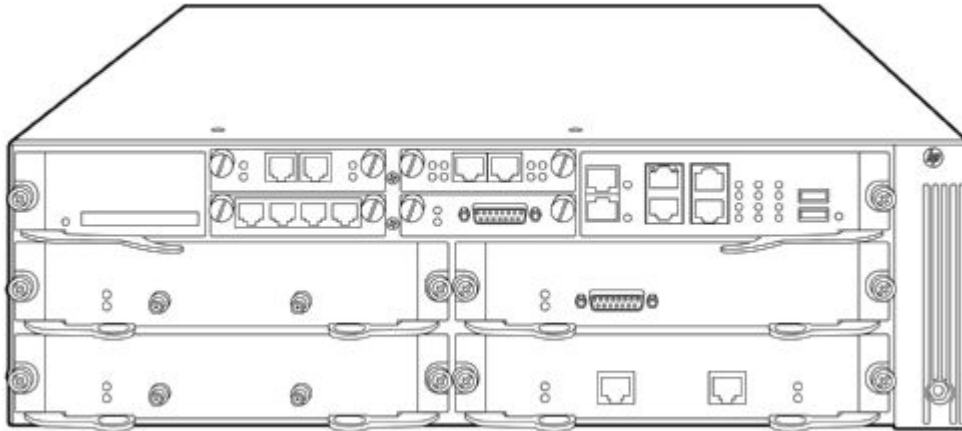
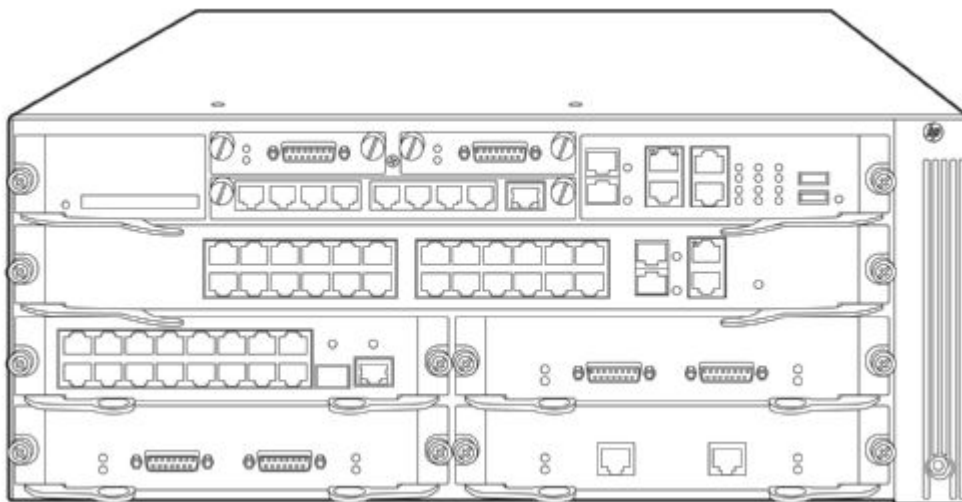


### Overview



**HP MSR50-40 Router**



**HP MSR50-60 Router**

### Models

HP MSR50-40 Router

JD433A

HP MSR50-60 Router

JF231A

HP MSR50-40 DC Router

JF285A

HP MSR50-60 DC Router

JF640A

### Overview

#### Key features

- High-performance, modular LAN/WAN router
- Converged routing, switching, wireless, voice, and security
- Third-party applications and virtualized services platform
- Embedded encryption, firewall, and other security features
- High reliability, with available dual power supplies and hot-swappable modules

#### Product overview

HP MSR50 Series routers are a component of the HP FlexBranch solution, which is part of the HP FlexNetwork architecture.

These routers are designed for large branch offices, regional offices, and enterprise deployments that require high-performance converged routing, switching, wireless, security, voice, and virtualized applications.

The MSR50 Series has a rich set of modular WAN, LAN, and voice interface connectivity options, as well as embedded hardware-based encryption and voice processing. With optional Open Architecture Platform (OAP) modules, it can deliver VMware vSphere, an industry-leading virtualization platform that integrates third-party applications with the router

#### 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
- **Congestion avoidance**—Weighted Random Early Detection (WRED)/Random Early Detection (RED)
- **Other QoS technologies**—supports traffic shaping, FR QoS, MPLS QoS, and MP QoS/LFI

##### Management

- **Management interface control**—provides management access through modem port and terminal interface—provides access through terminal interface, telnet, or SSH
- **Industry-standard CLI with a hierarchical structure**—reduces training time and expenses, and increases productivity in multivendor installations
- **Management security**—multiple privilege levels with password protection restrict access to critical configuration commands—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**—FTP allows bidirectional transfers over a TCP/IP network and is used for configuration updates—Trivial FTP is a simpler method using User Datagram Protocol (UDP)
- **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
- **Info center**—provides a central information center for system and network information—aggregates all logs, traps, and debugging

### Overview

information generated by the system and maintains them in order of severity—outputs the network information to multiple channels based on user-defined rules

- **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

- **High-density port connectivity**—provides up to 10 interface module slots and up to 90 Fast Ethernet ports
- **Multiple WAN and LAN interfaces**—provide a traditional link with E3, T3, E1, T1, ADSL, ADSL2, ADSL2+, G.SHDSL, OC-3, POS, ATM, and ISDN/AM backup—deliver high-density Ethernet access with WAN Fast Ethernet/Gigabit Ethernet, LAN Fast Ethernet, and PoE—offer mobility access with IEEE 802.11b/g/n Wi-Fi and 3G
- **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 are available
- **Ideal IP telephony solutions**—support FXO, FXS, T1, E1, and BRI in various densities—provide Web browser-based administration, Smart Dial Routing, FXS and FXO 1-1 binding for all ports, Power to Escape to PSTN when IP failures occur, and Enhanced Local MSR Survivability
- **Flexible port selection**—provides 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
- **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

### Performance

- **Excellent forwarding performance**—provides forwarding performance up to 800 Kpps/1280 Kpps (for two kinds of engines)—meets current and future bandwidth-intensive application demands of enterprise businesses
- **Powerful encryption capacity**—includes embedded hardware encryption accelerator to improve encryption performance
- **Flexible chassis selection**—offers a choice of four or six FIC slot routers, meeting different requirements on enterprise branches

### Resiliency and high availability

- **Hot swappable modules**—facilitate the replacement of hardware interface modules without impacting the traffic flow through the system
- **Dual internal power supply**—provides high reliability
- **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)**  
fully 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**—effectively 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

### Overview

- **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)**  
Interior Gateway Protocol (IGP) uses link-state protocol for faster convergence—supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery
- **Border Gateway Protocol 4 (BGP-4)**  
Exterior Gateway Protocol (EGP) with path vector protocol uses TCP for enhanced reliability for the route discovery process, reduces bandwidth consumption by advertising only incremental updates, and supports extensive policies for increased flexibility, as well as scales to very large networks
- **Intermediate system to intermediate system (IS-IS)**—Interior Gateway Protocol (IGP) using path vector protocol, 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**—is an important element for the transition from IPv4 to IPv6—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
- **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, thus reducing complexity and increasing 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 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

### Overview

- (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 illegal 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
- **Media access control (MAC) authentication**—provides simple authentication based on a user's MAC address—supports local or RADIUS-based authentication
- **Terminal Access Controller Access-Control System (TACACS+)**  
is an authentication tool using TCP with encryption of the full authentication request that provides additional security
- **Network login**—standard IEEE 802.1X allows authentication of multiple users per port
- **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, 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 the router 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
- **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)**—is used by IP hosts to establish and maintain multicast groups—supports v1, v2, and v3—utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks
- **Protocol Independent Multicast (PIM)**—is used for IPv4 and IPv6 multicast applications—supports PIM Dense Mode (PIM-DM), Sparse Mode (PIM-SM), and Source-Specific Mode (PIM-SSM)
- **Multicast Source Discovery Protocol (MSDP)**—is used for inter-domain multicast applications, allowing multiple PIM-SM domains to interoperate
- **Multicast Border Gateway Protocol (MBGP)**—allows multicast traffic to be forwarded across BGP networks and kept separate from unicast traffic

### Integration

- **Open Application Architecture (OAA)**—provides high-performance application-specific modules fully integrated with the switching architecture—uses the chassis high-speed backplane to access network-related data—increases performance, reduces costs, and simplifies network management
- **Embedded NetStream**—local and global server load-balancing module improves traffic distribution using powerful scheduling

### Overview

- 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**—are delivered through the use of a common operating system that simplifies and streamlines deployment, management, and training, thereby cutting costs as well as reducing the chance for 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**—engineering efficiencies allow new and custom features to be brought rapidly to the market with better initial and ongoing stability
- **Green initiative support**—provides support for RoHS and WEEE regulations

### Product architecture

- **Ideal multiservice platform**  
provides a 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
- **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
- **Open Application Platform (OAP) and virtualization**  
are available on HP MSR Open Architecture Platform (OAP) Module with VMware vSphere—offer an industry-leading virtualization platform which integrates third-party applications with the MSR series routers—provide application and services flexibility—deliver the potential functionality of multiple devices, creating capital and operational expense savings and lasting investment protection
- **USB interface**  
uses USB memory disk to download and upload configuration files—supports an external USB 3G modem for a 3G WAN uplink
- **Flexible modular design**  
includes multiple types of modules that meet different requirements, such as Smart Interface Cards (SICs), which are small and cost-effective modules—Multi-functional Interface Modules (MIMs), which are more high-density and affordable modules—Flexible Interface Cards (FICs), which provide high reliability and are hot-swappable—and double-width modules, which provide high density
- **SIP trunk**  
the SIP trunk link can carry multiple concurrent calls, and the carrier authenticates only the link, rather than carrying each SIP call over this link

### Warranty and support

- **1-year warranty**—with advance replacement and 30-calendar-day delivery (available in most countries)
- **Electronic and telephone support**—limited electronic and telephone support is available from HP—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

## Overview

releases available with 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.

