

## >> New Products Supplement

Everything you need to  
build, manage, optimize,  
and secure your network.



More  
than  
**60** New  
Products

Cabling | Power | Test Equipment | KVM  
Digital Signage | Networking | Security | Data Services

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our updated  
website



## KVM over IP.

High-end multi-platform KVM switching with up to four simultaneous IP users. See page 2.



## Get the protection you need.

Harden your network and cover your assets with ironclad network access control and vulnerability management. See pages 6-7.



## Turn tight spaces into right spaces.

Unique space-saving cables and panels for high-density infrastructures, crowded cabinets and the desktop. See pages 14-18.



## iCOMPEL.

All-in-box Digital Signage solution for content management, scheduling, distribution and system monitoring. Get your high quality content where you want it, the way you want it, with your iCOMPEL. See pages 12-13.



## Innovative video-over-IP technology.

Simplify and save. Use a LAN qualified WAN to extend HD-quality digital signage content. No more need for dedicated cabling. Use your LAN or qualified wan to extend your video. See page 11.



## KVM / ServSwitch™

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## Switch IP Remote Access

# ServSwitch CX UNO QUAD IP (+ Wizard IP Management Software)

- 4 simultaneous IP users via http or REALVNC.
- Additional support for one independent local user.
- Direct connections for up to 16 multi-platform servers.
- Flexible cost saving CATx server connections.
- VGA resolutions up to 1600 x 1200.
- True DDC Emulation.
- Secure access with AES 128-bit encryption and RSA2048 authentication.
- LDAP integration.
- Reset one or more host system power switches via the built-in power control port.
- RS-232 control and synchronisation with other CX switches.
- Ecopulse power saving of unnecessary circuits.
- Configuration option for 16 separate user IDs with unique access privileges.
- Including wizard.net network management software.
- Open future-save architecture with free firmware up-grades.



### Overview

High-performance IP access ServSwitch CX Quad IP allows one independent local user plus four global users (located anywhere that has a network/internet connection) to view and take full control of multiple host computer systems.

Each global (IP) user simply requires a Real VNC client application which is supplied on CD and can also be downloaded from various locations, even from the ServSwitch CX Quad IP unit itself.

Alternatively, the unit can quickly serve a Java applet to a global user, requiring only a standard internet browser to operate. AES128-bit encryption and RSA2048 password security keeps out unauthorized users.

### Easy connections

There are no bulky KVM cables to deal with. Just run CAT5/5e/6 structured cables from the switch's server ports to the Server Access Modules (SAMs) that connect to your servers. You can mix and match different kinds of servers on the same CX switch. Simply choose the appropriate SAM for each server and you're all set. Every connected computer can be linked by up to ten metres of standard CATx cable from the switch. ServSwitch CX Quad IP can directly support up to sixteen computers, however, this total can be increased to a maximum of 256 by adding ServSwitch CX UNO units in cascade to provide a much larger network of controlled computers.

### Simple server selection

Whether you're working at a user station or the local analogue console port in the server room, you can select a server to access and control via onscreen menus or hotkeys. On-screen menus make server selection simple because you can give each server a name that makes sense to you.

### High resolution video

The IP engine supports resolutions up to 1600 x 1200 at 60Hz to ensure there is enough power to allow smooth KVM over IP control. DDC and continuous keyboard and mouse emulation further ensure faultless operation across your unique installation.

### Take charge with your power.

ServSwitch CX QUAD IP has a power control port that enables a remote user to reset one or more power switches in the host system.

### LDAP integration

Authenticate users against your existing LDAP infrastructure. LDAP can be enabled and disabled.

### Ecopulse power saving

The ecopulse feature powers down not required circuits to reduce power requirements. Over the life of the product this will save significant power resources.

### Small form factor

Less than half the width of a standard 19" mountable device, the CX Quad IP supports via cascade up to 32 servers and eight IP sessions in 1U of rack space. Together with a KVM drawer like the ServView, it is an ideal solution for dense server rack environments with IP-based remote control options.

### Central Enterprise Management

Using the included Enterprise Management Software ServSwitch wizard.net, you can manage all your ServSwitch CX IP, CX Uno IP, CX Quad IP, ServSwitch Duo IP and Wizard IP/IP Plus via a common surface. The EMS allows a high performance work-flow combined with efficient ergonomic and state-of-the-art security features. Call our FREE TECH SUPPORT for more details.

### Coming soon: RS232-SAMs

With the up-coming RS232 SAMs the CX Quad IP will offer besides KVM control also full management for your serial consoles. Ready right now—and for the future.

The ServSwitch CX Quad IP can be flash upgraded. Latest Firmware-Upgrades can be downloaded from the Black Box website free of charge. So the switch is fully obsolescence-proof.

Item	Code
ServSwitch Quad IP	KV4161A
ServSwitch CX Server Access Module	
PS/2	KV1400A
USB	KV1401A
Sun	KV1404A
<b>You may also need ...</b>	
19" rack mount kit (1 unit in 1U)	RMK2004
19" rack mount kit (2 units in 1U)	RMK2004-2
Spare power supply	PS649-R3

### What's included

- (1) CX Quad IP,
- (1) power supply,
- (1) IEC320 power cord
- (4) self-adhesive rubber feet
- (1) CS with software and manual

Buyer's Guide	Serv Switch CX Series			
	simult. IP user	simult. CATx user	local user	# CPUs
CX Uno (KV0081A/KV0161A)	0	1	1	8/16
CX (KV0416A-R2/KV0424A-R2)	0	4	1	16/24
CX UNO IP (KV1081A/KV1161A)	1	0	1	8/16
CX IP (KV1416A-R2/KV1424A-R2)	1	2	1	16/24
CX Quad IP (KV4161A)	4	0	1	16

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## Switch IP Remote Access

# ServSwitch Wizard IP DXS (+ Wizard IP Management Software)

### Direct IP access to your server

- Compatible with USB and PS/2 servers.
- Virtual Media support for true remote management.
- Available in single- and dual-access versions.
- Small Form-factor Pluggable (SFP) with rackmount option.
- High video performance and smooth mouse handling via IP.
- Eliminates bottlenecks in mission-critical server administration.
- Nearly unlimited scalability.

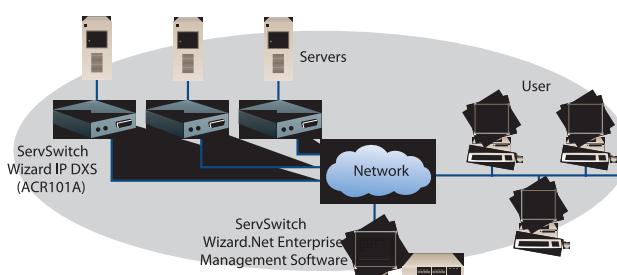


**Non-Blocking  
IP Access to your  
servers**



### Overview

The ServSwitch Wizard™ IP DXS enables you to efficiently manage everything from a single server to a complete cluster of servers. Because it connects directly to your servers, you're guaranteed the best video performance — even on higher resolutions — as well as smooth mouse handling.



Access the ServSwitch Wizard IP DXS via a Web browser or VNC. For larger installations, you can use the new ServSwitch Wizard IP Management Software to manage multiple servers and sites at a central point.

The ServSwitch Wizard IP DXS is fully interface powered, and it provides five-second bootup times, which gives you full KVM access down to the BIOS level of a server. If you need a shorter bootup time, you can use the optional external power supply.

The ServSwitch Wizard IP DXS also has Virtual Media support, which means you can add patches remotely. What's more, the DXS gives direct access to many users simultaneously. Simply add a DXS module for each user you wish to add. This makes the DXS a highly reliable server management system because it means there's no single point of failure, and it eliminates access bottlenecks like you have with other KVM over IP switches.

ServSwitch Wizard IP DXS modules are easy to mount in a 19" chassis (ACU5000A), which holds up to 16 single-access or 8 dual-access units. Special mounting brackets even enable you to mount the modules vertically in 800-mm-wide cabinets.

### Item

### Code

ServSwitch Wizard IP DXS	
Single Access	<b>ACR101A</b>
Dual Access	<b>ACR201A</b>
◆ Includes (1) Set of KVM Cables, (2) PS/2-to-USB Adaptors, (4) Self-Adhesive Rubber Feet, and a Manual.	

### You may also need ...

Optional External Power Supply	<b>PS649-R3</b>
19" Rackmount Chassis for up to 16 Switches	<b>ACU5000A</b>
Power Distribution Module for Rackmount Chassis	<b>PS5000-R2</b>

## TECH SPECS

**Connectors** — Both: (1) RJ-45 Ethernet, (1) 2.5 mm DC Power;  
 ACR101A: (1) HD15 F (Video) (2) PS/2 Keyboard/Monitor/Mouse;  
 ACR201A: (2-) HD15 F (Video) (4) PS/2 Keyboard/Monitor/Mouse;

**Configuration** — Over the server's USB port using a setup program or via Web browser

**Indicators** — LEDs: 10/100, Link, Data, Power, Keyboard/Mouse VNC

**Power** — Interface powered (5 VDC, 1A) or optional power supply (PS649-R2)

**Size** — ACR101A: 2.5H x 7.5W x 17.0D cm;  
 ACR201A: 5.0H x 7.5W x 17.0D cm

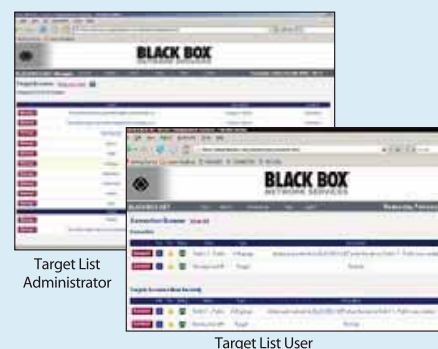
**Weight** — 0.5 kg

## ServSwitch Wizard IP Management Software

# The enterprise management software for central management and authentication

- Has central authentication to ensure system access security.
- Integrates the ServSwitch Wizard IP, ServSwitch Wizard IP Plus, ServSwitch™ CX IP and ServSwitch Wizard IP DXS.
- Provides a central log of system events and activity.
- Runs on Linux® and Windows® operating systems.

