

Frequently Asked Questions

Dominion[®] KX II



Question	Answer
<p>What is Dominion KX II?</p>	<p>Dominion KX II is a second-generation digital KVM (keyboard, video, mouse) switch that enables one, two, four or eight IT administrators to access and control 8, 16, 32 or 64 servers over the network with BIOS-level functionality. Dominion KX II is completely hardware- and OS-independent; users can troubleshoot and reconfigure servers even when servers are down.</p> <p>At the rack, Dominion KX II provides the same functionality, convenience, and space and cost savings as traditional analog KVM switches. However, Dominion KX II also integrates the industry's highest performing KVM-over-IP technology, allowing multiple administrators to access server KVM consoles from any networked workstation as well as from the iPhone[®] and iPad[®].</p>
<p>How does Dominion KX II differ from remote control software?</p>	<p>When using Dominion KX II remotely, the interface, at first glance, may seem similar to remote control software such as pcAnywhere[™], Windows[®] Terminal Services/Remote Desktop, VNC, etc. However, because Dominion KX II is not a software but a hardware solution, it's much more powerful:</p> <ul style="list-style-type: none"> • Hardware- and OS-independent – Dominion KX II can be used to manage servers running many popular OSs, including Intel[®], Sun[®], PowerPC running Windows, Linux[®], Solaris[™], etc. • State-independent/Agentless – Dominion KX II does not require the managed server OS to be up and running, nor does it require any special software to be installed on the managed server. • Out-of-band – Even if the managed server's own network connection is unavailable, it can still be managed through Dominion KX II. • BIOS-level access – Even if the server is hung at boot up, requires booting to safe mode, or requires system BIOS parameters to be altered, Dominion KX II still works flawlessly to enable these configurations to be made.
<p>Can the Dominion KX II be rack mounted?</p>	<p>Yes. The Dominion KX II ships standard with 19" rack mount brackets. It can also be reverse rack mounted so the server ports face forward.</p>
<p>How large is the Dominion KX II?</p>	<p>Dominion KX II is only 1U high (except the KX2-864 and KX2-464, which are 2U), fits in a standard 19" rack mount and is only 29 cm (11.4") deep. The Dominion KX2-832 and KX2-864 are 36 cm (13.8") deep.</p>
<p>Remote Access</p>	
<p>How many users can remotely access servers on each Dominion KX II?</p>	<p>Dominion KX II models offer remote connections for up to eight users per user channel to simultaneously access and control a unique target server. For one-channel devices like the DKX2-116, up to eight remote users can access and control a single target server. For two-channel devices, like the DKX2-216, up to eight users can access and control the server on channel one and up to another eight users on channel two. For four-channel devices, up to eight users per channel, for a total of 32 (8 x 4) users, can access and control four servers. Likewise, for the eight-channel devices, up to eight users can access a single server, up to an overall maximum of 32 users across the eight channels.</p>
<p>Can I remotely access servers from my iPhone or iPad?</p>	<p>Yes. Starting with Dominion KX II Release 2.4 and CC-SG Release 5.2, users can access servers connected to the KX II using their iPhone or iPad.</p>

