

### Overview

## Models

HP MSR1002-4 AC Router

JG875A

HP MSR1003-8 AC Router

JG732A

## Key features

- Up to 500Kpps IP forwarding—converged high-performance routing, switching, security, voice, mobility
- Embedded security features with hardware-based encryption, firewall, NAT, and VPNs
- Industry-leading breadth of LAN and WAN connectivity options
- No additional licensing complexity—no cost for advanced features
- Zero-touch solution, with single-pane-of-glass management

## Product overview

The HP MSR1000 router series is a next generation multi-services router designed to deliver unmatched application performance for small branch offices. The MSR1000 provides a flexible multiservice end point for small branches and remote office that quickly adapts to changing business requirements while delivering integrated, concurrent services on a single, easy-to-manage platform.

## Features and benefits

### Quality of Service (QoS)

- **Traffic policing**  
supports Committed Access Rate (CAR) and line rate
- **Congestion management**  
supports FIFO, PQ, CQ, WFQ, CBQ, and RTPQ
- **Weighted random early detection (WRED)/random early detection (RED)**  
delivers congestion avoidance capabilities through the use of queue management algorithms
- **Other QoS technologies**  
support traffic shaping, FR QoS, MPLS QoS, and MP QoS/LFI

### Management

- **Ease of deployment**  
supports both USB disk auto deployment and 3G SMS auto deployment
- **Industry-standard CLI with a hierarchical structure**  
reduces training time and expenses, and increases productivity in multivendor installations
- **Management security**  
restricts access to critical configuration commands—offers multiple privilege levels with password protection—ACLs provide telnet and SNMP access—local and remote syslog capabilities allow logging of all access
- **SNMPv1, v2, and v3**  
provide complete support of SNMP—provide full support of industry-standard Management Information Base (MIB) plus private extensions—SNMPv3 supports increased security using encryption

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- **Remote monitoring (RMON)**  
uses standard SNMP to monitor essential network functions—supports events, alarm, history, and statistics group plus a private alarm extension group
- **FTP, TFTP, and SFTP support**  
offers different mechanisms for configuration updates—FTP allows bidirectional transfers over a TCP/IP network—trivial FTP (TFTP) is a simpler method using User Datagram Protocol (UDP)—Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security
- **Debug and sampler utility**  
supports ping and traceroute for both IPv4 and IPv6
- **Network Time Protocol (NTP)**  
synchronizes timekeeping among distributed time servers and clients—keeps timekeeping consistent among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time
- **Information center**  
provides a central repository for system and network information—aggregates all logs, traps, and debugging information generated by the system and maintains them in order of severity—outputs the network information to multiple channels based on user-defined rules
- **Management interface control**  
provides management access through modem port and terminal interface—provides access through terminal interface, telnet, or SSH
- **Network Quality Analyzer (NQA)**  
analyzes network performance and service quality by sending test packets, and provides network performance and service quality parameters such as jitter, TCP, or FTP connection delays—allows network manager to determine overall network performance and diagnose and locate network congestion points or failures

### Connectivity

- **Packet storm protection**  
protects against broadcast, multicast, or unicast storms with user-defined thresholds
- **Loopback**  
supports internal loopback testing for maintenance purposes and an increase in availability—loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility
- **3G access support**  
provides 3G wireless access for primary or backup connectivity via a 3G SIC module certified on various cellular networks—optional carrier 3G USB modems available
- **Flexible port selection**  
provides a combination of fiber and copper interface modules, 100/1000BASE-X auto-speed selection, and 10/100/1000BASE-T auto-speed detection plus auto duplex and MDI/MDI-X
- **Multiple WAN interfaces**  
provide a traditional link with E1, T1, ADSL, ADSL2, ADSL2+, G.SHDSL, ATM, Serial, and ISDN/AM backup—provide high-density Ethernet access with WAN Fast Ethernet/Gigabit Ethernet and LAN 4- and 9-port Fast Ethernet—provide mobility access with IEEE 802.11b/g/n Wi-Fi and 3G
- **High-density port connectivity**  
includes three SIC interface module slots and up to eight Gigabit Ethernet LAN ports which can be re-configured as WAN Routing ports

### Performance



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- **Powerful encryption capacity**  
includes embedded hardware encryption accelerator to improve encryption performance
- **Excellent forwarding performance**  
provides forwarding performance up to 500 Kpps—meets current and future bandwidth-intensive application demands of enterprise businesses

### Resiliency and high availability

- **Backup Center**  
acts as a part of the management and backup function to provide backup for device interfaces—delivers reliability by switching traffic over to a backup interface when the primary one fails
- **Virtual Router Redundancy Protocol (VRRP)**  
allows groups of two routers to dynamically back each other up to create highly available routed environments—supports VRRP load balancing

### Layer 2 switching

- **Spanning Tree Protocol (STP)**  
supports standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- **Internet Group Management Protocol (IGMP) and Multicast**  
Listener Discovery (MLD) protocol snooping controls and manages the flooding of multicast packets in a Layer 2 network
- **Port mirroring**  
duplicates port traffic (ingress and egress) to a local or remote monitoring port
- **VLANs**  
support IEEE 802.1Q-based VLANs
- **sFlow**  
allows traffic sampling
- **Define port as switched or routed**  
supports command switch to easily change switched ports to routed (max. eight GE ports)

### Layer 3 services

- **Address Resolution Protocol (ARP)**  
determines the MAC address of another IP host in the same subnet—supports static ARPs—gratuitous ARP allows detection of duplicate IP addresses—proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **User Datagram Protocol (UDP) helper**  
redirects UDP broadcasts to specific IP subnets to prevent server spoofing
- **Dynamic Host Configuration Protocol (DHCP)**  
simplifies the management of large IP networks and supports client and server—DHCP Relay enables DHCP operation across subnets