The ServSwitch Wizard IP Management Software connects the whole Wizard IP product family by providing central management functionality and security-based access to clusters of servers. You can now manage multiple sites or multiple servers more efficiently and economically than ever before — all while using high-performance ServSwitch Wizard IP products. Administration and access is done via Web browser.



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## Desktop

# ServSwitch Wizard DVI DL USB Multi Video (Dual Link=2560x1600)

- Share high-end video and four USB peripherals between four CPUs.
- Options for single-, dual, triple and quad video heads.
- Best dual link DVI video quality for resolution of 2560 x 1600 at 60Hz and above.
- Supports dual link DVI-D, single link DVI-D and VGA.
- HDCP support for protected contents.
- Two ports with true USB emulation for advanced keyboard/mouse.
- Two independently switchable transparent USB 2.0 ports.
- Stereo audio support.
- Convenient switching via OnScreenDisplay, hotkey, mouse or RS232.
- Can be switched synchronously with other ServSwitch Wizards via the option's port.
- 19" rack mount kits available.



### Overview

Professional KVM Switching for premium Video The new ServSwitch Wizard DVI DL USB Multivideo supports the full DVI dual-link specification, with resolutions of 2560 x 1600 at 60 Hz to be switched at best quality. The switch also works with all singlelink DVI resolutions as well. And the DVI-I video circuitry enables even analogue VGA signals to be switched!

### Multi Head Video

Increasingly, user stations are equipped with two and more screens to move and extend program windows seamlessly across multiple screens. Better monitoring and productivity are the results. These KVM switches are ideal for such applications as they come along with support for single, double, triple and even quad video graphic outputs.

### HDCP and enhanced DDC

As you would expect from a professional grade KVM Switch, the Wizard DVI DL Multivideo reads the DDC EDID information from the attached screens and mirrors it to all attached PCs for optimum image quality. In addition the KVM Switches feature full HDCP support to deliver also protected contents.

True USB Emulation for Keyboard and Mouse

The Wizard DVI DL allow a 100% support for all low speed HID devices to be fully recognized and supported by their drivers. By that more reliability, quicker switching and access to attached workstations is provided.

### USB 2.0 Transparency

A clever architecture combines transparent USB 2.0 protocol with emulated keyboard and mouse control. To support this, there are two dedicated K/M Ports on the switch's console port plus two USB 2.0 transparent ports for any USB 2.0 peripherals, that can be switched independently from each other.

### Stereo Audio support

Additionally, the Wizard DVI DL supports stereo-audio speakers. The audio ports can be switched independently from the video signal, enabling maximum flexibility.

### Switching

The Wizard DVI DL USB can easily be switched via simple, selectable hotkey commands from the keyboard or via intuitive combined mouse clicks, besides switching via the front panel or OSD. A great advantage is the individual switching possibility of the different interfaces: KVM, Audio, USB 2.0 on Port A and USB 2.0 on port B.

### Intelligent Option's Port

The Wizard DVI DL can be upgraded for future improvements via its intelligent option's port. It can also be switched via simple RS-232/V.24 protocol or even dry contact. When linked with another ServSwitch Wizard Desktop Switch, the option's port can be used for synchronous switching of multiple video heads.

Item	Code
4-Port ServSwitch Wizard DVI DL (USB)	
Single Video	KV2004A
Dual Video	KV2204A
Triple Video	KV2304A
Quad Video	KV2404A
19" rack mount kit for KV2004A	RMK4007
Spare power supply	PS650

### What's included

- (1) Wizard DVI DL USB,
- (1) Power supply,
- (1) IEC320 power cordn
- (1) User manual on CD

### Ideal for

- » Broadcasting (graphic design, post production),
- » Conference rooms with external control i.e. Creston
- » Traffic control
- » CAD
- » Medical analyses X-Rax, CT, etc.
- » Gaming supporting most gamer type peripherals

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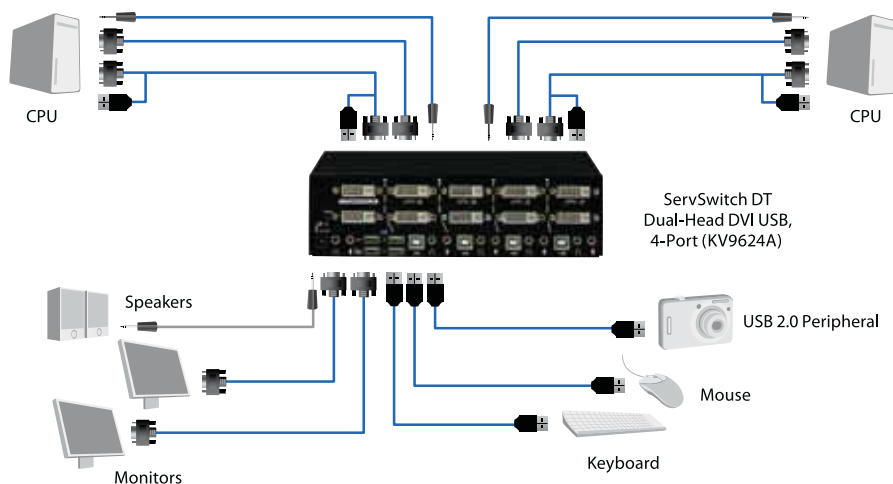
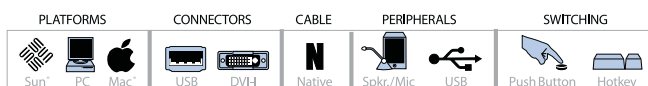
## Desktop

# ServSwitch DT DVI USB Multi Video (Single link=1920x1200)

These two- and four-port KVM switches provide the ultimate in high resolution video and USB switching



- Access, control, boot, and reboot multiple USB-enabled multimedia computers using one USB keyboard, 2 monitors, and mouse.
- Compatible with dual-head DVI flat screens.
- Supports digital resolutions up to 1920 x 1200 or an impressive 3840 x 1200 running extended desktop.
- USB 2.0 device hub ports for high-speed USB device sharing. No configuration necessary—plug-and-play.
- Supports DDC2B emulation.
- Choose from autoscan intervals of 3, 8, 15, and 30 seconds.
- Hotkey or push-button switching.
- Audio and microphone switching is independent of the KVM switch.
- Flash upgradable.



### Overview

Along with USB device sharing, this versatile KVM switch supports DVI flat-screen connections and enables you to control two or four multimedia computers.

The ServSwitch DT Dual-Head DVI USB 2-Port or 4-Port KVM Switch supports digital resolutions up to 1920 x 1200 for sharp video plus stereo audio. Or, running extended desktop, get resolutions up to 3840 x 1200. The switch is also compatible with DVI flat screens.

In addition to multimedia capabilities, the Dual-Head DVI USB KVM Switch features two USB ports. Its device hub port supports USB 1.1 or 2.0 high-speed device sharing. The switch is truly plug-and-play with DDC2B emulation.

### What's included

- (1) 2- or 4-Port ServSwitch DT Series USB/DVI/Audio KVM Switch
- (1) Universal power supply, output: 9–12 VDC, 1.5 A
- (1) User's manual

### Item Code

ServSwitch DT Dual-Head DVI USB	
2-Port	KV9622A
4-Port	KV9624A

### For your CPU keyboard mouse and primary video connections, order...

ServSwitch DT Series CPU Cables	
1.8-m	EHN900024U-0006
3.0-m	EHN900024U-0010
4.5-m	EHN900024U-0015

### ...then for secondary video, order...

DVI-D Male to DVI-D Male Cables	
1.8-m	EVNDVI02-0006
3.0-m	EVNDVI02-0010
4.5-m	EVNDVI02-0015

### For audio, order...

Audio Cables	
1.5-m	EJ110-0005

### Technically speaking

#### Digital Visual Interface (DVI)

The Digital Visual Interface (DVI) video standard is based on transition-minimized differential signaling (TMDS). In a typical single-line digital signal, voltage is raised to a high level and decreased to a low level to create transitions that convey data. To minimize the number of transitions needed to transfer data, TMDS uses a pair of signal wires. When one wire goes to a high-voltage state, the other goes to a low-voltage state.

This balance increases the data-transfer rate and improves accuracy. Although there are four types of DVI connectors, only DVI-D and DVI-I are commonly used for monitors. DVI-D is a digital-only connector. DVI-I supports both digital and analog RGB connections.

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## Network Security and access control

# Veri-NAC Network Vulnerability & Access Control

**Maximum protection that's cost-effective and easy to use.**

- One-box vulnerability management and network access control (NAC).
- Agentless and non-inline design provides rock-solid security in an easy-to-deploy appliance.
- No infrastructure upgrade needed — works with existing switches.
- Works with both wired and wireless devices.
- Protects your network from vulnerabilities that firewalls can't defend against.

### Don't be the next security breach headline!

You have a firewall to stop hackers, viruses, and malware at the network's edge. A firewall is vital to safe network operation, but, because it operates at the edge of your network, it can only protect you from threats coming from outside your network.

NAC devices, on the other hand, protect your network from threats originating on the inside. Unauthorized devices connected to your network are major threats to any organization. This is what a NAC appliance is designed to prevent, whether the vulnerability is a LAN port in a lobby or conference room, or a wireless access point.

Veri-NAC™ is a family of Network Access Control (NAC) appliances from Black Box that ensures that only authorized devices and users gain access to your network. It also screens computers connected to your network, returning mobile users, wireless devices, and new devices for vulnerabilities. If Veri-NAC detects an untrusted asset, it responds instantly to shut off network access for that device—protecting your network while keeping your trusted devices securely on-line.

