

Siemens HiPath 4000

Summary

Siemens markets the HiPath 4000 Real-Time IP System for global *Fortune 5000* customers, large distributed multinational enterprises and mid to large complex contact centers. Models include the HiPath 4300, 4500 and 4900.

Note

The HiPath 4000—Siemens' converged Internet Protocol-private branch exchange (IP-PBX) platform for both IP and time division multiplexing (TDM)-based telephony—has replaced the Hicom 300 H.

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Siemens HiPath 4000

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Overview

The table "*HiPath 4000 Overview*" shows the HiPath 4000 models currently marketed, along with some basic specifications and functionality.

Table 1: HiPath 4000 Overview			
Specifications	HiPath 4300	HiPath 4500	HiPath 4900
Federal Communications Commission (FCC) Registration Number(s)	AY3PF04BHIPATH4K (U.S.)	AY3PF04BHIPATH4K (U.S.)	AY3PF04BHIPATH4K (U.S.)
Port Capacity	16,752 (with distributed access points)	37,632 (with distributed access points)	112,896 (with distributed access points)
Station Capacity	2,000 (single system)	12,000 (single system)	30,000 (single system)
Trunk Capacity	7,040 (analog); 9,600 (digital)	7,920 (analog); 9,600 (digital)	23,760 (analog); 28,800 (digital)
Max. # of Analog Phones Supported	2,000	12,000	30,000

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Table 1: HiPath 4000 Overview			
Specifications	HiPath 4300	HiPath 4500	HiPath 4900
Max. # of Digital Phones Supported	2,000	12,000	30,000
Simultaneous Calls Possible	5,568	12,544	37,632
Max. # of Distributed Access Points (APs)	40	83	249
Switching Matrix	IP-, TDM-based	IP-, TDM-based	IP-, TDM-based
System Processing Architecture	Distributed	Distributed	Distributed
Main Processor (MPR)	Intel Pentium III	Intel Pentium III	Intel Pentium III
Type/Amount of Main Memory	Dynamic random-access memory (DRAM) (128MB)	DRAM (128MB)	DRAM (256MB)
Redundancy	Not available	Optional (backup main processors, power redundancy at main and distributed shelves)	Optional (backup main processors, power redundancy at main and distributed shelves)
Cabinet(s) Design	All models available in 30-in. floor-mount, or 19-in. rack-mount or floor-mount versions	All models available in 30-in. floor-mount, or 19-in. rack-mount or floor-mount versions	All models available in 30-in. floor-mount, or 19-in. rack-mount or floor-mount versions
IP Support:			
—IP Gateway/Trunk Card	HiPath HG 3550 (integrated H.323)	HiPath HG 3550 (integrated H.323)	HiPath HG 3550 (integrated H.323)
—IP Line/Station Card	HiPath HG 3530 (up to 30 IP workpoint clients per card)	HiPath HG 3530 (up to 30 IP workpoint clients per card)	HiPath HG 3530 (up to 30 IP workpoint clients per card)

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Table 1: HiPath 4000 Overview			
Specifications	HiPath 4300	HiPath 4500	HiPath 4900
—IP Phones, Endpoints	Siemens optiset E phones (with IP adapters); Siemens optiPoint IP phones, Siemens optiClient IP endpoints	Siemens optiset E phones (with IP adapters); Siemens optiPoint IP phones, Siemens optiClient IP endpoints	Siemens optiset E phones (with IP adapters); Siemens optiPoint IP phones, Siemens optiClient IP endpoints
—Max. # of IP Phones	1,200	2,490	7,470
—IP Standards Supported	Yes (H.323)	Yes (H.323)	Yes (H.323)
—Quality of Service (QOS)	Siemens provides critical service delivery of the LAN/WAN (site connectivity, diagnostics, service-level performance monitoring, QOS); Differentiated Services (DiffServ) and 802.1 p/q supported.	Siemens provides critical service delivery of the LAN/WAN (site connectivity, diagnostics, service-level performance monitoring, QOS); DiffServ and 802.1 p/q supported.	Siemens provides critical service delivery of the LAN/WAN (site connectivity, diagnostics, service-level performance monitoring, QOS); DiffServ and 802.1 p/q supported.
—Voice Codecs Supported	G.711, G.729A or G.723.1 depending on IP card deployment	G.711, G.729A or G.723.1 depending on IP card deployment	G.711, G.729A or G.723.1 depending on IP card deployment
Applications:			
Automatic Call Distribution (ACD)	Siemens HiPath ProCenter Suites	Siemens HiPath ProCenter Suites	Siemens HiPath ProCenter Suites

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Table 1: HiPath 4000 Overview			
Specifications	HiPath 4300	HiPath 4500	HiPath 4900
Customer Relationship Management (CRM)	Siemens HiPath ProCenter Standard or Advanced	Siemens HiPath ProCenter Standard or Advanced	Siemens HiPath ProCenter Standard or Advanced
Interactive Voice Response (IVR)	Siemens Prompt Response IVR	Siemens Prompt Response IVR	Siemens Prompt Response IVR
Mobility	HiPath MobileOffice Suite; SpectraLink Link 150 and Link 3000 WTS	HiPath MobileOffice Suite; SpectraLink Link 150 and Link 3000 WTS	HiPath MobileOffice Suite; SpectraLink Link 150 and Link 3000 WTS
Networking	Siemens CorNet IP, CorNet, Q-Signaling (QSIG)	Siemens CorNet IP, CorNet, QSIG	Siemens CorNet IP, CorNet, QSIG
— Campus/Branch Office Support	HiPath HG 3800 Fiber Gateway; HiPath HG 3570/HG 3575 IP Gateway	HiPath HG 3800 Fiber Gateway; HiPath HG 3570/HG 3575 IP Gateway	HiPath HG 3800 Fiber Gateway; HiPath HG 3570/HG 3575 IP Gateway
System Management	HiPath Assistant; HiPath 4000 Manager; HiPath MetaManagement	HiPath Assistant; HiPath 4000 Manager; HiPath MetaManagement	HiPath Assistant; HiPath 4000 Manager; HiPath MetaManagement
Unified Messaging	Siemens HiPath Xpressions	Siemens HiPath Xpressions	Siemens HiPath Xpressions
Voice Mail	Siemens PhoneMail, HiPath Xpressions	Siemens PhoneMail, HiPath Xpressions	Siemens PhoneMail, HiPath Xpressions

