessary: lock the sun shield into the spaces on the sides of the installation plate.

3.5.6.4 Wall Mounting Without Mounting Plate

Material required: two wall anchors of 8 mm diameter

1. Drill two holes (8 mm diameter) in the wall where the base station is to be mounted.
   For dimensions, see Figure 18. Insert the wall anchors in the holes.
2. Screw the two triangle head bolts through the mounting plate and into the wall anchor so that a clearance of about 12 mm remains between the screw head and the mounting wall.
3. Hang the base plate of the outdoor housing into the screws by its tabs (upper left and lower right) and tighten the screws.
4. Connect the base station connection cable(s) (see Section 3.5.4.2).
5. Secure the housing cover with the four triangle head bolts.

NOTE: The sun shield cannot be mounted without the mounting plate.

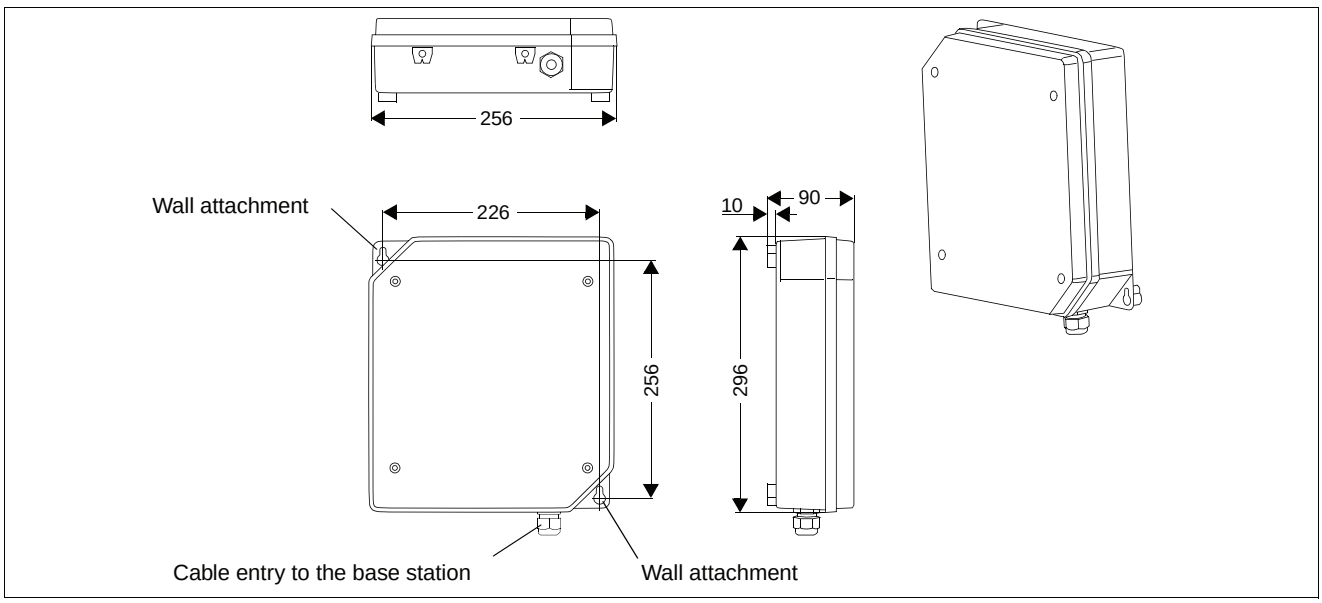


Figure 18 Wall mounting without mounting plate

4 Putting Into Service

You can only put your HiPath Cordless IP system into operation after the

- planning,
- coverage,
- installation and cabling,
- installing the communication server and if necessary, the HiPath Cordless IP server.

requirements have been fulfilled. The installation of the HiPath Cordless IP system now starts.

4.1 Preparation

1. DECT handsets are charged.
2. DECT system ID is available.
3. LAN suitability for VoIP services is analyzed (refer to Section 3.3).
4. Administration access is available for the HiPath Cordless IP server software's Web-Based Management application.
5. Information is available on subscribers, stations numbers, names.
6. There is a sufficiently large number of IP addresses available for use for the HiPath Cordless IP server software and the DECT IP base stations.
7. The IP address of the communication server, the DHCP server and the DNS server is determined.
8. The customer data available is backed up.

Optional if these services are to be used:

9. The PoE injectors are available.

4.2 Entering the DECT System Number (DECT ARI)

The DECT system number consists of eight hexadecimal characters and is unique worldwide for each DECT system.

The DECT system number is the number used to identify the individual DECT systems and therefore to identify the radio signals (radio range). This permits the synchronization of mobile telephones logged on to the system.

The DECT system number consists of:

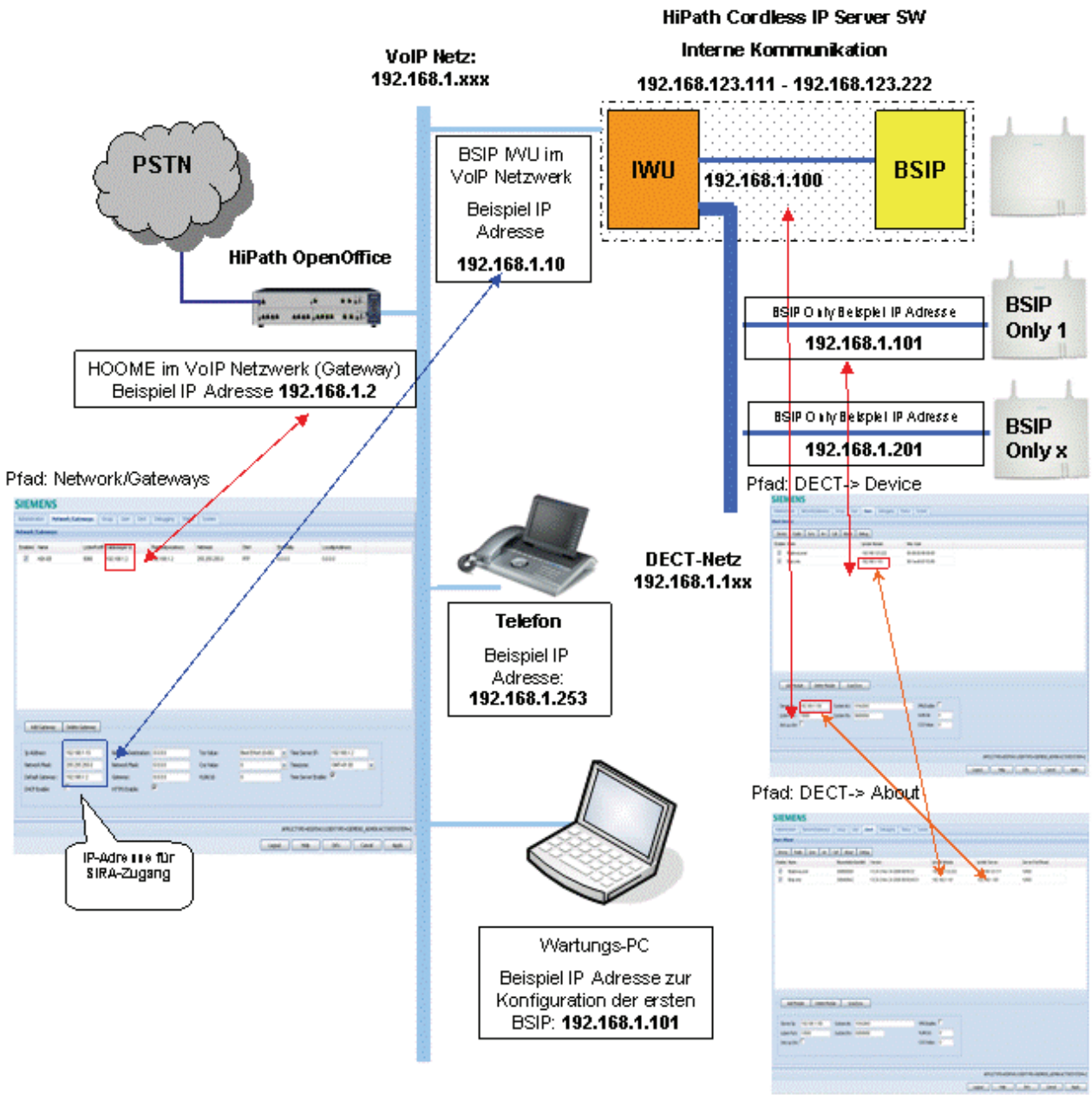
- E/ARC (Access Right Code, 4-bit (first digit is always 1)
- EIC (Equipment Installers Code, 16-bit),
- FPN (Fixed Part Number, 8-bit), and
- FPS (Fixed Part Subnumber, 4-bit).

When installing the system for the first time, you must apply for the DECT system number which then applies to the entire HiPath Cordless IP server software (even in the event of service).

The DECT system number is stored in the HiPath Cordless IP server software database.

This system number should be stored safely (loss).

4.3 Overview IP adresses



5 Installation and Administration

5.1 Terminology

The terms "Voip gateway" and "PBX" are used as a synonym for the supported HiPath communication servers HiPath OpenOffice ME and HiPath OpenOffice EE.

The term **BSIP Only** is used as a synonym for a BSIP1 which is **NOT running** the **HiPath Cordless IP Server Software**.

Therefore the term **BSIP IWU** is used as a synonym for a BSIP1 which IS **running** the **HiPath Cordless IP Server Software**.

5.2 Network Concept

The IP network concept of the HiPath Cordless IP solution System is designed for the separation into three logical networks:

1. **VoIP (Infrastructure) network**

   Here are the existing infrastructure components (default Gateways, DHCP servers, Time server, ...), the **PBX** (the VoIP Gateway) and the BSIP1 running the HiPath Cordless IP Server Software (the Interworking Unit [IWU] between VoIP and DECT) part of the BSIP1. This network is used for the connection of the BSIP1 IWU to the IP and VoIP infrastructure of the company LAN.

   The factory-default network address is 192.168.2.0 with a netmask of 255.255.255.0.

   The preconfigured IP address of the IWU in this network is 192.168.2.1.

2. **DECT network**

   Here are all BSIP1 Only Base Stations and the BSIP1 running the HiPath Cordless IP Server Software (IWU) located. This network is solely used for the communication of the BSIP1 IWU and the BSIP1 Only.

   The preconfigured network address of the BSIP1 IWU is 192.168.1.100 with a netmask of 255.255.255.0.

3. **BSIP1 internal networks**

   For internal communication between the different hardware components of the BSIP1 there are two further networks configured.

   Important: These addresses are fixed and cannot be changed. Keep in mind, that these addresses may not be used for the VoIP network and the DECT network.

   192.168.123.x :
   Network between the BSIP1 Local DECT module (.222) and the BSIP1 IWU (.111).

   169.254.222.x.
   Network between the two main processors (CSP) and 192.168.123.x (MSP) for internal communication.

Important: All BSIP1 devices must be located inside the same network segment and therefore **MUST NOT** be separated by layer 3 routing devices. Only Layer 2 switches are supported between the BSIPs.

5.2.1 Overview of reserved networks

192.168.1.1 and 192.168.2.1 are used for factory defaults of BSIP Only and BSIP IWU

192.168.123.x (.222) for BSIP Local on BSIP Iwu and (.111) corresponding host ip

169.254.222.x (CSP) and 192.168.123.x (MSP) for internal LINUX communication

5.3 Synchronisation over air concept

In contrast to a line based synchronisation mechanisms (or a network based one), synchronisation via air requires special requirements.

Synchronisation signal

Both synchronisation partners are syncing by air. This means that the synchronisation signal received by the synchronisation client from the synchronisation master has to have a minimum signal strength. The minimum signal strength for the synchronisation signal is -85 dB.

Synchronization sequence

For the operation of several synchronized Base Stations the synchronization sequence shall be configured as a "chain", (chain topology) i.e. the second Base Station synchronizes to the first, the third Base Station to the second, the fourth to the third and so on.

If all Base Stations synchronize to one single "Master" Base Station (in a star topology) a much longer period of time will be needed for the reconstruction of the system wide synchronization, because of the "Burst" behavior.

In addition to that the distance of a "Sync Slave" to the topmost "Sync Master" in the synchronization chain shall not be more than 2 hops (Base Stations) else the "Slip" will be to big and if a Base Station looses synchronization it will only be (automatically) resynchronized when there are no longer active calls at this Base Station.

For some topologies it is possible to mix the star topology with the chain topology.

Avoid using a chain topology which is physically arranged as a circle. In such a scenario, the drift between the first and the last base station maybe too large to ensure proper handover between these two basestations.

Resynchronisation

Important: If a BSIP loses synchronisation it tries to resync to the configured synchronisation base station. This process can not start until the last call at this base station is released and no other calls (at the belonging base station) are active.

5.4 WBM related issues

5.4.1 Supported Web Browser

Supported Web Browsers are:

- Mozilla Firefox Versions 2 (2.0.0.16 ... 2.0.0.18) and Version 3.0.x (3.01 .. 3.0.6) and
- Microsoft Internet Explorer Version 6.x and Version 7.x

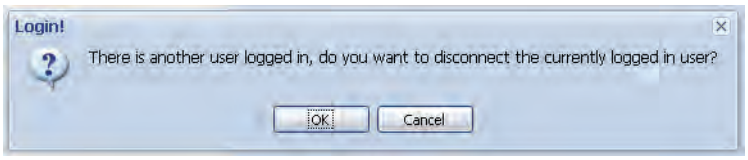
For details refer to chapter 5.35, “Configuration hints for Web Browser”.

5.4.2 General WBM issues

- Don't use special characters inside the objects for WBM. Supported characters are
  0-9, a-z, A-Z, "-" "_". Other characters may prevent the system services from running correctly.
- Don't configure names for objects with more than 20 Characters.
- Changing of IP addresses of BSIP Only - after changes have been applied, a manual [Scan/Sync] has to be applied to show the new values
- Configuration and firmware files MUST NOT include spaces in their filenames
- Do not use multiple WBM session to different BSIPs at a single browser session. This may influence the behaviour of the WBM sessions.

5.4.3 Multiple WBM sessions

If you login onto the same WBM session on which another user is logged on, you are informed about that by a message box.



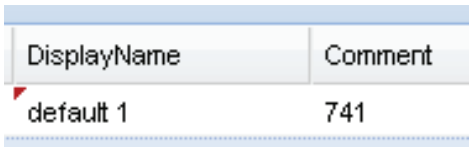
[OK] will logout the currently connected user.

[Cancel] Go back to the Login dialog.

5.4.4 Marking changed values

Changed values are marked with a red triangle at the top left corner of the corresponding field. But you have to leave the current field for changes to come in effect (via TAB key or mouse).

Marker for changed values (red triangle):



Please keep in mind that changes are not in effect immediately. You have to

- apply the changes with the [Apply] button and for some changes you have to
- restart the services or for some changes
- reboot the BSIP1

Information which actions have to be taken to take the changes into effect will be described in the appropriate chapters.

5.5 Phone related issues

5.5.1 Date / time for phone idle display

The handset displays the local system time in its idle display.

The activation of date / time at the phone idle display is initiated by an outgoing or incoming call (but no active connection is needed therefore).

If the user changed the LocalTime at the handset, the time will be overwritten with SystemTime after the next incoming or outgoing call.

- **Hint**: There is neither an activation of the current date / time due to a Power cycle of the handset nor to a roaming process.

5.6 Partition concept of BSIP1

To guarantee a functional BSIP1 at any time, two bootable systems are implemented at the BSIP1.

A **current system** and the **fallback system**. Therefore the BSIP1 has two different systems partitions: System 1 and System 2.

Both system partitions can hold their **own configuration** (although it is copied from one partition to the other during a firmware update).

Both partitions store their application mode (BSIP Only or BSIP IWU)

A factory reset is always applied to the **current system** partition. It does **not** affect the settings of the other partition.

5.7 Factory reset of BSIP1

A Factory Reset can be performed by a special "power sequencing" cycle, which is used to reset the BSIP1 to its default configuration. The factory reset is applied by the following process:

1. Power on the board (see note)
2. Wait 5s (3s < wait < 7s)
3. Power off the board
4. Repeat steps 1. - 3. three (3) times
5. Boot BSIP1 to OS

The successful factory reset is indicated by fast red flashing of both LEDs.

- Note: If you provide power to the board by connecting the ethernet cable using a PoE Switch power may NOT provided immediately. Due to the stages of powering up a PoE link defined in 802.3af it may take up to some seconds until the power is delivered from the switch to the PoE port. Take a look at the LEDs or the switch status LEDs to see at which point the power is available.

  After this procedure, the default configuration parameters will be set.

  The default application mode after a reset is BSIP Only mode.

- **Hint**: The factory reset is applied to the currently active partition. It does not affect the settings of the other partition. But both operation mode settings (BSIP Only and BSIP IWU) of the active partitions are resetted

Setting	Value
Operation mode:	BsIP1 Only
IP address of VoIP network	192.168.1.1
Access mode	http
User Siemens	Username: "Siemens", password "1q21q2"
User SiemensAdmin	Username: "SiemensAdmin", password "1q21q2"

Setting	Value
IP address of VoIP network	192.168.2.1
Access mode	http
User Siemens	Username: "Siemens", password "1q21q2"
User SiemensAdmin	Username: "SiemensAdmin", password "1q21q2"

5.8 Release notes

Check the release notes of the belonging version of the firmware for restrictions and special considerations using the BSIP1.

5.9 Quick Start

The quick start chapter describes the initial operation of the HiPath Cordless IP BSIP1 system for a first functional test including the necessary configuration.

The "Quick Start" assumes the availabilty of

- two BSIP1, a
- functional **PoE network switch**, (alternatively a switch and **Power injectors**) and CAT.5 cables
- **Maintenance PC** (Windows XP based) with administration account and a
- supported PBX (e.g. HiPath OpenOffice ME).

Please read the corresponding chapter in the detailed manual parts if you need further information regarding any step of the "Quick Start".

The following conditions apply:

- For the quick start it is assumed that no VLAN functionality is needed
- No special DECT functionality is configured (Antenna diversity,...).

5.10 Quick start overview

1. Prepare and connect hardware
2. Configure BSIP1 for IWU mode
3. Configuration of IP VoIP (Infrastructure) Network at BSIP IWU
4. Configuration of DECT Network at BSIP IWU
5. Configuration of users at the BSIP IWU
6. Configuration of users at the PBX
7. Start system services and register handsets at the BSIP IWU
8. Attach and configure further BSIP Only to the system

5.11 Prepare and connect hardware

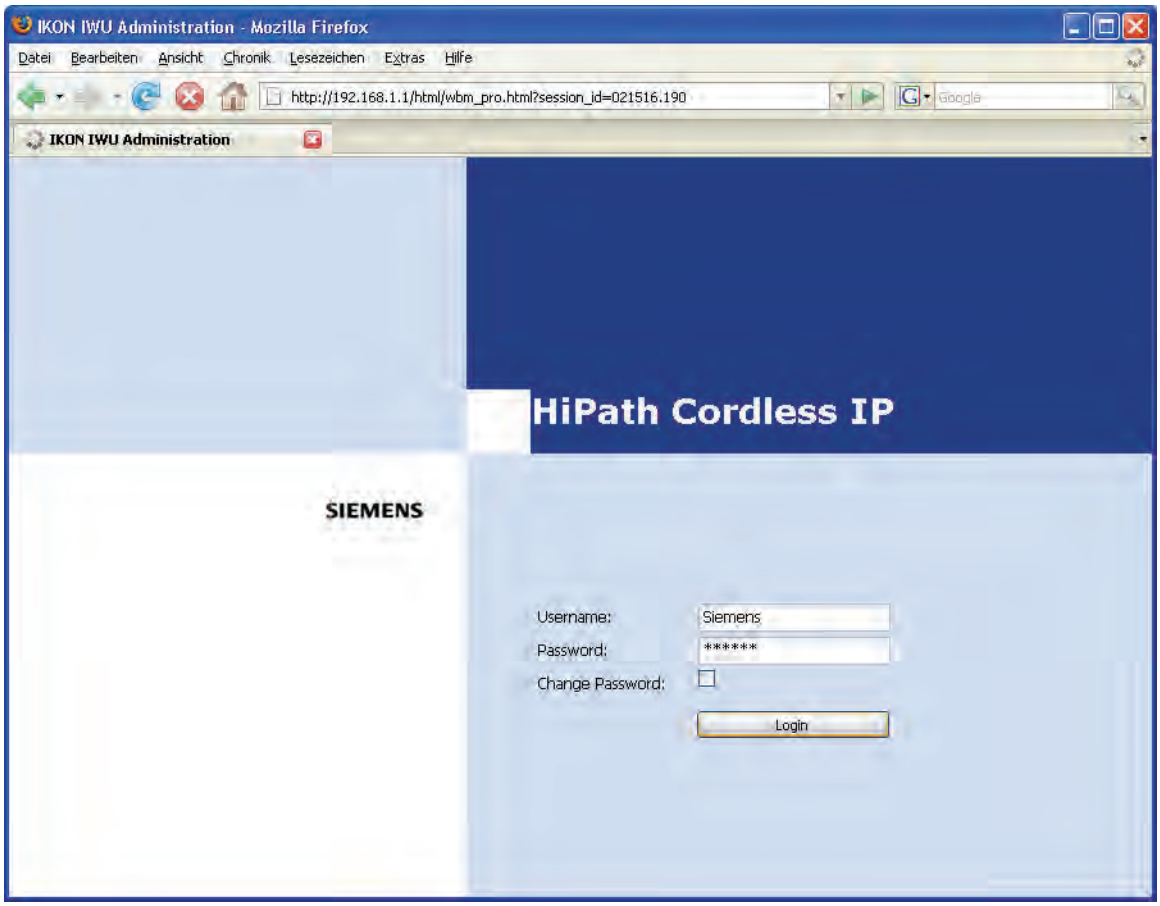
1. Attach the first BSIP1 to a PoE port of the network switch or via a Power injector to a standard port of the network switch. Wait about 1 minute until the LED states of the BSIP1 change to permanently green and red.
2. Meanwhile you may connect the maintenance PC to a switch port via a ethernet cable.

- **Hint**: The BSIP1 devices MUST NOT be separated by layer 3 Routing devices. Only separation via Layer 2 switches is supported.

5.12 Configure BSIP1 for IWU mode

1. The BSIP1 is accessible via its factory default IP address 192.168.1.1 in BSIP1 Only mode.

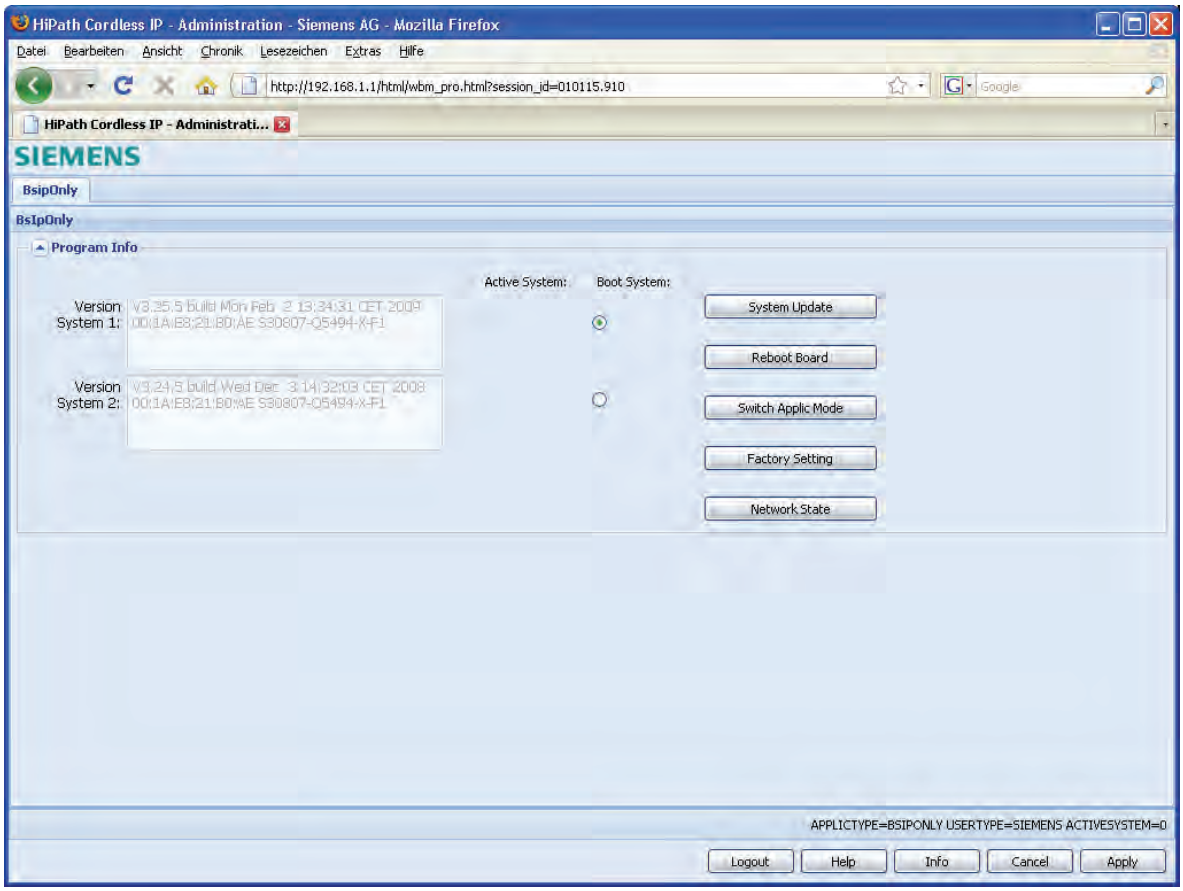
   To access the BSIP1 Only WBM you have to configure an IP address in the network 192.168.1.0/255.255.255.0, e.g. **192.168.1.101** on your maintenance PC.
2. If the IP address **192.168.1.1** is **used** in your network, you first have to directly connect the maintenance PC and the BSIP1 via ethernet. This may be done with a direct ethernet connection via the power injector or via a separate ethernet switch where only the Maintenance PC and the BSIP1 are connected.
3. Test via ping, if the BSIP1 is replying to the ping requests at ip address (ping 192.168.1.1).
4. If not, check all cabling, switch settings, (e.g VLAN configuration).
5. Ensure that the configured local IP of the maintenance PC adress is up (e.g ping 192.168.1.101).
6. If you don't get replies consider to reset the BSIP to its factory defaults (see chapter 5.7, “Factory reset of BSIP1”).
7. Start the Web browser at the Maintenance PC
8. Access the WBM (Web based management) at the following URL: http://192.168.1.1



9. Log in to the WBM with the following (case-sensitive) credentials:

   Username: **Siemens**, password: **1q21q2**

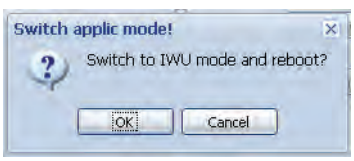
10. Press the [**Login**] button. The configuration page for the BSIP1 in BSIP Only mode appears.



11. To change the application mode of the BSIP1 from BSIP1 Only to BSIP1 IWU select [**Switch Applic Mode**].

    - **Hint**: The current application mode is indicated at the bottom status line (APPLICTYPE=BSIPONLY or BSIPIWU)

After changing the application mode, the following message box will appear.

