TRIPP·LITE

MAXIMIZE AVAILABILITY

SIMPLIFY MANAGEMENT

OPTIMIZE EFFICIENCY

LOWER TCO

Tripp Lite Integrated Solutions

Maximize the availability, manageability and efficiency of your critical network systems with cost-effective infrastructure solutions from a single, trusted source.

- Provide reliable, efficient power with battery backup
- Cool, organize, secure and connect critical systems
- Manage power and equipment from any location

Contact us for a customized solution—our **Solution Integration Service**℠ gives you expert advice from our experienced project engineers for free!

CONTENTS

Think Beyond the Box

Tripp Lite is known for building reliable products at an affordable price, but what really sets us apart is our willingness to work closely with you before, during and after your purchase. Some suppliers think a stack of cardboard boxes is a solution. You're left to figure out the details of making everything function with your existing systems—which is most of the work—and you might even be expected to scrap costly equipment and start from scratch.

When you choose Tripp Lite, our reseller partners and experienced project engineers will help you customize a fully integrated solution that's individually tailored to fit your unique requirements. Through our complimentary **Solution Integration Service**, we do a lot of the hard work for you at no additional cost. We assess your situation and provide actionable recommendations to ensure that your solution will provide the availability, manageability, efficiency and affordability you need to meet your goals.

Why do we give away valuable advice that other companies charge for? Because when you compare the features and value of a Tripp Lite integrated solution to the competition, we believe that you'll choose us. And after you've worked with us, we're confident that you'll be a repeat customer.

The Solution Integration Service will help you:

- **DEFINE** objectives and technical requirements

- **EVALUATE** the installation site, including existing systems and infrastructure

- **EXAMINE** systems to ensure they're correctly powered, protected and configured

- **AUDIT** power capacity requirements to right-size systems before consolidation, virtualization and other projects

- **PLAN** airflow management and cooling for low-, medium- or high-density deployments

- **PREPARE** for future infrastructure growth and evolving IT requirements

- **INTEGRATE** components with existing systems.

We'll provide a roadmap with detailed project requirements, BOMs, specifications, installation considerations and ongoing support options for your Tripp Lite integrated solution, including preventative maintenance, extended warranties, on-site services and rapid repair and replacement. We'll also provide clear alternatives that allow you to strike a balance between technical and budgetary considerations.

Try our free Solution Integration Service! Our experienced project engineers will choose from over 3,000 products to customize an integrated solution for you.

Tripp Lite integrated solution benefits:

MAXIMIZE AVAILABILITY

- Combine reliable power, expandable battery backup, remote management, robust security, built-in redundancy, hot-swappable components and flexible cooling options to avoid the unaffordable cost of network downtime, which averages $70,000 per hour for midsize businesses. (Source: IDC, 2009.)

SIMPLIFY MANAGEMENT

- Use Tripp Lite's free PowerAlert Network Management System and your favorite management tools through a secure, centralized gateway.

- Manage critical systems, power, environmental sensors, security and alarms from any location so you can spend less time traveling and more time solving problems.

OPTIMIZE EFFICIENCY

- Reduce energy use with Economy Mode UPS operation.

- Schedule Economy Mode to provide maximum protection during peak hours and maximum efficiency during off hours.

- Schedule automated equipment idling through remotely switchable outlets.

- Increase cooling efficiency with full support of IT best practices like hot-aisle/cold-aisle configurations.

LOWER TCO

- Upgrade your infrastructure incrementally without scrapping existing investments, lowering initial hardware costs.

- Lower operating costs with efficient green technology and right-sized equipment.

- Lower service costs with reduced maintenance requirements and self-service options.

- Increase productivity with remote management, allowing valuable IT personnel to cover more ground in less time.

How to Begin

Review the application scenarios in this brochure for a sample of the thousands of Tripp Lite products and millions of combinations available. When you're ready to take the next step, contact us for a custom solution tailored to fit your unique requirements. Our experienced project engineers are ready to assist you at no additional cost.

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

Scenario: Remote Cabinet

Common Equipment Supported: Router, Switches, Wireless Access | **Typical Size:** 1 Wall-Mount Rack Enclosure

RECOMMENDED TRIPP LITE SOLUTIONS FOR REMOTE CABINETS

UPS Systems (See pp. 12-13 for more information.)

- 1-3kVA SmartOnline™ UPS Systems
  (SU1000RTXL2UA, SU1500RTXL2UA, SU2200RTXL2UA, SU3000RTXL2U)

- 1-3kVA SmartPro® Line-Interactive UPS Systems
  (SMART1000RM1U, SMART1500RMXL2UA, SMART2200RM2U, SMART3000RM2U)

Rack & Cooling Solutions (See pp. 14-15 for more information.)

- 6-26U SmartRack™ Wall-Mount Rack Enclosures
  (SRW6U, SRW9U, SRW10US, SRW12US, SRW18US, SRW26US)

- 12U SmartRack Extra-Deep Wall-Mount Rack Enclosure
  (SRW12US33 – Extra depth accommodates standard 1U servers.)

- 1U Blanking Panels (SR1UPANEL10 – Includes 10 x 1U panels.)

- Rolling Caster Kit
  (SRCASTER – Adapts wall-mount enclosures to floor-standing applications.)

Power Distribution Units (See pp. 16-17 for more information.)
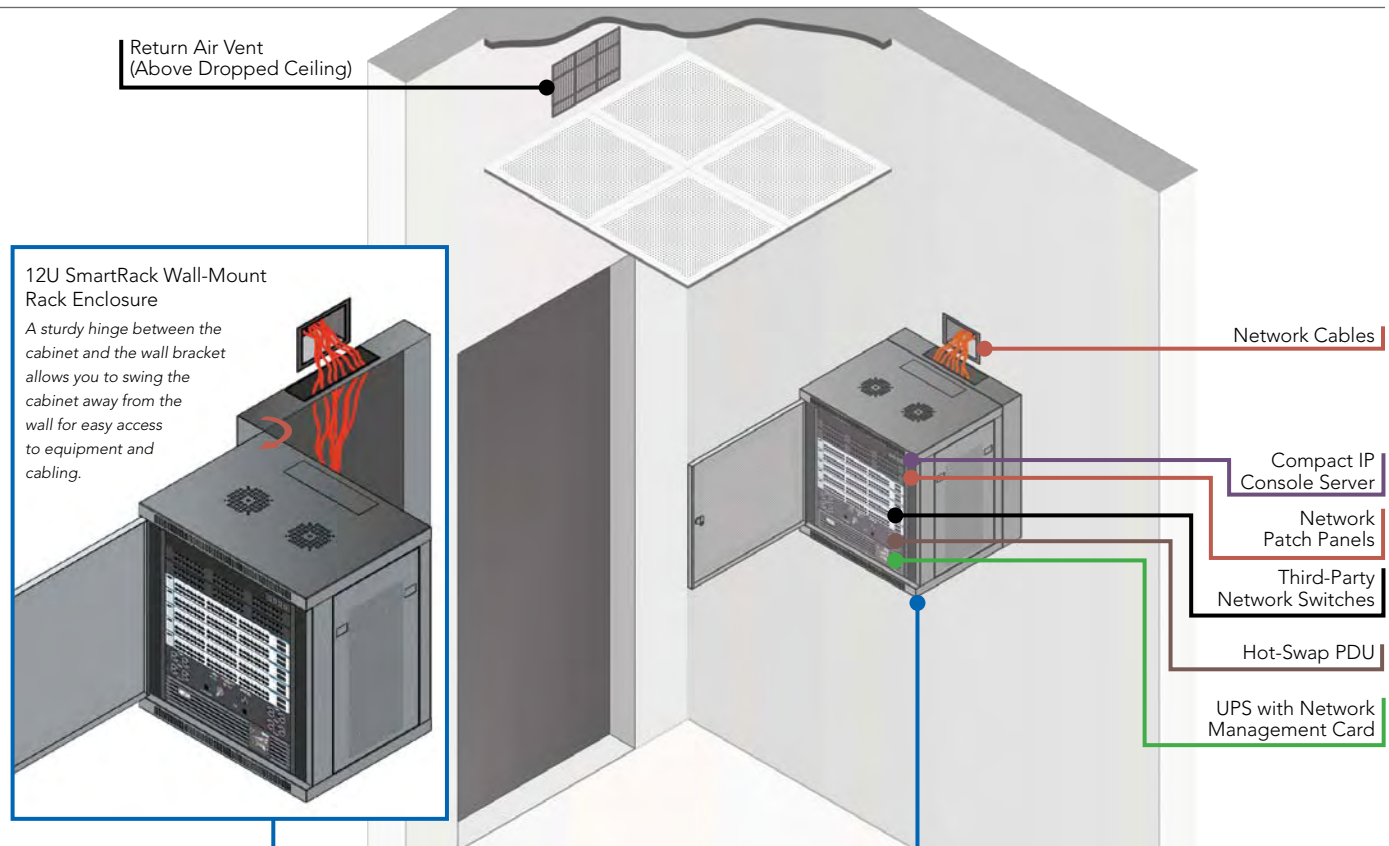
- Hot-Swap PDU (Adds hot-swap capability to <3kVA UPS.)

- Switched PDUs with Automatic Transfer Switch (ATS)
  (PDUMH15ATNET, PDUMH20ATNET)

- Metered PDUs (PDUMH15, PDUMH20)

Network Management Tools (See pp. 18-19 for more information.)

- UPS Network Management Card (SNMPWEBCARD)

- Environmental Sensor
  (ENVIROSENSE – Monitors temperature, humidity and dry contacts.)

- PowerAlert Network Management System (Included with UPS.)