Analysis

HiPath 4000 Real-Time IP System

Siemens HiPath 4000

The Siemens HiPath 4000 Real-Time IP System is a converged IP-PBX telephone system—a circuit/packet switched system containing PBX common control components and utilizing both an internal switch network and external IP-based switch network (that is, enterprise LAN/WAN—for provisioning reliable and real-time call control over alternate networks. Based on a similar architecture design and common control components, the HiPath 4000 supports a migration path from the system it replaces—the Hicom 300 H—and provides all of the traditional Hicom telephony features, legacy applications, networking and devices support. The system deploys a circuit-switched and IP-distributed architecture that can simultaneously support IP, TDM and asynchronous transfer mode (ATM) transport.

Targeted for medium-to-large enterprise customers and contact centers, the HiPath 4000 models can support maximum TDM station capacities of 2,000, 12,000 and 30,000 stations per single system respectively, and up to 100,000 stations in a network configuration using Siemens CorNet or CorNet IP technology. The system can operate in traditional TDM and distributed IP-based environments, or a mix of both, but is optimized for enterprise IP networks. Siemens indicates that the system is most cost-effective supporting from 100 to 30,000 end users.

The HiPath 4000 product family features the following models, maximum capacities and redundancy offerings:

- **HiPath 4300**—supporting from 300 to 2,000 stations (and a maximum of 1,200 IP stations), but no common control (that is, main processor) or power redundancy options.
- **HiPath 4500**—supporting from 1,000 to 12,000 stations (and a maximum of 2,490 IP stations), with standard common control (that is, main processor) redundancy and optional power redundancy.
- **HiPath 4900**—supporting up to 30,000 stations (and a maximum of 7,470 IP stations), with standard common control (that is, main processor) redundancy and optional power redundancy.
- **HiPath 4000 Networked**—supporting up to 100,000 stations (and a maximum of 30,000 IP stations). This can be 100,000 IP stations depending on how many systems are networked.

All HiPath 4000 models are available in 30-in. floor-mount or 19-in. rack-mount or floor-mount versions, and use stackable hardware cabinets to support system capacity growth. Customers have four purchase options with regard to capacity:

- Ultimate Capacity
- Wired-For Capacity
- Equipped-For Capacity
- Licensed-For Capacity

The system's modular software allows customers to purchase software licenses, not additional hardware, when adding applications. Additional software licenses can be purchased electronically from Siemens. A licensing tool in the system management application (that is, HiPath 4000 Manager) enables customers to move software licenses between sites.

Upgrade/Migration to HiPath 4000

To upgrade to the HiPath 4000, existing Hicom 300 E or 300 H customers with Atlantic hardware (version 6.3 to 6.5) would need to replace approximately 10 percent of their platform investment. Changeouts include the main CPU, system hard drive and system software (to HiPath 4000 software). Phone

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upgrades to Siemens optiset E or optiPoint 500 phones would be required if existing phones are RolmPhones, which are not supported on the HiPath 4000.

Customers with a Hicom 300 E version 6.1 to 6.4, and pre-Atlantic hardware, would need to replace their entire platform investment to upgrade to the HiPath 4000.

The table “*Migrating to the HiPath 4000*” lists the requirements for migrating existing Hicom 300 systems to the new HiPath 4000.

Existing Hicom 300 System	Requirements to Get to HiPath 4000
Hicom 300 H	Changeout the main CPU, system hard drive, and system software (to HiPath 4000 software), in addition to enhancing the Siemens Hicom Domain Management System (HDMS) and some other system applications (that is, Phonemail). optiset phones, analog devices, and most circuit cards and switch hardware can be reused.
Hicom 300 E	Changeout the main CPU, system hard drive, and system software (to HiPath 4000 software), and most of the cabinet hardware. In addition, the system management application and some other system applications must be enhanced (that is, PhoneMail). optiset phones, analog devices, and most circuit cards can be reused.
Pre-Hicom Model 30/30EX/80	Changeout the main CPU, system hard drive, and system software (to HiPath 4000 software), and most of the cabinet hardware. In addition, the system management application and some other system applications must be enhanced (that is, PhoneMail). optiset phones and analog devices can be reused.
Legacy Siemens Switches	Changeout the system software (to HiPath 4000 software), the switch hardware and system applications. Siemens PhoneMail must be enhanced; analog devices can be reused.

HiPath 4000 VoIP Interfaces

- HiPath HG 3550 IP Trunk Gateway—an integrated H.323 voice over IP (VoIP) trunk gateway card that supports CorNet IP interworking between two, or up to 300, HiPath 4000 systems networked over an IP infrastructure. Siemens Hicom 300 H and 300 E systems can also be included in this network by using the external HiPath RG 2500 digital gateway for connectivity. The HiPath HG 3550 functionality is identical to RG 2500 v2.2 primary rate trunking.
- HiPath HG 3530 IP Line/Station Gateway—an integrated H.323 IP line/station card that provides full CorNet IP access to HiPath 4000 features over an IP LAN or WAN. A 10/100BaseT Ethernet network interface is provided on each HiPath HG 3530 gateway, along with support for up to 30 Siemens IP workpoints per card—including support for Siemens optiset E, optiPoint 400 and optiPoint 500 phones, and the optiClient 130. The HiPath HG 3530 uses the G.711 or 723.1 codec and does not require a separate VoIP gatekeeper. Up to 10 HiPath HG 3530 cards can be plugged into a non-IP or fiber-linked HiPath AP 3300.