### Designed for simplicity.

Veri-NAC is designed to provide maximum security in a simple, agentless design that's also very affordable. No need for extensive training or dedicated personnel, no need to install software agents, no need to upgrade switches—Veri-NAC is easy to integrate into your network.

### Only the trusted.

Veri-NAC only lets computers and devices onto your network if they comply with standards that you specify.

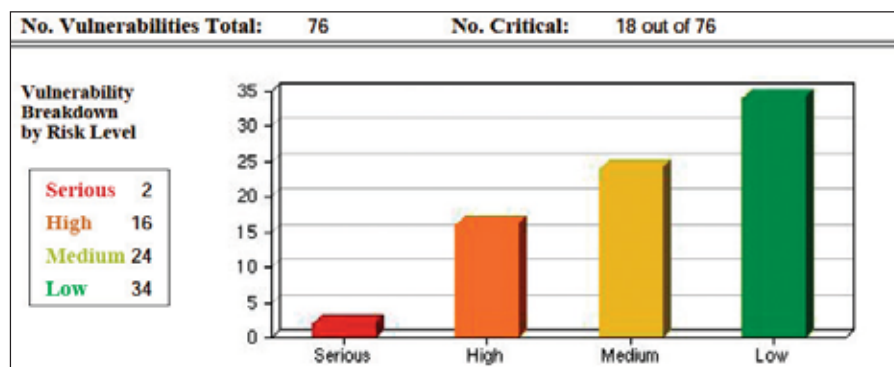
Every device has a unique, factory-installed MAC address. Veri-NAC assembles a profile of each device, including the MAC address, and only lets known, trusted devices on the network. It can even detect and stop a machine trying to get in under a spoofed MAC address.

Veri-NAC also checks to make sure each connected machine complies with your standards, including up-to-date operating system, patch management, and hardened configurations.

### Protects continuously.

Veri-NAC continuously scans your network, looking for unauthorized devices attempting to obtain an IP address. In addition, you can schedule the Veri-NAC to scan attached devices to search for security vulnerabilities.

### Interpreting Vulnerability



### Managing Assets: Trusted or Untrusted

Trust / Untrust List				Refresh Page	Legends Explained
				Add to Trusted Assets List	Remove from Trusted Assets List
IP Address	Trusted	Host Name	Operating System	Remove Selected IPs	
Subnet 192.168.1				Remove All	
192.168.1.1	N	192.168.1.1	Other, Mac: 00:14:6C:15:0E:AA		
192.168.1.2	Y	MALW-C13C24A01	Microsoft Windows 2003 Server or XP SP2, Mac: 00:30:ED:1E:B8:D8 (Belkin Corporation)		
192.168.1.3	Y	192.168.1.3	Unknown, Mac: 00:25:B3:AF:CF:D3		
192.168.1.4	Y	192.168.1.4	Unknown, Mac: 00:04:76:DE:3E:D0 (3 Com)		
192.168.1.5	Y	192.168.1.5	Unknown, Mac: 00:0B:7D:1E:6E:3F		
192.168.1.220	Y	192.168.1.220	Linux 2.4.0 - 2.5.20, Mac: unknown		
Subnet 192.168.20				Remove All	
192.168.20.220	N	192.168.20.220	Linux 2.4.0 - 2.5.20, Mac: 00:30:ED:09:DC:9F		
Subnet 192.168.30				Remove All	

### No agents.

Unlike many other NAC systems, Veri-NAC doesn't require that you install software agents on connected machines. This both simplifies installation and improves security because agents are vulnerable to hacking.

### Cost effective.

Not only is the up-front cost for Veri-NAC often lower than other solutions, installation and ongoing maintenance costs are lower, too.

Veri-NAC works with your existing network and legacy infrastructure, so there's no need for expensive upgrades. Plus, Veri-NAC requires no formal training and minimal installation time, so even organizations with a limited IT staff can easily add it to their network security plan without straining resources.

### Sized for every network.

Veri-NAC comes in models for every application from small-office networks to large enterprise networks containing thousands of devices. Models 5400/5600/5800 include the Command Center for secure central management of multiple Veri-NAC appliances so you can protect your entire organization from edge to core. These models also include ISO 27001 Policy Tools to simplify your organization's compliance efforts.





## Network Security and access control

# Veri-NAC Network Vulnerability & Access Control

### SC Magazine Product Rating

Features	★★★★★
Ease of Use	★★★★★
Performance	★★★★★
Documentation	★★★★★
Support	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★★

**For:** Full dynamic access control and auditing of network devices.

**Against:** None that we found.

**Verdict:** A solid suite of hardcore NAC products with a clear focus on keeping unauthorized systems and users off the network. We give Veri-NAC our Recommended this month.



Buyer's Guide	Veri-NAC				
	5200	5250	5400	5600	5800
FORM FACTOR	1U High, 11.5" Deep	1U High, 11.5" Deep	1U High, 14" Deep	1U High, 14" Deep	1U High, 14" Deep
AGENTLESS NAC	•	•	•	•	•
ENDPOINT VULNERABILITY AUDITING	—	•	•	•	•
MAXIMUM SIMULTANEOUS DEVICE AUDITS	—	10	50	100	250
AUTO DEVICE DISCOVERY	•	•	•	•	•
INVENTORY ALERTING	•	•	•	•	•
MAC SPOOF DETECTION	•	•	•	•	•
MAC AND IP SPOOF BLOCK	•	•	•	•	•
PROTECTED NODES (DIRECTLY CONNECTED)	Up to 250	Up to 500	Up to 1000	Up to 1500	Up to 2000
TOTAL PROTECTED AND MANAGED NODES (VIA MULTIPLE VERI-NAC APPLIANCES)	Up to 250	Up to 500	Up to 6000	Up to 50,000	Up to 100,000
SUBNETS (DIRECTLY CONNECTED)	2	2	4	6	8
MULTI-VLAN PROTECTION	10 VLANs	20 VLANs	40 VLANs	60 VLANs	80 VLANs
COMMAND CENTER SOFTWARE	—	—	•	•	•
NUMBER OF OTHER VERI-NAC APPLIANCES THAT CAN BE MANAGED FROM COMMAND CENTER	—	—	10	100	Unlimited
MANAGE REMOTELY FROM COMMAND CENTER	•	•	•	•	•
MULTIPLE USER LOGINS	•	•	•	•	•
WORKFLOW ENGINE	—	•	•	•	•
ISO 27001 POLICY TOOLS	—	—	•	•	•
CODE	LVN5200A	LVN5250A	LVN5400A	LVN5600A	LVN5800A

## PoE

# PoE Mid-Span Injectors

### Power and data on one cable—no need to search for a power outlet.

- Provide a minimum of 15.4 watts to every 802.3af port and 25 W to every 802.3at port simultaneously.
- All except the LPJ000A-F model support Gigabit Ethernet data speeds. ([LPJ000A-F] supports 10-/100-Mbps midspan data connections).
- SKUs ending in "M" are SNMP manageable; for details, see chart below.
- UNH-IOL test lab certified for interoperability with other PoE equipment.
- An economical wiring solution. You can carry both data and power over Ethernet cables run to 802.3af/at devices.
- Use to power various VoIP phones, security system cameras, wireless network access points, Bluetooth® access points, and other 802.3af- or 802.3at-compatible equipment.



- Avoid the cost and hassle of installing AC power at remote cameras or door scanners.
- Diagnostic LEDs indicate detection of power and faults.
- Offer overload and voltage control. Provide fully compliant detection and disconnect.

- Protection includes overvoltage/overcurrent overload and short circuit protection on the power output.
- Also have a USB port for diagnostics and manual port control via a Windows® GUI.

Buyer's Guide	PoE Injector Chart				
PoE Type	Ports	DC Output Voltage (Max.)	Available PoE Power	Code	Product Name
802.3AF	1	48 VDC 0.32 A	15.4 W	LPJ000A-F	802.3af PoE 10-/100-Mbps Injector
	1	56 VDC 0.35 A	19.6 W	LPJ001A-F	802.3af PoE Gigabit Injector, 1-Port
	8	48 VDC 0.32 A	125 W	LPJ008A-F	802.3af PoE Gigabit Injector, 8-Port
	16	48 VDC 0.32 A	250 W	LPJ016A-F	802.3af PoE Gigabit Injector, 16-Port
	24	48 VDC 0.32 A	370 W	LPJ024A-F	802.3af PoE Gigabit Injector, 24-Port
	24	48 VDC 0.32 A	370 W	LPJ024A-FM	802.3af PoE Gigabit Managed Injector, 24-Port
802.3AT	1	56 VDC 0.60 A	33.6 W	LPJ001A-T	802.3at PoE Gigabit Injector, 1-Port
	8	56 VDC 0.60 A	269 W	LPJ008A-T	802.3at PoE Gigabit Injector, 8-Port
	8	56 VDC 0.60 A	269 W	LPJ008A-TM	802.3at PoE Gigabit Managed Injector, 8-Port
	16	56 VDC 0.60 A	538 W	LPJ016A-T	802.3at PoE Gigabit Injector, 16-Port
	16	56 VDC 0.60 A	538 W	LPJ016A-TM	802.3at PoE Gigabit Managed Injector, 16-Port

## PoE Repeater

# Break through the Ethernet 100-meter limit—boost Ethernet plus PoE power to 300 meters.

- Plug-and-play ease of use.
- Autosensing, autonegotiating 10-/100-Mbps Ethernet ports.
- Auto MDI/MDI-X means you never need a crossover cable.

The 802.3af-compliant PoE Repeater enables you to extend PoE connections beyond the 100-meter limit to access faraway PoE devices.

The repeater passes on both data and power, so it needs no separate power supply—add one repeater for an additional 100 meters or daisychain two repeaters to extend the reach of your PoE an additional 200 meters on top of the standard PoE distance of 100 meters for a total reach of 300

meters. Because each repeater uses about 2.5 watts, we do not recommend daisy chaining beyond two units. Two repeaters daisy chained support a PoE PD end device up to 6.49 watts.

