

Use Tripp Lite's IP Console Servers to manage all your serial- and network-connected equipment from any location through a single, highly secure gateway.



Manage all your serial- and network-connecte **INTRODUCTION** 2-3 n through

a single, highly secure gateway • Manage a single gateway for all connected

work-connected equipment from a single, highly

- Manage all your serial- and parallel ports with PowerAlert NMS

any location through a single, highly secure

network-connected equipment from any location. It's not only secure

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IP Console Servers

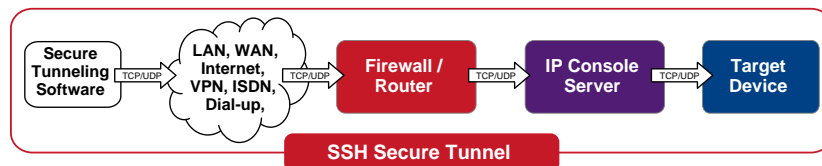


- ▶ 3, 4, 16 or 48 RJ45 Serial Ports
- ▶ In-Band and Out-of-Band Access to Serial- and Network-Connected Devices
- ▶ Secure Tunneling to All Devices
- ▶ 1,000+ Devices per IP Address
- ▶ Up to 48 Concurrent Users
- ▶ Embedded Linux with Shell Access
- ▶ Flash RAM for Logs and Configurations
- ▶ UPS/PDU Monitoring and Control
- ▶ Standard Cisco® Pinouts



Secure Tunneling

IP Console Servers connect remote users to managed devices through secure tunnels. With one click, the included client software opens a secure tunnel from the user to the IP Console Server, then automatically establishes a port-forward connection to the target device and launches the configured graphical or text-based management tool. The secure tunneling software includes unlimited licenses and runs on any computer that supports the Java™ Runtime Environment. Target devices can be located anywhere on the IP network or connected directly to the IP Console Server's serial ports.



Each IP Console Server has an embedded SSH server, allowing remote users to access devices through secure tunnels.

Universal Gateway

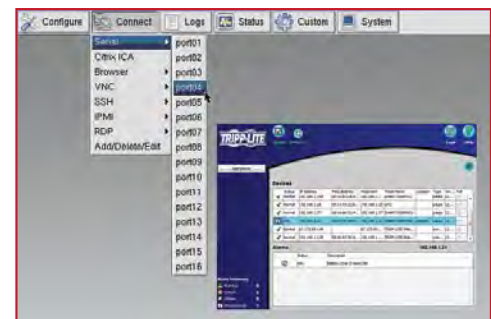
IP Console Servers allow you to access all your equipment from any location through a single, highly secure gateway. They provide in-band and out-of-band remote access to any manageable device, including servers, workstations, routers, switches, firewalls, PBX systems, storage controllers, load balancers, UPS systems, RPC units, PDUs and IP KVM switches, regardless of platform. Multiple connections from multiple locations pass through a single IP address, accommodating up to 48 concurrent users and more than 1,000 devices.

Integrated Tools

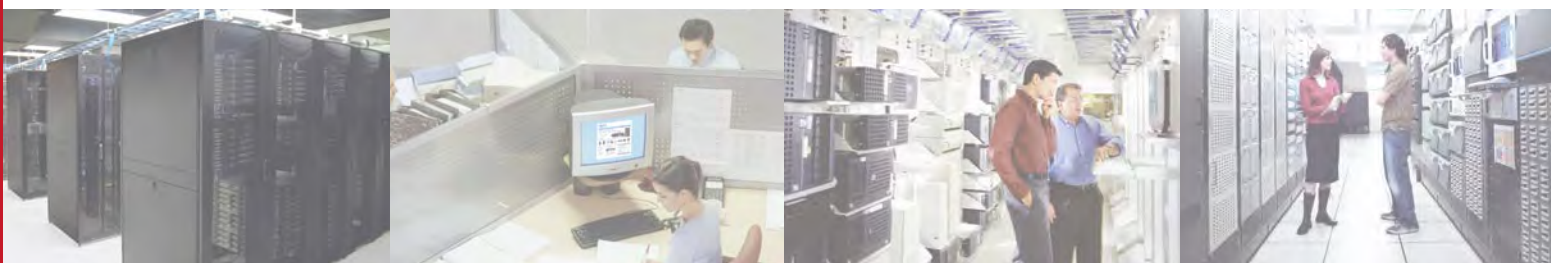
IP Console Servers have a programmable, open-source Linux® core closely integrated with familiar management tools, services and protocols, including:

- Remote GUI access (VNC, RDP, ICA, X11)
- Web browser access (HTTP, HTTPS, SSL)
- Command line access (SSH, telnet)
- Nagios® remote monitoring (NSCA, NRPE)
- Service processor access (IPMI, iLO, ALOM, DRAC, RSA, AMT)
- Serial-over-LAN (BIOS, EMS, ACS, POST)
- Power management (NUT, PowerMan)
- Real-time alerts (SNMP, e-mail, SMS)
- Linux GNU Bash shell access and scripting

Support for all tools is standard, without any hidden fees for advanced features. Model B092-016 also includes an embedded thin client and PowerAlert NMS. (See page 7 for more information.)



Model B092-016 includes an embedded thin client and PowerAlert NMS.



