

ProCurve Switch 5400zl/3500yl Series

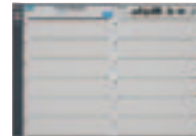
The ProCurve Switch 5400zl/3500yl series consists of the most advanced intelligent edge switches in the ProCurve Networking product line. The 5400zl series includes 6-slot and 12-slot chassis and associated zl modules and bundles, and the 3500yl series includes 24-port and 48-port stackables. The foundation for all these switches is a purpose-built, programmable ProVision ASIC that allows the most demanding networking features, such as 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/3500yl switches offer excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.



ProCurve Switch 5406zl
Intelligent Edge (J8697A)



ProCurve Switch 5406zl-48G
Intelligent Edge (J8699A)



ProCurve Switch 5412zl
Intelligent Edge (J8698A)



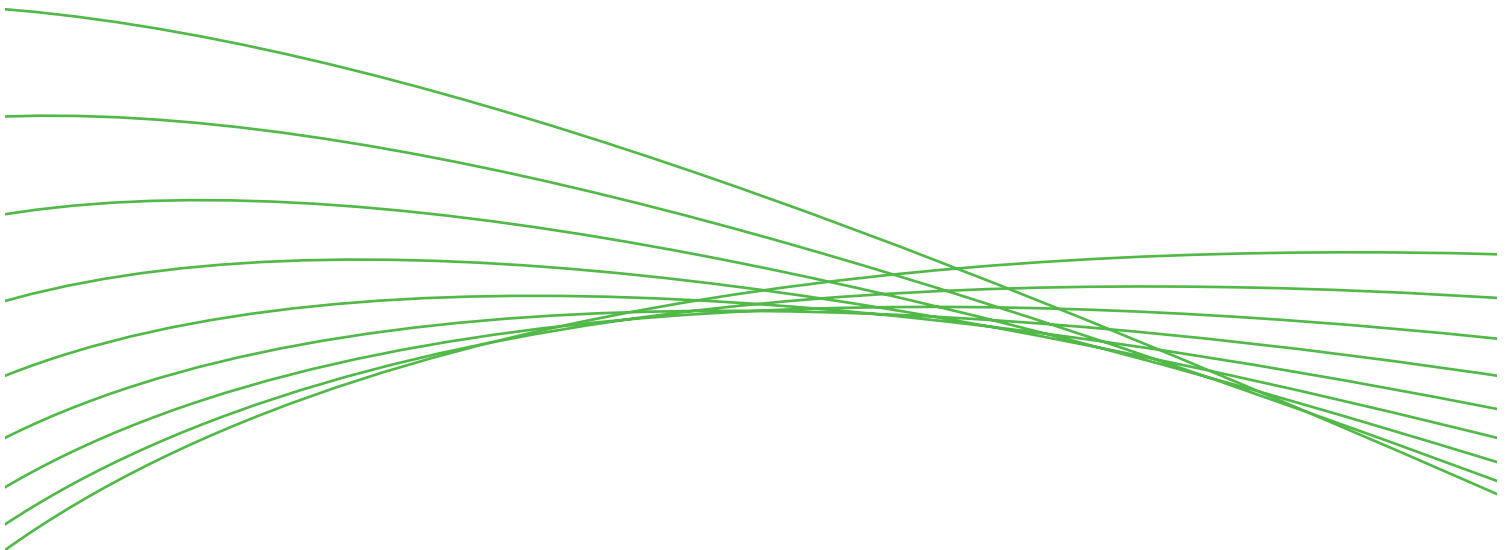
ProCurve Switch 5412zl-96G
Intelligent Edge (J8700A)



ProCurve Switch
3500yl-24G-PWR
Intelligent Edge (J8692A)



ProCurve Switch
3500yl-48G-PWR
Intelligent Edge (J8693A)



ProCurve Switch 5400zl/3500yl Series

Features and benefits

Performance

- **5400zl/3500yl architecture:** 115 to 692 Gbps crossbar switching fabric provides intra- and inter-module switching with 36 to 428 million pps throughput on purpose-built ProVision ASIC

