

User Manual



KLEv3

KVM Link Extender
Generation 3

Version: 1.0
Date: March 2019

FCC Statement : This equipment has been tested and found to comply with the regulations for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this User Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case, the user will be required to correct the interference at his/her own expense.

CE Statement : This is a Class B product in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



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1. Introduction

KLEv3 is the next generation of IP-based KVM Link Extender for remote server management. It allows virtual management of server(s) or KVM(s) over the Internet. In addition to support for secured access via 1024-bit PKI authentication, 256-bit SSL data encryption, LDAP, RADIUS, and Active Directory authentication; it has virtualization of ISO file that allowed accessing of remote drive to help manage server.

The Generation 3 of KLE provides a solid, reliable, and physical extension of keyboard, mouse, and video to nearly unlimited distance. Video supports for both analog and digital video through the DVI-I connector. Using two passive DVI to VGA adapters will provide VGA connection at both the console and system ends.

KLEv3 options give user total control from the pre-boot stage such as BIOS-level CMOS setting with USB interface, power cycling, and audio feedback. Along with the virtual media, you can rebuild the operating system of any server that KLEv3 connecting on. With properly plan KVM infrastructure, you can truly feel confident in your access to your systems.

1.1. Features

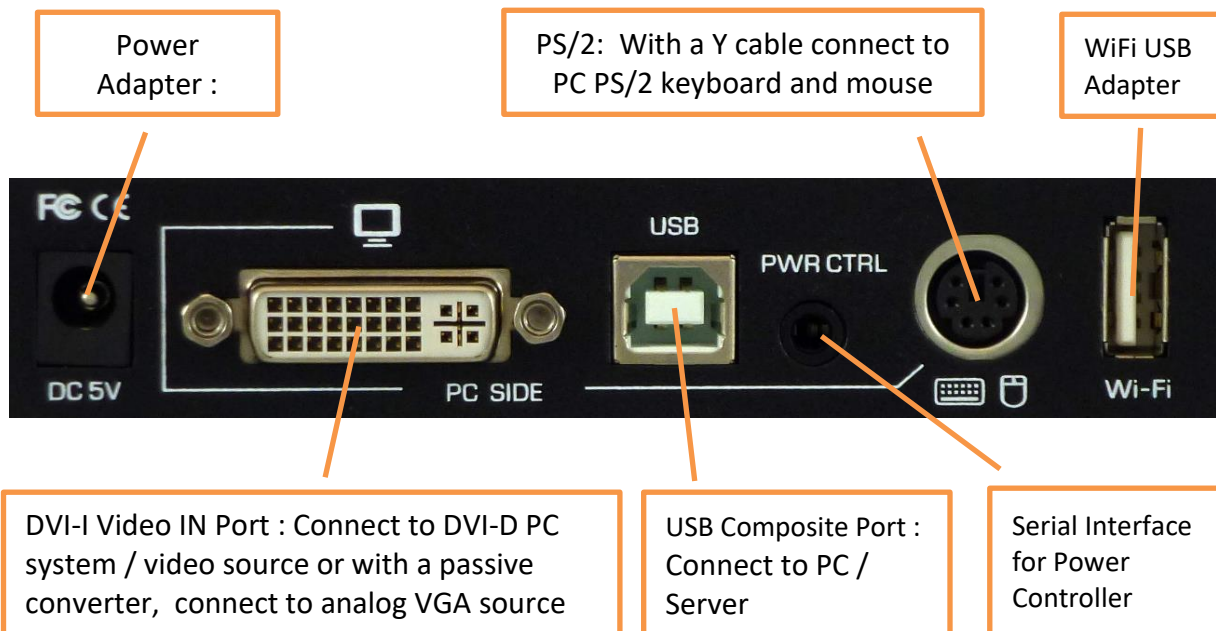
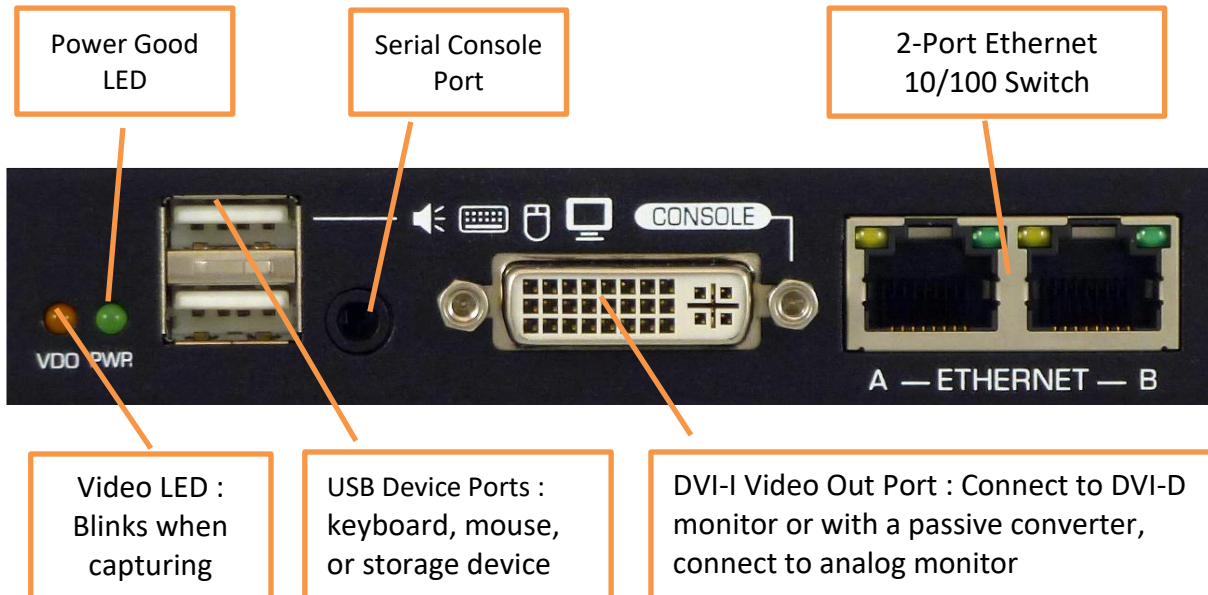
- Full-featured IP-based Remote Control Solution for server management
- DVI/VGA video, USB keyboard, and mouse extension over the Internet
- 2048x1152 resolution for clear and sharp video output
- Supports virtual media/ISO
- Supports audio and power management interface
- Build-in 2-Port Ethernet Hub
- Total transparent control

