NEW PRODUCT ANNOUNCEMENT!

High-Density Data Center Solutions

# Breakthrough 3-Phase Rack ATS Saves Thousands per Server Rack


Cisco Preferred Solution Partner

VMware PARTNER TECHNOLOGY ALLIANCE

## Redundancy Above 5 kW

Providing server racks with redundant power becomes more difficult and costly as density and wattages increase. Until now, the most practical way to provide redundant power to 208 V server racks above 5 kW has been to connect redundant 3-phase rack PDUs to redundant power supplies in each server. In clustered server applications, replacing the redundant PDUs with a 3-phase rack ATS would make it possible to reduce the cost of downstream hardware redundancy, but 5 kW has been the practical limit for 208 V applications. Tripp Lite's new 3-phase rack ATS shatters that barrier.

## 3-Phase Rack ATS Up to 17.3 kW

Perfecting a high-capacity 3-phase rack ATS has been problematic. Solid-state (TRIAC) switching is very fast, but inefficient. Electromechanical relay switching is efficient, but too slow. Tripp Lite's 3-phase switching technology leverages the strengths of each method to create 3-phase rack ATS solutions up to 17.3 kW. Tripp Lite's breakthrough 3-phase rack ATS (U.S. Patent Pending 20150084420) provides rapid coordination of unsynchronized phases without dropping loads and operates with the high efficiency and reliability required for data center applications.

## Streamlining Redundancy Reduces Costs

With 3-phase rack ATS solutions up to 17.3 kW, it's possible to eliminate dozens of costly redundant power supplies per server rack, which typically allows the remaining power supplies to operate with higher efficiency. Combining reduced hardware requirements with reduced power and cooling costs, a Tripp Lite 3-phase rack ATS can save thousands of dollars per server rack.

## Key Features

- Supports loads up to 8.6, 12.5 or 17.3 kW
- Provides rapid coordination of unsynchronized phases without dropping loads
- Operates with high efficiency and reliability required for data center applications

## Key Benefits

- Streamlines cost of redundant hardware, including power supplies and power cords
- Increases efficiency of server power supplies, which reduces power and cooling costs
- Uses less space for PDUs and cabling, which reduces rack congestion and improves airflow

