EMERALD™
HIGH-PERFORMANCE KVM

SOLUTIONS BROCHURE

EMERALD UNIFIED KVM PLATFORM –
KEY FEATURES

The award-winning Emerald™ Unified KVM platform, developed and manufactured by Black Box, ushers in a new day in KVM technology — eliminating sacrificed performance, compromised solutions and fractured networks. The future-proof system provides a high degree of flexibility and network security enabling state-of-the-art KVM extension and switching at industry-leading standards:

- Emerald can be operated as a point-to-point extension or a KVM switching system. You will no longer have to decide on IP-based or proprietary KVM transmission, because Emerald supports both combinations
- Extend and switch HD (DVI) and pixel-perfect 4K (DisplayPort 1.2) video signals, high-speed USB 2.0, bidirectional analog audio and serial (RS232) signals. Combine 4K and HD in one system
- Provide high-speed KVM access to virtual machines using RDP/ RemoteFX or PCoIP — supports VMware®, Microsoft® and Citrix®
- Flexible SFP ports allow for signal transmission over both CATx (100 m) and fiber (up to 10 km)
- Centrally manage your complete enterprise KVM network from the award-winning, user-friendly and web-based KVM management platform Boxilla
- Use ControlBridge™ or third-party control systems to switch between sources or select presets from a touch screen. This allows simple and flexible operations even within complex control room settings
- Choose between multiple mounting options and take advantage of a central power supply

Emerald is ideal for applications in various industries including critical, 24/7 command and control rooms and process monitoring environments:

BROADCASTING

MEDICAL

AIR TRAFFIC MANAGEMENT

PUBLIC SAFETY

DEFENSE

INDUSTRIAL

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EMD2000SE-T (TOP)
EMD2000SE-R (BOTTOM)

EMD4000T (TOP)
EMD4000R (BOTTOM)

EMERALD COMPONENTS

The Emerald™ Unified KVM product family consists of multiple components, including various transmitters (connected to a computer) and receivers (connected to a user station), IP switches and proprietary matrix switches, SFP modules as well as a mounting kit for extender units.

EMERALD TRANSMITTERS & RECEIVERS

With multiple types of extender units, Emerald provides the flexibility you need when connecting user stations with remote computers and servers. Start off with Emerald SE (Standard Edition) receivers and transmitters and add Emerald HD or 4K units gradually when you need them. Or, use 4K extenders that also support lower (HD) resolutions and migrate to 4K resolutions at your own pace.

When paired, all Emerald transmitters and receivers can be used as point-to-point extenders, providing KVM signal extension up to 10 km (single-mode fiber). See diagram on page 5 for more information. By connecting multiple extender units to an IP or matrix switch, you can scale your system to enable cross-point matrix switching between multiple users, computers and virtual machines. This method allows you to connect up to 32 endpoints without an additional management appliance. For deployments larger than 32 endpoints, our Boxilla™ KVM management platform will help you manage, monitor and maintain your entire KVM system.

Emerald SE units can be upgraded with the KVM Pro License Bundle, which includes features such as glide & switch and pixel-perfect video transmission. Add options and features as you need them and keep your critical KVM systems ready for any future requirements. For details, see page 7.
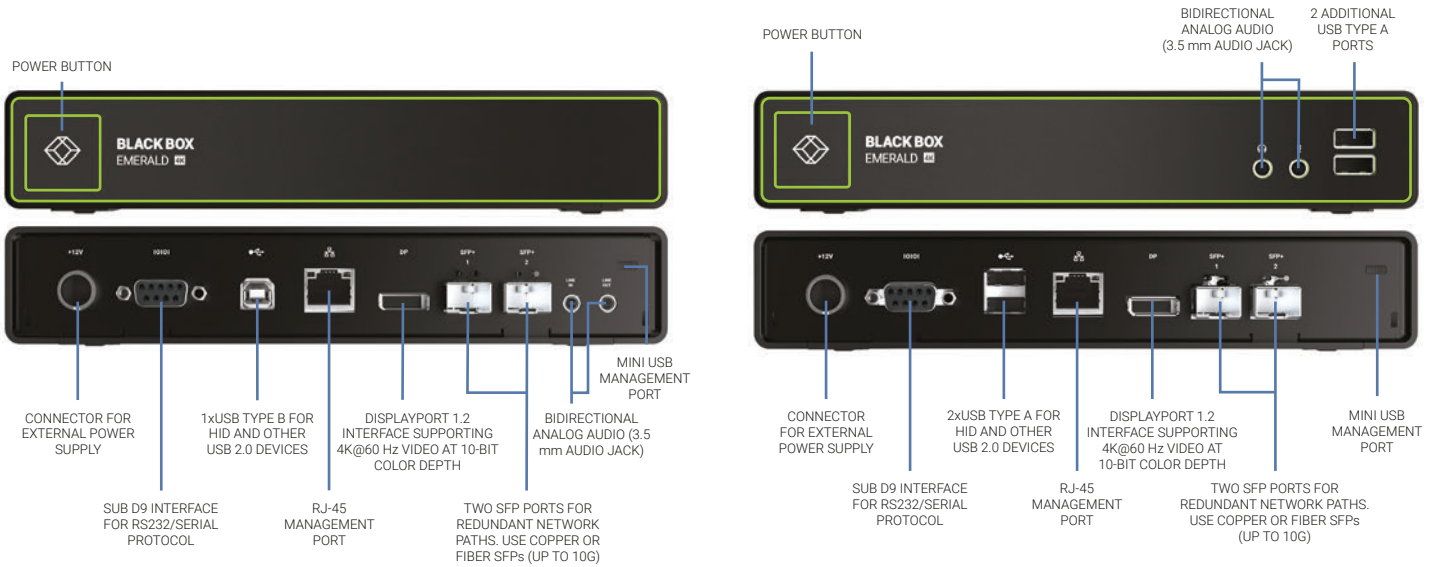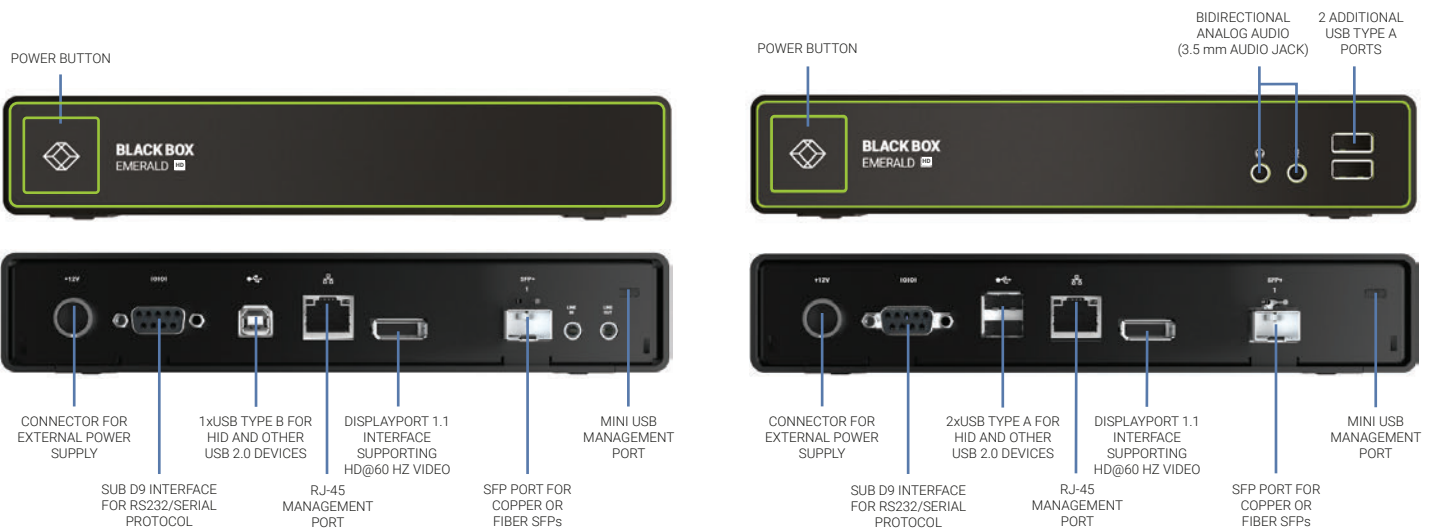
FEATURES OF EMERALD EXTENDER UNITS

