HiPath 8000 V2.0

SIEMENS

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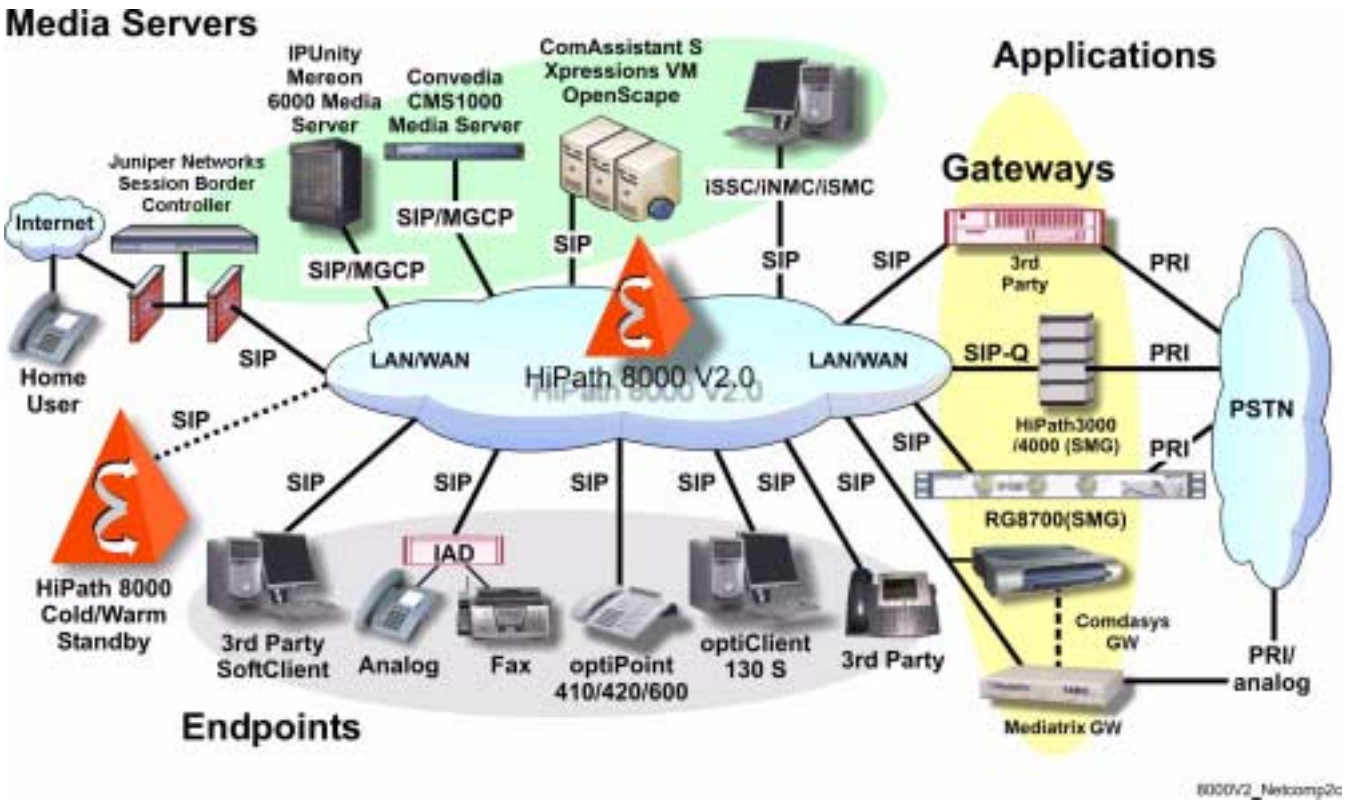
SIP-Based Real Time IP Communication System

HiPath 8000 V2.0 is a carrier-grade universal switching and service delivery system that can be deployed as either an enterprise solution or as a hosted service. It is scalable from a few hundred to 100,000 users per single system, and virtually unlimited per network. The system runs on highly reliable, fault-tolerant IBM eServer xSeries servers using the SuSE Linux operating system. Clustering software protects against hardware and software failures, and controls failover of redundant Ethernet links and cluster nodes (redundancy is optional in the 300-5000 user range). By ensuring that all functions and applications maintain constant, unrestricted availability, HiPath 8000 V2.0 provides a new level of quality in IP communications.