Can two people look at the same server at the same time?	Yes. Actually, up to eight people can access and control any single server at the same time.															
Can two people access the same server, one remotely and one from the local port?	Yes. The local port is completely independent of the remote "ports." The local port can access the same server using the PC-Share feature.															
In order to access Dominion KX II from a client, what hardware, software or network configuration is required?	<p>Because Dominion KX II is completely Web-accessible, it doesn't require customers to install proprietary software on clients used for access. (An optional installed client is available on www.raritan.com; this is required for access by an external modem.)</p> <p>Dominion KX II can be accessed through major Web browsers, including: Internet Explorer® and Firefox®. Dominion KX II can now be accessed on Windows, Linux and Macintosh® desktops, via Raritan's new Windows Client, and the Java™-based Multiplatform and Virtual KVM Client™.</p> <p>Dominion KX II administrators can also perform remote management (set passwords and security, rename servers, change IP address, etc.) using a convenient browser-based interface.</p>															
What is the file size of the applet that's used to access Dominion KX II? How long does it take to retrieve?	<p>The Virtual KVM Client (VKC) applet used to access Dominion KX II is approximately 500KB in size. The following chart describes the time required to retrieve Dominion KX II's applet at different network speeds:</p> <table border="1"> <tr> <td>100Mbps</td> <td>Theoretical 100Mbit network speed</td> <td>.05 seconds</td> </tr> <tr> <td>60Mbps</td> <td>Likely practical 100Mbit network speed</td> <td>.08 seconds</td> </tr> <tr> <td>10Mbps</td> <td>Theoretical 10Mbit network speed</td> <td>.4 seconds</td> </tr> <tr> <td>6Mbps</td> <td>Likely practical 10Mbit network speed</td> <td>.8 seconds</td> </tr> <tr> <td>512Kbps</td> <td>Cable modem download speed (typical)</td> <td>8 seconds</td> </tr> </table>	100Mbps	Theoretical 100Mbit network speed	.05 seconds	60Mbps	Likely practical 100Mbit network speed	.08 seconds	10Mbps	Theoretical 10Mbit network speed	.4 seconds	6Mbps	Likely practical 10Mbit network speed	.8 seconds	512Kbps	Cable modem download speed (typical)	8 seconds
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How do I access servers connected to Dominion KX II if the network ever becomes unavailable?	<p>You can access servers at the rack or via modem.</p> <p>Dominion KX II offers a dedicated modem port for attaching an external modem.</p>															
Do you have a Windows KVM Client?	Yes. We have a native .NET Windows Client called the Raritan Active KVM Client (AKC).															
Do you have a non-Windows KVM Client?	Yes. Both the Virtual KVM Client (VKC) and the Multiplatform Client (MPC) allow non-Windows users to connect to target servers in the data center. MPC can be run via Web browsers and stand-alone and can access servers connected to both Dominion KX I and KX II switches. Please refer to Raritan's Dominion KX II and KVM Client User Guides for more information.															
Do your KVM Clients have multi-language support?	Yes. The Dominion KX II's remote HTML User Interface and the KVM Clients now support the Japanese, Simplified Chinese and Traditional Chinese languages. This is available stand-alone as well as through CC-SG.															
Do your KVM Clients support dual LCD monitors?	Yes. For customers wishing to enhance their productivity by using multiple LCD monitors on their desktops, the Dominion KX II can launch KVM sessions to multiple monitors, either in full screen or standard modes.															
Universal Virtual Media™																
Which Dominion KX II models support virtual media?	All Dominion KX II models support virtual media. It is available stand-alone and through CommandCenter® Secure Gateway, Raritan's centralized management appliance.															

Which types of virtual media does the Dominion KX II support?	Dominion KX II supports the following types of media: internal and USB-connected CD/DVD drives, USB mass storage devices, PC hard drives and ISO images.
What is required for virtual media?	<p>A Dominion KX II virtual media CIM is required. There are two of these CIMs: the D2CIM-VUSB and the D2CIM-DVUSB.</p> <p>The D2CIM-VUSB has a single USB connector and is for customers who will use virtual media at the OS level.</p> <p>The D2CIM-DVUSB has dual USB connectors and should be purchased by customers who wish to utilize virtual media at the BIOS level. The D2CIM-DVUSB is also required for smart card authentication, tiering/cascading and digital audio.</p> <p>Both support virtual media sessions to target servers supporting the USB 2.0 interface. Available in economical 32 and 64 quantity CIM packages, these CIMs support Absolute Mouse Synchronization™ as well as remote firmware updates.</p>
Is virtual media secure?	Yes. Virtual media sessions are secured using 256-bit AES, 128-bit AES or 128-bit RC4 encryption.
Does virtual media really support audio?	Yes. Audio playback and recording to a server connected to the Dominion KX II is supported. So you can listen to sounds and audio playing on a remote server in the data center using the speakers connected to your desktop PC or laptop. You can also record on the remote server using a microphone connected to your PC or laptop. The D2CIM-DVUSB dual virtual media CIM is required.
What is a USB profile?	Certain servers require a specifically configured USB interface for USB-based services such as virtual media. The USB profile tailors the KX II's USB interface to the server to accommodate these server-specific characteristics.
Why would I use a USB profile?	USB profiles are most often required at the BIOS level where there may not be full support for the USB specification when accessing virtual media drives. However, profiles are sometimes used at the OS level, for example, for mouse synchronization for Macintosh and Linux servers.
How is a USB profile used?	Individual ports or groups of ports can be configured by the administrator to use a specific USB profile in the KX II's port configuration page. A USB profile can also be selected in the KX II Client when required. See the user guide for more information.
Do I always need to set a USB profile when I use virtual media?	No. In many cases, the default USB profile is sufficient when using virtual media at the OS level or operating at the BIOS level without accessing virtual media.
What profiles are available? Where can I find more information?	Consult the user guide for the available profiles and for more information.
Bandwidth and KVM-over-IP Performance	
How is bandwidth used in KVM-over-IP systems?	<p>Dominion KX II offers next-generation KVM-over-IP technology – the very best video compression available. Raritan has received numerous technical awards, confirming its high video quality transmissions and the low bandwidth utilization.</p> <p>The Dominion KX II digitizes, compresses and encrypts the keyboard, video and mouse signals from the target server and transmits IP packets over the IP network to the remote client to create the remote session to the user. The KX II provides an at-the-rack experience based on its industry-leading video processing algorithms.</p>