Enterprise Security

Whether you need to comply with existing security procedures or upgrade them, IP Console Servers make your task easier with support for a wide variety of standards, including:

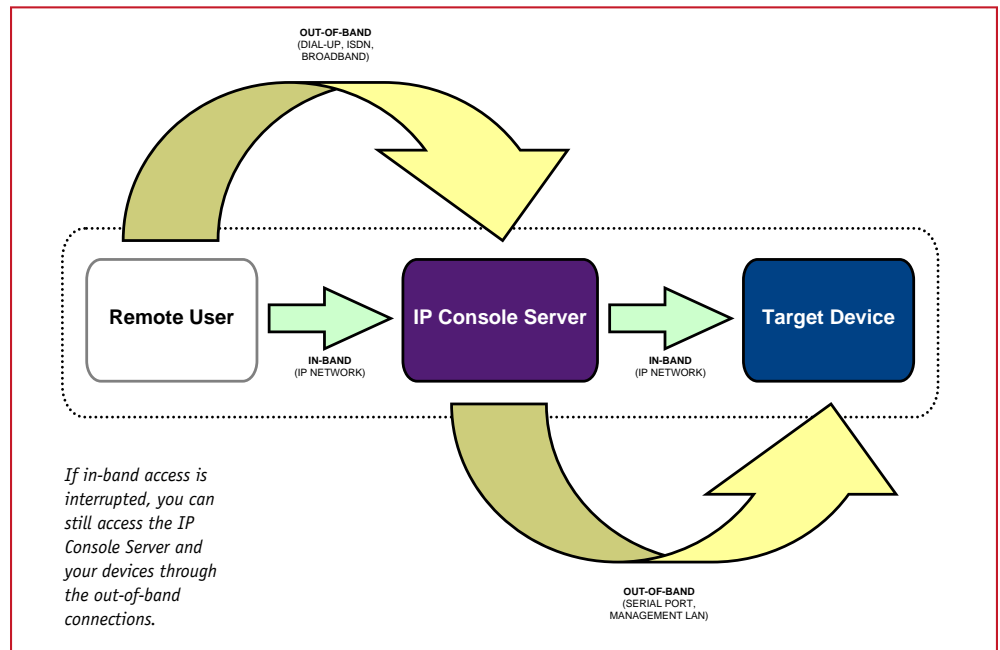
- Flexible authentication (RADIUS, LDAP, TACACS+, Kerberos, public key, onetime password, PPP with PAP, CHAP & dial-back)
- Strong encryption (SSL, 3DES, Blowfish, AES, Arcfour)
- User-, device- and port-specific access rights management
- NAT port redirection, IP packet filtering, trusted networks, IP aliasing and unlimited port forwarding, NTP support
- Online and offline logging (Syslog, NFS, CIFS)
- Compliant audit trails (Sarbanes-Oxley, GLBA, HIPAA)



IP Console Servers support most security standards.

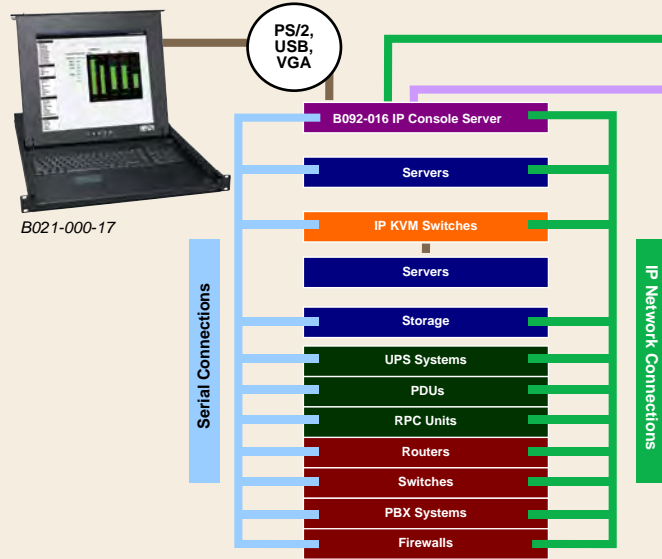
Out-of-Band Access

Out-of-band (alternative channel) access allows you to manage devices remotely when in-band (primary channel) access is unavailable due to a network outage, device malfunction or security concern. If your primary IP network connection is unavailable, you can still access the IP Console Server through its dial-up modem port or built-in modem, and it can provide access to your managed devices through serial port connections. Models B096-016 and B096-048 can also provide broadband out-of-band access through a special management LAN segregated from the production network. (See page 8 for more information.) These out-of-band connections allow you to troubleshoot, configure or reboot devices and restore normal operation without the expense and inconvenience of traveling to a remote site.

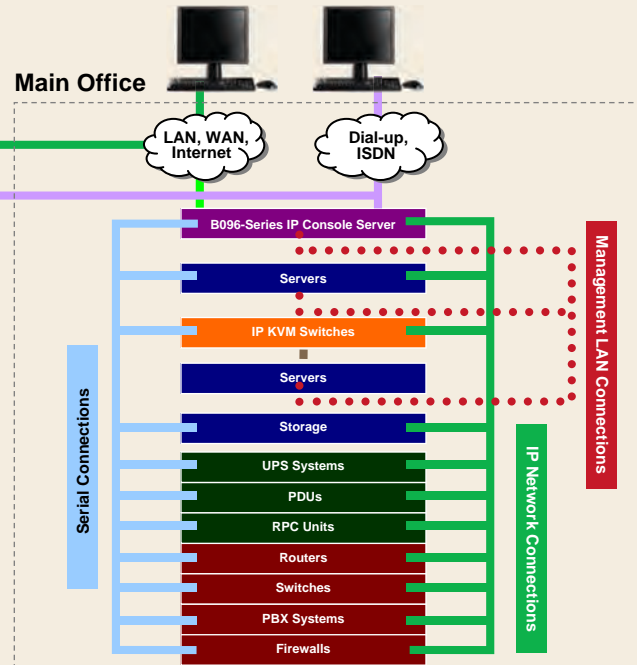


IP Console Server Connections

Branch Office



Main Office



IP Console Servers provide in-band and out-of-band remote access with options for rack-side access (B092-016) and full management LAN support (B096-016 or B096-048).

