Information

HiPath 4000 V4

The IP Switch for Medium-Sized and Large Enterprises

Communication for the open minded

SIEMENS

Innovative and future-proof

Open Communication with HiPath 4000 gives you a sophisticated and proven platform with an extensive installed base. Thanks to its rich range of features and distributed architecture, HiPath 4000 is able to cater for practically any requirement profile. Comprehensive service and support offerings also bring transparency to the process of migration to the convergent world. The HiPath 4000 convergent IP communications platform offers companies with between 300 and 100,000 stations a future-proof system architecture. Open interfaces and specialized applications enable easy integration in their individual business processes. These can of course be intelligently combined and adjusted to further reduce operational costs. Best-in-class high availability solutions guarantee continuous, interruption-free business activities, and up-to-date security implementations maintain the integrity of your confidential information.

The HiPath MetaManagement architecture also enables the efficient and cost-effective management of your communication network within managed service solutions.

HiPath 4000 V4

- Hardware, Software, and Features
- SIP (open standard)
- IP gateways HG 3500 (common gateways)
- Distributed architecture
- Desktop productivity
- HiPath applications
- HiPath Common Application Platform
- Upgrade/conversion to HiPath 4000 V4
- System interfaces
- Technical data
- Data sheets with further information on products mentioned in this document

- Open and flexible for adaption to any operator model

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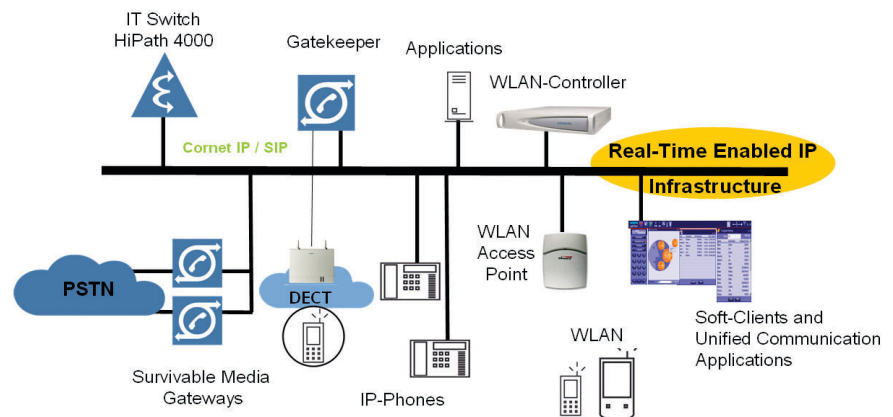
Hardware, Software und Features

Hardware

Modular, stackable hardware for seamless expansion

With its modularity, the availability of scalable access points plus powerful networking support, HiPath 4000 V4 offers an ideal solution for an entire enterprise network – regardless of size and location requirements – and a perfect solution for seamless expansion.

The HiPath 4000 communication server is the central control unit. This server is standards-based and consequently supports the direct integration of appropriate standard server applications in the system, for example the MMCS (Meet Me Conference

Server). AP 3700 access points enable complete 19-inch system configurations to be created and integrated directly in the IT infrastructure.

The HiPath 4000 communication server can be implemented and expanded in all configurations, from the smallest to the largest. It supports up to 15 directly connected access points plus 83 IP-distributed access points. A maximum of 12,000 digital or IP subscribers can be supported in these configurations. Configurations with up to 100,000 users can thus be implemented without difficulty in networked systems.

In addition, a duplex option is available for common control and redundant power supply for the entire system.

The modular structure of HiPath 4000 also enables cost-effective duplex solutions to be realized in small and mid-sized configurations.

Modular Software for Incremental Growth

HiPath ComScendo

The HiPath ComScendo software suite offers a full set of enterprise-class communication features for the HiPath 4000 IT switch. The (hardened UNIX) operating system provides maximum protection against viruses and hackers.