1.2. Package Content

- KLEv3 unit
- Power adapter
- User manual
- KLEv3 Support CD
- DVI-A to VGA Adapter
- DVI Cable
- USB Cable
- WiFi dongle (optional)

2. Product Overview

2.1. Front and Back Panels



2.2. Specifications

Video	Resolution: Up to 1600x1200 for VGA or 2048x1152 for DVI Capture Speed: Depends on video type. Limited to 30 pages/s
Mouse	Relative or Absolute modes
Ethernet	10/100 with internal Switch.
Wi-Fi	Available by connecting a wireless 802.11 USB Adapter to the USB extension port
Operation Temperature	0° ~40° C
Storage Temperature	-20° ~60° C
Humidity	0 ~90% RH, Non-condensing
Housing	Metal, Black
Dimensions	143 x 120 x 26.5 mm
Weight	480g
Power Adapter	DC 5V 2A
Consumption (5V)	No IP access: 1A (5W) During IP access: 1.15 (5.75W)
Certifications	CE, FCC

Table 1: KLEv3 Specifications

3. Connection Example

3.1. Console Connection

The diagrams in this chapter are examples, the actual application may vary. All illustrated accessories and monitors are not included in the package, it is for reference only.

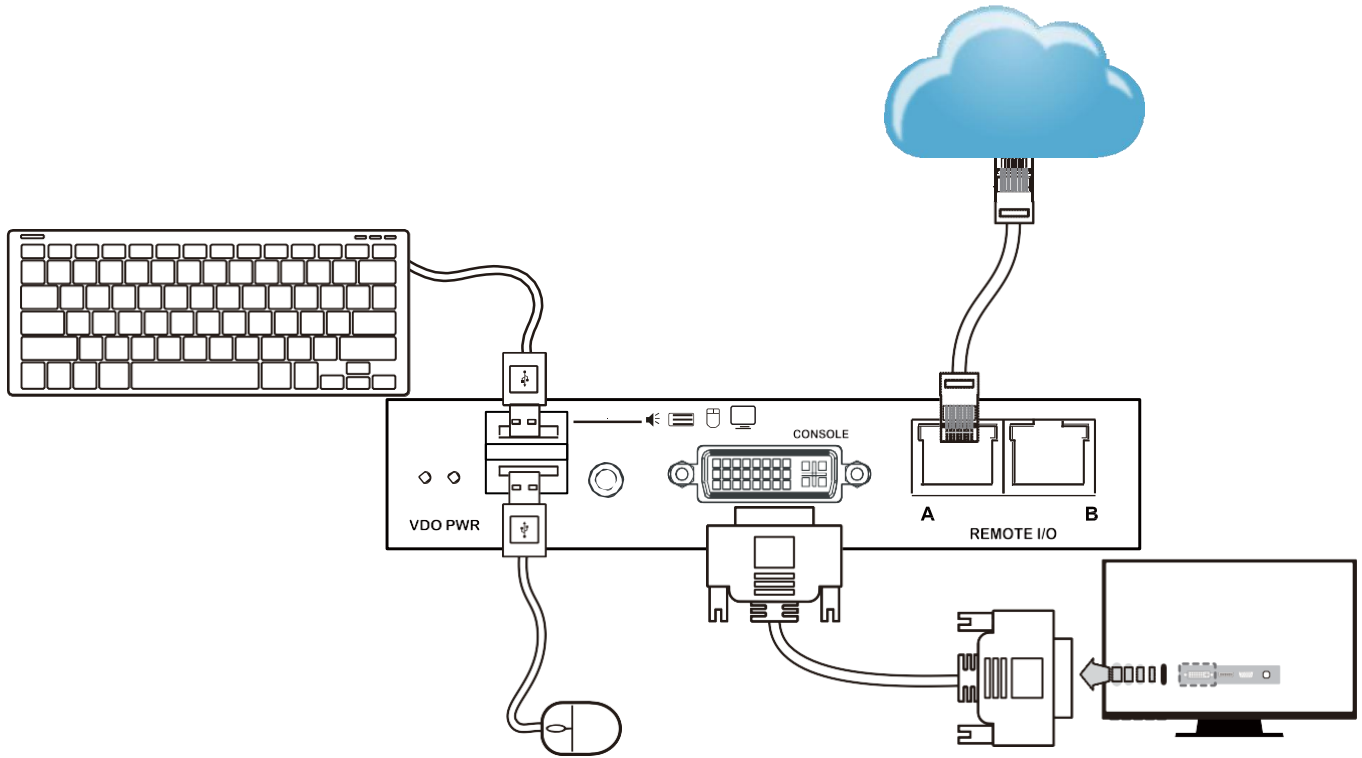


Figure 1: Connecting the console side of KLEv3

1. Connect a keyboard to the USB Type A connector which a keyboard icon marked on the unit.
2. Connect a mouse to the USB Type A connector which a mouse icon marked on the unit.
3. Connect to DVI or VGA monitor. Connecting to VGA monitor would require passive DVI-A to VGA converter.
4. Connect to your local network using Cat5/6 cable.
5. Plug the power cord to a power socket (the power cord/adaptor may vary, it is depending on the models).

3.2. Connection to Computer or Video Source

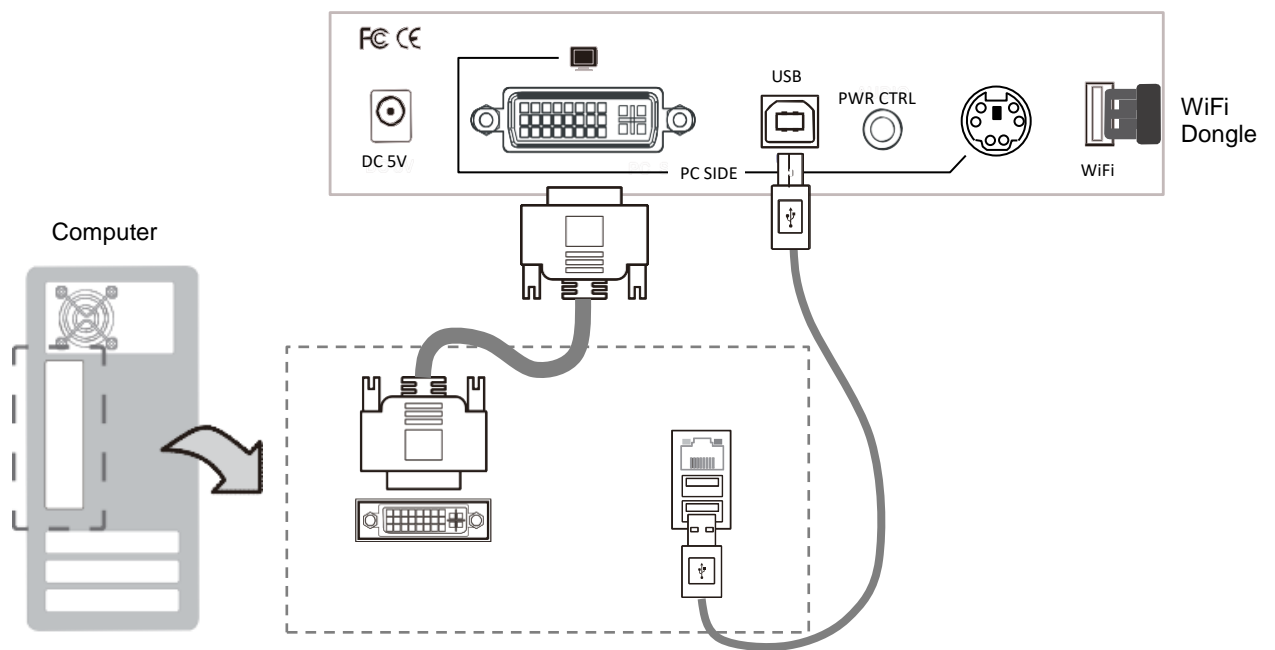


Figure 2: Connecting the computer side of KLEv3

1. Plug the PC Side USB type B port to a USB type A port of the computer. The computer should detect a new composite device.
