Expediting device management in virtualized data centers

By Greg Kincade

By providing secure in-band and out-of-band device access from a central console—even when the network or managed device is down—Dell™ KVM management console appliances help administrators simplify the management of virtualized data centers.

Through virtualizing their data centers, enterprises are looking to improve the efficiency of their IT infrastructures with the ultimate goal of furthering organizational and business agendas. Virtualization enables administrators to simplify and consolidate IT environments and operations. However, administrators are often required to manage physical and virtual infrastructures across multiple operating systems and hypervisors, while accelerating the deployment and performance of virtualized resources across these disparate systems.

Administrators in small and midsize organizations are confronted by some of the same device management challenges as their counterparts in large enterprises—just on a smaller scale. Faced with the complexities of managing and monitoring heterogeneous server platforms that run multiple discrete and virtual operating systems, data center administrators are looking for management solutions that will scale with their organizations. A complement to existing internal management tools, KVM (keyboard, video, mouse) console appliances facilitate the centralized management of physical servers and virtual machines. The family of Dell KVM management console appliances offers configurations tailored for the small and midsize enterprise data center.

Understanding KVM switches

Dell KVM appliances include analog KVM server console switches and digital KVM remote console switches. Dell KVM switches, which are compliant with the Trade Agreements

Act (TAA) to satisfy government procurement requirements, have best-of-breed features such as upgradeable firmware and intuitive graphical user interfaces (GUIs). From a single central console, the Dell KVM switches provide in-band access for devices in the rack and out-of-band access to rack devices even when the network or device OS is down. Unlike software alternatives, the KVM switches are designed to allow administrators to bring up a server from bare metal, diagnose and restore a failing device, update firmware, and enable BIOS-level access—independent of the state of the managed device or network.

Available in 0U and 1U form factors, Dell KVM switches come standard with Dell ReadyRails® sliding rails for tool-less mounting in four-post racks. Each KVM switch can be mounted in seconds at the front or rear of the rack.

Servers and other managed devices are connected to a KVM switch through server interface pods (SIPs). A SIP is designed to dramatically reduce cable volume and improper airflow by converting and transmitting KVM signals through a single Category 5 (Cat 5) unshielded twisted-pair (UTP) cable to one of the RJ-45 ports at the rear of KVM switch. SIPs also enable administrators to place devices up to 50 feet away from the KVM switch. This distance allows the KVM switch and management console to be located outside the data center, minimizing foot traffic into the data center. The SIP also helps simplify configuration by assigning and retaining unique device names and electronic ID numbers for each attached device. Every SIP is powered by its attached device and provides a keep-alive power safeguard whereby the attached device is unaffected if its connection with the KVM is lost.

Dell KVM switches support Virtual Media, a technology that allows a server to access storage media such as CDs, DVDs, ISO images, flash drives, and external hard drives attached to the switch or anywhere on the network. To enable local Virtual Media, the storage device is simply attached to a USB port on the switch, which allows any server connected to that switch through a Virtual Media SIP to access the
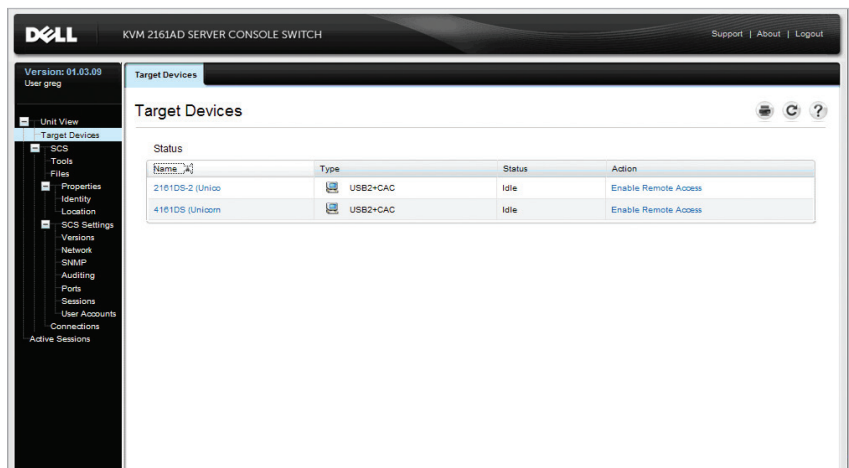

Figure 1. On-board Web interface (OBWI) for the Dell KVM server console switch

device as if it were connected to the server's USB port. The Virtual Media SIP is designed to let administrators perform virtual out-of-band file transfers as well as application and OS patch deployment anytime and anywhere.