### Layer 3 routing

- **Static IPv4 routing**  
provides simple manually configured IPv4 routing
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- **Routing Information Protocol (RIP)**  
uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; includes loop protection
- **Open shortest path first (OSPF)**  
delivers faster convergence; uses this link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery
- **Border Gateway Protocol 4 (BGP-4)**  
delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large network
- **Intermediate system to intermediate system (IS-IS)**  
uses a path vector Interior Gateway Protocol (IGP), which is defined by the ISO organization for IS-IS routing and extended by IETF RFC 1195 to operate in both TCP/IP and the OSI reference model (Integrated IS-IS)
- **Static IPv6 routing**  
provides simple manually configured IPv6 routing
- **Dual IP stack**  
maintains separate stacks for IPv4 and IPv6 to ease the transition from an IPv4-only network to an IPv6-only network design
- **Routing Information Protocol next generation (RIPng)**  
extends RIPv2 to support IPv6 addressing
- **OSPFv3**  
provides OSPF support for IPv6
- **BGP+**  
extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing
- **IS-IS for IPv6**  
extends IS-IS to support IPv6 addressing
- **IPv6 tunneling**  
allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; supports manually configured, 6to4, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels; is an important element for the transition from IPv4 to IPv6
- **Multiprotocol Label Switching (MPLS)**  
uses BGP to advertise routes across Label Switched Paths (LSPs), but uses simple labels to forward packets from any Layer 2 or Layer 3 protocol, which reduces complexity and increases performance; supports graceful restart for reduced failure impact; supports LSP tunneling and multilevel stacks
- **Multiprotocol Label Switching (MPLS) Layer 3 VPN**  
allows Layer 3 VPNs across a provider network; uses Multiprotocol BGP (MP-BGP) to establish private routes for increased security; supports RFC 2547bis multiple autonomous system VPNs for added flexibility; supports IPv6 MPLS VPN
- **Multiprotocol Label Switching (MPLS) Layer 2 VPN**  
establishes simple Layer 2 point-to-point VPNs across a provider network using only MPLS Label Distribution Protocol (LDP); requires no routing and therefore decreases complexity, increases performance, and allows VPNs of non-routable protocols; uses no routing information for increased security; supports Circuit Cross Connect (CCC), Static Virtual Circuits (SVCs), Martini draft, and Kompella-draft technologies
- **Policy routing**  
allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies

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#### Security

- **Access control list (ACL)**

supports powerful ACLs for both IPv4 and IPv6. ACLs are used for filtering traffic to prevent unauthorized users from accessing the network, or for controlling network traffic to save resources. Rules can either deny or permit traffic to be forwarded. Rules can be based on a Layer 2 header or a Layer 3 protocol header. Rules can be set to operate on specific dates or times.

- **Terminal Access Controller Access-Control System (TACACS+)**

delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security.

- **RADIUS**

eases security access administration by using a password authentication server.

- **Network address translation (NAT)**

supports one-to-one NAT, many-to-many NAT, and NAT control, enabling NAT-PT to support multiple connections. Supports blacklist in NAT/NAT-PT, and a limit on the number of connections, session logs, and multi-instances.

- **Secure Shell (SSHv2)**

uses external servers to securely login into a remote device or securely login into MSR from a remote location. With authentication and encryption, it protects against IP spoofing and plain text password interception. Increases the security of SFTP transfers.

- **Unicast Reverse Path Forwarding (URPF)**

allows normal packets to be forwarded correctly, but discards the attaching packet due to lack of reverse path route or incorrect inbound interface. Prevents source spoofing and distributed attacks.

- **IPSec VPN**

supports DES, 3DES, and AES 128/192/256 encryption, and MD5 and SHA-1 authentication.

- **DVPN (Dynamic Virtual Private Network)**

collects, maintains, and distributes dynamic public addresses through the VPN Address Management (VAM) protocol, making VPN establishment available between enterprise branches that use dynamic addresses to access the public network. Compared to traditional VPN technologies, DVPN technology is more flexible and has richer features, such as NAT traversal of DVPN packets, AAA identity authentication, IPSec protection of data packets, and multiple VPN domains.

- **Auto Discover VPN (ADVPN)**

collects, maintains, and distributes dynamic public addresses through the VPN Address Management (VAM) protocol, making VPN establishment available between enterprise branches that use dynamic addresses to access the public network. Compared to traditional VPN technologies, ADVPN technology is more flexible and has richer features, such as NAT traversal of ADVPN packets, AAA identity authentication, IPSec protection of data packets, and multiple VPN domains.

- **Attack Detection and Protection**

responding to network attacks and threats by MSR Comware, support max connection limitation, single-packet attacks protection, Scanning attack protection, flood attack protection, TCP and ICMP Attack Protection etc.

#### Convergence

- **Internet Group Management Protocol (IGMP)**

utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks. Supports IGMPv1, v2, and v3.

- **Protocol Independent Multicast (PIM)**

defines modes of Internet IPv4 and IPv6 multicasting to allow one-to-many and many-to-many transmission of information. Supports PIM Dense Mode (DM), Sparse Mode (SM), and Source-Specific Mode (SSM).

- **Multicast Source Discovery Protocol (MSDP)**

allows multiple PIM-SM domains to interoperate. Is used for inter-domain multicast applications.

- **Multicast Border Gateway Protocol (MBGP)**

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allows multicast traffic to be forwarded across BGP networks and kept separate from unicast traffic

### Integration

- **Embedded NetStream**

improves traffic distribution using powerful scheduling algorithms, including Layer 4 to 7 services; monitors the health status of servers and firewalls

- **Embedded VPN firewall**

provides enhanced stateful packet inspection and filtering; delivers advanced VPN services with Triple DES (3DES) and Advanced Encryption Standard (AES) encryption at high performance and low latency, Web content filtering, and application prioritization and enhancement

### Additional information

- **OPEX savings**

simplifies and streamlines deployment, management, and training through the use of a common operating system, thereby cutting costs as well as reducing the risk of human errors associated with having to manage multiple operating systems across different platforms and network layers

- **High reliability**

provides a state-of-the-art unified code base

- **Faster time to market**

allows new and custom features to be brought rapidly to market through engineering efficiencies, delivering better initial and ongoing stability

- **Green initiative support**

provides support for RoHS and WEEE regulations

### Product architecture

- **Ideal multiservice platform**

provides WAN router, Ethernet switch, wireless LAN, 3G WAN, firewall, VPN, and SIP/voice gateway all in one box

- **High-density voice interfaces**

provide flexible analog voice interface options for easy integration within a wide range of deployments

- **USB interface**

uses USB memory disk to download and upload configuration files; supports an external USB 3G modem for a 3G WAN uplink