Service Processor Access



IP Console Servers provide secure service processor access and baseboard management controller (BMC) access using embedded Intelligent Platform Management Interface (IPMI) tools. Service processors allow you to monitor, control, diagnose and recover servers independent of the CPU, BIOS and operating system, even when the server is unresponsive or powered down. The most common use of service processors is to power cycle unresponsive servers, and IP Console Servers provide a Web GUI to control this function. The service processor can also redirect serial output to LAN, reset software, monitor sensors, maintain logs, access media and control built-in service processor KVM interfaces, such as DRAC and RSA.

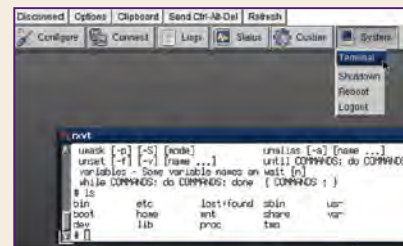
Service processor traffic is typically restricted to a separate management LAN for increased security and availability. Models B096-016 and B096-048 IP Console Server Management Switches include full management LAN support, including dual Ethernet ports and built-in firewall, router and DHCP server. (See page 8 for more information.)

Serial Over LAN

IP Console Servers provide Serial Over LAN (SoL) for secure network access to the serial output of remote servers. SoL allows you to perform any task that doesn't require a GUI, including accessing text consoles, installing/configuring operating systems, running utilities, accessing boot consoles, viewing POST messages, configuring BIOS settings, receiving alerts, querying platform status, reviewing logs and accessing the Emergency Management Services (EMS) or Special Administration Console (SAC) for Windows® server administration. SoL is indispensable for troubleshooting servers remotely, especially when the operating system is unresponsive.

Linux Shell Access

IP Console Servers run an embedded Linux operating system, and experienced users can configure IP Console Server settings and manage attached devices from the command line. The Linux kernel supports GNU Bash shell scripting, allowing you to write custom scripts for manual or automated execution.

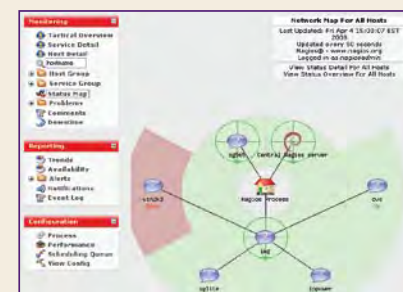


KVM Integration

IP Console Servers consolidate access to your IP Remote Access KVM Switches, improving security and manageability. Model B092-016 also includes KVM console ports that allow you to add serial connectivity and IP access to your legacy KVM infrastructure. (See page 7 for more information.)

Nagios Monitoring

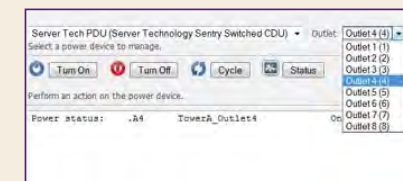
Nagios is a powerful IT infrastructure monitoring system that alerts you to problems with your devices, operating systems, applications, services and protocols. An embedded Nagios NSCA client and NRPE distributed server allow IP Console Servers to perform up to 45 different Nagios checks, reducing the overhead of the central server and making it possible to implement Nagios at remote sites without separate distributed servers. All IP Console Servers support basic Nagios checks, and models B096-016 and B096-048 support 40 additional advanced Nagios checks.



The screenshot shows the Nagios web interface with a table of service status breakdowns. The table has columns for Service, Status, and a percentage value. The services listed include CPU, Memory, and various system services.

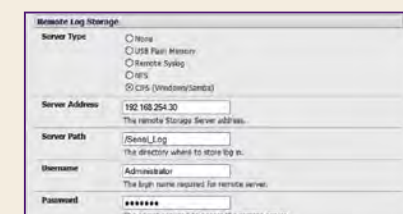
Power Management

Embedded PowerMan and Network UPS Tools (NUT) monitor and control UPS systems, power distribution units (PDUs) and remote power control (RPC) units from multiple vendors, providing alerts, logs and automatic shutdown during power failures. Model B092-016 also includes PowerAlert NMS. (See page 7 for more information.)



Flash Memory

IP Console Servers include up to 4 GB of expandable flash memory with FTP/TFTP/HTTP access. Store backup/alternate device configurations for disaster recovery, testing and fail-safe rollback. Store offline logs to meet internal security standards and provide compliant audit trails for regulatory requirements, such as Sarbanes-Oxley, GLBA and HIPAA.



Logging and Alerts

IP Console Servers monitor serial ports, networks, logins, power conditions and environmental sensors, sending alerts via e-mail, SMS, SNMP or Nagios when specified events and pattern matches occur. Logs can be stored in internal flash memory or written to external servers.



Environmental Monitoring

Optional environmental sensors monitor temperature and humidity, sending alerts based on user-defined warning levels. They can also monitor external dry contacts connected to smoke detectors, water detectors, vibration sensors, door contacts and more. Models B095-004-1E and B095-003-1E-M include embedded temperature sensors.

