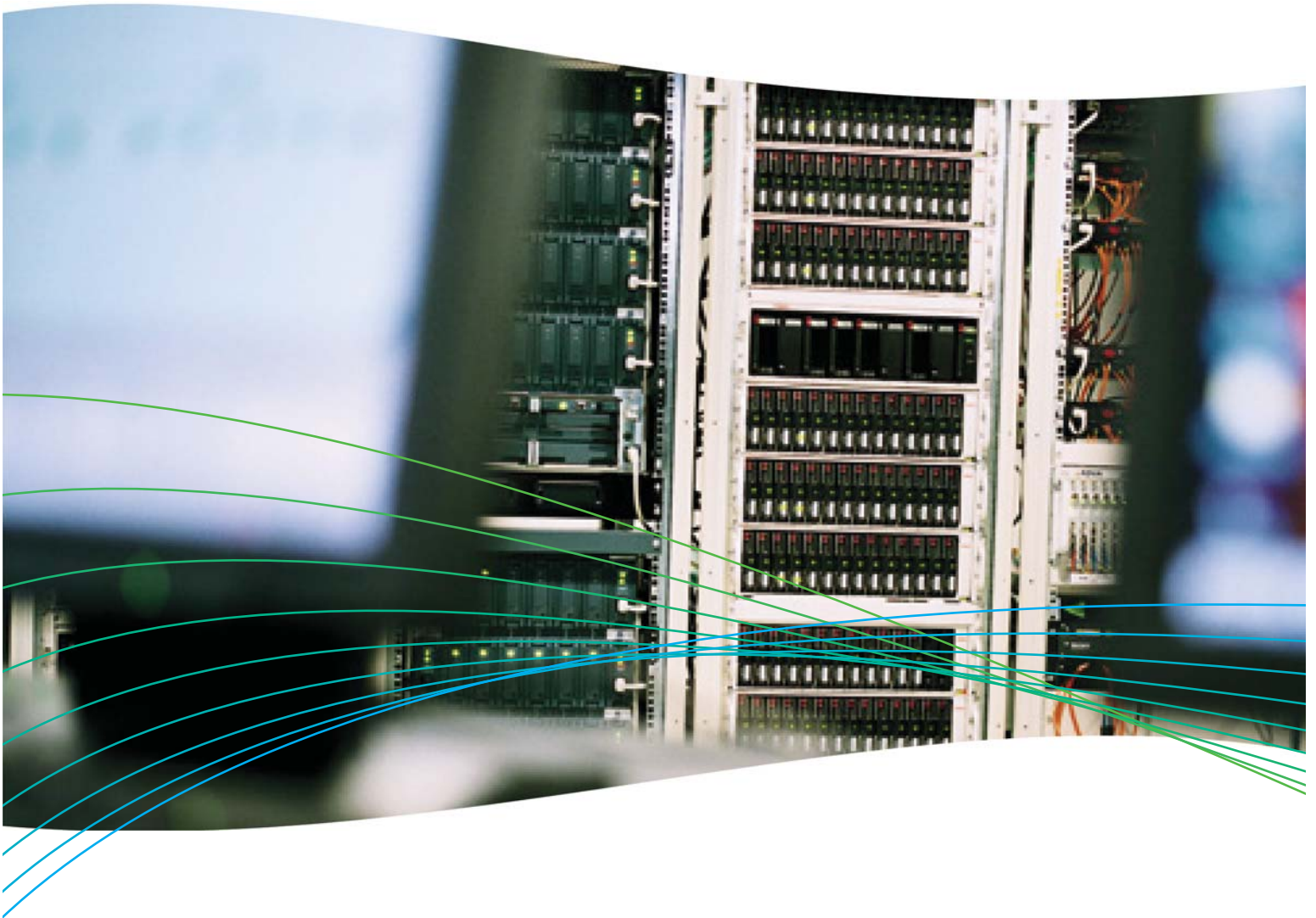


ProCurve Switch 8200zl/5400zl/3500yl Series
Ordering Guide



Part 1: zl series chassis power supply selection (PoE)

The ProCurve Switch 8200zl/5400zl/3500yl series can power any device that adheres to the IEEE 802.3af standard. In addition, devices using pre-standard Cisco PoE power can also be powered. The switches will automatically detect what type of power and how much is needed when a compatible device is plugged into the port.