Installation is easy—just plug in the Ethernet cable and go.



Item	Code
PoE Repeater	LPR110

Find out more  
about our latest prices  
at [www.blackbox.nl](http://www.blackbox.nl)



## Free Space Optics

# LaserLink II MoveMe

### 100/155Mbps over 2000 m. – point-to-point solution with auto tracking feature.

- High data throughput up to 100Mbps between two buildings
- Distance up to 2000m.
- Auto Tracking via Multi Beam Array technology.

The LaserLink II MoveMe offers improved performance and delivering connectivity at long distances up to 2.000m with a data throughput up to 155Mbps.

The device incorporates as many as four redundant beams and four receivers with auto tracking for high available links. Additional features like beam shaping, Multi Beam Array Tracking and Auto Power Control adjust atmospheric changes and building movement to ensure a constant high performance level.

Thus LaserLink II MoveMe becomes the ideal solution for building-to-building connections up to 2km even in difficult environments.



Item	Code
LaserLink II MoveMe Power 100-240VAC Interface: Multimode 100BaseFX	LWU2-2000-FO

## Free Space Optics

# LaserLink II PoE 1000

### 100Mbps plus PoE over 1000 m – SNMP/web managed point-to-point FSO connection.

- Longer-range Enterprise LAN connectivity.
- Distances up to 1.000 meters.
- Full-duplex Fast Ethernet net throughput of 100Mbps.

LaserLink II PoE 1000 provides a building-to-building 10/100Mbps LAN connections over distances up to 1.000 meters. The system can be monitored via a standard Internet based web browser. In addition the system features a full SNMP based network monitoring, management and alarm reporting.

LaserLink II PoE 1000 features copper interfaces that easily integrate into existing LANs. It's a simple plug and play installation with CATx cable. With Power over Ethernet the installation is further simplified without the need for costly electrical wiring runs or new outlets.

Offering full-duplex 100Mbps speeds this solutions is considerably faster than unlicensed RF alternatives and further on 100% immune to from radio frequency interference and spectrum saturation issues.



Item	Code
LaserLink II PoE 1000 Power 802.3af Interface CATx	LWU2-1000-POE

## Free Space Optics

# LaserLink II PoE 500

### 100Mbps plus PoE over 500 meter – SNMP/web managed point-to-point FSO connection.

- Shorter-range Enterprise LAN connectivity.
- Distances up to 500 meters.
- Full-duplex Fast Ethernet net throughput of 100Mbps.

LaserLink II PoE 500 provides a building-to-building 10/100Mbps LAN connections over distances up to 500 meters. The system can be monitored via a standard Internet based web browser. In addition the system features a full SNMP based network monitoring, management and alarm reporting.

LaserLink II PoE 500 features copper interfaces that easily integrate into existing LANs. It's a simple plug and play installation with CATx cable. With Power over Ethernet the installation is further simplified without the need for costly electrical wiring runs or new outlets.

Offering full-duplex 100Mbps speeds this solutions is considerably faster than unlicensed RF alternatives and further on 100% immune to from radio frequency interference and spectrum saturation issues.



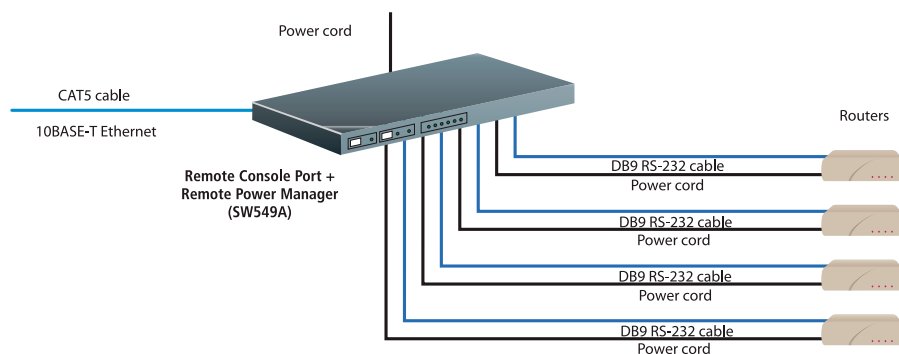
Item	Code
LaserLink II PoE 500 Power 802.3af Interface CATx	LWU2-0500-POE

## Remote Management

# Remote Console Port + Remote Power Manager

### Remotely manage six RS-232 ports and four power connections.

- Supports local or remote console port switching for up to six network devices.
- Includes remote power management and control for up to four network devices.
- Reboot servers, routers, Web cams, firewalls, and other remote devices.
- Access by using a Web browser over any TCP/IP network—even the Internet.
- Or, bypass the network with dialup access to remote consoles or direct serial connection to local consoles.
- In-band or out-of-band network management.



Item	Code
Remote Console Port + Remote Power Manager 208–240 VAC	<b>SW549AE-R2</b>

#### What's included

- (1) Remote Console Port + Remote Power Manager
- (1) 100–120-VAC power cord (for SW549A) or 208–240-VAC power cord (for SW549AE)
- (1) Rackmounting brackets
- (1) User manual

### Overview

The Remote Console Port + Remote Power Manager is a six-port console server that also incorporates a power manager so you can reset power to as many as four network devices. It operates in-band over any TCP/IP network such as your internal Ethernet network or the Internet, as well as out-of-band via the integral 33.6-kbps modem or a direct serial connection.

#### A full-featured console server.

The manager provides secure access to as many as six console ports so you can access remote devices for management functions such as changing configuration, connecting users to restricted ports, and collecting data. There are two separate user interfaces: the Web browser interface and the text interface. The Web browser interface enables you to contact the manager over any TCP/IP network, using a standard, JavaScript® enabled Web browser. You can even access it across the Internet and manage your network devices from anywhere in the world!

The text interface consists of a series of ASCII text menus that you can access via a Telnet™ login over a TCP/IP network, a modem, or a direct serial connection from one of the manager's serial ports to a PC. Any of the manager's serial ports can be used as an inbound connection to access any other port. The manager supports up to four simultaneous

Telnet sessions. You can access each of the six RS-232 ports individually by number, name, or group. Configure ports using simple, menu driven commands to set passwords, data rates, parity, flow control, and many other operating parameters. Configuration and Status screens display port parameters and connection activity for one or all ports.

#### A power manager, too.

Never again make that late-night trip just to flick a power switch off and on. The Remote Console Port + Remote Power Manager enables you to reboot equipment remotely across the Internet. Access the integral power manager the same way you access a console server—across a TCP/IP network, by modem, or by direct serial connection. You can assign each of the four AC power outlets plug names and view plug status via easy-to-use commands. Outlets can be individually switched on, off, or booted using plug numbers or names. For power sequencing, you can assign each plug a power-up time to wait before turning on the next plug.

#### Top-flight security.

The manager supports supervisor-level passwords that allow access to all configuration and switching functions, and non-supervisor passwords which restrict access to assigned plugs and ports and can't

be used to change unit configuration. You can define passwords for up to 32 users. Each menu-defined password can be assigned an individual user name for easy reference and an optional dialback number, which instructs the unit to call the user at a predefined number before allowing access.

#### Buffer mode.

The manager stores the last 32K of data through each port in its flash memory. Use this data for management—for instance, to see alarms sent while you're not connected. You can view, save, or erase buffered data at any time.

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about our latest prices  
at [www.blackbox.nl](http://www.blackbox.nl)





## IP Extender

# MediaCento™ IP AV-over-IP Distribution System

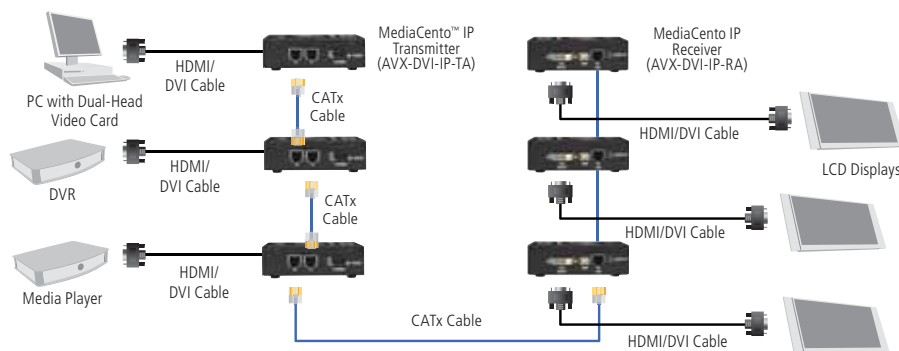
### Simplify and save. Use an existing LAN infrastructure or a qualified WAN to extend HD digital signage content!

- Innovative video-over-IP technology for setting up a highly cost-effective networked digital signage system.
- Packetizes multiple media streams for extension over ordinary CAT5e or CAT6 LAN cabling.
- Completely digital from end to end—digital content is never compromised.
- A single transmitter can deliver multimedia (including PowerPoint®, Flash, DVD, or HDMI content) to an unlimited number of displays.
- Supports HDTV resolutions up to 1080p at 60 Hz and computer graphics resolutions up to 1600 x 1200 at 60 Hz.
- Works in point-to-point, point-to-multipoint, or daisychained networked configurations.
- Includes software for uploading and scheduling content, and performing network-based diagnostics.
- Enables you to perform IT tasks such as running remote updates or backups.
- Use its bidirectional serial port to command and query a remote display for shutdown, power-on, and statistics.
- Supports streaming of live video using HDMI output from a camera.
- Scalable. Just add more units as your digital signage system grows.
- Functions as a true Gigabit Ethernet switch with three 1000-Mbps ports.
- RoHS compliant.
- Transmitter available in standalone and PCI/PCIe card versions.



1080p  
HD video

**MediaCento™ IP**  
BLACK BOX MEDIA DISTRIBUTION



### Overview

With the Black Box® MediaCento IP system, you can avoid running expensive dedicated links from a back room to digital signage in lobbies. Transmit audio and video streams over your existing LAN infrastructure instead!

