

LINDY®

CONNECTION PERFECTION

IP Access KVM Switch Classic

User Manual

English



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PREFACE

The **LINDY IP Access KVM SWITCH CLASSIC** features the latest and most technologically advanced SoC (System on Chip) IP KVM solution, based on Peppercon's latest IP-KVM engine technology.

Retaining the familiar management utilities, GUI and related software tools of its predecessor, the **CPU IP Access Switch LITE**, the **IP Access KVM SWITCH CLASSIC** delivers an advanced IP KVM solution whilst retaining compatibility with older models.

This manual is based on the **CPU IP Access Switch LITE** manual and therefore shows many screenshots referring to this model, however, please note that although they may display a slightly different design they fully apply to the **IP Access KVM SWITCH CLASSIC** too. The **IP Access KVM SWITCH CLASSIC** may also be referred to as **IP-KVM** or **IP Access Switch** in this manual.

Due to constant technological advances and further development, changes to this product may be introduced without further notice.

LINDY Elektronik-GmbH, June 2008

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1. Introduction

Thank you for purchasing the LINDY IP ACCESS KVM SWITCH CLASSIC. This device allows operators to monitor and access their computers from remote locations. The IP ACCESS KVM SWITCH CLASSIC connects to the internet, intranet, LAN or WAN using standard CAT5 or higher cable, then uses a KVM cable to connect a local KVM switch or server.

The IP ACCESS KVM SWITCH CLASSIC combines convenient digital remote KVM access and control with integrated system management. It captures, digitizes and compresses the video signal and transmits it alongside the keyboard and mouse signals, to and from a remote computer. The IP ACCESS KVM SWITCH CLASSIC provides a non-intrusive solution for remote access and control. Remote access and control software runs on its embedded processors only – so there is no interference with server operation, or impact on network performance.

The IP ACCESS KVM SWITCH CLASSIC supports PS/2 keyboard/mouse and 15-way VGA type monitor connections. It automatically detects the video mode of the console and allows manual fine tuning for improved video quality.

The IP ACCESS KVM SWITCH CLASSIC also features remote mass storage support – the unit connects via a USB connection to the computer and allows virtual storage devices to be setup on the host and accessed from the client.

1.1 Features

- Remote access of KVM switches or servers via LAN, WAN, or the internet; control your installation from almost anywhere in the world
- KVM (keyboard, video, mouse) access over IP and analogue telephone line (requires modem)
- BIOS level access also for remote computers
- 256-bit SSL encryption, SSL Certificate Management
- No impact on server or network performance
- Automatically senses video resolution for best possible screen capture
- High-performance mouse tracking and synchronisation
- User console port for direct access to KVM switch
- Local mouse suppression (only when using SUN's Java Virtual Machine)
- Can be used with any standard PS/2 Keyboard/Mouse & VGA Monitor
- Remote mass storage control
- Compatible with Windows 98SE/ME/2000/XP & 2003 Server, Mac OS 10 and Linux Red Hat/Fedora/Knoppix

1.2 Package Contents

- IP ACCESS KVM SWITCH CLASSIC
- Power Adapter, Multi Country for EURO, UK, US, AUS
- 19" Rack mount kit and set of 4 rubber feet for desktop use
- RS-232 Serial cable, 1.8m
- USB 2.0 A to B type Cable, 1m (for remote mass storage use)
- 3-in-1 KVM Cable, 1m (for PC/KVM)
- Software CD including tools and this manual

1.3 System Requirements

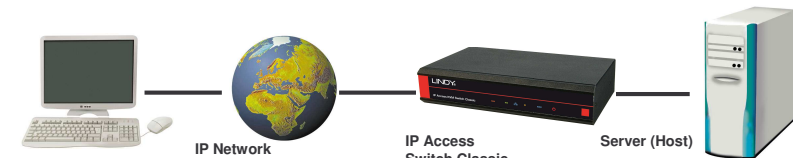
Item	Description
Local console side	One PS/2 Keyboard, one PS/2 Mouse, one VGA monitor
Remote Console side	PC with Java enabled browser linked to the network
Computer / KVM side	One PC/ Server or the console port of a KVM switch