Green Management

IP Console Servers support your efforts to save energy, control power costs and reduce your facility's carbon footprint:

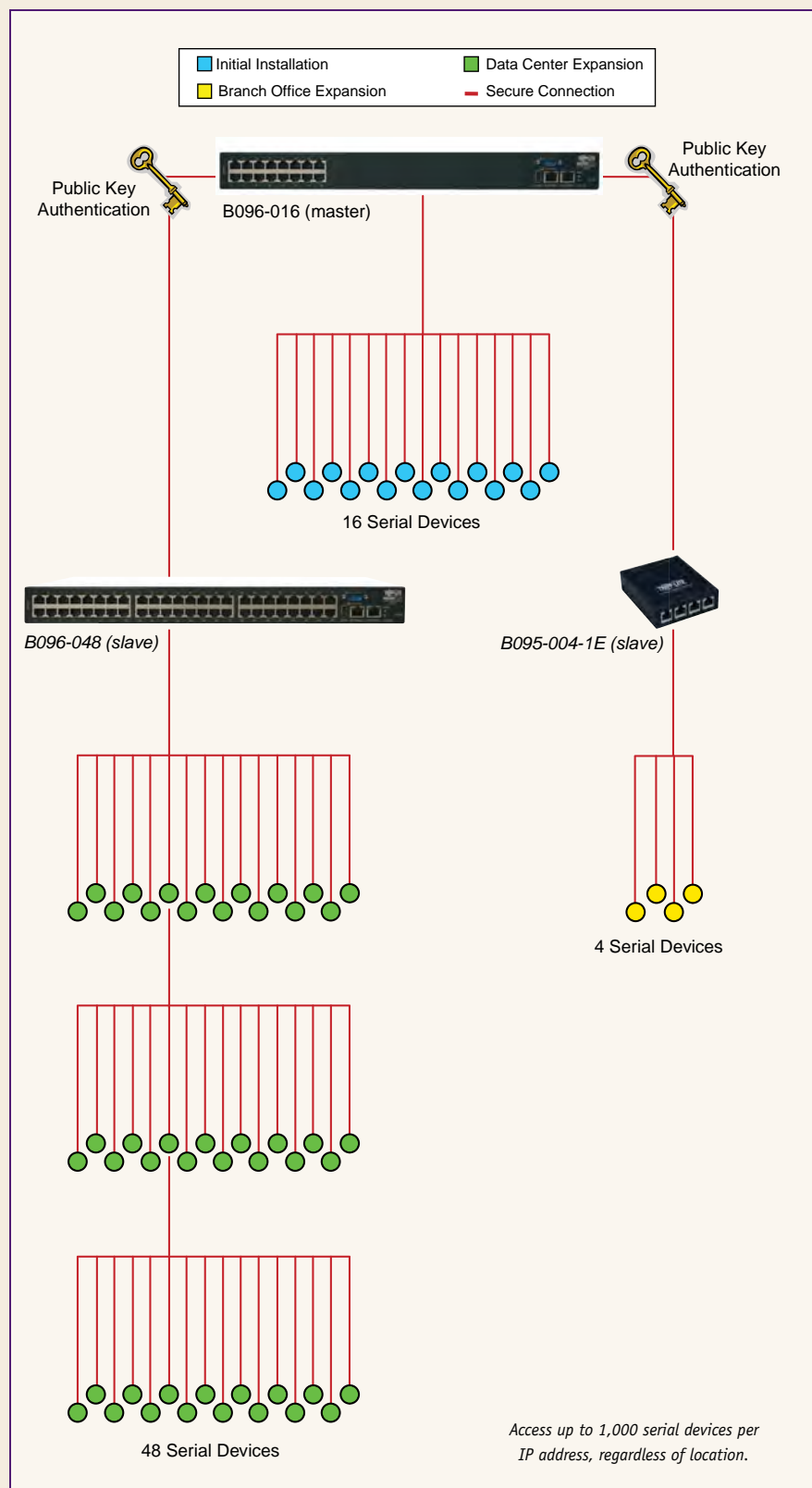
- Consolidating your management platform eliminates redundant workstations and reduces power consumption.
- IP Console Servers are extremely efficient, using no more than 30W per unit.
- Custom power control settings can selectively idle equipment that isn't required 24/7.
- Remote management reduces personnel travel requirements, saving time, money and carbon emissions.

IP Console Servers are also RoHS compliant, which means they adhere to strict standards in the reduction of six hazardous substances: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ether (PBDE).



Serial Port Clustering

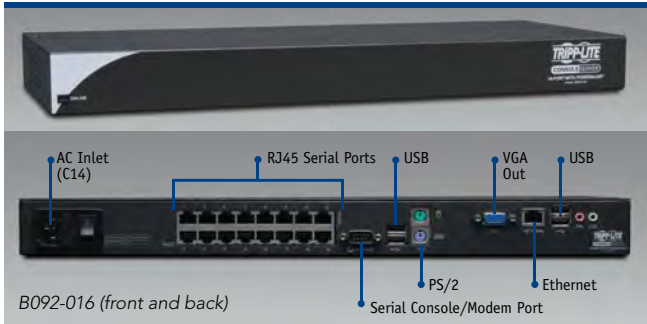
Master/slave clustering consolidates up to 1,000 serial devices under a single IP address, regardless of location. The master unit connects to the slave units over the IP network, and all serial connections for all units are accessed through the master unit's IP address and interface.