- Compact IP Console Servers (B095-004-1E, B095-003-1E-M)

Cables & Connectivity (See p. 17 for more information.)

- Power Cables, Network Cables & Network Patch Panels

Return Air Vent (Above Dropped Ceiling)

12U SmartRack Wall-Mount Rack Enclosure
A sturdy hinge between the cabinet and the wall bracket allows you to swing the cabinet away from the wall for easy access to equipment and cabling.

Network Cables

Compact IP Console Server

Network Patch Panels

Third-Party Network Switches

Hot-Swap PDU

UPS with Network Management Card

Scenario: Back Office

Common Equipment Supported: Servers, Storage, Router, Switches, Phone System | **Typical Size:** 1-3 Rack Enclosures

RECOMMENDED TRIPP LITE SOLUTIONS FOR BACK OFFICES

UPS Systems (See pp. 12-13 for more information.)

- 5-10kVA SmartOnline Hot-Swappable UPS Systems
  (SU5000RT4U, SU6000RT4UHV, SU8000RT3U, SU10KRT3U, SU10000RT3U)
- 1-5kVA SmartOnline UPS Systems
  (SU1000RTXL2UA, SU1500RTXL2UA, SU2200RTXL2UA, SU3000RTXL2U, SU5000RT4UTF)
- Additional External Battery Packs (Provide extended runtime.)

Rack & Cooling Solutions (See pp. 14-15 for more information.)

- 42U SmartRack Rack Enclosure (SR42UB)
- 25U SmartRack Rack Enclosure (SR25UB)
- 12U SmartRack Wall-Mount Rack Enclosure (SRW12US)
- 12U SmartRack Rack Enclosure (SR12UB – Similar to SRW12US, with extra depth for 1U servers and casters for floor-standing applications.)
- 12,000 BTU Compact Air Conditioning Unit (SRCOOL12K)
- 1U Blanking Panels (SR1UPANEL10, SR1UPANEL50)
- Vertical Cable Managers (SRCABLEDUCTVRT, SRCABLERINGVRT)
- Cable Ladder (SRCABLELADDER with SRLADDERATTACH)

Power Distribution Units (See pp. 16-17 for more information.)
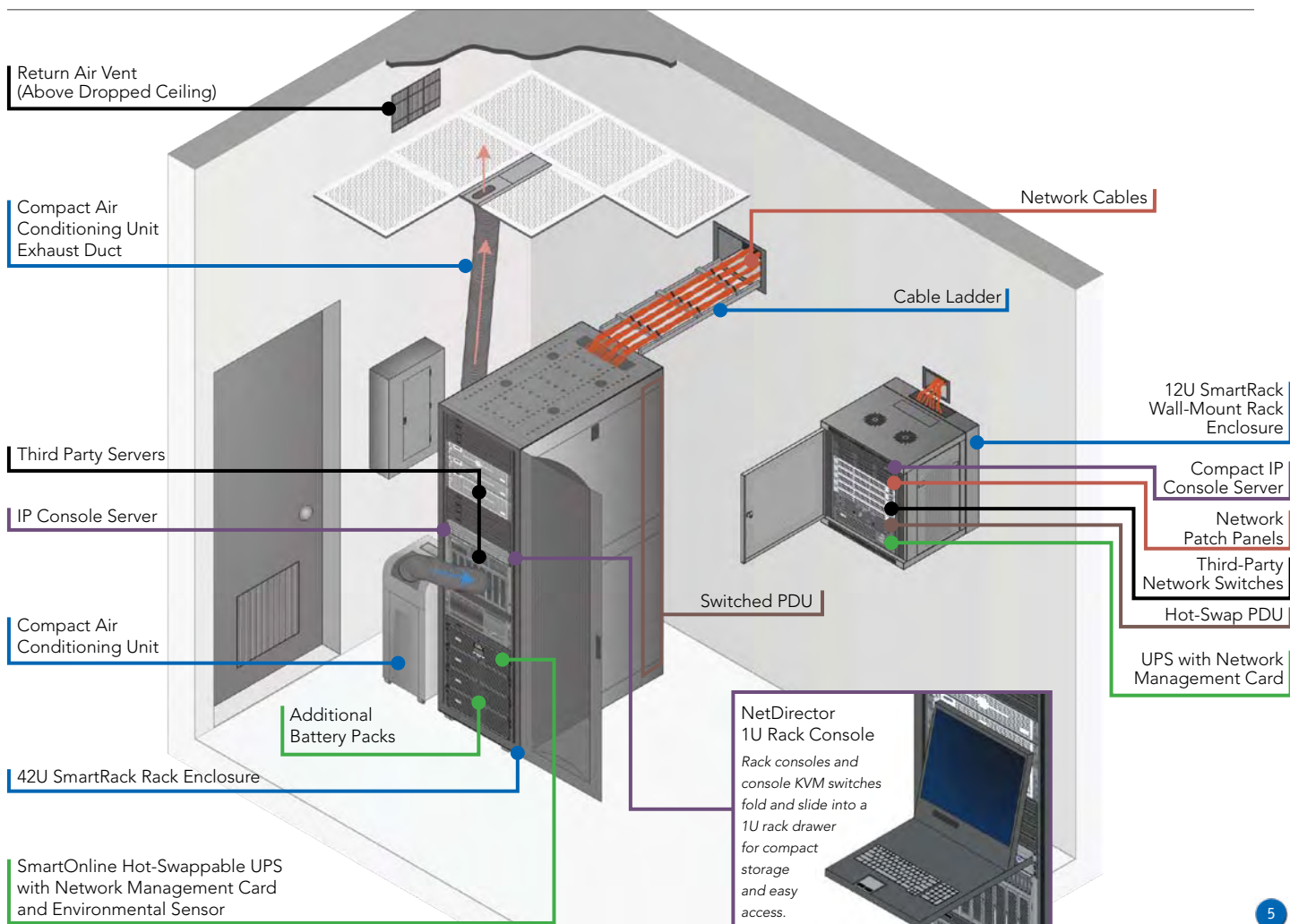
- Switched PDUs (PDUMV20HVNET, PDUMV30HVNET)
- Hot-Swap PDU (Adds hot-swap capability to <3kVA UPS.)
- Metered PDUs (PDUMV20HV, PDUMV30HV)

Network Management Tools (See pp. 18-19 for more information.)

- UPS Network Management Card (SNMPWEBCARD)
- Environmental Sensor
  (ENVIROSENSE – Monitors temperature, humidity and dry contacts.)
- PowerAlert Network Management System (Included with UPS.)
- IP Console Server with KVM Console Ports (B092-016)
- Compact IP Console Servers (B095-004-1E, B095-003-1E-M)
- NetDirector™ 1U Rack Consoles (B021-000-17, B021-000-19)
- NetDirector 1U Console KVM Switches with IP Access (B020-U08-19-IP, B020-016-17-IP)

Cables & Connectivity (See p. 17 for more information.)

- Power Cables, Network Cables & Network Patch Panels

Return Air Vent (Above Dropped Ceiling)

Compact Air Conditioning Unit Exhaust Duct

Network Cables

Cable Ladder

12U SmartRack Wall-Mount Rack Enclosure

Third Party Servers

Compact IP Console Server

IP Console Server

Network Patch Panels

Third-Party Network Switches

Hot-Swap PDU

Compact Air Conditioning Unit

Switched PDU

UPS with Network Management Card

Additional Battery Packs

NetDirector 1U Rack Console

Rack consoles and console KVM switches fold and slide into a 1U rack drawer for compact storage and easy access.

42U SmartRack Rack Enclosure

SmartOnline Hot-Swappable UPS with Network Management Card and Environmental Sensor

Scenario: Network Closet / IDF (Intermediate Distribution Frame)

Common Equipment Supported: Routers, Switches, Wireless Access, Phone System | **Typical Size:** 1–3 Open Frame Racks

RECOMMENDED TRIPP LITE SOLUTIONS FOR NETWORK CLOSETS

UPS Systems (See pp. 12-13 for more information.)

- 5-20kVA SmartOnline Hot-Swappable UPS Systems
  (SU5000RT4U, SU6000RT4UHV, SU8000RT3U, SU16KRT, SU20KRT)

- 1-5kVA SmartOnline UPS Systems
  (SU1000RTXL2UA, SU1500RTXL2UA, SU2200RTXL2UA, SU3000RTXL2U, SU5000RT4UTF)

- 1-5kVA SmartPro Line-Interactive UPS Systems
  (SMART1000RM1U, SMART1500RM2U, SMART2200RMXL2U, SMART3000RM2U, SMART5000XFMRXL)

- 1.5-3kVA SmartPro Shallow-Depth Line-Interactive UPS Systems
  (SMART1500CRMXL, SMART2200CRMXL, SMART3000CRMXL)

- Additional External Battery Packs (Provide extended runtime.)

Rack & Cooling Solutions (See pp. 14-15 for more information.)

- 45U SmartRack 2-Post Open Frame Rack
  (SR2POST)

- 45U SmartRack 4-Post Open Frame Rack
  (SR4POST)

- 42U SmartRack Heavy-Duty 4-Post Open Frame Rack
  (SR42UBEXPND)

- 42U SmartRack Rack Enclosures
  (SR42UB, SR42UBWD, SR42UBDP, SR42UBDPWD)

- 42U SmartRack Knockdown Rack Enclosure
  (SR42UBKD – Ships partially disassembled for installation in confined spaces.)

- SmartRack Wall-Mount Open Frame Rack
  (SRWO12US – Mounting frame pivots for easy access.)