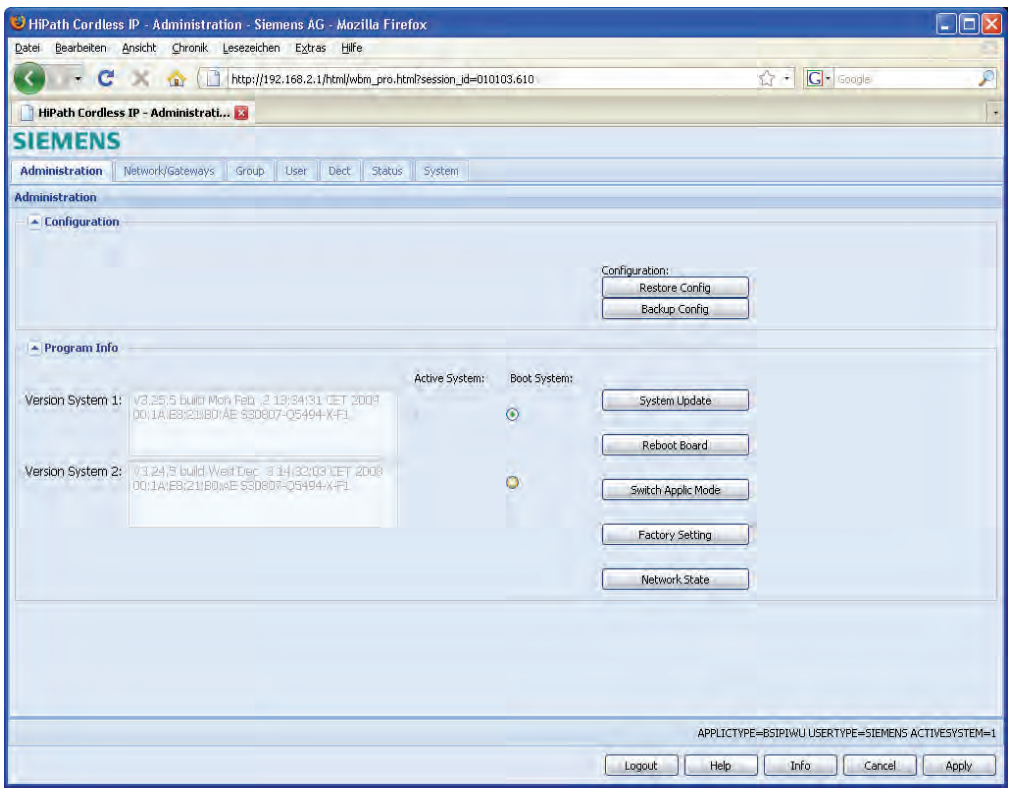


12. Press **[OK]** to reboot the BSIP1 and start it in application mode BSIP1 IWU.

- Important note: After changing the application mode, the BSIP1 will start in BSIP1 IWU mode and therefore has a different default IP address. The default IP address in IWU mode is 192.168.2.1.

The BSIP1 is accessible via the factory default IP address 192.168.2.1 in BSIP1 IWU mode. To access the BSIP1 IWU WBM you have to configure an IP address in the network 192.168.2.0/255.255.255.0, e.g. 192.168.2.101 on your Maintenance PC.

1. If the IP address 192.168.2.1 is used in your network, you first have to directly connect the Maintenance PC and the BSIP1 via ethernet. This may be done with a direct ethernet connection via the power injector or via a separate ethernet switch where only the Maintenance PC and the BSIP1 are connected.
2. Test via ping, if the BSIP1 is replying to the ping requests at ip address (ping 192.168.2.1).
3. If not, check all cabling, switch settings, (e.g VLAN configuration).
4. Ensure that the configured local IP of the maintenance PC adress is up (e.g ping 192.168.2.101).
5. Access the WBM (Web based management) at the following URL: http://192.168.2.1
6. Log in to the WBM with the following (case-sensitive) credentials:
7. Username: **Siemens**, Password: **1q21q2**
8. Press the [**Login**] button. The configuration page for the BSIP1 in BSIP1 Only mode appears.

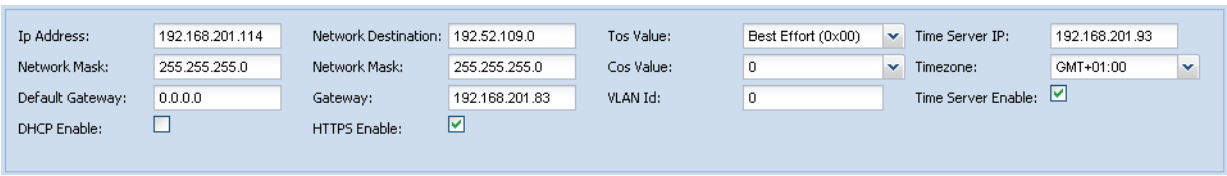


5.13 Configuration of VoIP (Infrastructure) network

Since configuration of the IP VoIP (Infrastructure) Network settings requires a reboot of the BSIP1, the settings are configured before the BSIP hardware is attached to the designated network segment.

To allow direct IP communication between the BSIP1 and the PBX both devices have to be located in the same IP network. Therefore it is necessary to adapt the IP address of the BSIP1 to the network of the VoIP (Infrastructure) . You need at least one unused IP address of the Infrastructure network, which has to be configured at the BSIP1.

1. Select the configuration page "Network/Gateways".
2. Change the configuration in the bottom frame to the designated values of the BSIP1 IWU.



Change the following values according your needs:

Ip address:

Here you have to configure the ip address at which the BSIP IWU should be available inside the VoIP (Infrastructure) Network. This also is the address at which the BSIP1 IWU is accessible via WBM.

Network mask

Enter the corresponding netmask for the IP address as configured above.

(Default for Class C networks: 255.255.255.0).

Time Server Ip

Since the BSIP1 has no hardware clock, time has to be set according a NTP (or SNTP) time server. After activating the NTP Server at the PBX, it may take some minutes upon activation of the NTP service. This is due to the nature of time synchronisation between NTP server and NTP client.

For details configuring time server at the PBX refer to "chapter 5.31, “Configuration Hints for PBXs”.

https

Activate the https access mode.

Routing entries

If you need routing to another network (e.g. access from maintenance PC to the IP VoIP (Infrastructure) Network, you can configure the corresponding values either by setting the "**Default Gateway**" or by a special "**Network destination**".

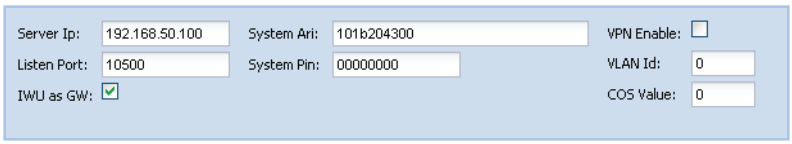
If using the "Network destination" method, you have to configure the fields "Network destination", "Network mask" and "Gateway" and additionaly you have to add a route at the maintenance PC.

- **Important**: Ensure that the ip configuration is configured correctly. Otherwise - after rebooting the board - it may not be accessible without resetting it to its factory defaults (which have a fixed IP setting of 192.168.1.1).

5.14 Configuration of DECT network

Since configuration of the DECT Network settings requires a reboot of the BSIP1, the settings are configured before the BSIP1 hardware is attached to the designated network segment.

1. Select the the configuration page "Dect".



2. Change the configuration in the bottom frame to the designated values of the BSIP1 IWU.

   Server Ip

   This field contains the IP address of the server (the IWU) in the DECT network.

   It is used for communication between all BSIP Only and the BSIP IWU.

   SystemAri

   In this field the System ARI (DECT ID) which has to be unique at each DECT system and has been assigned to the system has to be configured.

System Pin

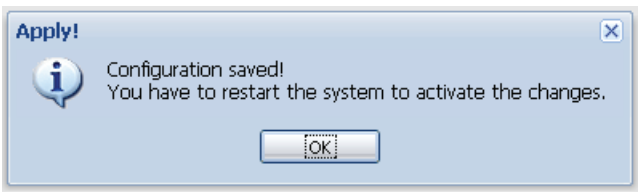
The "PIN" is a 8-digit number and it is needed for the registration of handsets. It is preconfigured with "00000000" and may be configured systemwide here. You can change the system pin to another decimal value.

IWU as GW

Activate this option to use the BSIP1 IWU as a router to the BSIP1 Only.

- Background: Using the option "IWU as GW" enables the routing (ip forwarding) via the IP VoIP (Infrastructure) Network to the DECT Network. This ensures access to the network in which the BSIP Only are located, without having an ip address (in the DECT network) configured at the maintenance PC. Additionaly you have to add a route at the maintenance PC

3. Apply the changes by clicking the [Apply] button at the bottom section.



4. Confirm the message box by clicking on **[OK]**.

   As stated above, for the changes to become active, the BSIP1 has to be rebooted.

- Important: After rebooting, the BSIP1 will not be accessible by its the ip address 192.168.2.1 anymore. Instead it is accessible by the ip address of the IP VoIP (Infrastructure) Network (configured at the step above). If you have attached the BSIP1 directly via a ethernet cable you have to attach the BSIP1 physically to the designated network segment after rebooting it.

5. Select the configuration page "Administration".
6. Initiate the reboot by clicking the [**Reboot Board**] button.

   Wait about 1 minute for the board to come up again. The board LEDs should change to permanently orange / orange.

7. Access the WBM (Web based management) by the in address you have configured before for the IP VoIP (Infrastructure) Network.

   Depending on the http access mode you have to use http:// or https:// mode

   HTTPS Enabled = [ ]use http://{Server Ip of IP VoIP (Infrastructure) Network}

HTTPS Enabled = [X]use https://{Server Ip of IP VoIP (Infrastructure) Network}

Example: https://192.168.201.114

5.15 Configuration of users at the PBX

It is assumed that the VoIP users at the PBX are already configured. For detail refer to Section 5.31.

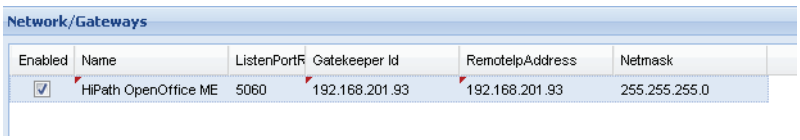
5.16 Configuration of users at the BSIP IWU

5.16.1 Gateway and Group

1. Access the WBM of the BSIP1 IWU WBM via the web browser at the maintenance PC.

   Example: https://192.168.201.114

2. Log in to the WBM with Username "Siemens".
3. Switch to configuration page "**Network/Gateways**".
4. Add a new gateway entry by clicking on the button [**Add Gateway**].



5. Change the following values:

   Name

   Change the preconfigured name of the PBX to a descriptive name for the VoIP Gateway. This name is only used for the internal configuration of the BSIP Software.

   Remote IP address and Netmask

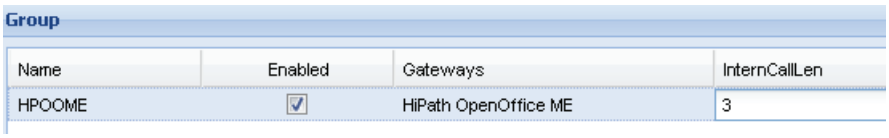
   Change the preconfigured "Remote IP address" as well as the corresponding "Netmask" to the ip address of your PBX.

6. Switch to configuration page "Group"

   Groups are the connecting link between the "Gateways" and the VoIP Users. A User is assigned to a Group and a Group is assigned to a "Gateway".

The default configuration already contains an entry for a Group, which is used for assigning the Users to the Gateways, so you do not need to make changes here.

7. Add a new group by clicking on the button [Add Group].



8. Change the contents of the following fields.

   Name

   Change the preconfigured name of the Group (e.g. to the name of the corresponding PBX) . This name is only used for the internal configuration of the BSIP Software.

   Gateways

   Select the gateway from the dropdown field which you have configured in the last step.

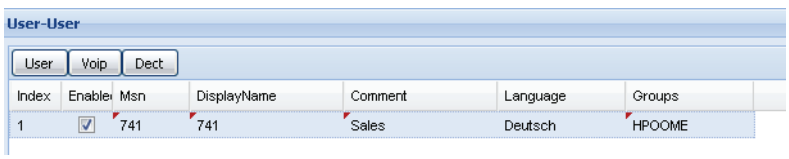
5.16.2 User

1. Switch to configuration page "**User**", sub page User ("User -User").

   Set up one or several Users according the user configuration at the PBX for the connection with the BSIP1. Please take care of the consistency of the entries between the PBX and the BSIP1.

2. Add a new user by clicking on the button [**Add User**].

- **Hint**: For the correlation of the fields between the BSIP and the PBX refer to chapter 5.33.4, “Station Configuration - IP-DECT IWU”.



3. Change the contents of the following fields:

   Msn (necessary)

   The MSN has to correlate with the Callnumber of the User at the PBX.

   DisplayName (necessary)

   This information is shown at the idle display of the corresponding handset.

Comment (optional)

Here you may enter any desired text for administration purposes.

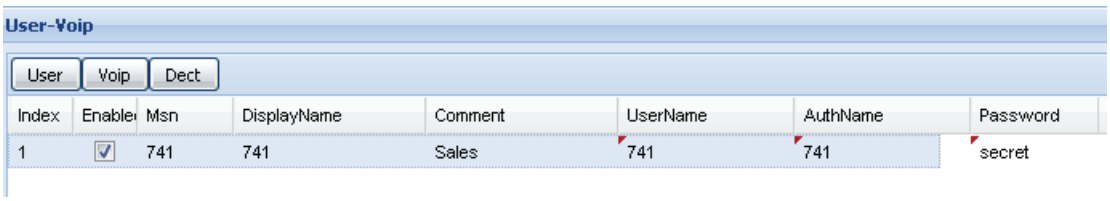
Language

The language used for display messages of the handset can is selected here

Groups

Choose a Group (and with that a Gateway) from the dropdown box to which the user is associated to.

4. Switch to configuration page "User", sub page Voip ("User -Voip").



5. Change the contents of the following fields:

   UserName (necessary)

   Name or Number for the registration of the User at the PBX.

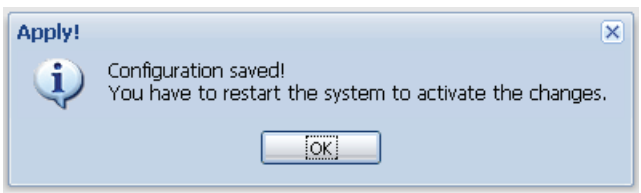
   AuthName (optional)

   Name which is used for the authentification at the PBX (together with "Password").

   Password

   Optional, but necessary if an "AuthName" is entered; The password which is used for the authentification at the PBX (together with "AuthName".

6. Apply the changes by clicking the [Apply] button at the bottom section.



7. Confirm the message box by clicking on **[OK]**.
8. To append further users to the configuration, repeat the steps above.

5.17 Start system services and register handsets

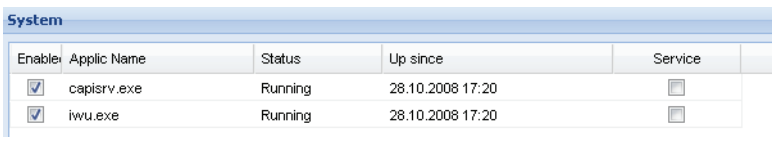
5.17.1 Start system services

1. Switch to configuration page "**System**".

   To start the functionality of the BSIP1 IWU you first have to start the system services.

2. Start the services by clicking the [**System Start**] button at the bottom section.

3. Check if the system services are running by clicking at the [Refresh] button several times.



If the system services are started correctly (both states displayed as "Running", the LED state at the BSIP1 IWU should change from orange/ orange to green/off.

If a time server is configured correctly and can be contacted, the field "Up since" should display actual local time values, otherwise time will start at "01.01.1970 00:00".

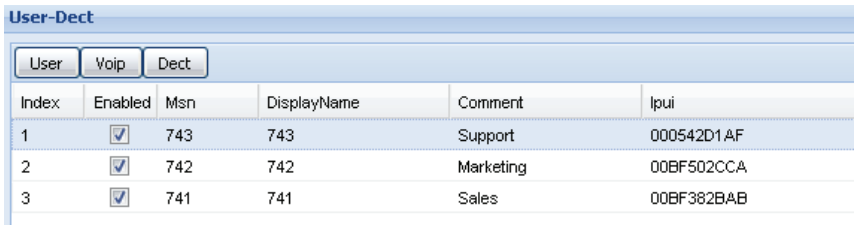
5.17.2 Register handsets

1. Switch to configuration page "**User-Dect**".

   - Prepare **one handset** for the **registration** process.

- Attention: Do not confirm the following procedure at the Handset right now!
  Start the **Registration procedure** via the **menu at the Handset**. Choose any Base Station for the Registration at the handset. Enter the SystemPIN (preconfigured to "**00000000**" at configuration page "DECT" as PIN at the handset (Attention: Do not confirm yet!).

2. Select the corresponding user in the WBM to which the handset has to be assigned to.



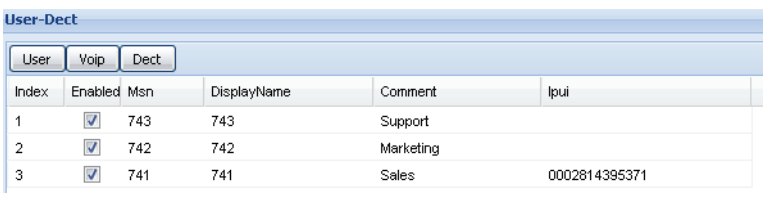
3. Activate the Registration procedure at the WBM by clicking at [Register] at the bottom section of page "User-Dect".

4. Now confirm the already entered PIN at the Handset (normally with softbutton "**OK**").

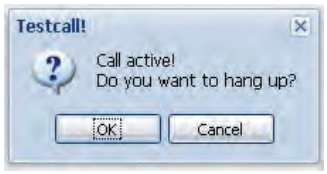
   - "The WBM displays the **successful Registration** of the Handset.

   - If the handset does not ring please read chapter 5.34, “Troubleshooting / FAQ” concerning possible reasons.

- "The IPUI of the registered handset is displayed in hexadecimal notation in the user entry.



5. Select the user again and click on **[TestCall]**. The registered Handset will start ringing. You can accept the call at your handset (no voice data will be transferred) or terminate the test call by clicking **[HangUp]**.



6. Confirm the message box by clicking on **[OK]**.
    - If the handset does not ring please read chapter 5.34, “Troubleshooting / FAQ” concerning possible reasons.

You can register further handsets for already configured VoIP users now or to a later time.

- **Important note**: Telephony functionality is not available before the system services have been started succesfully.

7. To test the telephony integration, go to configuration page "System" and restart the services.

After the services are running, telephony functionality should be available. You should be able to establish calls between the handsets.

5.18 Configure further BSIP Only to the system

1. Attach the second BSIP1 to a PoE port of the network switch of the DECT Network or via a power injector to a standard port of the network switch.

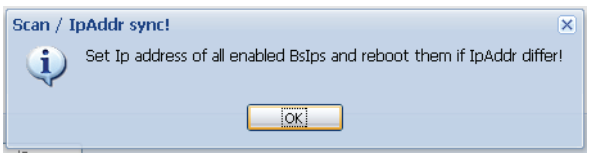
   It is assumed that the first Base Station is the synchronization master for the Over-Air synchronization of the second Base Station.

2. Wait about 1 minute until the LED states at the BSIP Only change to permanently green and red.

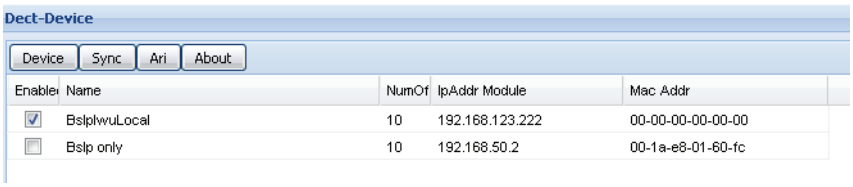
3. At the WBM of the BSIP1 IWU switch to configuration page "Dect-Device".

4. To scan the newly attached second BSIP click on the button [Scan/Sync].

5. Confirm the message box by clicking on **[OK]**.



   The newly attached second BSIP1 should be found automatically and a record will be appended for it in the table of DECT devices.



- If the BSIP1 is not found please read the chapter 5.34, “Troubleshooting / FAQ” concerning possible reasons.

The BSIP1 Only has to be configured for usage within the HiPath Cordless IP system by the following procedure:

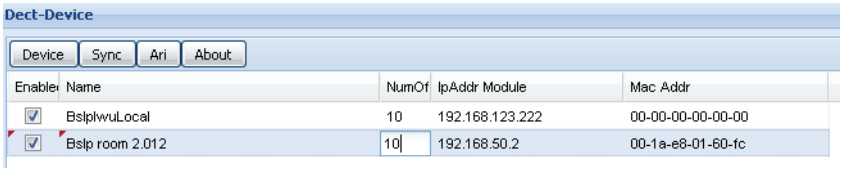
6. Select the newly created entry for BSIP Only and change the contents of the following fields:

Enabled (necessary)

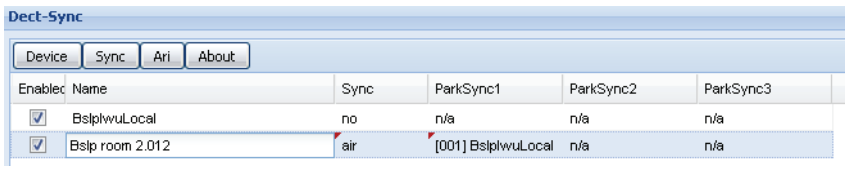
Set to Enabled for usage within the HiPath Cordless IP system.

Name (necessary)

Descriptive name for the BSIP1. Change the preconfigured name of the BSIP1 (e.g. to the name of the physical location it is destinated for). This name is only used for the internal configuration of the BSIP1.



7. At the WBM of the BSIP1 IWU switch to configuration page "Dect-Sync".



8. Select the newly created entry for BSIP Only and change the contents of the following fields:

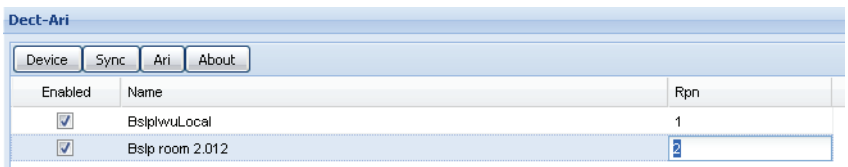
Sync (necessary)

Set to "air" to synchronise the actual BSIP1 to another BSIP1 via air.

ParkSync1 (necessary)

9. Select from the dropdown to which BSIP the selected BSIP1 should be synchronised to.

10. At the WBM of the BSIP1 IWU switch to configuration page "**Dect-Ari**".



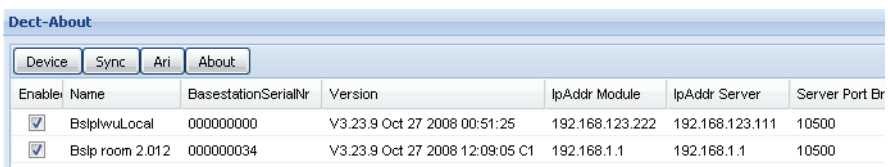
11. Select the newly created entry for BSIP Only and change the contents of the following fields:

    Rpn (necessary)

12. Change the "Rpn" for the selected first entry from "0" to "1".

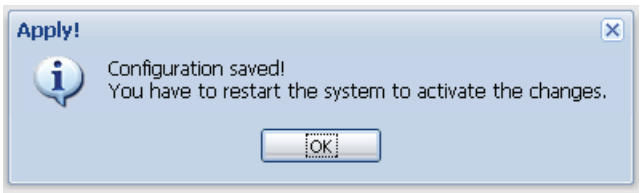
- Note: When using several Base Stations they have to be configured with a unique "Rpn" different from "0". Valid RPNs for a class B Ari are 1 ... 255.

13. At the WBM of the BSIP1 IWU switch to configuration page "Dect-About".



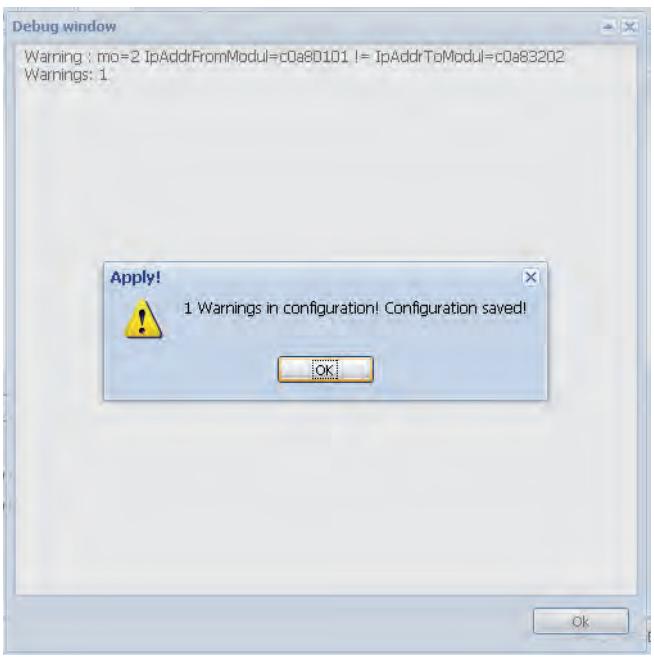
The fields IpAddr Module and IpAddr Server display the current (default) values for the selected BSIP1.

14. To apply all the changes to the BSIP1, the BSIP1 has to be synchronized. During the synchronization process the BSIP1 Only will receive its configuration values from the BSIP1 IWU.
15. Apply the changes by clicking the [Apply] button at the bottom section.



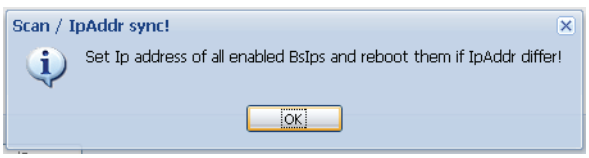
16. Confirm the message box by clicking on **[OK]**.

A debug window will appear.



17. Confirm the Debug window by clicking on **[OK]**.
18. Start the synchronisation process by clicking the [**Scan/Sync**] button at the bottom section.

A message box will appear.



19. Confirm the message box by clicking on **[OK]**.

    The following process will transfer the new settings to the BSIP1 Only. Therefore, the BSIP1 Only will rebooted automatically by the system.

20. Wait about 1 minute until the BSIP1 is started completely (LED states should be green/red)
21. At the WBM of the BSIP1 IWU switch to configuration page "System".
22. Start the services by clicking the [System Start] button at the bottom section.

After the system services are started successfully, telephony functionality is available.

5.19 "Quick Start" Completion

After you have accomplished some successful test calls you may configure all additional Users and additional BSIP1 Only in your System.

At this step it's a good idea to backup the configuration. For details refer to chapter 5.23.1.2, “Button [Backup Config]”

5.20 Further steps

5.20.1 Radio frequency site survey

A radio frequency site survey has to be performed. Within this step, also the synchronisation concept has to be designed, implemented and tested.

5.20.2 Synchronisation implementation

The syncronisation implementation should be part of the radio frequency site survey.

For details of synchronisation via air refer to chapter 5.3, “Synchronisation over air concept”.

5.21 Configuration reference

For the configuration of the HiPath Cordless IP system you have to connect via a Browser to the BSIP1 IWU.

5.22 WBM overview

5.22.1 Different WBM modes

- **Hint**: Where not other stated, all documentation is described for WBM mode Siemens Standard.

The system has two built-in factory default WBM users:

WBM mode	Username	Default password
Siemens Standard	Siemens	1q21q2
Siemens Administration	SiemensAdmin	1q21q2

Using the WBM mode Siemens Administration, more or changed configuration options are available.

For most configuration tasks, WBM mode Siemens Standard is sufficient.

5.22.2 Features in WBM mode Siemens Admin

Configuration page Network-Gateways

- GW specific Options: Fields "Gatekeeper Id", "Dtmf", "StunnelIp", "LocalIpAddress" available

Configuration page Dect-Call

- Field "NumofChannel" moved from sub-page Device

Configuration page Dect-Radio

- Field "Diversity" available
- Dropdown Field "Frequency" (Default: "1.88 - 1.90" for Europe, other available values: "1.91 - 1.93"). Changig this option from its default "off" is not supported yet.

Configuration page Dect-Ari

- Field "Cipher"

Configuration page Dect-Debug

- only available in WBM mode Siemens Admin

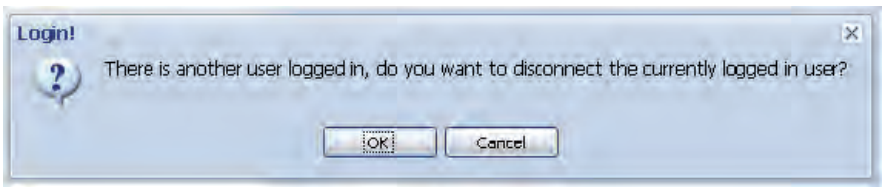
Configuration page Debugging

- only available in WBM mode Siemens Admin

5.22.3 Login to WBM

5.22.3.1 Multiple WBM sessions

If you login onto the same WBM session on which another user was logged on, you are informed about that by a message box.



[OK] will logout the currently connected user.

[Cancel] Go back to the Login dialog.

After a timeout of 30 minutes after the last WBM access the user will be logged out automatically by the WBM.

5.22.3.2 Login and Password change

- **Hint**: Password and Username are handled Case sensitive.

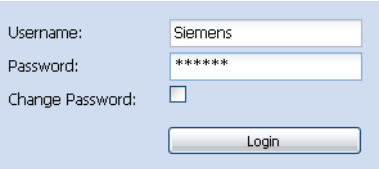
The WBM configuration mode is chosen according the Login username.