Best for Your Business

The entire portfolio is optimized for the demands of very large businesses — easy to put into practice, reliable in performance, and easy to use. With it, you become even more efficient.

Value

With HiPath, businesses benefit from the investments already made in their customers, partners, employees, and communications infrastructure. The HiPath 8000 illustrates how SIP platforms can reduce communication costs. The separation of voice and data no longer exists. Only one infrastructure needs to be maintained. Processes and applications are more reliable and can be shared across the enterprise.

Evolution

With HiPath 8000 V2.0, you achieve convergence without risk. Existing HiPath systems can be utilized and integrated into the overall solution. New applications and solutions can easily be integrated. Thus, businesses stay in touch with technology and will continue to profit from the benefits of SIP-based systems in the future.

Choices

You decide when, where, how, and to what extent to invest in innovative technology. You can choose from a broad range of IP convergence platforms, optiPoint phones, and an optiClient solution (softclient). You set the pace in accordance with your demands and ideas.

Benefits of Installing the HiPath 8000 V2.0 System

- Leveraging the benefits of an IP infrastructure without sacrificing feature richness, availability, and reliability.
- Reduction in network infrastructure ("IP convergence") for:
  - –Investments
  - –Administration
  - –Carrier fees
- Reduced administration and application costs due to:
  - –Single system
  - –Central administration and applications
- Large scope of features and applications, with increased choices thanks to flexibility of IP-based access points in terms of:
  - –Quantity
  - –Scalability
  - –Resilience

High-Performance IP Communication

HiPath 8000 V2.0 offers a wide range of options for transforming your corporate communications solution into real-time IP communication. You can reduce your IP infrastructure costs even further by using high-performance gateways and standardized compression procedures. HiPath 8000 V2.0's "Any-to-Any" IP payload switching ensures that you get the highest availability and quality.

Resilience

Specific hardware errors are automatically managed by the HiPath 8000 softswitch to prevent any degradation of service. The HiPath 8000's survivability strategy takes advantage of its public carrier roots, delivering reliability that exceeds that found in traditional enterprise class Customer Premise Equipment (CPE) solutions.

The HiPath 8000 hardware platform achieves carrier-class reliability and availability based on active/active clustered server nodes. It supports hot swappable components, active/standby Fast Ethernet links, and crossover network connections through Ethernet switches.

The PrimeCluster V4.0 software controls the failover of active/standby Ethernet links and failover of the clustered nodes. For signalling, it supports active/active links. For data storage, it supports redundant crossover SCSI links between each node and each disk array. The disk arrays are mirrored with hot- swappable disk drives.

The HiPath 8000 utilizes the **Resilient Telco Platform (RTP)** from Fujitsu Siemens Computers, a fault-tolerant, distributed computing platform that constitutes the underlying middleware for the system. The RTP pro-

vides services that implement applications with data resiliency and location transparency.

In the event of a system failure, the Resilient Telco Platform is designed to enable the HiPath 8000 to perform a system switchover while maintaining all active calls, with no loss of billing records. The HiPath 8000 can do this because it operates with redundant hardware nodes in active-active mode, as opposed to active-standby mode.

Siemens provides an entire family of SIP phones, softclients and media gateways that provide an interface to the PSTN, LANs, WANs, legacy devices, and IP clients.

HiPath 8000 V2.0 Solution Landscape

The HiPath 8000 V2.0 system is the ideal communication solution for large to very large enterprises. The HiPath 8000 communication architecture is designed for enterprises with distributed, remote sites, as well as for companies with campus-style structures.

With HiPath 8000, businesses of any size — and across multiple locations — can use all system features and applications universally. HiPath 8000 can also incorporate existing systems, such as HiPath 3000/4000, in the overall solution, as well as third-party systems.

Many new capabilities are added to the HiPath 8000 V2.0 solution landscape. They include new and enhanced features in the softswitch, new configurations, new enpoints, gateway and media server choices, as well as an expanded list of applications for customers to choose from.