- 12,000 BTU Compact Air Conditioning Unit
  (SRCOOL12K)

- High-Capacity Cable Managers
  (SRCABLEVRT6, SRCABLEVRT12)

- Vertical Cable Managers
  (SRCABLEDUCTVRT, SRCABLERINGVRT)

- Cable Ladder
  (SRCABLELADDER with SRLADDERATTACH)

- Heavy-Duty 2-Post Mounting Kit
  (2POSTRMKITHD)

- Heavy-Duty Mounting Ear Kit (UPSHDEARKIT)

- Rack Bolt-Down Kit (SRBOLTDOWN)

- Cantilever Rack Shelves (SRSHELF2P, SRSHELF2P1U)

Power Distribution Units (See pp. 16-17 for more information.)

- Switched PDUs
  (PDUMV20HVNET, PDUMV30HVNET, PDUMH20HVNET, PDUMH30HVNET)

- Switched PDUs with Automatic Transfer Switch (ATS)
  (PDUMH15ATNET, PDUMH20ATNET)

- Monitored PDUs (PDUMNV20HV, PDUMNV30HV)

- Metered PDUs (PDUMV20HV, PDUMV30HV)

- Hot-Swap PDUs (Add hot-swap capability to <3kVA UPS.)
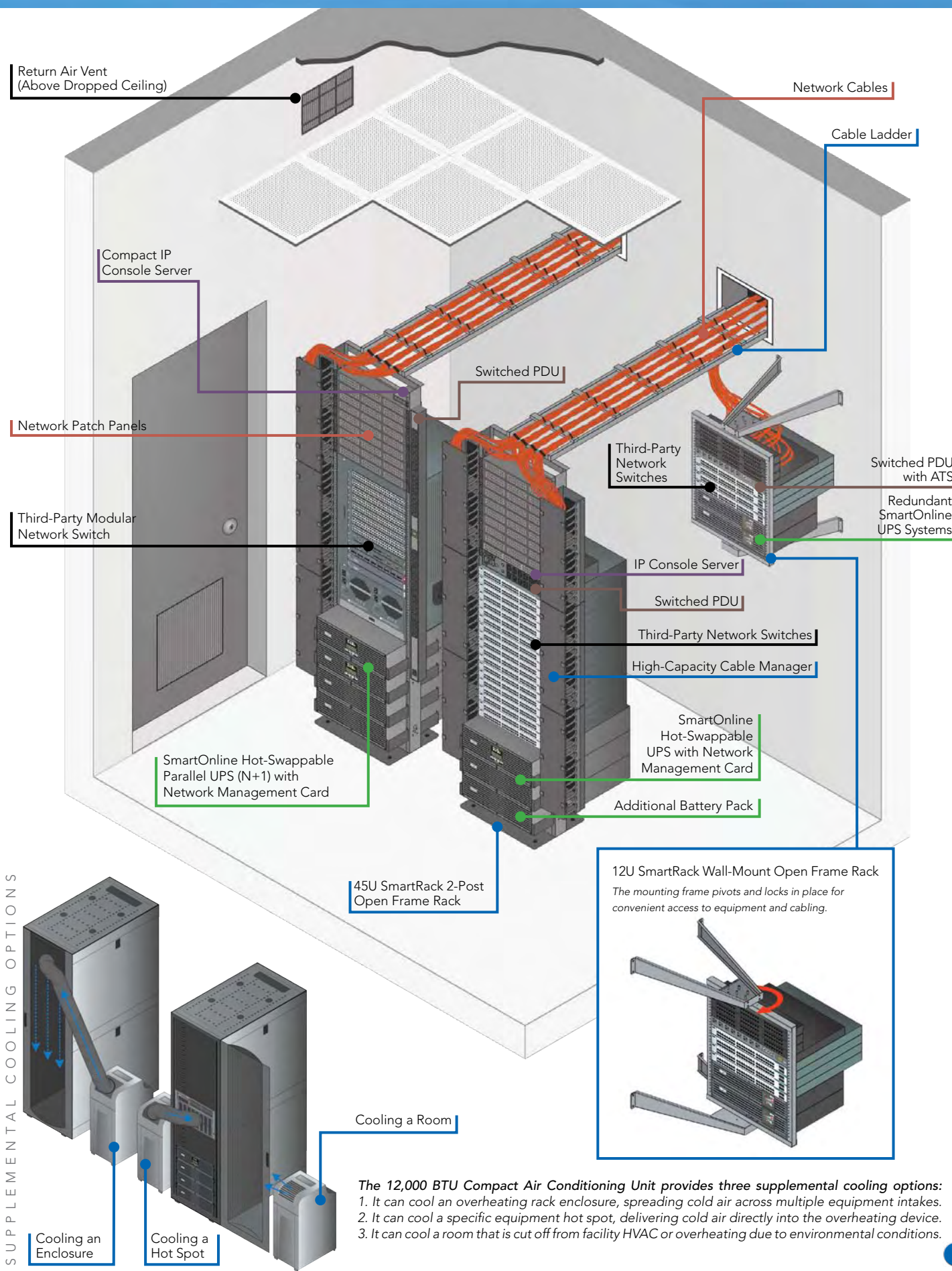
Network Management Tools (See pp. 18-19 for more information.)

- UPS Network Management Card (SNMPWEBCARD)

- Environmental Sensor
  (ENVIROSENSE – Monitor temperature, humidity and dry contacts.)

- PowerAlert Network Management System (Included with UPS.)

- IP Console Server Management Switch (B096-048)

- Compact IP Console Servers (B095-004-1E, B095-003-1E-M)

Cables & Connectivity (See p. 17 for more information.)

- Network Cables (Copper & Fiber-Optic)

- Network Patch Panels (Copper & Fiber-Optic)

- Power Cables

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

Return Air Vent
(Above Dropped Ceiling)

Network Cables

Cable Ladder

Compact IP
Console Server

Switched PDU

Network Patch Panels

Third-Party
Network
Switches

Switched PDU
with ATS

Redundant
SmartOnline
UPS Systems

Third-Party Modular
Network Switch

IP Console Server

Switched PDU

Third-Party Network Switches

High-Capacity Cable Manager

SmartOnline
Hot-Swappable
UPS with Network
Management Card

SmartOnline Hot-Swappable
Parallel UPS (N+1) with
Network Management Card

Additional Battery Pack

45U SmartRack 2-Post
Open Frame Rack

12U SmartRack Wall-Mount Open Frame Rack

The mounting frame pivots and locks in place for
convenient access to equipment and cabling.

SUPPLEMENTAL COOLING OPTIONS

Cooling a Room

Cooling an
Enclosure

Cooling a
Hot Spot

The 12,000 BTU Compact Air Conditioning Unit provides three supplemental cooling options:
1. It can cool an overheating rack enclosure, spreading cold air across multiple equipment intakes.
2. It can cool a specific equipment hot spot, delivering cold air directly into the overheating device.
3. It can cool a room that is cut off from facility HVAC or overheating due to environmental conditions.

Scenario: Server Room

Common Equipment Supported: Servers, Storage, Switches, Routers | **Typical Size:** 1–10 Rack Enclosures

RECOMMENDED TRIPP LITE SOLUTIONS FOR SERVER ROOMS

UPS Systems (See pp. 12-13 for more information.)

- 5-20kVA SmartOnline Hot-Swappable UPS Systems
  (SU5000RT4U, SU6000RT4U, SU6000RT4UHV, SU8000RT3U, SU8000RT4U,
  SU10000RT3U, SU12000RT4U, SU16000RT4U, SU16KRT, SU20KRT)

- 1-5kVA SmartOnline UPS Systems
  (SU1000RTXL2UA, SU1500RTXL2UA, SU2200RTXL2UA, SU3000RTXL2U,
  SU3000RTXL3U, SU3000RTXR3U, SU5000RT4UTF)

- 1-5kVA SmartPro Line-Interactive UPS Systems
  (SMART1000RM1U, SMART3000RM2U, SMART5000XFMRXL)

- Centralized Power Option: 20-80kVA SmartOnline 3-Phase UPS
  Systems (SU20K3/3, SU30K3/3, SU40K, SU60K, SU80K)

- Redundant (N+1 and/or 1+1) UPS Configuration

- Additional External Battery Packs (Provide extended runtime.)

Rack & Cooling Solutions (See pp. 14-15 for more information.)

- 42U SmartRack Rack Enclosures (SR42UB, SR42UBEXP)

- 42U SmartRack Deep, Wide or Deep & Wide Rack Enclosures
  (SR42UBDP, SR42UBWD, SR42UBDPWD)

- 12,000 BTU Compact Air Conditioning Unit (SRCOOL12K)

- High-Capacity Cable Managers (SRCABLEVRT6, SRCABLEVRT12)

- Vertical Cable Managers (SRCABLEDUCTVRT, SRCABLERINGVRT)

- Horizontal Cable Managers
  (SRCABLEDUCT1U, SRCABLERING1U, SRCABLERING2U)

- Cable Ladder (SRCABLELADDER)

- Cable Trough with Vertical Expansion
  (SRCABLETRAY with SRCABLETRAYEXP)

- Airflow Management Accessories (SRGASKET, SRSKIRT, SR1UBRUSH)

- 1U Blanking Panels (SR1UPANEL10, SR1UPANEL50)

- Heat Removal Fan Door (SRFANDOOR)

- Heat Removal Fan Roof Panel (SRFANROOF)

- 3U Heat Removal Fan Panel (SRFAN3U)

- Rack Bolt-Down Kit (SRBOLTDOWN)

- Anti-Tip Stabilizing Plate Kit (SRSTABILIZE)