NEW Selectable queue configurations: increase performance by selecting the number of queues and associated memory buffer that best meet the requirements of network applications

Connectivity

- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to power compliant PoE 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 www.procurve.com
- **Jumbo frames:** on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services
- **ProCurve/IEEE Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **IPv6 ready:** switch hardware is capable of supporting IPv6 host, routing, and filtering with the ProVision ASIC, but IPv6 operation and deployment are not available until enabled via a software update at a later date

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
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking:** support up to 36 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported
- **Hot-swappable modules (5400zl series):** permit modules, mini-GBICs, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network
- **Optional redundant power supply (5400zl series):** provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed

Layer 2 switching

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

ProCurve Switch 5400zl/3500yl Series

Layer 3 IP routing

- **Layer 3 IP routing:**
 - **Static IP routing:** provides basic routing
 - **RIP:** provides RIPv1 and RIPv2 routing at media speed
 - **OSPF (requires Premium license):** includes ECMP to provide link redundancy/scalable bandwidth and NSSA

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

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

Security

- **Switch CPU protection:** provides automatic protection against malicious network traffic trying to shut down the switch
- **Virus throttle:** 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
- **ICMP throttling:** defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- **Multiple user authentication methods:**
 - **IEEE 802.1X:** industry-standard way 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 MAC address of the client
- **Authentication flexibility:**
 - **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
 - **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 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
- **NEW DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **NEW BPDU port protection:** blocks Bridge Protocol Data Unit (BPDU) on ports that do not require BPDU, preventing forged BPDU attacks
- **NEW Dynamic IP lockdown*:** works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

*Target availability 2Q 2007.

ProCurve Switch 5400zl/3500yl Series

Features and benefits (continued)

- NEW Dynamic ARP protection:** blocks ARP broadcast from unauthorized hosts, preventing eavesdropping or theft of network data
- NEW Detection of malicious attacks:** monitors 10 types of network traffic and sends warning when an anomaly that can potentially 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
- **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
- **Security banner:** displays customized security policy when users log in to the switch

Convergence

- **IP multicast routing (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
- **iSCSI support:** enables the deployment of Ethernet storage area network solutions using the iSCSI standard

Quality of Service (QoS)

- **Layer 4 prioritization:** enables prioritization based on TCP/UDP port numbers
- **Traffic prioritization:** allows real-time traffic classification into 8 priority levels mapped to 8 queues
- **Bandwidth shaping:**
 - **Rate limiting:** per-port ingress/egress enforced maximum bandwidth
 - **Guaranteed minimum:** per-port, per-queue egress-based guaranteed minimum bandwidth
- **Class of Service (CoS):** sets IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Management

- **Remote intelligent mirroring:** mirrors ingress/egress ACL-selected traffic from a switch port or VLAN to a local or remote switch port anywhere on the network

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- **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

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

- **Friendly port names:** allow assignment of descriptive names to ports
- **Dual flash images:** provide independent primary and secondary OS files for backup while upgrading
- **Multiple configuration files:** multiple config files can be stored to flash image

NEW USB support:

- **File copy:** allows users to copy files from the switch to a USB device

NEW 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

- **Stacking capability (3500yl series):** provides single IP address management for a virtual stack of up to 16 switches

Industry-leading warranty

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

Services

ProCurve Switch 3500yl-24G-PWR

- Installation with minimum configuration, system-based pricing (U4826E)
- Installation with HP-provided configuration, system-based pricing (U4830E)

ProCurve Switch 3500yl-48G-PWR

- Installation with minimum configuration, system-based pricing (U4826E)
- Installation with HP-provided configuration, system-based pricing (U4830E)

ProCurve Switch 5406zl Intelligent Edge

- 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)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

ProCurve Switch 5406zl-48G Intelligent Edge

- 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)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

ProCurve Switch 5400zl/3500yl Series

Services (continued)

ProCurve Switch 5412zl Intelligent Edge

- 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)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

ProCurve Switch 5412zl-96G Intelligent Edge

- 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)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

Check www.hp.com/go/procurveservices for part numbers and service-level descriptions. For details about services and response times in your area, please contact your local HP sales office.