Concurrent Logins are not possible. The users who tries to login last is given the ability to logout the already logged in user.

5.22.3.3 Changing a WBM User's password

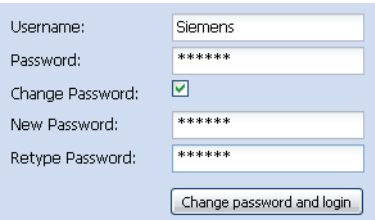
- Important note: Please note down the new password at a secure place. Passwords are stored at system level and also used when updating the system at a later time. If you forgot the password, you only may overcome the situation by resetting the system to factory defaults.

1. On the Login page, enter the Username and current password for the destinated user which has to be changed.



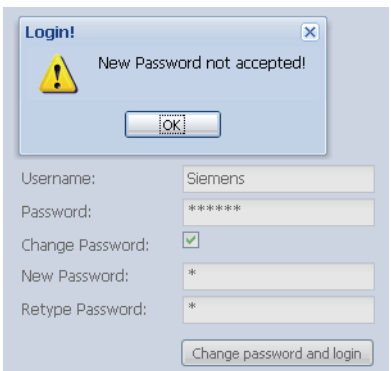
2. Activate the checkbox "Change Password".
3. Two new fields will be displayed: "New password" and "Retype password". Type in the new password in both fields.

- **Hint**: Username and passwords are case sensitive, the minimum password length is 6 (six) characters.



4. Click on [**Change password and login**].

If both new passwords are equal and valid, you will be logged in onto the WBM. Otherwise a error message will appear.



5.22.4 General objects

The WBM consists of several pages with topically structured configuration options of the IWU Software. These pages can be selected via the Tabs in the upper part of the WBM.

The buttons on all configuration pages on the bottom right have the following meaning:

Logout

This functionality will logout the currently user from the WBM session. After you have finished configuration, it is good practice to logout from the WBM session.

Help

The Help button starts the browser based online help system.

Info

Displays version information and the software license agreement.

Cancel

With **[Cancel]** the Configuration Utility is closed, modifications are discarded.

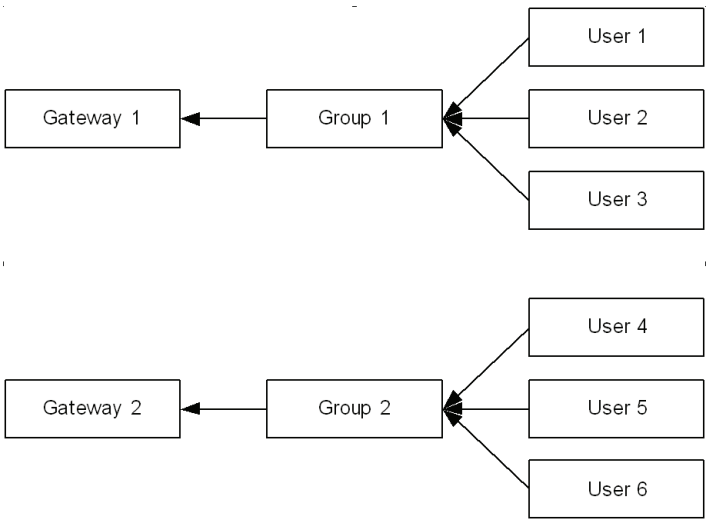
Apply

With this Button, all configuration is updated and iternally saved. Also current changes at a WBM page (which is not already applied) is applied and stored to the configuration of WBM.

5.22.5 Configuration Systematic

Several "Gateways" (PBXs) are supported per HiPath Cordless IP system. For establishing a call over a VoIP gateway, a Group has to be assigned to the Gateway and a User has to be assigned to this Group.

The following figure shows the relationships between Gateways, Groups and Users.



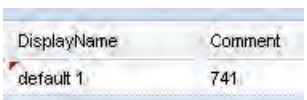
According to the figure above the following relations exist:

- One ore more Users can be assigned to a Group (n:1).
- One Group can be assigned to a Gateway (1:1).

Usually only 1 Gateway (the PBX) is configured for the IP-DECT System.

5.22.6 Changing values

Changed values are marked with a red triangle at the top left corner of the corresponding filed.



But you have to leave the current filed for changes to come in effect (via TAB key or mouse).

Please keep in mind that changes are not in effect immediately.

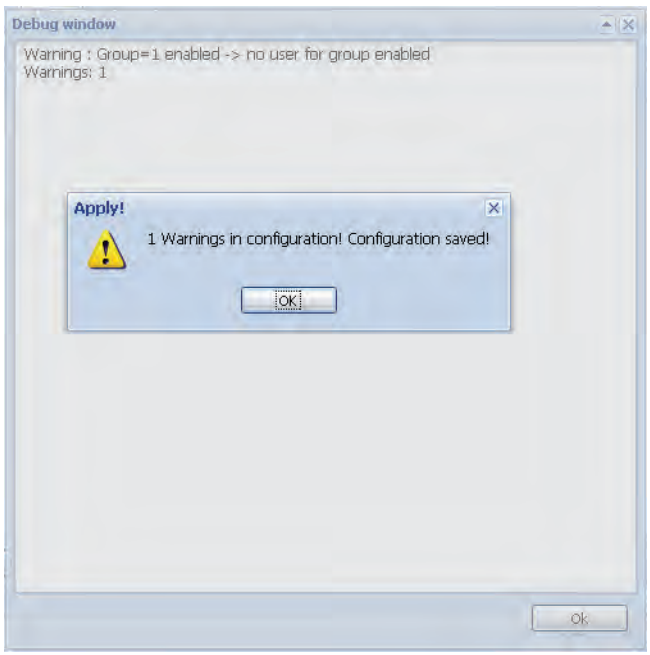
You have to

1. apply the changes with the **[Apply]** button and for some changes you have to
2. restart the services

5.22.6.1 Debug windows

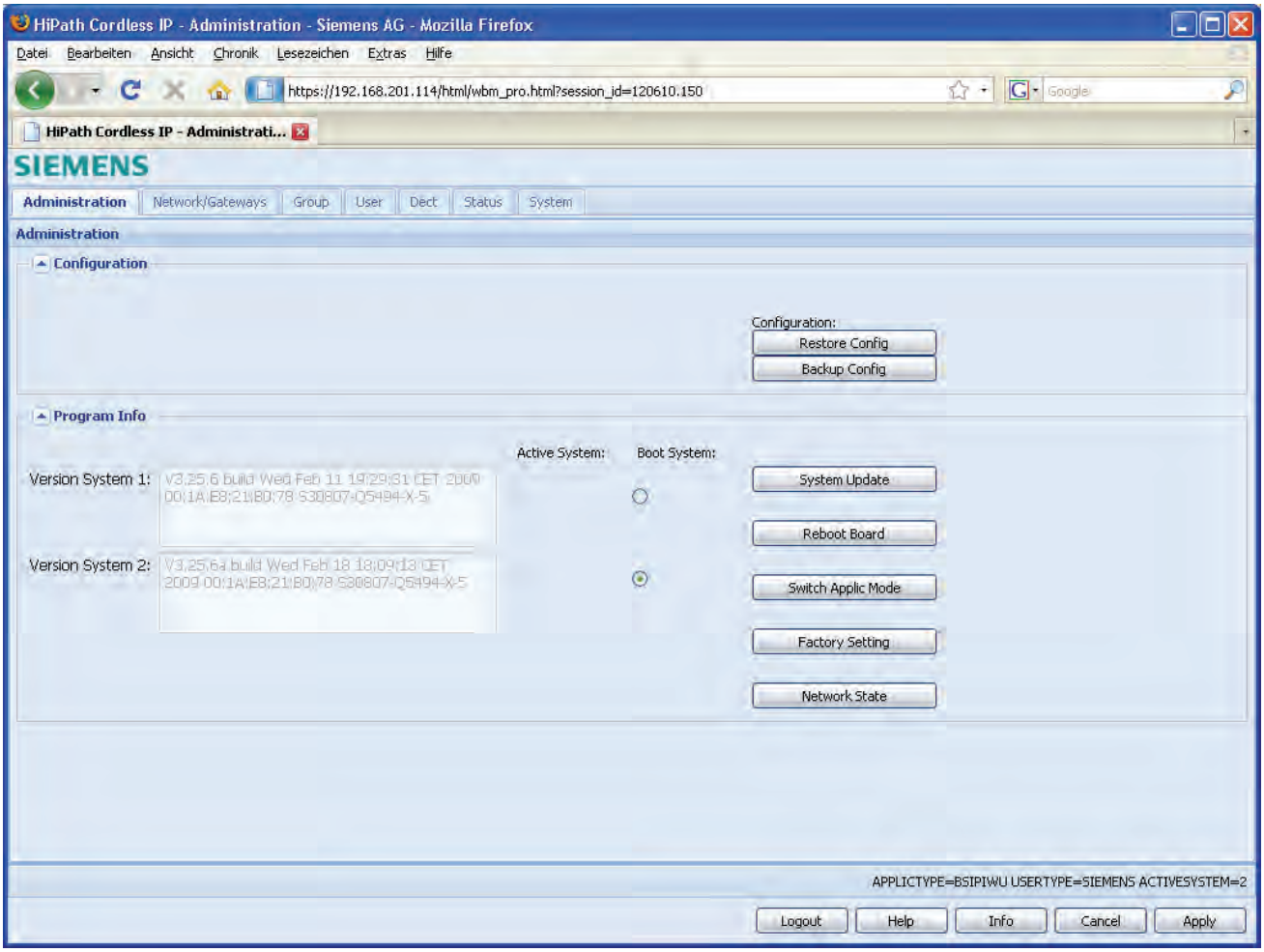
To inform the user about special events (e.g configuration warnings and/or errors) a Debug window will display the corresponding messages to the user.

After changing (and/or applying) changes to configuration objects, the WBM displays the debug windows with warnings and/or errors.



5.23 Administration

On the Administration page, administrative configuration and information about the BSIP1 is provided.

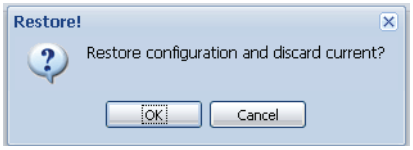


5.23.1 Frame Configuration

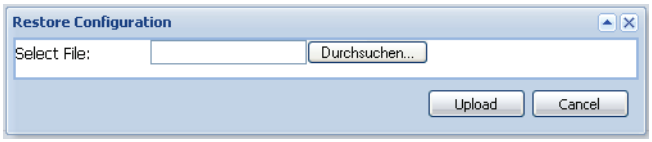
5.23.1.1 Button [Restore Config]

1. With the Button [**Restore Config**] the complete configuration of the BSIP IWU can be restored from a previously backuped configuration from a file.

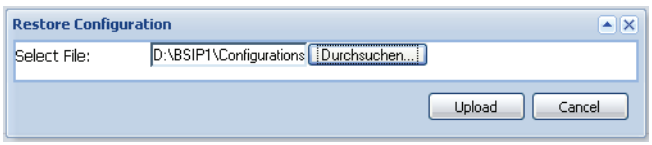
- **Hints**:The system services have to be stopped to use this feature.



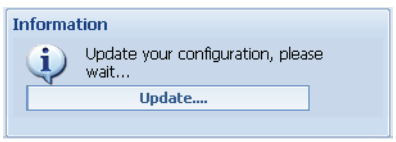
2. After confirming the action with button **[OK]**, a file "Restore Configuration" Dialog opens.



3. After clicking on [**Durchsuchen**] you can select a configuration file using an browser based file open dialog. (by default "iwu_config.tgz ").
4. After you have selected the desired configuration file you can load it into the BSIP1 using the [**Upload**] button.



During the upload process, a message box with a progress bar will be displayed.



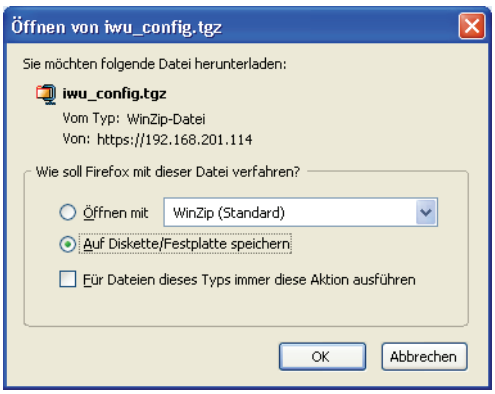
- Important: All stored configuration is loaded into the WBM. Ensure that you have loaded the correct configuration file. Particularly ensure that all relevant ip address values are correct (otherwise you won't be able to access the WBM after a reboot).
- After the configuration file is downloaded, you have to apply or discard the changes. For both actions, a reboot has to be performed.

5.23.1.2 Button [Backup Config]

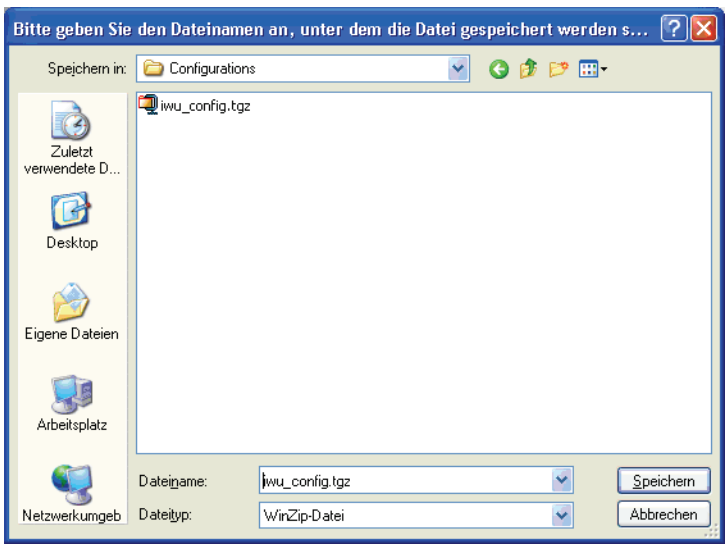
With this Button the complete configuration of the BSIP can be backuped and stored on the file system of the maintenance PC.

- **Hint**: The system services have to be stopped to use this feature.

1. After clicking on the button [**Backup Config**], a browser based file open dialog will be displayed immediately.



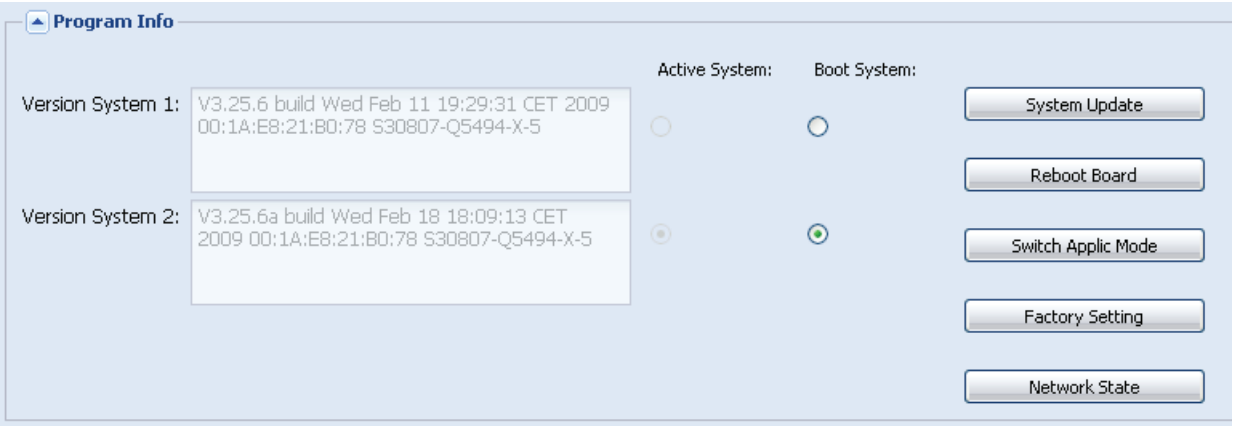
2. You have to select the store method of the dialog, click on button **[OK]** and select from the following "save as" dialog a folder to store the configuration files on the maintenance PC or a directory available via the network.



3. Save the configuration file using the default name "iwu_config.tgz " or change it according your needs (Don't use blanks in the filename).

5.23.2 Frame Program Info

Version system 1 and Version system 2



System1 and System2 partitions

To guarantee a functional BSIP1 at any time, two bootable systems are present on the BSIP.

The current (active) system and the fallback (non active) system.

Therefore the BSIP1 has two different systems partitions: System 1 and System 2.

Version Systemx:

Displays information about SW version , MAC address

Active system

The radio buttons below "Active system" indicate, which of the both System partition is the currently ACTIVE System partition. In the example of the screenshot above System 2 is the active partition.

Boot system

The radio buttons below "Boot system" determine, which of the both System partition will be booted and therefore be the active partition AFTER a reboot of the board..

- **Hint**: Don't activate a system partition whose displayed version is "n/a" or "update unsuccessfull". This may lead to a unusable system.

5.23.2.1 [System Update]

Updating the system software

- Important: If you update the system software, the Update is always applied to the NON-active system. Furthermore, the current configuration of the active system will be applied to the NON-active system. You have to ensure to use the SAME software version at all BSIPs. Therefore, updating the software has to take place at the BSIP IWU AND at all BSIP Only.

A downgrade is not fully supported. In need of a downgrade, a factory reset is applied automatically. Please refer to the delivered Release notes of the new version for details of the update process.

Create a backup of the old configuration (Page Registration - [Backup Config].

Update instructions

1. Please create a backup of the old configuration (Page Registration - [Backup Config].
2. Ensure that you have a firmware file of the old version available (in case of a necessary downgrade).
3. Start with the update for the BSIP1 running the HiPath Cordless IP Server Software (**BSIP1 IWU**) and reboot the BSIP1 IWU as described in chapter 5.23.2.2, “Other options”.

   Hint: Don’t forget to clear the browser cache after updating a partition.
4. Apply the update to all **BSIP1 Only** modules and reboot them.

   Hint: Don’t forget to clear the browser cache after updating a partition.
5. Restart the services at the **BSIP1 IWU**.
6. **Clear cache of Browser** (Very Important). After updating to the new version the cache of the browser has to be cleared. Otherwise sporadic problems with the new version will occure since old (cached) configuration pages are used by the browser.

To clear the cache of your browser:

1. Restart your browser.
2. Clear the browser cache of MS Internet Explorer **MSIE6**:
   Tools -> Internet Options -> General -> Temporary Internet Files -> Delete
   MSIE7: Tools - Internet Options - General - Browsing history - Delete - Temporary Internet Files.

5.23.2.2 Other options

[Reboot Board]

Using this Button the BSIP1 will start the reboot process after a confirmation dialog.

[Switch Applic Mode]

To change the mode of the BSIP1 between BSIP1 Only to BSIP1 IWU select [Switch Applic Mode].

- **Hint**: The current working mode is printed out at the bottom sstaus line (APPLICTYPE=BSIPONLY or BSIPIWU) and in the output of [Network State].

After changing the application mode, the following message box will appear.

Press **[OK]** to reboot the BSIP1 and start it in the other application mode.

- **Important note**: After changing the application mode the BSIP1 will start with the IP configuration which was configured last for the corresponding application mode. This may be the default configuration for the mode or the already configured addresses for the mode.

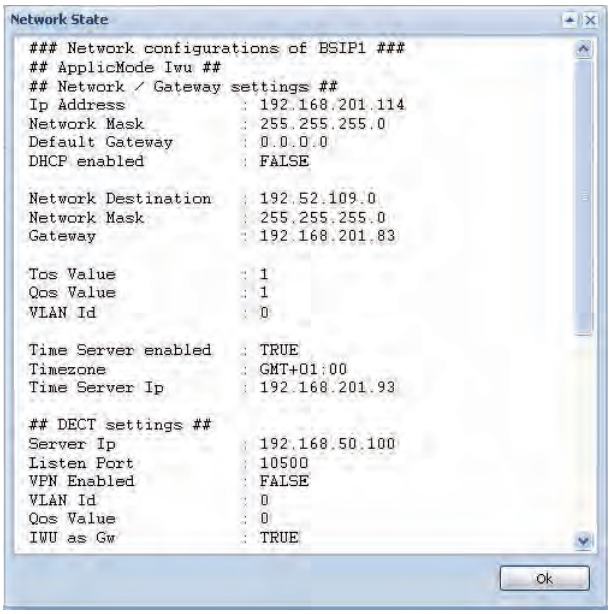
[Factory setting]

Using this functionality, a factory reset of the BSIP1 may be initiated.

This functionality may be used alternatively to the procedure of factory reset by power sequencing described in chapter 5.7, “Factory reset of BSIP1”.

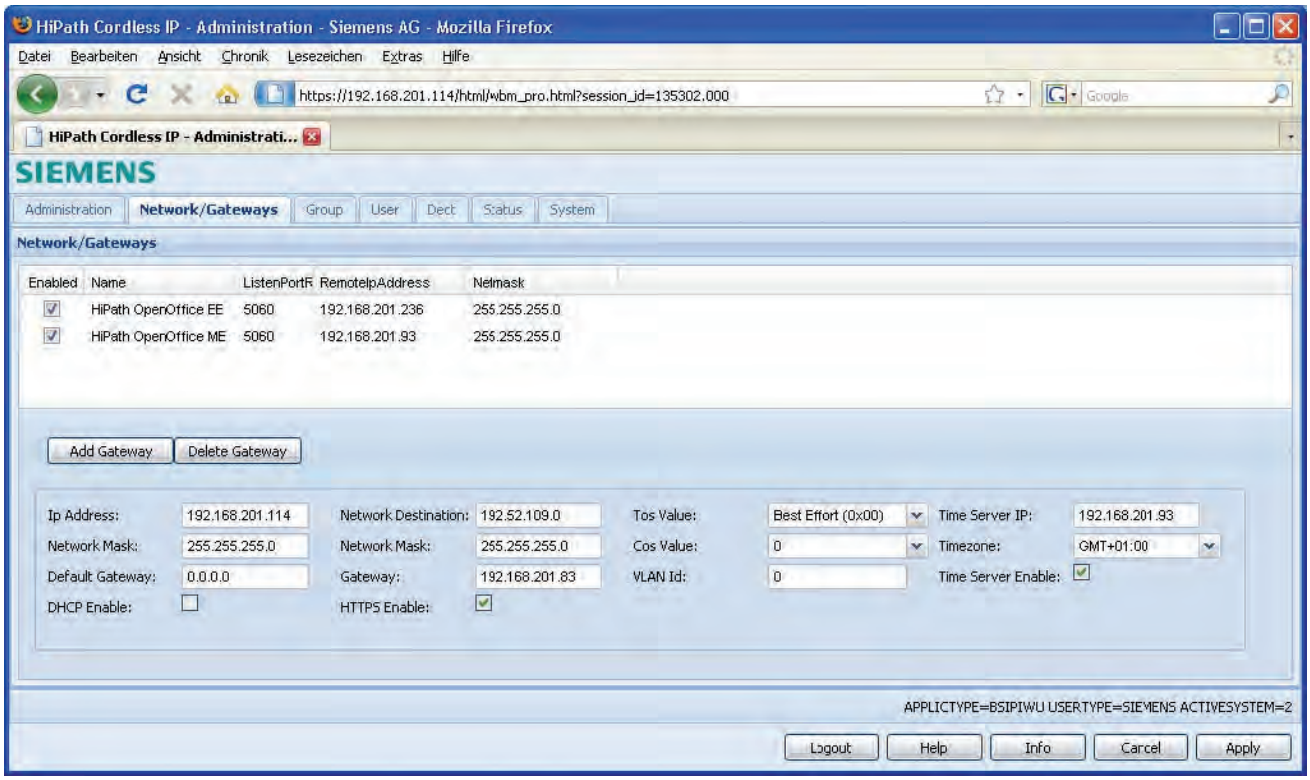
[Network State]

The output of the Network states functionality displays summarised information about the systems network configuration.


Network State
Network configurations of BSIP1
ApplicMode Iwu
Network / Gateway settings
Ip Address : 192.168.201.114
Network Mask : 255.255.255.0
Default Gateway : 0.0.0.0
DHCP enabled : FALSE
Network Destination : 192.52.109.0
Network Mask : 255.255.255.0
Gateway : 192.168.201.83
Tos Value : 1
Qos Value : 1
VLAN Id : 0
Time Server enabled : TRUE
Timezone : GMT+01:00
Time Server Ip : 192.168.201.93
DECT settings
Server Ip : 192.168.50.100
Listen Port : 10500
VPN Enabled : FALSE
VLAN Id : 0
Qos Value : 0
IWU as Gw : TRUE
Ok

5.24 "Network/Gateways" Configuration

The configuration page “Network/Gateways” is divided into two parts.



In the table view at the top, the VoIP gateways (PBX) are assigned to the "VoIP" connections.

At the bottom of the page, the general network configuration of the BSIP IWU network is done.

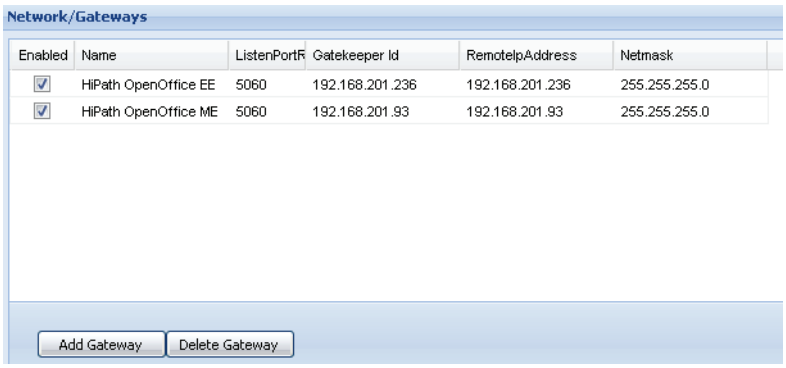
5.24.1 Gateway configuration

- **Hints**: To add or delete a Gateway entry, the system services have to be stopped before. All changes will be activated after a restart of the system services.

1. To add a new entry for a gateway, click on [**Add Gateway**]. A new entry line with default values is appended, which have to be modified according to your system needs.

The new entry line is either inserted above the selected Gateway or inserted at the top of the list if no Gateway is selected.

1. A selected Gateway entry may be deleted by clicking [**Delete Gateway**].



The columns of the configuration page have the following meaning:

Enabled

When activating this element ( ) the selected Gateway (the PBX) is added to the configuration and can be selected when configuring the Groups later on.

Name

Enter a unique name here for the Gateway. This name will be displayed in the dropdown box of the available Gateways when configuring the Groups.

ListenPortRemote

This entry determines the common SIP listen port of the configured gateway. There is no need to change this port to another value than 5060. The default setting is "5060".

If adding new entries, the value is duplicated from the field “Remote IpAddress”. If changing the value in Field “RemoteIPAddress”, the value is only duplicated, if both values didn’t differ before. Otherwise the field “GatekeeperId” remains unchanged.

Gatekeeper Id

The field “Gatekeeper Id“ is only displayed in SiemensAdmin mode . The value is equal to the IP address of the VoIP Gateway. By default, enter the same value as in field “Remote IP address“.

Remote IP Address

Enter the IP address of the Gateway (the PBX) here. It shall be located in the IP Infrastructure network (see chapter 5.2, “Network Concept”). At the BSIP1 a corresponding IP Infrastructure address has to be configured.

Netmask

Enter the netmask for the IP address for the Gateway here. (Default for Class C networks: 255.255.255.0).

Dtmf (only in advanced config. Mode)

Selects the method for the transmission of DTMF digits ("tones") to the Gateway:

"Signaling": The DTMF Digits are transmitted via the Signaling protocol to the Gateway (For SIP via the INFO method).

"RTP": The DTMF Digits are transmitted to the Gateway via the Voice (RTP) channel (e.g. for SIP embedded in the RTP protocol according to RFC2833).

There is no need to change this setting for the supported gateways. The default setting is "RTP".

Stunnel IP (only in advanced config. Mode)

Optional - The ip address of the Stun Server for the VoIP gateway SIP Registrar or the Proxy Server. This configuration is depending on the used PBX. There is no need to change this setting for the supported gateways. The default setting is "0.0.0.0".