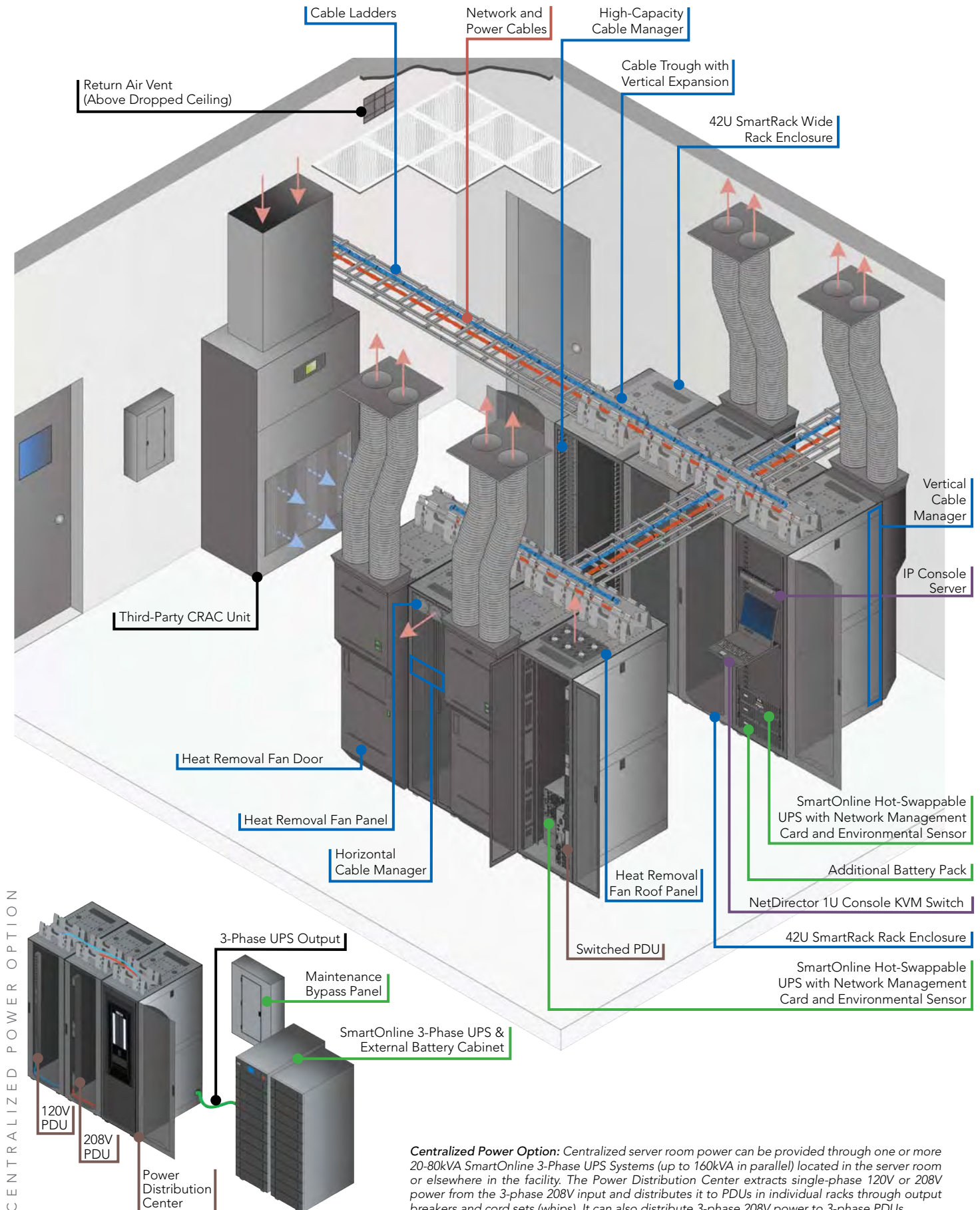### Power Distribution Units (See pp. 16-17 for more information.)

- Switched PDUs
  (PDUMV20HVNET, PDUMV30HVNET, PDUMH15HVNET,
  PDUMH20HVNET, PDUMH30HVNET)

- Switched PDUs with Automatic Transfer Switch (ATS)
  (PDUMH15ATNET, PDUMH20ATNET)

- Monitored PDUs (PDUMNV20HV, PDUMNV30HV)

- Metered PDUs (PDUMV20HV, PDUMV30HV)

- Power Distribution Center
  (SUDC208V42P – Distributes 120/208V single-phase and 208V 3-phase
  output from 208V 3-phase input.)

- 3-Phase Monitored and Switched PDUs

Network Management Tools (See pp. 18-19 for more information.)

- UPS Network Management Card (SNMPWEBCARD)

- Environmental Sensor
  (ENVIROSENSE – Monitor temperature, humidity and dry contacts.)

- PowerAlert Network Management System (Included with UPS)

- NetDirector 1U Console KVM Switches with IP Access
  (B020-016-17-IP, B020-U08-19-IP)

- IP Console Server Management Switch (B096-048)

- IP Console Server with KVM Console Ports
  (B092-016)

- NetDirector 1U Rack Consoles (B021-000-17, B021-000-19)

- NetDirector 1U Console KVM Switches with Cable Kits
  (B020-U16-19-K, B020-U08-19-K)

- NetDirector Multiuser Cat5 KVM Switches with IP Access
  (B064-032-04-IPG, B064-032-02-IPG, B064-016-04-IPG, B064-016-02-IPG)

Cables & Connectivity (See p. 17 for more information.)

- Network Cables (Copper & Fiber-Optic)

- Network Patch Panels (Copper & Fiber-Optic)

- Power Cables

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

Cable Ladders

Network and Power Cables

High-Capacity Cable Manager

Cable Trough with Vertical Expansion

Return Air Vent (Above Dropped Ceiling)

42U SmartRack Wide Rack Enclosure

Third-Party CRAC Unit

Vertical Cable Manager

IP Console Server

Heat Removal Fan Door

Heat Removal Fan Panel

Horizontal Cable Manager

Heat Removal Fan Roof Panel

SmartOnline Hot-Swappable UPS with Network Management Card and Environmental Sensor

Additional Battery Pack

NetDirector 1U Console KVM Switch

42U SmartRack Rack Enclosure

SmartOnline Hot-Swappable UPS with Network Management Card and Environmental Sensor

Switched PDU

CENTRALIZED POWER OPTION

3-Phase UPS Output

Maintenance Bypass Panel

SmartOnline 3-Phase UPS & External Battery Cabinet

120V PDU

208V PDU

Power Distribution Center

Centralized Power Option: *Centralized server room power can be provided through one or more 20-80kVA SmartOnline 3-Phase UPS Systems (up to 160kVA in parallel) located in the server room or elsewhere in the facility. The Power Distribution Center extracts single-phase 120V or 208V power from the 3-phase 208V input and distributes it to PDUs in individual racks through output breakers and cord sets (whips). It can also distribute 3-phase 208V power to 3-phase PDUs.*

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Scenario: Data Center & MDF (Main Distribution Frame)

Common Equipment Supported: Servers, Storage, Switches, Routers | **Typical Size:** 10+ Rack Enclosures

RECOMMENDED TRIPP LITE SOLUTIONS FOR DATA CENTERS

UPS Systems (See pp. 12-13 for more information.)

- In-Rack Power: 6-20kVA SmartOnline Hot-Swappable UPS Systems (SU6000RT4UHV, SU8000RT3U, SU10000RT3U, SU16KRT, SU20KRT)
- Centralized Power: 40-80kVA SmartOnline 3-Phase UPS Systems (SU40K, SU60K, SU80K)
- 3-Phase Maintenance Bypass Panel
- Redundant (N+1 and/or 1+1) UPS Configuration
- Additional External Battery Packs (Provide extended runtime.)

Rack & Cooling Solutions (See pp. 14-15 for more information.)

- 42U & 48U SmartRack Rack Enclosures (SR42UB, SR42UBEXP, SR48UB, SR48UBEXP)
- 42U SmartRack Thermal Duct Rack Enclosures (SR42UBTD, SR42UBWDTD – Adjustable overhead duct routes warm equipment exhaust to facility HVAC return air stream.)
- 42U SmartRack Deep, Wide or Deep & Wide Rack Enclosures (SR42UBDP, SR42UBWD, SR42UBDPWD)
- 42U & 48U SmartRack Colocation Rack Enclosures (SR42UBCL, SR48UBCL – Divided into two secure compartments.)
- 45U SmartRack 2-Post Open Frame Rack (SR2POST)
- 45U SmartRack 4-Post Open Frame Rack (SR4POST)
- 42U SmartRack Heavy-Duty 4-Post Open Frame Rack (SR42UBEXPND)
- High-Capacity Cable Managers (SRCABLEVRT6, SRCABLEVRT12)
- Cable Ladder (SRCABLELADDER)
- Cable Trough (SRCABLETRAY with SRCABLETRAYEXP)
- Vertical Cable Managers (SRCABLEDUCTVRT, SRCABLERINGVRT)
- Horizontal Cable Managers (SRCABLEDUCT1U, SRCABLERING1U, SRCABLERING2U)
- Heat Removal Fan Door (SRFANDOOR)
- Airflow Management Accessories (SRGASKET, SRSKIRT, SR1UBRUSH)
- 1U Blanking Panels (SR1UPANEL10, SR1UPANEL50)

