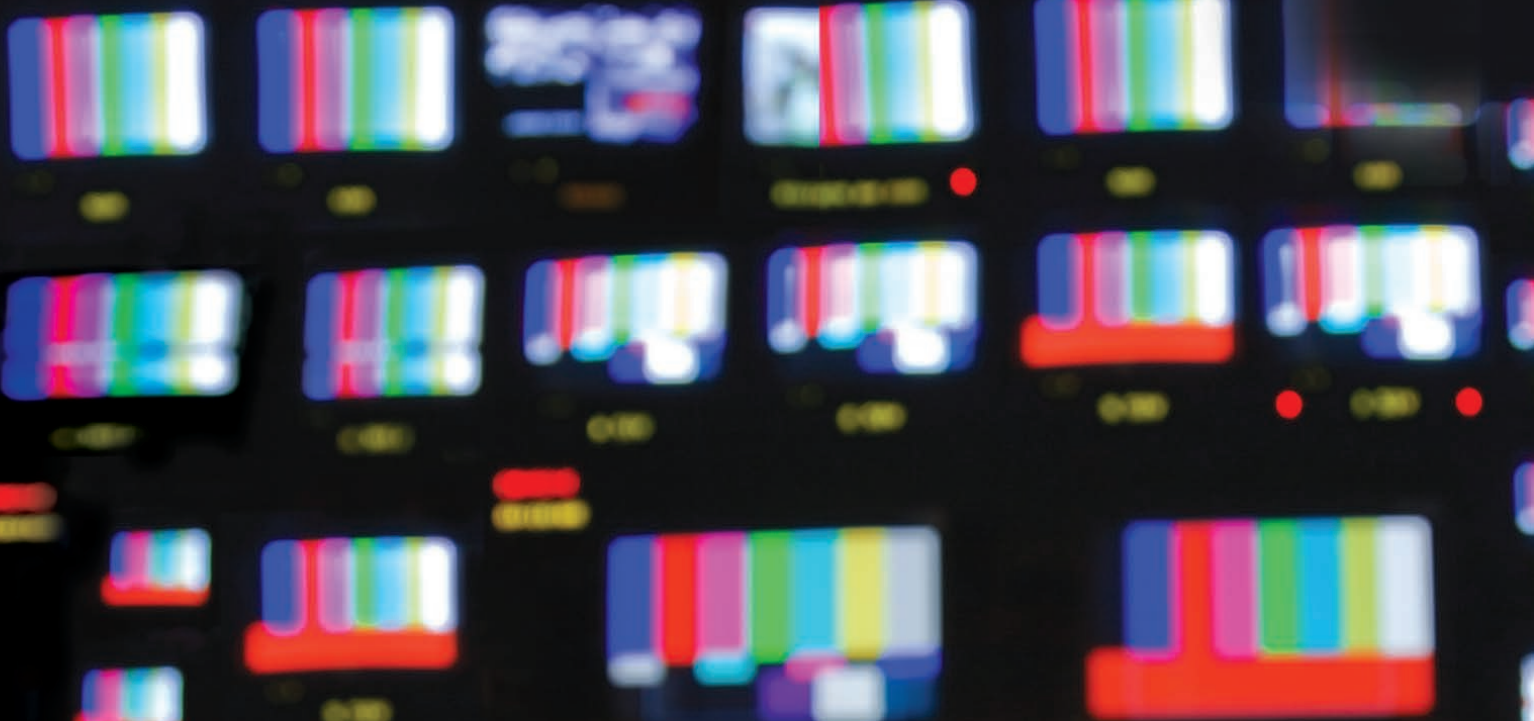




# ENTERPRISE CLASS KVM SOLUTIONS

BROADCAST & POST-PRODUCTION



# HIGH-PERFORMANCE KVM FOR CREATIVE AND PRODUCTION TEAMS

---

## BENEFITS OF ENTERPRISE CLASS KVM

**FLEXIBILITY** – Access systems from any location

**SCALABILITY** – Add servers and user stations as demand increases

**EFFICIENCY** – Improved modes of operation, providing efficient operational workflows

**SPEED** – Real-time instant switching of video, keyboard, mouse, and other peripheral devices

**REDUNDANCY** – Ability to build in redundancy and resiliency

**BLACK BOX OFFERS ENTERPRISE-LEVEL KVM SOLUTIONS FOR:**



LIVE PRODUCTION



POST PRODUCTION



STADIUMS & ARENAS