ProCurve Switch 5400zl/3500yl Series

Specifications



	ProCurve Switch 5406zl Intelligent Edge (J8697A)	ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)
What's included	N/A	2 ProCurve Switch 5400zl 24-Port 10/100/1000 PoE Modules (J8702A) 1 ProCurve Switch zl 875W Power Supply (J8712A)
Ports	6 open module slots 1 RS-232C DB-9 console port	4 open module slots 48 open 10-GbE transceiver slots 1 RS-232C DB-9 console port
Maximum ports	Supports a maximum of 24 10-GbE ports or 144 10/100/1000 ports or 144 mini-GBICs, or a combination	Supports a maximum of 16 10-GbE ports or 144 10/100/1000 ports or 96 mini-GBICs, or a combination
Power supplies	2 open power-supply slots	Includes 1 x J8712A 1 open power-supply slot
Physical characteristics		
Dimensions (D x W x H)	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height)	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height)
Weight	10.68 kg (23.55 lb.)	15.54 kg (34.26 lb.)
Memory and processor		
Gigabit module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR 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	<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 214 million pps	Up to 214 million pps
Routing/Switching capacity	288 Gbps	288 Gbps
Switch fabric speed	346 Gbps	346 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed
Operating relative humidity	15% to 95% @ 55°C (131°F), non-condensing	15% to 95% @ 55°C (131°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 4.6 km (15,091 ft.)	Up to 4.6 km (15,091 ft.)
Acoustic	Power: 57 dB; pressure: 40.2 dB ISO 7779, ISO 9296	Power: 57 dB; pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	Chassis ships without power supplies. Two power-supply slots available; two different power supplies available. See power-supply products for additional specifications.	One J8712A installed. One open power-supply slot available; two different power supplies available. See power-supply products for additional specifications.
Maximum heat dissipation	3100/3400 BTU/hr (3270.5/3587 kJ/hr); 2 J8712A or 2 J8713A power supplies installed	3100/3200 BTU/hr (3270.5/3376 kJ/hr); 2 J8712A or 1 J8712A + 1 J8713A power supplies installed
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Frequency	50/60 Hz	50/60 Hz
Notes	Power supplies must be ordered separately. One J8712A or J8713A can power the J8697A chassis.	N/A
Safety	CSA 22.2 No. 60950; UL 60950; IEC60950; EN60950	
Emissions	FCC Class A; EN55022/CISPR-22 Class A; VCCI Class A	
Immunity		
EN	EN55024, CISPR 24	EN55024, 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; 3V/m	IEC 61000-4-3; 3V/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; 3V	IEC 61000-4-6; 3V
Power frequency magnetic field	IEC 61000-4-8; 1A/m, 50 or 60 Hz	IEC 61000-4-8; 1A/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	EN61000-3-2, IEC61000-3-2	EN61000-3-2, IEC61000-3-2
Flicker	EN61000-3-3, IEC61000-3-3	EN61000-3-3, IEC61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)



ProCurve Switch 5406zl Intelligent Edge (J8697A)

ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)

