

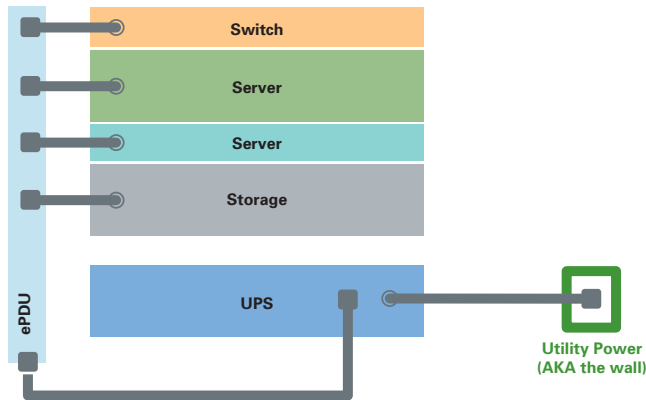
# Design best practices

## Recommendations for improved reliability in the network closet.

### Design for reliability

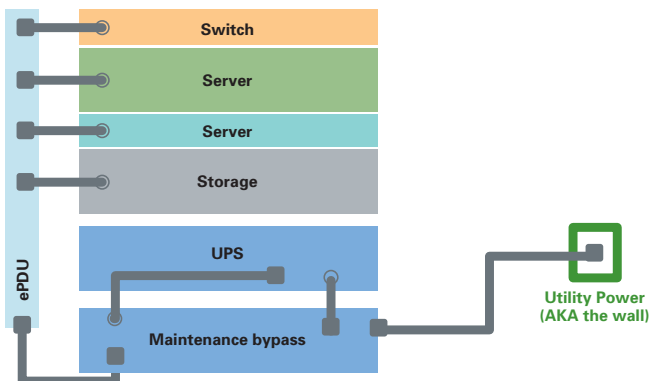
In most traditional power designs, you have one UPS supporting your servers, switches and storage devices. In this type of environment you are prone to having to shut down your equipment during a power failure, UPS maintenance or UPS replacement.

#### Traditional installation



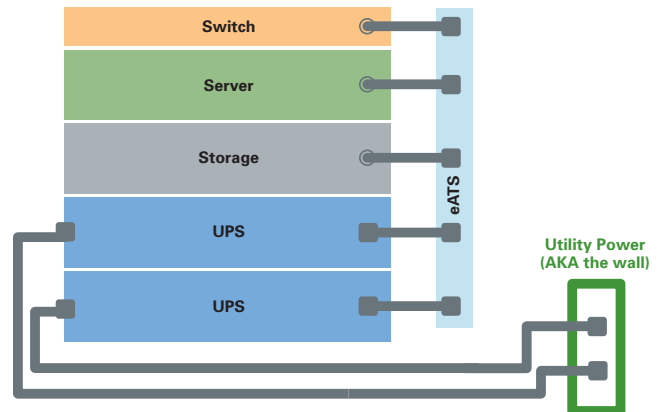
As business continuity requirements continue to rise in the network closet, traditional power designs are no longer adequate to meet IT service level agreements. However, single-corded IT equipment can often complicate system design as a single UPS or rack PDU may represent a single point of failure. Beyond traditional installations, maintenance bypass or automatic transfer switches (ATS) can dramatically improve system reliability with a marginal cost impact. With a maintenance bypass (MBP) for example, utility power runs through the UPS and then supports the rest of the equipment in the rack. Should the UPS need to be replaced, the power can be switched away from the UPS without having to shut down your equipment.

#### Maintenance bypass

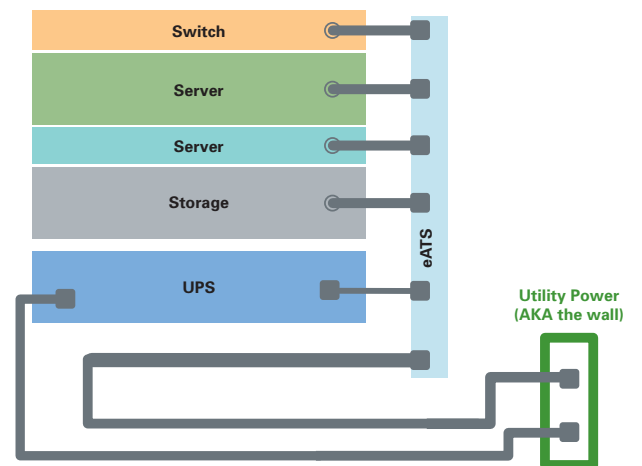


Eaton® automatic transfer switches (eATS) provide power redundancy to equipment with only one power supply. The ATS automatically transfers the power from a primary source to a secondary source if there is a problem with the primary. Once the primary source is restored, power transfers back through it.

#### Dual feed, dual UPS



#### Dual feed, single UPS





## Leveraging software to improve the monitoring and management of your environment

By leveraging software, you have the ability to monitor and manage your network closet remotely. This gives you more time to focus on higher priorities and gives you peace of mind when you are not near your equipment. Installing these solutions is fast, easy and affordable.

### Intelligent Power Manager

Eaton's Intelligent Power Manager software gives you all the tools you need to manage power devices in your physical or virtual environment. The solution ensures system uptime and data integrity by allowing you to monitor, manage and control the devices on your network remotely.

