

600-Watt Redundant AC Power System

Overview

Today, for a growing number of small and medium businesses, networks are at the heart of their ability to communicate with and be responsive to their customers, suppliers, and employees. This scenario is driving the demand for networks to be available 24 hours a day, 7 days a week. While software and hardware redundancy have long been a requirement for the core networks of large companies, increasingly both their smaller offices and offices of small and medium-sized businesses have the same needs.

On products for small and medium-sized offices, Cisco Systems has long met the requirement for software redundancy with Cisco IOS® features such as Hot Standby Routing Protocol (HSRP). To meet the need in these offices for power redundancy, Cisco is adding redundant power as an option across a range of Cisco routers, switches, hubs, and access servers.

600-Watt Redundant AC Power System

The 600-watt Redundant AC Power System (RPS), the PWR600-AC-RPS, is a separate chassis that provides redundant power for any combination of up to four of the following products:

- Cisco 1516M hub (HP 10Base-T Hub-16M)
- FastHub® 400 Series 10/100 hubs
- Catalyst® 1900 Series Ethernet switches
- Catalyst 2820 Series Ethernet switches
- Catalyst 2900 Series XL switches
- Catalyst 3500 Series XL switches
- Cisco 2500 Series routers
- Cisco 2500 Series access servers
- Cisco 2600 Series routers
- Cisco 3620/3640 Series routers

- Cisco 3725 Series routers
- Cisco MC3810 Multiservice access concentrator
- Cisco 4000 Series routers

This power system is ideal for powering these stackable LAN and WAN products. It is flexible and cost-effective in addressing the uptime requirements of these offices by offering three levels of redundancy:

In quasi-redundant mode, the RPS can support four load units. In this configuration, the mean time between failure (MTBF) of the RPS substantially exceeds that of the power supply in the individual external devices (hubs, switches, routers, and access servers). The RPS has demonstrated MTBF in excess of 500,000 hours. In fully redundant mode, the RPS can support two external devices with a special cable offering extremely high uptime. Individual external devices can be hot inserted without affecting other external devices in either configuration. In “redundant with reboot” mode, the RPS supports 4 switches or hubs. In this mode, AC power is connected directly to the hub or switch in addition to the power from the RPS. The RPS works in standby mode, so if the power supply in the hub or switch fails, the hub or switch will reboot and come up again powered by the RPS. (This configuration is not generally recommended due to the 30-second reboot and down time.)

The RPS supports both local and remote monitoring of status. Front panel LEDs allow a quick local check of status for AC input power, DC output power, cooling fans, and system temperature. When one of the external devices that the RPS powers is a Cisco 3600 or 2600 Series, the Cisco 3600 or 2600 can receive and store status signals from the RPS. In turn, the RPS status stored on the Cisco 3600 or 2600 series is available for remote monitoring via Simple Network Management Protocol (SNMP) products such as CiscoWorks.

Applications

The RPS is appropriate for applications that customers consider as “mission critical.” Whenever the customer’s business depends on reliable, fail-safe network access the added reliability offered by the RPS is attractive.

Both the resiliency of the RPS to incur a failure and continue operating and its capability to remotely communicate current or impending failures are particularly valuable for remote locations.

Benefits

- Increased network uptime
 - With dual AC input power modules power supply meantime between failures (MTBF) is significantly improved (demonstrated MTBF in excess of 500,000 hours)
- Flexibility and cost effectiveness
 - A single RPS supports up to four external devices
 - Match the level of redundancy required to the specific application requirements
- Advanced warning of possible failure
 - Front panel LEDs for AC input power, DC output power, and cooling status
 - SNMP manageable via a Cisco 3600 or 2600 Series router/access server

Features

- Three redundant modes: quasi-redundant, fully redundant, and fully redundant with reboot
- Support of up to four of any combination of 150-watt external devices (hubs, switches, routers, and access servers)
- Hot insertion of external devices
- Dual AC inputs and power cords
- Two fully redundant AC input power modules
- Four DC output power modules
- Four one-to-one DC power cables (PWR600-AC-RPS-CAB)
- Front panel LEDs for AC input power, DC output power, fan, and temperature status
- Redundant cooling fans
- Remote monitoring using SNMP via a Cisco 3600 series
- 19-inch rack-mount kit included (24-inch optional)

Configuration Information

There are two versions of the RPS, one with four one-to-one DC power cables (PWR600-AC-RPS-CAB) and one without (PWR600-AC-RPS-NCAB). The RPS with four DC

power cables is intended for powering up to four external devices (hubs, switches, routers, and access servers) in quasi-redundant mode. The RPS without DC power cables is intended for use in fully redundant mode where either one or two two-to-one DC power cables are ordered separately to support one or two external devices.

The following external devices incorporate RPS support into every chassis. In addition to having an internal AC supply every chassis includes a connector for being powered by the RPS.

- Cisco 1516M hub (HP 10Base-T Hub 16-M)
- FastHub 400 Series 10/100 hubs
- Catalyst 1900 Series Ethernet switches
- Catalyst 2820 Series Ethernet switches
- Catalyst 2900 Series XL switches
- Catalyst 3500 Series XL switches

The following external devices must either be ordered from the factory with the capability to be powered by the RPS or an upgrade kit can be ordered to convert an AC or DC model in the field to an RPS model. When the product comes from the factory as an RPS model there is no internal AC or DC supply. When the product is converted in the field to be powered by the RPS, the AC or DC supply must be removed.