Management	ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Standards and protocols	RFC 783 TFTP; RFC 2925 Ping MIB; RFC 951 BootP; RFC 1542 BootP; RFC 854 Telnet; RFC 768 UDP; RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 2030 Simple Network Time Protocol; IEEE 802.3x Flow Control; DHCP Relay; RFC 3046 DHCP Relay Agent Information Option 82; RFC 3376 IGMPv1/v2/v3; RFC 2453 RIPv2; RFC 2328 OSPFv2 (Premium License); IGMPv3; IEEE 802.1D Spanning Tree; IEEE 802.1w Rapid Convergence Spanning Tree; IEEE 802.1s Multiple Spanning Trees; IEEE 802.3ad Link Aggregation Control Protocol; IEEE 802.1AB Link Layer Discovery Protocol; ANSI/TIA-1057 LLDP Media Endpoint Discovery (MED); RFC 2474 DiffServ Precedence; RFC 2597 DiffServ Expedited Forwarding (EF); RFC 2598 DiffServ Assured Forwarding (AF); RFC 1492 TACACS+; RFC 2138 RADIUS; RFC 2866 RADIUS accounting; SSHv2 Secure Shell; Secure Sockets Layer (SSL); IEEE 802.1X Network Login; 802.3af Power over Ethernet; IEEE 802.1Q VLAN tagging; IEEE 802.1Q GVRP; IEEE 802.1p Priority; SNMPv1/v2c/v3; HTML and telnet management; RFC 1493 Bridge MIB; PIM Dense Mode (Premium License); PIM Sparse Mode (Premium License); RFC 1213 MIB II; RFC 2096 IP Forwarding Table MIB; RFC 2737 Entity MIB; RFC 2863 Evolution of Interface; RFC 2665 Ethernet MIB; RFC 3768 VRRP (Premium License); RFC 2787 VRRP MIB; RFC 1058 RIP; RFC 1724 RIPv2 MIB; RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events); XRMON; UDLD (Uni-directional Link Detection); RFC 2021 RMON probe configuration (RMON v2); RFC 2668 802.3 MAU MIB; RFC 2613 SMON; RFC 2674 802.1p and IEEE 802.1Q Bridge MIB; RFC 1850 OSPF MIB; RFC 2618 RADIUS Client MIB; RFC 2620 RADIUS Accounting MIB; RFC 3101 OSPF NSSA; RFC 1519 CIDR; RFC 3046 DHCP Relay Agent Information Option; RFC 3176 sFlow
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" (product number ends with the letter "B", e.g. J4858B, J4859B) or later are required.

ProCurve Switch 5400zl/3500yl Series

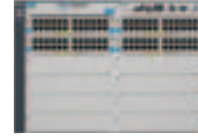
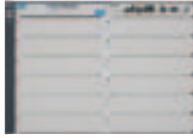
Specifications



	ProCurve Switch 5412zl Intelligent Edge (J8698A)	ProCurve Switch 5412zl-96G Intelligent Edge (J8700A)
What's included	N/A	4 ProCurve Switch 5400zl 24-Port 10/100/1000 PoE Modules (J8702A) 2 ProCurve Switch zl 875W Power Supplies (J8712A)
Ports	12 open module slots 1 RS-232C DB-9 console port	8 open module slots 96 open 10-GbE transceiver slots 1 RS-232C DB-9 console port
Maximum ports	Supports a maximum of 48 10-GbE ports or 288 10/100/1000 ports or 288 mini-GBICs, or a combination	Supports a maximum of 32 10-GbE ports or 288 10/100/1000 ports or 192 mini-GBICs, or a combination
Power supplies	4 open power-supply slots	Includes 2 x J8712A 2 open power-supply slots
Physical characteristics		
Dimensions (D x W x H)	45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height)	45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height)
Weight	15.85 kg (34.94 lb.)	26.31 kg (58 lb.)
Memory and processor		
Gigabit module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
Management module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR 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	<3.7 μ s (FIFO 64-byte packets)	<3.7 μ s (FIFO 64-byte packets)
10 Gbps	<2.1 μ s (FIFO 64-byte packets)	<2.1 μ s (FIFO 64-byte packets)
Throughput	Up to 428 million pps	Up to 428 million pps
Routing/Switching capacity	576 Gbps	576 Gbps
Switch fabric speed	692 Gbps	692 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed
Operating relative humidity	15% to 95% @ 55°C (131°F), non-condensing	15% to 95% @ 55°C (131°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 4.6 km (15,091 ft.)	Up to 4.6 km (15,091 ft.)
Acoustic	Power: 64 dB; pressure: 57.5 dB ISO 7779, ISO 9296	Power: 64 dB; pressure: 57.5 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	Chassis ships without power supplies. Four power-supply slots available; two different power supplies available. See power supply products for additional specifications.	Two J8712A installed. Two open power-supply slots available; two different power supplies available. See power supply products for additional specifications.
Maximum heat dissipation	6200/6800 BTU/hr (6541/7174 kJ/hr); 4 J8712A or 4 J8713A power supplies installed	6200/6600 BTU/hr (6541/6963 kJ/hr); 4 J8712A or 2 J8712A + 2 J8713A power supplies installed
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Frequency	50/60 Hz	50/60 Hz
Notes	Power supplies must be ordered separately. Two J8712A or J8713A supplies are required to power the J8698A chassis.	N/A
Safety	CSA 22.2 No. 60950; UL 60950; IEC60950; EN60950	
Emissions	FCC Class A; EN55022/CISPR-22 Class A; VCCI Class A	
Immunity		
EN	EN55024, CISPR 24	EN55024, 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; 3V/m	IEC 61000-4-3; 3V/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; 3V	IEC 61000-4-6; 3V
Power frequency magnetic field	IEC 61000-4-8; 1A/m, 50 or 60 Hz	IEC 61000-4-8; 1A/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	EN61000-3-2, IEC61000-3-2	EN61000-3-2, IEC61000-3-2
Flicker	EN61000-3-3, IEC61000-3-3	EN61000-3-3, IEC61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)



