APC Solutions for Cisco® Catalyst® Switches

The Cisco / APC relationship began in 1998 with a focus on non-stop networking and has since grown to include the integration of various platforms, the sharing of intellectual property for white papers and design specifications as well as joint field engagements.

Power protection is a crucial component of VoIP & IP Telephony networks and helps to ensure that they meet the demands for "always available" systems. To achieve the highest levels of availability, it is essential that Layer 0 solutions support VoIP & IP Telephony networks, in line with your business requirements. This document discusses the power needs of Cisco® Catalyst® Switches and appropriate APC UPS solutions.

APC's Power Protection is Ideal for Protecting and Supporting Cisco Catalyst Family Switches

Which Cisco equipment needs APC power protection?

> Catalyst 2950 Series, Catalyst 3750 Series, Catalyst 3550 Series, Catalyst 4500 Series

> Catalyst 6500/6500E Series

How to select the right APC protection for a Cisco® Catalyst® Family Switch?

Step 1: Consider the Application
> What model Cisco Catalyst Switch will the UPS support?
> What is the input voltage for the switch?
> Will the Cisco Catalyst Switch support PoE devices? If so, how many and what PoE class?
> What is the plug type for the Cisco Catalyst Switch?
> How many power supplies does the switch have?
> What will be the total loading on the UPS VA and Watts, both initially and in the future?
> How much runtime is required if the power goes out?

Step 2: Use the UPS Selector or Call APC for Assistance
www.apc.com/tools/ups_selector/ or 1-800-800-4272

Step 3: Recommend APC Power Protection
> APC Symmetra® and Smart-UPS® are the best solutions for the Cisco Catalyst Switch family in the dense wiring closet environment.
> For mission-critical or remote closets, you may also consider the NetBotz® family of accessories which provide real-time environmental monitoring and visibility to wiring closet environments.
> For dense closet and server room environments, consider InRow® RD.
> All of these components are InfraStruXure® Certified to integrate seamlessly with the APC InfraStruXure® system.

Resources Available from APC

www.apc.com
> Cisco Partnership Information: www.apc.com/techpartners
> Wiring Closet Design Tool: configurator.apcc.com
> Wiring Closet Solutions: http://apc.com/products/family/index.cfm?id

On Demand trainings at www. Datacenteruniversity.com

APC White Papers
> White Paper #88: Power and Cooling Considerations for Power over Ethernet (PoE)

APC Application Notes
> Application Note #50: APC Power Protection for Cisco VoIP and IP Telephony Solutions

The APC Smart-UPS® Family

With over 10 million currently installed, APC Smart-UPS is the one you can trust. Smart-UPS protects critical data by supplying reliable, network grade power in either traditional tower or rack-optimized form factors. For mission-critical applications requiring additional runtime, Smart-UPS XL units are available.

APC Smart-UPS® support for Cisco® CallManager®:

APC Smart-UPS supports Cisco CallManager 6.x out-of-the-box with exclusive built-in UPS support. This Cisco Compatible integration provides for graceful unattended shutdown of CallManager in the event of an extended power outage, thus preventing data corruption and improving time-to-recovery. In this application, Smart-UPS communicates serially or over the network.   Any APC UPS with a Network Management Card using PowerChute Network Shutdown (PCNS) software will provide graceful shutdown to CallManager.

APC Smart-UPS® support for Cisco® Unity Express® and CUCM 6.x:

APC Smart-UPS supports Cisco Unity Express with exclusive built-in UPS support. This Cisco Compatible integration provides for graceful unattended shutdown of voicemail and automated attendant services in the event of an extended power outage, thus preventing data corruption and improving time-to-recovery. In this application, Smart-UPS communicates serially and requires the APC Unity Express UPS Simple Signaling Cable (APC Part#AP9840)

Additionally, APC Smart-UPS 750XL and Smart-UPS 1500/1500RM, as outlined in Cisco's manual, have been tested to gracefully shutdown Cisco Unified Communications Manager versions 6.x via a point-to-point direct Universal Serial Bus (USB) connection in the event of an extended power outage.

Choose Symmetra® or Smart-UPS® RT for Catalyst 6500 and High Density Environments:

Symmetra, popular protection for Cisco Catalyst 6500, offers scalability and the additional protection of N+1 redundancy for high density environments. Symmetra supports from 2-6kVA (RM) in a rack-optimized form or up to 16kVA (LX) in a rack or tower form factor.
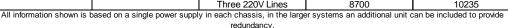
Smart-UPS RT, double conversion online family of UPSs offers performance for high density voice and data networks. Supports up to 20kVA in a 12U rack or tower form factor.

Basic Power Supply Options for a Selection of the Cisco® Catalyst® Switches

Cisco Switch	PSU Size Options	Nominal Line Input to PSU	Available DC Power from PSU	AC Load on UPS
Series	Watts	Volts (AC)	Watts	Watts
2950	Internal	100 - 240	Internal	30 - 45
3550	Internal	100 - 240	Internal	65 - 190
3560	Internal	100 - 240	Internal	45 - 590
3750	Internal	100 - 240	Internal	50 - 590
4500	1000	100 - 240	1000	1176
	1300	100 - 240	1300	1529
	2800	200	2800	3294
	4200	Two 120V lines	2100	2471
		Two 200V lines	4200	4941
6000 6500	1000	100 - 240	1000	1176
	1300	100 - 240	1300	1529
	2500	120	1300	1529
		200	2500	2941
	3000	120	1400	1647
		200	3000	3529
	4000	200	4000	4706
	6000 *1	Two 120V lines	2900	3412
		One 200V line	2900	3412
		Two 200V lines	6000	7059
	8700 *2	Two 120V line	2800	3294
		Three 120V Lines	4200	4941
		One 220V line	2800	3294
		Two 220V line	5800	6824
		Three 220V Lines	8700	10235

APC Smart-UPS® 3000XLM

APC Smart-UPS® 3000

All information shown is based on a single power supply in each chassis, in the larger systems an additional unit can be included to provide redundancy.

