

## Deploying Dell PowerEdge 1855 Blade Servers Using DRAC/MC Virtual Media

The Dell™ PowerEdge™ 1855 blade server has an optional digital KVM (keyboard, video, mouse) module that can be installed in the Dell Modular Server Enclosure housing the server blades and shared systems components. This KVM module provides virtual media capability, enabling administrators to assign a remote CD or DVD drive, ISO image, or floppy drive to individual server blades. The remote media device then appears as if it is attached directly to the server blade. This virtual media feature can be used to deploy and provision a blade server remotely.

**BY JAKE DINER AND ALAN BRUMLEY**

### Related Categories:

*Blade servers*

*Data center density*

*Dell PowerEdge blade servers*

*Keyboard, video, mouse (KVM)*

*Remote management*

*System deployment*

*Systems management*

*Virtual media*

Visit [www.dell.com/powersolutions](http://www.dell.com/powersolutions)  
for the complete category index.

In blade server environments, cable consolidation and pooled resources for power and network I/O can help reduce costs and streamline management while enabling high availability through redundancy. Systems such as the Dell PowerEdge 1855 blade server are designed to offer cost-effective, high-density computing power. The 7U chassis of the Dell PowerEdge 1855 blade server—known as the Dell Modular Server Enclosure—accommodates an Avocent Digital Access KVM (keyboard, video, mouse) module. This module resides within the chassis and offers two features: a remotely accessible virtual console and virtual media.

### Accessing server blades through the remote console

The Avocent Digital Access KVM module provides a remote console by emulating a keyboard and mouse at the hardware level as well as probing the video signal and then processing the image. This allows the remote console feature to function without drivers regardless of the OS or graphics mode used. Administrators can access the remote console via the Web-based interface of the Dell Remote Access Controller/Modular Chassis (DRAC/MC)—which also resides in the Dell Modular Server Enclosure. On the Console page of this interface,

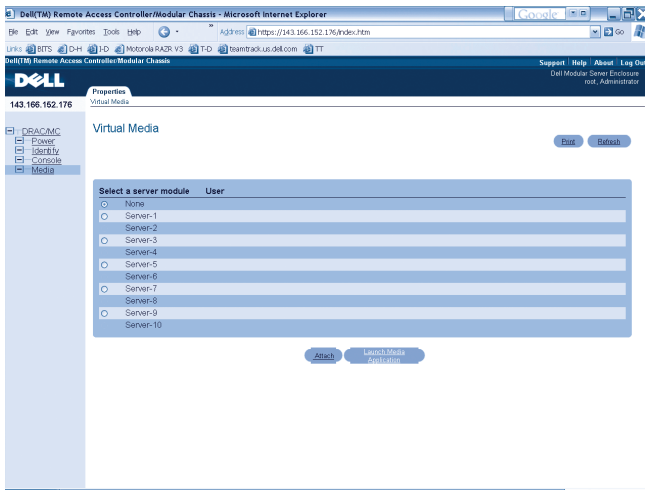


Figure 1. Connecting server blades to virtual media through the DRAC/MC interface

administrators can select the appropriate server blade to view. After selecting the server blade, administrators can launch the Java-based application that decodes the video and encodes the keyboard and mouse movements.

### Connecting to remote storage devices with virtual media

A key feature provided by the Avocent Digital Access KVM module is virtual media, which allows administrators to remotely connect a mass storage device to a server and use the device as if it were present on the server. Like the remote console, virtual media uses hardware to emulate USB devices with native USB mass storage drivers, helping ensure no other drivers are necessary. Virtual media is accessed in a similar manner as the remote console—administrators navigate to the DRAC/MC interface and select the server blade that needs to be controlled. From there, a console is launched that facilitates selection of the floppy or optical device (or supported image file). Once the device is selected, it is virtually connected to the OS. After the device is connected, the OS treats it as if the administrator had physically inserted a USB device, floppy disk, or CD into the remote server.

### Booting from a virtual CD

Server administrators can use the Avocent Digital Access KVM module to boot from the Dell OpenManage™ Server Assistant CD, which is provided with the Dell PowerEdge 1855 blade server. Before starting, administrators must install Java Runtime Environment (JRE) version 1.4.2 or later. *Note:* Earlier versions of JRE have known issues that may reduce the reliability of the virtual media applet that runs on the client workstation. This update is required for both Linux® OS-based and Microsoft® Windows® OS-based clients.

After installing the prerequisite JRE, administrators can use the Web browser to connect to the DRAC/MC and log in using administrative credentials. The account used when logging in to the DRAC/MC must have sufficient security privileges to access virtual media and the remote console. After connecting and logging in, administrators should expand the DRAC/MC tree view and select “Media” (see Figure 1).

Next, administrators should select the server blade they wish to connect to virtual media and click the Attach button. The OS will then detect an insert notification on the USB interface. At this time, two new USB devices will be “present” on the server blade: the CD/DVD device and the mass storage device. However, these devices will appear to the OS without any media inserted. The DRAC/MC interface page should reload to show the username next to the appropriate server. Administrators should then click the Launch Media Application button.

A key feature provided by the Avocent Digital Access KVM module is virtual media, which allows administrators to remotely connect a mass storage device to a server and use the device as if it were present on the server.