2. Hardware Installation

2.1 Operation Overview

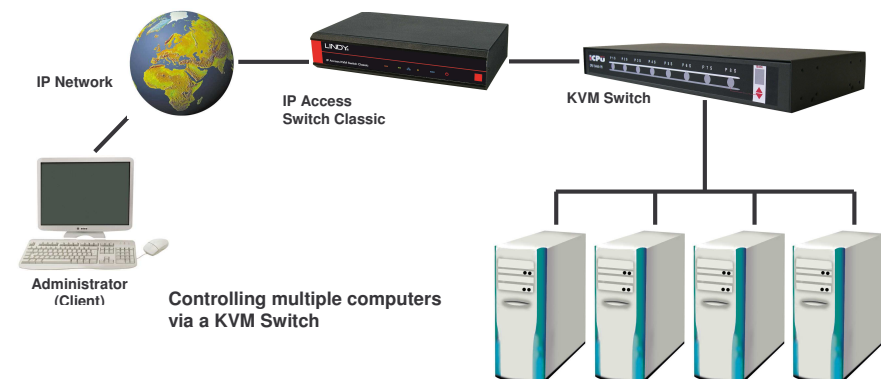
The pictures below show the connection options of the IP ACCESS KVM SWITCH CLASSIC.

The IP ACCESS KVM SWITCH CLASSIC redirects local keyboard, mouse, and video signals to a remote administration console. All data is transmitted using the TCP/IP protocol.



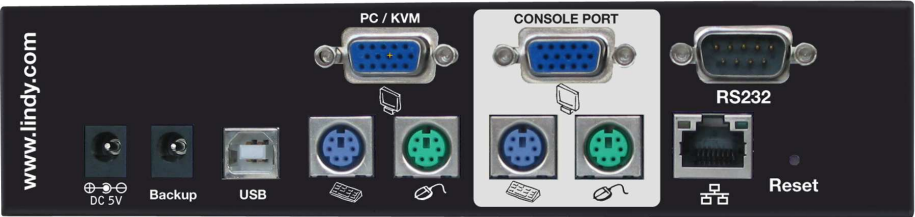
Controlling a single computer

The IP ACCESS KVM SWITCH CLASSIC can be used in a multi administrator and multi server environment as well. Attaching one or more IP ACCESS KVM SWITCH CLASSIC units to a KVM switch matrix allows multiple server access via a single remote console.



Controlling multiple computers via a KVM Switch

2.2 Connections



2.2.1 Host or KVM Switch Connection Side

Use the supplied 3-in-1 combined KVM cable and USB cable to make the connections to the host computer. The DC power supply connection is also made here. Use the second DC port labelled backup for a redundant power supply if required.

- 1. Plug the power adapter into the mains and connect the jack to the DC power supply socket
- 2. Connect the VGA port labelled **PC** connection to the VGA port on the host computer or KVM switch
- 3. Connect the keyboard and mouse port connections to the PS/2 keyboard and mouse ports labelled **PC** on the host computer or KVM switch
- 4. **(Optional)** If you want to use the remote mass storage control feature, use the supplied USB A-B cable to connect the USB port on the IP ACCESS KVM SWITCH CLASSIC to a USB port on the host system

2.2.2 Console Connection Side

Connect your local keyboard, monitor and mouse console to the VGA and PS/2 ports labelled **Console**.

2.2.3 Network Connection

The IP ACCESS KVM SWITCH CLASSIC provides an RJ-45 port for an Ethernet connection. The port can be used with a 100Mbps, 100Base-TX connection or a 10Mbps, 10Base-T connection. The IP ACCESS KVM SWITCH CLASSIC will sense the connection speed and automatically adjust to the appropriate operation mode.

10Mbps Connection

For 10Base-T Ethernet networks, the Ethernet adapter should use Category 3, 4, 5 or 6 UTP cable. To establish a 10Mbps connection, the cable must be connected to a 10Base-T hub.

