HP ProCurve Networking
Datasheets
January 2009

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HP ProCurve Networking

Why Choose HP ProCurve Networking?

More choice and flexibility Industry-standard solutions	HP ProCurve's tradition of driving and building on industry standards means more technology choice, flexibility, and investment protection. With HP ProCurve solutions, networks are built to meet business needs instead of being tied to the limitations of individual vendor offerings.
More secure Pervasive, advanced security technologies	HP ProCurve Networking security solutions proactively detect and help protect against threats with pervasive, advanced security technologies built on trusted open standards.
More efficient Reduced complexity, easier management	HP ProCurve Networking wired and wireless solutions increase operational efficiencies with reduced complexity and easier management for better use of network assets.
More value Advanced technology, lower cost of ownership	HP ProCurve Networking solutions provide more value from network investments by delivering advanced technology, ease of use, superior ROI, and lower cost of ownership—all without the price premium and complexity of competitor offerings.
More reliable Highly available, backed by a lifetime warranty	HP ProCurve Networking creates highly reliable networks through rigorous quality testing and exceptional engineering.

HP ProCurve Modular Switches

Key features

- Core, distribution, mission-critical access layer
- System high availability, ProCurve ONE integrated
- Layer 2 to Layer 4 and intelligent edge feature set
- Enterprise-class performance and security
- Scalable 10/100/1000 and 10-GbE connectivity

ONE

(J8715A shown with optional modules)

Datasheet

HP ProCurve Switch 8212zl

The HP ProCurve Switch 8212zl is a high-performance, highly available chassis switch platform that enables unified core-to-edge adaptive network solutions and delivers to market the industry's first core switch with a lifetime warranty. It has platform and software high-availability features to provide system continuity and enhance network productivity. With a full range of connectivity options, comprehensive networking features, advanced security tools, and unified core-to-edge infrastructure and management tools, the 8212zl switch reduces complexity and provides lower cost of ownership. With HP ProCurve ONE integration, the 8212zl switch provides customers with a choice of best-in-class applications and services that integrate into their networks. The ProCurve Switch 8212zl is ideal for customers seeking to cost-effectively meet the stringent availability requirements of today's converged network environments without sacrificing performance or flexibility.

HP ProCurve Switch 8212zl

Features and benefits

Industry-leading warranty

Management

- **Remote intelligent mirroring:** mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl/6600/6200yl/5400zl/3500yl switch anywhere on the network

- **RMON, XRMON, and sFlow v5:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **Uni-Directional Link Detection (UDLD):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops

- **ProCurve Core-to-Edge Device/Network Management tools:** ProCurve portfolio-common device-level tools (CLI, Web GUI, Menu) plus seamless integration into HP ProCurve Manager Plus (PCM+)/Identity Driven Manager (IDM) network management deployments

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Friendly port names:** allow assignment of descriptive names to ports

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading or fine-tuning the switch configuration

- **Multiple configuration files:** multiple configuration files can be stored to flash image

- **Unified Core-to-Edge features:** ProCurve portfolio-common feature implementation for faster solution deployment

Connectivity

- **High-density port connectivity:** 12 interface module slots, up to 288 wire-speed 10/100/1000 PoE-enabled ports or 48 10-GbE ports per system

- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to IEEE 802.3af compliant PoE powered devices such as IP phones, wireless access points, and security cameras

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

- **NEW IPv6:**

  - **IPv6 host:** the switches can be managed and deployed at the edge of IPv6 networks

  - **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols

  - **MLD snooping:** forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network

  - **IPv6 ACL/QoS:** supports ACL and QoS for IPv6 network traffic

  - **IPv6 ready:** the switch hardware can support IPv6 routing, tunneling, and security; these features will be available when enabled via software update in follow-on releases

- **ProCurve Core-to-Edge accessories:** ProCurve Intelligent Edge family-common interface and service modules, Gigabit optics/ 10-GbE transceivers, and power supplies enable sparing simplicity

- **Pre-standard PoE support:** detects and provides power to pre-standard PoE devices; see list of supported devices in the product FAQ at **ProCurve.eu**

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **High-speed/capacity architecture:** 691.2 Gbps crossbar switching fabric provides intra- and inter-module switching with 480.3 million pps throughput on the purpose-built ProVision ASICs

- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

- **Scalable system design:** Redundant management, fabric, and power: provide enhanced system availability and assured continuity of operations

HP ProCurve Switch 8212zl

Resiliency and high availability

- **Redundant management, fabric, and power:** provide enhanced system availability and assured continuity of operations

- **Virtual Router Redundancy Protocol:** VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments

- **IEEE 802.1s Multiple Spanning Tree Protocol:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol

- **NEW** **Server-to-switch distributed trunking:** allows a server to connect to two switches with one logical trunk that consists of multiple physical connections; enables load-balancing and increases resiliency

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported

- **Proven ASIC and system architecture:** the ProCurve ProVision ASIC and platform architecture, leveraged from ProCurve's successful 5400zl/3500yl/6200yl families of switches, reduces technology risk and provides reliable support and flexibility

- **ProCurve zl family componentry:** employs market-proven Intelligent Edge Switch interface modules, optics, and power supplies to reduce technology risk and enhance system reliability

- **Hot-swappable modules:** interface, management, and fabric modules as well as mini-GBIC optics and power supplies can be removed, swapped, or added to the system without interrupting ongoing switch operations

- **Redundant, hot-swappable cooling:** redundant fan design and hot-swappable fan tray provide continuity of operation in case of a single fan failure

- **Passive system design:** passive chassis backplane (no traffic-forwarding active componentry) provides system reliability and reduces impact of component failure

Layer 2 switching

- **IEEE 802.1ad Q-in-Q:** increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LANs on high-speed campus or metro network

- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth

- **VLAN support and tagging:** supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously

- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 services

- **UDP helper function:** UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP

- **Loopback interface address:** defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

Layer 3 routing

- **NEW** **IP static route:** provides manually configured routing; includes ECMP capability

- **RIP:** provides RIPv1 and RIPv2 routing at media speed

- **OSPF:** includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security

- **Access control lists (ACLs):** provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis

- **Multiple user authentication methods:**

  – **Multiple IEEE 802.1X users per port:** provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

  – **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server

  – **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address

  – **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port:** switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- **Virus throttling:** detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs or bridged interfaces, without requiring external appliances

- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

HP ProCurve Switch 8212zl

Features and benefits (continued)

NEW **Management Interface Wizard:** CLI-based step-by-step configuration tool to help ensure that management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB are secured to desired level

- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch

- **ICMP throttling:** defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user

- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDU) on ports that do not require BPDUs, preventing forged BPDU attacks

- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or data theft of network data

- **Detection of malicious attacks:** monitors ten types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Source-port filtering:** allows only specified ports to communicate with each other

- **TACACS+:** eases switch management security administration by using a password authentication server

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **Security banner:** displays a customized security policy when users log in to the switch

- **USB Secure Autorun (requires HP ProCurve Manager Plus):** deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering

- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

Convergence

- **IP multicast routing:** includes PIM Sparse and Dense modes to route IP multicast traffic

- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- **RADIUS VLAN for voice:** uses standard RADIUS attribute and LLDP-MED to automatically configure VLAN for IP phones

- **PoE allocations:** supports multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings

Quality of Service (QoS)

NEW **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on L2/3/4 information; applies QoS policies such as setting priority level and rate limit to selected traffic per port or per VLAN

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

- **Traffic prioritization:** allows real-time traffic classification into eight priority levels mapped to eight queues

- **Bandwidth shaping:**

  – **Port-based rate limiting:** per-port ingress/egress enforced maximum bandwidth

  – **Classified-based rate limiting:** use ACL to enforce maximum bandwidth for ingress traffic on each port

  – **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

HP ProCurve Switch 8212zl

HP ProCurve ONE integration

- **HP ProCurve ONE Services zl Module:** allows customers to embed applications directly into the network, either distributed throughout the network at the network edge, or centralized in the core or distribution layer; for more information about the HP ProCurve ONE solution, visit the ProCurve Web site

Flexibility

- **ProCurve Wireless Edge Services zl Module:** offers secure, advanced wireless services with simplified management and unified wired and wireless operation across the network

- **Complete feature set:** Gigabit PoE for edge VoIP solutions, scalable 10-GbE for enterprise-class distribution-layer implementations, advanced wireless management for comprehensive mobility solutions, and critical high-availability features for midmarket core network deployments

- **Programmable ASIC design:** allows seamless addition of new QoS and security features over time without costly hardware upgrades

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 8212zl

Specifications

HP ProCurve Switch 8212zl (J8715A)

Included accessories	1 HP ProCurve Switch 8200zl Management Module (J9092A) 2 HP ProCurve Switch 8200zl Fabric Module (J9093A) 1 HP ProCurve Switch 8200zl System Support Module (J9095A) 1 HP ProCurve Switch 8212zl Chassis/Fan Tray (J9091A)
Ports	12 open module slots Supports a maximum of 288 auto-sensing 10/100/1000 ports or 48 10-GbE ports or 288 mini-GBICs, or a combination
Power supplies	2 x required, 4 open power supply slots
Physical characteristics Dimensions (D x W x H) Weight	 47.5 x 44.45 x 39.62 cm (18.7 x 17.5 x 15.6 in.) (9U height) 22.88 kg (50.45 lb.)
Memory and processor Gigabit module 10G module Management module	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only. Optional 4-post cabinet rail available (see Switch 8212zl Ordering Guide).

Performance
Latency
  1000 Mb
  10 Gbps
Throughput
Routing/Switching capacity
Switch fabric speed
Routing table size
MAC address table size
	
	<3.7 μs (FIFO 64-byte packets)
	<2.1 μs (FIFO 64-byte packets)
	Up to 480.3 million pps
	645.6 Gbps
	691.2 Gbps
	10,000 entries
	64,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 55°C (131°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 64.0 dB; ISO 7779, ISO 9296
Electrical characteristics Description Maximum heat dissipation Voltage Frequency Notes	 Chassis ships without power supplies. Four power supply slots available; two different power supplies available. See power supply products for additional specifications. 5,170 kJ/hr (4,900 BTU/hr) (max. non-PoE), 7,807 kJ/hr (7,400 BTU/hr) (max. PoE) 100–127 VAC/200–240 VAC 50/60 Hz Power supplies must be ordered separately. Two J8712A or J8713A supplies are required to power the J8715A base system.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950; IEC 60825
Emissions	FCC Class A; FCC part 15 Class A; ICE-003, Canadian Radio Interface Regulation; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	Interface/Service modules, power supplies, and redundant management module ordered separately RS-232C console port via an RJ-45 connector When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.

HP ProCurve Switch 8212zl

HP ProCurve Switch 8212zl (J8715A)

Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UF807E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UF808E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UF809E) 3-year, 24x7 software phone support, software updates (UF810E) Installation with HP-provided configuration, system-based pricing (U4832E) Installation with minimum configuration, system-based pricing (U4828E) Refer to the HP Web site at **www.procurve.eu/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

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 3376 IGMPv3 (host joins only)
RFC 3973 Draft 2 PIM Dense Mode
RFC 4601 Draft 10 PIM Sparse Mode

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB

RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv2 Secure Shell

HP ProCurve Switch 8212zl

HP ProCurve Switch 8212zl accessories

HP ProCurve Switch zl 875W Power Supply (J8712A)

HP ProCurve Switch zl 1500W Power Supply (J8713A)

HP ProCurve Switch zl Power Supply Shelf (J8714A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Wireless Access Controllers

HP ProCurve Wireless Edge Services zl Module (J9051A)

HP ProCurve Redundant Wireless Services zl Module (J9052A)

zl Modules

HP ProCurve Switch 8200zl Management Module (J9092A)

HP ProCurve Switch 8200zl Fabric Module (J9093A)

HP ProCurve Switch 8200zl System Support Module (J9095A)

HP ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

HP ProCurve Switch zl 4-Port 10-GbE CX4 Module (J8708A)

HP ProCurve Switch 8212zl Chassis/Fan Tray (J9091A)

HP ProCurve Switch 8212zl Fan Tray (J9094A)

NEW HP ProCurve ONE Services zl Module (J9289A)

Note: See details for accessories starting on page 232.

Key features

- Core, distribution, advanced access layer
- Layer 2 to Layer 4 and intelligent edge feature set
- Enterprise-class performance and security
- HP ProCurve ONE integrated
- Scalable 10/100/1000 and 10-GbE connectivity

Datasheet

HP ProCurve Switch 5400zl Series

The HP ProCurve Switch 5400zl Series consists of the most advanced intelligent edge switches in the HP ProCurve Networking product line. The 5400zl series includes 6-slot and 12-slot chassis and associated zl modules and bundles. The foundation for all of these switches is a purpose-built, programmable ProVision ASIC that allows the most demanding networking features, such as Quality of Service (QoS) and security, to be implemented in a scalable yet granular fashion. With a variety of Gigabit interfaces, integrated PoE on all 10/100/1000Base-T ports, 10-GbE capability, and a choice of form factors, the 5400zl switches offer excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.

HP ProCurve Switch 5400zl Series

Features and benefits

Industry-leading warranty

Management

- **Remote Intelligent Mirroring:** mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl/6200yl/5400zl/3500yl switch anywhere on the network

- **RMON, XRMON, and sFlow v5:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **Uni-Directional Link Detection (UDLD):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops

- **Management simplicity:** ProCurve-common networking features and CLI implementation (common across ProCurve zl and yl switches)

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Friendly port names:** allow assignment of descriptive names to ports

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading

- **Multiple configuration files:** multiple configuration files can be stored to the flash image

Connectivity

NEW IPv6:

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- **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols

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- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to IEEE 802.3af compliant PoE powered devices such as IP phones, wireless access points, and security cameras

- **Pre-standard PoE support:** detects and provides power to pre-standard PoE devices; see list of supported devices in the product FAQ at **ProCurve.eu**

- **High-density port connectivity:** up to 12 interface module slots and up to 288 wire-speed 10/100/1000 PoE-enabled ports or 48 10-GbE ports per system

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **High-speed/capacity architecture:** 691.2 Gbps crossbar switching fabric provides intra- and inter-module switching with 480.3 million pps throughput on the purpose-built ProVision ASICs

- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability

- **Virtual Router Redundancy Protocol (requires Premium License):** VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments

- **IEEE 802.1s Multiple Spanning Tree Protocol:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol

- **NEW** **Server-to-switch distributed trunking:** allows a server to connect to two switches with one logical trunk that consists of multiple physical connections; enables load-balancing and increases resiliency

HP ProCurve Switch 5400zl Series

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported
- **Optional redundant power supply:** provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed
- **Hot-swappable modules:** permits modules, mini-GBICs, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network
- **Sparing simplicity:** ProCurve zl-common accessories (interface modules, power supplies)

Layer 2 switching
- **IEEE 802.1ad Q-in-Q (requires Premium License):** increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LAN's on high-speed campus or metro network
- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth
- **VLAN support and tagging:** supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously
- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 services
- **UDP helper function:** UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP
- **Loopback interface address:** defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

Layer 3 routing
- **NEW IP static route:** provides manually configured routing; includes ECMP capability
- **RIP:** provides RIPv1 and RIPv2 routing at media speed
- **OSPF (requires Premium License):** includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security
- **Access control lists (ACLs):** provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Multiple user authentication methods:**
  - **Multiple IEEE 802.1X users per port:** provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
  - **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address
  - **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port:** switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications
- **Virus throttling:** detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs or bridged interfaces, without requiring external appliances
- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3
- **USB Secure Autorun (requires HP ProCurve Manager Plus):** deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering
- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch
- **ICMP throttling:** defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user
- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

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Features and benefits (continued)

- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

- **Detection of malicious attacks:** monitors ten types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Source-port filtering:** allows only specified ports to communicate with each other

- **TACACS+:** eases switch management security administration by using a password authentication server

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **NEW** **Management Interface Wizard:** CLI-based step-by-step configuration tool to help ensure that management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB are secured to desired level

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **Security banner:** displays a customized security policy when users log in to the switch

Convergence

- **IP multicast routing (requires Premium License):** includes PIM Sparse and Dense modes to route IP multicast traffic

- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- **RADIUS VLAN for voice:** uses standard RADIUS attribute and LLDP-MED to automatically configure VLAN for IP phones

- **PoE allocations:** supports multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings

Quality of Service (QoS)

- **NEW** **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on L2/3/4 information; applies QoS policies such as setting priority level and rate limit to selected traffic per port or per VLAN

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

- **Traffic prioritization:** allows real-time traffic classification into eight priority levels mapped to eight queues

- **Bandwidth shaping:**
  - **Port-based rate limiting:** per-port ingress/egress enforced maximum bandwidth
  - **Classifier-based rate limiting:** use ACL to enforce maximum bandwidth for ingress traffic on each port
  - **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 5400zl Series

Specifications

	HP ProCurve Switch 5406zl Intelligent Edge (J8697A)	HP ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)
Included accessories		2 HP ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A) 1 HP ProCurve Switch zl 875W Power Supply (J8712A)
Ports	6 open module slots 1 RS-232C DB-9 console port Supports a maximum of 144 auto-sensing 10/100/1000 ports or 24 10-GbE ports or 144 mini-GBICs, or a combination	4 open module slots 1 RS-232C DB-9 console port Supports a maximum of 144 auto-sensing 10/100/1000 ports or 16 10-GbE ports or 96 mini-GBICs, or a combination 48 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDI
Power supplies	2 open power supply slots	Includes: 1 x J8712A 1 open power supply slots
Physical characteristics Dimensions (D x W x H) Weight	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height) 10.68 kg (23.55 lb.)	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height) 15.54 kg (34.26 lb.)
Memory and processor Gigabit module 10G module Management module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance Latency 　1000 Mb 　10 Gbps Throughput Routing/Switching capacity Switch fabric speed Routing table size	 <3.7 µs (FIFO 64-byte packets) <2.1 µs (FIFO 64-byte packets) Up to 240.2 million pps 322.8 Gbps 345.6 Gbps 10,000 entries	 <3.7 µs (FIFO 64-byte packets) <2.1 µs (FIFO 64-byte packets) Up to 240.2 million pps 322.8 Gbps 345.6 Gbps 10,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed 15% to 95% @ 55°C (131°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed 15% to 95% @ 55°C (131°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics Description Maximum heat dissipation Voltage Idle power Frequency Notes	 Chassis ships without power supplies. Four power supply slots available; two different power supplies available. See power supply products for additional specifications. 2,584 kJ/hr (2,450 BTU/hr), (max. non-PoE); 3,903 kJ/hr (3,700 BTU/hr) (max. using PoE) 100–127 VAC/200–240 VAC 50/60 Hz Power supplies must be ordered separately. One J8712A or J8713A can power the J8697A chassis. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	 One J8712A installed. One open power supply slot available; two different power supplies available. See power supply products for additional specifications. 2,584 kJ/hr (2,450 BTU/hr), (max. non-PoE); 3,903 kJ/hr (3,700 BTU/hr) (max. using PoE) 100–127 VAC/200–240 VAC 166 W 50/60 Hz Idle power is the power consumption of the base system with no traffic. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3

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Specifications (continued)

	HP ProCurve Switch 5406zl Intelligent Edge (J8697A)	HP ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UE250E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE251E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE252E) 3-year, 24x7 SW phone support, software updates (UF786E) Installation with minimum configuration, system-based pricing (U4828E) Installation with HP-provided configuration, system-based pricing (U4832E) Refer to the HP Web site at www.procurve.eu/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)			
	Device management RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q (Premium License) IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2453 RIPv2 RFC 2548 (MS-RAS-Vendor only) RFC 3046 DHCP Relay Agent Information Option RFC 3576 Ext to RADIUS (CoA only) RFC 3768 VRRP (Premium License) RFC 4675 RADIUS VLAN & Priority UDLD (Uni-directional Link Detection)	**IP multicast** RFC 3376 IGMPv3 (host joins only) RFC 3973 Draft 2 PIM Dense Mode (Premium License) RFC 4601 Draft 10 PIM Sparse Mode (Premium License) **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2925 Remote Operations MIB (Ping only) RFC 3019 MLDv1 MIB RFC 3315 DHCPv6 (client only) RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 RFC 3810 MLDv2 (host joins only) RFC 4022 MIB for TCP RFC 4113 MIB for UDP RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4293 MIB for IP RFC 4419 Key Exchange for SSH RFC 4541 IGMP & MLD Snooping Switch **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB RFC 1850 OSPFv2 MIB RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2613 SMON MIB	RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2668 IEEE 802.3 MAU MIB RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2787 VRRP MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events) RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON **OSPF** RFC 2328 OSPFv2 (Premium License) RFC 3101 OSPF NSSA **QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell

HP ProCurve | Network of Choice

HP ProCurve Switch 5400zl Series

Specifications

	HP ProCurve Switch 5412zl Intelligent Edge (J8698A)	HP ProCurve Switch 5412zl-96G Intelligent Edge (J8700A)
Included accessories		4 HP ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A) 2 HP ProCurve Switch zl 875W Power Supply (J8712A)
Ports	12 open module slots 1 RS-232C DB-9 console port Supports a maximum of 288 auto-sensing 10/100/1000 ports or 48 10-GbE ports or 288 mini-GBICs, or a combination	8 open module slots 1 RS-232C DB-9 console port Supports a maximum of 288 auto-sensing 10/100/1000 ports or 32 10-GbE ports or 192 mini-GBICs, or a combination 96 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
Power supplies	4 open power supply slots	Includes: 2 x J8712A 2 open power supply slots
Physical characteristics Dimensions (D x W x H) Weight	 45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height) 15.85 kg (34.94 lb.)	 45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height) 26.31 kg (58 lb.)
Memory and processor Gigabit module 10G module Management module	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	

Performance
Latency
  1000 Mb
  10 Gbps
Throughput
Routing/Switching capacity
Switch fabric speed
Routing table size
	
	<3.7 µs (FIFO 64-byte packets)
	<2.1 µs (FIFO 64-byte packets)
	Up to 480.3 million pps
	645.6 Gbps
	691.2 Gbps
	10,000 entries
		
		<3.7 µs (FIFO 64-byte packets)
		<2.1 µs (FIFO 64-byte packets)
		Up to 480.3 million pps
		645.6 Gbps
		691.2 Gbps
		10,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed 15% to 95% @ 55°C (131°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296	 0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed 15% to 95% @ 55°C (131°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296
Electrical characteristics Description Maximum heat dissipation Voltage Idle power Frequency Notes	 Chassis ships without power supplies. Four power supply slots available; two different power supplies available. See power supply products for additional specifications. 5,169 kJ/hr (4,900 BTU/hr), (max. non-PoE); 7,807 kJ/hr (7,400 BTU/hr) (max. using PoE) 100–127 VAC/200–240 VAC 50/60 Hz Power supplies must be ordered separately. A combination of two power supplies either J8712A or J8713A is required to power the J8698A chassis. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	 Two J8712A installed. Two open power supply slots available; two different power supplies available. See power supply products for additional specifications. 5,169 kJ/hr (4,900 BTU/hr), (max. non-PoE); 7,807 kJ/hr (7,400 BTU/hr) (max. using PoE) 100–127 VAC/200–240 VAC 299 W 50/60 Hz Idle power is the power consumption of the base system with no traffic. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 5400zl Series

Specifications (continued)

	HP ProCurve Switch 5412zl Intelligent Edge (J8698A)	HP ProCurve Switch 5412zl-96G Intelligent Edge (J8700A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UE253E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE254E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE255E) 3-year, 24x7 SW phone support, software updates (UF788E) Installation with minimum configuration, system-based pricing (U4828E) Installation with HP-provided configuration, system-based pricing (U4832E) Refer to the HP Web site at www.procurve.eu/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)	**Device management** RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q (Premium License) IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2453 RIPv2 RFC 2548 (MS-RAS-Vendor only) RFC 3046 DHCP Relay Agent Information Option RFC 3576 Ext to RADIUS (CoA only) RFC 3768 VRRP (Premium License) RFC 4675 RADIUS VLAN & Priority UDLD (Uni-directional Link Detection)	**IP multicast** RFC 3376 IGMPv3 (host joins only) RFC 3973 Draft 2 PIM Dense Mode (Premium License) RFC 4601 Draft 10 PIM Sparse Mode (Premium License) **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2925 Remote Operations MIB (Ping only) RFC 3019 MLDv1 MIB RFC 3315 DHCPv6 (client only) RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 RFC 3810 MLDv2 (host joins only) RFC 4022 MIB for TCP RFC 4113 MIB for UDP RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4293 MIB for IP RFC 4419 Key Exchange for SSH RFC 4541 IGMP & MLD Snooping Switch **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB RFC 1850 OSPFv2 MIB RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB	RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2668 IEEE 802.3 MAU MIB RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2787 VRRP MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events) RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON **OSPF** RFC 2328 OSPFv2 (Premium License) RFC 3101 OSPF NSSA **QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 5400zl Series

HP ProCurve Switch 5400zl Series accessories

Premium License for Switch 5400 Series (J8994A)

HP ProCurve Switch zl 1500W Power Supply (J8713A)

HP ProCurve Switch zl 875W Power Supply (J8712A)

HP ProCurve Switch zl Power Supply Shelf (J8714A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Wireless Access Controllers

HP ProCurve Wireless Edge Services zl Module (J9051A)

HP ProCurve Redundant Wireless Services zl Module (J9052A)

zl Modules

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

HP ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 4-Port 10-GbE CX4 Module (J8708A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

NEW HP ProCurve ONE Services zl Module (J9289A)

Note: See details for accessories starting on page 232.

Key features

- Access layer
- Layer 2 and Layer 3 lite feature set
- Scalable 10/100/1000 connectivity
- 10-GbE uplinks

Datasheet

HP ProCurve Switch 4200vl Series

The HP ProCurve Switch 4200vl Series consists of modular chassis that provide a flexible, cost-effective LAN solution as an alternative to stackables. These switches offer a proven chassis form factor with high quality and reliability in 10/100, 10/100/1000, and 10-Gigabit scalable solutions that integrate easily into any network.

HP ProCurve Switch 4200vl Series

Features and benefits

Industry-leading warranty

Management

- **Uni-Directional Link Detection (UDLD):** monitors a link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **Architecture:** up to 76.8 Gbps crossbar switching fabric provides wire-speed intra- and inter-module switching with up to 48 million pps throughput built on ProCurve custom-designed ASIC technology

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported
- **IEEE 802.1s Multiple Spanning Tree Protocol:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **Hot-swappable modules:** permit modules and mini-GBICs to be added or swapped without interrupting the network
- **Optional redundant power supply:** provides uninterrupted power; allows hot-swapping of one of the two supplies when installed

Layer 2 switching

- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 routing

- **Basic IP routing:** enables automatic routing to the connected VLANs and up to 16 static routes—including one default route—in IP networks

Security

- **Multiple user authentication methods:**
  - **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Authentication flexibility:**
  - **Multiple IEEE 802.1X users per port:** provides authentication of up to eight IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Source-port filtering:** allows only specified ports to communicate with each other
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

HP ProCurve Switch 4200vl Series

Features and benefits (continued)

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon
- **Custom banner:** displays security policy when users log in to the switch
- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

Convergence

- **IP multicast (data-driven IGMPv3):** automatically prevents flooding of IP multicast traffic
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

Quality of Service (QoS)

- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues
- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ
- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

Manageability

- **sFlow (RFC 3176):** wire-speed traffic accounting and monitoring
- **RMON and XRMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading
- **Multiple configuration files:** allows a configuration file to be stored to flash image
- **Friendly port names:** allow assignment of descriptive names to ports
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series
- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator
- **Troubleshooting:** ingress/egress port monitoring enables network problem-solving

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 4200vl Series

Specifications

	HP ProCurve Switch 4204vl (J8770A)	HP ProCurve Switch 4202vl-72 (J8772A)	HP ProCurve Switch 4208vl (J8773A)
Included accessories	N/A	N/A	N/A
Ports	4 open module slots 1 RS-232C DB-9 console port Supports a maximum of 96 auto-sensing 10/100 ports or 96 auto-sensing 10/100/1000 ports or 16 mini-GBICs, or a combination	2 open module slots 1 RS-232C DB-9 console port Supports a maximum of 120 auto-sensing 10/100 ports or 48 Gigabit ports or 8 mini-GBICs, or a combination 72 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full	8 open module slots 1 RS-232C DB-9 console port Supports a maximum of 192 auto-sensing 10/100 ports or 192 auto-sensing 10/100/1000 ports or 32 mini-GBICs, or a combination
Power supplies	Includes: 1 x J4839A 1 open power supply slots	Includes: 1 x J4839A 1 open power supply slots	Includes: 1 x J4839A 1 open power supply slots
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	 38.86 x 44.2 x 13.34 cm (15.3 x 17.4 x 5.25 in.) (3U height) 9.41 kg (20.75 lb.)	 38.86 x 44.2 x 13.34 cm (15.3 x 17.4 x 5.25 in.) (3U height) 10.8 kg (23.81 lb.)	 38.86 x 44.2 x 22.23 cm (15.3 x 17.4 x 8.75 in.) (5U height) 12.18 kg (26.85 lb.)
Memory and processor Fabric module Packet buffer size	 Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB	 Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB	 Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only		
Performance Latency Throughput Switch fabric speed	 <6 µs (FIFO) Up to 24 million pps 38.4 Gbps	 <6 µs (FIFO) Up to 22.4 million pps 33.6 Gbps	 <6 µs (FIFO) Up to 48 million pps 76.8 Gbps
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	 2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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.	 2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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.	 2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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	CSA 22.2 No. 950; UL 60950; EN 60950	CSA 22.2 No. 950; UL 60950; EN 60950	CSA 22.2 No. 950; UL 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; CISPR 22 Class A; EN 55024; IEC/EN 61000-3-2; IEC/EN 61000-3-3		
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (DB-9 serial port console); IEEE 802.3 Ethernet MIB; Repeater MIB; Ethernet Interface MIB		
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.		

HP ProCurve Switch 4200vl Series

Specifications (continued)

	HP ProCurve Switch 4204vl (J8770A)	HP ProCurve Switch 4202vl-72 (J8772A)	HP ProCurve Switch 4208vl (J8773A)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UE241E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE242E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE243E) 3-year, 24x7 SW phone support, software updates (UE263E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UE247E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE248E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE249E) 3-year, 24x7 SW phone support, software updates (UE265E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UE244E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE245E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE246E) 3-year, 24x7 SW phone support, software updates (UF787E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at www.procurve.eu/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)	**Device management** HTML and telnet management **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 IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3x Flow Control 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 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 3046 DHCP Relay Agent Information Option	**IP multicast** RFC 3376 IGMPv3 **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2665 Ethernet-Like-MIB RFC 2668 802.3 MAU MIB RFC 2737 Entity MIB (Version 2) **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 1757 RMON 4 groups: Stats, History, Alarms and Events RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3164 BSD syslog Protocol RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON	**QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 2138 RADIUS Authentication Secure Sockets Layer (SSL) SSHv2 Secure Shell

HP ProCurve Switch 4200vl Series

Specifications

	HP ProCurve Switch 4208vl-96 (J8775A)	HP ProCurve Switch 4204vl-48GS (J9064A)	HP ProCurve Switch 4208vl-72GS (J9030A)
Included accessories	4 HP ProCurve Switch vl 24-Port 10/100-TX Module (J8765B)	1 HP ProCurve Switch vl 24-Port Gig-T Module (J8768A) 1 HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)	2 HP ProCurve Switch vl 24-Port Gig-T Module (J8768A) 1 HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)
Ports	4 open module slots 96 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RS-232C DB-9 console port Supports a maximum of 192 auto-sensing 10/100 ports or 96 auto-sensing 10/100/1000 ports or 16 mini-GBICs, or a combination	2 open module slots 1 RS-232C DB-9 console port Supports a maximum of 48 auto-sensing 10/100 ports or 92 auto-sensing 10/100/1000 ports or 12 mini-GBICs, or a combination 44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 open mini-GBIC (SFP) slots	5 open module slots 1 RS-232C DB-9 console port Supports a maximum of 120 auto-sensing 10/100 ports or 188 auto-sensing 10/100/1000 ports or 24 mini-GBICs, or a combination 68 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 open mini-GBIC (SFP) slots
Power supplies	Includes: 1 x J4839A 1 open power supply slots	Includes: 1 x J4839A 1 open power supply slots	Includes: 1 x J4839A 1 open power supply slots
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	38.86 x 44.2 x 22.23 cm (15.3 x 17.4 x 8.75 in.) (5U height) 14.65 kg (32.3 lb.)	38.86 x 44.2 x 13.34 cm (15.3 x 17.4 x 5.25 in.) (3U height) 11.09 kg (24.45 lb.)	38.86 x 44.2 x 22.23 cm (15.3 x 17.4 x 8.75 in.) (5U height) 14.01 kg (30.88 lb.)
Memory and processor Fabric module Packet buffer size	Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB	Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB	Motorola PowerPC MPC8245 @ 330 MHz, 24 MB flash, 64 MB SDRAM 36 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only		
Performance Latency Throughput Switch fabric speed	<6 µs (FIFO) Up to 48 million pps 76.8 Gbps	<6 µs (FIFO) Up to 24 million pps 38.4 Gbps	<6 µs (FIFO) Up to 48 million pps 76.8 Gbps
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779	0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779	0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 4.6 km (15000 ft.) Power: 64.2 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency	2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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.	2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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.	2,270 kJ/hr (2,152 BTU/hr) 100–127 VAC/200–240 VAC 8.2 A/3.8 A 630 W 50/60 Hz 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	CSA 22.2 No. 950; UL 60950; EN 60950	CSA 22.2 No. 950; UL 60950; EN 60950	CSA 22.2 No. 950; UL 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; CISPR 22 Class A; EN 55024; IEC/EN 61000-3-2; IEC/EN 61000-3-3		
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4) IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 4200vl Series

Specifications (continued)

	HP ProCurve Switch 4208vl-96 (J8775A)	HP ProCurve Switch 4204vl-48GS (J9064A)	HP ProCurve Switch 4208vl-72GS (J9030A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (DB-9 serial port console); IEEE 802.3 Ethernet MIB; Repeater MIB; Ethernet Interface MIB		
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.		
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UE244E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE245E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE246E) 3-year, 24x7 SW phone support, software updates (UF787E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at **www.procurve.eu/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UE241E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE242E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE243E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at **www.procurve.eu/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UE244E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE245E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE246E) 3-year, 24x7 SW phone support, software updates (UF787E) Installation with minimum configuration, system-based pricing (U4827E) Installation with HP-provided configuration, system-based pricing (U4831E) Refer to the HP Web site at **www.procurve.eu/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)	**Device management** HTML and telnet management **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 IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3x Flow Control 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 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 3046 DHCP Relay Agent Information Option	**IP multicast** RFC 3376 IGMPv3 **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2665 Ethernet-Like-MIB RFC 2668 802.3 MAU MIB RFC 2737 Entity MIB (Version 2) **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 1757 RMON 4 groups: Stats, History, Alarms and Events RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3164 BSD syslog Protocol RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON	**QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 2138 RADIUS Authentication Secure Sockets Layer (SSL) SSHv2 Secure Shell

HP ProCurve Switch 4200vl Series

HP ProCurve Switch 4200vl Series accessories

HP ProCurve Switch gl/xl/vl Redundant Power Supply (J4839A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

vl Modules

HP ProCurve Switch vl 4-Port Mini-GBIC Module (J8776A)

HP ProCurve Switch vl 12-Port 100-FX MTRJ Module (J8763A)

HP ProCurve Switch vl 24-Port 10/100-TX Module (J8765B)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch vl 24-Port Gig-T Module (J8768A)

HP ProCurve Switch vl 1-Port 10-GbE X2 Module (J8766A)

Note: See details for accessories starting on page 232.

Key features

- High-performance compute platform
- Environment for ProCurve ONE applications
- Two 10-GbE connections to the switch backplane
- Industry-leading warranty

Datasheet

NEW HP ProCurve ONE Services zl Module

Part of the HP ProCurve ONE Program that enables secure best-in-class applications and services in the ProCurve infrastructure, the HP ProCurve ONE Services zl Module is a x86-based server module that provides two 10-GbE network links into the switch backplane. Coupled with ProCurve-certified services and applications that can take advantage of a switch-targeted API for better performance, this module creates a virtual appliance within a zl switch slot to provide solutions for business needs, such as network security. This services module can be moved to any zl switch in the environment.

HP ProCurve ONE Services zl Module

Features and benefits

Industry-leading warranty

Application support

- **ProCurve ONE application support:** is compatible with ProCurve ONE applications; non-ProCurve ONE applications will not run on the services module, which prevents rogue applications in mission-critical network environments
- **ProCurve ONE applications preinstalled In downloadable form:** ProCurve ONE applications come with their own OS (which may vary depending on the specific application) and are already installed on the OS as part of the application download; as a result, installation of the application on the services module is a straightforward and simple process, avoiding complicated installations into the OS that are typical of other downloaded application environments
- **ProCurve ONE API assistance:** ProCurve ONE applications can get switch software and ASIC assistance through programmatic calls to the ProCurve ONE API; additional performance, configuration, and management assistance will be available to these applications over time

Connectivity

- **Two 10-GbE connections to the switch:** two 10-GbE wire-speed internal connections help ensure that the network connections from application to switch backplane will not limit the performance of the application
- **USB port:** one external USB 2.0 port is available for application use—for example, external hard drives or other forms of mass storage

Performance

- **High-performance network bandwidth:** Two internal wire-speed 10-GbE ports to the switch backplane
- **High-performance processor system:** An Intel® Core™ 2 Duo T7500 Processor with 2.2 GHz, 4 MB cache provides a high-performance compute environment in a small footprint—a single switch slot
- **Memory subsystems:** 4 GB of DDR2-667 dual-channel memory provide for quick application performance

- **Disk drive:** 250 GB SATA II 7200 rpm hard disk drive (210 GB application space plus 40 GB diagnostic/maintenance space) allows quick data read/writes to speed applications along

Resiliency and high availability

- **Redundant power supplies:** The services module has the same level of power supply redundancy as the switch in which it is installed
- **Redundant network connections:** Two internal 10-GbE connections are provided between the switch and the services module; applications can take advantage of both links to provide a redundant network connection to the switch backplane

Security

- **Signed/Licensed applications only:** Only ProCurve ONE Applications, which are signed and licensed through ProCurve and the application provider, can run on the services module
- **Applications are certified:** ProCurve ONE applications go through certification testing against negative switch effects through API calls or malicious behavior—providing reasonable assurance that applications are well-behaved in the switch and network environment

Manageability

- **Console port:** application console is available as a pass-through to the switch console function

Ease of use

- **Locator LED:** allows users to set the locator LED on a specific module to either turn on, blink, or turn off; simplifies troubleshooting by making it easy to locate a specific module among other identical or similar modules

Warranty and support

- **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

HP ProCurve ONE Services zl Module

Specifications

HP ProCurve ONE Services zl Module (J9289A)

Physical characteristics	
Dimensions (D x W x H)	24.77 x 20.65 x 4.45 cm (9.75 x 8.13 x 1.75 in.)
Weight	1.47 kg (3.25 lb.)
Memory and processor	
Processor	Intel T7500 Core 2 Duo @ 2200 MHz, 4 GB DDR2 SDRAM, 4 GB compact flash
Storage	250 GB SATA II 7200 rpm hard disk drive
Environment	
Operating temperature	0°C to 40°C (32°F to 104°F); IMPORTANT: See note for 50°C temperature spec rules
Operating relative humidity	15% to 90% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–10°C to 65°C (14°F to 149°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 3 km (10,000 ft.)
Electrical characteristics	
Maximum heat dissipation	272 BTU/hr (287 kJ/hr)
Maximum power rating	80 W
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Management	Command-line interface; Module CLI available through the switch CLI. Applications running on the services module may have additional access and management methods.
Notes	The services module can only be used with certified OA services applications. It does not support a general application environment. Chassis operating temperature specifications of the 5400 chassis when the services module is installed:
	· 40°C when any services module is installed on the left side of the chassis
	· 50°C when all services modules are installed on the right side of the chassis
	Up to four services modules can be installed in a 5400/8200 chassis simultaneously. Up to three services modules are supported (all installed in the right half of the chassis) in the 5406 chassis if a 50°C temperature specification is desired.
	When the services module is installed, the maximum relative humidity for the switch drops from 95% to 90%.
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve Fixed-Port Switches

- Data Center
- Managed
- Web Managed
- Unmanaged

Key features

- Data center server access layer
- Front-to-back cooling, redundant power
- Layer 2–Layer 4 and intelligent edge feature set
- Enterprise-class performance and security
- Scalable 10/100/1000 and 10-GbE connectivity

Datasheet

NEW HP ProCurve 6600 Switch Series

The HP ProCurve 6600 Switch Series consists of the most advanced data center server edge switches in the HP ProCurve Networking product line. The 6600 series includes 1U 10/100/1000Base-T and 10-GbE SFP+ stackables enhanced for server edge connectivity with front-to-back cooling, redundant hot-swappable power, and redundant hot-swappable fans. The foundation for all of these switches is a purpose-built, programmable ProVision ASIC that allows the most demanding networking features, such as Quality of Service (QoS) and security, to be implemented in a scalable yet granular fashion. With a variety of connectivity interfaces and expanded buffering, the 6600 switches offer excellent investment protection, flexibility, and scalability, as well as ease of deployment and reduced operational expense.

HP ProCurve 6600 Switch Series

Features and benefits

Industry-leading warranty

Data center optimized

- **Front-to-back airflow:** designed to be co-located at the top of a server rack, the 6600 series supports front-to-back, reversible back-to-front airflow to support hot aisle/cold aisle configurations; the N+N fan tray is also hot-swappable, allowing easy replacement in the rack

- **Modular internal power supplies:** supports redundant, hot-swappable power supply configurations (units ship with one supply)

- **Server-to-switch distributed trunking:** supports Layer 2 LACP groups from a single server across two different switches for active-active server NIC teaming configurations

- **Deployment/serviceability:** data connectivity and management ports are all front-side accessible, and power supplies and fan trays are rear-side accessible to allow for easy maintenance; tool-less access to all system components provides easy in-rack serviceability

Management

- **Remote Intelligent Mirroring:** mirrors ingress/egress ACL-selected traffic from a switch port or VLAN to a local or remote 8200zl/6600/6200yl/5400zl/3500yl switch port anywhere on the network

- **RMON, XRMON, and sFlow v5:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Uni-Directional Link Detection (UDLD):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **Management simplicity:** common networking features and CLI implementation (common across HP ProCurve 8200zl/6600/6200yl/5400zl/3500yl switches)

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Friendly port names:** allow assignment of descriptive names to ports

- **Multiple configuration files:** multiple configuration files can be stored to the flash image

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading

Connectivity

- **IPv6:**
  - **IPv6 host:** the switches can be managed and deployed at the edge of IPv6 networks
  - **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols
  - **MLD snooping:** forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network
  - **IPv6 ACL/QoS:** supports ACL and QoS for IPv6 network traffic
  - **IPv6 ready:** the switch hardware can support IPv6 QoS, ACL, routing, tunneling, and security; these features will be available when enabled via software update in follow-on releases

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

Performance

- **High-speed/capacity architecture:** based on the purpose-built ProVision ASICs to provide superior system performance and scalability

- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported

HP ProCurve 6600 Switch Series

Features and benefits (continued)

- **IEEE 802.1s Multiple Spanning Tree**: provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w

- **Virtual Router Redundancy Protocol**: VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments

- **Server-to-switch distributed trunking**: allows a server to connect to two switches with one logical trunk that consists of multiple physical connections; enables load-balancing and increases resiliency

- **Sparing simplicity**: common power supplies, fan trays, and transceivers are used among the 6600 series products

Layer 2 switching

- **ProCurve switch meshing**: dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth

- **GARP VLAN Registration Protocol**: allows automatic learning and dynamic assignment of VLANs

- **IEEE 802.1ad Q-in-Q (requires Premium License)**: increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LAN's on high-speed campus or metro network

- **IEEE 802.1v protocol VLANs**: isolate select non-IPv4 protocols automatically into their own VLANs

Layer 3 services

- **Loopback interface address**: defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

- **UDP helper function**: UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP

Layer 3 routing

- **RIP**: provides RIPv1 and RIPv2 routing at media speed

- **Static IP routing**: provides manually configured routing; includes ECMP capability

- **OSPF (requires Premium License)**: includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security

- **Source-port filtering**: allows only specified ports to communicate with each other

- **RADIUS/TACACS+**: eases switch management security administration by using a password authentication server

- **Secure Shell (SSHv2)**: encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Port security**: allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout**: prevents configured particular MAC addresses from connecting to the network

- **Detection of malicious attacks**: monitors ten types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected

- **Secure FTP**: allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **Switch management logon security**: can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **Secure management access**: all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

- **ICMP throttling**: defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- **Virus throttling**: detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs or bridged interfaces, without requiring external appliances

- **STP BPDU port protection**: blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- **Dynamic IP lockdown**: works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

- **DHCP protection**: blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- **Dynamic ARP protection**: blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

- **USB Secure Autorun (requires HP ProCurve Manager Plus)**: deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering

HP ProCurve 6600 Switch Series

- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

- **Management Interface Wizard:** CLI-based step-by-step configuration tool to help ensure that management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB are secured to desired level

- **Access control lists (ACLs):** provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis

- **Multiple user authentication methods:**

  - **Multiple IEEE 802.1X users per port:** provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

  - **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server

  - **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address

  - **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port:** switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch

- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Security banner:** displays a customized security policy when users log in to the switch

Multicast support

- **IP multicast routing (requires Premium License):** includes PIM Sparse and Dense modes to route IP multicast traffic

- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

Quality of Service (QoS)

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

- **Bandwidth shaping:**

  - **Port-based rate limiting:** per-port ingress/egress enforced maximum bandwidth

  - **Classifier-based rate limiting:** use ACL to enforce maximum bandwidth for ingress traffic on each port

  - **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth

- **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on L2/3/4 information; applies QoS policies such as setting priority level and rate limit to selected traffic per port or per VLAN

- **Traffic prioritization:** allows real-time traffic classification into eight priority levels mapped to eight queues

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve 6600 Switch Series

Specifications

	HP ProCurve 6600-24G Switch (J9263A)	HP ProCurve 6600-24G-4XG Switch (J9264A)	HP ProCurve 6600-24XG Switch (J9265A)
Ports	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RS-232C DB-9 console port	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) 4 SFP+ 10-GbE ports Duplex: full only 1 RS-232C DB-9 console port	24 SFP+ 10-GbE ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: full only 1 RJ-45 serial console port
Power supplies	includes: 1 x J9269A 2 open power supply slots	includes: 1 x J9269A 2 open power supply slots	includes: 1 x J9269A 2 open power supply slots
Fan tray	Includes 1 x J9271A 1 Fan tray slot Fan tray supports N+N fans for added redundancy.	Includes 1 x J9271A 1 Fan tray slot Fan tray supports N+N fans for added redundancy.	Includes 1 x J9271A 1 Fan tray slot Fan tray supports N+N fans for added redundancy.
Physical characteristics Dimensions (D x W x H) Weight	 54.61 x 44.25 x 4.32 cm (21.5 x 17.42 x 1.7 in.) (1U height) 7.58 kg (16.7 lb.)	 54.61 x 44.25 x 4.32 cm (21.5 x 17.42 x 1.7 in.) (1U height) 7.8 kg (17.2 lb.)	 64.14 x 44.25 x 4.32 cm (25.25 x 17.42 x 1.7 in.) (1U height) 8.94 kg (19.7 lb.)
Memory and processor	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash; 256 MB compact flash, 256 MB DDR SDRAM; packet buffer size: 18 MB QDR SDRAM total (for all 1-GbE ports)	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash; 256 MB compact flash, 256 MB DDR SDRAM; packet buffer size: 36 MB QDR SDRAM total (18MB for all 1-GbE ports, 18MB for all 10-GbE ports)	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash; 1 GB compact flash, 256 MB DDR SDRAM; packet buffer size: 108 MB QDR SDRAM total (for all 10-GbE ports)
Mounting	Telco rack: Mounts in an EIA-standard 19-in. 2-post telco rack or equipment cabinet; horizontal surface mounting only. Rack kit: Rack rails are required for mounting in HP 10000 Series 4-post racks.	Telco rack: Mounts in an EIA-standard 19-in. 2-post telco rack or equipment cabinet; horizontal surface mounting only. Rack kit: Rack rails are required for mounting in HP 10000 Series 4-post racks.	Telco rack: Mounts in an EIA-standard 19-in. 2-post telco rack or equipment cabinet; horizontal surface mounting only. Rack kit: Rack rails are required for mounting in HP 10000 Series 4-post racks.

