

## Overview

### Models

HP VCX Connect Primary MIM Module	JE252A
HP VCX Connect Secondary MIM Module	JE253A
HP MSR 30-16 Router with VCX Connect Primary MIM, 4-port FXO and 2-port FXS Modules	JD025A
HP MSR 30-40 Router with VCX Connect Primary MIM, 8-port FXO and 4-port FXS Modules	JD026A
HP MSR 30-40 Router with VCX Connect Primary MIM, 8-port BRI-ST and 4-port FXS Modules	JD027A
HP MSR 30-40 Router with VCX Connect Primary MIM, T1, 4-port FXO and 4-port FXS Modules	JD028A
HP MSR 30-40 Router with VCX Connect Primary MIM, E1, 4-port BRI-ST and 4-port FXS Modules	JD029A

### Key features

- Economical VoIP bundles with enterprise WAN router
- Built-in phone, messaging, and softphone licenses
- Resiliency with optional redundant server
- Voice, video, IM collaboration, MS Lync interface
- Support up to 600 users with 6 servers

### Product overview

HP VCX Connect Unified Communications MIM on MSR series delivers an enterprise-class, full-featured VoIP phone system designed to meet the needs of rugged, collaborative small business work environments with up to 100 phone users. Designed to seamlessly integrate within HP A-MSR 30 series WAN routers, the VCX Connect MIM leverages MSR modularity to provide a true office-in-a-box solution with a comprehensive suite of WAN, LAN, security, and voice interfaces. The VCX Connect MIM's flexible, intuitive design and management help businesses replace legacy PBXs with SIP-based VoIP solutions that provide a full range of collaborative functionality—including Microsoft® OCS/Lync and Exchange UM connectivity, click-to-call, presence, and instant messaging. VCX Connect MIM solution bundles, which combine a VCX Connect MIM module, an A-MSR 30 series router, and various media gateway interfaces, are available to reduce expenses and increase network freedom and flexibility.

### Features and benefits

#### Quality of Service (QoS)

- **Echo cancellation:** automatically adjusts and removes echo from a telephone call
- **Voice activity detection:** the proprietary algorithm is designed to reduce/filter background noise
- **Comfort noise generation:** provides low audible artificial background noise to improve VoIP communications
- **802.1p/Q VLAN tagging:** delivers data to devices based on the priority and type of traffic; supports IEEE 802.1Q

#### Resiliency and high availability

- **Enhanced high availability:** backup VCX systems, whether co-located with the primary VCX or deployed in another office on the same network, provide geographic survivability and rapid failover for mission-critical communications
- **Optional redundant power supply:** provides seamless business continuity and data protection

#### Configuration

- **Media gateway support:** streamlines migration to IP communications and provides PSTN connectivity with a full range of either integrated or standalone VoIP gateways
- **Scheduled backups:** System Administration Web interface provides the ability to schedule static and reoccurring full system



### Overview

backups

### Integration

- **Converged IP telephony and data:** seamlessly integrate the VCX Connect MIM (multifunction interface module) into an HP A-MSR 30 series Power over Ethernet (PoE) or non-PoE router to deliver enterprise-class routing and telephony functionality

### Investment protection

- **All-in-one solution:** decreases capital and operating expenses and increases network freedom and flexibility by integrating a comprehensive suite of available telephony, routing, switching, wireless and security interfaces and features—all in the same box
- **Analog phone support:** leverages existing investment in analog phones while implementing a full set of PBX features

### Ease of use

- **Built-in licensing:** VCX Connect MIM system ships with default licenses—VCX IP Telephony/IP Messaging Server license, 25 business phone licenses, 25 IP messaging seat licenses, 25 Desktop Communicator softphone licenses, 25 Convergence Client softphone licenses, and 4 analog/entry licenses
- **LDAP synchronization with Microsoft® Active Directory, IBM Lotus Domino, Linux OpenLDAP:** easily integrate, filter, and synchronize employee contact information, thereby simplifying administration and providing reliable connections based on the most current user information
- **Ease of deployment:** VCX Connect MIM's out-of-the-box first-time configuration provides simpler installations using a Web-based, wizard-like interface that walks you through the installation process
- **Easy to use:** GUI-driven central management and configuration
- **NEW Replication status:** System Administration Web interface displays the replication status of primary and secondary pairs

### Scalability

- **Supported devices:** let you pay as you grow up to 100 devices per platform and up to 600 devices in total via VCX global directory, which enables up to six VCX Connect MIM platforms to function as a single system

### Additional information

- **Optional mobility for telecommuters:** optional HP VCX IP Telecommuting series provides remote users with the full benefit of their corporate IP telephony systems without compromising security
- **Optional multimedia conference bridge:** when businesses require a dense conferencing system to reduce the overhead and cost of expensive third-party conferencing products, the HP VCX V7000 IP Conferencing series provides capabilities that include host and participant Web-based conference controls, instant and emergency conferences with automatic dial-out options, scheduled and meet-me restricted conferences (requires participant passcode), peer-to-peer and one-to-many conferences, and more
- **Optional network management:** uses the HP Intelligent Management Center (IMC) and Voice Services Manager (VSM) to configure, monitor, and enhance the performance of media servers, gateways, and endpoints; to monitor VoIP traffic; and to control voice network quality; enhancements for the IMC VSM include MOS scoring and packet loss notification MIB changes; the VCX license MIBs support IMC

### Product architecture

- **Multi-site architecture:** a highly flexible architecture eliminates the dependency on any single component for unprecedented resiliency and end-to-end survivability; allow you to use Web-based centralized administration, global directory, and global voicemail to seamlessly link VCX systems together to scale your IP-PBX network as your business grows
- **Standards-based IP-PBX:** supports standard PBX and advanced telephony and messaging features based on the IETF Session Initiation Protocol (SIP) standards; supports third-party SIP-based applications and devices



### Overview

- **Integrated server:** IP telephony and IP messaging modules run on Linux OS
- **Direct SIP integration with Microsoft OCS/Lync and Exchange UM:** VCX direct SIP integration with Microsoft OCS/Lync allows VCX phones/clients to call and have basic features with phones/clients connected to OCS/Lync; OCS/Lync has access to VCX IP-PBX phones, clients, and gateways; VCX supports direct SIP integration with Office Communication Server 2007, Office Communication Server 2007 R2, and Microsoft Lync Server 2010

### Technical features

- **Ad hoc conferencing:** VCX Connect MIM supports up to 30 sessions of ad hoc conferencing with a maximum of six parties per conference
- **Shared lines and extension status:** single-line and multi-line phone support and bridged extensions for executives and administrators

### User productivity

- **Unified communications:** increases employee collaboration through the audio, video, instant messaging, file sharing, and presence capabilities within the HP Desktop Communicator; extends the Microsoft environment with HP Desktop Communicator Outlook Edition add-on to enable click-to-call/conference via Microsoft Outlook, to capture and retrieve call notes with Microsoft Journal, and to perform desktop call recording; HP VCX is fully integrated with Lotus Sametime
- **Unified messaging:** consolidates users' voicemail, email, and faxes into a single inbox for flexible, location-independent retrieval and management; schedules appropriate times when messages are delivered; sends voicemails to individuals or groups using extensive and easy-to-maintain distribution lists; sets up find me/follow me services to conveniently manage one's own access to help ensure that important calls are not missed; auto-delivers incoming fax calls to email and sends faxes from email
- **Web user interface:** listen to and manage voicemail messages
- **Lotus Domino/Sametime 8.5 support:** Sametime 8.5 can be deployed using a Sametime System Console and new meeting server functionality; VCX provides two packages for Sametime 8.5; can be deployed on Sametime Community Server ("classic" to pre-8.5) or on Sametime Media Manager (for 8.5) using the system console

### Voice functionality

- **Hot desking:** mobile users can effortlessly traverse within the VCX system, log into another handset, and have all their desktop extension settings, including voicemail, at their fingertips
- **Call admission control:** fine-tune and throttle media traffic to prevent VoIP over-subscription—even down to a particular extension
- **Pin codes:** prevent unauthorized outbound dialing and/or manage and record telephony calls via forced account codes and customer account and billing codes; PIN code portability allows users to roam the VCX system and utilize their existing data
- **Hunt groups:** built-in call distribution provides agent log-in functionality; support for 3 selectable call routing algorithms
- **Automatic call distribution:** add-on economical call center application that includes 5 selectable routing algorithms, the ability to capture real-time statistics, and support for remote agents in various VCX locations
- **Simultaneous Ring provides mobility for VCX users:** Simultaneous Ring feature allows a user to configure their external phone (such as cell phone) to simultaneously ring with their desktop VCX IP phone; users can answer the call at any of the ringing endpoints; when a user at one of the ringing endpoints answers the call, the other ringing endpoint stops ringing; it allows a user to be reached at two different locations by ringing both locations at the same time
- **350x IP phone background/screen saver image restore :** VCX Web interface provides the ability to reset background/screen saver image to factory defaults on 350x IP phones; if an image is incorrect, VCX will display a notification to the administrator

### 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; refer to: [www.hp.com/networking/warranty](http://www.hp.com/networking/warranty) for details on the support provided and the period during which support is available
- **Software releases:** refer to: [www.hp.com/networking/warranty](http://www.hp.com/networking/warranty) for details on the software releases provided and the period



## Overview

during which software releases are available for your product(s)



### Technical Specifications

#### HP VCX Connect Primary MIM Module (JE252A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 2 USB 2.0
<b>Physical characteristics</b>	<b>Dimensions</b> 8.27(d) x 5.91(w) x 1.57(h) in. (21 x 15 x 4 cm) (1U height) <b>Weight</b> 2.43 lb. (1.1 kg)
<b>Memory and processor</b>	<b>Module</b> Intel® Celeron® @ 600 MHz, 1 GB DDR SODIMM; storage: 1 60 GB HD
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C) <b>Operating relative humidity</b> 10% to 80% <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways
<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.

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#### HP VCX Connect Secondary MIM Module (JE253A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 2 USB 2.0
<b>Physical characteristics</b>	<b>Dimensions</b> 8.27(d) x 5.91(w) x 1.57(h) in. (21 x 15 x 4 cm) <b>Weight</b> 2.43 lb. (1.1 kg)
<b>Memory and processor</b>	<b>Module</b> Intel® Celeron® @ 600 MHz, 1 GB DDR SODIMM; storage: 1 60 GB HD
<b>Mounting</b>	VCX Connect Secondary module slides into HP A-MSR 30 Series router MIM slot
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C) <b>Operating relative humidity</b> 10% to 80% <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways
<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.



## Technical Specifications

### HP MSR 30-16 Router with VCX Connect Primary MIM, 4-port FXO and 2-port FXS Modules (JD025A)

<b>Ports</b>	3 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 3 USB 2.0 4 RJ-11 FXO ports 2 RJ-11 FXS ports 1 Compact Flash port
<b>Physical characteristics</b>	<b>Dimensions</b> 17.39(d) x 17.4(w) x 1.74(h) in. (44.17 x 44.2 x 4.42 cm) (1U height) <b>Weight</b> 16.25 lb. (7.37 kg) including bundle components
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot; A-MSR30 router mounts in EIA-standard 19 inch telco rack or equipment cabinet or table top (hardware included)
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C) <b>Operating relative humidity</b> 10% to 80% <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Voltage</b> 100-240 VAC <b>Frequency</b> 50/60 Hz
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported MSR 30-16 integrated voice gateways options: <ul style="list-style-type: none"><li>• Supports up to a maximum of twelve (12) analog voice ports</li><li>• Supports up to a maximum of eight (8) ISDN voice ports</li><li>• Supports up to a maximum of four (4) E1 or T1 digital voice spans</li></ul> Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways Bundle includes MSR 30-16 router with VCX Connect Primary MIM, 2-port FXO SIC (qty 2), and 2-port FXS SIC modules
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E)



## Technical Specifications

5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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### HP MSR 30-40 Router with VCX Connect Primary MIM, 8-port FXO and 4-port FXS Modules (JD026A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full
	4 USB 2.0
	8 RJ-11 FXO ports
	4 RJ-11 FXS ports
	2 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	2 SFP
	1 Compact Flash port
<b>Physical characteristics</b>	<b>Dimensions</b> 16.62(d) x 17.4(w) x 3.47(h) in. (42.21 x 44.2 x 8.81 cm) (2U height)
	<b>Weight</b> 30.29 lb. (13.74 kg) including bundle components
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot; A-MSR30 router mounts in EIA-standard 19 inch telco rack or equipment cabinet or table top (hardware included)
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C)
	<b>Operating relative humidity</b> 10% to 80%
	<b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Voltage</b> 100-240 VAC
	<b>Frequency</b> 50/60 Hz
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported MSR 30-40 integrated voice gateways options: <ul style="list-style-type: none"> <li>• Supports up to a maximum of twenty-four (24) analog voice ports</li> <li>• Supports up to a maximum of sixteen (16) ISDN voice ports</li> <li>• Supports up to a maximum of five (5) E1 or T1 digital voice spans</li> </ul> <p>Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways            Bundle includes MSR 30-40 router with VCX Connect Primary MIM, 4-port FXO MIM (qty 2), and 4-port FXS MIM modules</p>
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)



## Technical Specifications

- 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)
- 4-year, 24x7 SW phone support, software updates (UX161E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)
- 5-year, 24x7 SW phone support, software updates (UX162E)
- 3 Yr 6 hr Call-to-Repair Onsite (UX163E)
- 4 Yr 6 hr Call-to-Repair Onsite (UX164E)
- 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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### HP MSR 30-40 Router with VCX Connect Primary MIM, 8-port BRI-ST and 4-port FXS Modules (JD027A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full
	4 USB 2.0
	8 RJ-45 ISDN voice ports
	4 RJ-11 FXS ports
	2 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	2 SFP
	1 Compact Flash port
<b>Physical characteristics</b>	<b>Dimensions</b> 16.62(d) x 17.4(w) x 3.47(h) in. (42.21 x 44.2 x 8.81 cm) (2U height)
	<b>Weight</b> 30.34 lb. (13.76 kg) including bundle components
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot; A-MSR30 router mounts in EIA-standard 19 inch telco rack or equipment cabinet or table top (hardware included)
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C)
	<b>Operating relative humidity</b> 10% to 80%
	<b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Voltage</b> 100-240 VAC
	<b>Frequency</b> 50/60 Hz
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported MSR 30-40 integrated voice gateway options: <ul style="list-style-type: none"><li>• Supports up to a maximum of twenty-four (24) analog voice ports</li><li>• Supports up to a maximum of sixteen (16) ISDN voice ports</li><li>• Supports up to a maximum of five (5) E1 or T1 digital voice spans</li></ul>

Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways





## Technical Specifications

Bundle includes MSR 30-40 router with VCX Connect MIM Primary, 4-port BRI-ST MIM (qty 2), and 4-port FXS MIM modules