For remote Virtual Media, the storage device can be attached to any networked computer. Using the KVM switch's on-board Web interface (OBWI), an authorized technician at that computer can provide access to the storage device to any server connected to the KVM switch—just as if the device were directly connected to the server's USB port (see Figure 1).

Moreover, Dell KVM switches are manageable using the field-tested Dell Remote Console Switch (RCS) software. The RCS software enables administrators to monitor and control the KVM switches and attached servers from a single-pane-of-glass interface and provides secure switch-based authentication and data transfers. The switches also can be managed through the OBWI, which is designed to provide similar management functions as the RCS software. The OBWI is launched directly from the switch through a Web browser, and servers connected to the switch are automatically detected.

Enabling diverse access scenarios

Although Dell KVM switches share many attributes, there are fundamental differences between the analog server console switches and the digital remote console switches. Determining
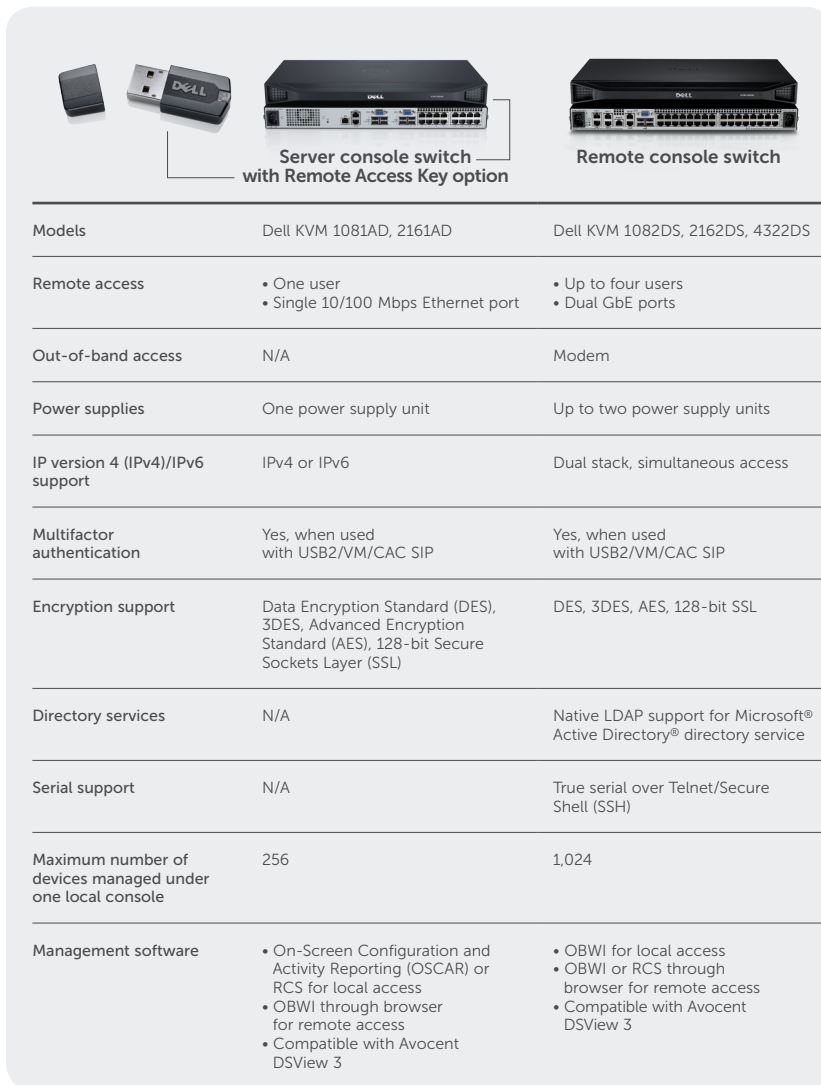
	Server console switch with Remote Access Key option	Remote console switch
Models	Dell KVM 1081AD, 2161AD	Dell KVM 1082DS, 2162DS, 4322DS
Remote access	• One user • Single 10/100 Mbps Ethernet port	• Up to four users • Dual GbE ports
Out-of-band access	N/A	Modem
Power supplies	One power supply unit	Up to two power supply units
IP version 4 (IPv4)/IPv6 support	IPv4 or IPv6	Dual stack, simultaneous access
Multifactor authentication	Yes, when used with USB2/VM/CAC SIP	Yes, when used with USB2/VM/CAC SIP
Encryption support	Data Encryption Standard (DES), 3DES, Advanced Encryption Standard (AES), 128-bit Secure Sockets Layer (SSL)	DES, 3DES, AES, 128-bit SSL
Directory services	N/A	Native LDAP support for Microsoft® Active Directory® directory service
Serial support	N/A	True serial over Telnet/Secure Shell (SSH)
Maximum number of devices managed under one local console	256	1,024
Management software	• On-Screen Configuration and Activity Reporting (OSCAR) or RCS for local access • OBWI through browser for remote access • Compatible with Avocent DSView 3	• OBWI for local access • OBWI or RCS through browser for remote access • Compatible with Avocent DSView 3