Performance
Latency
  1000 MB:
  10 Gbps:
Throughput
Routing/Switching capacity
Switch fabric speed
Routing table size
MAC address table size
	
	<3.7 µs (FIFO 64-byte packets)
	<2.1 µs (FIFO 64-byte packets)
	Up to 35.7 million pps
	48 Gbps
	48 Gbps
	10,000 entries
	64,000 entries
		
		<3.7 µs (FIFO 64-byte packets)
		<2.1 µs (FIFO 64-byte packets)
		Up to 75.7 million pps
		101.8 Gbps
		105.6 Gbps
		10,000 entries
		64,000 entries
			
			<3.7 µs (FIFO 64-byte packets)
			<2.1 µs (FIFO 64-byte packets)
			Up to 240.2 million pps
			322.8 Gbps
			345.6 Gbps
			10,000 entries
			64,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 5°C to 40°C (41°F to 104°F) 15% to 80% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 70°C (158°F), non-condensing Up to 3 km (10,000 ft.) Power: 71 dB, Pressure: 62.3 dB ISO 7779, ISO 9296	 5°C to 40°C (41°F to 104°F) 15% to 80% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 68 dB, Pressure: 59.5 dB ISO 7779, ISO 9296	 0°C to 40°C (32°F to 104°F) 15% to 80% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 72 dB, Pressure: 61.8 dB ISO 7779, ISO 9296

HP ProCurve 6600 Switch Series

	HP ProCurve 6600-24G Switch (J9263A)	HP ProCurve 6600-24G-4XG Switch (J9264A)	HP ProCurve 6600-24XG Switch (J9265A)
Electrical characteristics			
Description	The switch automatically adjusts to any voltage between 100–120 and 200–240 volts and either 50 or 60 Hz	The switch automatically adjusts to any voltage between 100–120 and 200–240 volts and either 50 or 60 Hz	The switch automatically adjusts to any voltage between 100–120 and 200–240 volts and either 50 or 60 Hz
Maximum heat dissipation	448.38 kJ/hr (425 BTU/hr)	619.29 kJ/hr (587 BTU/hr), (max. non-PoE); 991 kJ/hr (940 BTU/hr) (max. using PoE)	1,337.74 kJ/hr (1,268 BTU/hr)
Voltage	100–120 VAC/200–240 VAC	100–120 VAC/200–240 VAC	100–120 VAC/200–240 VAC
Idle power	92.5 W	127.4 W	309.8W
Maximum power rating	124.6 W	172.1 W	371.6 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Notes	Idle power is the power consumption of the base system with no traffic.	Idle power is the power consumption of the base system with no traffic.	Idle power is the power consumption of the base system with no traffic.
	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2	IEC 61000-4-2	IEC 61000-4-2
Radiated	IEC 61000-4-3	IEC 61000-4-3	IEC 61000-4-3
EFT/Burst	IEC 61000-4-4	IEC 61000-4-4	IEC 61000-4-4
Surge	IEC 61000-4-5	IEC 61000-4-5	IEC 61000-4-5
Conducted	IEC 61000-4-6	IEC 61000-4-6	IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8	IEC 61000-4-8	IEC 61000-4-8
Voltage dips and interruptions	IEC 61000-4-11	IEC 61000-4-11	IEC 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)		
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. Gigabit 1000Base-T mini-GBIC (J8177B) is not supported on 3500yl series switches.		
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve 6600 Switch Series

Specifications (continued)

	HP ProCurve 6600-24G Switch (J9263A)	HP ProCurve 6600-24G-4XG Switch (J9264A)	HP ProCurve 6600-24XG Switch (J9265A)
Standards and protocols (applies to all products in series)	**Device management** RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q (Premium License) IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP UDLD (Uni-directional Link Detection) RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2453 RIPv2 RFC 2548 (MS-RAS-Vendor only) RFC 3046 DHCP Relay Agent Information Option RFC 3576 Ext to RADIUS (CoA only) RFC 3768 VRRP RFC 4675 RADIUS VLAN & Priority	**IP multicast** RFC 3376 IGMPv3 (host joins only) RFC 3973 Draft 2 PIM Dense Mode (Premium License) RFC 4601 Draft 10 PIM Sparse Mode (Premium License) **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2925 Remote Operations MIB (Ping only) RFC 3019 MLDv1 MIB RFC 3315 DHCPv6 (client only) RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 RFC 3810 MLDv2 (host joins only) RFC 4022 MIB for TCP RFC 4113 MIB for UDP RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4293 MIB for IP RFC 4419 Key Exchange for SSH RFC 4541 IGMP & MLD Snooping Switch **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB RFC 1850 OSPFv2 MIB RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2613 SMON MIB	RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2668 802.3 MAU MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2787 VRRP MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON **OSPF** RFC 2328 OSPFv2 (Premium License) RFC 3101 OSPF NSSA **QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv2 Secure Shell

HP ProCurve 6600 Switch Series

Specifications

	HP ProCurve 6600-48G Switch (J9451A)*	HP ProCurve 6600-48G-4XG Switch (J9452A)*
	Not pictured	Not pictured
Ports	44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RJ-45 console port	48 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 4 SFP+ 10-GbE ports (IEEE 802.3ak Type 10Gbase-CX4) Duplex: full only 1 RJ-45 console port
Power supplies	Includes: 1 x J9269A 2 open power supply slots	Includes: 1 x J9269A 2 open power supply slots
Fan tray	Includes 1 x J9271A 1 Fan tray slot Fan tray supports N+N fans for added redundancy.	Includes 1 x J9271A 1 Fan tray slot Fan tray supports N+N fans for added redundancy.
Physical characteristics Dimensions (D x W x H) Weight	64.14 x 44.25 x 4.32 cm (25.25 x 17.42 x 1.7 in.) (1U height) 8.62 kg (19 lb.)	64.14 x 44.25 x 4.32 cm (25.25 x 17.42 x 1.7 in.) (1U height) 8.62 kg (19 lb.)
Memory and processor	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 1 GB compact flash, 256 MB DDR SDRAM; packet buffer size: 36 MB (750 KB/port)	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 1 GB compact flash, 256 MB DDR SDRAM; packet buffer size: 1 GB: 36 MB (750 KB/port); 10 GB: 108 MB (4.5 MB/port)
Mounting	Mounts in an EIA-standard 19 in. 2-point telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance Latency 1000 Mb 10 Gbps Throughput Routing/Switching capacity Switch fabric speed Routing table size MAC address table size	<3.7 µs (FIFO 64-byte packets) <2.1 µs (FIFO 64-byte packets) Up to 71.4 million pps 96 Gbps 96 Gbps 10,000 entries 64,000 entries	<3.7 µs (FIFO 64-byte packets) <2.1 µs (FIFO 64-byte packets) Up to 130.9 million pps 176 Gbps 176 Gbps 10,000 entries 64,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	5°C to 40°C (41°F to 104°F) 15% to 80% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 15% to 90% @ 70°C (158°F), non-condensing Up to 3 km (10,000 ft.) ISO 7779, ISO 9296	5°C to 40°C (41°F to 104°F) 15% to 80% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 15% to 90% @ 70°C (158°F), non-condensing Up to 3 km (10,000 ft.) ISO 7779, ISO 9296
Electrical characteristics Description Voltage Frequency	The switch automatically adjusts to any voltage between 100–120 and 200–240 volts and either 50 or 60 Hz 100–120 VAC/200–240 VAC 50/60 Hz	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz 100–120 VAC/200–240 VAC 50/60 Hz
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	

*Available first half 2009.

HP ProCurve 6600 Switch Series

Specifications (continued)

	HP ProCurve 6600-48G Switch (J9451A)	HP ProCurve 6600-48G-4XG Switch (J9452A)
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. Gigabit 1000Base-T mini-GBIC (J8177B) is not supported on 3500yl series switches.	
Services	Refer to the HP Web site at www.procurve.eu/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)		

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q (Premium License)
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
UDLD (Uni-directional Link Detection)
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP
RFC 4675 RADIUS VLAN & Priority

IP multicast
RFC 3376 IGMPv3 (host joins only)
RFC 3973 Draft 2 PIM Dense Mode (Premium License)
RFC 4601 Draft 10 PIM Sparse Mode (Premium License)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB

RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2 (Premium License)
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv2 Secure Shell

HP ProCurve 6600 Switch Series

HP ProCurve 6600 Switch Series accessories

NEW HP ProCurve 6600 Switch Power Supply (J9269A)

NEW HP ProCurve 6600 Switch Premium License (J9305A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

NEW HP ProCurve 10-GbE SFP+ SR Transceiver (J9150A)

NEW HP ProCurve 10-GbE SFP+ LRM Transceiver (J9152A)

NEW HP ProCurve 10-GbE SFP+ LR Transceiver (J9151A)

NEW HP ProCurve 10-GbE SFP+ 1m Direct Attach Cable (J9281A)

NEW HP ProCurve 10-GbE SFP+ 3m Direct Attach Cable (J9283A)

NEW HP ProCurve 10-GbE SFP+ 7m Direct Attach Cable (J9285A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Modules

NEW HP ProCurve 6600 Switch Fan Tray (J9271A)

Note: See details for accessories starting on page 232.

Key features

· Distribution layer

· Layer 2 to Layer 4 feature set

· High performance

· Low-cost 10-GbE connectivity

Datasheet

HP ProCurve Switch 6400cl Series

The HP ProCurve Switch 6400cl Series consists of 6-port 10-GbE stackables with optional 10-GbE add-on modules. Loaded with full Layer 3 features, the 6400cl series switches offer low-cost 10-GbE for high-performance aggregation of clusters of Gigabit switches. Ideal for consolidating multiple wiring closets, the 6400cl series offers the highest bandwidth on the market today for Gigabit. The ProCurve Switch 6400cl Series also provides fiber flexibility to connect remote campuses up to 40 km away.

HP ProCurve Switch 6400cl Series

Features and benefits

Industry-leading warranty

Performance

- **160 Gbps backplane with 119 mpps:** unprecedented bandwidth for low-latency throughput

- **Selectable queuing configurations:** increase performance by selecting the queuing configuration that best meets the requirements of network applications

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

Resiliency and high availability

- **Router redundancy (XRRP):** allows groups of two routers to dynamically back each other up to create highly available routed environments

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to four trunks, each with up to four links (ports) per trunk; trunking across modules is supported

- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees

- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links

- **Optional redundant power supply:** provides uninterrupted power (provided by HP ProCurve 600 RPS/EPS)

Layer 2 switching

- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth

- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs

Layer 3 routing

- **Layer 3 IP routing:** provides routing of IP at media speed; supports static routes, RIP, RIPv2, and OSPF

Security

- **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number

- **Source-port filtering:** allows only specified ports to communicate with each other

- **TACACS+:** eases switch management security administration by using a password authentication server

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **IEEE 802.1X and RADIUS network login:** control port-based access for authentication and accountability

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **Secure access to manage the 6400cl series:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

Convergence

- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic

HP ProCurve Switch 6400cl Series

Features and benefits (continued)

Quality of Service (QoS)
- **Rate limiting:** per-port ingress enforced maximums
- **Layer 4 prioritization:** enables prioritization based on TCP/UDP ports
- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues
- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Manageability
- **sFlow (RFC 3176):** wire-speed traffic accounting and monitoring
- **RMON and XRMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the 3400cl series

Warranty and support
- **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 6400cl Series accessories

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Network Immunity Manager

cl Modules
HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

HP ProCurve Switch cl 10-GbE CX4 Copper Module (J8434A)

Note: See details for accessories starting on page 232.

HP ProCurve Switch 6400cl Series

Specifications

	HP ProCurve Switch 6400cl (J8433A)	HP ProCurve Switch 6410cl (J8474A)
Ports	6 CX4 10-GbE ports (IEEE 802.3ak Type 10GBase-CX4) Duplex: full only 1 RS-232C DB-9 console port Supports a maximum of 8 10-GbE ports	1 RS-232C DB-9 console port Supports a maximum of 8 10-GbE ports 6 open 10-GbE X2 transceiver slots

Cabling	CX4 ports
	Maximum distance: 0.5 m to 15 m using CX4 cable
	Up to 300 m using J8439A media converter using MMF
		X2 transceiver slots
		HP ProCurve 10-GbE X2-SC LR Optic:
		  Maximum distance: 9/125 µm single-mode cable = 2–10 km
		HP ProCurve 10-GbE X2-SC SR Optic:
		  Maximum distance:
		  · 62.5 µm multimode cable @ 160 MHz/km = 2–26 meters
		  · 62.5 µm multimode cable @ 200 MHz/km = 2–33 meters
		  · 50 µm multimode cable @ 500 MHz/km = 2–82 meters
		  · 50 µm multimode cable @ 2000 MHz/km = 2–300 meters
		HP ProCurve 10-GbE X2-SC ER Optic:
		  Maximum distance: 30 km (40 km using engineered link)
		HP ProCurve 10-GbE X2-CX4 Transceiver:
		  Maximum distance: 0.5 m to 15 m using CX4 cable
		  Up to 300 m using J8439A media converter using MMF

Physical characteristics Dimensions (D x W x H) Weight	42.93 x 44.2 x 4.32 cm (16.9 x 17.4 x 1.7 in.) (1U height) 5.60 kg (12.35 lb.)	42.93 x 44.2 x 4.32 cm (16.9 x 17.4 x 1.7 in.) (1U height) 6.15 kg (13.56 lb.)

Memory and processor
Processor
	Motorola PowerPC MPC8245 @ 266 MHz, 16 MB flash, 128 MB
	  SDRAM; packet buffer size: 4 MB
		Motorola PowerPC MPC8245 @ 266 MHz, 16 MB flash, 128 MB
		  SDRAM; packet buffer size: 4 MB

Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance Latency Throughput Routing/Switching capacity MAC address table size	<11.7 µs (LIFO 64-byte packets) Up to 119 million pps (64-byte packets) 160 Gbps 16,000 entries	<11.7 µs (LIFO 64-byte packets) Up to 119 million pps (64-byte packets) 160 Gbps 16,000 entries

Environment
Operating temperature
 	
Operating relative humidity
Non-operating/Storage temperature
Non-operating/Storage relative humidity
Altitude
Acoustic
	0°C to 55°C (32°F to 131°F); 40°C (104°F) when used with SR/LR/ER
	  optics
	15% to 95% @ 40°C (104°F), non-condensing
	–40°C to 70°C (–40°F to 158°F)
	15% to 95% @ 65°C (149°F), non-condensing
	Up to 14.6 km (5,000 ft.)
	Power: 55 dB; DIN 45635T.19 per ISO 7779 @
		0°C to 55°C (32°F to 131°F); 40°C (104°F) when used with SR/LR/ER
		  optics
		15% to 95% @ 40°C (104°F), non-condensing
		–40°C to 70°C (–40°F to 158°F)
		15% to 95% @ 65°C (149°F), non-condensing
		Up to 14.6 km (5,000 ft.)
		Power: 55 dB; DIN 45635T.19 per ISO 7779 @

Electrical characteristics
Maximum heat dissipation
Voltage
Current
Maximum power rating
Frequency
Notes
	404 kJ/hr (383 BTU/hr), including use of optional cl modules with
	  optics
	100–127 VAC/200–240 VAC
	3 A/1.5 A
	112 W
	50/60 Hz
	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.
		404 kJ/hr (383 BTU/hr), including use of optional cl modules with
		  optics
		100–127 VAC/200–240 VAC
		3 A/1.5 A
		120 W
		50/60 Hz
		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	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A

Immunity
EN
ESD
Radiated
EFT/Burst
Surge
Conducted
Power frequency magnetic field
Voltage dips and interruptions
 	
Harmonics
Flicker
	EN 55024, CISPR 24
	IEC 61000-4-2; 4 kV CD, 8 kV AD
	IEC 61000-4-3; 3 V/m
	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	IEC 61000-4-5; 1 kV/2 kV AC
	IEC 61000-4-6; 3 V
	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction,
	  25 periods
	EN 61000-3-2, IEC 61000-3-2
	EN 61000-3-3, IEC 61000-3-3
		EN 55024, CISPR 24
		IEC 61000-4-2; 4 kV CD, 8 kV AD
		IEC 61000-4-3; 3 V/m
		IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		IEC 61000-4-5; 1 kV/2 kV AC
		IEC 61000-4-6; 3 V
		IEC 61000-4-8; 1 A/m, 50 or 60 Hz
		IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction,
		  25 periods
		EN 61000-3-2, IEC 61000-3-2
		EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 6400cl Series

Specifications (continued)

	HP ProCurve Switch 6400cl (J8433A)	HP ProCurve Switch 6410cl (J8474A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UA438E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UA439E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UA440E) 3-year, 24x7 SW phone support, software updates (UF791E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)

Device management
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3ae 10-Gigabit Ethernet
IEEE 802.3ak 10GBASE-CX4
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2

RFC 3046 DHCP Relay Agent Information Option

IP multicast
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2863 The Interfaces Group MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2138 RADIUS Authentication
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

Key features

· Distribution layer
· Layer 2 to Layer 4 and intelligent edge feature set
· High performance
· Low-cost mini-GBIC connectivity
· 10-GbE uplinks

Datasheet

HP ProCurve Switch 6200yl-24G-mGBIC

The HP ProCurve Switch 6200yl-24G-mGBIC is an advanced Layer 3 stackable in 1U height. It has 24 mini-GBIC slots and an expansion slot for an optional 4-port 10-GbE module. Designed to be deployed as an aggregator of traffic from the edge to the core of the network, this switch supports a variety of Gigabit mini-GBICs, such as SX, LX, LH, and 1000Base-T. The foundation for this switch is a purpose-built ProVision ASIC that allows the most demanding networking features, such as Quality of Service (QoS) and security, to be implemented in a scalable yet granular fashion. With its high-performance architecture, 10-GbE capability, and programmable ASIC, this switch offers excellent investment protection, flexibility, and scalability.

HP ProCurve Switch 6200yl-24G-mGBIC

Features and benefits

Industry-leading warranty

Management

- **Remote intelligent mirroring:** mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl/6600/6200yl/5400zl/3500yl switch anywhere on the network
- **RMON, XRMON, and sFlow:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail
- **Friendly port names:** allow assignment of descriptive names to ports
- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading
- **Multiple configuration files:** multiple configuration files can be stored to the flash image
- **Uni-Directional Link Detection (UDLD):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops
- **Management simplicity:** ProCurve-common networking features and CLI implementation (common across ProCurve zl and yl switches)

Connectivity
- **NEW IPv6:**
  - **IPv6 host:** the switches can be managed and deployed at the edge of IPv6 networks
  - **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols

- **MLD snooping:** forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network
- **IPv6 ACL/QoS:** supports ACL and QoS for IPv6 network traffic
- **IPv6 ready:** the switch hardware can support IPv6 routing, tunneling, and security; these features will be available when enabled via software update in follow-on releases
- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

Performance
- **High-speed/capacity architecture:** 105.6 Gbps crossbar switching fabric provides intra- and inter-module switching with 75.7 million pps throughput on the purpose-built ProVision ASICs
- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability
- **Router redundancy:** VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments
- **IEEE 802.1s Multiple Spanning Tree Protocol:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported
- **NEW Server-to-switch distributed trunking:** allows a server to connect to two switches with one logical trunk that consists of multiple physical connections; enables load-balancing and increases resiliency

Layer 2 switching
- **IEEE 802.1ad Q-in-Q:** increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LANs on high-speed campus or metro network
- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth

HP ProCurve Switch 6200yl-24G-mGBIC

- **VLAN support and tagging:** supports complete IEEE 802.1Q standard and 2,048 VLANs simultaneously
- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 services

- **UDP helper function:** UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP
- **Loopback interface address:** defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

Layer 3 routing

- **NEW IP static route:** provides manually configured routing; includes ECMP capability
- **RIP:** provides RIPv1 and RIPv2 routing at media speed
- **OSPF:** includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security

- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch
- **Virus throttling:** detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs without requiring external appliances
- **ICMP throttling:** defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **Multiple user authentication methods:**
  - **Multiple IEEE 802.1X users per port:** provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
  - **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address
  - **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port:** switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- **Access control lists (ACLs):** provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user
- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **Detection of malicious attacks:** monitors ten types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Source-port filtering:** allows only specified ports to communicate with each other
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **NEW Management Interface Wizard:** CLI-based step-by-step configuration tool to help ensure that management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB are secured to desired level
- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3
- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

HP ProCurve Switch 6200yl-24G-mGBIC

Features and benefits (continued)

- **Security banner:** displays customized security policy when users log in to the switch
- **USB Secure Autorun (requires HP ProCurve Manager Plus):** deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering
- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

Convergence

- **IP multicast routing:** includes PIM Sparse and Dense modes to route IP multicast traffic
- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic
- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

Quality of Service (QoS)

- NEW **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on L2/3/4 information; applies QoS policies such as setting priority level and rate limit to selected traffic per port or per VLAN
- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers
- **Traffic prioritization:** allows real-time traffic classification into eight priority levels mapped to eight queues

- **Bandwidth shaping:**
  - **Port-based rate limiting:** per-port ingress/egress enforced maximum bandwidth
  - **Classifier-based rate limiting:** use ACL to enforce maximum bandwidth for ingress traffic on each port
  - **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth
- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Warranty and support

- **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 6200yl-24G-mGBIC

Specifications

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

Ports	1 open module slot 24 open mini-GBIC (SFP) slots Supports a maximum of 4 10-GbE ports, with optional module
Physical characteristics	
Dimensions (D x W x H)	39.2 x 44.3 x 4.4 cm (15.43 x 17.44 x 1.73 in.) (1U height)
Weight	6.4 kg (14.11 lb.)
Memory and processor	
Processor	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only.
Performance	
Latency	
1000 Mb	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 75.7 million pps
Routing/Fabric Speed	101.8 Gbps
Switching capacity	105.6 Gbps
Routing table size	10,000 entries
Environment	
Operating temperature	0°C to 55°C (32°F to 131°F); 40°C (32°F to 104°F) when used with any X2 10-GbE
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)
Acoustic	Power: 55.1 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics	
Description	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz
Maximum heat dissipation	875 kJ/hr (829 BTU/hr)
Voltage	100–127 VAC/200–240 VAC
Current	1.8 A/0.9 A
Maximum power rating	243 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	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity	
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.

HP ProCurve Switch 6200yl-24G-mGBIC

Specifications (continued)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at **www.procurve.eu/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

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 3376 IGMPv3 (host joins only)
RFC 3973 Draft 2 PIM Dense Mode
RFC 4601 Draft 10 PIM Sparse Mode

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB

RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 6200yl-24G-mGBIC

HP ProCurve Switch 6200yl-24G-mGBIC accessories

HP ProCurve 620 Redundant/External Power Supply (J8696A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Network Immunity Manager

yl Modules

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

Note: See details for accessories starting on page 232.

Key features

- Distribution layer aggregation
- Layer 2 and Layer 3 lite feature set
- Low-cost 10/100/1000 connectivity
- Gigabit fiber uplinks

Datasheet

HP ProCurve Switch 6108

The HP ProCurve Switch 6108 is a low-cost, stackable, multi-layer managed 8-port switch with 6 auto-sensing 10/100/1000 ports and 2 dual-personality ports for 10/100/1000 or mini-GBIC connectivity. With Layer 3 basic IP routing, an industry-leading lifetime warranty, and free end-user telephone and e-mail support, the ProCurve 6108 is ideal for access-tier aggregation, with two optional Gigabit fiber uplinks to connect at distances up to 70 km.

HP ProCurve Switch 6108

Features and benefits

Industry-leading warranty

Connectivity
- **Dual-personality functionality:** two 10/100/1000 ports or mini-GBIC slots for optional fiber connectivity such as Gigabit-SX, -LX, or -LH

Performance
- **16 Gbps backplane:** non-blocking architecture for wire-speed throughput

Resiliency and high availability
- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to six trunks, each with up to four links (ports) per trunk

Layer 2 switching
- **VLAN support and tagging:** supports up to 30 port-based VLANs, GVRP, and IEEE 802.1Q VLAN tagging
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 routing
- **Basic IP routing:** enables automatic routing to the connected VLANs and up to 16 static routes—including one default route—in IP networks

Security
- **IEEE 802.1X and RADIUS network login:** control port-based access for authentication and accountability
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **TACACS+:** eases switch management security administration by using a password authentication server
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Secure access to manage the ProCurve Switch 6108:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

Quality of Service (QoS)
- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues

Manageability
- **RMON:** provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series
- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **Friendly port names:** allow assignment of descriptive names to ports

Warranty and support
- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 6108

Specifications

HP ProCurve Switch 6108 (J4902A)

Ports	6 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T)
	  Media type: Auto-MDIX
	    Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
	1 RS-232C DB-9 console port
	2 dual-personality ports; each port can be used as either 2 additional RJ-45 10/100/1000 ports (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet), 2 open mini-GBIC slots (for use with mini-GBIC transceivers), or one of each

Physical characteristics	
Dimensions (D x W x H)	23.62 x 44.25 x 4.39 cm (9.3 x 17.42 x 1.73 in.) (1U height)
Weight	3.16 kg (6.96 lb.)

Memory and processor	
Processor	Motorola PowerPC MPC8245 @ 266 MHz, 16 MB flash

Mounting	
	Mounts in a standard 19 in. rack (hardware included)

Performance	
Latency	<12.5 µs (LIFO 64-byte packets)
Throughput	11.9 million pps (64-byte packets)
Switching capacity	16 Gbps
Routing table size	8,000 entries

Environment	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)

Electrical characteristics	
Maximum heat dissipation	360 kJ/hr (341 BTU/hr)
Voltage	100–240 VAC
Current	1.5 A
Maximum power rating	100 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	
	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition

Emissions	
	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A

Immunity	
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3

Management	
	HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)

HP ProCurve Switch 6108

HP ProCurve Switch 6108 (J4902A)

Services	3-year, 4-hour onsite, 13x5 coverage for hardware (H5481E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U6303E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6302E) 3-year, 24x7 SW phone support, software updates (UE261E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at **www.procurve.eu/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	**Device management** HTML and telnet management **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 951 BOOTP RFC 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4	**IP multicast** RFC 2236 IGMPv2 **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2668 IEEE 802.3 MAU MIB RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2863 The Interfaces Group MIB	**Network management** RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events) SNMPv1/v2c/v3 **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 6108

HP ProCurve Switch 6108 accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

Key features

- Distribution and advanced access layer
- Layer 2 to Layer 4 and intelligent edge feature set
- Enterprise-class performance and security
- Scalable 10/100/1000 PoE connectivity
- 10-GbE uplinks

Datasheet

HP ProCurve Switch 3500yl Series

The HP ProCurve Switch 3500yl Series consists of the most advanced intelligent edge switches in the HP ProCurve Networking product line. The 3500yl series includes 24-port and 48-port stackables. The foundation for all these switches is a purpose-built, programmable ProVision ASIC that allows the most demanding networking features, such as Quality of Service (QoS) and security, to be implemented in a scalable yet granular fashion. With a variety of Gigabit interfaces, integrated PoE on all 10/100/1000Base-T ports, 10-GbE capability, and a choice of form factors, the 3500yl switches offer excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.

HP ProCurve Switch 3500yl Series

Features and benefits

Industry-leading warranty

Management

- **Remote Intelligent Mirroring:** mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl/6600/6200yl/5400zl/3500yl switch anywhere on the network

- **RMON, XRMON, and sFlow v5:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **Uni-Directional Link Detection (UDLD):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken turning the bi-directional link into uni-directional; this prevents network problems such as loops

- **Management simplicity:** ProCurve-common networking features and CLI implementation (common across ProCurve zl and yl switches)

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Friendly port names:** allow assignment of descriptive names to ports

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading

- **Multiple configuration files:** multiple configuration files can be stored to the flash image

Connectivity

NEW IPv6:

- – **IPv6 host:** the switches can be managed and deployed at the edge of IPv6 networks

- – **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols

- – **MLD snooping:** forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network

- – **IPv6 ACL/QoS:** supports ACL and QoS for IPv6 network traffic

- – **IPv6 ready:** the switch hardware can support IPv6 routing, tunneling, and security; these features will be available when enabled via software update in follow-on releases

- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to IEEE 802.3af compliant PoE powered devices such as IP phones, wireless access points, and security cameras

- **Pre-standard PoE support:** detects and provides power to pre-standard PoE devices; see list of supported devices in the product FAQ at **ProCurve.eu**

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **High-speed/capacity architecture:** 153.6 Gbps crossbar switching fabric provides intra- and inter-module switching with 111.5 million pps throughput on the purpose-built ProVision ASICs

- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability

- **Virtual Router Redundancy Protocol (requires Premium License):** VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments

- **IEEE 802.1s Multiple Spanning Tree Protocol:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol

- **NEW** **Server-to-switch distributed trunking:** allows a server to connect to two switches with one logical trunk that consists of multiple physical connections; enables load-balancing and increases resiliency

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 60 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported

HP ProCurve Switch 3500yl Series

Layer 2 switching

- **IEEE 802.1ad Q-in-Q (requires Premium License):** increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LAN's on high-speed campus or metro network

- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth

- **VLAN support and tagging:** supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously

- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 services

- **UDP helper function:** UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP

- **Loopback interface address:** defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

Layer 3 routing

- **NEW IP static route:** provides manually configured routing; includes ECMP capability

- **RIP:** provides RIPv1 and RIPv2 routing at media speed

- **OSPF (requires Premium License):** includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security

- **Access control lists (ACLs):** provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis

Multiple user authentication methods:

- – **Multiple IEEE 802.1X users per port:** provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

- – **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server

- – **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address

- – **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port:** switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- **Virus throttling:** detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs or bridged interfaces, without requiring external appliances

- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

- **USB Secure Autorun (requires HP ProCurve Manager Plus):** deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering

- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch

- **ICMP throttling:** defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user

- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

- **Detection of malicious attacks:** monitors ten types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Source-port filtering:** allows only specified ports to communicate with each other

- **TACACS+:** eases switch management security administration by using a password authentication server

HP ProCurve Switch 3500yl Series

Features and benefits (continued)

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **NEW** **Management Interface Wizard:** CLI-based step-by-step configuration tool to help ensure that management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB are secured to desired level

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **Security banner:** displays a customized security policy when users log in to the switch

Convergence

- **IP multicast routing (requires Premium License):** includes PIM Sparse and Dense modes to route IP multicast traffic

- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- **RADIUS VLAN for voice:** uses standard RADIUS attribute and LLDP-MED to automatically configure VLAN for IP phones

- **PoE allocations:** supports multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings

Quality of Service (QoS)

- **NEW** **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on L2/3/4 information; applies QoS policies such as setting priority level and rate limit to selected traffic per port or per VLAN

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

- **Traffic prioritization:** allows real-time traffic classification into eight priority levels mapped to eight queues

- **Bandwidth shaping:**

  - **Port-based rate limiting:** per-port ingress/egress enforced maximum bandwidth

  - **Classifier-based rate limiting:** use ACL to enforce maximum bandwidth for ingress traffic on each port

  - **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Warranty and support

- **ProCurve Lifetime Warranty⁺:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 3500yl Series

Specifications

	HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)	HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
Ports	1 open module slot 20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports	1 open module slot 44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports
Physical characteristics		
Dimensions (D x W x H)	39.2 x 44.3 x 4.4 cm (15.43 x 17.44 x 1.73 in.) (1U height)	43.0 x 44.3 x 4.4 cm (16.93 x 17.44 x 1.73 in.) (1U height)
Weight	6.4 kg (14.11 lb.)	7.3 kg (16.09 lb.)
Memory and processor		
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
1000 Mb	<3.7 µs (FIFO 64-byte packets)	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 75.7 million pps	Up to 111.5 million pps
Routing/Switching capacity	101.8 Gbps	149.8 Gbps
Switch fabric speed	105.6 Gbps	153.6 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 40°C (32°F to 104°F) when used with any X2 10-GbE	0°C to 55°C (32°F to 131°F); 40°C (32°F to 104°F) when used with any X2 10-GbE
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 90% @ 65°C (149°F), non-condensing	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)	Up to 14.6 km (5,000 ft.)
Acoustic	Power: 52.7 dB, Pressure: 44.8 dB ISO 7779, ISO 9296	Power: 55.1 dB, Pressure: 45.3 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts with either 50 or 60 Hz
Maximum heat dissipation	670 BTU/hr (706 kJ/hr), (max. non-PoE); 940 BTU/hr (991 kJ/hr) (max. using PoE)	810 BTU/hr (854 kJ/hr), (max. non-PoE); 1,090 BTU/hr (1149 kJ/hr) (max. using PoE)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	10.0 A/5.0 A	10.0 A/5.0 A
Idle power	98 W	142 W
Maximum power rating	615 W	693 W
Frequency	50/60 Hz	50/60 Hz
Notes	Idle power is the power consumption of the base system with no traffic. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220 V). Full load switch only heat spec listed above subtracts heat dissipated in external PoE powered devices. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	Idle power is the power consumption of the base system with no traffic. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220 V). Full load switch only heat spec listed above subtracts heat dissipated in external PoE powered devices. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 3500yl Series

Specifications (continued)

	HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)	HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E)) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q (Premium License)
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP (Premium License)
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 3376 IGMPv3 (host joins only)
RFC 3973 Draft 2 PIM Dense Mode (Premium License)
RFC 4601 Draft 10 PIM Sparse Mode (Premium License)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB

RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2 (Premium License)
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 3500yl Series

HP ProCurve Switch 3500yl Series accessories

Premium License for Switch 3500 Series (J8993A)

HP ProCurve 620 Redundant/External Power Supply (J8696A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

yl Modules

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

Note: See details for accessories starting on page 232.

Key features

· Access layer
· Layer 2 to Layer 4 and intelligent edge feature set
· Scalable 10/100/1000 connectivity
· 10-GbE uplinks

Datasheet

HP ProCurve Switch 3400cl Series

The HP ProCurve Switch 3400cl Series consists of exceptionally affordable 24- and 48-port 10/100/1000 intelligent edge stackables with optional 10-Gigabit uplinks* and stacking capability. Created in response to the growing need for network capacity in a world where high-demand applications are becoming common, these standards-based Layer 3 switches provide outstanding performance, traffic management, and access control capabilities. The result is an efficient, secure, high-throughput, multi-service network that is able to handle the demands of today's applications as well as those that will emerge in the future.

* Requires HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

HP ProCurve Switch 3400cl Series

Features and benefits

Industry-leading warranty

Connectivity

- **Dual-personality functionality:** four 10/100/1000 ports or mini-GBIC slots for optional fiber connectivity such as Gigabit-SX, -LX, or -LH
- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **88 Gbps backplane with 64 million pps (HP ProCurve 3400cl-24G) and 136 Gbps backplane with 99.5 million pps (HP ProCurve 3400cl-48G):** up to ten times the bandwidth for low-latency throughput
- **Selectable queuing configurations:** increase performance by selecting the queuing configuration that best meets the requirements of network applications
- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services (up to four ports per module on Gigabit modules)

Resiliency and high availability

- **Router redundancy (XRRP):** allows groups of two routers to dynamically back each other up to create highly available routed environments
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 25 trunks, each with up to 8 links (ports) per trunk
- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees
- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links
- **Optional redundant power supply:** provides uninterrupted power (provided by HP ProCurve 600 RPS/EPS)

Layer 2 switching

- **ProCurve switch meshing:** dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth
- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs
- **IEEE 802.1v protocol VLANs:** isolate select non-IPv4 protocols automatically into their own VLANs

Layer 3 routing

- **Layer 3 IP routing:** provides routing of IP at media speed; supports static routes, RIP, RIPv2, and OSPF

Security

- **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **Source-port filtering:** allows only specified ports to communicate with each other
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **IEEE 802.1X:** industry-standard way of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant

HP ProCurve Switch 3400cl Series

Features and benefits (continued)

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

Convergence

- **IP multicast routing (PIM Dense):** routes IP multicast traffic using the PIM Dense routing protocol
- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic

Quality of Service (QoS)

- **Rate limiting:** per-port ingress enforced maximums
- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers
- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues
- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Manageability

- **sFlow (RFC 3176):** wire-speed traffic accounting and monitoring
- **RMON, XRMON, and SMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator
- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading
- **Friendly port names:** allow assignment of descriptive names to ports
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 3400cl Series

Specifications

	HP ProCurve Switch 3400cl-24G (J4905A)	HP ProCurve Switch 3400cl-48G (J4906A)
Ports	1 open module slot 20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 24 auto-sensing 10/100/1000 ports plus 2 10-GbE ports	1 open module slot 44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 48 Gigabit ports plus 2 10-GbE ports
Physical characteristics Dimensions (D x W x H) Weight	 136.7 x 44.0 x 4.4 cm (4.45 x 17.32 x 1.73 in.) (1U height) 4.66 kg (10.27 lb.)	 43 x 44 x 4.4 cm (16.93 x 17.32 x 1.73 in.) (1U height) 4.92 kg (10.84 lb.)
Memory and processor Processor	 Motorola PowerPC MPC8245 @ 266 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 2 MB (1 MB per 12 ports)	 Motorola PowerPC MPC8245 @ 266 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 4 MB (1 MB per 12 ports)
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	

Performance
Latency
  1000 Mb
  10 Gbps
Throughput
Routing/Switching capacity
Routing table size
	
	<6 µs
	<10 µs
	Up to 64 million pps
	88 Gbps
	64,000 entries
		
		<6 µs
		<10 µs
		Up to 99.5 million pps
		136 Gbps
		64,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 40°C (32°F to 104°F); when used with any X2 10-GbE 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 14.6 km (5,000 ft.) Power: 53 dB; DIN 45635T.19 per ISO 7779 @	 0°C to 40°C (32°F to 104°F); when used with any X2 10-GbE 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 14.6 km (5,000 ft.) Power: 53 dB; DIN 45635T.19 per ISO 7779 @
Electrical characteristics Description Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	 The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz 324 kJ/hr (307 BTU/hr), including use of optional cl module with optics 100–127 VAC/200–240 VAC 2.0 A/1.0 A 90 W 50/60 Hz 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. Power consumption data is maximum value. Maximum BTUs includes use of optional cl module with optics.	 The switch automatically adjusts to any voltage between 100–127 and 200–240 volts with either 50 or 60 Hz 509 kJ/hr (482 BTU/hr), including use of optional cl module with optics 100–127 VAC/200–240 VAC 3.0 A/1.5 A 141 W 50/60 Hz 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. Power consumption data is maximum value. Maximum BTUs includes use of optional cl module with optics.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 3400cl Series

Specifications (continued)

	HP ProCurve Switch 3400cl-24G (J4905A)	HP ProCurve Switch 3400cl-48G (J4906A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	Other mini-GBICs supported: HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858A/B), HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859A/B), and HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860A/B)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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) | **Device management**
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 3046 DHCP Relay Agent Information Option | **IP multicast**
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2138 RADIUS Authentication
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell |

HP ProCurve Switch 3400cl Series

HP ProCurve Switch 3400cl Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

cl Modules

HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

HP ProCurve Switch cl 10-GbE CX4 Copper Module (J8434A)

Note: See details for accessories starting on page 232.

Key features

- Access layer switch
- Enterprise-class features
- Layer 2 and Layer 3 lite feature set
- Scalable 10/100/1000 connectivity
- Integrated 10-GbE uplinks

Datasheet

HP ProCurve Switch 2900 Series

The HP ProCurve Switch 2900 Series consists of two switches: the HP ProCurve Switch 2900-24G with 24 10/100/1000 ports and the HP ProCurve Switch 2900-48G with 48 10/100/1000 ports. Both have four dual-personality ports for 10/100/1000 or mini-GBIC connectivity. In addition, by including four integrated 10-Gigabit Ethernet ports (two CX4 and two X2), the 2900 series offers the most flexible and easy-to-deploy stacking and uplinks in its class. Together with static routing, robust security and management features, free lifetime warranty, and free software updates, the 2900 series is a cost-effective, future-proof solution for customers who are building high-performance networks.

HP ProCurve Switch 2900 Series

Features and benefits

Industry-leading warranty

Management

- **Port mirroring:** enables traffic on a port to be simultaneously sent to a network analyzer for monitoring

- **sFlow (RFC 3176):** provides scalable, ASIC-based, wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **RMON and XRMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Friendly port names:** allow assignment of descriptive names to ports

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator

- **Uni-Directional Link Detection (UDLD):** monitors a link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

Connectivity

NEW IPv6:

– **IPv6 host:** the switches can be managed and deployed at the edge of IPv6 networks

– **Dual stack (IPv4/IPv6):** provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols

– **MLD snooping:** forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network

- **Plug-and-play 10 Gbps Ethernet for stacking and uplink:** four integrated 10-GbE ports (two CX4 and two X2) built in on the switch

- **Dual-personality functionality:** four 10/100/1000 ports or SFP slots for optional fiber connectivity such as Gigabit-SX, -LX, -LH, or 100-FX

- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **High-performance architecture:** 105.6 Gbps switching fabric with up to 75.7 million pps (switch 2900-24G) and 153.6 Gbps switching fabric with up to 111.5 million pps (switch 2900-48G)

- **Selectable queue configurations:** increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Protocol (LACP) and ProCurve trunking:** support up to 24 trunks, each with up to 8 links (ports) per trunk

- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w

Layer 2 switching

- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services

Layer 3 routing

- **Static IP routing:** provides manually configured routing

- **RIP:** provides RIPv1 and RIPv2 routing at media speed

HP ProCurve Switch 2900 Series

Features and benefits (continued)

Security

NEW **USB Secure Autorun (requires HP ProCurve Manager Plus):** deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Multiple user authentication methods:**

  – **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server

  – **Web-based authentication:** authenticates from Web browser for clients that do not support IEEE 802.1X supplicant; customized remediation can be processed on an external Web server

  – **MAC-based authentication:** client is authenticated with the RADIUS server based on client's MAC address

- **Authentication flexibility:**

  – **Multiple IEEE 802.1X users per port:** provides authentication of up to eight IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

  – **Concurrent IEEE 802.1X and Web or MAC authentication schemes per port:** switch port will accept any of IEEE 802.1X and either Web or MAC authentications

- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- **Source-port filtering:** allows only specified ports to communicate with each other

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **TACACS+:** eases switch management security administration by using a password authentication server

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks

- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **Custom banner:** displays security policy when users log in to the switch

Convergence

- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

Quality of Service (QoS)

- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2900 Series

Specifications

	HP ProCurve Switch 2900-24G (J9049A)	HP ProCurve Switch 2900-48G (J9050A)
Ports	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 2 CX4 10-GbE ports (IEEE 802.3ak Type 10GBase-CX4) Duplex: full only 2 open 10-GbE X2 transceiver slots 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 2 CX4 10-GbE ports (IEEE 802.3ak Type 10GBase-CX4) Duplex: full only 2 open 10-GbE X2 transceiver slots 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Physical characteristics		
Dimensions (D x W x H)	39.2 x 44.3 x 4.4 cm (15.43 x 17.44 x 1.73 in.) (1U height)	43.0 x 44.3 x 4.4 cm (16.93 x 17.44 x 1.73 in.) (1U height)
Weight	6.3 kg (14.11 lb.)	7 kg (15.43 lb.)
Memory and processor		
Processor	Freescale PowerPC 8540 @ 667 MHz, 4 MB flash; packet buffer size: 13.5 MB	Freescale PowerPC 8540 @ 667 MHz, 4 MB flash; packet buffer size: 22.5 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
1000 Mb	<3.7 µs (FIFO 64-byte packets)	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 75.7 million pps (64-byte packets)	Up to 111.5 million pps
Routing/Fabric Speed	101.8 Gbps	149.8 Gbps
Switching capacity	105.6 Gbps	153.6 Gbps
Routing table size	2,000 entries	2,000 entries
MAC address table size	64,000 entries	64,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 0° to 40°C (32°F to 104°F) when using any X2 optic or transceiver	0°C to 55°C (32°F to 131°F); 0° to 40°C (32°F to 104°F) when using any X2 optic or transceiver
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 90% @ 65°C (149°F), non-condensing	15% to 90% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)	Up to 14.6 km (5,000 ft.)
Acoustic	Power: 49.3 dB; DIN 45635T.19 per ISO 7779	Power: 52 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics		
Description	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts with either 50 or 60 Hz
Maximum heat dissipation	721 kJ/hr (683 BTU/hr)	721 kJ/hr (683 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	4.0 A/2.0 A	4.0 A/2.0 A
Maximum power rating	200 W	200 W
Frequency	50/60 Hz	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.	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	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 2900 Series

Specifications (continued)

	HP ProCurve Switch 2900-24G (J9049A)	HP ProCurve Switch 2900-48G (J9050A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	One 0.5 m 10-GbE CX4 cable is included. When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. HP ProCurve 10-GbE CX4 Media Converter (J8439A) can be used only with the two fixed CX4 ports.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)			
	Device management RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2453 RIPv2 RFC 3046 DHCP Relay Agent Information Option **IP multicast** RFC 3376 IGMPv3	**IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2925 Remote Operations MIB (Ping only) RFC 3019 MLDv1 MIB RFC 3315 DHCPv6 (client only) RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 RFC 3810 MLDv2 (host joins only) RFC 4022 MIB for TCP RFC 4113 MIB for UDP RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4293 MIB for IP RFC 4419 Key Exchange for SSH RFC 4541 IGMP & MLD Snooping Switch **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB RFC 2021 RMONv2 MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB	RFC 2668 IEEE 802.3 MAU MIB RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2863 The Interfaces Group MIB **Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events) RFC 3176 sFlow ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON **QoS/Cos** RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2138 RADIUS Authentication RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell

HP ProCurve | Network of Choice

HP ProCurve Switch 2900 Series

HP ProCurve Switch 2900 Series accessories

HP ProCurve 620 Redundant/External Power Supply (J8696A)

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

NEW HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Note: See details for accessories starting on page 232.

Key features

- Managed Layer 2 features with 24 or 48 Gigabit ports
- sFlow, source port filtering, and enhanced security
- Optional redundant power supply
- Four dual-personality mini-GBIC slots
- Industry-leading warranty

Datasheet

HP ProCurve Switch 2810 Series

The HP ProCurve Switch 2810 Series consists of two switches: the 24-port HP ProCurve Switch 2810-24G with 20 10/100/1000 ports, and the 48-port HP ProCurve Switch 2810-48G with 44 10/100/1000 ports. Each switch also has four dual-personality ports for RJ-45 10/100/1000 or mini-GBIC fiber Gigabit connectivity. Ideal for high-performance and secure 10/100/1000 connectivity, the 2810 series offers access security and advanced prioritization and traffic-monitoring capabilities. The 2810 series is cost-effective and easy to use, with a shallow, 1U form factor that provides operational flexibility for use in smaller wiring closets.

HP ProCurve Switch 2810 Series

Features and benefits

Industry-leading warranty

Management

- **Dual-personality functionality:** four 10/100/1000 ports or SFP slots for optional fiber connectivity such as Gigabit-SX, -LX, -LH, or 100-FX

Performance

- **35.7 Mpps at 64 bytes (HP ProCurve 2810-24G) and 71.4 Mpps at 64 bytes (HP ProCurve Switch 2810-48G):** ten times the bandwidth for low-latency throughput

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Protocol (LACP) and ProCurve trunking:** support up to 24 trunks, each with up to 8 links (ports) per trunk
- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w
- **Optional redundant power supply:** provides uninterrupted power (provided by HP ProCurve 600 RPS/EPS)

Layer 2 switching

- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs
- **Jumbo packet support:** supports up to 9,216 byte frame size to improve performance of large data transfers

Security

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **NEW Protected ports:** provides increased security by allowing specified ports to be isolated from all other ports on the switch; the protected port or ports can only communicate with the uplink or shared resources

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Multiple user authentication methods:**
  - **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon
- **Multiple IEEE 802.1X users per port:** provides authentication of up to two IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Source-port filtering:** allows only specified ports to communicate with each other
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

Convergence

- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **Per-port broadcast throttling:** selectively configures broadcast control on heavy traffic port uplinks

HP ProCurve Switch 2810 Series

Features and benefits (continued)

Quality of Service (QoS)

- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

Manageability

- **sFlow (RFC 3176):** wire-speed traffic accounting and monitoring

- **RMON:** provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading

- **Troubleshooting:** ingress/egress port monitoring enables network problem-solving

- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2610 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500l Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

- **Multiple configuration files:** allow multiple configuration files to be stored to flash image

Ease of use

- **Locator LED:** allows users to set the locator LED on a specific switch to either turn on, blink, or turn off; simplifies troubleshooting by making it easy to locate a particular switch within a rack of similar switches

- **Friendly port names:** allow assignment of descriptive names to ports

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator

- **ProCurve/IEEE Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all RJ-45 ports

Warranty and support

- **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2810 Series

Specifications

HP ProCurve Switch 2810-24G (J9021A)

HP ProCurve Switch 2810-48G (J9022A)

	HP ProCurve Switch 2810-24G (J9021A)	HP ProCurve Switch 2810-48G (J9022A)
Ports	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Physical characteristics		
Dimensions (D x W x H)	32.26 x 44.2 x 4.32 cm (12.7 x 17.4 x 1.7 in.) (1U height)	32.26 x 44.2 x 4.32 cm (12.7 x 17.4 x 1.7 in.) (1U height)
Weight	3.27 kg (7.21 lb.)	3.9 kg (8.6 lb.)
Memory and processor		
Processor	MIPS @ 264 MHz, 16 MB flash, 64 MB SDRAM; packet buffer size: 0.75 MB	MIPS @ 264 MHz, 16 MB flash, 64 MB SDRAM; packet buffer size: 1.5 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency	<5.6 µs (FIFO 64-byte packets)	<5.4 µs (FIFO 64-byte packets)
Throughput	Up to 35.7 million pps	Up to 71.4 million pps
Switching capacity	48 Gbps	96 Gbps
MAC address table size	8,000 entries	8,000 entries
Environment		
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 3 km (10,000 ft.)	Up to 3 km (10,000 ft.)
Acoustic	Power: 40.3 dB	Power: 40.5 dB
Electrical characteristics		
Maximum heat dissipation	173 kJ/hr (164 BTU/hr)	360 kJ/hr (341 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	1.0 A	1.5 A
Maximum power rating	48 W	92 W
Frequency	50/60 Hz	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.	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	cUL (CSA 22.2 No. 60950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3	
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 2810 Series

Specifications (continued)

	HP ProCurve Switch 2810-24G (J9021A)	HP ProCurve Switch 2810-48G (J9022A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)

Device management
HTML and telnet management

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
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4

IP multicast
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1573 SNMP MIB II
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2138 RADIUS Authentication
RFC 2865 RADIUS (client only)
Secure Sockets Layer (SSL)
SSHv2 Secure Shell

HP ProCurve Switch 2810 Series

HP ProCurve Switch 2810 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Key features

- Access layer switch
- Enterprise-class features
- Layer 2 and Layer 3 lite feature set
- Scalable 10/100/1000 connectivity
- Gigabit fiber uplinks

Datasheet

HP ProCurve Switch 2800 Series

The HP ProCurve Switch 2800 Series consists of two switches: the 24-port HP ProCurve Switch 2824 with 20 10/100/1000 ports, and the 48-port HP ProCurve Switch 2848 with 44 10/100/1000 ports. In addition, each switch has four dual-personality ports for RJ-45 10/100/1000 or mini-GBIC connectivity. The 2800 series is ideal for secure 10/100/1000 connectivity, and it offers access security and advanced prioritization and traffic-monitoring capabilities. With support for IP static routing, the 2800 series is well-suited for environments that need basic routing at the edge of the network.