MediaCento IP packetizes signals so all your source content—including live, streaming, full HD-quality video, as well as synchronized stereo audio and control—can be delivered anywhere you want over Ethernet wiring (or, if your network supports it, across dedicated WAN links).

Transmitting over a copper network, the system extends video and audio streams to one or more displays up to 300 feet (91.4 m) away.

To go farther, just add standard network switches. Daisychaining switches enables you to achieve unlimited distance between the MediaCento IP transmitter and the last receiver in your system.

Distributing HD content for HD displays at Gigabit speeds, MediaCento IP transmits broadcast-quality video without amplifiers. It supports 1080p resolution, no matter the distance or the number of screens, and uses JPEG2000 compression for high-quality video. Plus, because it simulcasts video and audio synchronously, there's no lag from the first display to the last.

What's more, the MediaCento IP system boasts QoS prioritization and bandwidth-management controls, and includes easy-to-use content distribution/display management software for instantly publishing and updating content on remote screens. Set up content distribution schedules or narrowcast live camera feeds to digital signage. It's that flexible.

### TECH SPECS

**Network Bandwidth** — 20–100 Mbps (per channel, user-selectable)

**Resolutions (Maximum)** — HDTV: 1080p at 60 Hz;  
CG: 1600 x 1200 at 60 Hz

**Speed** — 1000 Mbps

**Video Latency** — 3 frames (50 msec at 60 Hz)

**CE Approval** — Yes

**Connectors** — Transmitters:

- Audio: (1) 3.5-mm jacks;
- Video: (1) DVI-D (HDMI with an adapter);
- System control/serial: (1) USB;
- Network switch ports: (3) RJ-45 (1000BASE-TX), daisychainable;
- Receiver: Audio: (2) RCA jacks;
- Video: (1) DVI-D (HDMI with an adapter);
- Serial: (1) DB9 F;
- Network switch ports: (3) RJ-45 (1000BASE-TX), daisychainable

**Power** — 5 VDC at 1.5 A

**Size** — AVX-DVI-IP-TA: 1.1"H x 6.8"W x 4.8"D (2.8 x 17.3 x 12.2 cm);  
AVX-DVI-IP-RA: 1.1"H x 6.5"W x 5.5"D (2.8 x 16.5 x 14 cm)

**Weight** — AVX-DVI-IP-TA: 1.3 lb. (0.6 kg);  
AVX-DVI-IP-RA: 1.4 lb. (0.2 kg)

### MediaCento IP So easy to install!

Use MediaCento IP to send video and audio content to digital signage or as part of a far-reaching, fully managed multimedia-over-IP system. If your network supports it, you can incorporate it into a WAN environment, or simply use existing CAT5e or CAT6 LAN wiring. Just connect a DVI source (or HDMI source via an adapter) to the transmitter, then connect a CAT5e/CAT6 cable to one or more remote receivers. The system can also be used in a fiber-based network by adding copper-to-fiber conversion equipment—or no cable at all by simply adding wireless networking adapters.

### Item

MediaCento IP Transmitter

MediaCento IP Receiver

### Code

AVX-DVI-IP-TA

AVX-DVI-IP-RA

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about our latest prices  
at [www.blackbox.nl](http://www.blackbox.nl)



## Digital Signage

# iCOMPEL Digital Signage Appliances



Front view: iCOMP

### Set up vibrant, real-time digital displays with this powerful yet affordable signage solution!

- An all-in-one, plug-and-display digital signage solution—sets up **FAST**.
- Work right out of the box with software preinstalled and tested—plus no ongoing SaaS or licensing fees and FREE updates—for a lower cost of ownership.
- Can be used standalone with one screen or a together as networked devices. Set up multiple units as subscribers for a publisher iCOMPEL unit.
- Controllable via a standard Web browser connection.
- Include FREE professionally designed screen layouts.
- Feature drag-and-drop tools to manipulate layouts easily.
- Resize and position items in precise increments or click and drag.
- Enable you to set up multizone layouts with each zone playing different media.
- Locally update screen content to instantly add messages for specific audiences.
- Don't compromise network bandwidth or resources.
- Highly secure Linux® based appliances with built-in firewalls.
- Support many different media formats for HTML, RSS feeds, text, stills, and audio zones, as well as multiple zones for video—great for showing video side by side!
- Feature a maximum output resolution up to 2048 x 1536.
- Support playing of live video from a set-top box (on the -VID versions).
- GPIO capabilities for connecting external device inputs.
- Scalable and easy to integrate into a network. No IT and security headaches.
- No learning curve to overcome; easy for beginners to master.



Includes FREE layouts. Customize them how you like!

#### iCOMPEL productivity tools

- Drag-and-drop layout, design, and zone manipulation tools
- Playlists for automating content distribution
- An interface for monitoring remotely over an IP network
- A direct link to external information, such as Internet content, including RSS ticker feeds
- A direct link to internal information for local content updates
- Local updates at the screen ("ad hoc" function) to quickly update messages and change a layout on the fly

### Overview

Create, distribute, and manage content easily with iCOMPEL™ digital signage network appliances from Black Box. Ideal for both large and small organizations, iCOMPEL appliances work right out of the box with all software preinstalled, so distributing content to signage can be done quickly and affordably.

### Support many media formats.

Because iCOMPEL supports many media formats, you can combine video with scrolling text, photos, Flash, JavaScript, and Web content.

In addition to HTML and RSS media, they handle Real, MPEG, AVI, QuickTime®, and PowerPoint® media; JPEG, GIF, PNG, and TIFF images; plus WAV and MP3 audio.

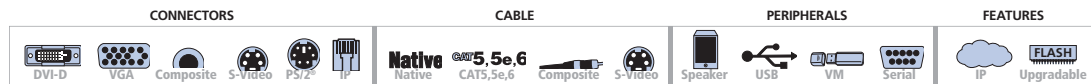
You can also order iCOMPEL with a built-in video capture card for applications where you need to display both stored video and live video. To upload media, drag and drop from a PC or Mac® desktop or folder to folders on the appliance's internal hard disk or use the iCOMPEL user interface to browse for and upload the media files.









### Simple, browser-based management.

Install the appliances on a network and manage them through a browser from any WAN computer. One iCOMPEL unit used as a publisher can send media via a network to an iCOMPEL unit used as a subscriber—even on the other side of the world. The iCOMPEL software comes with a number of layouts, or you can design your own. Intuitive tools make it easy to modify layouts. Adjust, resize, position, and layer zones with a simple click and drag! Screen layouts can contain a mix of media zones. Set up one or more layouts containing one or more rectangular zones. You can even import custom fonts and stream in Internet RSS feeds.

Plus, every zone in an iCOMPEL display layout has its own playlist to which you can add multiple stored media files. Zones can also run on their own schedule with different layouts playing at different times of the day.

And that's just a start! For more info, call us or go to [www.blackbox.nl](http://www.blackbox.nl).



Buyer's Guide	iCOMPEL			
	iCOMPEL HD Plus High-Speed Digital Signage Appliance	iCOMPEL HD Plus Digital Signage Appliance	iCOMPEL HD Digital Signage Appliance	iCOMPEL HD Subscriber Digital Signage Appliance*
<i>Features and Specifications</i>				 * A publisher model is required for operation.
<i>HD Media Player</i>	• (Not video capture)	• (Not video capture)	•	•
<i>Maximum Output Resolution</i>	Up to 2048 x 1536	Up to 2048 x 1536	Up to 2048 x 1536	Up to 2048 x 1536
<i>Standalone Player</i>	•	•	•	—
<i>Local Layout Creation/Editing</i>	•	•	•	—
<i>Central Media Publisher</i>	•	•	•	—
<i>Subscriber Player</i>	•	•	•	•
<i>Transparent Zone Capable</i>	•	•	•	•
<i>Portrait Mode</i>	•	•	•	•
<i>VESA Screen Mountable</i>	—	—	•	•
<i>Text, Stills, and Audio Zones</i>	Unlimited	Unlimited	Unlimited	Unlimited
<i>Video Zones</i>	4	2	2	2
<i>HTML Zones</i>	15	15	15	15
<i>CPU Processor</i>	Intel® Pentium® Core 2 Duo	1.6-GHz Intel Atom™	1.6-GHz Intel Atom™	1.6-GHz Intel Atom™
<i>Media Storage</i>	500 GB, 7200 RPM HDD	160 GB, 5400 RPM HDD	160 GB, 5400 RPM HDD or 32 GB Solid State Drive	160 GB, 5400 RPM HDD or 32 GB Solid State Drive
<i>Fanless</i>	—	—	•	•
<i>Memory (RAM)</i>	2 GB	1 GB	1 GB	1 GB
<i>Internal Power Supply</i>	•	•	—	—
<i>Video Capture Resolution (on ICOMP-VID &amp; ICOMP01-VID)</i>				
<i>Connectors</i>	(1) HD15 F (VGA); (1) DVI-D F; (1) RJ-45 (10/100/1000); (1) DB9 M (RS-232); (2) 6-pin mini DIN F (keyboard/mouse); (6) USB Type A F; (3) 3.5-mm F audio; optional (1) 4-pin mini DIN F (S-Video) and (1) RCA F (Composite video) on -VID version	(1) HD15 F (VGA); (1) RJ-45 (10/100/1000); (1) DB9 M (RS-232); (2) 6-pin mini DIN F (keyboard/mouse); (6) USB Type A F; (3) 3.5-mm F audio; optional (1) 4-pin mini DIN F (S-Video) and (1) RCA F (Composite video) on -VID version	(1) HD15 F (VGA); (1) DVI-D F; (1) RJ-45 (10/100/1000); (1) DB9 M (RS-232); (3) USB Type A; (1) 3.5-mm F audio	(1) HD15 F (VGA); (1) DVI-D F; (1) RJ-45 (10/100/1000); (1) DB9 M (RS-232); (3) USB Type A; (1) 3.5-mm F audio
<i>Power</i>	Input: 100–240 VAC, 50–60 Hz; Consumption: 60 W	Input: 100–240 VAC, 50–60 Hz; Consumption: 45 W	Input: 100–240 VAC, 50–60 Hz; Consumption: 12 W	Input: 100–240 VAC, 50–60 Hz; Consumption: 12 W
<i>Size</i>	3"H x 11"W x 10.5"D	3"H x 11"W x 10.5"D	1"H x 10"W x 6.5"D	1"H x 10"W x 6.5"D
<i>Weight</i>	9.4 lb.	8.75 lb.	2.9 lb.	2.9 lb.
<i>Ordering Information</i>				
<i>Base Unit (Hard Drive)</i>	ICOMP	ICOMP01	ICOMP02-H	ICOMP03-H
<i>Base Unit (Ruggedized Solid-State Drive)</i>	—	—	ICOMP02-S	ICOMP03-S
<i>Base Unit with Video Capture</i>	ICOMP-VID	ICOMP01-VID	—	—
<i>Wallmount Kit</i>	ICOMP-WALL	ICOMP-WALL	—	—
<i>Rackmount Kit</i>	ICOMP-RACK	ICOMP-RACK	—	—

NOTE: Need assistance ordering your iCOMPEL appliance or designing your complete end-to-end digital signage system? Just call our FREE Tech Support.