<p>How is bandwidth used in KVM-over-IP systems? (continued)</p>	<p>Screen changes, i.e., video accounts for the majority of the bandwidth used – and keyboard and mouse activity are significantly less.</p> <p>It is important to note that bandwidth is only used when the user is active. The amount of bandwidth used is based on the amount of change to the server's video display screen.</p> <p>If there are no changes to the video – the user is not interacting with the server – there is generally no bandwidth used. If the user moves the mouse or types a character, then there is a small amount of bandwidth used. If the display is running a complex screen saver or playing a video, then there can be a larger amount of bandwidth used.</p>
<p>How does bandwidth affect KVM-over-IP performance?</p>	<p>In general, there is a trade-off between bandwidth and performance. The more bandwidth available, the better performance can be. In limited bandwidth environments, performance can degrade. The Dominion KX II has been optimized to provide strong performance in a wide variety of environments.</p>
<p>What factors affect bandwidth?</p>	<p>There are many factors that determine how much bandwidth will be used. The primary factor, noted above, is the amount of change in the target server's video display. This is dependent on the user's task and actions.</p> <p>Other factors include the server's video resolution, networking speed and characteristics, client PC resources and video card noise.</p> <p>The Dominion KX II has very sophisticated video processing algorithms that optimize bandwidth and performance for a variety of environments. In addition, they are highly configurable; there are many settings to optimize bandwidth usage. In particular, the connection speed setting in the remote clients (VKC, MPC) can be set to reduce the bandwidth used.</p> <p>Unlike the KX I, the noise filter parameter does not generally have a large role in reducing bandwidth or improving performance of the Dominion KX II.</p>
<p>How much bandwidth does KX II use for common tasks?</p>	<p>Bandwidth primarily depends on the user's task and actions. The more the server's video screen changes, the more bandwidth is utilized.</p> <p>The table below summarizes some standard use cases at Dominion KX II's default and with two reduced bandwidth settings (connection speed setting of 1Mb with 15- and 8-bit color) on a Windows XP target server (1024x768 resolution) over a 100 Mb/s LAN:</p>

How much bandwidth does KX II use for common tasks? (continued)

User Task	Default	1Mb Speed and 15-bit Color	1Mb Speed and 8-bit Color
Idle Windows Desktop	0 KB/s	0 KB/s	0 KB/s
Move Mouse Cursor	5 – 15 KB/s	2 – 6 KB/s	2 – 3 KB/s
Drag Icon	40 – 70 KB/s	10 – 25 KB/s	5 – 15 KB/s
Drag Folder	10 – 40 KB/s	5 – 20 KB/s	5 – 10 KB/s
Open Text Window	50 – 100 KB/s	25 – 50 KB/s	10 – 15 KB/s
Continuous Typing	1 KB/s	.5 – 1 KB/s	.2 – .5 KB/s
Scroll Text Window	1050 KB/s	5 – 25 KB/s	2 – 10 KB/s
Close Text Window	50 – 100 KB/s	20 – 40 KB/s	10 – 15 KB/s
Open Panel	50 – 100 KB/s	60 – 70 KB/s	20 – 30 KB/s
Change Tab in Panel	40 – 50 KB/s	20 – 50 KB/s	10 – 20 KB/s
Close Panel	50 – 100 KB/s	40 – 60 KB/s	20 – 30 KB/s
Change Panel Option	2 – 10 KB/s	1 – 5 KB/s	1 – 3 KB/s
Open Browser Page	100 – 300 KB/s	50 – 200 KB/s	40 – 80 KB/s
Scroll Browser	75 – 200 KB/s	50 – 200 KB/s	30 – 100 KB/s
Close Browser	100 – 150 KB/s	75 – 100 KB/s	30 – 60 KB/s
Open Start Menu	75 – 100 KB/s	50 – 75 KB/s	20 – 30 KB/s
Close Start Menu	75 – 100 KB/s	25 – 50 KB/s	10 – 15 KB/s
Starfield Screensaver	25 – 50 KB/s	10 – 15 KB/s	7 – 10 KB/s
3D Pipes Screensaver	10 – 100 KB/s	5 – 20 KB/s	2 – 10 KB/s
Windows Media Video	500 – 1200 KB/s	300 – 500 KB/s	150 – 300 KB/s
QuickTime® Video #1	700 – 2500 KB/s	400 – 500 KB/s	150 – 350 KB/s
QuickTime Video #2	1500 – 2500 KB/s	400 – 550 KB/s	200 – 350 KB/s

With the reduced bandwidth settings, bandwidth is reduced significantly for virtually all tasks. With the 15-bit color setting, perceived performance is similar to the default parameters. Further bandwidth reductions are possible with additional changes in the settings.