HiPath ComScendo Plus
(for new systems, HiPath 4000 V4 or later)

In addition to the HiPath ComScendo functions, HiPath ComScendo Plus also offers

- Voicemail functionality (HiPath Xpressions V5.0 VM license) and
- CTI functionality (HiPath Xpressions Basic CTI Client)

Basic features:

- Call detail recording
- Call journal
- Operation with/without direct inward dialing
- Direct station selection key function
- Release/block call waiting
- Parallel ringing
- Flexible and enhanced call forwarding
- Call pick-up groups
- HiPath 4000 Assistant for convenient administration of the HiPath 4000 system
- Remote administration
- Different time zones
- Virtual numbering plan
- Distributed architecture (IPDA)

User features:

- Redial
- Speed dialing system/individual
- Callback
- Eight-party conference
- Toggling
- Do-not-disturb
- Call waiting and prevention of call waiting
- Override and prevention of override
- Hotline
- Mobile HFA (network-wide mobility)
- Personal ID number (PIN)
- Attendant console connection
- Executive/secretary functions
- Numerous team functions

These features are identical for digital system telephones (e.g. OpenStage T) and HFA IP telephones (HiPath Feature Access).

Additional features for key sets (terminals with multiline functionality):

- Call bridging
- Automatic/manual privacy
- On-hook access to multiple lines at all key sets
- Simultaneous hold of key lines
- Exclusive and manual hold
- LED and ringer cut-off
- Line use indication
- Recall

Trunk/networking features:

Trunk/networking allows the HiPath 4000 to be connected to or operated via the public network, and permits the HiPath 4000 to be connected with any communication system via private networks. Standard protocols such as QSIG and SIP and open interfaces (e. g. CSTA) are employed. HiPath 4000 enables the efficient and economical operation of communication networks.

Networking can be performed via ISDN, ATM or IP – always with the full CorNet NQ feature range (not valid for SIP). CorNet NQ is a signaling protocol for private network solutions based on Siemens standards. It is aligned with the international QSIG private network protocol for private networks.

The most significant advantages of homogeneous networking include the following:

- Central administration with HiPath 4000 Manager

- Implementation of central applications (for example, HiPath Xpressions, HiPath ProCenter)

- Enhanced voice features such as call pick-up group, call park, directed call pick-up, call forwarding, callback on busy and callback no answer

- Optimized use of the corporate network through cost-optimized routing (Least Cost Routing, LCR)
  - LCR ensures that the most economical route is selected. Time-based to different carriers
  - Central administration of all LCR data with HiPath 4000 Manager, local and network-wide administration of all outgoing, incoming and internal calls

IP Gateway HG 3500

HG 3500 an IP gateway for seamless migration to an IP infrastructure. With maintenance of the standard functional diversity voice and data connections can be managed via a single network, which consequently achieves cost savings.

HG 3500 offers:

- Voice compression (G.723, G.729)
- Redundant LAN interface
- Echo cancellation according to G.168
- T.38 for fax messages via IP trunking
- H.235 (Integrity and Authentication)
- 100 MB/s, full duplex (HG 3500 V4)
- 10/100 MB/s auto negotiation, selectable as half/full duplex (HG 3500 V2)
- Payload switching/direct media connections
- Adaptive jitter buffer
- Voice Activity Detection
- CNG (Comfort Noise Generation)
- Network Management Support (SNMP Agent, SNMP Version 2, MIB2, Private MIB for media streams)
- Up to 120 simultaneous connections
- Flexible assignment of stations/gateways (up to 240)
- Simultaneous use of several functions (e.g. HFA and IPDA)
- QoS in accordance with IEEE 802.1p/q (VLAN tagging) and DiffServ (IETF RFC 2474)
- QDC support (QoS Data Collection)
- (native) SIP
- SIP-Q V2 (for connections to HiPath 8000 V3.1)
- Signaling and Payload encryption (HiPath 4000 V4 R1 and later)

HG 3500 supports the following operating modes (parallel):

- HFA (HiPath Feature Access): Up to 240 IP clients can be connected, such as OpenStage HFA, AC-Win IP, AP1120 or optiClient 130).

- SIP: Up to 240 SIP stations (e.g. optiPoint 410/420 SIP) can be connected or connections set up to SIP Service Providers or other platforms such as HiPath 2000, 3000, 4000, 5000 and 8000.

- IP Trunking: Cost-effective networking of HiPath systems via IP can be set up on the basis of H.323 Annex M1 while retaining the full set of CorNet NQ features. The central controlling functions are taken over by the Large Enterprise Gatekeeper.

IPDA (IP Distributed architecture): This architecture enables several locations to be networked with a HiPath 4000 system (including on a global level). For this purpose the access points are distributed to the respective locations and connected via an IP infrastructure.