### Services

- 3-year, parts only, global next-day advance exchange (UX150E)
- 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX157E)
- 3-year, 24x7 SW phone support, software updates (UX160E)
- 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)
- 4-year, 24x7 SW phone support, software updates (UX161E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)
- 5-year, 24x7 SW phone support, software updates (UX162E)
- 3 Yr 6 hr Call-to-Repair Onsite (UX163E)
- 4 Yr 6 hr Call-to-Repair Onsite (UX164E)
- 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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 MSR 30-40 Router with VCX Connect Primary MIM, T1, 4-port FXO and 4-port FXS Modules (JD028A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full	
	4 USB 2.0	
	1 RJ-45 T1 port	
	4 RJ-11 FXO ports	
	4 RJ-11 FXS ports	
	2 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	
	2 SFP	
	1 Compact Flash port	
<b>Physical characteristics</b>	<b>Dimensions</b>	16.62(d) x 17.4(w) x 3.47(h) in. (42.21 x 44.2 x 8.81 cm) (2U height)
	<b>Weight</b>	30.23 lb. (13.71 kg) including bundle components
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot; A-MSR30 router mounts in EIA-standard 19 inch telco rack or equipment cabinet or table top (hardware included)	
<b>Environment</b>	<b>Operating temperature</b>	41°F to 104°F (5°C to 40°C)
	<b>Operating relative humidity</b>	10% to 80%
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Voltage</b>	100-240 VAC
	<b>Frequency</b>	50/60 Hz



## Technical Specifications

<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS																																
<b>Notes</b>	<p>Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported MSR 30-40 integrated voice gateway options:</p> <ul style="list-style-type: none"><li>• Supports up to a maximum of twenty-four (24) analog voice ports</li><li>• Supports up to a maximum of sixteen (16) ISDN voice ports</li><li>• Supports up to a maximum of five (5) E1 or T1 digital voice spans</li></ul> <p>Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways Bundle includes MSR 30-40 router with VCX Connect Primary MIM, 1-port T1 MIM, 24-Channel VPM, 4-port FXO MIM, and 4-port FXS MIM modules</p>																																
<b>Services</b>	<p>3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E) 5 Yr 6 hr Call-to-Repair Onsite (UX165E)</p> <p>Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>																																
<b>Features</b>	<table><tr><td><b>SYSTEM</b></td><td>Mute</td></tr><tr><td>Ad hoc conferencing</td><td>Paging (analog external paging system)</td></tr><tr><td>Centralized management</td><td>Paging (group - zone)</td></tr><tr><td>Call detail records</td><td>Paging (phone-to-phone), send beep with calling number</td></tr><tr><td>Converged application based architecture</td><td>Paging (SIP external paging system)</td></tr><tr><td>Emergency services</td><td>Phone lock/unlock</td></tr><tr><td>End-to-end SIP signaling</td><td>Privacy (block select monitor/charge-in)</td></tr><tr><td>Global directory</td><td>Privacy (calling number suppression)</td></tr><tr><td>Global voice mail</td><td>Serial calling (transfer with callback)</td></tr><tr><td>IP telephony</td><td>Silent monitor/charge-in</td></tr><tr><td>IP unified messaging</td><td>Simultaneous Ringing</td></tr><tr><td>Linux operating system with additional security</td><td>Speed dial (personal)</td></tr><tr><td>SIP back-to-back user Agent</td><td>Speed dial (system)</td></tr><tr><td>Standards-based connectivity</td><td>Transfer to voicemail (direct)</td></tr><tr><td>System redundancy</td><td>Voicemail access</td></tr><tr><td>Web services SDK</td><td>Warmline (warm ring down circuits)</td></tr></table> <b>RESILIENCY</b>	<b>SYSTEM</b>	Mute	Ad hoc conferencing	Paging (analog external paging system)	Centralized management	Paging (group - zone)	Call detail records	Paging (phone-to-phone), send beep with calling number	Converged application based architecture	Paging (SIP external paging system)	Emergency services	Phone lock/unlock	End-to-end SIP signaling	Privacy (block select monitor/charge-in)	Global directory	Privacy (calling number suppression)	Global voice mail	Serial calling (transfer with callback)	IP telephony	Silent monitor/charge-in	IP unified messaging	Simultaneous Ringing	Linux operating system with additional security	Speed dial (personal)	SIP back-to-back user Agent	Speed dial (system)	Standards-based connectivity	Transfer to voicemail (direct)	System redundancy	Voicemail access	Web services SDK	Warmline (warm ring down circuits)
<b>SYSTEM</b>	Mute																																
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## Technical Specifications

Redundancy, IP telephony  
Redundancy, IP messaging  
Redundancy, IP phones and media gateways  
Redundancy, optional RAID  
Redundancy, optional power supply

### SYSTEM ADMINISTRATION

Add VCX licenses  
Administration access control  
Administration secure access  
Audit trails and logging enhancements  
Command Line Interface  
Configuration back-up and restore  
CPU, memory, I/O statistics  
First-time configuration  
First-time data import  
Importing data  
Installed component versions  
Multiple administrators  
Multiple language support  
Online administrator help  
Password support, administrator and system access  
Provisioning; bulk moves, adds, changes  
Remove previous software versions  
Resetting a VCX server  
Reset to defaults  
Root directory access  
Searches  
Site configuration data  
Software upgrades and rollbacks  
Switch software versions  
System information  
User data LDAP synchronization: Lotus Domino running on IBM; Lotus Domino running on Windows® Server 2003, 2008; Microsoft Active Directory on Windows Server 2003, 2008; OpenLDAP on Linux  
VCX service licensing  
View VCX licensing data  
Virtual numbers

### QUALITY OF SERVICE

DSCP tagging  
Dynamic jitter buffer  
G.711 audio codec  
G.729ab audio codec  
Packet-loss rate  
Pay-load length  
QoS: 802.1p tagging (Prioritization)  
QoS: 802.1Q tagging (VLAN)  
Video codec  
Video resolution

### IP TELEPHONY ROUTING

Calendar bands  
Call admission control  
Call blocking  
Daytime bands  
Dialing prefixes  
Direct Inward Dialing (DID)  
Direct Outward Dialing (DOD)  
DNIS (Dialed Number Identification Service)  
E.164 numbering plan  
External directory access  
Holidays  
NANP support  
Network abbreviated dialing  
Number translations  
Outdial patterns  
Patterns  
Prioritization of trunks/routes  
Private line service  
Requestors  
Routes  
Route (plans and plan wizard)  
Routing (alternate)  
Routing (blacklist)  
Routing (call coverage)  
Routing (first available)  
Routing (global directory)  
Routing (IP to PSTN)  
Routing (IP to IP)  
Routing (least cost)  
Routing (PSTN to IP)  
Routing (source based)  
Routing (VPN numbering plan)  
Routing (white list)  
Trusted end points  
Weekday bands

### IP MESSAGING ARCHITECTURAL

G.711  
G.729  
Global voicemail central server  
Redundancy (intelligent mirroring)

### IP MESSAGING

Message annotation  
Message append  
Message auto-delivery  
Message auto playback  
Message broadcast  
Message delete  
Message delete retrieval  
Message delivery report



## Technical Specifications

Wide-band audio codec

### SECURITY

Network security policies  
Operating system security  
Secure access  
Security: Locking MAC addresses to switches  
User authentication methods

### SYSTEM MANAGEMENT

Alarm notification  
Audio performance reporting (local)  
Auto discovery and management of IP devices  
Intelligent Management Center Voice Service  
Manager: centralized management  
Maintenance, graceful shutdown of services  
Operating system updates  
Quality of service end of call reporting  
SNMP MIB access  
SNMP traps  
SNMP v1, v3  
System back-ups

### REPORTING

Call detail records (reporting)  
Call detail records (structure)

### IP TELEPHONY CALLING

Anonymous all  
Anonymous next  
Anonymous call reject  
Automatic call distribution (ACD)  
ACD groups (call coverage)  
ACD groups (calling groups)  
ACD groups (CDR reporting)  
ACD groups (circular)  
ACD groups (feature interactions)  
ACD groups (least-call count)  
ACD groups (linear)  
ACD groups (login/logout)  
ACD groups (malicious call trace)  
ACD groups (message-waiting indication)  
ACD groups (most idle agent)  
ACD groups (multisite)  
ACD groups (real-time statistics)  
ACD groups (view ACD group status)  
Automatic line selection (Multiple system  
appearance)  
Bridged line appearance  
Bridge line appearance (MWI)  
Bridge line appearance (shared hold)  
Busy lamp field

Message delivery to non-subscribers  
Message deposit  
Message deposit treatment options  
Message folders  
Message forward  
Message notification  
Message notification options  
Message priority  
Message record options  
Message reply  
Message retrieval  
Message review  
Message review options  
Message review playback controls  
Message save  
Message schedule delivery  
Message send  
Message send treatment options  
Mailbox login

### GREETING

Default system greeting  
Personal busy greeting  
Personal extended absence greeting  
Personal normal greeting  
Personal scheduled greetings

### DISTRIBUTION LIST

Administrator distribution lists  
Personal distribution lists  
System distribution lists

### DIRECTORY

Directory search  
Directory search (dial-by-name)

### USER PRODUCTIVITY

Auto attendants  
Bulletin board  
Call back  
Call monitor  
Family mailbox  
Force password change  
Listen and manage voicemail messages from Web  
user interface  
Mailbox alias  
Mailbox auto login  
Mailbox full alert  
Mailboxes for announcements  
Mailboxes for forms (Q&A)  
Mailboxes for information  
Mailboxes for surveys



## Technical Specifications

- Call conference (drop)
- Call conference (six-way calling)
- Call conference (three-way calling)
- Call coverage
- Call drop
- Call duration display
- Call forward all (universal)
- Call forward busy
- Call forward no answer
- Call forward out-of-coverage
- Call forward programmable
- Call forward reminder
- Call forward remote
- Call history (missed/answered/placed logs)
- Call history display sort
- Call hold
- Call hold reminder
- Call park/retrieve
- Call park (button mapping)
- Call park (fallback)
- Call pick-up (directed)
- Call pick-up (group)
- Call restrictions (black list)
- Call restrictions (blocking inbound)
- Call restrictions (blocking outbound)
- Call restrictions (call screening)
- Call restrictions (forward to trunk)
- Call restrictions (toll screening)
- Call restrictions (transfer to trunk)
- Call restrictions (white list)
- Call return
- Call transfer (attended)
- Call transfer (fallback on transfer failure)
- Call transfer (unattended)
- Call transfer (restrictions)
- Call waiting
- Caller ID (called party)
- Caller ID (calling party number)
- Caller ID (calling party name)
- Caller ID (privacy)
- Camp on busy (automatic call back)
- Class of service override
- Customer account and billing codes
- Delayed or no ringing
- Directory (local user)
- Directory (global user)
- Distinctive ringing, ring patterns (different call types)
- Distinctive ringing, selective ringing (ident-a-call)
- Do not disturb
- DTMF dialing
- Feature codes
- Feature access codes

- Mailboxes for system bulletins/broadcasts
- Message-waiting indication
- Music-on-hold
- Outline help
- Personal address book
- Personal auto-attendant
- Privacy
- Prompt bypass
- Set-up assistant tutorial
- Shortcut keys
- User password change
- User provisioning through TUI
- User provisioning through Web
- Virtual calling card
- Zero out

### FIND ME/FOLLOW ME

- Find me/follow me
- Find me/follow me call intercept

### FAX MAIL

- Electronic fax sending
- Fax auto-delivery to email
- Fax auto-delivery to fax machine
- Fax delivery to fax machine
- Fax message deposit
- Fax message retrieval
- Never-busy fax

### EMAIL INTEGRATION

- Client integration
- Email auto delivery
- Email integration
- Email synchronization
- Fax attachment in email (.tif or .pdf formats)
- Unified inbox for Domino on Windows
- Voicemail POP3/IMAP4 client integration

### IP MESSAGING ADMINISTRATION

- Administration of all parameters through X-terminal interface
- Class of service administration
- Company/division administration
- Export mailbox/COS
- Import mailbox/COS
- IMAP SSLv3 support
- IP messaging Web portal
- Mailbox administration
- Mailbox on-the-fly
- Mailbox un-login
- Multiple administration
- Multiple language support



## Technical Specifications

Forced account codes	Multiple permission levels
Forward to mail	Pager templates
Hands-free support	Send-user groups
Hotline (hot ring down circuits)	Support for multi-language voicemail
Hunt groups	Telephone user interface (native)
Hunt groups (call coverage)	Telephone user interface (traditional)
Hunt groups (calling group)	Time zones
Hunt groups (circular)	Upload audio files via Web interface
Hunt groups (feature interactions)	VIPIM support
Hunt groups (linear)	
Hunt groups (login/logout)	<b>IP MESSAGING MANAGEMENT</b>
Hunt groups (malicious call trace)	System alarms
Hunt groups (message-waiting indication)	System backup
Hunt groups (multisite)	System restoration
Hunt groups (view hunt group status)	System status
Last number redial	
Malicious call trace	<b>LANGUAGE SUPPORT</b>
Message-waiting indication (MWI), audio	Chinese (Mandarin), Dutch, English (Australian, UK and US), French (Canadian and Parisian), German, Italian, Korean, Portuguese (Brazilian), Russian and Spanish (Castilian and LAT)
Message-waiting indication (MWI), visual	
Missed call indicator	
Mobility (multisite hot desking)	
Mobility (single-region hot desking)	
Music on hold	

### HP MSR 30-40 Router with VCX Connect Primary MIM, E1, 4-port BRI-ST and 4-port FXS Modules (JD029A)

<b>Ports</b>	1 RJ-45 autosensing 10/100 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full
	4 USB 2.0
	1 E1 port
	4 RJ-45 ISDN voice ports
	4 RJ-11 FXS ports
	2 RJ-45 autosensing 100/1000 ports (IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 100BASE-TX: half or full; 1000BASE-T: full only
	2 SFP
<b>Physical characteristics</b>	<b>Dimensions</b> 16.62(d) x 17.4(w) x 3.47(h) in. (42.21 x 44.2 x 8.81 cm) (2U height)
	<b>Weight</b> 30.23 lb. (13.71 kg) including bundle components
<b>Mounting</b>	VCX Connect Primary module slides into HP A-MSR 30 Series router MIM slot; A-MSR30 router mounts in EIA-standard 19 inch telco rack or equipment cabinet or table top (hardware included)
<b>Environment</b>	<b>Operating temperature</b> 41°F to 104°F (5°C to 40°C)
	<b>Operating relative humidity</b> 10% to 80%
	<b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
<b>Electrical characteristics</b>	<b>Voltage</b> 100-240 VAC
	<b>Frequency</b> 50/60 Hz



