

KLE

1 x PC/KVM port IP-based KVM Link Extender w/ serial power control & PPP Sever/client connection support via external modem Quick Installation Guide

Thank you for purchasing the **KLE – a full-featured IP KVM Extender for remote server control over IP!** This Quick Installation Guide will help you connect the KLE to your conventional KVM Switch and/or server(s) and install it within your networking environment for remote client access across Intranet/Internet.

Check the Front-Panel and Rear Panel



Take out the Package contents

Take out the KLE and the accessories from the packaging box, and check whether you have all these items in the KLE packaging box.



Begin your KLE installation ...

1. Power on the KLE: plug the Power adapter to the power socket on the side of KLE.

2. Set up your local console: connect a PS/2 keyboard, mouse, and monitor to the KLE keyboard, mouse and monitor port.
3-a. Connect to single server /computer: If you need only connect to one server/computer. Just connect the PC/KVM port on the

backpanel of KLE to the server, using the 3-in-1 slim KVM combo cable and/or the USB cable.

or, 3-b.

Connect to Multiple Servers/computers: If you have to connect to multiple servers/computers, you'll have to use a conventional

KVM Switch in between. Just connect the PC/KVM port on KLE backpanel to the console port of the KVM Switch, using either the 3-in-1 slim KVM combo cable or the USB cable.

4. Boot up connected computers (if they are not powered-on yet): On the KLE local console, you should verify that the keyboard, mouse and monitor are all working on each of the connected server(s).

Prepare your computers for KLE connection

1. Turn off mouse acceleration and "Snap to" option on each of your computers/servers: Mouse

synchronization can function properly only when these two options are turned off on all connected computers. Taking Windows XP/2003 for example: Go to *Control Panel/Mouse/Pointer speed* and set the mouse speed to be at the exact middle of the scale, then uncheck both the *Enhance Pointer Precision* option and the *Snap to* option. For more details, please refer to the *User Guide, Section 2.2*.

2. Use a more common display frequency such as 60 Hz / 72 Hz / 75 Hz and pixel dimension: We suggest you use more standard display modes, such as:

800x600@60Hz / 72 Hz / 75 Hz
1024x768@60Hz / 70 Hz / 75 Hz
1280 x 1024@60 Hz

3. Disable transitional effect: Go to *Control Panel/ Display / Appearance / Effects*. And then uncheck the option to disable transition effects such as *Fade* for the menus and tool tips. This will much improve your video quality when you are using Medium or Low Quality as your KLE video filter setting.

Configure KLE for connection within LAN

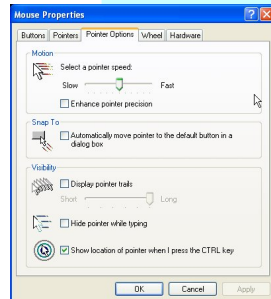
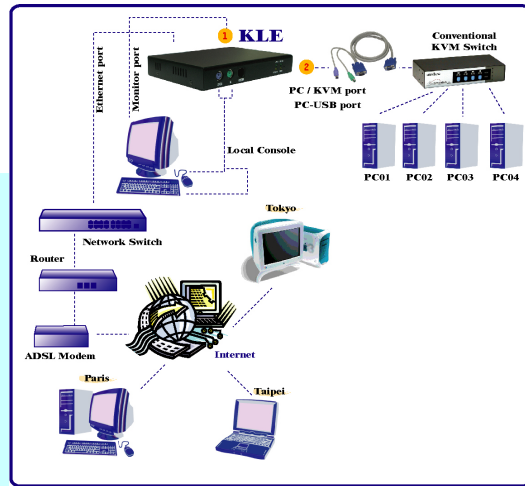
1. Connect the KLE to your LAN: Connect the Ethernet port of the KLE to one of the LAN port on your network switch/hub within your LAN, using an Cat5 UTP cable. (*Since the KLE accessories do not include a UTP cable, you should prepare one for use!*)

Upon connection to LAN, the Link LED will be lit to indicate ready Ethernet connectivity. If it is not lit, that means the connection is not ready. An orange 10/100M LED is lit to indicate a 100 Mbps connection; otherwise, it's 10 Mbps connection.