- **Advanced hardware architecture**

delivers Gigabit Ethernet switching and a PCIE bus

### Warranty and support

- **1-year Warranty 2.0**

advance hardware replacement with next-business-day delivery (available in most countries)

- **Electronic and telephone support (for Warranty 2.0)**

limited electronic and 24x7 telephone support is available from HP for the entire warranty period; to reach our support centers, refer to [www.hp.com/networking/contact-support](http://www.hp.com/networking/contact-support); for details on the duration of support provided with your product purchase, refer to [www.hp.com/networking/warrantysummary](http://www.hp.com/networking/warrantysummary)

- **Software releases**

to find software for your product, refer to [www.hp.com/networking/support](http://www.hp.com/networking/support); for details on the software releases available with

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your product purchase, refer to [www.hp.com/networking/warrantysummary](http://www.hp.com/networking/warrantysummary)

### Configuration

#### Build To Order<sup>2</sup>

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

#### Router Chassis

##### HP MSR1003-8 AC Router

- 2 RJ-45 autosensing 10/100/1000 WAN port
- 8 RJ-45 autosensing 10/100/1000 LAN ports
- 3 - SIC module slots / 1 DSIC
- 1 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 0 - VPM slot
- 1GB DDR3 SDRAM included (default=1GB \ max=1GB SDRAM)
- AC Power Supply included
- 1U - Height

JG732A

See Configuration  
Note<sup>1</sup>, 2, 3

##### PDU Cable NA/MEX/TW/JP

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

JG732A#B2B

##### PDU Cable ROW

- C15 PDU Jumper Cord (ROW)k

JG732A#B2C

##### High Volt Switch/Router to Wall Power Cord

- NEMA L6-20P Cord (NA/MEX/JP/TW)

JG732A#B2E

#### Configuration Rules<sup>2</sup>

Note 1 AC Power Supply included

Note 2 Localization required on orders without #B2B, #B2C or #B2E options.

Note 3 #B2E is Offered only in NA, Mexico, Taiwan and Japan.

#### Remarks<sup>2</sup>

Drop down under power supply should offer the following options and results<sup>2</sup>

Switch/Router/Power Supply to PDU Power Cord - #B2B in North America, Mexico, Taiwan, and Japan or #B2C ROW.  
(Watson Default B2B or B2C for Rack Level CTO)

Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)

High Volt Switch/Router/Power Supply to Wall Power Cord - #B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)

MSR1003-8 (JG732A) is Comware v5 based.



### Configuration

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

## Modules

### SIC Modules

System (std 0 // max 3 or 2 or 1) User Selection (min 0 // max 3 or 2 or 1) per Host (See Modules for Port information)

HP A-MSR 4-port 10/100Base-T Switch SIC Module	JD573B <a href="#">See Configuration Note 16, 18</a>
HP A-MSR 9-port 10/100Base-T Switch DSIC Module	JD574B <a href="#">See Configuration Note 3</a>
HP A-MSR 1-port 10/100Base-T SIC Module	JD545B <a href="#">See Configuration Note 16, 18</a>
HP A-MSR 1-port 100Base-X SIC Module <ul style="list-style-type: none"><li>min=0 \ max=1 SFP Transceivers</li></ul>	JF280A <a href="#">See Configuration Note 16, 18</a>
HP A-MSR 2-port FXO SIC Module	JD558A <a href="#">See Configuration Note 2</a>
HP A-MSR 1-port FXO SIC Module	JD559A <a href="#">See Configuration Note 2</a>
HP A-MSR 2-port FXS SIC Module	JD560A <a href="#">See Configuration Note 2</a>
HP A-MSR 1-port FXS SIC Module	JD561A <a href="#">See Configuration Note 2</a>
HP A-MSR 4-port FXS/1-port FXO DSIC Mod	JG189A

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	<a href="#">See Configuration Note<sup>3</sup></a>
HP A-MSR 2-port ISDN-S/T Voice SIC Module	JF821A <a href="#">See Configuration Note<sup>2</sup></a>
HP A-MSR 2-port FXS/1-port FXO SIC Module	JD632A <a href="#">See Configuration Note<sup>2</sup></a>
HP A-MSR 1-port E1/Fractional E1 (75ohm) SIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 E1 or 2E1 Cable</a></li></ul>	JD634B <a href="#">See Configuration Note<sup>2, 7, 10</sup></a>
HP A-MSR 1-port T1/Fractional T1 SIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 T1 Cable</a></li></ul>	JD538A <a href="#">See Configuration Note<sup>2, 14</sup></a>
HP A-MSR 2-port E1/Fractional E1 (75ohm) SIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 2E1 Cable</a></li></ul>	JF842A <a href="#">See Configuration Note<sup>2, 10</sup></a>
HP A-MSR 1-port Enhanced Sync/Async Serial SIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 Serial Port Cable</a></li></ul>	JD557A <a href="#">See Configuration Note<sup>1, 11</sup></a>
HP A-MSR 1-port ISDN-S/T SIC Module	JD571A <a href="#">See Configuration Note<sup>2</sup></a>
HP A-MSR 8-port Async Serial SIC Module <ul style="list-style-type: none"><li>• <a href="#">Must select 1 8AS Communication Cable (min=1 \ max=1 cable)</a></li></ul>	JF281A <a href="#">See Configuration Note<sup>2, 12</sup></a>
HP 802.11b/g/n Wireless AP SIC Module	JF819A <a href="#">See Configuration Note<sup>20</sup></a>
HP MSR 802.11b/g/n Wless AP SIC Mod (NA)	JG211A <a href="#">See Configuration Note<sup>20</sup></a>