HP ProCurve Switch 2800 Series

Features and benefits

Industry-leading warranty

Connectivity
- **Dual-personality functionality:** four 10/100/1000 ports or mini-GBIC slots for optional fiber connectivity such as Gigabit-SX, -LX, or -LH

Performance
- **48 Gbps backplane with up to 34.7 million pps (HP ProCurve Switch 2824) and 96 Gbps backplane with up to 69.8 million pps (HP ProCurve Switch 2848):** ten times the bandwidth for low-latency throughput

Resiliency and high availability
- **IEEE 802.3ad Link Aggregation Protocol (LACP) and ProCurve trunking:** support up to 24 trunks, each with up to 8 links (ports) per trunk
- **Spanning Tree Protocol (IEEE 802.1D):** provides redundant links while preventing network loops
- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links
- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees
- **Optional external redundant power supply:** provides uninterrupted power

Layer 2 switching
- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs
- **Jumbo packet support:** supports up to 9,216 byte frame size to improve performance of large data transfers

Layer 3 routing
- **Basic IP routing:** enables automatic routing to the connected VLANs and up to 16 static routes—including one default route—in IP networks

Security
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Multiple user authentication methods:**
  - **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Source-port filtering:** allows only specified ports to communicate with each other
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

HP ProCurve Switch 2800 Series

Features and benefits (continued)

Convergence

- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **Per-port broadcast throttling:** selectively configures broadcast control on heavy traffic port uplinks

Quality of Service (QoS)

- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

Manageability

- **RMON, XRMON, sFlow, and SMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Friendly port names:** allow assignment of descriptive names to ports

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading

- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator

- **Troubleshooting:** ingress/egress port monitoring enables network problem-solving

- **Multiple configuration files:** multiple configuration files can be stored to the flash image

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2800 Series

Specifications

	HP ProCurve Switch 2824 (J4903A)	**HP ProCurve Switch 2848 (J4904A)**
Ports	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port or an open mini-GBIC slot (for use with mini-GBIC transceivers)	44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Physical characteristics		
Dimensions (D x W x H)	36.58 x 43.99 x 4.45 cm (14.4 x 17.32 x 1.75 in.) (1U height)	42.93 x 43.99 x 4.45 cm (16.9 x 17.32 x 1.75 in.) (1U height)
Weight (fully loaded)	4.63 kg (10.2 lb.)	4.88 kg (10.75 lb.)
Memory and processor		
Processor	Motorola PowerPC MPC8245 @ 266 MHz, 8 MB flash, 64 MB SDRAM	Motorola PowerPC MPC8245 @ 266 MHz, 8 MB flash, 64 MB SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency	<5.4 μs (64-byte packets)	<5.4 μs (FIFO 64-byte packets)
Throughput	Up to 34.65 million pps (64-byte packets)	Up to 69.3 million pps (64-byte packets)
Switching capacity	48 Gbps	96 Gbps
MAC address table size	16,000 entries	16,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F)	0°C to 45°C (32°F to 113°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)	Up to 3 km (10,000 ft.)
Acoustic	Power: <53 dB; DIN 45635T.19 per ISO 7779 @ <25°C (80°F)	Power: <53 dB; DIN 45635T.19 per ISO 7779 @ <25°C (80°F)
Electrical characteristics		
Maximum heat dissipation	360 kJ/hr (341 BTU/hr)	360 kJ/hr (341 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	0.6 A/0.3 A	0.6 A/0.3 A
Maximum power rating	100 W	100 W
Frequency	50/60 Hz	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.	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	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 2800 Series

Specifications (continued)

	HP ProCurve Switch 2824 (J4903A)	HP ProCurve Switch 2848 (J4904A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	Other mini-GBICs supported: HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858A/B), HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859A/B), and HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860A/B)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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) | **Device management**
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 3046 DHCP Relay Agent Information Option | **IP multicast**
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
SNMPv1/v2c/v3
XRMON

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2138 RADIUS Authentication
RFC 2865 RADIUS (client only)
Secure Sockets Layer (SSL)
SSHv2 Secure Shell |

HP ProCurve | Network of Choice

HP ProCurve Switch 2800 Series

HP ProCurve Switch 2800 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve 600 Redundant External Power Supply (J8168A)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Note: See details for accessories starting on page 232.

Key features
- Access layer cost-effective switch
- Enterprise-class features
- Layer 2 and Layer 3 lite feature set
- Scalable 10/100 connectivity
- Gigabit fiber uplinks

Datasheet

HP ProCurve Switch 2610 Series

The HP ProCurve Switch 2610 Series consists of five switches—the HP ProCurve Switch 2610-24 and 2610-48 provide 24 and 48 ports of 10/100 connectivity. The HP ProCurve Switch 2610-24 is fanless, providing quiet operation and making it ideal for deployment in open spaces. The HP ProCurve 2610-24/12PWR, 2610-24-PWR, and 2610-48-PWR are IEEE 802.3af-compliant for Power over Ethernet (PoE) and provide up to 15.4 W for 12, 24, and 48 ports. The 2610-24/12PWR has 24 10/100 ports and provides 12 ports of PoE. All switches include two 10/100/1000Base-T ports and two mini-GBIC slots for Gigabit uplink connectivity. An optional redundant external power supply is also available to provide redundancy in the event of a power supply failure. With static routing, robust security and management features, free lifetime warranty, and free software updates, the 2610 series is a cost-effective solution for customers who are building converged enterprise edge networks.

HP ProCurve Switch 2610 Series

Features and benefits

Industry-leading warranty

Connectivity

- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to IEEE 802.3af compliant PoE powered devices such as IP phones, wireless access points, and security cameras
- **Pre-standard PoE support:** detects and provides power to pre-standard PoE devices; see list of supported devices in the product FAQ at **ProCurve.eu**
- **Gigabit Uplink Connectivity:** two 10/100/1000BASE-T ports and two mini-GBIC ports for connectivity such as Gigabit (SX, LX, LH, 1000BaseT) and 100Base-FX
- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 ports
- **Jumbo packet support:** supports up to 9,216 byte frame size to improve performance of large data transfers

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Protocol (LACP) and ProCurve trunking:** support up to 24 trunks, each with up to 8 links (ports) per trunk
- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w
- **Optional redundant power supply:** provides uninterrupted power (provided by HP ProCurve 600 RPS/EPS)

Layer 2 switching

- **VLAN support and tagging:** supports the IEEE 802.1Q (4,096 VLAN IDs) and 256 VLANs simultaneously
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 routing

- **Basic IP routing:** enables automatic routing to the connected VLANs and up to 16 static routes—including one default route—in IP networks

Security

- **Multiple user authentication methods:**
  - **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Authentication flexibility:**
  - **Multiple IEEE 802.1X users per port:** provides authentication of up to eight IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
  - **Concurrent IEEE 802.1X and Web or MAC authentication schemes per port:** switch port will accept any of IEEE 802.1X and either Web or MAC authentications
- **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number
- **Identity-driven ACL:** enables implementation of a highly granular and flexible access security policy specific to each authenticated network user
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Source-port filtering:** allows only specified ports to communicate with each other
- **TACACS+:** eases switch management security administration by using a password authentication server
- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Port monitoring for network threats:** Provides sampled port traffic using sFlow technology to the HP ProCurve Network Immunity Manager application for Network Behavior Anomaly Detection (NBAD) analysis to detect threats and mitigate threats at the port where the threat originated

Features and benefits (continued)

- **Secure Sockets Layer (SSL)**: encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- **STP Root Guard:** protects root bridge from malicious attack or configuration mistakes

Convergence

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic

Quality of Service (QoS)

- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

- **Traffic prioritization (IEEE 802.1p):** allows real-time traffic classification into eight priority levels mapped to four queues

Manageability

- **RMON, XRMON, and sFlow:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Uni-Directional Link Detection (UDLD):** monitors a link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

- **Command authorization:** leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail

- **Multiple configuration files:** allow multiple configuration files to be stored to flash image

- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading

- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2610 Series, 2810 Series, 2900 Series, 3400cl Series, 3500I Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

- **Friendly port names:** allow assignment of descriptive names to ports

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator

- **Troubleshooting:** ingress/egress port monitoring enables network problem-solving

Monitor and diagnostics

- **Port mirroring:** enables traffic on a port to be simultaneously sent to a network analyzer for monitoring

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2610 Series

Specifications

	HP ProCurve Switch 2610-48 (J9088A)	HP ProCurve Switch 2610-24 (J9085A)	HP ProCurve Switch 2610-24-PWR (J9087A)
Ports	48 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RJ-45 serial console port 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 2 open mini-GBIC (SFP) slots	24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RJ-45 serial console port 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 2 open mini-GBIC (SFP) slots	24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX; Duplex: half or full 1 RJ-45 serial console port 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 2 open mini-GBIC (SFP) slots
Physical characteristics			
Dimensions (D x W x H)	23.62 x 44.2 x 4.39 cm (9.3 x 17.4 x 1.73 in.) (1U height)	23.62 x 44.2 x 4.39 cm (9.3 x 17.4 x 1.73 in.) (1U height)	31.75 x 44.2 x 4.39 cm (12.5 x 17.4 x 1.73 in.) (1U height)
Weight (fully loaded)	4.88 kg (10.75 lb.)	4.63 kg (10.2 lb.)	6.83 kg (15.05 lb.)
Memory and processor			
Processor	MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 2 MB	MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 1 MB	MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 1 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only		
Performance			
Latency			
100 MB:	<6.2 µs (LIFO)	<4.1 µs (LIFO)	<4.1 µs (LIFO)
1000 MB:	<4.4 µs (LIFO)	<2.9 µs (LIFO)	<2.9 µs (LIFO)
Throughput	Up to 13.0 million pps	Up to 9.5 million pps	Up to 9.5 million pps
Routing/Switch capacity	17.6 Gbps	12.8 Gbps	12.8 Gbps
Routing table size	8,000 entries	8,000 entries	8,000 entries
Environment			
Operating temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	−40°C to 70°C (−40°F to 158°F)	−40°C to 70°C (−40°F to 158°F)	−40°C to 70°C (−40°F to 158°F)
Non-operating/Storage relative humidity	15% to 90% @ 65°C (149°F), non-condensing	15% to 90% @ 65°C (149°F), non-condensing	15% to 90% @ 65°C (149°F), non-condensing
Altitude	Up to 3 km (10,000 ft.)	Up to 3 km (10,000 ft.)	Up to 3 km (10,000 ft.)
Acoustic	Power: 45 dB, Pressure: 36.2 dB; DIN 45635T.19 per ISO 7779	Power: 0 dB, Pressure: 0 dB No Fan	Power: 64 dB, Pressure: 57 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics			
Maximum heat dissipation	300.67 kJ/hr (285 BTU/hr)	149.81 kJ/hr (142 BTU/hr)	432.55 kJ/hr (410 BTU/hr), (switch-only BTU/hr: 410; combined switch + max. PoE devices at 15.4 W: 2,281 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	1.3 A/0.8 A	0.8 A/0.4 A	7.0 A/3.5 A
Maximum power rating	66 W	41 W	77 W
Frequency	50/60 Hz	50/60 Hz	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.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. Power consumption: 77 W without PoE; 527 W with PoE.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A

HP ProCurve Switch 2610 Series
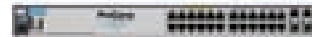
Specifications (continued)

	HP ProCurve Switch 2610-48 (J9088A)	HP ProCurve Switch 2610-24 (J9085A)	HP ProCurve Switch 2610-24-PWR (J9087A)
Immunity			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)		
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.		
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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) | **Device management**
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET | RFC 951 BOOTP
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 3046 DHCP Relay Agent Information Option

IP multicast
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB | RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell |

HP ProCurve Switch 2610 Series

Specifications

	HP ProCurve Switch 2610-48-PWR (J9089A)	HP ProCurve Switch 2610-24/12PWR (J9086A)

Ports	48 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
	  Media type: Auto-MDIX
	  Duplex: half or full
	1 RJ-45 serial console port
	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
	2 open mini-GBIC (SFP) slots
		24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
		  Media type: Auto-MDIX
		  Duplex: half or full
		1 RJ-45 serial console port
		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
		2 open mini-GBIC (SFP) slots

Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	134.29 x 44.2 x 4.39 cm (3.5 x 17.4 x 1.73 in.) (1U height) 7.58 kg (16.7 lb.)	23.62 x 44.2 x 4.39 cm (9.3 x 17.4 x 1.73 in.) (1U height) 3.4 kg (7.5 lb.)

Memory and processor
Processor
	MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM;
	  packet buffer size: 2 MB
		MIPS @ 300 MHz, 16 MB flash, 128 MB SDRAM;
		  packet buffer size: 1 MB

Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	

Performance
Latency
  100 MB:
  1000 MB:
Throughput
Routing/Switching capacity
MAC address table size
	<6.2 µs (LIFO)
	<4.4 µs (LIFO)
	Up to 13.0 million pps
	17.6 Gbps
	8,000 entries
		<4.1 µs
		<2.9 µs
		Up to 9.5 million pps
		12.8 Gbps
		8,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0ºC to 50ºC (32ºF to 122ºF) 15% to 95% @ 40ºC (104ºF), non-condensing –40ºC to 70ºC (–40ºF to 158ºF) 15% to 90% @ 65ºC (149ºF), non-condensing Up to 3 km (10,000 ft.) Power: 63.6 dB, Pressure: 56.6 dB; DIN 45635T.19 per ISO 7779	0ºC to 50ºC (32ºF to 122ºF) 15% to 95% @ 40ºC (104ºF), non-condensing –40ºC to 70ºC (–40ºF to 158ºF) 15% to 90% @ 65ºC (149ºF), non-condensing Up to 3 km (10,000 ft.) Power: 46 dB, Pressure: 38.4 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	432.55 kJ/hr (410 BTU/hr), (switch-only BTU/hr: 410; combined switch + max. PoE devices at 15.4 W: 2281 BTU/hr) 100–127 VAC/200–240 VAC 7.0 A/3.5 A 96 W 50/60 Hz 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. Power consumption: 96 W without PoE; 590 W with PoE.	190.96 kJ/hr (181 BTU/hr), (switch-only BTU/hr: 181; combined switch + max. PoE devices at 15.4 W: 827 BTU/hr) 100–127 VAC/200–240 VAC 3.3 A/1.7 A 62 W 50/60 Hz 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. Power consumption: 62 W without PoE; 189 W with PoE.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 2610 Series

Specifications (continued)

	HP ProCurve Switch 2610-48-PWR (J9089A)	HP ProCurve Switch 2610-24/12PWR (J9086A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)

Device management
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET

RFC 951 BOOTP
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 3046 DHCP Relay Agent Information Option

IP multicast
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB

RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

HP ProCurve | Network of Choice

HP ProCurve Switch 2610 Series

HP ProCurve Switch 2610 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve 610 External Power Supply (J8169A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Note: See details for accessories starting on page 232.

Key features

- Access layer PoE switch
- Layer 2 and Layer 3 lite feature set
- Scalable 10/100 connectivity
- Gigabit fiber uplinks

Datasheet

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

The HP ProCurve Switch 2600-8-PWR is a fully managed stackable switch with eight auto-sensing 10/100 PoE ports and one dual-personality Gigabit uplink. With integrated Power over Ethernet (PoE) and enterprise-level software features in a low-density form factor, this switch is more cost-effective and has better functionality to support a wide deployment of wireless access points. It is also ideal for small workgroups or remote offices that require general network connectivity and PoE for IP phones and access points. The switch can provide 15.4 W of power per port simultaneously on all eight 10/100 ports and supports IEEE 802.3af-compliant and most Cisco pre-standard PoE devices.

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

Features and benefits

Industry-leading warranty

Connectivity

- **Pre-standard PoE support:** detects and provides power to most Cisco pre-standard PoE devices; see list of support devices in product's FAQ on **ProCurve.eu**

- **Dual-personality functionality:** two 10/100/1000 ports or mini-GBIC slots for optional fiber connectivity such as Gigabit-SX, -LX, or -LH

- **Power over Ethernet (IEEE 802.3af) compliant (HP ProCurve 2650-PWR, ProCurve 2626-PWR, ProCurve 2600-8-PWR):** provides up to 15.4 W per port to power IP phones, wireless access points, Web cameras, and more (HP ProCurve 2650-PWR may require an external power supply to provide full 15.4 W for all 48 PoE-ready ports)

Performance

- **13.6 Gbps (HP ProCurve 2650 and 2650-PWR)/9.6 Gbps (HP ProCurve 2626, 2626-PWR, 2600-8-PWR) backplane:** wire-speed non-blocking architecture for low-latency throughput

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support for up to six trunks, each with up to eight links (ports) per trunk; trunking across modules is supported

- **Spanning Tree Protocol (IEEE 802.1D):** provides redundant links while preventing network loops

- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links

- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees

- **Optional external redundant power supply (HP ProCurve 2650-PWR, ProCurve 2626-PWR, ProCurve 2600-8-PWR):** provides uninterrupted power; sold as an accessory

Layer 2 switching

- **VLAN support and tagging:** support complete IEEE 802.1Q (4,096 VLAN IDs) and 253 VLANs simultaneously

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Layer 3 routing

- **Basic IP routing:** enables automatic routing to the connected VLANs and up to 16 static routes—including one default route—in IP networks

Security

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Dynamic IP lockdown:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

- **Multiple user authentication methods:**
  - **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
  - **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address

- **NEW** **Authentication flexibility:**
  - **Multiple IEEE 802.1X users per port:** provides authentication of up to eight IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

- **Secure FTP:** allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file

- **TACACS+:** eases switch management security administration by using a password authentication server

- **Source-port filtering:** allows only specified ports to communicate with each other

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HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

Features and benefits (continued)

- **Secure Shell (SSHv2):** encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL):** encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Switch management logon security:** can require either RADIUS or TACACS+ authentication for secure switch CLI logon

Convergence

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **LLDP-MED (Media Endpoint Discovery):** a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

Quality of Service (QoS)

- **Traffic prioritization (IEEE 802.1p):** allows real-time HP ProCurve Switch 2600 Series traffic classification into eight priority levels mapped to four queues
- **Class of Service (CoS):** sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ
- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers

Manageability

- **RMON:** provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **Friendly port names:** allow assignment of descriptive names to ports
- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series
- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator
- **Troubleshooting:** ingress/egress port monitoring enables network problem-solving (HP ProCurve Switch 2626 and 2626-PWR only)

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve | Network of Choice

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

Specifications

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink (J8762A)

Ports	8 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
	  Media type: Auto-MDIX
	  Duplex: half or full
	1 RS-232C DB-9 console port
	1 dual-personality port; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
	Supports a maximum of 8 auto-sensing 10/100 ports

Physical characteristics	
Dimensions (D x W x H)	22.5 x 44.3 x 4.39 cm (8.86 x 17.44 x 1.73 in.) (1U height)
Weight	3.4 kg (7.5 lb.)
Memory and processor	
Processor	Motorola PowerPC MPC8245 @ 266 MHz, 8 MB flash, 32 MB SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance	
Latency	<12 µs (LIFO)
Throughput	Up to 6.6 million pps
Routing/Switching capacity	9.6 Gbps
MAC address table size	8,000 entries
Environment	
Operating temperature	0°C to 50°C (32°F to 122°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)
Acoustic	Power: 57 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics	
Maximum heat dissipation	649 BTU/hr (685 kJ/hr), including the switch and attached PoE devices; switch only: 228 BTU/hr (241 kJ/hr)
Voltage	100–240 VAC
Current	3.3 A/1.7 A
Maximum power rating	190 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	CSA 22.2 No. 950; cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity	
Generic	EN 55024, CISPR 24
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

Specifications (continued)

	HP ProCurve Switch 2600-8-PWR with Gigabit Uplink (J8762A)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UD537E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UD538E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UD539E) 3-year, 24x7 SW phone support, software updates (UF793E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at **www.procurve.eu/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	**Device management** HTML and telnet management **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 IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 951 BOOTP	RFC 1542 BOOTP Extensions RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 3046 DHCP Relay Agent Information Option **IP multicast** RFC 2236 IGMPv2 **MIBs** RFC 1213 MIB II RFC 1493 Bridge MIB RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2665 Ethernet-Like-MIB RFC 2668 IEEE 802.3 MAU MIB RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2863 The Interfaces Group MIB	**Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events) RFC 3164 BSD syslog Protocol ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 **Security** IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2138 RADIUS Authentication RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve 610 External Power Supply (J8169A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Key features

- Managed Layer 2 feature set
- 24 or 48 10/100 or Gigabit ports
- Two mini-GBIC slots for fiber connectivity
- Quiet fanless design (J9019B)
- Industry-leading warranty

Datasheet

NEW HP ProCurve Switch 2510 Series

Designed to provide essential solutions to small and medium businesses, the HP ProCurve Switch 2510 Series consists of four Layer 2 managed switches that provide reliable 10/100 and 10/100/1000 connectivity. Building off of the popularity of the HP ProCurve Switch 2510-24, a 24-port 10/100 switch with two dual-personality ports, the 2510 series has expanded to include a higher-density HP ProCurve Switch 2510-48, with 48 10/100 ports and four Gigabit uplinks. Additionally, the 2510G switches add Gigabit to the 2510 series, with the 2510G-24 and 2510G-48, 24- and 48-port 10/100/1000 switches, each with four dual-personality ports—ideal for businesses that are ready to upgrade to increased network performance.

HP ProCurve Switch 2510 Series

Features and benefits

Industry-leading warranty

Connectivity

NEW **10/100 and 10/100/1000 connectivity:** provides customers with the choice to select the network connectivity speed that best meets their needs, with a consistent user experience

- **Gigabit uplinks:**

  – **2510-24 and 2510-48:** the 2510-24 has two dual-personality ports for either 10/100/1000 or mini-GBIC connectivity; the 2510-48 has four Gigabit ports, which can all be used concurrently with two 10/100/1000 ports and two open mini-GBIC slots

  – **2510G-24 and 2510G-48:** four dual personality for 10/100/1000 or SFP ports for optional fiber connectivity such as Gigabit-SX, -LX, -LH, or 100-FX

- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 and 10/100/1000 copper ports

Resiliency and high availability

- **IEEE 802.1s Multiple Spanning Tree:** provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:**

  – 2510-24 supports up to two 10/100 trunks each with four links/ports plus one Gigabit trunk

  – 2510-48 supports up to 24 10/100 trunks with eight links/ports per trunk

  – 2510G switches support up to 24 trunks with eight links/ports per trunk

Layer 2 switching

- **VLAN support and tagging:** support up to 64 port-based VLANs and dynamic configuration of IEEE 802.1Q VLAN tagging, providing security between workgroups

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

- **Jumbo packet support:** supports up to 9,216-byte frame size to improve performance of large data transfers

Security

- **Protected ports:** provides increased security by allowing specified ports to be isolated from all other ports on the switch; the protected port or ports can only communicate with the uplinks or shared resources

- **Multiple user authentication methods:**

  – **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server

  – **Web-based authentication:** similar to IEEE 802.1X, provides a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant

  – **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address

- **Guest VLAN:** Isolates guest and unauthorized users traffic to a separate VLAN

- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Multiple IEEE 802.1X users per port:** provides authentication of up to two IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication

- **BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

- **TACACS+:** eases switch management security administration by using a password authentication server

HP ProCurve Switch 2510 Series

Features and benefits (continued)

Convergence

- **IP multicast snooping:** automatically prevents flooding of IP multicast traffic

- **RADIUS VLAN for voice:** uses standard RADIUS attribute and LLDP-MED to automatically configure VLAN for IP phones

Quality of Service (QoS)

- **IEEE 802.1p prioritization:** delivers data to devices based on the priority and type of traffic

Manageability

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

- **RMON:** provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- **Full-featured console:** provides complete control of the switch with a familiar command-line interface (CLI)

- **Web interface:** allows configuration of the switch from any Web browser on the network

- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2610 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

- **Find-Fix-and-Inform:** finds and fixes common network problems automatically, then informs administrator

- **Dual flash images:** provides independent primary and secondary operating system files for backup while upgrading

- **Software updates:** free downloads from the Web

- **Friendly port names:** allow assignment of descriptive names to ports

Flexibility

- **Fanless design:** reduces noise and distractions when deployed in open spaces (2510-24 switch only)

- **NEW** **Multiple port density and connectivity speed options:** provide choice and flexibility with a consistent user experience

Warranty and support

- **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2510 Series

Specifications

	HP ProCurve Switch 2510-24 (J9019B)	HP ProCurve Switch 2510-48 (J9020A)
Ports	24 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RJ-45 serial console port	48 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RJ-45 serial console port 2 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media Type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 2 open mini-GBIC (SFP) slots
Physical characteristics		
Dimensions (D x W x H)	23.62 x 44.25 x 4.39 cm (9.3 x 17.42 x 1.73 in.) (1U height)	23.62 x 44.25 x 4.39 cm (9.3 x 17.42 x 1.73 in.) (1U height)
Weight (fully loaded)	2.22 kg (4.89 lb.)	2.74 kg (6.05 lb.)
Memory and processor		
Processor	MIPS 32 @ 264 MHz, 8 MB flash, 64 MB SDRAM; packet buffer size: 384 KB	MIPS 32 @ 300 MHz, 16 MB flash, 128 MB SDRAM; packet buffer size: 512 KB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
100 MB:	<4.9 µs (64-byte packets)	<4.9 µs (64-byte packets)
1000 MB:	<2.6 µs (64-byte packets)	<2.9 µs (64-byte packets)
Throughput	Up to 6.5 million pps (64-byte packets)	Up to 13 million pps (64-byte packets)
Switching capacity	8.8 Gbps	17.6 Gbps
MAC address table size	8,000 entries	8,000 entries
Environment		
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 90% @ 65°C (149°F), non-condensing
Altitude	Up to 3 km (10,000 ft.)	Up to 14.6 km (5,000 ft.)
Acoustic	Power: 0 dB no fan	Power: 43.6 dB; DIN 45635T.19 per ISO 7779
Electrical characteristics		
Maximum heat dissipation	71.74 kJ/hr (68 BTU/hr)	97 kJ/hr (92 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	0.75 A/0.4 A	1.2 A/0.7 A
Maximum power rating	20 W	27 W
Frequency	50/60 Hz	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.	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	cUL (CSA 22.2 No. 60950); UL 60950-1; IEC 60950; EN 60950	cUL (CSA 22.2 No. 60950); UL 60950-1; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3
Immunity		
Generic	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2	IEC 61000-4-2
Radiated	IEC 61000-4-3	IEC 61000-4-3
EFT/Burst	IEC 61000-4-4	IEC 61000-4-4
Surge	IEC 61000-4-5	IEC 61000-4-5
Conducted	IEC 61000-4-6	IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8	IEC 61000-4-8
Voltage dips and interruptions	IEC 61000-4-11	IEC 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP ProCurve Switch 2510 Series

Specifications (continued)

	HP ProCurve Switch 2510-24 (J9019B)	HP ProCurve Switch 2510-48 (J9020A)
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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) | **Device management**
HTML and telnet management

General protocols
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4 | **IP multicast**
RFC 3376 IGMPv3

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1573 SNMP MIB II
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 IEEE 802.3 MAU MIB
RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB | **Network management**
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2138 RADIUS Authentication
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell |

HP ProCurve Switch 2510 Series

Specifications

	HP ProCurve Switch 2510G-24 (J9279A)	HP ProCurve Switch 2510G-48 (J9280A)
Ports	20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX; Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Physical characteristics Dimensions (D x W x H) Weight	32.26 x 44.2 x 4.32 cm (12.7 x 17.4 x 1.7 in.) (1U height) 3.27 kg (7.21 lb.)	32.26 x 44.2 x 4.32 cm (12.7 x 17.4 x 1.7 in.) (1U height) 3.9 kg (8.6 lb.)
Memory and processor Processor	MIPS @ 264 MHz, 16 MB flash, 64 MB SDRAM; packet buffer size: 0.75 MB	MIPS @ 264 MHz, 16 MB flash, 64 MB SDRAM; packet buffer size: 1.5 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance Latency Throughput Switching capacity MAC address table size	< 5.6 µs (FIFO 64-byte packets) Up to 35.7 million pps 48 Gbps 8,000 entries	< 5.4 µs (FIFO 64-byte packets) Up to 71.4 million pps 96 Gbps 8,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0°C to 45°C (32°F to 113°F) 15% to 95% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 40.3 dB	0°C to 45°C (32°F to 113°F) 15% to 95% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 40.5 dB9
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	173 kJ/hr (164 BTU/hr) 100–127 VAC/200–240 VAC 1.0 A 48 W 50/60 Hz 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.	360 kJ/hr (341 BTU/hr) 100–127 VAC/200–240 VAC 1.5 A 92 W 50/60 Hz 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	cUL (CSA 22.2 No. 60950); UL 60950-1; IEC 60950; EN 60950	cUL (CSA 22.2 No. 60950); UL 60950-1; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3
Immunity Generic ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; HP ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	

HP ProCurve Switch 2510 Series

Specifications (continued)

	HP ProCurve Switch 2510G-24 (J9279A)	HP ProCurve Switch 2510G-48 (J9280A)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)
	Device management
	HTML and telnet management
	
	General protocols
	IEEE 802.1p Priority
	IEEE 802.1Q VLANs
	IEEE 802.1s Multiple Spanning Trees
	IEEE 802.3ad Link Aggregation Control
	  Protocol (LACP)
	IEEE 802.3x Flow Control
	RFC 768 UDP
	RFC 783 TFTP Protocol (revision 2)
	RFC 792 ICMP
	RFC 793 TCP
	RFC 826 ARP
	RFC 854 TELNET
	RFC 951 BOOTP
	RFC 1542 BOOTP Extensions
	RFC 2030 Simple Network Time Protocol
	  (SNTP) v4
		IP multicast
		RFC 3376 IGMPv3
		
		MIBs
		RFC 1213 MIB II
		RFC 1493 Bridge MIB
		RFC 1573 SNMP MIB II
		RFC 2021 RMONv2 MIB
		RFC 2096 IP Forwarding Table MIB
		RFC 2613 SMON MIB
		RFC 2618 RADIUS Client MIB
		RFC 2620 RADIUS Accounting MIB
		RFC 2665 Ethernet-Like-MIB
		RFC 2668 IEEE 802.3 MAU MIB
		RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB
		RFC 2737 Entity MIB (Version 2)
		RFC 2863 The Interfaces Group MIB
			Network management
			IEEE 802.1AB Link Layer Discovery Protocol
			  (LLDP)
			RFC 2819 Four groups of RMON: 1
			  (statistics), 2 (history), 3 (alarm) and 9
			  (events)
			SNMPv1/v2c/v3
			
			Security
			IEEE 802.1X Port Based Network Access
			  Control
			RFC 1492 TACACS+
			RFC 2138 RADIUS Authentication
			RFC 2866 RADIUS Accounting
			Secure Sockets Layer (SSL)
			SSHv1/SSHv2 Secure Shell

HP ProCurve Switch 2510 Series

HP ProCurve Switch 2510 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)*

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

NEW HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)

NEW HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

* The J8177C is supported only in the HP ProCurve Switch 2510-48 (J9020A).
Note: See details for accessories starting on page 232.

Key features

- Managed Layer 2 feature set
- 10/100 Connectivity with 12 or 24 ports
- Two Gigabit copper or fiber transceiver slots
- Proven reliability
- Industry-leading warranty

Datasheet

HP ProCurve Switch 2500 Series

The HP ProCurve Switch 2500 Series consists of Layer 2 managed 12- and 24-port switches. The switches include two Gigabit transceiver slots for copper or fiber connectivity, including 100Base-FX. The 2512 and 2524 switches have a proven track record of reliability and feature an industry-leading warranty and next-day advance replacement.

HP ProCurve Switch 2500 Series

Features and benefits

Industry-leading warranty

Performance
- **9.6 Gbps switch fabric integrated on chip:** high-performance switch design with a non-blocking architecture

Resiliency and high availability
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support a single trunk with up to four links (ports)
- **Spanning Tree Protocol (IEEE 802.1D):** provides redundant links while preventing network loops
- **IEEE 802.1w Rapid Convergence Spanning Tree Protocol:** increases network uptime through faster recovery from failed links

Layer 2 switching
- **VLAN support and tagging:** support up to 30 port-based VLANs and dynamic configuration of IEEE 802.1Q VLAN tagging, providing security between workgroups
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs

Security
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **IEEE 802.1X and RADIUS network login:** control port-based access for authentication and accountability
- **TACACS+:** eases switch management security administration by using a password authentication server

Convergence
- **IP multicast snooping and data-driven IGMP:** automatically prevents flooding of IP multicast traffic
- **NEW LLDP Lite:** allows for discovery and network topology mapping via HP ProCurve Manager
- **Stacking capability:** single IP address management for a virtual stack of up to 16 switches, including the HP ProCurve Switch 2500 Series, 2510 Series, 2600 Series, 2800 Series, 2810 Series, 2900 Series, 3400cl Series, 3500yl Series, 4200vl Series, 6108, 6200yl-24G-mGBIC, and 6400cl Series

Quality of Service (QoS)
- **IEEE 802.1p prioritization:** delivers data to devices based on the priority and type of traffic

Manageability
- **RMON and XRMON:** provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications
- **Friendly port names:** allow assignment of descriptive names to ports
- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 ports
- **Web interface:** allows configuration of the switch from any Web browser on the network

Warranty and support
- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

HP ProCurve Switch 2500 Series

Specifications

	HP ProCurve Switch 2524 (J4813A)	HP ProCurve Switch 2512 (J4812A)
Ports	24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 open transceiver slots 1 RS-232C DB-9 console port	12 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 open transceiver slots 1 RS-232C DB-9 console port
Physical characteristics		
Dimensions (D x W x H)	20.32 x 44.2 x 4.57 cm (8.0 x 17.4 x 1.8 in.) (1U height)	20.32 x 44.2 x 4.57 cm (8.0 x 17.4 x 1.8 in.) (1U height)
Weight (fully loaded)	2.72 kg (6.0 lb.)	2.72 kg (6.0 lb.)
Memory and processor		
Processor	ARM7TDMI @ 62.5 MHz, 2 MB flash, 26 KB RAM/ROM capacity; packet buffer size: 6 MB	ARM7TDMI @ 62.5 MHz, 2 MB flash, 26 KB RAM/ROM capacity; packet buffer size: 6 MB
Mounting	Mounts in a standard 19 in. rack (hardware included)	Mounts in a standard 19 in. rack (hardware included)
Performance		
Latency	<10 µs (LIFO)	<10 µs (LIFO)
Throughput	6.6 million pps (64-byte packets)	4.8 million pps (64-byte packets)
Switching capacity	9.6 Gbps	9.6 Gbps
MAC address table size	4,096 entries	4,096 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 90% @ 65°C (149°F), non-condensing
Shock and vibration	HP759, HP760 (similar to EN 60068, IEC 68)	HP759, HP760 (similar to EN 60068, IEC 68)
Electrical characteristics		
Maximum heat dissipation	130 kJ/hr (123 BTU/hr)	130 kJ/hr (123 BTU/hr)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	2.4 A/1.2 A	2.4 A/1.2 A
Maximum power rating	36 W	36 W
Frequency	50/60 Hz	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.	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	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
Generic	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Management	HP ProCurve Manager (included); HP ProCurve Manager Plus; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)	General protocols	MIBs	Security
	IEEE 802.1D MAC Bridges	RFC 1213 MIB II	IEEE 802.1X Port Based Network Access Control
	IEEE 802.1p Priority	RFC 1493 Bridge MIB	RFC 1492 TACACS+
	IEEE 802.1Q VLANs	RFC 2613 SMON MIB	SSHv1 Secure Shell
	IEEE 802.1w Rapid Reconfiguration of Spanning Tree	RFC 2674 IEEE 802.1p and 802.1Q Bridge MIB	
	IEEE 802.3ad Link Aggregation Control Protocol (LACP)	**Network management**	
	IEEE 802.3x Flow Control	RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)	
	IP multicast	RFC 3164 BSD syslog Protocol	
	RFC 3376 IGMPv3	SNMPv1/v2c/v3	
		XRMON	

HP ProCurve Switch 2500 Series

HP ProCurve Switch 2500 Series accessories

HP ProCurve 100/1000-T Transceiver (J4834A)

HP ProCurve 100-FX SC Transceiver (J4853A)

HP ProCurve Gigabit-SX Transceiver (J4131B)

HP ProCurve Gigabit-LX Transceiver (J4132A)

HP ProCurve Switch Gigabit Stacking Kit (J4116A)

HP ProCurve Manager

HP ProCurve Manager Plus

HP ProCurve Identity Driven Manager

HP ProCurve Network Immunity Manager

Note: See details for accessories starting on page 232.

Key features

- Web-managed Layer 2 Gigabit switch
- 8- and 24-port models
- Fanless switch for silent operation
- Two-dual-personality mini-GBIC slots (J9028B)
- Industry-leading warranty

Datasheet

HP ProCurve Switch 1800 Series

The HP ProCurve Switch 1800 Series consists of two Gigabit, fanless, Web-managed switches that are ideal for deployment in open offices that require silent operation. The HP ProCurve Switch 1800-24G is a 24-port 10/100/1000 switch with two dual-personality ports for RJ-45 10/100/1000 or mini-GBIC fiber Gigabit connectivity. The HP ProCurve Switch 1800-8G is a small form factor, 8-port 10/100/1000 switch. The ProCurve Switch 1800 Series enables increased network capabilities and control versus unmanaged switches, with support for fundamental networking protocols such as trunking and VLANs. Both switches are managed through an intuitive Web interface. The ProCurve Switch 1800 Series is ideal for businesses making the transition from unmanaged connectivity to managed networks without added cost or complexity.

HP ProCurve Switch 1800 Series

Features and benefits

Industry-leading warranty

Connectivity
· **Jumbo packet support:** to improve performance of large data transfers

Resiliency and high availability
· **IEEE 802.3ad Link Aggregation Control Protocol (LACP):** provides link-level redundancy with support for up to 4 trunks on the HP ProCurve Switch 1800-8G and 12 trunks on the HP ProCurve Switch 1800-24G, each with up to 8 links (ports) per trunk

Layer 2 switching
· **VLAN support and tagging:** support up to 64 port-based VLANs and dynamic configuration of IEEE 802.1Q VLAN tagging, providing security between workgroups

Security
· **Management password:** provides security so that only authorized access to the Web browser interface is allowed

Quality of Service (QoS)
· **Traffic prioritization:** honors priority of traffic based on IEEE 802.1p to deliver data to devices based on the priority and type of traffic
· **Broadcast control:** allows limitation of broadcast traffic rate to cut down on unwanted broadcast traffic on the network

Manageability
· **Intuitive Web interface:** enables simple management via an easy-to-use Web browser interface for switch configuration, monitoring, and administration
· **Integration with HP ProCurve Manager:** enables discovery and mapping via ProCurve Manager, available as a free download from the Web

· **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

Monitor and diagnostics
· **Port mirroring:** enables traffic on a port to be simultaneously sent to a network analyzer for monitoring

Ease of use
· **Comprehensive LED display with per-port indicators:** provides an at-a-glance view of status, activity, speed, and full-duplex operation
· **ProCurve/IEEE Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Flexibility
· **Small form factor:** ideal for desktop use; space-efficient for deployment flexibility (1800-8G switch only)
· **Designed with no fan:** enables quiet operation for deployment in open spaces

Warranty and support
· **ProCurve Lifetime Warranty**♦**:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
· **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 1800 Series

Specifications

	HP ProCurve Switch 1800-8G (J9029A)	HP ProCurve Switch 1800-24G (J9028B)
Ports	8 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only	22 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 2 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	11.63 x 19.63 x 4.39 cm (4.58 x 7.73 x 1.73 in.) (1U height) 0.54 kg (1.19 lb.)	17.12 x 44.25 x 4.39 cm (6.74 x 17.42 x 1.73 in.) (1U height) 1.96 kg (4.32 lb.)
Memory and processor	1 MB flash, 64 KB SDRAM, 1 MB RAM/ROM capacity; packet buffer size: 144 KB	2 MB flash, 64 KB SDRAM, 2 MB RAM/ROM capacity; packet buffer size: 500 KB
Mounting	Horizontal surface mounting only	Horizontal surface mounting only
Performance Latency 100 MB: 1000 MB: Throughput Switching capacity MAC address table size	<3.9 µs (64-byte packets) <2.1 µs (64-byte packets) Up to 11.9 million pps (64-byte packets) 16 Gbps 8,000 entries	<4.7 µs (64-byte packets) <3.0 µs (64-byte packets) Up to 35.7 million pps (64-byte packets) 48 Gbps 8,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0°C to 40°C (32°F to 104°F) 10% to 90% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB no fan	0°C to 40°C (32°F to 104°F) 10% to 90% @ 40°C (104°F), non-condensing −40°C to 70°C (−40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB no fan
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	64 kJ/hr (61 BTU/hr) 100–240 VAC 0.5 A 18 W 60 Hz 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. The exact input voltage and frequency rating are determined by the specific power adapter part number ordered. Please select the correct power adapter country option.	97 kJ/hr (92 BTU/hr) 100–127 VAC/200–240 VAC 0.8 A/0.4 A 27 W 50/60 Hz 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	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Rules Part 15, Subpart B Class A; EN 55022; VCCI; ICES-003 (Canada)	
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2 EN 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 EN 61000-3-2 EN 61000-3-3
Management	HP ProCurve Manager; Web browser	HP ProCurve Manager; Web browser
Notes		Use only supported genuine ProCurve mini-GBICs with your switch.

HP ProCurve Switch 1800 Series

	HP ProCurve Switch 1800-8G (J9029A)		HP ProCurve Switch 1800-24G (J9028B)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UE256E)		3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware (UE257E)		3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE258E)		3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E)	
	3-year, 24x7 SW phone support, software updates (UE260E)		3-year, 24x7 SW phone support, software updates (UF792E)	
	Installation with minimum configuration, system-based pricing (U4826E)		Installation with minimum configuration, system-based pricing (U4826E)	
	Installation with HP-provided configuration, system-based pricing (U4830E)		Installation with HP-provided configuration, system-based pricing (U4830E)	
	Refer to the HP Web site at www.procurve.eu/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.		Refer to the HP Web site at www.procurve.eu/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)	**General protocols** IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.3ad Link Aggregation Control Protocol (LACP)	IEEE 802.3x Flow Control RFC 1534 DHCP/BOOTP Interoperation	**Network management** IEEE 802.1AB Link Layer Discovery Protocol (LLDP)	

HP ProCurve Switch 1800 Series

HP ProCurve Switch 1800 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve Manager

Note: See details for accessories starting on page 232.

Key features

- Web-managed Layer 2 10/100 switch
- 8- and 24-port models
- Fanless switch for silent operation
- Two dual-personality mini-GBIC slots (J9080A)
- Industry-leading warranty

Datasheet

HP ProCurve Switch 1700 Series

The HP ProCurve Switch 1700 Series consists of two 10/100, fanless, Web-managed switches that are ideal for open offices that require silent operation or businesses making the transition from unmanaged to managed networks. The HP ProCurve Switch 1700-24 is a 24-port switch with 22 10/100 ports plus 2 dual-personality ports. The HP ProCurve Switch 1700-8 is a small-form-factor switch with seven 10/100 ports and one 10/100/1000 port. The ProCurve Switch 1700 Series enables increased network capabilities without added complexity.

HP ProCurve Switch 1700 Series

Features and benefits

Industry-leading warranty

Resiliency and high availability

- **IEEE 802.3ad Link Aggregation Control Protocol (LACP):** provides link-level redundancy; support for up to 4 trunks, with up to 7 links (ports) per trunk on the ProCurve Switch 1700-8, and support for 12 trunks, with up to 8 links (ports) per trunk on the ProCurve Switch 1700-24

Layer 2 switching

- **VLAN support and tagging:** support up to 64 port-based VLANs and dynamic configuration of IEEE 802.1Q VLAN tagging, providing security between workgroups

Security

- **Management password:** provides security so that only authorized access to the Web browser interface is allowed

Quality of Service (QoS)

- **IEEE 802.1p prioritization:** delivers data to devices by honoring the priority and type of traffic
- **Broadcast control:** allows limitation of broadcast traffic rate to cut down on unwanted broadcast traffic on the network

Manageability

- **Intuitive Web interface:** enables simple management via an easy-to-use Web browser interface for switch configuration, monitoring, and administration

- **Integration with HP ProCurve Manager:** enables discovery and mapping via ProCurve Manager, available as a free download from the Web
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

Monitor and diagnostics

- **Port mirroring:** enables traffic on a port to be simultaneously sent to a network analyzer for monitoring

Ease of use

- **Comprehensive LED display with per-port indicators:** provides an at-a-glance view of status, activity, speed, and full-duplex operation
- **ProCurve/IEEE Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Flexibility

- **Small form factor:** ideal for desktop use; space efficient for deployment flexibility (1700-8 switch only)
- **Designed with no fan:** enables quiet operation for deployment in open spaces

Warranty and support

- **ProCurve Lifetime Warranty✦:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

✦ For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

HP ProCurve Switch 1700 Series

Specifications

	HP ProCurve Switch 1700-24 (J9080A)	HP ProCurve Switch 1700-8 (J9079A)
Ports	22 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	7 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 auto-sensing 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	 17.12 x 44.25 x 4.39 cm (6.74 x 17.42 x 1.73 in.) (1U height) 1.99 kg (4.38 lb.)	 11.63 x 19.63 x 4.39 cm (4.58 x 7.73 x 1.73 in.) (1U height) 0.54 kg (1.19 lb.)
Memory and processor	2 MB flash, 2 MB RAM/ROM capacity; packet buffer size: 500 KB	1 MB flash, 1 MB RAM/ROM capacity; packet buffer size: 144 KB
Mounting	Mounts in an EIA-standard 19 in. telco racks (hardware included)	Horizontal surface mounting only

Performance
Latency
  100 MB:
  1000 MB:
Throughput
Switching capacity
MAC address table size
	
	<4.7 µs (64-byte packets)
	<3.0 µs (64-byte packets)
	Up to 6.2 million pps (64-byte packets)
	8.4 Gbps
	8,000 entries
		
		<3.9 µs (64-byte packets)
		<2.1 µs (64-byte packets)
		Up to 2.0 million pps (64-byte packets)
		3.4 Gbps
		8,000 entries

Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB no fan	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB no fan
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	 87 kJ/hr (82 BTU/hr) 100–127 VAC/200–240 VAC 0.75 A/0.4 A 24 W 50/60 Hz 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.	 64 kJ/hr (61 BTU/hr) 100–127 VAC/200–240 VAC 1.0 A/0.8 A 18 W 50/60 Hz 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. The exact input voltage and frequency rating are determined by the specific power adapter part number ordered. Please select the correct power adapter country option.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Rules Part 15, Subpart B Class A; EN 55022; VCCI; ICES-003 (Canada)	
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3	 EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3
Management	HP ProCurve Manager; Web browser	HP ProCurve Manager; Web browser
Notes	Use only supported genuine ProCurve mini-GBICs with your switch.	

HP ProCurve Switch 1700 Series

Specifications (continued)

	HP ProCurve Switch 1700-24 (J9080A)		HP ProCurve Switch 1700-8 (J9079A)	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UF803E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UF804E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UF806E) 3-year, 24x7 SW phone support, software updates (UF805E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.		3-year, 4-hour onsite, 13x5 coverage for hardware (UF799E) 3-year, 4-hour onsite, 24x7 coverage for hardware (uf800e) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UF802E) 3-year, 24x7 SW phone support, software updates (UF801E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)	General protocols IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.3ad Link Aggregation Control Protocol (LACP)	IEEE 802.3x Flow Control RFC 1534 DHCP/BOOTP Interoperation		Network management IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

HP ProCurve Switch 1700 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

HP ProCurve Manager

Note: See details for accessories starting on page 232.

Key features

- Unmanaged plug-and-play operation
- 12 or 24 10/100 ports
- Two Gigabit copper or fiber transceiver slots
- Rack mountable with included hardware
- Industry-leading warranty

Datasheet

HP ProCurve Switch 2300 Series

The HP ProCurve Switch 2300 Series consists of unmanaged 24- and 12-port switches with 10/100 auto-sensing per port and two open transceiver slots for Gigabit or 100Base-FX uplinks. The HP ProCurve Switch 2324 and Switch 2312 offer ProCurve Auto-MDIX on all 10/100 ports.

HP ProCurve Switch 2300 Series

Features and benefits

Industry-leading warranty

Connectivity

- **10/100 auto-sensing per port:** automatically detects and sets the speed for any 10Base-T or 100Base-TX device

- **Media-flexible uplink ports:** provides Gigabit or 100Base-FX ports for uplinks or server connections

- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 ports

Performance

- **9.6 Gbps switch fabric integrated on chip:** high-performance switch design with a non-blocking architecture

- **Half-/Full-duplex auto-negotiating capability on every port:** doubles the throughput of every port

Ease of use

- **Unmanaged:** provides plug-and-play simplicity

- **Flow control:** helps ensure reliable communications during full-duplex operation

- **Comprehensive LED display with per-port indicators:** provides an at-a-glance view of status, activity, speed, and full-duplex operation

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Switch 2300 Series accessories

HP ProCurve 100-FX SC Transceiver (J4853A)

HP ProCurve 100/1000-T Transceiver (J4834A)

HP ProCurve Gigabit-LX Transceiver (J4132A)

HP ProCurve Gigabit-SX Transceiver (J4131B)

HP ProCurve Switch Gigabit Stacking Kit (J4116A)

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

Note: See details for accessories starting on page 232.

HP ProCurve Switch 2300 Series

Specifications

	HP ProCurve Switch 2324 (J4818A)	HP ProCurve Switch 2312 (J4817A)
Ports	24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 open transceiver slots 1 RS-232C DB-9 console port	12 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 2 open transceiver slots 1 RS-232C DB-9 console port
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	20.32 x 44.2 x 4.45 cm (8.0 x 17.4 x 1.75 in.) (1U height) 2.72 kg (6.0 lb.)	20.32 x 44.2 x 4.45 cm (8.0 x 17.4 x 1.75 in.) (1U height) 2.72 kg (6.0 lb.)
Memory and processor Processor	ARM7TDMI @ 62.5 MHz, 2 MB flash, 26 MB RAM/ROM capacity; packet buffer size: 6 MB	ARM7TDMI @ 62.5 MHz, 2 MB flash, 26 MB RAM/ROM capacity; packet buffer size: 6 MB
Mounting	Mounts in a standard 19 in. rack (hardware included)	Mounts in a standard 19 in. rack (hardware included)
Performance Latency Throughput Switching capacity MAC address table size	<10 µs (LIFO) 6.6 million pps 9.6 Gbps 4,096 entries	<10 µs (LIFO) 4.8 million pps 9.6 Gbps 4,096 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Shock and vibration	0°C to 55°C (32°F to 131°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing HP759, HP760 (similar to EN 60068, IEC 68)	0°C to 55°C (32°F to 131°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing HP759, HP760 (similar to EN 60068, IEC 68)
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	130 kJ/hr (123 BTU/hr) 100–127 VAC/200–240 VAC 2.4 A/1.2 A 36 W 50/60 Hz 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.	130 kJ/hr (123 BTU/hr) 100–127 VAC/200–240 VAC 2.4 A/1.2 A 36 W 50/60 Hz 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	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity Generic ESD Radiated EFT/Burst	EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (H5484E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U6300E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6299E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)	**General protocols** IEEE 802.3x Flow Control	

ProCurve
Networking by HP

Key features

- Unmanaged plug-and-play operation
- 24 10/100 ports
- One transceiver slot for 100Base-FX connectivity
- Rack mountable with included hardware
- Industry-leading warranty

Datasheet

HP ProCurve Switch 2124

The HP ProCurve Switch 2124 is an unmanaged 24-port switch with 10/100 auto-sensing per port and one open transceiver slot for a 100Base-FX uplink. The ProCurve Switch 2124 offers ProCurve Auto-MDIX on all 10/100 ports.

