# HiPath 3000/5000 V9
HG 1500

HG 1500 is the LAN and gateway board for the HiPath 3000 Real Time IP system for small and medium-sized companies.

HG 1500 permits you to directly connect Ethernet LANs (10/100 Mbit/s) and ITSPs (Internet Telephony Service Provider) to HiPath 3000 systems, thus allowing Voice over IP (VoIP) in public and corporate networks.

IP communication

HG 1500 expands the capabilities of HiPath 3000 with IP technology. Therefore, it allows the gradual or complete migration of voice communication toward IP. The traditional and the new IP-based communication operate simultaneously. The existing traditional equipment can still be used beside the new IP workpoints. HG 1500 supports standard protocols and interfaces. Therefore, a wide range of 3rd-party applications for CTI, Unified Messaging, and telematic functions can be connected. The corporate network can be designed flexibly in terms of bandwidth, scalability, and choice of media.

IP communication capabilities by HG 1500 in a HiPath 3000 standalone scenario
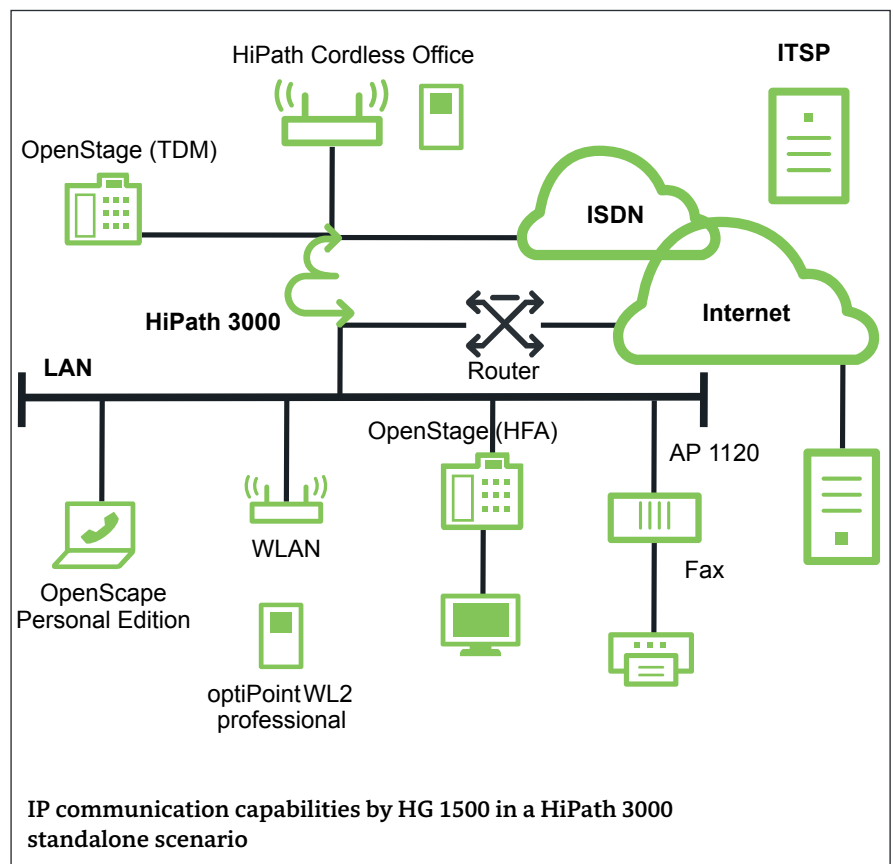
Overview

HG 1500 includes a SIP Registrar which supports standardized voice communication over IP networks.

HG 1500 enables the encryption of voice and signaling data on the Intranet and permits Virtual Private Networks (VPN) to be set up using fast and economical Internet connections. IP-Sec encryption and authentication mechanisms allow secure remote networks and secure access for teleworkers, while also enabling external partners to be included in the communication flow.