## Technical Specifications

<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS	
<b>Notes</b>	Integrated IP Messaging Voice Ports; up to 30 simultaneous auto-attendant, music-on-hold, fax, or voicemail ports supported MSR 30-40 integrated voice gateway options: <ul style="list-style-type: none"><li>• Supports up to a maximum of twenty-four (24) analog voice ports</li><li>• Supports up to a maximum of sixteen (16) ISDN voice ports</li><li>• Supports up to a maximum of five (5) E1 or T1 digital voice spans</li></ul>	
	Support for standalone VCX V7111, VCX V7122, MSR 20-xx, and MSR 30 Series analog, ISDN, and digital gateways Bundle includes MSR 30-40 router with VCX Connect Primary MIM, 1-port E1 MIM, 32-Channel VPM, 4-port BRI-ST MIM, and 4-port FXS MIM modules	
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E) 5 Yr 6 hr Call-to-Repair Onsite (UX165E)	
	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>Features</b>	<b>SYSTEM</b> Ad hoc conferencing Centralized management Call detail records Converged application based architecture Emergency services End-to-end SIP signaling Global directory Global voice mail IP telephony IP unified messaging Linux operating system with additional security SIP back-to-back user Agent Standards-based connectivity System redundancy Web services SDK Direct SIP integration with Microsoft Lync and Exchange UM	Paging (analog external paging system) Paging (group - zone) Paging (phone-to-phone), send beep with calling number Paging (SIP external paging system) Phone lock/unlock Privacy (block select monitor/charge-in) Privacy (calling number suppression) Serial calling (transfer with callback) Silent monitor/charge-in - Simultaneous ringing allows for user mobility by ringing desk phone and cell phone Speed dial (personal) Speed dial (system) Transfer to voicemail (direct) Voicemail access Warmline (warm ring down circuits) ACD Agent licenses are assigned dynamically



### Technical Specifications

#### RESILIENCY

- Redundancy, IP telephony
- Redundancy, IP messaging
- Redundancy, IP phones and media gateways
- Redundancy, optional RAID
- Redundancy, optional power supply

#### SYSTEM ADMINISTRATION

- Add VCX licenses
- Administration access control
- Administration secure access
- Audit trails and logging enhancements
- Command Line Interface
- Configuration back-up and restore
- CPU, memory, I/O statistics
- First-time configuration
- First-time data import
- Importing data
- Installed component versions
- Multiple administrators
- Multiple language support
- Online administrator help
- Password support, administrator and system access
- Provisioning; bulk moves, adds, changes
- Remove previous software versions
- Resetting a VCX server
- Reset to defaults
- Root directory access
- Searches
- Site configuration data
- Software upgrades and rollbacks
- Switch software versions
- System information
- User data LDAP synchronization: Lotus Domino running on IBM; Lotus Domino running on Windows® Server 2003, 2008; Microsoft Active Directory on Windows Server 2003, 2008; OpenLDAP on Linux
- VCX service licensing
- View VCX licensing data
- Virtual numbers
- Extensions and mailboxes can start with "0"
- Selectively delete Future Delivery messages
- Scheduled VCX backups
- 350x IP Phone Background/Screen saver Image reset to factory defaults via web

#### QUALITY OF SERVICE

- DSCP tagging
- Dynamic jitter buffer
- G.711 audio codec

ACD Agents can be automatically logged in

#### IP TELEPHONY ROUTING

- Calendar bands
- Call admission control
- Call blocking
- Daytime bands
- Dialing prefixes
- Direct Inward Dialing (DID)
- Direct Outward Dialing (DOD)
- DNIS (Dialed Number Identification Service)
- E.164 numbering plan
- External directory access
- Holidays
- NANP support
- Network abbreviated dialing
- Number translations
- Outdial patterns
- Patterns
- Prioritization of trunks/routes
- Private line service
- Routes
- Route (plans and plan wizard)
- Routing (alternate)
- Routing (blacklist)
- Routing (call coverage)
- Routing (first available)
- Routing (global directory)
- Routing (IP to PSTN)
- Routing (IP to IP)
- Routing (least cost)
- Routing (PSTN to IP)
- Routing (source based)
- Routing (VPN numbering plan)
- Routing (white list)
- Trusted end points
- Weekday bands
- Extensions and mailboxes can start with "0"

#### IP MESSAGING ARCHITECTURAL

- G.711
- G.729
- Global voicemail central server
- Redundancy (intelligent mirroring)

#### IP MESSAGING

- Message annotation
- Message append
- Message auto-delivery
- Message auto playback
- Message broadcast
- Message delete





## Technical Specifications

G.729ab audio codec  
Packet-loss rate  
Pay-load length  
QoS: 802.1p tagging (Prioritization)  
QoS: 802.1Q tagging (VLAN)  
Video codec  
Video resolution  
Wide-band audio codec

### SECURITY

Network security policies  
Operating system security  
Secure access  
Security: Locking MAC addresses to switches  
User authentication methods

### SYSTEM MANAGEMENT

Alarm notification  
Audio performance reporting (local)  
Auto discovery and management of IP devices  
Intelligent Management Center Voice Service  
Manager: centralized management  
Maintenance, graceful shutdown of services  
Operating system updates  
Quality of service end of call reporting  
SNMP MIB access  
SNMP traps  
SNMP v1, v3  
System back-ups  
Scheduled VCX backups  
QoS MIB and license MIB enhancements for IMC  
VSM

### REPORTING

Call detail records (reporting)  
Call detail records (structure)

### IP TELEPHONY CALLING

Anonymous all  
Anonymous next  
Anonymous call reject  
Automatic call distribution (ACD)  
ACD groups (call coverage)  
ACD groups (calling groups)  
ACD groups (CDR reporting)  
ACD groups (circular)  
ACD groups (feature interactions)  
ACD groups (least-call count)  
ACD groups (linear)  
ACD groups (login/logout)  
ACD groups (malicious call trace)  
ACD groups (message-waiting indication)

Message delete retrieval  
Message delivery report  
Message delivery to non-subscribers  
Message deposit  
Message deposit treatment options  
Message folders  
Message forward  
Message notification  
Message notification options  
Message priority  
Message record options  
Message reply  
Message retrieval  
Message review  
Message review options  
Message review playback controls  
Message save  
Message schedule delivery  
Message send  
Message send treatment options  
Mailbox login

### GREETING

Default system greeting  
Personal busy greeting  
Personal extended absence greeting  
Personal normal greeting  
Personal scheduled greetings

### DISTRIBUTION LIST

Administrator distribution lists  
Personal distribution lists  
System distribution lists

### DIRECTORY

Directory search  
Directory search (dial-by-name)

### USER PRODUCTIVITY

Auto attendants  
Bulletin board  
Call back  
Call monitor  
Family mailbox  
Force password change  
Listen and manage voicemail messages from Web  
user interface  
Mailbox alias  
Mailbox auto login  
Mailbox full alert  
Mailboxes for announcements  
Mailboxes for forms (Q&A)



## Technical Specifications

- ACD groups (most idle agent)
- ACD groups (multisite)
- ACD groups (real-time statistics)
- ACD groups (view ACD group status)
- Automatic line selection (Multiple system appearance)
- Bridged line appearance
- Bridge line appearance (MWI)
- Bridge line appearance (shared hold)
- Busy lamp field
- Call conference (drop)
- Call conference (six-way calling)
- Call conference (three-way calling)
- Call coverage
- Call drop
- Call duration display
- Call forward all (universal)
- Call forward busy
- Call forward no answer
- Call forward out-of-coverage
- Call forward programmable
- Call forward reminder
- Call forward remote
- Call history (missed/answered/placed logs)
- Call history display sort
- Call hold
- Call hold reminder
- Call park/retrieve
- Call park (button mapping)
- Call park (fallback)
- Call pick-up (directed)
- Call pick-up (group)
- Call restrictions (black list)
- Call restrictions (blocking inbound)
- Call restrictions (blocking outbound)
- Call restrictions (call screening)
- Call restrictions (forward to trunk)
- Call restrictions (toll screening)
- Call restrictions (transfer to trunk)
- Call restrictions (white list)
- Call return
- Call transfer (attended)
- Call transfer (fallback on transfer failure)
- Call transfer (unattended)
- Call transfer (restrictions)
- Call waiting
- Caller ID (called party)
- Caller ID (calling party number)
- Caller ID (calling party name)
- Caller ID (privacy)
- Camp on busy (automatic call back)
- Class of service override

- Mailboxes for information
- Mailboxes for surveys
- Mailboxes for system bulletins/broadcasts
- Message-waiting indication
- Music-on-hold
- Outline help
- Personal address book
- Personal auto-attendant
- Privacy
- Prompt bypass
- Set-up assistant tutorial
- Shortcut keys
- User password change
- User provisioning through TUI
- User provisioning through Web
- Virtual calling card
- Zero out

### FIND ME/FOLLOW ME

- Find me/follow me
- Find me/follow me call intercept

### FAX MAIL

- Electronic fax sending
- Fax auto-delivery to email
- Fax auto-delivery to fax machine
- Fax delivery to fax machine
- Fax message deposit
- Fax message retrieval
- Never-busy fax

### EMAIL INTEGRATION

- Client integration
- Email auto delivery
- Email integration
- Email synchronization
- Fax attachment in email (.tif or .pdf formats)
- Unified inbox for Domino on Windows
- Voicemail POP3/IMAP4 client integration
- Integration with Microsoft Exchange Unified Messaging

### IP MESSAGING ADMINISTRATION

- Administration of all parameters through X-terminal interface
- Class of service administration
- Company/division administration
- Export mailbox/COS
- Import mailbox/COS
- IMAP SSLv3 support
- IP messaging Web portal
- Mailbox administration



## Technical Specifications

Customer account and billing codes	Mailbox on-the-fly
Delayed or no ringing	Mailbox un-login
Directory (local user)	Multiple administration
Directory (global user)	Multiple language support
Distinctive ringing, ring patterns (different call types)	Multiple permission levels
Distinctive ringing, selective ringing (ident-a-call)	Pager templates
Do not disturb	Send-user groups
DTMF dialing	Support for multi-language voicemail
Feature codes	Telephone user interface (native)
Feature access codes	Telephone user interface (traditional)
Forced account codes	Time zones
Forward to mail	Upload audio files via Web interface
Hands-free support	VPM support
Hotline (hot ring down circuits)	
Hunt groups	<b>IP MESSAGING MANAGEMENT</b>
Hunt groups (call coverage)	System alarms
Hunt groups (calling group)	System backup
Hunt groups (circular)	System restoration
Hunt groups (feature interactions)	System status
Hunt groups (linear)	Selective deletion of messages via web
Hunt groups (login/logout)	Voice mail full return receipt support
Hunt groups (malicious call trace)	
Hunt groups (message-waiting indication)	<b>LANGUAGE SUPPORT</b>
Hunt groups (multisite)	Chinese (Mandarin), Dutch, English (Australian, UK and US), French (Canadian and Parisian), German, Italian, Korean, Portuguese (Brazilian), Russian and Spanish (Castilian and LAT)
Hunt groups (view hunt group status)	
Last number redial	
Malicious call trace	
Message-waiting indication (MWI), audio	
Message-waiting indication (MWI), visual	
Missed call indicator	
Mobility (multisite hot desking)	
Mobility (single-region hot desking)	
Music on hold	
Mute	



### Accessories

#### HP VCX Connect Unified Cables

Communications MIM on MSR Series accessories	HP X260 E1 BNC 75 ohm 3m Router Cable	JD175A
	HP X260 E1 RJ45 3m Router Cable	JD509A
	HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
	HP X260 E1 BNC 20m Router Cable	JD514A
	HP X260 E1 BNC 75 ohm 40m Router Cable	JD516A
	HP X260 E1 RJ45 20m Router Cable	JD517A
	HP X260 T1 Router Cable	JD518A

#### Power Supply

	HP A-RPS800 Redundant Power System	JD183A
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#### License

	HP VCX Business IP Phone License E-LTU	JE427BAE
	HP VCX Basic IP Phone License E-LTU	JE426BAE
	HP VCX Third Party IP Phone License E-LTU	JE444BAE
	HP VCX Business IP Phone License 50 Bundle E-LTU	JE332BAE
	HP VCX Basic IP Phone License 50 Bundle E-LTU	JE329BAE
	HP VCX Business IP Phone License 250 Bundle E-LTU	JE331BAE
	HP VCX Basic IP Phone License 250 Bundle E-LTU	JE328BAE
	HP VCX Entry/Analog Phone License E-LTU	JE425BAE
	HP VCX IP Messaging Seat License E-LTU	JE301BAE
	HP VCX IP Messaging Seat License 50 Bundle E-LTU	JC515BAE
	HP VCX IP Messaging Seat License 250 Bundle E-LTU	JC514BAE
	HP VCX Desktop Communicator Standalone Soft Phone License E-LTU	JE435BAE
	HP VCX Desktop Communicator Outlook Edition Standalone Soft Phone License E-LTU	JE436BAE
	HP VCX Desktop Communicator to Outlook Edition Upgrade Soft Phone License E-LTU	JE437BAE
	HP VCX Desktop Communicator Soft Phone License 50 Bundle E-LTU	JE334BAE
	HP VCX Desktop Communicator Outlook Edition Soft Phone License 50 Bundle E-LTU	JE336BAE
	HP VCX Desktop Communicator Soft Phone License 250 Bundle E-LTU	JE333BAE
	HP VCX Desktop Communicator Outlook Edition Soft Phone License 250 Bundle E-LTU	JE335BAE
	HP VCX Convergence Center Client Standalone License E-LTU	JE434BAE
	HP VCX ACD Agent License E-LTU	JE422BAE
	HP VCX ACD 5 Agent License E-LTU	JE424BAE
	HP VCX ACD 10 Agent License E-LTU	JE423BAE

#### Routers

	HP A-MSR30-16 Router	JF233A
	HP A-MSR30-16 PoE Router	JF234A
	HP A-MSR30-20 Router	JF284A
	HP A-MSR30-20 PoE Router	JF802A
	HP A-MSR30-40 Router	JF229A
	HP A-MSR30-40 PoE Router	JF803A
	HP A-MSR30-60 Router	JF230A
	HP A-MSR30-60 PoE Router	JF804A