In addition, two other Siemens gateways—HiPath HG 3570 and HiPath HG 3575—are supported on the HiPath 4000. HiPath HG 3570 gateways are inserted into Siemens Access Points (AP) at the host providing IP payload connections to remote access points. A HiPath HG 3575 is deployed in each remote HiPath AP 3300 IP or HiPath AP 3500 IP Access Point, where it provides signaling, processing, circuit switching and TDM-to-IP gateway functionality.

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Siemens APs include IP-distributed HiPath 4000 shelves—the standard Siemens HiPath AP 3300 shelf or the 19-in. Siemens HiPath AP 3500 shelf—which work in conjunction with Siemens proprietary CorNet IP networking protocol to provide the interfacing between the host communications platform and Siemens distributed workpoint clients. Siemens Access Points can be co-located in cabinets, distributed throughout a building, across a campus or throughout a WAN, and include standard shelves, 19 in. rack-mounted shelves, remote shelves and base stations for mobile applications.

Siemens HiPath AP 3000 shelves are fiber-linked extensions of the main HiPath 4000 system that enable system administration and diagnostics, call detail reporting (CDR), and all other HiPath applications to be centrally managed from the main location. In addition, Siemens HiPath ProCenter Flex-Routing and Composer applications installed at the main HiPath 4000 location can fully support call center agents at remote locations.

Common AP components for the HiPath 4000 include the following:

- HiPath HG 3800 Fast Ethernet fiber gateway for connecting remote campus locations.
- HiPath HG 3570 IP integrated (host) gateway for supporting IP transport to remote shelves.
- HiPath HG 3575 IP integrated (branch office) gateway located at the remote shelf (HiPath AP 3300 or HiPath AP 3500) site; works in conjunction with the HG 3570.

Key to the functionality of the IP distributed shelves is the extension of the full capabilities of the HiPath 4000 (that is, applications, transparent dialing, features) to remote locations over IP, with centralized system management capabilities performed at the host location.

Survivability Options for IP Distributed Endpoints

All HiPath 4000 models offer remote survivability options for HiPath Access Points. Fail-safe survivability options include fault management solutions addressing IP network failure at both the host location and the local IP network node.

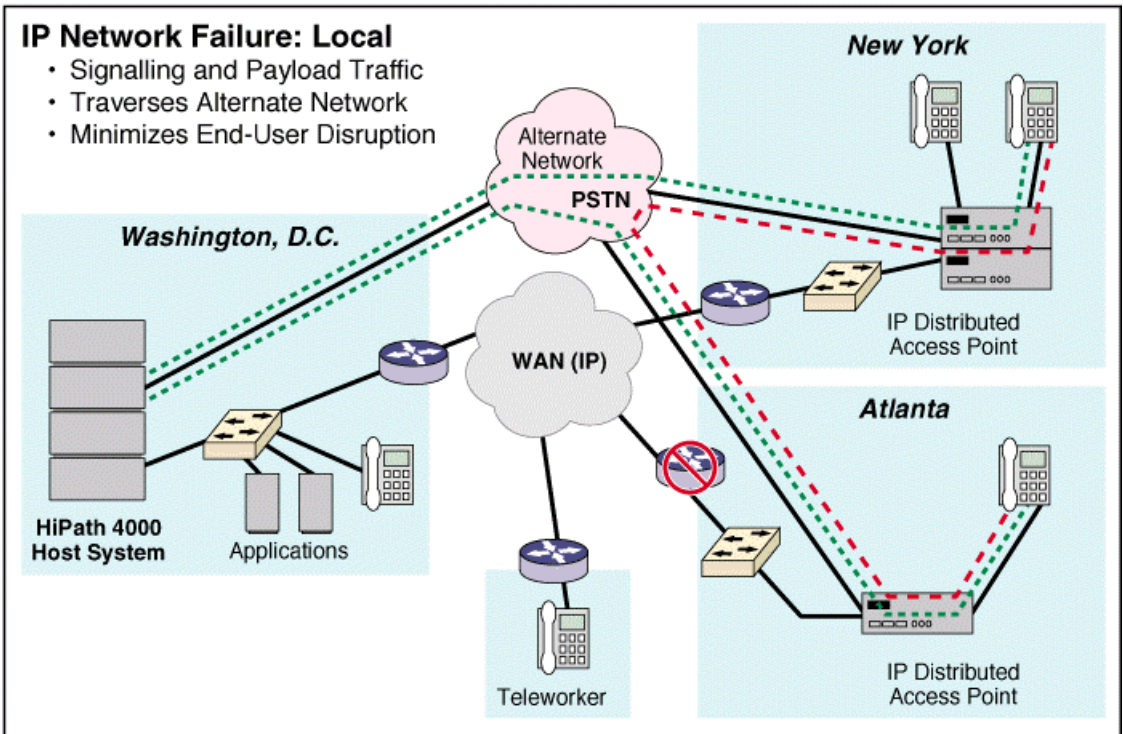
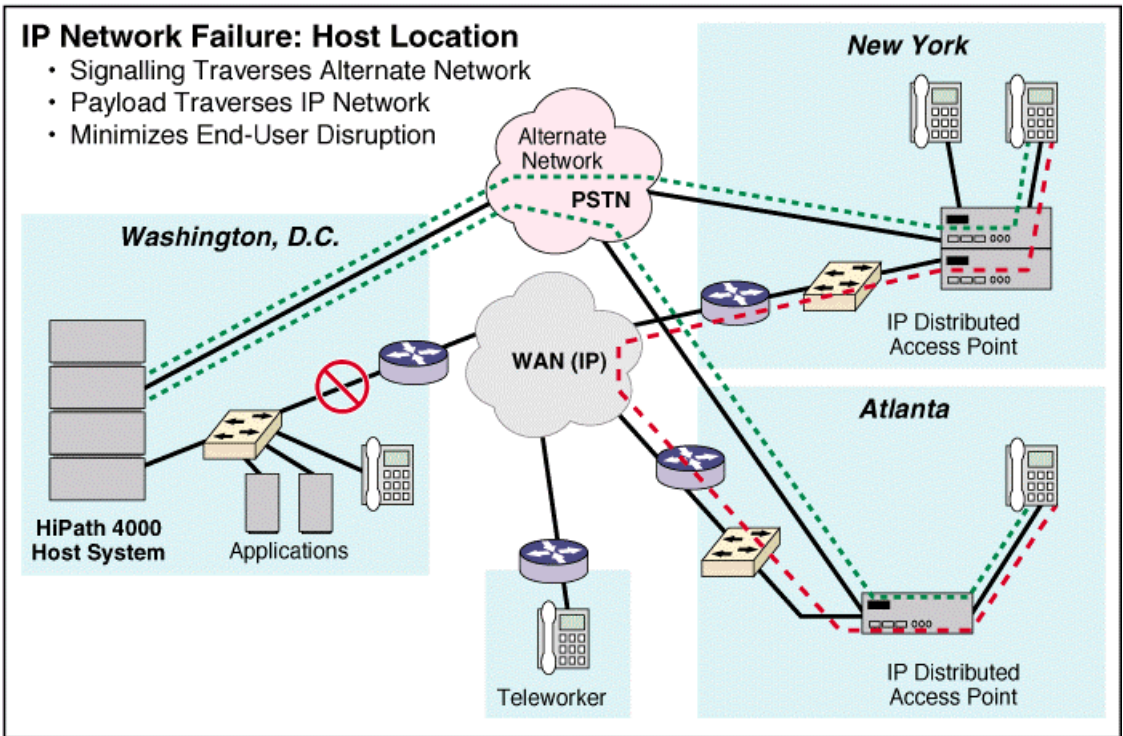
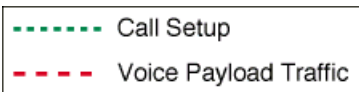
At the host location, should the IP network become congested or fail, the automatic overflow of signaling to analog modem-connected public switched telephone network (PSTN) lines is available. IP network remote sites can also be optioned with local PSTN trunking, meaning that should a local IP network fail, remote sites are fully survivable—supporting internal calls, external trunk calls via local trunks, trunk calls between the host site and the remote site, and signaling from the remote node to the main node via modem and alternate PSTN-based connections.