2. Connect the PC Side DVI-I port to the DVI Video Output of the computer. If your computer provides VGA video, connect the PC Side DVI-I port via a passive DVI-A to VGA converter.
3. You may connect to a wireless network by plugging a WiFi dongle into the WiFi port (optional). In this case, if the Ethernet is also connected, make sure that the Ethernet and the WiFi network interfaces are configured on different networks.

3.3. Configuring the Attached Computer/Server for Better Performance

There are several aspects that have to be taken into consideration when configuring your computer/ server for the best performance:

Refrain from selecting too peculiar video resolution modes. Choose a resolution that is within KLEv3's standard support.

Turn off special transition effects on your operating system such as fade.

Adjust the server desktop background with preferably plain solid colors with simple designs.

Concerning digital DVI video, KLEv3 is able to capture any resolution up to 2048x1152@60Hz. The video resolution is discovered automatically.

Concerning analog VGA video, not all resolutions are possible. The video resolution discovery is made by comparison with an internal table of VESA standards. Please refer to the table of supported VGA video resolutions.

Please note that RB means reduced blanking. Resolutions with RB are not intended for older CRT monitors. They are newer VESA standards for digital devices, which precisely KLEv3 is. However, not all computers can generate reduced blanking VGA video.

In a general way, you will get much better results by using digital video: better video quality, better video speed, higher compression, faster mouse, etc. Use HDMI or DVI each time possible.