#### Router Modules



### Accessories

HP A-MSR 24-Channel Voice Processing Module	JD599A
HP A-MSR 32-Channel Voice Processing Module	JD598A
HP A-MSR Voice Co-processing Module	JD610A
HP A-MSR 1-port FXO SIC Module	JD559A
HP A-MSR 2-port FXO SIC Module	JD558A
HP A-MSR 1-port FXS SIC Module	JD561A
HP A-MSR 2-port FXS SIC Module	JD560A
HP A-MSR 2-port FXS/1-port FXO SIC Module	JD632A
HP A-MSR 2-port ISDN-S/T Voice SIC Module	JF821A
HP A-MSR 1-port E1 Voice SIC Module	JD575A
HP A-MSR 1-port T1 Voice SIC Module	JD576A
HP A-MSR 4-port E/M MIM Module	JD539A
HP A-MSR 2-port FXO MIM Module	JD543A
HP A-MSR 4-port FXO MIM Module	JD542A
HP A-MSR 4-port FXS MIM Module	JD553A
HP A-MSR 16-port FXS MIM Module	JF822A
HP A-MSR 4-port ISDN-S/T Voice MIM Module	JF837A
HP A-MSR 1-port E1 Voice MIM Module	JD565A
A-MSR 1-port T1 Voice MIM Module	JD566A
HP A-MSR 2-port E1 Voice MIM Module	JD567A
HP A-MSR 2-port T1 Voice MIM Module	JD568A
<b>Power cords</b>	
HP X290 1m RPS Cable	JD637A



## Accessory Product Details

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

### HP A-MSR30-16 Multi-Service Router (JF233A)

<b>Ports</b>	4 SIC slots 1 MIM module slot 2 auto-sensing 10/100 WAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
<b>Physical characteristics</b>	<b>Dimensions</b> 17.39(d) x 17.4(w) x 1.74(h) in. (44.18 x 44.2 x 4.42 cm) (1U height) <b>Weight</b> 13.23 lb. (6 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 400 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 240 Kpps (64-byte packets) <b>Routing table size</b> 30,000 entries
<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%, non-condensing <b>Non-operating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Non-operating/Storage relative humidity</b> 5% to 90%, non-condensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 341 BTU/hr (359.76 kJ/hr) <b>Voltage</b> 100-120 / 200-240 VAC <b>Maximum power rating</b> 100 W <b>Frequency</b> 50 / 60 Hz <b>Notes</b> Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
<b>Safety</b>	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
<b>Emissions</b>	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
<b>Telecom</b>	FCC part 68
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E)



## Accessory Product Details

- 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)
- 4-year, 24x7 SW phone support, software updates (UX161E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)
- 5-year, 24x7 SW phone support, software updates (UX162E)
- 3 Yr 6 hr Call-to-Repair Onsite (UX163E)
- 4 Yr 6 hr Call-to-Repair Onsite (UX164E)
- 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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
- RFC 768 UDP
- RFC 783 TFTP Protocol (revision 2)
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 TELNET

- RFC 3032 MPLS Label Stack Encoding
- RFC 3036 LDP Specification
- RFC 3046 DHCP Relay Agent Information Option
- RFC 3063 MPLS Loop Prevention Mechanism
- RFC 3065 Support AS confederation
- RFC 3137 OSPF Stub Router Advertisement
- RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels
- RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels
- RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)
- RFC 3214 LSP Modification Using CR-LDP
- RFC 3215 LDP State Machine
- RFC 3246 Expedited Forwarding PHB
- RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)
- RFC 3277 IS-IS Transient Blackhole Avoidance
- RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
- RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
- RFC 3392 Support BGP capabilities advertisement
- RFC 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



## Accessory Product Details

- RFC 855 Telnet Option Specification
  - RFC 856 TELNET
  - RFC 858 Telnet Suppress Go Ahead Option
  - RFC 894 IP over Ethernet
  - RFC 925 Multi-LAN Address Resolution
  - RFC 950 Internet Standard Subnetting Procedure
  - RFC 959 File Transfer Protocol (FTP)
  - RFC 1006 ISO transport services on top of the TCP: Version 3
  - RFC 1027 Proxy ARP
  - RFC 1034 Domain Concepts and Facilities
  - RFC 1035 Domain Implementation and Specification
  - RFC 1042 IP Datagrams
  - RFC 1058 RIPv1
  - RFC 1071 Computing the Internet Checksum
  - RFC 1091 Telnet Terminal-Type Option
  - RFC 1122 Host Requirements
  - RFC 1141 Incremental updating of the Internet checksum
  - RFC 1142 OSI IS-IS Intra-domain Routing Protocol
  - RFC 1144 Compressing TCP/IP headers for low-speed serial links
  - RFC 1195 OSI ISIS for IP and Dual Environments
  - RFC 1256 ICMP Router Discovery Protocol (IRDP)
  - RFC 1293 Inverse Address Resolution Protocol
  - RFC 1315 Management Information Base for Frame Relay DTEs
  - RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
  - RFC 1333 PPP Link Quality Monitoring
  - RFC 1334 PPP Authentication Protocols (PAP)
  - RFC 1349 Type of Service
  - RFC 1350 TFTP Protocol (revision 2)
  - RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
  - RFC 1381 SNMP MIB Extension for X.25 LAPB
  - RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol
  - RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol
  - RFC 1490 Multiprotocol Interconnect over Frame Relay
  - RFC 1519 CIDR
  - RFC 1534 DHCP/BOOTP Interoperation
  - RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
  - RFC 1552 The PPP Internetworking Packet Exchange Fragments Beyond the 256 Limit
  - RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management
  - RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)
  - RFC 3847 Restart signaling for IS-IS
- IP multicast**
- RFC 1112 IGMP
  - RFC 2236 IGMPv2
  - RFC 2283 Multiprotocol Extensions for BGP-4
  - RFC 2362 PIM Sparse Mode
  - RFC 2934 Protocol Independent Multicast MIB for IPv4
- IPv4**
- RFC 3376 IGMPv3
- IPv6**
- RFC 1981 IPv6 Path MTU Discovery
  - RFC 2080 RIPvng 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
  - RFC 2473 Generic Packet Tunneling in IPv6
  - RFC 2529 Transmission of IPv6 Packets over IPv4
  - RFC 2545 Use of MP-BGP-4 for IPv6
  - RFC 2553 Basic Socket Interface Extensions for IPv6
  - RFC 2740 OSPFv3 for IPv6
  - RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
  - RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
  - RFC 3513 IPv6 Addressing Architecture
  - RFC 3596 DNS Extension for IPv6
- MIBs**
- RFC 1213 MIB II
  - RFC 1229 Interface MIB Extensions
  - RFC 1286 Bridge MIB
  - RFC 1493 Bridge MIB
  - RFC 1573 SNMP MIB II
  - RFC 1724 RIPv2 MIB
  - RFC 1757 Remote Network Monitoring MIB
  - RFC 1850 OSPFv2 MIB





## Accessory Product Details

Control Protocol (IPXCP)	RFC 2011 SNMPv2 MIB for IP
RFC 1577 Classical IP and ARP over ATM	RFC 2012 SNMPv2 MIB for TCP
RFC 1613 Cisco Systems X.25 over TCP (XOT)	RFC 2013 SNMPv2 MIB for UDP
RFC 1624 Incremental Internet Checksum	RFC 2233 Interfaces MIB
RFC 1631 NAT	RFC 2454 IPV6-UDP-MIB
RFC 1638 PPP Bridging Control Protocol (BCP)	RFC 2465 IPv6 MIB
RFC 1661 The Point-to-Point Protocol (PPP)	RFC 2466 ICMPv6 MIB
RFC 1662 PPP in HDLC-like Framing	RFC 2618 RADIUS Client MIB
RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2	RFC 2620 RADIUS Accounting MIB
RFC 1701 Generic Routing Encapsulation	RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 1702 Generic Routing Encapsulation over IPv4 networks	RFC 2737 Entity MIB (Version 2)
RFC 1721 RIP-2 Analysis	RFC 2863 The Interfaces Group MIB
RFC 1722 RIP-2 Applicability	RFC 2933 IGMP MIB
RFC 1723 RIP v2	RFC 3813 MPLS LSR MIB
RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1	<b>Network management</b>
RFC 1812 IPv4 Routing	IEEE 802.1D (STP)
RFC 1829 The ESP DES-CBC Transform	RFC 1155 Structure of Management Information
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses	RFC 1157 SNMPv1
RFC 1944 Benchmarking Methodology for Network Interconnect Devices	RFC 1905 SNMPv2 Protocol Operations
RFC 1973 PPP in Frame Relay	RFC 2272 SNMPv3 Management Protocol
RFC 1974 PPP Stac LZS Compression Protocol	RFC 2273 SNMPv3 Applications
RFC 1990 The PPP Multilink Protocol (MP)	RFC 2274 USM for SNMPv3
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)	RFC 2275 VACM for SNMPv3
RFC 2091 Trigger RIP	RFC 2575 SNMPv3 View-based Access Control Model (VACM)
RFC 2131 DHCP	RFC 3164 BSD syslog Protocol
RFC 2132 DHCP Options and BOOTP Vendor Extensions	<b>OSPF</b>
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements	RFC 1245 OSPF protocol analysis
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification	RFC 1246 Experience with OSPF
RFC 2280 Routing Policy Specification Language (RPSL)	RFC 1587 OSPF NSSA
RFC 2284 EAP over LAN	RFC 1765 OSPF Database Overflow
RFC 2338 VRRP	RFC 1850 OSPFv2 Management Information Base (MIB), traps
RFC 2364 PPP Over AAL5	RFC 2328 OSPFv2
RFC 2374 An Aggregatable Global Unicast Address Format	RFC 2370 OSPF Opaque LSA Option
RFC 2451 The ESP CBC-Mode Cipher Algorithms	RFC 3101 OSPF NSSA
RFC 2453 RIPv2	<b>QoS/CoS</b>
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols	IEEE 802.1P (CoS)
RFC 2511 Internet X.509 Certificate Request	RFC 2474 DS Field in the IPv4 and IPv6 Headers
	RFC 2475 DiffServ Architecture
	RFC 2597 DiffServ Assured Forwarding (AF)
	RFC 2598 DiffServ Expedited Forwarding (EF)
	RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
	<b>Security</b>
	IEEE 802.1X Port Based Network Access Control
	RFC 1321 The MD5 Message-Digest Algorithm
	RFC 2082 RIP-2 MD5 Authentication



## Accessory Product Details

Message Format	RFC 2104 Keyed-Hashing for Message Authentication
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)	RFC 2138 RADIUS Authentication
RFC 2644 Directed Broadcast Control	RFC 2209 RSVP-Message Processing
RFC 2661 L2TP	RFC 2246 Transport Layer Security (TLS)
RFC 2663 NAT Terminology and Considerations	RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5	RFC 2865 RADIUS Authentication
RFC 2694 DNS extensions to Network Address Translators (DNS_ALG)	RFC 2866 RADIUS Accounting
RFC 2702 Requirements for Traffic Engineering Over MPLS	RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication
RFC 2747 RSVP Cryptographic Authentication	<b>VPN</b>
RFC 2763 Dynamic Name-to-System ID mapping support	RFC 2403 - HMAC-MD5-96
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)	RFC 2404 - HMAC-SHA1-96
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)	RFC 2405 - DES-CBC Cipher algorithm
RFC 2784 Generic Routing Encapsulation (GRE)	RFC 2547 BGP/MPLS VPNs
RFC 2787 Definitions of Managed Objects for VRRP	RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2961 RSVP Refresh Overhead Reduction Extensions	RFC 2842 Capabilities Advertisement with BGP-4
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS	RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2973 IS-IS Mesh Groups	RFC 2918 Route Refresh Capability for BGP-4
RFC 2993 Architectural Implications of NAT	RFC 3107 Carrying Label Information in BGP-4
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)	<b>IPsec</b>
RFC 3027 Protocol Complications with the IP Network Address Translator	RFC 1828 IP Authentication using Keyed MD5
RFC 3031 Multiprotocol Label Switching Architecture	RFC 2401 IP Security Architecture
	RFC 2402 IP Authentication Header
	RFC 2406 IP Encapsulating Security Payload
	RFC 2407 - Domain of interpretation
	RFC 2410 - The NULL Encryption Algorithm and its use with IPsec
	RFC 2411 IP Security Document Roadmap
	RFC 2412 - OAKLEY
	RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

### HP A-MSR30-16 PoE Multi-Service Router (JF234A)

<b>Ports</b>	4 SIC slots
	1 MIM module slot
	2 auto-sensing 10/100 WAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
<b>Physical characteristics</b>	<b>Dimensions</b> 17.39(d) x 17.4(w) x 1.74(h) in. (44.18 x 44.2 x 4.42 cm) (1U height)
	<b>Weight</b> 13.23 lb. (6 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 400 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 240 Kpps (64-byte packets)
	<b>Routing table size</b> 30,000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 104°F (0°C to 40°C)



## Accessory Product Details

	<b>Operating relative humidity</b>	5% to 90%, non-condensing
	<b>Non-operating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Non-operating/Storage relative humidity</b>	5% to 90%
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b>	341 BTU/hr (359.76 kJ/hr)
	<b>Voltage</b>	100-120 / 200-240 VAC
	<b>Maximum power rating</b>	100 W
	<b>PoE power</b>	150 W
	<b>Frequency</b>	50 / 60 Hz
	<b>Notes</b>	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 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).
<b>Safety</b>		UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
<b>Emissions</b>		EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
<b>Telecom</b>		FCC part 68
<b>Management</b>		IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
<b>Services</b>		3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E) 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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

**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  
RFC 768 UDP  
RFC 783 TFTP Protocol (revision 2)  
RFC 791 IP  
RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP  
RFC 854 TELNET  
RFC 855 Telnet Option Specification  
RFC 856 TELNET  
RFC 858 Telnet Suppress Go Ahead Option  
RFC 894 IP over Ethernet  
RFC 925 Multi-LAN Address Resolution  
RFC 950 Internet Standard Subnetting Procedure  
RFC 959 File Transfer Protocol (FTP)  
RFC 1006 ISO transport services on top of the TCP: Version 3  
RFC 1027 Proxy ARP  
RFC 1034 Domain Concepts and Facilities  
RFC 1035 Domain Implementation and Specification  
RFC 1042 IP Datagrams  
RFC 1058 RIPv1  
RFC 1071 Computing the Internet Checksum

RFC 3032 MPLS Label Stack Encoding  
RFC 3036 LDP Specification  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3063 MPLS Loop Prevention Mechanism  
RFC 3065 Support AS confederation  
RFC 3137 OSPF Stub Router Advertisement  
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels  
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels  
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)  
RFC 3214 LSP Modification Using CR-LDP  
RFC 3215 LDP State Machine  
RFC 3246 Expedited Forwarding PHB  
RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)  
RFC 3277 IS-IS Transient Blackhole Avoidance  
RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile  
RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile  
RFC 3392 Support BGP capabilities advertisement  
RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP)  
RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering  
RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec  
RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers  
RFC 3784 ISIS TE support  
RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit  
RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management  
RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)  
RFC 3847 Restart signaling for IS-IS

### IP multicast

RFC 1112 IGMP  
RFC 2236 IGMPv2  
RFC 2283 Multiprotocol Extensions for BGP-4  
RFC 2362 PIM Sparse Mode  
RFC 2934 Protocol Independent Multicast MIB for



