



***Taking KVM Switches Beyond the Data Center***

# Taking KVM Switches Beyond the Data Center

## Overview of KVM

For nearly three decades, KVM (keyboard/video/mouse) switches have been a critical technology asset for organizations of all sizes. During the early 1980s, the boom in the computer industry led to an increase of costly monitors and other control peripherals in server rooms and data centers. Aside from the added expenditures and space requirements, computer sprawl was problematic as it impacted rack space and caused heat disbursement issues, to name a few issues.

Moreover, within larger data centers, IT administrators were forced to physically walk to each server they needed to work on. Around this time, the first KVM was introduced to address these IT challenges. Technically, the first iteration of these devices could be more aptly described as “KV” switches as they supported only keyboard and video switching – mice were not yet prevalent during this time.

By definition, a KVM switch is a hardware-based solution used to access multiple servers, computers and peripherals easily and conveniently from a single keyboard, video monitor and mouse. Fundamentally, KVMs enable network administrators to streamline rack space and IT environments as well as reduce the substantial costs and clutter of additional keyboards, monitors and mice. Other benefits of KVM include server manageability and savings in energy consumption, as well as a reduction of server racks, cabinets and floor space. In addition, by consolidating these peripherals, heat and electrical distribution and control became more manageable

According to market research firm [VDC Research](#), “KVM switches are excellent tools for reducing enterprise costs and improving the efficiency of an organization's business model. These devices can significantly reduce space, diminish energy costs, and make server management more effective.”

Since KVM switches provide access to a number of computers from a central location, IT professionals are not required to run from one server to the next, thereby streamlining workflow and increasing productivity. Many KVM products offer a breadth of features, scalability, multi-platform support, and local and remote access options. KVMs also have the flexibility to handle the complexity of IT operations and are increasingly being used outside of the data center to support all types of remote and/or distributed computing applications.

## KVM Switches Are Evolving

The one constant in the IT world is change. One year the trend is distributed data centers, and the next it is consolidation. With shifts in technology and stretched IT budgets, flexibility is the watchword in data center management. And, while virtualization and other software-based offerings have come to the forefront recently as competitive alternatives, KVM switches have held their own and are still, in fact, a powerful, viable and necessary tool for network management.

Over the years, new applications that extend beyond KVM's original purpose within the data center have emerged. Organizations have applied KVM technology to a variety of non-data center scenarios, including kiosk management, surveillance, industrial computer control, and digital media/graphics environments:

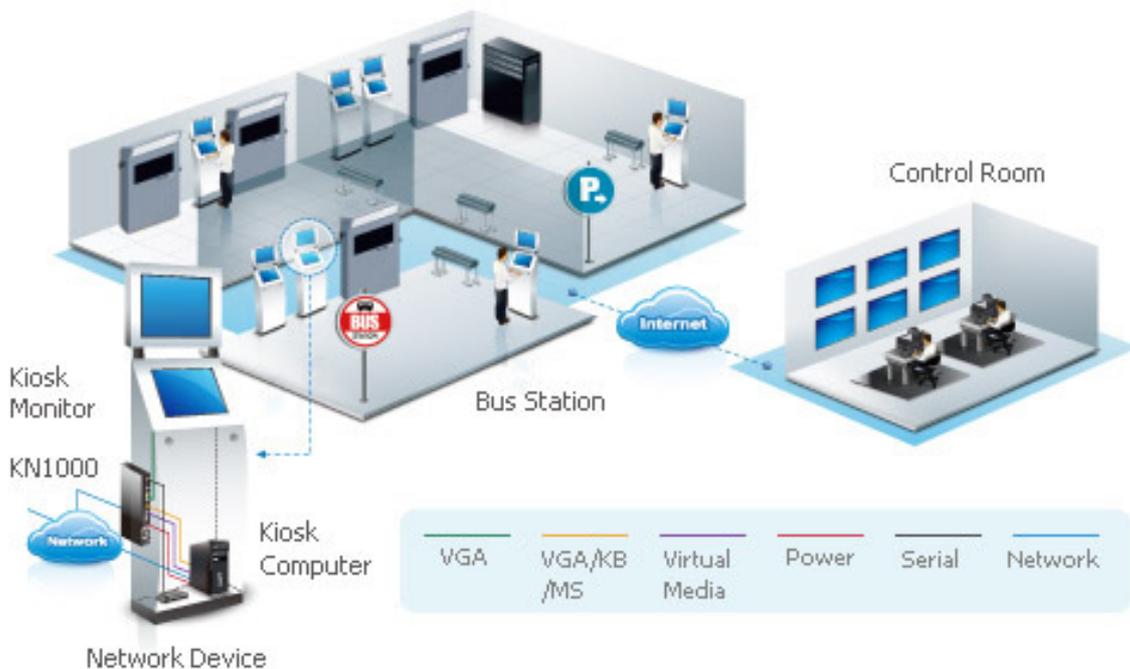
## Kiosk Management

While in existence for quite some time, self-service kiosks have come to the forefront in recent years as a convenient and popular method for point-of-sale (POS) transactions, self-service and customer support. Examples include check-in kiosks at airports and hotels, ATMs, coin counting dispensers, movie rental machines, self-checkout kiosks at supermarkets, e-ticketing and more.

Since most kiosks essentially have computer hardware stowed inside them, there will often be a need from a technology standpoint for management and troubleshooting of these machines. If a kiosk failure should occur at the software level, a digital, or IP-enabled KVM switch, could be leveraged, from a remote location, to connect to the kiosk at the BIOS level to troubleshoot and/or reboot the operating system. As previously noted, KVMs can access the BIOS- or hardware-level of computer devices in kiosks, allowing for remote repair or reboot of the system if the operating system crashes. Software-centric management tools do not offer this capability.

With an IP KVM switch, organizations no longer need to dispatch field technicians to sites to service kiosks. All of the tasks can be performed via the Internet – significantly reducing costs and ensuring kiosk uptime, which translates into improved customer satisfaction and a boon to the bottom line.

Additionally, because kiosks can be controlled via the Internet, organizations can reduce energy consumption by remotely powering down kiosks when they are not being used. For example, supermarket POS terminals and movie rental kiosks can be powered down once the store closes for the night. Airports can reduce the number of check-in terminals during off-peak hours. In both scenarios, KVMs can be configured to automatically power up kiosks at pre-determined times. In summary, when using IP KVM appliances for kiosk management, organizations can realize a host of key benefits including savings in both time and money.