The figure “*HiPath 4000 IP Network Survivability*” shows the call signaling and voice traffic paths traveled when IP network failures occur at both the host location and the local IP network node.

Figure 1: HiPath 4000 IP Network Survivability

The top figure shows the voice traffic path when the IP network failure occurs at the host location. The bottom figure shows the voice traffic path when the IP network failure occurs at the remote site.

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Source: Siemens ICN

CorNet IP

The HiPath 4000 leverages Siemens' proprietary CorNet IP networking protocol software, IP line and trunk endpoints, and distributed Siemens Access Points to link multiple enterprise locations over IP.

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Within host sites and across the enterprise, the communications infrastructure can be circuit, packet or mixed as appropriate. The IP network is utilized to connect remote sites to headquarters, but the sites can be equipped and configured in any manner appropriate to that particular site. The CorNet IP protocol communicates via the enterprise IP network with other HiPath 4000 servers, as well as HiPath 3000 (Hicom 150), HiPath AllServe, HiPath 5000 and Hicom 300 H systems.

The HiPath 4000 also provides support for the traditional Siemens CorNet interoffice networking protocol, which supports call control, feature transparency, uniform numbering plan, and centralized applications and resources sharing over TDM networks. By using out-of-band signaling over Integrated Services Digital Network (ISDN) or ATM on private (T1) or virtual private networks (U.S. only), CorNet can provide a single system image to multiple Siemens HiPath systems in a network.

By packetizing the CorNet payload (signaling and voice) and routing it over IP networks, CorNet IP has evolved from the traditional TDM-based CorNet, to an IP standards-based protocol that performs telephony and integration functions to help bridge TDM and packet-based enterprise networks.

HiPath 4000 Workpoint Clients

Siemens' Enterprise Workpoint Portfolio includes its line of optiset E phones with IP adapters, optiPoint IP phones, optiClient PC applications and various analog, digital and IP adapters.

Siemens optiset E—digital phones that are compatible across the entire Siemens HiPath product line worldwide. Key to the optiset's functionality is the ability of end users to add optional voice and data modules to the telephones as required, as well as the phone's OptiGuide mode of operation, which prompts end users with menu settings and operating instructions via the phone display. The following models make up the Siemens optiset E family—Entry, Basic, Advance, Standard, Advance Plus, Advance Conference and Liberator (digital cordless).

Easy-Add Modules—snap-in voice and data modules (to the bottom of the optiset E phones) can be implemented by end users and are called Easy-add Modules. They include the following:

- Analog Adapter (adds an analog port to an optiset E phone, no line card required)
- Data Adapter (connects an optiset E phone to a computer or terminal)
- Distance Adapter (extends the optiset E range from switch to 18,000 ft.)
- Headset Adapter (provides a headset interface)
- ISDN Adapter (provides an ISDN Basic Rate Interface (BRI) for optiset E phones)
- Key Module (adds 16 keys to advanced models, adds up to four modules)
- Phone Adapter (adds a second optiset E phone on same PBX port)
- Privacy Module (provides optiset E call encryption)
- IP adapter (enables an optiset E to connect to an IP network)

Siemens optiPoint 400—a multiprotocol phone that supports HiPath 4000 voice features and three industry standards (H.323, H.450 and Session Initiation Protocol [SIP]), which are changeable via a software download; it comes pre-configured for HiPath 4000 operation. It offers standard local power, or optional power-over-LAN based on the pre-Institute of Electrical and Electronics Engineers (IEEE) 802.3af standard and works in conjunction with HiPath PH 24 Power-over-LAN Hubs or standard PowerDsine power-over-Ethernet hubs. Contains a built-in, two-port Ethernet switch, a 2 × 24-line liquid crystal display

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(LCD) and full-duplex speakerphone. An economy model is also offered, which supports all of the above listed items with the exception of the built-in two-port Ethernet switch and full-duplex speakerphone (hands-free listening only).