If your LAN is using different network segment other than 192.168.1.xxx, you might consider configuring one computer to have an IP address of 192.168.1.xxx such that you can access the KLE web and then change KLE IP address to one appropriate to your regular IP segment.

The factory default IP setting of KLE as you receive it in the box packaging are such as:

Port base: 5900
IP address: 192.168.1.200
Subnet mask: 255.255.255.0



Default gateway: 192.168.1.254
DNS: 192.168.1.1

2. Log in KLE Web management interface: Access the KLE web management interface by a standard browser connection. Just type in the address bar of your browser:

https://<IP_address>:<PortBase+8>
For example: https://192.168.1.200:5908

and log in with the following username and password:

Username: superuser
Password: superu

3. Configure KLE TCP/IP settings: go to the *LAN TCP/IP* page to configure settings such as *port base*, *IP address*, *Network Mask*, *Gateway* and *DNS* server.

For example, we could configure KLE such as followings:

Port base: 6080
IP: 192.168.1.36
Subnet mask: 255.255.255.0
Default gateway: 192.168.1.11
DNS: 192.168.1.1

With these settings, it means you'll use 6080 for viewer port base and 6088 for SSL browser connection. For example, you should type https://192.168.1.36:6088 in the browser address bar for KLE Web management access. And within the viewer prompt window, you should type: 192.168.1.36:6080

Note that the DNS setting is required only when you want to use the mail alert function to notify users about specific server alert events via e-mail.

4. Validate the new settings: Click *Submit* button below to commit it to KLE's flash memory. Then go to the *Apply Setting* Page, and click the *Apply Setting* button to make new settings effective on the KLE.

5. Verify the presence of KLE within your LAN: try to ping the IP address of KLE from any computer on your LAN. For example, in the DOS box you type:

ping 192.168.1.36

.... and it should reply your ping.

You can now access KLE using any computer within your LAN environment.

Configure router/firewall settings for internet access

To allow access to the KLE behind corporate firewall/router, please configure the following settings on your router (not on your KLE):

1. Configure a virtual server on your router: you should configure (or ask your net admin to configure for you!) a virtual server as mapped to the KLE local IP address

2. Open a port range (<port_base> ~ <port_base + 9>) both inbound and outbound for the virtual server: you should open a port range according to what you have configured as port base for KLE in previous steps. Taking previous example, if we configure KLE as having a port base of 6080, then we should open port range 6080~6089 (that is, <port_base> ~ <port_base + 9>) both for inbound and outbound, in which,

<port_base> = 6080 is the KLE viewer connection port

<port_base + 8> = 6088 is the browser SSL connection port

<port_base + 9> = 6089 is for viewer internal communication, etc.

For example:

Router internet IP ↔ virtual server (port range open) ↔ KLE local IP
61.232.134.120 ↔ virtual server (port 6080~6089 open) ↔ 192.168.1.36

Once you have changed the port base of your KLE, you should also modify the open port range on your router accordingly, if you want internet access to come across.

Test KLE viewer connection from LAN and Internet

After you have installed KLE within your KVM Switch / server(s) / networking environment, you could now test the viewer connection from LAN and across Internet.

1. Access KLE Browser Management Interface: Use a standard browser to access KLE web management interface. Enter the valid IP address and browser port number <port_base + 8> within your browser address bar.

https://IP_address:browser_port

Taking previous case for example, you should enter

https://192.168.1.36:6088

Then login with the default account:

User name: superuser

Password: superu

2. Download and install the Win32 viewer program: Go to the *Download* page, download and install it on your computer client. After installation, you'll see a KLE viewer desktop icon on the desktop.

You can download either win32 viewer or java viewer. The java viewer will need Java Runtime Environment 1.5.0 or above to be already installed on your computer client. Java viewer won't need installation process, just double-click on it to run the java program.