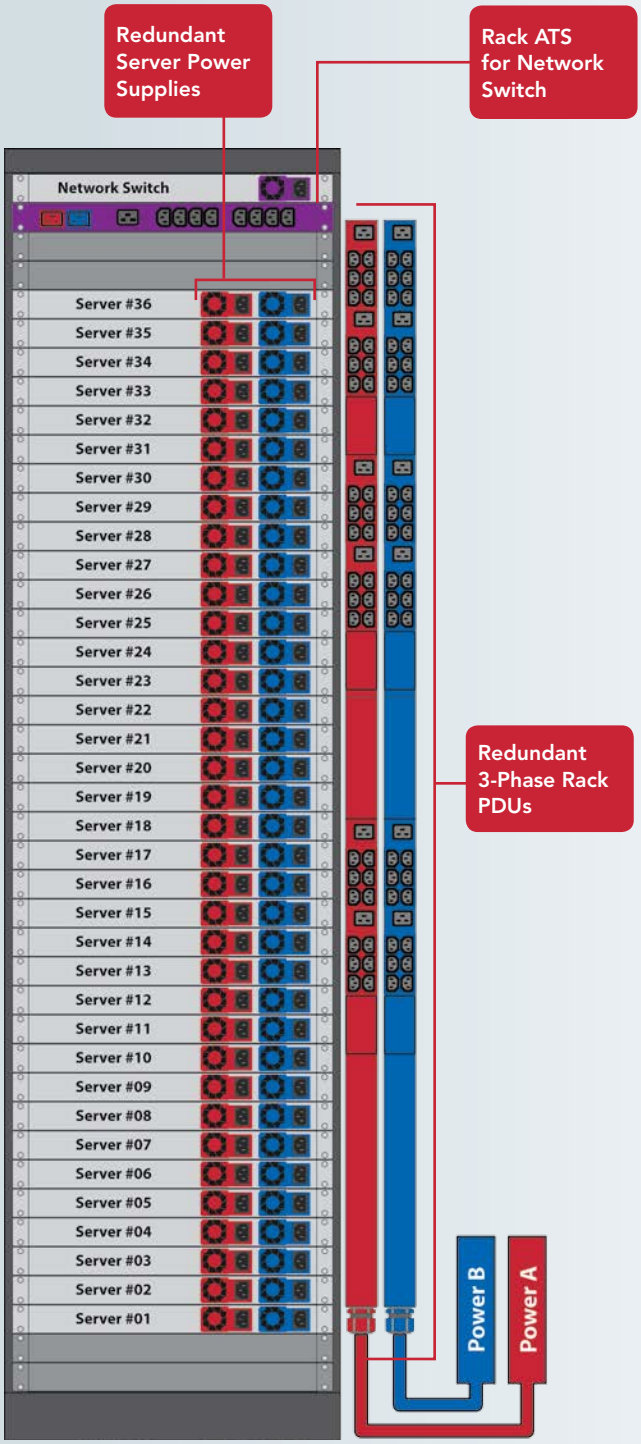
# Application Example

**Challenge:** Provide redundant power to 36 clustered servers and a single-cord network switch.

**Total load:** Approximately 12 kW at 208 V.

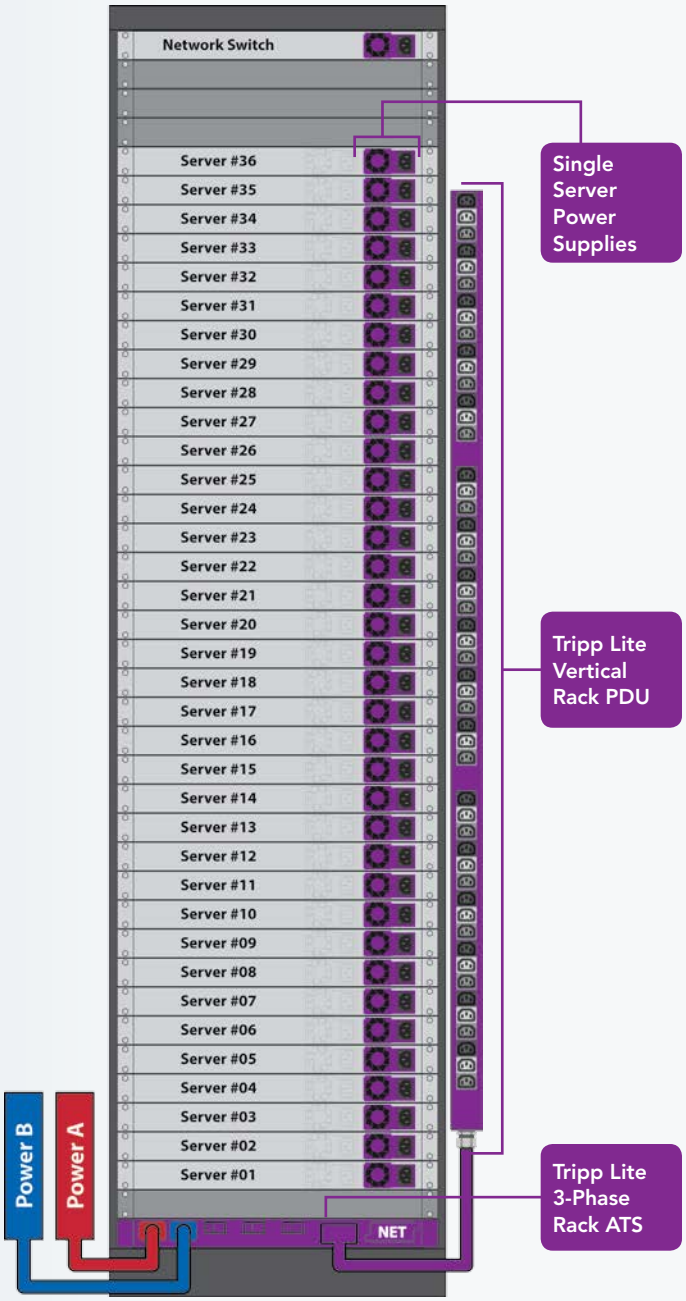
## Traditional Dual PDU Redundancy Solution

- The traditional dual PDU redundancy solution requires redundant 3-phase rack PDUs to feed redundant server power supplies.
- It also requires a separate rack ATS for the single-cord network switch.