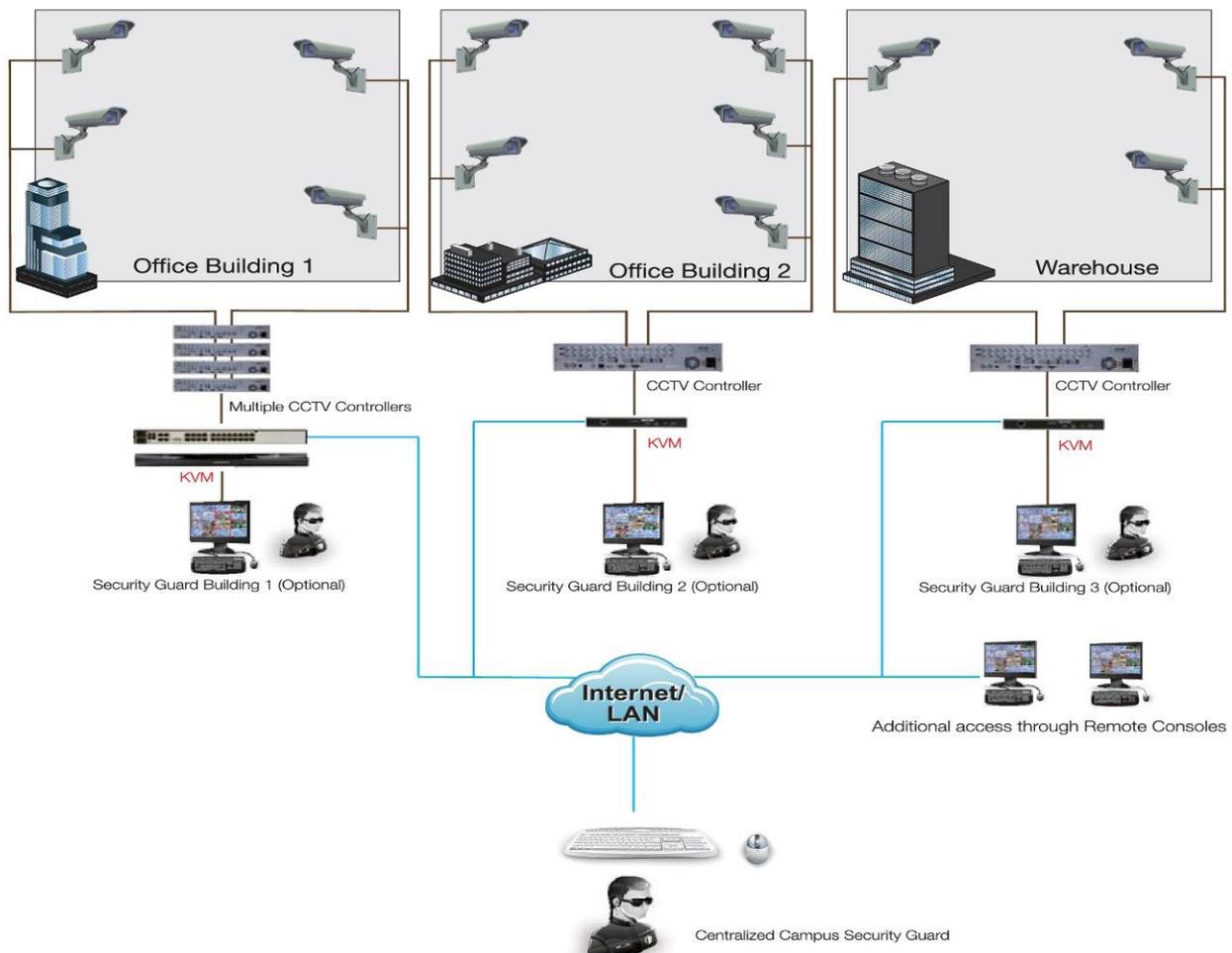
## Surveillance

When discussing security as it relates to technology, we often tend to think of digital defenses for computer and software access. Another critical aspect of security is surveillance of physical locations such as building entries, storage facilities, schools, home and business security, industrial plants, prisons and many more. To maintain initial investments, many schools and even prison facilities will opt to consolidate older systems and digitize their surveillance installations.

Many IP-based KVM switches provide a digital interface to remotely access and consolidate non-IP, legacy surveillance architectures such as closed-circuit television (CCTV). To bridge the technology gap, legacy CCTV systems can be modernized by adding remote access into the mix. A CCTV can be extended to provide security professionals with real-time monitoring of physical locations from remote areas.

Panel array technology allows surveillance operations to centralize monitoring from multiple locations. This provides support of up to 40 CCTV DVRs to be viewed simultaneously from a single screen.

In a typical surveillance installation for a multi-building facility, a CCTV controller is paired with only one control point for each building. A dedicated security team is needed to monitor and control each building at all times. When combined with an IP KVM switch, staffing is significantly reduced by centralizing the entire facility. Moreover, by adding a KVM to the surveillance installation, monitoring and control of all the buildings is centralized, thus KVM technology provides an efficient use of dedicated personnel to monitor one or more facilities.