PRODUCTION TRUCKS



MASTER CONTROL



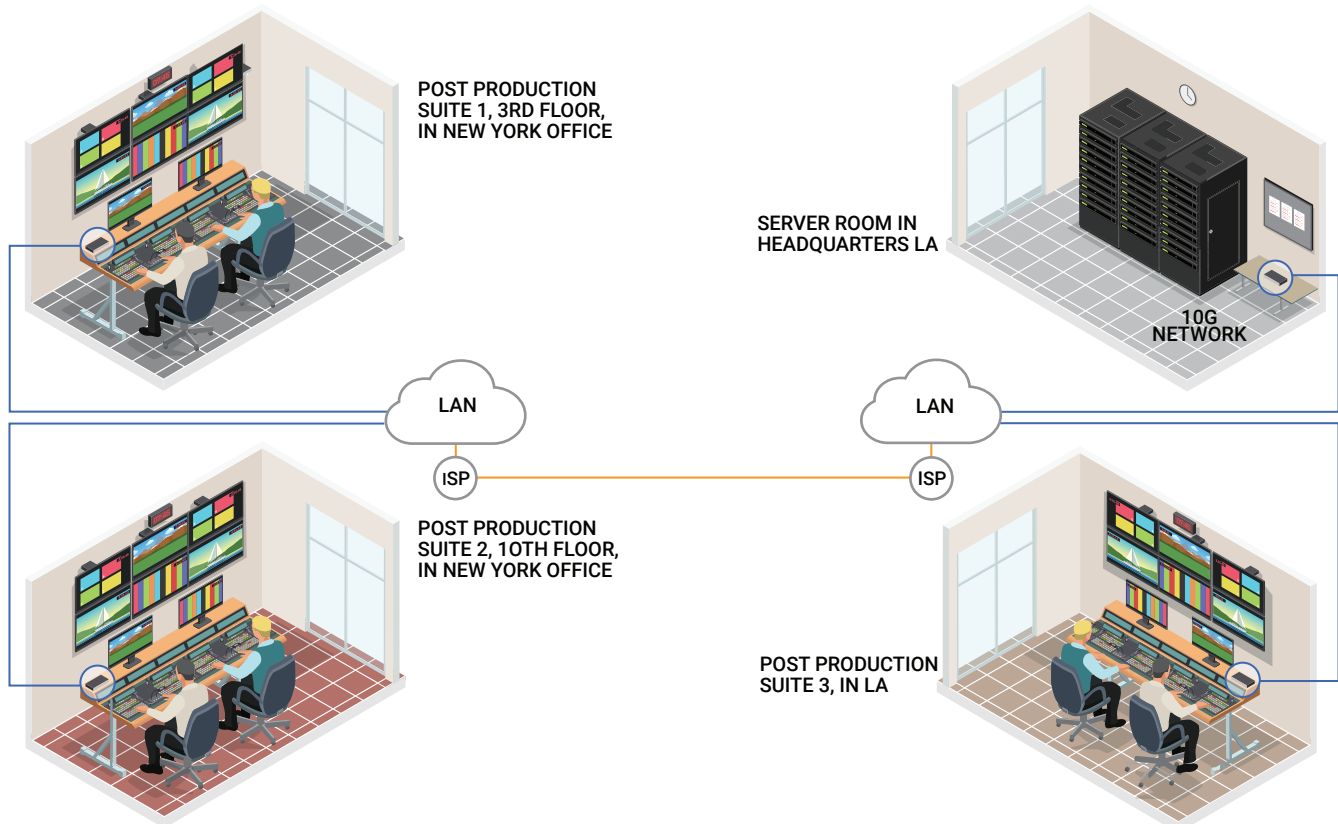
# UNIFIED KVM: HD, 4K OR BOTH

## EMERALD

Emerald is the first KVM platform to support 4K video at 60 Hz over standard IP network switches and connections. Even if you're not quite ready for 4K, you're still ready for Emerald. Start with HD and add 4K at your own pace. Deploy a KVM matrix switching system, and support both physical and virtual servers. Your Emerald KVM network can start small, but it's infinitely scalable just by adding endpoints with no additional chassis or cards needed. Because the Emerald KVM platform is flexible, you'll never have to worry about being locked into HD, 4K or anything that comes after that.