## Tripp Lite 3-Phase Rack ATS Redundancy Solution

- Tripp Lite's patent-pending 3-phase rack ATS provides redundant power to each server power supply individually, so redundant power supplies are not required. (If a server power supply fails, the server cluster will compensate without disruption until repair is complete.)
- Single power supplies may operate at 2-4% higher efficiency than redundant power supplies, depending on model.
- Eliminating a large vertical PDU and 36 power cords also reduces rack congestion to improve airflow, simplify installation and improve service access.
- A separate rack ATS for the single-cord network switch is not required.




**For a no-obligation evaluation unit, contact your Tripp Lite representative or call 773.869.1236**

## 3-Phase Rack ATS Cost Savings (Estimated per 12 kW application example outlined on previous page.)

### Hardware Cost Savings: Up to $12,000 per Rack

- Patent-pending Tripp Lite 3-phase rack ATS makes redundant server power supplies, redundant power cords and a separate rack ATS dedicated to the single-cord network switch unnecessary.
- Eliminating 36 redundant power supplies at $100 to $300 each yields potential savings of $3,600 to $10,800 per rack.
- Eliminating 36 power cords at $10 each yields potential savings of $360 per rack.
- Eliminating a separate rack ATS dedicated to the network switch yields potential savings of $850 per rack.

### Power & Cooling Cost Savings: Up to $800 per Rack per Year

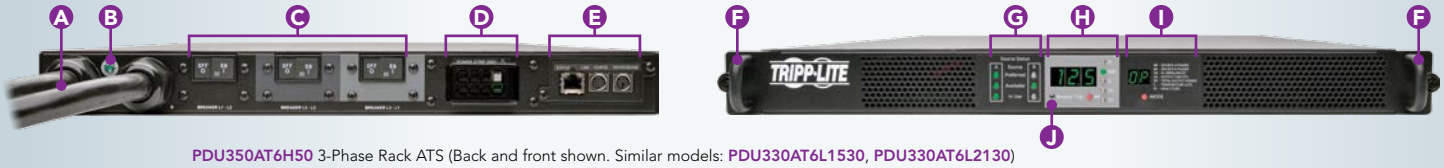
- Single power supplies operating at a higher load level are typically more efficient than redundant power supplies operating at a lower load level. (For example, an 80 PLUS® Gold-certified high-voltage power supply operates at 92% efficiency with a 50% load versus 88% efficiency with a 20% load.) For a rack with a 12 kW load, that could save up to 5,410 kWh per year, or $541 at $.10 per kWh.
- Both IBM® and Intel® estimate that each watt saved through increased power efficiency potentially saves another ½ watt through reduced cooling requirements. For a rack with a 12 kW load, that could save up to 2,705 kWh per year, or $270.50 at $.10 per kWh.

**Potential 5-Year Savings: Up to $16,000 per 12 kW rack**

### Additional Tripp Lite 3-Phase Rack ATS Benefits

- Space-saving design improves access and airflow by eliminating a large redundant vertical rack PDU and power cords.
- Availability of high-capacity 3-phase ATS at the rack level may foster cost savings in upstream electrical designs.
- Single lower-grade power supplies (such as an 80 PLUS Gold power supply at 50% load) may operate with efficiency similar to redundant higher-grade power supplies (such as 80 PLUS Platinum power supplies at 25% load).
- Monitoring a single 3-phase rack ATS instead of two rack PDUs simplifies network management.
- Streamlining redundant equipment may reduce rack weight and floor loading.
- Increased energy efficiency may reduce associated $CO_2$ emissions.