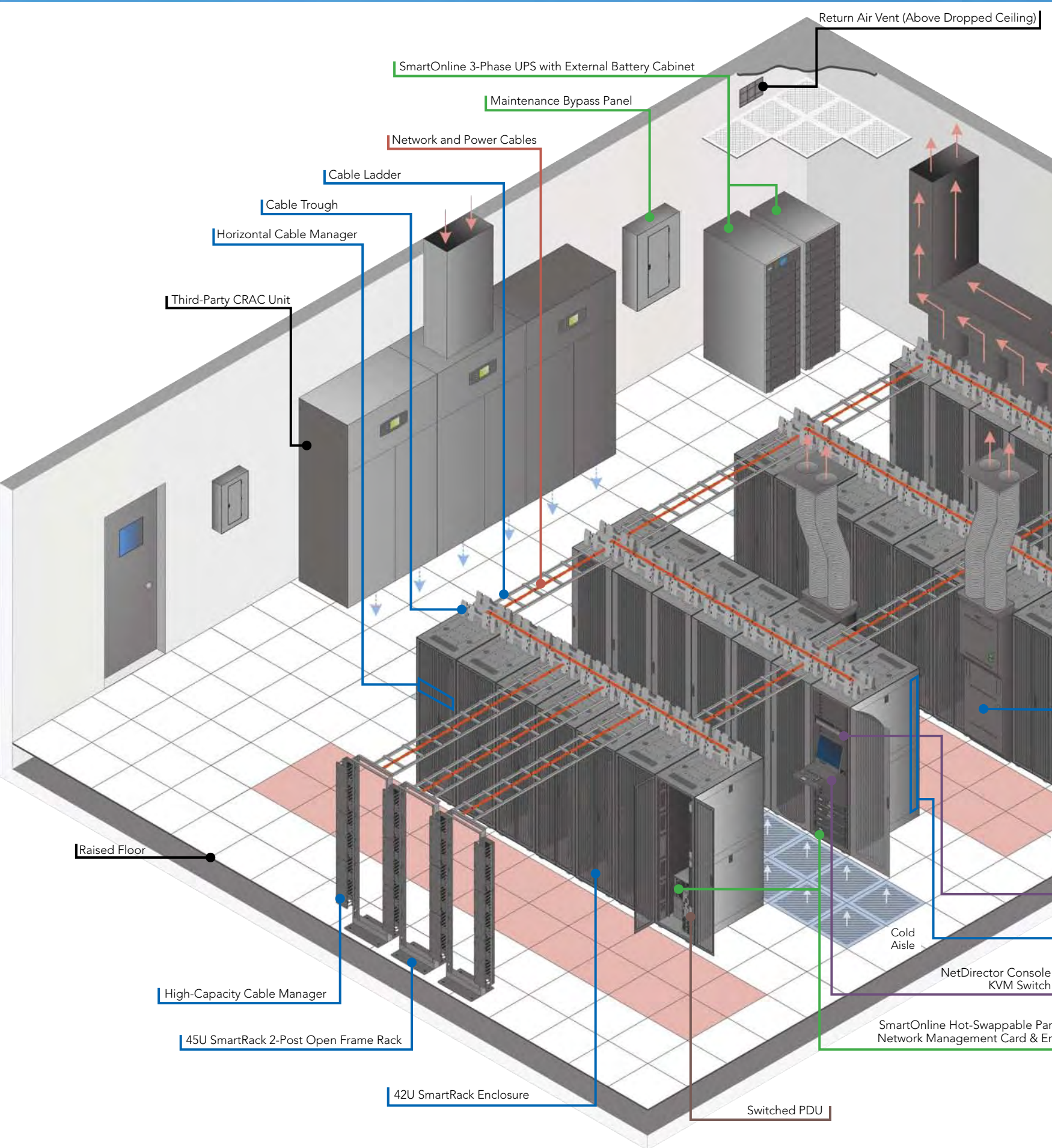### Power Distribution Units (See pp. 16-17 for more information.)

- Switched PDUs (PDUMV20HVNET, PDUMV30HVNET, PDUMH20HVNET, PDUMH30HVNET)
- Switched PDUs with Automatic Transfer Switch (ATS) (PDUMH15ATNET, PDUMH20ATNET)
- Monitored PDUs (PDUMNV20HV, PDUMNV30HV)
- Metered PDUs (PDUMV20HV, PDUMV30HV)
- Power Distribution Center (SUDC208V42P – Distributes 120/208V single-phase and 208V 3-phase output from 208V 3-phase input.)
- 3-Phase Monitored and Switched PDUs

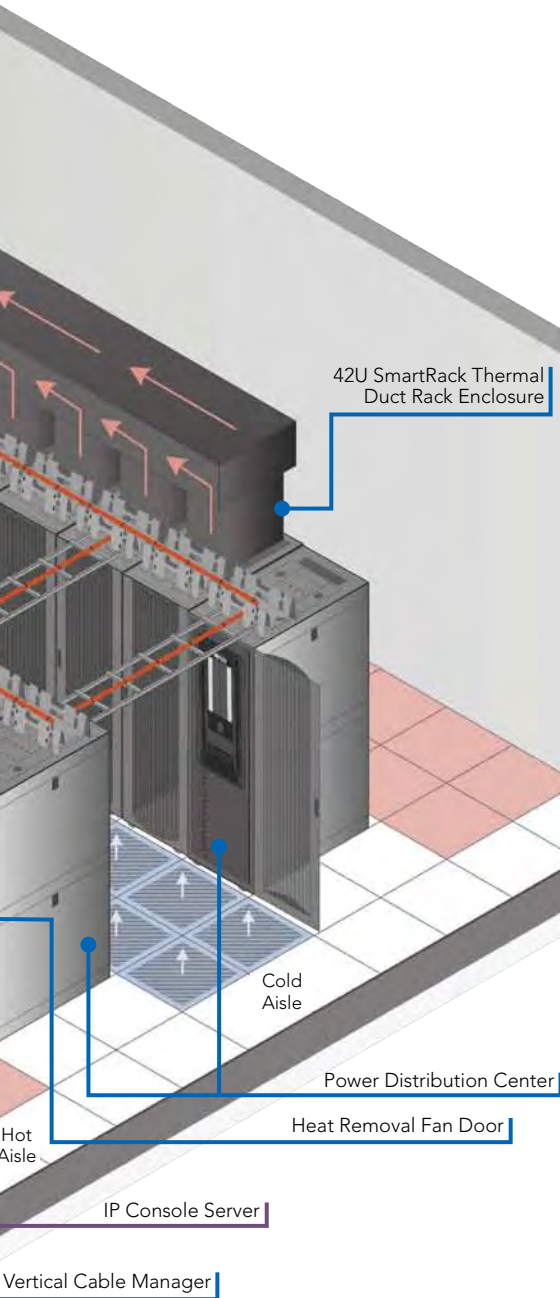### Network Management Tools (See pp. 18-19 for more information.)

- UPS Network Management Card (SNMPWEBCARD)
- Environmental Sensor (ENVIROSENSE – Monitors temperature, humidity and dry contacts.)
- PowerAlert Network Management System (Included with UPS)
- NetDirector 1U Console KVM Switches with IP Access (B020-016-17-IP, B020-U08-19-IP)
- IP Console Server Management Switches (B096-048, B096-016)
- IP Console Server with KVM Console Ports (B092-016)
- NetDirector 1U Rack Consoles (B021-000-17, B021-000-19)
- NetDirector 1U Console KVM Switches with Cable Kits (B020-U16-19-K, B020-U08-19-K)
- NetDirector Multiuser Cat5 KVM Switches with IP Access (B064-032-04-IPG, B064-032-02-IPG, B064-016-04-IPG, B064-016-02-IPG)

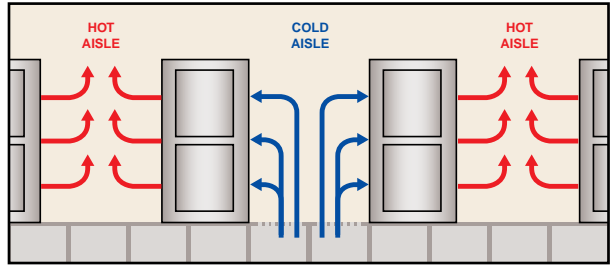### Cables & Connectivity (See p. 17 for more information.)

- Network Cables (Copper & Fiber-Optic)
- Network Patch Panels (Copper & Fiber-Optic)
- Power Cables

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

Return Air Vent (Above Dropped Ceiling)

SmartOnline 3-Phase UPS with External Battery Cabinet

Maintenance Bypass Panel

Network and Power Cables

Cable Ladder

Cable Trough

Horizontal Cable Manager

Third-Party CRAC Unit

Raised Floor

Cold
Aisle

NetDirector Console
KVM Switch

High-Capacity Cable Manager

SmartOnline Hot-Swappable Par
Network Management Card & En

45U SmartRack 2-Post Open Frame Rack

42U SmartRack Enclosure

Switched PDU

42U SmartRack Thermal Duct Rack Enclosure

Cold Aisle

Power Distribution Center

Heat Removal Fan Door

Hot Aisle

IP Console Server

Vertical Cable Manager

...allel UPS (N+1) with ...vironmental Sensor

Hot-Aisle / Cold-Aisle Configuration

Hot-aisle / cold-aisle configurations increase data center cooling efficiency, reducing energy use by up to 20%. (Source: TDI Data Centers.) Cold air passes through special floor tiles in the cold aisle, where it is drawn to equipment air intakes through the perforated front door of each rack enclosure. Hot exhaust air passes through the perforated rear doors of each rack enclosure to the hot aisle and vents overhead. Heat Removal Fan Doors and Thermal Duct Rack Enclosures isolate and remove hot air for even greater cooling efficiency.

Economy Mode Operation

In Economy Mode, SmartOnline UPS Systems save energy, eliminate heat and reduce operating costs by implementing dynamic double conversion. As long as input power quality is satisfactory, the UPS system suspends double conversion and operates with maximum efficiency. If input power falls outside the satisfactory range, the UPS system resumes double conversion until input power quality improves. Replacing 160kVA of legacy on-line UPS capacity with SmartOnline UPS Systems operating in Economy Mode can save more than $20,000 per year.