#### Standard Switch Enclosures

##### HP MSR50-40 Router

- [4 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w AC Power Supply included](#)
- [3U - Height](#)

JD433A

[See Configuration Note<sup>9</sup>](#)

##### HP MSR50-40 DC Router

- [4 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w DC Power Supply included](#)
- [3U - Height](#)

JF285A

##### HP MSR50-60 Router

- [6 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w AC Power Supply included](#)
- [4U - Height](#)

JF231A

[See Configuration Note<sup>9</sup>](#)

##### HP MSR50-60 Rtr Chassis w DC PwrSupply

- [6 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w DC Power Supply included](#)
- [4U - Height](#)

JF640A

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

Note 9

[Localization required. \(See Localization Menu\)](#)

#### CTO Models

##### CTO Solution Sku

##### HP MSR CTO Router Solution

JG500A





### Configuration

- [SSP trigger sku](#)

[See Configuration Note 10](#)

#### CTO Base Sku

##### HP MSR50-40 Router

- [4 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w AC Power Supply included](#)
- [3U - Height](#)

[JD433A](#)

[See Configuration Note 1, 9, 11](#)

##### HP MSR50-60 Router

- [6 - FIC module slots](#)
- [Must select at least 1 Main Processing Unit](#)
- [Must select at least 1 Multi Service Module](#)
- [1 - 350w AC Power Supply included](#)
- [4U - Height](#)

[JF231A](#)

[See Configuration Note 1, 9, 11](#)

#### Configuration Rules

**Note 1** If this Switch is selected integrated to the CTO Switch Solution, Then a Minimum of 1 factory integrated accessory must be ordered and integrated to CTO chassis. See Menu below, option must have a #0D1 to be integrated to the CTO Chassis.

**Note 9** Localization required. (See Localization Menu for list.)

**Note 10** This HPN CTO switch cannot be factory racked. (Future Release)

**Note 11** If the Router Chassis is to be Box Level Factory Integrated (CTO), Then the #0D1 is required on the Router Chassis and integrated to the JG500A - HP MSR CTO Enablement. (Min 1/Max 1 Router per SSP)

### Internal Power Supplies

[JD433A and JF285A Only System \(std 1 // max 2\) User Selection \(min 0 // max 1\) Per router](#)

[JF231A and JF640A Only System \(std 1 // max 3\) User Selection \(min 0 // max 2\) Per router](#)

HP MSR50 AC Power Supply

[JD650A](#)



### Configuration

	<a href="#">See Configuration Note 1, 4, 9</a>
HP MSR50-60 DC Power Supply	JF443A <a href="#">See Configuration Note 2, 4</a>
HP MSR50 AC PoE Power Supply	JD652A <a href="#">See Configuration Note 3, 5, 9</a>

### Configuration Rules

Note 1	If this Power Supply is selected, Then one of the following routers is required	
	HP MSR50-40 Router	JD433A
	HP MSR50-60 Router	JF231A
Note 2	If this Power Supply is selected, Then one of the following routers is required	
	HP MSR50-40 DC Router	JF285A
	HP MSR50-60 Rtr Chassis w DC PwrSupply	JF640A
Note 3	Only 1 AC PoE Power Supply can be added ANY MSR 50.	
Note 4	Only 1 JD650A - HP MSR50 AC Power Supply or JF443A - HP MSR50-60 DC Power Supply can be added ANY MSR50.	
Note 5	If the JD429B - HP MSR50 G2 Processor Module is selected, Then this power supply is not supported.	
Note 9	Localization required. (See Localization Menu for list.)	

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

## Modules

### Main Processing Unit Slot

HP MSR50 Processor Module	JD653A
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### Configuration

- 4 - SIC modules slot See Configuration Note=1, 2, 4, 6, 8
- min=0 \ max=2 SFP Transceivers
- 1 - 512MB HP MSR 512MB SDRAM Included
- 1 - 256MB HP X600 256M Compact Flash Card Included

#### Russian Reduced Encryption

JD653A#A59

#### HP MSR50 G2 Processor Module

JD429B

- with no SIC modules slot See Configuration Note=1,3, 4, 5, 8
- min=0 \ max=3 SFP Transceiver
- 1 - 512MB HP MSR 512MB SDRAM Included
- 1 - 256MB HP X600 256M Compact Flash Card Included

#### Russian Reduced Encryption

JD429B#A59

#### Configuration Rules=

##### Note 1

The following Transceivers install into this Module=(Use #0D1 if router is CTO) - if applicable

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 X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LH40 Transceiver	JD120B
HP X110 100M SFP LC LH80 Transceiver	JD091A
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X120 1G SFP LC BX 10-D Transceiver	JD099B

##### Note 2

The following DDR SDRAM install into this Module=

HP A-Series 256MB DDR SDRAM	JD647A
HP A-Series 512MB DDR SDRAM	JD648A

##### Note 3

The following DDR SDRAM install into this Module=

HP A-Series 2GB DDR2 SDRAM	JG205A
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### Configuration

Note 4	The following CF Card install into this Module=	
	HP A7500 1G Compact Flash Card	JC684A
	HP A7500 512M Compact Flash Card	JC685A
	HP A7500 256M Compact Flash Card	JC686A
Note 5	If this Module is selected, Then JD434A - HP MSR50 Router Software License is required.	
Note 6	The following SIC Modules install into this Module=(Use #0D1 if router is CTO) - if applicable	
	HP MSR 4-port 10/100 SIC Module	JD573B
	HP MSR 9-port 10/100 DSIC Module	JD574B
	HP A-MSR 4-port 10/100Base-T PoE Switch SIC Module	JD620A
	HP A-MSR 9-port 10/100Base-T PoE Switch DSIC Module	JD621A
	HP MSR 1-port 10/100 SIC Module	JD545B
	HP 1-port 100Mbt SFP SIC Router Module	JF280A
	HP MSR 1-port 10/100/1000 SIC Module	JD572A
	HP MSR 2-port FXO SIC Module	JD558A
	HP MSR 1-port FXO SIC Module	JD559A
	HP MSR 2-port FXS SIC Module	JD560A
	HP MSR 1-port FXS SIC Module	JD561A
	HP MSR 1-port E1-Voice SIC Module	JD575A
	HP MSR 1-port T1-Voice SIC Module	JD576A
	HP 2p ISDN-S/T Voice Interface SIC Mod	JF821A
	HP MSR 2FXS + 1FXO Voice Intfc SIC Mod	JD632A
	HP MSR 1-port Fractional E1 SIC Module	JD634A
	HP MSR 1-port Fractional SIC Module	JD538A
	HP MSR 2-port Fractional E1 SIC Module	JF842A
	HP MSR 1-port Enhanced Serial SIC Mod	JD557A
	HP A-MSR 1-port ADSL over POTS SIC Module	JD537A
	HP MSR 1-port ISDN-S/T SIC Module	JD571A
	HP A-MSR 8-port Async Serial SIC Module	JF281A
	HP 802.11b/g/n Wireless AP SIC Module	JF819A
	HP MSR 802.11b/g/n Wless AP SIC Mod (NA)	JG211A
	HP MSR 1p 8-wire G.SHDSL (RJ45) DSIC Mod	JG191A
	HP MSR 1-port ADSL over ISDN SIC Module	JG056B
	HP MSR 16-port Async Serial SIC Module	JG186A
	HP A-MSR 4-port FXS/1-port FXO DSIC Mod	JG189A
	HP A-MSR HSPA/WCDMA SIC Module	JG187A
	HP MSR 4G LTE SIC Mod for Verizon	JG742A
	HP MSR 4G LTE SIC Mod for ATT	JG743A
	HP MSR 4G LTE SIC Mod for Global	JG744A

### Configuration

Note 8 If this product is ordered in Russia, Then the #A59 must be ordered with product number.

#### Multi-Service Module Slot

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

##### HP MSR50 Module

- 2 - ESM Modules
- 1 - VCPM Module
- 4 - VPM Modules

JD651A

See Configuration  
Note 1, 3, 4, 5

##### HP MSR50 G2 Module

- 2 - ESM Modules
- 1 - VCPM Module

JD430A

See Configuration  
Note 2, 3, 4

#### Configuration Rules

Note 1 If this module is selected, Then the JD653A - HP MSR50 Processor Module is required.

Note 2 If this module is selected, Then the JD429B - HP MSR50 G2 Processor Module is required.

Note 3 The following ESM Modules install into this Module (Use #0D1 if router is CTO) - -

HP A-MSR Advanced Network Data Encryption ESM Module	JD608A
HP A-MSR Standard Network Data Encryption ESM Module	JD609A

Note 4 The following VCPM Modules install into this Module (Use #0D1 if router is CTO)

HP A-MSR Voice Co-processing Module	JD610A
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Note 5 The following VPM Modules install into this Module (Use #0D1 if router is CTO)

HP A-MSR 32-Channel Voice Processing Module	JD598A
HP A-MSR 24-Channel Voice Processing Module	JD599A
HP A-MSR 16-Channel Voice Processing Module	JD600A
HP A-MSR 8-Channel Voice Processing Module	JD601A

#### FIC Modules

JD433A and JF285A Only System (std 0 // max 4) User Selection (min 0 // max 4) Per router

JF231A and JF640A Only System (std 0 // max 6) User Selection (min 0 // max 6) Per router



### Configuration

HP MSR 1-port 10/100/1000 FIC Module	JD583B
HP MSR 8p Async Serial RJ45 FIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=8 AUX Cables</a></li></ul>	JF260B <a href="#">See Configuration Note 6</a>
HP MSR 16p Async Serial RJ45 FIC Mod <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=16 AUX Cables</a></li></ul>	JF265B <a href="#">See Configuration Note 6</a>
HP MSR 2-port Gig-T FIC Module	JF269B
HP MSR 2-port 1000BASE-X FIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=2 SFP Modules</a></li></ul>	JF270B <a href="#">See Configuration Note 3</a>
HP MSR 1-port GbE Fiber FIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 SFP Modules</a></li></ul>	JD582A <a href="#">See Configuration Note 3</a>
HP MSR 2-port 10/100 FIC MSR Module	JD577A
HP 4-port 10/100 FIC Module	JF824A
HP MSR 16-port 10/100 PoE FIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 SFP Modules</a></li></ul>	JD616A <a href="#">See Configuration Note 3, 11, 19, 20</a>
HP MSR 24-port 10/100 POE DFIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=2 SFP Modules</a></li></ul>	JD617A <a href="#">See Configuration Note 1, 2, 3, 11, 19, 20</a>
HP MSR 4-port E and M FIC Module	JD602A
HP MSR 4-port FXO FIC Module	JD593A
HP MSR 4-port FXS FIC Module	JD594A
HP MSR 1-port T1 Voice FIC Module <ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 T1 Cable</a></li></ul>	JD605A