Figure 2. Feature comparison: Dell KVM server console and remote console switches

which switch to deploy depends on organizational requirements, security policies, the physical attributes of the data center, the IT budget, and in some cases administrator preference.

Analog switches with enhanced digital capabilities

Traditionally, the analog KVM server console switches are well suited for environments where maximum security and limited remote access are required. For example, administrators may need to isolate managed servers from any external wide area networks or the Internet and also strictly control user access. In this case,

the combination of a Common Access Card (CAC)–enabled SIP and the server console switch enables support of multifactor authentication schemes required by governments and also limits remote access. For environments where real-time video and mouse responses are desired, the server console switch is an excellent choice because it does not need to digitize and transmit video frames, mouse, and keystroke events—avoiding delays in responses.

With the latest generation of Dell KVM server console switches, administrators not only retain the switches' traditional benefits but also can add a single digital channel for remote access through the optional Dell Remote Access Key. The digital capabilities of the analog server console switch are unlocked by plugging the Remote Access Key into one of the USB ports at the rear of the switch. When the Remote Access Key is installed, one authenticated digital user can remotely manage any server connected to the server console switch over a TCP/IP network.

The look and feel of the OBWI for the Remote Access Key–server console switch combination matches the sophistication of the OBWI for the Dell KVM remote console switches. Administrators can manage remote OS installations, OS recoveries, BIOS updates, or server backups from locations with Internet access. The OBWI is launched directly from the server console switch and does not require a software host.

The Remote Access Key provides cost-effective protection for an analog KVM system. A small or midsize organization can initially install one server console switch for managing a few servers and subsequently add secure remote access through the Remote Access Key when data center growth warrants it. If a bank of servers must be quarantined because of an external malicious attack, an administrator has the power to quickly shut down remote access by simply unplugging the Remote Access Key.

Flexible, fast access through digital switches

The digital KVM remote console switches are appropriate in data centers that have

established network infrastructures with the following requirements:

- Multiple administrators who need to log in and gain concurrent access to collaborate on the same server
- Management of hubs, switches, and intelligent power distribution units as well as servers
- Native Lightweight Directory Access Protocol (LDAP) support for directory services
- Encryption for end-to-end node access
- Enterprise-grade multifactor authentication

The KVM remote console switches are designed to be the most adroit members of the Dell KVM switch family. While the server console switch–Remote Access Key combination enables a single 10/100 Mbps Ethernet port, the remote console switch provides dual Gigabit Ethernet (GbE) ports for higher throughput and redundancy (see Figure 2).

Both the remote console switch and the server console switch with an installed Remote Access Key are compatible with the Avocent DSView 3 data center software management suite. DSView 3 provides remote access, monitoring, and control of physical IT devices and virtual machines from a single interface.

Centralizing secure device management

Dell KVM management console appliances continue to be vital components of a centralized management system by providing in-band and out-of-band access, regardless of the state of the network or the managed IT device. Beyond simple access to a server's keyboard, video, and mouse, Dell KVM devices offer capabilities that can grow with the needs of small and midsize organizations, helping them streamline data center management in the virtual era. PS

Author

Greg Kincade is a product marketing manager for the Data Center Infrastructure team within the Dell Enterprise Product Group where he manages the Dell KVM and KMM (keyboard, monitor, mouse) portfolio of products for the data center.

Learn more

Dell PowerEdge KVM console switches: dell.com/kvm