### Configuration

HP A-MSR 16-port Async Serial SIC Module	JG186A
<ul style="list-style-type: none"><li>• <a href="#">Must select 4 HP X260 mini D-28/4-RJ45 0.3m Rtr Cables (min=4 \ max=4 cables)</a></li></ul>	<a href="#">See Configuration Note 2, 13</a>
HP A-MSR HSPA/WCDMA SIC Module	JG187A
	<a href="#">See Configuration Note 16, 18</a>
HP A-MSR 1-port ADSL over POTS SIC Mod	JD537A
	<a href="#">See Configuration Note 16, 18</a>
HP MSR 1-p ADSL over ISDN BRI U SIC Mod	JG056B
	<a href="#">See Configuration Note 16, 18</a>
HP A-MSR 1-p 8-wire G.SHDSL DSIC Module	JG191A
	<a href="#">See Configuration Note 3</a>
HP MSR 1p E1/CE1/PRI SIC Mod	JG604A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 E1 Cable</a></li></ul>	<a href="#">See Configuration Note 2, 7</a>
HP MSR 4G LTE SIC Mod for Verizon	JG742A
	<a href="#">See Configuration Note 8, 16, 18</a>
HP MSR 4G LTE SIC Mod for ATT	JG743A
	<a href="#">See Configuration Note 8, 16, 18</a>
HP MSR 4G LTE SIC Mod for Global	JG744A
	<a href="#">See Configuration Note 8, 16, 18</a>
HP A-MSR 4-port 10/100Base-T PoE Switch SIC Module	JD620A
	<a href="#">See Configuration Note 17</a>
HP A-MSR 9-port 10/100Base-T PoE Switch DSIC Module	JD621A

### Configuration

	<a href="#">See Configuration Note=19</a>
HP MSR 2p Enh Sync/Async Srl SIC Mod	JG736A
<ul style="list-style-type: none"> <li>• <a href="#">min=0 \ max=2 Serial Port Cable</a></li> </ul>	<a href="#">See Configuration Note=2,11,15</a>
HP MSR 4p Enh Sync/Async Srl SIC Mod	JG737A
<ul style="list-style-type: none"> <li>• <a href="#">min=0 \ max=4 Serial Port Cable</a></li> </ul>	<a href="#">See Configuration Note=2,11,15</a>
HP MSR 1p GbE Combo SIC Mod	JG738A
<ul style="list-style-type: none"> <li>• <a href="#">min=0 \ max=1 SFP Transceiver</a></li> </ul>	<a href="#">See Configuration Note=6, 16, 18</a>
HP MSR 4p Gig-T Switch SIC Mod	JG739A
	<a href="#">See Configuration Note=17</a>
HP MSR 4p Gig-T PoE Switch SIC Mod	JG740A
	<a href="#">See Configuration Note=17</a>

### Configuration Rules=

**Note 1**      These Modules can install directly to the Routers (JG732A)  
min=0\ max=2 per enclosure (only supported in Slots 2 and 3)

**Note 2**      These Modules can install directly to the Routers (JG732A)  
min=0\ max=3 per enclosure

**Note 3**      These Modules can install directly to the Routers (JG732A)  
min=0\ max=1 per enclosure (This Module takes up two slots, and is installed in Slots 2 + 3)  
min=0\ max=1 per enclosure (This Module takes up two slots, and is installed in Slots 1 + 2)

**Note 5**      The following Transceivers install into this Module=

HP X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LX Transceiver	JD120B
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X110 100M SFP LC LH80 Transceiver	JD091A

**Note 6**      The following Transceivers install into this Module=

HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B



### Configuration

HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B
HP X120 1G SFP LC LH100 Transceiver	JD103A

Note 7 The following E1 Cables install into this Module<sup>-</sup>

HP X260 E1 (2) BNC 75 ohm 3m Router Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1 2 BNC 75 ohm 40m Router Cable	JD516A

Note 8 The following Antenna Cables install into this Module<sup>-</sup>

HP MSR 3G RF 2.8m Antenna Cable	JG522A
HP MSR 3G RF 6m Antenna Cable	JG666A
HP MSR 3G RF 15m Antenna Cable	JG667A

Note 10 The following 2E1 Cables install into this Module<sup>-</sup>

HP X260 2E1 BNC 3m Router Cable	JD643A
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Note 11 The following Cables install into this Module<sup>-</sup>

HP X260 RS449 3m DCE Serial Port Cable	JF826A
HP X260 RS449 3m DTE Serial Port Cable	JF825A
HP X200 X.21 DCE 3m Serial Port Cable	JD529A
HP X200 V.24 DTE 3m Serial Port Cable	JD519A
HP X200 V.35 DTE 3m Serial Port Cable	JD523A
HP X260 RS530 3m DTE Serial Port Cable	JF827A
HP X200 V.35 DCE 3m Serial Port Cable	JD525A
HP X260 RS530 3m DCE Serial Port Cable	JF828A
HP X200 V.24 DCE 3m Serial Port Cable	JD521A
HP X200 X.21 DTE 3m Serial Port Cable	JD527A

Note 12 The following Cables install into this Module<sup>-</sup>

HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A
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Note 13 If this module is selected Then 4 - JG263A HP X260 mini D-28/4-RJ45 0.3m Rtr Cable are required to be on the same order.

Note 14 The following T1 Cables install into this Module<sup>-</sup>

HP X260 T1 Router Cable	JD518A
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Note 15 These Modules can install directly to Router JG875A  
min=0\ max=2 per enclosure

### Configuration

- Note 16** These Modules can install directly to the Routers (JG732A, JG875A)  
min=0\ max=1 per enclosure (only supported in Slot 2)
- Note 17** These Modules can install directly to the Router JG875A  
min=0\ max=1 per enclosure (only supported in Slot 2)
- Note 18** These Modules can install directly to the Routers (JG875A)  
min=0\ max=2 per enclosure (only supported in Slots 2 and 3)
- Note 19** These Modules can install directly to the Routers (JG875A)  
min=0\ max=1 per enclosure (This Module takes up two slots, and is installed in Slots 1 + 2)
- Note 20** These Modules can install directly to the Routers (JG732A)  
min=0\ max=2 per enclosure (only supported in Slots 2 and 3)
- Remarks-** PoE Modules JG740A, JD620A and JD621A can be used as non-POE modules on chassis without PoE power supplies.