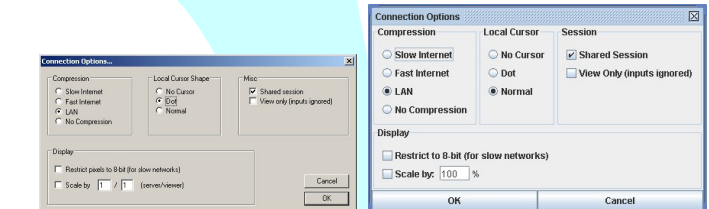
3. Run the viewer program: double-click the KLE viewer desktop icon and the *Connection Details* box appears.



Win32 viewer login

Java viewer login

4. Configure the connection options: click the *Options* button on the KLE viewer *Connection details* box.



For viewer connection within LAN: you can choose *LAN* as your encoding scheme. **For connection from across internet:** choose either *slow internet* (poor network bandwidth) or *fast internet* (better network bandwidth). And also the *8-bit color reduction* is an option for use in limited bandwidth conditions. **If you want no other user to share your KLE viewer access** while you are connected with the KLE, you could uncheck the *shared session* option. After you choose the suitable options, click *OK*.

5. Enter the access IP and viewer port number within the IP address/domain name field:

From local LAN:

<KLE_local_IP>:<port_base>

For example: 192.168.1.36:6080

Or

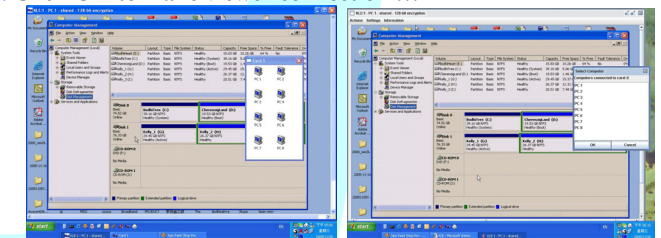
From across internet through a firewall/router

<router_Public_IP>:<port_base>

For example: 61.232.134.120:6080



6. Click OK to make viewer connection ...



Win32 viewer

Java Viewer

Congratulation! Your first viewer connection is made!

And you'll notice that there's also a *Select Computer* box on top of the viewer window with computer icons such as *PC 1*, *PC 2*, *PC 8*. Later you can configure the name of the icon to be your real computer name ...

Mouse synchronization: Sometimes you will find the local mouse cursor and the remote mouse cursor are out of sync. You can use the following mouse synchronization hotkey to bring them in sync:

[Right_Ctrl] – [Right_Ctrl] – [Home]

....Use the right control key, not the left!

KLE display optimization

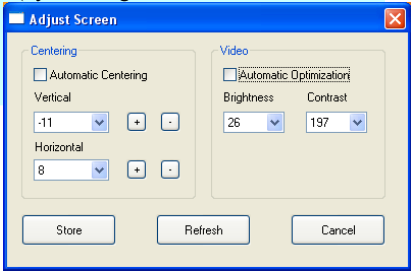
After you have made successful viewer connection to the KLE, you can now go forth to optimize the display on the viewer screen.

1. Open a viewer connection. (See previous section)

2. Check the viewer screen for centering and video quality: Check if the screen output is centered properly within the viewer screen.

💡 To check for viewer screen proper centering, just try to hit the **Right_Ctrl – Right_Ctrl – Home** to sync your remote and local mouse cursors. A properly centered viewer screen should have both cursors align perfectly. (But before that you should turn off the mouse acceleration. See previous section for mouse acceleration turn-off.). Also if a screen is not properly centered it will have a black strip (offset) on edge of the screen.

3. If the viewer screen is not centered correctly, try: either **(a)** to click the computer icon within the *Select Computer* Box to align it anew; or **(b)** Go to the viewer Quick Menu (by clicking the title bar icon of the viewer window), and select *Adjust Screen* to bring out the *Adjust Screen* box. First, uncheck the *Automatic Centering* option. And then adjust the vertical and horizontal shift. This way, you can manually center the screen output by the increment of one pixel. After the display is centered again, you can choose to check the *Automatic Centering* option again, or just leave it unchecked since you have made the correction. However, remember to click the *Store* button to save this correction into KLE memory, so that it will implement the correct value when next time you switch to this computer without even trying its automatic centering!