HP ProCurve Switch 2124

Features and benefits

Industry-leading warranty

Connectivity

- **24 auto-sensing 10/100 ports:** provide high-performance switching
- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 ports
- **Full scalability:** optional 100Base-FX fiber-optic (full-duplex bandwidth) transceiver enables low-cost uplink connectivity into a wiring closet up to 2 km away

Performance

- **Low-cost/High-performance:** combines affordability, scalability, and ease of use

Ease of use

- **Unmanaged:** provides plug-and-play simplicity
- **Use on desktop or rack-mounted:** quiet operation enables flexible use
- **1U form factor:** the industry's most frequently requested size

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch 2124 accessories

HP ProCurve 100-FX SC Transceiver (J4853A)

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

Note: See details for accessories starting on page 232.

HP ProCurve Switch 2124

Specifications

HP ProCurve Switch 2124 (J4868A)

Ports	24 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
	  Media type: Auto-MDIX
	  Duplex: half or full
	1 open transceiver slot

Physical characteristics	
Dimensions (D x W x H)	20.32 x 44.2 x 4.57 cm (8.0 x 17.4 x 1.8 in.) (1U height)
Weight (fully loaded)	3.74 kg (8.25 lb.)
Memory and processor	768 KB
Mounting	Mounts in a standard 19 in. rack (hardware included)
Performance	
Latency	<8.5 µs (LIFO)
Switching capacity	2.6 Gbps
MAC address table size	4,096 entries
Environment	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	90% @ 65°C (149°F), non-condensing
Shock and vibration	HP759, HP760 (similar to EN 60068, IEC 68)
Acoustic	Power: 42 dB; DIN 27779 per ISO 7779
Electrical characteristics	
Maximum heat dissipation	360 kJ/hr (341 BTU/hr)
Voltage	100–240 VAC
Current	1.0 A
Maximum power rating	100 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	cUL (CSA 950); EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950 3rd edition
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity	
Generic	EN 55024, CISPR 24
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (H5484E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U6300E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6299E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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	**General protocols** IEEE 802.3x Flow Control

Key features

- Unmanaged Layer 2 Gigabit switch
- 8- and 24-port models
- Fanless switch for silent operation
- Two dual-personality mini-GBIC slots (J9078A)
- Industry-leading warranty

Datasheet

HP ProCurve Switch 1400 Series

The HP ProCurve Switch 1400 Series provides plug-and-play simplicity for high-bandwidth connectivity. The ProCurve Switch 1400 Series consists of two unmanaged switches. The HP ProCurve Switch 1400-24G is a 24-port 10/100/1000 switch with 22 10/100/1000 ports and 2 dual-personality ports. The HP ProCurve Switch 1400-8G is a small-form-factor switch with 8 10/100/1000 ports. Ideal for deployment in open spaces, both switches feature silent operation via a fanless design.

HP ProCurve Switch 1400 Series

Features and benefits

Industry-leading warranty

Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **Jumbo packet support:** to improve performance of large data transfers

Performance

- **High performance:** wire-speed performance provides maximized throughput for all PCs and servers
- **Half-/Full-duplex auto-negotiating capability on every port:** doubles the throughput of every port

Quality of Service (QoS)

- **IEEE 802.1p prioritization:** delivers data to devices by honoring the priority and type of traffic

Ease of use

- **Unmanaged:** provides plug-and-play simplicity
- **10/100/1000 auto-sensing per port:** automatically detects and sets the speed for any 10Base-T, 100Base-TX, or 1000Base-T device
- **Comprehensive LED display with per-port indicators:** provides an at-a-glance view of status, activity, speed, and full-duplex operation

Flexibility

- **Small form factor:** ideal for desktop use; space efficient for deployment flexibility (1400-8G switch)
- **Designed with no fan:** enables quiet operation for deployment in open spaces

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch 1400 Series accessories

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

NEW HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)

NEW HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

Note: See details for accessories starting on page 232.

HP ProCurve Switch 1400 Series

Specifications

	HP ProCurve Switch 1400-24G (J9078A)	**HP ProCurve Switch 1400-8G (J9077A)**
Ports	22 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 2 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	8 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
Physical characteristics Dimensions (D x W x H) Weight	17.12 x 44.25 x 4.39 cm (6.74 x 17.42 x 1.73 in.) (1U height) 1.99 kg (4.38 lb.)	11.63 x 19.63 x 4.39 cm (4.58 x 7.73 x 1.73 in.) (1U height) 0.54 kg (1.19 lb.)
Memory and processor	128 KB RAM/ROM capacity; packet buffer size: 500 KB	128 KB RAM/ROM capacity; packet buffer size: 144 KB
Mounting	Mounts in an EIA-standard 19 in. telco racks (hardware included)	Horizontal surface mounting only
Performance Latency 100 MB: 1000 MB: Throughput Switching capacity MAC address table size	<4.7 µs (64-byte packets)) <3.0 µs (64-byte packets) Up to 35.7 million pps 48 Gbps 8,000 entries	< 3.9 µs (64-byte packets) < 2.1 µs (64-byte packets) Up to 11.9 million pps 16 Gbps 8,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB No Fan	0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 10% to 90% @ 65°C (149°F), non-condensing Up to 3 km (10,000 ft.) Power: 0 dB No Fan
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	85 kJ/hr (81 BTU/hr) 100–240 VAC 0.75 A/0.4 A 24 W 50/60 Hz 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.	64 kJ/hr (61 BTU/hr) 100–127 VAC/200–240 VAC 1.0 A/0.8 A 18 W 50/60 Hz 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. The exact input voltage and frequency rating are determined by the specific power adapter part number ordered. Please select the correct power adapter country option.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Rules Part 15, Subpart B Class A; EN 55022; VCCI; ICES-003 (Canada)	
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3	EN 55024, CISPR 24 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3
Notes	Use only supported genuine ProCurve mini-GBICs with your switch.	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UF797E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UF798E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UF795E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UF796E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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)	**General protocols** IEEE 802.1p Priority IEEE 802.3x Flow Control	

Key features

· Unmanaged plug-and-play operation

· Eight 10/100 ports

· Compact and quiet fanless design

· Industry-leading warranty

Datasheet

HP ProCurve Switch 408

The HP ProCurve Switch 408 is a compact, unmanaged 8-port 10/100 switch that offers half-/full-duplex 10/100 auto-sensing on every port and ProCurve Auto-MDIX on all ports for easy expansion. It is ideal for building small networks or connecting peripherals with any combination of 10 Mb and 100 Mb devices.

HP ProCurve Switch 408

Features and benefits

Industry-leading warranty

Connectivity

- **Auto-sensing:** 10/100 auto-sensing per port automatically detects and sets the speed for any 10Base-T or 100Base-TX device
- **ProCurve Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 ports

Performance

- **Switch design:** delivers dedicated bandwidth to each device and uses segmentation to improve network utilization
- **Auto-negotiation:** half-/full-duplex auto-negotiation on every port automatically doubles the throughput to each device, up to 200 Mbps

Ease of use

- **Flow control:** helps ensure reliable communications during full-duplex operation
- **Unmanaged:** provides plug-and-play simplicity
- **LED display:** comprehensive LED display with per-port indicators allows monitoring of status and activity of every port at a glance
- **Automatic polarity correction:** helps find and fix common cabling problems
- **Compact:** small footprint allows multiple mounting configurations on a flat surface, side by side, or in a standard rack

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

HP ProCurve Switch 408

Specifications

HP ProCurve Switch 408 (J4097C)

Ports	8 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
	  Media type: Auto-MDIX
	  Duplex: half or full

Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	 19.81 x 12.19 x 4.06 cm (7.8 x 4.8 x 1.6 in.) (1U height) 0.68 kg (1.5 lb.)
Memory and processor	32 KB per port
Mounting	Mounts in a standard 19 in. rack with optional four-way mounting kit
Performance Switching capacity Routing table size	 1.6 Gbps 1,000 entries
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Shock and vibration Altitude	 0°C to 40°C (32°F to 104°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 90% @ 65°C (149°F), non-condensing EN 60068 (IEC 68) Up to 3 km (10,000 ft.)
Electrical characteristics Maximum heat dissipation Voltage Current Maximum power rating Frequency Notes	 55 kJ/hr (52 BTU/hr) 100–127 VAC/200–240 VAC 0.4 A/0.2 A 15 W 50/60 Hz 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	CSA 950; EN 60950/IEC 60950; NOM-019-SCFI-1994; UL 1950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity Generic ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (H5484E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U6300E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6299E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) Refer to the HP Web site at www.procurve.eu/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	**General protocols** IEEE 802.3x Flow Control

HP ProCurve Wireless LAN Products

· MultiService Mobility

· Wireless Edge Services

· WLAN Management and Security

· Independent Mobility

Key features
- Single, dual, and tri radio
- IEEE 802.11a/b/g and 802.11n access points
- Self-healing, self-optimizing local mesh

Datasheet

NEW HP ProCurve MultiService Access Point Series

HP ProCurve MultiService Mobility Access Points (MSM APs) bring intelligence to the network edge by providing scalable, seamless wireless access anywhere, anytime. Their feature set is abundantly rich, dispensing multiple network services, enforcing robust security, and delivering high-performance client access—unlike "thin" or "lite" access points. An integral component of the HP ProCurve Intelligent Mobility Solution, MSM APs support a plug-and-play automatic configuration and ongoing central control by ProCurve MultiService Mobility Controllers for the highest degree of configurability and ease of management.

HP ProCurve MultiService Access Point Series

Features and benefits

Industry-leading warranty

Mobility

- Anywhere, anytime wireless coverage:

  – Single-, dual-, and tri-radio IEEE 802.11a/b/g and 802.11n access points

  – Per-radio software-selectable configuration of the 2.4 GHz and 5 GHz frequency bands

  – Plenum-rated enclosures for indoor wireless coverage

  – Self-healing, self-optimizing local mesh extends network availability to areas without an Ethernet infrastructure

  – Wi-Fi Alliance certified for interoperability with all IEEE 802.11a/b/g/n client devices

  – IEEE 802.3af Power over Ethernet (PoE) or external power cord on selected models. (The HP ProCurve MSM422 and MSM410 Access Points operate at full-power IEEE 802.11n 3x3 MIMO from a single IEEE 802.3af PoE source.)

Warranty and support

- **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

HP ProCurve MultiService Access Point Series

Specifications

	HP ProCurve MSM422 Access Point (J9359A)	HP ProCurve MSM410 Access Point (J9427A)	HP ProCurve MSM335 Access Point (J9357A)
Ports	1 RJ-45 auto-sensing 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port	1 RJ-45 auto-sensing 10/100/1000 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 serial console port	1 RJ-45 auto-sensing 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port
Physical characteristics			
Dimensions (D x W x H)	17.02 x 22.35 x 6.6 cm. (6.7 x 8.8 x 2.6 in)	15.64 x 13.17 x 4.94 cm (6.16 x 5.19 x 1.94 in.)	17.02 x 22.35 x 6.6 cm. (6.7 x 8.8 x 2.6 in)
Weight	1.81 kg (4.0 lb.)	1.36 kg (3.0 lb.)	1.81 kg (4.0 lb.)
Enclosure	Indoor, plenum rated	Indoor, plenum rated	Indoor, plenum rated
Environment			
Operating temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Operating relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 80°C (–40°F to 176°F)	–40°C to 80°C (–40°F to 176°F)	–40°C to 80°C (–40°F to 176°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Electrical characteristics			
Description	IEEE 802.3af PoE compliant; IEEE 802.3af PoE injector for Gigabit Ethernet or External power supply available as accessory.	IEEE 802.3af PoE compliant for Gigabit Ethernet	IEEE 802.3af PoE compliant; IEEE 802.3af PoE injector for Gigabit Ethernet or External power supply available as accessory.
Maximum power rating	12 W	8 W	12 W
Antenna Connector	(3) IEEE 802.11n RP-SMA, (1) IEEE 802.11a/b/g RP-SMA		(3) RP-SMA
Antenna	(2) Integrated, dual-band, omni, (3) IEEE 802.11n fixed 3x3 MIMO, 2 x IEEE 802.11a/b/g (diversity)	(3) Integrated, dual-band 2.4/5 GHz omnidirectional antennas	(3) Integrated, dual-band 2.4/5 GHz omnidirectional or directional patch antennas (per flap)
Notes		Integrated, dual-band 2.4/5 GHz omnidirectional antennas – (3) IEEE 802.11n Draft 2.0 (fixed 3x3 MIMO configuration) – Gain: 2.7 dBi @ 2.4 GHz, 6.2 dBi @ 5.25 GHz, 4.5 dBi @ 5.875 GHz	
Frequency band and Operating			
FCC (US and Canada)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.484 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels
European Union	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)		
Safety	UL 2043; UL 60950-1; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1	UL 2043; UL 60950-1; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1	UL 2043; UL 60950-1; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03
Emissions	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B		
RF Exposure	FCC Bulletin OET-65C; RSS-102	FCC Bulletin OET-65C; RSS-102	FCC Bulletin OET-65C; RSS-102
Features	Dual radio—IEEE 802.11n for high-throughput applications and IEEE 802.11a/b/g for legacy support Integrated antennas for both IEEE 802.11a/b/g (diversity) and 802.11n (3x3 MIMO) Accepts external IEEE 802.11a/b/g (non-diversity) and 802.11n (3) antennas Will operate both radios; full power on IEEE 802.3af PoE for Gigabit Ethernet	Integrated antennas for both IEEE 802.11a/b/g (diversity) and 802.11n (3x3 MIMO)	Accepts external IEEE 802.11a/b/g (non-diversity) Will operate all 3 radios; full power on IEEE 802.3af PoE for Gigabit Ethernet

HP ProCurve MultiService Access Point Series

	HP ProCurve MSM422 Access Point (J9359A)	HP ProCurve MSM410 Access Point (J9427A)	HP ProCurve MSM335 Access Point (J9357A)
Notes	IEEE 802.11a, IEEE 802.11g, IEEE 802.11b, WPA-Enterprise, WPA2-Enterprise, WMM, WMM Powersave, EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM*, IEEE 802.11d, IEEE 802.11h IEEE 802.11n Draft 2.0 Capabilities: 3x3 MIMO with 2 spatial streams, Cyclic Shift Diversity (CSD), 20 MHz and Auto 20/40 MHz channels, data rates up to 300 Mbps, Maximal Ratio Combining (MRC), transmit beamforming, Packet aggregation: A-MPDU, A-MS Maximum transmit power varies by country.	Wi-Fi compliance: IEEE 802.11n DRAFT 2.0, IEEE 802.11a, IEEE 802.11g, IEEE 802.11b, WPA-Enterprise, WPA2-Enterprise, WMM, WMM Powersave, EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM*, IEEE 802.11d, IEEE 802.11h IEEE 802.11n Draft 2.0 Capabilities: 3x3 MIMO with 2 spatial streams, Cyclic Shift Diversity (CSD), 20 MHz and Auto 20/40 MHz channels, data rates up to 300 Mbps, Maximal Ratio Combining (MRC), Transmit beamforming, Packet aggregation: A-MPDU, A-MSD Maximum transmit power varies by country.	Wi-Fi compliance: IEEE 802.11a, IEEE 802.11b, IEEE 802.11g WPA and WPA2 Wireless Multimedia (WMM), WMM Powersave EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM** IEEE 802.11d, IEEE 802.11h Maximum transmit power varies by country.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UN667E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN668E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN669E) 3-year, 24x7 software phone support, software updates (UN670E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UN683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN684E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN686E) 3-year, 24x7 SW phone support, software updates (UN685E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UN671E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN672E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN673E) 3-year, 24x7 software phone support, software updates (UN674E) Refer to the HP Web site at www.procurve.eu/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 ProCurve MSM422 Access Point (J9359A)

Radio characteristics: IEEE 802.11a/b/g + IEEE 802.11a/b/g/n Draft 2.0

Data rate	IEEE 802.11n 20 MHz Channel MCS0/8	IEEE 802.11n 20 MHz Channel MCS7/15	IEEE 802.11n 40 MHz Channel MCS0/8	IEEE 802.11n 40 MHz Channel MCS7/15	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–82 dBm	–64 dBm	–79 dBm	–61 dBm	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–94 dBm	–87 dBm
Transmit power	18 dBm	10 dBm	17 dBm	10 dBm	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

HP ProCurve MSM410 Access Point (J9427A)

Radio characteristics: IEEE 802.11a/b/g/n Draft 2.0

Data rate	IEEE 802.11n (5 GHz) 20 MHz MCS0/MCS8	IEEE 802.11n (5 GHz) 20 MHz MCS7/MCS15	IEEE 802.11n (5 GHz) 40 MHz MCS0/MCS8	IEEE 802.11n (5 GHz) 40 MHz MCS7/MCS15	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11n (2.4 GHz) 20 MHz MCS0/MCS8	IEEE 802.11n (2.4 GHz) 20 MHz MCS7/MCS15	IEEE 802.11n (2.4 GHz) 40 MHz MCS0/MCS8	IEEE 802.11n (2.4 GHz) 40 MHz MCS7/MCS15	IEEE 802.11g 6 Mbps
Receiver sensitivity	–82 dBm	–64 dBm	–79 dBm	–61 dBm	–87 dBm	–67 dBm	–82 dBm	–64 dBm	–79 dBm	–61 dBm	–87 dBm
Transmit power	18 dBm	10 dBm	17 dBm	10 dBm	18 dBm	12 dBm	19 dBm	10 dBm	17 dBm	10 dBm	18 dBm

HP ProCurve MSM335 Access Point (J9357A)

Radio characteristics: 3 IEEE 802.11a/b/g

Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–94 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

Standards and protocols (applies to all products in series)	Mobility IEEE 802.11a High Speed Physical Layer in the 5 GHz Band	IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band IEEE 802.11d Global Harmonization	IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band IEEE 802.11i Medium Access Control (MAC) Security Enhancements

Specifications (continued)

HP ProCurve MSM422 Access Point (J9359A)

MCS Index	800 nS		400 nS	
	20 MHz Rate (Mbps)	40 MHz Rate (Mbps)	20 MHz Rate (Mbps	40 MHz Rate (Mbps)
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	157.5
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300

HP ProCurve MSM410 Access Point (J9427A)

MCS Index	800 nS		400 nS	
	20 MHz Rate (Mbps)	40 MHz Rate (Mbps)	20 MHz Rate (Mbps)	40 MHz Rate (Mbps)
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54 0	28.	9 6
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	157.5
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300

HP ProCurve MultiService Access Point Series

Specifications

	HP ProCurve MSM325 Access Point (J9373A)	HP ProCurve MSM320 Access Point (J9364A)	HP ProCurve MSM310 Access Point (J9379A)
Ports	2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full	2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full	2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full
Physical characteristics			
Dimensions (D x W x H)	16.56 x 16.26 x 4.78 cm (6.52 x 6.40 x 1.88 in.)	16.56 x 16.26 x 4.78 cm (6.52 x 6.40 x 1.88 in.)	16.56 x 16.26 x 4.78 cm (6.52 x 6.40 x 1.88 in.)
Weight	1.36 kg (3.0 lb.)	1.36 kg (3.0 lb.)	1.36 kg (3.0 lb.)
Enclosure	Indoor, plenum rated	Indoor, plenum rated	Indoor, plenum rated
Environment			
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Operating relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 80°C (–40°F to 176°F)	–40°C to 80°C (–40°F to 176°F)	–40°C to 80°C (–40°F to 176°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Electrical characteristics			
Description	IEEE 802.3af PoE compliant or 5 VDC from available AC power supply	IEEE 802.3af PoE compliant or 5 VDC from available AC power supply	IEEE 802.3af PoE compliant or 5 VDC form available AC power supply
Maximum power rating	8.6 W	8.6 W	6.5 W
Antenna Connector	(4) RP-SMA with diversity	(4) RP-SMA with diversity	(2) RP-SMA with diversity
Antenna	(4) 2 dBi dual-band 2.4/5 GHz omnidirectional antennas	(4) 2 dBi dual-band 2.4/5 GHz omnidirectional antennas	(2) 2 dBi dual-band 2.4/5 GHz omnidirectional antennas
Frequency band and Operating			
FCC (US and Canada)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.484 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels
European Union	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)		
Safety	UL 2043; UL 60950; IEC 60950; EN 60950-1; CSA 22.2 No. 950-95; CAN/CSA-C22.2 No. 60950-1-03; EN 60601-1-2		
Emissions	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B		
RF Exposure	FCC Bulletin OET-65C; RSS-102; EN 50385	FCC Bulletin OET-65C; RSS-102; EN 50385	FCC Bulletin OET-65C; RSS-102; EN 50385
Features	Integrated security sensor – Integrated security sensor for use with the HP ProCurve RF Manager IDS/IPS system	Dual radio External antenna	
Notes	Maximum transmit power varies by country.	Maximum transmit power varies by country.	Maximum transmit power varies by country.

Specifications (continued)

	HP ProCurve MSM325 Access Point (J9373A)	HP ProCurve MSM320 Access Point (J9364A)	HP ProCurve MSM310 Access Point (J9379A)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UN679E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN680E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN681E) 3-year, 24x7 software phone support, software updates (UN682E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UN683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN684E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN685E) 3-year, 24x7 software phone support, software updates (UN686E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UN687E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN688E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN689E) 3-year, 24x7 software phone support, software updates (UN690E) Refer to the HP Web site at www.procurve.eu/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 ProCurve MSM325 Access Point (J9373A)

Radio characteristics: Dual IEEE 802.11a/b/g

Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

HP ProCurve MSM320 Access Point (J9364A)

Radio characteristics: Dual IEEE 802.11a/b/g

Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

HP ProCurve MSM310 Access Point (J9379A)

Radio characteristics: IEEE 802.11a/b/g

Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

Standards and protocols (applies to all products in series)	**Mobility** IEEE 802.11a High Speed Physical Layer in the 5 GHz Band	IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band IEEE 802.11d Global Harmonization	IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band IEEE 802.11i Medium Access Control (MAC) Security Enhancements

HP ProCurve MultiService Access Point Series

HP ProCurve MultiService Access Point Series accessories

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve MSM422 Access Point (J9359A)

HP ProCurve MSM335 and MSM422 Power Supply (J9406A)

HP ProCurve MSM422 AP Mounting Bracket (J9424A)

HP ProCurve MSM335 Access Point (J9357A)

HP ProCurve MSM335 and MSM422 Power Supply (J9406A)

HP ProCurve MSM325 Access Point (J9373A)

HP ProCurve MSM31x and MSM32x Power Supply (J9405A)

HP ProCurve MSM310/MSM320 AP Mounting Bracket (J9403A)

HP ProCurve MSM320 Access Point (J9364A)

HP ProCurve MSM320 RF sensor license (J9384A)

HP ProCurve MSM31x and MSM32x Power Supply (J9405A)

HP ProCurve MSM310/MSM320 AP Mounting Bracket (J9403A)

HP ProCurve MSM310 Access Point (J9379A)

HP ProCurve MSM31x and MSM32x Power Supply (J9405A)

HP ProCurve MSM310/MSM320 AP Mounting Bracket (J9403A)

Note: See details for accessories starting on page 232.

Key features

- NEMA-rated for outdoor wireless coverage
- Self-healing, self-optimizing local mesh

Datasheet

NEW HP ProCurve MultiService Mobility Outdoor Access Point Series

HP ProCurve MultiService Mobility Access Points (MSM APs) bring intelligence to the network edge by providing scalable, seamless wireless access anywhere, anytime. Their feature set is abundantly rich, dispensing multiple network services, enforcing robust security, and delivering high-performance client access, unlike "thin" or "lite" access points. An integral component of the HP ProCurve Intelligent Mobility Solution, MSM APs support a plug-and-play automatic configuration and ongoing central control by ProCurve MultiService Mobility Controllers for the highest degree of configurability and ease of management.

HP ProCurve MultiService Mobility Outdoor Access Point Series

Features and benefits

Mobility
- Anywhere, anytime wireless coverage:
  – Single and dual-radio IEEE 802.11a/b/g access points

  – Per-radio software-selectable configuration of the 2.4 GHz and 5 GHz frequency bands

  – NEMA-rated enclosures for outdoor wireless coverage

  – Self-healing, self-optimizing local mesh extends network availability to areas without an Ethernet infrastructure

  – Wi-Fi Alliance certified for interoperability with all IEEE 802.11a/b/g client devices

  – IEEE 802.3af Power over Ethernet (PoE)

Warranty and support
- **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve MultiService Mobility Outdoor Access Point Series accessories

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve MSM320-R Access Point (J9368A)
HP ProCurve MSM320 RF sensor license (J9384A)

Note: See details for accessories starting on page 213.

HP ProCurve MultiService Mobility Outdoor Access Point Series

Specifications

	HP ProCurve MSM320-R Access Point (J9368A)	**HP ProCurve MSM310-R Access Point (J9383A)**
Ports	1 RJ-45 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full	1 RJ-45 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full
Physical characteristics		
Dimensions (D x W x H)	21.44 x 18.42 x 5.44 cm (8.44 x 7.25 x 2.14 in.)	21.44 x 18.42 x 5.44 cm (8.44 x 7.25 x 2.14 in.)
Weight	4.08 kg (9 lb.)	4.08 kg (9 lb.)
Enclosure	Die cast aluminum with 3-point silicone rubber gasket; compliant with IP65 and EN61373	Die cast aluminum with 3-point silicone rubber gasket; compliant with IP65 and EN61373
Mounting	Includes pole top U-bolts and wall mounting brackets	Includes pole top U-bolts and wall mounting brackets
Environment		
Operating temperature	–20°C to 50°C (–4°F to 122°F)	–20°C to 50°C (–4°F to 122°F)
Operating relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 80°C (–40°F to 176°F)	–40°C to 80°C (–40°F to 176°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing
Electrical characteristics		
Description	IEEE 802.3af PoE compliant	IEEE 802.3af PoE compliant
Maximum power rating	8.6 W	6.5 W
Antenna Connector	(2) Waterproof N-type female (one per radio)	(2) Waterproof N-type female with diversity
Antenna	(2) 5.5 dBi 2.4 GHz omnidirectional	(2) 5.5 dBi 2.4 GHz omnidirectional
Frequency band and Operating		
FCC (US and Canada)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)
European Union	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)
Radio	RSS-210 (Canada); ARIB STD-T66; ARIB STD-T71; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ETSI 301 893; ETSI 300 328	
Safety	UL 60950-1; EN 60950-1	UL 60950-1; EN 60950-1
Emissions	EN 301 489-1; EN 301 489-17; FCC Part 15, Class B	EN 301 489-1; EN 301 489-17; FCC Part 15, Class B
RF Exposure	RSS-102; EN 50385	RSS-102; EN 50385
Notes	IEEE 802.11a, IEEE 802.11b, IEEE 802.11g WPA and WPA2 Wireless Multimedia (WMM), WMM Powersave EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM** IEEE 802.11d, IEEE 802.11h Maximum transmit power varies by country.	
Services	3-year, parts only, global next-day advance exchange (UN554E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UN551E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN552E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN553E) 1 Year Post Warranty Next Bus. Day Exchange (UN638PE) 1 Year Post Warranty 4 hour response 13x5 Onsite Support (UN635PE) 1 Year Post Warranty 4 hour response 24x7 Onsite Hardware Support (UN636PE) 1 Year Post Warranty Hardware and Software 24x7 Phone Support (UN367PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UN650E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UN647E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN648E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN649E) 1 Year Post Warranty Next Bus. Day Exchange (UN654PE) 1 Year Post Warranty 4 hour response 13x5 Onsite Support (UN651PE) 1 Year Post Warranty 4 hour response 24x7 Onsite Hardware Support (UN652PE) 1 Year Post Warranty Hardware and Software 24x7 Phone Support (UN653PE) Refer to the HP Web site at www.procurve.eu/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.

Specifications (continued)

	HP ProCurve MSM320-R Access Point (J9368A)			HP ProCurve MSM310-R Access Point (J9383A)		
HP ProCurve MSM320-R Access Point (J9368A)						
Radio characteristics: Dual IEEE 802.11a/b/g						
Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm
HP ProCurve MSM310-R Access Point (J9383A)						
Radio characteristics: IEEE 802.11a/b/g						
Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm
Standards and protocols (applies to all products in series)	**Mobility** IEEE 802.11a High Speed Physical Layer in the 5 GHz Band		IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band IEEE 802.11d Global Harmonization		IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band IEEE 802.11i Medium Access Control (MAC) Security Enhancements	

Key features
- Enhanced WLAN architecture reduces LAN traffic
- IEEE 802.11n capable
- Rock-solid WLAN security

Datasheet

NEW HP ProCurve MultiService Controller Series

Working with HP ProCurve MultiService Mobility Access Points, HP ProCurve MultiService Mobility Controllers deliver a high-performance networking solution. The enhanced architecture scales from IEEE 802.11b to 802.11n without expensive controller upgrades. Robust identity and roles-based user account profiles, as well as Virtual Service Communities (VSCs) with independently configurable Quality of Service (QoS), authentication, encryption, and VLAN support, deliver intelligence to the edge of the network. Scalable from branch offices to large organizations, the controllers deliver fast-roaming and ultraspeed hand-offs. Wireless security is rock solid with support for the internal and external authentication, authorization, and accounting (AAA) servers, built-in stateful firewall, per-user VLAN mapping, and mutual controller/access point (AP) authentication.

HP ProCurve MultiService Controller Series

Features and benefits

Mobility

- **Solutions enhanced for businesses:** The ProCurve MSM700 Controller Series delivers services for healthcare, hospitality, education, manufacturing, transportation, and service providers

- **Powerful security capabilities:** Robust, identity- and roles-based user account profiles use embedded or external AAA services

- **Simplified management with central control:** The ProCurve MSM700 Controller Series reduces the time and complexity of managing a wireless network. The solutions control hundreds of APs from a single management interface and help ensure that a consistent set of services is delivered throughout the wireless network. Pushing authentication, encryption, QoS enforcement, and access policies to the access points delivers the intelligence to the edge of your mobile network

- **Capacity that scales from small office to enterprise campus:** Efficiently deploy wireless LAN (WLAN) capacity with the MSM710 controller, which controls 10 APs, the MSM730 controller, which controls 40 APs, and the MSM750 controller, which controls 200 APs—all with the ability to interconnect in mobility clusters

- **Solutions that cover the most important WLAN applications:** The MSM700 controller series and the rest of the ProCurve MultiService Mobility Solution deliver rich application support, including guest access, location-based services, Voice over Wi-Fi (VoWi-Fi), hotspot, surveillance, and secure point of sale

Warranty and support

- **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available.

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve MultiService Controller Series accessories

HP ProCurve MSM710 Mobility Controller (J9325A)

HP ProCurve MSM710 Controller Rack Mounting Kit (J9404A)

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve MSM710 Access Controller (J9328A)

HP ProCurve MSM710 Controller Rack Mounting Kit (J9404A)

HP ProCurve MSM710 Mobility Services upgrade (J9331A)

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve MSM730 Access Controller (J9329A)

HP ProCurve MSM730 Mobility Services upgrade (J9332A)

HP ProCurve MSM750 Access Controller (J9330A)

HP ProCurve MSM750 Mobility Services upgrade (J9333A)

Note: See details for accessories starting on page 213.

HP ProCurve MultiService Controller Series

Specifications

	HP ProCurve MSM710 Mobility Controller (J9325A)	HP ProCurve MSM730 Mobility Controller (J9326A)	HP ProCurve MSM750 Mobility Controller (J9327A)
Ports	2 RJ-45 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 1 RS-232C DB-9 console port	1 RS-232C DB-9 console port 2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full	2 RJ-45 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 1 RJ-45 serial console port
Physical characteristics			
Dimensions (D x W x H)	19.05 x 25.4 x 4.42 cm (7.5 x 10 x 1.74 in.)	36.0 x 42.8 x 4.4 cm (14.17 x 16.85 x 1.73 in.)	43.7 x 42.8 x 4.4 cm (17.2 x 16.85 x 1.73 in.) (1U height)
Weight	2.72 kg. (6 lb)	9.8 kg (21.61 lb.)	16 kg (35.27 lb.)
Mounting	1U rack mountable with HP ProCurve MSM710 Controller Rack Mounting Kit (J9404A)	1U rack mount	1U rack mount
Environment			
Operating temperature	5°C to 50°C (41°F to 122°F)	0°C to 50°C (32°F to 122°F)	5°C to 50°C (41°F to 122°F)
Operating relative humidity	20% to 90%, non-condensing	20% to 90%, non-condensing	20% to 90%, non-condensing
Non-operating/Storage temperature	–40°C to 80°C (–40°F to 176°F)	0°C to 70°C (32°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Electrical characteristics			
Description	IEEE 802.3af PoE compliant, or 48 VDC input from included AC power supply		
Voltage	100–240 VAC	100–240 VAC	100240 VAC
Current	0.2 A/0.1 A	1.0 A/0.4 A	1.0 A/0.4 A
Maximum power rating	6 W	100 W	100 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Safety	UL 60950-1	UL 60950-1	UL 60950-1
Emissions	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A
Notes	Supports up to 10 IEEE 802.11a/b/g/n MSM Access Points Supports up to 100 simultaneous guest access users Provides the following services · WLAN management · Guest access · Ultraspeed roaming	Supports up to 40 IEEE 802.11a/b/g/n MSM Access Points Supports up to 500 simultaneous guest access users Provides the following services · WLAN management · Guest access · Ultraspeed roaming	Supports up to 200 IEEE 802.11a/b/g/n MSM Access Points Supports up to 2,000 simultaneous guest access users Provides the following services · WLAN management · Guest access · Ultraspeed roaming
Services	3-year, parts only, global next-day advance exchange (UN535E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UN536E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN537E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN538E) 1-year post-warranty next-bus. day exchange (UN539PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UN540PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UN541PE) 1-year post-warranty hardware and software 24x7 phone support (UN542PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UM497E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UM498E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UM499E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM500E) 1-year post-warranty next-bus. day exchange (UM501PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM502PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM503PE) 1-year post-warranty hardware and software 24x7 phone support (UM504PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UM457E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UM458E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UM459E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM460E) 1-year post-warranty next-bus. day exchange (UM461PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM462PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM463PE) 1-year post-warranty hardware and software 24x7 phone support (UM464PE) Refer to the HP Web site at www.procurve.eu/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 ProCurve MultiService Controller Series

Specifications

	HP ProCurve MSM710 Access Controller (J9328A)	HP ProCurve MSM730 Access Controller (J9329A)	HP ProCurve MSM750 Access Controller (J9330A)
Ports	2 RJ-45 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 half or full; 1000Base-T: full only 1 RS-232C DB-9 console port	1 RS-232C DB-9 console port 2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full	2 RJ-45 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 1 RJ-45 serial console port
Physical characteristics Dimensions (D x W x H) Weight	19.1 x 25.4 x 4.4 cm (7.52 x 10 x 1.73 in.) 2.72 kg. (6 lb)	36.0 x 42.8 x 4.4 cm (14.17 x 16.85 x 1.73 in.) 9.8 kg (21.61 lb.)	43.7 x 42.8 x 4.4 cm (17.2 x 16.85 x 1.73 in.) (1U height) 16 kg (35.27 lb.)
Mounting	1U rack mountable with HP ProCurve MSM710 Controller Rack Mounting Kit (J9404A)	1U rack mount	1U rack mount
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity	5ºC to 50ºC (41ºF to 122ºF) 20% to 90%, non-condensing –40ºC to 80ºC (–40ºF to 176ºF) 5% to 95%, non-condensing	0ºC to 50ºC (32ºF to 122ºF) 20% to 90%, non-condensing 0ºC to 70ºC (32ºF to 158ºF) 5% to 95%, non-condensing	5ºC to 50ºC (41ºF to 122ºF) 20% to 90%, non-condensing –40ºC to 70ºC (–40ºF to 158ºF) 5% to 95%, non-condensing
Electrical characteristics Description Voltage Current Maximum power rating Frequency	IEEE 802.3af PoE compliant, or 48 VDC input from included AC power supply 100–240 VAC 0.2 A/0.1 A 6 W 50/60 Hz	100–240 VAC 1.0 A/0.4 A 100 W 50/60 Hz	100240 VAC 1.0 A/0.4 A 100 W 50/60 Hz
Safety	UL 60950-1	UL 60950-1	UL 60950-1
Emissions	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A	FCC part 15 Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; ICES-003; AS/NZS 3548 Class A
Notes	Supports up to 10 IEEE 802.11a/b/g/n MSM Access Points Supports up to 100 simultaneous guest access users Provides the following services · WLAN management · Guest access	Supports up to 40 IEEE 802.11a/b/g/n MSM Access Points Supports up to 500 simultaneous guest access users Provides the following services · WLAN management · Guest access	Supports up to 200 IEEE 802.11a/b/g/n MSM Access Points Supports up to 2,000 simultaneous guest access users Provides the following services · WLAN management · Guest access
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UN639E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UN640E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN641E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN642E) 1-year post-warranty next-bus. day exchange (UN643PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UN644PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UN645PE) 1-year post-warranty hardware and software 24x7 phone support (UN646PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UM505E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UM506E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UM507E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM508E) 1-year post-warranty next-bus. day exchange (UM509PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM510PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM525PE) 1-year post-warranty hardware and software 24x7 phone support (UN526PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UM473E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UM474E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UM475E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM476E) 1-year post-warranty next-bus. day exchange (UM477PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM478PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM479PE) 1-year post-warranty hardware and software 24x7 phone support (UM480PE) Refer to the HP Web site at www.procurve.eu/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.

Datasheet

HP ProCurve Radio Port 210

The HP ProCurve Radio Port 210, with support for IEEE 802.11g wireless operation, works in conjunction with HP ProCurve Wireless Edge Services xl and zl Modules to deliver advanced wireless services. These services help provide a highly secure and resilient wireless LAN that dynamically adapts to the demands of a mobile network. The ProCurve Radio Port 210, with integrated antenna design, provides a cost-effective solution for office-area wireless deployments that do not require IEEE 802.11a wireless client support.

HP ProCurve Radio Port 210

Features and benefits

Industry-leading warranty

Mobility

- **Layer 3 radio port adoption:** Network-wide adoption and auto-configuration of ProCurve radio ports enable rapid deployment of a wireless LAN with minimal network reconfiguration. ProCurve radio ports traverse Layer 3 networks to locate the designated ProCurve Wireless Edge Services Module using information returned in a DHCP offer or as part of the DNS request. Once adopted by the wireless module, each radio port receives all configuration parameters, including security and BSSID information, to enable wireless operation

- **Layer 2 radio port adoption:** Simply connect each ProCurve radio port to a Power over Ethernet (PoE)-enabled network port, and the device will be automatically discovered and configured by the HP ProCurve Wireless Edge Services xl and zl Modules

Connectivity

- **IEEE 802.11g single-radio design:** provides a highly cost-effective solution for wireless LAN deployments when IEEE 802.11a wireless client support is not a requirement

- **Integrated diversity antenna with omnidirectional coverage:** provides robust wireless LAN coverage for open office environments

- **International country configuration:** Centrally configured on the HP ProCurve Wireless Edge Services xl and zl Modules, all ProCurve radio ports automatically adjust to match selected country regulatory requirements

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

- **Adjustable output power:** controls cell size for high-density access point deployments

Resiliency and high availability

- **Network self-healing:** In the event of a radio port failure, adjacent ProCurve radio ports will adjust transmit power and data rates to maintain wireless LAN coverage

- **RF detection and interference avoidance:** ProCurve radio ports automatically recalibrate channel assignments to avoid environmental or other IEEE 802.11-based wireless interference

Security

- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic

- **IEEE 802.1X client:** enables secure authentication of ProCurve radio ports on network ports protected by IEEE 802.1X port-based authentication

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP), TLS, TTLS, PEAP, and SIM, with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

- **Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process

- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **4 BSSIDs/16 SSIDs per radio:** Multiple wireless broadcast domains with separate security, authentication, and policy configuration per SSID provide access control of network resources based on user authentication and level of trusted security between the wireless user and the network

- **Neighbor access point (rogue AP) detection:** Each ProCurve radio port simultaneously scans for the presence of other access points while servicing wireless clients. Radio ports can be configured as dedicated RF monitors for continuous monitoring of the RF environment

- **Inter-station traffic blocking:** prevents communication between client devices associated on the same radio port

- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network

HP ProCurve Radio Port 210

Quality of Service (QoS)

· **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications

· **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality

· **Unscheduled Automatic Power Save Delivery (uAPSD):** extends the battery life for wireless devices such as VoWLAN handsets

Warranty and support

· **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Radio Port 210 accessories

HP ProCurve 1-Port Power Injector (J9407A)

Note: See details for accessories starting on page 213.

HP ProCurve Radio Port 210

Specifications

HP ProCurve Radio Port 210 (J9004A)

Ports	1 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full

Physical characteristics

Dimensions (D x W x H)	17.53 x 24.89 x 4.24 cm (6.9 x 9.8 x 1.67 in.)
Weight	0.54 kg (1.2 lb.)

Mounting	Ceiling mount to suspended ceiling T-bar or wall mount

Environment

Operating temperature	0°C to 40°C (32°F to 104°F)
Operating relative humidity	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing
Altitude	Up to 3 km (10,000 ft.)

Electrical characteristics

Description	Voltage: 48 VDC (PoE)
Maximum heat dissipation	19 kJ/hr (18 BTU/hr)
Current	0.104 A
Maximum power rating	5 W

Frequency band and Operating channels

FCC (US and Canada)	2.412–2.462 GHz (11 channels)
European Union	2.412–2.472 GHz (13 channels)
Japan	2.412–2.484 GHz (14 channels)
China	2.412–2.472 GHz (13 channels)
Singapore	2.412–2.472 GHz (13 channels)
Taiwan	2.412–2.4624 GHz (11 channels)

Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; EN 301 893 (Europe); ARIB STD-T66; ARIB STD-T71; ARIB STD-33

Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1

Emissions	EN 60601-1-2; EN 301 489-1; EN 301 489-17; FCC Part 15.107; FCC Part 15.109; ICES-003 (Canada)

RF Exposure	FCC Bulletin OET-65C; IEEE C95.1; RSS-102

Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UD542E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UD543E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UD544E) 3-year, 24x7 SW phone support, software updates (UF794E)) Refer to the HP Web site at www.procurve.eu/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 ProCurve Radio Port 210 (J9004A)

Radio characteristics: IEEE 802.11b
Maximum transmit power: 17.5 dBm (EIRP)

Data rate	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
Receiver sensitivity	–84 dBm	–87 dBm	–88 dBm	–90 dBm
Transmit power	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm

IEEE 802.11g

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–68 dBm	–70 dBm	–75 dBm	–79 dBm	–81 dBm	–85 dBm	–87 dBm	–88 dBm
Transmit power	12.5 dBm	12.5 dBm	14 dBm	14 dBm	16.5 dBm	16.5 dBm	17 dBm	17 dBm

Datasheet

HP ProCurve Radio Port 220

The HP ProCurve Radio Port 220, with simultaneous IEEE 802.11a and 802.11g wireless operation, works in conjunction with HP ProCurve Wireless Edge Services xl and zl Modules to deliver advanced wireless services. These services enable a highly secure and resilient wireless LAN that dynamically adapts to the demands of a mobile network. With per-radio external diversity antenna support, the ProCurve Radio Port 220 is ideal for wireless LAN installations where expanded wireless coverage or physical device placement requires the use of external antennas.

HP ProCurve Radio Port 220

Features and benefits

Industry-leading warranty

Mobility

- **Layer 3 radio port adoption:** Network-wide adoption and auto-configuration of ProCurve radio ports enable rapid deployment of a wireless LAN with minimal network reconfiguration. ProCurve radio ports traverse Layer 3 networks to locate the designated ProCurve Wireless Edge Services Module using information returned in a DHCP offer or as part of a DNS request. Once adopted by the wireless module, each radio port receives all configuration parameters, including security and BSSID information, to enable wireless operation

- **Layer 2 radio port adoption:** Simply connect each ProCurve radio port to a Power over Ethernet (PoE)-enabled network port, and the device will be automatically discovered and configured by the ProCurve Wireless Edge Services Module

Connectivity

- **Simultaneous IEEE 802.11a and 802.11g radio operation:** supports dual-band wireless clients and provides backward compatibility for IEEE 802.11b wireless devices

- **Per-radio external diversity antenna support:** specifically designed for installations where expanded wireless coverage or physical device placement requires the use of external antennas

- **IEEE 802.11h International Telecommunication Union (ITU) compliant:** Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) are employed to automatically select another channel and adjust transmit power to reduce interference with systems such as radar, if detected on the same channel

- **International country configuration:** Centrally configured on the HP ProCurve Wireless Edge Services xl and zl Modules, all ProCurve radio ports automatically adjust to match selected country regulatory requirements

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

- **Adjustable output power:** controls cell size for high-density access point deployments

Resiliency and high availability

- **Network self-healing:** In the event of a radio port failure, adjacent ProCurve radio ports adjust transmit power and data rates to maintain wireless LAN coverage

- **RF detection and interference avoidance:** ProCurve radio ports automatically recalibrate channel assignments to avoid environmental or other IEEE 802.11-based wireless interference

Security

- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic

- **IEEE 802.1X client:** enables secure authentication of ProCurve radio ports on network ports protected by IEEE 802.1X port-based authentication

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP), TLS, TTLS, PEAP, and SIM, with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

- **Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process

- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **4 BSSIDs/16 SSIDs per radio:** Multiple wireless broadcast domains with separate security, authentication, and policy configuration per SSID provide access control of network resources based on user authentication and level of trusted security between the wireless user and the network

- **Neighbor access point (rogue AP) detection:** Each ProCurve radio port simultaneously scans for the presence of other access points while servicing wireless clients. Radio ports can be configured as dedicated RF monitors for continuous monitoring of the RF environment

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HP ProCurve Radio Port 220

- **Inter-station traffic blocking:** prevents communication between client devices associated on the same radio port
- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network

Quality of Service (QoS)

- **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications
- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality
- **Unscheduled Automatic Power Save Delivery (uAPSD):** extends the battery life for wireless devices such as VoWLAN handsets

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Radio Port 220 accessories

HP ProCurve Antenna Lightning Arrester (J8996A)

HP ProCurve 14 dBi Yagi Antenna (J8448B)

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve 3 dBi Dual Band Diversity Antenna (J8997A)

HP ProCurve 6 dBi 5 GHz Omnidirectional Antenna (J8998A)

HP ProCurve 7 dBi Dual Band Directional Antenna (J8999A)

HP ProCurve 14 dBi 5 GHz Directional Antenna (J9000A)

HP ProCurve 5 dBi Indoor/Outdoor Omnidirectional Antenna (J8441A)

HP ProCurve 8 dBi Outdoor Omnidirectional Antenna (J8444A)

Note: See details for accessories starting on page 213.

HP ProCurve Radio Port 220

Specifications

HP ProCurve Radio Port 220 (J9005A)

Ports	1 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full
Physical characteristics	
Dimensions (D x W x H)	14.61 x 23.5 x 2.54 cm (5.75 x 9.25 x 1.0 in.)
Weight	0.59 kg (1.3 lb.)
Mounting	Ceiling mount (above ceiling tile) or wall mount (plenum rated)
Environment	
Operating temperature	–20°C to 50°C (–4°F to 122°F)
Operating relative humidity	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing
Altitude	Up to 3 km (10,000 ft.)
Electrical characteristics	
Description	Voltage: 48 VDC (PoE)
Maximum heat dissipation	25 kJ/hr (24 BTU/hr)
Current	0.148 A
Maximum power rating	7 W
Frequency band and Operating channels	
United States	2.412–2.462 GHz (11 channels) 5.150–5.250 GHz (4 channels) 5.725–5.825 GHz (4 channels)
European Union	2.412–2.472 GHz (13 channels) 5.150–5.250 GHz (4 channels)
Japan	2.412–2.484 GHz (14 channels) 5.150–5.350 GHz (8 channels)
China	2.412–2.472 GHz (13 channels) 5.725–5.825 GHz (4 channels)
Singapore	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Taiwan	2.412–2.462 GHz (11 channels) 5.250–5.350 GHz (4 channels) 5.725–5.825 GHz (4 channels)
Canada	2.412–2.462 GHz (11 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; EN 301 893 (Europe); ARIB STD-T66; ARIB STD-T71; ARIB STD-33
Safety	UL 2043; UL 60950-1; CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1
Emissions	EN 60601-1-2; EN 301 489-1; EN 301 489-17; FCC Part 15.107; FCC Part 15.109; ICES-003 (Canada)
RF Exposure	FCC Bulletin OET-65C; IEEE C95.1; RSS-102
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UD542E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UD543E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UD544E) 3-year, 24x7 SW phone support, software updates (UF794E)) Refer to the HP Web site at www.procurve.eu/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 ProCurve Radio Port 220

HP ProCurve Radio Port 220 (J9005A)

HP ProCurve Radio Port 220 (J9005A)

Radio characteristics: IEEE 802.11b
Maximum transmit power: 17.5 dBm (EIRP)

Data rate	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps				
Receiver sensitivity	–84 dBm	–87 dBm	–88 dBm	–90 dBm				
Transmit power	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm				

IEEE 802.11g

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–68 dBm	–70 dBm	–75 dBm	–79 dBm	–81 dBm	–85 dBm	–87 dBm	–88 dBm
Transmit power	12.5 dBm	12.5 dBm	14 dBm	14 dBm	16.5 dBm	16.5 dBm	17 dBm	17 dBm

IEEE 802.11a

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–68 dBm	–70 dBm	–75 dBm	–79 dBm	–81 dBm	–85 dBm	–87 dBm	–88 dBm
Transmit power	12 dBm	12 dBm	14 dBm	14 dBm	16 dBm	16 dBm	17.5 dBm	17.5 dBm

Datasheet

HP ProCurve Radio Port 230

The HP ProCurve Radio Port 230, with simultaneous IEEE 802.11a and 802.11g wireless operation, works in conjunction with HP ProCurve Wireless Edge Services xl and zl Modules to deliver advanced wireless services. These services enable a highly secure and resilient wireless LAN that dynamically adapts to the demands of a mobile network.

