

## Overview

### HPE 10500/7500 20G Unified Wired-WLAN Module

#### Models

HP 10500/7500 20G Unified Wired-WLAN Module

JG639A

#### Key features

- Enterprise-scale capacity, performance, and high reliability for wireless networks
- System-wide approach to WLAN reliability through Wi-Fi Clear Connect
- Flexible forwarding modes
- Comprehensive feature set for demanding Enterprise environments

#### Product overview

The IEEE 802.11ac-ready HPE 10500/7500 20G Unified Wired-WLAN Module delivers enterprise-scale features, capacity up to 1024 APs through optional licensing and 20G of centralized throughput, and high reliability, as well as offering substantial data processing capacity for wireless networks. The module can operate in the HPE 11900, 10500, and 7500 Switch Series and supports IEEE 802.11a/b/g/n and IEEE 802.11ac APs access devices.

The HPE 10500/7500 20G Unified Wired-WLAN Module provides refined user control and management, comprehensive RF management and security mechanisms, fast roaming, QoS and IPv4/IPv6 features, and powerful WLAN access control.

Designed for WLAN access of enterprise networks, this module provides an industry-leading WLAN solution for large enterprise networks. Working together with HPE access points, the HPE 10500/7500 Unified Wired-WLAN Module can be easily deployed on Layer 2 or Layer 3 networks without affecting existing configurations.

#### Features and benefits

##### Management

- **Wi-Fi Clear Connect**  
provides a system-wide approach to help ensure WLAN reliability by proactively determining and adjusting to changing RF conditions and by identifying rogue activity and enforcing prevention policies, and optimizing WLAN performance by detecting interference from Wi-Fi and non-Wi-Fi sources using spectrum analysis capabilities built into specific access points (refer to the HPE Access Point—Controller Compatibility Matrix for specific access points supported).
- **Advanced radio resource management**
  - **Automatic radio power adjustments**  
include real-time power adjustments based on changing environmental conditions and signal coverage adjustment
  - **Automatic radio channel**  
provides intelligent channel switching and real-time interference detection
  - **Intelligent client load balancing**  
balances the number of clients across multiple APs to optimize AP and client throughput
  - **Airtime fairness**  
helps ensure equal RF transmission time for wireless clients

## Overview

- **Spectrum analysis**
  - **Signal detection/classification**  
identifies source of RF interference, such as Bluetooth®, cordless phones, and microwave ovens
  - **Evaluation of channel quality**  
helps detect severe channel degradation and improves the reporting of poor RF performance
- Band navigation  
enables automatic redirection of 5 GHz-capable clients to the less-congested 5 GHz spectrum
- **Enterprise network management**  
is provided by HPE Intelligent Management Center (IMC) Platform Software and the IMC Wireless Services Manager Software Module, which effectively integrate traditionally disparate management tools into one easy-to-use interface
- **Secure controller management**  
securely manages the controller from a single location with IMC or any other SNMP management station; controller supports SNMPv3 as well as SSH and SSL for secure CLI and Web management
- **Support for environments using Bonjour services**
  - **Gateway**  
allows discovery of Bonjour services located in a different layer-3 network
  - **HPE Zerocast**  
eliminates Bonjour multicast traffic from the WLAN enabling scalable deployment of Apple devices with no performance impact on the Wi-Fi network
  - **Access control**  
enables filters to be applied inbound and outbound (on the AP) to SSIDs, groups of or specific APs. User based filtering can block Bonjour traffic until the user is authenticated
- **VLAN pooling**  
enables wireless clients to be dynamically assigned to different VLANs so administrators can assign different subnets to different clients in the same SSID. A VLAN pool can bind to multiple SSIDs
- **Unified network visibility**  
provides visibility between a wired and wireless network using IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and sFlow
- **AP Plug and Play (PnP)**  
provides zero-configuration capability. An AP without a predefined configuration file can connect to the WLAN controller and the WLAN Controller will provision it with the correct wireless configuration
- **Policy based forwarding**  
simplifies the deployment of centralized or local forwarding. The policy-based mode allows user to classify data traffic based on ACL and choose local or centralized forwarding. Policy-based forwarding can be applied based on SSID or user-profile. That means a forwarding policy can be applied on a SSID or a specific user or a group of users
- **AP grouping**  
enables an admin to easily apply AP-based or radio-based configurations to all the AP that are in the same group
- **Staged Firmware Upgrades**  
enables an admin to selectively upgrade APs, typically a group of APs, to minimize the impact of upgrading large deployments of APs to a new version of firmware}
- **Custom antenna settings**  
allow the admin to select a custom antenna gain