Ideal Power for Critical Systems

SmartOnline UPS Systems provide ideal power for critical network systems, isolating equipment from blackouts, brownouts, overvoltages, surges, line noise, harmonic distortion, electrical impulses and frequency variations. True on-line double conversion delivers pure sine wave output 24x7 and complies with worldwide standards for voltage- and frequency-independent operation. No matter what your power line throws at you—rolling blackouts, industrial power fluctuations, dangerous transient voltages—your equipment will continue to receive reliable power and your critical network systems will stay up and running around the clock.
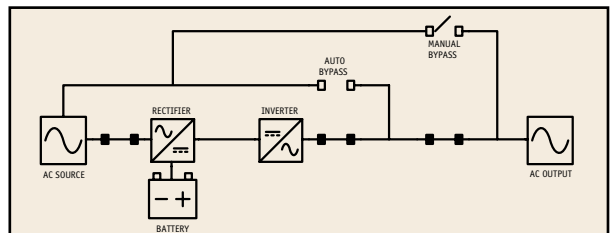
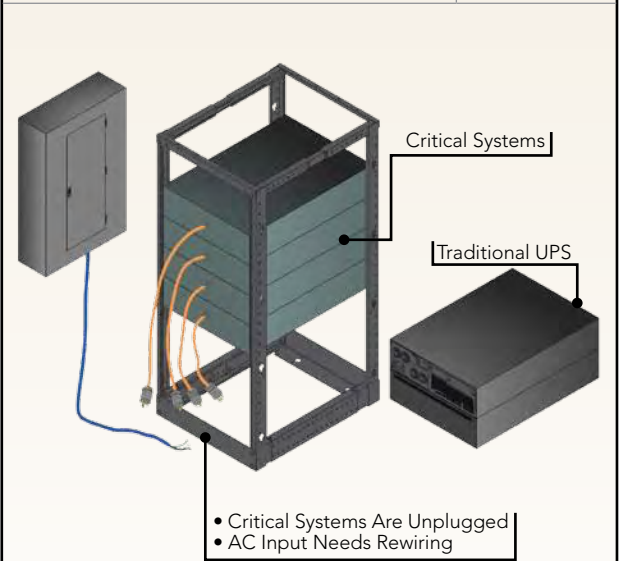# MAXIMIZE SYSTEM AVAILABILITY
with SmartOnline UPS Systems

UPS systems are crucial to maintaining system availability, but the wrong UPS system can actually cause downtime. Traditional UPS systems typically require you to power down and disconnect your equipment during a UPS repair. Before you can restore productivity, you'll need a repair technician to install the new UPS system and you'll need to reconnect, power up and test all your equipment. SmartOnline Hot-Swappable UPS Systems eliminate these shortcomings.

All SmartOnline UPS Systems include hot-swappable batteries and an automatic bypass that keeps your equipment powered by utility power in the event of an internal fault or overload. SmartOnline Hot-Swappable UPS Systems also have one or more hot-swappable power modules and a detachable PDU with a manual bypass switch. After you turn the bypass switch, you can completely remove and replace the power module while the detachable PDU keeps your critical systems up and running, effectively reducing mean time to repair (MTTR) to zero. **A SmartOnline Hot-Swappable UPS System can eliminate 60 minutes of downtime during a single repair, saving average midsize businesses up to $70,000 per incident.** (Source: IDC, 2009.)
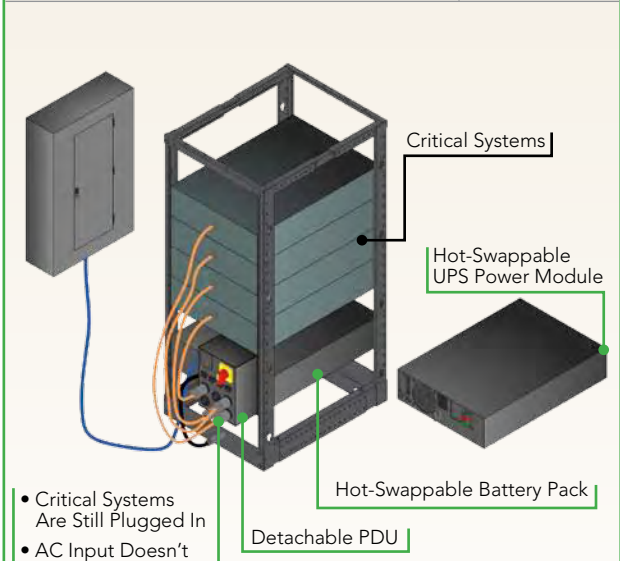
Estimated Repair Time Line for 5kVA+ UPS

Traditional UPS System	
Schedule Downtime (Typically After Hours)	Hours to Days
Wait for UPS Repair Technician	4-24 hours
Shut Down & Disconnect Equipment	**10+ minutes**
Disconnect & Remove Old UPS	**15 minutes**
Install New UPS in Rack and Power Up	**20 minutes**
Plug In, Start Up & Test Equipment	**15+ minutes**
Total Repair Time	5-25+ hours
Total Downtime of Critical Systems	**60+ minutes**

SmartOnline Hot-Swappable UPS System	
Schedule Downtime	Not Required
Wait for UPS Repair Technician	Not Required
Turn Bypass Switch & Detach PDU	1 minute
Remove Old Power Module	1.5 minutes
Install New Power Module	1.5 minutes
Reattach PDU & Turn Bypass Switch	1 minute
Total Repair Time	5 minutes
Total Downtime of Critical Systems	**Zero**

Critical Systems

Traditional UPS

- Critical Systems Are Unplugged
- AC Input Needs Rewiring

During repair, critical systems are dead in the water while the traditional UPS system is disconnected, replaced and rewired by one or more costly service specialists – 60+ minutes of downtime per incident, plus additional time scheduling the service outage and waiting for the repair technician to arrive.

Critical Systems

Hot-Swappable UPS Power Module

- Critical Systems Are Still Plugged In
- AC Input Doesn't Need Rewiring

Detachable PDU

Hot-Swappable Battery Pack

During repair, critical systems remain fully operational on bypass power while the hot-swappable power module is disconnected, replaced and reconnected by an IT staffer – zero downtime per incident, with no waiting to schedule service outages and no need to contract a costly repair technician.

UPS SYSTEMS

Core Function: Provide Reliable, Efficient Power with Expandable Battery Backup
- Keep critical network systems operating 24x7 through blackouts and other power problems.
- Reduce energy usage, heat production and electricity costs through Economy Mode operation.
- Provide remote power management via SNMP, Web or telnet, including free PowerAlert software.

SmartOnline True On-Line UPS Systems

Available in capacities from 750VA to 20kVA, SmartOnline UPS Systems provide the best protection for critical network systems.

- True on-line, double-conversion operation delivers precision-regulated output continuously, isolating equipment from power problems, including blackouts, brownouts, overvoltages, surges, line noise, harmonic distortions, electrical impulses and frequency variations.

- Reliable battery backup keeps equipment operating through power failures.

- An automatic internal bypass keeps connected equipment powered if there's an overload or internal fault.

- Pure sine wave output and zero transfer time to battery ensure compatibility with sensitive network equipment.

- Economy Mode operation lowers operating costs.

- Optional UPS Network Management Cards enable stand-alone remote monitoring and control via SNMP, Web or telnet, including centralized power management via free PowerAlert Network Management System.

- Optional external battery packs provide unlimited scalability to meet any runtime requirement.

- Internal and external batteries are hot-swappable.

- SmartOnline Hot-Swappable UPS Systems include a hot-swappable power module and detachable PDU to allow UPS maintenance, repair or replacement without interrupting power and causing critical system downtime.

SmartOnline UPS Systems Provide Maximum Availability for Critical Network Systems

Remove the hot-swappable power module for maintenance or repair...
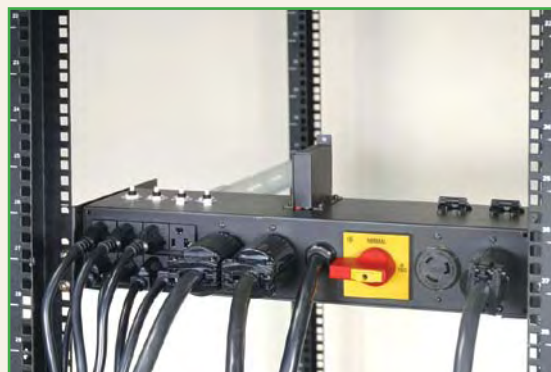
...and the detachable PDU keeps your equipment operating without an interruption.

"We chose Tripp Lite for two reasons: their reputation as a leading UPS manufacturer and the attractive price. Since the Tripp Lite UPS was installed, we haven't experienced any equipment damage or downtime."

Benny Chang, Systems Analyst for Columbia Business School

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

SmartOnline 3-Phase UPS Systems

Available in capacities up to 80kVA (160kVA in parallel), SmartOnline 3-Phase UPS Systems employ 3-phase input and output to provide higher capacity with fewer circuits in less space per kVA than single-phase units.

- Advanced IGBT rectifier technology produces low input total harmonic distortion to eliminate costly over-sizing requirements.

- Economy Mode operation provides increased efficiency, which can reduce data center power and cooling costs by more than $20,000 per year for each 160kVA load. (Estimate assumes 96% vs. 86% efficiency and 24x7 duty cycle.)

- Hot-swappable 20kVA power modules provide internal N+1 redundancy and parallel configurations provide 1+1 redundancy or double output capacity.

- If service or repair requires shutdown, a manual bypass breaker and automatic bypass function maintain system availability by passing through AC power until the system returns to service.

- Internal and external batteries are hot-swappable.