There are two different power supplies available for the ProCurve 8200zl/5400zl. Both power supplies provide system power (the power needed to run the switch itself) and PoE power (the power sent down the Ethernet cable to power the device at the other end). The only difference between the two supplies is the amount of PoE power available from the supply.

12V system power	50V PoE power	Power supply total
600 W	275 W	875 W
600 W	900 W	1500 W

This will be discussed in Step 4 of the procedure below.

It is important to plan for peak PoE power needs so that sufficient power is available in the switch. When the peak power needs of the powered devices (PDs) connected to the switch exceed the PoE power available from the supplies, the PoE power priority in the switch is used to determine which ports lose PoE power. Consult the switch manual for a discussion of the PoE power priority capability. Ports that lose their PoE power will not be powered again to prevent them from turning on and off, unless the loss of power was due to a power supply failure. To avoid this situation, use this guide to correctly size the power supplies.

A PoE power configurator that automates some of the power supply selection is available at the ProCurve Networking Web site (www.procurve.com). For best results, use this guide in conjunction with the Web configurator.

Choosing the number and type of supplies that are best for your solution is a four-step process.

Step 1: Determine your PoE power needs for the chassis.

Count the number of PDs and the PoE peak power each consumes. The actual peak power needed by a powered device should be available in the documentation or data sheet for that device. The 8200zl, 5400zl, and 3500yl switches can allocate actual PD power rounded up to the nearest watt. Add up the total wattage needed. Also add 22 W for each Gigabit PoE module in the chassis. The first PD plugged into each module will release 17 W of this module allotment back to the switch PoE power pool. For this reason, it is recommended to have at least one PD plugged into each PoE module as PDs are added to the switch.

Step 2: Determine your future power needs for the chassis, if any.

PoE power: If you would like to plan for future PoE power needs now, determine how much extra PoE power you might need. Add this to your figure from Step 1.

Table 1. Use this table to determine your PoE power needs from Steps 1 and 2.

Power-consuming items		Power needed
Powered devices	_____ x 1 W =	_____ W
at each wattage	_____ x 2 W =	_____ W
	_____ x 3 W =	_____ W
	_____ x 4 W =	_____ W
	_____ x 5 W =	_____ W
	_____ x 6 W =	_____ W
	_____ x 7 W =	_____ W
	_____ x 8 W =	_____ W
	_____ x 9 W =	_____ W
	_____ x 10 W =	_____ W
	_____ x 11 W =	_____ W
	_____ x 12 W =	_____ W
	_____ x 13 W =	_____ W
	_____ x 14 W =	_____ W
	_____ x 15 W =	_____ W
		Subtotal: _____ W
# of PoE modules in switch without a PD plugged in	_____ x 22 W =	_____ W
# of PoE modules in switch with a PD plugged in	_____ x 5 W =	_____ W
		Subtotal: _____ W
Future PoE wattage desired		Subtotal: _____ W
		Total watts needed: _____ W

Step 3: Determine the level of redundant power desired.

See Table 2 for definitions of the different levels of redundancy.

No redundancy: Skip to Step 4.

System power redundancy: System power is the power needed to run the switching and routing functionality in the switch—essentially everything except PoE. One power supply is sufficient for full system power for the ProCurve Switch 5406zl chassis; two power supplies are required for the ProCurve Switch 8212zl/5412zl. Full system power redundancy is achieved with two power supplies for the 5406zl and four power supplies for the 8212zl/5412zl.

Since there are only 2 power supply slots in the 5406zl, system power N+1 redundancy and full redundancy are equivalent. The 8212zl/5412zl can have system power N+1 with three supplies and full redundancy with four supplies.