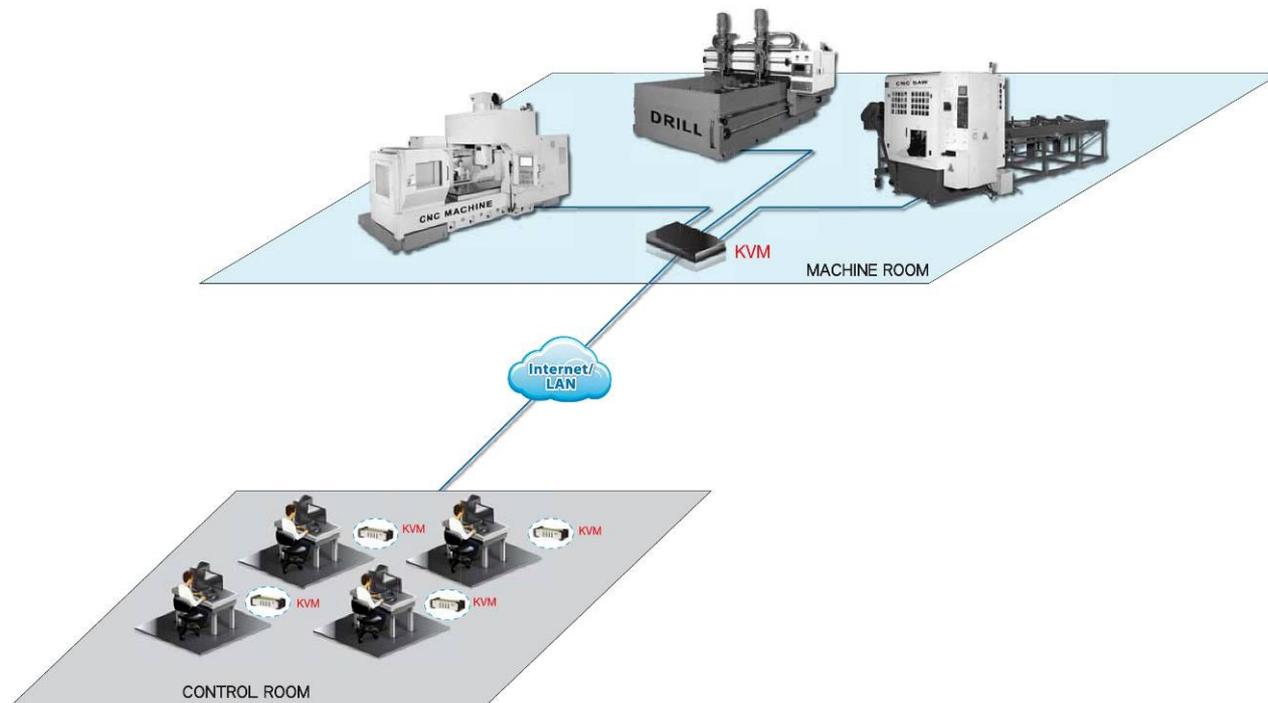


## Industrial Computer Control

Within manufacturing facilities and other industrial environments, KVM switches can be extremely useful in a variety of ways. As the machinery within these environments become more and more sophisticated, supervisors need simple user control to streamline management. Oftentimes, control computers are located in hazardous locations or can pose occupational safety issues – a risk for the technology, employee and company. By deploying KVM technology, control computers can be kept in a secure, safe location where users can access and configure without any risk of harm and without compromising work performance. Therefore, KVMs can extend and relocate the user console to a safe location, through either the network or CAT5/6 cabling.

Industrial control applications of KVM can be found at any manufacturing plant that involves hazardous areas. One example of that is logging companies, which operate in inhospitable environments. Logging companies use computers to control large saws and laser dimensioning systems to determine the maximum output of a given log. Unfortunately, control computers are often located near the dangerous saws, putting employees at risk for serious injury or worse. By leveraging a KVM extender or a CAT5-based KVM switch, the control console can be moved to a safe location, eliminating any threat of unforeseen accidents.