Resolution	Refresh rate (Hz)	Resolution	Refresh rate (Hz)
640x480	60	1280x768	60
720x400	70	1024x768	60
720x400	72	1024x768	70
720x400	75	1024x768	75
720x400	85	1024x768	85
640x480	60	1152x864	60
640x480	72	1152x864	75
640x480	75	1440x900	60
640x480	85	1280x1024	60
800x600	60	1280x1024	75
800x600	72	1680x1050	60
800x600	75	1400x1050	75
800x600	85	1920x1080RB	60
1280x720	60	2048x1152RB	60
1360x768	60	1920x1200RB	60

Table 2: Supported VGA resolutions

3.4. Default Settings

The factory default network settings for KLEv3 are as follows:

IPv4 Address: 192.168.1.200

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.254

DNS Servers: 192.168.1.254

Default access to KLEv3 Web Management Interface: **https://192.168.1.200:5908**



Figure 3: Welcome to KLEv3 Management

Default administrator account name and password:

User name: superuser

Password: superu

3.5. First Access to the Web Management

The first access to the KLEv3 HTTP server can be a little bit tricky if the default settings of KLEv3, i.e., HTTPS://192.168.1.200:5908 are not compatible with your LAN, or if another machine already occupies this address. In this case preferably use KCenter or getipdev (<http://www.prosum.net/download/GETIPDEVInstall.exe>) to give a temporary IP address to KLEv3. Then open the KLEv3 web management to confirm this IP address or to change the IP settings.

- * You could also create an isolated network, not connected to the local or company network, between KLEv3 and a computer with a simple cross connect cable. Then set up the IP address of the computer to something like 192.168.1.xxx , and then with a browser, open KLEv3 management at default address HTTPS://192.168.1.200:5908
- * When accessing to the KLEv3 Web Management, your browser may provide a security warning. Please choose **"Continue to this website"** since there is no risk of pirate website here. These warnings are not relevant for HTTPS servers of hardware devices such as KLEv3. You can also install the Root certificate of KLEv3 in the list of trusted CA if you want to remove this warning. You will also have to authorize the usage of certificates that do not contain the name of the HTTPS server.

3.6. Setting Up the Network Interfaces

Using a browser, login to the KLEv3 Web Management. Expand **Main** on the left menu and click **Networks**.

Figure 4: Network Settings

Specify the port base for viewer connections in **TCP Port Base**. You can choose any available port base, starting from 5900 with an increment of 10 right up to 6400. TCP port base + 8 is the port number you will use for https web management.

Specify the host name, i.e., the name that KLEv3 will assume on your Local Area Network. Click **Set Default** to load the default unique host name composed of the product name and the hardware MAC address of the Ethernet port.

3.6.1. Ethernet IP Settings

The Ethernet 10/100 is the default network interface. It is faster than the Wireless Interface. Fill in the form. Please refer to the help page if you need more information.

3.6.2. Wireless Interface IP Settings

This subsection is hidden if you do not have a compatible wireless 802.11 USB adapter plugged in the USB extension port of your KLEv3. The supported USB adapter is the EW-7811 from Edimax.



Figure 5: Wireless 802.11 USB Adapter

Preferably use a WPA/WPA2 wireless connection. Older protocols such as WEP are unsecure.

Check **Enable Wireless Interface** to put the wireless interface in service. Wait until the service is started and the wireless part of this form is displayed.

In **Network Name (SSID)**, select the name of the wireless network (SSID) you want to connect to. If you do not know, please get this information from your network administrator. If the wanted SSID does not appear in the list, try to click on **Scan**. Eventually, if you cannot get the desired SSID, this is likely because the access point is out of reach.

Please refer to the help page to fill in the wireless interface parameters. We recommend you leave the wireless router or access point configure the KLEv3 by checking **Use DHCP**

3.6.3. Store Settings

Click the **Store Settings** button to save the new network setting. Then press the **Soft Restart** to put them in service. Once it restarted, all accesses to KLEv3 will need to use the new network information. The new KLEv3 Web Management address will be:

`https://<IP_address>:<TCP Port Base + 8>`

For example let's suppose that KLEv3 new IP Address is 192.168.1.192 and that TCP Port Base is set to 5920, then the KLEv3 Web Management new URL is: `https://192.168.1.192:5928`

3.6.4. Important Note

The Ethernet port and the Wireless port can work simultaneously at the condition they belong to different IP networks. In the case that both ports are set to conflicting IP addresses, the Ethernet port will work, and the wireless port will not work whether or not the Ethernet cable is connected.

So, if you plan you use the wireless alone, i.e., without Ethernet cable, please give to the Ethernet port a fake IP address in a different network. For example, if the IP address of the wireless port belongs to 192.168.1.xxx, you could set the Ethernet Port to 192.168.2.xxx (netmask = 255.255.255.0).

* Make sure you pass all information about KLEv3 to your Network Administrator so that he can make the needed adjustments to the firewalls, network configuration, and DMZ of routers for the KLEv3 to function properly and to allow it to be accessed from remote locations across the Internet.

3.7. Downloading the Viewers

There are two different program called viewers for accessing the KLEv3 KVM server. The KVM server captures and sends the video of the attached computer. In the other direction it receives the events of your keyboard and mouse and transmits them to the attached computer by simulating an USB keyboard and mouse.