## Quality of Service (QoS)

- **End-to-end QoS**  
the HPE 10500/7500 20G Unified Wired-WLAN Module supports the DiffServ standard and IPv6 QoS; the QoS DiffServ model includes traffic classification and traffic policing, and fully implements six groups of services—EF, AF1 through AF4, and BE

## Overview

- **IEEE 802.1p prioritization**  
delivers data to devices based on the priority and type of traffic
- **Class of Service (CoS)**  
sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ

## Security

- **Web-based authentication**  
provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
- **IEEE 802.1X and RADIUS network logins**  
support port-based and SSID-based 802.1X authentication and accounting
- **WEP, WPA2, or WPA encryption**  
can be deployed at the AP to lock out unauthorized wireless access by authenticating users prior to granting network access; robust Advanced Encryption Standard (AES) or Temporal Key Integrity Protocol (TKIP) encryption secures the data integrity of wireless traffic
- **Secure shell**  
encrypts all transmitted data for secure remote CLI access over IP networks
- **Media access control (MAC) authentication**  
provides simple authentication based on a user's MAC address; supports local or RADIUS-based authentication
- **Integrated Wireless Intrusion Detection System (WIDS)**  
provides support for hybrid and dedicated modes; detects flood, spoofing, and weak IV attacks; displays statistics (events) and history; supports configuration of detection policies
- **Integrated Wireless Intrusion Prevention System (WIPS)**  
automatically identifies and classifies all APs and stations; enables packet-trigger containment via knowledge-based heuristics; protects against honeypot attacks and enforces STA security; detects Denial of Service (DoS) attacks via pre-defined DoS attacks, and provides a Signature mechanism which allows admins to define custom rules; enables Virtual Service Domains to deploy security policies by department or location for example
- **Secure user isolation**  
virtual AP services enable the network administrator to provide specific services for different user groups, allowing effective resource sharing, and simplifying network maintenance and management
- **Secure access by location**  
AP location-based user access control helps ensure that wireless users can access and authenticate only to preselected APs, enabling system administrators to control the locations where a wireless user can access the network
- **Endpoint Admission Defense**  
integrated wired and wireless Endpoint Admission Defense (EAD) helps ensure that only wireless clients that comply with mandated enterprise security policies can access the network, reducing threat levels caused by infected wireless clients and improving the overall security of the wireless network
- **Public Key Infrastructure (PKI)**  
used to control access
- **Authentication, authorization, and accounting (AAA)**  
uses an embedded authentication server or external AAA server for local users
- **Wireless Intelligent Application Aware Feature (WIAA)**  
provides a user role based or SSID based firewall embedded in WLAN Controller via ACL-based packet filter firewall and ASPF firewall. Protect clients from outside attacks Restrict specific users from accessing specific network resources
- **Source Address Validation Improvement (SAVI)**  
records the wireless client's IP address and MAC address and at the next data traffic forwarding stage, SAVI will validate the client's IP address to prevent attacker spoofing other client's IP address

## Overview

### Connectivity

- **IPv6**
  - **IPv6 host**  
enables controllers to be managed and deployed at the IPv6 network's edge
  - **Dual stack (IPv4 and IPv6)**  
transitions customers from IPv4 to IPv6, supporting connectivity for both protocols
  - **MLD snooping**  
directs IPv6 multicast traffic to the appropriate interface, preventing traffic flooding
  - **IPv6 ACL/QoS**  
supports ACL and QoS for IPv6 network traffic
- **NAT support**
  - **NAT traversal**  
helps ensure that communication between a branch office AP and module is supported when the branch uses NAT
  - **Integrated NAT support**  
replaces the private source IP address with a public address; enables multiple internal addresses to be mapped to the same public IP address; permits only certain internal IP addresses to be NATed, and provides an Application Layer Gateway that supports specific application protocols without requiring the NAT platform to be modified
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP)**