💡 After the optimization, you can always disable the *Automatic Centering* option or even disable the *Automatic Optimization* option just to make the viewer more efficient for initial capturing of the display output from your PC. It will connect faster!

Add a KVM switch and its switching hotkeys for Click-and-Switch KVM port selection

💡 You should add a KVM Switch within the KLE configuration only when you need to allow multiple servers/computers to be access by KLE. In this case, you should input the KVM switch and its port switching hotkey to the KLE database, so that you can use the *Select Computer* box for **click-and-switch** operation. However, if you intend to connect only one single server/computer to the KLE, then there’s no need to add any KVM switch to the KLE database.

1. Go to the KVMs page of KLE Web Management:
2. Add in your KVM Switch: Either select a KVM switch from the available list if you happen to use one on the list. Or, you can just add in your own KVM switch on the list as well --- Just type in the *Model Name*, and select the *Escape Hotkey* this KVM switch uses and type in the rest of the port switching hotkey sequences corresponding to every KVM port. For details, please refer to the *User Guide, Section 4.11*.
3. Validate your setting: Go to the *Apply Setting* page and hit *Apply Setting* button to restart KLE. Now you can try to connect to KLE with your viewer and try to click on the computer icons on the *Select Computer* box to see if it can click-and-switch to the corresponding KVM port.



Configure your Computer Names

1. Go to the *Computers* page of KLE Web and configure the computer names as you wish.
2. However, every time when you rename a computer, please hit the *Submit* button to save the modification to the KLE database, and then go to rename the next computer (Note that if you don’t click *Submit* button, your modification won’t go into KLE database!)
3. After you have finished renaming all the connected computers, go to the *Apply Setting* page and hit the *Apply setting* button to make the name modifications effective. For details, please refer to *User Guide, Section 4.7*.
4. Establish a new viewer connection and you’ll see the *Select Computer* box is now with new computer names you have specified.

Add, edit or delete KLE user accounts

KLE allows three types of user accounts with different privileges to the access of KLE Web management features – SUPERADMIN- access to

all management features / ADMIN – access to partial management features / USER – access to minimal features. For details, please refer to *User Guide, Section 4.1*.

1. Go to the User Management page on KLE Web.
2. Add, edit or delete the user accounts as well as assign access privilege.

There are three default user accounts:

username / password	
superuser / superu	→ SUPERADMIN privilege
admin / 123456	→ ADMIN privilege
user / 123456	→ USER privilege

💡 We recommend you to add your own user accounts and delete or at least modify the passwords of the existing default accounts for security sake.

💡 You should at least retain one account with SUPERADMIN privilege. In fact, the KLE won’t allow you to delete the last SUPERADMIN account so that you won’t lock yourself out by accidentally deleting all SUPERADMIN accounts.

Install Certificates on both KLE and your client computer

💡 The certificates are only needed when you want to implement level 3 Security – SSL data encryption plus full PKI authentication - over viewer connection. If you have no intention to implement level-3 security, you could as well skip this section.

1. Obtain a set of certificates from your certification authority (CA): This set of certificates should have the following file names and format requirements:

root.crt → file name is mandatory, in .crt format
server.crt → file name is mandatory, in .crt format
serverkey.pem → file name is mandatory, in .pem format
client_name.p12 → file name could be freely chosen, in .p12 format.

2. Import certificates to both the KLE and the viewer on your client computer: For details please refer to the *User Guide, Section 3.3 and Section, 4.16*.

💡 You could also set up your own CA (Certification Authority) using freeware such as XCA (downloadable from <http://sourceforge.net/projects/xca>) to generate the set of certificates you need to implement full PKI authentication on your own with the ultra-security yet without incurring the costs of buying certificates from external CA. For details, please refer to the document **How to generate KLE certificates using XCA** (could be found on the KLE Support CD-ROM).