### Configuration

HP MSR 2-port T1 Voice FIC Module	JD606A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=2 T1 Cable</a></li></ul>	
HP MSR 1-port E1 Voice FIC Module	JD607A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 E1 Cable</a></li></ul>	<a href="#">See Configuration Note-8, 13</a>
HP MSR 2-port E1-Voice FIC Module	JD587A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=2 E1 Cable</a></li></ul>	<a href="#">See Configuration Note-8, 13</a>
HP MSR 4-port Enhanced Serial FIC Module	JD584A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=4 Serial Port Cable</a></li></ul>	<a href="#">See Configuration Note-7</a>
HP MSR 8-port Serial Enhanced FIC Module	JD580A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=8 Serial Port Cable</a></li></ul>	<a href="#">See Configuration Note-7</a>
HP MSR 2-port CE1/PRI FIC Module	JD578A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=2 E1 Cable</a></li></ul>	<a href="#">See Configuration Note-8, 13</a>
HP MSR 4-port CE1/PRI FIC Module	JD588A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=4 E1 Cable</a></li></ul>	<a href="#">See Configuration Note-8, 13</a>
HP MSR 8-port CE1/PRI FIC-75 Module	JD585A
<ul style="list-style-type: none"><li>• <a href="#">must select 1 8-port E1 Cable</a></li></ul>	<a href="#">See Configuration Note-9</a>
HP MSR 4-port Fractional E1 FIC Module	JD591A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=4 E1 Cable</a></li></ul>	<a href="#">See Configuration Note-8, 13</a>
HP MSR 4-port Fractional T1 FIC Module	JD592A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=4 T1 Cable</a></li></ul>	<a href="#">See Configuration Note-12</a>
HP MSR 1-port FT3/CT3 FIC Module	JD629A

### Configuration

<ul style="list-style-type: none"><li>• min=0 \ max=2 E3/T3 Cable</li></ul>	See Configuration Note~11
HP MSR 1-port FE3/CE3 FIC Module	JD625A
<ul style="list-style-type: none"><li>• min=0 \ max=2 E3/T3 Cable</li></ul>	See Configuration Note~11
HP MSR 4-port ISDN-S/T FIC Module	JD589A
HP MSR 4-port E1-IMA FIC -75 Module	JD622A
<ul style="list-style-type: none"><li>• min=0 \ max=1 E1 Cable</li></ul>	See Configuration Note~14
HP MSR 1-port T3 ATM FIC Module	JD595A
<ul style="list-style-type: none"><li>• min=0 \ max=2 E3/T3 Cable</li></ul>	See Configuration Note~11
HP MSR 1-port E3 ATM FIC Module	JD596A
<ul style="list-style-type: none"><li>• min=0 \ max=2 E3/T3 Cable</li></ul>	See Configuration Note~11
HP MSR 1-port OC-3 ATM FIC Module	JD633A
<ul style="list-style-type: none"><li>• min=0 \ max=1 SFP Modules</li></ul>	See Configuration Note~4
HP MSR 1-port OC-3 POS FIC Module	JD581C
<ul style="list-style-type: none"><li>• min=0 \ max=1 SFP Modules</li></ul>	See Configuration Note~4
HP MSR 1p OC-3/STM-1 E1/T1 CPOS FIC Mod	JG201A
<ul style="list-style-type: none"><li>• min=0 \ max=1 SFP Modules</li></ul>	See Configuration Note~4
HP A-MSR 8-p E1 IMA (75ohm) FIC Module	JF278B
<ul style="list-style-type: none"><li>• min=1 \ max=1 8-port E1 Cable</li></ul>	See Configuration Note~15
HP A-MSR 24-port FXS FIC Module	JG197A
HP A-MSR 8-port T1/CT1/PRI FIC Module	JD586B
<ul style="list-style-type: none"><li>• min=1 \ max=1 T1 Cable</li></ul>	See Configuration Note~17



### Configuration

HP A-MSR 8-port T1 IMA FIC Module	JG200A
<ul style="list-style-type: none"> <li>min=1 \ max=1 T1 Cable</li> </ul>	See Configuration Note <sup>17</sup>
HP MSR OAP FIC Mod w/VMware vSphere	JG533A#B01
HP MSR LSB Com FIC Mod pwrby Msft Lync	JG589A#B01
	See Configuration Note <sup>21</sup>

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

Note 1	If these Modules are add to the following routers Then Max = 2 <sup>2</sup>	
	HP MSR50-40 Router	JD433A
	HP MSR50-40 DC Router	JF285A
Note 2	If these Modules are add to the following routers Then Max = 2 <sup>2</sup>	
	HP MSR50-60 Router	JF231A
	HP MSR50-60 Rtr Chassis w DC PwrSupply	JF640A
Note 3	The following Transceivers install into this Module <sup>2</sup> (Use #0D1 if router is CTO) - if applicable	
	HP X125 1G SFP LC LH70 Transceiver	JD063B
	HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
	HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	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
	HP X120 1G SFP LC SX Transceiver	JD118B
	HP X120 1G SFP LC LX Transceiver	JD119B
Note 4	The following Transceivers install into this Module <sup>2</sup> (Use #0D1 if router is CTO) - if applicable	
	HP X110 100M SFP LC LH40 Transceiver	JD090A
	HP X110 100M SFP LC LH80 Transceiver	JD091A
	HP X110 100M SFP LC FX Transceiver	JD102B
	HP X110 100M SFP LC LX Transceiver	JD120B

### Configuration

Note 6	The following AUX Cables and Transit Cables install into this Module <sup>-</sup> Aux Cable-3m (D25 Male) JD508A Single Cable, Transit Plug, D25F, MP8(S)-? JD636A Single Cable, Transit Cable, 0.5m (RJ45) JD641A
Note 7	The following Cables install into this Module <sup>-</sup> V.24 Serial Port Cable, DTE, 3m JD519A V.24 Serial Port Cable, DCE, 3m JD521A V.35 Serial Port Cable, DTE, 3m JD523A V.35 Serial Port Cable, DCE, 3m JD525A X.21 Serial Port Cable, DTE, 3m JD527A X.21 Serial Port Cable, DCE, 3m JD529A RS449 Serial Port Cable, DTE, 3m JF825A RS449 Serial Port Cable, DCE, 3m JF826A RS530 Serial Port Cable, DTE, 3m JF827A RS530 Serial Port Cable, DCE, 3m JF828A
Note 8	The following E1 Cables install into this Module <sup>-</sup> 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
Note 9	The following Cable install into this Module <sup>-</sup> 8-port E1 Cable, 16 BNC, 3m, 75ohm JD512A
Note 11	The following E3/T3 Cable and Connector install into this Module <sup>-</sup> E3/T3 Cable 15m-BNC75 (ohm) Straight Male/SFYZ-75-2-1/SMB75 (ohm) Straight Female@D531A E3/T3 Cable 30m-BNC75 (ohm) Straight Male/SFYZ-75-2-1/SMB75 (ohm) Straight Female@D533A
Note 12	The following T1 Cables install into this Module <sup>-</sup> HP X260 T1 Router Cable JD518A
Note 13	The following E1 Cables install into this Module <sup>-</sup> HP X260 E1 RJ45 3m Router Cable JD509A HP X260 E1 RJ45 20m Router Cable JD517A
Note 14	The following E1 Cables install into this Module <sup>-</sup> HP X260 E1 4-Port IMA Router Cable JD638A
Note 15	The following 8E1 Cables install into this Module <sup>-</sup> HP CAB-75ohm 8E1-3m-BNC-IMA JD927A

### Configuration

Note 16	The following Cables install into this Module-	
	HP A-MSR 50 pin D-sub Male to 24 x RJ-11 Plug 15m Router Cable	JG318A
Note 17	The following Cables install into this Module-	
	HP X260 8T1 RJ45 3m Router Cable	JD639A
Note 19	If selected, Then show - Warning- JD652A - HP MSR50 AC PoE Power Supply required for POE.	
Note 20	If the JD429B - HP MSR50 G2 Processor Module is selected, Then this Module is not supported.	
Note 21	Max of 2 Modules per router with 1 Power Supply, and Max of 4 Modules per router with 2 Power supplies.	