## Accessory Product Details

RFC 1091 Telnet Terminal-Type Option	<b>IPv4</b>
RFC 1122 Host Requirements	RFC 3376 IGMPv3
RFC 1141 Incremental updating of the Internet checksum	IPv6
RFC 1142 OSI IS-IS Intra-domain Routing Protocol	RFC 1981 IPv6 Path MTU Discovery
RFC 1144 Compressing TCP/IP headers for low-speed serial links	RFC 2080 RIPng for IPv6
RFC 1195 OSI ISIS for IP and Dual Environments	RFC 2292 Advanced Sockets API for IPv6
RFC 1256 ICMP Router Discovery Protocol (IRDP)	RFC 2373 IPv6 Addressing Architecture
RFC 1293 Inverse Address Resolution Protocol	RFC 2460 IPv6 Specification
RFC 1315 Management Information Base for Frame Relay DTEs	RFC 2461 IPv6 Neighbor Discovery
RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)	RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 1333 PPP Link Quality Monitoring	RFC 2464 Transmission of IPv6 over Ethernet Networks
RFC 1334 PPP Authentication Protocols (PAP)	RFC 2472 IP Version 6 over PPP
RFC 1349 Type of Service	RFC 2473 Generic Packet Tunneling in IPv6
RFC 1350 TFTP Protocol (revision 2)	RFC 2529 Transmission of IPv6 Packets over IPv4
RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)	RFC 2545 Use of MP-BGP-4 for IPv6
RFC 1381 SNMP MIB Extension for X.25 LAPB	RFC 2553 Basic Socket Interface Extensions for IPv6
RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol	RFC 2740 OSPFv3 for IPv6
RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol	RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 1490 Multiprotocol Interconnect over Frame Relay	RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 1519 CIDR	RFC 3513 IPv6 Addressing Architecture
RFC 1534 DHCP/BOOTP Interoperation	RFC 3596 DNS Extension for IPv6
RFC 1542 Clarifications and Extensions for the Bootstrap Protocol	<b>MIBs</b>
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)	RFC 1213 MIB II
RFC 1577 Classical IP and ARP over ATM	RFC 1229 Interface MIB Extensions
RFC 1613 Cisco Systems X.25 over TCP (XOT)	RFC 1286 Bridge MIB
RFC 1624 Incremental Internet Checksum	RFC 1493 Bridge MIB
RFC 1631 NAT	RFC 1573 SNMP MIB II
RFC 1638 PPP Bridging Control Protocol (BCP)	RFC 1724 RIPv2 MIB
RFC 1661 The Point-to-Point Protocol (PPP)	RFC 1757 Remote Network Monitoring MIB
RFC 1662 PPP in HDLC-like Framing	RFC 1850 OSPFv2 MIB
RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2	RFC 2011 SNMPv2 MIB for IP
RFC 1701 Generic Routing Encapsulation	RFC 2012 SNMPv2 MIB for TCP
RFC 1702 Generic Routing Encapsulation over IPv4 networks	RFC 2013 SNMPv2 MIB for UDP
RFC 1721 RIP-2 Analysis	RFC 2233 Interfaces MIB
RFC 1722 RIP-2 Applicability	RFC 2454 IPV6-UDP-MIB
	RFC 2465 IPv6 MIB
	RFC 2466 ICMPv6 MIB
	RFC 2618 RADIUS Client MIB
	RFC 2620 RADIUS Accounting MIB
	RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
	RFC 2737 Entity MIB (Version 2)
	RFC 2863 The Interfaces Group MIB
	RFC 2933 IGMP MIB
	RFC 3813 MPLS LSR MIB
	<b>Network management</b>



## Accessory Product Details

RFC 1723 RIP v2	IEEE 802.1D (STP)
RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1	RFC 1155 Structure of Management Information
RFC 1812 IPv4 Routing	RFC 1157 SNMPv1
RFC 1829 The ESP DES-CBC Transform	RFC 1905 SNMPv2 Protocol Operations
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses	RFC 2272 SNMPv3 Management Protocol
RFC 1944 Benchmarking Methodology for Network Interconnect Devices	RFC 2273 SNMPv3 Applications
RFC 1973 PPP in Frame Relay	RFC 2274 USM for SNMPv3
RFC 1974 PPP Stac LZS Compression Protocol	RFC 2275 VACM for SNMPv3
RFC 1990 The PPP Multilink Protocol (MP)	RFC 2575 SNMPv3 View-based Access Control Model (VACM)
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)	RFC 3164 BSD syslog Protocol
RFC 2091 Trigger RIP	<b>OSPF</b>
RFC 2131 DHCP	RFC 1245 OSPF protocol analysis
RFC 2132 DHCP Options and BOOTP Vendor Extensions	RFC 1246 Experience with OSPF
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements	RFC 1587 OSPF NSSA
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification	RFC 1765 OSPF Database Overflow
RFC 2280 Routing Policy Specification Language (RPSL)	RFC 1850 OSPFv2 Management Information Base (MIB), traps
RFC 2284 EAP over LAN	RFC 2328 OSPFv2
RFC 2338 VRRP	RFC 2370 OSPF Opaque LSA Option
RFC 2364 PPP Over AAL5	RFC 3101 OSPF NSSA
RFC 2374 An Aggregatable Global Unicast Address Format	<b>QoS/CoS</b>
RFC 2451 The ESP CBC-Mode Cipher Algorithms	IEEE 802.1P (CoS)
RFC 2453 RIPv2	RFC 2474 DS Field in the IPv4 and IPv6 Headers
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols	RFC 2475 DiffServ Architecture
RFC 2511 Internet X.509 Certificate Request Message Format	RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)	RFC 2598 DiffServ Expedited Forwarding (EF)
RFC 2644 Directed Broadcast Control	RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
RFC 2661 L2TP	<b>Security</b>
RFC 2663 NAT Terminology and Considerations	IEEE 802.1X Port Based Network Access Control
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5	RFC 1321 The MD5 Message-Digest Algorithm
RFC 2694 DNS extensions to Network Address Translators (DNS_ALG)	RFC 2082 RIP-2 MD5 Authentication
RFC 2702 Requirements for Traffic Engineering Over MPLS	RFC 2104 Keyed-Hashing for Message Authentication
RFC 2747 RSVP Cryptographic Authentication	RFC 2138 RADIUS Authentication
RFC 2763 Dynamic Name-to-System ID mapping support	RFC 2209 RSVP-Message Processing
RFC 2765 Stateless IP/ICMP Translation Algorithm	RFC 2246 Transport Layer Security (TLS)
	RFC 2716 PPP EAP TLS Authentication Protocol
	RFC 2865 RADIUS Authentication
	RFC 2866 RADIUS Accounting
	RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication
	<b>VPN</b>
	RFC 2403 - HMAC-MD5-96
	RFC 2404 - HMAC-SHA1-96
	RFC 2405 - DES-CBC Cipher algorithm
	RFC 2547 BGP/MPLS VPNs



## Accessory Product Details

(SIIT)	RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)	RFC 2842 Capabilities Advertisement with BGP-4
RFC 2784 Generic Routing Encapsulation (GRE)	RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2787 Definitions of Managed Objects for VRRP	RFC 2918 Route Refresh Capability for BGP-4
RFC 2961 RSVP Refresh Overhead Reduction Extensions	RFC 3107 Carrying Label Information in BGP-4
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS	<b>IPsec</b>
RFC 2973 IS-IS Mesh Groups	RFC 1828 IP Authentication using Keyed MD5
RFC 2993 Architectural Implications of NAT	RFC 2401 IP Security Architecture
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)	RFC 2402 IP Authentication Header
RFC 3027 Protocol Complications with the IP Network Address Translator	RFC 2406 IP Encapsulating Security Payload
RFC 3031 Multiprotocol Label Switching Architecture	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)

### HP A-MSR30-20 Multi-Service Router (JF284A)

<b>Ports</b>	4 SIC slots
	2 MIM module slots
	2 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T); Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
<b>Physical characteristics</b>	<b>Dimensions</b> 17.39(d) x 17.4(w) x 1.74(h) in. (44.18 x 44.2 x 4.42 cm) (1U height)
	<b>Weight</b> 15.21 lb. (6.9 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 300 Kpps (64-byte packets)
	<b>Routing table size</b> 30,000 entries
<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%, non-condensing
	<b>Non-operating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
	<b>Non-operating/Storage relative humidity</b> 5% to 90%, non-condensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 426 BTU/hr (449.43 kJ/hr)
	<b>Voltage</b> 100-120 / 200-240 VAC
	<b>Maximum power rating</b> 125 W
	<b>Frequency</b> 50 / 60 Hz
	<b>Notes</b> Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.



## Accessory Product Details

<b>Safety</b>	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
<b>Emissions</b>	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
<b>Telecom</b>	FCC part 68
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E) 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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 3032 MPLS Label Stack Encoding  
RFC 3036 LDP Specification  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3063 MPLS Loop Prevention Mechanism  
RFC 3065 Support AS confederation  
RFC 3137 OSPF Stub Router Advertisement  
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RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels  
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)  
RFC 3214 LSP Modification Using CR-LDP  
RFC 3215 LDP State Machine  
RFC 3246 Expedited Forwarding PHB  
RFC 3268 Advanced Encryption Standard (AES)  
Ciphersuites for Transport Layer Security (TLS)  
RFC 3277 IS-IS Transient Blackhole Avoidance  
RFC 3279 Algorithms and Identifiers for the Internet





## Accessory Product Details

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  
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RFC 783 TFTP Protocol (revision 2)  
RFC 791 IP  
RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP  
RFC 854 TELNET  
RFC 855 Telnet Option Specification  
RFC 856 TELNET  
RFC 858 Telnet Suppress Go Ahead Option  
RFC 894 IP over Ethernet  
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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

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  
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RFC 3847 Restart signaling for IS-IS

### IP multicast

RFC 1112 IGMP  
RFC 2236 IGMPv2  
RFC 2283 Multiprotocol Extensions for BGP-4  
RFC 2362 PIM Sparse Mode  
RFC 2934 Protocol Independent Multicast MIB for IPv4  
RFC 3376 IGMPv3

### IPv6

RFC 1981 IPv6 Path MTU Discovery  
RFC 2080 RIPng for IPv6  
RFC 2292 Advanced Sockets API for IPv6  
RFC 2373 IPv6 Addressing Architecture  
RFC 2460 IPv6 Specification  
RFC 2461 IPv6 Neighbor Discovery  
RFC 2462 IPv6 Stateless Address Auto-configuration  
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RFC 2472 IP Version 6 over PPP  
RFC 2473 Generic Packet Tunneling in IPv6  
RFC 2529 Transmission of IPv6 Packets over IPv4  
RFC 2545 Use of MP-BGP-4 for IPv6  
RFC 2553 Basic Socket Interface Extensions for IPv6



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- RFC 1350 TFTP Protocol (revision 2)
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  - RFC 1613 Cisco Systems X.25 over TCP (XOT)
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  - RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)
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  - RFC 1246 Experience with OSPF
  - RFC 1587 OSPF NSSA
  - RFC 1765 OSPF Database Overflow
  - RFC 1850 OSPFv2 Management Information Base (MIB), traps



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Extensions  
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements  
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification  
RFC 2280 Routing Policy Specification Language (RPSL)  
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RFC 2702 Requirements for Traffic Engineering Over MPLS  
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RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)  
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RFC 2973 IS-IS Mesh Groups  
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RFC 3022 Traditional IP Network Address Translator (Traditional NAT)  
RFC 3027 Protocol Complications with the IP Network Address Translator  
RFC 3031 Multiprotocol Label Switching Architecture

RFC 2328 OSPFv2  
RFC 2370 OSPF Opaque LSA Option  
RFC 3101 OSPF NSSA

### QoS/CoS

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RFC 2474 DS Field in the IPv4 and IPv6 Headers  
RFC 2475 DiffServ Architecture  
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RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP

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RFC 2865 RADIUS Authentication  
RFC 2866 RADIUS Accounting  
RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication

### VPN

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

### IPsec

RFC 1828 IP Authentication using Keyed MD5  
RFC 2401 IP Security Architecture  
RFC 2402 IP Authentication Header  
RFC 2406 IP Encapsulating Security Payload  
RFC 2407 - Domain of interpretation  
RFC 2410 - The NULL Encryption Algorithm and its use with IPsec  
RFC 2411 IP Security Document Roadmap  
RFC 2412 - OAKLEY  
RFC 2865 - Remote Authentication Dial In User Service (RADIUS)



## Accessory Product Details

### HP A-MSR30-20 PoE Multi-Service Router (JF802A)

<b>Ports</b>	4 SIC slots 2 MIM module slots 2 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T); Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
<b>Physical characteristics</b>	<b>Dimensions</b> 17.39(d) x 17.4(w) x 1.74(h) in. (44.18 x 44.2 x 4.42 cm) (1U height) <b>Weight</b> 15.21 lb. (6.9 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 300 Kpps (64-byte packets) <b>Routing table size</b> 30,000 entries
<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%, non-condensing <b>Non-operating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Non-operating/Storage relative humidity</b> 5% to 90%, non-condensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 426 BTU/hr (449.43 kJ/hr) <b>Voltage</b> 100-120 / 200-240 VAC <b>Maximum power rating</b> 125 W <b>PoE power</b> 150 W <b>Frequency</b> 50 / 60 Hz <b>Notes</b> Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 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).
<b>Safety</b>	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
<b>Emissions</b>	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
<b>Telecom</b>	FCC part 68
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E)



## Accessory Product Details

3-year, 24x7 SW phone support, software updates (UX160E)  
4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)  
4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)  
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)  
4-year, 24x7 SW phone support, software updates (UX161E)  
5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)  
5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)  
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)  
5-year, 24x7 SW phone support, software updates (UX162E)  
3 Yr 6 hr Call-to-Repair Onsite (UX163E)  
4 Yr 6 hr Call-to-Repair Onsite (UX164E)  
5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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  
RFC 768 UDP  
RFC 783 TFTP Protocol (revision 2)  
RFC 791 IP  
RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP

### RFC 3032 MPLS Label Stack Encoding

RFC 3036 LDP Specification  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3063 MPLS Loop Prevention Mechanism  
RFC 3065 Support AS confederation  
RFC 3137 OSPF Stub Router Advertisement  
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels  
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels  
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)  
RFC 3214 LSP Modification Using CR-LDP  
RFC 3215 LDP State Machine  
RFC 3246 Expedited Forwarding PHB  
RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)  
RFC 3277 IS-IS Transient Blackhole Avoidance  
RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile  
RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile  
RFC 3392 Support BGP capabilities advertisement  
RFC 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