Change Viewer Security Level

KLE offers three viewer connection security levels:

* Level 1: No SSL encryption, No SSL authentication
* Level 2: 256-bit encryption, server authentication by client
* Level 3: 256-bit encryption, full authentication (requires the installation of certificates)

💡 By factory default, the security level is set at level 2 - with SSL encryption but without full PKI Authentication.

1. Go to the Security Page on KLE Web.
2. Choose your viewer connection Security Level: If you choose level 1 or level 2, you just select it and *Submit* and *Apply Settings*. However, if you intend to implement the highest level of security – Level 3 – you should first upload the certificates to KLE and also import certificates to the viewer on your client computer before you can enable level 3 (SSL + full PKI authentication) security setting. For details, please refer to the *User Guide, Section 3.3*.
3. Validate your settings: go to the *Apply Setting* page to hit the *Apply Setting* button to validate the security setting...

Change Password Policy for viewer connection

KLE offers three viewer password control policies: No password – No password is required for connection, Global password – a global password is required for all users; User-specific password – each user has a specific password. Each user account and its password are valid for use only when KLE is adopting the User-specific password policy. The password policy does not affect the browser access, which is only granted using User-specific account and password For details, please refer to *User Guide, Section 4.16*.

1. Go to the Security page on KLE Web.
2. Select your password policy: select your password policy and click *Submit*.
3. Validate your settings: go to the *Apply Setting* page and hit the *Apply Setting* button to validate the new setting.

💡 If you select Global Password policy, you will have to enter a global password, which is used for all users when they want the viewer access to the KLE.

💡 By factory default, the user policy is User-specific Password, which is a more secure policy than either No Password or Global Password.

Power Control, Radius Accounting, Remote Authentication and other Settings

💡 Settings such as *Power Control, Radius accounting* and *remote authentication* are disabled by factory default. If you are not going to use these features, there is no need to enable it, so that it won’t take up KLE resource during booting time. However, if you are going to use any of these, please configure the settings according to your requirements.
Power control - You should go to the *Power Control* page on KLE Web to enable the power control over serial port, and configure all required settings. For details, please refer to *User Guide, Section 4.6*.

Radius accounting setting - If you have a Radius accounting server, you can go to the *User Management* page on KLE Web and check the Radius accounting option, and configure all required settings. For details, please refer to *User Guide, Section 4.15*.

Remote authentication - If you have implemented remote authentication servers such as Active Directory, Radius or LDAP server, you can go to the *User Management* page and check the Radius accounting option, and configured all required settings. For details, please refer to *User Guide, Section 4.15*.

Now KLE is ready for use

Now KLE is ready for connection, and you can distribute the accounts, passwords and connection information to all KLE users. Basically, one needs the following information for connection:

1. KLE access IP address (or domain name) and access port number for KLE browser management and KLE viewer.
Taking example from previous case, it’s **https://61.220.14.122:5908** for browser access and **61.220.14.122:5900** for viewer access
2. User account and password: For example, Brian / zw2x5W. Or if you choose a global password policy, it’ll be the global password. Or if you choose No Password policy, there will be no need for password.
[3.] The certificates are required only if you enable level 3 security – PKI authentication and SSL encryption - for the viewer connection.

Restore to Factory Default

In case you have totally forgot the access IP of your KLE, or you want to restore KLE to its factory default, just take a pointed needle or pen tip to depress the recessed *Restore-to-default* button for over 5 seconds on the KLE front-panel (meanwhile you should do this when KLE is connected to power). Then release and wait for the KLE to load and restart. When restarting, the Video and Link LED indicator will be off for some seconds and then the KLE restart itself from ground up with the default factory settings:

[TCP/IP settings]	
Port base:	5900
IP address:	192.168.1.200
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.254
DNS:	192.168.1.1
[username / password]	
superuser / superu	→ SUPERADMIN privilege
admin / 123456	→ ADMIN privilege
user / 123456	→ USER privilege

Then you can access KLE again with Browser by **https://192.168.1.200:5908** and with viewer by **192.168.1.200:5900**

Troubleshooting

Q. I can see the screen output on local console. It’s OK. However, there’s only No Video on the viewer screen when connected. What’s up?
A. You might have adopted a resolution or refresh rate too peculiar for KLE, please try to change the frequency to more standard ones such as 70/ 72/ 75 Hz. And also if that does not help, try to change the pixel dimension as well to say 800 x 600 / 1024 x 768 / 1280 x 1024.

