NORTEL

Product Brief

Using the Nortel Redundant Power Supply 15

Features and benefits

- **Provides power redundancy** to Ethernet Routing Switches 4500 series and 5500 series; Ethernet Switch 470 and 470-PWR.

- **Compact packaging** — Single chassis, 2U high for standard 19" rack, provides scalable, Redundant Power Supply for multiple devices.

- **Highly efficient** — Redundant Power Supply modules, available in 600 watt rating, provide redundant power to up to 12 devices per chassis.

- **Flexible deployment** — Redundant Power modules may be purchased separately and installed into the chassis as needed, while unit remains fully operational.

- **Protects mission-critical enterprise applications** from interruption due to problems with either the power source or power units within network devices.

- **Ensures business continuity** — When a third-party UPS is added, it ensures continuity of AC power to switches and other network devices even during AC mains failure, power sag, surges or blackouts.

Overview

The Nortel Redundant Power Supply 15 improves network availability by providing redundant power options to improve the network uptime. The Redundant Power Supply 15 maintains network operation in case of device power failure. Power is provided to switches simultaneously without requiring a device reboot. The modular chassis allows you to acquire additional modules as your network grows. The Redundant Power Supply Modules are hot-swappable so additional protection can be added within normal office hours and without downtime of the network.

The Redundant Power Supply 15 can be used to provide power sharing or protection for Nortel Ethernet Routing Switch 4550T-PWR, 4548GT-PWR, 5520-24T-PWR, 5520-48T-PWR and Ethernet Switch 470-PWR, as well as power protection for non-PoE switches. Up to 12 switches can be power protected with one Redundant Power Supply 15, providing maximum efficiency. For additional resiliency, the Redundant Power Supply 15 provides customers with the freedom to choose their corporate standard Uninterruptible Power Supply vendor.

The Redundant Power Supply 15 is 2RU high and can accommodate up to three Redundant Power Supply Modules. These Redundant Power Supply Modules provide up to 600W of power each. The Redundant Power Supply Modules feature two front-facing LED indicators

Ideal for:

- New and existing mid-tier and enterprise customers that need RPS functionality in a single chassis

- Enterprise customers requiring requiring extra PoE capacity than can be delivered by the switch itself

- Enterprise customers that already have a UPS and only need power redundancy

- When there is little space in the wiring closet and redundant power is needed

to display both status of AC and DC power. A basic Redundant Power Supply 15 configuration consists of a chassis that is shipped with two blank panels preinstalled. The Redundant Power Supply 15 requires at least one hot swappable Redundant Power Supply Module, which must be ordered as a separate item.

Additionally, a DC power cable needs to be ordered to connect to the DC power socket of the switch. Depending on the switch type, a separate DC-to-DC converter is required.

Power Protection Mode

The Redundant Power Supply 15 provides power protection for Ethernet Switch 470; 470-PWR; and Ethernet Routing Switches 4526FX, 4550T, 4548GT, 5510, 5520 and 5530. In case of a power outage, the Redundant Power Supply 15 will immediately take over, providing power to the switch. Ethernet Routing Switch 4550T-PWR, 4548GT-PWR, 5520-24T-PWR, 5520-48T-PWR and Ethernet Switch 470-PWR can be configured to share the internal and external power source to provide power to the switch itself and connected PoE devices.

When a third-party UPS is added, it ensures continuity of AC power even during AC mains failure, power sag, surges or blackouts. For example, a customer can provide redundant power protection to a stack of Nortel ERS4500 switches by delivering a second power source to the switches in the stack using the RPS15.

The Redundant Power Supply 15 can protect up to four non-PoE switches[2] per 600W Redundant Power Supply Module. Up to three modules fit in a Redundant Power Supply 15 chassis.

Power Sharing Mode

When the Redundant Power Supply 15 is used together with Ethernet Routing Switch 4550T-PWR, 4548GT-PWR, 5520-48T-PWR or Ethernet Switch 470-48T-PWR PoE power per port can be increased to full 15.4W on all 48 ports. In power sharing mode, both the internal AC power supply and the RPS15 power supply provide power to the switch and PoE ports. This enables the switch to deliver up to 740W, or 15.4W per port on a 4550T-PWR, 4548GT-PWR, 5520-48T or 470-48T-PWR.

Typical applications

PoE devices

Connect up to 3 x 5520-24T, 5520-48T, 4550T-PWR, 4548GT-PWR, 470-24T-PWR, or 470-48T-PWR to provide each switch with 740W in power sharing mode. Order DC cable AA0005018-E6 to connect 5520-PWR, 4500-PWR or 470-PWR switches.

[1] Ethernet Switch 470-PWR can provide 370W to connected devices.

[2] To provide redundancy to an Ethernet Routing Switch 5530-24TFD, use one Redundant Power Supply Module per switch.

