Data sheet

HP MSR20 Router Series

Key features

- Converged routing, switching, voice, and security
- Embedded encryption, firewall, and security features
- Modular WAN/LAN interface options
- Unified wired and wireless
- Single pane-of-glass management

Product overview

The HP MSR20 router series is a component of the HP FlexBranch solution, which is part of the HP FlexNetwork Architecture. It features a modular design that delivers unmatched flexibility for small branch offices and small- to medium-sized businesses while reducing complexity, simplifying management, and increasing control. MSR20 Router Series provide a full-featured, resilient routing platform, including IPv6 and MPLS, up to 180 Kpps forwarding capacity, and 100 Mbps encryption. These products offer lasting investment protection, and help reduce capital and operating expenses. MSR20 series routers provide an agile, flexible network infrastructure that offers the ability to adapt to changing business requirements quickly 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) and random early detection (RED)

  Delivers congestion avoidance capabilities using queue management algorithms

- Other QoS technologies

  Support traffic shaping, FR QoS, MPLS QoS, and MP QoS/LFI

Management

- 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

- 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

  Offer 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 managers to determine overall network performance, and diagnose and locate network congestion points or failures

Connectivity

• High-density port connectivity

Provides up to four interface module slots and up to 18 Fast Ethernet ports

• 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

• 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

• 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

• 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

Performance

• Powerful encryption capacity

Includes embedded hardware encryption accelerator to improve encryption performance

• Flexible chassis selection

Offers a choice of three routers, meeting different requirements on enterprise branches

• Excellent forwarding performance

Provides forwarding performance up to 180 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 back each other up dynamically to create highly available routed environments; supports VRRP load balancing

Layer 2 switching

- Spanning Tree Protocol (STP)

  Aupports 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

  Control and manage 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 up to 4,094 ports or IEEE 802.1Q-based VLANs

- sFlow

  Allows traffic sampling

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

- 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 networks

- 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, 6 to 4, 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 (MBGP) to establish private routes for increased security; supports RFC 2547 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

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

- 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

- Network login

  Authentication of multiple users per port

- RADIUS

  Eases security access administration by using a user and 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, a limit on the number of connections, session logs, and multi-instances

- Secure shell (SSHv2)

  Uses external servers to safely login into a remote device; with authentication and encryption, it protects against IP spoofing and plain text password interception; increases the security of SFTP transfers

- IPSec VPN

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

- Dynamic Virtual Private Network (DVPN)

  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

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 interdomain multicast applications

- Multicast Border Gateway Protocol (MBGP)

  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

  Simplify and streamline deployment, management, and training using 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 and digital 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

- SIP trunk

  The SIP trunk link can carry multiple concurrent calls; the carrier authenticates only the link, rather than carrying each SIP call on the link

- Embedded service modules for security and voice

  Embedded Voice Co-Processing Modules (VCPMs) and Voice Processing Modules (VPMs) accommodate digital signal processor (DSP) modules for voice packet processing; embedded hardware encryption modules, Standard Network Data Encryption (SNDE) cards, and Advanced Network Data Encryption (ANDE) cards do not occupy I/O slots

Warranty and support

- 1-year warranty

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

- Electronic and telephone support

  Limited electronic and business-hours telephone support is available from HP for the entire warranty period; to reach our support centers, refer to hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to hp.com/networking/warrantysummary

- Software releases

  To find software for your product, refer to hp.com/networking/support; for details on the software releases available with your product purchase, refer to hp.com/networking/warrantysummary

HP MSR20 Series

Specifications

	HP MSR20-20 Router (JF283A)	HP MSR20-21 Router (JD663B)	HP MSR20-40 Router (JF228A)
I/O ports and slots	2 SIC slots 2 RJ-45 autosensing 10/100 WAN ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full	2 SIC slots 2 RJ-45 autosensing 10/100 WAN ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 8 RJ-45 autosensing 10/100 LAN ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full	4 SIC slots 2 RJ-45 autosensing 10/100 WAN ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full
Physical characteristics			
Dimensions	14.17(w) x 11.3(d) x 1.74(h) in (36 x 28.71 x 4.42 cm) (1U height)	14.17(w) x 11.3(d) x 1.74(h) in (36 x 28.7 x 4.42 cm) (1U height)	14.17(w) x 11.3(d) x 1.74(h) in (36 x 28.71 x 4.42 cm) (1U height)
Weight	7.5 lb (3.4 kg)	7.5 lb (3.4 kg)	11.9 lb (5.4 kg)
Memory and processor	RISC @ 400 MHz, 256 MB compact flash, 256 MB SDRAM	RISC @ 400 MHz, 256 MB compact flash, 256 MB SDRAM	RISC @ 400 MHz, 256 MB compact flash, 256 MB SDRAM
Mounting and enclosure	Desktop or can be mounted in a EIA-standard 19-inch telco rack when used with the rack-mount kit in the package	Desktop or can be mounted in a EIA-standard 19-inch telco rack when used with the rack-mount kit in the package	Mounts in an EIA-standard 19-inch telco rack
Performance			
Throughput	up to 180 Kpps (64-byte packets)	up to 180 Kpps (64-byte packets)	up to 180 Kpps (64-byte packets)
Routing table size	10000 entries (IPv4), 10000 entries (IPv6)	10000 entries (IPv4), 10000 entries (IPv6)	10000 entries (IPv4), 10000 entries (IPv6)
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 90%, noncondensing	5% to 90%, noncondensing	5% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	5% to 90%, noncondensing	5% to 90%, noncondensing	5% to 90%, noncondensing