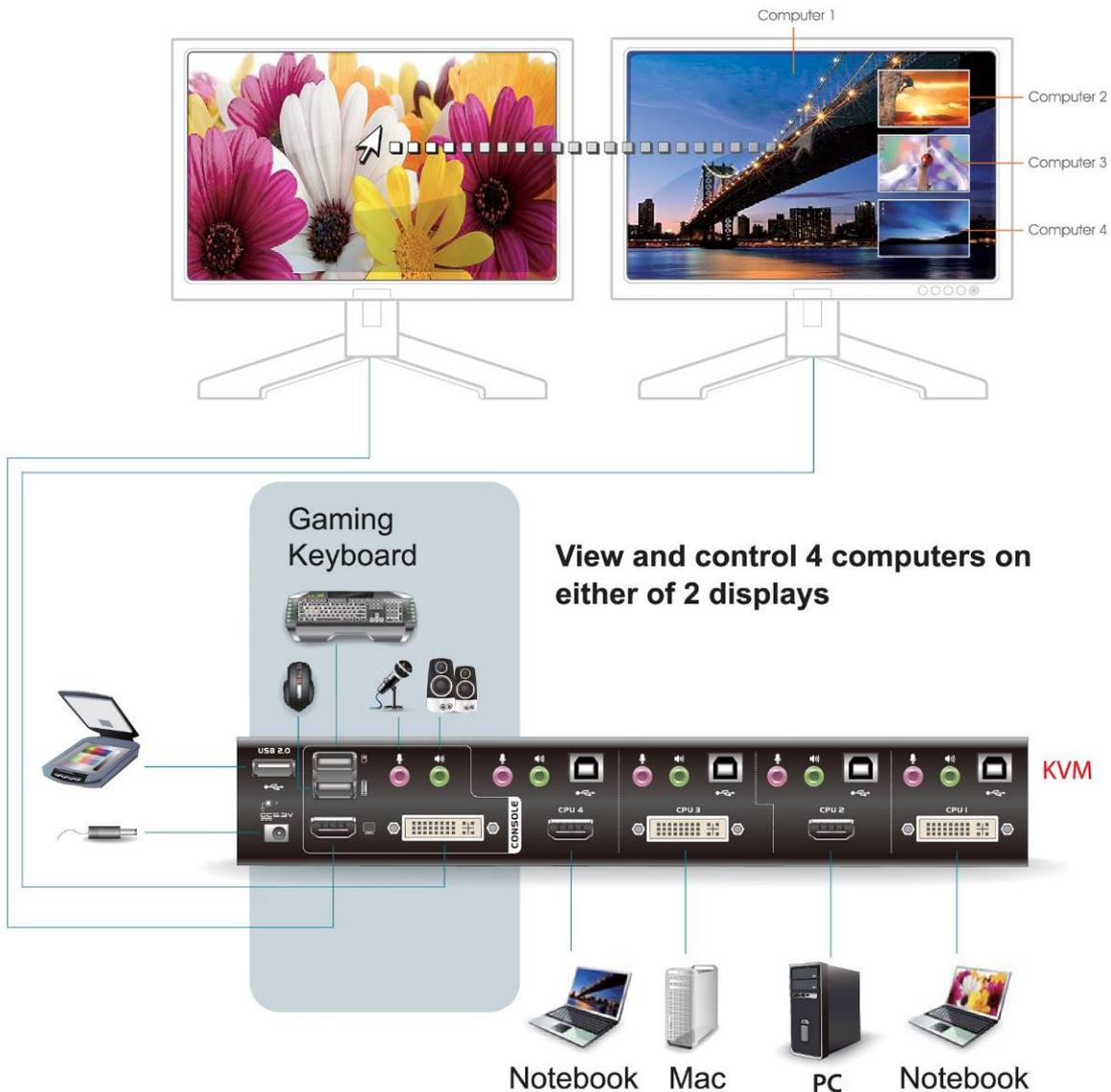
KVMs also provide ironclad, unbreakable security protection, which is particularly important for industrial applications, such as power plants. Using a KVM switch to directly connect a network to a keyboard, monitor and mouse, users can eliminate the need to control target devices remotely through the Internet – reducing the possibility of cyber-attacks.



## Digital Media/Graphics Environments

For graphic artists, designers and other digital media professionals, KVM technology offers the opportunity to develop efficient work environments., which can include everything from 3D modeling, and simulation design, to audio and video editing. Engineers and architects often require complex configurations to manage their work processes. Because these professionals often work with more than one computer at a time, KVMs offer a perfect solution to consolidate the computer equipment sprawl.

To keep pace with today’s computer advancements, KVM switches now offer new functionality such as high-definition monitor support for HDMI, DVI and Display Port. Some KVM switches offer a dual display mode which enables users to control one computer on one display while viewing another source on the second display. Others provide a picture-in-picture capability in which users can monitor up to four computers simultaneously – an ideal application for desktop graphic design and other multimedia applications. And, with 3D technology becoming more and more prevalent, newer KVM switches are offering support for these three-dimensional video signals.



## Conclusion

Although KVM is not a new technology, it has proven time and time again that it is still an important and valuable tool both within the server room as well as in non-data center scenarios described above. As new commercial, professional and consumer applications continue to be integrated into kiosks and other remote configurations, KVM technology will play an instrumental role in IT management and support. Because they operate at the hardware-level, KVMs offer a distinct advantage over other software-based counterparts, such as remote access applications. Access on the hardware level provides deeper control functionality and more robust failsafe options – offering time and cost reduction, improved productivity and customer satisfaction.

### Things to Consider: Hardware vs. Software

- Complete OS independent
- Save money by limiting the need to send field technicians to customer sites
- Reduce costs by providing power control to remote devices so they can be shut off when not in use
- Utilize high-definition monitors and resolution support for more efficient use of resources
- Promote safety by keeping employees and computers from hazardous areas
- Consolidation of resources to maintain IT devices remotely with remote reboot and BIOS level control – something a software solution is unable to provide
- Software based remote control offerings are fast and inexpensive, but are lacking distinct functionality inherent in hardware-based solution such as KVM switches
- Consider the following before selecting a software-based remote control solution:
  - ✓ OS Dependent – inability to run cross OS platforms. For example, Windows software is unable to communicate with Linux, and Linux is not capable of communicating with SCO UNIX
  - ✓ If an OS is corrupted, software-based remote control would be of no use
  - ✓ Inability to access and control BIOS level since software methods only function