Both viewers can be downloaded from the KLEv3 Web Management **Download** --> **Viewers**. You have the choice between the Windows viewer and the OS-independent Java viewer. Note that the Java viewer runs on Windows as well.



Figure 6 : Downloading the viewers

* The computer that you are using to run the Java viewer must have a recent Java JRE \geq 1.7.

3.8. Accessing the Remote Server

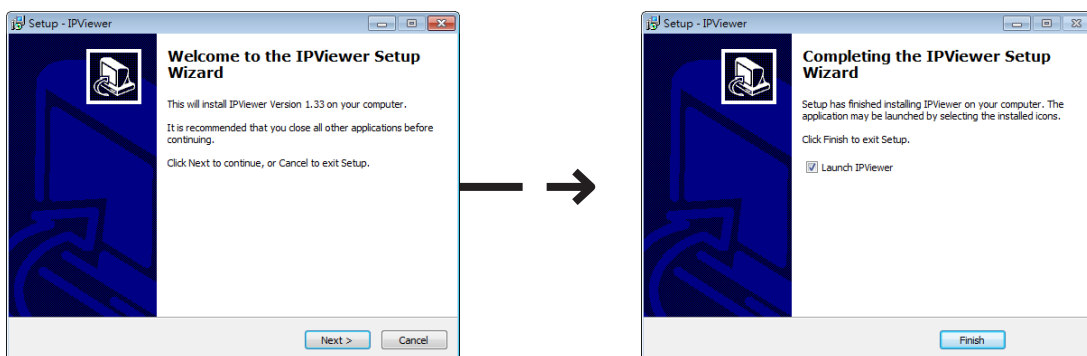
Please select methods of accessing the KLEv3 to have virtual presence of using your computing resources.


Separate independent program viewer. This can be downloaded from the KLEv3 Web Management

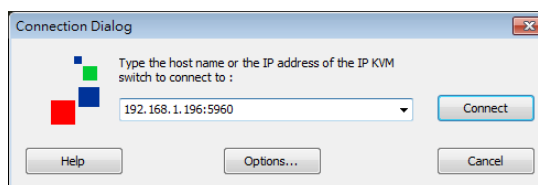
Interface --> **Download** --> **Viewers**. You have a choice of Windows viewer or OS independent Java viewer.

3.8.1. Windows Viewers

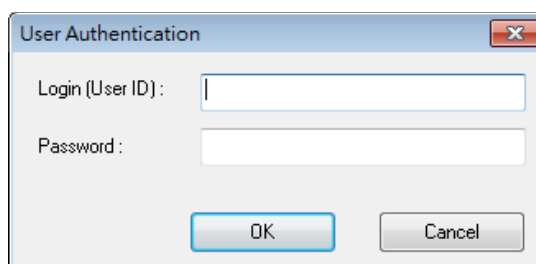
This viewer can be used on all Windows platform starting from Windows XP. The first time, please download and install the viewer.



Click  (Viewer Link icon) to access the Windows' viewer. If insufficient rights are granted to the viewer, User Access Control will pop up for authorization.

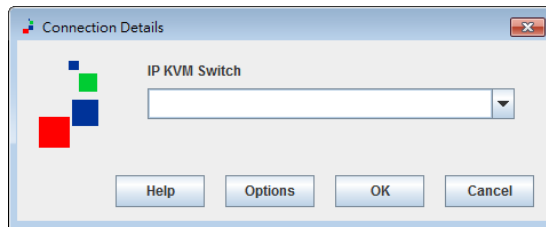


In the **Connection Dialog**, key in the network information to access KLEv3, then press **Connect**. If found, it will come back and ask for KLEv3 User Authentication, key in the User ID and Password for access.



3.8.2. Java Viewer

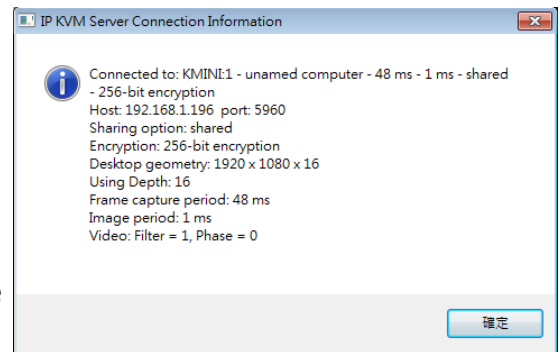
This viewer can be used on any system that supports a recent version of Java, including Windows. If you continuously use the current system to access through Java, recommend the jar file be save at a convenient location. Run or double click the jar file and it will pop up the **Connection Dialog** similar to the Windows viewer.



3.8.3. Title Bar Information

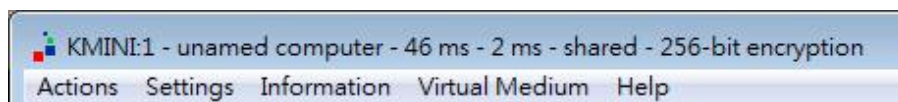
The application title bar provides some basic information for your reference. These data are important for the technician when requested. Changing these basic setting will be further introduce later on in the manual. Will use below example title as a reference.

- SvrName** - The name given to the current video server
- CompName** - The name given to the connected computer
- 33 ms** - The time it takes to capture the image
- 0 ms** - The time used to transmit the video refresh
- shared** - Currently session set mode
- 256-bit encryption** - Currently used encryption mode



The same information can be found in the applet under the **Information Menu --> Connection Information**

The below information is KLEv3 server, with unnamed computer, 46 ms to capture, 2 ms to refresh, under shared mode, with 256-bit encryption.