HG 1500 sets up the connection of the HiPath 3000 to the respective customer Ethernet LAN. Features from the traditional telecommunication world and other applications are provided on the relevant terminals based on IP protocols. This enables communication solutions with multi-station capability to be implemented:

- Voice over IP (VoIP) in the public/corporate network
- Connection to Internet Telephony Service Providers (ITSP) via the SIP protocol
- Voice gateway between traditional telephone/voice networks and VoIP networks using SIP
- Voice and signaling gateway to the OpenScape Office application
- IP Networking and Virtual Private Networking, for economic and flexible connectivity between locations
- Encryption of voice and signaling data between users and on the network
- LAN-LAN coupling via ISDN
- Remote LAN access/teleworking
- Fax (T.30/T.38)/modem over IP in the network
- Internet access
- Computer Telephony Integration (CTI)
- Telematic services such as fax transmission and Eurofile Transfer

- Platform for 3rd-party applications such as IP accounting
- Standard based network management with SNMP, i.e. administration, alarm and performance management in a central management platform
- Voice over IP clients
- OpenScape Personal Edition, IP telephony on the PC of the end user
- OpenStage HFA
  The new IP telephone family for Real Time IP systems (CorNet-IP)
- optiPoint 410/420 family (CorNet-IP and SIP variants)
- Connection of standard SIP devices, e.g., OpenStage 15 S
- optiPoint WL2 professional Professional WLAN phone for the Voice-over-WLAN market
- optiClient Attendant PC-based attendant console
- AP 1120 SIP Connection of analog devices via an IP network
- Certified SIP clients

IP communication capabilities by HG 1500 in a HiPath 3000 networked scenario
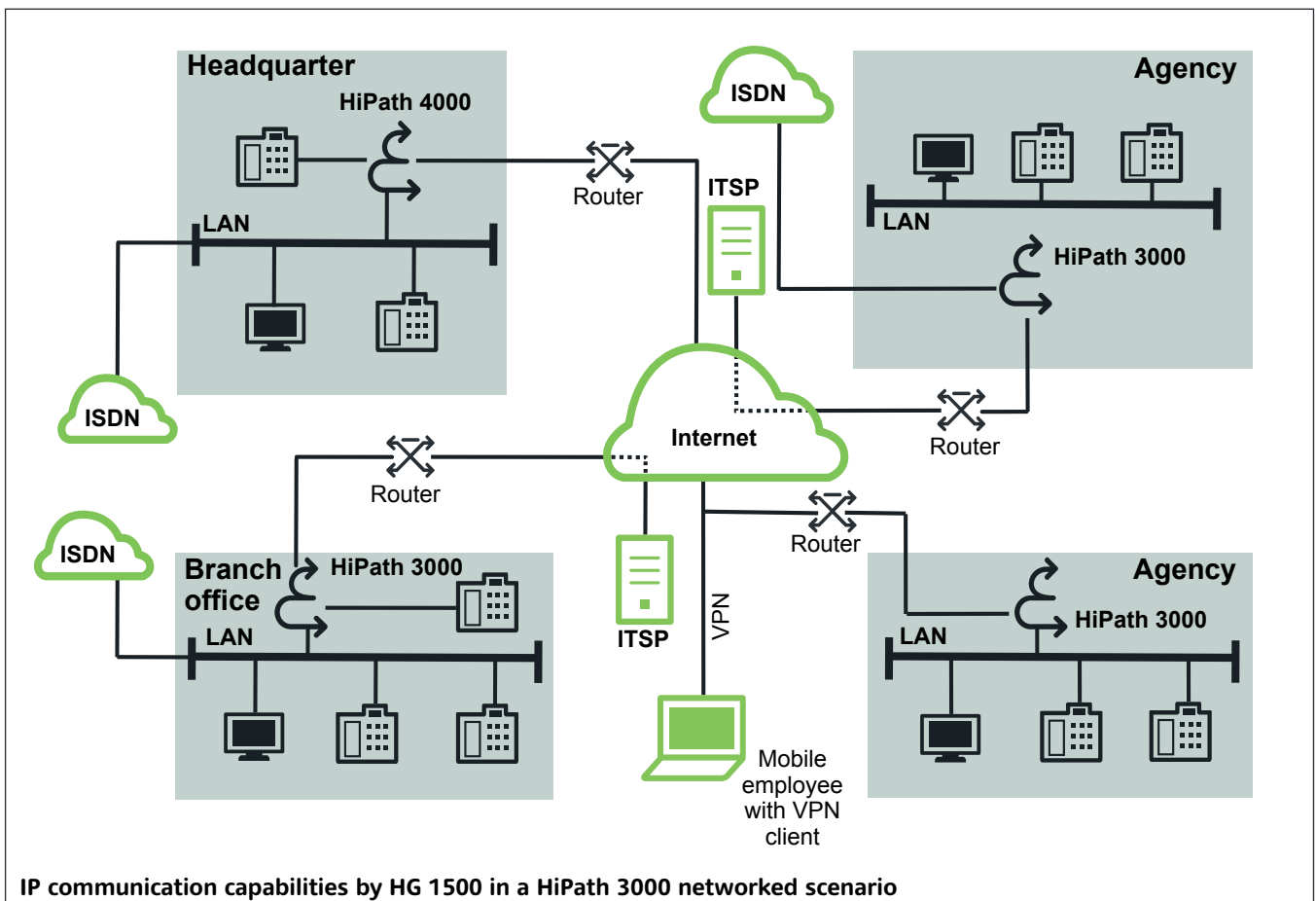
Features