### Performance

- **Flexible forwarding modes**
  - **Enable distributed and centralized traffic forwarding**  
with centralized forwarding, wireless traffic is sent to the module for processing. With distributed mode wireless traffic is dropped off locally. In the event that connectivity to the module is lost, authenticated clients can continue to access local resources
  - **Support local drop off or centralization of data traffic**  
after an HTML authentication using the built-in portal server or IMC portal authentication
- **Wireless user access control and management**  
support defining settings such as Committed Access Rate (CAS), QoS profiles, and access control policies based on location for different applications
- **Fast roaming**  
supports Layer 3 roaming and fast roaming, satisfying the most demanding voice service requirements
- **Robust switching capacity and wire-speed processing**  
deliver powerful forwarding capacity to support large enterprise WLANs

### Resiliency and high availability

- **High reliability**  
the module supports 1+1, N+1, and N+N backup; the 1+1 redundancy configuration of the modules supports subsecond-level failure detection; APs establish AP-module tunnel links with both modules, but only the links to the active module are active; when the active module fails, the heartbeat mechanism between the two modules help ensure that the standby module can sense the failure in subsecond level and then informs the APs to switch over to it, thus providing service continuity
- **802.1X hot-backup**  
enables two controllers to sync 802.1X state information and wireless client's 802.11 information from master to backup.

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This feature is only supported on the HPE 850, HPE 870 and 20G Unified Module

### Layer 2 switching

- **VLAN support and tagging**  
supports IEEE 802.1Q with 4,094 simultaneous VLAN IDs
- **Jumbo packet support**  
supports up to 4 KB frame size to improve the performance of large data transfers

### Scalability

- **Ease of deployment**  
The module uses the backplane of all network and management communications, with no need for external network power connections
- **Optional 32 or 128 access-point upgrade license**
  - Increases support for additional access points without the need to buy additional costly hardware and use additional valuable space in a chassis.
  - A reduced-cost 128-access point license is available for use on this redundant module. Refer to the Specifications and Accessories sections for more detail.

### Comprehensive portfolio

- **Access point support**  
Refer to the HPE Access Point—Controller Compatibility Matrix  
(<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA5-0345ENW&cc=us&lc=en>).

### Warranty and support

- **1-year warranty**  
see <http://www.hp.com/networking/warrantysummary> for warranty and support information included with your product purchase.
- **Electronic and telephone support**  
1-year limited electronic and telephone support is available from HPE; to reach our support centers, refer to <http://www.hp.com/networking/contact-support>; for details on the duration of support provided with your product purchase, refer to <http://www.hp.com/networking/warrantysummary>
- **Software releases**  
includes all offered software releases for as long as you own the product; to find software for your product, refer to <http://www.hp.com/networking/support>; for details on the software releases available with your product purchase, refer to <http://www.hp.com/networking/warrantysummary>