IT Architecture

Access Point Emergency Concept

This is a survivability concept for IP-based access points. An AP 3700 IP can be equipped with an optional control unit known as an emergency unit. If the central IT switch is not available or an IP connection cannot be set up to this switch, the emergency unit assumes control of its own access point and other access points that do not have their own control unit. The IP infrastructure between the access points must be intact for this to happen. However, all AP 3700 IPs connected to an IT switch (up to 83) can be equipped with a survivability unit. This way, you achieve optimum security for all access points connected to the system.

Signaling and Payload Survivability

The optional signaling and payload survivability function guarantees the highest level of availability for a HiPath 4000 system with IP-based access points. The PSTN can be used as a backup network for both the signaling and payload path if the IP network fails or does not provide the quality required. The available PSTN accesses are used for the Payload Survivability. The Payload Survivability path cannot be selected automatically if no other connections are possible in the IP network direction.

HiPath QoS Data Collection

The HG 3500 IP gateways support HiPath QoS data collection. This means that LAN data (for example, jitter, delay, packet loss, buffer overflows/underflows, threshold violations) is sent to a central unit (QCU QoS data collection unit). This data can then be used to quickly and efficiently analyze any IP network problems that may occur.

ComScendo on a Button Suite

In conjunction with a system phone (e.g. OpenStage) or an optiClient, HiPath ComScendo on a Button Suite provides new kinds of features to increase workplace productivity. The functions can be set up on the end device to be called up either by separate keys or via a menu that is called up via a single application key. The connection between HiPath 4000 and the corporate directory is generated by HiPath CAP (Common Application Platform – SW is supplied).

- EasyLookup: Simple access to the corporate directory (LDAP) via search parameters, output of results on the display and direct dialing of the displayed phone number.
- EasySee: Output of information from the corporate directory as PhoneCard on the PC.
- EasyMail: Opening of an e-mail window on the PC with the e-mail addresses of all contacts.
- EasyShare: Starting Microsoft Netmeeting on the PCs of all known contacts (in the directory).

HiPath Meet-Me Conference Server (MMCS)

Thanks to MMCS, all participants of a conference can dial in regardless of their current location and their infrastructure. All participants simply call the same number and are directly connected with each other – without having to take the trouble of having to call all participants. MMCS offers 1,000 meet-me conference rooms with up to 30 participants. Design and editing of personal conferences is performed by the employees themselves, with settings for regular conferences being saved.

Summary of Main Features

- Single system
  - Full HiPath 4000 feature set available for all IP-distributed subscribers
  - Central administration for the entire distributed IP architecture
  - Scalable, large capacity for HiPath 4000
  - Up to 15 directly connected access points (AP 3300 or AP 3700)
  - Up to 83 additional IP-based access points (AP 3300 IP or AP 3700 IP)
  - Up to 12,000 stations per system
  - Up to 100,000 in HiPath 4000 network

- Resilience options for high availability
  - Access point emergency concept (survivability of IP access points): 40 IP-based access points per emergency unit, up to 83 AP 3700 access points each with its own emergency unit
  - HG 3500 standby board
  - Signaling survivability
  - Payload survivability
- High voice quality (for example, via embedded echo cancellation and IP payload switching)
- Management support (for example, SNMP)
- Quality of service support in IP networks by prioritizing traffic.
  - IEEE 802.1 p/q and
  - IETF DiffServ
- Maximum number of simultaneous connections per HG 3500 in the IP network: 120

Benefits

- Reduction in network infrastructure costs ("IP convergence") for
  - Investments,
  - Administration,
  - Carrier fees.
- Reduced administration and application costs due to:
  - Single system,
  - Central administration and applications.
- More usage options for features and applications (single system)
- Increased choices thanks to IP-based access points with regard to:
  - Number,
  - Scalability,
  - Resilience
- Leveraging the benefits of an IP infrastructure without sacrificing feature richness, availability, and reliability.
- Features for increasing workstation productivity (for example, ComScendo on a Button Suite)
- More cost-effective connection to an IP carrier (SIP-based)

Desktop Productivity

OpenStage

The OpenStage family is intuitive in functionality and interface, integrated through interoperability with other devices, and multimodal to allow access to various services and applications.

The OpenStage family is designed to be extremely user friendly and simplify feature implementation. Sensorial interfaces based on advanced technology solutions (touch keys, embedded color LEDs, TouchSlider for volume control and TouchGuide navigator) as well as large, tiltable, backlit color graphical displays in TFT technology facilitate user interaction.