SmartPro Line-Interactive UPS Systems

SmartPro UPS Systems are available in capacities from 500VA to 5kVA. Line-interactive operation—also known as automatic voltage regulation (AVR)—automatically adjusts abnormal input voltages to safe levels.

- Reliable battery backup keeps equipment operating through power failures.

- Pure sine wave output (most models) ensures compatibility with sensitive network equipment.

- Optional UPS Network Management Cards enable stand-alone remote monitoring and control via SNMP, Web or telnet, including centralized power management via free PowerAlert Network Management System.

- Optional external battery packs provide increased battery backup runtime (select models).

- Internal and external batteries are hot-swappable.

- Shallow-depth models are optimized for 2-post racks and network closets.

External Battery Packs & Battery Cabinets

External battery packs & battery cabinets increase battery runtime. Expandable models allow daisy-chaining of multiple units for unlimited runtime scalability. Tripp Lite also offers a full line of replacement batteries to keep UPS systems in operation when batteries eventually require replacement.

RACK & COOLING SOLUTIONS

Core Function: Secure, Organize and Cool Equipment
- Provide air conditioning and heat removal for high-density installations.
- Organize equipment and cabling, providing security wherever required.
- Support hot-aisle/cold-aisle installations for efficient data center cooling.

SmartRack Premium Rack Enclosures

Available with or without side panels in sizes from 12U to 48U, SmartRack Enclosures organize and secure standard 19-inch rack equipment, regardless of vendor.

- Heavy-duty 3,000 lb load rating supports high-density installations.
- Features like quick-adjust vertical rails, easy-view depth indexing, integrated baying hardware and toolless mounting for vertical PDUs and cable managers make installation and configuration tasks quicker and easier.
- Massive front-to-rear airflow exceeds server manufacturer requirements and fully supports hot-aisle/cold-aisle configurations for efficient data center cooling.
  - Knockdown models ship partially disassembled into several major sections for easy transport and quick reassembly in tight spaces.
  - Colocation models are divided into two secure compartments (upper and lower) for multi-tenant applications.

- Deep, wide and deep & wide models are available to accommodate deeper equipment cabinets and facilitate high-density cable management.

SmartRack Thermal Duct Rack Enclosures

SmartRack Thermal Duct Rack Enclosures keep equipment cooler without using electricity or generating additional heat. An adjustable overhead duct and sealed rear doors route warm exhaust air directly to your facility's HVAC return air stream. The negative pressure of the return air duct pulls heat from the enclosure, increasing cooling capacity and efficiency.
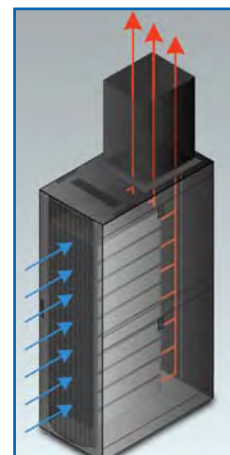
SmartRack Wall-Mount Rack Enclosures

Ideal for locations with limited floor space, SmartRack Wall-Mount Rack Enclosures are available in sizes from 6U to 26U. Most models include a hinged wall bracket that allows the enclosure to swing away from the wall for easy access to equipment and cabling. An optional caster kit is available for floor-standing and roll-away applications. For applications that do not require a secure cabinet, SmartRack Wall-Mount Open Frame Racks from 2U to 22U are also available.

SmartRack Open Frame Racks

SmartRack Open Frame Racks provide economical equipment organization and cable management for applications that do not require a secure enclosure. 2-post racks are available in 25U and 45U sizes. 4-post racks are available in 13U, 25U and 45U sizes, as well as a 42U heavy-duty model.

Compact Air Conditioning Unit

The portable, maintenance-free Compact Air Conditioning Unit provides 12,000 BTU (up to 3.4kW) of supplemental cooling capacity. It's ideal for cooling overheated rack enclosures, IT equipment hot spots and network closets without access to facility air conditioning. You can focus cool air through its flexible cooling duct or cool an entire room through its louvered vent. The unit also filters and dehumidifies air. Condensate is re-evaporated for drip-free operation, so you won't waste time emptying water collection tanks. Installation does not require plumbing or special circuits. Eco-friendly R410a refrigerant meets environmental standards worldwide.

Heat Removal Fan Door

The Heat Removal Fan Door connects to a standard-width 42U or 48U SmartRack Enclosure in place of the rear doors. Four powerful centrifugal fans supercharge front-to-rear airflow to remove heat through overhead ducts, which connect to a drop ceiling or your facility's HVAC return air stream. Digital thermometers display intake and exhaust temperature.

Heat Removal Fan Panels

The 3U Horizontal Fan Panel removes warm air from enclosure hot spots with three high-performance fans. The Roof Fan Panel replaces the standard SmartRack Enclosure roof panel and includes six high-performance fans.

Airflow Management Accessories

Airflow management accessories facilitate front-to-rear airflow for increased cooling efficiency, especially for SmartRack Enclosures arranged in a hot-aisle/cold-aisle configuration. They prevent warm exhaust air from recirculating and contaminating cool intake air. Accessories include 1U Blanking Panels, Cable Pass-Through Panels and Rack Enclosure Skirts.

Rack Shelves

Fixed and sliding rack shelves with capacities up to 250 lb are available for SmartRack Rack Enclosures and Open Frame Racks.

Internal Cable Managers

A variety of ring-type and duct-type vertical and horizontal Internal Cable Managers are available. Vertical Cable Managers include toolless mounting.

External Cable Managers

Cable Ladders and Cable Troughs route cables between racks and across aisles. They also separate power and data cables to reduce interference and maintain optimal data transmission speeds.

High-Capacity Cable Managers

With double-sided cable channels and flexible fingers at 1U increments, High-Capacity Cable Managers organize and secure large quantities of patch cables in high-density data centers and network closets. High-Capacity Cable Managers are available in 6-inch and 12-inch widths.

POWER DISTRIBUTION UNITS (PDUs)

Core Function: Provide Reliable, Manageable Power Distribution

- Distribute power from a UPS system, generator or wall outlet to multiple devices.
- Right-size equipment and infrastructure to reduce up-front costs and increase operational efficiency.
- Reboot unresponsive devices from any distance, eliminating time-consuming trips to remote sites.

Network-Grade Power Distribution Units

Tripp Lite single-phase PDUs are available in four varieties: **Basic**, **Metered**, **Monitored** and **Switched**.

Feature	Benefit	Basic	Metered	Monitored	Switched
Multiple Outlets	Provide reliable power distribution from a UPS system, generator or utility source to multiple devices.	Yes	Yes	Yes	Yes
High-Current Input and Low-Current Outlets	Convert a single high-amperage outlet into multiple low-amperage outlets.	Select Models	Select Models	Select Models	Select Models
Toolless Mounting Buttons	Provide quick, convenient 0U mounting.	Vertical Models	Vertical Models	Vertical Models	Vertical Models
Load Meter(s)	Display the connected equipment load to prevent overloads and safely optimize load levels.		Yes	Yes	Yes
Automatic Transfer Switch (ATS)	Provides redundant power sources for single-cord devices.		Select Models		Select Models
Network Interface	Provides remote monitoring and condition reporting to prevent overloads and downtime.			Yes	Yes
Remote Individual Outlet Control	Eliminates costly service calls by rebooting locked devices from any location.				Yes

PDU Type

3-Phase Power Distribution Units

3-Phase PDUs are available in two varieties: **Monitored** and **Switched**. They're similar to standard PDUs, but they accept 3-phase input power and provide single-phase output power. Switched 3-Phase PDUs can also measure and display the connected equipment load of individual outlets.

Hot-Swap Power Distribution Units

Hot-Swap PDUs pass through utility power to connected equipment during UPS system maintenance, repair or replacement, preventing downtime. They add hot-swap capability to UPS systems up to 3kVA.

Tripp Lite Integrated Solutions are designed to work with your existing equipment, regardless of vendor.

Power Distribution Centers

Power Distribution Centers organize and simplify power distribution for multiple racks. They accept 3-phase input power from SmartOnline 3-Phase UPS Systems and distribute single-phase and/or 3-phase output power to PDUs. Power distribution through individual output breakers and corresponding output cord sets (whips) maximizes flexibility, balances critical loads and provides branch circuit over-current protection. Select models include an integrated bypass panel to allow UPS maintenance without requiring connected equipment downtime.

CABLES & CONNECTIVITY

Core Function:
Connect Equipment & Infrastructure

Cables

- Cat5/5e/6/6a, Cat3, T1 & CX4 Patch Cables
- Singlemode, Multimode & Mode Conditioning Fiber-Optic Cables
- VGA, DVI & HDMI Display Cables
- Easy Pull Display Cables (Ideal for Conduit)
- AC Power Cables
- Audio/Video Cables
- USB & FireWire® Cables
- Storage Cables

Patch Panels

- Cat5e & Cat6 Network Patch Panels
- Fiber-Optic Patch Panels
- Up to 48 Ports per 1U

Adapters, Extenders, Splitters & Switches

- VGA, DVI & HDMI Extenders, Splitters & Switches
- Component Video, VGA, DVI & HDMI Over Cat5 Extenders
- Fiber-Optic Converters, Adapters & Couplers

"Tripp Lite has always delivered excellent products and support. That's why I chose them to protect Cisco's flagship product line. We will be recommending Tripp Lite power protection to all our Cisco TelePresence customers."

Rick Santina, Technical Marketing Engineer for Cisco TelePresence Exchange Business Unit

NETWORK MANAGEMENT TOOLS

Core Function: Manage Power and IT Devices from Any Location
- Provide secure access and control for all devices.
- Allow valuable IT personnel to cover more ground in less time.
- Detect problems sooner and fix them faster—before downtime hurts your bottom line.