- Access remote, high-speed servers and computers stored safely in your central equipment room
- Switch and extend pixel-perfect HD or 4K video (lossless compression) at 10-bit color depth; dual-head SE and HD units available
- Extend and share up to four USB devices (HID and/or high-speed, transparent USB 2.0) such as keyboards, mice, Wacom® tablets, touch interfaces or flash drives as well as RS232 serial and bidirectional analog audio
- Transmit signals over IP or proprietary direct-connect protocol for enhanced network security. Securely access critical devices over WAN/internet
- Connect via dual network ports for fail-safe operation (Emerald HD and 4K extenders)
- Access and share virtual machines in real time using RDP 8.1/ RemoteFX or PCoIP, eliminating the need for constant logins

EMERALD™ 4K TRANSMITTER (EMD4000T) | EMERALD 4K RECEIVER (EMD4000R)

POWER BUTTON

CONNECTOR FOR EXTERNAL POWER SUPPLY

1xUSB TYPE B FOR HID AND OTHER USB 2.0 DEVICES

DISPLAYPORT 1.2 INTERFACE SUPPORTING 4K@60 Hz VIDEO AT 10-BIT COLOR DEPTH

BIDIRECTIONAL ANALOG AUDIO (3.5 mm AUDIO JACK)

MINI USB MANAGEMENT PORT

SUB D9 INTERFACE FOR RS232/SERIAL PROTOCOL

RJ-45 MANAGEMENT PORT

TWO SFP PORTS FOR REDUNDANT NETWORK PATHS. USE COPPER OR FIBER SFPs (UP TO 10G)

POWER BUTTON

BIDIRECTIONAL ANALOG AUDIO (3.5 mm AUDIO JACK)

2 ADDITIONAL USB TYPE A PORTS

CONNECTOR FOR EXTERNAL POWER SUPPLY

2xUSB TYPE A FOR HID AND OTHER USB 2.0 DEVICES

DISPLAYPORT 1.2 INTERFACE SUPPORTING 4K@60 Hz VIDEO AT 10-BIT COLOR DEPTH

MINI USB MANAGEMENT PORT

SUB D9 INTERFACE FOR RS232/SERIAL PROTOCOL

RJ-45 MANAGEMENT PORT

TWO SFP PORTS FOR REDUNDANT NETWORK PATHS. USE COPPER OR FIBER SFPs (UP TO 10G)

EMERALD HD TRANSMITTER (EMD2000T) | EMERALD HD RECEIVER (EMD2000R)

POWER BUTTON

CONNECTOR FOR EXTERNAL POWER SUPPLY

1xUSB TYPE B FOR HID AND OTHER USB 2.0 DEVICES

DISPLAYPORT 1.1 INTERFACE SUPPORTING HD@60 HZ VIDEO

MINI USB MANAGEMENT PORT

SUB D9 INTERFACE FOR RS232/SERIAL PROTOCOL

RJ-45 MANAGEMENT PORT

SFP PORT FOR COPPER OR FIBER SFPs

POWER BUTTON

BIDIRECTIONAL ANALOG AUDIO (3.5 mm AUDIO JACK)

2 ADDITIONAL USB TYPE A PORTS

CONNECTOR FOR EXTERNAL POWER SUPPLY

2xUSB TYPE A FOR HID AND OTHER USB 2.0 DEVICES

DISPLAYPORT 1.1 INTERFACE SUPPORTING HD@60 HZ VIDEO

MINI USB MANAGEMENT PORT

SUB D9 INTERFACE FOR RS232/SERIAL PROTOCOL

RJ-45 MANAGEMENT PORT

SFP PORT FOR COPPER OR FIBER SFPs

EMERALD SE TRANSMITTER (EMD2000SE-T) | EMERALD SE RECEIVER (EMD2000SE-R)

POWER LED BUTTON

5-VDC POWER IN CONNECTOR

USB TYPE B CONNECTOR FOR PC/WORKSTATION USB DEVICE

RJ-45 PORT CONNECTS TO NETWORK

DVI INTERFACE CONNECTS TO PC VIDEO

RJ-45 PORT CONNECTS TO SERIAL INTERFACE

AUDIO LINE IN (CONNECTS TO SPEAKERS)

AUDIO LINE OUT (CONNECTS TO SPEAKERS)

POWER LED BUTTON (DEACTIVATED, NOT USED)

USB TYPE A CONNECTORS FOR USB PERIPHERALS

AUDIO PORT CONNECTS TO MICROPHONE

AUDIO PORT CONNECTS TO SPEAKERS

5-VDC POWER IN CONNECTOR

USB TYPE A CONNECTORS FOR USB PERIPHERALS

RJ-45 PORT CONNECTS TO NETWORK

DVI INTERFACE CONNECTS TO MONITOR

DB9 PORT CONNECTS TO SERIAL INTERFACE

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ITEM	PART NUMBER
EMERALD 4K EXTENDER	
TRANSMITTER	EMD4000T
RECEIVER	EMD4000T
EMERALD HD EXTENDER	
TRANSMITTER (SINGLE HEAD/DUAL HEAD)	EMD2000T / EMD2002T
RECEIVER (SINGLE HEAD/DUAL HEAD)	EMD2000R / EMD2002R
EMERALD SE EXTENDER	
TRANSMITTER (SINGLE HEAD/DUAL HEAD)	EMD2000SE-T / EMD2002SE-T
RECEIVER (SINGLE HEAD/DUAL HEAD)	EMD2000SE-R / EMD2002SE-R