Soft-labeled touch sensor keys can be easily programmed for specific phone functions, line/feature access or speed dial by name. Fixed feature/function push keys (such as Drop/Release, Redial, Call Forwarding, Mute, Speaker) and dedicated touch sensor application/function keys (such as Telephony Call View, Phonebook, Call Log/History, Message Waiting, Applications) enable easy access to frequently needed phone functions.

OpenStage incorporates the latest developments in leading edge acoustics to ensure delivery of the very best voice quality (G.722 wideband codec support for handset, speaker, and headset communications). A high quality speakerphone is built in as standard in all models.

HiPath 4000 V4 currently supports the following models:

- OpenStage 20/40 T
- OpenStage 20/40/60/80 HFA

The OpenStage 60/80 T models will be released at a later date.
For more information on OpenStage refer to the data sheet.

optiClient 130

optiClient 130 is a computer-based mapping of the HiPath 4000 system phone functionality. optiClient 130 is a purely software solution, ideal for all mobile users who want access to OpenStage office phone features while on the move.

The modern and intuitive user interface makes optiClient 130 the ideal companion for clients who want to receive and make calls outside of their office. For mobile users the optiClient 130 can be operated with the same numbers as the IP telephone on their desk (only one phone is always active). For more information on optiPoint 130 refer to the relevant data sheet.

Attendant Consoles

The attendant console is used by an attendant to set up internal or external calls. AC-Win IP can be used to access the electronic telephone directory DS-Win. AC-Win MQ provides multiple queuing capabilities and displays incoming calls simultaneously. The PC-based attendant console is connected via IP (HG 3500).
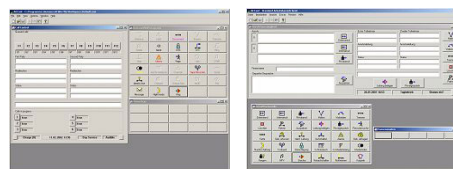
AC-Win MQ   **AC-Win 2Q**

For further information on the AC-Win added-feature attendant console, refer to the relevant data sheets.

Directory Service DS-Win

DS-Win increases the efficiency and the communication quality of the telephone switch by quickly forwarding incoming calls to the AC-Win attendant console or optiPoint / OpenStage work points. Through optional connection with the Outlook or Lotus Notes calendar, the operator can check whether the intended call recipient is currently present or absent. In combination with HiPath 4000 Manager, DS-Win is integrated in the single entry point concept for directory data.
For more information on Directory Service DS-Win refer to the relevant data sheet.

Busy Lamp Field (BLF-Win)

The Busy Lamp Field (BLF-Win) is an application for the PC-based attendant console, AC-Win. The permanent availability of information about the current status of the extensions enables more efficient and faster handling of incoming calls. This avoids unnecessary waiting periods for callers due to busy extensions or messaging systems.

HiPath 4000 Manager

HiPath 4000 Manager is the central management platform for standalone HiPath 4000/Hicom 300 systems and networked systems. As Element Manager, it is an integral component of the HiPath Management architecture.

HiPath 4000 Manager offers:

- Configuration Management (CM),
- Performance Management Networking (PM N)
- Performance Management Enhanced (PM E)
- Collecting Agent (COL)
- Application Programming Interface (API)
- SNMP Proxy Agent

Additional HiPath MetaManagement applications:

- HiPath Fault Management (HiPath FM):
- HiPath Accounting Management (HiPathAM)
- HiPath User Management (HiPath UM)
- HiPath QoS Management
- HiPath DS-Win and HiPath DTB

HiPath 4000 Assistant

A Management System integrated into HiPath 4000, with a graphical administration interface for local configuration tasks, important service tools and an SNMP Proxy Agent for sending HiPath 4000 error messages and alarms as SNMP Traps.

- Configuration Management (CM)
- Switch Diagnosis Support (SDS)
- Backup & Restore (HBR)
- Error Message Interpreter (EMI)
- ACL Tracer
- SNMP Proxy Agent

HiPath Application Portfolio

HiPath CAP

HiPath 4000 V4 provides standard interfaces and protocols (TAPI, JTAPI and CSTA) via HiPath CAP V3.0.