PoE power redundancy: PoE power is the power necessary to power the external PDs connected to the switch. PoE power is independent from system power and is not used in powering the normal functions of the switch.

Determine the level of PoE power redundancy you desire. Table 2 has definitions for the different types of redundant power.

With software version K13.xx or later, the switch can be configured to automatically hold PoE power in reserve based on desired level of redundancy. With prior software versions, the switch does not automatically hold any PoE power in reserve for redundancy. To ensure PoE redundancy with prior software versions, plan for the amount of power to be held in reserve, and keep the wattage needed for the level of redundancy desired in reserve by controlling the number of PDs on the switch.

Definitions of redundant power

Table 2. Redundant power definitions

Non-redundant power	No power is held in reserve. For system power, if a power supply fails, some or all parts of the switch become inoperative. For PoE power, all power supplied by the available supplies can be used to power PDs. If a power supply fails, the amount of PoE power supplied by the failed supply is no longer available. The switch will turn off the number of PDs starting with the lowest PoE priority PD up to the wattage lost with the failed supply.
N+1 redundancy	For system power, one supply can fail and the entire switch remains functional. For PoE power, one power supply can fail without loss of power to any currently powered device. Under N+1, the switch will hold in reserve (not use) the amount of PoE power equal to the largest PoE supply. If a power supply fails, the reserve power is used to continue to power all PDs without interruption. N+1 redundancy may not protect against a failed external power main.
Full redundancy	For system power, one half of the power supplies can fail and the entire switch remains functional. For PoE power, one half of the power supplies can fail without power interruption to any connected nodes. The switch will hold at least one half of the PoE power available from all supplies in reserve to be used in case of power supply failures. Full redundancy would be used if protection from a failed external power main is desired.

For no redundancy: On failure of one power supply, PDs using PoE power equal to the PoE power available from the largest supply installed will have their PoE power turned off as the power supply losing power goes down. If after several seconds the switch determines that there is excess PoE power available with the remaining supply(ies), the number of ports that can be turned back on given the excess power available will have their power restored.

For N+1 redundancy: For software version K13.xx or later, configure the switch to enforce N+1 redundancy. For prior software versions, hold the amount of PoE power available in the highest powered power supply in reserve.

For full redundancy: For software version K13.xx or later, configure the switch to enforce full redundancy. For prior software versions, hold half the amount of PoE power available in reserve if all power supplies in the switch provide the same level of PoE power. Determine full redundancy reserve power when unlike power supplies are installed by separating the installed power supplies into two columns so the total power in each column is as close in value as possible. Hold in reserve the amount of power from the column with the larger added power.

Step 4: Choose your power supply(ies).

There are two power supplies available for the zl series family of switches.

Table 3. zl switch power supplies

Product number	Supply	System power	PoE power	Power main requirements
J8712A	ProCurve Switch zl 875 W Power Supply	600 W	273 W	110V @ 12A 220V @ 5.5A
J8713A ¹	ProCurve Switch zl 1500 W Power Supply	600 W	900 W	220V @ 10A only

¹ Use of the J8713A changes the switch altitude specification from 15,000 ft. (4.6 km) to 10,000 ft. (3.1 km).

PoE power available from the power supplies is computed by adding the PoE power from all of the installed supplies. If PoE power redundancy is desired, take into account the amount of PoE power that needs to be held in reserve when calculating power needs.

Though installing two different power supplies in the same chassis is a supported configuration, it is strongly discouraged, particularly if some level of PoE power redundancy is wanted, since the amount of PoE power available on power supply loss may not be intuitive.

For example, if full PoE power redundancy is wanted using 875 W and 1500 W power supplies, the 1500 W supply should be held in reserve. This would mean that only 273 W of PoE power should be used normally. While it is tempting to add the two supplies and divide by two (using 585 W and keeping 585 W in reserve), if power is lost from one supply, the full 900 W of the 1500 W supply may be missing, with only the 273 W of the 875 W supply available. This is obviously not enough to keep the 585 W of the normal

environment up and running. Thus there is no redundancy for some of the PDs in this scenario, even though that was desired. This is not a concern if all supplies in the switch are the same power.