ProCurve Switch 5412zl Intelligent Edge (J8698A)

ProCurve Switch 5412zl-966 Intelligent Edge (J8700A)

Management	ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Standards and protocols	RFC 783 TFTP; RFC 2925 Ping MIB; RFC 951 BootP; RFC 1542 BootP; RFC 854 Telnet; RFC 768 UDP; RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 2030 Simple Network Time Protocol; IEEE 802.3x Flow Control; DHCP Relay; RFC 3046 DHCP Relay Agent Information Option 82; RFC 3376 IGMPv1/v2/v3; RFC 2453 RIPv2; RFC 2328 OSPFv2 (Premium License); IGMPv3; IEEE 802.1D Spanning Tree; IEEE 802.1w Rapid Convergence Spanning Tree; IEEE 802.1s Multiple Spanning Trees; IEEE 802.3ad Link Aggregation Control Protocol; IEEE 802.1AB Link Layer Discovery Protocol; ANSI/TIA-1057 LLDP Media Endpoint Discovery (MED); RFC 2474 DiffServ Precedence; RFC 2597 DiffServ Expedited Forwarding (EF); RFC 2598 DiffServ Assured Forwarding (AF); RFC 1492 TACACS+; RFC 2138 RADIUS; RFC 2866 RADIUS accounting; SSHv2 Secure Shell; Secure Sockets Layer (SSL); IEEE 802.1X Network Login; 802.3af Power over Ethernet; IEEE 802.1Q VLAN tagging; IEEE 802.1Q GVRP; IEEE 802.1p Priority; SNMPv1/v2c/v3; HTML and telnet management; RFC 1493 Bridge MIB; PIM Dense Mode (Premium License); PIM Sparse Mode (Premium License); RFC 1213 MIB II; RFC 2096 IP Forwarding Table MIB; RFC 2737 Entity MIB; RFC 2863 Evolution of Interface; RFC 2665 Ethernet MIB; RFC 3768 VRRP (Premium License); RFC 2787 VRRP MIB; RFC 1058 RIP; RFC 1724 RIPv2 MIB; RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events); XRMON; UDLD (Uni-directional Link Detection); RFC 2021 RMON probe configuration (RMON v2); RFC 2668 802.3 MAU MIB; RFC 2613 SMON; RFC 2674 802.1p and IEEE 802.1Q Bridge MIB; RFC 1850 OSPF MIB; RFC 2618 RADIUS Client MIB; RFC 2620 RADIUS Accounting MIB; RFC 3101 OSPF NSSA; RFC 1519 CIDR; RFC 3046 DHCP Relay Agent Information Option; RFC 3176 sFlow
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" (product number ends with the letter "B", e.g. J4858B, J4859B) or later are required.