Note: The video can be slow when connecting across the Internet. The image quality is depending on the global bandwidth of the network. Choose the appropriate compression mode in the viewer connection options (Slow Internet) and if not enough, use 7-bit video depth. With the maximum compression and 7-bit video quality, it is possible to work with bandwidths as low as 100 Kbps. Operation

4. Web Management Interface

The Web Management Interface is the main administrative user interface for KLEv3. We already described several parts of the web management in previous chapter.

This manual will **NOT** provide detailed information about all web pages of the management. You can get detailed and up to date information by clicking on **Help** in each page of the web management.

A black rectangular button with the word "Help" written in white, bold, sans-serif font.

Use a modern web browser to access the web management at URL:

`https://<IP_address>:<TCP Port Base + 8>`

By default this is <https://192.168.1.200:5908>

Default administrator account name and password:

User name:	superuser
Password:	superu

When you login to KLEv3 Web Management, your browser may provide a security warning. Click "Continue to this site (not recommended)". The browser displays this warning because it does not know the issuer of the KLEv3 certificate. This does not mean that it is less secure than a certificate provided by an official certification authority. The browser cannot trust this certificate but you can because you know what you are doing.

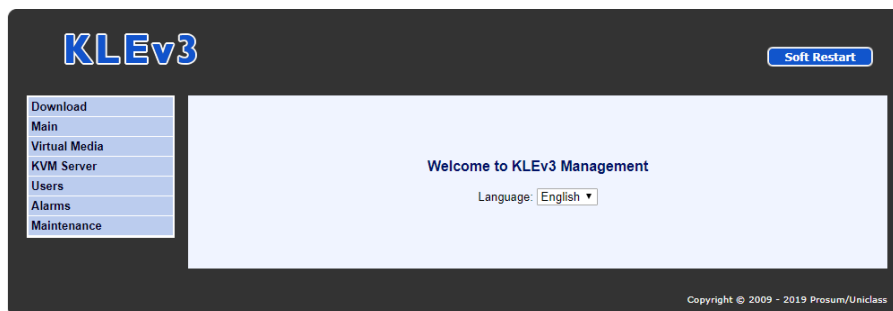


Figure 7: Web Management Interface

5. Viewers

This chapter provides some information, tricks and tips about the Windows and Java viewers. The Android viewer is not described here but its features are very similar and it provides a detailed help. The three viewers provide similar performances.

Refer to section 3.8 to login to the Windows or Java Viewer.

5.1. Viewer Menu



This menu provides some information concerning the remote KLEv3 and the video capture: Name of IP KVM, computer name, screen capture time, screen transmission time, type of connection (shared, view only), encryption type.

To get the menu-bar back in full-screen or disable-menu-bar mode, place the mouse cursor on the viewer windows top title bar, right click to get the mouse menu and click on "**Show Menu Bar**".

5.1.1. Actions

- **Send shortcut:** This will list the mouse shortcuts previously defined. Click on one of the defined shortcuts and it will be sent to the remote system.
- **Refresh screen:** Force the update of the viewer screen.
- **Send Cntl-Alt-Del:** This is a hard-coded shortcut. When pressing these keys while viewing a remote system, you would only reboot the local computer because this event is intercepted by the local system. Click this menu to send these keys to the remote computer.
- **Power off current computer:** This command requires administrator privileges and a power control unit connected to operate. It will power down the attached port.
- **Power on current computer:** This command needs administrator privilege and Power Control Unit attached for its function. It will power up the attached port.
- **New Connection (Win):** Open another Connection Dialog to login to another remote server.
- **Disconnect:** Release access to the remote system. It will also automatically close the viewer screen.

5.1.2. Settings

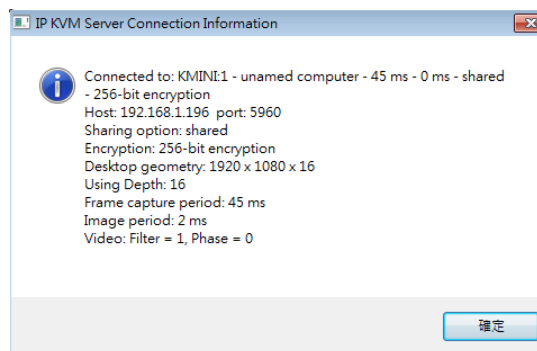
- **Connection options:** Local Cursor and Session adjustment of the connection options.
- **Adjust screen:** Change the remote screen centering and adjust the brightness and contrast
- **Full Display (Win):** Full screen view of remote system.
- **Show Menu Bar (Win):** Enable/ disable of Application Viewer menu bar on top of the viewer.
- **Save Settings/ Store Connection Options:** Store Password with connection data.
- **Device Management:** Open the Web Management Interface.