Siemens optiPoint 500—the company's next-generation family of digital phones for the HiPath 4000 platform; feature a standard Universal Serial Bus (USB) adapter on all models (except the Entry model), full duplex operation on all speakerphone models, a reduced footprint and list price, and new styling. The five models are Entry, Economy, Basic, Standard and Advance.

Siemens optiPoint 600 Office—a multiprotocol (IP and TDM) digital phone that supports HiPath 4000 voice features. It's a full duplex speakerphone that contains a switched Ethernet IP interface and digital ports, as well as dual USB ports. It features a large touch-screen interface, support for Lightweight Directory Access Protocol (LDAP) and Dynamic Host Control Protocol (DHCP), and an integrated 10/100M bps switch for connecting a PC workstation to the LAN via the phone (for one-wire requirements). It utilizes power-over-LAN based on the pre-IEEE 802.3af standard and works in conjunction with HiPath PH 24 Power-over-LAN Hubs, standard PowerDsine power –over-Ethernet hubs or Cisco power-over-Ethernet.

Siemens optiClient 130—based on the H.323 standard, and the G.723.1 voice compression algorithm, the optiClient 130 is client software that runs on a Microsoft Windows PC and provides access to the entire HiPath 4000 feature set through an intuitive Windows graphical user interface (GUI). The optiClient 130 can operate on any desktop PC or laptop with a full-duplex sound card (or USB) that meets the minimum processor and RAM requirements.

Siemens Attendant Consoles

The following new attendant console options for the HiPath 4000 are targeted for medium and large enterprise operations, including remote sites:

- **Siemens AC4**—large-display attendant console, which provides operator services for incoming and outgoing calls for the HiPath 4000. Features a space-saving design; provides an upgrade option from the traditional 9765 Attendant Console.
- **Siemens AC-Win**—Windows 2000-based PC attendant console, which provides enhanced operator services for incoming and outgoing calls for the HiPath 4000.
- **Siemens AC-Win Multiple Queuing (MQ)**—Windows 2000-based “high-end” PC attendant console option that supports intelligent routing and call prioritization, including multiple queuing capabilities for the HiPath 4000.
- **Siemens DS-Win**—enhances the functionality of AC-Win and AC-Win MQ by supporting the quick look-up of HiPath 4000 subscribers in a local directory database, than a call connection to that subscriber.
- **Siemens**—Busy Lamp Field (BLF) provides an expanded view of many HiPath 4000 extensions for AC4, AC-Win and AC-Win MQ attendants.
- **Siemens AC-Voice**—enhances the functionality of AC-Win by including the ability for attendants to playback self-recorded messages to callers.

HiPath System Management

New HiPath 4000 system management applications are HiPath 4000 Assistant, HiPath 4000 Manager and HiPath MetaManagement:

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- HiPath 4000 Assistant comes standard with the HiPath 4000 and provides basic system administration and management functionality.
- HiPath 4000 Manager is an optional offering beyond HiPath 4000 Assistant, and is based on the current version of the Siemens HDMS Modular offering. As such, it is backward-compatible with HDMS for sharing access to HiPath management administration applications across HDMS managed nodes. It provides Web access and a single point of administration for single or multisite systems, including support for HiPath 4000s, Hicom 300 Hs, Siemens HiPath Xpressions and Siemens PhoneMail systems in network configurations. It interfaces with HiPath MetaManagement applications (HiPath Fault Management, HiPath Accounting Management).
- HiPath MetaManagement supports comprehensive system administration, particularly for converged environments. It enables the uniform and universal management of the entire HiPath solutions suite, regardless of the combination of HiPath products and applications that comprise the enterprise solution. Key components and modules of HiPath MetaManagement include HiPath Fault Management, HiPath QOS Management, HiPath Accounting Management and HiPath User Management (an integrated umbrella management single access point and user interface). HiPath MetaManagement supports LDAP for directory linkages to Siemens and other vendors' directory applications and offerings.

VoiceMail/Unified Messaging

Siemens PhoneMail is the company's traditional store-and-forward, voice-messaging solution. PhoneMail is implemented on an external PhoneMail server (only) that connects to the HiPath 4000 through the Subscriber-Line Module S0 (SLMS) (Sub zero ISDN basis rate interface [S0 ISDN BRI]) Board, which supports up to 16 PhoneMail channels per board. The maximum number of PhoneMail channels supported by a single HiPath 4000 is 128 channels.

In addition to a range of basic voice mail features supported such as store-and-forward messaging, telephone answering and call routing, PhoneMail supports ACD and IVR devices along with the following functionality:

- **Voice-activated call routing**—speaker-independent voice recognition technology enables callers to route themselves by answering PhoneMail prompts with spoken words, rather than keying the touchpad.
- **PhoneMail networking**—permits up to 512 Siemens PhoneMail systems to link into a single PhoneMail network utilizing HiPath 4000 private networking features.
- **Audio Messaging Interchange Specification (AMIS) networking**—enables Phonemail systems to connect with AMIS-compatible voice messaging systems (that is, both Siemens and non-Siemens systems).
- **Siemens Connect Server**—a Microsoft Windows NT-based gateway solution that enables legacy PhoneMail systems to exchange voice messages with Siemens HiPath Xpressions unified messaging systems over the corporate TCP/IP LAN or WAN. The server also enables IP connectivity between multisite PhoneMail networks or mixed PhoneMail/HiPath Xpressions environments.

