TELDAT H1+GE

Metro Ethernet Router for Large Corporations and SMEs

"All the power and versatility of a module at the price of a compact is the definition of Teldat's new H1+GE router. This new router means that advanced services, with high bandwidth requirements, can be deployed without dispensing with any reliability, security and intelligence capabilities for Data and Voice applications".

OVERVIEW

The Teldat H1+GE router is the latest generation compact device with equivalent or better features than many other modules on the market, both regarding power thanks to its latest generation processor as well as regarding software features and voice and data interfaces making it an ideal device for remote branches with high communication requirements.

- Gigabit-Ethernet port as a WAN-Ethernet line.
- Four port **Fast-Ethernet** (10/100M) **Switch.**
- Embedded **WLAN** IEEE 802.11b/g/n interface (MIMO, double port for external WiFi antennas), with professional security (IEEE 802.11i).
- **USB Host** 2.0 port in which the most varied range of external USB/3G modems can be inserted.
- Desktop format and ready for wall installation.
- Cipher hardware optimizes the transmission of encrypted traffic.
- External power supply (90-240Vac adaptor) or via Ethernet (PoE client integrated in the Gigabit port).
- Local console port.

USER SCENARIOS

Integrated solution for Data and Voice convergency

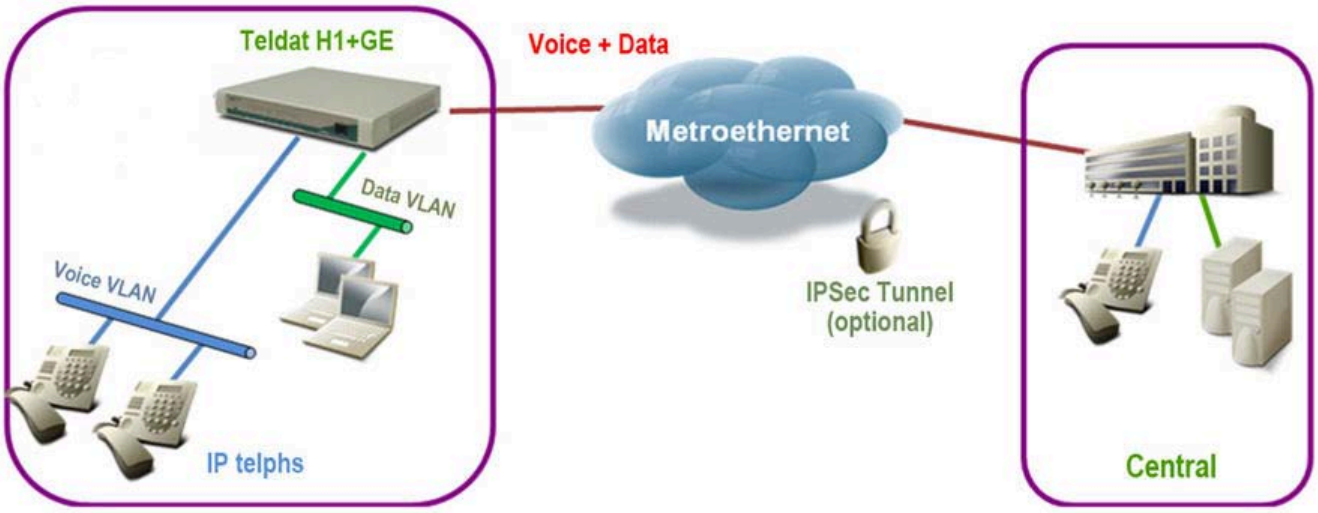

Figure 1. Communications solution for Data and Voice with the Teldat H1+GE

As shown in Figure 1, the Teldat H1+GE interconnects VoIP and Data aplications from the Service Centers through a Metro Ethernet access. The ToIP/Universal-MediaGW license means that the Teldat H1+GE delivers top quality IP Telephony service to the IP extensions (SIP telephones).

With minimum performance impact, the device can transmit all or determined encrypted branch traffic flows, while maintaining maximum security levels in the communications. The router also has a "stateful" access list system (Firewalling based on states) and an Application Layer Gateway (ALG) function thus providing the maximum level of perimeter protection for communications.