	HP MSR20-20 Router (JF283A)	HP MSR20-21 Router (JD663B)	HP MSR20-40 Router (JF228A)
Electrical characteristics			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Maximum heat dissipation	184 BTU/hr (194.12 kJ/hr)	184 BTU/hr (194.12 kJ/hr)	341 BTU/hr (359.76 kJ/hr)
AC voltage	100 - 240 VAC	100 - 240 VAC	100 - 240 VAC
Maximum power rating	54 W	54 W	100 W
	Notes 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.	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.	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.
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
Telecom	FCC part 68; CS-03	FCC part 68; CS-03	FCC part 68; CS-03
Management	IMC—Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC—Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC—Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
Notes	The HP 3G Wireless GSM/WCDMA WAN SIC Module (JF820A) is not approved for use in the same chassis as a Wi-Fi interface (IEEE 802.11b/g, 802.11b/g/n, etc.) in the European Union.	The HP 3G Wireless GSM/WCDMA WAN SIC Module (JF820A) is not approved for use in the same chassis as a Wi-Fi interface (IEEE 802.11b/g, 802.11b/g/n, etc.) in the European Union.	The HP 3G Wireless GSM/WCDMA WAN SIC Module (JF820A) is not approved for use in the same chassis as a Wi-Fi interface (IEEE 802.11b/g, 802.11b/g/n, etc.) in the European Union.

	HP MSR20-20 Router (JF283A)	HP MSR20-21 Router (JD663B)	HP MSR20-40 Router (JF228A)
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1-year, 24x7 software phone support, software updates (HR557E) Refer to the HP website at hp.com/networking/services 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.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at hp.com/networking/services 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.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1-year, 24x7 software phone support, software updates (HR557E) Refer to the HP website at hp.com/networking/services 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.

Standards and Protocols
(applies to all products in series)

BGP	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	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	IEEE 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 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 1878 Variable Length Subnet Table for IPv4 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 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 2570 Introduction to Version 3 of the Internet-standard Network Management Framework

Standards and Protocols
(applies to all products in series)

	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_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 2985 PKCS #9: Selected Object Classes and Attribute Types Version 2.0 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 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 3246 Expedited Forwarding PHB RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS) RFC 3277 IS-IS Transient Blackhole Avoidance 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 3410 Introduction and Applicability Statements for Internet Standard Management Framework 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 RFC 4301 Security Architecture for the Internet Protocol RFC 5101 Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of IP Traffic Flow Information 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 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 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

Standards and Protocols
(applies to all products in series)

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 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 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)

HP MSR20 Series accessories

Transceivers	HP X110 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 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 RJ45 20m Router Cable (JD517A) 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) 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 mini D-28 to 4-RJ45 0.3m Router Cable (JG263A)

HP MSR20 Series accessories (continued)

Router Modules	HP MSR Encryption Accelerator Advanced Module (JD608A) HP MSR Standard Encryption Accelerator Module (JD609A) HP MSR 4-port 10/100Base-T Switch SIC Module (JD573B) HP MSR 1-port 10/100Base-T SIC Module (JD545B) HP MSR 1-port 100Base-X SIC Module (JF280A) HP MSR 1-port GbE Combo SIC Module (JD572A) HP MSR 2-port FXO SIC Module (JD558A) HP MSR 2-port FXS SIC Module (JD560A) HP MSR 1-port E1 Voice SIC Module (JD575A) HP MSR 1-port T1 Voice SIC Module (JD576A) HP MSR 2-port FXS/1-port FXO SIC Module (JD632A) HP MSR 2-port ISDN-S/T Voice SIC Module (JF821A) HP MSR 1-port E1/Fractional E1 (75ohm) SIC Module (JD634B) HP MSR 2-port E1/Fractional E1 (75ohm) SIC Module (JF842A) HP MSR 1-port T1/Fractional T1 SIC Module (JD538A) HP MSR 1-port Enhanced Serial SIC Module (JD557A) HP MSR 1-port ADSL2+ SIC Module (JD537A) HP MSR 1-port ADSL over ISDN SIC Module (JG056B) HP MSR 1-port 8-wire G.SHDSL (RJ45) DSIC Module (JG191A) HP MSR 1-port ISDN-S/T SIC Module (JD571A) HP MSR 8-port Async Serial SIC Module (JF281A) HP MSR 16-port Async Serial SIC Module (JG186A) HP MSR 802.11b/g/n Wireless Access Point 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 HSPA/WCDMA SIC Module (JG187A) HP MSR 4-port FXS / 1-port FXO DSIC Module (JG189A) **NEW** HP MSR 4G LTE SIC Module for Verizon/LTE 700 MHz/CDMA Rev A (JG742A) **NEW** HP MSR 4G LTE SIC Module for ATT/LTE 700/1700/2100 MHz and UMTS/HSPA+/HSPA/EDGE/GRPS/GSM (JG743A) **NEW** HP MSR 4G LTE SIC Module for Global/LTE 800/900/1800/2100/2600 MHz and UMTS/HSPA+/HSPA/EDGE/GRPS/GSM (JG744A)
Memory	HP X600 1G Compact Flash Card (JC684A) HP X600 512M Compact Flash Card (JC685A) HP X600 256M Compact Flash Card (JC686A)
HP MSR20-40 Router (JF228A)	HP MSR 32-channel Voice Processor Module (JD598A) HP MSR 24-channel Voice Processor Module (JD599A) HP MSR Voice Co-processor Module (JD610A) HP MSR 9-port 10/100Base-T Switch DSIC Module (JD574B)

Learn more at
hp.com/networking

Sign up for updates
hp.com/go/getupdated

Share with colleagues

Rate this document

© Copyright 2010-2014 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

4AA3-0761ENW, July 2014, Rev.5