## Accessory Product Details

- RFC 854 TELNET
  - RFC 855 Telnet Option Specification
  - RFC 856 TELNET
  - RFC 858 Telnet Suppress Go Ahead Option
  - RFC 894 IP over Ethernet
  - RFC 925 Multi-LAN Address Resolution
  - RFC 950 Internet Standard Subnetting Procedure
  - RFC 959 File Transfer Protocol (FTP)
  - RFC 1006 ISO transport services on top of the TCP: Version 3
  - RFC 1027 Proxy ARP
  - RFC 1034 Domain Concepts and Facilities
  - RFC 1035 Domain Implementation and Specification
  - RFC 1042 IP Datagrams
  - RFC 1058 RIPv1
  - RFC 1071 Computing the Internet Checksum
  - RFC 1091 Telnet Terminal-Type Option
  - RFC 1122 Host Requirements
  - RFC 1141 Incremental updating of the Internet checksum
  - RFC 1142 OSI IS-IS Intra-domain Routing Protocol
  - RFC 1144 Compressing TCP/IP headers for low-speed serial links
  - RFC 1195 OSI ISIS for IP and Dual Environments
  - RFC 1256 ICMP Router Discovery Protocol (IRDP)
  - RFC 1293 Inverse Address Resolution Protocol
  - RFC 1315 Management Information Base for Frame Relay DTEs
  - RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
  - RFC 1333 PPP Link Quality Monitoring
  - RFC 1334 PPP Authentication Protocols (PAP)
  - RFC 1349 Type of Service
  - RFC 1350 TFTP Protocol (revision 2)
  - RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
  - RFC 1381 SNMP MIB Extension for X.25 LAPB
  - RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol
  - RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol
  - RFC 1490 Multiprotocol Interconnect over Frame Relay
  - RFC 1519 CIDR
  - RFC 1534 DHCP/BOOTP Interoperation
  - RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
  - RFC 1552 The PPP Internetworking Packet
  - RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit
  - RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management
  - RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)
  - RFC 3847 Restart signaling for IS-IS
- IP multicast**
- RFC 1112 IGMP
  - RFC 2236 IGMPv2
  - RFC 2283 Multiprotocol Extensions for BGP-4
  - RFC 2362 PIM Sparse Mode
  - RFC 2934 Protocol Independent Multicast MIB for IPv4
  - RFC 3376 IGMPv3
- IPv6**
- RFC 1981 IPv6 Path MTU Discovery
  - RFC 2080 RIPng for IPv6
  - RFC 2292 Advanced Sockets API for IPv6
  - RFC 2373 IPv6 Addressing Architecture
  - RFC 2460 IPv6 Specification
  - RFC 2461 IPv6 Neighbor Discovery
  - RFC 2462 IPv6 Stateless Address Auto-configuration
  - RFC 2464 Transmission of IPv6 over Ethernet Networks
  - RFC 2472 IP Version 6 over PPP
  - RFC 2473 Generic Packet Tunneling in IPv6
  - RFC 2529 Transmission of IPv6 Packets over IPv4
  - RFC 2545 Use of MP-BGP-4 for IPv6
  - RFC 2553 Basic Socket Interface Extensions for IPv6
  - RFC 2740 OSPFv3 for IPv6
  - RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
  - RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
  - RFC 3513 IPv6 Addressing Architecture
  - RFC 3596 DNS Extension for IPv6
- MIBs**
- RFC 1213 MIB II
  - RFC 1229 Interface MIB Extensions
  - RFC 1286 Bridge MIB
  - RFC 1493 Bridge MIB
  - RFC 1573 SNMP MIB II
  - RFC 1724 RIPv2 MIB
  - RFC 1757 Remote Network Monitoring MIB



## Accessory Product Details

- Exchange
  - Control Protocol (IPXCP)
  - RFC 1577 Classical IP and ARP over ATM
  - RFC 1613 Cisco Systems X.25 over TCP (XOT)
  - RFC 1624 Incremental Internet Checksum
  - RFC 1631 NAT
  - RFC 1638 PPP Bridging Control Protocol (BCP)
  - RFC 1661 The Point-to-Point Protocol (PPP)
  - RFC 1662 PPP in HDLC-like Framing
  - RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2
  - RFC 1701 Generic Routing Encapsulation
  - RFC 1702 Generic Routing Encapsulation over IPv4
  - networks
  - RFC 1721 RIP-2 Analysis
  - RFC 1722 RIP-2 Applicability
  - RFC 1723 RIP v2
  - RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1
  - RFC 1812 IPv4 Routing
  - RFC 1829 The ESP DES-CBC Transform
  - RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses
  - RFC 1944 Benchmarking Methodology for Network Interconnect Devices
  - RFC 1973 PPP in Frame Relay
  - RFC 1974 PPP Stac LZS Compression Protocol
  - RFC 1990 The PPP Multilink Protocol (MP)
  - RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)
  - RFC 2091 Trigger RIP
  - RFC 2131 DHCP
  - RFC 2132 DHCP Options and BOOTP Vendor Extensions
  - RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements
  - RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification
  - RFC 2280 Routing Policy Specification Language (RPSL)
  - RFC 2284 EAP over LAN
  - RFC 2338 VRRP
  - RFC 2364 PPP Over AAL5
  - RFC 2374 An Aggregatable Global Unicast Address Format
  - RFC 2451 The ESP CBC-Mode Cipher Algorithms
  - RFC 2453 RIPv2
  - RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols
  - RFC 1850 OSPFv2 MIB
  - RFC 2011 SNMPv2 MIB for IP
  - RFC 2012 SNMPv2 MIB for TCP
  - RFC 2013 SNMPv2 MIB for UDP
  - RFC 2233 Interfaces MIB
  - RFC 2454 IPV6-UDP-MIB
  - RFC 2465 IPv6 MIB
  - RFC 2466 ICMPv6 MIB
  - RFC 2618 RADIUS Client MIB
  - RFC 2620 RADIUS Accounting MIB
  - RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
  - RFC 2737 Entity MIB (Version 2)
  - RFC 2863 The Interfaces Group MIB
  - RFC 2933 IGMP MIB
  - RFC 3813 MPLS LSR MIB
- Network management**
- IEEE 802.1D (STP)
  - RFC 1155 Structure of Management Information
  - RFC 1157 SNMPv1
  - RFC 1905 SNMPv2 Protocol Operations
  - RFC 2272 SNMPv3 Management Protocol
  - RFC 2273 SNMPv3 Applications
  - RFC 2274 USM for SNMPv3
  - RFC 2275 VACM for SNMPv3
  - RFC 2575 SNMPv3 View-based Access Control Model (VACM)
  - RFC 3164 BSD syslog Protocol
- OSPF**
- RFC 1245 OSPF protocol analysis
  - RFC 1246 Experience with OSPF
  - RFC 1587 OSPF NSSA
  - RFC 1765 OSPF Database Overflow
  - RFC 1850 OSPFv2 Management Information Base (MIB), traps
  - RFC 2328 OSPFv2
  - RFC 2370 OSPF Opaque LSA Option
  - RFC 3101 OSPF NSSA
- QoS/CoS**
- IEEE 802.1P (CoS)
  - RFC 2474 DS Field in the IPv4 and IPv6 Headers
  - RFC 2475 DiffServ Architecture
  - RFC 2597 DiffServ Assured Forwarding (AF)
  - RFC 2598 DiffServ Expedited Forwarding (EF)
  - RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
- Security**
- IEEE 802.1X Port Based Network Access Control
  - RFC 1321 The MD5 Message-Digest Algorithm



## Accessory Product Details

RFC 2511 Internet X.509 Certificate Request Message Format	RFC 2082 RIP-2 MD5 Authentication
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)	RFC 2104 Keyed-Hashing for Message Authentication
RFC 2644 Directed Broadcast Control	RFC 2138 RADIUS Authentication
RFC 2661 L2TP	RFC 2209 RSVP-Message Processing
RFC 2663 NAT Terminology and Considerations	RFC 2246 Transport Layer Security (TLS)
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5	RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2694 DNS extensions to Network Address Translators (DNS_ALG)	RFC 2865 RADIUS Authentication
RFC 2702 Requirements for Traffic Engineering Over MPLS	RFC 2866 RADIUS Accounting
RFC 2747 RSVP Cryptographic Authentication	RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication
RFC 2763 Dynamic Name-to-System ID mapping support	<b>VPN</b>
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)	RFC 2403 - HMAC-MD5-96
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)	RFC 2404 - HMAC-SHA1-96
RFC 2784 Generic Routing Encapsulation (GRE)	RFC 2405 - DES-CBC Cipher algorithm
RFC 2787 Definitions of Managed Objects for VRRP	RFC 2547 BGP/MPLS VPNs
RFC 2961 RSVP Refresh Overhead Reduction Extensions	RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS	RFC 2842 Capabilities Advertisement with BGP-4
RFC 2973 IS-IS Mesh Groups	RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2993 Architectural Implications of NAT	RFC 2918 Route Refresh Capability for BGP-4
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)	RFC 3107 Carrying Label Information in BGP-4
RFC 3027 Protocol Complications with the IP Network Address Translator	<b>IPsec</b>
RFC 3031 Multiprotocol Label Switching Architecture	RFC 1828 IP Authentication using Keyed MD5
	RFC 2401 IP Security Architecture
	RFC 2402 IP Authentication Header
	RFC 2406 IP Encapsulating Security Payload
	RFC 2407 - Domain of interpretation
	RFC 2410 - The NULL Encryption Algorithm and its use with IPsec
	RFC 2411 IP Security Document Roadmap
	RFC 2412 - OAKLEY
	RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

### HP A-MSR30-40 Multi-Service Router (JF229A)

<b>Ports</b>	4 SIC slots
	4 MIM module slots
	2 1000Base-T ports (IEEE 802.3ab Type 1000Base-T)
	2 fixed Gigabit Ethernet SFP ports
<b>Physical characteristics</b>	<b>Dimensions</b> 16.63(d) x 17.4(w) x 3.47(h) in. (42.23 x 44.2 x 8.82 cm) (2U height)
	<b>Weight</b> 26.23 lb. (11.9 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 360 Kpps (64-byte packets)
	<b>Routing table size</b> 30,000 entries





## Accessory Product Details

Environment	Operating temperature	32°F to 104°F (0°C to 40°C)
	Operating relative humidity	5% to 90%, non-condensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	5% to 90%, non-condensing
Electrical characteristics	Maximum heat dissipation	717 BTU/hr (756.44 kJ/hr)
	Voltage	100-120 / 200-240 VAC
	Maximum power rating	210 W
	Frequency	50 / 60 Hz
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	
Telecom	FCC part 68	
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E) 5 Yr 6 hr Call-to-Repair Onsite (UX165E)	

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

**BGP**  
RFC 1163 Border Gateway Protocol (BGP)

RFC 3032 MPLS Label Stack Encoding  
RFC 3036 LDP Specification



## Accessory Product Details

series)	RFC 1267 Border Gateway Protocol 3 (BGP-3)	RFC 3046 DHCP Relay Agent Information Option
	RFC 1657 Definitions of Managed Objects for BGPv4	RFC 3063 MPLS Loop Prevention Mechanism
	RFC 1771 BGPv4	RFC 3065 Support AS confederation
	RFC 1772 Application of the BGP	RFC 3137 OSPF Stub Router Advertisement
	RFC 1773 Experience with the BGP-4 Protocol	RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels
	RFC 1774 BGP-4 Protocol Analysis	RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels
	RFC 1965 BGP4 confederations	RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)
	RFC 1997 BGP Communities Attribute	RFC 3214 LSP Modification Using CR-LDP
	RFC 1998 PPP Gandalf FZA Compression Protocol	RFC 3215 LDP State Machine
	RFC 2385 BGP Session Protection via TCP MD5	RFC 3246 Expedited Forwarding PHB
	RFC 2439 BGP Route Flap Damping	RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)
		RFC 3277 IS-IS Transient Blackhole Avoidance
	<b>Device management</b>	RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
	RFC 1305 NTPv3	RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
	RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0	RFC 3392 Support BGP capabilities advertisement
	RFC 2271 FrameWork	RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP)
	RFC 2452 MIB for TCP6	RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering
	RFC 2454 MIB for UDP6	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
	<b>General protocols</b>	RFC 3784 ISIS TE support
	IEEE 802.1D MAC Bridges	RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit
	IEEE 802.1p Priority	RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management
	IEEE 802.1Q VLANs	RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)
	IEEE 802.1s Multiple Spanning Trees	RFC 3847 Restart signaling for IS-IS
	IEEE 802.1w Rapid Reconfiguration of Spanning Tree	
	RFC 768 UDP	<b>IP multicast</b>
	RFC 783 TFTP Protocol (revision 2)	RFC 1112 IGMP
	RFC 791 IP	RFC 2236 IGMPv2
	RFC 792 ICMP	RFC 2283 Multiprotocol Extensions for BGP-4
	RFC 793 TCP	RFC 2362 PIM Sparse Mode
	RFC 826 ARP	RFC 2934 Protocol Independent Multicast MIB for IPv4
	RFC 854 TELNET	RFC 3376 IGMPv3
	RFC 855 Telnet Option Specification	
	RFC 856 TELNET	
	RFC 858 Telnet Suppress Go Ahead Option	
	RFC 894 IP over Ethernet	
	RFC 925 Multi-LAN Address Resolution	
	RFC 950 Internet Standard Subnetting Procedure	
	RFC 959 File Transfer Protocol (FTP)	
	RFC 1006 ISO transport services on top of the TCP: Version 3	
	RFC 1027 Proxy ARP	
	RFC 1034 Domain Concepts and Facilities	
	RFC 1035 Domain Implementation and Specification	
	RFC 1042 IP Datagrams	
	RFC 1058 RIPv1	
	RFC 1071 Computing the Internet Checksum	
	RFC 1091 Telnet Terminal-Type Option	
	RFC 1122 Host Requirements	