Teldat's hierarchic QoS System (Teldat BRS) allows priority, modeling and independent labeling in each traffic flow (VoIP, Data with priority 1, Data with priority 2, etc.), so it's appropriately handled in the transport network, simplifying the service level policy definitions (SLA) which are adapted to each of the branch applications.

The Teldat H1+GE has a commands interface (CLI) fully adapted for professional use. Additionally the router possesses all the functions and features needed in the corporate sector for efficient, detailed and centralized management over the TeldaGES management platform.

Corporate management features are fully supported (SNMPv1/2/3 fully parameterized complying with MIB-2 and Teldat's MIB, FTP, TFTP, RADIUS, Syslog, etc), simplifying seamless integration in the company's existing communications management platform.

Integrated Voice and Data solution with WWAN backup

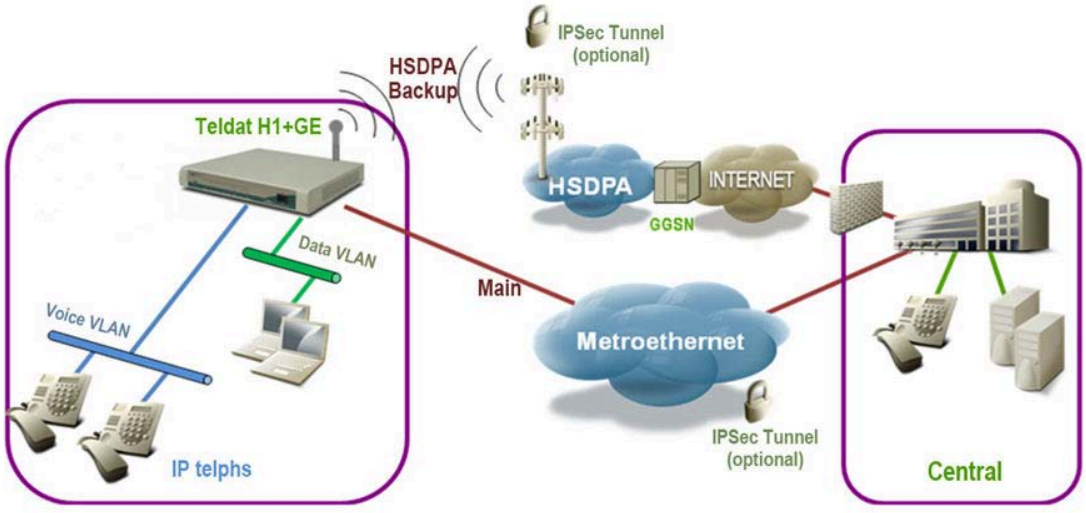

Figure 2. Communications solution for Data and Voice with Teldat H1+GE with WWAN backup

Figure 2 shows a backup solution added to the previous case. In cases where the main Metro Ethernet drops, the 3G/3.5G connection automatically activates through the external USB modem. Logically 3G technology offers fewer features than the main metro-ethernet line however it is still a very valid solution for the majority of applications as the HSPA accesses deliver up to 7Mb of bandwidth with delays below 60 milliseconds and provides excellent quality voice traffic over IP.
Detecting drops in the main line is executed intelligently. This means that just line degradation i.e. without the main line actually dropping, activates the 3G backup. This is done by using routing protocols or by programming the Teldat L1+ to execute periodic polls over the line thus detecting packet loss rate, delay or jitter which when over the programmed threshold activates the backup line.

KEY CHARACTERISTICS

- **Ethernet Services**
  - WAN Ethernet: Gigabit-Ethernet 10/100/1000M port.
  - Integrated Ethernet Switch: 4 x Fast-Ethernet 10/100 ports.
  - Full and independent SNMP Management Switch for each Ethernet port in the router.
  - High processing capacity for maximum performance for Ethernet transmission.
  - Full VLAN support in the Gigabit-Ethernet port and Fast-Ethernet ports (trunking, filtering, QinQ, etc)
  - State of the art routing and bridging features.