100Mbps Connection

For 100Base-TX Fast Ethernet networks, the IP ACCESS KVM SWITCH CLASSIC supports Category 5 or 6 UTP cabling. To establish a 100Mbps connection the cable must be connected to a 100Base-TX hub.

2.2.4 Dial up Line / Modem Connection

The RS232 port of the IP ACCESS KVM SWITCH CLASSIC can either be used to connect to an external Modem i.e. to set up a dial up line connection or can be used to connect to an external RS232 managed power switch. Use the supplied cable to connect the appropriate unit.

2.2.5 Connecting an External Power Switch option

At the time of writing (June 2008) the IP ACCESS KVM SWITCH CLASSIC supports the following external power switch options. Please refer to the individual manufacturers manuals for advice on connecting to the IP ACCESS KVM SWITCH CLASSIC.

- Peppercon IPM-220L
- Avocent SPC1 800/1600
- Sentry In-Line Power Module
- Leaning ePowerSwitch

2.2.6. LED indicators and Switches



LED	Indication
Power	RED – On when power is applied
IOIOI	Blue – RS-232 Data Link Indicator
LAN Ethernet Link/Act 10/100Mbps	Orange (10) -- 10BaseT Ethernet connection established Green (100) -- 100BaseT Ethernet connection established Blinking: Activity ON: When no data activity and link is connected
Link	Green -- Blinking when data is being transmitted

- **RESET** button: on the rear panel, press the button to reboot the IP-KVM unit

3. Configuration

The IP ACCESS KVM SWITCH CLASSIC's communication interfaces are all based on TCP/IP. The switch comes pre-configured with the IP configuration detailed here:

Parameter	Value
IP auto configuration	none
IP-Address	192.168.0.70
Net-mask	255.255.255.0
Default-Gateway	none

If this initial configuration does not meet your requirements, the following section describes the configuration that is necessary to access the IP ACCESS SWITCH CLASSIC for the first time.

3.1 Initial IP Configuration via Network

If DHCP mode is enabled (IP auto configuration = DHCP), the IP Access KVM Switch Classic will try to contact a DHCP server in the subnet to which it is physically connected. If a DHCP server is found, it may provide a valid IP address, gateway address and net mask. Before you connect the device to your local subnet, be sure to complete the corresponding configuration of your DHCP server. It is recommended to configure a fixed IP assignment to the MAC address of the IP Access KVM Switch Classic. You can find the MAC address labeled on the bottom side of the metal housing.

There is a Network Setup Software tool (PSetup) for setting up the network configuration (IP address, Subnet mask, DHCP, etc). It is useful when you want to change the network settings or when you cannot access to the unit due to not knowing the network settings of the unit. In this case, you can view or change the settings via this utility. Follow the procedure described on the next page (**Section 3.3.**)

3.2 Initial Configuration via Serial Console

The IP ACCESS KVM SWITCH CLASSIC has a serial line interface (host side) for connecting a serial terminal. This connector is compliant with the RS-232 serial line standard. The serial line has to be configured with the parameters given in this table:

Parameter	Value
Bits/second	115200
Data bits	8
Parity	No
Stop bits	1
Flow Control	None

When configuring with a serial terminal, reset the IP ACCESS KVM SWITCH CLASSIC and immediately press the **ESC** key. You will see some device information and a "=>" prompt. Type **config** and press the **Enter** key. Wait a few seconds for the configuration questions to appear.

As you proceed, the following questions will appear on the screen. To accept the default values (shown in square brackets below) press the **Enter** key.

IP auto configuration (non/dhcp/bootp) [dhcp]:
IP [192.168.0.70]:
Net mask [255.255.255.0]:
Gateway (0.0.0.0 for none) [0.0.0.0]:

3.3 IP ACCESS KVM SWITCH CLASSIC Setup Tool

3.3.1 MAC Address Detection

Connect the IP ACCESS KVM SWITCH CLASSIC to your computer either via a local network, or via USB. If you use a USB connection Windows will detect the IP ACCESS KVM SWITCH CLASSIC as a '**Removable Disk**' and an appropriate drive letter will be assigned.