HiPath 8000 V2.0 Features

The user feature set for the HiPath 8000 V2.0 includes the following:

- Anonymous Call Rejection
- Anonymous Call Screening
- Automatic Callback
- Automatic Recall
- Call Forwarding Busy
- Call Forwarding No Answer
- Call Forwarding Variable
- Call Waiting, Cancel Call Waiting
- Call Waiting Visual Notification
- Caller ID, Caller ID Blocking
- Calling Name Delivery
- Customer-Changeable Speed Calling (CCSC)
- Extended Call Forwarding (Management of CF using a Web interface)
- Malicious Call Trace
- Message Waiting Indicator (MWI)
- One-Digit and Two-Digit Speed Calling
- Remote Activation Call Forwarding
- Selective Call Acceptance
- Selective Call Forwarding
- Selective Call Rejection
- Selective Distinctive Ringing
- Three-Way Calling
- Usage Sensitive Three-Way Calling
- Video Two-Way Call
- Visual/Telephone Screen List Management
- Voice Mail/Unified Messaging support

The system feature set for the HiPath 8000 V2.0 includes the following:

- Enterprise telephony features
- Gateway selection and hunting
- Interface for advanced services, such as instant messaging, presence, billing, and collaboration
- Interface to monitor and control media transactions, including pure telephony
- Routing functions
- SIP proxy server with back-to-back user agent (B2BUA), redirect server, location service
- Support for a full range of industry-standard, real-time communication and control protocols and interfaces, including TGCP, NCS, MGCP, H.248/Megaco, SIP, SIP-Q, SIP-T, ISDN PRI, Q.SIG
- User management and address translation functions

Call Detail Recording

Enhanced Call Detail Recording provides details for all call phases, durations, and intervals for outgoing, incoming, internal, and call routing for all users. It also enables network-wide correlation of records and call paths.

Scalable Capacity

Depending upon the configuration, the HiPath 8000 can support up to 100,000 SIP users per node. With multiple systems, the HiPath 8000 solution capacity is virtually unlimited.

Payload Switching

In HiPath 8000, call switching is independent of the call processing unit. Connections between IP endpoints are switched directly in the IP network. Voice packets can be switched without an audible delay using the best route through the LAN/WAN. As a result, the bandwidth of the available IP network can be optimally exploited.

HiPath 8000 V2.0 Management

System management for HiPath 8000 V2.0 may be implemented in three ways:

- **Command Line Interface (CLI)**
- **The iSuite: iNMC / iSMC / iSSC** for systems with more than 5000 users
- **Integrated Administration** for systems with less than 5000 users

Command Line Interface

HiPath 8000 system provisioning and administration can be performed using a traditional command line interface (CLI). Some features must be managed using the CLI, for example trace and maintenance, as well as mass provisioning. The CLI is always accessible via a secure shell, which is especially useful if the user is offsite.

Network Management Center (iNMC)

The Siemens Web-based Network Management Center (iNMC) is a Java-based application that provides a graphical user interface (GUI) for configuring, provisioning, and controlling the HiPath 8000. As a supplement to traditional configuration methods based on Command Line Interface (CLI) and Simple Network Management Protocol (SNMP), the iNMC also supports a range of open interfaces that will allow the integration of other third-party applications.

Intuitive and easy to use, the iNMC GUI makes access to needed information fast and efficient. A context-sensitive online help feature guides users through the most difficult provisioning tasks, providing for a more efficient and less error-prone process. The iNMC runs on a Windows 2000-based server.

Using the Network Management Center, the system administator can configure users so as to create service profiles, as well as to assign and configure resources such as subscriber numbers and ports. All features of the HiPath 8000 are supported (e.g., hunt algorithms, hunt service numbers, line service numbers, etc.).

Service Management Center (iSMC)

The Siemens Web-based Service Management Center (iSMC) provides users (craft persons or administrators) with the ability to control all subscriber-related services and features, using an interface that is accessible with any standard Web browser.

The iSMC allows the administrator to add and modify subscriber data. The iSMC communicates with the HiPath 8000 via XML/SOAP, and can be run on any Windows 2000 Server.