While Emerald is a one-of-a-kind solution that opens up the revolutionary new world of Unified KVM, the platform builds upon time-tested KVM technology evolved by Black Box since the early 1990s. Emerald works flawlessly with many popular Black Box product families, including: the DKM proprietary direct-connect KVM system; the Freedom II KM Switch for easy switching just by moving a mouse between screens; the ControlBridge™ system for one-touch, multisystem control; and the award-winning Boxilla™ KVM Manager.

- HD and 4K video transmission over standard IP network infrastructure
- True USB emulation supporting:
  - Wacom® Tablets
  - High-Speed USB 2.0 Devices
- Unlimited scalability of endpoints
  - Non-blocking
  - Highly configurable
  - No distance limitations
- Pixel-perfect image transmission with every pixel—60 fps with 10-bit color depth
- Simplified access to both physical and virtual servers
- Supports VMware®, Microsoft® and Citrix™, using RDP, RemoteFX and PCoIP
- Supports WAN access so users can work anywhere with access to everything
- Resilient system designed with 24/7/365 critical applications in mind
- Configurable with redundant paths and server endpoints for fail-safe backup
- Flexible, USB-powered KVM solution for agile remote desktop connectivity consuming zero rack space with Emerald ZeroU Transmitter



# DIGITAL KVM MATRIX SWITCH

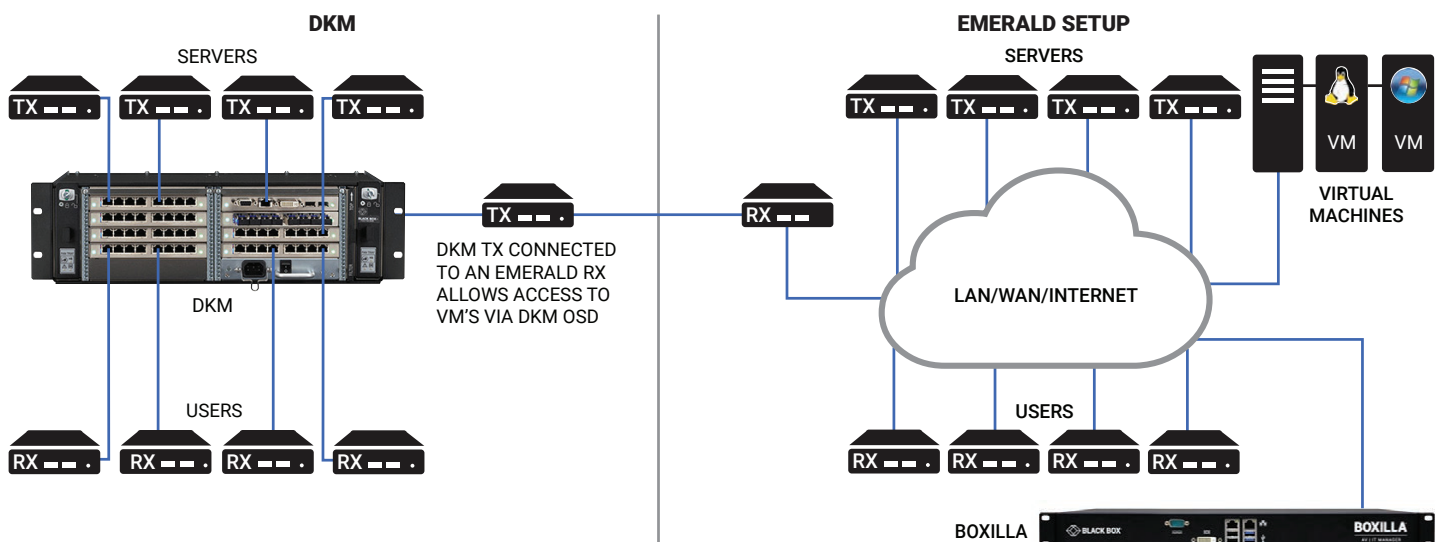
## DKM



KVM matrix technology enables multiple users to connect to and switch between multiple, remote servers. The connectivity between the user and servers can include all video, keyboard, mice, and other peripheral signals and devices, enabling the users to have full access and capabilities of the remote server at their desktop. Physical connectivity is supported by dedicated CATx or fiber cables that are routed to the central switching chassis from both the servers and user console. This type of matrix connectivity is also referred to as "direct connect". Black Box provides a hybrid (copper and fiber) matrix switching solution for multiple signal types in an innovative product system, the DKM KVM Matrix Switching system. The DKM platform replaces multiple devices with one hybrid solution by supporting routing, switching, and multi-point distribution of HD-SDI, HDMI, and DisplayPort, as well as state-of-the-art KVM functionality. This solution replaces up to four single-purpose devices with one robust solution, thereby saving customers time, money, complexity, and potential integration hassles.