### SIC Modules

System (std 0 // max 4) User Selection (min 0 // max 4) per JD653A MPU

HP MSR 4-port 10/100 SIC Module	JD573B See Configuration Note-1
HP MSR 9-port 10/100 DSIC Module	JD574B See Configuration Note-1
HP A-MSR 4-port 10/100Base-T PoE Switch SIC Module	JD620A See Configuration Note-1
HP A-MSR 9-port 10/100Base-T PoE Switch DSIC Module	JD621A See Configuration Note-1
HP MSR 1-port 10/100 SIC Module	JD545B See Configuration Note-1
HP 1-port 100Mbt SFP SIC Router Module	JF280A See Configuration Note-1, 2
<ul style="list-style-type: none"> <li>min=0 \ max=1 SFP Transceivers</li> </ul>	



### Configuration

HP MSR 1-port 10/100/1000 SIC Module	JD572A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 SFP Transceivers</a></li></ul>	<a href="#">See Configuration Note<sup>1, 3</sup></a>
HP MSR 2-port FXO SIC Module	JD558A
HP MSR 1-port FXO SIC Module	JD559A
HP MSR 2-port FXS SIC Module	JD560A
HP MSR 1-port FXS SIC Module	JD561A
HP MSR 1-port E1-Voice SIC Module	JD575A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 E1 Cable</a></li></ul>	<a href="#">See Configuration Note<sup>4, 13</sup></a>
HP MSR 1-port T1-Voice SIC Module	JD576A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 T1 Cable</a></li></ul>	<a href="#">See Configuration Note<sup>10</sup></a>
HP 2p ISDN-S/T Voice Interface SIC Mod	JF821A
HP MSR 2FXS + 1FXO Voice Intfc SIC Mod	JD632A
HP MSR 1-port Fractional E1 SIC Module	JD634B
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 E1 Cable</a></li></ul>	<a href="#">See Configuration Note<sup>4</sup></a>
HP MSR 1-port Fractional SIC Module	JD538A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 T1 Cable</a></li></ul>	<a href="#">See Configuration Note<sup>10</sup></a>
HP MSR 2-port Fractional E1 SIC Module	JF842A

### Configuration

<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 2E1 Cable</a></li></ul>	<a href="#">See Configuration Note~11</a>
HP MSR 1-port Enhanced Serial SIC Mod	JD557A
<ul style="list-style-type: none"><li>• <a href="#">min=0 \ max=1 Serial Port Cable</a></li></ul>	<a href="#">See Configuration Note~6</a>
HP A-MSR 1-port ADSL over POTS SIC Module	JD537A
	<a href="#">See Configuration Note~1</a>
HP MSR 1-port ISDN-S/T SIC Module	JD571A
HP A-MSR 8-port Async Serial SIC Module	JF281A
<ul style="list-style-type: none"><li>• <a href="#">Must select 1 8AS Communication Cable (min=1 \ max=1 cable)</a></li></ul>	<a href="#">See Configuration Note~7</a>
HP 802.11b/g/n Wireless AP SIC Module	JF819A
	<a href="#">See Configuration Note~1</a>
HP MSR 802.11b/g/n Wireless AP SIC Mod (NA)	JG211A
	<a href="#">See Configuration Note~1</a>
HP MSR 1p 8-wire G.SHDSL (RJ45) DSIC Mod	JG191A
	<a href="#">See Configuration Note~1</a>
HP MSR 1-port ADSL over ISDN SIC Module	JG056B
	<a href="#">See Configuration Note~1</a>
HP 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~12</a>
HP A-MSR 4-port FXS/1-port FXO DSIC Mod	JG189A
	<a href="#">See Configuration Note~1</a>

### Configuration

HP A-MSR HSPA/WCDMA SIC Module	JG187A <a href="#">See Configuration Note 1</a>
HP MSR 1-port E1/CE1/PRI SIC Module	JF253B <a href="#">See Configuration Note 1</a>
HP MSR 4G LTE SIC Mod for Verizon • None	JG742A <a href="#">See Configuration Note 14, 15</a>
HP MSR 4G LTE SIC Mod for ATT • None	JG743A <a href="#">See Configuration Note 14, 15</a>
HP MSR 4G LTE SIC Mod for Global • None	JG744A <a href="#">See Configuration Note 14, 15</a>

### Configuration Rules

Note 1 If these Modules are added, Then the Max = 2.

Note 2 The following Transceivers install into this Module (Use #0D1 if router is CTO) - if applicable

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

Note 3 The following Transceivers install into this Module

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

### Configuration

Note 4	The following E1 Cables install into this Module=	
	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
Note 6	The following Cables install into this Module=	
	V.24 Serial Port Cable, DTE, 3m	JD519A
	V.24 Serial Port Cable, DCE, 3m	JD521A
	V.35 Serial Port Cable, DTE, 3m	JD523A
	V.35 Serial Port Cable, DCE, 3m	JD525A
	X.21 Serial Port Cable, DTE, 3m	JD527A
	X.21 Serial Port Cable, DCE, 3m	JD529A
	RS449 Serial Port Cable, DTE, 3m	JF825A
	RS449 Serial Port Cable, DCE, 3m	JF826A
	RS530 Serial Port Cable, DTE, 3m	JF827A
	RS530 Serial Port Cable, DCE, 3m	JF828A
Note 7	If this module is selected Then 1 JD642A - HP X260 SIC-8AS RJ45 0.28m Router Cable is required.	
Note 10	The following T1 Cables install into this Module=	
	HP X260 T1 Router Cable	JD518A
Note 11	The following 2E1 Cables install into this Module=	
	HP X260 2E1 BNC 3m Router Cable	JD643A
Note 12	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 13	The following E1 Cables install into this Module=	
	HP X260 E1 RJ45 3m Router Cable	JD509A
	HP X260 E1 RJ45 20m Router Cable	JD517A
Note 14	The following Antenna Cables install into this Module=	
	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 15	If this module is selected, Then Max = 2 Modules of any combination or pairing of the following modules= JG742A, JG743A, JG744A.	

### ESM Modules



### Configuration

JD651A and JD430A Service Modules Only - System (std 0 // max 2) User Selection (min 0 // max 2)

HP MSR Encryption Accelerator Adv Mod	JD608A
HP MSR Std Encryption Accelerator Mod	JD609A

#### Voice Co-Processing Modules

JD651A and JD430A Service Modules Only -System (std 0 // max 1) User Selection (min 0 // max 1)

HP MSR Voice Co-processor Module	JD610A
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#### Voice Processing Modules

JD651A Service Modules Only -System (std 0 // max 1) User Selection (min 0 // max 4)

JD430A Service Modules Only -Not supported

HP MSR 32-channel Voice Processor Module	JD598A
HP MSR 24-channel Voice Processor Module	JD599A
HP MSR 16-channel Voice Processor Module	JD600A
HP MSR 8-channel Voice Processor Module	JD601A

#### SDRAM

System (std 1 // max 2) User Selection (min 0 // max 2) per Main Processing Module

HP 2GB DDR2 SDRAM	JG205A
HP MSR 256MB SDRAM	JD647A
HP MSR 512MB SDRAM	JD648A

### 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





### Configuration

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

### Cables

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 RJ45 3m Router Cable	JD509A
HP X260 E1 RJ45 20m Router Cable	JD517A
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 2E1 BNC 3m Router Cable	JD643A
HP X260 T1 Router Cable	JD518A
HP X260 T1 Voice Router Cable	JD535A
HP X260 T3/E3 Router Cable	JD531A
HP X260 E3-30 E3/T3 Router Cable	JD533A
HP X260 E1 4-port IMA Router Cable	JD638A
HP X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A
HP X200 Transit Plug D25F MP8(S) Single Cable	JD636A
HP X200 Transit Cable RJ45 0.5m Single Cable	JD641A
HP A-MSR 50 pin D-sub Male to 24 x RJ-11 Plug 15m Router Cable	JG318A
HP X260 8T1 RJ45 3m Router Cable	JD639A
HP CAB-75ohm 8E1-3m-BNC-IMA	JD927A

### Configuration

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

The following cable is used for RJ45 BNC Conversion  
HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable JD511A

### Router 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

#### Licenses

System (std 0 // max 1) User Selection (min 0 // max 1) per switch enclosure

HP MSR50 Router Software License JD434A

#### SDRAM

System (std 1 // max 2) User Selection (min 0 // max 2) per Main Processing Module

HP A-Series 2GB DDR2 SDRAM JG205A  
[See Configuration Note<sup>1</sup>](#)

HP MSR 256MB SDRAM JD647A  
[See Configuration Note<sup>1</sup>](#)

HP MSR 512MB SDRAM JD648A  
[See Configuration Note<sup>1</sup>](#)

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



### Configuration

Note 1	These SDRAM's are supported on the following Modules only-	
	HP MSR50 G2 Main Processing Unit	JD429B
	HP MSR50 Main Processing Unit	JD653A

#### Compact Flash cards

System (std 1 // max 2) User Selection (min 0 // max 1) per Main Processing Module

HP X600 1G Compact Flash Card	JC684A
	See Configuration Note~1

HP X600 512M Compact Flash Card	JC685A
	See Configuration Note~1

HP X600 256M Compact Flash Card	JC686A
	See Configuration Note~1

#### Configuration Rules~

Note 1	These CF Cards are supported on the following Modules only-	
	HP MSR50 G2 Main Processing Unit	JD429B
	HP MSR50 Main Processing Unit	JD653A

#### Opacity Shield Kit

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

HP MSR50-40 Opcty Shld Kit	JG583A
<b>NOTE~</b> Supported on JD433A, JF285A	See Configuration Note~1

HP MSR50-60 Opcty Shld Kit	JG584A
<b>NOTE~</b> Supported on JF231A, JF640A	See Configuration Note~1

#### Configuration Rules~

Note 1	If selected with a CTO Router Solution, Quantity 1 of JG586A#B01 must also be ordered.
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### Configuration

#### Tamper Evidence Labels

HP 12mm x 60mm Tmpr-Evidence (100) Lbl

**NOTE**

Supported on JD433A, JF285A, JF231A, JF640A

JG586A

See Configuration

Note<sup>1</sup>

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

Note 1 If selected with a CTO Router Solution, Quantity 1 of JG583A#B01 or JG584A#B01 must also be ordered.

Remarks<sup>3</sup> Each JG583A or JG584A would use 1 of JG586A.