## Features




**PDU350AT6H50** 3-Phase Rack ATS (Back and front shown. Similar models: **PDU330AT6L1530**, **PDU330AT6L2130**)


**PDU3V51** Vertical Rack PDU (Front shown rotated 90°. Similar models: **PDU3V20D354**, **PDU3V20D354A**, **PDU3V20D354B**)

- **A** Dual 6 ft. AC Input Cords (Source A/B, Input Plugs Vary with Model)
- **B** Ground Connection
- **C** Output Breakers (Color-Coded per Phase Bank)
- **D** AC Output Connector (Connects to Vertical PDU)
- **E** Network Management Card
- **F** EIA-Standard Rack-Mounting Hardware (Sliding Rails Support Toolless Mounting)
- **G** Source Status Indicators
- **H** Multifunction Data Display
- **I** Display Mode Selection
- **J** Tripped Breaker Indicator
- **K** Interlaced AC Outlets (Numbered and Color-Coded per Phase Bank)
- **L** 2.5 ft. Cord with AC Input Connector (Connects to Rack ATS)
- **M** Toolless Rack-Mounting Buttons (On Back)

## Specifications

| 3-Phase Monitored Rack ATS (U.S. Patent Pending 20150084420, Dual 3-Phase Input, Single-Phase Output, Network Management Card) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | Nominal Voltage | Max Input Current(1) | Output Capacity(2) | Input Plugs | Input Cords | Output Banks | Vertical Rack PDU Options | Rack Size |
| **PDU330AT6L1530** | 208 V (60 Hz) | 24 A | 8.6 kW | 2 x L15-30P | 2 x 6 ft. | 3(3) | A B C D | 1U (17.5 in.) |
| **PDU330AT6L2130** | 208 V (60 Hz) | 24 A | 8.6 kW | 2 x L21-30P | 2 x 6 ft. | 3(3) | A B C D | 1U (17.5 in.) |
| **PDU350AT6H50** | 208 V (60 Hz) | 35 A | 12.5 kW | 2 x 50 A Hubbell® CS8365C | 2 x 6 ft. | 3(3) | A B C D | 1U (17.5 in.) |
| **PDU360AT6G60** | 208 V (60 Hz) | 48 A | 17.3 kW | 2 x 60 A Blue IEC-309 (3P+E) | 2 x 6 ft. | 6(4) | E F G | 1U (17.5 in.) |

| Vertical Rack PDUs for 3-Phase Rack ATS (Single-Phase Output) | | | | | |
|---|---|---|---|---|---|
| Model | Outlets | Rack Size | Model | Outlets | Rack Size |
| A **PDU3V51** | 51 (C13) | 0U (63 in.) | E **PDU3V602D354** | 54 (C13) | 0U (63 in.)(5) |
| B **PDU3V20D354** | 54 (C13) | 0U (63 in.) | F **PDU3V602D354A** | 54 (42 C13 + 12 C19) | 0U (63 in.)(5) |
| C **PDU3V20D354A** | 54 (42 C13 + 12 C19) | 0U (63 in.) | G **PDU3V602D354B** | 54 (48 C13 + 6 C19) | 0U (63 in.)(5) |
| D **PDU3V20D354B** | 54 (48 C13 + 6 C19) | 0U (63 in.) | A B C D : 3 banks. E F G : 6 banks with status-reporting breakers. | | |

| Accessory | |
|---|---|
| Model | Description |
| **ENVIROSENSE** | Connects to the rack ATS network management card for remote temperature, humidity and dry contact closure monitoring. |

**Tripp Lite also makes a complete line of rack PDUs up to 28.8 kW and single-phase rack ATS solutions up to 7.4 kW.**
**For more information, contact your Tripp Lite representative or visit www.tripplite.com.**

Standards: Tested to UL 60950-1, CSA, FCC, RoHS, NOM (select models). **(1)** Maximum agency-derated current per input. **(2)** Balanced load. **(3)** Each bank has a breaker. **(4)** Breakers for each bank are located on the vertical rack PDU. Breakers communicate status to the rack ATS. **(5)** Double-wide PDU.

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