HP ProCurve Radio Port 230

Features and benefits

Industry-leading warranty

Mobility

- **Layer 3 radio port adoption:** Network-wide adoption and auto-configuration of ProCurve radio ports enable rapid deployment of a wireless LAN with minimal network reconfiguration. ProCurve radio ports traverse Layer 3 networks to locate the designated ProCurve Wireless Edge Services Module using information returned in a DHCP offer or as part of a DNS request. Once adopted by the wireless module, each radio port receives all configuration parameters, including security and BSSID information to enable wireless operation

- **Layer 2 radio port adoption:** Simply connect each ProCurve radio port to a Power over Ethernet (PoE)-enabled network port, and the device will be automatically discovered and configured by the ProCurve Wireless Edge Services Module

Connectivity

- **Simultaneous IEEE 802.11a and 802.11g radio operation:** supports dual-band wireless clients and provides backward compatibility for IEEE 802.11b wireless devices

- **Per-radio integrated diversity antenna with omnidirectional coverage:** provides robust, dual-radio wireless LAN coverage for open office environments

- **IEEE 802.11h International Telecommunication Union (ITU) compliant:** Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) are employed to automatically select another channel and adjust transmit power to reduce interference with systems such as radar, if detected on the same channel

- **International country configuration:** Centrally configured on the HP ProCurve Wireless Edge Services xl and zl Modules, all ProCurve radio ports automatically adjust to match selected country regulatory requirements

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

- **Adjustable output power:** controls cell size for high-density access point deployments

Resiliency and high availability

- **Network self-healing:** In the event of a radio port failure, adjacent ProCurve radio ports adjust transmit power and data rates to maintain wireless LAN coverage

- **RF detection and interference avoidance:** ProCurve radio ports automatically recalibrate channel assignments to avoid environmental or other IEEE 802.11-based wireless interference

Security

- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic

- **IEEE 802.1X client:** enables secure authentication of ProCurve radio ports on network ports protected by IEEE 802.1X port-based authentication

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP), TLS, TTLS, PEAP, and SIM, with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

- **Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process

- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **4 BSSIDs/16 SSIDs per radio:** Multiple wireless broadcast domains with separate security, authentication, and policy configuration per SSID provide access control of network resources based on user authentication and level of trusted security between the wireless user and the network

- **Neighbor access point (rogue AP) detection:** Each ProCurve radio port simultaneously scans for the presence of other access points while servicing wireless clients. Radio ports can be configured as dedicated RF monitors for continuous monitoring of the RF environment

Features and benefits (continued)

- **Inter-station traffic blocking:** prevents communication between client devices associated on the same radio port

- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network

Quality of Service (QoS)

- **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications

- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality

- **Unscheduled Automatic Power Save Delivery (uAPSD):** extends the battery life for wireless devices such as VoWLAN handsets

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Radio Port 230

Specifications

HP ProCurve Radio Port 230 (J9006A)

Ports	1 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX)
	  Media type: Auto-MDIX
	  Duplex: half or full

Physical characteristics

Dimensions (D x W x H)	17.53 x 24.89 x 4.24 cm (6.9 x 9.8 x 1.67 in.)
Weight	0.59 kg (1.3 lb.)

Mounting	Ceiling mount to suspended ceiling T-bar or wall mount

Environment

Operating temperature	0°C to 40°C (32°F to 104°F)
Operating relative humidity	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing
Altitude	Up to 3 km (10,000 ft.)

Electrical characteristics

Description	Voltage: 48 VDC (PoE)
Maximum heat dissipation	25 kJ/hr (24 BTU/hr)
Current	0.148 A
Maximum power rating	7 W

Frequency band and Operating channels

United States	2.412–2.462 GHz (11 channels) 5.150–5.250 GHz (4 channels) 5.725–5.825 GHz (4 channels)
European Union	2.412–2.472 GHz (13 channels) 5.150–5.250 GHz (4 channels)
Japan	2.412–2.484 GHz (14 channels) 5.150–5.350 GHz (8 channels)
China	2.412–2.472 GHz (13 channels) 5.725–5.825 GHz (4 channels)
Singapore	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Taiwan	2.412–2.462 GHz (11 channels) 5.250–5.350 GHz (4 channels) 5.725–5.825 GHz (4 channels)
Canada	2.412–2.462 GHz (11 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)

Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; EN 301 893 (Europe); ARIB STD-T66; ARIB STD-T71; ARIB STD-33
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1
Emissions	EN 60601-1-2; EN 301 489-1; EN 301 489-17; FCC Part 15.107; FCC Part 15.109; ICES-003 (Canada)
RF Exposure	FCC Bulletin OET-65C; IEEE C95.1; RSS-102
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UD542E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UD543E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UD544E) 3-year, 24x7 SW phone support, software updates (UF794E)) Refer to the HP Web site at www.procurve.eu/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 ProCurve Radio Port 230

Specifications (continued)

HP ProCurve Radio Port 230 (J9006A)

Radio characteristics: IEEE 802.11b
Maximum transmit power: 17.5 dBm (EIRP)

Data rate	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps				
Receiver sensitivity	–84 dBm	–87 dBm	–88 dBm	–90 dBm				
Transmit power	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm				

IEEE 802.11g

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–68 dBm	–70 dBm	–75 dBm	–79 dBm	–81 dBm	–85 dBm	–87 dBm	–88 dBm
Transmit power	12.5 dBm	12.5 dBm	14 dBm	14 dBm	16.5 dBm	16.5 dBm	17 dBm	17 dBm

IEEE 802.11a

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–68 dBm	–70 dBm	–75 dBm	–79 dBm	–81 dBm	–85 dBm	–87 dBm	–88 dBm
Transmit power	12 dBm	12 dBm	14 dBm	14 dBm	16 dBm	16 dBm	17.5 dBm	17.5 dBm

Datasheet

HP ProCurve Wireless Edge Services zl Module

Working in conjunction with ProCurve radio ports, the HP ProCurve Wireless Edge Services zl Module provides centralized wireless LAN configuration and management of advanced wireless services, enabling a resilient, highly secure, mobile network. With the addition of the module, the HP ProCurve Switch 5400zl Series and Switch 8212zl enable network administrators to centrally manage a unified wired and wireless network using the complete HP ProCurve Manager networking management suite. This centralized approach to wired and wireless management streamlines device configuration. It enables network monitoring and response to wired and wireless network threats and administration of security and role-based user policies that are enforced at the edge of the network, regardless of how or where the user connects.

HP ProCurve Wireless Edge Services zl Module

Features and benefits

Industry-leading warranty

Mobility

- **Layer 3 radio port adoption:** Network-wide adoption and auto-configuration of ProCurve radio ports enable rapid deployment of a wireless LAN with minimal network reconfiguration. By enabling radio port deployment at Layer 3, the wireless network provides fast network roaming to maintain uninterrupted application persistence

- **Layer 3 mobility domain:** When configured as part of a Layer 3 mobility domain, ProCurve Wireless Edge Services zl Modules maintain client network connectivity as users roam across subnet boundaries and from module to module. A mobility domain may include up to 12 ProCurve Wireless Edge Services zl Modules

- **Guest accounts:** The ProCurve Wireless Edge Services zl Module provides secure, Web-authenticated guest access using the built-in RADIUS server. Guest account creation includes randomly generated or predefined individual user credentials and duration of access, including time of day. Termination of network access privileges is immediate upon expiration of the guest account

- **Guest administration:** Assigned by the network administrator, guest administration privileges permit restricted access to the Web page used to manage guest accounts hosted internally on the Wireless Edge Services zl Module. Guest administrators may create, print, and delete guest accounts

Management

- **Centralized management:** A single point to configure system-wide wireless LAN setup and operation is provided, including SSID, security, and authentication options as well as advanced wireless services. Wireless LAN settings are automatically administered to designated ProCurve radio ports, eliminating the cost and time associated with individual configuration of access points

- **Zero-configuration deployment:**
  - **Automatic wireless LAN provisioning:** Upon installation of a Wireless Edge Services zl Module, the switch will automatically configure the module to discover and adopt ProCurve radio ports
  - **Layer 2 auto radio port discovery:** Simply connect each ProCurve radio port to a Power over Ethernet (PoE)-enabled network port, and the device will be automatically discovered and configured by the Wireless Edge Services zl Module

- **Wireless sFlow support:** With addition of sFlow sampling of wireless traffic, management applications such as ProCurve Manager Plus or other wireless sFlow-capable network analyzers enable unified network visibility into traffic metrics—including wired and wireless network top talkers, top applications, and network connections. Wireless sFlow, when used in conjunction with ProCurve Network Immunity Manager, provides rapid identification and response to specific network threats on wired and wireless network connections

Connectivity

- **Modular network connectivity:** The modular design of the ProCurve Switch 5400zl Series and Switch 8212zl provides a choice of port type, density, and Power over Ethernet capability to simplify network deployment, with expansion to scale as network needs change

- **Scalable radio architecture:** The ProCurve family of radio ports provides choice and flexibility to address a wide range of deployment needs. Network architects can choose between flexible dual-radio (IEEE 802.11a and 802.11g) and highly cost-effective single-radio (IEEE 802.11g) designs, integrated or external antenna configurations, and customized housings for office area and in-ceiling deployment

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

- **Adjustable output power:** controls cell size for high-density access point deployments

- **IEEE 802.11h International Telecommunication Union (ITU) compliant:** employs Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) to automatically select another channel and adjust transmit power to reduce interference with systems such as radar, if it is detected on the same channel

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

HP ProCurve Wireless Edge Services zl Module

· **International country configuration:** Centrally configured on the Wireless Edge Services zl Module, all ProCurve radio ports automatically adjust to match selected country regulatory requirements

Resiliency and high availability

· **Network self-healing:** In the event of a radio port failure, the module will automatically adjust transmit power and data rate on adjacent ProCurve radio ports to maintain wireless LAN coverage

· **RF detection and interference avoidance:** The system automatically recalibrates radio port channel assignments to avoid environmental or other IEEE 802.11-based wireless interference

· **Module redundancy:** If a primary Wireless Edge Services zl Module should fail, the HP ProCurve Redundant Wireless Services zl Module will automatically adopt the radio ports that were associated with the primary module

· **Module power redundancy:** As an integrated service module for the ProCurve Switch 5400zl Series and Switch 8212zl, the module leverages the fully redundant, hot-swappable power supplies of the chassis for higher service uptime

Security

· **Stateful packet inspection firewall:** inspects and drops routed wireless packets with invalid TCP flags or corrupted packets and stops common denial-of-service attacks; dropped packets are logged with the name and time of the attack

· **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number

· **Network address translation (NAT):** Choice of dynamic or static NAT preserves a network's IP address pool or conceals the private address of network resources, such as Web servers, made accessible to users of a guest or public wireless LAN

· **Enhanced Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process. In addition, the Wireless Edge Services zl Module can store custom Web pages or direct users to custom Web authentication pages on an external Web server

· **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

· **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

· **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP) MD-5, TLS, TTLS, and PEAP with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

· **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic

· **HP ProCurve Identity Driven Manager (IDM) security and access control:**

– **Per-user ACLs:** User access to specific network resources is permitted or denied based on user identity and time of day, so multiple types of users (employees, visitors, temporary workforce) on the same network can access specific network resources without risk to network security or unauthorized access to sensitive data

– **Automatic VLAN assignment:** Users are automatically assigned to the appropriate VLAN based on their identity, community, and time of day

– **Traffic prioritization:** Traffic prioritization (QoS) is automatically set for each wireless client based on identity, community, location, and time of day

– **Rate limits:** Ingress rate limits are automatically applied to user traffic based on identity, community, and time of day

· **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3

· **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, Web browser interface, and SNMP

· **4 BSSIDs/16 SSIDs per radio:** Multiple wireless broadcast domains with separate security, authentication, and policy configuration per SSID provide access control of network resources based on user authentication and level of trusted security between the wireless user and the network

HP ProCurve Wireless Edge Services zl Module

Features and benefits (continued)

- **Neighbor access point (rogue AP) detection:** The Wireless Edge Services zl Module provides a system-wide view of all access points detected in the wireless LAN coverage area. Discovered access points are easily classified as either approved or unapproved to simplify network monitoring of "rogue APs." Each ProCurve radio port simultaneously scans for the presence of other access points while servicing wireless clients. Radio ports can be configured as dedicated RF monitors for continuous monitoring of the RF environment

- **Wireless intrusion detection:** The ProCurve Wireless Services zl Module monitors wireless client activity for behavior harmful to the network. Upon detection of such behavior, the module will block the wireless client, log the attack, and generate a trap

- **Inter-station traffic blocking:** prevents communication between client devices associated on the same radio port

- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network

Quality of Service (QoS)

- **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications

- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality

- **Unscheduled Automatic Power Save Delivery (uAPSD):** extends the battery life for wireless devices such as voice over wireless LAN (VoWLAN) handsets

Configuration

- **Local RADIUS server:** supports wireless as well as wired user or device authentication using IEEE 802.1X, browser based, or MAC authentication. Choice of authentication database includes the built-in, 500-user account database or authentication to an LDAP-compliant directory. EAP methods supported include EAP-TLS, EAP-TTLS with MD5, EAP-TTLS with PAP, EAP-TTLS with GTC, and EAP-PEAP with MSCHAPv2

- **Built-in DHCP server:** When configured, the ProCurve Wireless Edge Services zl Module responds to wired and wireless client Dynamic Host Configuration Protocol (DHCP) IP configuration requests. The DHCP server provides configuration responses including the assigned client IP address from network or host pools, lease time, default gateway, domain name, DNS server addresses, and DHCP options. DHCP functionality also includes DHCP relay and Dynamic DNS

Scalability

- **Scalable network capacity:** The ProCurve Wireless Edge Services zl Module, as purchased, provides support for up to 12 ProCurve radio ports. The module easily accommodates additional radio port capacity with purchase of either a 12 or 48 ProCurve Wireless Services zl Radio Port License. The Wireless Services zl Module scales to a maximum of 156 ProCurve radio ports per module. With up to four ProCurve Wireless Edge Services zl Modules per Switch 5400zl series or Switch 8212zl, each chassis can manage a total of 624 ProCurve radio ports

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Wireless Edge Services zl Module

Specifications

HP ProCurve Wireless Edge Services zl Module (J9051A)

Physical characteristics	
Dimensions (D x W x H)	26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight (fully loaded)	0.93 kg (2.05 lb.)
Environment	
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95%, non-condensing
Wireless interface	Microsoft Internet Explorer 5.5 or higher
Services	Refer to the HP Web site at www.procurve.eu/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

Device management
RFC 2068 Hypertext Transfer Protocol—HTTP/1.1
HTML and telnet management

General protocols
IEEE 802.1p Priority
IEEE 802.1Q VLANs
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 894 IP over Ethernet
RFC 959 File Transfer Protocol (FTP)
RFC 1541 DHCP
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 3046 DHCP Relay Agent Information Option

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB

Mobility
IEEE 802.11a High Speed Physical Layer in the 5 GHz Band
IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band
IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band
IEEE 802.11i Medium Access Control (MAC) Security Enhancements

Network management
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control

RFC 2138 RADIUS Authentication
RFC 2548 Microsoft Vendor-specific RADIUS Attributes
RFC 2809 L2TP Compulsory Tunneling via RADIUS
RFC 2865 RADIUS Authentication
RFC 2866 RADIUS Accounting
RFC 2869 RADIUS Extensions
RFC 2882 NAS Requirements: Extended RADIUS Practices
RFC 3576 Dynamic Authorization Extensions to RADIUS
RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
RFC 3580 IEEE 802.1X RADIUS
RFC 4590 RADIUS Extension for Digest Authentication
Secure Sockets Layer (SSL)
SSHv2 Secure Shell
WPA (Wi-Fi Protected Access)

HP ProCurve Wireless Edge Services zl Module accessories

Wireless Access Controllers

HP ProCurve Redundant Wireless Services zl Module (J9052A)

Radio Ports

HP ProCurve Radio Port 210 (J9004A)

HP ProCurve Radio Port 220 (J9005A)

HP ProCurve Radio Port 230 (J9006A)

zl Modules

HP ProCurve Wireless Services zl 12 RP License (J9053A)

HP ProCurve Wireless Services zl 48 RP License (J9090A)

Datasheet

HP ProCurve Wireless Edge Services xl Module

Working in conjunction with ProCurve radio ports, the HP ProCurve Wireless Edge Services xl Module provides centralized wireless LAN configuration and management of advanced wireless services, enabling a resilient, highly secure, mobile network. With the addition of the module, the HP ProCurve Switch 5300xl Series enables network administrators to centrally manage a unified wired and wireless network using the complete HP ProCurve Manager networking management suite. This centralized approach to wired and wireless management streamlines device configuration. It enables network monitoring and response to wired and wireless network threats and administration of security and role-based user policies that are enforced at the edge of the network, regardless of how or where the user connects.

HP ProCurve Wireless Edge Services xl Module

Features and benefits

Industry-leading warranty

Mobility

- **Layer 3 radio port adoption:** Network-wide adoption and auto-configuration of ProCurve radio ports enable rapid deployment of a wireless LAN with minimal network reconfiguration. By enabling radio port deployment at Layer 3, the wireless network provides fast network roaming to maintain uninterrupted application persistence

- **Layer 3 mobility domain:** When configured as part of a Layer 3 mobility domain, ProCurve Wireless Edge Services xl Modules maintain client network connectivity as users roam across subnet boundaries and from module to module. A mobility domain may include up to 12 ProCurve Wireless Edge Services xl Modules

- **Guest accounts:** The ProCurve Wireless Edge Services xl Module provides secure, Web authenticated guest access using the built-in RADIUS server. Guest account creation includes randomly generated or predefined individual user credentials and duration of access, including time of day. Termination of network access privileges is immediate upon expiration of the guest account

- **Guest administration:** Assigned by the network administrator, guest administration privileges permit restricted access to the Web page used to manage guest accounts hosted internally on the Wireless Edge Services xl Module. Guest administrators may create, print, and delete guest accounts

Management

- **Centralized management:** A single point to configure system-wide wireless LAN setup and operation is provided, including SSID, security, and authentication options as well as advanced wireless services. Wireless LAN settings are automatically administered to designated ProCurve radio ports, eliminating the cost and time associated with individual configuration of access points

- **Zero-configuration deployment:**
  - **Automatic wireless LAN provisioning:** Upon installation of a Wireless Edge Services xl Module, the switch will automatically configure the module to discover and adopt ProCurve radio ports
  - **Layer 2 auto radio port discovery:** Simply connect each ProCurve radio port to a Power over Ethernet (PoE)-enabled network port, and the device will be automatically discovered and configured by the Wireless Edge Services xl Module

- **Wireless sFlow support:** With addition of sFlow sampling of wireless traffic, management applications such as ProCurve Manager Plus or other wireless sFlow-capable network analyzers enable unified network visibility into traffic metrics— including wired and wireless network top talkers, top applications, and network connections. Wireless sFlow, when used in conjunction with ProCurve Network Immunity Manager, provides rapid identification and response to specific network threats on wired and wireless network connections

Connectivity

- **Modular network connectivity:** The modular design of the fully featured ProCurve Switch 5300xl Series provides choice of port type, density, and Power over Ethernet capability to simplify network deployment, with expansion to scale as network needs change

- **Scalable radio architecture:** The ProCurve family of radio ports provides choice and flexibility to address a wide range of deployment needs. Network architects can choose between flexible dual-radio (IEEE 802.11a and 802.11g) and highly cost-effective single-radio (IEEE 802.11g) designs, integrated or external antenna configurations, and customized housings for office area and in-ceiling deployment

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

- **Adjustable output power:** controls cell size for high-density access point deployments

- **IEEE 802.11h International Telecommunication Union (ITU) compliant:** Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) are employed to automatically select another channel and adjust transmit power to reduce interference with systems such as radar, if detected on the same channel

HP ProCurve Wireless Edge Services xl Module

Features and benefits (continued)

- **International country configuration:** Centrally configured on the Wireless Edge Services xl Module, all ProCurve radio ports automatically adjust to match selected country regulatory requirements

Resiliency and high availability

- **Network self-healing:** In the event of a radio port failure, the module will automatically adjust transmit power and data rate on adjacent ProCurve radio ports to maintain wireless LAN coverage
- **RF detection and interference avoidance:** The system automatically recalibrates radio port channel assignments to avoid environmental or other IEEE 802.11-based wireless interference
- **Module redundancy:** If a primary Wireless Edge Services xl Module should fail, the HP ProCurve Redundant Wireless Services xl Module will automatically adopt the radio ports that were associated with the primary module
- **Module power redundancy:** As an integrated service module for the ProCurve Switch 5300xl Series, the module leverages the fully redundant, hot-swappable power supplies of the chassis for higher service uptime

Security

- **Stateful packet inspection firewall:** inspects and drops routed wireless packets with invalid TCP flags or corrupted packets and stops common denial-of-service attacks. Dropped packets are logged with the name and time of the attack
- **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number
- **Network address translation (NAT):** Choice of dynamic or static NAT preserves a network's IP address pool or conceals the private address of network resources, such as Web servers, made accessible to users of a guest or public wireless LAN
- **Enhanced Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process. In addition, the Wireless Edge Services xl Module can store custom Web pages or direct users to custom Web authentication pages on an external Web server
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP) MD-5, TLS, TTLS, and PEAP with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point
- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic
- **HP ProCurve Identity Driven Manager (IDM) security and access control:**
  - **Per-user ACLs:** User access to specific network resources is permitted or denied based on user identity and time of day, so multiple types of users (employees, visitors, temporary workforce) on the same network can access specific network services without risk to network security or unauthorized access to sensitive data
  - **Automatic VLAN assignment:** Users are automatically assigned to the appropriate VLAN based on their identity, community, and time of day
  - **Traffic prioritization:** Traffic prioritization (QoS) is automatically set for each wireless client based on identity, community, location, and time of day
  - **Rate limits:** Ingress rate limits are automatically applied to user traffic based on identity, community, and time of day
- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3
- **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, Web browser interface, and SNMP
- **4 BSSIDs/16 SSIDs per radio:** Multiple wireless broadcast domains with separate security, authentication, and policy configuration per SSID provide access control of network resources based on user authentication and level of trusted security between the wireless user and the network
- **Neighbor access point (rogue AP) detection:** The Wireless Edge Services xl Module provides a system-wide view of all access points detected in the wireless LAN coverage area. Discovered access points are easily classified as either approved or unapproved to simplify network monitoring of "rogue APs." Each ProCurve radio port simultaneously scans for the presence of other access points while servicing wireless clients. Radio ports can be configured as dedicated RF monitors for continuous monitoring of the RF environment

HP ProCurve Wireless Edge Services xl Module

- **Wireless intrusion detection:** The ProCurve Wireless Services xl Module monitors wireless client activity for behavior harmful to the network. Upon detection of such behavior, the module will block the wireless client, log the attack, and generate a trap
- **Inter-station traffic blocking:** prevents communication between client devices associated on the same radio port
- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network

Quality of Service (QoS)

- **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications
- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality
- **Unscheduled Automatic Power Save Delivery (uAPSD):** extends the battery life for wireless devices such as VoWLAN handsets

Configuration

- **Local RADIUS server:** supports wireless as well as wired user or device authentication using IEEE 802.1X, browser-based, or MAC authentication. Choice of authentication database includes the built-in, 500-user account database or authentication to an LDAP compliant directory. EAP methods supported include EAP-TLS, EAP-TTLS with MD5, EAP-TTLS with PAP, EAP-TTLS with GTC, and EAP-PEAP with MSCHAPv2
- **Built-in DHCP server:** When configured, the ProCurve Wireless Edge Services xl Module responds to wired and wireless client Dynamic Host Configuration Protocol (DHCP) IP configuration requests. The DHCP server provides configuration responses including the assigned client IP address from network or host pools, lease time, default gateway, domain name, DNS server addresses, and DHCP options. DHCP functionality also includes DHCP relay and Dynamic DNS

Scalability

- **Scalable network capacity:** The ProCurve Wireless Edge Services xl Module, as purchased, provides support for up to 12 ProCurve radio ports. The module easily accommodates additional radio port capacity with the purchase of the ProCurve Wireless Services Module 12 RP License. Each license provides support for an additional 12 ProCurve radio ports, for a maximum of 48 ProCurve radio ports per module. With support for two ProCurve Wireless Edge Services xl Modules per chassis, each switch in the 5300xl series can manage a total of 96 radio ports

Note: See details for accessories starting on page 213.

Warranty and support

- **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Wireless Edge Services xl Module accessories

HP ProCurve Redundant Wireless Services xl Module (J9003A)

HP ProCurve Wireless Services Module 12 RP License (J9002A)

Radio Ports

HP ProCurve Radio Port 210 (J9004A)

HP ProCurve Radio Port 220 (J9005A)

HP ProCurve Radio Port 230 (J9006A)

HP ProCurve Wireless Edge Services xl Module

Specifications

HP ProCurve Wireless Edge Services xl Module (J9001A)

Physical characteristics	
Dimensions (D x W x H)	22.78 x 20.32 x 4.45 cm (8.97 x 8.0 x 1.75 in.)
Weight (fully loaded)	0.86 kg (1.9 lb.)
Environment	
Operating temperature	5°C to 40°C (41°F to 104°F)
Operating relative humidity	15% to 80% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	20% to 90% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)
Wireless interface	Microsoft Internet Explorer 5.5 or higher
Safety	EN 60950/IEC 60950; UL 60950
Emissions	FEN 55022/CISPR 22 Class A
Immunity	
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2
Radiated	IEC 61000-4-3
Surge	IEC 61000-4-5
Conducted	IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8
Voltage dips and interruptions	IEC 61000-4-11
Services	Refer to the HP Web site at www.procurve.eu/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

Device management
RFC 2068 Hypertext Transfer Protocol—HTTP/1.1
HTML and telnet management

General protocols
IEEE 802.1p Priority
IEEE 802.1Q VLANs
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 894 IP over Ethernet
RFC 959 File Transfer Protocol (FTP)
RFC 1541 DHCP
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2784 Generic Routing Encapsulation (GRE)
RFC 3046 DHCP Relay Agent Information Option

IPv6
RFC 3162 RADIUS and IPv6

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB

Mobility
IEEE 802.11a High Speed Physical Layer in the 5 GHz Band
IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band
IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band
IEEE 802.11i Medium Access Control (MAC) Security Enhancements

Network management
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 2138 RADIUS Authentication
RFC 2548 Microsoft Vendor-specific RADIUS Attributes
RFC 2809 L2TP Compulsory Tunneling via RADIUS
RFC 2865 RADIUS Authentication
RFC 2866 RADIUS Accounting
RFC 2867 RADIUS Accounting Modifications for Tunnel Protocol Support
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 2869 RADIUS Extensions
RFC 2882 NAS Requirements: Extended RADIUS Practices
RFC 3576 Dynamic Authorization Extensions to RADIUS
RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
RFC 3580 IEEE 802.1X RADIUS
RFC 4590 RADIUS Extension for Digest Authentication
Secure Sockets Layer (SSL)
SSHv2 Secure Shell
WPA (Wi-Fi Protected Access)

Key features

· Central management of security policies
· Out-of-the-box and custom reports
· Predefined compliance reports
· Roles-based administrative rights
· Integrates with existing SNMP management systems

Datasheet

NEW HP ProCurve Mobility Security IDS/IPS Series

HP ProCurve RF Manager automatically and immediately blocks all unauthorized traffic without disrupting or reducing the performance of authorized communication. ProCurve RF Manager simultaneously prevents multiple threats while continuing to scan for additional problems. It eliminates time-consuming false positive alerts with patent-pending classification and provides central management of security policies with the flexibility to customize with site-specific guidelines. RF Manager contains predefined compliance reports for the Health Insurance Portability and Accountability Act (HIPAA), PCI, Sarbanes-Oxley Act, Gramm-Leach-Bliley Act, and Department of Defense (DoD) Directive 1800.2, including summary of security violations with a drill-down to details. It provides a secure, at-a-glance dashboard that displays information from all sites for quick security status.

HP ProCurve Mobility Security IDS/IPS Series

Features and benefits

Additional information

- **Central management of security policies:** gives administrators the flexibility to customize with site-specific guidelines

- **Secure, at-a-glance dashboard:** displays information from all sites for quick security status

- **Out-of-the-box and custom reports e-mailed hourly, daily, or at custom-defined intervals:** helps to ensure that administrators always have the essential information they need to manage effectively

- **Predefined reports for HIPAA, PCI, Sarbanes-Oxley, Gramm-Leach-Bliley, and DoD Directive 1800.2:** help you identify and remedy security violations quickly

- **Roles-based administrative rights:** provides the highest levels of RF Manager system security

- **Integrates with existing SNMP management systems:** keeps previous investments protected

Technical features

- **Wireless IDS/IPS features:**

  - Automatic intrusion threat prevention, including rogue APs, misconfigured APs, unauthorized client connections, client misassociations, ad hoc connections, honeypot/evil twin attacks, and MAC spoofing

  - Automatic prevention of denial of service attacks, such as authentication floods, deauthentication floods, association floods, disassociation floods, and EAPOL floods

  - Prevents more than 20 threats simultaneously from a single sensor while continuing to scan for more threats

  - Accurately auto-classifies APs and client devices as "friend" or "foe" by using patented auto-classification techniques, immediately blocking those that pose a genuine threat

  - Sends an immediate alarm when a policy violation occurs via e-mail, SNMP, and syslog

  - Network detection monitors entire wired network without requiring a sensor on each subnet

  - Precise, real-time location tracking displays rogue devices on floor plan for quick removal

  - Intrusion policies based on authentication and encryption requirements (IEEE 802.1X, WPA, WPA2, WEP, TKIP, and CCMP), AP type (ProCurve, third-party APs), IEEE 802.11 protocol (IEEE 802.11a/b/g), or any combination

  - Prevention-level selectable, from "degrade" to "block"

- **Management features:**

  - Central management of security policies with the flexibility to customize with site-specific guidelines

  - Secure, at-a-glance dashboard displays information from all sites for quick security status

  - Out-of-the-box and custom reports e-mailed hourly, daily, or at custom-defined recurring intervals

  - Predefined compliance reports for HIPAA, PCI, Sarbanes-Oxley, Gramm-Leach-Bliley, and DoD Directive 1800.2, including summary of security violations with a drill-down to details

  - Roles-based administrative rights for the highest level of RF Manager system security

  - Integrates with existing SNMP management systems

Warranty and support

- **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Mobility Security IDS/IPS Series accessories

HP ProCurve RF Manager 100 IDS/IPS system (J9397A)

HP ProCurve RF Manager sensor license—50-sensor upgrade (J9399A)

HP ProCurve RF Manager 50 IDS/IPS system (J9398A)

HP ProCurve RF Manager sensor license—50-sensor upgrade (J9399A)

Note: See details for accessories starting on page 213.

HP ProCurve Mobility Security IDS/IPS Series

Specifications

	HP ProCurve RF Manager 100 IDS/IPS system (J9397A)	HP ProCurve RF Manager 50 IDS/IPS system (J9398A)
Ports	2 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port	2 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RJ-45 serial console port
Physical characteristics Dimensions (D x W x H) Weight	43.7 x 42.8 x 4.4 cm (17.2 x 16.85 x 1.73 in.) (1U height) 18 kg (39.68 lb.)	43.7 x 42.8 x 4.4 cm (17.2 x 16.85 x 1.73 in.) 18 kg (39.68 lb.)
Memory and processor	Dual Intel® Xeon® @ 2000 MHz, 2 GB DDR2 SDRAM; storage: 80 GB SATA	Intel Xeon @ 2000 MHz, 1 GB DDR SDRAM; storage: 80 GB SATA
Environment Operating temperature Operating relative humidity	0°C to 50°C (32°F to 122°F) 5% to 95%, non-condensing	0°C to 50°C (32°F to 122°F) 5% to 95%, non-condensing
Electrical characteristics Voltage Current Maximum power rating Frequency	100–240 VAC 6 A/2.5 A 600 W 50/60 Hz	100–240 VAC 4.5 A/1.9 A 450 W 50/60 Hz
Safety	UL 60950-1; EN 60950-1	UL 60950-1; EN 60950-1
Emissions	FCC part 15 Class A; EN 55022 Class A; AS/NZS 3548, CISPR22 Class A	FCC part 15 Class A; EN 55022 Class A; AS/NZS 3548, CISPR22 Class A
Immunity Generic Harmonics Flicker	EN 55024 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3	EN 55024 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Notes	HP ProCurve RF Manager 50 IDS/IPS system (J9398A) has base HP ProCurve RF Manager sensor license—50-sensor upgrade (J9399A). HP ProCurve RF Manager 100 IDS/IPS system (J9397A) has base support for 50 APs and can be expanded to 200 APs with three HP ProCurve RF Manager sensor license—50-sensor upgrades (J9399A). The HP ProCurve RF Manager IDS/IPS products require the HP ProCurve MSM325 or MSM335 Access Points, which have integrated RF Manager sensor, or the MSM320, with available MSM320 RF Manager sensor license.	
Services	3-year, parts only, global next-day advance exchange (UK588E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UK589E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UK590E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM452E) 1-year post-warranty next-bus. day exchange (UM453PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM454PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM455PE) 1-year post-warranty hardware and software 24x7 phone support (UM456PE) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UM481E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UM482E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UM483E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UM484E) 1-year post-warranty next-bus. day exchange (UM485PE) 1-year post-warranty 4-hour response, 13x5 onsite support (UM486PE) 1-year post-warranty 4-hour response, 24x7 onsite hardware support (UM487PE) 1-year post-warranty hardware and software 24x7 phone support (UM488PE) Refer to the HP Web site at www.procurve.eu/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 ProCurve | Network of Choice

Key features
- Automated configuration of more than 200 settings
- Real-time network and user-level monitoring
- Continuous security policy audits

Datasheet

NEW HP ProCurve CNMS Software Series

HP ProCurve CNMS software discovers ProCurve Intelligent Mobility system components for fast, easy deployment. It automates the configuration of more than 200 settings, plus software distribution, eliminating the potential for human error. ProCurve CNMS software provides accurate troubleshooting data through real-time network and user-level monitoring, and continuously audits security policies to provide consistent enforcement. It includes a reporting package that supplies detailed trending information to facilitate capacity planning and allows secure, remote management from any Web browser.

HP ProCurve CNMS Software Series

Features and benefits

Additional information

- **Automatic discovery of ProCurve Intelligent Mobility system components:** provides fast, easy deployment
- **Automated configuration of more than 200 settings, plus software distribution:** greatly reduces the potential for human error
- **Real-time network and user-level monitoring:** provides accurate troubleshooting data
- **Continuous security policy audits:** provide consistent enforcement
- **Reporting package that supplies detailed trending information:** facilitates capacity planning
- **Supported on wide range of hardware platforms:** runs on Red Hat Enterprise Linux 5 or CentOS-5 platform and provides a broad range of hardware compatibility, delivering unprecedented levels of operational flexibility

Technical features

- **Device discovery:**
  - Layer 2 discovery (OSU, CDP, WNMP, and IAPP)
  - SNMP and HTTP scans
  - Manual entry
- **Comprehensive AP configuration including the HP ProCurve MSM313 and MSM323 Integrated Services Access Points:**
  - VSC and SSID
  - Broadcast SSID on/off
  - Channel settings
  - Transmission power
  - Antenna configuration
  - Excluded autochannels
- **Security settings:**
  - Required security (VPN, WPA, WEP, etc.) per VSC
  - RADIUS server (primary, secondary, etc.)
  - VLAN tagging
  - Access control lists
- **Software management:**
  - Minimum firmware version
  - Automated firmware upgrades
  - Scheduled firmware distribution
  - AP configuration auditing
  - Configurable, automated AP auditing period
  - On-screen discrepancy report
  - Auto-repair function

- **General:**
  - Logical AP and controller groups
  - Group-based policy management
  - Job scheduler
  - LAN settings
  - "Management" vs. "Monitor Only" AP
- **Monitoring general:**
  - Multiple views (network, group, AP)
  - Real-time performance data
  - Configurable SNMP polling interval (by group)
  - Graphical on-screen reports
- **User-based monitoring:**
  - User name
  - IP and MAC address
  - Signal strength
  - Authentication time/status
  - Bandwidth utilization
  - Roaming history
- **Network monitoring:**
  - Real-time AP status
  - Total users
  - Bandwidth utilization
  - Uptime
- **Alerts and triggers:**
  - Standard SNMP alerts
  - Advanced "synthetic" alerts
  - User-configurable alerts
  - Configurable severity codes
  - Multiple delivery options (e-mail, pager, console, and SNMP trap)
- **Reporting:**
  - Daily reporting package (network utilization)
  - Ad hoc reports (by AP group, time period)
  - Graphical reports
  - Rogue and client history reports
  - Exportable via XML
- **Rogue AP detection:**
  - Wireless RF scanning using APs
  - Wireline discovery across subnets
  - Integrated rogue detection list
  - Ad hoc or scheduled rogue AP scans
  - Rogue data includes MAC, SSID, RSSI, security settings, and IP address (if available)
  - Rogue history report

HP ProCurve CNMS Software Series

Features and benefits (continued)

- **System details:**
  - Password-based security
  - Management, monitoring, and operator permission levels
  - Web-based UI
  - Unlimited simultaneous administrative users
  - Context-sensitive help
- **Interoperability:**
  - IEEE 802.11b/g, 802.11a, and 802.11n
  - WEP, WPA, and WPA2

Warranty and support

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve CNMS Software Series accessories

HP ProCurve CNMS 500 software (J9429A)
HP ProCurve CNMS 500 license—500-device upgrade (J9430A)

Specifications

	HP ProCurve CNMS 200 software (J9428A)	HP ProCurve CNMS 500 software (J9429A)
Notes	HP ProCurve CNMS software requires the Red Hat Enterprise Linux 5 or CentOS-5 operating system running on an OS-approved hardware platform. HP ProCurve CNMS 200 software manages up to 200 MSM devices. HP ProCurve CNMS 500 software manages up to 500 MSM devices, and is expandable to 1,000 devices with the HP ProCurve CNMS 500 license—500-device upgrade (J9430A).	
Services	Refer to the HP Web site at www.procurve.eu/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.	

Key features

- Easy-to-use guest accounts management tool
- Customizable guest experience
- Role-based management interface

Datasheet

NEW HP ProCurve Guest Management software

HP ProCurve Guest Management software simplifies centralized creation of guest accounts from any Microsoft® Windows® -based computer. The intuitive user interface is designed for receptionists and clerical staff with minimal training. It provides centralized, real-time management of visitor accounts and sessions with a configurable visitor session duration per account. The guest account information is loaded into the ProCurve MultiService Controllers for strong security policy enforcement. It creates printable access vouchers for visitors. Secure login prevents unauthorized account creation, and the reporting feature records all account management activity for audits. Digital certificate secures all communication between the Guest Management software and the MultiService Mobility Controller.

HP ProCurve Guest Management software

Features and benefits

Technical features

- **Strong X.509 certificate-based authentication of account manager:** keeps communications between the guest management software and the HP ProCurve MultiService Controller Series or HP ProCurve MSM313/MSM323 Access Points secure in order to avoid unauthorized guest account creation

- **Audit capabilities of all visitor profiles:** keeps detailed information about guest identity and allows administrators to track down individuals on the network

- **Intuitive graphical interface:** adapts itself based on the administrative role of the individual manipulating the tool

- **Simple click account creation:** few steps and wizard-based account creation allow guest accounts to be created in a few clicks

- **Advanced profile creation:** flexible account options allow network access policies to be created on specific days, dates, hours of the day, and so on

- **Customizable session voucher:** information printed on the voucher can be tailored to an organization's needs and security policies; the voucher can be printed and handed over to guests as a reminder of their credentials

- **Note:** Requires HP ProCurve MultiService Controller Series, or HP ProCurve MSM313/MSM323 Access Point running COS v5 or later

Warranty and support

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Guest Management software

Specifications

	HP ProCurve Guest Management software (J9355A)
Minimum system hardware	2.0 GHz Intel Pentium® III or equivalent processor 512 MB RAM memory 100 MB storage
Recommended system hardware	300 MB storage
Recommended software	Microsoft Windows XP SP2
Additional requirements	Color monitor with a resolution of 1024 x 768 or better
Services	Refer to the HP Web site at www.procurve.eu/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.

Key features

- Unique, patent-pending RF propagation model
- Graphical display of wireless LAN spillage
- Security coverage modeling
- Drag-and-drop functionality
- Outdoor modeling capability

Datasheet

NEW HP ProCurve RF Planner

HP ProCurve RF Planner is built on a unique, patent-pending RF propagation model. This model provides outstanding accuracy by drawing from a comprehensive knowledge base of RF characteristics for HP ProCurve MultiService Access Points, third-party equipment (client cards, access points, and directional antennas), and building materials. Open-air modeling capabilities facilitate the design of outdoor campus and municipal networks.

HP ProCurve RF Planner

Features and benefits

Additional information

- **Unique, patent-pending RF propagation model:** models wireless LAN coverage quickly and accurately, without physical site surveys

- **Fine-grain heat map overlaid on floor plan:** enables users to visualize coverage

- **Graphical display of wireless LAN spillage:** allows for easy evaluation of security risks

- **Security coverage modeling:** helps ensure that every installation has the proper level of coverage for its security risk profile

- **Supports 2.4 and 5 GHz frequencies and IEEE 802.11a, b, g, and n wireless LAN protocols:** makes it is compatible with a wide variety of existing network configurations

- **Simple drag-and-drop technique:** makes it easy for planners to evaluate changes and experiment with "what-if" scenarios

- **Outdoor modeling capability:** extends planning to open-air environments

Technical features

- **RF prediction engine:**
  - IEEE 802.11a, 802.11b, 802.11b/g, and 802.11n

- **Wireless sensor coverage modeled:**
  - HP ProCurve MSM335 and MSM325 Access Points with integrated sensor, and the MSM320 access point with available RF sensor license (J9384A)

- **Modeling inputs:**
  - Access point vendor, power level, and antenna type

- **Building floor plan inputs:**
  - TIF, JPEG, and BMP AutoCAD files (DWG and DXF) can be converted into these formats as well as input

- **Placement method:**
  - Drag and drop

- **Reports views modeled:**
  - Indoor RF coverage, outdoor RF coverage, link speed, channel allocation, AP placement, sensor placement, sensor coverage, and spillage

- **Report contents:**
  - Input model, network security and performance assessment, and wireless LAN equipment list

Warranty and support

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve RF Planner

Specifications

	HP ProCurve RF Planner (J9400A)
Minimum system hardware	1.6 GHz Intel Pentium 4 or equivalent processor 1 GB RAM memory 100 MB free hard disk space
Recommended system hardware	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 200 MB free hard disk space
Recommended software	Microsoft® Windows® 2000 Microsoft Windows XP
Additional requirements	1024 x 768 screen resolution recommended
Services	Refer to the HP Web site at **www.procurve.eu/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.

Key features

- Wireless access point with IEEE 802.11a/b/g support
- Powerable by PoE or AC
- Secure connectivity, dual radio, up to eight SSIDs
- Industry-leading warranty

Datasheet

HP ProCurve Wireless Access Point 10ag

The HP ProCurve Wireless Access Point 10ag is ideal for small business networks that need to deploy wireless connectivity quickly and easily with minimal investment. The Wireless Access Point 10ag can be configured in just minutes using the intuitive Web-managed interface. The ProCurve Wireless Access Point 10ag also supports IEEE 802.11a, 802.11b, and 802.11g clients simultaneously via its dual IEEE 802.11a and 802.11b/g radios. The Wireless Access Point 10ag can be wall mounted or placed on a flat surface and has the option to be powered by Power over Ethernet (PoE), allowing for increased location flexibility.

HP ProCurve Wireless Access Point 10ag

Features and benefits

Industry-leading warranty

Mobility

- **Interoperability:** Wi-Fi Alliance certifications including IEEE 802.11a, 802.11b, 802.11g Wi-Fi, and WPA2 to help ensure multivendor interoperability

Connectivity

- **Simultaneous IEEE 802.11a and 802.11g dual radio operation:** supports up to 64 wireless clients and provides backward compatibility for IEEE 802.11b wireless devices

Security

- **Choice of Wi-Fi Protected Access 2 (WPA2) or WPA:** locks 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 the wireless traffic

- **Supports up to eight SSIDs (four per radio):** allows multiple authentication and encryption settings to accommodate the widest range of client capabilities

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP) MD-5, TLS, TTLS, and PEAP with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network

- **Management password:** provides security so that only authorized access to the Web browser interface is allowed

Manageability

- **Intuitive Web interface:** enables simple management via an easy-to-use Web browser interface for access point configuration, monitoring, and administration

- **Integration with HP ProCurve Manager:** enables discovery and mapping via ProCurve Manager, available as a free download from the Web

Ease of use

- **Comprehensive LED display:** provides an at-a-glance view of status, activity, speed, and radio operation

Flexibility

- **Choice of power supply (standard AC power or IEEE 802.3af PoE):** provides location flexibility for where the access point is deployed. To use the Power over Ethernet (PoE) option, the access point must be connected to a PoE switch or PoE injector.

- **Deployment options:** access point can be mounted on a vertical wall or placed on a flat surface

Warranty and support

- **ProCurve Lifetime Warranty[♦]:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Wireless Access Point 10ag

Specifications

HP ProCurve Wireless Access Point 10ag (J9141A)

Ports	1 RJ-45 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full
Physical characteristics Dimensions (D x W x H) Weight	 10.3 x 17.8 x 3.4 cm (4.06 x 7.01 x 1.34 in.) 0.28 kg (0.62 lb.)
Memory and processor Processor	 MIPS 4000 @ 220 MHz, 16 MB SDRAM, 2 MB flash ROM
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude	 0°C to 40°C (32°F to 104°F); PoE mode 5% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 5% to 95% @ 70°C (158°F), non-condensing Up to 3 km (10,000 ft.)
Electrical characteristics Description Maximum heat dissipation Current Maximum power rating	 Voltage: 48 VDC (PoE); 12 VDC (power adapter); 110/220 V 50/60 Hz 26.38/34.82 kJ/hr (25/33 BTU/hr) 0.6 A/0.2 A 7 W
European Union	2.412–2.472 GHz (13 channels) 5.150–5.250 GHz (4 channels)
Japan	2.412–2.484 GHz (14 channels) 5.150–5.350 GHz (8 channels)
China	2.412–2.472 GHz (13 channels) 5.725–5.825 GHz (5 channels)
Singapore	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (5 channels)
Korea	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.470–5.725 GHz (7 channels) 5.725–5.825 GHz (4 channels)
Australia	2.412–2.472 GHz (13 channels) 5.725–5.825 GHz (5 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; ARIB STD-T71; ARIB STD-33; RSS-Gen (Canada); EN 301 893 V1.2.3 (Europe)
Safety	IEC 60950-1; EN 60950-1
Emissions	FCC Part 15.107; EN 60601-1-2; EN 301 489-1; EN 301 489-17; FCC Part 15.109; ICES-003 (Canada)
RF Exposure	EN 50385
Management	HP ProCurve Manager; Web browser
Notes	Antennas: integral 2.4 GHz 1.8 dBi diversity antennas; 5 GHz 1.8 dBi diversity antennas

HP ProCurve Wireless Access Point 10ag

Specifications (continued)

HP ProCurve Wireless Access Point 10ag (J9141A)

Services	

	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E)
	3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E)
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software
	   phone support (U6321E)
	3-year, 24x7 SW phone support, software updates (UF792E)
	
	Refer to the HP Web site at www.procurve.eu/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 ProCurve Wireless Access Point 10ag (J9141A)

Radio characteristics: IEEE 802.11g

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–71 dBm	–73 dBm	–77 dBm	–80 dBm	–85 dBm	–87 dBm	–88 dBm	–89 dBm
Transmit power	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm

IEEE 802.11b

Data rate	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
Receiver sensitivity	–86 dBm	–88 dBm	–90 dBm	–94 dBm
Transmit power	17 dBm	17 dBm	17 dBm	17 dBm

IEEE 802.11a

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	-72 dBm	-73 dBm	-79 dBm	-82 dBm	-85 dBm	-87 dBm	-89 dBm	-90 dBm
Transmit power	18 dBm	18 dBm	18 dBm	18 dBm	18 dBm	18 dBm	18 dBm	18 dBm

Standards and protocols (applies to all products in series)	General protocols	Mobility	Security

	IEEE 802.3 Type 10BASE-T
	IEEE 802.3af Power over Ethernet
	IEEE 802.3u 100BASE-X
		IEEE 802.11a High Speed Physical Layer in
		   the 5 GHz Band
		IEEE 802.11b Higher-Speed Physical Layer
		   Extension in the 2.4 GHz Band
		IEEE 802.11g Further Higher Data Rate
		   Extension in the 2.4 GHz Band
			IEEE 802.1X Port Based Network Access
			   Control
			WPA (Wi-Fi Protected Access)

Datasheet

HP ProCurve Access Point 530

Ideal for branch or satellite office deployments, the HP ProCurve Access Point 530 is an intelligent edge, dual-radio access point with simultaneous support for IEEE 802.11a and 802.11g standards, as well as dual IEEE 802.11g radio operation. The 530 access point offers a comprehensive range of industry-proven user authentication methods and the latest in standards-based wireless security to provide appropriate and secure access to network resources. With built-in support for HP ProCurve Identity Driven Manager, the ProCurve Access Point 530 enables network administrators to reduce network operating costs by deploying a unified network that offers centralized wired and wireless network policy and device management.

HP ProCurve Access Point 530

Features and benefits

Industry-leading warranty

Management

- **Wireless sFlow support:** With the addition of sFlow sampling of wireless traffic, management applications such as HP ProCurve Manager Plus or other wireless sFlow-capable network analyzers enable unified network visibility into traffic metrics, including wired and wireless network top talkers, top applications, and network connections. Wireless sFlow, when used with HP ProCurve Network Immunity Manager, provides rapid identification and response to specific network threats on wired and wireless network connections.

- **Group configuration:** simplifies deployment of configuration updates to many access points in the same subnet. An administrator can securely manage up to 12 access points using SNMP, the browser, or the CLI interface of one member of the group. Each configuration change is securely communicated to other members of the group. New members added to the configuration group automatically receive the latest configuration from a peer within the group.

- **RADIUS accounting support:** separate RADIUS accounting server support per BSSID provides detailed session, usage, and billing information for each client activity

- **Remote configuration and management:** through secure Web browser or command-line interface (CLI)

- **Multiple configuration files:** multiple configuration files can be stored to the flash image

- **SCP (Secure Copy Protocol):** allows secure file transfer to/from the access point; protects against unwanted file downloads or unauthorized copying of switch configuration file

Connectivity

- **Advanced dual-radio design:**
  - **Simultaneous IEEE 802.11a and IEEE 802.11g radio operation:** supports dual-band wireless clients and provides backward compatibility for IEEE 802.11b wireless devices

- **Dual IEEE 802.11b/g radio operation:** provides high-capacity IEEE 802.11b/g data and voice wireless LAN coverage in networks where support for IEEE 802.11a is not a requirement

- **Adaptive Transmit Power Control:** The ProCurve Access Point 530 continuously monitors and automatically adjusts beacon or data transmit power to reduce same-channel interference while increasing channel coverage.

- **Antenna flexibility accommodates a wide range of wireless LAN deployments:**
  - **Per-radio integrated diversity antenna with omnidirectional coverage:** provides robust, dual-radio wireless LAN coverage for open office environments
  - **Per-radio external diversity antenna support:** RP-SMA antenna connectors enable external antenna configurations to extend wireless coverage or wireless bridging between access points

- **Wireless Distribution System (WDS):**
  - **Wireless bridging:** Because it expands network connectivity to remote access points located beyond a network's wired infrastructure, wireless bridging is ideal for increasing wireless coverage to adjacent buildings, across large lecture halls, or to outdoor campus environments. Each ProCurve Access Point 530 can support up to six wireless links to remote access points. WPA-PSK encryption secures data on each wireless link. Wireless distribution is supported on IEEE 802.11a, b, and g radio modes of operation.
  - **Single-radio operation:** A wireless link is provided to each remote ProCurve Access Point 530; it also services local wireless clients.
  - **Dual-radio operation:** One radio provides a wireless link to each remote ProCurve Access Point 530. The second radio provides network connectivity to local wireless clients.