### Technical Specifications

#### HP MSR50-40 Router (JD433A)

<b>Ports</b>	4 FIC slots												
<b>Physical characteristics</b>	<table border="0"> <tr> <td><b>Dimensions</b></td> <td>17.17(w) x 16.69(d) x 5.16(h) in (43.6 x 42.4 x 13.1 cm) (3U height)</td> </tr> <tr> <td><b>Weight</b></td> <td>39.68 lb (18 kg)</td> </tr> </table>	<b>Dimensions</b>	17.17(w) x 16.69(d) x 5.16(h) in (43.6 x 42.4 x 13.1 cm) (3U height)	<b>Weight</b>	39.68 lb (18 kg)								
<b>Dimensions</b>	17.17(w) x 16.69(d) x 5.16(h) in (43.6 x 42.4 x 13.1 cm) (3U height)												
<b>Weight</b>	39.68 lb (18 kg)												
<b>Memory and processor</b>	<table border="0"> <tr> <td><b>Processor 1</b></td> <td>RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash</td> </tr> <tr> <td><b>Processor 2</b></td> <td>RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash</td> </tr> </table>	<b>Processor 1</b>	RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash	<b>Processor 2</b>	RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash								
<b>Processor 1</b>	RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash												
<b>Processor 2</b>	RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash												
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack												
<b>Performance</b>	<table border="0"> <tr> <td><b>Throughput</b></td> <td>up to 1280 Kpps (64-byte packets)</td> </tr> <tr> <td><b>Routing/Switching capacity</b></td> <td>3 Gbps</td> </tr> <tr> <td><b>Routing table size</b></td> <td>100000 entries (IPv4), 100000 entries (IPv6)</td> </tr> </table>	<b>Throughput</b>	up to 1280 Kpps (64-byte packets)	<b>Routing/Switching capacity</b>	3 Gbps	<b>Routing table size</b>	100000 entries (IPv4), 100000 entries (IPv6)						
<b>Throughput</b>	up to 1280 Kpps (64-byte packets)												
<b>Routing/Switching capacity</b>	3 Gbps												
<b>Routing table size</b>	100000 entries (IPv4), 100000 entries (IPv6)												
<b>Environment</b>	<table border="0"> <tr> <td><b>Operating temperature</b></td> <td>32°F to 104°F (0°C to 40°C)</td> </tr> <tr> <td><b>Operating relative humidity</b></td> <td>5% to 90%, noncondensing</td> </tr> <tr> <td><b>Nonoperating/Storage temperature</b></td> <td>-40°F to 158°F (-40°C to 70°C)</td> </tr> <tr> <td><b>Nonoperating/Storage relative humidity</b></td> <td>5% to 90%, noncondensing</td> </tr> </table>	<b>Operating temperature</b>	32°F to 104°F (0°C to 40°C)	<b>Operating relative humidity</b>	5% to 90%, noncondensing	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)	<b>Nonoperating/Storage relative humidity</b>	5% to 90%, noncondensing				
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<b>Electrical characteristics</b>	<table border="0"> <tr> <td><b>Maximum heat dissipation</b></td> <td>1194 BTU/hr (1259.67 kJ/hr)</td> </tr> <tr> <td><b>Voltage</b></td> <td>100-240 VAC</td> </tr> <tr> <td><b>Maximum power rating</b></td> <td>350 W</td> </tr> <tr> <td><b>PoE power</b></td> <td>500 W</td> </tr> <tr> <td><b>Frequency</b></td> <td>50/60 Hz</td> </tr> <tr> <td><b>Notes</b></td> <td> <p>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.</p> <p>PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).</p> </td> </tr> </table>	<b>Maximum heat dissipation</b>	1194 BTU/hr (1259.67 kJ/hr)	<b>Voltage</b>	100-240 VAC	<b>Maximum power rating</b>	350 W	<b>PoE power</b>	500 W	<b>Frequency</b>	50/60 Hz	<b>Notes</b>	<p>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.</p> <p>PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).</p>
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<b>PoE power</b>	500 W												
<b>Frequency</b>	50/60 Hz												
<b>Notes</b>	<p>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.</p> <p>PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).</p>												
<b>Safety</b>	UL 60950-1 <sup>†</sup> AS/NZS 60950 <sup>†</sup> EN 60825-1 Safety of Laser Products-Part 1 <sup>†</sup> EN 60825-2 Safety of Laser Products-Part 2 <sup>†</sup> IEC 60950-1 <sup>†</sup> EN 60950-1 <sup>†</sup> CAN/CSA-C22.2 No. 60950-1-03 <sup>†</sup> FDA 21 CFR Subchapter J												
<b>Emissions</b>	<p>EN 55022 Class A</p> <p>ICES-003 Class A</p> <p>ANSI C63.4 2003</p> <p>ETSI EN 300 386 V1.3.3</p> <p>AS/NZS CISPR 22 Class A</p> <p>EN 61000-4-2</p> <p>EN 61000-4-3</p>												

### Technical Specifications

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

#### Management

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.

#### Services

3-year, parts only, global next-day advance exchange (UX166E)  
 3-year, 4-hour onsite, 13x5 coverage for hardware (UX167E)  
 3-year, 4-hour onsite, 24x7 coverage for hardware (UX170E)  
 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX173E)  
 3-year, 24x7 SW phone support, software updates (UX176E)  
 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR546E)  
 4-year, 4-hour onsite, 13x5 coverage for hardware (UX168E)  
 4-year, 4-hour onsite, 24x7 coverage for hardware (UX171E)  
 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX174E)  
 4-year, 24x7 SW phone support, software updates (UX177E)  
 5-year, 4-hour onsite, 13x5 coverage for hardware (UX169E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware (UX172E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX175E)  
 5-year, 24x7 SW phone support, software updates (UX178E)  
 3 Yr 6 hr Call-to-Repair Onsite (UX179E)  
 4 Yr 6 hr Call-to-Repair Onsite (UX180E)  
 5 Yr 6 hr Call-to-Repair Onsite (UX181E)  
 1-year, 4-hour onsite, 13x5 coverage for hardware (HR544E)  
 1-year, 6 hour Call-To-Repair Onsite for hardware (HR548E)  
 1-year, 24x7 software phone support, software updates (HR547E)

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

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#### HP MSR50-60 Router (JF231A)



### Technical Specifications

<b>Ports</b>	6 FIC slots
<b>Physical characteristics</b>	<b>Dimensions</b> 17.17(w) x 16.69(d) x 6.89(h) in (43.6 x 42.4 x 17.5 cm) (4U height)
	<b>Weight</b> 44.09 lb (20 kg)
<b>Memory and processor</b>	<b>Processor 1</b> RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash
	<b>Processor 2</b> RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> up to 1280 Kpps (64-byte packets)
	<b>Routing/Switching capacity</b> 3 Gbps
	<b>Routing table size</b> 100000 entries (IPv4), 100000 entries (IPv6)
<b>Environment</b>	<b>Operating temperature</b> 32°F to 104°F (0°C to 40°C)
	<b>Operating relative humidity</b> 5% to 90%, noncondensing
	<b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Nonoperating/Storage relative humidity</b> 5% to 90%, noncondensing
	<b>Maximum heat dissipation</b> 1194 BTU/hr (1259.67 kJ/hr)
	<b>Voltage</b> 100-240 VAC
	<b>Maximum power rating</b> 350 W
	<b>PoE power</b> 500 W
	<b>Frequency</b> 50/60 Hz
<b>Notes</b>	<p>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.</p> <p>PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).</p>
<b>Safety</b>	UL 60950-1 <sup>†</sup> AS/NZS 60950 <sup>†</sup> EN 60825-1 Safety of Laser Products-Part 1 <sup>†</sup> EN 60825-2 Safety of Laser Products-Part 2 <sup>†</sup> IEC 60950-1 <sup>†</sup> EN 60950-1 <sup>†</sup> CAN/CSA-C22.2 No. 60950-1-03 <sup>†</sup> FDA 21 CFR Subchapter J
<b>Emissions</b>	<p>EN 55022 Class A</p> <p>ICES-003 Class A</p> <p>ANSI C63.4 2003</p> <p>ETSI EN 300 386 V1.3.3</p> <p>AS/NZS CISPR 22 Class A</p> <p>EN 61000-4-2</p> <p>EN 61000-4-3</p> <p>EN 61000-4-4</p> <p>EN 61000-4-5</p>

### Technical Specifications

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

#### Management

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.

#### Services

3-year, parts only, global next-day advance exchange (UX166E)  
 3-year, 4-hour onsite, 13x5 coverage for hardware (UX167E)  
 3-year, 4-hour onsite, 24x7 coverage for hardware (UX170E)  
 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX173E)  
 3-year, 24x7 SW phone support, software updates (UX176E)  
 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR546E)  
 4-year, 4-hour onsite, 13x5 coverage for hardware (UX168E)  
 4-year, 4-hour onsite, 24x7 coverage for hardware (UX171E)  
 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX174E)  
 4-year, 24x7 SW phone support, software updates (UX177E)  
 5-year, 4-hour onsite, 13x5 coverage for hardware (UX169E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware (UX172E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX175E)  
 5-year, 24x7 SW phone support, software updates (UX178E)  
 3 Yr 6 hr Call-to-Repair Onsite (UX179E)  
 4 Yr 6 hr Call-to-Repair Onsite (UX180E)  
 5 Yr 6 hr Call-to-Repair Onsite (UX181E)  
 1-year, 4-hour onsite, 13x5 coverage for hardware (HR544E)  
 1-year, 6 hour Call-To-Repair Onsite for hardware (HR548E)  
 1-year, 24x7 software phone support, software updates (HR547E)

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

#### HP MSR50-40 DC Router (JF285A)

**Ports** 4 FIC slots





### Technical Specifications

<b>Physical characteristics</b>	<b>Dimensions</b>	17.17(w) x 16.69(d) x 5.16(h) in (43.6 x 42.4 x 13.1 cm) (3U height)
	<b>Weight</b>	39.68 lb (18 kg)
<b>Memory and processor</b>	<b>Processor 1</b>	RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash
	<b>Processor 2</b>	RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack	
<b>Performance</b>	<b>Throughput</b>	up to 1280 Kpps (64-byte packets)
	<b>Routing/Switching capacity</b>	3 Gbps
	<b>Routing table size</b>	100000 entries (IPv4), 100000 entries (IPv6)
<b>Environment</b>	<b>Operating temperature</b>	32°F to 104°F (0°C to 40°C)
	<b>Operating relative humidity</b>	5% to 90%, noncondensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	5% to 90%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b>	1194 BTU/hr (1259.67 kJ/hr)
	<b>DC Voltage</b>	-48 VDC to -60 VDC
	<b>Maximum power rating</b>	350 W
	<b>PoE power</b>	500 W
	<b>Notes</b>	<p>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.</p> <p>PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).</p>
<b>Safety</b>	UL 60950-1 <sup>†</sup> AS/NZS 60950 <sup>†</sup> EN 60825-1 Safety of Laser Products-Part 1 <sup>†</sup> EN 60825-2 Safety of Laser Products-Part 2 <sup>†</sup> IEC 60950-1 <sup>†</sup> EN 60950-1 <sup>†</sup> CAN/CSA-C22.2 No. 60950-1-03 <sup>†</sup> FDA 21 CFR Subchapter J	
<b>Emissions</b>	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 <sup>‡</sup> 2006	

### Technical Specifications

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

**Management**

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.