- Support widest range of video and peripherals
- Up to UHD (3840 x 2160 @ 60 Hz) and DCI (4096 x 2160 @ 60 Hz)
- USB 2.0 and USB 3.0 at full data rates
- Digital and analog audio and serial control
- Baseband SDI and HDMI support
- Central matrix system
  - Scalable from 8 to 576 ports
  - Fixed and modular chassis
  - Interconnect for larger systems

## PRODUCTION CONTROL KVM SYSTEM



# IP-BASED KVM

## AGILITY

IP-based systems offer even more flexibility in terms of system architecture. There is no theoretical limit to the number of end points that can be added to an IP-based KVM system. The only practical limitation is the bandwidth of the user-supplied network that supports the system. IP-based systems are considered the best choice for very large systems, although it is recommended to examine the load that the KVM system may impose upon the network, and consider dedicated network infrastructure for the KVM system to ensure performance. Black Box Agility is a scalable system for sending KVM, audio, and serial signals to user stations or video monitors as far as your Ethernet network goes. The flexible topology of Agility gives you extension options beyond traditional keyboard-video-mouse. Get KVM switching, server sharing, video extension with full HD 60 fps, and multi-casting.

- Scalable system that will grow with your network as needed.
- Flexible topology for HD video, audio, USB, and KVM extension and switching.
- No-loss compression minimizes bandwidth use while maximizing the user experience.
- Configure your network to suit your needs: point-to-point extension, KVM switching, single-target sharing, or multicasting.
- Features keyboard/mouse emulation and virtual transparency for other standard human interface devices (HIDs), such as touchscreens or flash drives.



## BOXILLA KVM MANAGEMENT



Your Boxilla command center dashboard gives you an instant snapshot of your KVM network. It shows you what users and devices are active and how much bandwidth different devices are using so you can see how your KVM system is performing in real time at any given moment. Drill-down menus let you dig deeper for more in-depth analysis. Boxilla also allows you to chart key performance parameters such as bandwidth, frame rate, user changes, and power.

- **Ease of Use:** Intuitive centralized admin and control with simple configuration and management.
- **Scalability** - Supports an unlimited number of users and devices across your KVM systems, including virtual desktops and physical PC/servers.
- **Security** - Enterprise management with enhanced authentication, access control, and accounting for secure communications; security interface dashboard provides real-time alerts and alarms.
- **Performance** - Chart key performance parameters such as bandwidth, frame rate, user changes and power usage; advanced mode controls include private, shared, pre-emption, and auto log-in.

## BLACK BOX CASE STUDY

### WWE ENHANCES PRODUCTION EFFICIENCY WITH HIGH PERFORMANCE KVM

In 2016, WWE considered a new KVM system that could accommodate their production load. The facility was limited to 64 ports with unreliable line ties that often caused system breakdowns. The analog VGA system also did not travel long distances well, and suffered from low video quality and limited overall resolution. The production team's graphics system was also on a separate matrix, making it difficult to get from one system to another. The WWE required a setup that would enable control-room producers to seamlessly use multiple screens at high resolutions.

"From the start, Black Box helped us put together a good list for what would be needed for each station," said WWE Director of Broadcast Engineering Jasper Veldhuis. "They put together a configuration template with the different extenders and connections that we would need for each device and were even able to help us with some of the design."

Following the initial agreement, the WWE also asked Black Box to support their need for an additional control room. Black Box was able to surpass the customer's expectations thanks to their broad product lines. "With Black Box, you can basically get anything you need," Veldhuis said.

In a three-month build out, Black Box revamped the WWE's system by installing a 288-port switch populated with 246 TXs and RXs. They also installed a 48-port switch populated with 36 TXs and RXs, which was used for their extra control room. The overall system was designed to allow the WWE to upgrade to a 576-port switch if needed. Black Box Cat 6 cabling and connectors were also used, delivering a product continuity that appealed to the customer.