### Transceivers

#### SFP Transceivers

HP X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LH40 Transceiver	JD120B
HP X110 100M SFP LC LH80 Transceiver	JD091A
HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X120 1G SFP LC LH40 1550nm XCVR	JD062A
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X125 1G SFP LC LH40 1310nm XCVR	JD061A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B
HP X120 1G SFP LC BX 10-U Transceiver	JD103A
HP X120 1G SFP LC LH100 Transceiver	

### Internal Power Supplies

Internal Power Supplies included

### Cables



### Configuration

HP X260 mini D-28/4-RJ45 0.3m Rtr Cable	JG263A
HP X200 V.24 DTE 3m Serial Port Cable	JD519A
HP X200 V.24 DCE 3m Serial Port Cable	JD521A
HP X200 V.35 DTE 3m Serial Port Cable	JD523A
HP X200 V.35 DCE 3m Serial Port Cable	JD525A
HP X200 X.21 DTE 3m Serial Port Cable	JD527A
HP X200 X.21 DCE 3m Serial Port Cable	JD529A
HP X260 RS449 3m DTE Serial Port Cable	JF825A
HP X260 RS449 3m DCE Serial Port Cable	JF826A
HP X260 RS530 3m DTE Serial Port Cable	JF827A
HP X260 RS530 3m DCE Serial Port Cable	JF828A
HP X260 Auxiliary Router Cable	JD508A
HP X260 E1 (2) BNC 75 ohm 3m Rtr Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1/2 BNC 75 ohm 40m Router Cable	JD516A
HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
HP X260 T1 Router Cable	JD518A
HP X260 2E1 BNC 3m Router Cable	JD643A
HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A

### Configuration Rules

<b>Remarks</b>	The following cable is used for RJ45 BNC Conversion	
	HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A

## Router Enclosure Options

### Antenna Cables

System (std 0 // max 2) User Selection (min 0 // max 2) per SIC Module (JG742A, JG743A, JG744A)

HP MSR 3G RF 2.8m Antenna Cable	JG522A
HP MSR 3G RF 6m Antenna Cable	JG666A
HP MSR 3G RF 15m Antenna Cable	JG667A

### Opacity Shield Kit

System (std 0 // max 1) User Selection (min 0 // max 1)

HP MSR2003 Opcty Shld Kit	JG598A
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### Configuration

**NOTE=**

Supported on the HP MSR1003-8 AC Router (JG732A).

### Tamper Evidence Labels

System (std 0 // max 1) User Selection (min 0 // max 1)

HP 12mm x 60mm Tmpr-Evidence (30) Lbl

JG585A

**NOTE=**

Supported on JG557A, JG559A

**Remarks=**

Each JG598A would use 1 of JG585A.



### Technical Specifications

#### HP MSR1002-4 AC Router (JG875A)

<b>I/O ports and slots</b>	2 SIC slots, or 1 DSIC slot 1 RJ-45 autosensing 10/100/1000 WAN port 1 SFP fixed Gigabit Ethernet SFP port 4 RJ-45 autosensing 10/100/1000 LAN ports 1 Serial port	
<b>Additional ports and slots</b>	1 USB 2.0 1 RJ-45 console port to access limited CLI port	
<b>AP characteristics</b>	<b>Radios (via optional modules)</b>	3G, 4G LTE
<b>Physical characteristics</b>	<b>Dimensions</b>	14.17(w) x 11.81(d) x 1.74(h) in (36 x 30 x 4.42 cm) (1U height)
	<b>Weight</b>	6.83 lb (3.10 kg)
<b>Memory and processor</b>	RISC @ 667 MHz, 512 MB DDR3 SDRAM, 256 MB flash	
<b>Mounting</b>	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
<b>Performance</b>	<b>Throughput</b>	500 Kpps (64-byte packets)
	<b>Routing table size</b>	200000 entries (IPv4), 200000 entries (IPv6)
	<b>Forwarding table size</b>	200000 entries (IPv4), 200000 entries (IPv6)
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b>	5% to 95%, noncondensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	5% to 95%, noncondensing
	<b>Altitude</b>	up to 16,404 ft (5 km)
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b>	92 BTU/hr (97.06 kJ/hr)
	<b>AC Voltage</b>	100 - 240 VAC
	<b>Maximum power rating</b>	30 W
	<b>Frequency</b>	50/60 Hz
	<b>Notes</b>	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
<b>Reliability</b>	<b>MTBF (years)</b>	137.5
<b>Safety</b>	UL 60950-1 ǂIEC 60950-1 ǂEN 60950-1 ǂCAN/CSA-C22.2 No. 60950-1 ǂFDA 21 CFR Subchapter J ǂAS/NZS 60950-1 ǂGB 4943.1	

### Technical Specifications

<b>Emissions</b>	VCCI Class A EN 55022 Class A CISPR 22 Class A EN 55024 ICES-003 Class A EN 300 386 CISPR 24 AS/NZS CISPR 22 Class A EN 61000-3-2 EN 61000-3-3 FCC (CFR 47, Part 15) Class A
<b>Telecom</b>	FCC part 68 CS-03
<b>Management</b>	IMC - Intelligent Management Center command-line interface Web browser out-of-band management (Serial RS-232C) out-of-band management (DB-9 serial port console) SNMP Manager Telnet RMON1 FTP IEEE 802.3 Ethernet MIB
<b>Services</b>	<p>3-year, parts only, global next-day advance exchange (UW075E)</p> <p>3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E)</p> <p>3-year, 24x7 SW phone support, software updates (UW012E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E)</p> <p>4-year, 24x7 SW phone support, software updates (UW013E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E)</p> <p>5-year, 24x7 SW phone support, software updates (UW014E)</p> <p>3 Yr 6 hr Call-to-Repair Onsite (UW079E)</p> <p>4 Yr 6 hr Call-to-Repair Onsite (UW080E)</p> <p>5 Yr 6 hr Call-to-Repair Onsite (UW081E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E)</p> <p>1-year, 24x7 software phone support, software updates (HR557E)</p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>

#### HP MSR1003-8 AC Router (JG732A)

<b>I/O ports and slots</b>	3 SIC slots, or 1 DSIC slot, and 1 SIC slot
	2 RJ-45 autosensing 10/100/1000 WAN ports
	8 RJ-45 autosensing 10/100/1000 LAN ports
<b>Additional ports and slots</b>	1 USB 2.0
	1 RJ-45 console port to access limited CLI port
<b>AP characteristics</b>	<b>Radios (via optional modules)</b> 3G, 4G LTE
<b>Physical characteristics</b>	<b>Dimensions</b> 14.17(w) x 11.81(d) x 17.4(h) in (36 x 30 x 4.42 cm)
	<b>Weight</b> 6.94 lb (3.15 kg)