### Virtual media application

The client machine will download and launch a Java-based application. The system configuration determines which items are listed in the application as well as which drives are available. Figure 2 shows an example Java-based application screen for a system that has one floppy drive available and one CD drive (D:). Using such an application, administrators can select a media image instead of a physical drive for each media type. If using a physical drive, administrators should ensure that the media is inserted before

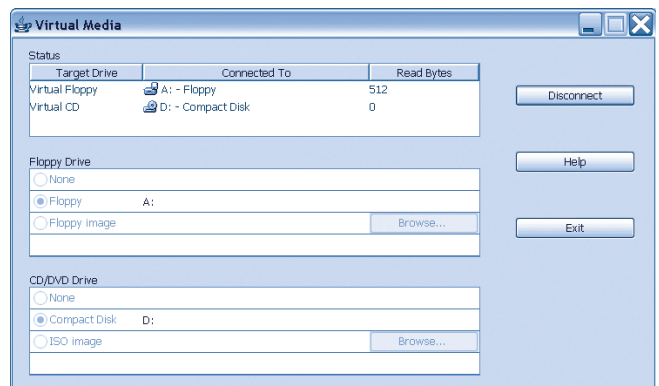


Figure 2. Connecting virtual media to target devices with the Java-based application

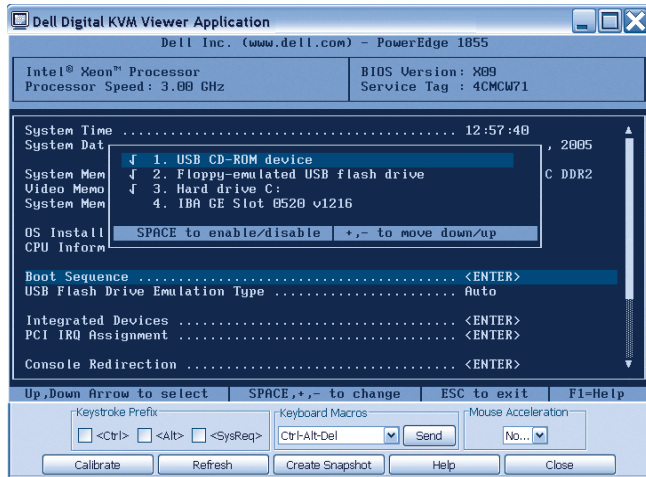


Figure 3. Accessing the server blade BIOS setup through the remote console

selecting the drive and clicking the Connect button. After this step, the OS may detect media has been inserted. Depending on the OS configuration, the OS may mount the device and begin reading from it. The top portion of the screen shown in Figure 2 displays status information about which devices are connected and how many bytes have been transferred through the network.

Once the application has initiated the connection, the media may not be changed until administrators click the Disconnect button. At this time, the media may be changed, or a different image file may be selected. Best practices strongly recommend against trying to swap media or change files without disconnecting. Failure to do so may result in the remote server receiving corrupted information because of client OS caching, for example. If a virtual floppy disk is being used, it may be read and written to as if the floppy disk were present on the server. When using an image file or virtual CD drive, the media will always be read-only even if a CD-RW drive is connected.

### Virtual media boot

Once virtual media is connected to the server blade, administrators can remotely boot the system using virtual media. To do this, administrators should select “Console” from the DRAC/MC tree. From there, a Web-based interface similar to the one shown in Figure 2 will load; this interface allows administrators to access a server blade and then launch a remote console application. The process is very similar to launching the virtual media application.


Once the remote console is launched, it will show whether the OS on the remote server is running, which depends on the server state. If the server is not powered up, administrators can simply select “Power” to access an interface that will let them power up the server blade being managed. From this point on, the management

experience will be as if the administrator were physically present at the server.

Administrators can press F2 during the boot process to access the BIOS setup (see Figure 3). Under the Boot Sequence menu, “USB CD-ROM device” and “Floppy-emulated USB flash drive” will appear, and these items can be moved up and down in the boot sequence. Administrators can simply move one or both devices to the top of the list to enable booting from virtual media.

Installation and configuration of the OS will also proceed as if the administrator were physically present at the server. The only difference is that administrators must use the virtual media applet to disconnect and connect the media when changing CDs or floppy disks.

### Enabling remote management for modular server environments

Modular server systems such as the Dell PowerEdge 1855 blade server enable enterprises to concentrate computing power into a minimal form factor—allowing administrators to use data center space efficiently. However, such dense rack configurations can make systems difficult to access. The 7U Dell Modular Server Enclosure housing the PowerEdge 1855 blade server accommodates optional components that provide remote management capabilities to help ease server administration. In particular, the Avocent Digital Access KVM module and the DRAC/MC enable administrators to access server blades from a remote console and use virtual media devices to install software and configure server blades from virtually anywhere across the enterprise. 

**Jake Diner** is a software engineer in the Dell Enterprise Systems Management Software organization. His interests involve public speaking and wireless communication. Jake has a B.S. in Computer Science from Michigan State University.

**Alan Brumley** is a software engineer and senior consultant in the Dell Enterprise Systems Management Software organization. He is the lead engineer on the Dell OpenManage Deployment Toolkit and has worked at Dell for more than five years. His interests involve embedded system design and radio-control aviation. Alan has a B.S. in Computer Engineering from the University of South Carolina.

#### FOR MORE INFORMATION

##### ***Dell Remote Access Controller/Modular Chassis User's Guide:***

[support.dell.com/support/edocs/software/smdrac3/dracmc/index.htm](http://support.dell.com/support/edocs/software/smdrac3/dracmc/index.htm)