5.1.3. Virtual Medium

- **Manage Virtual Medium/ Drive Redirection:** Local Cursor and Session adjustment to the connection option.
- **Status:** Show the current Virtual Media connection status
- **Hard Disk or CD ROM Drive (Win):** Redirect or map a local drive onto the remote system. Check "Enable Write Accesses" to enable read / write, otherwise it would map it as a CD read only drive.
- **ISO Image File:** File that is in ISO format can be mapped onto the remote system.
- **Disconnect Button:** Release the Virtual Media connection / mapping.
- **Connect:** Establish the Virtual Media connection / mapping. We recommend mapping small files or drives, since the time needed to link the file is relative to its size.
- **Close:** Close the Dialog window in the local system. Note: Closing does not release the link or the connection.

5.1.4. IP KVM Connection Information

Display network connection and product setting information about the device.



5.1.5. Connection Options

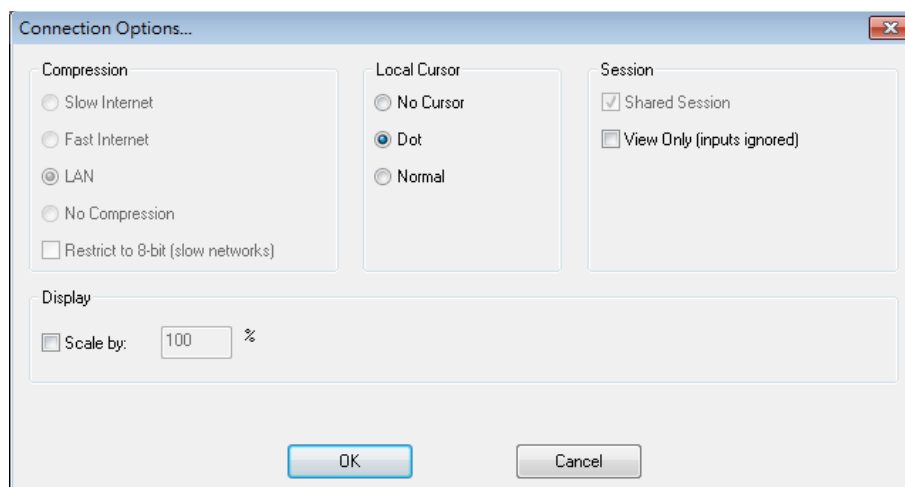


Figure 8: Viewer Connection Options

Compression

This setting is used to balance the video quality against the data volume. Higher video quality generates greater data volumes, which should be reserved for good performance networks. We can sort the settings from the lowest to the highest data volumes as following: Restrict to 8-bit Slow Internet, Slow Internet, Fast Internet, LAN, and No Compression.

- **Slow Internet:** Video quality optimized for slow Internet.
- **Fast Internet:** Video quality optimized for fast Internet.
- **LAN:** Video quality optimized for 100BaseT.
- **No Compression:** Can be used when the video is the highest priority and the bandwidth is high.
- **Restricted to 8-bit:** Limit the color depth of the video to 8 bits. The screen colors would normally be different from the actual remote screen.

Local Cursor

There are really two cursors when you are accessing a remote system using a local computer. The default setting is optimized for most situations since the mouse synchronization is rather smooth. When the network bandwidth is very low or your setting for the video resolution is unusual, the mouse synchronization may be off. The choices for the setting are: No Cursor, Dot, and Normal.

Session

Most of the internet works on the broadcast structure and so does this product. So it is possible to share the remote access at different location so long as all the location has the viewer access, username, and password.

- **Shared Session:** Logged in user will have full access, including keyboard and mouse.
- **View Only:** Logged in user only have view access.

Display

Scale by: Display a smaller version of the remote screen.

6. KCenter and Multiviewer

6.1. KCenter

KCenter is an application designed for centralized management of single port IP KVMs such a KMini, KLEv2, KLEv3.

With KCenter, IT administrators can easily manage all distributed IP KVMs connected to the LAN or across the Internet.

Make sure that Java™ is installed on your system before starting the installation of KCenter. The required Java™ version is 1.7 or higher (Oracle or OpenJDK). The latest Java can be downloaded from <http://java.com>.

For detailed operation of KCenter, please refer to the KCenter user's manual.

