Control Room Solutions

Signal Distribution and Visualization for 24/7 Critical Environments
Control rooms need to be reliable and should display accurate data both on-site and remotely. They also have to provide access to massive amounts of data in a safe environment and offer enough flexibility and scalability to accommodate ever-changing user needs and new technologies. Black Box has the deep technical expertise, wide support system, and extensive product portfolio to put together a solution for your application. As a leading control room solution provider, we offer our customers reliable, highly tailored solutions for routing, switching, and extending video and peripheral signals. Our products help you optimize the visualization of critical data and bring collaboration in the control room to a whole new level.

Black Box® Solutions for Control Rooms

Signal Switching and Extension
High-performance KVM solutions that switch and extend critical sources.

Video Wall Management
Make informed decisions from an easy-to-manage, shared video wall.

Operator Workspace and Control
Real-time monitoring tools and room control products that optimize operator workflows.

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CONTROL ROOM SIGNAL FLOW

SOURCES
Video and data sources are accessible to multiple users at different consoles and various locations.

SIGNAL MANAGEMENT

OPERATOR CONSOLES
The matrix switch and control system enables users to switch between sources and show content on video walls.

VIDEO WALL
KVM-over-IP and decoding technology enable operators to access systems from a remote site (fail-safe design).

ENGINEERING
Downtime is reduced because engineers can access sources from any equipment with a system receiver. Engineers are able to troubleshoot, switch operators and change sources quickly and easily.

MAIN CONTROL ROOM

CONTROL ROOM 2

IP CONNECTION

BACK-UP SITE
**Signal Switching and Extension**

KVM matrix switching gives operators access to remote computers, production assets, and virtual machines. It also allows users to monitor processes and provides flexible control of visual elements on common shared screens and video walls.

KVM signal extension enables organizations to place PCs, servers, and workstations in clean and secure locations. KVM technology also optimizes workflows by giving operators quick access to remote sources from their local workstations. Black Box offers KVM solutions that transmit pixel-perfect 4K video, USB, serial, and audio signals over CATx, fiber, and even IP.

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**Emerald – 4K KVM Matrix Switching over IP**

Emerald® Unified KVM is an award-winning zero-client-based KVM extension and matrix switching platform that supports both point-to-point extension and IP-based KVM matrix switching of an unlimited number of users and computers. Distributing HD or pixel-perfect 4K video signals, high-speed USB 2.0, and bidirectional analog audio, it can connect users with both physical computers and virtual machines. Use managed IP switches to connect all end points and provide fast and reliable remote computer access as far as your network reaches – or even over the internet. Use the Emerald Remote App to turn any Windows® 10 device into a software KVM receiver, eliminating the need for additional hardware receivers. To learn more about Emerald, visit [blackbox.com/emerald](http://blackbox.com/emerald)

- Switch and extend HD or pixel-perfect 4K video, bidirectional analog audio, and up to four USB 2.0 devices.
- Create a KVM matrix that supports up to 32 end points through the built-in management interface, or use the Boxilla® KVM Manager to construct matrices with hundreds of users and servers.
- Use Black Box-tested or third-party standard IP switches to build a KVM matrix.
- Real-time virtual machine access via RDP 8.1/RemoteFX or PCoIP.
- Dual network ports for fail-safe operation (Emerald 4K, Emerald PE).
DKM – 4K Digital KVM Matrix Switching

DKM is a proprietary (non-IP) high-performance KVM matrix switching platform that allows cross-point switching and extension of up to 4K video, peripheral, audio, and serial signals. Choose from chassis-based matrix switches in multiple sizes (DKM FX), compact CATx and fiber switches (DKM FX Compact), and (modular) DKM extenders. The multilevel redundancy of the DKM family offers high reliability for 24/7 operation in critical environments, such as control rooms. DKM supports full redundant power and hot-swappable modules so you can perform field upgrades without interrupting signal flow. To learn more about DKM, visit blackbox.com/dkm

- DKM FX Matrix Switch chassis with 48, 80, 160, 288, or 576 ports.
- DKM FX Compact Switches with 8, 16, 32, 48, 64, or 80 ports.
- Select from a variety of I/O cards for the switch or extender chassis to fit your application’s requirements.
- Use preconfigured or modular extender units to connect sources/switches and switches/user stations.
- Supports multiple signal types, including DisplayPort, DVI, HDMI, VGA, digital or analog audio, USB 1/2/3, and serial.
- Manage via Controller Card and Java Management Tool.