LocalIPAddress (only in advanced config. Mode)

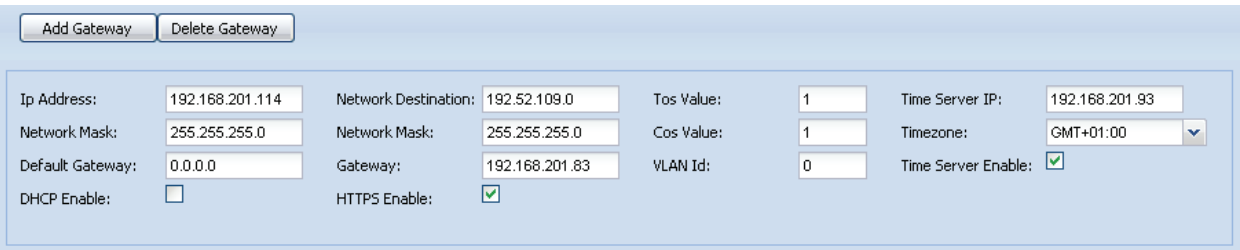
Optional IP address to which the communication to the gateway should be bound to. There is no need to change this setting for the supported gateways. The default setting is "0.0.0.0".

5.24.2 Network configuration

At the bottom of the configuration page "Network/Gateways", the general network configuration of the BSIP IWU network is done.

Refer to the concepts of networking described in chapter 5.2, “Network Concept”.

- **Hint**: All changes will be activated after a reboot of the BSIP1.



IP settings for the BSIP IWU

Ip Address

Here you have to configure the ip address at which the BSIP IWU should be configured inside the VoIP (Infrastructure) Network. This is also the ip address at which the BSIP1 IWU is accessible via WBM.

Network Mask

Enter the corresponding netmask for the IP address as configured above. (Default for Class C networks: 255.255.255.0).

Default Gateway

If all other routing is done via a default gateway , it can be configured here. Alternatively, a dedicated route may be configured using the settings "Network destination", "Network Mask" and "Gateway" as described below.

Hint: The Default gateway is functional only for neworks outside 192.168.0.0/ 255.255.0.0. (Since 192.168.x.y. is a reserved local network for DECT Basestations).

- Important: All BSIP1 devices must be located inside the same network segment and therefore **MUST NOT** be separated by layer 3 Routing devices. Only Layer 2 switches are supported between the BSIP.

DHCP Enable

Activate this option if the BSIP VoIP (Infrastructure) network has to be configured by a DHCP server. The BSIP IWU settings for the VoIP (Infrastructure) network will be assigned by the DHCP server.

- Important notes:
  - If using DHCP for the VoIP (Infrastructure) network, the configuration of the DECT network has to be done manually (since not distributed by the DHCP server).
  - After applying the DHCP changes (reboot of BSIP1), the BSIP1 will be assigned a new IP address by the DHCP server. Since there is no local console access at BSIP1 possible, the only method to get the assigned IP address is to have access to the DHCP servers lease information! Contact the administrator of the DHCP server before activating this option.

Network Destination

Alternatively, if a default gateway should not be used, a dedicated route to another network may be configured here (e.g. using a Time server or access to a maintenance network, ...). In the following three fields, you have to configure the routing information to the other IP network.

Network destination

The destination address for the other IP network (e.g. 192.52.109.0).

Network Mask

The corresponding network mask for the other Network destination. (e.g. 255.255.255.0).

Gateway

The IP address of the gateway inside the VoIP (Infrastructure) network which handles the routing to the other network.

HTTPS Enable

Determines if https (Hypertext Transfer Protocol over Secure Socket Layer) should be used for WBM communication between the browser and the BSIP1. Using https encrypts the communication between the browser and the WBM. It is suggested to use https mode.

Depending on the http access mode you have to use http:// or https:// mode at the browser.

HTTPS Enabled = [ ] use **http://**{Server Ip IP VoIP (Infrastructure) Network}

HTTPS Enabled = [X] use **https://**{Server Ip IP VoIP (Infrastructure) Network}

Example: **https://192.168.201.114**

Tos Value

With the “TOS Value“ you can configure the prioritization of the IP packets via TCP/IP (Layer3) according to DSCP. It is only used for the IP DSCP field for VoIP Signalling (SIP) and VoIP data (RTP) packets towards the PBX (VoIP Infrastructure Network).

Other IP packets e.g.

- WBM or SSH towards the VoIP Infrastructure network or
- packets between BSIP1 Only and BSIP1 IWU (DECT Network)

are **NOT** tagged with configured the DSCP value. (Default = “0“, i.e. no prioritization).

Using the dropdown you may select one of the pre-configured ToS values.

Cos Value

With the “CoS Value“ (decimal) you can configure the prioritization of the ethernet packets via ethernet (Layer2) according to 802.1p. (Default = “0“, i.e. no prioritization).

Using the dropdown you may select one of the pre-configured CoS values.

VLAN Id

The corresponding VLAN Id is configured here. If VLANs are used (value unequal to "0"), the switch port connected with the BSIP IWU has to be configured to tag the ethernet frames.

If a value of zero (0) is configured here, the BSIP IWU will **not** tag the ethernet frames. Otherwise, the frames are tagged according to their destination.

All frames inside the destinated VoIP (Infrastructure) network will be tagged with the configured VLAN Id. All frames destinated to the DECT network will be tagged with the VLAN Id configured at the DECT page.

Hint: The BSIP1 ethernet tagging feature is only activated for VLANId <> "0".

Time Server IP

Since the BSIP1 has no hardware clock, the time has to be set by contacting a NTP (or SNTP) time server. The IP address of the Time Server is configured here.

Since the BSIP1 has no hardware clock, the time has to be set by contacting a NTP (or SNTP) time server. The IP address of the Time Server is configured here. Hint: The supported platforms may serve as a SNTP server. For details refer to e.g chapter 5.33.5, “Time server configuration”.

If a time server is not configured correctly and cannot be contacted, local time will start at "01.01.1970 00:00".

Timezone

If using a Time Server, the timezone has to be configured according the physical location of the HiPath Cordless IP solution (country). Since NTP is always using UTC time, the local time has to be calculated against the time zone information to get correct current Local time.

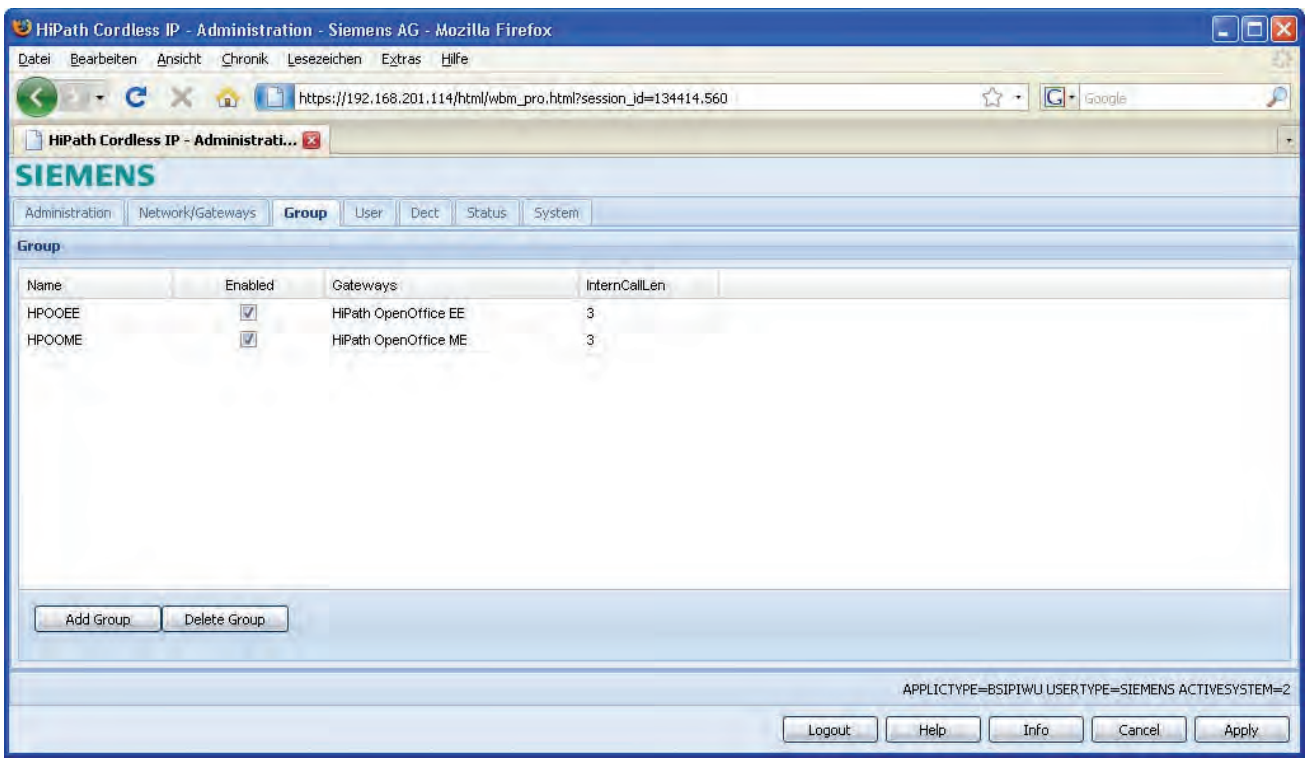
Time Server Enable

Enables the usage of the Time Server.

After activating the NTP Server at the PBX it may take some minutes upon activation of the NTP service. This is due to the nature of time synchronisation between NTP server and NTP client.

5.25 "Group" Configuration

On the configuration page "Group" the Groups are defined, which are the connecting link between the "VoIP Users" and the "Gateways". A User has to be assigned to a Group and a Group has to be assigned to a Gateway.



- **Hints**: To add or delete a Group entry, the system services have to be stopped before. All changes will be activated after a restart of the system services.

1. To add a new Group entry, click on [**Add Group**].

A new entry line with default values is appended, which have to be modified according to your System. The new entry line is either inserted above the selected Group or inserted at the top of the list if no Group is selected.

2. A selected Group entry may be deleted by clicking [**Delete Group**].

The columns of the configuration page have the following meaning:

Name

Enter a descriptive name for the Group (e.g the name of the corresponding gateway). This will be displayed in the dropdown box for the available Groups when configuring the VoIP Users.

Enabled

When activating this element ( ) the selected Group is enabled and displayed in the dropdown box for the available Groups when configuring the VoIP Users.

Gateways

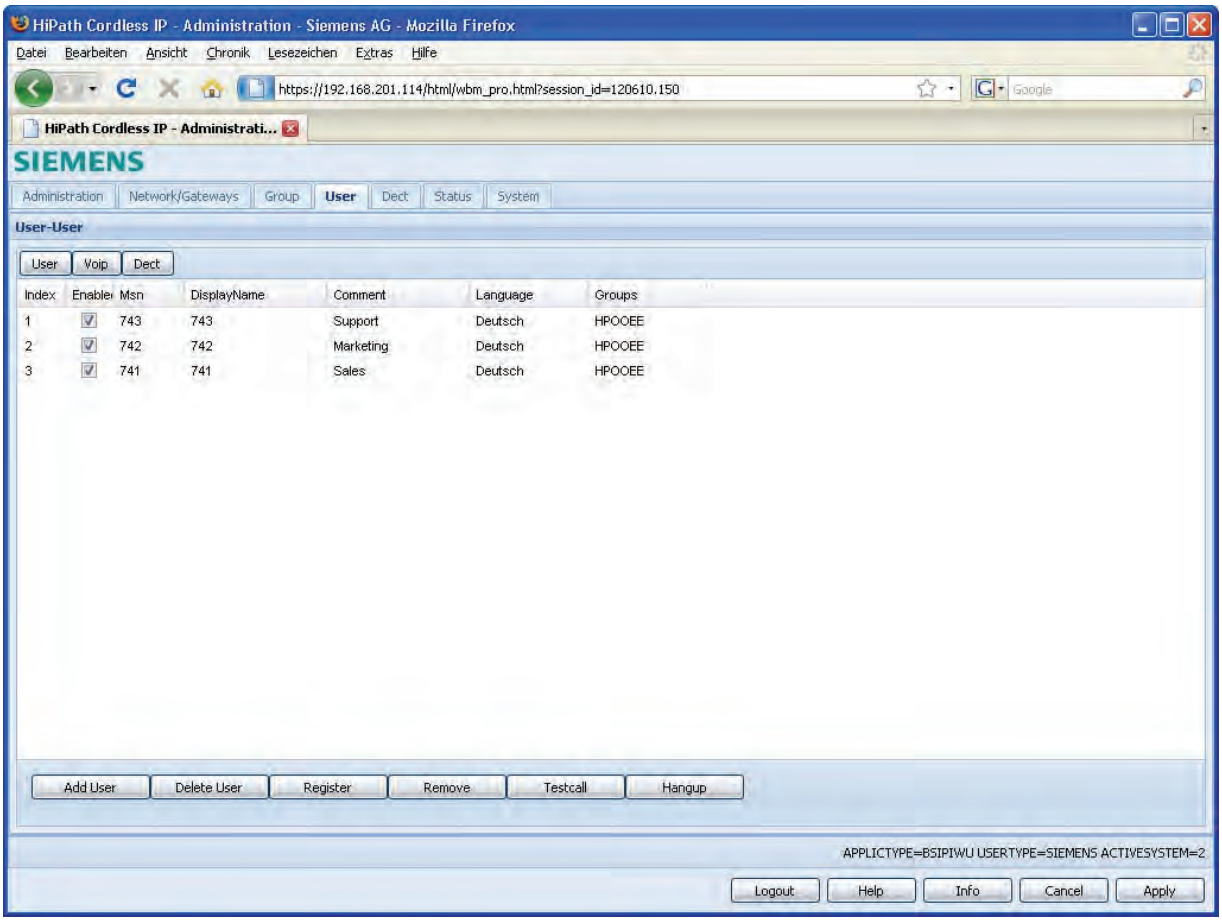
Select the assigned Gateway for this Group via the select box. Hereby the assignment between the User to a gateway (PBX) is configured.

InternCallLength

With this setting the maximum number of digits of the calling Party number for internal calls is configured. Calls with a larger number of digits are signalled as external calls at the handset. The default value is “3”.

5.26 Users Configuration

On the sub configuration pages below "VoIP Users" ("User", "Voip" and "Dect") the individual users and their properties regarding "User" (general user properties), "Voip" (registration via VoIP) and "Dect" can be configured.



5.26.1 General user configuration

- **Hint**: To add or delete a user entry, the system services have to be stopped before.
  All changes will be activated after a restart of the system services.

1. To add a new user entry, please click on [**Add User**]. A new entry line with default values is appended, which have to be modified according to your system needs. The new entry line is either inserted above the selected user or inserted at the top of the list if no user is selected.

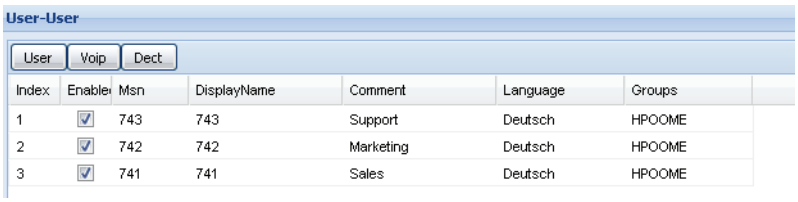
A selected user entry may be deleted by clicking [**Delete User**].

- **Hint**: The functionality [Delete user] does not remove the registration of the handset. It only removes the user entry from the WBM configuration. Therefore if you delete an user, an “Auto entry” will be added later (for details refer to chapter 5.26.5, “Auto Entry users”.

The buttons [**Register**], [**Remove**], [**Testcall**] and [**Hangup**] are described at a later chapter.

5.26.2 Configuration Page "User - User"

On this page the VoIP parameters for the Users are configured.



The columns of the configuration table have the following meaning:

Index

Current number of the User entry. Automatically incremented by the BSIP.

Enabled

When activating this element ( ) the selected User is enabled at the BSIP IWU.

MSN

The "MSN" should correspond with the Subscriber Number of the User at the PBX (usually the "User Name" in the PBX).

DisplayName

The handsets will display this value in their idle display. The activation of the DisplayInfo is done by an outgoing or incoming call. There is neither an activation of the DisplayInfo due to a Power cycle of the handset nor to a roaming process.

The DisplayInfo at the handset is limited to a maximum of 10 Characters.

- Important note: Don't use characters others than 0-9, a-z, A-Z, "-" "_" for the DisplayInfo configuration. Other characters may prevent that the DisplayInfo is diplayed correctly or that the system services are running correctly.

To avoid confusions, the field "DisplayName" should be equal the Msn configured above.

Comment

The field "Comment" serves only as a reference for the system administrator of the BSIP1. It may e.g. contain the type of the Handset or the name of the department if the Handset is not associated directly to a person.

This field has no influence on the functionality of the IWU.

Language

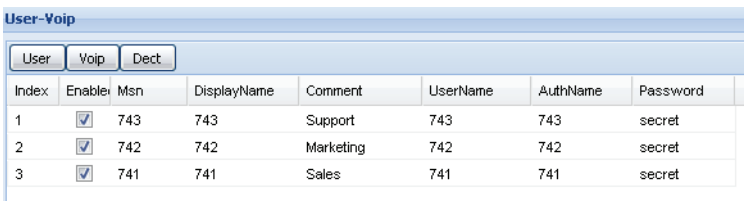
The language used for display messages of the handset is selected here.

Groups

Choose a Group (and therefore an associated VoIP gateway) from the dropdown box to which the user is associated to.

5.26.3 Configuration Page "User - VoiP"

On this page the parameters for the registration of the User at the PBX and the assignment of the subscriber numbers can be configured.



The columns of the configuration page have the following meaning:

- Note: The columns "Index", "Enabled", "Msn", "DisplayName" and "Comment" are repeated on all sub pages. A description of these parameters can be found in chapter 5.26.2, “Configuration Page "User - User"”.

For the correlation between the values used in the VoIP gateway configuration and in WBM see the corresponding chapter for the used PBX in chapter 5.31, “Configuration Hints for PBXs”.

UserName

Assign a User Name which is used for the registration at the PBX. This may be a name or a number depending on the PBX or the provider. For the supported gateways the phonenumber should be used.

AuthName

The authentication Name is needed as a “Login” name if the registration is done via “RAS” and the account at the PBX is password protected.

Password

Enter the Password here which is needed for the registration of the User (together with the "AuthName").

G729

The usage of low bandwith codec G729 is intended for devices which are connected to the PBX via low bandwith lines (DSL) e.g. for home office users using a SIP phone (e.g OptiPoint). Therefore bandwith is an issue for such scenarios. Inside the LAN efficient bandwith should not be an issue; therefore codec G711 should generally be used. Therefore there is no need to configure G729 in the codec list of the PBXs “Gateway - Codec” configuration page. Activating the codec G729 at the handset changes the codec list from G711A, G711U to G729ab;G711A,G711U.

To establish a G729 voice connection between a BSIP1 handset (G729 Enabled) and an OptiPoint SIP phone, the following configuration is necessary:

At the BSIP1, configure G729 for the desired or all user.

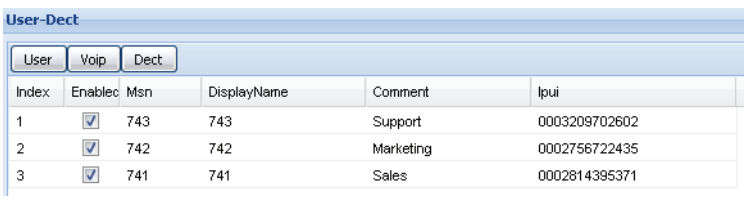
At the SIP phone, configure the speech codecs for “G729 preferred” and activate “Silence suppression” (Silence Supression is needed due to the used “b” variant of the G729 codec).

Using these settings, calls between the following participiants should use the following codec:

From / To	BSIP1 G729 Enabled	BSIP1 G729 Disabled	SIP phone	TDM user
BSIP1 G729 Enabled	G711	G711	G729	G711
BSIP1 G729 Disabled	G711	G711	G711	G711

5.26.4 Configuration Page "User - Dect"

This page contains the user configuration for DECT.



- Note: The columns "Index", "Enabled", "Msn", "DisplayName" and "Comment" are repeated on all sub pages. A description of these parameters can be found inchapter 5.26.2, “Configuration Page "User - User"”.

- **Hint**:All changes will be activated after a restart of the system services.

The buttons in the lower part of the page on the left have the following functions:

[Register]

Start the DECT registration for the selected User (Registration of the handset).

For the registration a close by Base Station has to be chosen from the select box in the column "DectModul" of the User.

The registration mode will be activated for a certain period of time for this Base Station. At the Handset of the User Registration has to be started and the PIN number (as configured in chapter 5.27.3, “Configuration Page "Dect - ARI"”) has to be entered when requested.

- **Note**: Restart the registration process if you did not succeed registering your handset in the provided period of time.The time is limited to avoid foreign handsets registering.

Remove

Remove the DECT registration for the selected User (Deregister the Handset).

TestCall

Perform a test call. The Handset of the selected User must start ringing (if already registered). The call can be accepted.

Hangup

Terminate the test call (Hang up).

Ipui

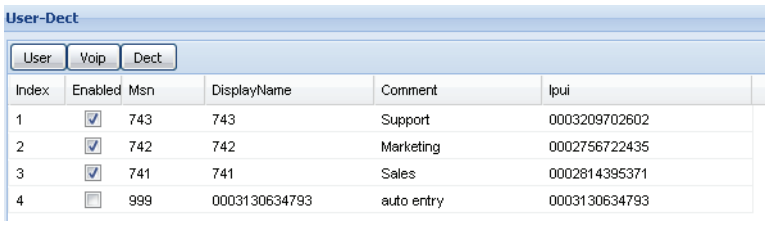
The IPUI (International Portable User Identity) of the Handset of the User is automatically recorded during the registration process.

5.26.5 Auto Entry users

The WBM generates a special "Auto entry" user in the following scenarios:

A handset has a valid registration at the BSIP and is registered, but no corresponding User can be found which matches the IPUI of the handset.

The AutoEntry user will be displayed alike a normal user in the user configuration



It is possible to configure the auto entry user as a normal user with the difference, that no registration procedure has to be performed (since the DECT registration at the BSIP was successfull).

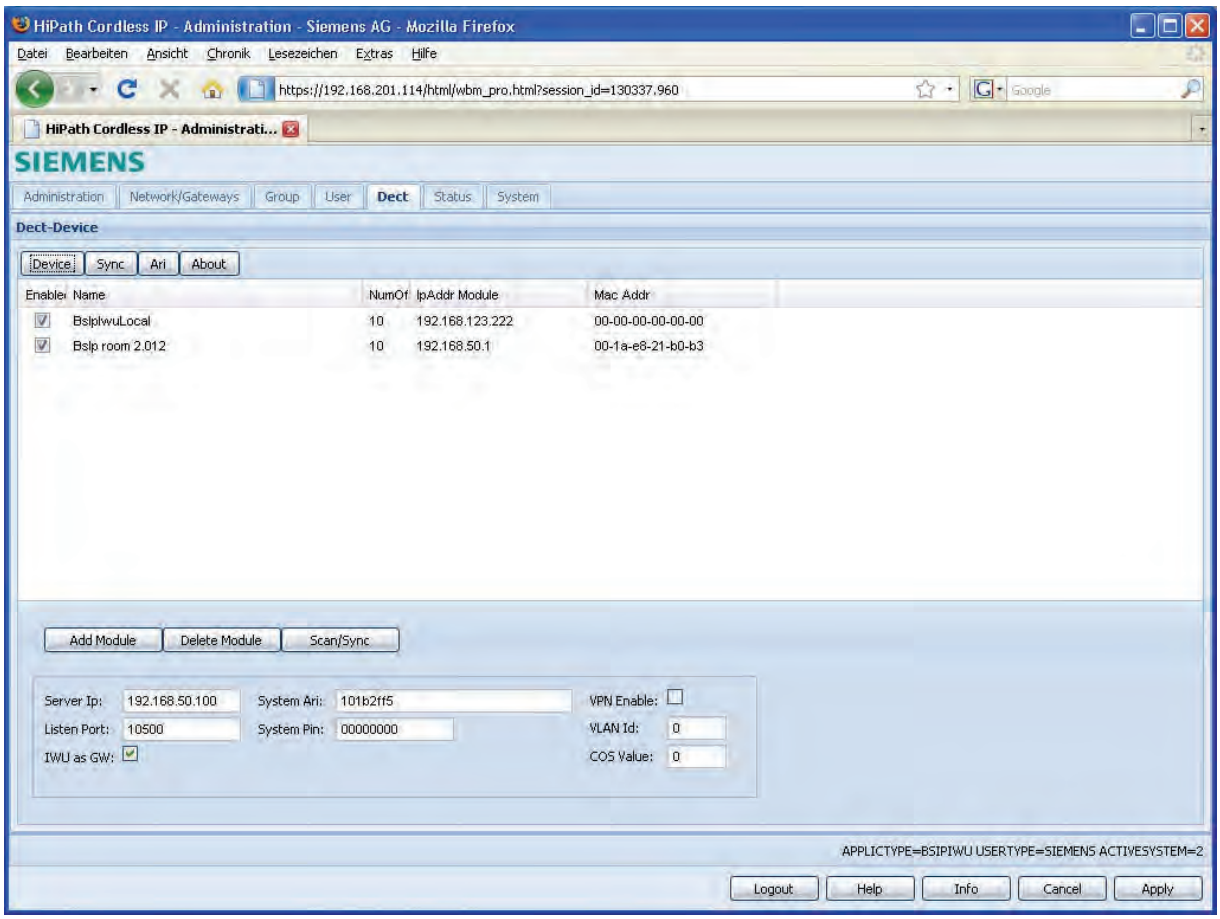
- **Hint**: Auto user entries are stored as normal users in the BSIP configuration.

The auro entry user is also displayed in the status page "Calls Dect".

5.27 Dect Configuration

On the main configuration page "Dect" the IP-DECT ethernet Base Stations are configured. This page contains the sub configuration pages "Device",""Sync", "ARI", and , "About".

There are further sub-pages available in WBM mode Siemens Admin.



5.27.1 Configuration Page "Dect - Device"

On this page the properties of the Base Station connections are configured. The columns of the configuration table have the following meaning:

Enabled

By activating this option this Base Station is enabled at the BSIP IWU.

Name

The name of the Base Station can be configured here.

NumOfChannel

Number of voice channels of the Base Station in conjunction with the IWU. The maximum value is "10". If less than "10" parallel voice channels shall be supported, a smaller value may be configured here. The default value is "10".

IpAddr Module

The IP address of choice for the Base Station in the IP-DECT network is entered here. Please take care that the "IpAddr Module" address has to be unique and is in the same subnet as the IP address of the Interworking Unit ("Server Ip").

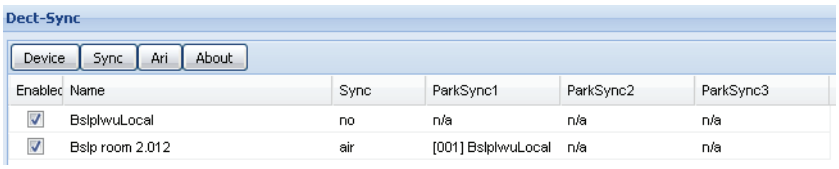
Please not that the IP address of the Base Station is transmitted to the Base Station after a [UDP Set] (see chapter 5.27, “Dect Configuration”).

MAC Addr

In this field the ethernet MAC address of the Base Station is displayed as it is found during a "Scan". It cannot be changed.

5.27.2 Configuration Page "Dect - Sync"

On this configuration page the synchronization of the Base Stations is configured.



The columns of the configuration page have the following meaning:

- Note: The columns "Enabled" and "Name" are repeated on all sub pages. A description of thesevalues can be found in chapter 5.27.1, “Configuration Page "Dect - Device"”.

"Sync" (Default value: "air")

Here you can configure the type of synchronization of the Base Station with a dropdown box. It is important e.g. for the over air-synchronisation and therefore for the seamless handover between basestations. You can choose one of the following menu items in the dropdown box:

- "**no**": No synchronization of the Base Station. This may be configured if no "seamless handover" is needed or if this BSIP serves as the “Sync Master” which is the topmost synchronisation source.

- "**air**": Synchronization of activated Base Stations over air, i.e. directly via DECT, but with additional Status information by the IWU.
  This method occupies - depending on the Beacon configuration - one or more available timeslots (which cannot be used for telephony), but it allows the seamless handover between the radio areas of synchronized Base Stations.
  The Base Station to be synchronized to must be an activated Base Station at the IWU. This is the standard synchronisation method used.