- **IEEE 802.11h International Telecommunication Union (ITU) compliant:** employs Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) to automatically select another channel and adjust transmit power to reduce interference with systems such as radar, if detected on that same channel

- **International country configuration:** select the appropriate country, and the access point will automatically configure operation to match regulatory requirements

- **Auto Channel Select (ACS):** helps reduce radio co-channel interference by automatically selecting an unoccupied radio channel

HP ProCurve Access Point 530

- **Adjustable output power:** controls cell size for high-density access point deployments
- **IEEE 802.3af Power over Ethernet support:** simplifies deployment and dramatically reduces installation costs by helping to eliminate the time and cost involved in supplying local power at each access point location
- **Link Layer Discovery Protocol (LLDP):** enables real-time mapping of nodes to switch ports; LLDP (IEEE 802.1AB) industry-standard discovery protocol automatically populates both the LLDP and proprietary discovery MIBs for net management systems dependent on these MIBs

Security

- **Up to 16 BSSIDs per radio with separate VLAN, security, and authentication:** permits network administrators to control user access to network resources based on user authentication and level of trusted security between the client and access point
- **Access point authentication:** enables secure authentication of the ProCurve Access Point 530 on network ports protected by IEEE 802.1X port-based authentication
- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic
- **HP ProCurve Identity Driven Manager (IDM) security and access control:**
  - **Per-user ACLs:** permit or deny user access to specific network resources based on user identity and time of day, allowing multiple types of users (employees, visitors, temporary workforce) on the same network to access specific network services without risk to network security or unauthorized access to sensitive data
  - **Automatic VLAN assignment:** automatically assigns users to the appropriate VLAN based on their identity, community, and time of day
  - **Rate limits:** automatically applies ingress rate limits to user traffic based on identity, community, and time of day
- **Web authentication:** provides authentication for browser-based wireless clients. Built-in login, welcome, and failure Web pages assist users through the login process

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP), TLS, TTLS, SIM, GTC, and PEAP, with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point
- **Local RADIUS authentication:** enables "enterprise-grade" IEEE 802.11i (WPA2) wireless security for small wireless LAN networks; serves as backup authentication in the event primary and secondary network RADIUS servers are unavailable due to network disruption. The local RADIUS authentication feature supports up to 100 user accounts
- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface
- **Local MAC authentication:** deny or allow network access based on wireless client MAC address, which is compared to a database stored on the access point
- **MAC address lockout:** prevents configured particular MAC addresses from connecting to the network
- **Local wireless bridge client traffic filtering:** when enabled, prevents communication between wireless devices associated with the same access point
- **Neighbor access point (rogue AP) and ad hoc wireless network detection:** Periodic scanning is provided for neighboring access points and ad hoc wireless networks. Information collected during the scan, including BSSID, SSID, channel, RSSI, security setting, and radio type (IEEE 802.11b, b/g, or a mode), is captured for each wireless device detected. If configured, the access point can enter dedicated scan mode to provide continuous scanning of the surrounding RF environment
- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network; access point does not respond to the wireless client probe request of "ANY"
- **Secure management access:** all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3
- **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, Web browser interface, and SNMP

HP ProCurve Access Point 530

Features and benefits (continued)

- **Management access control:** To provide more security for the access point, management interfaces that are not required can be disabled, including the Web browser, telnet, and Secure Shell (SSH), as well as the serial console port and reset button

Quality of Service (QoS)

- **Wi-Fi WMM support:** provides QoS functionality in wireless networks by prioritizing wireless traffic from different applications
- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).
- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.
- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Access Point 530 accessories

HP ProCurve 14 dBi Yagi Antenna (J8448B)

HP ProCurve Antenna Lightning Arrester (J8996A)

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve 5 dBi Indoor/Outdoor Omnidirectional Antenna (J8441A)

HP ProCurve 8 dBi Outdoor Omnidirectional Antenna (J8444A)

HP ProCurve 3 dBi Dual Band Diversity Antenna (J8997A)

HP ProCurve 6 dBi 5 GHz Omnidirectional Antenna (J8998A)

HP ProCurve 7 dBi Dual Band Directional Antenna (J8999A)

HP ProCurve 14 dBi 5 GHz Directional Antenna (J9000A)

Note: See details for accessories starting on page 213.

HP ProCurve Access Point 530

Specifications

HP ProCurve Access Point 530 (J8987A)

Ports	1 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RS-232C DB-9 console port
Physical characteristics Dimensions (D x W x H) Weight	 17.27 x 24.89 x 3.05 cm (6.8 x 9.8 x 1.2 in.) 0.73 kg. (1.6 lb) mounting bracket
Memory and processor Processor	 PowerPC MPC8248 @ 400 MHz, 32 MB SDRAM, 16 MB flash ROM
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude	 0°C to 50°C (32°F to 122°F); PoE mode 5% to 95%, non-condensing −40°C to 70°C (−40°F to 158°F) 5% to 95%, non-condensing Up to 3 km (10,000 ft.)
Wireless interface	Microsoft Internet Explorer 5.5 or higher
Electrical characteristics Description Maximum heat dissipation Current Maximum power rating	 Voltage: 48 VDC (PoE) 45 kJ/hr (43 BTU/hr) 0.260 A 12.5 W
European Union	2.412–2.472 GHz (13 channels) 5.150–5.250 GHz (4 channels)
Japan	2.412–2.484 GHz (14 channels) 5.150–5.350 GHz (8 channels)
China	2.412–2.472 GHz (13 channels) 5.725–5.825 GHz (4 channels)
Singapore	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Korea	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.470–5.650 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Australia	2.412–2.472 GHz (13 channels) 5.150–5.350 GHz (8 channels) 5.725–5.825 GHz (4 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; EN 301 893 (Europe); ARIB STD-T66; ARIB STD-T71; ARIB STD-33
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1
Emissions	EN 60601-1-2; EN 301 489-1; EN 301 489-17; FCC Part 15.107; FCC Part 15.109; ICES-003 Class B
RF Exposure	IEEE C95.1

HP ProCurve Access Point 530

Specifications (continued)

HP ProCurve Access Point 530 (J8987A)

Management	HP ProCurve Manager Plus; HP ProCurve Manager; command-line interface; Web browser; out-of-band management (DB-9 serial port console); IEEE 802.3 Ethernet MIB
Notes	Radio specifications for J8987A: EN 300 328; EN 301 893 (Europe); ARIB STD-T66; ARIB STD-T71; ARIB STD-33
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Refer to the HP Web site at www.procurve.eu/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 ProCurve Access Point 530 (J8987A)

Radio characteristics: IEEE 802.11b
Maximum transmit power: 17.5 dBm (EIRP)

Data rate	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps				
Receiver sensitivity	−89 dBm	−91 dBm	−93 dBm	−96 dBm				
Transmit power	17.5 dBm	17.5 dBm	17.5 dBm	17.5 dBm				

IEEE 802.11g

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	−73 dBm	−76 dBm	−80 dBm	−83 dBm	−87 dBm	−89 dBm	−90 dBm	−91 dBm
Transmit power	19 dBm	19 dBm	19 dBm	19 dBm	19 dBm	19 dBm	19 dBm	19 dBm

IEEE 802.11a

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	-70 dBm	-72 dBm	-79 dBm	-82 dBm	-85 dBm	-88 dBm	-88 dBm	-90 dBm
Transmit power	22 dBm	23 dBm	24 dBm	24 dBm	24 dBm	24 dBm	24 dBm	24 dBm

Standards and protocols
(applies to all products in series)

Device management
RFC 1305 NTPv3
RFC 1945 Hypertext Transfer Protocol—HTTP/1.0
HTML and telnet management

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1Q VLANs
IEEE 802.3af Power over Ethernet
RFC 768 UDP
RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 894 IP over Ethernet
RFC 1042 IP Datagrams
RFC 1350 TFTP Protocol (revision 2)
RFC 1541 DHCP

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 2233 Interface MIB
RFC 3418 MIB for SNMPv3

Mobility
IEEE 802.11a High Speed Physical Layer in the 5 GHz Band
IEEE 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz Band
IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band
IEEE 802.11i Medium Access Control (MAC) Security Enhancements

Network management
RFC 1157 SNMPv1
RFC 3164 BSD syslog Protocol
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access Control
RFC 1321 The MD5 Message-Digest Algorithm
RFC 2104 Keyed-Hashing for Message Authentication
RFC 2138 RADIUS Authentication
RFC 2459 Internet X.509 Public Key Infrastructure Certificate and CRL Profile
RFC 2548 Microsoft Vendor-specific RADIUS Attributes
RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2818 HTTP Over TLS
RFC 2865 RADIUS Authentication
RFC 2866 RADIUS Accounting
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 2869 RADIUS Extensions
RFC 3394 Advanced Encryption Standard (AES) Key Wrap Algorithm
RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
SSHv2 Secure Shell

Datasheet

HP ProCurve Wireless Access Point 420

The HP ProCurve Wireless Access Point 420 is a full-featured IEEE 802.11g, single-radio access point ideally suited for medium to large wireless LAN deployments. Offering the latest standards-based security—including support for IEEE 802.11i, WPA2, and WPA—combined with multiple SSID, access point (rogue AP), and wireless ad hoc network detection, the ProCurve Access Point 420 delivers choice and flexibility to address wireless access to network services without compromising network security.

HP ProCurve Wireless Access Point 420

Features and benefits

Industry-leading warranty

Mobility

- **IEEE 802.11g single-radio design:** provides choice for support of IEEE 802.11g and legacy IEEE 802.11b wireless clients with selection of three radio modes of operation: IEEE 802.11b, 802.11g, or 802.11g with fallback support for 802.11b

- **Detachable antenna design:** enables use of external antenna configurations for improved radio coverage and performance

- **Adjustable output power:** controls cell size for high-density access point deployments

- **Interoperability:** Wi-Fi Alliance certifications including IEEE 802.11g Wi-Fi and WPA2 to help ensure multivendor interoperability

Management

- **Remote configuration and management:** through secure Web browser or command-line interface (CLI)

- **Management interface control:** each of the following interfaces can be enabled or disabled depending on security preferences: console port, telnet port, or reset button

- **Manager, operator privilege levels:** enables read-only (operator) and read-write (manager) access on CLI and Web browser management interfaces

- **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, Web browser interface, and SNMP

- **RADIUS accounting support:** separate RADIUS accounting server support per SSID; provides detailed session, usage, and billing information for each client activity

- **International country configuration:** select the appropriate country, and the access point automatically configures operation to match regulatory requirements (model J8131B only)

- **Local wireless bridge client traffic filtering:** when enabled, prevents communication between wireless devices associated with the same access point

Security

- **Choice of IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), or WPA:** locks 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 the wireless traffic

- **IEEE 802.1X:** provides port-based user authentication with support for Extensible Authentication Protocol (EAP) MD-5, TLS, TTLS, and PEAP with choice of AES, TKIP, and static or dynamic WEP encryption for protecting wireless traffic between authenticated clients and the access point

- **Eight SSIDs with separate VLAN, security, and authentication per SSID:** permits network administrators to control user access to network resources based on user authentication and level of trusted security between the wireless user and the access point. For example, the SSID labeled "GUEST" requires no authentication or security for users of this SSID. All traffic on the "GUEST" SSID is placed on a VLAN with restricted access to specific services such as Internet access. A second SSID is configured for employee access. The "EMPLOYEE" SSID requires successful authentication to the network using IEEE 802.11i with AES encryption to protect wireless data. The VLAN associated with the "EMPLOYEE" SSID grants access to a broader range of services and network access.

- **RADIUS-based MAC authentication:** a wireless client is authenticated with a RADIUS server based on the MAC address of the client; this is useful for clients that have minimal or no user interface

- **Secure access to management interfaces:** all management interfaces of the ProCurve Access Point 420—CLI, browser interface, or MIB—are securely encrypted through SSHv2, SSL, and SNMPv3

- **Closed system:** restricts broadcast of SSID as a security measure to conceal presence of the wireless network; access point does not respond to the wireless client probe request of "ANY"

- **Access Point (rogue AP) and ad hoc wireless network detection:** each ProCurve Access Point 420 can be configured to periodically scan for neighboring access points and ad hoc wireless networks. Information collected during the scan—including the BSSID, SSID, channel, RSSI, security setting, and radio type (IEEE 802.11b, g, or b/g mode)—are captured for each access point detected. If configured, the access point can enter dedicated scan mode to provide continuous scanning of the surrounding RF environment.

HP ProCurve Wireless Access Point 420

Convergence

- **SpectraLink voice priority (SVP) support:** prioritizes SpectraLink voice IP packets sent from a SpectraLink NetLink SVP server to SpectraLink wireless voice handsets to help ensure excellent voice quality

- **IEEE 802.3af Power over Ethernet support:** simplifies deployment and dramatically reduces installation costs by helping to eliminate the time and cost involved in supplying local power at each access point location

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Wireless Access Point 420 accessories

HP ProCurve 14 dBi Yagi Antenna (J8448B)

HP ProCurve Antenna Lightning Arrester (J8996A)

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve 5 dBi Indoor/Outdoor Omnidirectional Antenna (J8441A)

HP ProCurve 8 dBi Outdoor Omnidirectional Antenna (J8444A)

HP ProCurve 3 dBi Dual Band Diversity Antenna (J8997A)

HP ProCurve 6 dBi 5 GHz Omnidirectional Antenna (J8998A)

HP ProCurve 7 dBi Dual Band Directional Antenna (J8999A)

HP ProCurve 14 dBi 5 GHz Directional Antenna (J9000A)

Note: See details for accessories starting on page 213.

HP ProCurve Wireless Access Point 420

Specifications

HP ProCurve Wireless Access Point 420 (J8131B)

Ports	1 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Media type: Auto-MDIX Duplex: half or full 1 RS-232C DB-9 console port
Physical characteristics Dimensions (D x W x H) Weight	 21.82 x 13.74 x 3.28 cm (8.59 x 5.41 x 1.29 in.) 1.02 kg (2.27 lb.) mounting bracket
Memory and processor	4 MB flash
Mounting	Includes wall-mounting bracket and related hardware
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity	 0°C to 40°C (32°F to 104°F) 15% to 95%, non-condensing –40°C to 70°C (–40°F to 158°F) 0% to 95%, non-condensing
Wireless interface	Microsoft Internet Explorer 5.5 or higher; Netscape Navigator 6.0 or higher
Electrical characteristics Description Maximum heat dissipation Current Maximum power rating	 Voltage: 48 VDC (PoE); or included power adapter 110/220 V 50/60 Hz 108 kJ/hr (102 BTU/hr) 0.4 A 13.2 W
Radio	FCC Part 15.247; IC RSS 210; EN 300-328-1; EN 300-328-2; ARIB STD-T66; ARIB STD-33
Safety	EN 60950/IEC 60950; UL 2043; UL 60950
Emissions	EN 55022 Class B; AS/NZS 3548 Class B; FCC Part 15.107; ICES-003 Class B; FCC Part 15.109 Class B
Immunity EN	 EN 55024, CISPR 24
Features	Hardware · Hardware reset button · External antenna connectors (RP-SMA) · Antenna diversity support · Plenum rating (UL 2043 rating) · Kensington security slot · RS-232 DB-9 serial console port · Status LEDs · Wall mount hardware · Local DC power input or IEEE 802.3af Power over Ethernet · 10/100 Ethernet port (IEEE 802.3 Type 10Base-T, 802.3u Type 100Base-TX)
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U4683E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U4835E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6321E) 3-year, 24x7 SW phone support, software updates (UF792E) Refer to the HP Web site at www.procurve.eu/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 ProCurve Wireless Access Point 420

HP ProCurve Wireless Access Point 420 (J8131B)

HP ProCurve Wireless Access Point 420 (J8131B)

Radio characteristics: IEEE 802.11g
Modulation: Orthogonal Frequency Division Modulation (64 QAM, 16 QAM, QPSK, BPSK)
Media access protocol: CSMA/CA (Collision Avoidance) with ACK
Nominal output power: 15 dBm

Data rate	54 Mbps	48 Mbps	36 Mbps	24 Mbps	18 Mbps	12 Mbps	9 Mbps	6 Mbps
Receiver sensitivity	–70 dBm	–73 dBm	–75 dBm	–80 dBm	–82 dBm	–85 dBm	–85 dBm	–87 dBm
Transmit power								

Standards and protocols
(applies to all products in series)

Device management
RFC 2068 Hypertext Transfer Protocol—
    HTTP/1.1
HTML and telnet management

General protocols
IEEE 802.1Q VLANs
IEEE 802.3af Power over Ethernet
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 894 IP over Ethernet
RFC 1541 DHCP
RFC 2030 Simple Network Time Protocol (SNTP)
    v4

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 2011 SNMPv2 MIB for IP
RFC 2012 SNMPv2 MIB for TCP
RFC 2013 SNMPv2 MIB for UDP

Mobility
IEEE 802.11b Higher-Speed Physical Layer
    Extension in the 2.4 GHz Band
IEEE 802.11g Further Higher Data Rate
    Extension in the 2.4 GHz Band
IEEE 802.11i Medium Access Control (MAC)
Security Enhancements

Network management
RFC 3164 BSD syslog Protocol
SNMPv1/v2c/v3

Security
IEEE 802.1X Port Based Network Access
    Control
RFC 2138 RADIUS Authentication
RFC 2866 RADIUS Accounting
SSHv2 Secure Shell

Datasheet

NEW HP ProCurve M110 Access Point

HP ProCurve M110 Access Point is an entry-level, single IEEE 802.11a/b/g radio device that can be configured to operate as an access point, a wireless distribution system (WDS) bridge, or a full-spectrum IEEE 802.11 wireless LAN (WLAN) monitor. The ProCurve M110 Access Point supports up to two Virtual Service Communities, each with independent VLAN and wireless security profiles. It is Plenum rated and powered by IEEE 802.3af-compliant Power over Ethernet (PoE). The M110 access point is Wi-Fi Certified for WPA2, WPA, and WEP security and has hardware assisted AES and RC4 encryption.

HP ProCurve M110 Access Point

Features and benefits

Industry-leading warranty

Mobility

- **Enhanced security:**

  – Configurable Ethernet MAC and protocol filters

  – WPA2, WPA, and WEP

  – IEEE 802.1X PEAP WLAN authentication

  – Hardware-assisted AES and RC4 encryption

- **Location flexibility:**

  – 100 mW radio and antenna diversity provide excellent range

  – Configurable IEEE 802.11 a/b/g radio with external antenna connectors

  – Plenum rated

  – Centrally manageable as part of the ProCurve Intelligent Mobility system

Warranty and support

- **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve M110 Access Point accessories

HP ProCurve 1-Port Power Injector (J9407A)

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

Note: See details for accessories starting on page 213.

HP ProCurve M110 Access Point

Specifications

HP ProCurve M110 Access Point (J9388A)

Ports	1 RJ-45 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
	1 RS-232C DB-9 console port

Physical characteristics

Dimensions	12.7 x 13.97 x 3.3 cm (5(d) x 5.5(w) x 1.3(h) in.)
Weight	0.91 kg. (2.0 lb)
Enclosure	Indoor, plenum rated

Environment

Operating temperature	0°C to 50°C (32°F to 122°F)
Operating relative humidity	5% to 95%, non-condensing
Non-operating/Storage temperature	–40°C to 80°C (–40°F to 176°F)
Non-operating/Storage relative humidity	5% to 95%, non-condensing
Shock and vibration	EN61373

Electrical characteristics

Description	IEEE 802.3af PoE compliant or 5 VDC from available AC power supply
Maximum power rating	5 W
Antenna Connector	(2) RP-SMA with diversity
Antenna	(2) 2 dBi dual-band 2.4/5 GHz

Frequency band and Operating channels

FCC (US and Canada)	2.412–2.462 GHz (11 channels)
	5.180–5.240 GHz (4 channels)
	5.745–5.825 GHz (5 channels)
European Union	2.412–2.472 GHz (13 channels)
	5.180–5.240 GHz (4 channels)
	5.260–5.320 GHz (4 channels)
	5.500–5.700 GHz (11 channels)

Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)
Safety	UL 2043; UL 60950-1; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1
Emissions	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B
RF Exposure	FCC Bulletin OET-65C; RSS-102; EN 50385
Notes	Maximum transmit power varies by country.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UN691E)
	3-year, 4-hour onsite, 24x7 coverage for hardware (UN692E)
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN694E)
	3-year, 24x7 SW phone support, software updates (UN693E)
	Refer to the HP Web site at www.procurve.eu/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 ProCurve M110 Access Point (J9388A)

Radio characteristics: IEEE 802.11a/b/g

Data rate	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–90 dBm	–72 dBm	–92 dBm	–72 dBm	–90 dBm	–90 dBm
Transmit power	20 dBm	16 dBm	20 dBm	16 dBm	20 dBm	20 dBm

| Standards and protocols | Mobility IEEE 802.11a High Speed Physical Layer in the 5 GHz Band IEEE 802.11b Higher-Speed Physical | | Layer Extension in the 2.4 GHz Band IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band | | IEEE 802.11i Medium Access Control (MAC) Security Enhancements | |

Key features

- Zero-configuration service interface
- Advanced bandwidth management capabilities
- Complete IP routing and networking services
- Integrated MultiService Access Point

Datasheet

NEW HP ProCurve Mobility Integrated Services Access Point Series

HP ProCurve MSM313 and MSM323 Access Points integrate a full-featured MultiService Mobility Access Point and MultiService Mobility Controller in a single turnkey unit. They are used to create easy-to-use public/guest Internet access (hotspot) services. The zero-configuration service interface adapts to client device configuration settings. Bandwidth management creates multiple service tiers and provides users with fair access to bandwidth. The access points provide secure user authentication, authorization, and accounting (AAA), enabling a wide range of free or fee-based service models. They support HTML and IEEE 802.1X login, and provide interfaces for centralized AAA, captive portal, and billing functions, allowing large multilocation networks.

HP ProCurve Mobility Integrated Services Access Point Series

Features and benefits

Industry-leading warranty

Mobility

- **All-in-one simplicity:** The HP ProCurve MSM313 and MSM323 Access Points combine a full-featured multiservice access point and multiservice controller in a single easy-to-deploy enclosure that is ideally suited for public hotspot networks and small enterprise deployments

- **Award-winning public/guest Internet access service:** The ProCurve MSM313 and MSM323 Access Points provide high-speed guest Internet access for up to 25 patrons, guests, and partners. Guest access can be segmented from corporate applications. Easy, Web-based login via a captive, customized portal and zero-configuration service adapts to any client device's IP address and Web proxy settings

- **Rock-solid security:** Security policies based on user credentials (IEEE 802.1X/EAP), hardware identifiers (MAC address and WEP key), or HTML login are enforced at the network edge to safeguard network and information integrity. Standards-based RADIUS interface provides remote authentication, authorization, and accounting (AAA) system integration and hardware-assisted encryption using WPA2/AES (IEEE 802.11i), WPA/RC4, and/or WEP. A built-in stateful firewall provides secure connection to the Internet

- **High-performance, multiservice networking:** The ProCurve MSM313 and MSM323 Access Points can deliver multiple services simultaneously: networking policies tailored for Quality of Service (QoS), authentication, encryption, bandwidth allocation, and VLANs based on user, device, or application identity. End-to-end QoS based on TOS/DiffServ, IEEE 802.1p, and TCP/UDP port. IEEE 802.11e Wireless MultiMedia (WMM) and SpectraLink Voice Priority (SVP) provide voice performance

- **Rich management features:** Activity statistics support per-user billing by data volume and elapsed session time. There is also integrated support for leading third-party hotspot billing services. The self-healing configuration automatically adjusts to changes in the RF environment. The series provides advanced IP networking capabilities, including Adaptive NAT, SMTP redirect, and DHCP services for transparent application support

- **Location flexibility:** The series features a plenum-rated enclosure and is powered by IEEE 802.3af Power over Ethernet (PoE) or a power supply accessory (sold separately)

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Mobility Integrated Services Access Point Series

Specifications

	HP ProCurve MSM323 Access Point (J9341A)	HP ProCurve MSM313 Access Point (J9350A)
Ports	2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full 1 RJ-11 serial console port	2 RJ-45 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) Duplex: half or full 1 RJ-11 serial console port
Physical characteristics Dimensions (D x W x H) Weight Enclosure	16.56 x 16.26 x 4.78 cm (6.52 x 6.4 x 1.88 in.) 1.36 kg (3.0 lb.) Indoor, plenum rated	16.57 x 16.26 x 4.78 cm (6.52 x 6.4 x 1.88 in.) 1.36 kg (3.0 lb.) Indoor, plenum rated
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity	0°C to 50°C (32°F to 122°F) 5% to 95%, non-condensing –40°C to 80°C (–40°F to 176°F) 5% to 95%, non-condensing	0°C to 50°C (32°F to 122°F) 5% to 95%, non-condensing –40°C to 80°C (–40°F to 176°F) 5% to 95%, non-condensing
Electrical characteristics Description Maximum power rating Antenna Connector Antenna	5 VDC connector (power supply sold separately), IEEE 802.3af PoE compliant 8.6 W (4) RP-SMA with diversity (4) 2 dBi dual-band 2.4/5 GHz omnidirectional	5 VDC connector (power supply sold separately), IEEE 802.3af PoE compliant 6.5 W (2) RP-SMA with diversity (2) 2 dBi dual-band 2.4/5 GHz omnidirectional
Frequency band and Operating FCC (US and Canada)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)	2.412–2.462 GHz (11 channels) 5.180–5.240 GHz (4 channels) 5.745–5.825 GHz (5 channels)
European Union	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)	2.412–2.472 GHz (13 channels) 5.180–5.240 GHz (4 channels) 5.260–5.320 GHz (4 channels) 5.500–5.700 GHz (11 channels)
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)
Safety	UL 1950; UL 2043; IEC 60950; EN 60950; CSA 22.2 No. 950-95	UL 1950; UL 2043; IEC 60950; EN 60950; CSA 22.2 No. 950-95
Emissions	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B
Medical	EN60601-1-2	EN60601-1-2
RF Exposure	FCC Part 15.247; RSS-210; EN 300-328; ETS 301-398	FCC Part 15.247; RSS-210; EN 300-328; ETS 301-398
Notes	Maximum transmit power varies by country.	Maximum transmit power varies by country.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UN663E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN664E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN666E) 3-year, 24x7 software phone support, software updates (UN665E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UN675E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN676E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN678E) 3-year, 24x7 software phone support, software updates (UN677E) Refer to the HP Web site at www.procurve.eu/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 ProCurve Mobility Integrated Services Access Point Series

	HP ProCurve MSM323 Access Point (J9341A)				HP ProCurve MSM313 Access Point (J9350A)	
HP ProCurve MSM323 Access Point (J9341A)						
Radio characteristics: Dual a/j/b/g + a/b/g						
Data rate	IEEE 802.11a/j 6 Mbps	IEEE 802.11a/j 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm
HP ProCurve MSM313 Access Point (J9350A)						
Radio characteristics: IEEE 802.11a/j/b/g						
Data rate	IEEE 802.11a/j 6 Mbps	IEEE 802.11a/j 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Receiver sensitivity	–87 dBm	–67 dBm	–87 dBm	–70 dBm	–87 dBm	–87 dBm
Transmit power	18 dBm	12 dBm	18 dBm	13 dBm	18.5 dBm	18.5 dBm

HP ProCurve Mobility Integrated Services Access Point Series accessories

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve MSM323 Access Point (J9341A)

HP ProCurve MSM31x and MSM32x Power Supply (J9405A)

HP ProCurve MSM310/MSM320 AP Mounting Bracket (J9403A)

HP ProCurve MSM313 Access Point (J9350A)

HP ProCurve MSM31x and MSM32x Power Supply (J9405A)

HP ProCurve MSM310/MSM320 AP Mounting Bracket (J9403A)

HP ProCurve WLAN Accessories

- Mobility Client Bridge
- Antennas
- Power Supplies and Injectors

ProCurve
Networking by HP

Datasheet

NEW HP ProCurve M111 Client Bridge

Legacy client devices can be easily integrated into a wireless LAN (WLAN) using the HP ProCurve M111 Client Bridge. The ProCurve M111 Client Bridge can bridge an Ethernet client device running a legacy networking protocol to the WLAN, extending wireless network access to a wide range of DECnet, IPX, AppleTalk, and other devices. An integrated serial to TCP/IP converter enables a TIA-232 asynchronous terminal device to communicate with a compatible station on the network. Strong enterprise-class layered security features, including an IEEE 802.1X supplicant, protect the network from intrusions. Hardware-accelerated encryption provides high performance when using WPA2 (AES), WPA, or WEP security.

HP ProCurve M111 Client Bridge

Features and benefits

Mobility

- **Enhanced security:**

  – Configurable Ethernet MAC and protocol filters

  – WPA2, WPA, and WEP

  – IEEE 802.1X PEAP WLAN authentication

  – Hardware-assisted AES and RC4 encryption

- **Location flexibility:**

  – 100 mW radio and antenna diversity provide excellent range

  – Configurable IEEE 802.11 a/b/g radio with external antenna connectors

  – Plenum rated

  – Centrally manageable as part of the ProCurve Intelligent Mobility system

Warranty and support

- **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available.

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve M111 Client Bridge accessories

HP ProCurve 1-Port Power Injector (J9407A)

HP ProCurve M111 Client Bridge

Specifications

HP ProCurve M111 Client Bridge (J9389A)

Ports	1 RJ-45 auto-sensing 10/100 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 1 RS-232C serial console port
Physical characteristics Dimensions (D x W x H) Weight Enclosure	 12.7 x 13.97 x 3.3 cm (5 x 5.5 x 1.3 in.) 0.91 kg. (2.0 lb) Indoor, plenum rated
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Shock and vibration	 0°C to 50°C (32°F to 122°F) 5% to 95%, non-condensing –40°C to 80°C (–40°F to 176°F) 5% to 95%, non-condensing EN61373
Electrical characteristics Description Maximum power rating Antenna Connector Antenna	 IEEE 802.3af PoE compliant or 5 VDC from available AC power supply 5 W (2) RP-SMA with diversity (2) 2 dBi dual-band omnidirectional
Radio	FCC Part 15.247; FCC Part 15.407 (US); RSS-210 (Canada); EN 300 328; ARIB STD-T66; IDA Registration (Singapore); MIC approval (Korea); RCR STD-33; ARIB STD-T71 (Japan); EN 301 893 (EU)
Safety	UL 2043; UL 60950-1; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1
Emissions	EN 55022 Class B; EN 301 489-1; EN 301 489-17; ICES-003 Class B; FCC Part 15, Class B
RF Exposure	FCC Bulletin OET-65C; RSS-102; EN 50385
Notes	Maximum transmit power varies by country.
Services	3-year, parts only, global next-day advance exchange (UN655E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UN656E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UN657E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UN658E) 1-year post-warranty next-business day exchange (UN659E) 1-year post-warranty 4-hour response, 13x5 onsite support (UN660PE) 1-year post-warranty 4-hour response, 24x7 onsite support (UN661PE) 1-year post-warranty hardware and software, 24x7 phone support (UN662PE) Refer to the HP Web site at www.procurve.eu/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 ProCurve M111 Client Bridge (J9389A)

Radio characteristics: IEEE 802.11a/b/g

	IEEE 802.11a 6 Mbps	IEEE 802.11a 54 Mbps	IEEE 802.11g 6 Mbps	IEEE 802.11g 54 Mbps	IEEE 802.11b 1 Mbps	IEEE 802.11b 11 Mbps
Data rate						
Receiver sensitivity	–90 dBm	–72 dBm	–92 dBm	–72 dBm	–90 dBm	–90 dBm
Transmit power	20 dBm	16 dBm	20 dBm	16 dBm	20 dBm	20 dBm

Standards and protocols	Mobility IEEE 802.11a High Speed Physical Layer in the 5 GHz Band IEEE 802.11b Higher-Speed Physical	Layer Extension in the 2.4 GHz Band IEEE 802.11g Further Higher Data Rate Extension in the 2.4 GHz Band	IEEE 802.11i Medium Access Control (MAC) Security Enhancements

Datasheet

HP ProCurve External Access Point Antennas

The ProCurve family of 2.4 GHz, 5 GHz, and dual-band access point antennas is specifically designed to meet the needs of today's most demanding wireless LAN deployments. ProCurve external antennas support both single- and dual-band access point deployments, providing increased flexibility to help improve coverage and radio signal predictability. Each external antenna includes the necessary installation hardware to extend a robust wireless network across an entire campus, or for in-building environments.

HP ProCurve External Access Point Antennas

Features and benefits

Industry-leading warranty

Additional information

- **High-gain omnidirectional or directional antennas:** provide specific RF pattern characteristics to increase wireless coverage and signal gain or overcome physical/RF interference

- **Choice of indoor and outdoor antennas:** extend the reach of a wireless LAN within an office, warehouse, or retail environment or for campus-wide indoor and outdoor coverage

- **Choice of mounting options:** for ease of deployment, each ProCurve antenna includes the necessary mounting hardware to quickly get a wireless LAN up and running

- **Certified external antennas:** specifically designed and certified for use with ProCurve wireless access points

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.
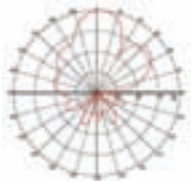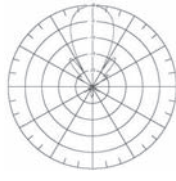
HP ProCurve External Access Point Antennas

Specifications

	HP ProCurve 14 dBi 5 GHz Directional Antenna (J9000A)	HP ProCurve 14 dBi Yagi Antenna (J8448B)
Electrical characteristics		
Frequency (MHz)	5150–5875	2400–2500
Gain 1 dBi (with antenna cable)	13.3	13.8
VSWR max	2.0:1	1.7:1
E-Plane (3 dB beamwidth)	27 degrees	30 degrees
E-plane radiation plots		
H-Plane (3 dB beamwidth)	29 degrees	34 degrees
H-plane radiation plots		
Polarization	Linear (vertical)	N/A
Impedance (Ohms)	50	50
Grounding	DC	N/A
RF connector	Reverse SMA (male)	N-Type (female)
Cable length	0.84 m (2.75 ft.)	0.52 m (1.7 ft.)
Physical characteristics		
Dimensions (D x W x H)	10.57 x 10.57 x 3.48 cm (4.16 x 4.16 x 1.37 in.)	67.31 x 9.53 x 3.81 cm (26.5 x 3.75 x 1.5 in.)
Height	N/A	N/A
Wind surface area	0.01 sq. m (0.12 sq. ft.)	0.07 sq. m (0.70 sq. ft.)
Wind survival	193.08 km/hr (120 mph)	160.9 km/hr (100 mph)
Weight	0.32 kg (0.7 lb.)	0.57 kg (1.25 lb.)
Mounting style	Flush wall mount, articulating wall, or mast	Wall or mast mount
Enclosure	PVC/Acrylic	Polycarbonate
Front-to-back ratio (dB)	17	18
Environment		
Operating temperature	–30ºC to 55ºC (–22ºF to 131ºF)	–30ºC to 55ºC (–22ºF to 131ºF)
Non-operating/Storage temperature	–40ºC to 65ºC (–40ºF to 149ºF)	–40ºC to 65ºC (–40ºF to 149ºF)
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve External Access Point Antennas

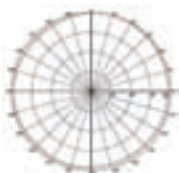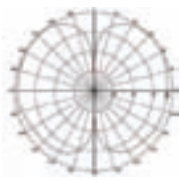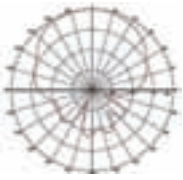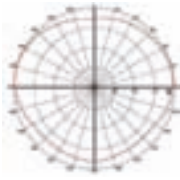|	HP ProCurve 5 dBi Indoor/Outdoor Omnidirectional Antenna (J8441A)	HP ProCurve 8 dBi Outdoor Omnidirectional Antenna (J8444A)
Electrical characteristics		
Frequency (MHz)	2400–2500	2400–2500
Gain 1 dBi (with antenna cable)	4.4	7.4
VSWR max	1.7:1	1.5:1
E-Plane (3 dB beamwidth)	31 degrees	12 degrees
E-plane radiation plots		
H-Plane (3 dB beamwidth)	Omnidirectional	Omnidirectional
H-plane radiation plots		
Polarization	Linear (vertical)	Linear (vertical)
Impedance (Ohms)	50	50
Grounding	DC	N/A
RF connector	Reverse SMA (male)	Reverse SMA (male)
Cable length	0.84 m (2.75 ft.)	0.84 m (2.75 ft.)
Physical characteristics		
Dimensions (D x W x H)	N/A	N/A
Height	29.21 cm (11.5 in.)	64.14 cm (25.25 in.)
Wind surface area	0.01 sq. m (0.08 sq. ft.)	0.01 sq. m (0.11 sq. ft.)
Wind survival	201.13 km/hr (125.1 mph)	201.13 km/hr (125 mph)
Weight	0.14 kg (0.30 lb.)	0.23 kg (0.5 lb.)
Mounting style	Ceiling T-bar, I-beam, or mast	Mast
Enclosure	Polycarbonate	Polycarbonate
Front-to-back ratio (dB)	N/A	N/A
Environment		
Operating temperature	–30°C to 55°C (–22°F to 131°F)	–30°C to 55°C (–22°F to 131°F)
Non-operating/Storage temperature	–40°C to 65°C (–40°F to 149°F)	–40°C to 65°C (–40°F to 149°F)
Services	Refer to the HP Web site at www.procurve.eu/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.	

Specifications (continued)

HP ProCurve 6 dBi 5 GHz Omnidirectional Antenna (J8998A)

Electrical characteristics	
Frequency (MHz)	5150–5875
Gain 1 dBi (with antenna cable)	6.3
VSWR max	2.0:1
E-Plane (3 dB beamwidth)	17 degrees
E-plane radiation plots	
H-Plane (3 dB beamwidth)	Omnidirectional
H-plane radiation plots	
Polarization	Linear (vertical)
Impedance (Ohms)	50
Grounding	N/A
RF connector	Reverse SMA (male)
Cable length	0.84 m (2.75 ft.)
Physical characteristics	
Dimensions (D x W x H)	N/A
Height	29.36 cm (11.56 in.)
Wind surface area	0.01 sq. m (0.09 sq. ft.)
Wind survival	193.08 km/hr (120 mph)
Weight	0.14 kg (0.3 lb.)
Mounting style	Ceiling T-bar, I-beam, or mast
Enclosure	Polycarbonate
Front-to-back ratio (dB)	N/A
Environment	
Operating temperature	–30ºC to 55ºC (–22ºF to 131ºF)
Non-operating/Storage temperature	–40ºC to 65ºC (–40ºF to 149ºF)
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve External Access Point Antennas

	HP ProCurve 7 dBi Dual-Band Directional Antenna (J8999A)	HP ProCurve 3 dBi Dual-Band Diversity Antenna (J8997A)
Electrical characteristics		
Frequency (MHz)	2400–2500 (1), 4900–5990 (2)	2400–2500 (1), 4900–5990 (2)
Gain 1 dBi (with antenna cable)	6.9 (1), 7.7 (2)	3 (1), 4 (2)
VSWR max	2.0:1	2.0:1
E-Plane (3 dB beamwidth)	66 degrees	60 degrees
E-plane radiation plots		
H-Plane (3 dB beamwidth)	68 degrees	Omnidirectional
H-plane radiation plots		
Polarization	Linear (vertical)	N/A
Impedance (Ohms)	50	50
Grounding	N/A	DC
RF connector	Reverse SMA (male)	Reverse SMA (male)
Cable length	0.84 m (2.75 ft.)	0.84 m (2.75 ft.)
Physical characteristics		
Dimensions (D x W x H)	13.11 x 13.11 x 3.48 cm (5.16 x 5.16 x 1.37 in.)	15.65 x 9.3 x 2.26 cm (6.16 x 3.66 x 0.89 in.)
Height	N/A	N/A
Wind surface area	0.01 sq. m (0.12 sq. ft.)	N/A
Wind survival	193.08 km/hr (120 mph)	N/A
Weight	0.23 kg (0.5 lb.)	0.23 kg (0.5 lb.)
Mounting style	Flush wall mount, articulating wall, or mast	Ceiling grid
Enclosure	PVC/Acrylic	PVC/Acrylic
Front-to-back ratio (dB)	10	N/A
Environment		
Operating temperature	–30ºC to 55ºC (–22ºF to 131ºF)	–30ºC to 55ºC (–22ºF to 131ºF)
Non-operating/Storage temperature	–40ºC to 65ºC (–40ºF to 149ºF)	–40ºC to 65ºC (–40ºF to 149ºF)
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve External Access Point Antennas

HP ProCurve Dual-Band Indoor Short Omnidirectional Antenna (J9401A), not pictured

Physical characteristics
Dimensions (H): 9.59 cm (3.78 in.)
Base diameter: 0.93 cm (0.37 in.)

Electrical characteristics
Connector: RP-SMA

Notes
2.1 dBi (2.45 GHz), 2.4 dBi (4.9 GHz), 2.6 dBi (5.25 GHz), 3.4 dBi (5.875 GHz)
Polarization: vertical, omnidirectional
VSWR 2:1 max. across all bands

Services
Refer to the HP Web site at **www.procurve.eu/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.

Accessories:

HP ProCurve MSM323 Access Point (J9341A)

HP ProCurve MSM313 Access Point (J9350A)

HP ProCurve MSM422 Access Point (J9359A)

HP ProCurve M110 Access Point (J9388A)

HP ProCurve M111 Client Bridge (J9389A)

HP ProCurve MSM320 Access Point (J9364A)

HP ProCurve MSM325 Access Point (J9373A)

HP ProCurve MSM310 Access Point (J9379A)

HP ProCurve MSM335 Access Point (J9357A)

Warranty and support

- **ProCurve Lifetime Warranty◆:** for as long as you own the
  product, with next-business-day advance replacement (available
  in most countries).

- **Electronic and telephone support:** limited electronic and
  telephone support is available from HP. Refer to the HP Web
  site at **www.procurve.eu/support** for details on the support
  provided and the period during which support is available.

HP ProCurve Power Supplies and Injectors

HP ProCurve Antenna Lightning Arrester (J8996A)

Electrical characteristics
VSWR max: 1.4:1

Physical characteristics
Dimensions (D x W x H): 6.1 x 2.29 x 3.05 cm (2.4 x 0.9 x 1.2 in.)

Notes
Input RF power, 100 MHz/6000 MHz: 250 W/10 W
50 Meg Ohm insulation resistance
Maximum insertion loss of 0.4 dB

Services
Refer to the HP Web site at www.procurve.eu/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.

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve MSM31x and MSM32x Power Supply (J9405A), not pictured

Physical characteristics
Dimensions (D x W x H): 8.5 x 5 x 3.22 cm (3.35 x 1.97 x 1.27 in.)
Weight: 0.4 kg (0.88 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)
Operating relative humidity: 5% to 95%, non-condensing
Non-operating/Storage temperature: –20°C to 80°C (–4°F to 176°F)
Non-operating/Storage relative humidity: 5% to 95%, non-condensing

Electrical characteristics
Voltage: 100–240 VAC
Current: 0.5 A/0.3 A
Frequency: 50/60 Hz

Notes
Output voltage: 5 VDC

Services
Refer to the HP Web site at www.procurve.eu/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.

Warranty and support

· **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve Power Supplies and Injectors

HP ProCurve MSM335 and MSM422 Power Supply (J9406A), not pictured

Physical characteristics
Dimensions (D x W x H): 6.7 x 10.6 x 3.8 cm (2.64 x 4.17 x 1.5 in.)
Weight: 0.33 kg (0.73 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°)
Operating relative humidity: 5% to 95%, non-condensing
Non-operating/Storage temperature: –20°C to 85°C (–4°F to 185°)
Non-operating/Storage relative humidity: 5% to 95%, non-condensing

Electrical characteristics
Voltage: 100–240 VAC
Current: 0.3 A/0.2 A
Maximum power rating: 50 W
Frequency: 50/60 Hz

Notes
Maximum power rating is the worst-case theoretical maximum power number with fully loaded
    PoE, 100% traffic, all ports plugged in, and all modules populated.

Safety
UL 60950; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03

Emissions
EN 55022 Class B; EN 55024; FCC Part 15, Class B

Services
Refer to the HP Web site at www.procurve.eu/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.

Warranty and support

· **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve 1-Port Power Injector (J9407A), not pictured

Physical characteristics
Dimensions (D x W x H): 14.5 x 6 x 3.1 cm. (5.71 x 2.36 x 1.22 in)
Weight: 0.45 kg (1 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)
Operating relative humidity: 5% to 95%, non-condensing
Non-operating/Storage temperature: –20°C to 70°C (–4°F to 158°F)
Non-operating/Storage relative humidity: 5% to 95%, non-condensing
Altitude: Up to 3 km (10,000 ft.)

Electrical characteristics
Voltage: 100–240 VAC
Current: 0.3 A/0.2 A
Frequency: 50/60 Hz
Notes: IEEE 802.3af compliant

Safety
UL 60950; EN 60950

Emissions
EN 55024; EN 55022 (CISPR 22) Class B with FTP cabling; FCC Part 15, Class B with FTP cabling

Notes
The 1-port power converter has 1 AC power cord input, 1 RJ-45 10/100/1000 Mbps port for
    data coming from the network infrastructure, and 1 RJ-45 for data plus IEEE 802.3af-compliant
    PoE for Gigabit Ethernet to power the access point.

Services
Refer to the HP Web site at www.procurve.eu/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.

Warranty and support

· **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve WAN Products

Datasheet

HP ProCurve Secure Router 7000dl Series

The HP ProCurve Secure Router 7000dl Series provides an affordable and scalable platform for small and medium businesses as well as medium and large enterprise organizations to connect branch offices to their headquarter locations. The Secure Router 7000dl Series offers a variety of WAN interface modules and supports wire-speed routing performance with integrated security and convergence capabilities to secure branch office connections edge to edge while simplifying the deployment, management, and support of routers.