**Services**

- 3-year, parts only, global next-day advance exchange (UX166E)
- 3-year, 4-hour onsite, 13x5 coverage for hardware (UX167E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (UX170E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX173E)
- 3-year, 24x7 SW phone support, software updates (UX176E)
- 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR546E)
- 4-year, 4-hour onsite, 13x5 coverage for hardware (UX168E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UX171E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX174E)
- 4-year, 24x7 SW phone support, software updates (UX177E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UX169E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UX172E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX175E)
- 5-year, 24x7 SW phone support, software updates (UX178E)
- 3 Yr 6 hr Call-to-Repair Onsite (UX179E)
- 4 Yr 6 hr Call-to-Repair Onsite (UX180E)
- 5 Yr 6 hr Call-to-Repair Onsite (UX181E)
- 1-year, 4-hour onsite, 13x5 coverage for hardware (HR544E)
- 1-year, 6 hour Call-To-Repair Onsite for hardware (HR548E)
- 1-year, 24x7 software phone support, software updates (HR547E)

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

**HP MSR50-60 DC Router (JF640A)**

**Ports**

6 FIC slots

**Physical characteristics**

**Dimensions**

17.17(w) x 16.69(d) x 6.89(h) in (43.6 x 42.4 x 17.5 cm) (4U height)

**Weight**

44.09 lb (20 kg)



### Technical Specifications

<b>Memory and processor</b>	<b>Processor 1</b>	RISC @ 1700 MHz, 1 GB DDR SDRAM, 256 MB compact flash
	<b>Processor 2</b>	RISC @ 833 MHz, 512 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA-standard 19 in. rack	
<b>Performance</b>	<b>Throughput</b>	up to 1280 Kpps (64-byte packets)
	<b>Routing/Switching capacity</b>	3 Gbps
	<b>Routing table size</b>	100000 entries (IPv4), 100000 entries (IPv6)
<b>Environment</b>	<b>Operating temperature</b>	32°F to 104°F (0°C to 40°C)
	<b>Operating relative humidity</b>	5% to 90%, noncondensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	5% to 90%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b>	1194 BTU/hr (1259.67 kJ/hr)
	<b>DC Voltage</b>	-48 VDC to -60 VDC
	<b>Maximum power rating</b>	350 W
	<b>PoE power</b>	500 W
	<b>Notes</b>	<p>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.</p> <p>PoE Power is the power supplied by the internal power supply, it is dependent on the type and quantity of power supplies and may be supplemented with the use of a External Power Supply (EPS).</p>
<b>Safety</b>	UL 60950-1 <sup>†</sup> AS/NZS 60950 <sup>‡</sup> EN 60825-1 Safety of Laser Products-Part 1 <sup>‡</sup> EN 60825-2 Safety of Laser Products-Part 2 <sup>‡</sup> IEC 60950-1 <sup>‡</sup> EN 60950-1 <sup>‡</sup> CAN/CSA-C22.2 No. 60950-1-03 <sup>‡</sup> FDA 21 CFR Subchapter J	
<b>Emissions</b>	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 <sup>‡</sup> 2006 EN 61000-3-3 <sup>‡</sup> 1995 +A1 <sup>‡</sup> 2001+A2 <sup>‡</sup> 2005 EMC Directive 2004/108/EC FCC (CFR 47, Part 15) Class A	

### Technical Specifications

EN 55024-1998+ A1-2001 + A2-2003

EN 61000-4-11-2004

EN 61000-4-8-2001

#### Telecom

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

#### 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.

#### Services

Refer to the HP website at [www.hp.com/networking/services](http://www.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 1965 BGP4 confederations

RFC 1997 BGP Communities Attribute

RFC 1998 PPP Gandalf FZA Compression Protocol

RFC 2385 BGP Session Protection via TCP MD5

RFC 2439 BGP Route Flap Damping

##### Device management

RFC 1305 NTPv3

RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0

RFC 2271 FrameWork

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 for Multiprotocol Label Switching (MPLS)

RFC 768 UDP

RFC 783 TFTP Protocol (revision 2)

RFC 791 IP

RFC 792 ICMP

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)

Management

RFC 3812 Multiprotocol Label Switching (MPLS)

Traffic Engineering (TE) Management Information

Base (MIB)

### Technical Specifications

RFC 793 TCP	RFC 3847 Restart signaling for IS-IS
RFC 826 ARP	RFC 4301 Security Architecture for the Internet Protocol
RFC 854 TELNET	RFC 5101 Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of IP Traffic Flow Information
RFC 855 Telnet Option Specification	FRF.1.2 PVC User-to-Network Interface (UNI) Implementation Agreement - July 2000
RFC 856 TELNET	FRF.11.1 Voice over Frame Relay Implementation Agreement - May 1997 - Annex J added March 1999
RFC 858 Telnet Suppress Go Ahead Option	FRF.12 Frame Relay Fragmentation Implementation Agreement - December 1997
RFC 894 IP over Ethernet	FRF.16.1 Multilink Frame Relay UNI/NNI Implementation Agreement - May 2002
RFC 925 Multi-LAN Address Resolution	FRF.2.2 Frame Relay Network-to-Network Interface (NNI) Implementation Agreement - March 2002
RFC 950 Internet Standard Subnetting Procedure	FRF.20 Frame Relay IP Header Compression Implementation Agreement - June 2001
RFC 959 File Transfer Protocol (FTP)	FRF.3.2 Frame Relay Multiprotocol Encapsulation Implementation Agreement - April 2000
RFC 1006 ISO transport services on top of the TCP- Version 3	FRF.7 Frame Relay PVC Multicast Service and Protocol Description - October 1994
RFC 1027 Proxy ARP	FRF.9 Data Compression Over Frame Relay Implementation Agreement - January 1996
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	
	<b>IP multicast</b>
	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
	<b>IPv6</b>
	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 2464 Transmission of IPv6 over Ethernet Networks
	RFC 2472 IP Version 6 over PPP

### Technical Specifications

RFC 1519 CIDR	RFC 2473 Generic Packet Tunneling in IPv6
RFC 1534 DHCP/BOOTP Interoperation	RFC 2529 Transmission of IPv6 Packets over IPv4
RFC 1542 Clarifications and Extensions for the Bootstrap Protocol	RFC 2545 Use of MP-BGP-4 for IPv6
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)	RFC 2553 Basic Socket Interface Extensions for IPv6
RFC 1577 Classical IP and ARP over ATM	RFC 2740 OSPFv3 for IPv6
RFC 1613 Cisco Systems X.25 over TCP (XOT)	RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 1624 Incremental Internet Checksum	RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 1631 NAT	RFC 3513 IPv6 Addressing Architecture
RFC 1638 PPP Bridging Control Protocol (BCP)	RFC 3596 DNS Extension for IPv6
RFC 1661 The Point-to-Point Protocol (PPP)	
RFC 1662 PPP in HDLC-like Framing	<b>MIBs</b>
RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2	RFC 1213 MIB II
RFC 1701 Generic Routing Encapsulation	RFC 1229 Interface MIB Extensions
RFC 1702 Generic Routing Encapsulation over IPv4 networks	RFC 1286 Bridge MIB
RFC 1721 RIP-2 Analysis	RFC 1493 Bridge MIB
RFC 1722 RIP-2 Applicability	RFC 1573 SNMP MIB II
RFC 1723 RIP v2	RFC 1724 RIPv2 MIB
RFC 1795 Data Link Switching=Switch-to-Switch Protocol AIW DLSw RIG=DLSw Closed Pages, DLSw Standard Version 1	RFC 1757 Remote Network Monitoring MIB
RFC 1812 IPv4 Routing	RFC 1850 OSPFv2 MIB
RFC 1829 The ESP DES=CBC Transform	RFC 2011 SNMPv2 MIB for IP
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses	RFC 2012 SNMPv2 MIB for TCP
RFC 1878 Variable Length Subnet Table for IPv4	RFC 2013 SNMPv2 MIB for UDP
RFC 1944 Benchmarking Methodology for Network Interconnect Devices	RFC 2233 Interfaces MIB
RFC 1973 PPP in Frame Relay	RFC 2454 IPV6-UDP-MIB
RFC 1974 PPP Stac LZS Compression Protocol	RFC 2465 IPv6 MIB
RFC 1990 The PPP Multilink Protocol (MP)	RFC 2466 ICMPv6 MIB
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)	RFC 2618 RADIUS Client MIB
RFC 2091 Trigger RIP	RFC 2620 RADIUS Accounting MIB
RFC 2131 DHCP	RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2132 DHCP Options and BOOTP Vendor Extensions	RFC 2737 Entity MIB (Version 2)
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements	RFC 2863 The Interfaces Group MIB
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification	RFC 2933 IGMP MIB
RFC 2280 Routing Policy Specification Language	RFC 3813 MPLS LSR MIB
	<b>Network management</b>
	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