ProCurve Switch 5400zl/3500yl Series

Specifications



	ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)	ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
Ports	1 open module slot 20 open 10-GbE 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; 802.3u Type 100Base-TX; 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	1 open module slot 44 open 10-GbE 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; 802.3u Type 100Base-TX; 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
Maximum ports	Supports a maximum of 4 10-GbE ports	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
Exceptions	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, 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 74 million pps	Up to 110 million pps
Routing/Switching capacity	101 Gbps	148 Gbps
Switch fabric speed	115 Gbps	173 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% at 40°C (104°F), non-condensing	15% to 95% at 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% at 65°C (149°F), non-condensing	15% to 95% at 65°C (149°F), non-condensing
Altitude	Up to 4.6 km (15,091 ft.)	Up to 4.6 km (15,091 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 and either 50 or 60 Hz
Maximum heat dissipation	2590 BTU/hr (2732.45 kJ/hr), including the switch and max number of attached PoE devices; switch only is 1,330 BTU/hr	2590 BTU/hr (2732.45 kJ/hr), including the switch and max number of attached PoE devices; switch only is 1,330 BTU/hr
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
Power consumption	759 W	759 W
Frequency	50/60 Hz	50/60 Hz
Notes	Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220V)	Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220V)
Safety	CSA 22.2 No. 60950; UL 60950; IEC60950; EN60950	
Emissions	FCC Class A; EN55022/CISPR-22 Class A; VCCI Class A	
Immunity		
EN	EN55024, CISPR 24	EN55024, 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; 3V/m	IEC 61000-4-3; 3V/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; 3V	IEC 61000-4-6; 3V
Power frequency magnetic field	IEC 61000-4-8; 1A/m, 50 or 60 Hz	IEC 61000-4-8; 1A/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	EN61000-3-2, IEC61000-3-2	EN61000-3-2, IEC61000-3-2
Flicker	EN61000-3-3, IEC61000-3-3	EN61000-3-3, IEC61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)



ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)



ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

	ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)	ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
Management	ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Standards and protocols	RFC 783 TFTP; RFC 2925 Ping MIB; RFC 951 BootP; RFC 1542 BootP; RFC 854 Telnet; RFC 768 UDP; RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 2030 Simple Network Time Protocol; IEEE 802.3x Flow Control; DHCP Relay; RFC 3046 DHCP Relay Agent Information Option 82; RFC 3376 IGMPv1/v2/v3; RFC 2453 RIPv2; RFC 2328 OSPFv2 (Premium License); IGMPv3; IEEE 802.1D Spanning Tree; IEEE 802.1w Rapid Convergence Spanning Tree; IEEE 802.1s Multiple Spanning Trees; IEEE 802.3ad Link Aggregation Control Protocol; IEEE 802.1AB Link Layer Discovery Protocol; ANSI/TIA-1057 LLDP Media Endpoint Discovery (MED); RFC 2474 DiffServ Precedence; RFC 2597 DiffServ Expedited Forwarding (EF); RFC 2598 DiffServ Assured Forwarding (AF); RFC 1492 TACACS+; RFC 2138 RADIUS; RFC 2866 RADIUS accounting; SSHv2 Secure Shell; Secure Sockets Layer (SSL); IEEE 802.1X Network Login; 802.3af Power over Ethernet; IEEE 802.1Q VLAN tagging; IEEE 802.1Q GVRP; IEEE 802.1p Priority; SNMPv1/v2c/v3; HTML and telnet management; RFC 1493 Bridge MIB; PIM Dense Mode (Premium License); PIM Sparse Mode (Premium License); RFC 1213 MIB II; RFC 2096 IP Forwarding Table MIB; RFC 2737 Entity MIB; RFC 2863 Evolution of Interface; RFC 2665 Ethernet MIB; RFC 3768 VRRP (Premium License); RFC 2787 VRRP MIB; RFC 1058 RIP; RFC 1724 RIPv2 MIB; RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events); XRMON; UDLD (Uni-directional Link Detection); RFC 2021 RMON probe configuration (RMON v2); RFC 2668 802.3 MAU MIB; RFC 2613 SMON; RFC 2674 802.1p and IEEE 802.1Q Bridge MIB; RFC 1850 OSPF MIB; RFC 2618 RADIUS Client MIB; RFC 2620 RADIUS Accounting MIB; RFC 3101 OSPF NSSA; RFC 1519 CIDR; RFC 3046 DHCP Relay Agent Information Option; RFC 3176 sFlow	
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" (product number ends with the letter "B", e.g. J4858B, J4859B) or later are required. J8177B Gigabit 1000Base-T mini-GBIC is not supported on the 3500yl series switches.	