HP ProCurve Secure Router 7000dl Series

Features and benefits

Industry-leading warranty

Resiliency and high availability

- **Equal-cost multi-path (ECMP) for BGP, OSPF, and static routes:** provides the ability to load-balance traffic across multiple WAN connections

- **Multilink capability:** MLFR and MLPPP enable multiple T1/E1 ports to be aggregated and dynamically load-balanced across Frame Relay or PPP links

- **Multi-homing BGP support:** supports redundant WAN connections to multiple service providers using BGP routing protocol

- **Network monitor:** Provides performance testing and Layer 3 network connectivity monitoring for integrated IP interfaces and externally connected ADSL/cable modems; can be used to initiate a demand routing backup connection based on the status of IP links

- **Optional redundant power supply:** provides uninterrupted power (provided by HP ProCurve 600 RPS/EPS)

Layer 2 switching

- **VLAN support and tagging:** support complete IEEE 802.1Q (4,096 VLAN IDs)

Layer 3 services

- **IP multicast:** supports PIM SM, IGMPv2, and multicast stub routing

- **PIM Sparse mode:** routes IP multicast traffic using PIM Sparse mode (PIM-SM)

- **DHCP support:** acts as a DHCP server, relay, or client

- **SNTP Client/Server:**

  - **SNTP client:** obtains time settings from NTP server using SNTP

  - **SNTP server:** device will respond to SNTP client requests for time settings

Layer 3 routing

- **IP routing protocols:** supports static routes, RIP, RIPv2, OSPF, and BGP4

- **Policy-based routing:** allows users to route based upon both source and destination address

- **Route redistribution:** redistributes routes between BGP, OSPF, RIP, and static routes

- **Concurrent bridging and routing:** simultaneously bridge non-IP traffic and route IP traffic on the same interface

- **VLAN-aware bridging:** ability to preserve IEEE 802.1Q tag across Frame Relay, PPP, and HDLC WAN circuits

Supported WAN standards

- **WAN protocols:** provides support for PPP, Frame Relay, IPSec, HDLC, DDR, MLPPP, MLFR, PPPoA, and PPPoE

- **Dial-on-Demand Routing (DDR):** ISDN or analog modem links activate when interesting traffic needs to be routed, helping to avoid costs associated with toll charges

- **Channelized T1/E1 support:** enables connections of up to 24 or 30 locations at 64 kbps, terminating on a single T1 or E1 WAN port on the 8xT1/E1 module

Security

- **Stateful firewall:** includes an integrated stateful firewall and a Cyber Attack Defense Engine that stops common attacks to help ensure continuous availability of critical Internet-dependent applications; the firewall also supports NAT and port-forwarding operations

- **Access control lists (ACLs):** provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number

- **Time-based ACLs:** can be used to restrict network services (i.e., Internet access) based on time of day or day of the week

- **IPSec VPN:** optional IPSec VPN module enables site-to-site and client sessions; tunneling protocols include IPSec and GRE; encryption methods include 3DES-CBC, DES-CBC, AES-CBC, 128-bit, 192-bit, and 256-bit; hash algorithms supported are SHA-1, MD5, and manual IPSec policies; supports the ability to route traffic between tunnels (hub and spoke VPNs)

- **HTTP content filtering:** HTTP filtering can be applied to incoming or outgoing sessions on any IP interface to provide a proactive defense against Web-based threats; also, uses the WiSP protocol to communicate with Websense Enterprise server for enhanced content-filtering services

HP ProCurve Secure Router 7000dl Series

Features and benefits (continued)

- **Policy-based routing:** allows the enforcement of packet policies and resource allocation down to individual end systems and end users

- **Network address translation (NAT) support:** provides 1:1 or 1:many NAT port translation

- **Management security:** utilizes SSHv2, secure copy, and SSL to encrypt all HTTP traffic, allowing secure access to the browser-based management GUI in the router; supports AAA systems, including authentication methods that utilize RADIUS servers or a local user database for operator and privileged mode passwords

- **Global password encryption:** provides a global command to allow encryption of all user passwords

- **RADIUS authentication:** user authentication is performed via RADIUS to prevent unauthorized management access

- **TACACS+ AAA support:** offers full authentication, authorization, and accounting (AAA) with TACACS+

- **IEEE 802.1X supplicant:** supports IEEE 802.1X supplicant mode, where the router transmits and receives EAP requests from the authenticator to support IEEE 802.1X-enabled environments and prevent rogue networking equipment deployments

Convergence

- **VoIP support:** supports H.323 and SIP ALGs through a firewall

Quality of Service (QoS)

- **Layer 2/3/4 QoS mechanisms:** IEEE 802.1p marking, precedence, and DiffServ priority tagging based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, and source port

- **QoS maps on Ethernet interfaces:** map IEEE 802.1p marking to Layer 3 QoS tag based on ACL settings

- **Scheduling mechanisms:** supports Weighted Fair Queuing (WFQ), FIFO, Low Latency Queuing (LLQ), and Priority Queuing (PQ)

- **Class-Based Weighted Fair Queuing (CBWFQ):** allows allocation of bandwidth to a particular class of traffic based on a percentage of total available bandwidth or maximum kbps throughput

- **Traffic shaping and QoS support for Ethernet ports:** allow the ability to apply WFQ, LLQ, and CBWFQ mechanisms to Ethernet ports based on DiffServ Code Point settings

- **Policy and shaping:** support Frame Relay Traffic Shaping (FRTS) and Frame Relay Fragmentation (FRF.12) to help reduce insertion delay across low-speed WAN links

Ease of use

- **ProCurve AutoSynch capability:** automatic synchronization of the internal flash and compact flash memory to help ensure that the most recent configuration and image files are stored in both locations to facilitate remote deployment, manageability, and maintenance

- **ProCurve SafeMode capability:** allows easy recovery of configuration mishaps when modifying active configurations remotely

- **Industry-standard CLI:** utilizes a familiar command-line interface (CLI) to reduce training and certification costs

- **Link Layer Discovery Protocol (LLDP):** supported by HP ProCurve Manager to enable real-time mapping of Ethernet nodes connected to the router ports

- **Compact flash port:** facilitates remote site installation by allowing the system image and configuration file to boot from externally accessible compact flash (CF) drive; can be configured to support ProCurve AutoSynch technology to simultaneously update external CF and onboard flash with the system image and configuration file, helping to limit downtime and switchover in the event of failure

- **Dual flash images:** provides independent primary and secondary OS files for backup while upgrading

- **Firewall and VPN wizards:** the GUI provides a simplified format for configuring firewall policies and access control lists (ACLs), as well as setting up VPN tunnels; novice and expert users will find the GUI to be intuitive and easy to use

- **Central management:** supports SNMPv2/v3; can be centrally managed to archive and update configuration and software image files, and secures SNMP management through addition of authentication and encryption

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Secure Router 7000dl Series

Specifications

HP ProCurve Secure Router 7102dl (J8752A)

HP ProCurve Secure Router 7203dl (J8753A)

	HP ProCurve Secure Router 7102dl (J8752A)	HP ProCurve Secure Router 7203dl (J8753A)
Ports	2 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) 　Media type: Auto-MDIX 　Duplex: half or full 2 open dl module slots 1 RS-232C DB-9 console port 1 Compact Flash port 1 VPN encryption module slot; 500 max VPN sessions	2 auto-sensing 10/100 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX) 　Media type: Auto-MDIX 　Duplex: half or full 2 open dl module slots 1 RS-232C DB-9 console port 1 Compact Flash port 1 VPN encryption module slot; 1000 max VPN sessions 1 open dl wide module slot
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	29.26 x 44.25 x 4.39 cm (11.52 x 17.42 x 1.73 in.) (1U height) 4.62 kg (10.26 lb.)	29.26 x 44.25 x 4.39 cm (11.52 x 17.42 x 1.73 in.) (1U height) 4.93 kg (10.95 lb.)
Memory and processor	32 MB flash, 128 MB SDRAM	32 MB flash, 256 MB SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance WAN throughput	150 kpps up to 4xT1/E1 lines	210 kpps up to 8xT1/E1 lines
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity	0°C to 50°C (32°F to 122°F) 0% to 95%, non-condensing −20°C to 70°C (−4°F to 158°F) 0% to 95%, non-condensing	0°C to 50°C (32°F to 122°F) 0% to 95%, non-condensing −20°C to 70°C (−4°F to 158°F) 0% to 95%, non-condensing
Electrical characteristics Voltage Current Maximum power rating Frequency Notes	100–127 VAC/200–240 VAC 0.4 A/0.2 A 15 W 50/60 Hz Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated.	100–127 VAC/200–240 VAC 0.4 A/0.2 A 50 W 50/60 Hz Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated.
Safety	CSA 22.2 No. 60950 3rd edition; CE Labeled; cUL Certified; EN 60950/IEC 60950, 3rd edition; UL Listed; AS/NZS 60950; KN 60950; GOST R MEK60950; TS 60950; UL 60950	
Emissions	FCC Rules Part 15, Subpart B Class A; CISPR 22/A2; EN 55022/A2; ICES-003; VCCI V-3/2000.04; IEC/EN 61000-3-2; IEC/EN 61000-3-3; EN 55024/A1; IEC 61000:4-2, 4-3, 4-4, 4-5, 4-6, 4-8, 4-11; BSMI CNS 13438	
Telecom	TBR-1; TBR-2; TBR-3; TBR-12; TBR-13; TBR-21; ITU-T G.992.1	TBR-1; TBR-2; TBR-3; TBR-12; TBR-13; TBR-21; ITU-T G.992.1
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UA432E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UA433E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UA434E) 3-year, 24x7 SW phone support, software updates (UF789E) Refer to the HP Web site at www.procurve.eu/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, 4-hour onsite, 13x5 coverage for hardware (UA435E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UA436E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UA437E) 3-year, 24x7 SW phone support, software updates (UF790E) Refer to the HP Web site at www.procurve.eu/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 ProCurve Secure Router 7000dl Series

HP ProCurve Secure Router 7000dl Series accessories

HP ProCurve VPN Client 100-user license (J8758A)

HP ProCurve VPN Client unlimited-user license (J8750A)

HP ProCurve 600 Redundant External Power Supply (J8168A)

HP ProCurve Manager

HP ProCurve Manager Plus

Cables

HP ProCurve Secure Router Serial Cable V.35 DTE (J8757A)

HP ProCurve Secure Router Serial Cable X.21 DTE (J8755A)

dl Backup Modules

HP ProCurve Secure Router dl Analog Modem Backup Module (J8462A)

HP ProCurve Secure Router dl 1-Port ISDN BRI S/T Backup Module (J8461A)

HP ProCurve Secure Router dl 1-Port ISDN BRI U Backup Module (J8460A)

dl Modules

HP ProCurve Secure Router dl 1xT1 Module (J8451A)

HP ProCurve Secure Router dl 1xT1 + DSX-1 Module (J8452A)

HP ProCurve Secure Router dl 2xT1 Module (J8453A)

HP ProCurve Secure Router dl 1xE1 Module (J8454A)

HP ProCurve Secure Router dl 1xE1+G.703 Module (J8455A)

HP ProCurve Secure Router dl 2xE1 Module (J8456A)

HP ProCurve Secure Router dl 1-Port ADSL2+ Annex B Module (J8759A)

HP ProCurve Secure Router dl 1-Port ADSL2+ Annex A Module (J8459A)

HP ProCurve Secure Router dl 1-Port Serial Module (J8458A)

HP ProCurve Secure Router dl 2-Port ISDN BRI U Module (J9010A)

HP ProCurve Secure Router dl 2-Port ISDN BRI S/T Module (J8457A)

dl Wide Modules

HP ProCurve Secure Router dl Wide 8xT1/E1 Module (J8463A)

HP ProCurve Secure Router dl Wide 8xSerial Module (J9011A)

VPN Encryption Modules

HP ProCurve Secure Router 7100/7200 IPSec VPN Module (J8471A)

HP ProCurve Secure Router 7100/7200 IPSec VPN Base Module (J9026A)

HP ProCurve Switch Accessories

Datasheet

HP ProCurve 600 Redundant External Power Supply

The HP ProCurve 600 Redundant and External Power Supply (RPS/EPS) has two different power supplies embedded: one for 12 V and the other one for 50 V. The 12 V power supply is called a redundant power supply (RPS) and the 50 V power supply is called the external power supply (EPS). The RPS has six ports offering redundant power to any one of up to six ProCurve switches. The EPS has two ports and can power up to 24 Power over Ethernet (PoE) ports with full 15.4 W PoE power, if only one of the EPS ports is used. Alternatively, it can simultaneously power up to 12 ports with full 15.4 W of PoE power on each of two switches if both EPS ports are used. The pair of EPS ports can supply up to 408 W of PoE power.

HP ProCurve 600 Redundant External Power Supply

Features and benefits

Industry-leading warranty

Additional information

- **Power distribution on an "as-needed" basis:** monitors power supplies from connected switch or switches; when power from switch fails, it provides backup power in less than 1 millisecond

- **RPS device prioritization:** if the internal power supply of more than one of the connected switches fails, redundant power is provided to the highest-priority switch; RPS port 1 has the highest priority, whereas port 6 has the lowest priority

- **Redundant switch power (six ports):** provides redundant power to any one of up to six switch products, backing up the power supply in a switch in case of loss of AC power or a fault condition

- **Hot-plugging:** supports changing the configuration of an RPS or EPS cable while the device is powered

- **Supports ProCurve chassis and stackable products:** power supply units can be configured to support both chassis and stackable switches

- **Cables included:** includes two 2-meter EPS cables and six 1.26-meter cables

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

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* For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

HP ProCurve 600 Redundant External Power Supply

Specifications

HP ProCurve 600 Redundant External Power Supply (J8168A)

Ports	6 redundant power supply ports
	Restrictions: Each port can provide redundant +12 V power to a connected switch; only one port can provide power at a given time
	2 external power supply ports
	Restrictions: Provides 50 VDC external PoE to up to two ProCurve switches; provides max. of 408 W full power to one device, or half power (204 W each) if connected to two devices
Physical characteristics	
Dimensions (D x W x H)	32.59 x 44.3 x 4.39 cm (12.83 x 17.44 x 1.73 in.) (1U height)
Weight (fully loaded)	5.34 kg (11.78 lb.)
Mounting	1U rack-mountable and wall-mountable enclosure using standard mounting hardware
Environment	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 14.6 km (5,000 ft.)
Acoustic	Noise emission LwA=59.2 dB at virtual workspace, according to DIN 45635 T.19
Electrical characteristics	
Voltage	100–240 VAC
Current	9 A/5 A
Frequency	The unit automatically adjusts to any voltage between 100–240 V and either 50 or 60 Hz
Maximum power rating	800 W
RPS power	180 W
PoE power	408 W
Notes	Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity	
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Provides information via port interfaces of attached devices
Notes	Supported devices
	HP ProCurve Switch 2600-PWR Series, ProCurve Switch 2610 Series, ProCurve Switch 2610-PWR Series, ProCurve Switch 2800 Series, ProCurve Switch 2810 Series, ProCurve Switch 5300xl Series, ProCurve Switch 3400cl Series, ProCurve Switch 6400cl Series, and ProCurve Secure Router 7000dl Series
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U9270E)
	3-year, 4-hour onsite, 24x7 coverage for hardware (U9271E)
	Refer to the HP Web site at www.procurve.eu/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.

Datasheet

HP ProCurve 610 External Power Supply

The HP ProCurve 610 External Power Supply (EPS) has two pairs of EPS ports (with four ports total). Each pair of EPS ports can power up to 24 Power over Ethernet (PoE) ports with full 15.4 W PoE power, if only one of the EPS ports is used. Alternatively, each pair of EPS ports can simultaneously power up to 12 ports with full 15.4 W of PoE power on each of two switches if both EPS ports are used. Each pair of EPS ports can supply up to 408 W of PoE power.

The 610 EPS also includes EPS power backup ports, which allow one 610 EPS with spare power to provide power backup for another 610 unit connected to it in a stack.

HP ProCurve 610 External Power Supply

Features and benefits

Industry-leading warranty

Additional information

· **Supports ProCurve chassis and stackable products:** power supply units can be configured to support both chassis and stackable switches

· **ProCurve patented EPS backup:** automatically provides power to another connected 610 unit in a stack in case of a power failure

· **External switch power (four ports):** provides external power to up to four PoE switches or modules through four EPS ports

· **Cables included:** includes four 2-meter EPS cables

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 610 External Power Supply

Specifications

HP ProCurve 610 External Power Supply (J8169A)

Ports	4 external power supply ports Restrictions: Provides 50 VDC external PoE power to up to four ProCurve switches; each pair of EPS ports provides max. of 408 W full power to one device, or half power (204 W each) if connected to two devices
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	 48.31 x 43.94 x 4.39 cm (19.02 x 17.3 x 1.73 in.) (1U height) 7.46 kg (16.44lb.)
Mounting	1U rack-mountable and wall-mountable enclosure using standard mounting hardware
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 50°C (32°F to 122°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 65°C (149°F), non-condensing Up to 14.6 km (5,000 ft.) Noise emission LwA=58 dB at virtual workspace, according to DIN 45635 T.19
Electrical characteristics **Voltage** **Current** **Frequency** **Maximum power rating** **PoE power** **Notes**	 100–240 VAC 11 A/6 A The unit automatically adjusts to any voltage between 100–240 V and either 50 or 60 Hz 1,000 W 816 W Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated. For Japan, the unit only operates at 200 V, 50 Hz, and 6 A.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	Unmanaged power supply; provides information via LEDs or through port interfaces of attached devices
Notes	Supported devices HP ProCurve Switch 2600-PWR Series, ProCurve Switch 2610-PWR Series, and ProCurve Switch 5300xl Series
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U9270E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U9271E) Refer to the HP Web site at www.procurve.eu/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.

Datasheet

HP ProCurve 620 Redundant/External Power Supply

The HP ProCurve 620 Redundant/External Power Supply provides redundant system power and/or an extra 398 W of Power over Ethernet (PoE) power for each of two supported switches simultaneously. Ideally suited for Voice over IP (VoIP) environments, the 620 provides the RPS and extra PoE power needed in many other common customer environments where high power availability is desired. Switchover from a failed internal power supply to the 620 is seamless and immediate. In addition, the 620 can protect against a single power main failure by being connected to a different power main than the switch. The 620 supports the HP ProCurve Switch 2900 Series and 3500yl Series, as well as 6200yl switches.

HP ProCurve 620 Redundant/External Power Supply

Features and benefits

Industry-leading warranty

Additional information

· **Independent RPS and EPS ports:** two RPS ports provide system power for up to two switches simultaneously and two EPS ports provide PoE power for up to two switches simultaneously

· **Supports a number of ProCurve stackable switches:**

– **Redundant power supply (RPS):** provides full redundant system power (RPS) support for the HP ProCurve Switch 2900 Series and 3500yl Series, as well as 6200yl switches

– **External power supply (EPS):** provides an additional 398 W of PoE (EPS) power to the ProCurve Switch 3500yl Series

· **Cables included:** includes four 2-meter RPS/EPS cables; cables can be used to carry RPS power or EPS power to the connected switch; no extra cables are needed for a complete solution

Warranty and support

· **ProCurve Lifetime Warranty˙:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

˙ For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at **www.procurve.eu/warranty**.

HP ProCurve 620 Redundant/External Power Supply

Specifications

HP ProCurve 620 Redundant/External Power Supply (J8696A)

Ports	2 redundant power supply ports Restrictions: 195 W available per port, total of 390 W 2 external power supply ports Restrictions: 398 W available per port, total of 796 W
Physical characteristics	
Dimensions (D x W x H)	39.12 x 44.2 x 4.39 cm (15.4 x 17.4 x 1.73 in.) (1U height)
Weight (fully loaded)	6.89 kg (15.2 lb.)
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Environment	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating relative humidity	15% to 95% @ 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 90% @ 65°C (149°F), non-condensing
Altitude	Up to 3 km (10,000 ft.)
Acoustic	LwA per ISO 7779: 54.2 dB
Electrical characteristics	
Maximum heat dissipation	422 kJ/hr (400 BTU/hr), for the actual 620 itself. PoE-powered device heat dissipation assumed to be outside the 620.
Voltage	100–127 VAC/200–240 VAC
Current	16 A/8 A
Maximum power rating	1,440 W
RPS power	390 W
PoE power	796 W
RPS	12 V
PoE	–50 V
Frequency	50/60 Hz
Notes	Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated. Above figures are for maximum RPS and PoE power being supplied to two switches simultaneously. 200–240 V power cords shipped with the 620 have a wall plug rated as close to 13 A as specific country standards allow.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity	
EN	EN 55024, CISPR 24
ESD	IEC 61000-4-2
Radiated	IEC 61000-4-3
EFT/Burst	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted	IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8
Voltage dips and interruptions	IEC 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Unmanaged power supply; provides information via LEDs (LEDs repeated on front and back panel) or through port interfaces of attached devices
Notes	The ProCurve 620 supports the HP ProCurve Switch 2900 Series (RPS) and 3500yl Series (RPS/PoE), as well as 6200yl (RPS) switches. The HP ProCurve Switch 5400zl Series is not supported. The ProCurve 620 includes four 2 m RPS/EPS cables. These cables can be used to carry either RPS or PoE power to the switch being powered.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U9270E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U9271E) Refer to the HP Web site at www.procurve.eu/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.

Datasheet

HP ProCurve Switch zl Power Supply Shelf

The HP ProCurve Switch zl Power Supply Shelf provides additional Power over Ethernet (PoE) power to a zl switch beyond what can be provided by the switch's internal power supplies alone. The power supply is rack mountable and has two slots for zl switch power supplies. A large VoIP installation provides an ideal environment for the power shelf, particularly if a high level of PoE power redundancy is desired.

HP ProCurve Switch zl Power Supply Shelf

Features and benefits

Additional information

· Supports up to two switches: provides additional PoE power for up to two switches simultaneously, or both supplies can be connected to a single switch

· Flexible solution: uses zl power supplies; power supplies in zl switches and the Switch zl Power Supply Shelf can be interchanged as needed

· Cables included: includes two 2-meter PoE (EPS) cables; cables can be used to carry PoE power to the connected switch; no extra cables are needed for a complete solution

· Flexible mounting: the power shelf can be mounted forward or rear facing in a rack; in a four-post rack, two power shelves can be mounted front to front, requiring only 3U of rack space

Warranty and support

· **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available.

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch zl Power Supply Shelf accessories

HP ProCurve Switch zl 1500 W Power Supply (J8713A)

HP ProCurve Switch zl 875 W Power Supply (J8712A)

HP ProCurve Switch zl Power Supply Shelf

Specifications

HP ProCurve Switch zl Power Supply Shelf (J8714A)

Ports	2 external power supply ports Restrictions: PoE power available depends on power supplies installed
Physical characteristics Dimensions (D x W x H) Weight	 24.71 x 44.3 x 13.2 cm (9.73 x 17.44 x 5.2 in.) (3U height) 4.2 kg (9.26 lb.) (no power supplies installed)
Mounting	3U rack mountable, either forward or rear facing; two power shelf units can be mounted front-to-front in a 4-post rack, taking only 3U total to conserve rack space.
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature Non-operating/Storage relative humidity Altitude Acoustic	 0°C to 55°C (32°F to 131°F) 15% to 95% @ 40°C (104°F), non-condensing –40°C to 70°C (–40°F to 158°F) 15% to 95% @ 40°C (104°F), non-condensing Up to 3 km (10,000 ft.) Power: 52.9 dB Pressure: 42.9 dB
Electrical characteristics Description Notes	 Power draw and heat dissipation for the power shelf are dependent on the power supplies installed. For heat dissipation and power requirements of the power shelf, find and add together these figures for the 1 or 2 power supplies actually installed.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity EN ESD Radiated EFT/Burst Surge Conducted Power frequency magnetic field Voltage dips and interruptions Harmonics Flicker	 EN 55024, CISPR 24 IEC 61000-4-2; 4 kV CD, 8 kV AD IEC 61000-4-3; 3 V/m IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC IEC 61000-4-6; 3 V IEC 61000-4-8; 1 A/m, 50 or 60 Hz IEC 61000-4-11; > 95% reduction, 0.5 period; 30% reduction, 25 periods EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Notes	The HP ProCurve Switch zl Power Supply Shelf has two slots for zl power supplies. It supplies PoE power only to zl switches. For yl switches, see the HP ProCurve 620 Redundant/External Power Supply. Power shelf depth includes 1.9 cm (0.75 in.) due to the power supply handles. Power supplies not included.
Services	Refer to the HP Web site at www.procurve.eu/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 ProCurve Mini-GBICs and SFPs

HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

Ports
1 LC 1000Base-SX port (IEEE 802.3z Type 1000Base-SX)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.69 x 1.37 x 1.23 cm (2.24 x 0.54 x 0.486 in.)
Weight: 0.02 kg (0.04 lb.)

Cabling
Type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively
Supported distances:
· 2–220 m (62.5 µm core diameter, 160 MHz*km bandwidth)
· 2–275 m (62.5 µm core diameter, 200 MHz*km bandwidth)
· 2–500 m (50 µm core diameter, 400 MHz*km bandwidth)
· 2–550 m (50 µm core diameter, 500 MHz*km bandwidth)

HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

Ports
1 LC 1000Base-LX port (IEEE 802.3z Type 1000Base-LX)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.69 x 1.37 x 1.23 cm (2.24 x 0.54 x 0.486 in.)
Weight: 0.02 kg (0.04 lb.)

Cabling
Type: Either single mode or multimode; 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1
Supported distances:
· 2–550 m (multimode 62.5 µm core diameter, 500 MHz*km bandwidth)
· 2–550 m (multimode 50 µm core diameter, 400 MHz*km bandwidth)
· 2–550 m (multimode 50 µm core diameter, 500 MHz*km bandwidth)
· 2–10,000 m (single-mode fiber)

Notes
A mode conditioning patch cord may be needed in some multimode fiber installations.

HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

Ports
1 LC 1000Base-LH port (no IEEE standard exists for 1550 nm optics)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.5 x 1.53 x 1.18 cm (2.17 x 0.60 x 0.46 in.)
Weight: 0.02 kg (0.04 lb.)

Cabling
Type: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1
Supported distances:
· 10–70,000 m (single-mode fiber)

Notes
For distances less than 20 km, a 10 dB attenuator must be used.
For distances between 20 km and 40 km, a 5 dB attenuator must be used.
Attenuators can be purchased from most cable vendors.

Used with the following:

HP ProCurve Switch 6108 (J4902A)

HP ProCurve Switch 2824 (J4903A)

HP ProCurve Switch 2848 (J4904A)

HP ProCurve Switch 3400cl-24G (J4905A)

HP ProCurve Switch 3400cl-48G (J4906A)

HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)

HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink (J8762A)

HP ProCurve Switch vl 4-Port Mini-GBIC Module (J8776A)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

HP ProCurve Switch 2510-24 (J9019B)

HP ProCurve Switch 2510-48 (J9020A)

HP ProCurve Switch 2810-24G (J9021A)

HP ProCurve Switch 2810-48G (J9022A)

HP ProCurve Switch 1800-24G (J9028B)

HP ProCurve Switch 4208vl-72GS (J9030A)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

HP ProCurve Switch 4204vl-48GS (J9064A)

HP ProCurve Switch 1400-24G (J9078A)

HP ProCurve Switch 1700-24 (J9080A)

HP ProCurve Switch 2610-24 (J9085A)

HP ProCurve Switch 2610-24/12PWR (J9086A)

HP ProCurve Switch 2610-24-PWR (J9087A)

HP ProCurve Switch 2610-48 (J9088A)

HP ProCurve Switch 2610-48-PWR (J9089A)

HP ProCurve 6600-24G Switch (J9263A)

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve Switch 2510G-24 (J9279A)

HP ProCurve Switch 2510G-48 (J9280A)

HP ProCurve 6600-48G Switch (J9451A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve Mini-GBICs and SFPs

HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)

Ports
1 RJ-45 1000Base-T port (IEEE 802.3ab Type 1000Base-T)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 6.88 x 1.37 x 1.4 cm (2.71 x 0.54 x 0.55 in.)
Weight: 0.03 kg (0.06 lb.)

Cabling
Type: 1000Base-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded
  twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab
  1000Base-T
Supported distances:
· 100 m

Notes
For supported platforms and minimum software requirements to support this product, see the
document titled "Support for the J8177C 1000Base-T Mini-GBIC" on the "ProCurve Mini-GBICs
and SFPs" Manuals Web page.
The J8177C Gigabit copper mini-GBIC is not supported on dual-personality ports.
The J8177C is capable of 100 Mb operation. This is supported on only the HP ProCurve Switch
8200zl, 5400zl, and 6200yl Series using software version K.12.21 or later. Use the "auto-
100" port setting to enable 100 Mb operation.
Important: The earlier J8177B does not support 100 Mb operation.

Used with the following:

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module
(J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch vl 4-Port Mini-GBIC Module (J8776A)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

HP ProCurve Switch 2510-48 (J9020A)

HP ProCurve Switch 4208vl-72GS (J9030A)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch 4204vl-48GS (J9064A)

HP ProCurve Switch 2610-24 (J9085A)

HP ProCurve Switch 2610-24/12PWR (J9086A)

HP ProCurve Switch 2610-24-PWR (J9087A)

HP ProCurve Switch 2610-48 (J9088A)

HP ProCurve Switch 2610-48-PWR (J9089A)

Warranty and support

· **ProCurve Lifetime Warranty*:** for as long as you own the
  product, with next-business-day advance replacement (available
  in most countries).

· **Electronic and telephone support:** limited electronic and
  telephone support is available from HP. Refer to the HP Web
  site at **www.procurve.eu/support** for details on the support
  provided and the period during which support is available.

HP ProCurve Mini-GBICs and SFPs

HP ProCurve 1000-BX-D SFP-LC Mini-GBIC (J9142B)
NEW

Ports
1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-D)
Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.57 x 1.37 x 1.18 cm (2.19 x 0.54 x 0.46 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: Single-mode fiber optic, complying with ITU-T G.652
Supported distances:
· 0.5–10,000 m (single-mode fiber)

Notes
For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP ProCurve BX Transceivers" on the "ProCurve Mini-GBICs and SFPs" Manuals Web page.
The J9142B connects to the J9143B "upstream" transceiver, or to any IEEE-standard 1000BASE-BX10-U ("upstream") device. (A 1000-BX-D transceiver can only connect to a 1000-BX-U product. You cannot connect two 1000-BX-D transceivers together.)

HP ProCurve 1000-BX-U SFP-LC Mini-GBIC (J9143B)
NEW

Ports
1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-U)
Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.57 x 1.37 x 1.18 cm (2.19 x 0.54 x 0.46 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: Single-mode fiber optic, complying with ITU-T G.652
Supported distances:
· 0.5–10,000 m (single-mode fiber)

Notes
For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP ProCurve BX Transceivers" on the "ProCurve Mini-GBICs and SFPs" Manuals Web page.
The J9143B connects to the J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device. (A 1000-BX-U transceiver can only connect to a 1000-BX-D product. You cannot connect two 1000-BX-U transceivers together.)

Used with the following:

HP ProCurve Switch 2824 (J4903A)

HP ProCurve Switch 2848 (J4904A)

HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)

HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch 2600-8-PWR with Gigabit Uplink (J8762A)

HP ProCurve Switch vl 4-Port Mini-GBIC Module (J8776A)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

HP ProCurve Switch 2510-24 (J9019B)

HP ProCurve Switch 2510-48 (J9020A)

HP ProCurve Switch 2810-24G (J9021A)

HP ProCurve Switch 2810-48G (J9022A)

HP ProCurve Switch 1800-24G (J9028B)

HP ProCurve Switch 4208vl-72GS (J9030A)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

HP ProCurve Switch 4204vl-48GS (J9064A)

HP ProCurve Switch 1400-24G (J9078A)

HP ProCurve Switch 1700-24 (J9080A)

HP ProCurve Switch 2610-24 (J9085A)

HP ProCurve Switch 2610-24/12PWR (J9086A)

HP ProCurve Switch 2610-24-PWR (J9087A)

HP ProCurve Switch 2610-48 (J9088A)

HP ProCurve Switch 2610-48-PWR (J9089A)

HP ProCurve 6600-24G Switch (J9263A)

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve Switch 2510G-24 (J9279A)

HP ProCurve Switch 2510G-48 (J9280A)

HP ProCurve 6600-48G Switch (J9451A)

Warranty and support

· **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Mini-GBICs and SFPs

HP ProCurve 100-FX SFP-LC Transceiver (J9054B)

Ports
1 LC 100Base-FX port (IEEE 802.3u Type 100Base-FX)
   Duplex: half or full

Physical characteristics
Dimensions (D x W x H): 6.86 x 1.38 x 1.22 cm. (2.7 x 0.54 x 0.48 in)
Weight: 0.03 kg (0.06 lb.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 5% to 95%
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)
Non-operating/Storage relative humidity: 5% to 85%
Altitude: Up to 3 km (10,000 ft.)

Cabling
Type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively
Supported distances:
· 2 km (full duplex) or 412 m (half duplex)

Notes
For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9054B 100-FX SFP-LC Transceiver" on the "ProCurve Mini-GBICs and SFPs" Manuals Web page.

Used with the following:

HP ProCurve Switch 2824 (J4903A)

HP ProCurve Switch 2848 (J4904A)

HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)

HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

HP ProCurve Switch 2510-24 (J9019B)

HP ProCurve Switch 2510-48 (J9020A)

HP ProCurve Switch 2810-24G (J9021A)

HP ProCurve Switch 2810-48G (J9022A)

HP ProCurve Switch 4208vl-72GS (J9030A)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

HP ProCurve Switch 4204vl-48GS (J9064A)

HP ProCurve Switch 2610-24 (J9085A)

HP ProCurve Switch 2610-24/12PWR (J9086A)

HP ProCurve Switch 2610-24-PWR (J9087A)

HP ProCurve Switch 2610-48 (J9088A)

HP ProCurve Switch 2610-48-PWR (J9089A)

HP ProCurve 6600-24G Switch (J9263A)

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve Switch 2510G-24 (J9279A)

HP ProCurve Switch 2510G-48 (J9280A)

HP ProCurve 6600-48G Switch (J9451A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Mini-GBICs and SFPs

NEW **HP ProCurve 100-BX-D SFP-LC Transceiver (J9099B)**

Ports
1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-D)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 6.86 x 1.39 x 1.22 cm (2.7 x 0.55 x 0.48 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: Single-mode fiber optic, complying with ITU-T G.652
Supported distances:
· 0.5–10,000 m (single-mode fiber)

Notes
For supported platforms and minimum software requirements to support this product, see the
  document titled "Support for the HP ProCurve BX Transceivers" on the "ProCurve Mini-GBICs
  and SFPs" Manuals Web page.
The J9099B connects to the J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-
  BX10-U ("upstream") device. (A 100-BX-D transceiver can only connect to a 100-BX-U product.
  You cannot connect two 100-BX-D transceivers together.)

NEW **HP ProCurve 100-BX-U SFP-LC Transceiver (J9100B)**

Ports
1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-U)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 6.86 x 1.39 x 1.22 cm (2.7 x 0.55 x 0.48 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: Single-mode fiber optic, complying with ITU-T G.652
Supported distances:
· 0.5–10,000 m (single-mode fiber)

Notes
For supported platforms and minimum software requirements to support this product, see the
  document titled "Support for the HP ProCurve BX Transceivers" on the "ProCurve Mini-GBICs
  and SFPs" Manuals Web page.
The J9100B connects to the J9099B "downstream" transceiver, or to any IEEE-standard
  100BASE-BX10-D ("downstream") device. (A 100-BX-U transceiver can only connect to a 100-
  BX-D product. You cannot connect two 100-BX-U transceivers together.)

Used with the following:

HP ProCurve Switch 2824 (J4903A)

HP ProCurve Switch 2848 (J4904A)

HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)

HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

HP ProCurve Switch 2510-24 (J9019B)

HP ProCurve Switch 2510-48 (J9020A)

HP ProCurve Switch 2810-24G (J9021A)

HP ProCurve Switch 2810-48G (J9022A)

HP ProCurve Switch 4208vl-72GS (J9030A)

HP ProCurve Switch vl 20-Port Gig-T + 4-Port SFP Module (J9033A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

HP ProCurve Switch 4204vl-48GS (J9064A)

HP ProCurve Switch 2610-24 (J9085A)

HP ProCurve Switch 2610-24/12PWR (J9086A)

HP ProCurve Switch 2610-24-PWR (J9087A)

HP ProCurve Switch 2610-48 (J9088A)

HP ProCurve Switch 2610-48-PWR (J9089A)

HP ProCurve 6600-24G Switch (J9263A)

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve Switch 2510G-24 (J9279A)

HP ProCurve Switch 2510G-48 (J9280A)

HP ProCurve 6600-48G Switch (J9451A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the
  product, with next-business-day advance replacement (available
  in most countries).

· **Electronic and telephone support:** limited electronic and
  telephone support is available from HP. Refer to the HP Web
  site at **www.procurve.eu/support** for details on the support
  provided and the period during which support is available.

HP ProCurve 10-GbE X2 Optics and Transceivers

HP ProCurve 10-GbE X2-SC SR Optic (J8436A)

Ports
1 SC 10-GbE port (IEEE 802.3ae Type 10GBase-SR)
　Duplex: full only

Physical characteristics
Dimensions (D x W x H): 8.84 x 3.61 x 1.09 cm (3.48 x 1.42 x 0.43 in.)
Weight: 0.29 kg (0.64 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)
Operating relative humidity: 15% to 95%, non-condensing

Cabling
Type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively
Supported distances:
· 62.5 µm multimode cable @ 160 MHz*km = 2–26 m
· 62.5 µm multimode cable @ 200 MHz*km = 2–33 m
· 50 µm multimode cable @ 400 MHz*km = 2–66 m
· 50 µm multimode cable @ 500 MHz*km = 2–82 m
· 50 µm multimode cable @ 2000 MHz*km = 2–300 m

Notes
850 nm serial optics
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

HP ProCurve 10-GbE X2-SC LR Optic (J8437A)

Ports
1 SC 10-GbE port (IEEE 802.3ae Type 10GBase-LR)
　Duplex: full only

Physical characteristics
Dimensions (D x W x H): 8.84 x 3.61 x 1.09 cm (3.48 x 1.42 x 0.43 in.)
Weight: 0.07 kg (0.16 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)
Operating relative humidity: 15% to 95%, non-condensing

Cabling
Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1
Supported distances:
· 9/125 µm single-mode cable = 2 m–10 km

Notes
1310 nm serial optics
Conditioning patch cord cables are not supported
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

HP ProCurve 10-GbE X2-SC ER Optic (J8438A)

Ports
1 SC 10-GbE port (IEEE 802.3ae Type 10GBase-ER)
　Duplex: full only

Physical characteristics
Dimensions (D x W x H): 8.84 x 3.61 x 1.09 cm (3.48 x 1.42 x 0.43 in.)
Weight: 0.07 kg (0.15 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)
Operating relative humidity: 15% to 95%, non-condensing

Cabling
Type: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1
Supported distances:
· 30 km (40 km on engineered links)

Notes
1550 nm serial optics
Conditioning patch cord cables are not supported
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

Used with the following:

HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

HP ProCurve Switch 6410cl (J8474A)

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

HP ProCurve Switch vl 1-Port 10-GbE X2 Module (J8766A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

Warranty and support

· **ProCurve Lifetime Warranty** : for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 10-GbE X2 Optics and Transceivers

NEW **HP ProCurve 10-GbE X2-SC LRM Optic (J9144A)**

Ports
1 SC 10-GbE port (IEEE 802.3aq Type 10GBase-LRM)
    Duplex: full only

Physical characteristics
Dimensions (D x W x H): 9.0 x 4.05 x 1.78 cm (3.54 x 1.59 x 0.7 in.)
Weight: 0.13 kg (0.29 lb.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)
Altitude: Up to 3 km (10,000 ft.)

Cabling
Type: 62.5/125 μm or 50/125 μm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations)
Supported distances:
· 62.5 μm multimode cable @ 160/500 MHz*km = 0.5–220 m
· 62.5 μm multimode cable @ 200/500 MHz*km = 0.5–220 m
· 50 μm multimode cable @ 400/400 MHz*km = 0.5–100 m
· 50 μm multimode cable @ 500/500 MHz*km = 0.5–220 m
· 50 μm multimode cable @ 1500/500 MHz*km = 0.5–220 m

Notes
1310 nm serial optics
For OM3 cable (50 μm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the supported distances listed above.
For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9144A 10-GbE X2-SC LRM Optic" on the "ProCurve 10-GbE Transceivers" Manuals Web page.

Used with the following:

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

HP ProCurve Switch vl 1-Port 10-GbE X2 Module (J8766A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

Warranty and support

· **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 10-GbE X2 Optics and Transceivers

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

Ports
1 CX4 transceiver port

Physical characteristics
Dimensions (D x W x H): 8.99 x 3.61 x 1.35 cm (3.54 x 1.42 x 0.53 in.)
Weight: 0.08 kg (0.18 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95% @ 65°C (149°F), non-condensing

Cabling
Supported distances:
· 15 m using CX4 cables
· 300 m using optical media converters and multimode fiber cable

Notes
Connector: CX4; Duplex: full
Use CX4 10-GbE cable (0.5-15 m) or ProCurve 10-GbE CX4 Media Converter (J8439A).
For suggested vendors of CX4 cables, please see the "Cabling" answers on the "ProCurve 10-GbE Transceivers" FAQs Web page.

Used with the following:

HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

HP ProCurve Switch 6410cl (J8474A)

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

HP ProCurve Switch vl 1-Port 10-GbE X2 Module (J8766A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 10-GbE CX4 Media Converter (J8439A)

Physical characteristics
Dimensions (D x W x H): 7.19 x 2.49 x 1.5 cm (2.83 x 0.98 x 0.59 in.)
Weight: 0.03 kg (.06 lb.)

Cabling
Supported distances:
· 62.5 µm multimode cable @ 150 MHz*km = 1–50 m
· 50 µm multimode cable @ 500 MHz*km = 1–100 m
· 50 µm multimode cable @ 2000 MHz*km = 1–300 m

Notes
Duplex: full
The CX4 Media Converter connects directly to the CX4 port, and a 12-strand multimode ribbon cable is used between CX4 Media Converters.
The 12-strand multimode ribbon cable can have either 62.5 or 50 micron core diameters, terminated by standard Multiple Terminations Push-pull Latch (MTP) connectors in a crossover configuration. The ribbon cables are known as Multi-fiber Push (MPO).
Users should specify a "crossover" (often called "key up/key up") configuration for the ribbon cable. Also, specify female-female cables to connect to ProCurve 10-GbE CX4 Media Converters.
For a suggested vendor of MPO ribbon cables, please see the "Cabling" answers on the "ProCurve 10-GbE Transceivers" FAQs Web page.

Used with the following:

HP ProCurve Switch 6400cl (J8433A)

HP ProCurve Switch cl 10-GbE CX4 Copper Module (J8434A)

HP ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

HP ProCurve Switch zl 4-Port 10-GbE CX4 Module (J8708A)

HP ProCurve Switch 2900-24G (J9049A)

HP ProCurve Switch 2900-48G (J9050A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 10-GbE SFP+ Transceivers and Direct Attach Cables

NEW **HP ProCurve 10-GbE SFP+ SR Transceiver (J9150A)**

Ports
1 LC 10-GbE port (IEEE 802.3ae Type 10GBase-SR)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.57 x 1.38 x 1.19 cm (2.19 x 0.54 x 0.47 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 85%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 158°F)

Cabling
Type: 62.5/125 μm or 50/125 μm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively
Supported distances:
· 62.5 μm multimode cable @ 160 MHz*km = 2–26 m
· 62.5 μm multimode cable @ 200 MHz*km = 2–33 m
· 50 μm multimode cable @ 400 MHz*km = 2–66 m
· 50 μm multimode cable @ 500 MHz*km = 2–82 m
· 50 μm multimode cable @ 2000 MHz*km = 2–300 m

Notes
850 nm serial optics.
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

NEW **HP ProCurve 10-GbE SFP+ LR Transceiver (J9151A)**

Ports
1 LC 10-GbE port (IEEE 802.3ae Type 10GBase-LR)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.57 x 1.38 x 1.19 cm (2.19 x 0.54 x 0.47 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 85%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1
Supported distances:
· 9/125 μm single-mode cable = 2 m–10 km

Notes
1310 nm serial optics.
Conditioning patch cord cables are not supported.
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

NEW **HP ProCurve 10-GbE SFP+ LRM Transceiver (J9152A)**

Ports
1 LC 10-GbE port (IEEE 802.3aq Type 10GBase-LRM)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 5.57 x 1.38 x 1.19 cm (2.19 x 0.54 x 0.47 in.)

Environment
Operating temperature: 0°C to 70°C (32°F to 158°F)
Operating relative humidity: 0% to 85%, non-condensing
Non-operating/Storage temperature: –40°C to 85°C (–40°F to 185°F)

Cabling
Type: 62.5/125 μm or 50/125 μm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations)
Supported distances:
· 62.5 μm multimode cable @ 160/500 MHz*km = 0.5–220 m
· 62.5 μm multimode cable @ 200/500 MHz*km = 0.5–220 m
· 50 μm multimode cable @ 400/400 MHz*km = 0.5–100 m
· 50 μm multimode cable @ 500/500 MHz*km = 0.5–220 m
· 50 μm multimode cable @ 1500/500 MHz*km = 0.5–220 m

Notes
1310 nm serial optics.
For OM3 cable (50 μm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the supported distances listed above.
For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.

Used with the following:

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve 6600-24XG Switch (J9265A)

HP ProCurve 6600-48G-4XG Switch (J9452A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

HP ProCurve 10-GbE SFP+ Transceivers and Direct Attach Cables

NEW **HP ProCurve 10-GbE SFP+ 1 m Direct Attach Cable (J9281A),** not pictured

A low-cost 10-Gigabit connectivity option consisting of a 1 m cable with SFP+ connectors permanently attached to each end.

For product specifications, see the ProCurve Web site at **Procurve.eu**

NEW **HP ProCurve 10-GbE SFP+ 3 m Direct Attach Cable (J9283A),** not pictured

A low-cost 10-Gigabit connectivity option consisting of a 3 m cable with SFP+ connectors permanently attached to each end.

For product specifications, see the ProCurve Web site at **Procurve.eu**

NEW **HP ProCurve 10-GbE SFP+ 7 m Direct Attach Cable (J9285A),** not pictured

A low-cost 10-Gigabit connectivity option consisting of a 7 m cable with SFP+ connectors permanently attached to each end.

For product specifications, see the ProCurve Web site at **Procurve.eu**

Used with the following:

HP ProCurve 6600-24G-4XG Switch (J9264A)

HP ProCurve 6600-24XG Switch (J9265A)

HP ProCurve 6600-48G-4XG Switch (J9452A)

Warranty and support

- **ProCurve Lifetime Warranty◆:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve 100-FX Transceiver

HP ProCurve 100-FX SC Transceiver (J4853A)

Ports
1 SC 100Base-FX port (IEEE 802.3u Type 100Base-FX)
    Duplex: half or full

Physical characteristics
Dimensions (D x W x H): 9.65 x 5.21 x 2.41 cm (3.8 x 2.05 x 0.95 in.)
Weight: 0.04 kg (0.09 lb.)

Cabling
Type: 62.5/125 μm or 50/125 μm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively
Supported distances:
· 2 km (full duplex) or 412 m (half duplex)

Notes
Full duplex only, when installed in unmanaged switches and HP ProCurve Switch 2500 Series

Used with the following:

HP ProCurve Switch 2512 (J4812A)

HP ProCurve Switch 2524 (J4813A)

HP ProCurve Switch 2312 (J4817A)

HP ProCurve Switch 2324 (J4818A)

HP ProCurve Switch 2124 (J4868A)

Warranty and support

·**ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

·**Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Gigabit Transceivers

HP ProCurve Gigabit-SX Transceiver (J4131B)

Ports
1 SC 1000Base-SX port (IEEE 802.3z Type 1000Base-SX)
　Duplex: full only

Physical characteristics
Dimensions (D x W x H): 9.65 x 5.21 x 2.41 cm (3.8 x 2.05 x 0.95 in.)
Weight: 0.04 kg (0.09 lb.)

Cabling
Type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content,
　multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a,
　respectively
Supported distances:
・ 220 m (62.5 µm core diameter, 160 MHz/km bandwidth)
・ 275 m (62.5 µm core diameter, 200 MHz/km bandwidth)
・ 500 m (50 µm core diameter, 400 MHz/km bandwidth)
・ 550 m (50 µm core diameter, 500 MHz/km bandwidth)

HP ProCurve Gigabit-LX Transceiver (J4132A)

Ports
1 SC 1000Base-LX port (IEEE 802.3z Type 1000Base-LX)
　Duplex: full only

Physical characteristics
Dimensions (D x W x H): 9.65 x 5.21 x 2.41 cm (3.8 x 2.05 x 0.95 in.)
Weight: 0.04 kg (0.09 lb.)

Cabling
Type: Either single mode or multimode; Low metal content, single-mode fiber-optic, complying
　with ITU-T G.652 and ISO/IEC 793-2 Type B1; 62.5/125 µm or 50/125 µm (core/cladding)
　diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651
　and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be
　needed in some multimode fiber installations)
Supported distances:
・ 10 km (single mode) or 550 m (multimode)

HP ProCurve 100/1000-T Transceiver (J4834A)

Ports
1 RJ-45 auto-sensing 100/1000 port (IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type
　1000Base-T)
　Media type: Auto-MDIX
　Duplex: 100Base-TX: half or full; 1000Base-T: full only

Physical characteristics
Dimensions (D x W x H): 9.65 x 5.21 x 2.41 cm (3.8 x 2.05 x 0.95 in.)
Weight: 0.05 kg (0.11 lb.)

Cabling
Type: 100Base-TX: Category 5 (or better), 100 Ω differential unshielded twisted pair (UTP) or
　shielded twisted pair (STP), complying with IEEE 802.3u 100Base-TX; 1000Base-T: Category 5
　(5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or
　shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000Base-T
Supported distances:
・ 100 m

HP ProCurve Switch Gigabit Stacking Kit (J4116A)

Ports
2 HSSDC Gigabit transceiver ports (1 HSSDC port each)

Physical characteristics
Dimensions (D x W x H): 9.65 x 5.21 x 2.41 cm (3.8 x 2.05 x 0.95 in.)
Weight: 0.04 kg (0.09 lb.)

Cabling
Type: Included with product

Supported distances:
・ 23.5 in. (59.69 cm)

Used with the following:

HP ProCurve Switch 2512 (J4812A)

HP ProCurve Switch 2524 (J4813A)

HP ProCurve Switch 2312 (J4817A)

HP ProCurve Switch 2324 (J4818A)

Warranty and support

・**ProCurve Lifetime Warranty**✦**:** for as long as you own the
product, with next-business-day advance replacement (available
in most countries).

・**Electronic and telephone support:** limited electronic and
telephone support is available from HP. Refer to the HP Web
site at **www.procurve.eu/support** for details on the support
provided and the period during which support is available.

HP ProCurve Switch cl Modules

HP ProCurve Switch cl 10-GbE Media Flex Module (J8435A)

Ports
2 open 10-GbE X2 transceiver slots

Physical characteristics
Dimensions (D x W x H): 17.3 x 11.43 x 4.06 cm (6.81 x 4.5 x 1.6 in.)
Weight: 0.29 kg (0.64 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F); 40°C (104°F) when used with SR/LR/ER optics
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95% @ 65°C (149°F), non-condensing

Notes
Duplex: full
Operating temperature is 0°C to 40°C (32°F to 104°F) if any X2 10-GbE optic or transceiver is inserted in any X2 slot

HP ProCurve Switch cl 10-GbE CX4 Copper Module (J8434A)

Ports
2 10-GbE ports (IEEE 802.3ak Type 10GBase-CX4)
   Duplex: full only

Physical characteristics
Dimensions (D x W x H): 17.3 x 11.43 x 3.81 cm (6.81 x 4.5 x 1.5 in.)
Weight: 0.3 kg (0.67 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95% @ 65°C (149°F), non-condensing

Cabling
Supported distances:
· 15 m using CX4 cable
· 300 m using optical media converters and multimode fiber cable

Notes
Use CX4 10-GbE cable (0.5-15 m) or ProCurve 10-GbE CX4 Media Converter (J8439A).
Includes a single 0.5 m cable.

Used with the following:

HP ProCurve Switch 3400cl-24G (J4905A)

HP ProCurve Switch 3400cl-48G (J4906A)

HP ProCurve Switch 6400cl (J8433A)

HP ProCurve Switch 6410cl (J8474A)

Warranty and support

· **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch yl Modules

HP ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

Ports
2 open 10-GbE X2 transceiver slots
2 10-GbE ports (IEEE 802.3ak Type 10Gbase-CX4)
   Duplex: full only

Physical characteristics
Dimensions (D x W x H): 19.7 x 19.1 x 36.3 cm (7.76 x 7.52 x 14.29 in.)
Weight: 0.7 kg (1.54 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 90%, non-condensing

Cabling
Supported distances:
· CX4: 15 m using CX4 cable or 300 m using media converter with ribbon MMF

Notes
Only the two fixed CX4 ports on this module support HP ProCurve 10-GbE CX4 Media Converter (J8439A).
Operating temperature is 0°C to 40°C (32°F to 104°F) if any X2 10-GbE optic or transceiver is inserted in any X2 slot.
One 0.5 m CX4 cable is included.

Used with the following:

HP ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)
HP ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
HP ProCurve Switch 6200yl-24G-mGBIC (J8992A)

Warranty and support

· **ProCurve Lifetime Warranty***: for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch zl Modules

HP ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A)

Ports
24 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type
  100Base-TX, IEEE 802.3ab Type 1000Base-T)
  Media type: Auto-MDIX
  Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.98 kg (2.16 lb.)

Cabling
Type: 1000Base-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded
  twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab
  1000Base-T

HP ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

Ports
4 open mini-GBIC (SFP) slots
20 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u
  Type 100Base-TX, IEEE 802.3ab Type 1000Base-T)
  Media type: Auto-MDIX
  Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 1 kg (2.2 lb.)

Notes
When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number
  ends with the letter "B" or later, e.g., J4858B, J4859C) are required.
When installed in a zl chassis, the J8705A module limits the operating temperature range of the
  chassis to 0°C to 40°C (32°F to 104°F).

Accessories
HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)
HP ProCurve 100-FX SFP-LC Transceiver (J9054B)
HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)
HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)
HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

HP ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

Ports
24 open mini-GBIC (SFP) slots

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.91 kg (2.01 lb.)

Notes
When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number
  ends with the letter "B" or later, e.g., J4858B, J4859C) are required.
When installed in a zl chassis, the J8706A module limits the operating temperature range of the
  chassis to 0°C to 40°C (32°F to 104°F).