### Technical Specifications

(RPSL)	RFC 2575 SNMPv3 View-based Access Control Model (VACM)
RFC 2284 EAP over LAN	RFC 3164 BSD syslog Protocol
RFC 2338 VRRP	
RFC 2364 PPP Over AAL5	<b>OSPF</b>
RFC 2374 An Aggregatable Global Unicast Address Format	RFC 1245 OSPF protocol analysis
RFC 2451 The ESP CBC-Mode Cipher Algorithms	RFC 1246 Experience with OSPF
RFC 2453 RIPv2	RFC 1587 OSPF NSSA
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols	RFC 1765 OSPF Database Overflow
RFC 2511 Internet X.509 Certificate Request Message Format	RFC 1850 OSPFv2 Management Information Base (MIB), traps
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)	RFC 2328 OSPFv2
RFC 2570 Introduction to Version 3 of the Internet-standard Network Management Framework	RFC 2370 OSPF Opaque LSA Option
RFC 2644 Directed Broadcast Control	RFC 3101 OSPF NSSA
RFC 2661 L2TP	<b>QoS/CoS</b>
RFC 2663 NAT Terminology and Considerations	IEEE 802.1P (CoS)
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5	RFC 2474 DS Field in the IPv4 and IPv6 Headers
RFC 2694 DNS extensions to Network Address Translators (DNS, ALG)	RFC 2475 DiffServ Architecture
RFC 2702 Requirements for Traffic Engineering Over MPLS	RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2747 RSVP Cryptographic Authentication	RFC 2598 DiffServ Expedited Forwarding (EF)
RFC 2763 Dynamic Name-to-System ID mapping support	RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)	<b>Security</b>
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)	IEEE 802.1X Port Based Network Access Control
RFC 2784 Generic Routing Encapsulation (GRE)	RFC 1321 The MD5 Message-Digest Algorithm
RFC 2787 Definitions of Managed Objects for VRRP	RFC 2082 RIP-2 MD5 Authentication
RFC 2961 RSVP Refresh Overhead Reduction Extensions	RFC 2104 Keyed-Hashing for Message Authentication
RFC 2966 Domain-wide Prefix Distribution with Two Level IS-IS	RFC 2138 RADIUS Authentication
RFC 2973 IS-IS Mesh Groups	RFC 2209 RSVP-Message Processing
RFC 2985 PKCS #9-Selected Object Classes and Attribute Types Version 2.0	RFC 2246 Transport Layer Security (TLS)
RFC 2993 Architectural Implications of NAT	RFC 2716 PPP EAP TLS Authentication Protocol
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)	RFC 2865 RADIUS Authentication
RFC 3027 Protocol Complications with the IP	RFC 2866 RADIUS Accounting
	RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication
	<b>VPN</b>
	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



### Technical Specifications

Network Address Translator	Full Mesh IBGP
RFC 3031 Multiprotocol Label Switching Architecture	RFC 2842 Capabilities Advertisement with BGP-4
RFC 3032 MPLS Label Stack Encoding	RFC 2858 Multiprotocol Extensions for BGP-4
RFC 3036 LDP Specification	RFC 2918 Route Refresh Capability for BGP-4
RFC 3046 DHCP Relay Agent Information Option	RFC 3107 Carrying Label Information in BGP-4
RFC 3063 MPLS Loop Prevention Mechanism	
RFC 3065 Support AS confederation	<b>IPsec</b>
RFC 3137 OSPF Stub Router Advertisement	RFC 1828 IP Authentication using Keyed MD5
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels	RFC 2401 IP Security Architecture
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels	RFC 2402 IP Authentication Header
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)	RFC 2406 IP Encapsulating Security Payload
RFC 3214 LSP Modification Using CR-LDP	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)



### Accessories

#### HP MSR50 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
<a href="#">HP X120 1G SFP LC SX Transceiver</a>	JD118B
<a href="#">HP X120 1G SFP LC LX Transceiver</a>	JD119B
<a href="#">HP X124 1G SFP LC LH40 1310nm Transceiver</a>	JD061A
<a href="#">HP X120 1G SFP LC LH40 1550nm Transceiver</a>	JD062A
<a href="#">HP X125 1G SFP LC LH70 Transceiver</a>	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 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 RJ45 3m Router Cable	JD509A
HP X260 E1 RJ45 20m Router Cable	JD517A
HP X260 E1 BNC 75 ohm 3m Router Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1 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 T1 Voice Router Cable	JD535A
HP X260 T3/E3 Router Cable	JD531A
HP X260 E3-30 E3/T3 Router Cable	JD533A
HP X260 E1 4-port IMA Router Cable	JD638A
HP X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A
HP X200 Transit Pluq D25F MP8(S) Single Cable	JD636A

## Accessories

HP X200 Transit Cable RJ45 0.5m Single Cable	JD641A
HP X260 mini D-28 to 4-RJ45 0.3m Router Cable	JG263A
<a href="#">HP MSR 50 pin D-sub Male to 24 x RJ-11 Plug 15m Router Cable</a>	JG318A
HP CAB-75ohm 8E1-3m-BNC-IMA	JD927A
HP X260 8T1 RJ45 3m Router Cable	JD639A
<b>Power Supply</b>	
HP MSR50 350W AC Power Supply	JD650A
HP MSR50 350W DC Power Supply	JF443A
HP MSR50 500W PoE Power Module	JD652A
<b>License</b>	
HP MSR50 Series Standard Version Router Software License	JD434A
<b>Router Modules</b>	
HP MSR50 G2 Main Processing Unit	JD429B
HP MSR50 G2 Multi-Service Module	JD430A
HP MSR50 Main Processing Unit	JD653A
HP MSR50 Multi-Service Module	JD651A
HP MSR Advanced Network Data Encryption ESM Module	JD608A
HP MSR Standard Network Data Encryption ESM Module	JD609A
HP MSR Voice Co-processing Module	JD610A
HP MSR 32-Channel Voice Processing Module	JD598A
HP MSR 24-Channel Voice Processing Module	JD599A
HP MSR 16-Channel Voice Processing Module	JD600A
HP MSR 8-Channel Voice Processing Module	JD601A
HP MSR 9-port 10/100Base-T Switch DSIC Module	JD574B
HP MSR 9-port 10/100Base-T PoE Switch DSIC Module	JD621A
HP MSR 4-port 10/100Base-T Switch SIC Module	JD573B
HP MSR 4-port 10/100Base-T PoE Switch SIC Module	JD620A
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 1-port FXO SIC Module	JD559A
HP MSR 2-port FXS SIC Module	JD560A
HP MSR 1-port FXS SIC Module	JD561A
HP MSR 2-port ISDN-S/T Voice SIC Module	JF821A
HP MSR 2-port FXS/1-port FXO SIC Module	JD632A
HP MSR 1-port E1 Voice SIC Module	JD575A
HP MSR 1-port T1 Voice SIC Module	JD576A
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

### Accessories

HP MSR 1-port ADSL over POTS 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 Enhanced Sync/Async Serial SIC Module	JD557A
HP MSR 1-port ISDN-S/T SIC Module	JD571A
<a href="#">HP MSR 8-port Async Serial SIC Module</a>	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 3G Wireless GSM/WCDMA WAN SIC Module	JF820A
HP MSR 4-port 10/100Base-T FIC Module	JF824A
HP MSR 2-port 10/100Base-T FIC Module	JD577A
HP MSR 1-port Gig-T FIC Module	JD583B
HP MSR 1-port 1000Base-X FIC Module	JD582A
HP MSR 2-port Gig-T FIC Module	JF269B
HP MSR 2-port 1000BASE-X FIC Module	JF270B
HP 24-port 10/100 DFIC A-MSR Module	JD603A
HP MSR 16-port 10/100Base-T / 1-port GbE Combo Switch FIC Module	JD604A
HP 24-port 10/100 PoE DFIC Module	JD617A
HP MSR 16-port 10/100Base-T PoE / 1-port GbE Combo Switch FIC Module	JD616A
HP MSR 8-port Enhanced Sync/Async Serial FIC Module	JD580A
HP MSR 4-port Enhanced Sync/Async Serial FIC Module	JD584A
HP MSR 8-port Enhanced Async Serial FIC Module	JF260B
HP MSR 16-port Enhanced Async Serial FIC Module	JF265B
HP MSR 4-port FXO FIC Module	JD593A
HP MSR 4-port FXS FIC Module	JD594A
HP MSR 4-port E/M FIC Module	JD602A
HP MSR 2-port E1 Voice FIC Module	JD587A
HP MSR 1-port E1 Voice FIC Module	JD607A
HP MSR 2-port T1 Voice FIC Module	JD606A
HP MSR 1-port T1 Voice FIC Module	JD605A
HP MSR 8-port E1/CE1/PRI (75ohm) FIC Module	JD585A
HP MSR 4-port E1/CE1/PRI FIC Module	JD588A
HP MSR 2-port E1/CE1/PRI FIC Module	JD578A
HP MSR 4-port E1/Fractional E1 FIC Module	JD591A
HP MSR 4-port T1/Fractional T1 FIC Module	JD592A
HP MSR 1-port E3/CE3/FE3 FIC Module	JD625A
HP MSR 1-port T3/CT3/FT3 FIC Module	JD629A
HP MSR 1-port E3 ATM FIC Module	JD596A
HP MSR 1-port T3 ATM FIC Module	JD595A
HP MSR 4-port E1 IMA (75ohm) FIC Module	JD622A

### Accessories

HP MSR 4-port Enhanced ISDN-S/T FIC Module	JD589A
HP MSR 1-port OC-3c/STM-1c ATM SFP FIC Module	JD633A
HP MSR 1-port OC-3c/STM-1c POS FIC Module	JD581C
HP MSR 1-port OC-3/STM-1 (E1/T1) CPOS FIC Module	JG201A
<a href="#">HP MSR 24-port FXS FIC Module</a>	JG197A
<a href="#">HP MSR 8-port T1/CT1/PRI FIC Module</a>	JD586B
<a href="#">HP MSR 8-port T1 IMA FIC Module</a>	JG200A
<a href="#">HP MSR 8-port E1 IMA (75ohm) FIC Module</a>	JF278B
<a href="#">HP MSR 1-port E1/CE1/PRI SIC Module</a>	JF253B
<a href="#">HP MSR 4-port FXS / 1-port FXO DSIC Module</a>	JG189A
<a href="#">HP MSR HSPA/WCDMA SIC Module</a>	JG187A
NEW HP MSR Open Application Platform (OAP) with VMware vSphere FIC Module	JG533A
<b>Memory</b>	
HP Series 256MB DDR SDRAM	JD647A
HP Series 512MB DDR SDRAM	JD648A
<a href="#">HP 2GB DDR2 SDRAM Memory</a>	JG205A
<a href="#">HP X600 1G Compact Flash Card</a>	JC684A
<a href="#">HP X600 512M Compact Flash Card</a>	JC685A
<a href="#">HP X600 256M Compact Flash Card</a>	JC686A

### Accessory Product Details

**NOTE**—Details are not available for all accessories. The following specifications were available at the time of publication.