DKM KVM matrix switching setup that connects multiple source PCs and operator workstations
DCX – Compact Matrix Switches

DCX is a flexible KVM matrix switching solution designed for small- and medium-sized applications where fast and reliable switching of uncompressed HD video, audio, and USB is essential. DCX offers 10 or 30 configurable ports that support any combination of users and servers (30-port model: maximum of 23 computer connections). A thumbnail preview of all connected sources provides an instant overview of all connected sources and enables intuitive, fast switching. Interface-powered Server Access Modules connect to sources, and Remote User Stations link to each workplace to extend DVI, DisplayPort, or VGA signals and USB over shielded CATx cabling. To learn more about DCX, visit blackbox.com/dcx

- Cost-effective digital KVM matrix switching for up to 30 end points.
- Features a multiview thumbnail OSD so you can preview all systems at the same time.
- Zero compression and zero latency with pixel-perfect video up to 1920 x 1200 at 60 Hz.
- Supports single-, dual-, or multi-head video operation.
- Add computers with DVI, DisplayPort, or VGA video ports and USB interfaces using compact Server Access Modules.
- Convenient server and user connections over shielded CAT6 (or higher) cable. Supports 10-meter (32 feet) server-to-switch connections and 50-meter (64 feet) switch-to-console connections.
Video Wall Management

High-performance video processing solutions convert and scale video signals to the required single-screen or multiscreen display format. With video or data sources connected to the processor, it is possible to create individually tailored video wall solutions that deliver high-resolution images to all displays in your control room.

Radian Flex – Software-Based Video Wall Controller

Radian Flex is a 100 percent software-based video wall processing solution, which means no costly, confusing hardware upgrades and no bulky boxes that take up too much space. Infinitely scalable, it has no limit to the number of end points it can display to. Radian Flex gives you powerful control over all of your content, which lets you easily manage what, where, when, and how content is shown. To learn more about Radian Flex, visit blackbox.com/radianflex

- Radian Flex is a 100 percent software-based video wall controller.
- Works over standard, managed 1-Gbps Ethernet.
- Supports 250+ displays for one or multiple video walls on a single controller PC.
- Supports today’s 4K and is ready for tomorrow’s 8K and beyond.
- Features high-performance HD and 4K at 60 Hz video playback.
- Supports video compressed in the H.264/AVC format and audio compressed in the AAC format.
- Globally share live feeds and content among connected walls.
- Powerful, fail-safe connectivity makes it ideal for mission-critical applications.

Radian Flex application diagram
MCX – Advanced AV Distribution and Video Wall Control

MCX is the next-generation AV-over-IP solution that delivers up to 4K 60 Hz 4:4:4 video with the lowest latency and fastest switch times available in the AV marketplace. MCX makes it possible to handle video walls, video extension (point-to-point and point-to-multipoint), and digital signage on an IT network. It also gives you intuitive control over how content displays on every screen. This networked AV system brings versatility to video wall deployments with advanced video scaling options, such as multi-view, picture-in-picture, split screen, and more. To learn more about MCX, visit blackbox.com/mcx

- Extend up to 4K 60 Hz 4:4:4 video to an unlimited number of displays without sacrificing latency, video quality, or bandwidth.
- Overcome source to display latency with glass-to-glass encoding and decoding that happens in real time (less than 0.03 milliseconds).
- Switch between video sources in less than 100 milliseconds with no artifacts or screen blink.
- Increase versatility in video wall deployments with advanced video scaling options, such as multiview, picture-in-picture, split screen, and more.
- Developed with Software-Defined Video over Ethernet (SDVoE™) – the latest software-based AV-over-IP platform for extension and control of AV systems.