- Remotely monitor and manage multiple devices across your network from a single interface; this can be integrated into an already existing platform, such as VMware, Microsoft or Citrix
- Measure power consumption and kWh to calculate power usage effectiveness
- Trigger live migration for virtual machines during power outages

Fig 1. Intelligent Power Manager software

### Suggested part numbers

UPS model*	Part number	Rating (VA/Watts)	Input connection	Output receptacles	Dimensions (H x W x D in.)	Weight (lb.)
Evolution 650VA RM 1U	81701	650/420	5-15P (8 ft)	(4) 5-15R	1.7 (1U) x 17.2 x 14.4	22.3
Evolution 1550VA RM 1U	51710	1550/1100	5-15P (8 ft)	(4) 6-15R	1.7 (1U) x 17.2 x 21.9	44.1
5PX 1500VA w/ Network Card-MS	5PX1500RTN	1440/1440	5-15P (8 ft)	(8) 5-15R	3.4 (2U) x 17.2 x 20.6	65.0
5PX 2000VA w/ Network Card-MS	5PX2000RTN	1950/1920	5-20P (8 ft)	(4) 5-20R, (4) 5-15R	3.4 (2U) x 17.2 x 20.6	65.0
5PX 3000VA w/ Network Card-MS	5PX3000RT2UN	3000/2700	L5-30P (10 ft)	(6) 5-20R, (1) L5-30R	3.4 (2U) x 17.2 x 20.6	65.0

\*UPS comes with 4-post rail kit. See Eaton power quality product pages for additional UPS and accessories including EBMs, 2-post rail kits, and network cards.

ePDU rack mount distribution models	Part number	For use with	Input connection	Output receptacles	Dimensions (H x W x D in.)
Basic, 1500VA Horizontal ePDU	ePBZ78	3000VA UPS or UPS with L5-30R	L5-30P (15 ft)	(20) 5-20R	1.7 x 17.0 x 3.5
Basic, 1500VA Vertical ePDU	ePBZ73	1500VA and below UPS or UPS with 5-15R	5-15P (15 ft)	(18) 5-15R	48.0 x 1.5 x 1.5
Basic, 2kVA Vertical ePDU	ePBZ72	2000VA UPS or UPS with 5-20R	5-20P/L5-20P** (15 ft)	(18) 5-20R	48.0 x 1.5 x 1.5
Monitored, 1500VA Vertical ePDU	PW101MI1U221	1500VA UPS or UPS with 5-15P/5-15R	5-15P (9 ft)	(12) 5-15R	1.75 x 19.0 x 7.0
Managed, 1.44kW Vertical ePDU	EMA112-10	5PX 1.5 kVA UPS or UPS with 5-15R	5-15P (10 ft)	(16) 5-20R	66.5 x 2.05 x 2.56
Basic, 6000VA Vertical ePDU	PW105BA2U420	6000VA or UPS with L6-30R	L6-30P	(4) L6-20R	3.4 x 19.0 x 6.0
Managed, 6000VA Vertical ePDU	eMA010	6000VA or UPS with L6-30R	L6-30P (10 ft)	(20) C13, (4) C19	68.0 x 2.2 x 2.6

\*\*These units ship with an adapter allowing for 5-20P input plug.

MBP or eATS distribution***	Part number	For use with	Input connection	Output receptacles	Dimensions (H x W x D in.)
HotSwap MBP 1500VA 120V	EHBPL1500R-PDU1U	1500VA and below UPS or UPS with 5-15P / 5-15R	5-15P (3 ft)	(6) 5-15R	2.1 (2U) x 3.8 x 17.3
HotSwap MBP 2000VA 120V	EHBPL2000R-PDU1U	2000VA UPS or UPS with 5-20P / 5-20R	5-20P (3 ft)	(6) 5-15R	2.1 (2U) x 3.8 x 17
HotSwap MBP 3000VA 120V	EHBPL3000R-PDU1U	3000VA UPS or UPS with L5-30P / L5-30R	L5-30P (3 ft)	(5) 5-20R	2.1 (2U) x 3.8 x 17.3
Eaton eATS 1500VA 120V	PULSTS1400R-1U	1500VA and below UPS or UPS with 5-15P / 5-15R	5-15P (6 ft)	(8) 5-15R	1.7 (1U) x 19.0 x 9.8
Eaton eATS 2000VA 120V	PWATSS520003	2000VA UPS or UPS with 5-20P / 5-20R	5-20P (6 ft)	(8) 5-20R	1.7 (1U) x 19.0 x 7.0
Eaton eATS 3000VA 120V	PWATSL530005	3000VA UPS or UPS with L5-30P / L5-30R	L5-30P (6 ft)	(8) 5-20R	1.7 (1U) x 19.0 x 7.0
Eaton eATS 3000VA 208/230V	PULSTS16AMPR-1U	3000VA UPS and below with C20/C19	C20 (6 ft)	(1) C19, (6) C13	1.7 (1U) x 19.0 x 9.8

\*\*\*Other MBP and eATS options available on Eaton.com/ePDU.

Learn more at  
[Eaton.com/ePDU](http://Eaton.com/ePDU)

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