Subscriber Self-Care (iSSC)

Siemens Web-based Subscriber Self-Care (iSSC), essentially a more restricted variant of the Service Management Center (iSMC), provides the end user or subscriber with a means to control phone and call features through a Web portal. An SDK (Software Developers Kit) can be provided to aid in the implementation of the iSSC for each individual customer.

Integrated Administration

For systems with fewer than 5000 subscribers, an integrated administration tool is available as an alternative to the iSuite. The HiPath 8000 Assistant V2.0 combines the maintenance and administration functions of iNMC and iSMC with a single GUI interface. The tool runs on the same server as the HiPath 8000 and supports Web access to its functions, as well as a single point of access for the management of phones, media server and licenses.

HiPath 8000 V2.0 Media Servers

The HiPath 8000 V2.0 solution landscape offers several media server options:

- **IP Unity Mereon 6000 Media Server** for more than 15,000 users
- **Convedia CMS-1000 Media Server** for 50-300 ports, up to 15,000 users
- **Integrated Media Server** for 300-5000 users

IP Unity Mereon 6000

The Mereon 6000 Media Server is a scalable, carrier-class hardware/software platform that performs the high-speed, high-volume media processing functions required for enhanced services such as unified messaging, conferencing, automated speech recognition (ASR), interactive voice response (IVR), text-to-speech, billing record creation (CDR, IPDR), transcoding, and fax detection.

The 10,000-port capacity of the Mereon 6000, which can support up to 100,000 users, can be easily partitioned so that processing power can be effectively divided among multiple applications or customers. The platform's partitionable architecture, scalability, and multi-network flexibility offers service providers an ideal solution for enabling top-line growth through the introduction of enhanced telecommunication services.

Convedia CMS-1000

The Convedia CMS-1000 Media Server is an alternative option for HiPath 8000 systems with fewer than 15,000 users. The CMS-1000 delivers the media processing power required for a broad range of services such as multimedia conferencing, calling cards, interactive voice response (IVR), IP Centrex, call centers, unified messaging, network gaming, and speech portals.

Media processing capabilities of the CMS-1000 include announcement generation, audio and video bridging, DTMF tone detection and generation, transcoding, message play/record, and speech processing.

Because it is compatible with industry standard protocols, the CMS-1000 Media Server can be shared and controlled by multiple softswitches, call agents or application servers in any next generation VoIP network.

Integrated Media Server

The integrated Media Server provides the HiPath 8000 system with tones and announcements and is for medium-size enterprises supporting 300-5000 subscribers. This software-only server solution is fully integrated into the system server hardware.

The integrated Media Server supports redundancy and can be managed by the integrated HiPath 8000 Assistant V2.0 or by an iNMC/iSMC administration server.

HiPath 8000 V2.0 Media Gateways

To access the public switched telephone network (PSTN), the HiPath 8000 V2.0 solution landscape provides the following gateway options:

- HiPath 4000 V3.0 (via SIP)
- HiPath 3000 V6.0 (via SIP)
- RG 8700
- Third-party gateway products

Survivability Media Gateways (SMG)

The RG 8700 provides a complete Siemens solution for HiPath 8000 V2.0, as well as basic survivability for branch offices in the event of network failure. Station-to-station calls and PSTN access as well as emergency services access (E911) are available at all times in remote branches.

Siemens HiPath 3000 and HiPath 4000 systems can be upgraded to offer survivability in a HiPath 8000 environment.

Small Branch Office (SBO) Gateways

These gateways connect endpoints in a small office scenario. Gateways from **Mediatrix** and optional survivability provided by **Comdasys** connect these locations to the HiPath 8000.

Customers can continue to use their previously installed third-party SIP gateways (CISCO 3700, for example) with the Siemens HiPath 8000. The supported functionality depends on how these gateways adhere to the relevant SIP standards. Interoperability testing may be required to confirm feature behavior. The HiPath Ready Lab is available to vendors seeking to certify their products with the HiPath 8000.