See Table 4 for the minimum and maximum power supply counts for the different zl switches.

Table 4. Switch power supply capacities

Product number	Product	Included supply	Min. # of supplies needed	Max. # of supplies possible	Max. # of supplies with the Power Shelf
J8697A	5406zl	None	1	2	4
J8699A	5406zl-48G	1 875 W	1	2	4
J8698A	5412zl	None	2	4	6
J8700A	5412zl-96G	2 875 W	2	4	6
J8715A	8212zl base system	None	2	4	6
J9091A	8212zl chassis only (replacement)	None	2	4	6

Watch the amount of power drawn from the building power mains by the installed switch supplies. It adds up quickly. Refer to table 1 for incoming power requirements. If power redundancy is very important, split the available power supplies between two separate building circuits. If one power main goes down, you will still have the other one to power the switch.

Note that the 1500 W supply is 200 V – 240 V only.

PoE power levels

There are four PoE power levels defined by the PoE IEEE 802.1af standard.

Table 5. IEEE 802.3af power classes

IEEE 802.3af class	Power
0 (default)	15.4 W
1	4 W
2	7 W
3	15.4 W
4	Future
Cisco pre-standard	6.3 W

Power cords

The power cords available for these switches are sized for the increased current that can be drawn meeting the needs of PoE. As a result, they are uncommon and it is recommended to have a few spares on hand. For more details, see Part 3 for the listing of power cords.

Using power cords not rated to carry the current drawn by a device could create a fire hazard. Use the proper power cord listed for your ProCurve equipment. Elevated operational temperatures reduce the amount of current that power cords can safely provide. The cords listed in Part 3 have been certified by ProCurve to be adequate for the rated operating temperature range of our products. Use of any other power cord is not supported by ProCurve.

ProCurve 620 Redundant/ External Power Supply

The ProCurve 620 Redundant/External Power Supply provides RPS and EPS power individually to two ProCurve 3500yl switches or RPS to two ProCurve 6200yl or ProCurve 2900 switches. The ProCurve 620 does not support the ProCurve 8200zl or 5400zl switches.

RPS power: Connecting the RPS provides full redundancy for the connected switch's system power.

EPS power: The ProCurve 620 supply provides 398 W of additional PoE power to each of two connected ProCurve 3500yl switches. For a ProCurve Switch 3500yl-24G, the internal power supply can power all 24 ports at 15.4 W for PoE. The additional power available from the ProCurve 620 provides full redundancy for the PoE power.

If the ProCurve 620 is connected to a ProCurve Switch 3500yl-48G, it allows all 48 ports to run at the full 15.4 W simultaneously but with no PoE power redundancy. The additional PoE power from the ProCurve 620 could be used to provide full PoE power redundancy for 24 of the 48 ports, if that is needed, rather than additional power for the extra ports.

ProCurve Switch zl Power Supply Shelf

The ProCurve Switch zl Power Supply Shelf (J8714A) provides two additional power supply bays for connection to one or two zl switches. Used for providing extra EPS (PoE) power to the zl switch, the extra PoE power can be used to power additional PDs beyond what can be powered by the internal switch supplies or, more commonly, to provide for larger redundant PoE power environments, such as large VoIP installations.

The Power Shelf accepts the same power supplies available for the zl switches and connects to the switches via 2 m EPS cables included with the Power Shelf. The extra PoE power available via the Power Shelf is determined by the power supplies installed in the Shelf. See the Power Shelf data sheet for more details.

Part 2: Software licenses

The 5400zl and 3500yl series of switches contain all the functionalities that most customers need to deploy at the edge of the network (see Figure 1). For a detailed listing of these functionalities, please see the data sheet for the 5400zl and 3500yl series on the ProCurve Networking Web site at:

www.procurve.com.