- "**air ext**": Synchronization of Base Stations over air, i.e. directly via DECT, but without additional Status information by the IWU.
  This method occupies - depending on the Beacon configuration - one or more available timeslots (which cannot be used for telephony), but it allows the seamless handover between the radio areas of synchronized active Base Stations.
  The Base Station to be synchronized to must be a Base Station configured at the IWU, but it need **not** be activated.
  Alternatively a Base Station may also be synchronized to another Base Station that is NOT configured at the IWU (e.g. Base Stations of other manufacturers).
  If the PARK of the external Base Station is known, it may be entered as "PARK Default" of the Base Station to be synchronized on the page "Ari".
  For the external Base Station a "Dummy" module has to be configured.
  Please notice that this may result in problems regarding the so called "Beacon Announcement" which may lead to frequent losses of synchronization.
  To minimize this problem an (internal) Base Station may be used as synchronization Base Station. Therefore you have to configure "0" channels (page "DECT - Device", entry "NumOfChannel"). No voice connections can be established via this Base Station.

- **"ParkSync"** (3 columns)
  You can choose a Base Station resp. DECT module from the select box on which the selected Base Station shall synchronize to (synchronization master). The Base Station will first try to synchronize to the Base Station in the leftmost "ParkSync" column. If this is not successful or if the synchronization gets lost while in operation, the Base Station will try to synchronize to the Base Station in the middle "ParkSync" column and finally to the rightmost column.
  Only when the synchronization to all 3 entered Base Stations is not successful, a synchronized operation and therefore a seamless handover will no longer be possible.

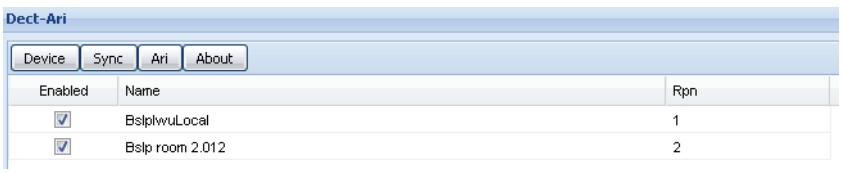
- Note regarding the synchronization sequence:
  For the operation of several synchronized Base Stations the synchronization sequence shall be configured as a "chain", i.e. the second Base Station synchronizes to the first, the third Base Station to the second, the fourth to the third and so on.
  If all Base Stations synchronize to one single "Master" Base Station a

much longer period of time will be needed for the reconstruction of the system wide synchronization, because of the "Burst" behavior.
In addition to that the distance of a "Sync Slave" to the topmost "Sync Master" in the synchronization chain shall not be more than 5 hops (Base Stations) else the "Slip" will be to big and if a Base Station looses synchronization it will only be (automatically) resynchronized when there are no longer active calls at this Base Station.

Important note: If a BSIP looses synchronisation it tries to resync to the configured synchronisation base station. This process can not start until the last call at this base station is released and no other calls (at the belonging base station) are active.

5.27.3 Configuration Page "Dect - ARI"

On this configuration page the access rights (ARI - Access Right Identity) for the individual Base Stations as seen from the Handsets are configured.



The columns of the configuration page have the following meaning:

- Note: The columns "Enabled" and "Name" are repeated on all sub pages. A description of these can be found in chapter 5.27.1, “Configuration Page "Dect - Device"”.)

RPN

When operating the Base Station stand alone and unsynchronized "0" (default value) has to be entered as RPN ("Radio Fixed Part Number"). For the setup of a network of synchronized DECT Base Stations this number is used for a handset to differentiate between the Base Stations for the seamless handover and it therefore has to be unique in the DECT network.

For DECT Base Stations with an ARI class A (default) the values 1 to 7 are allowed to differentiate between up to 7 Base Stations, for DECT Base Stations with an ARI class B the values 1 to 255 are allowed to differentiate up to 255 Base Stations.

Cipher (only available in Siemens Admin mode)

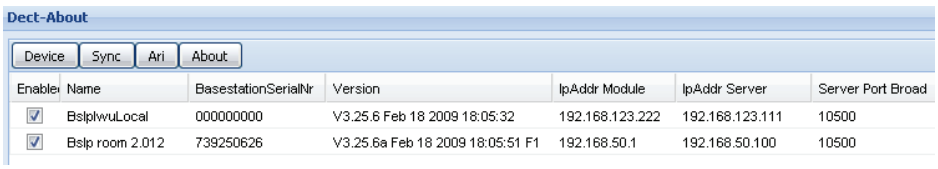
By activating the ciphering feature, the communication between the handset and the configured base station is encrypted.

Configure this setting for all base stations to the same value.

5.27.4 Configuration Page "Dect - About"

This configuration page is only for information purposes on the created DECT configuration.

1. Click [**Scan/Sync**] to update all values.



The columns of the configuration page have the following meaning (only display):

- Note: The columns "Enabled" and "Name" are repeated on all sub pages. A description of these can be found in chapter 5.27.1, “Configuration Page "Dect - Device"”.)

BasestationSerialNr."

Serial number of the Base Station as read with "Scan/Sync".

Version

Displays the version number of the Firmware of the DECT module including version date as read from the Base Station with "Scan/Sync".

IpAddr Module

IP address of the BSIP1 Only , as read with "Scan".

IpAddr Server

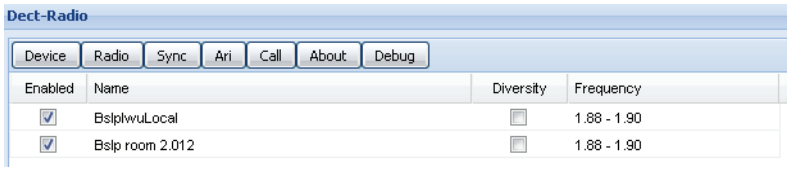
IP address of the DECT Server IP (DECT network) read with "Scan/Sync".

Server Port Broad

IP port on which the BSIP IWU communicates with the BSIP Only as read from the Base Station with "Scan/Sync".

5.27.5 Configuration Page "Dect - Radio" (Advanced mode)

This page is only displayed in Siemens Admin mode at the WBM.



Diversity

Activates the antenna diversity feature for the selected BSIP1.

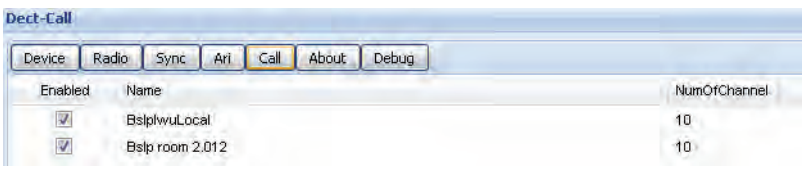
Frequency

Selects the frequency of the DECT the BSIP1 is working with.

Standard setting: "1.88-1.90". Dont' configure other settings.

5.27.6 Configuration Page "Dect - Call" (Advanced mode)

This page is only displayed in Siemens Admin mode at the WBM.



NumOfChannel

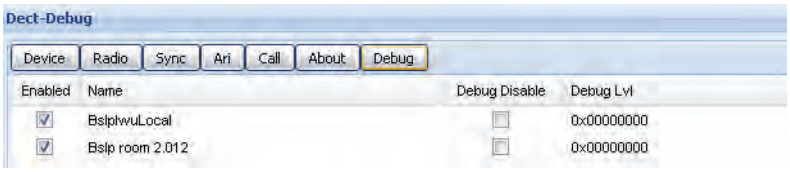
In SiemensAdmin mode the configuration for number of channels is located at this sub-page. In Normal mode the configuration may be found at configuration page "Dect - device"

Jitter

In SiemensAdmin mode the jitter buffers for the Dect Module may be configured here. Don’t change the value from its default “6”.

5.27.7 Configuration Page "Dect - Debug" (Advanced mode)

This page is only displayed in Siemens Admin mode at the WBM.



On the sub page "Debug" various logging and debugging functions may be activated for the individual DECT modules. Based on these functions potential problems in the DECT section may be isolated. For the analysis of the Log files profound knowledge of the DECT technologies is essential. Therefore debugging is intended primarily for our support staff.

- Note: Please note that depending on the activated Logging configuration big amounts of data may be produced which may have negative influence on the performance of the IWU Software and the System. Therefore you should only activate Logging functions when requested by a support engineer.

The columns of the configuration page have the following meaning:

- Note: The columns "Enabled" and "Name" are repeated on all sub pages. A description of these can be found in chapter 5.27.1, “Configuration Page "Dect - Device"”.

Debug Disable (Default value: Deactivated)

When activating this entry ( ) the Logging functionality for the active DECT module is disabled, independent of the configured Debug level.

Debug Lvl (Default value: "0x00000000")

Debug level of the selected entry. The value may be entered directly hexadecimal or via the checkboxes on the right.

5.27.8 General DECT configuration

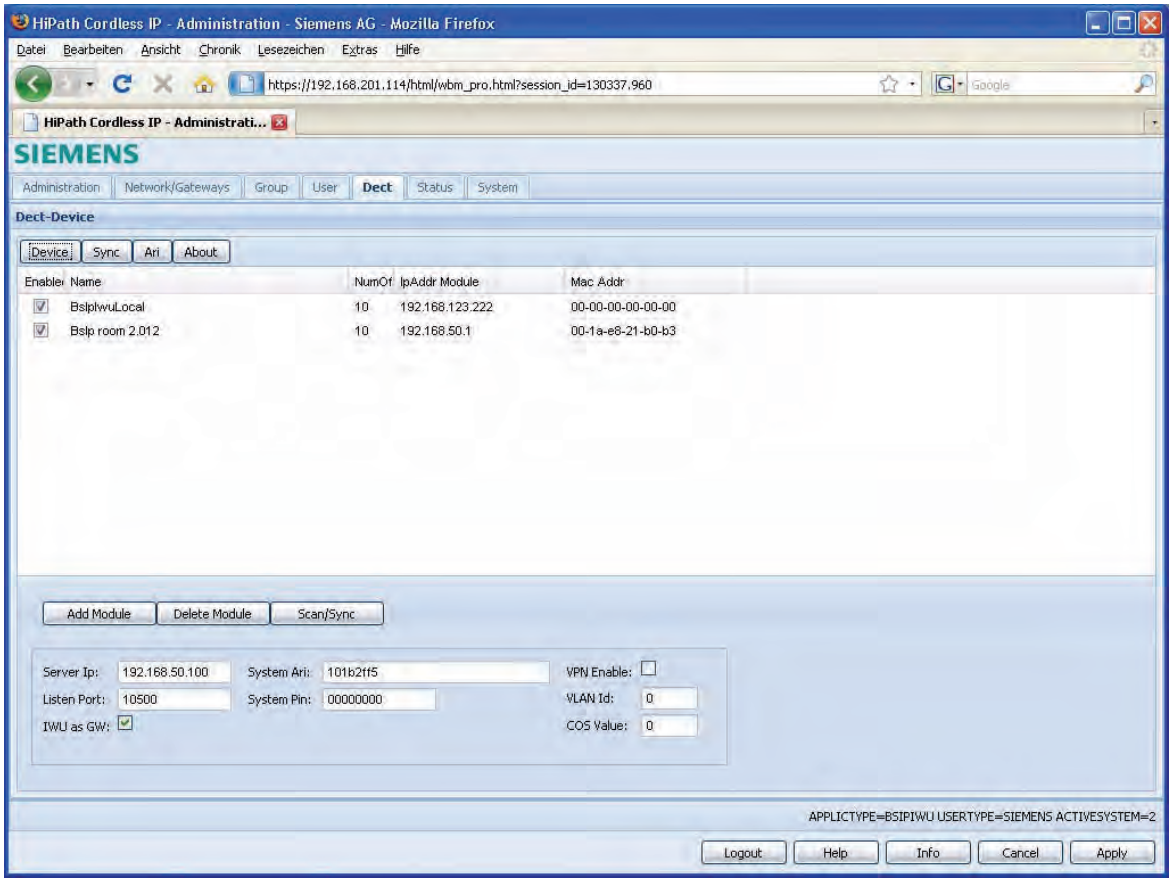
The configuration page "Dect" is divided into two parts.

In the table view at the top, all BSIP1 modules are configured.

At the bottom of the page, the general DECT configuration of the DECT Network is done.

- **All changes will be activated after a reboot of the BSIP1.**

5.27.8.1 Adding, deleting and scanning

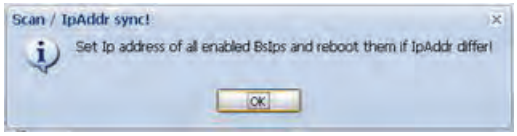


1. Click on [**Add Module**] to manually add a new entry for a Base Station (normally not needed - see [Scan]). You have to configure the new entry. The new entry is added above the selected Base Station entry or at the end of the list if no Base Station is selected.
2. By selecting a base station and clicking on [**Delete Module**], the selected Base Station entry is deleted.

The button [**Scan/Sync**] has a dual purpose functionality.

The first functionality is to Scan the network for all BSIPs using an ip broadcast mechanism. All BSIP Only are answering and sending their actual configuration information to the BSIP IWU where it is displayed. For BSIPs which no configuration is assigned, a new entry is automatically added. Please note that only IP-DECT Base Stations in the same ethernet segment as the BSIP IWU are found.

The other functionality is to send the configuration to all configured base stations. Hereby all configured options are transferred to all activated Base Stations.



5.27.8.2 General configuration options

Server Ip

This field contains the IP address of the server (the IWU) in the DECT network. It is used by the BSIP Only as the destination ip address for ip packets.

Listen Port

This field defines the IP port on which the communication between the BSIP1 IWU and BSIP1 Only is established. The default value is 10500.

SystemAri

In this field the System ARI (DECT ID) which has to be unique at each DECT system has to be configured. The SystemAri is provided by the system implementor. Supported System Ari's are Class A and ClassB Ari.

SystemPIN

The "PIN" is a 8-digit number and it is needed for the registration of Handsets. It is preconfigured with "00000000" and may be configured systemwide here.

IWU as GW

This option is only intended to access the BSIP1 Only when different VLANS and/or VPNs are configured. It activates the routing functionality between the VoIP (Infrastructure) network and the DECT network.

Hint: Using the BSIP1 IWU as a router influences the system (e.g. system load for encryption) and may lead to to unpredictable system bahaviour.

Use this option only in case where other IP access is not available, e.g.

- SSH access to BSIP1 Only
- Access to WBM of BSIP1 Only
- Firmware update of BSIP1 Only

in case where other IP access is not available.

Therefore, you have to add add a route at the maintenance PC (Windows XP):

Example:

IP of BSIP1 IWU is 192.52.109.83, IP-DECT network is 192.168.201.0/ 255.255.255.0

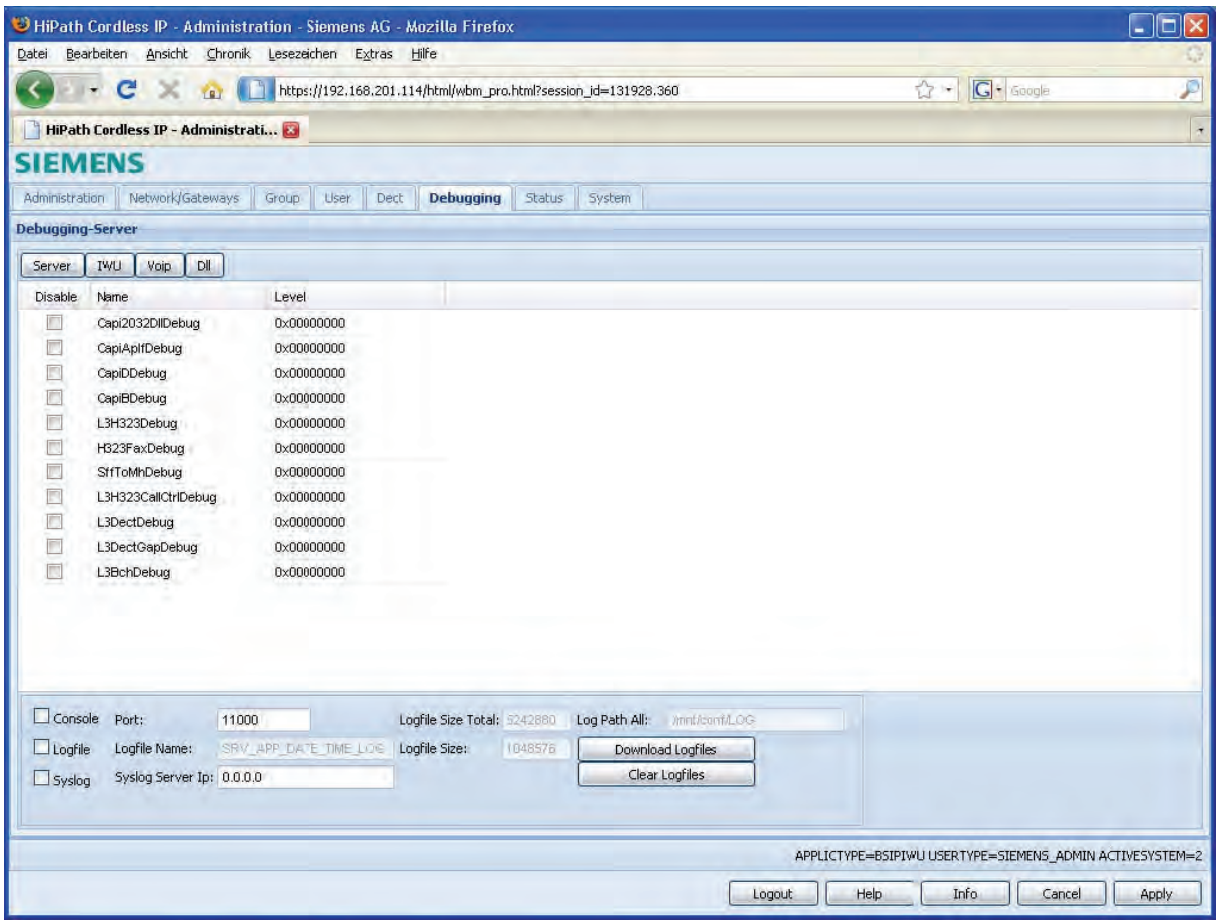
To permanently add a route at the administration XP PC, type in at a command windows:

```
route -p add 192.168.201.0 MASK 255.255.255.0
192.52.109.83
```

Hint: If you have formerly configured an IP address at the maintenance PC within the DECT network, don't forget to delete this address at the XP PC before adding the route.

5.28 Debugging Configuration

This page is only displayed with Siemens Admin mode at the WBM.



On the page “Debugging“ various Logging and Debugging functions may be activated. Based on these functions potential problems regarding DECT, VoIP or interworking functionality maybe isolated. For the analysis of the Log files profound knowledge of VoIP and DECT connections is essential. Therefore they are intended primarily for our support staff.

The sub pages "**Server**", "**Iwu**" "**Voip**" and "**DLL**"differentiate the various parts of the Software for which Debugging can be activated. They differentiate the names of the Software levels and the according Log file names. You will get more detailed information from our support engineer when the activation of a Debug level is requested.

- Note: Please note that depending on the activated Logging configuration big amounts of data may be produced which may have negative influence on the performance of the IWU Software and the System. Therefore you should only activate Logging functions when requested by a support engineer.

The options of the table have the following meaning:

Disable (Default value: Deactivated)

When activating this entry the logging functionality for the selected entry is disabled, independent of the configured Debug level.

Name (fixed)

Preconfigured descriptive name of the Software level for which the Debug level is valid. You will get more detailed information from our support engineer when the activation of a Debug level is requested.

Level (Default value: "0x00000000")

Debug level of the selected entry. The value may be entered directly hexadecimal or via the checkboxes on the right.

The options of the lower part of the configuration page have the following meaning:

Console (Checkbox and entry)

By activating this entry ( ) the Debugging functionality via the Console application is enabled.

The entry contains the associated UDP port number for Remote Debugging.

Logfile

By activating this entry ( ) the Debug output is written to the associated Log files.

You may choose exclusively between Option Logfile or Syslog

Logfilename

This entry shows the name format of the Log file created.

Syslog

By activating this entry ( ) the Debug output is written to the associated Sylog server.

You may choose exclusively between Option Logfile or Syslog.

BSIP1 Debugging messages are logged to a configurable syslog daemon with Facility="LOCAL1" and SEVERTIY Level="ALERT".

Syslog Server IP

The ip address of the syslog server is configured here.

Logfile Size Total

Displays the limit of the the maximum allocated disk space in bytes for all log files (stored in the “Log Path”) here. A process checks periodically if the total size is reached. If the limit is reached the oldest Log Files are deleted to free up disk space.

Logfile Size

Displays the limit of the the maximum file size in bytes of a single logfile here. As soon as this size is reached the log output is continued in a new file.

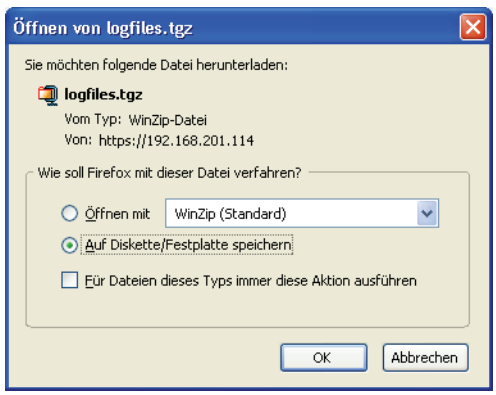
LogPath All

Displays the LogPath the files are stored on the BSIP1.

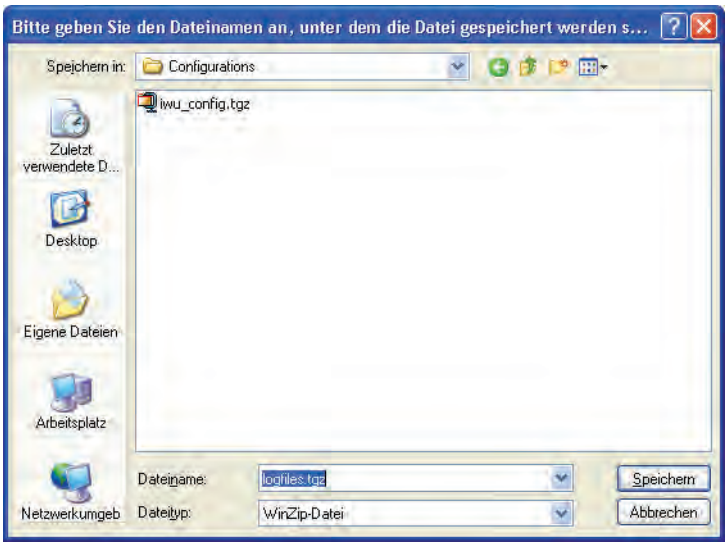
Download logfiles

With this Button all logfiles of the BSIP can be downloaded and stored on the file system of the maintenance PC.

1. After clicking on the button [**Download logfiles**], an browser based file open dialog will be displayed immediately.



2. You have to select the store method of the dialog, click on button **[OK]** and select from the following "save as" dialog a folder to store the configuration files on the maintenance PC or a directory available via the network.



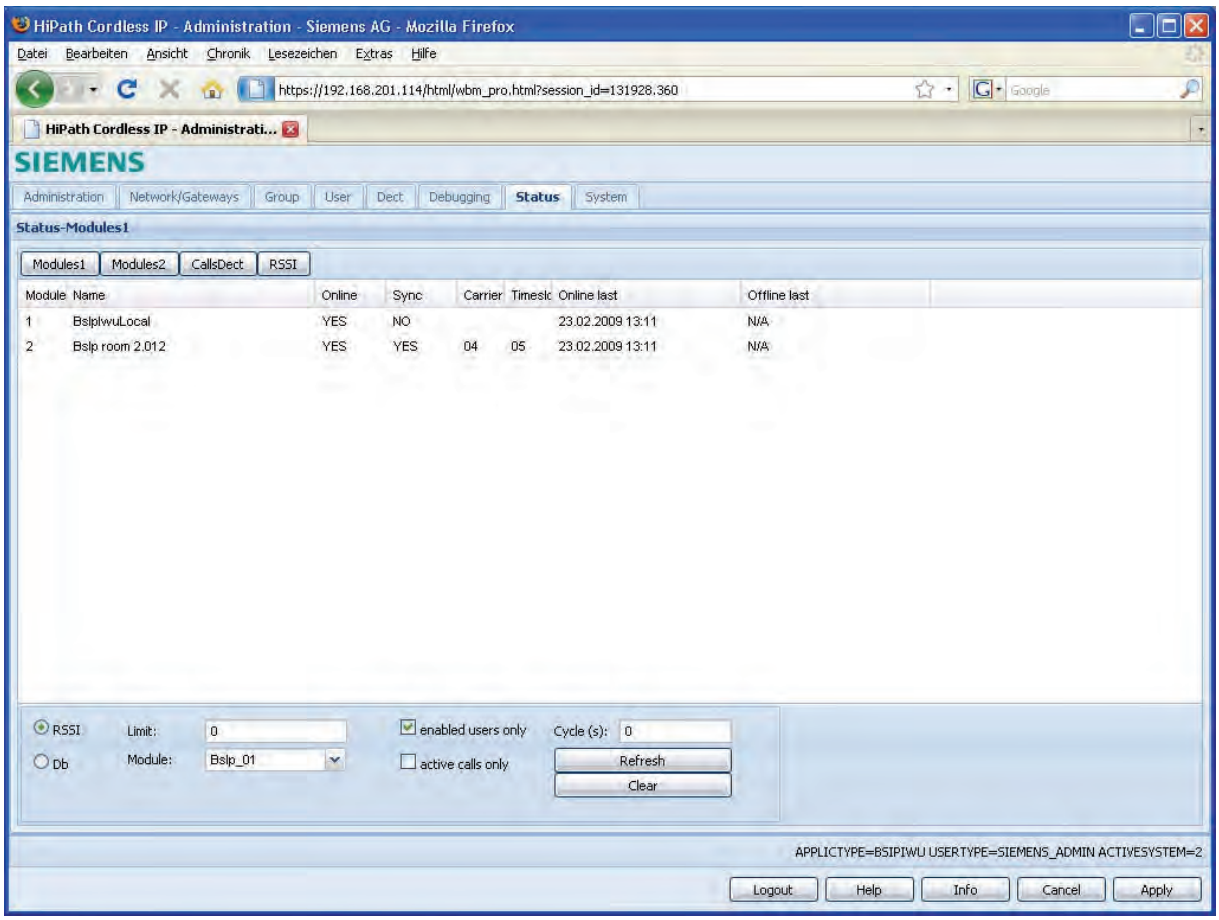
3. Save the configuration file using the default name "logfiles" or change it according your needs (Don't use blanks in the filename).

Clear logfiles

Use this function to clear the logfiles in the log directory.

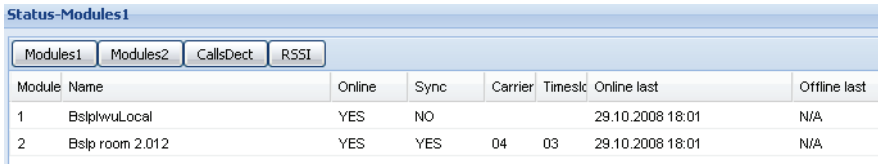
5.29 "Status" Configuration

On the page "Status" of the Configuration Utility various Status information may be displayed. It consists of several sub pages:



- On the first sub page (**[Modules 1]**) general information about the base stations is displayed.
- On the second sub page (**[Modules 2]**) enhanced information about the Base Stations is displayed.
- On the third sub page (**[Calls Dect]**) user specific information about are displayed.
- On the fourth sub page (**[RSSI]**) the current allocation of the DECT radio interface is displayed in a Table (RSSI Table).

5.29.1 Configuration Page "Status - Modules 1"



The columns of the table have the following meaning:

Module

This field contains the consecutive number of the BSIP 1.

Name

The name of the Base Station as read from the Base Station via "Scan".

Online

“Yes” if the selected Base Station is “Online“, “No” if it is “Offline”.

Sync

"Yes" if the selected Base Station is in "Sync" (synchronized), which means that this base station has synchronised to another base station. At the base Station which is not synchronized to another base, the value is always "No".

Carrier

Displays the carrier number of the Synchronization channel the BSIP1 is synchronised to.

Timeslot

Displays the timeslot number of the Synchronization channel the BSIP1 is synchronised to.