## Space Gain

# SpaceGAIN CAT5e and CAT6 Reduced-Length Patch Cables



## CAT5e CAT6

### Save money by eliminating the need for horizontal cable management.

- Eliminate the time and money needed to buy and install horizontal cable managers.
- Cable is 15,2cm long with 7,6cm of connectors, for a 22,9cm overall length.
- Great for connecting a patch panel to a patch panel, or a patch panel to a network switch.
- Use these reduced-length patch cables for super-easy connections in relay racks and cabinets.
- CAT5e cable is rated at 350 MHz.
- CAT6 cable is rated at 550 MHz.
- All feature stranded, 24 AWG conductors, 4 pairs, and a PVC jacket.
- Available in six colors to help you further organize your cabinet.



No need for horizontal cable management with these cables.

### Choose from six colors!



Cable is 15,2cm long with 7,6cm of connectors, for a 22,9cm overall length.

Item	Code
SpaceGAIN CAT5e 350-MHz Reduced-Length Patch Cables 6-in. (15.2 cm)	<b>EVNSLXX-06IN</b>
<b>To order, replace the "XX" with the number assigned to each color.</b>	
Gray = 80      Green = 82      Yellow = 84      Blue = 81	
Red = 83      Black = 87	
SpaceGAIN CAT6 550-MHz Reduced-Length Patch Cables 6-in. (15.2 cm)	<b>EVNSLXXX-06IN</b>
<b>To order, replace the "XX" with the number assigned to each color.</b>	
Gray = 640      Green = 642      Yellow = 644      Blue = 641	
Red = 643      Black = 647	

Quantity discounts available

### TECH SPECS

**Network Bandwidth** — 20–100 Mbps (per channel, user-selectable)  
**Bend Radius (Min.)** — 1.0" (2.54 cm)  
**Conductors** — 8 (4 pair)  
**Conductor Gauge** — 24 AWG, stranded copper  
**Jacket** — PVC  
**Standards** — CAT5e, CAT6: TIA/EIA 568C.2  
**Tensile Strength (Max.)** — 25 lb. pulling tension  
**Temperature Rating** — 167° F (75° C)  
**Wiring** — T568B  
**Size** — 9" (22.9 cm) including connectors

Find out more about our  
 Space Gain Patch Panels  
 at [www.blackbox.nl](http://www.blackbox.nl)



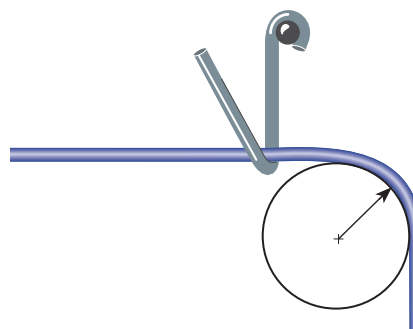
### Technically speaking

#### Bend radius.

You can invest in the best cable and hardware, but if it's not installed properly, it won't work, or at least it won't work well. If you bend twisted-pair cable too much, you loosen the twists and lose performance. Protect your investment by adhering to the following bend radius recommendations under no-load conditions:

- UTP horizontal: 4 times the cable diameter.
- ScTP horizontal: 8 times the cable diameter
- Multipair backbone: 10 times the cable diameter.
- 2- and 4-fiber horizontal: Not less than 25 mm (0.98 in.).
- Fiber backbone: Not less than 10 times the cable diameter, or as recommended by the manufacturer.

Even though there is no standard at this time for patch cable bend radius, it's good to be aware of bend radius when using patch cables.





## Space Gain

## CAT5e and CAT6 90° Angle Patch Cables

**Down-Down Cable**

The clip is on the bottom and the cable runs down. Shown: EVNSL21E-0003-90DD

**Down-Up Cable**

The down clip faces down and the cable runs down. The up clip faces down and the cable runs up. Shown: EVNSL23E-0003-90DU

**Right-Straight Cable**

The clip is on the bottom and the connector faces right. Shown: EVNSL21E-0003-90RS

**Left-Straight Cable**

The clip is on the bottom and the connector faces left. Shown: EVNSL27E-0003-90LS

**Tight fit? These cables have the right angle to save space.**

- Save up to four inches of space in crowded cabinets.
- Make tight wallplate connections behind furniture and equipment.
- Tame cable chaos on your desktop.
- For the perfect fit, choose from a whole family of cables with up, down, left, and right angled connectors.
- Meet or exceed CAT5e or CAT6 specifications.
- Avoid excessive bends and reduce stress on the cable.
- Feature four 24 AWG unshielded twisted wires, RJ-45 connectors, molded boots, and a PVC jacket.
- Connectors have gold-plated contacts.

**Retrofitting a cabinet? Installing newer, deeper equipment? Want to make sure your cabinet door closes?**

In high-density configurations, cabinet space is becoming an increasingly scarce commodity. Gain space in your cabinets (and ensure the door will close) by using our exclusive SpaceGAIN 90° Patch Cables. You can save up to 10cm of space in front of your patch panels and rack-mounted equipment. That's significant when every centimeter counts in today's high-density data centers. If you've ever retrofitted cabinets or installed extra-deep equipment, you've probably run into the problem of not being able to close the cabinet door. SpaceGAIN solves the problem. Better yet, you'll save both time and money by eliminating cable managers.

The down and up cables are ideal for data center applications. Use them for high-density patch panel connections. Tame the cable chaos on your desk with the right and left cables. Use them for quick laptop connects and disconnects. They're also ideal for tight wallplate connections behind desks and other furniture.

**TECH SPECS****CAT6:**

**ACR (Minimum)** — -1.1 dB/100 m

**Attenuation** — 23.8 dB/100 m @ 100 MHz;  
39.4 dB/100 m @ 250 MHz

**ELFEXT** — 27.8 dB/100 m @ 100 MHz; 19.8 dB/100 m @ 250 MHz

**Frequency** — Up to 250 MHz

**NEXT** — 42.3 dB/100 m @ 100 MHz; 36.3 dB/100 m @ 250 MHz

**Propagation Delay** — 536 dB/100 m @ 250 MHz

**PS-ELFEXT** — 24.8 dB/100 m @ 100 MHz; 16.8 dB/100 m @ 250 MHz

**PS-NEXT** — 42.3 dB/100 m @ 100 MHz; 36.3 dB/100 m @ 100 MHz

**Return Loss** — 19.0 dB/100 m @ 100 MHz;  
15.6 dB/100 m @ 250 MHz

**CAT5e:**

**Attenuation** — 26.4 dB/100 m @ 100 MHz

**ELFEXT** — 26.4 dB/100 m @ 100 MHz

**Frequency** — Up to 100 MHz

**NEXT** — 35.3 dB/100 m @ 100 MHz

**Propagation Delay** — 538 dB/100 m @ 100 MHz

**PS-ELFEXT** — 20.8 dB/100 m @ 100 MHz

**PS-NEXT** — 32.3 dB/100 m @ 100 MHz

**Resistance** — 45 ohms/1000 ft.

**Return Loss** — 19.0 dB/100 m @ 100 MHz

**Structural Return Loss** — 16.0 dB/100 m @ 100 MHz

**CAT5e and CAT6:**

**Cable Type** — 4-pair UTP

**Conductor Gauge** — 24 AWG, stranded

**Delay Skew** — 45 ns/100 m

**Impedance** — 100 ± 15 ohms

**Mutual Capacitance** — 15 pF/ft.

**The right angles to clean up your desktop.**

Down cable: cable clip faces down and the cable angles down.  
Shown: EVNSL24E-0003-90DS



Right cable: cable clip faces up and cable exits to the left.  
Shown: EVNSL21E-0003-90RS

**Save even more space...**

... with this SpaceGAIN combo:

- CAT5e/CAT6 90° Angle Cables
- 48-Port, 1U High-Density Feed-Through Patch Panels

To fit 48 ports in only 1U, the patch panel connectors face up on the top row and down on the bottom row as indicated by the tab area. To achieve the tight, neat configuration as shown above, use 90° Down Cables for both rows. This may seem counter intuitive. But the "Down" cable has a clip facing down. Just use it upside down for the top row of the patch panel.

**Connector combinations**

Choose from a variety of down, up, left, and right connector combinations.