## Technical Specifications

### HP 10500/7500 20G Unified Wired-WLAN Module (JG639A)

<b>Ports</b>	1 RJ-45 serial console port (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 1 RJ-45 out-of-band management port (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>	<table border="0"> <tr> <td style="vertical-align: top;"><b>Dimensions</b></td> <td>15.71(w) x 13.98(d) x 1.57(h) in (39.9 x 35.5 x 4.0 cm) (1U height)</td> </tr> <tr> <td style="vertical-align: top;"><b>Weight</b></td> <td>7.98 lb (3.62 kg)</td> </tr> </table>	<b>Dimensions</b>	15.71(w) x 13.98(d) x 1.57(h) in (39.9 x 35.5 x 4.0 cm) (1U height)	<b>Weight</b>	7.98 lb (3.62 kg)				
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<b>Memory and processor</b>	<b>Processor</b> Eight core @ 950 MHz, 1 GB compact flash, 2 GB DDR2 DIMM								
<b>Performance</b>	<table border="0"> <tr> <td style="vertical-align: top;"><b>Switch fabric speed</b></td> <td>10 Gbps</td> </tr> <tr> <td style="vertical-align: top;"><b>MAC address table size</b></td> <td>24000 entries</td> </tr> </table>	<b>Switch fabric speed</b>	10 Gbps	<b>MAC address table size</b>	24000 entries				
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<b>Environment</b>	<table border="0"> <tr> <td style="vertical-align: top;"><b>Operating temperature</b></td> <td>32°F to 113°F (0°C to 45°C)</td> </tr> <tr> <td style="vertical-align: top;"><b>Operating relative humidity</b></td> <td>5% to 95%, noncondensing</td> </tr> <tr> <td style="vertical-align: top;"><b>Nonoperating/Storage temperature</b></td> <td>-40°F to 158°F (-40°C to 70°C)</td> </tr> <tr> <td style="vertical-align: top;"><b>Nonoperating/Storage relative humidity</b></td> <td>5% to 95%, noncondensing</td> </tr> </table>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)	<b>Operating relative humidity</b>	5% to 95%, noncondensing	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)	<b>Nonoperating/Storage relative humidity</b>	5% to 95%, noncondensing
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<b>Electrical characteristics</b>	<table border="0"> <tr> <td style="vertical-align: top;"><b>Maximum heat dissipation</b></td> <td>512 BTU/hr (540.16 kJ/hr)</td> </tr> <tr> <td style="vertical-align: top;"><b>Maximum power rating</b></td> <td>150 W</td> </tr> <tr> <td style="vertical-align: top;"><b>Notes</b></td> <td>Power consumption: 118 W-150 W</td> </tr> </table>	<b>Maximum heat dissipation</b>	512 BTU/hr (540.16 kJ/hr)	<b>Maximum power rating</b>	150 W	<b>Notes</b>	Power consumption: 118 W-150 W		
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<b>Safety</b>	UL 60950-1; CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1; FDA 21 CFR Subchapter J								
<b>Emissions</b>	EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; AS/NZS CISPR 22 Class A; EN 61000-3-2; EN 61000-3-3; VCCI-3 CLASS A; VCCI-4 CLASS A; ETSI EN 300 386; FCC Part 15 (CFR 47) CLASS A								
<b>Immunity</b>	<b>EN</b> EN 55024, CISPR24 & ETSI EN 300 386								
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS; RMON1; FTP; in-line and out-of-band; IEEE 802.3 Ethernet MIB; Ethernet Interface MIB								
<b>Features</b>	<ul style="list-style-type: none"> <li>• For use in HPE 10500 Switch Series and HPE 7500 Switch Series</li> <li>• Default supported APs: 128</li> <li>• Maximum supported APs: 1,024 (via the purchase of the optional HPE Unified Wired-WLAN 128 AP E-LTU (JG649AAE))</li> <li>• Maximum supported clients and centralized throughput: <ul style="list-style-type: none"> <li>○ 20,000 clients</li> <li>○ 20G of centralized throughput</li> </ul> </li> <li>• Maximum supported users via local portal authentication: 4,000</li> <li>• Maximum supported users via local authentication: 1,000</li> <li>• Maximum supported configured SSIDs: 512</li> <li>• Maximum supported ACLs: 32,000</li> <li>• Supported MSM APs are automatically discovered, Comware firmware is loaded, and the APs can be fully managed.</li> <li>• AP upgrade license rules for redundant HPE 10500/7500 20G Unified Wired-WLAN Module</li> </ul>								

## Technical Specifications

deployments

- o The primary HPE 10500/7500 20G Unified Wired-WLAN Module's AP count must be increased using the optional HPE Unified Wired-WLAN 128 AP E-LTU (JG649AAE) or HPE Unified Wired-WLAN 32 AP E-LTU (JG774AAE).
- o The secondary HPE 10500/7500 20G Unified Wired-WLAN Module's AP count can be increased as needed using the reduced-cost HPE Unified Wired-WLAN 128 AP Redundant E-LTU (JG902AAE).

**Notes** The faceplate of the HPE 10500/7500 20G Unified Wired-WLAN Module uses LSU3WCMD0 as the unique product identifier instead of JG639A.

**Services** Refer to the Hewlett Packard Enterprise website at: <http://www.hpe.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 Hewlett Packard Enterprise sales office.