### Technical Specifications

<b>Memory and processor</b>	RISC @ 667 MHz, 512 MB DDR3 SDRAM, 256 MB flash	
<b>Mounting</b>	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
<b>Performance</b>	<b>Throughput</b>	500 Kpps (64-byte packets)
	<b>Routing table size</b>	30000 entries (IPv4), 30000 entries (IPv6)
	<b>Forwarding table size</b>	30000 entries (IPv4), 30000 entries (IPv6)
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b>	5% to 95%, noncondensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	5% to 95%, noncondensing
<b>Electrical characteristics</b>	<b>Altitude</b>	up to 16,404 ft (5 km)
	<b>Maximum heat dissipation</b>	65 BTU/hr (68.58 kJ/hr)
	<b>AC Voltage</b>	100 - 240 VAC
	<b>Maximum power rating</b>	30 W
	<b>Frequency</b>	50/60 Hz
	<b>Notes</b>	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
<b>Reliability</b>	<b>MTBF (years)</b>	137.5
<b>Safety</b>	UL 60950-1†IEC 60950-1†EN 60950-1†CAN/CSA-C22.2 No. 60950-1†FDA 21 CFR Subchapter J†AS/NZS 60950-1†GB 4943.1	
<b>Emissions</b>	VCCI Class A†EN 55022 Class A†CISPR 22 Class A†EN 55024†ICES-003 Class A†EN 300 386†CISPR 24†AS/NZS CISPR 22 Class A†EN 61000-3-2†EN 61000-3-3†FCC (CFR 47, Part 15) Class A	
<b>Telecom</b>	FCC part 68†CS-03	
<b>Management</b>	IMC - Intelligent Management Center†command-line interface†Web browser†out-of-band management (serial RS-232C)†out-of-band management (DB-9 serial port console)†SNMP Manager†Telnet†RMON1†FTP†IEEE 802.3 Ethernet MIB	
<b>Services</b>	Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	
<b>Standards and protocols</b>	<b>BGP</b>	
(applies to all products in series)	RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4	

### Technical Specifications

RFC 1772 Application of the BGP  
RFC 1773 Experience with the BGP-4 Protocol  
RFC 1774 BGP-4 Protocol Analysis  
RFC 1997 BGP Communities Attribute  
RFC 1998 An Application of the BGP Community Attribute in Multi-home Routing  
RFC 2385 BGP Session Protection via TCP MD5  
RFC 2439 BGP Route Flap Damping

#### **Denial of service protection**

CPU DoS Protection  
Rate Limiting by ACLs

#### **Device management**

RFC 1305 NTPv3  
RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0  
RFC 2452 MIB for TCP6  
RFC 2454 MIB for UDP6

#### **General protocols**

RFIEEE 802.1D MAC Bridges  
IEEE 802.1p Priority  
IEEE 802.1Q VLANs  
IEEE 802.1s Multiple Spanning Trees  
IEEE 802.1w Rapid Reconfiguration of Spanning Tree  
RFC 768 UDP  
RFC 783 TFTP Protocol (revision 2)  
RFC 791 IP  
RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP  
RFC 854 TELNET  
RFC 855 Telnet Option Specification  
RFC 856 TELNET  
RFC 858 Telnet Suppress Go Ahead Option  
RFC 894 IP over Ethernet  
RFC 925 Multi-LAN Address Resolution  
RFC 950 Internet Standard Subnetting Procedure  
RFC 959 File Transfer Protocol (FTP)  
RFC 1006 ISO transport services on top of the TCP=Version 3  
RFC 1027 Proxy ARP  
RFC 1034 Domain Concepts and Facilities  
RFC 1035 Domain Implementation and Specification  
RFC 1042 IP Datagrams  
RFC 1058 RIPv1  
RFC 1071 Computing the Internet Checksum  
RFC 1091 Telnet Terminal-Type Option  
RFC 1122 Host Requirements  
RFC 1141 Incremental updating of the Internet checksum

### Technical Specifications

RFC 1142 OSI IS-IS Intra-domain Routing Protocol  
RFC 1144 Compressing TCP/IP headers for low-speed serial links  
RFC 1195 OSI ISIS for IP and Dual Environments  
RFC 1256 ICMP Router Discovery Protocol (IRDP)  
RFC 1293 Inverse Address Resolution Protocol  
RFC 1315 Management Information Base for Frame Relay DTEs  
RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)  
RFC 1333 PPP Link Quality Monitoring  
RFC 1334 PPP Authentication Protocols (PAP)  
RFC 1349 Type of Service  
RFC 1350 TFTP Protocol (revision 2)  
RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)  
RFC 1381 SNMP MIB Extension for X.25 LAPB  
RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol  
RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol  
RFC 1490 Multiprotocol Interconnect over Frame Relay  
RFC 1519 CIDR  
RFC 1534 DHCP/BOOTP Interoperation  
RFC 1542 Clarifications and Extensions for the Bootstrap Protocol  
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)  
RFC 1577 Classical IP and ARP over ATM  
RFC 1613 Cisco Systems X.25 over TCP (XOT)  
RFC 1624 Incremental Internet Checksum  
RFC 1631 NAT  
RFC 1638 PPP Bridging Control Protocol (BCP)  
RFC 1661 The Point-to-Point Protocol (PPP)  
RFC 1662 PPP in HDLC-like Framing  
RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2  
RFC 1701 Generic Routing Encapsulation  
RFC 1702 Generic Routing Encapsulation over IPv4 networks  
RFC 1721 RIP-2 Analysis  
RFC 1722 RIP-2 Applicability  
RFC 1723 RIP v2  
RFC 1795 Data Link Switching—Switch-to-Switch Protocol AIW DLSw RIG—DLSw Closed Pages, DLSw Standard Version 1  
RFC 1812 IPv4 Routing  
RFC 1829 The ESP DES-CBC Transform  
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses  
RFC 1944 Benchmarking Methodology for Network Interconnect Devices  
RFC 1973 PPP in Frame Relay  
RFC 1974 PPP Stac LZS Compression Protocol  
RFC 1990 The PPP Multilink Protocol (MP)  
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)  
RFC 2091 Trigger RIP  
RFC 2131 DHCP