IP Console Server Feature Comparison

	Model	B096-048	B096-016	B092-016	B095-004-1E	B095-003-1E-M
Interfaces	RJ45 Serial Ports (RS-232)	48	16	16	4	3
	Ethernet Ports	2	2	1	1	1
	Local Console	Serial	Serial	Serial/KVM	Serial	Serial
	Internal Modem (V.92)	✓	✓			✓
	External Modem	Optional	Optional	Optional	Optional	
	USB Ports	1	1	4	1	1
	Power	Dual AC	Dual AC	Single AC	Single AC	Single AC
Features	Linux with Source Code Access	✓	✓	✓	✓	✓
	Network UPS Tools	✓	✓	✓	✓	✓
	Expandable Flash Memory	2GB USB Flash	2GB USB Flash	4GB Compact Flash	2GB USB Flash	2GB USB Flash
	IPMI	✓	✓	✓	✓	✓
	Embedded Nagios Checks	✓	✓	✓	✓	✓
	RFC2217	✓	✓	✓	✓	✓
	Cisco Pinouts	✓	✓	✓	✓	✓
	SUN Break Safe	✓	✓	✓	✓	✓
	NTP	✓	✓	✓	✓	✓
	NAT Port Redirection	✓	✓	✓	✓	✓
	IP Aliasing	✓	✓	✓	✓	✓
	IP Forwarding	✓	✓	✓	✓	✓
	Form Factor	1U Rack	1U Rack	1U Rack	Compact	Compact
	Clustering	✓	✓	✓	✓	✓
	VirtualPort (Port Redirect)	✓	✓	✓	✓	✓
	Built-In Thin Client & PowerAlert			✓		
	Temperature/Humidity Sensor	Optional	Optional	Optional	Temperature	Temperature
	TAA Compliance	✓	✓	✓	✓	✓
	Local Port Buffering	✓	✓	✓	✓	✓
	Offline Logs	✓	✓	✓	✓	✓
Management	NFS	✓	✓	✓	✓	✓
	Key Logging	✓	✓	✓	✓	✓
	Syslog	✓	✓	✓	✓	✓
	SNMP V3 Read/Write	✓	✓	✓	✓	✓
	SNMP Alerts	✓	✓	✓	✓	✓
	UPS Power Status Alerts	✓	✓	✓	✓	✓
	Serial or Network Host Connect Alerts	✓	✓	✓	✓	✓
	Event String Recognition	✓	✓	✓	✓	✓
	E-mail/SMS Alerts	✓	✓	✓	✓	✓
	User and Group Authentication	✓	✓	✓	✓	✓
Security / Firewall	Local Database Authentication	✓	✓	✓	✓	✓
	RADIUS	✓	✓	✓	✓	✓
	TACACS+	✓	✓	✓	✓	✓
	LDAP	✓	✓	✓	✓	✓
	IP Address Filtering	✓	✓	✓	✓	✓
	System Event Syslog	✓	✓	✓	✓	✓
	SSH	✓	✓	✓	✓	✓
	PPP	✓	✓	✓	✓	✓
	HTTP/HTTPS/SSL	✓	✓	✓	✓	✓
	Port Forwarding	✓	✓	✓	✓	✓
	Management LAN Support	✓	✓			
	Secure Tunneling Software	Included	Included	Included	Included	Included

IP Console Server with PowerAlert NMS

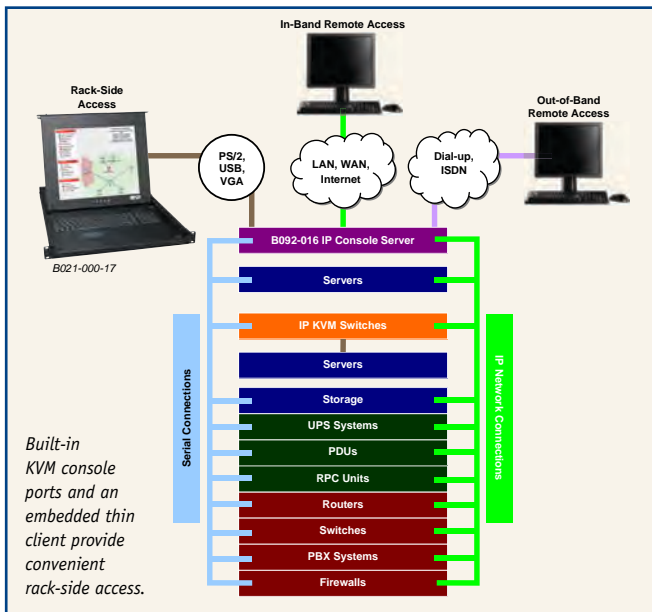


- ▶ 16 RJ45 Serial Ports in 1U
- ▶ Embedded Thin Client with Integrated Management Tools
- ▶ PowerAlert Network Management System
- ▶ KVM Console Ports (PS/2, USB, VGA)

See Pages 2–6 for Additional Features

Rack-Side Access

Built-in console ports connect to a Rack Console or Console KVM for convenient rack-side equipment access. An embedded thin client with integrated tools allows you to manage any device in the rack. The console ports also allow you to add remote access, serial connectivity and other IP Console Server features to your existing KVM infrastructure.