**Down and up cables**

- 90° down to a 180° straight connector
- 90° down to a 90° down connector
- 90° down to a 90° up connector

**Left and right cables.**

(not to be used in patch panel and switch applications)

- 90° left to a 180° straight connector
- 90° right to a 180° straight connector

Item	Code
------	------

SpaceGAIN 90° Angle Patch Cable (UTP)  
Down-Up Series

**CAT5e 100-MHz**

1-ft. (0.3-m)	<b>EVNSLXXE-0001-90YY</b>
3-ft. (0.9-m)	<b>EVNSLXXE-0003-90YY</b>
6-ft. (1.8-m)	<b>EVNSLXXE-0006-90YY</b>
10-ft. (3.0-m)	<b>EVNSLXXE-0010-90YY</b>
15-ft. (4.5-m)	<b>EVNSLXXE-0015-90YY</b>

**CAT6 250-MHz**

1-ft. (0.3-m)	<b>EVNSLXXX-0001-90YY</b>
3-ft. (0.9-m)	<b>EVNSLXXX-0003-90YY</b>
6-ft. (1.8-m)	<b>EVNSLXXX-0006-90YY</b>
10-ft. (3.0-m)	<b>EVNSLXXX-0010-90YY</b>
15-ft. (4.5-m)	<b>EVNSLXXX-0015-90YY</b>

SpaceGAIN 90° Angle Patch Cable (UTP)  
Left-Right Series

**CAT5e 100-MHz**

3-ft. (0.9-m)	<b>EVNSLXXE-0003-90YY</b>
6-ft. (1.8-m)	<b>EVNSLXXE-0006-90YY</b>
10-ft. (3.0-m)	<b>EVNSLXXE-0010-90YY</b>

**CAT6 250-MHz**

3-ft. (0.9-m)	<b>EVNSLXXX-0003-90YY</b>
6-ft. (1.8-m)	<b>EVNSLXXX-0006-90YY</b>
10-ft. (3.0-m)	<b>EVNSLXXX-0010-90YY</b>

To order, replace the "X" with the number assigned to each color.

CAT5e	Blue = 21 Black = 27	Red = 23	Yellow = 24
CAT6e	Blue = 216 Black = 276	Red = 236	Yellow = 246

Then replace the "YY" with the letters assigned to each orientation.

90° Down - 180° Straight	= DS
90° Down - 180° Up	= DU
90° Down - 180° Down	= DD
90° Right - 180° Straight	= RS
90° Left - 180° Straight	= LS

Example: EVNSL21E-0003-90RS signifies a CAT5e blue, 3-foot, 90° right connector to a straight connector cable.

## Space Gain

# SpaceGAIN CAT5e/CAT6 High-Density Feed-Through Patch Panels



### Fit 48 ports into only 1U of rack space and no punchdowns needed!

- Save space in crowded data cabinets.
- Feature 48 easy-to-use RJ-45 to RJ-45 feed-through ports—all in 1U!
- Use this sturdy panel for high-density applications in all 19" relay racks or communications cabinets.
- Provide patching without punching down the wires to the ports.
- Meet or Category 6 or Category 5e performance requirements.
- Choose from shielded or unshielded models.
- Cable management bar helps support cables attached to the rear of the panel.

## TECH SPECS

**Connectors** — (48) RJ-45 front; (48) RJ-45 rear

**Standards** — CAT5e and CAT6: TIA/EIA-568-C.2

**Wiring** — T568A or T568B, 22 to 26 AWG, solid or stranded

**Size** — 1.75"H (1U) x 19"W x 6"D  
(4.4 x 48.3 x 15.3 cm)

**Weight** — JPM816A-HD, JPM806A-HD: 3.8 lb. (1.7 kg);  
JPM820A-HD, JPM810A-HD: 2.4 lb. (1.1 kg)

# CAT6



JPM820A-HD: front view



JPM806A-HD: front view



JPM810A-HD: rear view

# CAT5e



JPM810A-HD: front view

### What's included

- (1) SpaceGAIN High-Density Feed-Through Patch Panel
- (4) 10-32 cuphead screws
- (4) 12-24 cuphead screws
- (8) cable ties
- (8) station ID labels

Item	Code
SpaceGAIN High-Density Feed-Through Patch Panels	
CAT6	
Shielded	JPM816A-HD
Unshielded	JPM820A-HD

Item	Code
SpaceGAIN High-Density Feed-Through Patch Panels (Continued)	
CAT5e	
Shielded	JPM806A-HD
Unshielded	JPM810A-HD

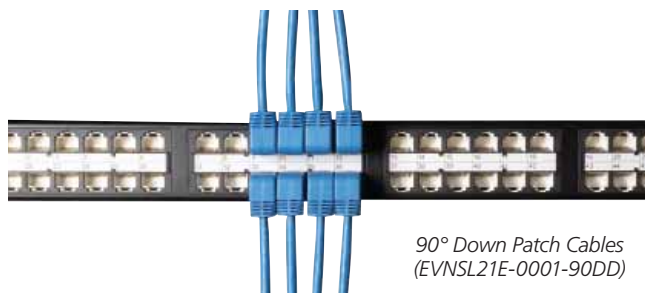
### Save even more space ...

#### ... with this SpaceGAIN combo: High-Density Feed-Through Patch Panels and CAT5e/CAT6 90-Degree Patch Cables.

Retrofitting a cabinet?  
Installing newer, deeper equipment?  
Want to make sure your cabinet door closes?

In high-density configurations, cabinet space is becoming an increasingly scarce commodity. Gain space in your cabinets (and ensure the door will close) by using our exclusive SpaceGAIN 90° Patch Cables with your new High-Density Feed-Through Patch Panel.

To fit 48 ports in only 1U, the patch panel connectors face up on the top row and down on the bottom row as indicated by the tab area. To achieve the tight, neat configuration as shown to the right, use 90° Down Cables for both rows. This may seem counter intuitive. But the "Down" cable has a clip facing down. Just use it upside down for the top row of the patch panel.



90° Down Patch Cables  
(EVNSL21E-0001-90DD)

Use the High-Density Feed-Through Patch Panels (above) with our 90° Down Patch Cables (EVNSL21E-0001-90DD).

Find out more  
about our latest prices  
at [www.blackbox.nl](http://www.blackbox.nl)



## Space Gain

# SpaceGAIN 45° Angled-Port Patch Panels


**CAT5e**    **CAT6**

45° angled ports allow for patch cables to drape down, freeing up to 4" of cabinet depth.

You'll also save time and money by eliminating horizontal cable managers in front of the panel.

Shown: JPM648-45ANG



## Go down, not out—save up to 4" by angling cables at 45°.

- Close quarters? This patch panel features 45° angled connector modules to conserve space.
- Gain up to four inches in front of every panel.
- Save time and money by eliminating horizontal cable managers in front of the panel.
- Ideal for retrofitting data cabinets.
- Features angled RJ-45 connectors on one side and straight Krone/110 dual IDC connectors on the other.
- Great for strain relief and maintaining bend radius.
- Rolled-metal construction provides strength for repeated punches.
- Meets or exceeds CAT6 or CAT5e requirements.
- Choose from 24- or 48-port models.



JPM5E24-45ANG



JPM5E48-45ANG

## Overview

Save space and time in the data center with these 45° Angled-Port Patch Panels. The connectors tilt downward at a 45° angle making patching easier. Because the cables flow smoothly downward and don't protrude, you can save two or four inches—or more—in front of every panel. You'll especially appreciate those extra inches when retrofitting cabinets with newer, deeper equipment. If you've run into situations where cabinet doors don't close or need to be removed to accommodate cable, you'll never go back to straight panels again!

Plus, because there is a nice downward cable flow, you can eliminate horizontal cable managers, saving a bundle of time and money. You also get the bonus of not having to worry about bend radius and strain relief.

Item	Code
SpaceGAIN 45° Angled-Port Patch Panels	
<b>CAT6</b>	
24-Port	<b>JPM624-45ANG</b>
48-Port	<b>JPM648-45ANG</b>
<b>CAT5e</b>	
24-Port	<b>JPM5E24-45ANG</b>
48-Port	<b>JPM5E48-45ANG</b>

## TECH SPECS

**Connectors** — (24) or (48) RJ-45 to (24) or (48) Krone/IDC 110

**Wiring** — T568A or T568B, 22 to 26 AWG, solid or stranded

**Size** — JPM624-45ANG, JPM5E24-45ANG: 1.75"H (1U) x 19"W x 1.1"D (4.4 x 48.3 x 2.8 cm); JPM648-45ANG, JPM5E48-45ANG: 3.45"H (2U) x 19"W x 1.1"D (8.8 x 48.3 x 2.8 cm)

**Weight** — JPM624-45ANG, JPM5E24-45ANG: 1.12 lb. (0.5 kg); JPM648-45ANG, JPM5E48-45ANG: 2 lb. (0.9 kg)

## Space Gain

# SpaceGAIN Angled Patch Panels



JPM624-ANG: front view

**CAT6**
**CAT5e**


JPM624-ANG: rear view



JPM5E48-ANG

Save time and money by routing cables directly into ports and eliminating cable management.

### Free up valuable space—angled design eliminates the need for horizontal cable managers.

- 128° forward angle provides better cable organization.
- Angled design eliminates the need for horizontal cable managers.
- Enable cables to flow from vertical cable management channels in an organized fashion.
- Route cables directly into the ports.
- Free up valuable rack space.
- Ideal for high-density applications.
- Meet or exceed all CAT6 and CAT5e standards.
- 100% factory tested.
- Rolled-edge, 16-gauge steel construction provides superior strength to eliminate flexing during termination.
- Support T568A and T568B for universal wiring.
- Meet the EIA/TIA-310-D rackmount standard.
- Include (4) 10-32 and (4) 12-24 screws.
- Choose from CAT6 and CAT5e panels with 24 or 48 ports.
- Made in the USA.