PRODUCT CODE	VIDEO HEADS	RESOLUTION	USB PORTS	NETWORK CONNECTORS, SFP CAGES	SERIAL/ANALOG AUDIO	POWER CONNECTORS
TRANSMITTERS						
EMD4000T	(1) DisplayPort	4096 X 2160	(1) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (2) SFP+	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2000T	(1) DVI	1920 x 1200	(1) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (1) SFP	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2002T	(2) DVI	1920 x 1200	(1) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (1) SFP	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2000SE-T	(1) DVI	1920 x 1200	(1) USB 2.0 Type B (or Type A as required)	(1) RJ-45	(1) DB9, (2) 3.5 mm Audio Jack	(1) 5-VDC, 3-A
EMD2002SE-T	(2) DVI	1920 x 1200	(1) USB 2.0 Type B (or Type A as required)	(1) RJ-45	(1) DB9, (2) 3.5 mm Audio Jack	(1) 5-VDC, 3-A
RECEIVERS						
EMD4000R	(1) DisplayPort	4096 x 2160	(4) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (2) SFP+	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2000R	(1) DVI	1920 x 1200	(4) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (1) SFP	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2002R	(2) DVI	1920 x 1200	(4) USB 2.0 Type B (or Type A as required)	(1) RJ-45, (1) SFP	(1) DB9, (2) 3.5 mm Audio Jack	(1) 12-VDC, 3-A
EMD2000SE-R	(1) DVI	1920 x 1200	(4) USB 2.0 Type B (or Type A as required)	(1) RJ-45	(1) DB9, (2) 3.5 mm Audio Jack	(1) 5-VDC, 3-A
EMD2002SE-R	(2) DVI	1920 x 1200	(4) USB 2.0 Type B (or Type A as required)	(1) RJ-45	(1) DB9, (2) 3.5 mm Audio Jack	(1) 5-VDC, 3-A

SUPPORTED EXTENSION DISTANCE

The supported extension distance of Emerald™ depends on the ports and cables being used. Using copper connections with the Emerald SE RJ-45 port or the Emerald HD or Emerald 4K copper SFP port will allow you to transmit video and peripheral signals up to 100 m.

Using fiber connections with the Emerald HD or Emerald 4K SFP/SFP+ ports allows you to extend signals up to 10 km (multimode: 400 m; single-mode: up to 10 km).
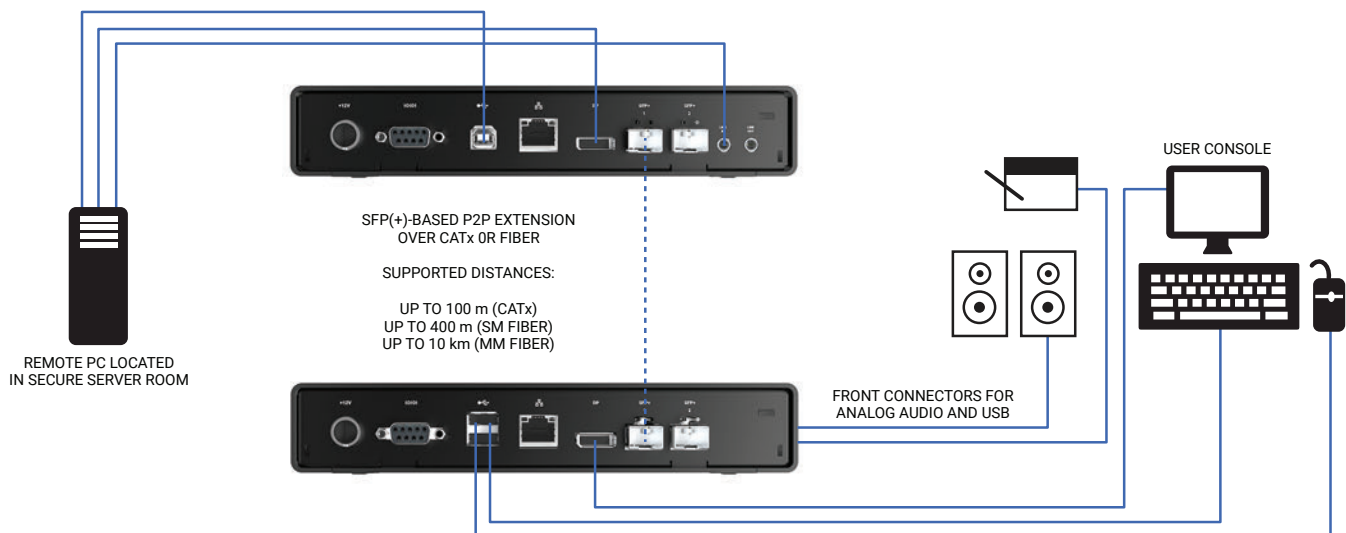

REMOTE PC LOCATED IN SECURE SERVER ROOM

SFP(+)-BASED P2P EXTENSION OVER CATx 0R FIBER

SUPPORTED DISTANCES:

UP TO 100 m (CATx)
UP TO 400 m (SM FIBER)
UP TO 10 km (MM FIBER)

FRONT CONNECTORS FOR ANALOG AUDIO AND USB

USER CONSOLE
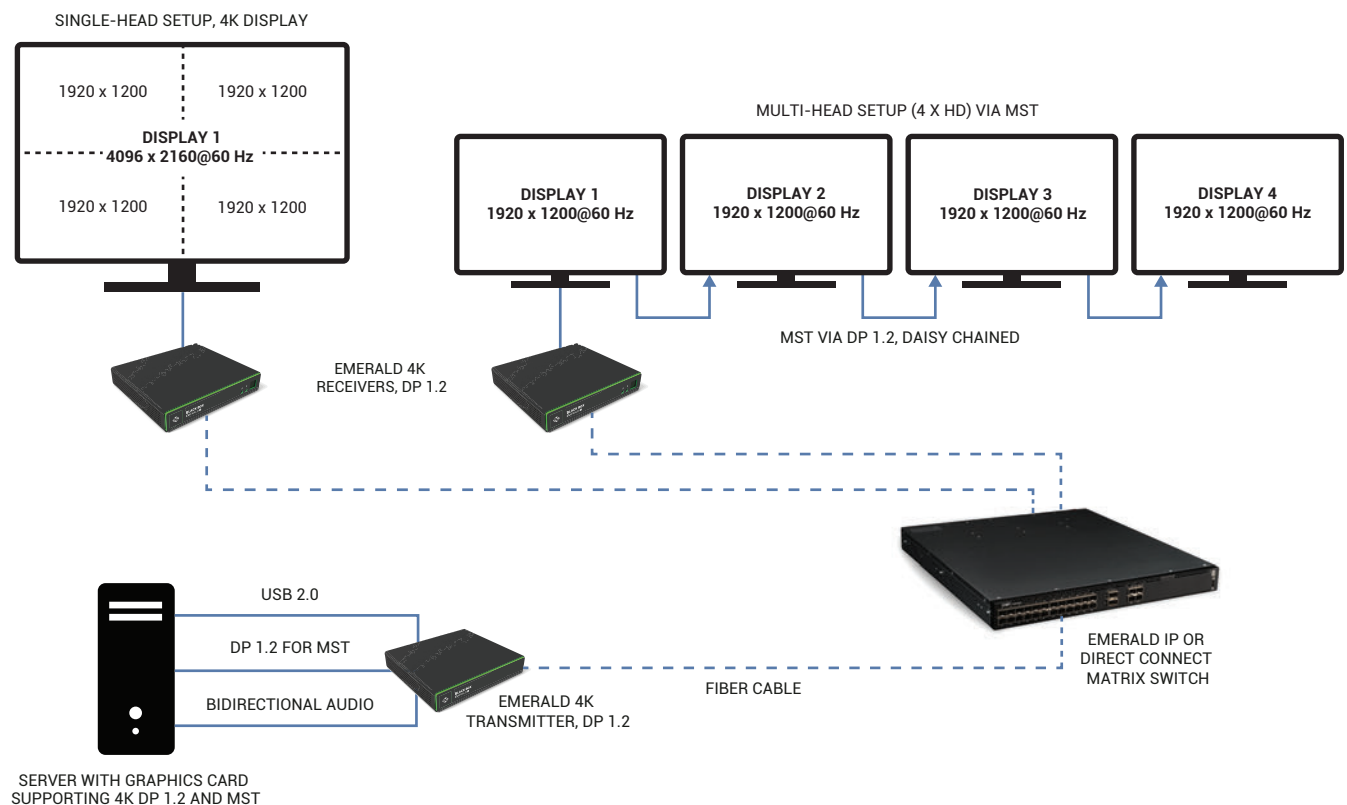
FIGURE 1: EMERALD P2P EXTENSION SETUP