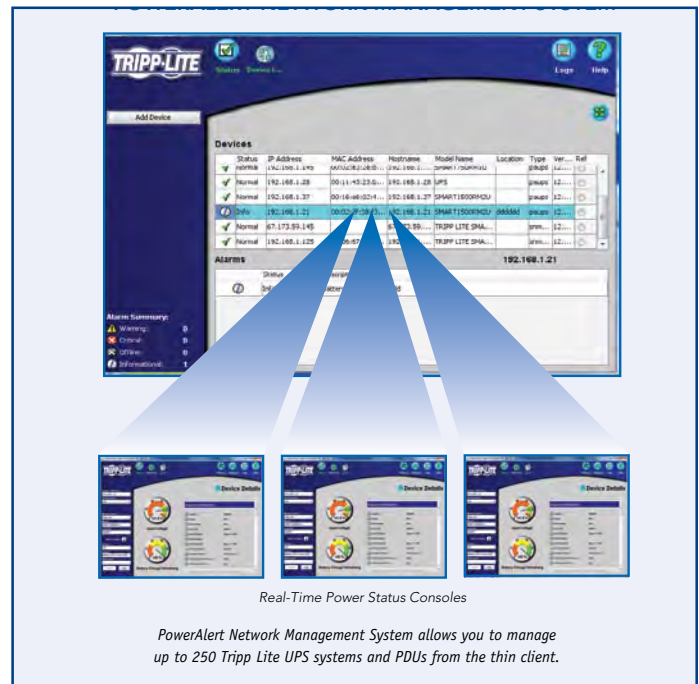


Embedded Thin Client

The thin client includes a Firefox™ Web browser with Java Runtime Environment, a terminal emulator, VNC/RDP/ICA clients, IPMI tools, power management tools and more. You can access the thin client's integrated tools at the rack through the console connections—a separate computer is not required. An embedded VNC server also allows you to access the thin client remotely, or you can selectively bypass the thin client to use management tools resident on your remote workstation.

PowerAlert Network Management System

Embedded PowerAlert Network Management System (NMS) software can manage up to 250 Tripp Lite UPS systems and PDUs, allowing you to monitor and control all these resources from the thin client. PowerAlert NMS automatically discovers each UPS system or PDU connected to the network, as well as devices connected to the IP Console Server's serial ports. All the functions available for each device through the local PowerAlert console are available through PowerAlert NMS, including connected equipment reboots, individual outlet control, load monitoring, custom startup/shutdown sequences and more. Mass configuration tools, alerts and sorting options make it easy to manage the power resources for an entire network.



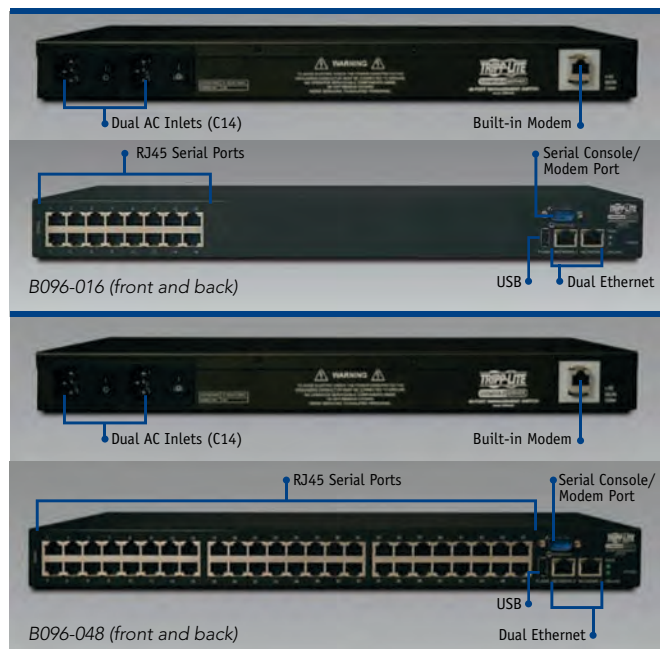
SPECIFICATIONS

Model	RJ45 Serial Ports (RS-232) (1)	Serial Port Clustering	Maximum Devices (2)	Concurrent Users	Power Supplies	Power Requirement	Ethernet Ports	KVM Console Ports	Embedded Thin Client	Embedded PowerAlert NMS	Built-in Modem	Serial Console/Modem Port
IP Console Server with PowerAlert NMS												
B092-016	16	Up to 1,000	1,000+	48	1	< 10W	1	Yes	Yes	Yes	No	Yes

Includes mounting hardware for 1U installation in standard 19-inch racks. Compatible with 100-240 VAC, 50/60 Hz input (C14 inlet) and includes a detachable power cord with a standard North American plug (5-15P). Connect a user-supplied power cord for compatibility in other regions. (1) Sun break-safe. Console servers require B090-series adapters to connect to serial devices that do not have Cisco-compatible RJ45 serial ports. See page 10 for more information. (2) Includes both serial- and network-connected devices. Connecting more than 16 serial devices requires additional units.



IP Console Server Management Switches



- ▶ 16 or 48 RJ45 Serial Ports
- ▶ Dual Ethernet Ports
- ▶ Dual Power Supplies
- ▶ Built-in Modem
- ▶ Built-in Firewall
- ▶ Built-in Router
- ▶ Built-in DHCP Server
- ▶ Heartbeat Monitor with Automatic Failover to Out-of-Band Connections
- ▶ Full Management LAN Support