Please note that these bandwidth figures are only examples and may vary from those seen in your environment due to many factors.

<p>How can I reduce bandwidth?</p>	<p>KX II provides a variety of settings in our remote clients for the user to optimize bandwidth and performance. The default settings will provide an at-the-rack level of performance in standard LAN/WAN environments with economical use of bandwidth.</p> <p>Bandwidth management settings include the connection speed and color depth. To reduce bandwidth:</p> <p>Connection speed. Reducing the connection speed can significantly reduce the bandwidth used. In a standard LAN/WAN environment, setting the connection speed to 1.5 or 1 Mb per second will reduce bandwidth while maintaining good performance. Settings below this will further reduce bandwidth and are appropriate for slow bandwidth links.</p> <p>Color depth. Reducing the color depth will also significantly decrease bandwidth and increase performance, but fewer colors will be used, resulting in video degradation. This may be acceptable for certain system administration tasks.</p> <p>For slow Internet connections, the use of 8-bit color or lower bit depths can reduce bandwidth and improve performance.</p>
<p>How can I reduce bandwidth? (continued)</p>	<p>Other tips to decrease bandwidth include:</p> <ul style="list-style-type: none"> • Use a solid desktop background instead of a complex image • Disable screensavers • Use a lower video resolution on the target server • Uncheck the “Show window contents while dragging” option in Windows • Use simple images, themes and desktops (e.g., Windows Classic)
<p>What should I do on slower bandwidth links?</p>	<p>The connection speed and color depth settings can be tweaked to optimize performance for slower bandwidth links.</p> <p>For example, in the Multiplatform Client or the Virtual KVM Client, set the connection speed to 1.5 Mb or 1 Mb; and the color depth to 8 bit.</p> <p>Even lower connection speeds and color depths can be used for very low bandwidth situations.</p> <p>For modem connections, the KX II will automatically default to a very low connection speed and reduced color depth to optimize performance.</p>
<p>I want to connect over the Internet. What type of performance should I expect?</p>	<p>It depends on the bandwidth and latency of the Internet connection between your remote client and the KX II. With a cable modem or high speed DSL connection, your performance can be very similar to a LAN/WAN connection. For lower speed links, use the suggestions above to improve performance.</p>
<p>I have a high bandwidth environment. How can I optimize performance?</p>	<p>The default settings will provide strong performance in a high bandwidth environment.</p> <p>Ensure that the connection speed is set to 100 Mb or 1 Gb and the color depth is set to 15-bit RGB color.</p>
<p>What is the maximum remote (over IP) video resolution supported?</p>	<p>The Dominion KX II is the first and only KVM-over-IP switch to support full high definition (HD) remote video resolution – 1920x1080.</p> <p>In addition, popular widescreen formats are supported, including 1600x1200, 1680x1050 and 1440x900, so remote users can work with today’s higher resolution monitors.</p>
<p>How much bandwidth is used for audio?</p>	<p>It depends on the type of audio format used, but to listen to CD quality audio, approximately 1.5 Mbps is used.</p>