Q. The KLE booting time has become unduly longer over several minutes. What’s wrong?

A. Please make sure that the external authentication, PPP server/client, time server as well as power control settings are correct. If you don’t use all these features or the authentication/time servers are not available, just try to disable them to save booting time. If you don’t have all these servers present, the KLE settings will force it to try to look for them till timeout. That will waste KLE booting time considerably.

Q: Video response seems slower in limited bandwidth condition, are there ways to increase the response speed?

A: There are several ways to increase the response speed on the viewer screen:

- (1) Under bandwidth limited condition, you should select a more economical encoding scheme such as *Slow Internet* or *Fast Internet* Encoding scheme instead of the *LAN* or *No Compression* encoding scheme from the viewer connection option menu. However, if the connection is made only within LAN with plenty connection bandwidth, *LAN* or *No Compression* encoding scheme should be (paradoxically) quicker than Internet scheme – since your client computer won’t dissipate extra computing power for decoding the more-compressed internet scheme.
- (2) Use 8-bit color reduction (with only 256 colors instead of the 65K colors in 16-bit settings).
- (3) You can enable Automatic Filter Adjustment (*Web Management/Video Server page*) for automatic video optimization according to different bandwidth condition.
- (4) On the other hand, if you don’t want to use Automatic Filter Adjustment, you could always select either Medium Quality/Low Quality level for more speed as your Video Filter setting (Web Management/ Video Server Page). You could also do something to increase the response speed: use a server desktop of small resolution (such as 800 x 600) and use a solid plain color background for server desktop.
- (5) Finally, you should check also the networking environment to find if there is some bottleneck that can be improved or eliminated for more bandwidth throughput.

Q. When connection is first made, the display on the viewer screen seems not centered correctly and there is black margin on the edge of the viewer screen. How could I eliminate the black strip?

A. The black strip is the offset that will be seen when the display on viewer screen is not centered correctly. Probably you have not enabled automatic centering option on KLE, so please check the followings:

- (1) Go to the Video Server page on KLE Web Management Interface to check whether the *Automatic Screen Alignment* option is enabled. If it is not yet enabled, please check the option, click *Submit* button and then go to *Apply Settings* page to click the *Apply Settings* button to restart KLE with new setting.
- (2) When the viewer connection is made, select the *Adjust Screen* option on Viewer’s Quick Menu, and the Adjust Screen dialog box appears. On it, check whether you have *Automatic Centering* enabled. If it is not yet enabled, please check this option to enable it. If it is already checked, please uncheck it and then wait for at least 15 seconds and then check the option again to force the video server to align (center) the display in the viewer screen.

Q: I can log in and make successful browser connection with KLE. However, I cannot make a valid viewer connection or the KLE does not respond to my viewer connection request. What can I do about it?

A: The KLE video server might not function properly. First, make sure your account have the SUPERADMIN privilege. If not, you should request one that has the SUPERADMIN privilege to do the troubleshooting job for you. Next, go to the *Apply Settings* Page on the Web Management Interface and then hit the *Apply Settings* button to restart KLE. Then wait for at least 10 more seconds for it to start completely. Try to make the viewer connection again to see if it is back to normal. Second, If the *Apply settings* button could not bring back the KLE video server to normal working condition, try to hit the *Emergency Reboot* button (could be found on the Maintenance Page of the Web Management Interface) for a complete start from ground level. An Emergency Reboot is a clean reboot, and it takes longer time for KLE system and video server to load, thus you have to wait at least a minute for the system to be up and running. Then try to make the viewer connection again to see if it is brought back to normal function again. A cold boot of KLE is always a last resort to bring the KLE back – just try to disconnect the power adapter form KLE and wait for sometime (30 seconds) before plugging in again for a cold start over.

Technical Support

Please contact your local dealer for technical support issue.

FCC / CE Statements

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 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.