### Standards and protocols

#### General protocols

RFC 768 UDP  
 RFC 791 IP  
 RFC 792 ICMP  
 RFC 793 TCP  
 RFC 826 ARP  
 RFC 854 TELNET  
 RFC 855 Telnet Option Specification  
 RFC 858 Telnet Suppress Go Ahead Option  
 RFC 894 IP over Ethernet  
 RFC 950 Internet Standard Subnetting Procedure  
 RFC 959 File Transfer Protocol (FTP)  
 RFC 1122 Host Requirements  
 RFC 1141 Incremental updating of the Internet checksum  
 RFC 1144 Compressing TCP/IP headers for low-speed serial links  
 RFC 1256 ICMP Router Discovery Protocol (IRDP)  
 RFC 1305 NTPv3 (IPv4 only)  
 RFC 1321 The MD5 Message-Digest Algorithm  
 RFC 1334 PPP Authentication Protocols (PAP)  
 RFC 1350 TFTP Protocol (revision 2)  
 RFC 1812 IPv4 Routing  
 RFC 1944 Benchmarking Methodology for Network Interconnect Devices  
 RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)

RFC 2465 Management Information Base for IP Version 6: Textual Conventions and General Group (partially support, only "IPv6 Interface Statistics table")  
 RFC 2466, Management Information Base for IP Version 6 - ICMPv6  
 RFC 2526 Reserved IPv6 Subnet Anycast Addresses  
 RFC 2553 Basic Socket Interface Extensions for IPv6  
 RFC 2563 ICMPv6  
 RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)  
 RFC 3315 DHCPv6 (client and relay)  
 RFC 3363 DNS support  
 RFC 3484 Default Address Selection for IPv6  
 RFC 3493 Basic Socket Interface Extensions for IPv6  
 RFC 3513 IPv6 Addressing Architecture  
 RFC 3542 Advanced Sockets API for IPv6  
 RFC 3587 IPv6 Global Unicast Address Format  
 RFC 3596 DNS Extension for IPv6  
 RFC 4193, Unique Local IPv6 Unicast Addresses  
 RFC 4443 ICMPv6  
 RFC 4541 IGMP & MLD Snooping Switch  
 RFC 4861 IPv6 Neighbor Discovery  
 RFC 4862 IPv6 Stateless Address Auto-configuration  
 RFC 5095 Deprecation of Type 0 Routing

#### Network management

IEEE 802.11k-2008 (beacon measurement functionality used as part of radio resource management)  
 RFC 1155 Structure of Management Information  
 RFC 1905 SNMPv2 Protocol Operations  
 RFC 2573 SNMPv3 Applications  
 RFC 2574 SNMPv3 User-based Security Model (USM)  
 RFC 2575 VACM for SNMP  
 SNMPv1/v2c

#### QoS/CoS

RFC 2474 DS Field in the IPv4 and IPv6 Headers  
 RFC 2474 DSCP DiffServ  
 RFC 2475 DiffServ Architecture  
 RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP Call Admission Control (CAC): supports client-based and channel-utilization based call admission policies  
 Wi-Fi MultiMedia (WMM), IEEE 802.11e

#### Security

IEEE 802.11w Protected Management Frames  
 IEEE 802.1X Port Based Network Access Control  
 RFC 1851 ESP Triple DES Transform  
 RFC 2246 Transport Layer Security (TLS)  
 RFC 2401 Security Architecture for the Internet Protocol

## Technical Specifications

RFC 2104 HMAC: Keyed-Hashing for Message Authentication  
 RFC 2246 The TLS Protocol Version 1.0  
 RFC 2284 EAP over LAN  
 RFC 2644 Directed Broadcast Control  
 RFC 2864 The Inverted Stack Table Extension to the Interfaces Group MIB  
 RFC 2866 RADIUS Accounting  
 RFC 2869 RADIUS Extensions  
 RFC 3164 Syslog  
 RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)  
 RFC 3619 Ethernet Automatic Protection Switching (EAPS)  
 RFC 3636 Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)

### IP multicast

RFC 1112 IGMP  
 RFC 2236 IGMPv2  
 RFC 2934 Protocol Independent Multicast MIB for IPv4

