Emerald KVM over IP Solution Allows Modernization of Mission-Critical Control Room

Industry	:	**Military and Defense**
Solution	:	**4K and HD KVM over IP**
Application	:	**Control Room**
Products	:	**Emerald PE, 4K, Boxilla**

THE CHALLENGE

A system integrator had a client who needed to update their control room. The integrator had a previous, long-term relationship with a Black Box KVM application expert. When the customer wanted to update their existing KVM installation with a new 4K system, they reached out to our application expert.

The customer was faced with several challenges. They needed:

- A more futureproof solution that has the ability to support 4K connections while providing full interoperability with all hardware compatible (HD and 4K)
- Remote access executed through an isolated KVM network
- Access to physical and virtual machines
- The ability to control the system from multiple sites so clients wouldn't have to travel to worksites
- To reduce the amount of bandwidth consumed by the system
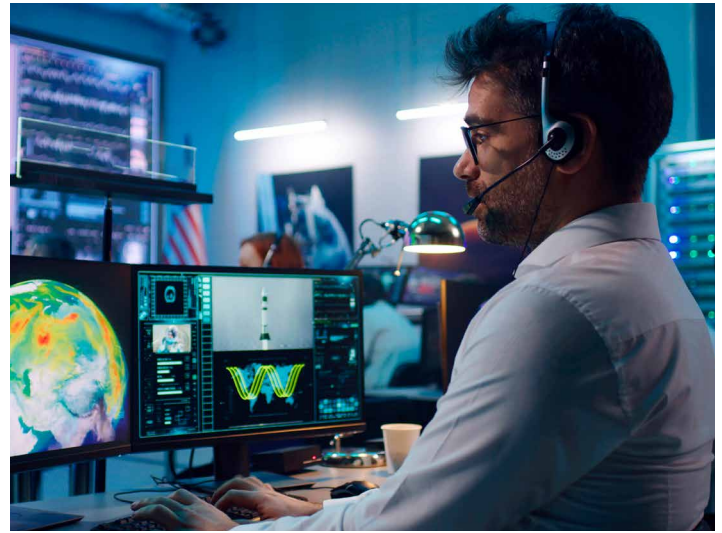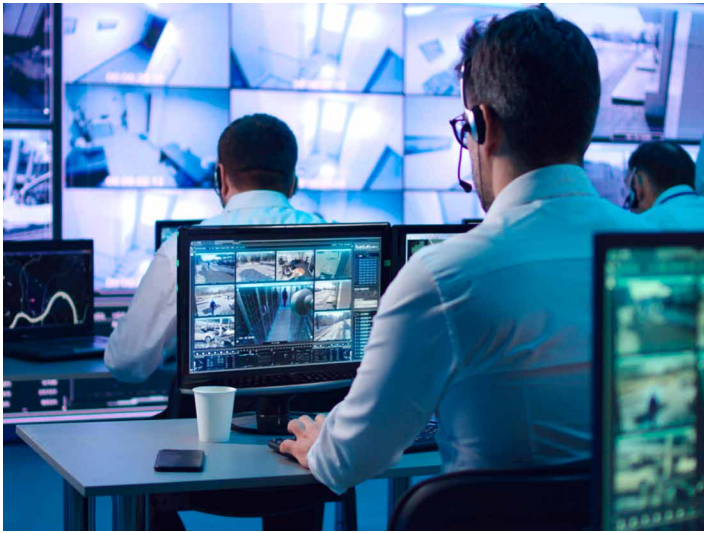- Fiber connectivity for all connections

THE SOLUTION

Our KVM application specialist recommended an Emerald KVM-over-IP solution to address each and every one of the customer's requirements. He designed a turnkey solution comprised of several Emerald 4K and Emerald PE (HD video) Transmitters and Receivers, Boxilla KVM Managers, Emerald Network Switches, Central Power Hubs, as well as the fiber cabling.

From the initial request to the actual go-live date, this project took nearly 2-years while Black Box worked closely together with the system integrator, provided solution concepts, product demonstrations, and tried and tested every single part of the overall solution to make sure there are no complications post go-live in such a critical application.