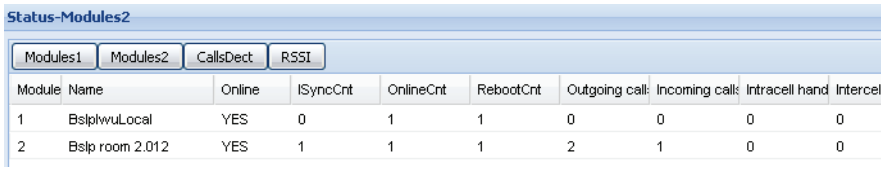
Online last

Displays date/time of the BSIP1 when it lastly changed its state to Online.

Offline last

Displays date/time of the BSIP1 when it lastly changed its state to Offline.

5.29.2 Configuration Page "Status - Modules 2"



Module

This field contains the consecutive number of the BSIP 1.

Name

The name of the Base Station as read from the Base Station via "Scan".

Online

"Yes" if the selected Base Station is "Online".

ISyncCnt (In Sync Count)

Shows how often the Base Station did a resynchronisation since the start of the system services.

OnlineCnt (Online Count)

Shows how often a Online/Offline change has been detected since the start of the system services.

BootCnt (Boot Count)

Shows how often the Base Station was booted since the start of the system services.

Outgoing calls

Shows how often an outgoing connection (from direction BSIP to PBX) has been signalled.

Incoming calls

Shows how often an incoming connection (from direction PBX to DECT) has been signalled.

Intracell handover

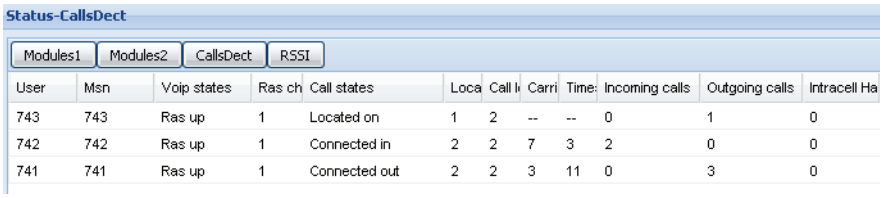
Shows how often a Intracell handover (transfer of a channel within the same DECT Base Station) was detected at the BSIP.

Intercell handover

Shows how often a Intercell handover (transfer of a channel between different DECT ethernet Base Stations) was detected at the BSIP.

5.29.3 Configuration Page "Status - Calls Dect"

On this page user specific information is displayed.



User	Msn	Voip states	Ras ch	Call states	Loca	Call I	Carri	Time:	Incoming calls	Outgoing calls	Intracell Ha
743	743	Ras up	1	Located on	1	2	--	--	0	1	0
742	742	Ras up	1	Connected in	2	2	7	3	2	0	0
741	741	Ras up	1	Connected out	2	2	3	11	0	3	0

The columns of the table page have the following meaning:

User

DisplayName of the associated User.

Msn

Displays the "Msn" for the current user.

Voip states

Displays the Voip state of the User ("No ras", "Ras up", "Ras down").

Ras changes

Displays the number of ras changes of the user (see Voip states).

Call states

Displays the current Call state of the User ("Located on", "No location", "Calling out", "Alerting out", "Connected out", "Calling in", "Alerting in", "Connected in", "Switched off").

Located

Displays the number of the Base Station the User is located on.

Call located

Displays the number of the Base Station on which the current/last call was located on.

Carrier

Carrier number on which the connection for User "DisplayName" is active.

Timeslot

Timeslot number on which the connection for User "DisplayName" is active.

Incoming calls

Displays the number of incoming connections (from direction PBX to DECT) which have been signalled for the User.

Outgoing calls

Displays the number of outgoing connections (from direction DECT to PBX)which have been signalled for the User.

Intracell handover

Shows how often a Intracell handover (transfer of a channel within the same ethernet Base Station) was detected for the User.

Intercell handover

Shows how often a Intercell handover (transfer of a channel between different ethernet Base Stations) was detected for the User.

The options at the lower part of the configuration page have the following meanings:

enabled users only

If activated, only entries for enabled users are displayed (not implemented yet).

active calls only

If activated, only entries for active calls are displayed (not implemented yet).

Cycles (s)

If a numeric value different than "0" is configured, the display will automatically refresh after the configured number of seconds.

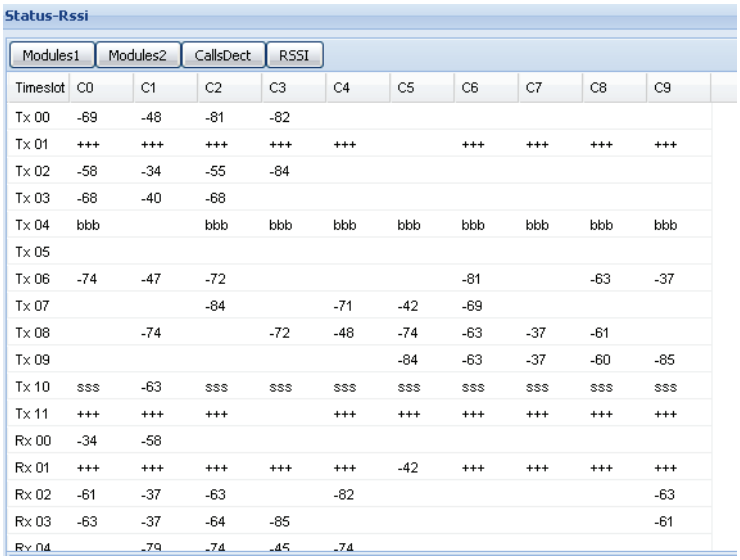
Refresh

Manually refresh the counters displayed.

Clear statistics

Clears (resets) all counters to 0 after a confirmation dialog.

5.29.4 Configuration Page "Status - RSSI"



Timeslot	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
Tx 00	-69	-48	-81	-82						
Tx 01	+++	+++	+++	+++	+++		+++	+++	+++	+++
Tx 02	-58	-34	-55	-84						
Tx 03	-68	-40	-68							
Tx 04	bbb		bbb	bbb	bbb	bbb	bbb	bbb	bbb	bbb
Tx 05										
Tx 06	-74	-47	-72				-81		-63	-37
Tx 07			-84		-71	-42	-69			
Tx 08		-74		-72	-48	-74	-63	-37	-61	
Tx 09						-84	-63	-37	-60	-85
Tx 10	sss	-63	sss	sss	sss	sss	sss	sss	sss	sss
Tx 11	+++	+++	+++		+++	+++	+++	+++	+++	+++
Rx 00	-34	-58								
Rx 01	+++	+++	+++	+++	+++	-42	+++	+++	+++	+++
Rx 02	-61	-37	-63		-82					-63
Rx 03	-63	-37	-64	-85						-61
Rx 04		-79	-74	-45	-74					

On this page the table with the RSSI values is displayed. The table has the following structure:

Lines (Tx 00 - Rx 11)

The Timeslots Tx00 - Tx11 and Rx00 - Rx11 are displayed.

Columns (C0 … C9)

Here the Carriers C0 - C9 are displayed.

Cell values:

"bbb"

"bbb" in a line (Timeslot) shows that this is a timeslot with a beacon (sent signal).

One cell in the line shows the signal level (receive level) of the received value of the channel allocation of other DECT devices. This value shall be as small as possible.

"sss"

"sss" in a line (Timeslot) shows that this is a Timeslot with a synchronization signal (received signal "Sync").

One cell in the line shows the signal level (receive level) of the Sync signal. This value shall be as high as possible.

For accurate synchronisation over air a minimum signal strength of -85 dB (resp. 30 [RSSI]) is required.

"+++"

"+++" in a line (Timeslot) shows that this is a Timeslot with a voice channel (unidirectional) signal (The Timeslot number of the Rx channel is Tx Channel + 12).

One cell in a "Tx" line shows the value of the used Carrier for the voice channel.

One cell in a "Rx" line shows the receive level of the Base Station in relation to the active call.

"<value>"

Shows the current value (Receive resp. Send signal of the Rx resp. Tx Timeslot) depending on the configuration of "RSSI", "Db" and "Limit".

Value ranges:

minimal value (corresponds to poor reception quality) -85 dB (resp. 30 [RSSI])

maximum value (corresponds to good reception quality) -50 dB (resp. 46 [RSSI])

Values outside a bbb, sss, or +++ line display the signal level (receive level) of other DECT devices. The number of values as well as their value itself shall be as small as possible.

The options at the lower part of the configuration page have the following meanings:

"RSSI"

The values displayed in the RSSI table are RSSI values.

"Db"

The values displayed in the RSSI table are Db values.

"Limit"

Here you can configure a minimum value. Only values bigger (in the case of "Db" only values smaller) than "Limit" are displayed in the RSSI table.

Normally the following default values are used:

RSSI:"30"

Db:"-85"

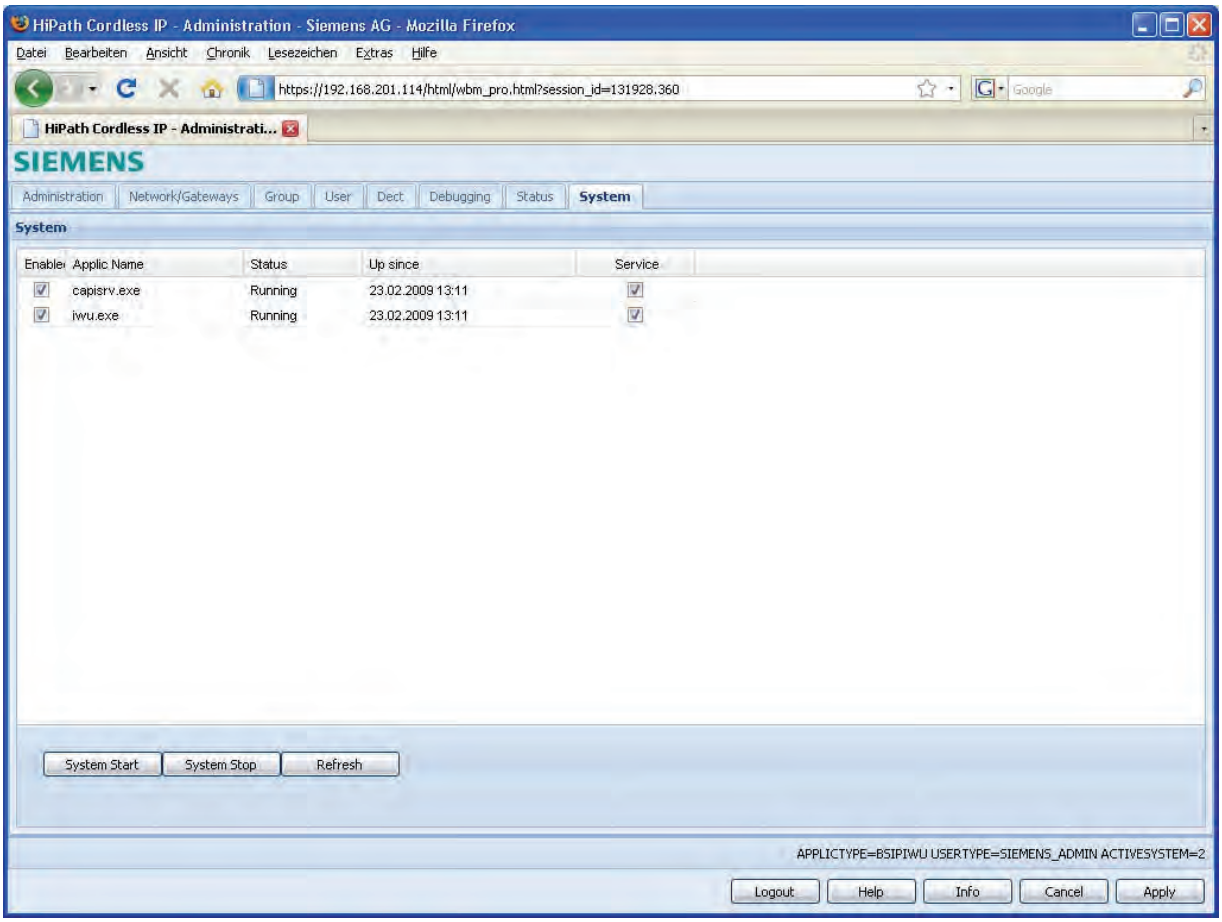
"Module Rssi"

Here you may select the Base Station which values are displayed at the table.

5.30 "System" Configuration

On the configuration page "System" the two Software processes of the BSIP can be started and stopped.

1. Click [**Start**] to start the enabled processes and [**Stop**] to stop them again. Activate "Service" if the service should start automatically at system start. Other modifications are usually not needed here.



The columns of the configuration page have the following meaning:

"Enabled"

Usually both processes are activated ( ). This default configuration should only be changed for locating problems after consultation of the support team.

"Applic Name"

Both IWU processes are displayed here.

"Status"

In this column the states of the two IWU processes are displayed (“Stopped“, “Started” or “Running“).

Up since

Displays the time the service was started lastt

"Service"

Usually both services are activated which means that the corresponding process is started automatically after rebooting the BSIP.

5.31 Configuration Hints for PBXs

In the following chapters you can find configuration notes for for different PBXs which have to be released for usage with the HiPath Cordless IP system.

5.32 HiPath OpenOffice EE

Here you can find the configuration hints using a HiPath OpenOffice EE (SW-Version V1) using SIP users.

5.32.1 Base Configuration - HiPath OpenOffice EE

The following value is used for the base configuration:

Parameter	Value
IP address of the HiPath OpenOffice EE	192.168.0.213

A detailed configuration instruction for the HiPath OpenOffice EE would go beyond the scope of this documentation. Therefore only the information regarding the configuration which is very important and relevant for the Inter-working is described here.

Detailed documentation for the HiPath OpenOffice EE can be found in the manual:

- "HiPath OpenOffice EE V1 Administratior Documentation"

1. Please configure the HiPath OpenOffice EE for the usage with SIP Users and configure the needed number of SIP Users in the Installation Assistant.
2. Configure the IP address of the HiPath OpenOffice EE to 192.168.0.213 or change the according IP addresses.
3. Configure the following Codec Parameters via "WBM - Explorers - Voice Gateway - Codec Parameters":

Codec	Priority	Voice Activity Detection	Frame Size
G.711 A-law	Priority 1	Off	20 msec
G.711 µ-law	Priority 2	Off	20 msec
G.723	not used	Off	30 msec
G.729A	not used	Off	20 msec
G.729AB	not used	On	20 msec

T.38 Fax

T.38 Fax:	On
Use FillBitRemoval:	On
Max. UDP Datagram Size for T.38 Fax (bytes):	1472
Error Correction Used for T.38 Fax (UDP) :	t38UDPRedundancy

Misc.

ClearChannel:	On	Frame Size:	20 msec
Transmission of Fax/Modem Tones according to RFC2833:	On		
Transmission of DTMF Tones according to RFC2833:	On		
Redundant Transmission of RFC2833 Tones according to RFC2198:	Off		

4. Configure the DSP Settings (primarily the Echo Cancellation) via “WBM - Explorers - Payload - - HW Modules - DSP Settings”:

General

Echo Canceller:	On
DTMF Outband Signaling:	On

Fax Parameter

Error Correction Mode:	Off
Number of Redundancy Packets:	2
Maximum Network Jitter (hex msec):	00C8
Fax/Modem Tone Detection Timeout (s):	0

5.32.2 Base Configuration - BSIP IWU

Please make the following configuration settings at the BSIP IWU:

1. Page "Network/Gateways", table gateways

Option	Value
Remote IP Address	192.168.0.213
Gatekeeper Id	192.168.0.213

2. Save all modifications with [Apply].
3. Configure one DECT ethernet Base Station for the operation with this Gateway.

5.32.3 Station Configuration - HiPath OpenOffice EE

The following values are used as a sample for this configuration instruction:

Parameter	Value
Name	DECT-401
Callnumber	401
Password	ikon

1. The configuration of the HiPath OpenOffice EE is done via Web browser (Web Based Management - WBM). Please log in to the HiPath OpenOffice EE, start the Web Based Management in Expert mode and navigate to the page "WBM - Explorers - Stations - Station - IP Clients - SIP Clients".
2. Select a free entry (after the base configuration of the HiPath OpenOffice EE with the assistant free entries should be available).

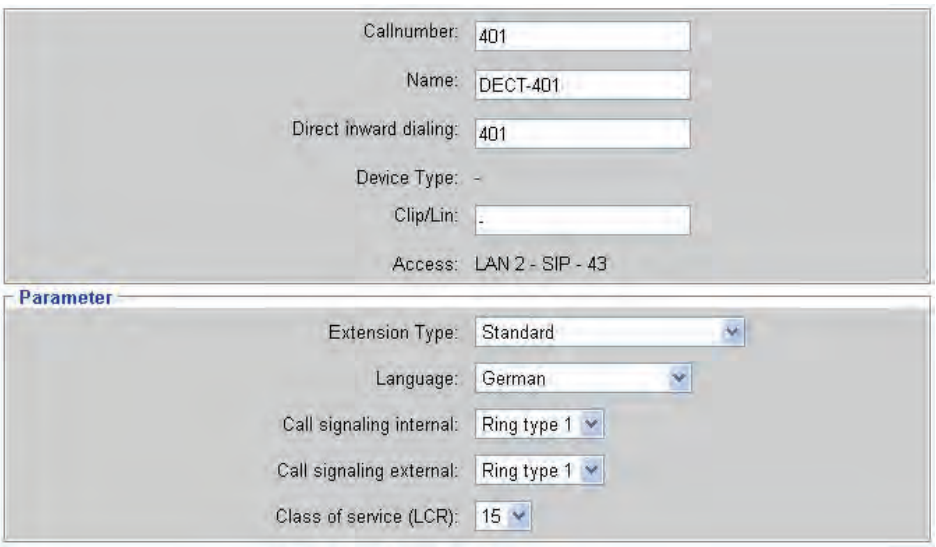
   If no free entries are available, use the "Subscriber table editor" on the page "WBM - Explorers - Stations - Station - (Right mouse button) - Subscriber table editor", change the "Device Type" of a free entry to "SIP Client" and store the modifications with [Apply]. After that you should store the new configuration on the HiPath with the [Save] Button at the bottom section of the WBM. Now a free SIP User should be available on "WBM - Explorers - Stations - Station - IP Clients - SIP Clients".

5.32.3.1 Step 1 - User Parameters

1. Select the free entry and choose "Edit station parameter" via click on the right Mouse Button. Enter the following values in the input mask:

Entry	Value
Callnumber:	401
Name:	DECT-401
Direct inward dialing:	401

Please do not change the other values. After that the configuration page should look like this:

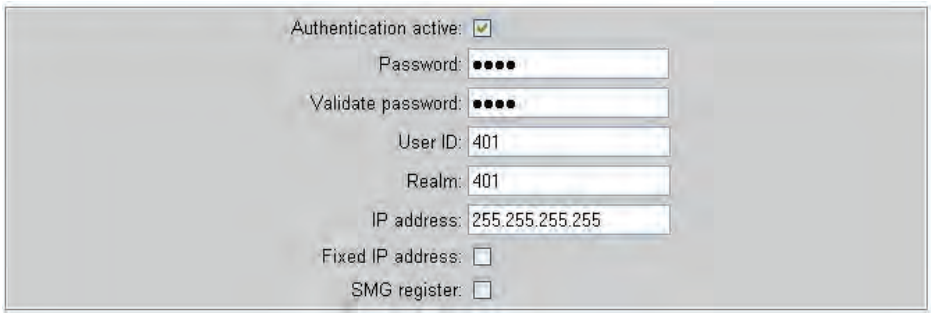


5.32.3.2 Step 2 - Workpointclient Data

1. Select the free entry and choose "Edit Workpointclient data" via click on the right Mouse Button. Enter the following values in the input mask:

Entry	Value
Authentication active:	[V]
Password:	ikon
Validate password:	ikon
User ID:	401
Realm:	401

Please do not change the other values.



2. After that you should save the new configuration on the HiPath with the [**Apply**] Button at the bottom of the WBM.

5.32.4 Station Configuration - BSIP IWU

Please make the following configurations at the BSIP IWU:

Page "Users - User"

1. Go to the sub page "User" of "Users" in the Configuration Utility.
2. Select the first entry "DisplayName" and enter the following values:

Entry	Value
DisplayName:	401
Save the modifications by clicking [Apply].	
Page "Users - Void "	

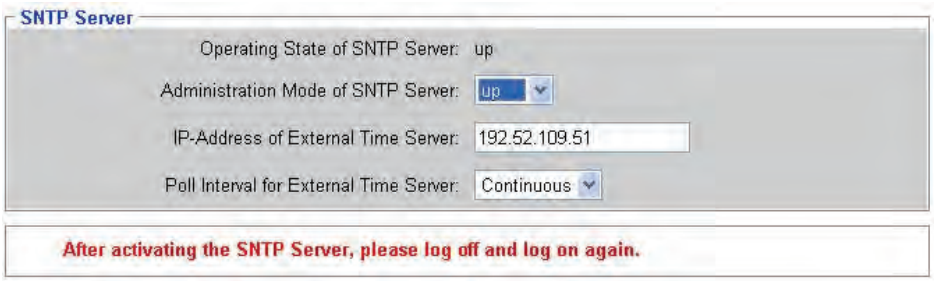
3. Select the first entry and enter the following values:

Entry	Value
UserName:	401
AuthName:	401
Password:	Ikon
MSN	401

4. Save the modifications by clicking [**Apply**].

5.32.5 Time server configuration

1. Configure the following settings to activate the time server settings via “WBM - Explorers - Basic Settings - Date and Time - SNTP settings“:



Entry	Value
operating state of SNTP Server:	Up
IP address of External Time Server	IP adress: 0.0.0.0 if no external time server is used for time synchronisation, otherwise the ip address of the external time server.
Poll interval for External Time Server	Continuous

2. Save the modifications by clicking [**Apply**].

5.33 HiPath OpenOffice ME

Here you can find the configuration hints using a HiPath OpenOffice ME (SW-Version V1) using SIP users.

5.33.1 Base Configuration - HiPath OpenOffice ME

- The following value is used for the base configuration:

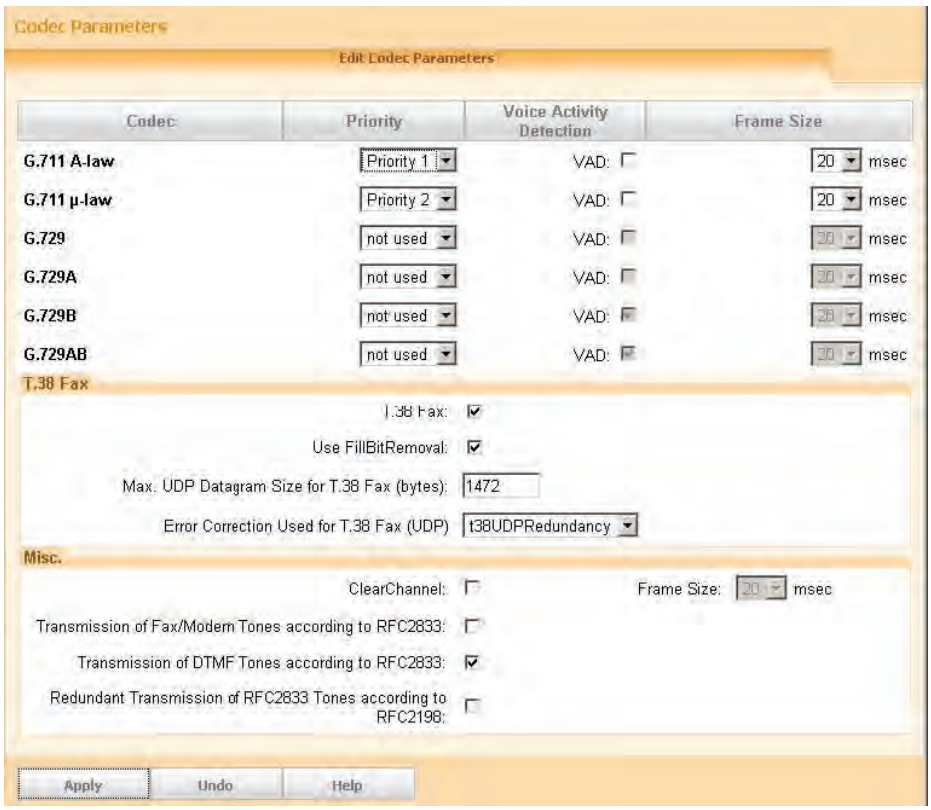
Parameter	Value
IP address of the HiPath OpenOffice ME	192.168.0.93

Detailed configuration instruction for the HiPath OpenOffice ME would go beyond the scope of this documentation. Therefore only the information regarding the configuration which is very important and relevant for the Inter-working is described here.

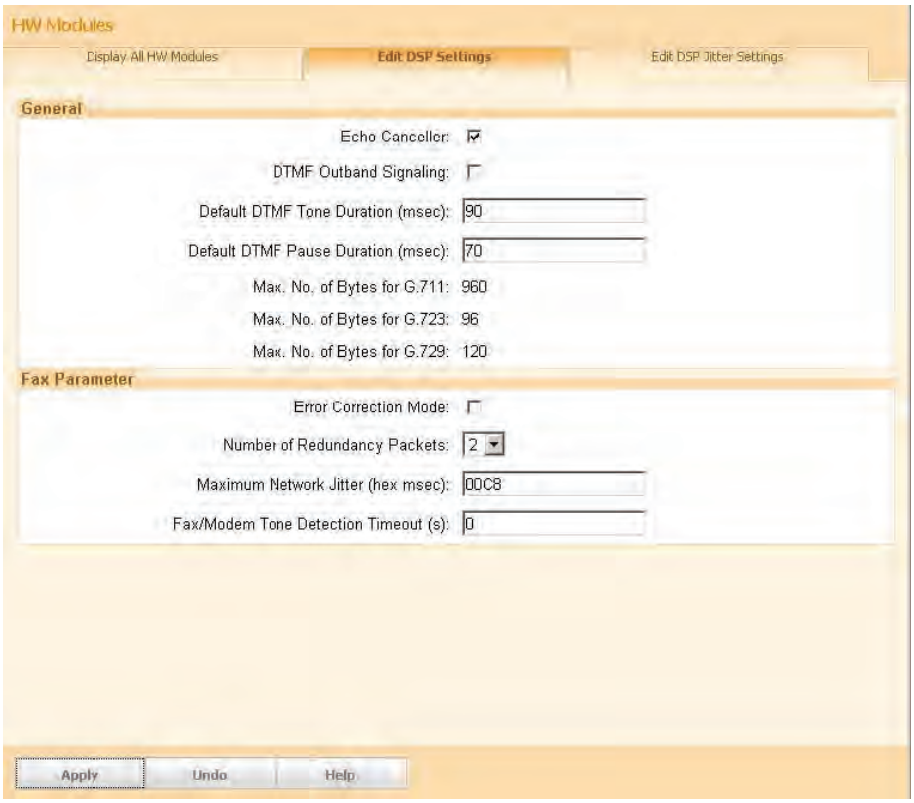
Detailed documentation for the HiPath OpenOffice ME can be found in the Siemens manuals:

- "HiPath OpenOffice ME V1 Administrator Documentation"

1. Please configure the HiPath OpenOffice ME for the usage with SIP Users and configure the needed number of SIP Users in the Installation Assistant.
2. Configure the IP address of the HiPath OpenOffice ME to 192.168.0.93 or change the according IP addresses.
3. Configure the following Codec Parameters via "WBM - Expert mode - Voice Gateway - Codec Parameters":



4. Configure the DSP Settings (primarily the Echo Cancellation) via “WBM - Expert mode - Payload - HW Modules - Edit DSP Settings”:



5.33.2 Base Configuration - BSIP IWU

1. Please make the following configuration settings at the BSIP IWU:

Page „Gateways“

Entry	Value
Remote IP Address	192.168.0.93
Gatekeeper Id	192.168.0.93

2. Save all modifications with [**Apply**].
3. Configure one DECT ethernet Base Station for the operation with this Gateway.

5.33.3 Station Configuration - HiPath OpenOffice ME

The following values are used as a sample for this configuration instruction:

Parameter	Value
Name	DECT-401
Callnumber	401
Password	ikon

1. The configuration of the HiPath OpenOffice ME is done via Web browser (Web Based Management - WBM). Please log in to the HiPath OpenOffice ME, start the Web Based Management in Expert mode and navigate to the page "WBM - Expert mode - Station - IP Clients - SIP Clients".
2. Select a free entry (after the base configuration of the Siemens HiPath OpenOffice ME with the Assistant free entries should be available).