VIDEO QUALITY

Emerald™ lets you extend and switch high-res, full-motion video signals at up to 60 fps with virtually no transmission latency. Emerald's compression algorithm, developed by Black Box, allows you to adjust the compression rate from full compression — saving bandwidth and allowing the transmission of signals over WAN in real time — up to pixel-perfect video in five easy steps. It supports 8-bit color depth for 1920 x 1200 resolutions and 4:4:4 and 10-bit color depth for resolutions up to 4096 x 2160.

The EDID pass-through feature ensures video signals are displayed correctly at all times, supporting a wide range of resolutions to accommodate for different types of screens and operating panels.

To support multi-monitor workplaces, Emerald SE and HD extenders are available as dual-head unit options. It is also possible to use the 4K extender's MST feature to split one DisplayPort 1.2 4K signal into up to four 1080p signals. This provides quad-head video support for operator workspaces.

EMERALD 4K WITH MULTI-HEAD/MST HD SETUP

SINGLE-HEAD SETUP, 4K DISPLAY

1920 x 1200	1920 x 1200
DISPLAY 1	
4096 x 2160@60 Hz	
1920 x 1200	1920 x 1200

EMERALD 4K RECEIVERS, DP 1.2

MULTI-HEAD SETUP (4 X HD) VIA MST

DISPLAY 1
1920 x 1200@60 Hz

DISPLAY 2
1920 x 1200@60 Hz

DISPLAY 3
1920 x 1200@60 Hz

DISPLAY 4
1920 x 1200@60 Hz

MST VIA DP 1.2, DAISY CHAINED

EMERALD IP OR
DIRECT CONNECT
MATRIX SWITCH

USB 2.0

DP 1.2 FOR MST

BIDIRECTIONAL AUDIO

EMERALD 4K
TRANSMITTER, DP 1.2

FIBER CABLE

SERVER WITH GRAPHICS CARD
SUPPORTING 4K DP 1.2 AND MST

NETWORK SECURITY AND RESILIENCE

For fail-safe operation and maximum uptime, Emerald™ provides network resiliency at every level — all the way up to complete switch over from one control room to a backup control room location. Emerald's security and resiliency features enable you to:

- Instantly switch over in case one network connection fails via two network ports on the Emerald HD and 4K
- Pool multiple transmitters/sources to provide users with alternate systems capable of the same task, in case one computer crashes or is currently used by another user

- Use the central power supply to keep your devices' power status monitored and provide a redundant power supply. See details on page 8
- Never miss a critical event or run out of bandwidth with Boxilla's extended KVM status dashboard and automated alerts. See details on page 12

FULL REDUNDANCY

AFTER NETWORK FAIL
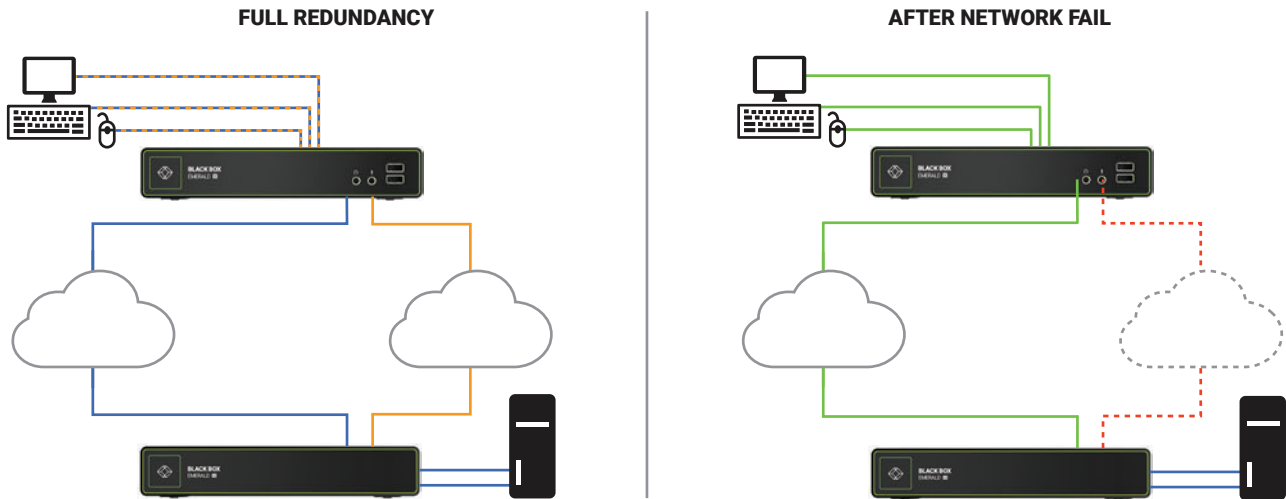
FIGURE 2: REDUNDANT NETWORK PATHS FOR FAIL-SAFE OPERATION

PRO LICENSE FOR EMERALD SE

The Emerald SE PRO license bundle enables you to gradually add new, helpful features to your extenders as the need arises. This helps you save money and stay flexible for future system requirements:

FEATURES	DESCRIPTION
Pixel-Perfect Video	Extend and display mathematically lossless video pixel by pixel.
VM Access over PCoIP	Use the PCoIP protocol to access VMs.
Virtual Machine Sharing	Share virtual machine access amongst a group of users.
Glide & Switch	Switch between up to eight PCs by moving your mouse from one screen to another.
Bonding	Group multiple transmitters and receivers to provide multi-head support for your workspace.

ITEM	PART NUMBER
KVM PRO LICENSE BUNDLE	EMDPRO-LIC

EMERALD 4K EXTENDER MOUNTING KIT

Emerald units can be mounted on and below tables, behind screens or in racks, using the 19" rack mount kit. The 1U mounting kit is ideal for space-saving installations because it provides space for two extender units. Emerald was designed with optimal airflow in mind so the units will not overheat when placed alongside other components in the rack mounting shelf.

ITEM	PART NUMBER
Emerald Rack Mount Kit, 2 Units	EMD4000-RMK1

CENTRAL POWER SUPPLY

For improved power management and fail-safe operation, use the optional central power hub for eight or 16 units.