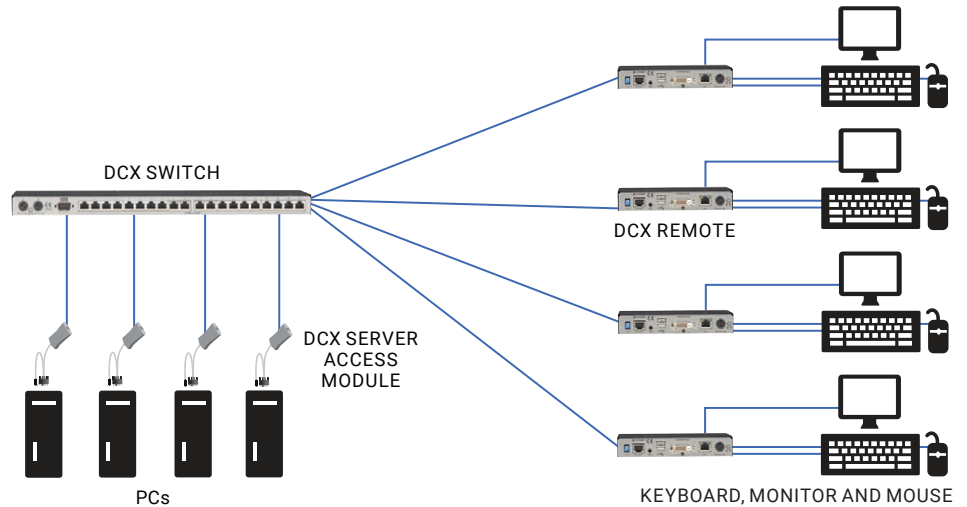
"The system has made the most improvement in our workflow within our production control rooms," he said. "It has enabled extreme flexibility for production to work where they want. If someone from production wants graphics in the back row or the front row, both are possible. If they want graphics in another room, that's also possible. He added, "The quality of the video, and zero latency for video and control, is equal to connecting directly to the computer. This allows access to all systems in a transparent way for users. Having access to hundreds of computers from one user station with multiple displays is life changing."

For more on this case study, visit [BLACKBOX.COM/WWE](http://BLACKBOX.COM/WWE).



## MULTI-VIEW KVM MATRIX (DCX)

- Multi-view display of sources
  - Use as confidence monitor
- Full-Screen with High-Quality Video
  - Uncompressed
- Mixed Mode sources
  - DisplayPort, DVI, VGA



CONNECTS UP TO 23 TARGET COMPUTERS OVER DISTANCES UP TO 50 METERS FROM THE SWITCH

## MULTI-PC EXTENDED DESKTOP (FREEDOM)



- Control multiple PCs
- Any mix of operating systems
- Share keyboard and mouse
- Zero switching delay
- Supports non-linear screen layouts
- Works with local and remote systems

## MULTI-VIEW KVM (4-SITE)

- 4 video displays on one monitor, touch screen compatible
- Shared keyboard and mouse
- User configuration of screen layout
- Flexible, four display modes, in real-time



QUAD MODE



PIP MODE



WINDOWS MODE

## LARGE SCALE HIGH-PERFORMANCE KVM CLIENTS:

11 RTL	FOX CAROLINA	RTL
ABC	FOX NE&O	SCRIPPS INTERACTIVE
ARIZONA CARDINALS	GOOGLE	STUDIO MITTE (GERMANY)
BR (GERMANY)	HBO	SWR (GERMANY)
CBS	HOCKEY CLUB LUGANO	TFI (FRANCE)
CHAINSAW / SIM GROUP	HSN	TURNER
CNN	MOBILE TV GROUP	UTAH CHANNEL 4 (ABC)
COMCAST	MY FOX HOUSTON	WDR 1 (GERMANY)
DAYTON DRAGONS	NBC UNIVERSAL	WGBH
DEUTSCHE WELLE	NDR (GERMANY)	WJBK
DIGITA (FINLAND)	NEON	WMAQ
DIRECTV	PROSIEBEN SAT1 (GERMANY)	WPXI
DIVERSIFIED	PULS (GERMANY)	WWE
FACEBOOK	QVC	ZDF (GERMANY)