## Accessory Product Details

- RFC 1141 Incremental updating of the Internet checksum
- RFC 1142 OSI IS-IS Intra-domain Routing Protocol
- RFC 1144 Compressing TCP/IP headers for low-speed serial links
- RFC 1195 OSI ISIS for IP and Dual Environments
- RFC 1256 ICMP Router Discovery Protocol (IRDP)
- RFC 1293 Inverse Address Resolution Protocol
- RFC 1315 Management Information Base for Frame Relay DTEs
- RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
- RFC 1333 PPP Link Quality Monitoring
- RFC 1334 PPP Authentication Protocols (PAP)
- RFC 1349 Type of Service
- RFC 1350 TFTP Protocol (revision 2)
- RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
- RFC 1381 SNMP MIB Extension for X.25 LAPB
- RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol
- RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol
- RFC 1490 Multiprotocol Interconnect over Frame Relay
- RFC 1519 CIDR
- RFC 1534 DHCP/BOOTP Interoperation
- RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
- RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)
- RFC 1577 Classical IP and ARP over ATM
- RFC 1613 Cisco Systems X.25 over TCP (XOT)
- RFC 1624 Incremental Internet Checksum
- RFC 1631 NAT
- RFC 1638 PPP Bridging Control Protocol (BCP)
- RFC 1661 The Point-to-Point Protocol (PPP)
- RFC 1662 PPP in HDLC-like Framing
- RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2
- RFC 1701 Generic Routing Encapsulation
- RFC 1702 Generic Routing Encapsulation over IPv4 networks
- RFC 1721 RIP-2 Analysis
- RFC 1722 RIP-2 Applicability
- RFC 1723 RIP v2
- RFC 1795 Data Link Switching: Switch-to-Switch
- IPv6**
  - RFC 1981 IPv6 Path MTU Discovery
  - RFC 2080 RIPng for IPv6
  - RFC 2292 Advanced Sockets API for IPv6
  - RFC 2373 IPv6 Addressing Architecture
  - RFC 2460 IPv6 Specification
  - RFC 2461 IPv6 Neighbor Discovery
  - RFC 2462 IPv6 Stateless Address Auto-configuration
  - RFC 2464 Transmission of IPv6 over Ethernet Networks
  - RFC 2472 IP Version 6 over PPP
  - RFC 2473 Generic Packet Tunneling in IPv6
  - RFC 2529 Transmission of IPv6 Packets over IPv4
  - RFC 2545 Use of MP-BGP-4 for IPv6
  - RFC 2553 Basic Socket Interface Extensions for IPv6
  - RFC 2740 OSPFv3 for IPv6
  - RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
  - RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
  - RFC 3513 IPv6 Addressing Architecture
  - RFC 3596 DNS Extension for IPv6
- MIBs**
  - RFC 1213 MIB II
  - RFC 1229 Interface MIB Extensions
  - RFC 1286 Bridge MIB
  - RFC 1493 Bridge MIB
  - RFC 1573 SNMP MIB II
  - RFC 1724 RIPv2 MIB
  - RFC 1757 Remote Network Monitoring MIB
  - RFC 1850 OSPFv2 MIB
  - RFC 2011 SNMPv2 MIB for IP
  - RFC 2012 SNMPv2 MIB for TCP
  - RFC 2013 SNMPv2 MIB for UDP
  - RFC 2233 Interfaces MIB
  - RFC 2454 IPV6-UDP-MIB
  - RFC 2465 IPv6 MIB
  - RFC 2466 ICMPv6 MIB
  - RFC 2618 RADIUS Client MIB
  - RFC 2620 RADIUS Accounting MIB
  - RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
  - RFC 2737 Entity MIB (Version 2)
  - RFC 2863 The Interfaces Group MIB
  - RFC 2933 IGMP MIB
  - RFC 3813 MPLS LSR MIB
- Network management**
  - IEEE 802.1D (STP)
  - RFC 1155 Structure of Management Information



## Accessory Product Details

Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1	RFC 1157 SNMPv1
RFC 1812 IPv4 Routing	RFC 1905 SNMPv2 Protocol Operations
RFC 1829 The ESP DES-CBC Transform	RFC 2272 SNMPv3 Management Protocol
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses	RFC 2273 SNMPv3 Applications
RFC 1944 Benchmarking Methodology for Network Interconnect Devices	RFC 2274 USM for SNMPv3
RFC 1973 PPP in Frame Relay	RFC 2275 VACM for SNMPv3
RFC 1974 PPP Stac LZS Compression Protocol	RFC 2575 SNMPv3 View-based Access Control Model (VACM)
RFC 1990 The PPP Multilink Protocol (MP)	RFC 3164 BSD syslog Protocol
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)	<b>OSPF</b>
RFC 2091 Trigger RIP	RFC 1245 OSPF protocol analysis
RFC 2131 DHCP	RFC 1246 Experience with OSPF
RFC 2132 DHCP Options and BOOTP Vendor Extensions	RFC 1587 OSPF NSSA
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements	RFC 1765 OSPF Database Overflow
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification	RFC 1850 OSPFv2 Management Information Base (MIB), traps
RFC 2280 Routing Policy Specification Language (RPSL)	RFC 2328 OSPFv2
RFC 2284 EAP over LAN	RFC 2370 OSPF Opaque LSA Option
RFC 2338 VRRP	RFC 3101 OSPF NSSA
RFC 2364 PPP Over AAL5	<b>QoS/CoS</b>
RFC 2374 An Aggregatable Global Unicast Address Format	IEEE 802.1P (CoS)
RFC 2451 The ESP CBC-Mode Cipher Algorithms	RFC 2474 DS Field in the IPv4 and IPv6 Headers
RFC 2453 RIPv2	RFC 2475 DiffServ Architecture
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols	RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2511 Internet X.509 Certificate Request Message Format	RFC 2598 DiffServ Expedited Forwarding (EF)
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)	RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
RFC 2644 Directed Broadcast Control	<b>Security</b>
RFC 2661 L2TP	IEEE 802.1X Port Based Network Access Control
RFC 2663 NAT Terminology and Considerations	RFC 1321 The MD5 Message-Digest Algorithm
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5	RFC 2082 RIP-2 MD5 Authentication
RFC 2694 DNS extensions to Network Address Translators (DNS_ALG)	RFC 2104 Keyed-Hashing for Message Authentication
RFC 2702 Requirements for Traffic Engineering Over MPLS	RFC 2138 RADIUS Authentication
RFC 2747 RSVP Cryptographic Authentication	RFC 2209 RSVP-Message Processing
RFC 2763 Dynamic Name-to-System ID mapping support	RFC 2246 Transport Layer Security (TLS)
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)	RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2766 Network Address Translation - Protocol	RFC 2865 RADIUS Authentication
	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 Full Mesh IBGP



### Accessory Product Details

Translation (NAT-PT)	RFC 2842 Capabilities Advertisement with BGP-4
RFC 2784 Generic Routing Encapsulation (GRE)	RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2787 Definitions of Managed Objects for VRRP	RFC 2918 Route Refresh Capability for BGP-4
RFC 2961 RSVP Refresh Overhead Reduction Extensions	RFC 3107 Carrying Label Information in BGP-4
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS	<b>IPsec</b>
RFC 2973 IS-IS Mesh Groups	RFC 1828 IP Authentication using Keyed MD5
RFC 2993 Architectural Implications of NAT	RFC 2401 IP Security Architecture
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)	RFC 2402 IP Authentication Header
RFC 3027 Protocol Complications with the IP Network Address Translator	RFC 2406 IP Encapsulating Security Payload
RFC 3031 Multiprotocol Label Switching Architecture	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)

#### HP A-MSR30-40 PoE Multi-Service Router (JF803A)

<b>Ports</b>	4 SIC slots
	4 MIM module slots
	2 1000Base-T ports (IEEE 802.3ab Type 1000Base-T)
	2 fixed Gigabit Ethernet SFP ports
<b>Physical characteristics</b>	<b>Dimensions</b> 16.63(d) x 17.4(w) x 3.47(h) in. (42.23 x 44.2 x 8.82 cm) (2U height)
	<b>Weight</b> 26.23 lb. (11.9 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 360 Kpps (64-byte packets)
	<b>Routing table size</b> 30,000 entries
<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%, non-condensing
	<b>Non-operating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
	<b>Non-operating/Storage relative humidity</b> 5% to 90%, non-condensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 717 BTU/hr (756.44 kJ/hr)
	<b>Voltage</b> 100-120 / 200-240 VAC
	<b>Maximum power rating</b> 210 W
	<b>PoE power</b> 375 W
	<b>Frequency</b> 50 / 60 Hz



## Accessory Product Details

**Notes** Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 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).

**Safety** UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03; FDA 21 CFR Subchapter J

**Emissions** EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001

**Telecom** FCC part 68

**Management** IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB

**Services** 3-year, parts only, global next-day advance exchange (UX150E)  
3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E)  
3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E)  
3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E)  
3-year, 24x7 SW phone support, software updates (UX160E)  
4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)  
4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)  
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)  
4-year, 24x7 SW phone support, software updates (UX161E)  
5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)  
5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)  
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)  
5-year, 24x7 SW phone support, software updates (UX162E)  
3 Yr 6 hr Call-to-Repair Onsite (UX163E)  
4 Yr 6 hr Call-to-Repair Onsite (UX164E)  
5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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 (CR-LDP)  
RFC 2385 BGP Session Protection via TCP MD5

RFC 3032 MPLS Label Stack Encoding  
RFC 3036 LDP Specification  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3063 MPLS Loop Prevention Mechanism  
RFC 3065 Support AS confederation  
RFC 3137 OSPF Stub Router Advertisement  
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels  
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels  
RFC 3212 Constraint-Based LSP setup using LDP  
RFC 3214 LSP Modification Using CR-LDP



## Accessory Product Details

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

RFC 768 UDP

RFC 783 TFTP Protocol (revision 2)

RFC 791 IP

RFC 792 ICMP

RFC 793 TCP

RFC 826 ARP

RFC 854 TELNET

RFC 855 Telnet Option Specification

RFC 856 TELNET

RFC 858 Telnet Suppress Go Ahead Option

RFC 894 IP over Ethernet

RFC 925 Multi-LAN Address Resolution

RFC 950 Internet Standard Subnetting Procedure

RFC 959 File Transfer Protocol (FTP)

RFC 1006 ISO transport services on top of the TCP: Version 3

RFC 1027 Proxy ARP

RFC 1034 Domain Concepts and Facilities

RFC 1035 Domain Implementation and Specification

RFC 1042 IP Datagrams

RFC 1058 RIPv1

RFC 1071 Computing the Internet Checksum

RFC 1091 Telnet Terminal-Type Option

RFC 1122 Host Requirements

RFC 1141 Incremental updating of the Internet checksum

RFC 1142 OSI IS-IS Intra-domain Routing Protocol

RFC 1144 Compressing TCP/IP headers for low-speed serial links

RFC 1195 OSI ISIS for IP and Dual Environments

RFC 1256 ICMP Router Discovery Protocol (IRDP)

RFC 1293 Inverse Address Resolution Protocol

RFC 1315 Management Information Base for Frame

Relay DTEs

RFC 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 3479 Fault Tolerance for the Label Distribution

Protocol (LDP)

RFC 3564 Requirements for Support of

Differentiated Services-aware MPLS Traffic

Engineering

RFC 3602 The AES-CBC Cipher Algorithm and Its

Use with IPsec

RFC 3706 A Traffic-Based Method of Detecting

Dead Internet Key Exchange (IKE) Peers

RFC 3784 ISIS TE support

RFC 3786 Extending the Number of IS-IS LSP

Fragments Beyond the 256 Limit

RFC 3811 Definitions of Textual Conventions (TCs)

for Multiprotocol Label Switching (MPLS)

Management

RFC 3812 Multiprotocol Label Switching (MPLS)

Traffic Engineering (TE) Management Information

Base (MIB)

RFC 3847 Restart signaling for IS-IS

### IP multicast

RFC 1112 IGMP

RFC 2236 IGMPv2

RFC 2283 Multiprotocol Extensions for BGP-4

RFC 2362 PIM Sparse Mode

RFC 2934 Protocol Independent Multicast MIB for

IPv4

RFC 3376 IGMPv3

### IPv6

RFC 1981 IPv6 Path MTU Discovery

RFC 2080 RIPng for IPv6

RFC 2292 Advanced Sockets API for IPv6

RFC 2373 IPv6 Addressing Architecture

RFC 2460 IPv6 Specification

RFC 2461 IPv6 Neighbor Discovery

RFC 2462 IPv6 Stateless Address Auto-

configuration

RFC 2464 Transmission of IPv6 over Ethernet

Networks



## Accessory Product Details

- RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
  - RFC 1333 PPP Link Quality Monitoring
  - RFC 1334 PPP Authentication Protocols (PAP)
  - RFC 1349 Type of Service
  - RFC 1350 TFTP Protocol (revision 2)
  - RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
  - RFC 1381 SNMP MIB Extension for X.25 LAPB
  - RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol
  - RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol
  - RFC 1490 Multiprotocol Interconnect over Frame Relay
  - RFC 1519 CIDR
  - RFC 1534 DHCP/BOOTP Interoperation
  - RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
  - RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)
  - RFC 1577 Classical IP and ARP over ATM
  - RFC 1613 Cisco Systems X.25 over TCP (XOT)
  - RFC 1624 Incremental Internet Checksum
  - RFC 1631 NAT
  - RFC 1638 PPP Bridging Control Protocol (BCP)
  - RFC 1661 The Point-to-Point Protocol (PPP)
  - RFC 1662 PPP in HDLC-like Framing
  - RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2
  - RFC 1701 Generic Routing Encapsulation
  - RFC 1702 Generic Routing Encapsulation over IPv4 networks
  - RFC 1721 RIP-2 Analysis
  - RFC 1722 RIP-2 Applicability
  - RFC 1723 RIP v2
  - RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1
  - RFC 1812 IPv4 Routing
  - RFC 1829 The ESP DES-CBC Transform
  - RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses
  - RFC 1944 Benchmarking Methodology for Network Interconnect Devices
  - RFC 1973 PPP in Frame Relay
  - RFC 1974 PPP Stac LZS Compression Protocol
  - RFC 1990 The PPP Multilink Protocol (MP)
  - RFC 2472 IP Version 6 over PPP
  - RFC 2473 Generic Packet Tunneling in IPv6
  - RFC 2529 Transmission of IPv6 Packets over IPv4
  - RFC 2545 Use of MP-BGP-4 for IPv6
  - RFC 2553 Basic Socket Interface Extensions for IPv6
  - RFC 2740 OSPFv3 for IPv6
  - RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
  - RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
  - RFC 3513 IPv6 Addressing Architecture
  - RFC 3596 DNS Extension for IPv6
- MIBs**
- RFC 1213 MIB II
  - RFC 1229 Interface MIB Extensions
  - RFC 1286 Bridge MIB
  - RFC 1493 Bridge MIB
  - RFC 1573 SNMP MIB II
  - RFC 1724 RIPv2 MIB
  - RFC 1757 Remote Network Monitoring MIB
  - RFC 1850 OSPFv2 MIB
  - RFC 2011 SNMPv2 MIB for IP
  - RFC 2012 SNMPv2 MIB for TCP
  - RFC 2013 SNMPv2 MIB for UDP
  - RFC 2233 Interfaces MIB
  - RFC 2454 IPV6-UDP-MIB
  - RFC 2465 IPv6 MIB
  - RFC 2466 ICMPv6 MIB
  - RFC 2618 RADIUS Client MIB
  - RFC 2620 RADIUS Accounting MIB
  - RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
  - RFC 2737 Entity MIB (Version 2)
  - RFC 2863 The Interfaces Group MIB
  - RFC 2933 IGMP MIB
  - RFC 3813 MPLS LSR MIB
- Network management**
- IEEE 802.1D (STP)
  - RFC 1155 Structure of Management Information
  - RFC 1157 SNMPv1
  - RFC 1905 SNMPv2 Protocol Operations
  - RFC 2272 SNMPv3 Management Protocol
  - RFC 2273 SNMPv3 Applications
  - RFC 2274 USM for SNMPv3
  - RFC 2275 VACM for SNMPv3
  - RFC 2575 SNMPv3 View-based Access Control Model (VACM)
  - RFC 3164 BSD syslog Protocol
- OSPF**