Accessories
HP ProCurve Gigabit 1000Base-T Mini-GBIC (J8177C)
HP ProCurve 100-FX SFP-LC Transceiver (J9054B)
HP ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)
HP ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)
HP ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

Used with the following:

HP ProCurve Switch 8212zl (J8715A)

HP ProCurve Switch 5406zl Intelligent Edge (J8697A)

HP ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)

HP ProCurve Switch 5412zl Intelligent Edge (J8698A)

HP ProCurve Switch 5412zl-98G Intelligent Edge (J8700A)

Warranty and support

- **ProCurve Lifetime Warranty*:** for as long as you own the
  product, with next-business-day advance replacement (available
  in most countries).

- **Electronic and telephone support:** limited electronic and
  telephone support is available from HP. Refer to the HP Web
  site at **www.procurve.eu/support** for details on the support
  provided and the period during which support is available.

HP ProCurve Switch zl Modules

HP ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

Ports
4 open 10-GbE X2 transceiver slots

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.79 kg (1.74 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)

Notes
When installed in a zl chassis, the J8707A module limits the operating temperature range of the chassis to 0°C to 40°C (32°F to 104°F).

HP ProCurve Switch zl 4-Port 10-GbE CX4 Module (J8708A)

Ports
4 CX4 10-GbE ports (IEEE 802.3ak Type 10GBase-CX4)
  Duplex: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.79 kg (1.74 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)

Cabling
Supported distances:
· 15 m using CX4 cable
· 300 m using optical media converters and multimode fiber cable

Notes
Use CX4 10-GbE cable (0.5 m-15 m) or HP ProCurve 10-GbE CX4 Media Converter (J8439A). No CX4 cables are included with this module.

HP ProCurve ONE Services zl Module (J9289A)

Physical characteristics
Dimensions (D x W x H): 24.77 x 20.65 x 4.45 cm (9.75 x 8.13 x 1.75 in.)
Weight: 1.47 kg (3.25 lb.)

Memory and processor
Processor: Intel T7500 Core 2 Duo @ 2200 MHz, 4 GB DDR2 SDRAM, 4 GB compact flash
Storage: 200 GB SATA II 7200 rpm hard disk drive

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F); **important:** See note for 50°C temperature spec rules
Operating relative humidity: 15% to 90% @ 40°C (104°F); non-condensing
Non-operating/Storage temperature: –10°C to 65°C (14°F to 149°F)
Non-operating/Storage relative humidity: 15% to 95% @ 65°C (149°F), non-condensing
Altitude: Up to 3 km (10,000 ft.)

Electrical characteristics
Maximum heat dissipation: 287 kJ/hr (272 BTU/hr)
Maximum power rating: 80 W
Notes: Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.

Notes
The services module can only be used with certified OA services applications. It does not support a general application environment.
Chassis operating temperature specifications of the 5400/8200 chassis when the services module is installed:
· 40°C when any services module is installed on the left side of the chassis
· 50°C when any services module is installed on the right side of the chassis
Up to four services modules can be installed in a 5400/8200 chassis simultaneously. Up to three services modules are supported (all installed in the right half of the chassis) in the 5406 chassis if a 50°C temperature specification is desired.
When the services module is installed, the maximum relative humidity for the switch drops from 95% to 90%.

Used with the following:

HP ProCurve Switch 8212zl (J8715A)

HP ProCurve Switch 5406zl Intelligent Edge (J8697A)

HP ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)

HP ProCurve Switch 5412zl Intelligent Edge (J8698A)

HP ProCurve Switch 5412zl-98G Intelligent Edge (J8700A)

Warranty and support

· **ProCurve Lifetime Warranty*:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Switch zl Modules

HP ProCurve Switch 8200zl Management Module (J9092A)

Ports
1 RJ-45 serial console port

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 3.55 cm (10.3 x 8.13 x 1.4 in.)
Weight: 0.54 kg (1.20 lb.)

Environment
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95%, non-condensing

HP ProCurve Switch 8200zl Fabric Module (J9093A)

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.75 kg (1.65 lb.)

Environment
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95%, non-condensing

HP ProCurve Switch 8200zl System Support Module (J9095A)

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 3.55 cm (10.3 x 8.13 x 1.4 in.)
Weight: 0.45 kg (1.00 lb.)

Environment
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95%, non-condensing

Used with the following:

HP ProCurve Switch 8212zl (J8715A)

HP ProCurve Switch 8212zl Chassis/Fan Tray (J9091A)

Warranty and support

· **ProCurve Lifetime Warranty⁺:** for as long as you own the product, with next-business-day advance replacement (available in most countries).

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

HP ProCurve Network Security

Key features

- Managed security appliance
- Built-in RADIUS authentication server
- Endpoint integrity (EI) testing (licenses required)
- Centralized management of NAC endpoint policies
- Scalable and flexible endpoint license management

Datasheet

HP ProCurve Network Access Controller 800

The HP ProCurve Network Access Controller (NAC) 800 combines a RADIUS-based authentication server and the ability to validate the integrity of the systems connecting to the network, allowing network administrators to secure the network from unauthorized users and systems that pose a threat to network resources.

HP ProCurve Network Access Controller 800

Features and benefits

Management

- **Centralized endpoint policy management:** endpoint testing policies are centrally managed by a single management server and shared by up to ten enforcement servers

- **Administration console:** a Web-based console provides an easy-to-use interface for configuring endpoint policies and enforcement clusters as well as a dashboard-style interface for viewing the status of endpoint integrity testing

- **Default testing policies:** default testing policies provide a great starting point for endpoint testing and can be easily utilized as the basis for custom testing policies

- **Network management server integration:** the HP ProCurve Network Access Controller 800 management server is discovered and monitored by the HP ProCurve Manager platform to enable unified device and security management; the Web-based administration console of the ProCurve Network Access Controller 800 is integrated into the ProCurve Manager display for a cohesive management experience

Performance

- **Efficient endpoint testing:** typical endpoint testing can be completed in less than ten seconds, avoiding lengthy wait times as endpoints are connected to the network

- **Support for up to 30,000 concurrent endpoints in one management domain:** each enforcement server can support up to 3,000 endpoints, and one management server can control up to ten enforcement servers

Resiliency and high availability

- **Enforcement server resiliency and redundancy:** enable high network availability for mission-critical LAN deployments; enforcement servers continue to provide authentication and endpoint testing services in the absence of a management server and can be configured in clusters to provide redundancy and load-balancing for endpoint testing

Security

- **Built-in RADIUS server:** can perform authentication services or act as a proxy server for a remote RADIUS authentication service

- **Supports standard-based or a local authentication directory:** can integrate with existing Active Directory or standard LDAP directory services or can host a local authentication directory for smaller environments

- **Endpoint integrity assessment:** enables both pre-authentication and post-authentication testing of network-attached endpoints; includes an extensive set of built-in endpoint tests and is extensible to test for any prohibited or required software:
  - **Operating system:** versions, service pack levels, and hot fixes
  - **Security settings:** firewall, auto-update, and browser security settings
  - **Security software:** antivirus, antispyware, and firewalls
  - **Malware:** spyware, worms, viruses, and trojans
  - **Applications:** peer-to-peer and instant messaging software

- **Flexible enforcement modes:** offer multiple enforcement modes that can be used together and centrally managed by a single management server to share endpoint policies and licenses:
  - **RADIUS:** integrates with RADIUS authentication to allow access only to authorized users and devices; uses RADIUS authorization capabilities to isolate endpoints for testing prior to providing complete network access and isolation of non-compliant endpoints
  - **DHCP:** integrates with DHCP servers to isolate and test endpoints before they are allowed to access production networks and interact with other network clients and resources
  - **Inline:** actively monitors a link for new endpoints and tests them before they are allowed to access the network; enables testing of remote endpoints connecting through a VPN concentrator

- **Flexible testing methods:** enables endpoint testing that meets the broad needs of most businesses, including solutions for both managed and unmanaged endpoints:
  - **Agent based:** a permanent agent can be installed on endpoints to evaluate endpoint integrity status; it is the most efficient mode for managed endpoints that will continually connect to the network
  - **Transient agent:** an agent is temporarily downloaded to the endpoint to evaluate endpoint integrity, and then it enables unmanaged endpoints to be tested without the need to have an agent preloaded and remain on the endpoint
  - **Agentless:** uses administrative credentials for an endpoint along with native communications protocols to evaluate the endpoint integrity status; enables endpoints that are part of a managed domain or have known administrative credentials to be tested without ever loading an agent

- **Endpoint quarantine:** policy-based enforcement allows for isolation of non-compliant endpoints

HP ProCurve Network Access Controller 800

Features and benefits (continued)

- **Configurable remediation feedback:** provides administrator-customized feedback to users on how they can remediate their systems and be allowed full network access

- **Integration with Microsoft SMS:** endpoints that fail testing and are also managed by a Microsoft Systems Management Server (SMS) agent will be prompted to contact the SMS for updates and will be retested once updates have been applied

Policy management

- **Policy-based network access rights:** integrate with ProCurve Identity Driven Manager and network devices to apply centrally managed network access policies to be enforced at the edge of the network, where users and devices attach; allow network administrators to easily create and maintain robust access policies, including secure guest access to appropriate network services, without risk to the network

Product architecture

- **The ProCurve Network Access Controller 800:** can be configured to take on different roles in a secure network access solution:

  – **Management server:** a centralized server that manages and monitors multiple enforcement servers, including the endpoint integrity policies and centralized logging of endpoint authentication and test results, availability, and status

  – **Enforcement server:** provides RADIUS-based authentication of endpoints, along with testing of endpoints to evaluate compliance with endpoint integrity policies, policy-based isolation of non-compliant endpoints, and customized user feedback on how to remediate issues

  – **Combination server:** a single-server solution that combines the management server and enforcement server roles into a single appliance solution. A combination server only manages the enforcement server that is running in the combination server. A combination server can also be used in conjunction with ProCurve Identity Driven Manager to provide RADIUS-based authentication and the Identity Driven Manager adaptive networking capabilities without endpoint integrity testing

  – **Note:** endpoint integrity testing is a capability that requires the additional purchase of HP ProCurve NAC Endpoint Integrity Agent licenses (see Accessories) and an initial Implementation Startup Service provided by a ProCurve-certified service provider or purchased through ProCurve (see Services).

Warranty and support

- **Warranty:** one-year hardware limited warranty with next-business-day advance replacement (available in most countries); warranty extensions are available

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Network Access Controller 800 accessories

HP ProCurve NAC Endpoint Integrity Agent License for 100 clients (J9066A)

HP ProCurve NAC Endpoint Integrity Agent License for 250 clients (J9067A)

HP ProCurve NAC Endpoint Integrity Agent License for 1,000 clients (J9068A)

HP ProCurve NAC Endpoint Integrity Agent License for 5,000 clients (J9069A)

HP ProCurve NAC Endpoint Integrity Agent 1 year Maintenance License for 100 clients (J9070A)

HP ProCurve NAC Endpoint Integrity Agent 1 year Maintenance License for 250 clients (J9071A)

HP ProCurve NAC Endpoint Integrity Agent 1 year Maintenance License for 1,000 clients (J9072A)

HP ProCurve NAC Endpoint Integrity Agent 1 year Maintenance License for 5,000 clients (J9073A)

HP ProCurve Network Access Controller 800

Specifications

HP ProCurve Network Access Controller 800 (J9065A)

Ports	2 RJ-45 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 1 serial console port
Physical characteristics Dimensions (D x W x H) Weight (fully loaded)	 39.07 x 43.99 x 4.45 cm (15.38 x 17.32 x 1.75 in.) (1U height) 6.1 kg (13.45 lb.)
Memory and processor Processor	 Intel Core 2 Duo @ 2130 MHz, 2 GB DDR2 SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Environment Operating temperature Operating relative humidity Non-operating/Storage temperature	 5°C to 40°C (41°F to 104°F) 15% to 80%, non-condensing –40°C to 65°C (–40°F to 149°F)
Electrical characteristics Maximum heat dissipation **Voltage** **Current** **Maximum power rating** **Frequency** Notes	 457.87 kJ/hr (434 BTU/hr) 100–127 VAC/200–240 VAC 2 A/1 A 127 W 50/60 Hz Maximum power rating is the worst-case theoretical maximum power number with fully loaded PoE, 100% traffic, all ports plugged in, and all modules populated.
Safety	CAN/CSA 22.2 No. 60950-1; IEC 60950-1; EN 60950-1
Emissions	FCC part 15 Class A; EN 55022 Class A
Immunity EN Harmonics Flicker	 EN 55024, CISPR 24 EN 61000-3-2, IEC 61000-3-2 EN 61000-3-3, IEC 61000-3-3
Management	HP ProCurve Manager Plus; Web browser
Notes	Endpoint Support for HP ProCurve NAC EI Agents · Windows Vista® , Windows XP, Windows Server 2003, Windows 2000, Windows NT® , and Mac OS X Related Services · J9083A—HP ProCurve NAC Endpoint Integrity Implementation Startup Service (Inline and DHCP) · J9084A—HP ProCurve NAC Endpoint Integrity Implementation Startup Service (IEEE 802.1x)
Services	3-year, parts only, global next-day advance exchange (UH199E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UH196E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UH197E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UH198E) Installation with minimum configuration, system-based pricing (U4826E) 1 Year Post Warranty Next Bus. Day Exchange (UH200PE) 1 Year Post Warranty 4 hour response 13x5 Onsite Support (UH201PE) 1 Year Post Warranty 4 hour response 24x7 Onsite Hardware Support (UH202PE) 1 Year Post Warranty hardware and software 24x7 Phone Support (UH203PE) Startup of the NAC 800 with EI—DHCP and Inline (J9083A) Startup of the NAC 800 with EI—802.1x (J9084A) Refer to the HP Web site at www.procurve.eu/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.

Key features

- Provides appropriate access to network resources
- Policy- and identity-based network access rights
- Dynamically configures security and performance)
- Resilient architecture promotes high availability
- Integrates with Microsoft Active Directory and NAP

Datasheet

HP ProCurve Identity Driven Manager 2.3

HP ProCurve Identity Driven Manager (IDM), a plug-in to HP ProCurve Manager Plus, dynamically configures security and performance settings based on user, device, location, time, and device posture. Identity Driven Manager provides network administrators with the ability to centrally define and apply policy-based network access rights that allow the network to automatically adapt to the needs of users and devices as they connect, thereby enforcing network security while providing appropriate access to authorized network users and devices. Identity Driven Manager is a powerful tool that allows network administrators to efficiently manage the users and devices connecting to their network.

HP ProCurve Identity Driven Manager 2.3

Features and benefits

Additional information

- **Ease of use:**

  – **Graphical user interface (GUI):** Identity Driven Manager provides a powerful GUI for defining network access policies and monitoring users on the network. Administrators can quickly see which users are currently on the network and easily drill down to know where and when they connected

  – **Auto-discovery of identity elements:** RADIUS servers with IDM agents, RADIUS realms, and users are automatically discovered and assigned to a default policy group for the administrator's attention

  – **Detailed reporting:** Identity Driven Manager provides reports of network access that can be automated to run at specified times or created on demand. Reports are useful for documenting network access by users and groups, as well as for investigating failed network access attempts in order to identify potential network attacks

- **Integration:**

  – **Integrates with Microsoft Network Access Protection:** Identity Driven Manager cooperates with Microsoft Network Access Protection (NAP) in order to integrate the ProCurve Adaptive Network capabilities with endpoint validation from Microsoft NAP

  – **Integration with Active Directory:** Identity Driven Manager integrates with Active Directory to automatically map Active Directory group membership to Identity Driven Manager Access Policy Groups. Changes within Active Directory are automatically propagated to Identity Driven Manager and the new network access rights are enforced

  – **Import users from LDAP or XML file:** If current user data is not kept in Active Directory, Identity Driven Manager can read users and group membership from an LDAP directory or XML-formatted file

  – **Works with industry-standard RADIUS protocol:** Access policies are enforced based on RADIUS authentication, and Identity Driven Manager integrates with leading RADIUS authentication servers

- **Security:**

  – **Dynamic access rules based on time, location, and user system are formed by administrators and dynamically applied:** Access-policy groups have rules that are applied to each user in the group based on the time, location, and user system. These dynamic inputs are evaluated and the policies applied according to the user's profile, so the appropriate network access policies are applied at the right time and place

  – **Automatic VLAN assignment:** Users can be automatically assigned to the appropriate VLAN based on their identity, device, device status, location, and time of day

  – **Endpoint integrity verification:** When used with an endpoint integrity solution such as the HP ProCurve Network Access Controller 800 or Microsoft Network Access Protection (NAP), access policies can be set based on the posture of the endpoint connecting to the network, allowing non-compliant endpoints to be isolated until they comply with organization policies

  – **User-based access control lists (ACLs):** Users can be allowed or denied access to network resources (e.g., servers, printers) based on the destination IP address or a range of IP addresses, and/or to network services (e.g., Web pages, instant messaging, or FTP) based on well-known or user-defined TCP/UDP ports

- **Performance:**

  – **Traffic prioritization:** Traffic prioritization (QoS) can be automatically set for each connection based on user, device, location, and time of day, allowing appropriate prioritization of network traffic

  – **Rate limits:** Rate limits can be automatically applied to a session in order to limit the impact of lower-priority connections and reserve bandwidth for important business use

- **Resiliency and high availability:**

  – **The Identity Driven Manager agent can run independently and be deployed to redundant RADIUS servers:** The Identity Driven Manager agent can be deployed to each RADIUS server in the network. The agents are able to operate independently from the Identity Driven Manager server, allowing the software to be deployed to multiple redundant RADIUS servers and providing authentication services for network devices

Features and benefits (continued)

– **Identity Driven Manager updates the server with transactional resilience:** The Identity Driven Manager agent uses a transaction process to update Identity Driven Manager server data. If the connection from the agent on the RADIUS server to the Identity Driven Manager server is broken, the agent will queue the data until the connection is restored and then transmit the data, as appropriate, back to the Identity Driven Manager database

· **Device support:**

– **ProCurve intelligent edge switches:** 5400zl series, 5300xl series, 3500yl series, and 3400cl series

– **ProCurve traditional edge switches:** 6108, 4200vl series, 2900 series, 2800 series, 2610 series, 2600 and 2600-PWR series, and 2500 series

– **ProCurve wireless access points:** Access Point 530 and 420

– **ProCurve wireless edge services:** Wireless Edge Services zl and xl Modules

Warranty and support

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

· **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Identity Driven Manager 2.3

Specifications

	HP ProCurve Identity Driven Manager 2.3 base product—500-user license (J9012A)	HP ProCurve Identity Driven Manager 2.3—add 2,000 users license (J9014A)	HP ProCurve Identity Driven Manager 2.3 base product (upgrade from 1.0) (J9013A)
	Please see HP ProCurve Manager Plus for system requirements	This license adds support for an additional 2,000 users to the IDM base products of J9012A or J9013A.	Please see HP ProCurve Manager Plus for system requirements.
RADIUS server support	FreeRADIUS on SUSE Enterprise Linux (9.3 and 10.0) FreeRADIUS on Red Hat Enterprise Linux (4.0 and 5.0) Steel-Belted RADIUS on Windows (versions 5.3 and 5.4) Microsoft Network Policy Server on Windows Server 2008 (32-bit) Microsoft Internet Authentication Service (IAS) on Windows Server 2003 (32-bit)		FreeRADIUS on SUSE Enterprise Linux (9.3 and 10.0) FreeRADIUS on Red Hat Enterprise Linux (4.0 and 5.0) Steel-Belted RADIUS on Windows (versions 5.3 and 5.4) Microsoft Network Policy Server on Windows Server 2008 (32-bit) Microsoft Internet Authentication Service (IAS) on Windows Server 2003 (32-bit)
Features	Intuitive Explorer-style interface HP OpenView NNM integration Application of policies by user identity · Auto VLAN assignment · Auto set quality of service by user · Auto set bandwidth assignment by user Rule-based access rights deployment Dynamic rights assignment based on: · Time · Location · User system Auto-discovery of: · RADIUS servers · Realms · Users	Intuitive Explorer-style interface HP OpenView NNM integration Application of policies by user identity · Auto VLAN assignment · Auto set quality of service by user · Auto set bandwidth assignment by user Rule-based access rights deployment Dynamic rights assignment based on: · Time · Location · User system Auto-discovery of: · RADIUS servers · Realms · Users	Intuitive Explorer-style interface HP OpenView NNM integration Application of policies by user identity · Auto VLAN assignment · Auto set quality of service by user · Auto set bandwidth assignment by user Rule-based access rights deployment Dynamic rights assignment based on: · Time · Location · User system Auto-discovery of: · RADIUS servers · Realms · Users
Notes	HP ProCurve Identity Driven Manager requires the HP ProCurve Manager Plus platform. The base product for Identity Driven Manager allows for managing up to 500 users. Customers may add users in quantities of 2,000 by purchasing J9014A.	Requires the HP ProCurve Identity Driven Manager base product.	This upgrade provides HP ProCurve Identity Driven Manager 2.0, which allows for managing up to 500 users. Customers may add users in quantities of 2,000 by purchasing J9014A.
Services	Refer to the HP Web site at www.procurve.eu/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.		

Key features

- Intrusion detection
- Intrusion response
- Security management
- Reporting
- Flexible deployment

Datasheet

HP ProCurve Network Immunity Manager 1.0

HP ProCurve Network Immunity Manager is a plug-in for HP ProCurve Manager Plus that detects and automatically responds to threats, such as virus attacks, inside the network. This security management tool monitors devices across the network for internal network attacks and allows administrators to set detection and response security policies. It leverages security and traffic-monitoring features built into ProCurve switches with the ProVision ASIC, such as sFlow, Virus Throttle, and remote-mirroring technologies, and it performs network behavior anomaly detection (NBAD) to detect attacks. Optionally, it remotely mirrors suspect traffic to an IDS/IPS/UTM appliance for deeper analysis. It provides administrators with broad coverage against malicious attacks and a rich set of attack-mitigation and offender-tracking capabilities. This easy-to-use security management tool provides visibility into internal network threat activity and helps administrators improve network availability.

HP ProCurve Network Immunity Manager 1.0

Features and benefits

Additional information

- **Intrusion detection:**

  - **Network visibility:** monitor traffic for internal network threats across wired and wireless networks using sFlow data from ProCurve devices

  - **Multiple intrusion detection methods:** detect intrusions using virus throttle alerts from select ProCurve switches, network behavior anomaly detection (NBAD) performed by Network Immunity Manager, and security alerts from signature-based third-party IDS/IPS security devices

  - **Remote monitoring for deeper analysis of traffic:** mirrors suspect traffic to select third-party IDS/IPS/UTM devices for signature file matching for high-confidence detection of known viruses; leverages one IDS/IPS/UTM device across the network

  - **Offender tracking:** identifies the offender (IP, and MAC and DNS name) responsible for the network attack and displays their location; additional information can be displayed, such as the offender's name and network access information when Identity Driven Manager is installed

  - **Security heat map:** real-time view of security activities across the network; displays devices where attacks occur using visual color coding

- **Intrusion response:**

  - **Internal threat protection:** discover the switch port where the offender connects and mitigate the attack at the port where the attack originates (Per-Port-Response)

  - **Location-based policy enforcement:** set and enforce security policies based on the network location of the offender and the time of attack

  - **Multiple threat mitigation responses:** mitigate internal network attacks by putting the offender in a Quarantine VLAN or using offender bandwidth rate limiting, offender MAC lockout, offender port shutdown, or IT administrator e-mail alert notification only

  - **Chain of actions:** provides a prioritized list of mitigation actions, so when a response to the attack fails, an alternate response can be triggered

  - **Wireless support:** mitigate threats from wireless LAN by blocking offender MAC address

- **Security management:**

  - **Policy management:** create and manage mitigation policies based on event source, location, time, action, and other alert parameters

  - **Security dashboard:** real-time view of security activities, mitigation actions taken, and offender details across the network over various time intervals

  - **White list (exempt list):** set of IP address and MAC and DNS names that are exempt from mitigation actions

  - **Configuration cleanup:** automatic rollback of response configurations from ProCurve switches and wireless access points after the policy expires

- **Reporting:**

  - **Data mining:** generate network-based, offender-based, and alert-based tabular reports

- **Flexible deployment:**

  - **Network behavior anomaly detection and response:** detect attacks using NBAD analysis of sampled traffic and Virus Throttle attack alerts from select ProCurve switches, and mitigate threats at the ProCurve network edge using intrusion-response capabilities

  - **Passive intrusion prevention and response:** remotely mirror suspect traffic identified by NBAD analysis to an offline IDS/IPS/UTM device for a signature file match to detect attacks and mitigate threats at the ProCurve network edge using Network Immunity Manager's intrusion-response capabilities

  - **Active intrusion prevention and response:** prevent attacks using inline IDS/IPS/UTM device and mitigate threats at the ProCurve network edge using Network Immunity Manager's intrusion-response capabilities

- **Third-party IDS/IPS/UTM device support:**

  - **Cisco:** Cisco IPS 4200 Series Sensors

  - **Fortinet:** Fortinet UTM appliances

  - **SonicWALL:** SonicWALL UTM Pro Series appliances

Warranty and support

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Network Immunity Manager 1.0

Specifications

	HP ProCurve Network Immunity Manager 1.0 50-device license (J9060A)	HP ProCurve Network Immunity Manager 1.0 +100-device license (J9061A)	HP ProCurve Network Immunity Manager 1.0 unlimited-device license (J9062A)
Notes	For system requirements, please refer to the HP ProCurve Manager specifications list.		
Services	Refer to the HP Web site at **www.procurve.eu/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 ProCurve Network Management

Key features

- Free ProCurve device management software
- Auto-discover, configure, and monitor devices
- Network topology and mapping
- Device alerts and troubleshooting

Datasheet

HP ProCurve Manager 2.3

HP ProCurve Manager is a Microsoft Windows-based network management solution that is a free downloadable software from the Web and is provided in box with selected manageable ProCurve devices. It provides all the basic tools needed to handle a network effectively, along with a 30-day trial version of HP ProCurve Manager Plus 2.3.

HP ProCurve Manager 2.3

Features and benefits

Additional information

- **Network status summary:** Upon bootup, a Network Status screen displays high-level information on network devices, end nodes, and events. From here, the user can research any one of these areas to get more details

- **Alerts and troubleshooting:** An Events Summary screen displays alerts to the user and categorizes them by severity, making it easier to track where bottlenecks and problems exist in the network. Alerts present detailed information on the problem, even down to the specific port. Users can be alerted to network problems via e-mail or pager

- **Automatic Device Discovery:** HP ProCurve Manager uses IEEE's Link Layer Discovery Protocol, which allows fast discovery of all ProCurve-manageable network devices and any device that supports the standard

- **Topology and mapping:** The software automatically creates a map of discovered network devices. Maps are color coded to reflect device status and can be viewed at multiple levels (physical view, subnet view, or VLAN view). Connection relationships between devices are drawn to reflect packet traffic lines

- **Device management:** Some device-focused tasks can be performed directly by the software, or the user can access Web and command-line interfaces with the click of a button to manage individual devices from inside the tool

Warranty and support

- **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

- **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Manager 2.3 accessories

HP ProCurve Manager Plus 2.3 upgrade from PCM+ 1.6 or newer (J9056A)

HP ProCurve Manager Plus 2.3 50-device license (J9057A)

HP ProCurve Manager Plus 2.3 upgrade +100-device license (J9058A)

HP ProCurve Manager Plus 2.3 unlimited-device license (J9059A)

HP ProCurve Identity Driven Manager 2.3 base product (upgrade from 1.0) (J9013A)

HP ProCurve Identity Driven Manager 2.3 base product—500-user license (J9012A)

HP ProCurve Identity Driven Manager 2.3–add 2,000 users license (J9014A)

HP ProCurve Network Immunity Manager 1.0 50-device license (J9060A)

HP ProCurve Network Immunity Manager 1.0 +100-device license (J9061A)

HP ProCurve Network Immunity Manager 1.0 unlimited-device license (J9062A)

HP ProCurve Mobility Manager 2.0 upgrade from PMM 1.1 (J9081A)

HP ProCurve Mobility Manager 2.0 50-device license (J9074A)

HP ProCurve Mobility Manager 2.0 +100-device license (J9075A)

HP ProCurve Mobility Manager 2.0 unlimited-device license (J9076A)

HP ProCurve Manager 2.3

Specifications

	HP ProCurve Manager 2.3	
	For networks having 50 to 250 managed devices, ProCurve recommends the following:	For networks having 250 to 2,000 managed devices, ProCurve recommends the following:
Minimum system hardware	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 10 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server
Recommended system hardware	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server	Intel Xeon or equivalent processor 4 GB RAM memory 80 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server
Recommended software	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)
Browsers	Microsoft Internet Explorer version 5.0 or later	Microsoft Internet Explorer version 5.0 or later
Supported platforms	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5 (optional)	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5 (optional)
Additional requirements	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.
Notes	Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change.	Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change.
Services	Refer to the HP Web site at www.procurve.eu/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.	

Key features

- Unified management across entire network
- Configuring, updating, monitoring, and troubleshooting of devices
- Policy-based and multidevice management
- Proactively alert setting, automatic action taking
- Advanced traffic-monitoring capabilities

Datasheet

HP ProCurve Manager Plus 2.3

HP ProCurve Manager Plus 2.3 is a secure, advanced Microsoft Windows-based network management platform that allows administrators to configure, update, monitor, and troubleshoot ProCurve devices centrally with easy-to-use information-rich screens. The administrator can set policies that will take automated actions in response to network events from a variety of sources. The software can run on its own or with HP OpenView Network Node Manager integration, allowing administrators to monitor multivendor networks while leveraging ProCurve-specific Adaptive EDGE management functions. ProCurve Manager Plus can be enhanced with plug-in modules, such as HP ProCurve Network Immunity Manager, Identity Driven Manager, and Mobility Manager. ProCurve Manager Plus can also integrate base management for third-party devices.

HP ProCurve Manager Plus 2.3

Features and benefits

Additional information

- **ProCurve Manager Plus 2.3 has all of the features of ProCurve Manager 2.3, along with:**

- **Policy creation and enforcement:** ProCurve Manager Plus 2.3 brings the ability to create policies, set alerts, and take action to enforce network or device policies. Network threats, bandwidth, or link issues can be mitigated by proactive policies and enforced with alerts and actions

- **Audit change reporting:** ProCurve Manager Plus now provides a configuration change log for all configuration changes. The audit log is provided to help customers meet compliance reporting regulations

- **In-depth traffic analysis:** An integrated, low-overhead traffic monitor interface shows detailed information on traffic throughout the network. Using enhanced traffic analysis protocols such as XRMON and sFlow, the user can monitor input and output traffic levels per device, segments with the highest traffic, or even the top users within a network segment

- **Device software updates:** ProCurve Manager Plus 2.3 automatically obtains new device software images from ProCurve and updates devices, allowing the user to download the latest version or choose the desired version. Updates can be scheduled easily across large groups of devices, all at user-specified times

- **Easier configuration management:** Changes in configuration are tracked and logged, and archived configurations can be applied to one or many devices. Configurations can be compared over time or between two devices, with the differences highlighted for the user

- **Advanced VLAN management:** A new, easy-to-use VLAN management interface allows the user to create and assign VLANs across the entire network, without having to access each network device individually

- **Investment protection:** The modular software architecture of ProCurve Manager Plus 2.3 will allow ProCurve to offer network administrators add-on software solutions that complement their needs

- **SNMPv3:** ProCurve Manager uses the secure SNMPv3 management protocol to help ensure the privacy of management data between the management server and the managed devices. It is integrated with HP OpenView's Network Node Manager implementation of SNMPv3

- **HP OpenView Network Node Manager Windows integration:**

  - **Installation:** The option to integrate with HP OpenView Network Node Manager (NNM) Windows may be selected at installation. ProCurve Manager Plus 2.3 will then integrate with the 6.41 and 7.x versions of NNM

  - **Auto-discovery coordinated with OpenView Network Node Manager:** When integrated with NNM, ProCurve Manager Plus 2.3 will use NNM's discovery database and then retrieve additional ProCurve device data for the ProCurve Manager Plus database

  - **Topology mapping:** When integrated with NNM, ProCurve Manager Plus will provide ProCurve device icons to the NNM topology map. The NNM topology map will be the primary mapping mechanism, with the option to launch the ProCurve Manager map views as well. This allows easy identification of ProCurve devices and allows the user, via right mouse button selection, to retrieve a ProCurve Manager Plus map of all selected ProCurve devices

- **Network management security:**

  - **Secure shell for telnet and command-line interface (CLI):** Secure shell (SSH) provides encrypted data when ProCurve Manager Plus 2.3 is accessing a device via telnet and CLI. This helps ensure that changes to network devices are safe from tampering by hackers

  - **RADIUS authentication of network management administrators:** ProCurve Manager Plus 2.3 can be configured to use the RADIUS industry-standard protocol to authenticate network management administrators. This authentication approach allows for simplified and standardized user administration

- **Advanced monitoring and diagnosis:**

  - **Inter-switch consistency checking between connected ports:** Switches connected to one another in a network should have consistent configurations on each side of the connected ports. ProCurve Manager Plus 2.3 checks these parameters to help ensure the proper reliable behavior occurs over these links. Parameters checked include VLAN ID and name, full-duplex/half-duplex, VLAN tagged vs. untagged packets, QoS, and priorities. These checks save administrator diagnosis time and ensure reliable data exchange

  - **BootROM consistency check:** ProCurve Manager Plus 2.3 checks BootROMs during the firmware update process to verify that the target firmware has the required BootROM before updating of the firmware is allowed. This prevents network downtime and alerts administrators of needed upgrades before errors occur

HP ProCurve Manager Plus 2.3

– **Find Port diagnostic capabilities:** ProCurve Manager Plus 2.3 provides the ability to find a switch port when given an IP or MAC address. This function can be initiated manually by the administrator or automatically by an external event. This enables administrators to automatically isolate problems to specific ports and take automated corrective action, saving time and reducing network downtime

– **Enable port mirroring and remote port mirroring on select ProCurve switches:** ProCurve Manager Plus 2.3 can set port mirroring and remote port mirroring on select advanced ProCurve switches

· **Friendly port names:** ProCurve Manager Plus 2.3 allows the administrator to set and display friendly port names.

· **Command-line interface:**

– **CLI command policies saved by name:** Configuration policies represented by a series of CLI commands can be saved by a unique name to be executed again for repetitive tasks

– **CLI policies can be triggered by external events:** Configuration policies represented as a series of CLI-like commands can be automatically executed when configurable external events trigger them

Warranty and support

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at **www.procurve.eu/support** for details on the support provided and the period during which support is available.

· **Software releases:** refer to the HP Web site at **www.procurve.eu/support** for details on the software releases provided and the period during which software releases are available.

HP ProCurve Manager Plus 2.3 accessories

HP ProCurve Identity Driven Manager 2.3 base product (upgrade from 1.0) (J9013A)

HP ProCurve Identity Driven Manager 2.3 base product—500-user license (J9012A)

HP ProCurve Identity Driven Manager 2.3—add 2,000 users license (J9014A)

HP ProCurve Network Immunity Manager 1.0 50-device license (J9060A)

HP ProCurve Network Immunity Manager 1.0 +100-device license (J9061A)

HP ProCurve Network Immunity Manager 1.0 unlimited-device license (J9062A)

HP ProCurve Mobility Manager 2.0 upgrade from PMM 1.1 (J9081A)

HP ProCurve Mobility Manager 2.0 50-device license (J9074A)

HP ProCurve Mobility Manager 2.0 +100-device license (J9075A)

HP ProCurve Mobility Manager 2.0 unlimited-device license (J9076A)

HP ProCurve Manager Plus 2.3

Specifications

	HP ProCurve Manager Plus 2.3 50-device license (J9057A)	HP ProCurve Manager Plus 2.3 upgrade +100-device license (J9058A)
	For networks having 50 to 250 managed devices, ProCurve recommends the following:	For networks having 50 to 250 managed devices, ProCurve recommends the following:
Minimum system hardware	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 10 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 10 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server
Recommended system hardware	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server
Recommended software	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)
	For networks having 250 to 2,000 managed devices, ProCurve recommends the following:	For networks having 250 to 2,000 managed devices, ProCurve recommends the following:
Minimum system hardware	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server
Recommended system hardware	Intel Xeon or equivalent processor 4 GB RAM memory 80 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server	Intel Xeon or equivalent processor 4 GB RAM memory 80 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server
Browsers	Microsoft Internet Explorer version 5.0 or later	Microsoft Internet Explorer version 5.0 or later
Supported platforms	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5
Additional requirements	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.
Notes	Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change	Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change
Services	Refer to the HP Web site at www.procurve.eu/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.	Refer to the HP Web site at www.procurve.eu/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 ProCurve Manager Plus 2.3

Specifications

	HP ProCurve Manager Plus 2.3 unlimited-device license (J9059A)	HP ProCurve Manager Plus 2.3 upgrade from PCM+ 1.6 or newer (J9056A)
	For networks having 50 to 250 managed devices, ProCurve recommends the following:	For networks having 50 to 250 managed devices, ProCurve recommends the following:
Minimum system hardware	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 10 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server	2.0 GHz Intel Pentium 4 or equivalent processor 2 GB RAM memory 10 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server
Recommended system hardware	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server
Recommended software	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)	Microsoft Windows XP SP2 Microsoft Windows XP Professional SP2 Microsoft Windows 2003 Server (32-bit)
	For networks having 250 to 2,000 managed devices, ProCurve recommends the following:	For networks having 250 to 2,000 managed devices, ProCurve recommends the following:
Minimum system hardware	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server	3.0 GHz Intel Pentium 4 or equivalent processor 3 GB RAM memory 40 GB storage 1000 MB NIC for PCM+ as a standalone application, assuming a dedicated server
Recommended system hardware	Intel Xeon or equivalent processor 4 GB RAM memory 80 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server	Intel Xeon or equivalent processor 4 GB RAM memory 80 GB storage 1000 MB NIC for PCM+ assuming a dedicated server, and including HP ProCurve Identity Driven Manager, Mobility Manager, and Network Immunity Manager on the same server
Browsers	Microsoft Internet Explorer version 5.0 or later	Microsoft Internet Explorer version 5.0 or later
Supported platforms	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5	HP OpenView Network Node Manager version 6.41 or 7.01 or 7.5
Additional requirements	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.	Note: HP ProCurve Network Immunity Manager when loaded on PCM+ 2.3 can sample up to 500 managed ports using sFlow or XRMON.
Notes	Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change	Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change
Services	Refer to the HP Web site at www.procurve.eu/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.	Refer to the HP Web site at www.procurve.eu/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.

Datasheet

HP ProCurve Mobility Manager 2.0

HP ProCurve Mobility Manager 2.0 provides a single point in which to plan, deploy, manage, and monitor a ProCurve wireless LAN. As a plug-in software module for HP ProCurve Manager Plus, this powerful tool provides visualization of predictive radio frequency (RF) coverage and location of wireless LAN infrastructure, unmanaged (rogue) access points, and wireless clients as part of an overlay to imported floor plans. Monitoring network health is easy with an integrated, single-screen dashboard providing device or network-wide wireless network utilization and client activity. With ProCurve Mobility Manager 2.0 integrated seamlessly into ProCurve Manager Plus, network administrators can easily manage their wireless and wired network from a common, unified network management console.

HP ProCurve Mobility Manager 2.0

Features and benefits

Additional information

· **In addition to the benefits offered by ProCurve Manager Plus, ProCurve Mobility Manager enables the following wireless LAN management functionality:**

· **Wireless LAN planning and deployment:**

  – **Site plan:** simplifies planning a wireless LAN deployment by displaying a graphical representation of the desired coverage area. Import floor plans, and identify physical dimensions and obstacles such as external and internal walls and their RF properties

  – **RF coverage prediction (heat map):** simple drag and drop of ProCurve wireless devices onto a site plan enables network designers to visualize the effect device placement and configuration of ProCurve access points and radio ports have on the desired coverage area. Adjustments to variables, including radio transmit power, channel, antenna type, and orientation, provide greater design accuracy before the physical installation of the wireless network infrastructure. ProCurve Mobility Manager saves each device configuration as part of the site plan. Once ProCurve Manager Plus discovers the newly installed devices, the network administrator can modify or simply apply the saved configurations to the new wireless devices

  – **Auto-placement wizard:** simplifies placement and configuration of ProCurve wireless infrastructure within a specified section of a site plan. Select the ProCurve device type, radio configuration, and minimum desired data rate, and the tool automatically determines the number of devices, physical location, and device configuration parameters such as transmit power and channel selection

  – **Wireless device planner report:** reduces the time it takes to install a wireless LAN by providing a detailed, accurate Bill of Materials report, which includes a list of devices, their required x and y coordinates, and physical orientation within the floor plan. Network designers can easily add design notes, device configuration, and other installation instructions as part of the report, all helping to reduce the cost of installation

· **Wireless LAN monitoring and reporting:**

  – **Single-screen wireless LAN dashboard:** provides charting of wireless network statistics for a single device or a user-defined group of ProCurve access points and radio ports. ProCurve Mobility Manager collects and displays up to an hour of historical network statistics, including status of discovered infrastructure, wireless client associations, network traffic type, bandwidth utilization, and traffic errors

  – **Site view:** using site plans stored or imported into ProCurve Mobility Manager, the site view function simplifies monitoring and troubleshooting by displaying wireless network coverage, physical location and activity of wireless clients, and both managed and unmanaged (possible rogue access points) wireless devices operating within the wireless network. More network detail is readily available by simply clicking on a client or access point icon for information such as MAC and IP address, client association status, signal strength, and wireless security settings

  – **Reporting tools:** includes wireless diagnostic and network activity reporting capabilities to troubleshoot or analyze client activity and infrastructure performance, in addition to reports available as part of ProCurve Manager Plus. Network administrators can quickly build customized reports, at a device or group level, by choosing from a comprehensive list of device, radio, or network parameters to generate reports such as client connectivity history or bandwidth utilization

· **Network security:**

  – **Rogue device detection:** alerts administrators to untrusted devices discovered via radio-frequency scans (using ProCurve wireless devices)

  – **Centralized application of security policies:** helps ensure consistent application of a business's security policies via template-based group configuration of wireless device security settings (including encryption keys and SSIDs)

  – **Automated configuration checking:** allows administrators to choose to be alerted to any device configuration changes, helping to mitigate potential gaps in security policy

· **Configuration management:**

  – **Device configuration:** simply select a ProCurve wireless device from a list of auto-discovered network infrastructure or click a wireless device icon on the site view map to view or configure device, radio, and security parameters

  – **Group-based configuration and software management:** allows administrators to centrally assign managed devices to groups and apply configuration changes or software updates either real-time or on a scheduled basis

Warranty and support

· **Electronic and telephone support:** limited electronic and telephone support is available from HP. Refer to the HP Web site at www.procurve.eu/support for details on the support provided and the period during which support is available.

· **Software releases:** refer to the HP Web site at www.procurve.eu/support for details on the software releases provided and the period during which software releases are available.

HP ProCurve Mobility Manager 2.0

Specifications

	HP ProCurve Mobility Manager 2.0 50-device license (J9074A)	HP ProCurve Mobility Manager 2.0 +100-device license (J9075A)
Notes	Requires HP ProCurve Manager Plus version 2.3 or greater. For system requirements, please refer to the ProCurve Manager Plus specifications list. Supported devices: • HP ProCurve Access Point 530 • HP ProCurve Access Point 420 • HP ProCurve Radio Port 210, 220, and 230 • HP ProCurve Wireless Edge Services zl Module • HP ProCurve Wireless Edge Services xl Module • HP ProCurve wireless antennas Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change	Requires HP ProCurve Manager Plus version 2.3 or greater. For system requirements, please refer to the ProCurve Manager Plus specifications list. Supported devices: • HP ProCurve Access Point 530 • HP ProCurve Access Point 420 • HP ProCurve Radio Port 210, 220, and 230 • HP ProCurve Wireless Edge Services zl Module • HP ProCurve Wireless Edge Services xl Module • HP ProCurve wireless antennas Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change
Services	Refer to the HP Web site at www.procurve.eu/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.	Refer to the HP Web site at www.procurve.eu/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 ProCurve Mobility Manager 2.0 unlimited-device license (J9076A)	HP ProCurve Mobility Manager 2.0 upgrade from PMM 1.1 (J9081A)
Notes	Requires HP ProCurve Manager Plus version 2.3 or greater. For system requirements, please refer to the ProCurve Manager Plus specifications list. Supported devices: • HP ProCurve Access Point 530 • HP ProCurve Access Point 420 • HP ProCurve Radio Port 210, 220, and 230 • HP ProCurve Wireless Edge Services zl Module • HP ProCurve Wireless Edge Services xl Module • HP ProCurve wireless antennas Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change	Requires HP ProCurve Manager Plus version 2.3 or greater. For system requirements, please refer to the ProCurve Manager Plus specifications list. Supported devices: • HP ProCurve Access Point 530 • HP ProCurve Access Point 420 • HP ProCurve Radio Port 210, 220, and 230 • HP ProCurve Wireless Edge Services zl Module • HP ProCurve Wireless Edge Services xl Module • HP ProCurve wireless antennas Additional processing power may be necessary for extensive traffic monitoring. Unlimited license means that ProCurve does not impose a limit on the number of devices attached to the network as a condition of the license. Some degradation in performance may be expected the greater the number of devices attached to the network. Specifications subject to change
Services	Refer to the HP Web site at www.procurve.eu/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.	Refer to the HP Web site at www.procurve.eu/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 ProCurve Customer Care

HP ProCurve Customer Care

HP ProCurve warranty and support

HP ProCurve networking products come with warranties you would expect from HP.

- HP ProCurve Lifetime Warranty◆ features next-business-day advance replacement.
- HP ProCurve warranty includes coverage for fans and power supplies.
- Software release notification is provided upon registration on the www.ProCurve.eu Web site.
- Limited electronic or telephone support is available from HP. For details about the support provided and the period during which support is available, refer to the HP Web site: www.procurve.eu/support. Details about the software releases provided and the period during which software releases are available can also be found at this Web site.
- For details about how to contact HP ProCurve technical support, refer to the HP Web site: www.procurve.eu/support.

HP ProCurve services

HP provides a full range of services to meet the end-to-end networking needs of our customers. Network lifecycle services form the core foundation of network consulting, assessments, planning, design, integration, deployment, and management. These can be purchased on a standalone basis or can be used to deliver solutions throughout the network, spanning network security/HP Adaptive Infrastructure and Data Center Networking Services, as well as wireless/mobility solutions.

The HP ProCurve Lifetime Warranty◆ provides robust ongoing network support. Because many customers have advanced support needs, HP offers a wide range of optional services to increase uptime, protect your technology investment, and assist you with services such as:

- 24x7 phone support for hardware and software
- Onsite technical engineer for hardware response
- Direct access to support experts
- Account management support
- Installation and Startup Services

Choose HP Services when you want to upgrade or extend your warranty coverage. HP can also provide integrated support for your entire IT infrastructure, including networking, servers, and storage, to help you grow your business with expert support that is affordable, personal, and scaled to your needs.

◆ For as long as you own the product, with next-business-day advance replacement (available in most countries). The following hardware products and their related series modules have a one-year hardware warranty with extensions available: HP ProCurve Routing Switch 9300m Series, HP ProCurve Switch 8100fl Series, and HP ProCurve Network Access Controller 800. The following hardware mobility products have a one-year hardware limited warranty with extensions available: HP ProCurve M111 Client Bridge, HP ProCurve MSM3xx-R Access Points, HP ProCurve MSM7xx Mobility and Access Controllers, HP ProCurve RF Manager IDS/IPS Systems, HP ProCurve MSM Power Supplies, and HP ProCurve 1-Port Power Injector. Disk drives in the HP ProCurve ONE Services zl Module have a five-year hardware warranty. Standalone software, upgrades, or licenses may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.procurve.eu/warranty.

HP ProCurve Customer Care

Overview of HP ProCurve service offerings

· Consulting services

· Hardware and software maintenance services

· Deployment & implementation services

· Mission critical and proactive services

· Channel partner delivered services

Consulting services

HP Network Consulting Service delivers consultation on multivendor network architectures, technologies, protocols, products, and tools to help you manage costs, increase quality, mitigate risks, and increase agility. HP Network Consulting Service is a customized service for customers who are planning to integrate IT systems, consolidate or expand networks, and/or migrate to new technologies. HP provides technical expertise to assist customers in defining requirements, developing strategies, and planning network support for applications.

Hardware and software maintenance services

The services below are available as HP Care Pack and Contractual Services

· Hardware support

  – 4-Hour Same Business Day

  – 4-Hour 24x7 Same Day

  – 6-Hour Call to Repair

  – Next Business Day Onsite

· Software support

  – 24x7 or 9x5 Software Support

  – Software product updates

· Combination hardware/software support

  – HP Support Plus
  HP Services engineers deliver onsite hardware support and over-the-phone software support 13 hours per day, 5 days per week.

  – HP Support Plus 24
  HP Services engineers deliver onsite hardware support and over-the-phone software support around the clock, 365 days per year.

Deployment & implementation services

HP Deployment Services help you get your HP ProCurve Networking device up and running quickly by coordinating the installation, configuration, and verification of the new device with:

· HP ProCurve Installation Service

· HP ProCurve Installation and Startup Service

HP mission critical and proactive services

HP Services can improve availability and avoid costly downtime by mitigating technology-related business risks while enhancing operational efficiency and service delivery through service management best practices and access to premium support.

· HP Proactive 24

  – This is an integrated hardware and software support solution that combines efficient proactive problem prevention with responsive technical assistance whenever you need it.

· HP Critical Service
  HP Critical Service provides you with:

  – Access to proactive onsite expertise from HP-certified high-availability experts

  – Priority-reactive assistance from the HP worldwide network of mission-critical response centers

  – Remote support tools to monitor your environment for potential problems

  – Evaluation of your infrastructure and processes, as well as assistance in implementing recommendations to achieve availability requirements

HP ProCurve Customer Care

Channel Partner delivered services

HP ProCurve channel resellers meet the most challenging customer networking solutions needs by designing and supporting complex networking and application environments.

- HP ProCurve Master channel resellers provide the highest level of technical expertise and networking certification and have the infrastructure to deliver 24x7 post-sales services, offer a complete and robust portfolio of networking services and solutions, and provide hardware repair or replacement in less than one business day.

- HP ProCurve Expert channel resellers deliver solutions and services on a project basis, can provide next-business-day replacement, and offer a complete and robust portfolio of networking services and solutions, including post-sales support.

- HP ProCurve Professional channel resellers provide the logistics and financial services that make it easy for customers to purchase HP ProCurve products.

For more information about channel partner delivered services, please visit: **www.procurve.eu/services**

To find out more about the HP ProCurve services available in your country, please visit the Web:

- HP ProCurve services overview: **www.procurve.eu/services**
- About HP Services: **www.hp.com/hps/about**
- HP Care Pack Services: **www.hp.com/hps/carepack**
- HP Care Pack Lookup Tool: **www.hp.com/go/lookuptool**
- HP Network Services: **www.hp.com/go/networks**
- HP Mission critical and proactive services: **www.hp.com/services/missioncritical**

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