- **Corporate Services**
  - Border router for different dynamic routing domains (RIP, OSPF, BGP), administrative distance in IP routes, route filtering based on maps and policy-based routing (PBR) favor the implementation of corporate convergent services which combine Wireless WAN and landline access.
  - Multi-HSRP and Multi-VRRP for network resilience and load balance applications.
  - Link quality monitoring through the Teldat NSM/NSLA system, router routing policy based on link quality (RTT, erroneous frame rate and UDP jitter).
  - Teldat's hierarchic QoS system. Flexible application for flow priority, tagging and traffic classification means that efficient use is made of the network resources and an accurate definition on the service level (SLAs).
  - USB 2.0 port for connecting 3G external modems.

- **Secure Communications**.
  - Encryption processor incorporated optimizing the performance of devices in IP Sec tunnel scenarios.
  - Fully parameterized IPSec Client/Server. Advanced IPSec features such as PKI encryption (Digital Certificates), extended authentication and Reverse-Route Injection guaranteeing compatibility with commercial VPN solutions.
  - Latest generation meshed topology VPN networks (Dynamic Multipoint VPN technology).
  - IP filtering, MAC filtering and the SPI firewall protect the router from DoS attacks.

- **High performance WLAN module**
  - Embedded WLAN module (IEEE 802.11a/b/g/n Draft 2.0) with double external antenna connector (2x2 MIMO), activated by license.
  - WiFi speed of up to 300 Mbps.
  - Professional security (IEEE 802.11i/WPA-2).
  - Configurable "Access-Point" and "Client" operation mode, either to reroute from the WiFi terminals to the mobile network (access to Internet or to corporate VPN, depending on the service specifications, operating as "Access-Point"), or to connect the router to the branch WiFi network to access determine applications in the branch ("Client" mode).

- **Simple to install and deploy, suitable for massive deployments**
  - Power through Ethernet (integrated PoE client): Removes the need for an external power source near the router.
  - Chassis adapted for wall installation, which together with the Ethernet power means it can be installed at the point where the best coverage is found.
  - Router configuration in a single text file (Teldat commands file), easily duplicated.
  - The Teldat H1+GE routers can be configured with a personalized default configuration for the service.
  - Graphic configurators can be implemented for installers/operators, and customized depending on the specific needs of each service implemented with the Teldat H1+GE.

- **Efficient communications management**
  - Powerful Teldat commands console, suitable for professionally managing the device.
  - A Syslog client reports any events detected by the Teldat Events Logging System.

- SNMPv3 agent provides the ability to send traps and read MIB2 and Teldat-MIB depending on the defined management communities. The Teldat H1+GE can easily be integrated in the existing network management platform.
- Network clock synchronization (NTP Client).
- Intuitive and efficient management of Teldat H1+GE routers through the Teldat network management platform (TeldaGES).
- Telnet, SSH2, FTP, TFTP and RADIUS Client.

TECHNICAL SPECIFICATIONS

General

Interfaces and Connectors
WAN or LAN 10/100/1000M Gigabit Ethernet interface, RJ-45F
4 x 10/100M Fast Ethernet Switch, RJ-45F + 1 x Interface
1 x WLAN Interface with two external antenna ports (req. license)
1 x USB Host 2.0 Interface for USB/3G modems (req. license)
1 x Console Port, RJ-45F
1 x Power switch

Power options
AC external adaptor: 90 – 240 Vac; 50/60Hz (by default)
DC external adaptor: 18 – 75 Vdc (optional)

Consumption
11 watts

Environmental conditions
Operating temperature: -10ºC to 45 ºC
Relative humidity: 5% to 90%
Barometric pressure: 700 mbar to 1060 mbar

Dimensions and weight
Length x Width x Height: 220 x 220 x 32 mm
Approximate weight: 0.8 Kg

Gigabit and FastEthernet Interfaces
Automatic speed detection
Duplex/semiduplex automatic negotiation
MDI / MDI-X crossed detection
Ethernet V2 / IEEE 802.3
LLC (802.2), ARP
IEEE 802.1Q (VLAN)
IEEE 802.1X
Managed Switch:
- EtherLike-MIB (RFC 2665)
- SNMP-REPEATER-MIB (RFC 2108)
- MAU-MIB (RFC 2668)

2 status LEDs per port

Wireless LAN Interface
IEEE 802.11b/g/n Draft 2.0
Two detachable external antennas (SMA ports)