- Central power feed to 5V or 12V DC devices with up to 20 watts per port
- Web UI for configuration and monitoring of system power status
- Highest resilience when equipped with second, hot-swappable 600k hours power supply
- Clean, professional installation with lockable 3-pin DC connectors in only 1U

FIGURE 3: CENTRAL POWER HUB, 16 PORTS (ACR1000-CPH16R)

FIGURE 4: 12 VDC TO 5 VDC CONVERTER CABLE (ACR1000-12V5-CBL3M)

ITEM	PART NUMBER
Central Power Hub, 16 Port	ACR1000-CPH16R
Central Power Hub, 8 Port	ACR1000-CPH8R
Central Power Hub Redundant Power Supply	ACR1000-CPH-PS
Central Power Hub Power Converter Cable - 12 VDC to 5 VDC, 3-m	ACR1000-12V5-CBL3M

EMERALD SWITCHES

Emerald™ was designed with the needs of IT planners and integrators in mind. By giving you the choice of extending and switching your KVM signals over IP, proprietary matrix switches or both in one solution, it allows you to build out your system based on your unique connectivity needs.

Choose from a variety of Black Box-tested IP switches, third-party IP switches or direct-connect Emerald Matrix Switches that support proprietary (non-IP-based) KVM networks.

FIGURE 5: 10G 28 PORT IP SWITCH (EMS10G-28)

ITEM	PART NUMBER
IP SWITCHES	
1G 48 Port	EMS1G-48
10G 28 Port	EMS10G-28
100G 32 Port	EMS100G-32
MATRIX SWITCHES (DIRECT-CONNECT)	
48-Port, Standard-Speed Matrix	EMX1-48
28-Port, High-Speed Matrix	EMX10-28
32-Port, Ultra-Speed Matrix Switch	EMX100-32

ITEM	DIRECT CONNECT SWITCHES			IP NETWORK SWITCHES		
	EMX1-48	EMX10-28	EMX100-32	EMS1G-48	EMS10G-28	EMS100G-32
Speed	Standard Speed	High/Standard Speed	Ultra Speed	1G	10G	100G
Ports	(48) RJ-45 1.25 Gbps standard speed	(28) SFP+ auto-detect 1.25 or 12.5 Gbps high speed	(32) 12.5 Gbps or 125 Gbps SFP+ auto-detect ultra-speed ports	(48) 10/100/1000BT RJ-45 1.25 Gbps	(28) 10GbE SFP+	(32) 100 GbE SFP+ or (128) 10GbE SFP+
Cascade Ports	(4) SFP+ 12.5 Gbps high speed	(2) SFP+ 125 Gbps ultra-speed ports	–	(4) 10G SFP+ 12.5 Gbps	(2) 100G SFP+ ports	–
Latency	< 5 µs	< 1 µs		–	–	–
Network	(2) 1 Gbps	(2) 1G/10G Ethernet		–	–	–
Ports	Ethernet	Ethernet		Ethernet	Ethernet	Ethernet
Capacity	Non-Blocking			260 Gbps FD	960 Gbps	6.4 Tbps
Dimensions	4.4 (1 RU) x 43.4 x 32 cm (HxWxD)	4.4 (1 RU) x 43.1 x 45.7 cm (HxWxD)	4.4 (1 RU) x 43.4 x 46 cm (HxWxD)	4.4 (1 RU) x 43.4 x 32 cm (HxWxD)	4.4 (1 RU) x 43.1 x 45.7 cm (HxWxD)	4.4 (1 RU) x 43.4 x 46 cm (HxWxD)
Max Power Consumption	88 W	292 W	608 W	87 W	290 W	605 W
Power Input	90–264 VAC, 50/60 Hz	100–240 VAC, 50/60 Hz		90–264 VAC, 50/60 Hz	100–240 VAC, 50/60 Hz	

SFP MODULES

Emerald™ extenders and switches provide a high level of flexibility by offering SFP (1 Gbps) and SFP+ (10 Gbps) ports, depending on the type of extender used and system application. Use 1-Gbps SFPs for HD signal transmissions, and 10-Gbps SFP+ modules to transmit 4K60 signals and to aggregate multiple connections through a 100-Gbps IP or direct-connect switch. Emerald supports connectivity through copper, fiber multimode or fiber single-mode cables, using a variety of Black Box and third-party SFP modules.

FIGURE 6: 10G 28 PORT
IP SWITCH (EMS10G-28)

ITEM	DISTANCE	PART NUMBER
SFP+ MODULES (10-GBPS CONNECTIONS)		
SFP+ 10-Gb, Extended Diagnostics, 850-nm Multimode Fiber, LC	300m	LSP421
SFP+ 10GBASE-SR,1310-nm Single-Mode Fiber	10 km	LSP422
SFP MODULES (1-GBPS CONNECTIONS)		
SFP 1250-Mbps, 1000BASE-T, RJ-45	100m	LFP417
SFP 1250-Mbps, 850-nm Multimode Fiber, LC	550m	LFP411
SFP 1250-Mbps, 1550-nm TX, 1310-nm RX, Single-Mode Fiber, LC	10km	LFP420

EMERALD MATRIX SWITCHING

Combine Emerald Extenders, Switches and SFP Modules into a high-performance KVM switching matrix to instantly connect multiple computers, virtual machines and users. With Emerald, you are no longer limited to the boundaries of network cables, because it allows you to connect sources across a WAN or the internet. The solutions' advanced network security and resilience features provide 24/7/365 availability for your critical infrastructure.
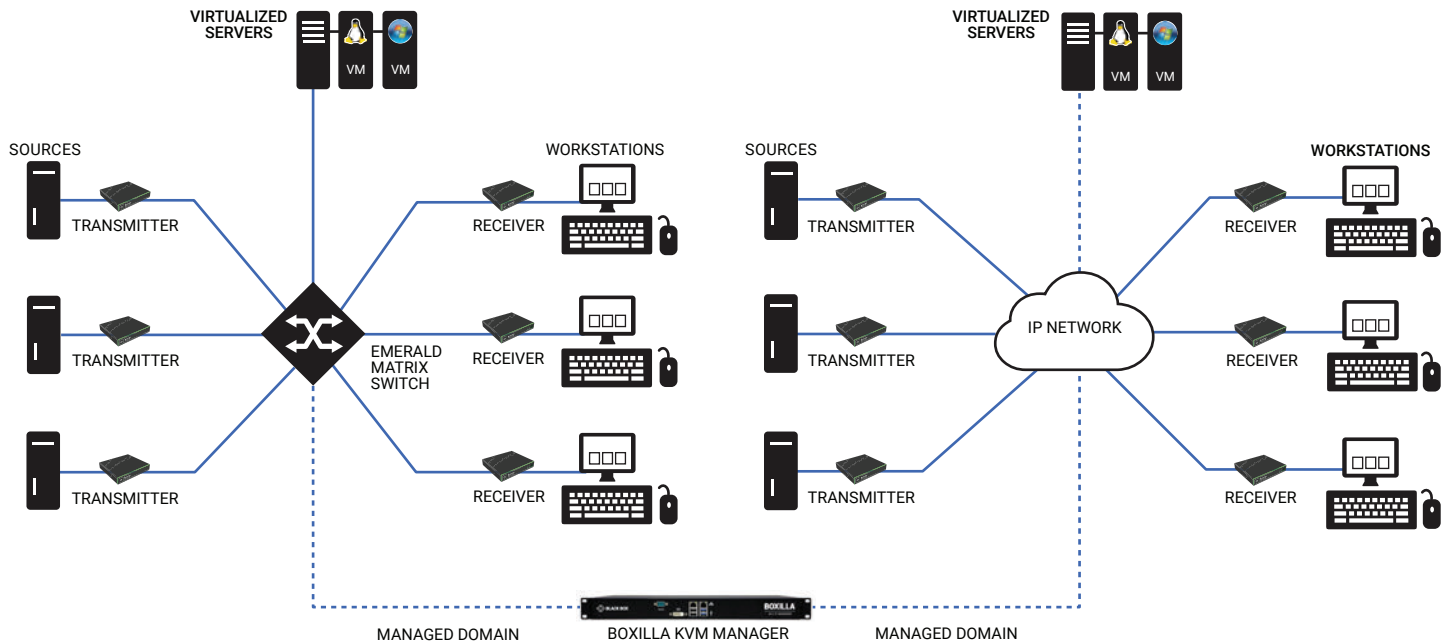
FIGURE 7: COMBINED IP AND PROPRIETARY MATRIX SWITCHING