*1 Compatible with full output in Cisco Catalyst 6506-E, Catalyst 6509-E, and Catalyst 6513 switches. Works in Catalyst 6506 and Catalyst 6509 with a maximum output of 4000W.

*2 Available power is limited to 4000W in Cisco Catalyst 6506 and 6509 Switches, 4500W in the Cisco Catalyst 6509-NEB-A Switch and 6000W in the Cisco Catalyst 6513 Switch. Full power is available in the Cisco Catalyst 6506-E and 6509-E Switches.

For full details on all Cisco Systems Power Supply units and system compatibility please visit www.cisco.com

The following table provides a guide to selecting an appropriate size UPS to support your chosen Cisco® Catalyst® Series switch.

Wiring Closets (IDF), Power Solution Guide (Nominal UPS input voltage ranges covered, 120V & 208V)								
Nominal Line Input to PSU*1	Available DC Power from PSU*2	AC Load on UPS*3	Rack mount Smart-UPS Family	Extension Battery Pack*4	Extension Battery Pack Qty.			
					0	1	2	
V (AC)	Watts	Watts	APC Part Number	APC Part Number	Approximate Total Runtime			
120	100 Internal	118	SC450RM1U	N/A	25 min	N/A	N/A	
120	250 Internal	294	SUA750RM2U	N/A	11 min	N/A	N/A	
120	500	588	SU1400RMXLB3U	SU24R2XLBP	19 min	1 hrs 13 min	2 hrs 21 min	
			SUM1500RMXL2U	SUM48RMXLBP2U	34 min	1 hrs 35 min	2 hrs 50 min	
120	1000	1176			15 min	46 min	1 hrs 24 min	
			SUA2200R3XLNETPKG	SUA48RMXLBP3U	19 min	1 hrs 13 min	2 hrs 22 min	
			SUA3000R3XLNETPKG	SUA48RMXLBP3U	12 min	53 min	1 hrs 45 min	
120	1300	1529	SYH4K6RMT-P1	SYBT2*5	27 min	43 min	60 min	
				SYRMXR4B4	27 min	96 min	2 hrs 50 min	
120	1400	1647	SUA3000R3XLNETPKG	SUA48RMXLBP3U	12 min	53 min	1 hrs 45 min	
			SYH4K6RMT-P1	SYBT2*5	24 min	38 min	56 min	
				SYRMXR4B4	24 min	90 min	2 hrs 35 min	
200	2500	2941	SURTD5000RMXLT3U	SURT192RMXLBP3U	7 min	33 min	1 hrs 0 min	
			SYH6K6RMT	SYRMXR4B4	19 min	55 min	1 hrs 32 min	
200	2800	3294	SURT6000RMXLT3U	SURT192RMXLBP3U	8 min	30 min	54 min	
			SYH6K6RMT	SYRMXR4B4	18 min	52 min	1 hrs 24 min	
120	2900	3412	SURT8KRMXLT6U-1TF5	SURT192RMXLBP3U	16 min	33 min	54 min	
			SYH6K6RMT-P1	SYRMXR4B4	16 min	46 min	1 hrs 09 min	
200	3000	3529	SURT8KRMXLT6U-1TF5	SURT192RMXLBP3U	15 min	32 min	52 min	
			SYH6K6RMT	SYRMXR4B4	15 min	44 min	1 hrs 07 min	
200	4000	4706	SURT8000RMXLT6U	SURT192RMXLBP3U	11 min	22 min	37 min	
			SYA12K16RMP	SYARMXR3B3	17 min	42 min	1 hrs 8 min	
200	4200	4941	SURT8000RMXLT6U	SURT192RMXLBP3U	10 min	21 min	35 min	
			SYA12K16RMP	SYARMXR3B3	16 min	40 min	1hrs 03 min	
200	6000	7059	SURT10000RMXLT6U	SURT192RMXLBP3U	5 min	13 min	23 min	
			SYA16K16RMP	SYARMXR3B3	15 min	31min	48 min	
200	8700	10235	SYA16K16RMP	SYARMXR9B9	8 min	43min	1 hrs 20 min	
Line Interactive			Double Conversion On-Line		Double Conversion On-Line with scalability & N+1 options			

*1 The "Nominal Line Input to PSU" is the nominal voltage supplied by the UPS to the Cisco power supply. Note some Cisco PSU derate on low nominal line voltages.

*2 The "Available DC Power from PSU" is the maximum output power of individual Cisco power supplies and relates to the data in the previous power supply options chart.

*3 The "AC Load on UPS" is the AC power drawn by the internal Cisco power supplies allowing for a typical efficiency of 85%

*4 With the Symmetra range run time can be increased by adding additional battery packs to the base unit as well as extension battery stacks, please go to www.apcc.com for full details.

*5 SYBT2 & SYBT4 are additional battery packs which can be added to the main chassis before adding extension battery stacks.

APC®

by Schneider Electric