## Accessory Product Details

- RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)
  - RFC 2091 Trigger RIP
  - RFC 2131 DHCP
  - RFC 2132 DHCP Options and BOOTP Vendor Extensions
  - RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements
  - RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification
  - RFC 2280 Routing Policy Specification Language (RPSL)
  - RFC 2284 EAP over LAN
  - RFC 2338 VRRP
  - RFC 2364 PPP Over AAL5
  - RFC 2374 An Aggregatable Global Unicast Address Format
  - RFC 2451 The ESP CBC-Mode Cipher Algorithms
  - RFC 2453 IPv2
  - RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols
  - RFC 2511 Internet X.509 Certificate Request Message Format
  - RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)
  - RFC 2644 Directed Broadcast Control
  - RFC 2661 L2TP
  - RFC 2663 NAT Terminology and Considerations
  - RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5
  - RFC 2694 DNS extensions to Network Address Translators (DNS\_ALG)
  - RFC 2702 Requirements for Traffic Engineering Over MPLS
  - RFC 2747 RSVP Cryptographic Authentication
  - RFC 2763 Dynamic Name-to-System ID mapping support
  - RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)
  - RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)
  - RFC 2784 Generic Routing Encapsulation (GRE)
  - RFC 2787 Definitions of Managed Objects for VRRP
  - RFC 2961 RSVP Refresh Overhead Reduction Extensions
  - RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS
  - RFC 2973 IS-IS Mesh Groups
  - RFC 2993 Architectural Implications of NAT
  - RFC 3022 Traditional IP Network Address
  - RFC 1245 OSPF protocol analysis
  - RFC 1246 Experience with OSPF
  - RFC 1587 OSPF NSSA
  - RFC 1765 OSPF Database Overflow
  - RFC 1850 OSPFv2 Management Information Base (MIB), traps
  - RFC 2328 OSPFv2
  - RFC 2370 OSPF Opaque LSA Option
  - RFC 3101 OSPF NSSA
- QoS/CoS**
- IEEE 802.1P (CoS)
  - RFC 2474 DS Field in the IPv4 and IPv6 Headers
  - RFC 2475 DiffServ Architecture
  - RFC 2597 DiffServ Assured Forwarding (AF)
  - RFC 2598 DiffServ Expedited Forwarding (EF)
  - RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
- Security**
- IEEE 802.1X Port Based Network Access Control
  - RFC 1321 The MD5 Message-Digest Algorithm
  - RFC 2082 RIP-2 MD5 Authentication
  - RFC 2104 Keyed-Hashing for Message Authentication
  - RFC 2138 RADIUS Authentication
  - RFC 2209 RSVP-Message Processing
  - RFC 2246 Transport Layer Security (TLS)
  - RFC 2716 PPP EAP TLS Authentication Protocol
  - RFC 2865 RADIUS Authentication
  - RFC 2866 RADIUS Accounting
  - RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication
- VPN**
- RFC 2403 - HMAC-MD5-96
  - RFC 2404 - HMAC-SHA1-96
  - RFC 2405 - DES-CBC Cipher algorithm
  - RFC 2547 BGP/MPLS VPNs
  - RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
  - RFC 2842 Capabilities Advertisement with BGP-4
  - RFC 2858 Multiprotocol Extensions for BGP-4
  - RFC 2918 Route Refresh Capability for BGP-4
  - RFC 3107 Carrying Label Information in BGP-4
- IPsec**
- RFC 1828 IP Authentication using Keyed MD5
  - RFC 2401 IP Security Architecture
  - RFC 2402 IP Authentication Header
  - RFC 2406 IP Encapsulating Security Payload
  - RFC 2407 - Domain of interpretation



## Accessory Product Details

Translator (Traditional NAT) RFC 3027 Protocol Complications with the IP Network Address Translator RFC 3031 Multiprotocol Label Switching Architecture	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)
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### HP A-MSR30-60 Multi-Service Router (JF230A)

<b>Ports</b>	4 SIC slots 6 MIM module slots 2 1000Base-T ports (IEEE 802.3ab Type 1000Base-T) 2 fixed Gigabit Ethernet SFP ports
<b>Physical characteristics</b>	<b>Dimensions</b> 16.61(d) x 17.4(w) x 5.2(h) in. (42.18 x 44.2 x 13.2 cm) (3U height) <b>Weight</b> 29.98 lb. (13.6 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack
<b>Performance</b>	<b>Throughput</b> 360 Kpps (64-byte packets) <b>Routing table size</b> 30,000 entries
<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%, non-condensing <b>Non-operating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Non-operating/Storage relative humidity</b> 5% to 90%, non-condensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 717 BTU/hr (756.44 kJ/hr) <b>Voltage</b> 100-120 / 200-240 VAC <b>Maximum power rating</b> 210 W <b>Frequency</b> 50 / 60 Hz <b>Notes</b> Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
<b>Safety</b>	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
<b>Emissions</b>	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
<b>Telecom</b>	FCC part 68
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
<b>Services</b>	3-year, parts only, global next-day advance exchange (UX150E)



## Accessory Product Details

- 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E)
- 3-year, 24x7 SW phone support, software updates (UX160E)
- 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E)
- 4-year, 24x7 SW phone support, software updates (UX161E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E)
- 5-year, 24x7 SW phone support, software updates (UX162E)
- 3 Yr 6 hr Call-to-Repair Onsite (UX163E)
- 4 Yr 6 hr Call-to-Repair Onsite (UX164E)
- 5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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- 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

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- 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
- RFC 768 UDP
- RFC 783 TFTP Protocol (revision 2)
- RFC 791 IP

- RFC 3032 MPLS Label Stack Encoding
- RFC 3036 LDP Specification
- RFC 3046 DHCP Relay Agent Information Option
- RFC 3063 MPLS Loop Prevention Mechanism
- RFC 3065 Support AS confederation
- RFC 3137 OSPF Stub Router Advertisement
- RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels
- RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels
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- RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
- RFC 3392 Support BGP capabilities advertisement
- RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP)
- RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering
- RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec



## Accessory Product Details

RFC 792 ICMP	RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers
RFC 793 TCP	RFC 3784 ISIS TE support
RFC 826 ARP	RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit
RFC 854 TELNET	RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management
RFC 855 Telnet Option Specification	RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)
RFC 856 TELNET	RFC 3847 Restart signaling for IS-IS
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RFC 894 IP over Ethernet	
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RFC 1293 Inverse Address Resolution Protocol	RFC 2460 IPv6 Specification
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RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)	RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 1333 PPP Link Quality Monitoring	RFC 2464 Transmission of IPv6 over Ethernet Networks
RFC 1334 PPP Authentication Protocols (PAP)	RFC 2472 IP Version 6 over PPP
RFC 1349 Type of Service	RFC 2473 Generic Packet Tunneling in IPv6
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  - RFC 1661 The Point-to-Point Protocol (PPP)
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  - RFC 1973 PPP in Frame Relay
  - RFC 1974 PPP Stac LZS Compression Protocol
  - RFC 1990 The PPP Multilink Protocol (MP)
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  - RFC 2091 Trigger RIP
  - RFC 2131 DHCP
  - RFC 2132 DHCP Options and BOOTP Vendor Extensions
  - RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements
  - RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification
  - RFC 2280 Routing Policy Specification Language (RPSL)
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  - RFC 2364 PPP Over AAL5
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  - RFC 1757 Remote Network Monitoring MIB
  - RFC 1850 OSPFv2 MIB
  - RFC 2011 SNMPv2 MIB for IP
  - RFC 2012 SNMPv2 MIB for TCP
  - RFC 2013 SNMPv2 MIB for UDP
  - RFC 2233 Interfaces MIB
  - RFC 2454 IPV6-UDP-MIB
  - RFC 2465 IPv6 MIB
  - RFC 2466 ICMPv6 MIB
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  - RFC 2620 RADIUS Accounting MIB
  - RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
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  - RFC 2273 SNMPv3 Applications
  - RFC 2274 USM for SNMPv3
  - RFC 2275 VACM for SNMPv3
  - RFC 2575 SNMPv3 View-based Access Control Model (VACM)
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  - RFC 1765 OSPF Database Overflow
  - RFC 1850 OSPFv2 Management Information Base (MIB), traps
  - RFC 2328 OSPFv2
  - RFC 2370 OSPF Opaque LSA Option
  - RFC 3101 OSPF NSSA
- QoS/CoS**
- IEEE 802.1P (CoS)
  - RFC 2474 DS Field in the IPv4 and IPv6 Headers
  - RFC 2475 DiffServ Architecture
  - RFC 2597 DiffServ Assured Forwarding (AF)
  - RFC 2598 DiffServ Expedited Forwarding (EF)
  - RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP



## Accessory Product Details

RFC 2453 IPv2  
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols  
RFC 2511 Internet X.509 Certificate Request Message Format  
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)  
RFC 2644 Directed Broadcast Control  
RFC 2661 L2TP  
RFC 2663 NAT Terminology and Considerations  
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5  
RFC 2694 DNS extensions to Network Address Translators (DNS\_ALG)  
RFC 2702 Requirements for Traffic Engineering Over MPLS  
RFC 2747 RSVP Cryptographic Authentication  
RFC 2763 Dynamic Name-to-System ID mapping support  
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)  
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)  
RFC 2784 Generic Routing Encapsulation (GRE)  
RFC 2787 Definitions of Managed Objects for VRRP  
RFC 2961 RSVP Refresh Overhead Reduction Extensions  
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS  
RFC 2973 IS-IS Mesh Groups  
RFC 2993 Architectural Implications of NAT  
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)  
RFC 3027 Protocol Complications with the IP Network Address Translator  
RFC 3031 Multiprotocol Label Switching Architecture

### Security

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

### VPN

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

### IPsec

RFC 1828 IP Authentication using Keyed MD5  
RFC 2401 IP Security Architecture  
RFC 2402 IP Authentication Header  
RFC 2406 IP Encapsulating Security Payload  
RFC 2407 - Domain of interpretation  
RFC 2410 - The NULL Encryption Algorithm and its use with IPsec  
RFC 2411 IP Security Document Roadmap  
RFC 2412 - OAKLEY  
RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

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## HP A-MSR30-60 PoE Multi-Service Router (JF804A)

<b>Ports</b>	4 SIC slots 6 MIM module slots 2 1000Base-T ports (IEEE 802.3ab Type 1000Base-T) 2 fixed Gigabit Ethernet SFP ports
<b>Physical characteristics</b>	<b>Dimensions</b> 16.61(d) x 17.4(w) x 5.2(h) in. (42.18 x 44.2 x 13.2 cm) (3U height) <b>Weight</b> 29.98 lb. (13.6 kg)
<b>Memory and processor</b>	<b>Processor</b> RISC @ 533 MHz, 256 MB DDR SDRAM, 256 MB compact flash
<b>Mounting</b>	Mounts in an EIA standard 19-in. rack



## Accessory Product Details

Performance	Throughput	360 Kpps (64-byte packets)
	Routing table size	30,000 entries
Environment	Operating temperature	32°F to 104°F (0°C to 40°C)
	Operating relative humidity	5% to 90%, non-condensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	5% to 90%, non-condensing
Electrical characteristics	Maximum heat dissipation	717 BTU/hr (756.44 kJ/hr)
	Voltage	100-120 / 200-240 VAC
	Maximum power rating	210 W
	PoE power	375 W
	Frequency	50 / 60 Hz
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 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).
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	
Telecom	FCC part 68	
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	3-year, parts only, global next-day advance exchange (UX150E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UX151E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX154E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UX157E) 3-year, 24x7 SW phone support, software updates (UX160E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX152E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX155E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX158E) 4-year, 24x7 SW phone support, software updates (UX161E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX153E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX156E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX159E) 5-year, 24x7 SW phone support, software updates (UX162E) 3 Yr 6 hr Call-to-Repair Onsite (UX163E) 4 Yr 6 hr Call-to-Repair Onsite (UX164E)	



## Accessory Product Details

5 Yr 6 hr Call-to-Repair Onsite (UX165E)

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IEEE 802.1w Rapid Reconfiguration of Spanning Tree  
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RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP  
RFC 854 TELNET  
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RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)  
RFC 3847 Restart signaling for IS-IS

#### IP multicast





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- 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
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- IEEE 802.1P (CoS)
  - RFC 2474 DS Field in the IPv4 and IPv6 Headers
  - RFC 2475 DiffServ Architecture
  - RFC 2597 DiffServ Assured Forwarding (AF)
  - RFC 2598 DiffServ Expedited Forwarding (EF)
  - RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
- Security**
- IEEE 802.1X Port Based Network Access Control
  - RFC 1321 The MD5 Message-Digest Algorithm
  - RFC 2082 RIP-2 MD5 Authentication
  - RFC 2104 Keyed-Hashing for Message Authentication
  - RFC 2138 RADIUS Authentication
  - RFC 2209 RSVP-Message Processing
  - RFC 2246 Transport Layer Security (TLS)
  - RFC 2716 PPP EAP TLS Authentication Protocol
  - RFC 2865 RADIUS Authentication
  - RFC 2866 RADIUS Accounting
  - RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication



### Accessory Product Details

RFC 2702 Requirements for Traffic Engineering Over MPLS  
RFC 2747 RSVP Cryptographic Authentication  
RFC 2763 Dynamic Name-to-System ID mapping support  
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)  
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)  
RFC 2784 Generic Routing Encapsulation (GRE)  
RFC 2787 Definitions of Managed Objects for VRRP  
RFC 2961 RSVP Refresh Overhead Reduction Extensions  
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS  
RFC 2973 IS-IS Mesh Groups  
RFC 2993 Architectural Implications of NAT  
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)  
RFC 3027 Protocol Complications with the IP Network Address Translator  
RFC 3031 Multiprotocol Label Switching Architecture

#### VPN

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

#### IPsec

RFC 1828 IP Authentication using Keyed MD5  
RFC 2401 IP Security Architecture  
RFC 2402 IP Authentication Header  
RFC 2406 IP Encapsulating Security Payload  
RFC 2407 - Domain of interpretation  
RFC 2410 - The NULL Encryption Algorithm and its use with IPsec  
RFC 2411 IP Security Document Roadmap  
RFC 2412 - OAKLEY  
RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

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