Additional features might be required for deployments in the aggregation/distribution layer or if full routing is required in the wiring closet. To meet these requirements, ProCurve provides the Premium License that contains the following features:

- OSPF
- PIM Sparse
- PIM Dense
- VRRP
- QinQ

While all 5400zl and 3500yl series switches include Routing Information Protocol (RIP) that could be used to route IP traffic, OSPF is a better choice in all but the smallest environments. RIP is primarily used to provide a way to get network traffic from one VLAN to another in small environments.

Since the primary use model for 8200zl series switches is for aggregation and core deployment, all of the features in the Premium License are included in all 8200zl switches. For 5400zl and 3500yl series customers that require features in the Premium License, they should order the following products:

- J8993A—ProCurve Switch 3500yl Premium License
- J8994A—ProCurve Switch 5400zl Premium License

Each license can be added to one corresponding 5400zl or 3500yl switch manually through the MyProCurve Portal Web site using the registration ID included with the Premium License, along with some information obtained from the switch. The portal will then provide a license key that is entered into the switch, and will enable the features.

ProCurve Manager (PCM) or ProCurve Manager Plus can be used to simplify the process of adding licenses. Provide the registration ID from the Premium License and tell PCM onto which switch to install the license. PCM will communicate with the MyProCurve Portal directly and add the license to the switch without user intervention.

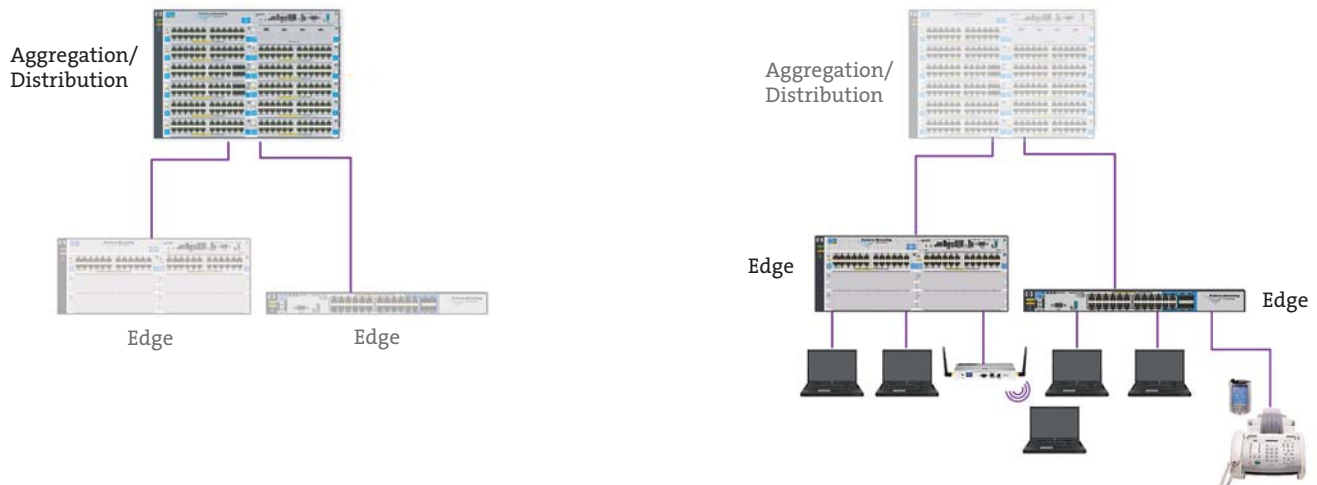
A license can later be removed from a 5400zl or 3500yl series switch and transferred to another 5400zl or 3500yl switch.

Software updates¹ for existing customers

In keeping with the longstanding value from ProCurve Networking, software updates when provided will be free of charge to existing customers.

¹ Software updates are done on a best-effort basis without commitment for future functional enhancements.

Figure 1: Edge and aggregation/distribution use models



Part 3: Field-replaceable units



Two parts—the management module and the fan tray—for the 8200zl/5400zl switches are field-replaceable, meaning the customer can keep a spare onsite and replace the part themselves if the need arises. The switches are covered by a lifetime warranty♦ with next-business-day replacement, so keeping spare parts on hand is best for customers who desire the minimum amount of possible downtime if a problem arises.