Console
RS-232 at 9600 bps (max 115200 bps)
8 bits without parity with 1 stop bit (8N1)

Protocols and features

IP Protocol
IP, ARP, Proxy ARP
Static IP Routing, RIP I, RIP II, OSPFv2, BGP-4 & Policy Routing
BFD Protocol
Compatible with HSRP
RFC 2281 VRRP – Virtual Router Protocol
VRF-Lite
Quality of backup: Routing based on network quality measurements
Multi-path per IP packet (with static & dynamic routing)
Weighted balancing per TCP/IP session
Multicast: IGMP, IGMP-proxy, MOSPF
DHCP client, server & relay
DNS client & proxy. DNS cache. Dynamic upgrades in DNS (RFC 2136)
SNAT/DNAT/NAPT. Visible subnets, Port Mapping
PAT fire-walling
Multiple addresses per interface
Loopback interfaces

PPP & PPPoE Protocols
PPP (RFC 1661), PAP/CHAP, IPCP
Multilink PPP
Multi-Class Extension to Multi-Link PPP (RFC 2686)
PPPoEoE, PPPoE Bridge + routing (PPPoE pass-through)
Multilink PPP over PPPoE
Renegotiation based on PADT

Data compression
IPHC compression
Van Jacobson & STA LZS compression algorithms

Quality of service (QoS)
Packet labeling (DiffServ) depending on the interface, subinterface, protocol, port and MAC and size
Congestion control: FIFO, queuing priority, BRS proprietary system, WFQ
Traffic shaping.
Fragmentation in FR (FRF.12), PPP & MPPP

Specific Wireless LAN features
Selectable transmission power
Manual or automatic selectable speed
Turbo mode (108 Mbps)
802.11i, WPA, WPA2
EAP, EAPOL
Authentication (open, shared, WPA)
Encryption (AES, TKIP, WEP)
ESSID
MAC Filtering
Quality of Service (QoS) AIFS, CWmin, CWmax

Security and VPNs
IPSec client & server. Fully parameterized, compatible with third party IPSec peers
IPSec security services: ESP & AH
IPSec operation modes: tunnel & transport
Encryption: RC4, DES, 3DES & AES
Authentication: SHA-1 & MD5
IKE Protocol
ISAKMP configuration method. Oakley groups 1, 2, 5, 15
NAT-Traversal
Reverse Route Injection (RRI)
Digital certificates X.509v3, LDAP, PKIX, PEM, DER
SCEP Protocol
TED Protocol
IPSec PMTU Discovery
GRE & multi-GRE encryption. GRE RC4
NHRP Protocol
Dynamic Multipoint IPSec VPNs (DMVPN)
Gateway Encryption Transport VPN (GET VPN - GDOI) RFC 3547
Radius Access Control (RFC 2138)
L2TP client (LAC), L2TP initiation & L2TP server (LNS)
L2TP/IPSec Server, compatible with Microsoft clients
Advanced IP filters
Advanced Firewall System (AFS)
- Statefull Firewall
- Advanced packet classification and marking
- URL & content filtering

Bridge
Bridge over PPP (BCP)
STP "Spanning Tree Protocol" (IEEE 802.1d)
RSTP "Rapid Convergence Spanning Tree Protocol"(IEEE 802.1w)
Multiple bridge domains
Simultaneous bridging & routing
IEEE 802.1p CoS ("Class of Service")
PVST ("Per VLAN Spanning Tree Protocol") **[1]**
Source Routing, MAC filtering & NetBIOS

Management
Command line interface on console, telnet & SSH
SNMP: MIB-2, Teldat-MIB
Events Logging System
Netflow V5 and V9
Syslog Client
NTP protocol
DynDNS Client
FTP & TFTP Software, BIOS & configuration upgrading
Internal Protocol Analyzer, compatible with Ethereal /WireShark
Default configuration reset knob
Radius Accounting (RFC 2139)
Integrated in TeldaGES (Teldat professional management platform)