What about servers with DVI ports?	Servers with DVI ports that support DVI-A (analog) and DVI-I (integrated analog and digital) can use Raritan's ADVI-VGA inexpensive, passive adapter to convert the server's DVI port to a VGA plug that can be connected to a KX II CIM's VGA plug. Servers with DVI ports that only support DVI-D (digital) would need a more expensive adapter, but customers should check to see if the server's video card can be configured to support DVI-I or DVI-A.
Ethernet and IP Networking	
What is the speed of Dominion KX II's Ethernet interfaces?	Dominion KX II supports gigabit as well as 10/100 Ethernet. KX II supports two 10/100/1000 speed Ethernet interfaces, with configurable speed and duplex settings (either auto detected or manually set).
Can I access Dominion KX II over a wireless connection?	Yes. Dominion KX II not only uses standard Ethernet, but also very conservative bandwidth with very high quality video. Thus, if a wireless client has network connectivity to a Dominion KX II, servers can be configured and managed at the BIOS level wirelessly.
Does the Dominion KX II offer dual gigabit Ethernet ports to provide redundant failover or load balancing?	Yes. Dominion KX II features dual gigabit Ethernet ports to provide redundant failover capabilities. Should the primary Ethernet port (or the switch/router to which it is connected) fail, Dominion KX II will failover to the secondary network port with the same IP address – ensuring that server operations are not disrupted. Note that automatic failover must be enabled by the administrator.
Can I use Dominion KX II with a VPN?	Yes. Dominion KX II uses standard Internet Protocol (IP) technologies from Layer 1 through Layer 4. Traffic can be easily tunneled through standard VPNs.
Can I use KX II with a proxy server?	Yes. KX II can be used with a SOCKS proxy server, assuming the remote client PC is configured appropriately. Contact the user documentation or online help for more information.
How many TCP ports must be open on my firewall in order to enable network access to Dominion KX II?	Two ports are required: TCP port 5000 to discover other Dominion devices and for communication between Raritan devices and CC-SG; and, of course, port 443 for HTTPS communication.
Are these ports configurable?	Yes. Dominion KX II's TCP ports are configurable by the administrator.
Can Dominion KX II be used with Citrix®?	Dominion KX II may work with remote access products like Citrix if configured appropriately, but Raritan cannot guarantee it will work with acceptable performance. Customers should realize that products like Citrix utilize video redirection technologies similar in concept to digital KVM switches so that two KVM-over-IP technologies are being used simultaneously.
Can the Dominion KX II use DHCP?	DHCP addressing can be used; however, Raritan recommends fixed addressing since the Dominion KX II is an infrastructure device and can be accessed and administered more effectively with a fixed IP address.
I'm having problems connecting to the Dominion KX II over my IP network. What could be the problem?	The Dominion KX II relies on your LAN/WAN network. Some possible problems include: <ul style="list-style-type: none"> • Ethernet auto-negotiation. On some networks, 10/100 auto-negotiation does not work properly, and the Dominion KX II unit must be set to 100 Mb/full duplex or the appropriate choice for its network. • Duplicate IP address. If the IP address of the Dominion KX II is the same as another device, network connectivity may be inconsistent. • Port 5000 conflicts. If another device is using port 5000, the Dominion KX II default port must be changed (or the other device must be changed). • When changing the IP address of a Dominion KX II, or swapping in a new Dominion KX II, sufficient time must be allowed for its IP and Mac® addresses to be known throughout the Layer 2 and Layer 3 networks.

IPv6 Networking	
What is IPv6?	<p>IPv6 is the acronym for Internet Protocol Version 6. IPv6 is the “next generation” IP protocol which will replace the current IP Version 4 (IPv4) protocol.</p> <p>IPv6 addresses a number of problems in IPv4, such as the limited number of IPv4 addresses. It also improves IPv4 in areas such as routing and network auto-configuration. IPv6 is expected to gradually replace IPv4, with the two coexisting for a number of years.</p> <p>IPv6 treats one of the largest headaches of an IP network from the administrator’s point of view – configuring and maintaining an IP network.</p>
Why does Dominion KX II support IPv6 networking?	U.S. government agencies and the Department of Defense are now mandated to purchase IPv6-compatible products. In addition, many enterprises and foreign countries, such as China, will be transitioning to IPv6 over the next several years.
What is “dual stack” and why is it required?	Dual stack is the ability to simultaneously support both IPv4 and IPv6 protocols. Given the gradual transition from IPv4 to IPv6, dual stack is a fundamental requirement for IPv6 support.
How do I enable IPv6 on the Dominion KX II?	Use the “Network Settings” page, available from the “Device Settings” tab. Enable IPv6 addressing and choose manual or auto-configuration. Consult the user guide for more information.
What if I have an external server with an IPv6 address that I want to use with my Dominion KX II?	<p>The Dominion KX II can access external servers via their IPv6 addresses, for example, an SNMP manager, syslog server or LDAP server.</p> <p>Using the Dominion KX II’s dual-stack architecture, these external servers can be accessed via: (1) an IPv4 address, (2) IPv6 address or (3) hostname. So, the Dominion KX II supports the mixed IPv4/IPv6 environment many customers will have.</p>
Does the Dominion KX I (the previous generation KX) support IPv6?	No. The Dominion KX I does not support IPv6 addresses.
What if my network doesn’t support IPv6?	The Dominion KX II’s default networking is set at the factory for IPv4 only. When you are ready to use IPv6, then follow the above instructions to enable IPv4/IPv6 dual-stack operation.
Where can I get more information on IPv6?	See www.ipv6.org for general information on IPv6. The Dominion KX II user guide describes the Dominion KX II’s support for IPv6.