Internet access

- Dynamic IP addressing from an Internet Service Provider (ISP)
- Internet access using one Internet Provider IP address and Network Address Translation (NAT/NAPT), i.e. cost-effective solution for all PCs in the network
- Internet access via ISDN
- Dynamic or static channel bundling (load-dependent B channel switching)
- The Internet Provider must also support these features.
- Internet access via xDSL lines or fixed Internet connections

Access control

- ISDN call number checking
- Automatic callback without setting up an ISDN toll call
- IP address verification
- MAC firewall (checking the MAC/IP address combination in the internal LAN)
- Stateful packet filter
- IP address-based service release/block
- Protection against denial of service attacks

IP networking

Using the HG 1500, it is possible to network HiPath 3000, HiPath 4000, and OpenScape Voice systems via the SIP-Q protocol. In a HiPath 3000 network with the HiPath 5000 RSM as the central network administration server, up to 32 nodes and 1000 users can be supported.

Second LAN interface

HG 1500 has a second LAN interface. This can be used for an ADSL line or to connect behind a 3rd-party SDSL router in order to provide faster Internet access. Alternatively, the second LAN interface can be used for connecting two LAN segments (LAN-LAN).

Remote LAN access

By linking PCs that are installed outside the corporate LAN, an authorized external group of people can have access to central applications and information on the LAN. This means home workstation users can access the same LAN services as users of PCs connected to the corporate LAN (data, e-mail, PC programs).

Virtual Private Networking

Thanks to the integrated HG 1500 VPN gateway, HiPath 3000 offers a secure and flexible solution for networking locations and allows teleworkers to access remotely to the enterprise network via the cost effective infrastructure of the public Internet.

An integrated Light Weight Certification Authority (LWCA) enables certificates to be generated for the purpose of secure authentication of VPN users.

The VPN Client software provides a secure connection from the teleworker's PC to the HG 1500 VPN gateway within the company. This means that central applications are available throughout the network.

LAN-LAN coupling

Through LAN-LAN coupling, Ethernet LANs at different locations are linked into a single corporate network using ISDN dialup lines. ISDN dialup lines are used for that purpose. This makes it possible for outside locations to access central files or files at other locations, thereby meeting the requirement for interactively combining workflows in organizational units at different locations.

Dynamic channel bundling

In the case of LAN-LAN coupling via ISDN up to 16 B channels are bundled automatically depending on the transmission volume and the application packages implemented. The threshold values for dynamic channel bundling can be set. The number of B channels can be configured for each routing partner.

Encryption

Together with the integrated IP gateway HG1500, HiPath 3000 offers a solution for tap-proof communication based on international security standards. The solution is based on international standards. The call data is encrypted between gateways using the Secure Real Time Transport Protocol (SRTP, RFC 3711), and the CorNet-IP signaling protocol is encrypted using Advanced Encryption Standard (AES). The decisive advantage of this solution is that no additional software or hardware is needed for the encryption and decryption processes. Encryption and decryption are performed locally at the physical endpoints of the connection (at the terminal or gateway) and are already integrated in the system. The encryption can be activated on a subscriber-by-subscriber basis.

Administration

In the case of HG 1500 V3.0, all the important functions can be configured via Web-Based Management (WBM) from the IP network.

- Microsoft Internet Explorer® for administration
- Intuitive user interface
- Secure administration via SSL/TLS
- Administration, maintenance, and software upgrading on site or via remote administration and maintenance
- Own administration by the customer via LAN
- SNMP (Simple Network Management Protocol) for incorporation in a network management system

IP accounting

The cost of Internet access can be tracked through IP accounting with TeleData Office V3.0. HG 1500 provides an internal interface by means of which TeleData Office V3.0 charge solutions can also collect and evaluate charge rates for pure data connections.

Telematic services

Access to telematic services is provided via,for example, the Fritz!32 telematic software.This ensures the transmission of fax reports and files to/from any PC.