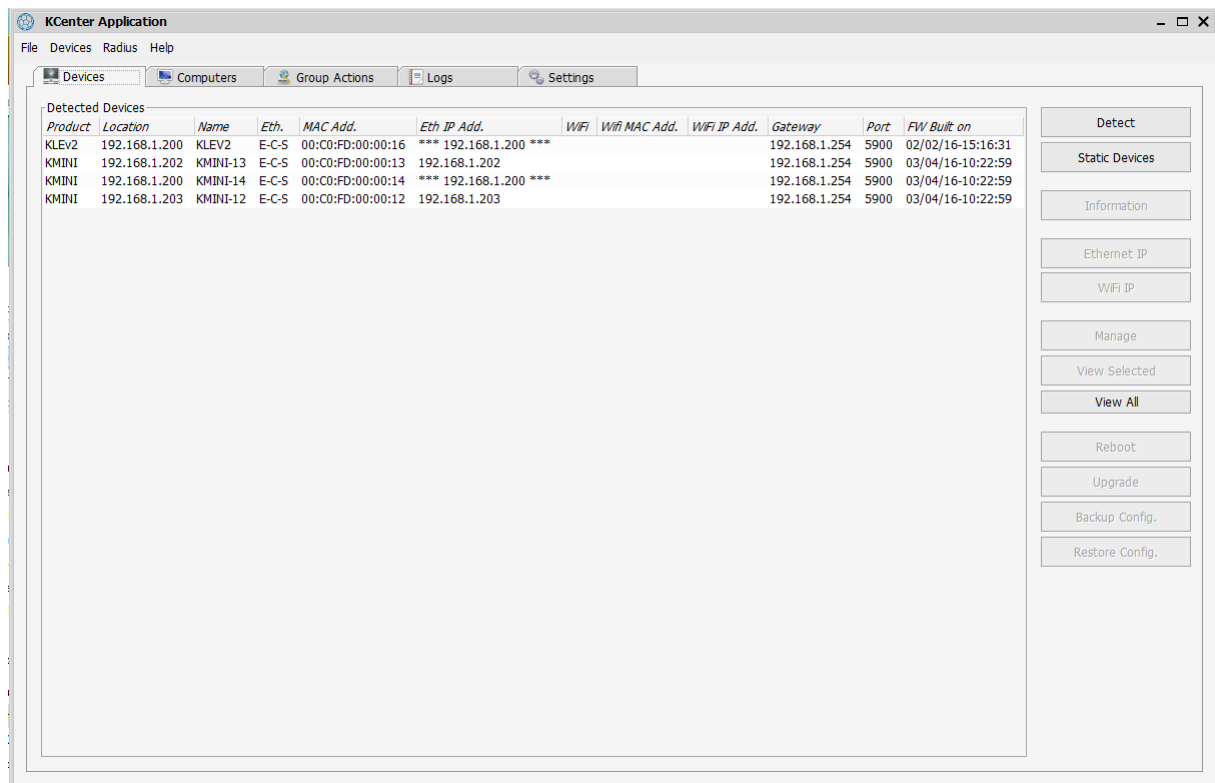


Figure 9: KCenter

6.2. Multiviewer

KCenter integrates the Multiviewer which is able to give a KVM access in real time to multiple devices simultaneously. The Multiviewer is installed with KCenter. It is a companion application that cannot be run alone. It is launched by KCenter and it gives access to all detected devices or to a subset of the devices according to the settings you made in KCenter.

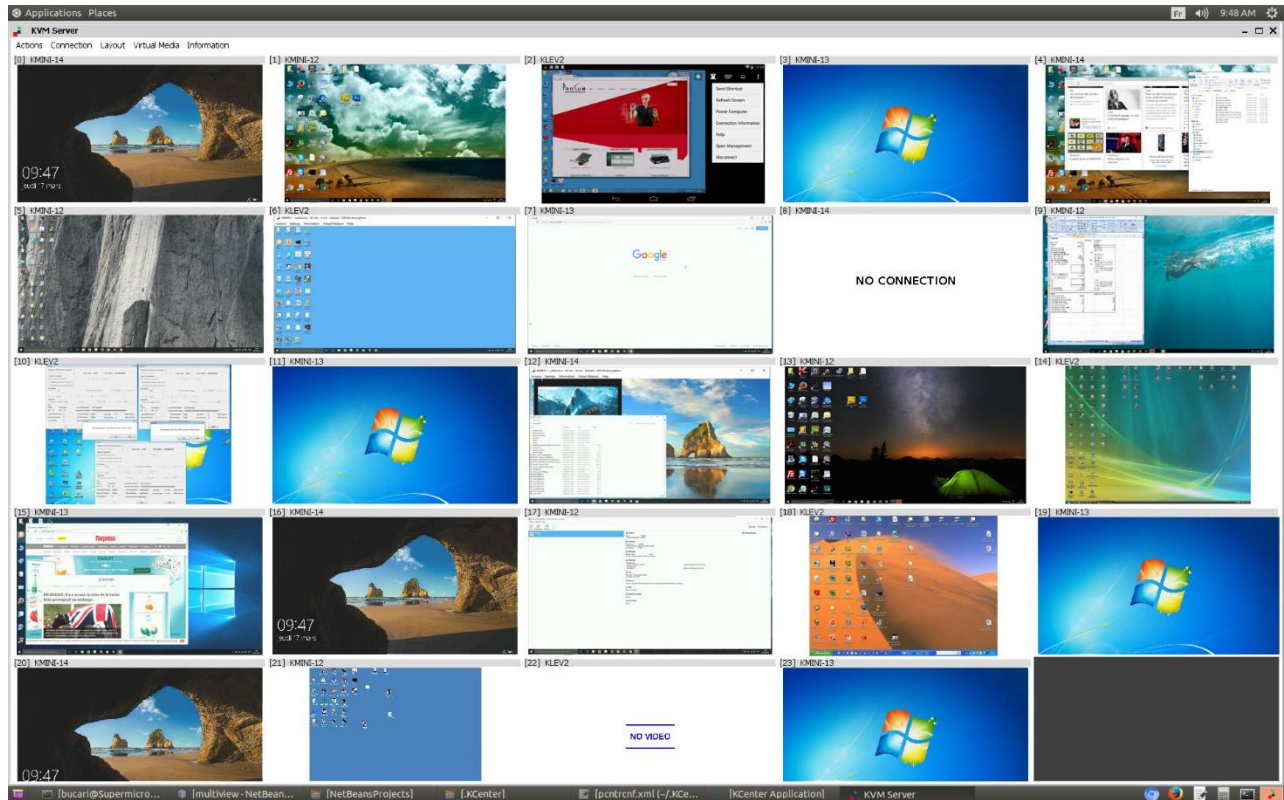


Figure 10: Multiviewer