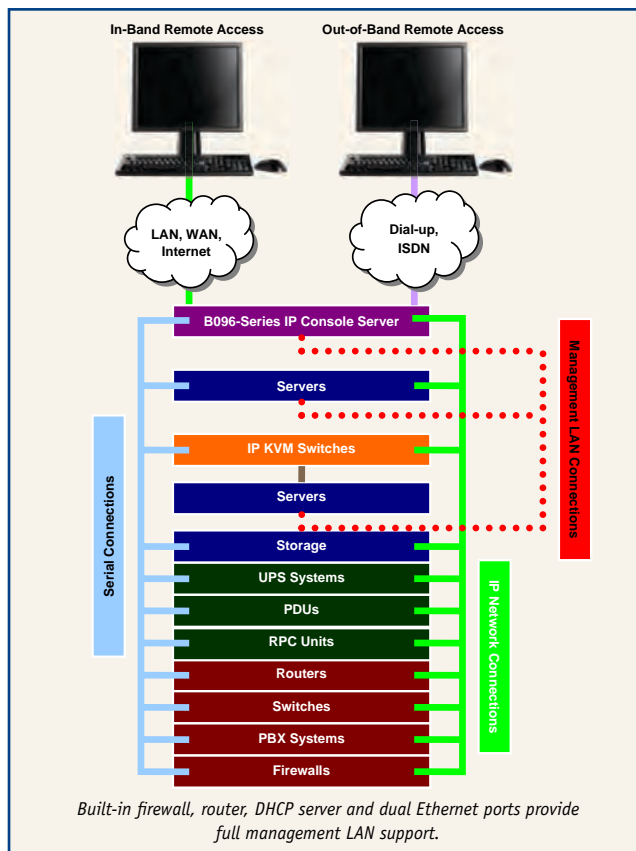
See Pages 2–6 for Additional Features

Mission-Critical Architecture

IP Console Server Management Switches include dual power supplies and dual Ethernet ports for increased fault tolerance and security. The second Ethernet port can function as a broadband out-of-band access port or management LAN port. IP Console Server Management Switches also support automatic failover to out-of-band access through the second Ethernet port, built-in modem or external modem port if in-band access is interrupted.

Full Management LAN Support

Each IP Console Server Management Switch includes a firewall, router and DHCP server to create a management LAN. Segregated from the primary production LAN, the management LAN accommodates sensitive data that requires increased security and availability, such as service processor traffic that controls the vital functions of mission-critical servers. Connect an external LAN switch to the second Ethernet port to attach multiple network hosts to the management LAN. If you have a pre-existing management LAN, you can simply connect the second Ethernet port to it.



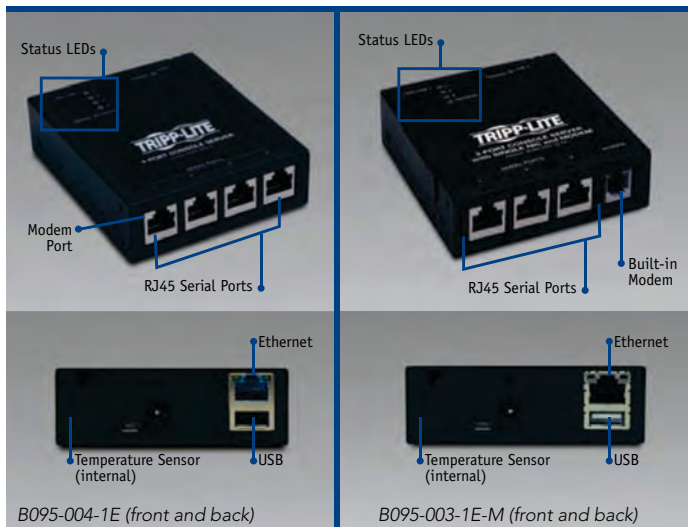
SPECIFICATIONS

Model	RJ45 Serial Ports (RS-232) ⁽¹⁾	Serial Port Clustering	Maximum Devices ⁽²⁾	Concurrent Users	Power Supplies	Power Requirement	Ethernet Ports	Built-in DHCP Server	Built-in Firewall	Built-in Router	Built-in Modem	Serial Console/Modem Port
IP Console Server Management Switches												
B096-016	16	Up to 1,000	1,000+	48	2	< 30W	2	Yes	Yes	Yes	Yes	Yes
B096-048	48	Up to 1,000	1,000+	48	2	< 30W	2	Yes	Yes	Yes	Yes	Yes

Both models include mounting hardware for 1U installation in standard 19-inch racks. Both models are compatible with 100-240 VAC, 50/60 Hz input (C14 inlet) and each power supply includes a detachable power cord with a standard North American plug (5-15P). Connect user-supplied power cords for compatibility in other regions. (1) Sun break-safe. Console servers require B090-series adapters to connect to serial devices that do not have Cisco-compatible RJ45 serial ports. See page 10 for more information. (2) Includes both serial- and network-connected devices. Connecting more than 16 or 48 serial devices requires additional units.



Compact IP Console Servers



- ▶ 3 or 4 RJ45 Serial Ports in a Desktop Housing
- ▶ Embedded Temperature Sensor
- ▶ External/Internal Modem Options
- ▶ Compact Size for Enclosed and Remote Site Applications