The new Emerald system delivers remote access over a dedicated and secure KVM network with approximately 140 endpoints. Operators can easily access and switch between physical servers and virtual machines. Eliminating the need for operators to travel to worksites, the system provides remote access for system management and control from any location. Because the system runs over fiber optic cables, EMI/RFI emissions are practically nonexistent. Emerald also enables more efficient operation than the previous solution, because Emerald uses an exceptional low bandwidth with next to no latency, which becomes an important point considering the required 4K video streams. Through the intuitive dashboard of the Boxilla KVM Managers, required connections moves, system monitoring, and user access become faster and easier to deploy.

The Emerald installation is more reliable than the customer's previously installed system. In the old system, if the system controllers fail, the extender units connecting users and systems also fail. This is not so with Emerald, since the extenders continue

to operate even if the KVM Managers fail. To ensure 24/7 reliable operation, a secondary Boxilla KVM manager is installed as a full backup solution to the primary controller. Emerald 4K units for the most critical connections use redundant power. For ultimate reliability and instant replacement, the customer also wanted to host a few spare units at his facility to allow instant hot-swap replacements.
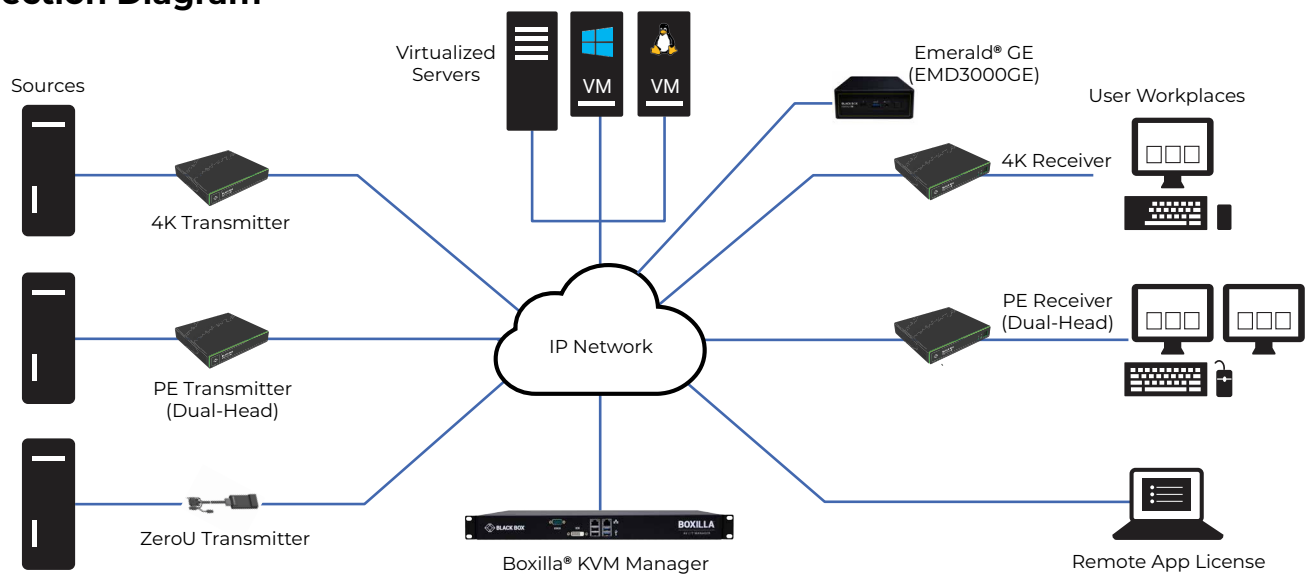
THE RESULT

The customer now has a fully functioning Emerald 4K KVM over IP system in their mission-critical control room. The installed 4K and PE extenders have fiber connectivity, making them less prone to signal detection than copper cabling. Operators can access all systems, both physical and virtual, remotely at any time. As Emerald 4K and HD devices are fully interoperable, every user, no matter if he uses HD or 4K video, can access any system - HD or 4K - allowing slow migration to 4K while using existing HD equipment without limitations.

In particular, the new solution addresses the "Achilles' heel" of the customer's previous solution: if the controller fails, the extenders can still operate and will not lose their connections.

With potential for creating similar applications at other sites, the integrator will choose the Black Box KVM solution first, and the solid, trusted working relationship our KVM application expert has developed with them over the years is a deciding factor.

Connection Diagram

Sources

4K Transmitter

PE Transmitter (Dual-Head)

ZeroU Transmitter

Virtualized Servers

VM   VM

Boxilla® KVM Manager

IP Network

Emerald® GE (EMD3000GE)

4K Receiver

PE Receiver (Dual-Head)

User Workplaces

Remote App License