Emerald Matrix Switching Features

- Start small and grow your matrix over time by adding additional receivers and transmitters
- Manage up to 32 endpoints with no additional management appliance required; to go beyond, use the Boxilla KVM manager
- Create IP- or proprietary protocol-based KVM systems and even combine both into one matrix switching solution
- Add virtual and physical servers to your KVM matrix and remotely access them via hotkeys, touch-screen interface, USB push buttons or the on-screen menu
- Create matrices supporting HD and 4K resolutions, transparent USB 2.0 devices, bidirectional analog audio and serial RS232 signals

- Cascade multiple IP or proprietary matrix switches to provide for additional network ports
- Use Emerald's WAN connectivity feature to add remote devices to your matrix as far as the internet reaches
- Create a secure and redundant KVM network through redundant network ports, pooling, redundant power supply and the Boxilla network monitoring dashboard
- Create and connect a backup control room configuration to replicate the main control room setup anywhere you have a network connection

MAIN CONTROL ROOM

LAN

BACKUP CONTROL ROOM

SERVER ROOM CONNECTED VIA NETWORK. BACKUP CAN BE CONFIGURED AS MAIN CONTROL ROOM WITH ONE CLICK FROM BOXILLA OR CONTROL BRIDGE
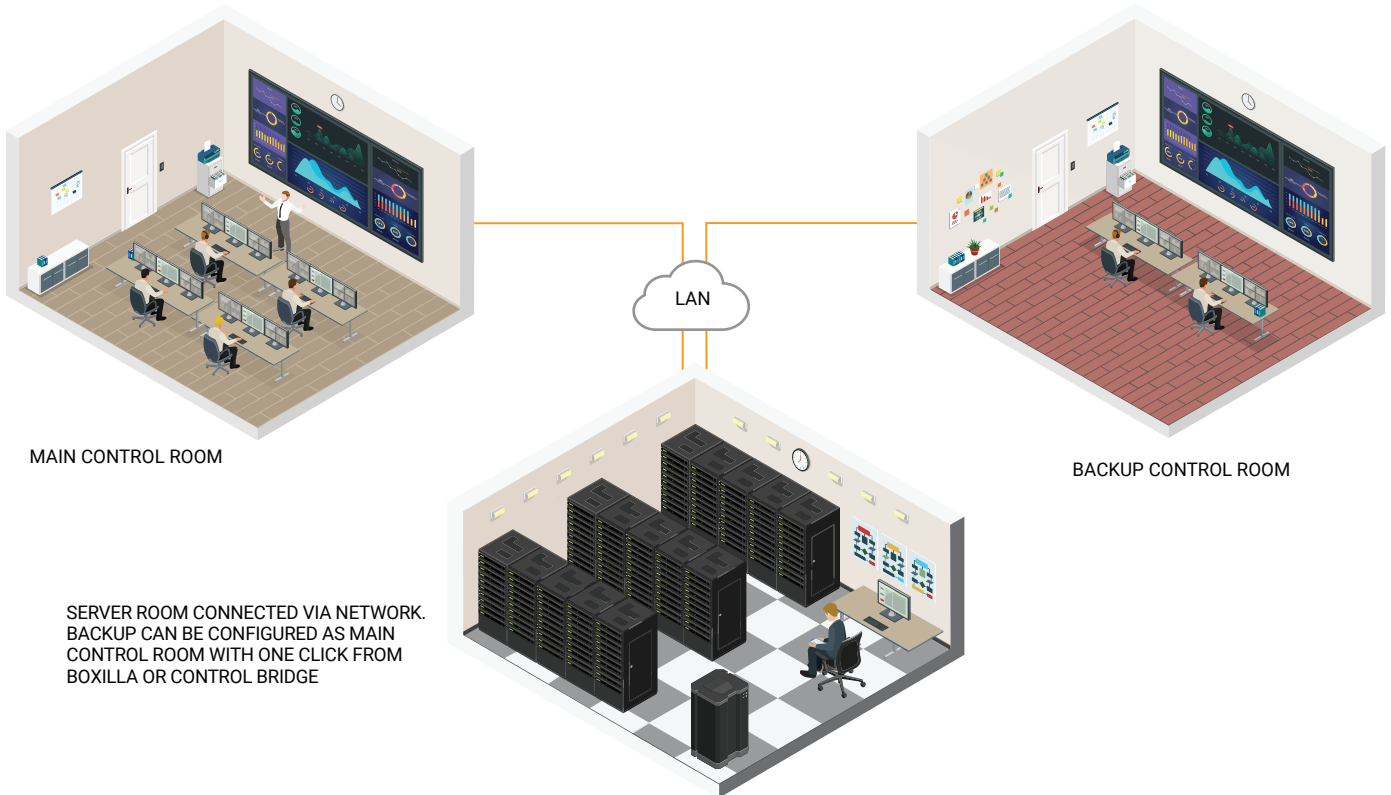
FIGURE 8: BACKUP CONTROL ROOM CONNECTED OVER IP

Emerald UI Menu

The Emerald™ UI Menu comes with many helpful options to configure your extension and switching setup. Manage your small matrix setup by adding/removing users, a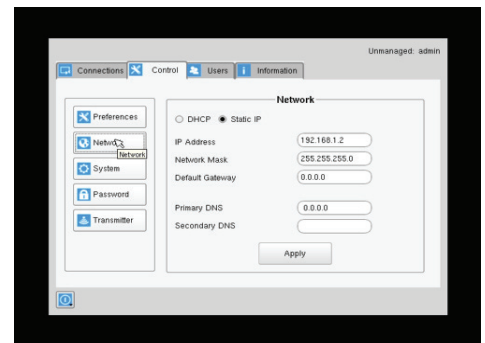dding new endpoints to the system, defining screen resolutions, defining hotkeys for switching and much more. For detailed information download the Emerald manual.
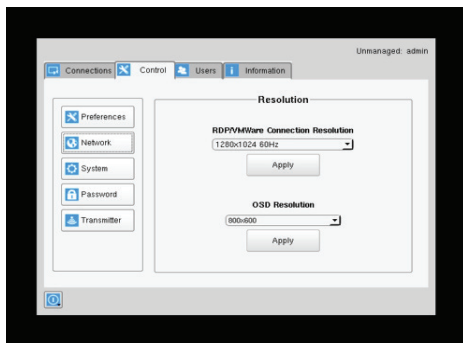
DEFINE SCREEN RESOLUTIONS
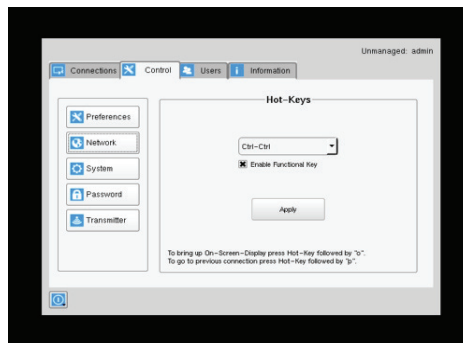
DEFINE SYSTEM HOTKEYS

NETWORK SETTINGS

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NETWORK AND BANDWIDTH REQUIREMENTS

Use any managed IP switch supporting Multicast over IGMP and full-wire speed, or rely on specified Emerald™ IP or proprietary matrix switches. Use an existing IP network that can provide enough bandwidth to transmit the required data, or implement a dedicated IP or proprietary KVM network.