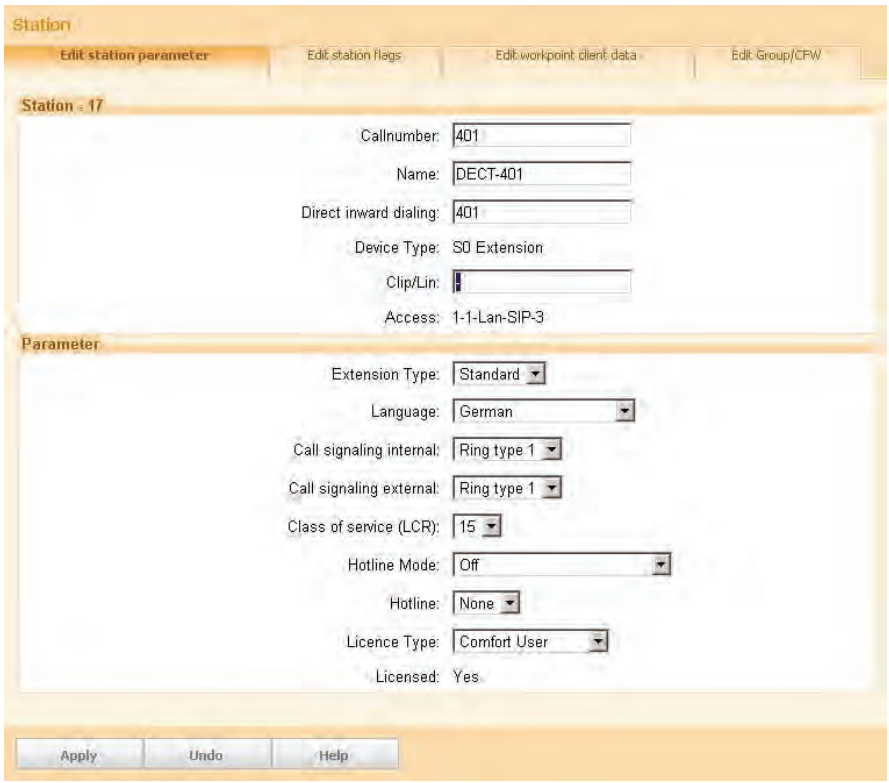
   If no free entries are available, use the page "WBM - Expert mode - Stations - Station - IP Clients - Edit subscriber", change the "Device Type" of a free entry to "SIP Client" and store the modifications with [Apply]. Now a free SIP User should be available on "WBM - Explorers - Stations - Station - IP Clients - SIP Clients".

5.33.3.1 Step 1 - User Parameters

1. Select the free entry and choose "Edit station parameter". Enter the following values in the input mask:

Entry	Value
Callnumber:	401
Name:	DECT-401
Direct inward dialing:	401

Please do not change the other values. After that the configuration page should look like this:

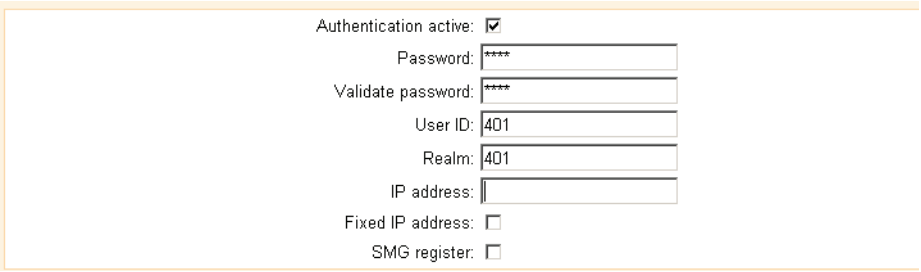


5.33.3.2 Step 2 - Workpointclient Data

1. Select the free entry and choose "Edit Workpointclient data". Enter the following values in the input mask:

Entry	Value
Authentication active:	[V]
Password:	ikon
Validate password:	ikon
User ID:	401
Realm:	401

Please do not change the other values.



2. After that you should save the new configuration on the HiPath with the [**Apply**] Button at the bottom of the WBM.

5.33.4 Station Configuration - IP-DECT IWU

Please make the following configurations at the IP-DECT IWU:

Page "Users - User"

1. Go to the sub page "User" of "Users" in the Configuration Utility.
2. Select the first entry "DisplayName" and enter the following values:

Entry	Value
DisplayName:	DECT-401

Save the modifications by clicking **[Apply]**.

Page "VoIP Users - Ras"

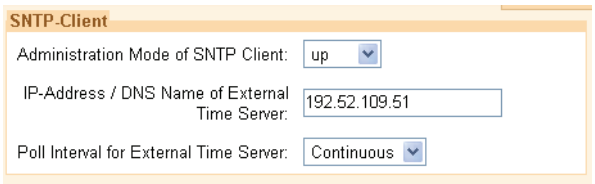
Select the first entry and enter the following values:

Entry	Value
UserName:	401
AuthName:	401
Password:	ikon
MSN	401

3. Save the modifications by clicking [**Apply**].

5.33.5 Time server configuration

1. Configure the following settings to activate the time server settings via "WBM - Expert mode - Basic settings - Date and time - SNTP Settings":



Entry	Value
Administration mode of SNTP client:	Up
IP address / DNS Name of External Time Server:	IP adress: 0.0.0.0 if no external time server is used for time synchronisation, otherwise the ip address of the external time server.
Poll Interval for External Time Server:	Continuous

2. Save the modifications by clicking **[Apply]**.

5.34 Troubleshooting / FAQ

5.34.1 BSIP1 Only is not found using "Scan"

Please check the following:

- Is the "missing" BSIP1 connected with the power supply? (LED states OK?)
- Is the network cable connected at the IP-DECT Base Station?
- Is the network cable connected to an ethernet Switch? Please check the Status LEDs at the relevant Ports of the ethernet Switch.
- The IP-DECT Base Station must be located in the same ethernet segment as the IWU. IWU and Base Station cannot operate in different ethernet segments connected via an IP Router.
- VLAN configuration issues

5.34.2 Registration of the handsets not successful

- The PIN configured for the BSIP IWU differs from the PIN entered at the Handset
  (Did you mistype?).
- The handset has no radio connection to the Base Station (too far away etc.).
- Are all activated Base Station in state "Online" and "InSync" (except the Base Station which is the Synchronisation masters) ?

5.34.3 Idle display of handset is blinking

The following causes may apply:

- the handset is outside the DECT coverage
- the handset has no DECT registration at the BSIP1
- at the handset the wrong base is selected or
- the system services are not running

5.34.4 Display message "Netzfehler" / "Out of Order"

The RAS registration from the handset at the PBX is down (see Status - Calls Dect - Voip states)

5.35 Configuration hints for Web Browser

5.35.1 Mozilla Firefox

Mozilla Firefox Versions 2 (2.0.0.16 ... 2.0.0.18) and Version 3.0.x (3.01 .. 3.0.6) of firefox are supported.

The minimum supported screen resolution the Browser is running on is 1024x768.

5.35.2 Microsoft Internet Explorer

The following version of Microsoft Internet Explorer are supported:

- Version 6.x
- Version 7.x

The minimum supported screen resolution the Browser is running on is 1024x768.

Please keep in mind that the support of IE starts with a **running** version of BSIP1 v_3.24.3. Updating to version 3.24.3 has to be done with Firefox.

Depending of the security settings of MS IE, the IP address of the BSIP1 has to be added to the list of Trusted sites (Tools - Internet options - Security - Trusted sites).

This comes in effect when Backing up a configuration file. If the security settings are not valid, the configuration file will not be donloaded and the WBM session will be closed.

For **IE7** there is an issue one some installations when backing up the configuration. After initiating the backup process, the information panel will be displayed and afterwards you are logged out from the WBM. To overcome this situation, you have to change the following settings in IE7:

1. Select Tools - InternetOptions - Security
2. Select the appropriate zone in which the IWU is located (e.g. "Trusted sites") and select [**Custom level**]
3. In the outline view browse to "Downloads" and change the setting of "**Automatic prompting for file downloads**" from Disabled to **Enabled**.

6 Technical Data

6.1 BSIP1 DECT standard EU

• Number of channels	120 duplex channels, freely administered (10 carriers, each with 12 time-division multiplex channels)
• Frequency range	1.88 to 1.9 GHz (send and receive range)
• Channel spacing	1.728 MHz
• Bit rate	1.152 Mbps
• Speech encoding	32 kilobit ADPCM
• GAP standard	Specified in DECT specification 300444
• PN CAP	Siemens-specific protocol enhancement
• DECT Access	EN 301 406 V.1.5.1

DECLARATION OF CONFORMITY

We

Siemens Enterprise Communications GmbH & Co. KG

Hofmannstr. 51, D-80200 Munich / Germany

declare that the product

HiPath Cordless Basestation IP1 (BSIP1)

..... (name, type, model or version)

to which this declaration relates, conforms to the following European Directives and European standards:

conformity in accordance with ISO/IEC 17050

Directive 99/5/EEC: Radio and Telecommunication Terminal Equipment

EN 50385:2002	EMF
EN 60950-1:2006	Safety
EN 55022:2006+A1:2007 ClassB	EMC, Emission ITE Residential Environment
EN 61000-6-2:2005	EMC, Immunity in industrial area
EN 301 406 V1.5.1	DECT Access
EN 301 489-1 V1.8.1	EMC & Radio spectrum Matters for radio Equipment
EN 301 489-6 V1.3.1	EMC & Radio spectrum Matters for radio Equipment (DECT Equipment)

Other standards or national regulations:

FCC CFR 47, P.15 Class B	Radio frequency devices, radiated Emmission

Munich, March 12th, 2010

Siemens Enterprise Communications GmbH & Co. KG ..... (Place and date of issue)

ppa Stephan Schaade (Name, Function and signature of authorized person)

i.V. (Name, Function and signature of authorized person) Richard Wendl

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ZER10008.doc Owner: SEN VA LP Number of Declaration: 10 / 008

6.2 BSIP1US DECT standard USA

- This device complies with Part 15 of the FCC rules and with RSS-210 of Industry Canada.
- Operation is subject to the following two conditions:
  1. this device may not cause harmful interference, and
  2. this device must accept any interference received, including interference that may cause undesired operation.
  3. Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.
- This device is tested and fulfills the Radio Standards Specification RSS-213 Issue 2.
- This device complies with FCC Part 15 Subpart D, unlicensed personal communication devices.
- Frequency band: 1920-1930 MHz.
- Type of Modulation: multi carrier time division multiple access with Digital modulation (GFSK).
- Number of channels: 5 RF Channels, 5x12=60TDMA Duplex channels.
- Antenna information: 2 permanent attached antennas, no external connector.
- RF Power: max. +20,5dBm.
- Temperature range: -10 to +45 degree Celsius (ambient).
- FCC ID: AY3-BSIP1US.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiofrequency radiation exposure Information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

6.3 Base Stations

General

• Software	Can be loaded via the communication system.
• Antennas	Two external antennas are mounted on the top of the housing of the base station. The base station works with antenna diversity (this means that the radio receiver is connected to whichever antenna delivers the greater field strength).
• Average output power	10 mW to 125 mW
• Radio range	Basically dependant on the radio transmission characteristics of the environment/premises.
– Outdoors	Up to 300 m
– Indoors	Up to 50 m
• Power supply	PoE is used to supply power to the DECT IP base station
• Accessories	Outdoor housing

DECT IP Basisstation BSIP1

• Dimensions	202 x 172 x 43 (W x H x D in mm)
• Weight	500 g
• Power supply	PoE, according IEEE 802.3af Class 2
• Power consumption	< 6,5 W
• Operating temperature indoors Outdoors (in outdoor housing)	+ 0°C to + 40°C - 25°C to + 40°C
• Cabling	10/100 Mbps Ethernet cable, Cat. 5 and higher, 8-pin shielded RJ45 connector

LED status displays on the base station

- No settings need be made at the base station.
- LED 1/LED 2 on the front of the base station provides the following information:

Operating State	LED 1		LED 2	
LED status at booting sequence				
No power on Base station	off		off	
BSIP1 is booting the the Active partition	red flashing		red flashing	
BSIP1 is booting the the Fallback partition	red flashing		off	
BSIP1 is booting the Active partition with factory defaults	red fast flashing		red fast flashing	
BSIP1 is booting the Fallback partition with factory defaults	red fast flashing		off	
BSIP1 is booting kernel with Active partition	off		red	
BSIP1 is booting kernel with Fallback partition	red		off	
LED status at working process				
BSIP1 not ready Services not started or starting	orange		orange	
BSIP1 ready No LAN link	red		red	
BSIP1 ready No Connection to IWU	green		red	
BSIP1 ready All DECT-frequencies blocked or all available DECT channels occupied	red		green	
BSIP1 ready Link unsynchronized (DECT/LAN), no active call	off		green	

Table 7 LED status displays on the base station

Operating State	LED 1		LED 2	
BSIP1 ready Link unsynchronized (DECT/LAN), at least one active call *	off		green flashing	
BSIP1 ready Link synchronized (DECT/LAN), no active call	green		green	
BSIP1 ready Link synchronized (DECT/LAN), at least one active call	green		green flashing	

Table 7 LED status displays on the base station

* On BSIP IWU means this LED status that a call might by located at another BSIP and be routed via the BSIP IWU

Blinking frequency = 500 msec. ON, 500 msec. OFF

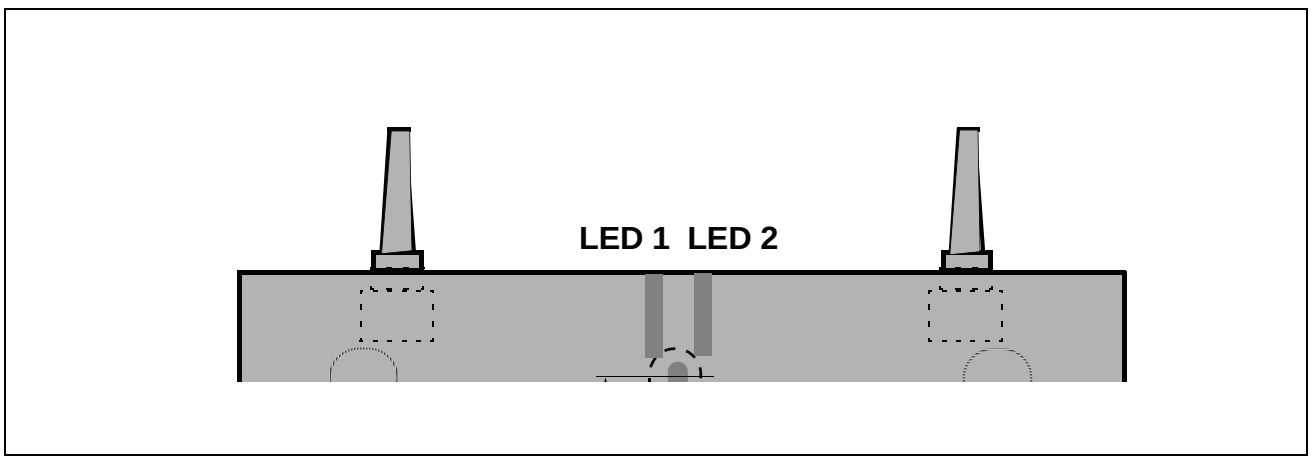


Figure 19 LED position on the base station

6.3.1 Mobile Telephones

All the mobile telephones mentioned in this section are suitable for use in normal environments. The Gigaset M2/M2*plus* and M2EX mobile telephones may also be used in industrial environments.

6.3.1.1 Gigaset S3 professional

• Software	Checking, see Section 7.2.2
• Output power	Average output power +10 dBm per channel Peak output power +24 dBm per channel
• Tone ringing	
– Volume control	adjustable 5 levels + crescendo ringing
– Tone ringing signal	Can be configured separately for internal and external calls (3 ringtones and 30 melodies)
• User Interface (UI)	Menu-driven graphic user interface
• Display	Illuminated color display
• Telephone book (integrated locally)	Up to a total of 250 entries
• PIN-lock	• 4-digit, numeric (see Section 7.3.3)
• Approved ambient conditions	+ 5°C to + 45°C 20% to 75% relative humidity
• Power supply (state of charge indicated on the display)	
– Recommended rechargeable batteries	**Nickel Metal Hydride (NiMH), 600 - 1200 mAh** Sanyo NiMH 800 GP 850 mAh Yuasa Technologies AAA 800

Do not remove batteries without good reason because charge state monitoring and the recharge function will not work properly if you do. After the batteries are removed and reinserted, they must be discharged and recharged as for the initial startup.

CAUTION

The use of any other rechargeable batteries may cause functional disturbances or may damage the handsets. The manufacturer will not be held liable in such cases. If replacement batteries are required, be sure to use only the approved rechargeable types.

Example for a capacity of 800 mAh :

– Talktime	Up to 9 hours
– Standby time	Up to 175 hours
– Charging time in handset	approx. 9 h in charging unit, approx. 7 h in base station

The times for normal charging and initial charging are comparable.

• Housing	approx. 143 x 50 x 30 mm (L x W x H)
• Weight incl. rechargeable battery	approx. 119 g

Accessories

• Charging unit for EU including plug-in power supply unitt	S30852-H1980-R142
• Charging unit for UK including plug-in power supply unit	S30852-H1980-L142
• Charging unit for US including plug-in power supply unit	S30852-H1980-R142
• Charging unit for AUS including plug-in power supply unit	S30852-H1980-C442

NOTE: The home version of the Gigaset S3 professional will be classified by the HiPath Cordless IP system as GAP-device.

6.3.1.2 Gigaset SL3 professional

- Software — Checking, see Section 7.2.2
- Output power — Average output power +10 dBm per channel
  Peak output power +24 dBm per channel
- Tone ringing
  - Volume control — adjustable 5 levels + crescendo ringing
  - Tone ringing signal — Can be configured separately for internal and external calls (3 ringtones and 30 melodies)
- User Interface (UI) — Menu-driven graphic user interface
- Display — Illuminated color display
- Telephone book (integrated locally) — Up to a total of 250 entries
- PIN-lock — • 4-digit, numeric (see Section 7.3.3)
- Approved ambient conditions — + 5°C to + 45°C
  20% to 75% relative humidity
- Power supply (state of charge indicated on the display)
- Approved battery pack — **Lithium-Ion (Li-Ion), 700 mAh**

Do not remove the battery pack without good reason as charge state monitoring and the recharge function will not work properly if you do! After the batteriey pack is removed and reinserted, it must be discharged and recharged as for the initial startup!

CAUTION

The use of any other battery packs may cause functional disturbances or may damage the handsets. The manufacturer will not be held liable in such cases. If replacement battery packs are required, be sure to use only the approved types.

  - Talktime — Up to 14 hours
  - Standby time — Up to 350 hours
  - Charging time in handset — approx. 3,5 h

The times for normal charging and initial charging are comparable.

- Housing — approx. 114 x 46,5 x 22,6 mm (L x W x H)
- Weight incl. battery pack — approx. 93 g

Accessories

- Charging unit for EU including plug-in power supply unit S30852-H1982-R141
- Charging unit for UK including plug-in power supply unit S30852-H1982-L141
- Charging unit for US including plug-in power supply unit S30852-H1982-U141
- Charging unit for AUS including plug-in power supply unit S30852-H1982-C441

NOTE: The home version of the Gigaset SL3 professional will be classified by the HiPath Cordless IP system as GAP-device.

6.3.1.3 Gigaset M2 professional, Gigaset M2 *plus* professional

• Software	Checking, see Section 7.2.2
• Output power	Average output power +10 dBm per channel Peak output power +24 dBm per channel
• Tone ringing	
– Volume control	adjustable: 5 levels, levels 4 and 5 for loud environments.
– Tone ringing signal	Can be configured separately for internal and external calls 20 standard ringtones (3 ringtones / 17 melodies) 16 loadable polyphonic melodies
• User Interface (UI)	Menu-driven graphic user interface
• Display	Illuminated color display
• Telephone book (integrated locally)	Up to a total of 250 entries
• Voice dialing (voice telephone book)	Up to 30 entries
• PIN-lock	• 4-digit, numeric (see Section 7.3.3)
• Full functionality of device guaranteed for	-10 °C to +55 °C 100 % relative humidity including splashes and low pressure jets of water (IP 65)
• Power supply (state of charge indicated on the display)	
• Approved battery pack	**Lithium-Ion, 1000 mAh (A5B00075416005)**

Do not remove the battery pack without good reason as charge state monitoring and the recharge function will not work properly if you do! After the batteriey pack is removed and reinserted, it must be discharged and recharged as for the initial startup!

CAUTION

The use of any other battery packs may cause functional disturbances or may damage the handsets. The manufacturer will not be held liable in such cases. If replacement battery packs are required, be sure to use only the approved types.

Example for a capacity of 850 mAh:

– Talktime	Up to 12 hours
– Standby-Time	Up to 380 hours, approx. 16 days
– Charging time in handset	approx. 3,7 hours
– Initial charging time	at least 10 h
• Housing	approx. 166,5 x 56,0 x 35,4 mm (L x W x H)

- Weight incl. battery pack — approx. 180 g

Accessories

- Charging unit for EU including plug-in power supply unit S30852-H1786-R101
- Charging unit for UK including plug-in power supply unit S30852-H1786-L101

6.3.1.4 Gigaset M2 Ex professional

- Software — Checking, see Section 7.2.2
- Output power — Average output power +10 dBm per channel
Peak output power +24 dBm per channel
- Tone ringing
  - Volume control — adjustable: 5 levels, levels 4 and 5 for loud environments.
  - Tone ringing signal — Can be configured separately for internal and external calls
20 standard ringtones (3 ringtones / 17 melodies)
16 loadable polyphonic melodies
- User Interface (UI) — Menu-driven graphic user interface
- Display — Illuminated color display
- Telephone book (integrated locally) — Up to a total of 250 entries
- Voice dialing (voice telephone book) — Up to 30 entries
- PIN-lock — • 4-digit, numeric (see Section 7.3.3)
- Full functionality of device guaranteed for — -10 °C to +55 °C
100 % relative humidity including splashes and low pressure jets of water (IP 65)
- Power supply (state of charge indicated on the display)
  - Permitted Ex-battery pack — **Lithium-Ion, 1000 mAh including electronic components (A5B00075609027)**

Do not remove the Ex-battery pack without good reason as charge state monitoring and the recharge function will not work properly if you do! After the Ex-battery pack is removed and reinserted, it must be discharged and recharged as for the initial startup!

CAUTION

Only use approved Ex battery packs . Ex authorisation is only valid and the handset can only be operated if this battery pack is installed. Other battery packs are strictly prohibited. If they are used, Ex protection is no longer valid.

Example for a capacity of 850 mAh:

– Talktime	Up to 12 hours
– Standby-time	Up to 380 hours, approx. 16 days
– Charging time	approx. 3,7 h
– Initial charging time	at least 10 h
• Housing	approx. 166,5 x 56,0 x 35,4 mm (L x W x H)
• Weight incl. battery pack	approx. 180 g

Accessories

• Charging unit for EU including plug-in power supply unit	S30852-H1786-R101
• Charging unit for UK including plug-in power supply unit	S30852-H1786-L101

6.3.2 PoE Injector

- An injector is needed when operating the DECT IP base station on the mains,
- Single-port PoE injector in compliance with IEEE 802.3af Class 2
- Injector is included in the scope of features
- The PoE injector ships with startup information and notes on LED status displays.

6.3.3 Item Number Overview

- Base stations
  - HiPath Cordless IP V1 - Base station BSIP1 — S30807-U5494-X
  - HiPath Cordless IP V1 - SW License per HiPath Cordless IP Server*
  - HiPath Cordless IP V1 - SW License per DECT IP Basisstation BSIP1*
  - HiPath Cordless IP V1 - CD-ROM with software
  - DECT system number (ARI = Access Right Identifier) — A31003-G2121-S500-*-20
  - HiPath Cordless IP V1 - HiPath Cordless IP Server
  - HiPath Cordless IP V1 - 19" conversation kit for the HiPath Cordless IP Server
  - One-Port PoE Injector — S30122-X8009-X20
  - Outdoor mounting — S30122-X7469-X2
  - Power line for PoE injector - EU — C39195-Z7001-C11
  - Power line for PoE injector - UK — C39195-Z7001-C20
  - Power line for PoE injector - Switzerland — C39195-Z7001-C38

  *only needed if the HiPath Cordless IP server software is installed on dedicated server hardware and not on one of the DECT IP base stations
- Terminals
  - **Gigaset M2 professional** — S30852-S1756-R111
  - Charging unit for EU including plug-in power supply unit — S30852-H1786-R101
  - Charging unit for UK including plug-in power supply unit — S30852-H1786-L101
  - **Gigaset M2 EX professional** — S30852-S1756-R121
  - Charging unit for EU including plug-in power supply unit — S30852-H1786-R101
  - Charging unit for UKincluding plug-in power supply unit — S30852-H1786-L101
  - **Gigaset M2 *plus* professional** — S30852-S1756-R131
  - Charging unit for EU including plug-in power supply unit — S30852-H1786-R101
  - Charging unit for UK including plug-in power supply unit — S30852-H1786-L101
  - **Gigaset S3 professional** — S30852-H1950-R142
  - Charging unit for EU including plug-in power supply unit — S30852-H1980-R142
  - Charging unit for UK including plug-in power supply unit — S30852-H1980-L142
  - Charging unit for US including plug-in power supply unit — S30852-H1980-R342
  - Charging unit for AUS including plug-in power supply unit — S30852-H1980-C442
  - **Gigaset SL3 professional** — S30852-H1952-R142
  - Charging unit for EU including plug-in power supply unit — S30852-H1982-R141
  - Charging unit for UK including plug-in power supply unit — S30852-H1982-L141

– Charging unit for US including plug-in power supply unit	S30852-H1982-U141
– Charging unit for AUS including plug-in power supply unit	S30852-H1982-C441

*

6.4 Measuring Equipment

• HiPath Cordless Servicetool HCS DECT Locater / Locater Pro	TIS Technische Informations-Systeme GmbH Barloer Weg 190 46397 Bocholt, Germany Tel.: (0 28 71) 27 22 - 0, (0 28 71) 3 78 62 http://www.tis-gmbh.de/produkte/

6.5 Operating Manuals

See http://apps.g-dms.com:8081/techdoc/search_en.htm

7 Diagnosis and Maintenance

7.1 Checking the Base Stations and the Radio Coverage

Do not use Gigaset mobile telephones to check the radio area coverage. This must be done with the Hicom Cordless Service tool (HCS-DECT).

You can use Gigaset mobile telephones to test the base stations and verify the radio area coverage.

- A prerequisite is that the mobile telephone being used is logged on to the system, see the operating manual.
- The radio coverage is tested in two stages:
  - Base station test
  - Coverage test via the base stations (area coverage)

  The following minimum values must be observed for the site survey of the radio range:

  1. Providing handsets with an adequate DECT radio signal

     Handsets only receive a sufficiently sized DECT radio signal if they are located in the radio range of the DECT IP base station, that is:

     - RSSI value <-70 dBm
     - FRAQ value >95%

  2. Distance of DECT IP base stations

     For the DECT synchronism function to work, the DECT IP base stations to be synchronized with each other must be defined in the HiPath Cordless IP server software. These DECT IP base stations must also be able to exchange their management information, i.e. they must be at least <-85 dBm apart.

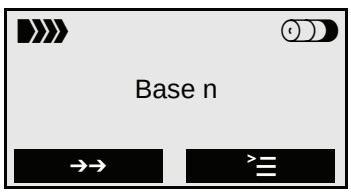
     Failure to maintain these values results in a loss of radio signal or a loss of synchronism which prevents the handsets from roaming to another DECT IP base station.

7.1.1 Base Stations

The purpose of this test is to check the functions of all base stations.

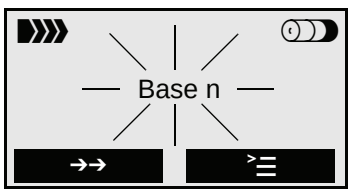
- Take the mobile telephone to each of the base stations.
- Holding the mobile telephone directly below, beside or above each base station, turn it off and on again.
  - Display data, for example:

Synchronization between mobile telephone and base station



Radio connection to the base station is displayed on the screen as "Base n", for example.

No synchronization between mobile telephone and base station



"Base n" flashes, it means that the radio connection to the base station has been lost.

- Set the mobile telephone to measuring mode.

NOTE: Values recorded with a mobile telephone are not very precise and are intended to provide a rough assessment only. In addition, different values may be recorded on each mobile telephone even though the ambient conditions are identical. If you require more accurate results, we recommended that you use the Hicom Cordless Service tool (HCS-DECT).