### Technical Specifications

RFC 2132 DHCP Options and BOOTP Vendor Extensions  
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements  
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification  
RFC 2280 Routing Policy Specification Language (RPSL)  
RFC 2284 EAP over LAN  
RFC 2338 VRRP  
RFC 2364 PPP Over AAL5  
RFC 2374 An Aggregatable Global Unicast Address Format  
RFC 2451 The ESP CBC-Mode Cipher Algorithms  
RFC 2453 RIPv2  
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols  
RFC 2511 Internet X.509 Certificate Request Message Format  
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)  
RFC 2644 Directed Broadcast Control  
RFC 2661 L2TP  
RFC 2663 NAT Terminology and Considerations  
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5  
RFC 2694 DNS extensions to Network Address Translators (DNS<sub>2</sub>ALG)  
RFC 2702 Requirements for Traffic Engineering Over MPLS  
RFC 2747 RSVP Cryptographic Authentication  
RFC 2763 Dynamic Name-to-System ID mapping support  
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)  
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)  
RFC 2784 Generic Routing Encapsulation (GRE)  
RFC 2787 Definitions of Managed Objects for VRRP  
RFC 2961 RSVP Refresh Overhead Reduction Extensions  
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS  
RFC 2973 IS-IS Mesh Groups  
RFC 2993 Architectural Implications of NAT  
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)  
RFC 3027 Protocol Complications with the IP Network Address Translator  
RFC 3031 Multiprotocol Label Switching Architecture  
RFC 3032 MPLS Label Stack Encoding  
RFC 3036 LDP Specification  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3063 MPLS Loop Prevention Mechanism  
RFC 3065 Support AS confederation  
RFC 3137 OSPF Stub Router Advertisement  
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels  
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels  
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)  
RFC 3214 LSP Modification Using CR-LDP  
RFC 3215 LDP State Machine  
RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)  
RFC 3277 IS-IS Transient Blackhole Avoidance

### Technical Specifications

RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile

RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile

RFC 3392 Support BGP capabilities advertisement

RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP)

RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering

RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPSec

RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers

RFC 3784 ISIS TE support

RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit

RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management

RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)

RFC 3847 Restart signaling for IS-IS

FRF.1.2 PVC User-to-Network Interface (UNI) Implementation Agreement - July 2000

FRF.11.1 Voice over Frame Relay Implementation Agreement - May 1997 - Annex J added March 1999

FRF.12 Frame Relay Fragmentation Implementation Agreement - December 1997

FRF.16.1 Multilink Frame Relay UNI/NNI Implementation Agreement - May 2002

FRF.2.2 Frame Relay Network-to-Network Interface (NNI) Implementation Agreement - March 2002

FRF.20 Frame Relay IP Header Compression Implementation Agreement - June 2001

FRF.3.2 Frame Relay Multiprotocol Encapsulation Implementation Agreement - April 2000

FRF.7 Frame Relay PVC Multicast Service and Protocol Description - October 1994

FRF.9 Data Compression Over Frame Relay Implementation Agreement - January 1996

#### **IP multicast**

RFC 1112 IGMP

RFC 2236 IGMPv2

RFC 2283 Multiprotocol Extensions for BGP-4

RFC 2362 PIM Sparse Mode

RFC 2365 Administratively Scoped IP Multicast

RFC 2710 Multicast Listener Discovery (MLD) for IPv6

RFC 2934 Protocol Independent Multicast MIB for IPv4

RFC 3376 IGMPv3

#### **IPv6**

RFC 1981 IPv6 Path MTU Discovery

RFC 2080 RIPng for IPv6

RFC 2292 Advanced Sockets API for IPv6

RFC 2373 IPv6 Addressing Architecture

RFC 2460 IPv6 Specification

RFC 2461 IPv6 Neighbor Discovery

RFC 2462 IPv6 Stateless Address Auto-configuration

RFC 2463 ICMPv6

RFC 2464 Transmission of IPv6 over Ethernet Networks

RFC 2472 IP Version 6 over PPP

RFC 2473 Generic Packet Tunneling in IPv6

RFC 2475 IPv6 DiffServ Architecture

### Technical Specifications

RFC 2529 Transmission of IPv6 Packets over IPv4  
RFC 2545 Use of MP-BGP-4 for IPv6  
RFC 2553 Basic Socket Interface Extensions for IPv6  
RFC 2740 OSPFv3 for IPv6  
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers  
RFC 3056 Connection of IPv6 Domains via IPv4 Clouds  
RFC 3513 IPv6 Addressing Architecture  
RFC 3596 DNS Extension for IPv6

#### **MIBs**

RFC 1213 MIB II  
RFC 1229 Interface MIB Extensions  
RFC 1286 Bridge MIB  
RFC 1493 Bridge MIB  
RFC 1573 SNMP MIB II  
RFC 1724 RIPv2 MIB  
RFC 1757 Remote Network Monitoring MIB  
RFC 1850 OSPFv2 MIB  
RFC 2011 SNMPv2 MIB for IP  
RFC 2012 SNMPv2 MIB for TCP  
RFC 2013 SNMPv2 MIB for UDP  
RFC 2233 Interfaces MIB  
RFC 2454 IPV6-UDP-MIB  
RFC 2465 IPv6 MIB  
RFC 2466 ICMPv6 MIB  
RFC 2618 RADIUS Client MIB  
RFC 2620 RADIUS Accounting MIB  
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB  
RFC 2737 Entity MIB (Version 2)  
RFC 2863 The Interfaces Group MIB  
RFC 2933 IGMP MIB  
RFC 3813 MPLS LSR MIB

#### **Network management**

IEEE 802.1D (STP)  
RFC 1155 Structure of Management Information  
RFC 1157 SNMPv1  
RFC 1905 SNMPv2 Protocol Operations  
RFC 2272 SNMPv3 Management Protocol  
RFC 2273 SNMPv3 Applications  
RFC 2274 USM for SNMPv3  
RFC 2275 VACM for SNMPv3  
RFC 2575 SNMPv3 View-based Access Control Model (VACM)  
RFC 3164 BSD syslog Protocol

#### **OSPF**

RFC 1245 OSPF protocol analysis  
RFC 1246 Experience with OSPF



### Technical Specifications

- RFC 1587 OSPF NSSA
- RFC 1765 OSPF Database Overflow
- RFC 1850 OSPFv2 Management Information Base (MIB), traps
- RFC 2328 OSPFv2
- RFC 2370 OSPF Opaque LSA Option
- RFC 3101 OSPF NSSA