In addition, rack-mounting kits are available for 10K four-post racks and other four-post racks using the standard EIA unit of measurement.

All of these parts are available through the HP Parts Web site (www.hp.com/buy/parts).

Spare management module

While past experience on other ProCurve switches has shown an extremely low failure rate on the management functionality, there may be some customers who would like to have a spare management module on hand. Upon failure, the management module can be swapped out to restore switch functionality. Installing the new management module will cause the switch to reboot.

The spare management module does not contain a compact flash unit because this will be installed from the original board to bring customer configurations and switch software to the new management module. The compact flash can be ordered separately, if desired.

	Part number
Switch 5400zl Management Module without CF card	J8726-61001
8200zl Management Module	J9092A
Programmed CompactFlash Kit for 5400zl Management Module	5070-1056
Programmed CompactFlash Kit for 8200zl Management Module	5070-3051

Fan tray

Switch 8200zl/5400zl fan trays can be hot-swapped as long as the new tray is installed within three minutes of the previous tray being removed.

Replacing the Switch 3500yl or Switch 6200yl fan tray requires that the switch be removed from the rack, power removed, and the top of the switch opened.

	Part number
Switch 8212zl Fan Tray	J9094A
Switch 5406zl Fan Tray	J8697-60005
Switch 5412zl Fan Tray	J8698-60005
Switch 3500yl/6200yl Fan Tray	5069-8598

Spare 8200zl Fabric Module

Switch 8200zl series products normally ship with required fabric modules, but spare modules can be ordered to be on hand in the event of a failure. One fabric module is required, and replacement fabric modules can be swapped out during switch operation with minimal interruption to switch service.

	Part number
Switch 8200zl Fabric Module	J9093A

♦ 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 family modules have a one-year warranty with extensions available: The ProCurve Routing Switch 9300m Series, ProCurve Switch 8100fl Series, ProCurve Access Control Server 745wl, and the ProCurve Network Access Controller 800. Standalone software may have a different warranty duration. For details, refer to the ProCurve Software License, Warranty, and Support booklet at www.hp.com/rnd/support/warranty/index.htm.

Spare 8200zl System Support Module

The Switch 8200zl series requires a System Support Module (SSM), and spare modules can be ordered as it is a critical system component. The spare SSM ships with the required tool for removal from the 8200zl chassis, and replacement should be done during a scheduled maintenance window as the SSM is not a hot-swappable component.

	Part number
Switch 8200zl System Support Module	J9095A

Rack-mounting kit

The switches normally ship with rack-mounting “ears” that allow installation into a two-post, 19-inch datacomm rack.

	Part number
Two-post Rack Mounting Kit for 5406zl	5069-8561
Two-post Rack Mounting Kit for 5412zl	5069-8562
Switch 3500yl/6200yl Rack Mounting Kit	5069-5705
Two-post Rack Mounting Kit for Switch 8212zl	5070-2983
Switch zl Power Supply Shelf Rack Mounting Kit	5070-3028

If installation using an HP 10000 Series four-post 19-inch cabinet is desired, a rack-mounting kit is available providing rails that give sturdy support for the switch along its entire length.

	Part number
For 8200zl/5400zl—10K Rack Rail Kit Assembly	5070-0145
For 3500yl/6200yl—10K Rack Rail Kit Assembly	356578-B21*

* Ordered through your HP sales channel

For transporting switches in a rack, please see the *Installation Guide* that is included with the Rack Rail Kits for more instructions.

RPS/EPS and Console Cables

The ProCurve 620 Redundant/External Power Supply and the ProCurve Switch zl Power Supply Shelf use cables to individually connect the RPS (620 only) and EPS (PoE) power to the target ProCurve zl or yl switches. The same cable is used for either RPS or EPS power. The ProCurve 620 comes with four of these cables and the Power Shelf comes with two, which are the respective maximum number of cables usable for each of these units. If a spare cable is desired, use the following product number.