### TECH SPECS

**Connectors** — Front: (24) or (48) RJ-45;  
Rear: (24) or (48) 110 punchdown contacts

**Construction** — 16-gauge cold, rolled steel

**Nose Contact Material** — Beryllium copper with precious metal plating and nickel under-plating

**Wiring** — T568A or T568B, 22 to 26 AWG, solid or stranded

**Size** — JPM624-ANG, JPM5E24-ANG:  
1.75"H (1U) x 19"W x 5"D (4.4 x 48.3 x 12.7 cm);  
JPM648-ANG, JPM5E48-ANG:  
3.5"H (2U) x 19"W x 5"D (8.8 x 48.3 x 12.7 cm)

**Weight** — JPM624-ANG, JPM5E24-ANG: 1.4 lb. (0.6 kg);  
JPM648-ANG, JPM5E48-ANG: 2.5 lb. (1.1 kg)

#### iCOMPEL productivity tools

##### CAT6

- CAT6 component performance (EIA/TIA-568-C.2);
- CAT6 channel performance (ISO 11801 Class EA);
- PoE and PoE+ operation (IEEE 802.3at).

##### CAT5e

- CAT5e component performance (EIA/TIA-568-C.2);
- CAT5e channel performance (ISO 11801 Class D);
- PoE and PoE+ operation (IEEE 802.3at)

#### Item

#### Code

SpaceGAIN Angled Patch Panels

##### CAT6

24-Port	<b>JPM624-ANG</b>
48-Port	<b>JPM648-ANG</b>

##### CAT5e

24-Port	<b>JPM5E24-ANG</b>
48-Port	<b>JPM5E48-ANG</b>

Find out more  
about our latest prices  
at [www.blackbox.nl](http://www.blackbox.nl)





## Copper

# LAN Solution Network Testers

Now  
available  
for CAT6

Get advanced troubleshooting with these easy-to-use testers.

### LAN Solution GB Network Tester Kit

- Tests CAT6 Gigabit Ethernet cable runs.
- Tests PoE to ensure adequate power for powered devices such as VoIP phones.
- Detects and reports speed, duplex mode, wiring mode, and polarity of transmit pair for active Ethernet and other devices up to 1 GB.
- Port discovery, ping test, and hub flash.
- Simultaneously pings three addresses.
- Identifies hub or switch port and links to Cisco® bridge or router ports using Cisco Discovery Protocol.
- Tests cabling configuration and verifies connectivity.
- Checks for opens, shorts, miswires, split pairs, faults, and reverses.
- Wire maps network connections.
- Conducts single-ended and remote cable tests.

#### What's included

- (1) Tester
- (9) remotes
  - Tone tracer probe
  - 1-ft. RJ-45 to alligator clips cable
- (2) 1-ft. RJ-45/RJ-45 cables
- (2) 7.5" RJ-12 to RJ-12 cables
- Nylon case

### LAN Solution Network Tester and Kit

- Tests cable and monitors and corrects network problems with Physical Layer and link conditions.
- Tests CATx cable.
- Also enables you to test coax cable (with coax connectors attached), map to remotes, and select which pins have tone.
- Checks for opens, shorts, miswires, and split pairs.
- Identifies port services like Ethernet, ISDN, POTS, and Token Ring.
- Reports speed, location, and capabilities of network devices.
- Pinging function verifies connections.

#### What's included

- TS560A:
- LAN Solution Network Tester
  - Remote
  - (2) 12" RJ-45/alligator-clip cable assemblies
  - (2) 12" UTP cables with RJ-45 connectors
  - (2) 7.5" cable assemblies with RJ-12 connectors for RJ-11 and RJ-45 jacks
  - Carrying case
  - 9-V alkaline battery

- TS565A:
- All the above plus:
  - (8) remotes
  - Tone tracer
  - (2) RJ-45-to-F type coax connectors



TS5000A

Item	Code
LAN Solution GB Network Tester Kit	TS5000A
LAN Solution Network Tester	TS560A
LAN Solution Network Tester Kit	TS565A

## Copper

# Copper Taps • Copper Aggregators • Optical Taps

Monitor high-speed copper or fiber links with no network disruption or downtime.

- Get an accurate view of your copper or fiber optic network.
- Provide a complete copy of data from full-duplex network links.
- Operate transparently and don't block error packets.
- Provide passthrough signals.
- Can be left in place permanently.
- Connect and disconnect monitoring devices without disruption.
- Use with network and protocol analyzers, security monitoring devices, RMON probes, and more.
- Copper Tap model has separate transmit and receive channels; Aggregator models combine streams for dual monitoring.
- Provide continuous data flow if the power fails.



TS250A

#### Pro-Tip

#### Leave the guesswork to the amateurs.

Black Box cable testers provide quick, accurate information that all cables installers need. Test for shorts, opens, miswires, and reversals. ID cables, generate tone, and measure length.

Or choose one of our more advanced testers to check for PoE, display network speed, and more. Why work harder when you can work smarter?

Item	Code	Item	Code
Single-Channel Optical Tap, 50/50 Split Ratio		10/100 Copper Tap	TS230A-R2
Multimode 50-μm	TS243A	10/100/1000 Copper Tap	TS250A
62.5-μm	TS240A-R2	10/100/1000 Copper Aggregators	
Single-Mode 9-μm	TS244A	256 MB Buffer	TS254A
10-GbE Optical Tap, 50/50 Split Ratio		512 MB Buffer	TS255A
Multimode 50-μm	TS245A	1-GB Aggregator Tap	TS256A
Single-Mode 9-μm	TS246A		
Rackmount Bracket, 19", 1U	TS253		

## Extreme Networks

# Summit Advanced Series

### Summit Advanced Switch Common Features.

- Universal Port dynamic port configuration for IP Telephony and security
- 40 gigabit full-duplex SummitStack™ stacking for mix-and-match stacking
- IPv4/IPv6 unicast and multicast routing and intelligent Layer 2 switching
- ExtremeXOS® operating system
- ExtremeXOS scripting capability to automate switch configuration



### Summit X650

Ten Gigabit Top-of-Rack switch for service virtualization and aggregation.

- 24-port 10 Gigabit Ethernet with 10GBASE-T or SFP+ support in 1 rack unit with additional 8-port 10 Gigabit Ethernet option module
- Optional 256 Gbps stacking for up to eight units in a stack to provide up to 10 Gigabit Ethernet ports in one logically integrated unit
- Optional 512 Gbps stacking for connecting two Summit® X650 switches to provide 48 non-blocking 10 Gigabit Ethernet ports
- AC or DC dual and hot-swappable power supply



### Summit X450a/X450e Series

Gigabit fiber, copper, or PoE Layer 2/Layer 3 intelligent switching for advanced IP services at aggregation and the edge.

- Flexible fiber and copper Gigabit Ethernet with optional 10 Gigabit Ethernet
- Flexible 10/100/1000 PoE with optional 10 Gigabit Ethernet
- AC power supply with external redundancy options



### Summit X480 Series

High-performance gigabit switch for Data Center virtualization, Enterprise aggregation, and Carrier Ethernet Transport.

- High-performance switching and routing with 48-port Gigabit Ethernet or 24-port Gigabit and 2-port 10 Gigabit Ethernet
- Optional 4-port 10 Gigabit Ethernet for 40 Gbps uplinks and 128 Gbps high-speed stacking
- Supports MPLS/H-VPLS and highly scalable Layer 2 and Layer 3 switching with up to 512k MAC addresses or up to 512k IPv4 routes



### Summit X250e Series

For 10/100 Layer 2/Layer 3 intelligent switching for advanced IP services at the edge.

- Flexible fiber and copper Fast Ethernet connectivity with PoE and Gigabit uplinks
- AC or DC power supply with external redundancy options

## Extreme Networks

# Summit Value Series

### Summit Value Switch Common Features.

- ExtremeXOS® operating system
- ExtremeXOS scripting capability to automate switch configuration



### Summit X350/X150 Series

Intelligent Layer 2 switching for simple enterprise edge solutions.

- External redundant AC power supply options
- Flexible 10/100/1000BASE-T standalone switches
- 10/100BASE-TX with and without PoE standalone switches

## Black Box hard op weg naar Gold Status van Extreme

# Black Box behaalt de juiste certificering voor Extreme Networks

Eind vorig jaar hebben Black Box en Extreme Networks hun krachten gebundeld. Wij zijn verheugd u te kunnen mededelen dat onze Tech Support afdeling de juiste certificaten heeft behaald die nodig zijn voor de Gold Partner-status van Extreme Networks.

Sinds enkele maanden versterken een netwerk-architect en een senior consultant het Black Box-team. Zij hebben jarenlange ervaring met de oplossingen van Extreme Networks en zijn tevens gecertificeerd op netwerken van andere producenten. Met hun komst en onze gecertificeerde technici kunnen we uw huidige Extreme-oplossing ondersteunen en hebben we het juiste antwoord in huis voor uw complexe netwerk vraagstukken.

Black Box biedt complete oplossingen voor datacommunicatie netwerkinfrastructuren, van advies, ontwerp tot de installatie en het beheer. Het uitgebreide assortiment en de gratis Technical Support worden door de klanten hoog gewaardeerd. Met Extreme Networks, producent van geavanceerde netwerk-oplossingen, gaat Black Box haar netwerk services verder uitbouwen.

Extreme Networks ontwikkelt, bouwt en installeert netwerkinfrastructuren gebaseerd op Ethernet-technologie, die bijdragen aan het oplossen van de meest ingewikkelde uitdagingen op het gebied van zakelijke communicatie.



# You'll find it at Black Box.

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Black Box Network Services is the industry's source for the latest technology as well as hard-to-find and legacy products.

With more than 12,000 selections, you'll find everything you need to take your network from the data center to the desktop.

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- Cabling & Infrastructure Hardware
- Data Communications
- Data Extenders & Sharers
- Digital Signage & Multimedia
- Environmental Monitoring & Control
- KVM ServSwitch™
- Monitoring & Security
- Interface & Protocol Converters
- Networking
- Network Security
- Power & Surge Protection
- Peripheral Switching & Sharing
- Switches
- T1/E1/G.703/DDS/ISDN
- Voice Communications
- Testers & Tools
- Wireless