<p><b>HP X120 1G SFP LC SX Transceiver (JD118B)</b></p> <p>A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550m on a Multimode fiber.</p>	<b>Ports</b>	1 LC 1000BASE-SX port	
	<b>Connectivity</b>	<b>Connector type</b> LC	
	<b>Physical characteristics</b>	<b>Wavelength</b>	850 nm
		<b>Dimensions</b>	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
		<b>Full configuration weight</b>	0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b>	0.8 W
		<b>Power consumption maximum</b>	1.0 W
	<b>Cabling</b>	Maximum distance <sup>±</sup>	<ul style="list-style-type: none"> <li>• FDDI Grade distance = 220m</li> <li>• OM1 = 275m</li> <li>• OM2 = 500m</li> <li>• OM3 = Not Specified by standard</li> </ul>
		Cable length	up to 550m
		Fiber type	Multi Mode
<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.		

<p><b>HP X120 1G SFP LC LX Transceiver (JD119B)</b></p> <p>A small form-factor pluggable (SFP) Gigabit LX transceiver that provides a full duplex Gigabit solution up to 550m on MMF or 10Km on SMF</p>	<b>Ports</b>	1 SFP 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX)	
	<b>Connectivity</b>	<b>Connector type</b> LC	
	<b>Physical characteristics</b>	<b>Wavelength</b>	1300 nm
		<b>Dimensions</b>	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
		<b>Full configuration weight</b>	0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b>	0.8 W
		<b>Power consumption maximum</b>	1.0 W
	<b>Cabling</b>	Cable type <sup>±</sup>	Either single mode or multimode <sup>±</sup>
		Maximum distance <sup>±</sup>	<ul style="list-style-type: none"> <li>• 550m for Multimode</li> <li>• 10km for Singlemode</li> </ul>
		Fiber type	Both

### Accessory Product Details

#### Services

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

#### HP X125 1G SFP LC LH40 1310nm Transceiver (JD061A)

A small form-factor pluggable SFP Gigabit LH40 transceiver that provides a full duplex Gigabit solution up to 40km on a single-mode fiber.

#### Ports

1 LC 1000Base-LH port (no IEEE standard exists for 1550 nm optics)

#### Connectivity

Connector type LC

Wavelength 1310 nm

#### Physical characteristics

Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)

Full configuration weight 0.04 lb. (0.02 kg)

#### Electrical characteristics

Power consumption typical 0.8 W

Power consumption maximum 1.0 W

#### Cabling

Cable type<sup>2</sup>

Single-mode fiber optic, complying with ITU-T G.652<sup>7</sup>

Maximum distance<sup>2</sup>

- 40km distance

Fiber type Single Mode

#### Services

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

#### HP X120 1G SFP LC LH40 1550nm Transceiver (JD062A)

A small form-factor pluggable (SFP) Gigabit LH40 transceiver that provides a full-duplex Gigabit solution up to 40 km on a single mode fiber.

#### Ports

1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)

#### Connectivity

Connector type LC

Wavelength 1550 nm

#### Physical characteristics

Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)

Full configuration weight 0.04 lb. (0.02 kg)

#### Electrical characteristics

Power consumption typical 0.8 W

Power consumption maximum 1.0 W

#### Cabling

Cable type<sup>2</sup>

Single-mode fiber optic, complying with ITU-T G.652<sup>7</sup>

Maximum distance<sup>2</sup>

- 40km distance

Fiber type Single Mode

#### Services

Refer to the HP website at [www.hp.com/networking/services](http://www.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.

### Accessory Product Details

<b>HP X125 1G SFP LC LH70 Transceiver (JD063B)</b>	<b>Ports</b>	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)	
	<b>Connectivity</b>	<b>Connector type</b>	LC
A small form-factor pluggable (SFP) Gigabit LH70 transceiver that provides a full-duplex Gigabit solution up to 70km on a single-mode fiber.	<b>Physical characteristics</b>	<b>Wavelength</b>	1550 nm
		<b>Dimensions</b>	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
		<b>Full configuration weight</b>	0.04 lb. (0.02 kg)
<b>Electrical characteristics</b>	<b>Power consumption typical</b>	<b>Power consumption typical</b>	0.8 W
		<b>Power consumption maximum</b>	1.0 W
<b>Cabling</b>	<b>Cabling</b>	<b>Cable type</b>	Single-mode fiber optic, complying with ITU-T G.652 <sup>†</sup>
		<b>Maximum distance</b>	• 70km
		<b>Fiber type</b>	Single Mode
<b>Services</b>	<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>HP MSR 50 pin D-sub Male to 24 x RJ-11 Plug 15m Router Cable (JG318A)</b>	<b>Physical characteristics</b>	<b>Dimensions</b>	14.6(d) x 13.3(w) x 4.5(h) in. (37.08 x 33.78 x 11.43 cm)
		<b>Weight</b>	4.61 lb. (2.09 kg)
<b>Services</b>	<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>HP MSR 8-port Async Serial SIC Module (JF281A)</b>	<b>Connectivity</b>	<b>Bit rate</b>	115.2Kbps
		<b>Interface</b>	RS232
<b>Services</b>	<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.	

### Accessory Product Details

<b>HP MSR 24-port FXS FIC Module</b> (JG197A)	<b>Connectivity</b>	<b>Interface</b>	D50
	<b>Physical characteristics</b>	<b>Dimensions</b>	12(d) x 14.6(w) x 4.2(h) in. (30.48 x 37.08 x 10.67 cm)
		<b>Weight</b>	3.7 lb. (1.68 kg)
	<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>HP MSR 8-port T1/CT1/PRI FIC Module</b> (JD586B)	<b>Physical characteristics</b>	<b>Dimensions</b>	12(d) x 14.6(w) x 4.2(h) in. (30.48 x 37.08 x 10.67 cm)
	<b>Physical characteristics</b>	<b>Weight</b>	3 lb. (1.36 kg)
		<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>HP MSR 8-port T1 IMA FIC Module</b> (JG200A)	<b>Connectivity</b>	<b>Interface</b>	D68, ITU-G.703, ITU-G.704
	<b>Physical characteristics</b>	<b>Dimensions</b>	12(d) x 14.6(w) x 4.2(h) in. (30.48 x 37.08 x 10.67 cm)
		<b>Weight</b>	3.11 lb. (1.41 kg)
	<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>HP MSR 8-port E1 IMA (75ohm) FIC Module</b> (JF278B)	<b>Connectivity</b>	T1=2.048 Mbps	
	<b>Physical characteristics</b>	<b>Interface</b>	D68, ITU-G.703, ITU-G.704
		<b>Dimensions</b>	12(d) x 14.6(w) x 4.2(h) in. (30.48 x 37.08 x 10.67 cm)
	<b>Services</b>	<b>Weight</b>	3.11 lb. (1.41 kg)
	<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.	



### Accessory Product Details

<b>HP MSR 1-port E1/CE1/PRI SIC Module (JF253B)</b>	<b>Connectivity</b>	E1=2.048 Mbps
	<b>Physical characteristics</b>	<b>Interface</b> D15
		<b>Dimensions</b> 12.8(d) x 8.3(w) x 4.2(h) in. (32.51 x 21.08 x 10.67 cm)
		<b>Weight</b> 1.1 lb. (0.5 kg)
	<b>Notes</b>	support 75ohm cable direct connection, can support 120Ohm connection but need to JD511A (75-120 ohm convertor)
	<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>HP MSR 4-port FXS / 1-port FXO DSIC Module (JG189A)</b>	<b>Connectivity</b>	Interface 5*RJ11
	<b>Physical characteristics</b>	<b>Dimensions</b> 12.8(d) x 8.3(w) x 4.2(h) in. (32.51 x 21.08 x 10.67 cm)
		<b>Weight</b> 1.19 lb. (0.54 kg)
	<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>HP MSR HSPA/WCDMA SIC Module (JG187A)</b>	<b>Connectivity</b>	Interface 2*TNC RF, 1*RJ45
	<b>Physical characteristics</b>	<b>Dimensions</b> 12.8(d) x 8.3(w) x 4.2(h) in. (32.51 x 21.08 x 10.67 cm)
		<b>Weight</b> 1.41 lb. (0.64 kg)
	<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>HP 2GB DDR2 SDRAM Memory (JG205A)</b>	<b>Physical characteristics</b>	<b>Dimensions</b> 8.8(d) x 5(w) x 2.6(h) in. (22.35 x 12.7 x 6.6 cm)
		<b>Weight</b> 0.99 lb. (0.45 kg)
	<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.

### Accessory Product Details

<b>HP X600 1G Compact Flash Card (JC684A)</b>	<b>Physical characteristics</b>	<b>Dimensions</b>	4.96(d) x 8.82(w) x 2.56(h) in. (12.6 x 22.4 x 6.5 cm)
	<b>Services</b>	<b>Weight</b>	0.33 lb. (0.15 kg)
			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.

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<b>HP X600 512M Compact Flash Card (JC685A)</b>	<b>Physical characteristics</b>	<b>Dimensions</b>	4.96(d) x 8.82(w) x 2.56(h) in. (12.6 x 22.4 x 6.5 cm)
	<b>Services</b>	<b>Weight</b>	0.33 lb. (0.15 kg)
			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.

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<b>HP X600 256M Compact Flash Card (JC686A)</b>	<b>Physical characteristics</b>	<b>Dimensions</b>	4.96(d) x 8.82(w) x 2.56(h) in. (12.6 x 22.4 x 6.5 cm)
	<b>Services</b>	<b>Weight</b>	0.33 lb. (0.15 kg)
			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.

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