Siemens HiPath Xpressions is a Microsoft Windows 2000-based, unified messaging platform for HiPath that provides advanced voice mail capability and can be selectively and modularly upgraded to include fax and e-mail integration. A member of the Siemens HiPath MobileOffice portfolio of IP-ready messaging and collaboration solutions, HiPath Xpressions supports the integration of unified messaging into Microsoft Exchange, Lotus Domino, Novell Groupwise (Groupware) or IMAP 4 e-mail environments.

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IT organizations can decide which unified messaging (UM) implementation approach is best for their network topology through an architectural choice—either single or dual message stores (not typically available from most UM vendors)—and support for cross-media messaging options, which Siemens ICN calls “message morphing.”

Message morphing enables users to choose the most appropriate medium to receive and reply to their messages. For example, a user might receive a voice message but choose to answer it via e-mail from an office. Alternately, a user at an airport might receive e-mail but choose to have the e-mail message read aloud using a telephone in conjunction with the HiPath Xpressions server’s text-to-speech (TTS) application. E-mail heard via TTS can then be sent to the nearest airport fax machine for a hard-copy message that can be reread on the plane. Users can blend message formats and create compound messages that combine voice with fax or e-mail.

Users of the HiPath Xpressions platform can manage message and mailbox functions from a standard multimedia PC, a telephone or a combination of a PC screen and any telephone connection, using a single mailbox and global address book for all messaging functions. MyXpressions Folder is a Siemens message prioritization feature that uses rules-based criteria to automatically sift through the Microsoft Outlook Inbox to receive the highest priority message first when retrieving messages via telephone. Three HiPath Xpressions models are available:

- HiPath Xpressions Entry—a voice mail-only solution that can be expanded into a unified messaging solution when end users require increased functionality.
- HiPath Xpressions Standard—unified messaging solution that unites voicemail, e-mail and faxes in one inbox.
- HiPath Xpressions Advanced—a unified communications solution that is unified messaging coupled with HiPath SimplyPhone, a personal computer-telephony integration (CTI) application that works in conjunction with Microsoft Outlook or Lotus Notes to control and log inbound/outbound calls.

The maximum number of users supported is dependent on the amount of voice and data traffic within the enterprise. From 25 to 30,000 users can be supported with a single system image. HiPath Xpressions is expandable to 100,000+ users.

While one HiPath Xpressions server can connect to multiple switches simultaneously, customers with greater capacity can be achieved by networking multiple HiPath Xpressions servers together with no limit on the number of servers that can be networked. In addition, HiPath Xpressions to PhoneMail networking is supported via the Siemens Connect Server gateway product and the HiPath Xpressions Digital Networking feature. HiPath Xpressions systems can be configured as follows:

- Voice, e-mail and fax messaging
- Voice and fax messaging
- Voice and e-mail messaging
- Voice-only messaging

Users can implement one configuration, then convert to another at a later time. For example, a customer can start with the voice-only configuration and convert to the voice, e-mail and fax-messaging configuration. Siemens’ documentation emphasizes that data traffic engineering planning must be done carefully for each type of system configuration.