Note: Even though the RPS/EPS cables are interchangeable between the ProCurve 620 and Switch zl Power Shelf, the 620 does not support the zl switches, while the Power Shelf only works with the zl switches.

	Part number
Switch zl and yl RPS/EPS cable	5070-0102
DB9-DB9 Console cable for 5400zl Series	5184-1894
RJ45-to-DB9 Console cable for 8212zl	5188-6699

Power cords

The power cords available for these switches are sized for the increased current that can be drawn meeting the needs of PoE. As a result, these power cords may not be found in a typical environment and power cords “borrowed” from other products will not work in most instances. Having some spare power cords on hand may be a good idea. They can be purchased through the HP Parts Web site:

www.hp.com/buy/parts.

	ProCurve Switch 3500yl/6200yl	ProCurve Switch 8200zl/5400zl		ProCurve 620 Red/Ext Power Supply
		875 W supply	1500 W supply	
Australia/ New Zealand	8120-5335		8121-0871	
China	8120-8385	8120-1034	8121-0916	
Continental Europe	8120-5336		8120-6899	8120-6352
Denmark	8120-5340		8120-6897	
Israel	8121-1009		8121-1010	
Japan	8120-5342		8120-6903	8121-0942 ² 8120-6903 ³
South Africa/ India	8120-5341		8121-0915	
Switzerland	8120-5339		8120-6897	8121-0916
Taiwan	8121-0967	8121-0941	8120-6903	8121-0968
Thailand	8121-0671		8121-0675	8121-0922
U.K./Hong Kong/ Singapore	8120-5334		8120-6898	8121-0907
U.S./Canada/ Mexico	8121-0973	8121-0973 ³ 8121-0941 ⁴	8120-6903 ³ 8120-6893 ⁵	8120-6361

¹ 100 V cord: ships standard with the 620 after April 1, 2007

² 200 V cord: shipped standard with the 620 prior to April 1, 2007

³ 110 V cord: ships standard with the 875 W power supply

⁴ 220 V cord: twist-lock NEMA L6-20P

⁵ Twist-lock: NEMA L6-20P shipped standard with the 1500 W power supply

⁶ Non-locking: NEMA 6-20P

Jumper cables (PDU to Product)

If power interconnects between a switch and a power distribution device such as a Power Distribution Unit (PDU) or an Uninterruptible Power Supply (UPS) is desired, jumper cables are available. The jumper cables for these switches are sized for the increased current that can be drawn, meeting the needs of PoE. As a result, these jumper cables meet the environmental and electrical specifications of ProCurve switches. Jumper cables “borrowed” from other products will not work in most instances. The jumper cables can be purchased through the HP Parts Web site: www.hp.com/buy/parts.

	Length (meters)	ProCurve Switch 3500yl/6200yl ¹	ProCurve Switch 8200zl/5400zl and Power Supply Shelf		ProCurve 620 Red/Ext Power Supply ²
			875 W supply ³	1500 W supply ³	
Australia/ New Zealand	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
China	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Continental Europe	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Denmark	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Israel	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Japan	1 m	8121-1092	8121-1089		
	2.5 m	8121-1091	8121-1090		
South Africa/ India	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Switzerland	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Taiwan	1 m	8121-1092	8121-1089		
	2.5 m	8121-1091	8121-1090		
Thailand	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
U.K.	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
Hong Kong/ Singapore	1 m	8121-1093 ¹	8121-1089		
	2.5 m	8121-1094 ¹	8121-1090		
U.S./Canada/ Mexico	1 m	8121-1092	8121-1089		
	2.5 m	8121-1091	8121-1090		

¹ Availability of 8121-1093 and 8121-1094 jumper cables planned for April 2008

² C19 to C20 cable: The C19 connector connects into the power inlet on the switch power supply, while the C20 connector connects into receptacle on a power distribution device.

³ C14 to C15 cable: The C15 connector connects into the power inlet on the switch power supply, while the C14 connector connects into receptacle on a power distribution device.

For more information

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

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4AA1-2038ENUC Rev. 1, April 2008