- Cisco 2600 Series routers
- Cisco 3620/3640 Series routers
- Cisco MC3810 Multiservice access concentrator
- Cisco 4000 Series routers

The following products are not available from the factory with RPS support. They must be converted in the field to be powered by the RPS. When the product is converted in the field to be powered by the RPS, the AC or DC supply must be removed.

- Cisco 2500 Series routers
- Cisco 2500 Series access servers

The standard quasi-redundant DC power cable works with all external devices but the 2500 Series (four of the cables are included with PWR600-AC-RPS-CAB). The standard DC power cable is called a “22-to-18” cable because it has a 22-pin connector on the RPS end and an 18-pin connector on the external device end. The Cisco 2500 Series requires a “22-to-8” DC power cable. This cable is not included with the Cisco 2500 field upgrade kit and must be ordered separately.

For supporting external devices in fully redundant mode, optional cables must be ordered separately. These cables are referred to as two-to-one cables because there are two connectors for the RPS end and one for the load end. There is an 18 pin version of the two-to-one DC power cable and an 8 pin version (for the 2500 Series). The two-to-one cables are not supported on hubs and switches.

External Device	Quasi-Redundant	Fully Redundant	Redundant with Reboot *
FastHub 400 Series 10/100 hubs	Yes	No	Yes
Cisco 1516-M hub (HP 10Base-T Hub-16-M)	Yes	No	No
Catalyst 1900 Series switches	Yes	No	Yes
Catalyst 2820 Series switches	Yes	No	Yes
Catalyst 2900 Series XL switches	Yes	No	Yes
Catalyst 3500 Series XL switches	Yes	No	Yes
Cisco 2500 Series routers and access servers	Yes	Yes	No
Cisco 2600 Series routers and access servers	Yes	Yes	No
Cisco 3600 Series routers	Yes	Yes	No
Cisco 3725 Series routers	Yes	Yes	No
Cisco MC3810 Multiservice access concentrator	Yes	Yes	No
Cisco 4000 Series routers	Yes	Yes	No

* Not recommended because of 30-second reboot and downtime. If used, always power up the switch before powering up the RPS.

Software Requirements

The RPS itself requires no software. When the RPS is powering a Cisco 3600 Series access server/router, the Cisco 3600 must be loaded with Cisco IOS Release 11.2(7)P (available July 1997) or later.

Specifications

- Dimensions (H x W x D): 3.44 x 17.5 x 16 in.
- Weight: 27.25 lb
- Nominal input voltage: 100 to 240 VAC autoranging
- Current: 10A maximum
- Frequency: 50 to 60 Hz
- Absolute maximum input: 1000W
- Output voltage/current: +5@24 ADC, +12@5 ADC, -12@3 ADC
- Output power: 150W per module (maximum)
- Operating temperature: 32 to 104 F (0 to 40 C)
- Operating humidity: 10 to 85%, noncondensing
- Operating altitude: 0 to 10,000 feet
- Nonoperating temperature: -4 to 149 F (-20 to 65 C)
- Nonoperating humidity: 5 to 95% noncondensing
- Nonoperating altitude: 0 to 30,000 feet
- Normal operating noise level: 48 dBA
- Regulatory compliance: FCC Class B.
- Status LEDs (bicolor: Off, Amber, Green) AC input power, DC output power, fan, temperature
- Demonstrated MTBF in excess of 500,000 hours

Part Numbers

Part Description	Part Number
600-Watt Redundant AC Power System with DC Power Cables	PWR600-AC-RPS-CAB
600-Watt Redundant AC Power System without DC Power Cables	PWR600-AC-RPS-NCA B
Two-to-one DC Power cable (other than Cisco 2500 or MC3810)	CAB-RPSY-2218(=)
Two-to-one DC Power cable (Cisco 2500 or MC3810)	CAB-RPSY-2208(=)
RPS 22/18 One-to-One DC Power Cable (other than 2500 and MC3810)	CAB-RPS-2218(=)
RPS 22/08 One-to-One DC Power Cable (Cisco 2500 or MC3810)	CAB-RPS-2208 (=)
24-Inch Rack-Mount Kit	ACS-3640RM-24(=)
Cisco 2610 Ethernet modular router with Cisco IOS IP, use with ext. RPS	CISCO2610-RPS
Cisco 2611 Dual Ethernet modular router with Cisco IOS IP, use with ext. RPS	CISCO2611-RPS
Cisco 3600 two-slot modular router, use with RPS	CISCO3620-RPS
Cisco 3600 four-slot modular router, use with RPS	CISCO3640-RPS
Cisco 4000-M Modular Multiprotocol Router, use with RPS	CISCO4000-RPS-M
Cisco 4500-M Modular Multiprotocol Router, use with RPS	CISCO4500-RPS-M
Cisco 4700-M Modular Multiprotocol Router, use with RPS	CISCO4700-RPS-M
RPS Field Upgrade for C2500 Series	ACS-2500RPS=
RPS Field Upgrade for the Cisco 2600 Series	ACS-2600RPS
RPS Field upgrade for C3620	ACS-3620RPS=
RPS Field Upgrade for the C3640	ACS-3640RPS=
RPS Field Upgrade for C4000 Series	ACS-4000RPS=



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