Check:

- **RSSI value** (field strength value)
- **RPN value** (base station number)
  Does the mobile telephone pick up the connection (synchronization) with the base station to be tested?
- **FRAQ value** (transmission quality %)

If the indicated values are not attained, use a second logged-on mobile telephone to check the value ranges.
If the indicated values are not attained with the second mobile telephone, replace the base station.

WARNING

The customer must be informed about the boundaries of the radio area.

Proceed with the area coverage test once the RSSI value, the availability and radio quality of all base stations has been checked.

7.1.2 Quick Verification of Area Coverage

The purpose of this test is to check whether the necessary field strength and the transmission quality is attained throughout the entire radio network.

NOTE: Values recorded with a mobile telephone are not very precise and are intended to provide a rough assessment only. In addition, different values may be recorded on each mobile telephone even though the ambient conditions are identical. If you require more accurate results, we recommended that you use the Hicom Cordless Service tool (HCS-DECT).

Step 1

The purpose of this step is to provide the basis for step 2 where you will use a Gigaset mobile telephone to obtain a rough assessment of the area coverage.

- Switch the mobile telephone to measuring mode (see Section 7.2.2.1).
- Establish a voice connection between two mobile telephones. If you wish, you can use an announcement service (for example "speaking clock").

Step 2

This step involves obtaining a rough assessment of the area coverage.

- With a mobile telephone in measuring mode, move around the area in question and determine whether an RSSI value > 50 (-60 dBm) and a FRAQ value > 95% are reached throughout the area.
  In the process, the Range Warning feature can be used as an aid for recognizing the radio area boundaries. A warning tone (range warning) is

emitted as soon as you cross the border zone of the radio area. (To activate the range warning tone, use the "Tones" menu on the mobile telephone display.)

WARNING

Areas in the corners of buildings or behind metal structures should be carefully checked (check the RSSI values several times).

In these radio area border zones, the radio connection to the base station may be lost in the case of the following values:

RSSI	< 40 (< -80 dBm)
FRAQ	< 95%

- The measuring sites with RSSI value < 40 (< -80 dBm) should be entered or marked in the building/site plan.

Step 3

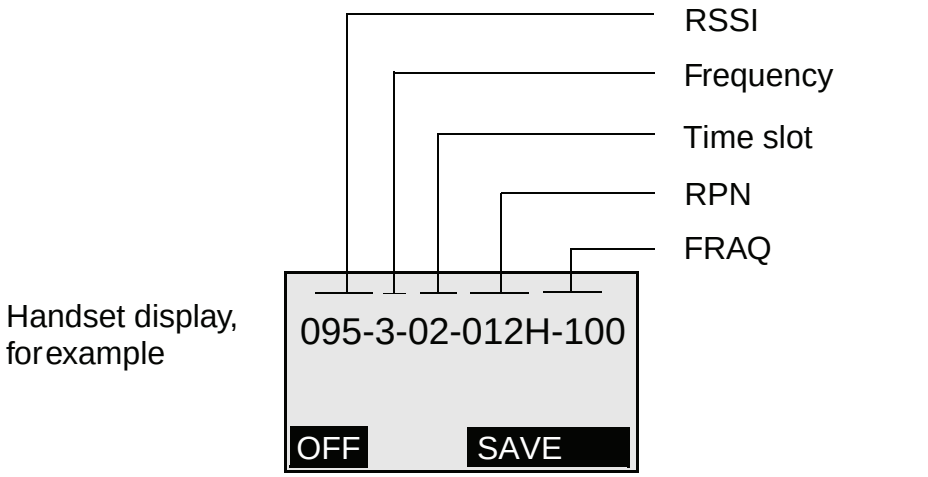
If you require more accurate values than those obtained in step 2, we recommended that you use the Hicom Cordless Service tool (HCS-DECT).

7.2 Testing the Radio Area

7.2.1 Significance of Results Obtained

NOTE: Values recorded with a mobile telephone are not very precise and are intended to provide a rough assessment only. In addition, different values may be recorded on each mobile telephone even though the ambient conditions are identical. If you require more accurate results, we recommended that you use the Hicom Cordless Service tool (HCS-DECT)

The following figure shows a sample display of the measuring results for a Gigaset mobile telephone when a call is in progress:



Measurement result

RSSI (radio signal)	Field strength of the radio signals received from the base station, normalized to a maximum of 100. If the value is < 50, the radio connection to the base station is no longer guaranteed. Acceptable field strength is > 50 (> -60 dBm).
Frequency	Frequency (0 – 9)
Time slot (Slot)	Time slot (0 – 11) of the receiving channel on which the measurement is carried out.
RPN (port number)	IDECT IP base station identification based on the RPN (Radio Fixed Part Number), e.g. 018. If the handset switches on at/over to an overlapping radio cell/DECT IP base station, the current DECT IP base station appears on the handset display. The RPN is indicated in hex format in Gigaset S3 professional and Gigaset SL3 professional handsets. Example: RPN 018 will be display in the Gigasets as HEX-value 012H. The identifier "H" shows clearly the hexadecimal presentation.
FRAQ (frame quality)	Transmission quality in %. 95% to 100% satisfactory (for short periods 90% to 94% non-critical), < 95% faulty.

7.2.2 Gigaset Family

NOTE: The default language for measuring mode is English.

7.2.2.1 Activating Measuring Mode

You must switch off the mobile telephone before you can activate measuring mode.

Switch off the mobile telephone:

Press the on-hook key until the confirmation beep is heard (ascending tone sequence).

Nothing is displayed

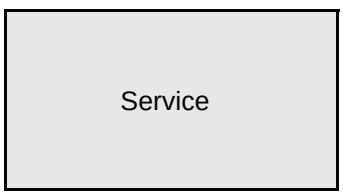
Switch the mobile telephone into service status:

1	2	3
4	5	6
7	8	9
*	0	#

Press keys 1, 4, and 7 simultaneously...

... whilst at the same time...

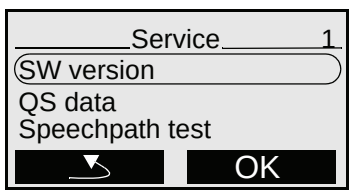
... pressing the on-hook key.



Activate the "Service" menu:

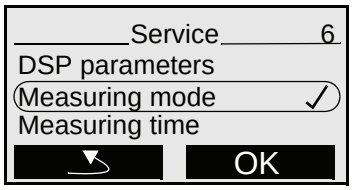
Enter code 76200.

1	2	3
4	5	6
7	8	9
*	0	#



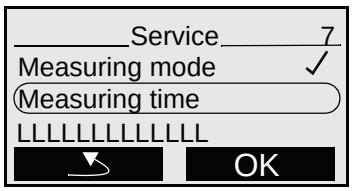
Activate the measuring mode:

Using the navigation key, scroll down to "Measuring time".
Confirm with OK.
Measuring mode is switched on; this is indicated by the tick next to "Measuring mode".

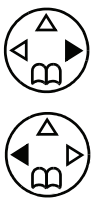


Select the measuring time:

Using the navigation key, scroll down to "Measuring time".
Confirm with OK.



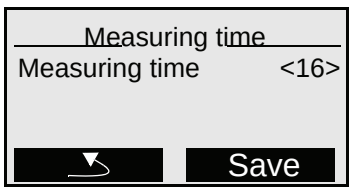
Set the value range:



Press the navigation key:
to increase the value range

Press the navigation key:
to reduce the value range

Value range: 06 to 16
Recommended value range: 16
(measuring cycle: 1 s to 2.5 s)



Press the Save key
to confirm the value range set

Switch off the mobile telephone:

Press the on-hook key until the confirmation beep is heard (ascending tone sequence).

Nothing is displayed

The measurement values are displayed when the mobile telephone is switched on. Measurements are performed at the set intervals (see Section 7.2.1).

Switch on the mobile telephone:

Press the on-hook key until the confirmation beep is heard (ascending tone sequence).

WARNING

Only the specified functions may be activated. Activating other functions may result in malfunctions.

7.2.2.2 Deactivating Measuring Mode

Switch off the mobile telephone:

Press the on-hook key until the confirmation beep is heard (ascending tone sequence).

Nothing is displayed

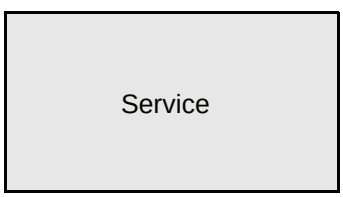
Switch the mobile telephone into service status:

1	2	3
4	5	6
7	8	9
*	0	#

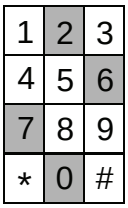
Press keys 1, 4, and 7 simultaneously...

... whilst at the same time...

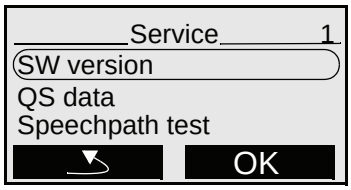
... pressing the on-hook key.



Activate the "Service" menu:

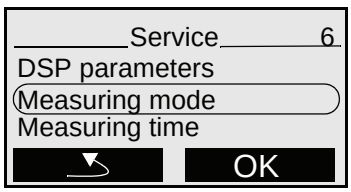


Enter code 76200.



Deactivate the measuring mode:

Using the navigation key, scroll down to "Measuring time".
Confirm with OK.
Measuring mode is switched off; the tick next to "Measuring mode" disappears.



Switch off the mobile telephone:

Press the on-hook key until the confirmation beep is heard (ascending tone sequence).

Nothing is displayed

The measurement values are not displayed if the mobile telephone is switched on.

7.2.3 Documentation of Results

The following points must be documented:

- The installation site of the base stations must be drawn on a customer-specific building/site plan and the base station number (for example, 016 (RPN in measuring mode)) entered.
- Any deviations from existing building and site plans must be verified with the Hicom Cordless Service tool (HCS-DECT) and documented.

WARNING

Any subsequent structural changes within the radio area (buildings, sites, facilities, and devices, etc.) might restrict the operation of the mobile telephones and thus require rearrangement of the base stations.

Examples:

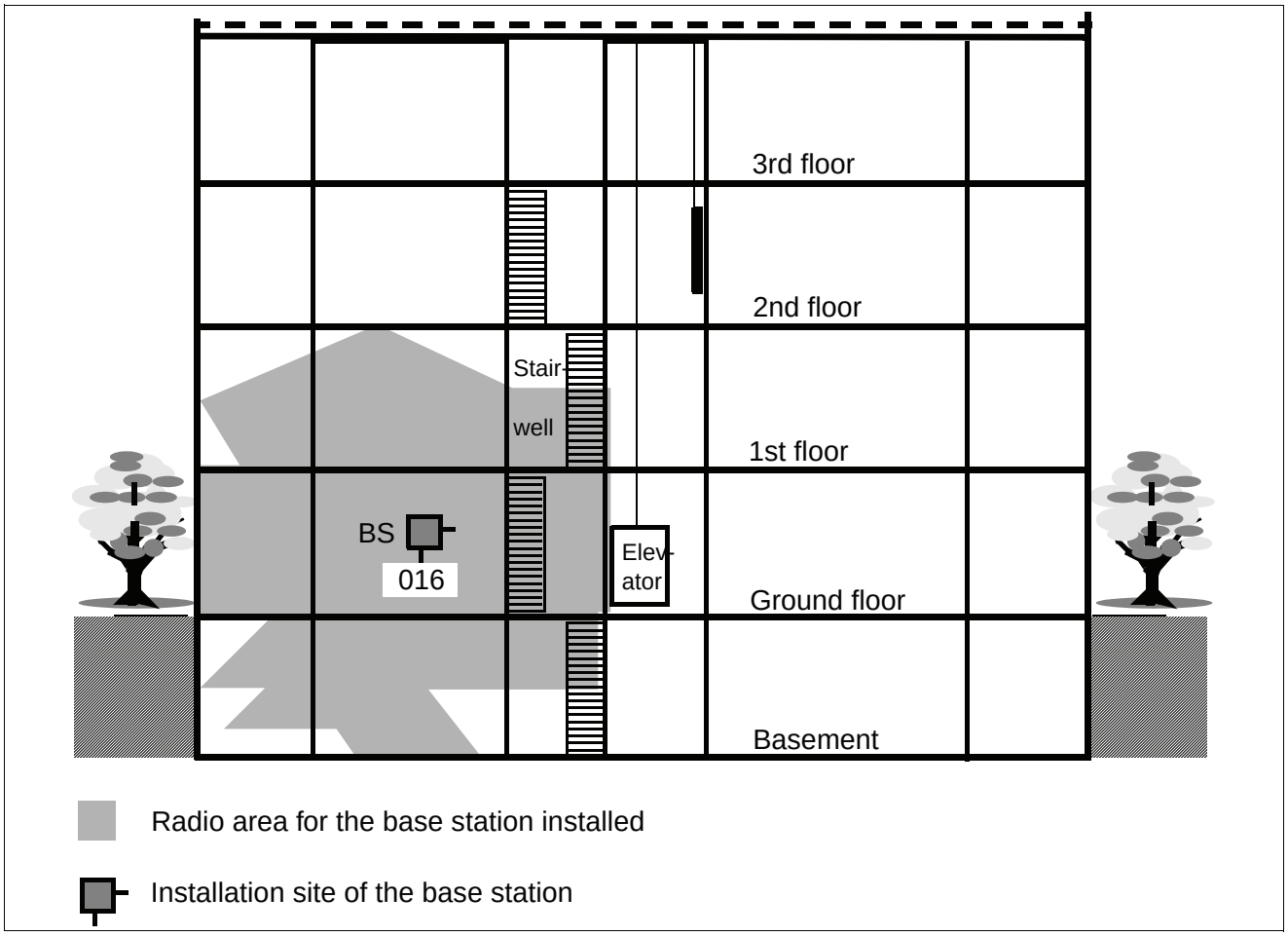


Figure 21 Building - Base station installation site/radio area

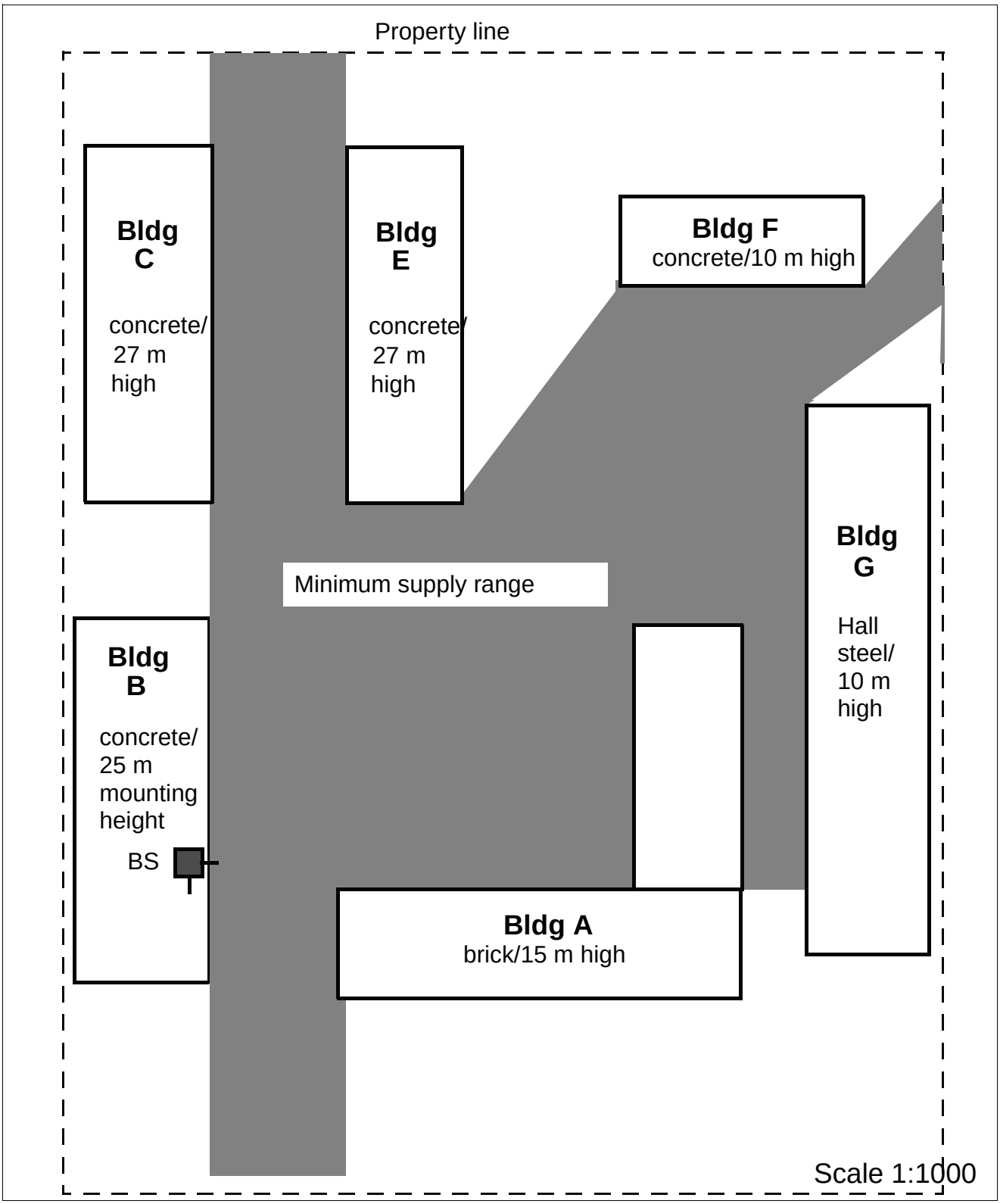


Figure 22 Outdoors - Base station installation site/radio area

7.3 Troubleshooting

7.3.1 Checking HiPath Cordless IP Components

• Entire system	
– Set up call with the mobile telephone	Operating Manual Subjective evaluation of voice connection, for example, background noise
• Check the radio area coverage	See Section 7.1.2 (range warning tone activated)
• DECT IP Base station (BSIP1)	
– LED 1/2	See Section 6.3
– Base station status	PC
– Check active status of base station using the logged-on mobile telephone	**No synchronism:** "Base n" blinks on handset display. **Handset measuring mode is activated:** - Frequency/slot changes - RSSI value If this is not the case, perform the test on a different base station. If it is still unsuccessful, use a different handset. If it is still not possible to synchronize with a base station after repeated attempts, replace the base station.
• Mobile telephone (MT)	
– Logged-on mobile telephone, synchronized with base station	Synchronism symbol "Base n" (name = individual setting) on handset display is continuously visible, does not blink.

7.3.2 What Happens If ...

7.3.2.1 Synchronism Symbol on Handset Display:

– "Base n" flashes

No synchronization to base station

1. Is the mobile telephone not logged on?
2. If the mobile telephone is logged on to multiple systems, is it switched to the correct system? Is automatic system selection activated?
   Check the base station.

– "Base n" continuously visible but no action is possible

Synchronization to base station

1. An error tone can be heard when the line key is pressed.
   Temporary overload status (all the base station speech paths are busy).

   Wait, and try again.
2. Handset was not able to complete the locations request successfully (handset contact to the system).

   Workaround:

   Repeat locations request by switching off the handset and then switching it on again.

7.3.2.2 Handset Cannot Be Reached

1. Handset is called, caller hears ringing (followed by busy signal).

   Causes:
   handset being called is switched off
   OR
   handset is no longer within range
   OR
   the base station used is in overload status and there is no other base station within range.

2. Handset is called, call is always switched to another station.
   Handset has inadvertently activated call forwarding.

7.3.2.3 Connection Handover

– Call disconnected on handover to another base station

1. Check whether or not the base station to which the call is handed over is in overload status (all radio channels busy).
2. Check the base station LEDs.
3. Check the overlap sectors.
   Is the RSSI value of the other base station OK?
4. Check if the two DECT IP base stations involved in the handover operation are synchronous. You can use the Gigaset's measurement mode for this or the synchronism display in the HiPath Cordless IP server software .

7.3.2.4 Handset: Problems Logging On

- Check first if the communication server's IP board and at least one DECT IP base station (in range) are operational.
- Is adequate synchronism guaranteed for the DECT IP base station in the HiPath Cordless IP system?
- Is the handset you want to log on configured on the communication server?
  - Test this with a random phone (optiPoint/OpenStage model).

7.3.3 Deactivating the PIN Lock on Gigaset S3, SL3

A mobile telephone can only be reactivated at the factory or by a service technician if the user forgets the PIN. The forgotten PIN is deleted on reactivation. Login data and other data are retained.

Reactivating the PIN requires a programming adapter and the "Win FT" program. These must be supplied by Gigaset Communications, Bocholt.

Procedure:

1. Connect the adapter to a plug-in power supply unit.
2. Connect the adapter to a PC COM port (PCMCIA in the case of laptops) via a V.24 (RS232) cable.
3. Start the "Win FT" program.
4. Open the battery compartment and remove the batteries from the mobile telephone.
5. Insert the mobile telephone into the adapter. "Factorytest" appears on the display.
6. Open the "EEprom" menu and select the icon to read out the EEPROM (arrow pointing away from the yellow telephone). The EEPROM is read out.
7. Reset the four-digit PIN to "30 30 30 30". The "30 30 30 30" value is hexadecimal and corresponds to the decimal value "0000".

CAUTION

Modifying any other data in addition to the PIN, for example, the HF or battery parameters, will disable the mobile telephone. This can only be reversed at Gigaset Communications, Bocholt.

8. Open the "EEprom" menu and select the icon to write to the EEPROM (arrow pointing towards the yellow telephone). The EEPROM is re-written.
9. Initiate a reset. The mobile telephone should not request a PIN now.
10. Remove the mobile telephone from the adapter.
11. Insert the batteries into the mobile telephone and close the battery compartment.

8 Open Source Software used in the Product

8.1 General Conditions

The Product "HiPath Cordless IP" contains, among other things, Open Source Software, licensed under an Open Source Software License and developed by third parties. These Open Source Software files are protected by copyright. Your rights to use the Open Source Software beyond the mere execution of Siemens´ program, is governed by the relevant Open Source Software li-cense conditions.

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  http://www.freebsd.org/copyright/license.html
- The GPL v2 is available on the internet at:

  http://www.gnu.org/licenses/old-licenses/gpl-2.0.html
- The LGPL v2.1 is available on the internet at:

  http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html
- The OpenSSL license is available on the internet at:

  http://www.openssl.org/source/license.html
- The zLib license is available on the internet at:

  http://www.zlib.net/zlib_license.html

If programs contained in this product are licensed under GNU General Public License (GPL) and/or GNU Lesser General Public License (LGPL) and this software is not already delivered in source code form together with the device, you can request the corresponding source code from Siemens Enterprise Communication GmbH&Co. KG by paying a fee of 10 Euro for the physical act of transferring the copy.

Please send your specific request, together with a receipt indicating the date of purchase, within three years of your purchase, together with the MAC ID number of the device and the software release number to:

Your local Service Organisation of Siemens Enterprise Communication GmbH&Co. KG

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Technical support, if any, will only be provided for unmodified software.

8.2 Open Source Software Used

Open Source Software Component	License
U-Boot	GPLv2
Busybox	GPLv2
binutils	GPLv2
ethtool	GPLv2
hotplug2	GPLv2
ipsec-tools	X11-License, 3-clause BSD
libelf	LGPLv2.1
libpcap	BSD License
iptables	GPLv2
Isof	Isof License
mini_httpd	BCD License 2 clause
libpcap	BCD License
net-snmp	BSD Licenses
openSSL	OpenSSL License, SSLeay License
ntp	Ntp, without GPLv2 parts
strace	BCD License
tcpdump	BCD License
mtd-utils	GPLv2
gcc 4.* incl. libstdc++	GPLv2
zlib	Zlib-license
openSSH	BSD Licenses, MIT License
dropbear	BSD Licenses
uClibc incl. libpthread	LGPLv2.1
linux kernel 2.6.2x	GPLv2
JSON-C	X11

8.3 Acknowledgements

OpenSSL:

- This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)"
- This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)

Zlib:

- This product includes software developed by Jean-loup Gailly and Mark Adler

Libpcap:

- This product includes software developed by the University of California, Lawrence Berkeley Laboratory and its contributors.

8.4 Text of the used Open Source Software Licenses

8.4.1 GPL

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Preamble

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>
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    You should have received a copy of the GNU General Public License
    along with this program; if not, write to the Free Software
    Foundation, Inc., 59 Temple Place, Suite 330, Boston,
    MA  02111-1307  USA
```

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```
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    Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type
    `show w'.
    This is free software, and you are welcome to redistribute it
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```

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```
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    James Hacker.

    <signature of Ty Coon>, 1 April 1989
    Ty Coon, President of Vice
```

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8.4.2 LGPL

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Version 2.1, February 1999

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8.4.6 Zlib

ZLIB DATA COMPRESSION LIBRARY

zlib 1.2.3 is a general purpose data compression library. All the code is thread safe. The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files

http://www.ietf.org/rfc/rfc1950.txt (zlib format), rfc1951.txt (deflate format) and rfc1952.txt (gzip format). These documents are also available in other formats from ftp://ftp.uu.net/graphics/png/documents/zlib/zdoc-index.html

All functions of the compression library are documented in the file zlib.h (volunteer to write man pages welcome, contact zlib@gzip.org). A usage example of the library is given in the file example.c which also tests that the li-brary is working correctly. Another example is given in the file minigzip.c. The compression library itself is composed of all source files except exam-ple.c and minigzip.c.

To compile all files and run the test program, follow the instructions given at the top of Makefile. In short "make test; make install" should work for most machines. For Unix: "./configure; make test; make install". For MSDOS, use one of the special makefiles such as Makefile.msc. For VMS, use make_vms.com.

Questions about zlib should be sent to <zlib@gzip.org>, or to Gilles Vollant <info@winimage.com> for the Windows DLL version. The zlib home page is http://www.zlib.org or http://www.gzip.org/zlib/ Before reporting a problem, please check this site to verify that you have the latest version of zlib; otherwise get the latest version and check whether the problem still exists or not.

PLEASE read the zlib FAQ http://www.gzip.org/zlib/zlib_faq.html before asking for help.

Mark Nelson <markn@ieee.org> wrote an article about zlib for the Jan. 1997 issue of Dr. Dobb's Journal; a copy of the article is available in http://dogma.net/markn/articles/zlibtool/zlibtool.htm

The changes made in version 1.2.3 are documented in the file ChangeLog.

Unsupported third party contributions are provided in directory "contrib".

A Java implementation of zlib is available in the Java Development Kit http://java.sun.com/j2se/1.4.2/docs/api/java/util/zip/package-summary.html
See the zlib home page http://www.zlib.org for details.

A Perl interface to zlib written by Paul Marquess <pmqs@cpan.org> is in the CPAN (Comprehensive Perl Archive Network) sites http://www.cpan.org/modules/by-module/Compress/

A Python interface to zlib written by A.M. Kuchling <amk@amk.ca> is available in Python 1.5 and later versions, see http://www.python.org/doc/lib/module-zlib.html

A zlib binding for TCL written by Andreas Kupries <a.kupries@westend.com> is availlable at http://www.oche.de/~akupries/soft/trf/trf_zip.html

An experimental package to read and write files in .zip format, written on top of zlib by Gilles Vollant <info@winimage.com>, is available in the contrib/minizip directory of zlib.

Notes for some targets:

- For Windows DLL versions, please see win32/DLL_FAQ.txt
- For 64-bit Irix, deflate.c must be compiled without any optimization. With -O, one libpng test fails. The test works in 32 bit mode (with the -n32 compiler flag). The compiler bug has been reported to SGI.
- zlib doesn't work with gcc 2.6.3 on a DEC 3000/300LX under OSF/1 2.1 it Works when compiled with cc.
- On Digital Unix 4.0D (formely OSF/1) on AlphaServer, the cc option -std1 is necessary to get gzprintf working correctly. This is done by configure.
- zlib doesn't work on HP-UX 9.05 with some versions of /bin/cc. It works with other compilers. Use "make test" to check your compiler.
- gzdopen is not supported on RISCOS, BEOS and by some Mac compilers.
- For PalmOs, see http://palmzlib.sourceforge.net/
- When building a shared, i.e. dynamic library on Mac OS X, the library must be installed before testing (do "make install" before "make test"), since the library location is specified in the library.

Acknowledgments:

The deflate format used by zlib was defined by Phil Katz. The deflate and zlib specifications were written by L. Peter Deutsch. Thanks to all the people who reported problems and suggested various improvements in zlib; they are too numerous to cite here.

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Jean-loup Gailly Mark Adler
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8.4.7 Mini Httpd

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 *
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