ORDERING INFORMATION

Part No.	Product Description
Teldat H1+GE Routers	
RPHPH003	TELDAT H1+GE: 1GE + SWITCH 4FE + WIFI(OPC) + USB(OPC)
Software for H1+GE routers	
RPHPS001-REC	APPLICATION SOFTWARE FOR TELDAT H1+/H1+GE. INCLUDES SNA, IPSEC AND TOIP
RPHPS001-NF	APPLICATION SOFTWARE FOR TELDAT H1+/H1+GE. INCLUDES SNA, IPSEC AND TOIP
Accessories	
RWTHAQEU	INTERNAL HSUPA 900/2100 MHZ CARD FOR TELDAT H1+GE / ASSEMBLED IN FACTORY
RWTHAQLAT	INTERNAL HSUPA 850/1900/2100 MHZ CARD FOR TELDAT H1+GE / ASSEMBLED IN FACTORY
RCATAAWE	WIFI ANTENNA, OUTDOORS CEILING MOUNT, CABLE 1M, SMA MALE CONNECTOR
RPHPAP01	POE A 1GBPS KIT TO FEED REMOTELY THE H1+
Licenses	
RPHPSGEUSB	USB ACTIVATION LICENSE FOR 3G LINK FOR TELDAT H1+GE
RPHPSGEWIF	WIFI 802.11 B/G/N ACTIVATION LICENSE FOR TELDAT H1+GE
3G Antennas	
RWTHAAM1	3G MULTI-BAND 900-1800-2100 DIPOLE ANTENNA 90 DEGREES MOUNT
RWTHAAM2	3G MULTI-BAND 900-1800-2100 DIPOLE ANTENNA MAGNETIC BASE, 1.5M CABLE
RWTHAAM3	3G MULTI-BAND 900-1800-2100 ANTENNA FOR WALL MOUNT

RWTHAAM5	3G MULTI-BAND 900-1800-2100 ANTENNA FOR OUTDOOR WALL MOUNT, 5M CABLE
RWTHAAM6	3G MULTI-BAND 900-1800-2100 ANTENNA FOR OUTDOOR WALL MOUNT, 10M CABLE
RWTHAAM7	3G MULTI-BAND 900-1800-1900-2100 ANTENNA FOR PRE-DRILLED OUTDOOR SURFACE, 2,5M CABLE, SMS CONNECTOR
RWTHAEM1	EXTENSION BASE FOR 3G MULTI-BAND 900-1800-2100 ANTENNA, SMA CONNECTOR
RWTHAAM2A3	3G MULTI-BAND 900-1800-2100 DIPOLE ANTENNA MAGNETIC BASE, 3M CABLE

3G Cables	
RCATAAC1	LMR400 LOW LOSS COAXIAL CABLE, SMA CONNECTOR, 6M
RCATAAC2	LMR400 LOW LOSS COAXIAL CABLE, SMA CONNECTOR, 15M
RCATAAC3	RF-7MM LOW LOSS COAXIAL CABLE, SMA CONNECTOR, 10M
RCATAAC4	ONE METER PIGTAIL CABLE FOR ANTENNAS (SMA CONNECTOR)
RPHPARJ455	NETWORK CABLE RJ45 EXTENSION FROM 2M TO 5M
RWTHACON	CONSOLE CABLE: DB9F-DB9M, 2M
RWTHCAEU	POWER SOURCE CABLE, EUROPEAN JACK, 2M
RWTHCAUK	POWER SOURCE CABLE, UK JACK, 2M
RWTHCAUS	POWER SOURCE CABLE, US JACK, 2M
RWTHCLAN	ETHERNET UTP RJ45M-RJ45M CABLE, 2M
RWTHCLCX	ETHETNET STP RJ45M-RJ45M CROSS CABLE, 2M

www.teldat.com
TELDAT S. A.
Parque Tecnológico de Madrid. 28760 Tres Cantos, Madrid (Spain).
Tel.: +34 91 807 65 65
Anna Piferrer 1-3. 08023 Barcelona (Spain). Tel.: + 34 93 253 02 22

TELDAT MEXICO
Diagonal 27. Colonia del Valle,
Mexico D. F. 03100 (Mexico).
Tel: +52(55)55232213

TELDAT USA
1901 S. Bascom Avenue, Suite 220.
Campbell, CA 95008 (USA)
Tel.: +1 408 892 9363

TELDAT CHINA
Gongtinanlu A1-B, Chaoyang
District, Beijing 100020 (China).
Tel.: +86 15210 718225