KVM Switches, Console KVM Switches & Rack Consoles

KVM Switches are available with or without built-in LCD consoles, Cat5 cabling, IP remote access and support for multiple concurrent users. KVM Switches contain up to 32 ports per 1U and can expand to control thousands of servers by connecting additional units.

IP Console Servers

IP Console Servers provide remote access to all your serial- and network-connected devices, including servers, switches, routers, UPS systems and PDUs. If your primary IP network connection goes down due to an outage or device malfunction, you can still access connected equipment through alternative, out-of-band connections such as dial-up modems and serial ports.

- Secure tunneling to all devices
- Up to 48 Cisco®-compatible RJ45 serial ports in 1U
- 1,000+ devices per IP address
- Up to 48 concurrent users
- Embedded Linux® with shell access
- Built-in management tools, including service processor tools
- Ability to add your favorite management tools
- Flash memory for logs and configurations
- Integrated or plug-in temperature sensors

Compact IP Console Servers include an embedded temperature sensor, 3 or 4 serial ports and a modem port or built-in modem. They're perfect for branch offices and smaller installations. The **IP Console Server with KVM Console Ports** includes an embedded thin client and embedded PowerAlert NMS. It provides convenient rack-side access and can also add IP access to your existing KVM infrastructure. **IP Console Server Management Switches** have redundant power supplies and dual Ethernet ports. They can host a separate management LAN for increased security and high-speed out-of-band access.

PowerAlert Network Management System (NMS)
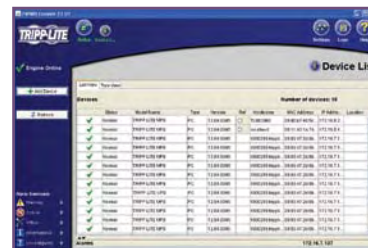
Tripp Lite's free PowerAlert software allows you to monitor and control hundreds of UPS systems, Monitored PDUs and Switched PDUs over the network through a single interface.

UPS Network Management Cards

UPS Network Management Cards allow compatible UPS systems to connect to the network for remote monitoring and control via SNMP, Web or telnet, including centralized management through free PowerAlert NMS software.
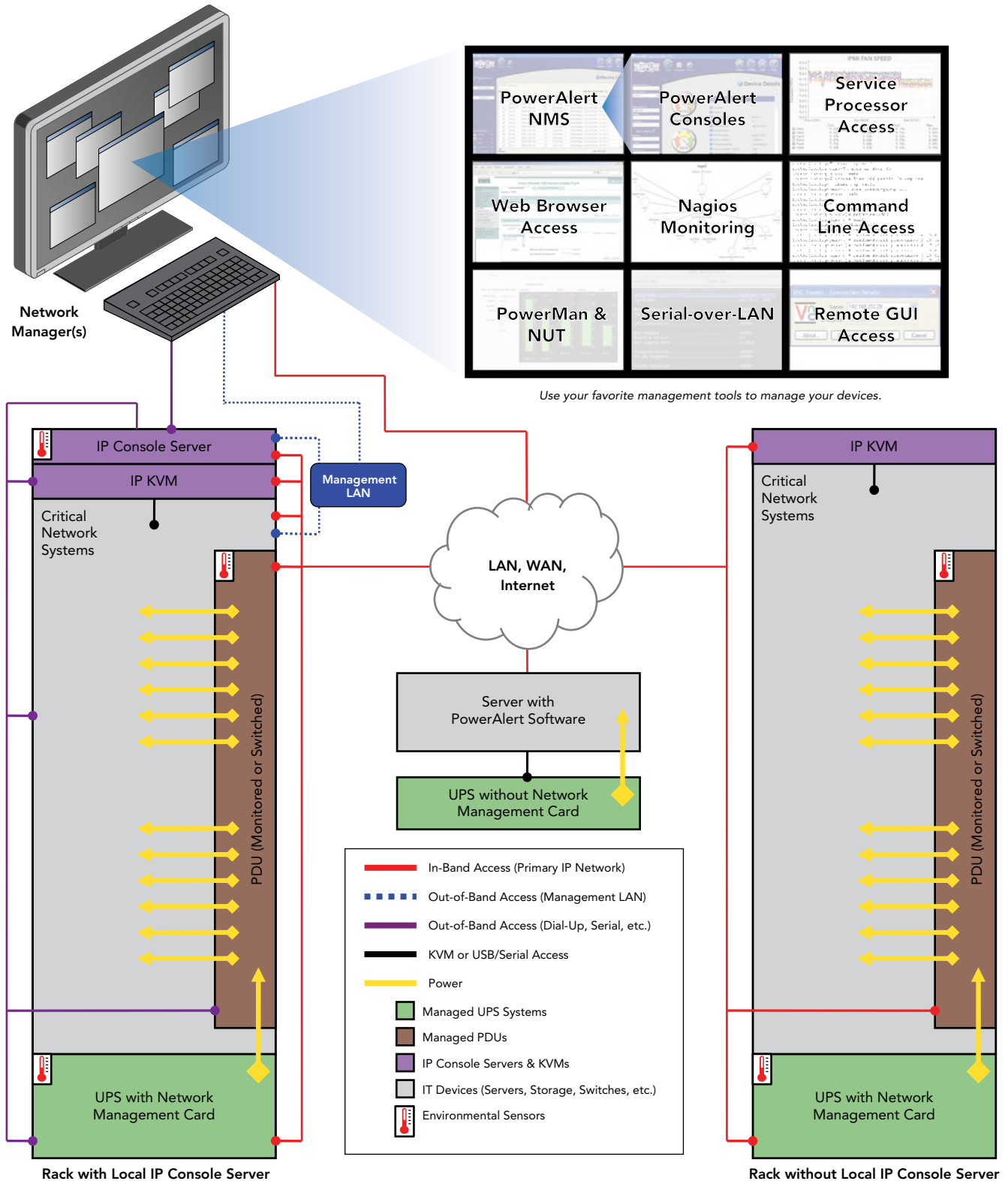
Environmental Sensors

Environmental Sensors connect to UPS Network Management Cards and Monitored/Switched PDUs, providing remote monitoring of temperature, humidity and dry contacts.

INTEGRATED POWER & DEVICE MANAGEMENT

Network Manager(s)

PowerAlert NMS

PowerAlert Consoles

Service Processor Access

Web Browser Access

Nagios Monitoring

Command Line Access

PowerMan & NUT

Serial-over-LAN

Remote GUI Access

Use your favorite management tools to manage your devices.

IP Console Server

IP KVM

Critical Network Systems

PDU (Monitored or Switched)

Management LAN

LAN, WAN, Internet

IP KVM

Critical Network Systems

PDU (Monitored or Switched)

Server with PowerAlert Software

UPS without Network Management Card

UPS with Network Management Card

UPS with Network Management Card

▬▬▬	In-Band Access (Primary IP Network)
▪▪▪▪▪	Out-of-Band Access (Management LAN)
▬▬▬	Out-of-Band Access (Dial-Up, Serial, etc.)
▬▬▬	KVM or USB/Serial Access
▬▬▬	Power
■	Managed UPS Systems
■	Managed PDUs
■	IP Console Servers & KVMs
■	IT Devices (Servers, Storage, Switches, etc.)
🌡	Environmental Sensors

Rack with Local IP Console Server

Rack without Local IP Console Server

IP Console Servers allow you to access all your serial- and network-connected devices from any location through secure tunnels, regardless of which management tool or protocol you're using, including Tripp Lite's free PowerAlert NMS network power management software. Out-of-band connections (including dial-up, serial and management LAN) ensure that you can access and troubleshoot managed devices from any location 24x7, even when in-band (primary IP network) connections are unavailable due to network outages, device malfunctions or security restrictions.

SERVICE & SUPPORT

Core Function: Provide Superior Customer Service Before, During and After Project Implementation

When you choose Tripp Lite, our experienced project engineers will help you customize a solution tailored to fit your unique requirements. Through our **Solution Integration Service**, we do a lot of the hard work for you at no additional cost. We assess your situation and provide actionable recommendations to ensure that your solution will provide the availability, manageability, efficiency and affordability you need to meet your goals.

We'll provide a roadmap with detailed project requirements, BOMs, specifications, installation considerations and ongoing support options, including preventative maintenance, extended warranties, on-site services and rapid repair and replacement. We'll also provide clear alternatives that allow you to strike a balance between technical and budgetary considerations.

Our Solution Integration Service will help you:

- **DEFINE** objectives and technical requirements

- **EVALUATE** the installation site, including existing systems and infrastructure

- **EXAMINE** systems to ensure they're correctly powered, protected and configured

- **AUDIT** power capacity requirements and right-size systems before consolidation, virtualization and other projects

- **PLAN** airflow management and cooling for low-, medium- or high-density deployments

- **PREPARE** for future infrastructure growth and evolving IT requirements

- **INTEGRATE** components with existing systems.

A W A R D - W I N N I N G   T R I P P   L I T E   R E L I A B I L I T Y

A Single, Trusted Source

With a long history of providing superior customer service and thousands of vendor-neutral IT infrastructure solutions, Tripp Lite is uniquely positioned to help you maximize the availability, manageability and efficiency of your critical network systems. Whether you're starting from scratch, upgrading or expanding, Tripp Lite delivers practical, proven, cost-effective solutions, with single-source convenience for planning, ordering, implementation, service and support.

Distributed By:

TRIPP·LITE
POWER PROTECTION

Manufacturing Excellence.

ISO9001
CERTIFIED QUALITY SYSTEMS

Tripp Lite has been a trusted manufacturer of innovative solutions for over 85 years!

RoHS COMPLIANT

GREEN SOLUTIONS

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