### IPv6

RFC 1350 TFTP  
 RFC 1881 IPv6 Address Allocation Management  
 RFC 1887 IPv6 Unicast Address Allocation Architecture  
 RFC 1981 IPv6 Path MTU Discovery  
 RFC 2292 Advanced Sockets API for IPv6  
 RFC 2373 IPv6 Addressing Architecture  
 RFC 2375 IPv6 Multicast Address Assignments  
 RFC 2460 IPv6 Specification  
 RFC 2461 IPv6 Neighbor Discovery  
 RFC 2462 IPv6 Stateless Address Auto-configuration  
 RFC 2463 ICMPv6  
 RFC 2464 Transmission of IPv6 over Ethernet Networks

Headers in IPv6

### MIBs

RFC 1213 MIB II  
 RFC 1229 Interface MIB Extensions  
 RFC 1643 Ethernet MIB  
 RFC 1757 Remote Network Monitoring MIB  
 RFC 2011 SNMPv2 MIB for IP  
 RFC 2012 SNMPv2 MIB for TCP  
 RFC 2013 SNMPv2 MIB for UDP  
 RFC 2571 SNMP Framework MIB  
 RFC 2572 SNMP-MPD MIB  
 RFC 2613 SMON MIB  
 RFC 2665 Ethernet-Like-MIB  
 RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions  
 RFC 2863 The Interfaces Group MIB  
 RFC 2932IP (Multicast Routing MIB)  
 RFC 2933 IGMP MIB

### Mobility

IEEE 802.11a High Speed Physical Layer in the 5 GHz Band  
 IEEE 802.11ac WLAN Enhancements for Very High Throughput  
 IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band  
 IEEE 802.11d Global Harmonization  
 IEEE 802.11e QoS enhancements  
 IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band  
 IEEE 802.11h Dynamic Frequency Selection  
 IEEE 802.11i Medium Access Control (MAC) Security Enhancements  
 IEEE 802.11n WLAN Enhancements for Higher Throughput  
 IEEE 802.11s D1.06 Draft  
 HotSpot 2.0 Release 1 per the WiFi Alliance  
 Hotspot 2.0 (Release 1) Technical Specification Package v1.0.0 (refer to the HP Access Point—Controller Compatibility Matrix for certified APs)

**NOTE:** All of the above standards are now included in IEEE 802.11-2012

RFC 2408 Internet Security Association and Key Management Protocol (ISAKMP)  
 RFC 2409 The Internet Key Exchange (IKE)  
 RFC 2548 Microsoft Vendor-specific RADIUS Attributes  
 RFC 2716 PPP EAP TLS Authentication Protocol  
 RFC 2865 RADIUS Authentication  
 RFC 2867 RADIUS Accounting Modifications for Tunnel Protocol Support  
 RFC 3394 Advanced Encryption Standard (AES) Key Wrap Algorithm  
 RFC 3576 Dynamic Authorization Extensions to RADIUS (Disconnect Message and Session-time renewal)  
 RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)  
 RFC 3580 IEEE 802.1X RADIUS Guidelines Access Control Lists (ACLs) Guest VLAN for 802.1X  
 Secure Sockets Layer (SSL)  
 SSHv2 Secure Shell  
 Web Authentication  
 WPA (Wi-Fi Protected Access)/WPA2

### VPN

RFC 2403 The Use of HMAC-MD5-96 within ESP and AH  
 RFC 2404 The Use of HMAC-SHA-1-96 within ESP and AH  
 RFC 2405 The ESP DES-CBC Cipher Algorithm With Explicit IV  
 RFC 2407 The Internet IP Security Domain of Interpretation for ISAKMP  
 RFC 2451 The ESP CBC-Mode Cipher Algorithms

### IPSec

RFC 1829 The ESP DES-CBC Transform  
 RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPSec

### IKEv1

RFC 3748 - Extensible Authentication Protocol (EAP)

### PKI



## Technical Specifications

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

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## Accessories

### HPE 10500/7500 20G Unified Wired-WLAN Module accessories

#### License

HP Unified Wired-WLAN 128 AP E-LTU	JG649AAE
HP Unified Wired-WLAN 32 AP E-LTU	JG774AAE
HP Unified Wired-WLAN 128 AP Redundant E-LTU	JG902AAE

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## Summary of Changes

Date	Version History	Action	Description of Change
29-Apr-2016	From Version 2 to 3	Changed	Key features, Product overview, Features and benefits, Technical Specifications and Accessories updated
04-Mar-2014	From Version 1 to 2	Changed	Updates were made throughout the document.



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