- Group 3 fax up to 14,400 bit/s
- Fax-on-Demand in receive direction
- ISDN file transfer

Basic package

- HG 1500 V3.0 incl. 8 B channels
- TAPI 120 V2.0 1st party TAPI service provider for connecting up to 6 clients in smaller networks
- Documentation

Expansion options

- License for every further B channel
- Expansion Module PDM1 for 8 additional B channels.
- Hardware module to expand from 8 to a maximum of 16 B channels for HiPath 33x0 and HiPath 35x0
- ComScendo license for IP Workpoints on HiPath 3000/5000
- Light Weight Certification Authority (LWCA) package
- TAPI 120 V2.0 1st-party TAPI service provider for connecting more than 6 clients. The supplied CSTA Message Dispatcher (CMD) should be installed. Available for delivery in different expansion packages.
- TAPI 170 V2.0 (TAPI driver for connecting TAPI-enabled 3rd-party applications) 3rd-party TAPI service provider. Available for delivery in various basic and expansion packages.
- VPN Client software (not obtainable from Unify, NCP and Safenet Soft Remote Clients are certified)

Product software

HG 1500 for HiPath 3000

Technical data

System requirements

- HiPath 3000 V9
- At least one free slot in the basic system
- Maximum number of HG 1500 Gateways that can be used in the system:
  HiPath 3300/3350: 1 gateway,
  HiPath 3500/3550: 3 gateways,
  HiPath 3800: 4 gateways per box,
  8 gateways per system

Interfaces

- S_0-Basic Rate Interface with DSS1 protocol:
  System connectionPoint-to-multipoint connection, S_{2M}-Primary Rate Interface with DSS1 protocol
- Ethernet interfaces:
  10/100 Mbit/s,
  10/100 Mbit/s (DSL with PPPoE/PPTP)

PC/LAN

- Microsoft Windows® XP, Vista, 7
- Microsoft Internet Explorer® from 5.5
- Network protocol TCP/IP

System environment

- Switched LAN 10/100 BaseT
- Client/Server and peer-to-peer-net-works with TCP/IP protocol

Network topology

HG 1500 supports Ethernet LANs and is configured for twisted pair port (RJ45) as standard.

Quality of Service

- Quality of Service Layer 2:
  IEEE 802.1p,
- Quality of Service Layer 3:
  Type of Service (ToS)/IP Precedence, DiffServ

Protocols

- Voice over IP:
  SIP-Q V2,
  SIP according to RFC,STUN
- Voice coding:
  G.711,
  G.723.1,
  G.729A/AB
- Fax over IP:
  T.30 (Fax over G.711),
  T.38
- G.168 compliant echo compensation
- Point-to-point protocols and features:
  PPPoE,
  PPTP,
  PPP compression MPPC/STAC,
  PPP/PPP multilink,
  Static and dynamic bandwidth management,
  Voice over PPP
- Remote access:
  Analog V.34,
  Analog V.90,
  GSM V.110 bit rate adaptation,ISDN,
  TAPI 2.2/3.0 interface

VPN protocols

- IPSec protocols:
  Encapsulating Security Payload (ESP),
  Tunnel mode encapsulation
- Key management:
  Internet Key Exchange (IKE),
  Diffie-Hellman algorithms,
  Oakley groups 1, 2 and 5,
  Main mode/aggressive mode,
  Perfect Forward Secrecy (PFS),
  Export/import in PKCS#12 format
- Symmetric encryption algorithms:
  DES,
  3DES,
  AES
- Hash algorithms:
  HMAC-MD5,
  HMAC-SHA1
- Public Key algorithms:
  Rivest, Shamir, Adleman (RSA),
  Digital Signature Algorithm (DSA)
- Authentication:
  Preshared Keys,
  X.509v3 certificates,
  PKI (Public Key Infrastructure)
- Certification Authority:
  Integrated Light Weight CA (LWCA),
  Private or public PKI

Miscellaneous

- Callback for registered station numbers (RAS)
- PAP
- CHAP
- NAT/NAPT
- MAC address filtering
- IP address filtering
- Stateful Packet Filter
- Denial of service protection
- Encryption:
  SRTP (Secure Real Time Protocol) for encryption of voice data,
  TLS signaling encryption
- SIP attack protection:
  IP address filtering,
  Denial of service protection
- H.235:
  Authentication and integrity,
  IP mapping
- Secure administration:
  Web-based management via SSL/TLS
- Bandwidth control:
  Reservation of bandwidth for voice and data
- Dynamic control of jitter buffer
- SNTP server
- LDAP V2 interface

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