Deployment Service

The Deployment Service (DLS) is a HiPath Management application that provides an integrated solution for customers and service personal to administer IP devices (IP phones and clients) in HiPath and non-HiPath networks. This means HFA/H.323 and SIP based networks also including OpenScape and HiPath 8000 in stand-alone mode (w/o data interface to the switch). DLS is the central component where device-related and QoS related parameters of HiPath IP devices are administered for the customer's entire HiPath or non-HiPath solution.

HiPath Cordless Enterprise

HiPath Cordless Enterprise V3.0 is the integrated mobile switching module for HiPath 4000. It enables operation of cordless terminals using enhanced system features.

For more information on HiPath Cordless Enterprise refer to the relevant data sheet.

HiPath DAKS

HiPath DAKS is an alarm and communication server that can be connected to HiPath 4000 systems using 4, 8, 30, 60, 90, ... 210, 240 voice channels via S0 and S2m (CorNet NQ) interfaces.

For more information on HiPath DAKS refer to the relevant data sheet.

HiPath Xpressions

HiPath Xpressions V5.0 Unified Messaging offers an extremely flexible IT architecture and gives users voice access to their mailboxes. E-mails can also be read out to the user (but no access to functions such as Appointments). HiPath Xpressions V5.0 is a unified messaging solution for companies of all sizes.

HiPath Xpressions Voice-only System:
A cost-effective voice messaging solution. Permits simple migration of VMS (Voice Mail System) or PhoneMail to HiPath Xpressions. From here it is just a small upgrade to Unified Messaging.

HiPath Xpressions as Unified Messaging system:
A multimedia mailbox for voice, fax, e-mail and text messages. Integrated in Microsoft Outlook and Lotus Notes, or can also be used as a standalone messaging system.

For more information on HiPath Xpressions refer to the relevant data sheet.

HiPath ComAssistant

HiPath ComAssistant V2.0 is a communication tool for the enterprise market, which allows the user to dynamically manage their communication according to their requirements. Incoming calls and e-mails can be filtered here and forwarded to the terminal device that the user has defined according to date and workload. HiPath ComAssistant V2.0 consequently helps with the difficult balancing between constant availability and undisturbed time for work with high priority. HiPath ComAssistant V2.0 has a browser-based web client as user interface. The user can avail of a wide range of CTI functionalities, including:

- Easy phoning with Click & Dial
- Logging the incoming and outgoing calls in a personal journal

Access to global electronic LDAP address books (Lightweight Directory Access Protocol) such as, HiPath Meta Directory, for example, and the integration of private address books and contacts from Microsoft Exchange. Dialing with a mouse click from the hit list.

For more information on HiPath ComAssistant refer to the relevant data sheet.

HiPath ProCenter

HiPath ProCenter Agile/Enterprise V7 R1 is the Siemens Contact Center application for the HiPath communication platforms. As the successor to HiPath ProCenter Agile/Standard V6.5 and HiPath ProCenter Advanced V5.1, HiPath ProCenter V7.0 R1 combines the features of both products to include the enhanced, intuitively operated agent interfaces and visual administration tools that were introduced in HiPath ProCenter Agile V6.0. This is the first time that a platform-independent standalone call center solution is available that covers all market segments, from small through medium to very large enterprises.

For more information on HiPath ProCenter refer to the relevant data sheets.

HiPath Hospitality Service Center

HiPath Hospitality Service Center (HHSC) is an advanced intelligent CRM solution that optimally implements service processes in the hotel industry. The Hospitality Service Center was specially developed for the requirements of the service-oriented hotel industry.

In addition to complete telephony integration, HHSC also enables an efficient control of the entire service personnel. Evaluations and detailed reporting are enabled locally by the "Management Information System (MIS)" and over the entire hotel chain by the "Executive Information System (EIS).

The globally active major hotel chains can consequently map their business strategy with consistent guest services and increase their profitability with intelligent reporting. For smaller and medium-size hotels HHSC is a convenient and efficient complete solution that connects all operative activities with one another in one application.
For more information on HHSC refer to the relevant data sheet.

HiPath Mobile Connect

HiPath MobileConnect is an FMC (Fixed Mobile Convenience) solution for enterprises. It extends SIP and availability functionality to dual mode Wi-Fi/cellular handsets in both VoWLAN and mobile phone networks. The HiPath MobileConnect solution is made up of a central MobileConnect system and the HiPath-MobileConnect client on the dual mode device. Thanks to the genuine "one number/one voice mailbox" functionality and uninterrupted roaming, users benefit from increased productivity and enhanced availability. IT managers profit from better control of mobile phone costs and call charges.