See Pages 2–6 for Additional Features

Environment Monitoring

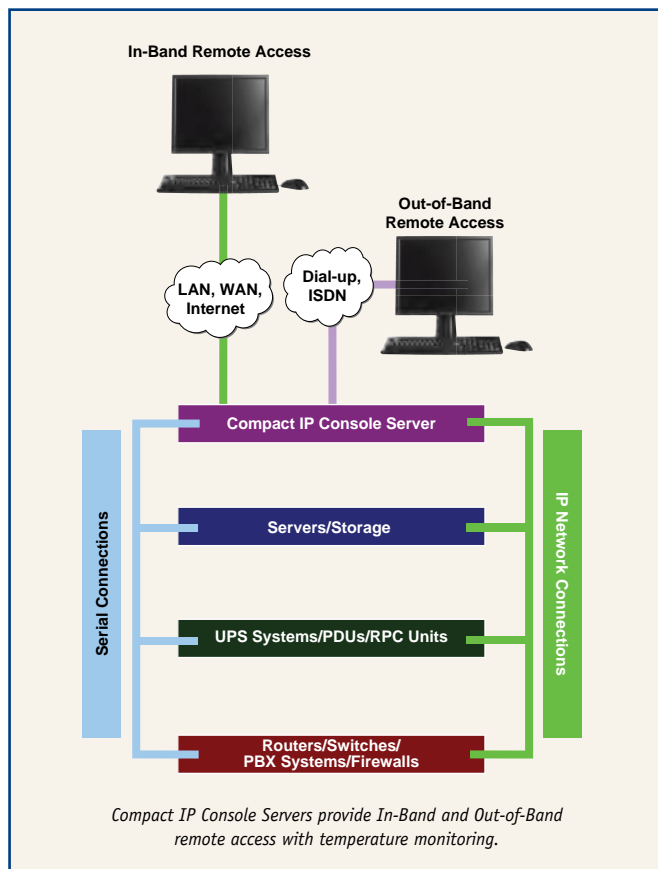
Embedded temperature sensors distinguish Compact IP Console Servers from other Tripp Lite models. Equipped to monitor environmental temperature actively, they allow network managers to receive environmental information from remote locations, enabling them to detect hot spots and take corrective action before equipment failures cause downtime and productivity loss.

Modem Port Options

Out-of-Band connection allows communication between remote sites even during network outages. Model B095-003-1E-M features a built-in modem for this purpose. On model B095-004-1E, port 1 can be converted to operate as an external modem port.

Compact Size for Enclosed and Remote Site Applications

Due to their small form factor, Compact IP Console Servers are an ideal integration solution for VoIP closets and remote site locations where space is at a premium. They provide immediate access to those IT devices which are not centrally located.



SPECIFICATIONS

Model	RJ45 Serial Ports (RS-232) ⁽¹⁾	USB Ports	Serial Port Clustering	Maximum Devices ⁽²⁾	Concurrent Users	Power Supplies	Power Requirement	Ethernet Ports	Built-in Modem	Serial Console/Modem Port
IP Console Server Management Switches										
B095-004-1E	4	1	Up to 1,000	1,000+	48	1	< 20W	1	No	Yes
B095-003-1E-M	3	1	Up to 1,000	1,000+	48	1	< 20W	1	Yes	No

(1) Sun break-safe. Console servers require B090-series adapters to connect to serial devices that do not have Cisco-compatible RJ45 serial ports. See page 10 for more information. (2) Includes both serial- and network-connected devices. Connecting more than 4 or 3 serial devices requires additional units.

Rack Consoles



B021-000-17 Rack Console

Combining a full-size keyboard, touchpad and 17- or 19-inch color LCD monitor, Rack Consoles fold like laptops and slide into a 1U rack drawer for compact storage and easy access. Connecting a Rack Console to the B092-016 IP Console Server gives you convenient and reliable rack-side access to your managed devices. A heavy-duty steel enclosure, high-quality LCD, premium connectors and uncomplicated controls ensure trouble-free operation in demanding high-availability environments.

SPECIFICATIONS

Model	LCD	Cable Kits/Adapters	
		PS/2	USB
B021-000-17	17 in.	Included (6 ft.)	Add B015-000
B021-000-19	19 in.	Included (6 ft.)	Included (6 ft.)

Certifications vary by model. All models include mounting hardware for 1U installation in standard 19-inch racks. Each model is compatible with 100-240 VAC, 50/60 Hz input (C14 inlet) and include a detachable power cord with a standard North American plug (5-15P). Connect a user-supplied power cord for compatibility in other regions. Longer cable kits are available. Contact Tripp Lite for more information.



Serial Adapters



RJ45 Serial Adapter

Devices with Cisco-compatible RJ45 serial ports can connect to the IP Console Server's RJ45 serial ports directly. Use these inexpensive adapters to connect devices with DB9 serial ports.

SPECIFICATIONS

Model	Description
B090-A9F	IP Console Server Straight-Through Adapter – Cisco RJ45 Female to DB9 Female (For compatible Brocade / Foundry Networks switches and routers.)
B090-A9F-X	IP Console Server Crossover Adapter – Cisco RJ45 Female to DB9 Female (For compatible x86 and other servers.)
B090-A9M	IP Console Server Straight-Through Adapter – Cisco RJ45 Female to DB9 Male (For compatible Tripp Lite UPS systems.)



Environmental Sensor

Environmental Sensors plug into the IP Console Server's RJ45 serial ports (up to 33 ft. away) to monitor, log and graph temperature and humidity. They can also monitor the status of external dry contacts, which can be connected to smoke detectors, water detectors, vibration sensors, door contacts and more.

SPECIFICATIONS

Model	Description
Inquire	IP Console Server Environmental Sensor



Online KVM Selector

Go to www.tripplite.com/selectors to access Tripp Lite's dynamic KVM selector. Refine KVM choices by form factor, ports and features, then compare KVM switches to find the perfect model for your application. Selectors for UPS systems, replacement batteries, PDUs, surge suppressors, inverters and cables are also available.

ABOUT TRIPP LITE

Since 1922, Tripp Lite has established a global reputation for quality manufacturing, superior value and excellent service. Tripp Lite makes more than 1,000 products to power, protect and connect electronic equipment, including UPS systems, replacement batteries, power distribution units, rack systems, surge suppressors, KVM switches, cables, laptop accessories, power strips and inverters. Learn more at www.tripplite.com.

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