ProCurve Switch 5400zl/3500yl Series Modules

zl modules



ProCurve Switch 5400zl 4-Port 10-GbE X2 Module (J8707A)

4-port 10-GbE X2 module for 5400 series switches

Ports

4 open 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: 1.74 lb. (0.79 kg)

Environment

Operating temperature: 0°C to 40°C (32°F to 104°F)

Transceivers supported (ordered separately)

- J8436A ProCurve 10-GbE X2-SC SR Optic
- J8437A ProCurve 10-GbE X2-SC LR Optic
- J8438A ProCurve 10-GbE X2-SC ER Optic*
- J8440A ProCurve 10-GbE X2-CX4 Transceiver

Notes

When installed in a 5400 chassis, the J8707A module limits the operating temperature range of the chassis to 0°C to 40°C (32°F to 104°F).

*Check Web site for availability.



ProCurve Switch 5400zl 24-Port 10/100/1000 PoE Module (J8702A)

24-port 10/100/1000 PoE module for 5400 series switches

Ports

IEEE Auto-MDI: yes
Duplex: half or full
Connectors: RJ-45

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



ProCurve Switch 5400zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

20-port 10/100/1000 PoE + 4-port mini-GBIC module for 5400 series switches

Ports

4 open mini-GBIC slots
IEEE Auto-MDI: yes
Duplex: half or full
Connectors: RJ-45

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.)

Mini-GBICs supported (ordered separately)

- J4858B ProCurve Gigabit-SX-LC Mini-GBIC
- J4859B ProCurve Gigabit-LX-LC Mini-GBIC
- J4860B ProCurve Gigabit-LH-LC Mini-GBIC
- J8177B ProCurve Gigabit 1000Base-T Mini-GBIC



ProCurve Switch 5400zl 4-Port 10-GbE CX4 Module (J8708A)

4-port 10-GbE CX4 module for 5400 series switches

Ports

4 10-Gigabit Ethernet ports (IEEE 802.3ak Type 10Gbase-CX4)
Connectors: CX4

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)

Transceivers supported (ordered separately)

- J8439A ProCurve 10-GbE CX4 Media Converter

Maximum distance

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 ProCurve 10-GbE CX4 Media Converter (J8439A)
Available 2Q/3Q 2006

Services for accessories are covered under the product in which they are installed.

ProCurve Switch 5400zl/3500yl Series Modules

zl modules (continued)



ProCurve Switch 5400zl 24-Port Mini-GBIC Module (J8706A)

24-port mini-GBIC module for 5400 series switches

Ports

24 open mini-GBIC slots

Physical characteristics

Dimensions: 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.)

Mini-GBICs supported (ordered separately)

- 4858B ProCurve Gigabit-SX-LC Mini-GBIC
- J4859B ProCurve Gigabit-LX-LC Mini-GBIC
- J4860B ProCurve Gigabit-LH-LC Mini-GBIC
- J8177B ProCurve Gigabit 1000Base-T Mini-GBIC

Notes

Module available 2Q/3Q 2006

yl modules



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

10-GbE module with two fixed CX4 ports and two X2 slots for ProCurve Switch 3500yl series and Switch 6200yl-24G-mGBIC

Ports

2 open transceiver slots
2 10-Gigabit Ethernet ports (IEEE 802.3ak Type 10Gbase-CX4)
Duplex: full

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: .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

Transceivers supported (ordered separately)

- J8437A ProCurve 10-GbE X2-SC LR Optic
- J8436A ProCurve 10-GbE X2-SC SR Optic
- J8438A ProCurve 10-GbE X2-SC ER Optic
- J8439A ProCurve 10-GbE CX4 Media Converter
- J8440A ProCurve 10-GbE X2-CX4 Transceiver

Maximum distance

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 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 optics or transceiver is inserted in any X2 slot.