#### **QoS/CoS**

- IEEE 802.1P (CoS)
- RFC 2474 DS Field in the IPv4 and IPv6 Headers
- RFC 2475 DiffServ Architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP

#### **Security**

- IEEE 802.1X Port Based Network Access Control
- RFC 1321 The MD5 Message-Digest Algorithm
- RFC 2082 RIP-2 MD5 Authentication
- RFC 2104 Keyed-Hashing for Message Authentication
- RFC 2138 RADIUS Authentication
- RFC 2209 RSVP-Message Processing
- RFC 2246 Transport Layer Security (TLS)
- RFC 2716 PPP EAP TLS Authentication Protocol
- RFC 2865 RADIUS Authentication
- RFC 2866 RADIUS Accounting
- RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication

#### **VPN**

- RFC 2403 - HMAC-MD5-96
- RFC 2404 - HMAC-SHA1-96
- RFC 2405 - DES-CBC Cipher algorithm
- RFC 2547 BGP/MPLS VPNs
- RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
- RFC 2842 Capabilities Advertisement with BGP-4
- RFC 2858 Multiprotocol Extensions for BGP-4
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 3107 Carrying Label Information in BGP-4

#### **IPSec**

- RFC 1828 IP Authentication using Keyed MD5
- RFC 2401 IP Security Architecture
- RFC 2402 IP Authentication Header
- RFC 2406 IP Encapsulating Security Payload
- RFC 2407 - Domain of interpretation
- RFC 2410 - The NULL Encryption Algorithm and its use with IPSec
- RFC 2411 IP Security Document Roadmap
- RFC 2412 - OAKLEY

### Technical Specifications

RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

**IKEv1**

RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

RFC 3748 - Extensible Authentication Protocol (EAP)

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### Accessories

#### HP MSR1000 Router Series accessories

##### Transceivers

HP X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LX Transceiver	JD120B
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X110 100M SFP LC LH80 Transceiver	JD091A
HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X120 1G SFP LC LH100 Transceiver	JD103A
HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B

##### Cables

HP X200 V.24 DTE 3m Serial Port Cable	JD519A
HP X200 V.24 DCE 3m Serial Port Cable	JD521A
HP X200 V.35 DTE 3m Serial Port Cable	JD523A
HP X200 V.35 DCE 3m Serial Port Cable	JD525A
HP X200 X.21 DCE 3m Serial Port Cable	JD529A
HP X260 RS449 3m DTE Serial Port Cable	JF825A
HP X260 RS449 3m DCE Serial Port Cable	JF826A
HP X260 RS530 3m DTE Serial Port Cable	JF827A
HP X260 RS530 3m DCE Serial Port Cable	JF828A
HP X260 Auxiliary Router Cable	JD508A
HP X260 E1 RJ45 3m Router Cable	JD509A
HP X260 E1 2 BNC 75 ohm 40m Router Cable	JD516A
HP X260 E1 (2) BNC 75 ohm 3m Router Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
HP X260 2E1 BNC 3m Router Cable	JD643A
HP X260 T1 Router Cable	JD518A
HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A
HP X260 E1 RJ45 20m Router Cable	JD517A
HP X260 mini D-28 to 4-RJ45 0.3m Router Cable	JG263A

##### Mounting Kit

HP 3100/4210-16/-8 PoE Rack Mount Kit	JD323A
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##### Router Modules

HP MSR 9-port 10/100 DSIC Module	JD574B
HP MSR 4-port 10/100 SIC Module	JD573B

### Accessories

HP MSR 4-port Gig-T Switch SIC Module	JG739A
HP MSR 1-port GbE Combo SIC Module	JG738A
HP MSR 1-port 10/100 SIC Module	JD545B
HP 1-port 100Mbt SFP SIC Router Module	JF280A
HP MSR 2-port FXO SIC Module	JD558A
HP MSR 2-port FXS SIC Module	JD560A
HP MSR 2 FXS +1 FXO Voice Interface SIC Module	JD632A
HP 2-port ISDN-S/T Voice Interface SIC Module	JF821A
HP MSR 1-port ADSL2+ SIC Module	JD537A
HP MSR 1-port ADSL over ISDN BRI U SIC Module	JG056B
HP MSR 1-port 8-wire G.SHDSL (RJ45) DSIC Module	JG191A
HP MSR 1-port Fractional E1 SIC Module	JD634B
HP MSR 2-port Fractional E1 SIC Module	JF842A
HP MSR 1-port Fractional SIC Module	JD538A
HP MSR 1-port Enhanced Serial SIC Module	JD557A
HP MSR 2-port Enhanced Sync / Async Serial SIC Module	JG736A
HP MSR 4-port Enhanced Sync / Async Serial SIC Module	JG737A
HP MSR 1-port ISDN-S/T SIC Module	JD571A
HP MSR 16-port Async Serial SIC Module	JG186A
HP 8-port Asynchronous Serial Interface SIC Router Module	JF281A
HP 802.11b/g/n Wireless AP SIC Module	JF819A
HP MSR 802.11b/g/n Wireless Access Point SIC Module (NA)	JG211A
HP MSR 1-port E1/CE1/PRI SIC Module	JF253B
HP MSR 4-port FXS / 1-port FXO DSIC Module	JG189A
HP MSR HSPA/WCDMA SIC Module	JG187A
HP MSR 4G LTE SIC Module for Verizon/LTE 700 MHz/CDMA Rev A	JG742A
HP MSR 4G LTE SIC Module for ATT/LTE 700/1700/2100 MHz and UMTS/HSPA+/HSPA/EDGE/GRPS/GSM	JG743A
HP MSR 4G LTE SIC Module for Global/LTE 800/900/1800/2100/2600 MHz and UMTS/HSPA+/HSPA/EDGE/GRPS/GSM	JG744A

### Summary of Changes

Date	Version History	Action	Description of Change
24-Feb-2015	From Version 5 to 6	Changed	Minor change on Configuration section
06-Oct-2014	From Version 4 to 5	Removed	Removed SKU JD572A
		Changed	Configuration section updated
18-August-2014	From Version 3 to 4	Added	Added 1 new model—JG875A Added 7 new accessories—JG736A, JG737A, JG738A, JG739A, JG742A, JG743A, JG744A
		Changed	Content Edits
10-June-2014	From Version 2 to 3	Added	New accessories added.

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