The required bandwidth depends on the video quality, required resolutions and consumed bandwidth by USB devices. Emerald lets you change the video compression in five easy steps: adjust

from highly compressed (ca. 35 Mbps, 1080p@60fps) to pixel perfect (450 Mbps, 1080p@60fps). For pixel-perfect 4K@60Hz 4:4:4 video transmission, a 10-Gbps connection is required.
• 1920 x 1200@60 Hz, full-compression mode: ca. 35 Mbps
• 1920 x 1200@60 Hz, pixel-perfect mode: ca. 450 Mbps
• 4096 x 2160@60Hz; pixel-perfect mode: ca. 10 Gbps

VIRTUAL MACHINE CONNECTIVITY

Black Box has been pioneering real-time virtual machine KVM connectivity that provides high-performance access to virtualized infrastructure. With Emerald, VM connectivity is brought to a whole new level. Access VMware®, Microsoft® and Citrix® VMs over RDP 8.1/Remote FX or PCoIP and allow multiple users to access them in share mode. Unlike other methods of accessing VMs, Emerald supports a real-time, high-quality user experience across any given

distance. Users may work with virtual machines just like they are used to from their local PCs. By adding the VMs to a matrix setup, multiple users can switch seamlessly between various physical and virtual desktops without being able to tell the difference. Add VMs to an Emerald matrix setup by connecting them to the IP or matrix switch, eliminating the need for additional transmitter units.
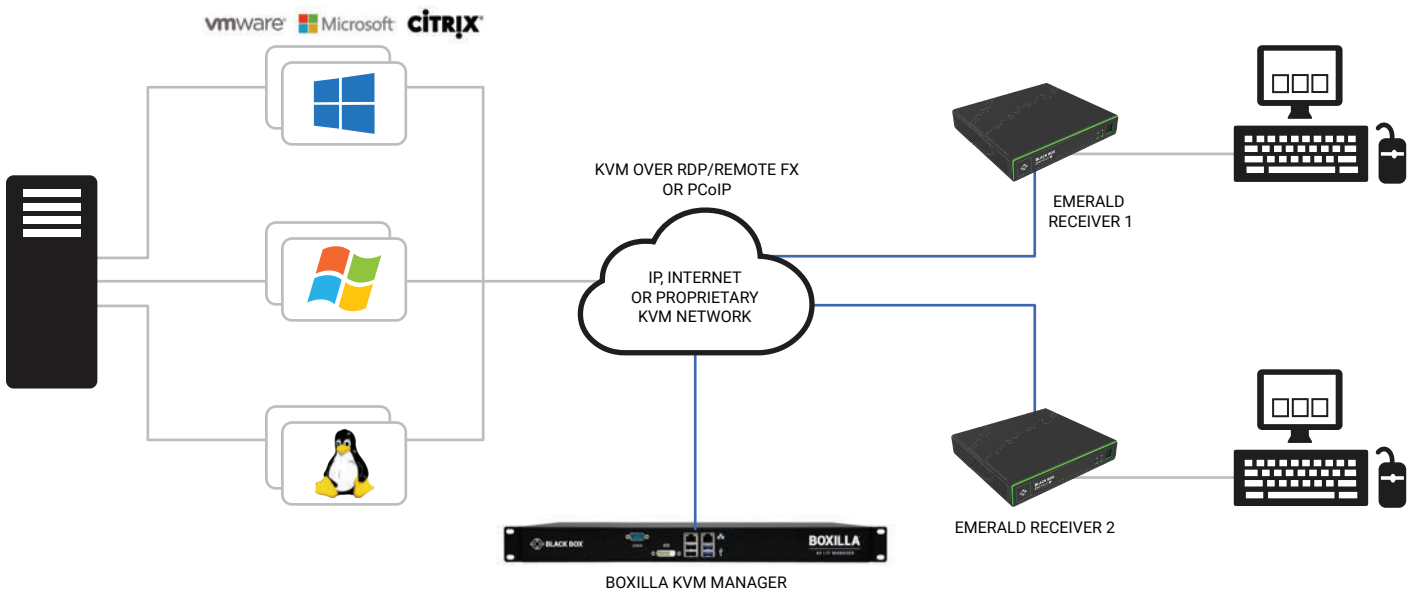

FIGURE 9: REMOTE KVM CONNECTIVITY FOR VIRTUAL MACHINES

BOXILLA KVM MANAGER

Boxilla™ is a centralized KVM management appliance that allows for centralized, remote management and monitoring of your complete enterprise KVM network. When connected to an Emerald KVM Matrix, Boxilla provides a user-friendly web-based GUI that allows users to auto-detect and connect new endpoints, update firmware, adjust bandwidth consumption, set up automated security alerts and much more. Boxilla comes with multiple license types to accommodate for different KVM network sizes. On top of managing and monitoring your network, Boxilla also enables connections between multiple Black Box KVM systems, such as DKM and InvisaPC. This functionality lets you upgrade existing systems without having to replace all components.

Boxilla Features:

- Manage deployments and user access rights, monitor KVM status, upgrade firmware, extensive troubleshooting and provide network security, all from one central platform
- Auto device discovery and configuration and advanced user authentication
- The command center dashboard provides an instant snapshot and management of your entire KVM network
- Target pooling: automatically assign users to next the available system
- Also compatible with Black Box's DKM KVM Matrix Switch and InvisaPC KVM-over-IP Matrix to provide a real UNIFIED KVM experience
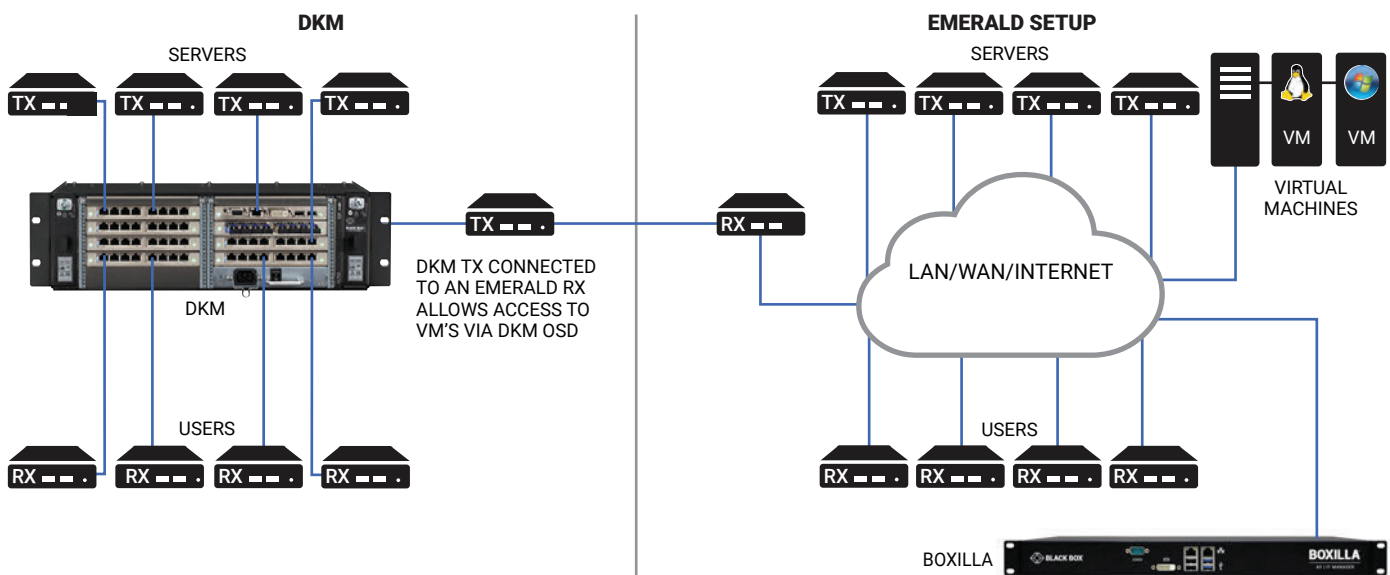
To learn more, visit BLACKBOX.COM/BOXILLA.

FIGURE 10: CONNECT AN EXISTING DKM SYSTEM WITH EMERALD

ADDITIONAL PRODUCTS
CONTROLBRIDGE CONTROL PROCESSOR AND TOUCH SCREEN

ControlBridge™ is a versatile control processor and touch-screen-based appliance for room automation and intuitive operations control. It allows you to control all aspects of your control room, including KVM switching, lighting, window shutters, automated furniture position and your video wall.

• Multiple control processors and touchscreen devices (7" and 12") available
• Provides bidirectional control of any IP enabled and other I/O devices

• Active matrix touch-screen display offers resolutions of 1280 x 800, 32-bit (true color) images and full-motion streaming video preview
• Includes built-in microphone, speakers and light and motion sensors
• Set up through a standard web browser
• Black Box will help you to design a custom interface for your specific requirements

To learn more, visit BLACKBOX.COM/CONTROLBRIDGE.

KM SWITCHES FOR GLIDE & SWITCH CONTROL

Glide & switch allows operators to switch between up to eight computers by moving a mouse from one screen to another, without pressing hotkeys or additional buttons. Black Box KM switches, like the Freedom KM switches, support this feature by connecting a single keyboard and mouse plus additional USB devices to multiple computers. The optional KVM Pro License Bundle for Emerald™ extenders includes glide & switch support and allows you to take advantage of this feature right from the KVM devices.

To learn more, visit BLACKBOX.COM/FREEDOM.
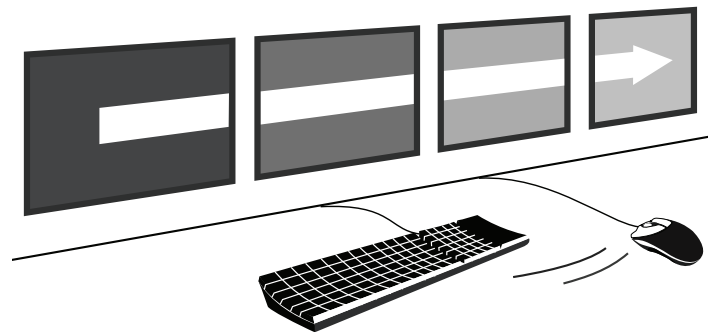
ITEM	PART NUMBER
Freedom II KVM Switch, 4 Ports	KV0004A-R2
Freedom II KVM Switch, 8 Ports	KV0008A-R2

RACK CONSOLE FOR SERVER ROOM ACCESS

Use Black Box LCD Server Rack Consoles (1U) to quickly access local Emerald devices in your server room:
• Brilliant 17" LED backlit LCD display with native WUXGA 1920 x 1200 resolution
• Full-size keyboard available with multiple language designs and touchpad
• DisplayPort and DVI/VGA video, USB or PS/2 keyboard/mouse
• Picture-in-picture display mode
• USB feed-through port on the front
• Control via on-screen menu

DESCRIPTION	PART NUMBER
Rackmount LCD KVM Drawer, 17", DP, DVI, 1U	KVT1920E-US-U-R2
Rackmount LCD KVM Drawer, 19", DVI, VGA, 1U	KVT419A-1UV-R3

VIDEO CABLES AND ADAPTERS

Use Black Box quality cables and adapters to connect your Emerald™ KVM system with computers and user consoles. Choose from an extensive product portfolio that includes the following items:

COMPATIBLE CABLES AND ADAPTERS	PRODUCT CODE
VIDEO CABLES	
DisplayPort 1.2 (4K60)	VCB-DP2 Series (various lengths)
DVI SL/DL Cable	EVNDVI02 Series (various lengths)
VIDEO ADAPTERS	
VGA to DVI-D Video Converter, USB Powered (1920 x 1200)	KVGA-DVID
Mini DisplayPort-to-DisplayPort Adapter	VA-MDP12-DP12
DisplayPort to DVI (1920 x 1200)	VA-DP-DVID-A
DisplayPort to HDMI (1920 x 1080)	VA-DP12-HDMI4K-A

EMERALD KVM - DESIGNED AND BUILT BY BLACK BOX

For many years, Black Box has been pioneering the market for KVM technology solutions globally and has gained a reputation as a trusted solutions provider and consultant.

Emerald has been independently designed and developed by our expert team of engineers located in Limerick, Ireland and Pittsburgh, Pennsylvania, with multiple KVM technology patents. As of today, the team combines an impressive number of years of experience in designing new KVM technology. By constantly expanding our R&D department, our team is well-suited for developing new solutions, upgrades and features that provide you with the best KVM user experience on the market.

Through our international and local sales and tech support teams, Black Box can provide you with on-site assessment, project planning and tech support. To learn more, visit: BLACKBOX.COM/COE.

WHY BLACK BOX?

EXPERTISE
Black Box project engineers can assist with system assessment, design, deployment and training.

BREADTH
Black Box offers the most comprehensive suite of engineered KVM solutions in the industry.

SUPPORT
Reflecting our commitment to complete satisfaction, our dedicated team of highly trained support technicians is available by phone free of charge, 24 hours a day, every day of the year.

WARRANTIES
Multi-year warranties with multi-year extensions and replacement options are available.

FINANCIAL STRENGTH
Nearly $1 billion in annual revenue; publicly traded (BBOX).

EXPERIENCE
Providing leading technology solutions since 1976, Black Box helps more than 175,000 customers in 150 countries build, manage, optimize and secure IT infrastructures.

CENTER OF EXCELLENCE
Black Box offers a Center of Excellence featuring professional services and support agreements that help optimize customers' systems and maximize uptime.

SERVICE LEVEL AGREEMENTS
Our service level agreements give customers access to technical support, product training, dedicated application engineers and more.