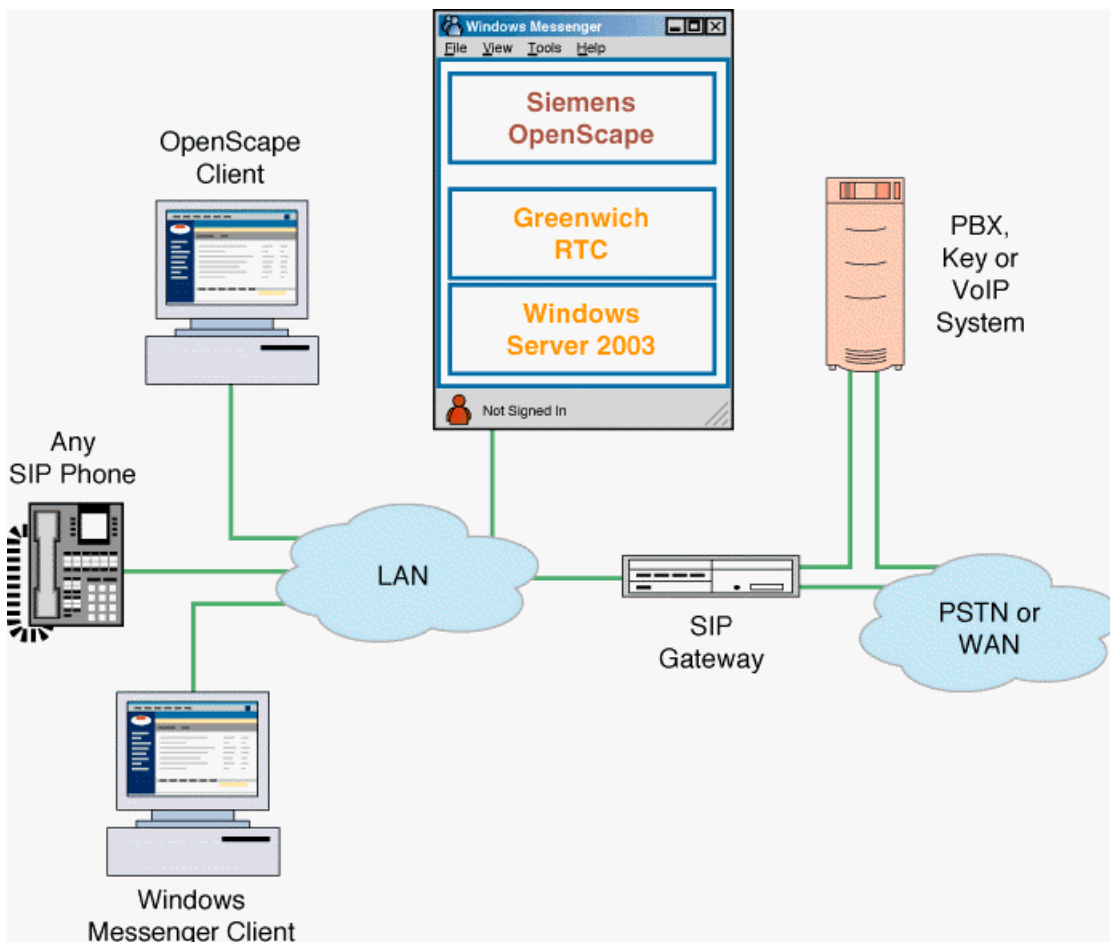
Multimedia Collaboration

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Siemens OpenScape version 1.0 (expected general availability in the third quarter of 2003) is software for real-time, presence-based communications, multimedia collaboration, mobility, personal productivity and unified messaging. OpenScape will leverage Microsoft components, such as Microsoft .Net, Windows Server 2003, Active Directory and Windows Messenger Client, along with platform-independent components, such as SIP-based telephones and SIP gateways for connecting a LAN to a PBX, the PSTN or WAN.

Figure 2: Siemens OpenScape Deployment

Siemens expects the applications supported by OpenScape, such as presence management, mobility, personal productivity, unified messaging and Web collaboration, to provide the tools for a unified communications (UC) offering.



Source: Siemens ICN

HiPath MobileOffice provides Siemens mobility applications for HiPath environments; OpenScape will provide its applications support on an open platform for IT environments.

Call Centers

The Siemens HiPath ProCenter Suites of call center solutions are designed specifically for the HiPath systems. HiPath ProCenter Suites consist of three groups of customer interaction applications, each tailored for contact center requirements ranging in agent size and functional sophistication from simple to advanced. The three configurations are HiPath ProCenter Entry, HiPath ProCenter Standard and HiPath

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ProCenter Advanced. The specifications for the HiPath ProCenter Standard and Advanced Suites, as well as for networked HiPath ProCenter systems, are listed in the following tables.

HiPath ProCenter Capacities	Standard/Advanced Suites
Active Agents per Site	750-1,250
Maximum Configured Agents	2,000
Skills per Agent	100
Preference Range per Skill	1-9 (Advanced Suite)
Skill-Level Range per Skill	1-9
Routing Criteria per Call	100
Routing Entries	15,000
Priority Levels per Call	99
Maximum Configured Skills	1,000
Number of Supervisor Desktops	300
Maximum Busy Hour Call Completions (BHCCs—peak, one hour)	8,000 (per site)
Maximum No. of Call Types	1,000
Number of Supervisor Desktops	300
Report Storage Periods:	15 min.—42 days Daily data—100 days Weekly data—371 days Monthly data—750 days

Networked ProCenter Capacities	Standard/Advanced Suites
Number of Sites	25
Active Agents/Site	750-1,250
Active Agents/System	10,000
Configured Agents/Site	2,000
Configured Agents/System	50,000
BHCCs/Site	8,000
Busy Hour Call Attempts (BHCA)/System	160,000

Siemens' RésuméRouting application, a key component of the HiPath ProCenter Standard and Advanced Suites, delivers intelligent routing capabilities for electronic media, as well as inbound and outbound voice transactions. The patented RésuméRouting component features virtual group routing, which determines the best possible match between a caller and an agent on a call-by-call basis. It enhances the ACD FlexRouting intelligence in the HiPath 4000 by identifying caller requirements, then searching for available agents who best meet these requirements by virtue of their personal skill and preference résumé.

With HiPath ProCenter RésuméRouting, all agents are available for all calls without segmenting the call center into fixed ACD groups. Caller requirements can be identified from multiple sources, such as network information (automatic number identification [ANI] and dialed number identification service [DNIS]), database information, customer responses to call prompts from an IVR system or a voice processing application, and even parameters being input by a live call screener. A virtual group is then constructed from agents whose résumés most closely match the needs of the caller. Once the transaction

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is routed to an agent within the virtual group, the group is disbanded, making the other agents available for additional transactions.

CTI capabilities inherent within RésuméRouting enable integration between HiPath ProCenter Suites and CRM systems. Siemens supports prepacked integration of CRM applications software from third-party sources, such as Remedy, Siebel, Vantive and Goldmine. In addition, Siemens is a major reseller of Genesys enterprise routing and Internet contact center solutions to large call center application customers.

Siemens expanded the functionality available within the portfolio by adding user applications, such as graphical visual editing and enhanced routing capabilities, including the addition of e-mail capabilities, Web chat, callbacks, and outbound and performance routing.

HiPath MobileOffice Suite

A major focus for Siemens is extending the robust features and functionality of enterprise communications to teleworkers and mobile employees. As such, the Siemens HiPath MobileOffice Suite of products, applications and solutions is a key component in the company's HiPath enterprise convergence strategy. The MobileOffice Suite positions Siemens to compete for revenue growth in the lucrative mobile worker/telecommuting workspace and includes the following offerings:

- **HiPath Teleworking**—available in entry, standard and advanced configurations to meet enterprise teleworking requirements, from occasional to full-time.
- **HiPath DeskSharing**—addresses the needs of the mobile employee that only periodically uses the enterprise site.
- **HiPath Xpressions**—unified messaging application that integrates with most e-mail systems.
- **HiPath SimplyPhone**—personal CTI desktop screen dialer application.
- **HiPath ComResponse**—a Web-based voice application engine that translates Web pages to voice, making available Web page content to users via the telephone.
- **HiPath CorporateConnect**—enables employees use of their mobile telephones with a single office phone number, with all corporate voice communications anywhere on or off campus.
- **HiPath Wireless**—provides untethered access to the telephone system for use of the features and functions of the desktop phone all around the office.