For more information on HiPath MobileConnect refer to the relevant datasheet.

Upgrade/Conversion to HiPath 4000 V4

The HiPath 4000 V4 IT switch offers a future-proof, real-time IP system architecture with a wide range of availability options. Its numerous applications form the ideal basis for optimizing business processes.

Upgrading HiPath 4000 Systems

In most cases it is sufficient to upgrade the existing software to HiPath 4000 V4 and increase the main memory of the central processor board to 1 GB. In some cases, it may be necessary to replace older components (mainly boards) with more modern variants (special terms apply). Some applications may need to be upgraded to the latest version. If you are using HiPath 4000 Manager, this should be upgraded to HiPath 4000 Manager V4.

Easy Conversion

Easy Conversion is the migration of Hicom 300 and HiPath 4000 systems of older design to the latest HiPath 4000 version.

System Interfaces

Trunks

- S_0 (basic rate interface)
- E1 (S_{2m}) (primary rate interface)
- T1 (primary rate interface)
- DPNSS1
- Analog
- H323 and SIP (project-specific release necessary)

Integral Service Platform

- Transport and network protocol TCP/IP
- Asynchronous protocol PPP
- File transfer protocol FTP
- Web protocol HTTP
- Asynchronous / synchronous V.24 access
- Access via Ethernet or via fast modem

Networking Interfaces

- S_0/E1 (S_{2m})/T1
  The following protocols are supported: CorNet NQ, QSIG, PSS1, E&M, CAS, MFC
- Analog
  Various protocols
- IP trunking (H323 Annex M1)
- SIP trunking to HiPath platforms (SIP-Q)
- SIP trunking to other manufacturers (native SIP)

User Interfaces

- $U_{P0/E}$
  Twin-wire interface for connecting OpenStage T and optiPoint 500 telephones
- HiPath Feature Access (HFA)
- SIP Registrar
- S_0bus
  S_0 port for ISDN terminal devices
- a/b port (CLIP and MWI possible) for analog terminal devices

Technical Data

Variant	Number of directly connected access points	Number of IP distributed access points	Number of digital/IP subscribers
HiPath 4000	up to 15	up to 83	up to 12,000

Environmental Operating Conditions

Air temperature in operation (air cooling)	+5 °C to +40 °C
Relative air humidity	max. 85%

A "buffered" 48-volt direct current power supply can also be used.

Power Supply Voltage

Single Phase	100 V - 240 V
Three Phase	190 V/400 V

Dimensions (W x H x D in mm) & Weight

HiPath 4000 Communication Server	440 x 170 x 300	max. 13 kg
HiPath AP 3300	773 x 645 x 515	max. 30 kg
HiPath AP 3700	440 x 445 x 433	max. 25 kg
HiPath AP 3300 IP	773 x 645 x 515	max. 30 kg
HiPath AP 3700 IP	440 x 445 x 433	max. 22 kg

Compliance

Safety	EN60950
EMC Emission	EN55022 Class A
EMC Immunity	EN55024 and EN1000-6-2

Data Sheets with Further Information on Products Mentioned in this Document

Product	Order number
OpenStage	A31002-S2000-D100-*-7629
optiClient 130	A31002-A2000-B400-*-7629
Attendant Consoles ● AC-Win and AC-Win MQ, Enhanced Attendant Consoles for HiPath 4000 and Hicom 300 E/H	A31002-G4010-D100-*-7629
HiPath 4000 Manager V4.0 HiPath 4000 Assistant V4.0	A31002-H3440-D100-*-7629 A31002-H3440-D101-*-7629
HiPath Xpressions	A31002-S2350-D100-*-7629
HiPath Cordless Enterprise	A31002-G2100-A250-*-7629
HiPath DAKS - Digital Alarm and Communication Server	A31002-S1700-A200-*-7629
HiPath ComAssistant	A31002-S2620-D100-*-7629
HiPath ProCenter ● HiPath ProCenter Agile V7.0 R1 ● HiPath ProCenter Enterprise V7.0 R1	A31002-S2270-D100-*-7629 A31002-S2270-D101-*-7629
HiPath Hospitality Service Center V2R5	A31002-E1300-D100-*-7629
HiPath Mobile Connect (only available online as a PDF file)	A31002-M1010-D101-*-7629

Communication for the open minded

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