Licenses



Premium Edge License for Switch 3500 Series (J8993A)

The following features are included in this license:

- OSPF
- PIM Dense mode
- PIM Sparse mode
- VRRP



Premium Edge License for Switch 5400 Series (J8994A)

The following features are included in this license:

- OSPF
- PIM Dense mode
- PIM Sparse mode
- VRRP

Services for accessories are covered under the product in which they are installed.

ProCurve Switch 5400zl/3500yl Series Modules

Power supplies



ProCurve Switch zl 1500W Power Supply (J8713A)

High-power 1500 W power supply for 5400 series switches. Supplies 900 W for PoE power plus 600 W for switch power. 220 V only.

Physical characteristics

Dimensions (D x W x H): 15.37 x 18.92 x 12.95 cm
(6.05 x 7.45 x 5.1 in.)
Weight: 3.4 kg (7.5 lb.)

Electrical characteristics

Maximum current: 10 A
Frequency range: 50/60 Hz
Power: 1500 W

Notes

220 V only.
J8713A supplies 600 W chassis power and 900 W PoE power.



ProCurve Switch zl 875W Power Supply (J8712A)

Standard 875 W power supply for 5400 series switches. Supplies 273 W for PoE power plus 600 W for switch power.

Physical characteristics

Dimensions (D x W x H): 15.37 x 18.92 x 12.95 cm
(6.05 x 7.45 x 5.1 in.)
Weight: 3.2 kg (7.05 lb.)

Electrical characteristics

Voltage: 100–127 VAC/200–240 VAC
Maximum current: 12 A/5.7 A
Frequency range: 50/60 Hz
Power: 875 W

Notes

J8712A supplies 600 W chassis power and 273 W PoE power.
One J8712A can power the J8697A chassis.
Two J8712A supplies are required to power the J8698A chassis.



NEW ProCurve 620 Redundant/External Power Supply (J8696A)*

Provides redundant system power and/or extra PoE power for up to two switches simultaneously

Ports

2 RPS ports; 195 W available per port
2 EPS ports; 398 W available per port

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: 6.89 kg (15.2 lb.)

Electrical characteristics

Maximum BTUs: 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: 12.5 A/5.5 A
Power consumption: 1360 W
RPS power: 390 W
PoE power: 796 W
RPS: 12 V
PoE: –50 V
Frequency: 50/60 Hz

Notes: Above figures are for maximum RPS and EPS power being supplied to 2 switches simultaneously. 220 V power cords shipped with the 620 have a wall plug rated as close to 13 A as specific country standards allow.

Notes

The ProCurve 620 supports the ProCurve 2900 series (RPS), 3500yl series (RPS/EPS), and 6200yl (RPS) switches.
The ProCurve 5400zl switches are not supported.
The ProCurve 620 includes 4 2-meter RPS/EPS cables. These cables can be used to carry either RPS or EPS power to the switch being powered.

*Check Web site for availability.

Services for accessories are covered under the product in which they are installed.

Additional accessories

ProCurve Gigabit-SX-LC Mini-GBIC (J4858B)

ProCurve Gigabit-LX-LC Mini-GBIC (J4859B)

ProCurve Gigabit-LH-LC Mini-GBIC (J4860B)

ProCurve Gigabit 1000Base-T Mini-GBIC (J8177B)

ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

ProCurve 10-GbE CX4 Media Converter (J8439A)

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

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

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

ProCurve Manager Plus 2.0 unlimited license (J9009A)

Identity Driven Manager 2.0 base product (500 user license) (J9012A)

For more information

To learn more about ProCurve
Networking, please visit
www.hp.com/eur/procurve

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