Switch type	Chassis AA0005017	600W RPS Module AA0005?19[3]	DC-to-DC converter	DC cable for PoE switches	DC cable 10ft/3m[4]	DC cable 25ft/7.6m[4]
Ethernet Routing Switch 5510	1	1 per 4 switches	AL1904007-E6		AA0005021-E6	AA0005020-E6
Ethernet Routing Switch 5520	1	1	incl.	AA0005018-E6	-	-
Ethernet Routing Switch 5530	1	1	incl.	AA0005018-E6	-	-
Ethernet Switch 470	1	1 per 4 switches	AL1904005-E5	-	AA0005021-E6	AA0005020-E6
Ethernet Switch 470-PWR	1	1	incl.	AA0005018-E6	-	-
Ethernet Routing Switch 4526FX, 4550T, 4548GT	1	1 per 4 switches	AL1904007-E6	-	AA0005021-E6	AA0005020-E6
Ethernet Routing Switch 4550T-PWR, 4548GT-PWR	1	1	incl.	AA0005018-E6	-	-

[3] ? Must be replaced with country code A through F for local power cord options.

[4] Use one cable to connect up to 4 switches

Non-PoE devices

Connect up to 12 Ethernet Switch 470 or Ethernet Routing Switch 4526FX, 4550T, 4548GT and 5510 to provide power protection to these switches. A single 600W Redundant Power Supply Module can protect up to four switches from power disruption. Use DC cable AA0005021-E6 to connect four switches to a single Redundant Power Supply Module. For maximum deployment flexibility, a long DC cable of 25 ft/7.6 m is available (AA0005020-E6).

How to choose

Various flexible deployment options are available for the Redundant Power Supply 15. It can be used in conjunction with many Nortel Ethernet Routing Switches and Ethernet Switches. The previous table outlines valid combinations.

Qualification questions:

- Is network uptime and uninter-rupted activity critical to your business?
- Do you have multiple wiring closet switches?
- Is space limited in your wiring closets?
- Do you have multiple high demanding PoE devices connecting into you wiring closet?

Example configuration

This hypothetical example shows the various items required for a customer quotation of a Redundant Power Supply Unit 15. A customer wants to provide power redundancy with the Redundant Power Supply 15 to the following Nortel switching products:

- 1 x Ethernet Routing Switch 5510-24T
- 1 x Ethernet Routing Switch 5520-48T-PWR
- 1 x Ethernet Switch 470-48T
- 1 x Ethernet Switch 470-48T-PWR
- 1 x Ethernet Routing Switch 4550T

Your Redundant Power Supply 15 quote should include the following components:

	Order number	Product description	Qty.
A	AA0005017-E5	Redundant Power Supply 15 - Chassis (Supports three power supplies).	1
B	AA0005A19-E5	Redundant Power Supply 15 - 600 Watt Power Supply Module. Up to three can be installed in RPSU15 chassis AA0005017-E5. Requires separate RPSU connection cable between PSU and switch. (No power cord.)	3
C	AA0005021-E6	Redundant Power Supply 15 - Short Connecting Cable (3m/10ft) for up to 4 x ERS 4526FX, 4550T, 4548GT, 5510-24T, 5510-48T, Ethernet Switch 470-24T, 470-48T. (Requires separate DC-DC converter for connection to switch).	1
D	AA0005018-E6	Redundant Power Supply 15 - Connecting Cable (1.8m/6ft) for a single ERS 4550T-PWR, 4548GT-PWR, 5520-24T-PWR, 5520-48T-PWR, 5530 or Ethernet Switch 470-24T-PWR, 470-48T-PWR (does not require DC-DC converter).	2
E	AL1904007-E6	-48 V DC-to-DC converter, for installation in the Ethernet Routing Switch 5510-48T and 5510-24T, 4526FX, 4550T, 4548GT.	2
F	AL1904005-E5	-48 V DC-to-DC converter, for installation in the Ethernet Switch 470-24T and 470-48T.	1

A Redundant Power Supply Unit 15 chassis to house the 600W Redundant Power Supply Modules is required.

B In total, three 600W modules are needed. All PoE switches need a separate 600W module. In this example, we need two for PoE switches: one for the Ethernet Routing Switch 5520 and one for the Ethernet Switch 470-48T-PWR. Three non-PoE switches like the Ethernet Switch 470, the Ethernet Routing Switch 5510, 4550T or 4548GT require a third 600W module. Now all three slots of the chassis are filled with 600W Redundant Power Supply Modules. You can choose various power cord options; this example is without a power cord.

C When connecting non-PoE switches like Ethernet Switch 470, Ethernet Routing Switch 5510, 4550T or 4548GT, you can use the 1:4 cable that allows you to connect up to four switches to one 600W module. In this example, the customer could add another non-PoE switch in the future.

D When connecting a PoE switch like the Ethernet Routing Switch 4550T-PWR, 4548GT-PWR, 5520-48T-PWR, 5520-24T-PWR or Ethernet Switch 470-48T-PWR to the Redundant Power Supply unit 15, a 1:1 connecting cable is required to connect each PoE switch to one separate 600W module. In this example, we have two of these switches, so we need two connecting cables.