MCX AV-over-IP System (MCX-S9C-ENC)

MCX application diagram
Operator Workspace and Control

Workspace and control solutions allow operators to use their systems and applications more efficiently. Black Box solutions range from AV control systems to KVM Multiviewers to keyboard mouse switches. With these solutions in place, operators can focus more closely on their work, rather than on the equipment affecting their work.

Freedom KM Switches

- Freedom KM Switches enable you to switch between four or eight computers by moving your mouse cursor from monitor to monitor.
- With only one keyboard and mouse required to operate four or eight computer systems, desk space becomes more ergonomically effective.
- Monitors keep direct computer connection. Only USB and audio switch between source PCs.
- Require no additional software or drivers on your computers.
- To learn more about Freedom, visit blackbox.com/freedom

KM switches allow you to switch between four or eight PCs by moving a mouse cursor from screen to screen
4Site KVM Multiviewer

- Control and monitor four computers on a single screen.
- Real-time, reliable switching of digital HD video, USB, and audio signals.
- Features KVM switching via hot key, hot mouse, OSD, external program, or serial control device.
- Four display modes: full screen, quad, picture-in-picture, and windows mode (free scaling and transparent positioning).
- To learn more about 4Site, visit blackbox.com/4site

ControlBridge – Complete Multisystem and Room Control

- Control AV systems, room automation, software applications, KVM networks, and video wall controllers via Ethernet, serial, IR, digital I/O, and relays.
- Multiple control processors and touch screen devices for any control application.
- Control applications with an unlimited number of touch screens, pushbuttons, and mobile devices (iOS, Android).
- Pre-configured control room app available that allows you to automatically discover, set up, and control DKM, Emerald, and Radian Flex solutions.
- To learn more about ControlBridge®, visit blackbox.com/controlbridge
Case Studies

**Police Station Command and Control Room**
A new police station needed to upgrade its command and control room.

**The Challenge**
As part of the move to a new building, a police department in Norway planned to overhaul their command and control room equipment. Their existing control room used legacy analog technology and was a mix of KVM point-to-point extensions (VGA-PS2 and VGA-USB) and small desktop KVM switches. This setup only provided single-user access to one or two remote systems.

**The Solution**
The police department specified a need for fast switching times, redundancy, and hot swappability to avoid potential downtime. Black Box suggested the implementation of a DKM FX Matrix Switching System. Because of their scalability and flexibility, DKM FX Switches are great for command and control rooms. These switches provide multiple users with access to multiple computers and the ability to work over a mix of structured cabling (copper and fiber).

The DKM FX solution was configured with two video walls, one 4-by-2 and one 2-by-2. This setup connected multiple users throughout 24/7 shifts.

**WWE Enhances Production Efficiency with High-Performance KVM**
Create a KVM system that could support the WWE’s production load.

**The Challenge**
The WWE needed a new KVM solution that could accommodate their production load. Their current analog VGA system did not extend KVM signals well, suffered from poor video quality, and only supported a low video resolution. Their facility was also limited to 64 ports with unreliable line ties that often caused system breakdowns.

**The Solution**
Black Box installed a 288-port KVM switch, a 48-port KVM switch, and CAT6 cabling and connectors that gave the customer the high-performance KVM functionality and reliability they required. Since deployment, WWE has experienced significantly improved workflows, enhanced efficiency, and no system breakdowns.

WWE Director of Broadcast Engineering Jasper Veldhuis was very pleased with the new KVM solution from Black Box. He explained, “The system has made the most improvement in our workflow within our production control rooms. “It has enabled extreme flexibility for production to work where they want.”
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, AV and infrastructure 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.

Service Level Agreements
Our service level agreements give customers access to technical support, product training, dedicated application engineers, and more.

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.

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

Centre of Excellence
Black Box offers a Centre of Excellence, featuring professional services and support agreements that help optimize customers’ systems and maximize uptime.