HiPath CorporateConnect

HiPath CorporateConnect version 2.0 (general availability June 2003) is an enterprise mobility solution that integrates employee cellular phones and voice-enabled, Windows-based Personal Digital Assistants (PDAs) with Hicom 300 and HiPath 4000 enterprise phone systems in private voice network applications. PDA access to the phone system is accomplished via support for the IEEE 802.11 b/e wireless LAN standards. The solution enables those devices to be used as the office phone while on or off-campus by extending the voice features of the Siemens platform to mobile users. It can route cellular phone traffic over the corporate network and support functionality, such as corporate database access, abbreviated corporate dialing (4 or 5 digit), least cost routing, collaborative dialing and one-number service—where a single phone, phone number and voice mailbox per user can be used for all corporate voice communications.

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Siemens indicates that HiPath CorporateConnect is supported across all Siemens Real-Time IP Systems, depending on the version installed:

- **Entry**—compatible with all Siemens Hicom/HiPath Real-Time IP Systems.
- **Standard**—available on Hicom 300 E version 6.5 (U.S.), Hicom 300 H and HiPath 4000, supports calling features in addition to those offered on the Entry version.
- **Advanced**—available on Hicom 300 E Version 6.5 (U.S.), Hicom 300 H and HiPath 4000, supports calling features in addition to those offered on the Standard version.

A key component of the HiPath MobileOffice portfolio, HiPath CorporateConnect targets global enterprises with mobile workers and can provide three levels of security: encryption, authentication and policies. The solution is server-based and scalable from eight users to an unlimited number of users, supported by the deployment of additional servers.

Pricing

- HiPath 4000 can range from US\$350 to \$650 per port (list price), depending on the configuration.
- Siemens HiPath Xpressions v.3.0 is priced from \$80 to \$300 per subscriber mailbox, depending on system size, configuration and features.
- Approximate starting list prices for the HiPath ProCenter Suite of systems are as follows: HiPath ProCenter Entry is \$7,000; HiPath ProCenter Standard is \$30,000; HiPath ProCenter Advanced is \$40,000.
- Siemens optiPoint 400 Standard phone is \$440 (list price).
- Siemens optiPoint 500 phones range from \$140 to \$525 (list price).

Note: For the European market, the list prices above are the same based on the dollar-to-Euro conversion.

GSA Pricing

Yes.

Competitors

- Alcatel (OmniPCX Enterprise)
- Avaya (Definity Servers, ECLIPS S8700 Media Servers/Gateways)
- Cisco Systems (Cisco AVVID CallManager)
- Mitel Networks (Mitel 3300 Integrated Communications Platform)
- NEC America (NEAX 2400 Internet Protocol eXchange)
- Nortel Networks (Meridian 1 Option 61C, 81C IP-Enabled, Succession CSE 1000)

Strengths

- Established Hicom 300 E or 300 H customers with Atlantic hardware (version 6.3 to 6.5) will need to replace approximately 10 percent of their platform investment to upgrade to the HiPath 4000. Most of the system components, line cards and applications (such as PhoneMail) in the circuit-switched infrastructure are reusable.

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- The HiPath 4000 can support established Siemens optiSet E phones, IP adapters and workpoints; as well as newer optiPoint 400, optiPoint 500, optiPoint 600 and optiClient endpoints.
- The HiPath 4000 Manager application supports a remote software expansion capability, enabling customers to allocate software licenses among established enterprise network sites via a Web browser. This facilitates temporary moves and enables new network locations quickly.
- The CorNet IP Interworking feature eliminates the need (and expense) for dedicated point-to-point T1/E1 trunk facilities.
- The capability to add distributed HiPath 4000 shelves in remote locations, via either IP or fiber connectivity, in lieu of having to deploy a full Hicom system at each site, is a cost-savings advantage for end users. The capability to centrally manage those distributed sites as a single system is also an advantage.
- The HiPath 4000 supports voice networking with HiPath 3000, 4000 and 5000 sites.
- Common dial plan functionality between Hicom 300, HiPath 3000, HiPath 4000 and HiPath 5000 systems is supported.
- The HiPath 4000's corporate network directory access application (Display Telephone Book) provides telephone book and call journal functions on the displays of optiset E and optiPoint 500 phones.
- The HiPath 4000 supports the IP peripherals and applications offered on the IP-based Siemens HiPath 5000 system.

Limitations

- Customers with Hicom 300 E version 6.1 to 6.4 and pre-Atlantic hardware, will need to almost totally replace their platform investments to upgrade to the HiPath 4000.
- RolmPhones are not supported on the HiPath 4000.
- Hicom-based Remote Communications Modules (RCMs) for T1 connectivity are not supported on the HiPath 4000.
- CorNet Virtual Networking (VN) is currently not supported on the HiPath 4000. CorNet VN provides Hicom switches with a gateway interface to public ISDN Primary Rate Interface (PRI) facilities for transporting CorNet-N calls and signaling information across a switched public network connection using a public virtual private network (VPN) service, rather than a private or leased T1 digital trunk. However, CorNet IP provides the same functionality as CorNet VN using an IP infrastructure. Siemens' next release will add CorNet VN capability.
- Siemens HiPath Xpressions is proprietary to Siemens HiPath Real-Time IP Systems and cannot be used with third-party vendor systems.

Recommended Gartner Research

- Key/Hybrid, PBX and IP-PBX Systems: Comparison Columns, DPRO-89876
- Siemens HiPath 5000, DPRO-115916
- Siemens HiPath 3000, DPRO-90153
- Siemens HiPath ProCenter Suites, DPRO-90394

Siemens HiPath 4000

Insight

The HiPath 4000 is a real-time IP system which supports both TDM- and IP-based telephony for mid-to-large enterprise customers looking for some investment protection. A future release of HiPath system software called HiPath ComScendo IP communications software is expected to provide support across Siemens Real-Time IP systems (HiPath 3000 SMG, HiPath 5000, HiPath 4000). The user interface, system features and networking functionality will be the same for some, but not all of these platforms. However, in most standard configurations, this should not limit user capabilities at remote sites and should feature transparency across the network. The software gives customers a choice of operating system and hardware used, as Siemens unbundles HiPath ComScendo from hardware and operating system platforms in a more modular approach.