E Some switch models require a separate DC-to-DC converter to enable the DC power slot at the back of the switch and connect a DC cable. This DC-to-DC converter is typical for the Ethernet Routing Switch 5510 or Ethernet Routing Switch 4526FX, 4550T and 4548GT.

F To connect an Ethernet Switch 470 to the Redundant Power Supply 15, this DC-to-DC converter, that is specific to the Ethernet Switch 470, is required. Please note that this DC converter is different than used in ERS 5500 or ERS 4500 series products.

Please note that although Ethernet Routing Switch 5530-24TFD is not a PoE switch, it has a 1:1 requirement for a 600W Redundant Power Supply module. Also, the DC-to-DC converter is already inbuilt. So from an RPS 15 engineering perspective, you should treat it as if it is a 5520 or 470-PWR switch.

Technical specifications

Interfaces	Standard AC wall plug – NEMA 5-15 P (AC in) DC connector
Electromagnetic compatibility	EN55022/CISPR 22, Class A, EN55024/CISPR 22, Class A, VCCI, Class A (Japan), BSMI Class A (Taiwan), ACA, AS/NZ 3548, Class A (Australia), FCC Part 15 Class A (US)
MTBF	>2,000,000 hours
Noise level	<60 dBA
Shock/vibration	NEBS GR-63 Std, MIL-STD-810E, METHOD 516.4, procedure IV when packaged for shipping. NEBS GR-63-CORE Sect. 5.3.1, Category A container. NEBS GR-63-CORE, Sect. 5.1.1, NEBS GR-63-CORE, Sect. 5.4.3
Physical dimensions	14.57 x 5.315 x 3.38 inches,(37.0 x 13.5 x 8.58 cm), Weight: Chassis 15lbs/6.8kg, RPS module 7.5lbs/3.4kg
Power requirements	• Input requirements: Input voltage: 90-264VAC • Input frequency range: 47 to 440 Hz, Nominal: 50/60 Hz, • Inrush current: maximum 40A • Leakage current: 0.5 mA to 3.0 mA maximum for any input voltage • Output requirements: Output voltage and current 600W power supply module • DC output: 47.5V output, 600W, Minimum Load: 0A, Full Load: 12.5A
Environmental	• Operating temperature: 0 ° to 45 ° C • Storage temperature: -25° C to 70° C • Operating relative humidity: 5% to 85% relative humidity, non-condensing • Storage temperature humidity: 95% maximum relative humidity, non-condensing • Operating altitude: Up to 10,000 feet above sea level • Storage altitude: Up to 30,000 feet above sea level • Cooling, forced air: 2X30 CFM, 80 mm fans
Standards and certifications	TUV GS mark, cTUVus mark, IEC950/EN60950, EN50091-1, CB certificate and report with all national deviations. AS/NZS 3260, NOM-019-SCFI, IRAM

Ordering information

AA0005017-E5	Redundant Power Supply 15 - Chassis (supports three power supplies). [EUED RoHS 5/6 compliant.]
AA0005018-E6	Redundant Power Supply 15 - Connecting Cable (1.8m/6ft) for a Single Ethernet Routing Switch 4550T-PWR, 4548GT-PWR, 5520-24T-PWR, 5520-48T-PWR, 5530 or Ethernet Switch 470-24T-PWR, 470-48T-PWR (does not require DC-DC converter) [RoHS 6/6].
AA0005?19-E5	Redundant Power Supply 15 - 600 Watt Power Supply Module. Up to three can be installed in RPSU15 chassis AA0005017-E5. Requires separate RPSU connection cable between PSU and switch. (No power cord.)
AA0005020-E6	Redundant Power Supply 15 - Long Connecting Cable (7.6m/25ft) for up to 4 x Ethernet Routing Switch 4526FX, 4550T, 4548GT, 5510-24T, 5510-48T, Ethernet Switch 470-24T, 470-48T. (Requires separate DC-DC converter for connection to switch [RoHS 6/6].)
AA0005021-E6	Redundant Power Supply 15 - Short Connecting Cable (3m/10ft) for up to 4 x Ethernet Routing Switch 4526FX, 4550T, 4548GT, 5510-24T, 5510-48T, Ethernet Switch 470-24T, 470-48T. (Requires separate DC-DC converter for connection to switch [RoHS 6/6].)

** The seventh character (?) of the switch order number must be replaced with the proper code to indicate desired product nationalization:

"A" – No power cord included

"B" – Includes European "Schuko" power cord common in Austria, Belgium, Finland, France, Germany, The Netherlands, Norway, and Sweden

"C" – Includes power cord commonly used in the United Kingdom and Ireland

"D" – Includes power cord commonly used in Japan

"E" – Includes North American power cord

"F" – Includes Australian power cord, also commonly used in New Zealand and the People's Republic of China

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