Supported SIP Endpoints

The following Siemens SIP endpoints are supported:

- optiPoint 410 S / 420 S
- optiPoint 600
- optiClient 130 S

Additionally, selected third-party phones have been certified.

optiPoint Phone Family

optiPoint 410 S / 420 S

The feature that distinguishes the optiPoint 410 S / 420 S family of phones, in particular, is the customized range of models. A choice of four different telephone models is available to suit all workstation requirements:

- optiPoint 410 S / 420 S entry
- optiPoint 410 S / 420 S economy
- optiPoint 410 S / 420 S economy plus (with built-in LAN switch)
- optiPoint 410 S / 420 S standard
- optiPoint 410 S / 420 S advance

Every optiPoint 410 S / 420 S telephone satisfies all the requirements of VoIP telephony. All conventional voice codecs and QoS mechanisms are implemented and the telephones can be powered either from a local source or via Power over Ethernet (PoE) in accordance with the 802.3af standard. The open hardware and software platform ensures that standard VoIP protocols such as SIP can be implemented.

optiPoint 600

The optiPoint 600 provides the customer with the ability to reuse the phone when going from a TDM to an IP environment. Additionally, the optiPoint 600 offers a large screen display that can be used to provide Internet services to the desktop without a PC.

optiClient 130 S Softclient

The optiClient 130 S is essentially a computer-based mapping of the HiPath 8000 V2.0 phone functionality. Operation can be learned intuitively as with all optiPoint phones. The optiClient 130 S is a pure software-based solution.

Integrated Access Device

The Integrated Access Device (IAD) converts traditional POTS or ISDN line protocols to the VoIP (e.g., SIP, MGCP) messages used at the system interface.

Secure and Assured VoIP for Remote Users

Remote users who are not accessing the HiPath 8000 via a VPN will typically have their requests to register rejected by a corporate firewall, just like all other traffic originating outside the firewall. The **VF 1000 Session Border Controller** from Juniper Networks simplifies deployment of VoIP and other rich media services to users outside a company's network by providing a seamless and secure solution for registration and access to the HiPath 8000 system. No additional equipment or modification of existing equipment is required at the user's location.

The Juniper Networks VF 1000 is a 1U, Fast Ethernet, packet-processing device capable of handling up to 2000 concurrent VoIP calls. The VF 1000 is typically 'sandwiched' between firewalls at the edge of a company's VoIP network and configured to resolve the necessary security, service assurance and other compliance issues.

HiPath 8000 V2.0 Application Suite

HiPath OpenScape

HiPath OpenScape is a high-functionality collaboration application that fits into an enterprise's existing voice and data infrastructure, tying together phones, voice mail, e-mail, text messaging, directories, caldendaring, instant messaging and conferencing services.

HiPath OpenScape's tight integration into the HiPath 8000 environment allows users to take advantage of market-leading collaboration and mobility features, and provides the ability to leverage advanced user and group presence features.

HiPath Xpressions

HiPath Xpressions 4.0 SMR1 provides a voice messaging system for the HiPath 8000 V2.0 solution landscape.

HiPath ComAssistant S

HiPath ComAssistant S is a Web browser-based call control and communication filtering application that enables users to manage incoming voice and e-mail communications from their desktop.

HiPath ComAssistant S offers computer telephony integration (CTI) features such as Click-to-dial, Call Logging, LDAP Address Book search, and "One-Number-Service."

Presenting an easy-to-use graphical user interface (GUI), HiPath ComAssistant S provides home and business users with rule based communication filters and routing capabilities to optimize accessibility and increase efficiency.

IP Unity Applications

The Unified Messaging (UM) and Conferencing applications from IP Unity are separate products that can be added to the HiPath 8000 V2.0 to provide comprehensive unified messaging and/or conferencing solutions.

IP Unity Unified Messaging is a robust, scalable, carrier-class platform designed to handle any messaging demand. By providing support for any device, antime, anywhere, UM allows users to manage all media types (email, voice, fax, video, still images) from a single easy-to-use mailbox.

IP Unity Conferencing is a simple and elegant conferencing solution that provides a comprehensive set of audio, Web and collaborative conferencing features, while leveraging IP, TDM and converged communications infrastructures. IP Unity Conferencing works in conjunction with IP Unity's Mereon 6000 Media Server to provide a rich set of multilingual conferencing features from 100 to thousands of ports.

Both IP Unity applications (Unified Messaging and Conferencing) can run on the same server unit.

Technical Data

The HiPath 8000 hardware platform consists of IBM xSeries servers. The IBM x346 server is configured with two (2) 3.0 GHz / 800 MHz Xeon processors, up to 16GB of DDR2 RAM, and as many as six hot-swappable SCSI hard disk drives.

The server is configured with Hyper-Threading and simultaneous multi-threaded (SMT) technologies for more efficient program processing. With a compact 2U footprint, the rack-optimized xSeries server helps save valuable rack space and resources. Yet, it is packed with highly integrated, advanced server features designed for compute-intensive Web-based or enterprise network applications where space is a primary consideration.

IBM x346 Server

Dimensions (2U Rack Drawer):

- Width: 443.6 mm (17.5 in)
- Depth: 698.0 mm (27.5 in)
- Height: 85.4 mm (3.36 in)

Electrical:

- 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 6.2 A
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 3.1 A
- Input kilovolt-amperes (kVA) (approx.):
  - –Min. configuration: 0.10 kVA
  - –Max. configuration: 0.62 kVA

Heat Dissipation:

- Ship configuration: 341 Btu/hr (100 watts)
- Full configuration: 2,200 Btu/hr (645.2 watts)

Operating Environment:

- Operating Temperature
  - –10.0° to 35.0° C (50° to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - –10.0° to 32.0° C (50° to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

Hardware/Software Requirements for the iNMC/iSMC/iSSC

Minimum and recommended iNMC, iSMC, and iSSC hardware/software requirements:

	iNMC System Requirements		**iSMC/iSSC System Requirements**
	Server	**Client**	
CPU	3 GHz Pentium	1 GHz Pentium	3 GHz Pentium
RAM	1024/2048 MB (min/rec)	512/1024 MB (min/rec)	1024/2048 MB (min/rec)
Disk (min)	350 MB	100 MB	300 MB
Temp Space*	150 MB	30 MB	75 MB
Monitor Properties		Resolution: 800 x 600 (min); 1024 x 768 (rec) Color: 16-bit	
Additional Disk Space**	6 GB per HiPath		1 MB per day for logs. 6 GB per HiPath for BG Call Stats and Hunt Group Stats
OS	MS Windows 2003 Server with SP 1	MS Windows 2003 Server with SP 1 OR MS Windows XP Pro with SP 1	MS Windows 2003 Server with SP 1
Ethernet between Client, Server and NEs	100 Base T		

* Temp space is used only during product installation. For Windows, this space must be available in the Windows TEMP folder.

** Disk space on the servers needs to be maintained on a regular basis: Logs need to be archived or deleted, and a garbage collection utility needs to be run on the database.

IETF Standards Supported

The HiPath 8000 platform supports the following requirements specific to Voice over IP (VoIP):

- RFC 1889 & RFC 1890: RTP - Real-Time Transport
- RFC 2327: Session Description Protocol (SDP)
- RFC 2705: Media Gateway Control Protocol (MGCP)
- RFC 2806: URLs for Telephone Calls
- RFC 2916: E.164 Numbers and DNS
- RFC 2976: SIP INFO Method
- RFC 3015: Megaco Protocol
- RFC 3204: MIME Type for ISUP and QSIG
- RFC 3261 SIP: Session Initiation Protocol
- RFC 3262: Reliability of Provisional Responses in SIP
- RFC 3265: SIP-specific Event Notification
- RFC 3272: Overview and Principles of Internet Traffic Engineering
- RFC 3323: SIP Privacy Mechanism
- RFC 3398: ISUP to SIP Mapping
- RFC 3725: SIP Third Party Call Control
- RFC 3824: Using E.164 Numbers with SIP
- RFC 3842: SIP Message Waiting
- RFC 4028: Session Timers in SIP

Our strengths - Your advantages

Siemens is known worldwide as a trailblazer in the advancement of information and communication technologies. No other company offers such a comprehensive and innovative portfolio.

Regardless of which communication technology you are using today – or want to use tomorrow – Siemens offers you the right solution.

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