Start the setup tool from the CD ROM.

A window opens as shown below:

On the upper left corner, the MAC address of the IP ACCESS KVM SWITCH CLASSIC is displayed. To detect the MAC address, press the **Refresh Devices** button. The displayed MAC address is the same as that printed on the sticker on the base of the unit.

On the lower right corner of the window, there are two buttons: **Query Device** and **Setup Device**. Press the **Query Device** button to display the preconfigured values of the network configuration. The values are displayed in the text fields located above. If necessary, adjust the network settings to your needs. To save the changes enter a user login and a password (**see 3.3.2 Authentication, on page 9**) and then press the **Setup Device** button.

3.3.2 Authentication

To adjust the authentication settings, enter your login as a super user and change your password.

Super user login

Enter the login name of the super user. The initial value is **super**. All of the characters are lower case.

Super user password

Enter the current password for the super user. This initial value is **pass**. All of the characters are lower case.

New super user password

Enter the new password for the super user.

New password (confirm)

Re-type the new password for the super user.

To close the window and accept the changes, press the **OK** button, otherwise press the **Cancel** button.

3.3.3 IP Auto Configuration

With this option, you can specify whether the IP ACCESS KVM SWITCH CLASSIC should obtain its network settings from a DHCP or BOOTP server. From the drop down list select either **DHCP** or **BOOTP**. If you select **NONE**, the IP auto configuration is disabled and you should manually input the following network settings:

IP address

The IP address the IP ACCESS KVM SWITCH CLASSIC uses.

Net mask

The net mask of the connected IP subnet.

Gateway address

The IP address of the default router for the connected IP subnet. If you do not have a default router, enter **0.0.0.0**.

3.4 Keyboard, Mouse and Video configuration

Between the IP ACCESS KVM SWITCH CLASSIC and the host, there are two interfaces available for transmitting keyboard and mouse data: USB and PS/2. The correct operation of the remote mouse depends on several settings which will be discussed in the following subsections.

3.4.1 IP ACCESS KVM SWITCH CLASSIC Keyboard Settings

The IP ACCESS KVM SWITCH CLASSIC settings for the host's keyboard type have to be correct in order to make the remote keyboard work properly. The settings can be checked using the IP ACCESS KVM SWITCH CLASSIC front-end.

3.4.2 Remote Mouse Settings

A common problem with KVM devices is the synchronization between the local and remote mouse cursors. The IP ACCESS KVM SWITCH CLASSIC addresses this problem with an intelligent synchronization algorithm. There are two mouse modes available on the IP ACCESS KVM SWITCH CLASSIC: **Auto mouse speed** and **Fixed mouse speed**.

Auto mouse speed

The automatic mouse speed mode tries to detect the speed and acceleration settings of the host system automatically. Speed detection is performed during mouse synchronization. If the mouse does not move correctly, there are two ways to re-synchronize the local and remote mouse:

Fast Sync: Fast synchronization is used to correct a temporary, but fixed skew. Choose this option using the Remote Console options menu or by pressing the mouse synchronization hotkey sequence - **[ALT] + [F12]**

Intelligent Sync: If the fast sync does not work correctly or the mouse settings have been changed on the host system, you can use the intelligent resynchronization option. This method can be accessed from the **Mouse Handling** sub menu of the Remote Console **Option** menu.

Intelligent synchronization requires a correctly adjusted picture. Use the auto adjustment function or manual correction in the Video Settings panel to setup the picture. **The Sync mouse button on top of the Remote Console can behave differently, depending on the current state of mouse synchronization.** Usually pressing this button leads to a fast sync, except in situations where the KVM port or the video mode was recently changed.

Tip: When first started, if the local mouse pointer is not synchronized with the remote mouse pointer, click the **Auto Adjust Button** once. If the mouse is still not synchronized select **Intelligent Sync** from the **Mouse Handling** sub menu of the Remote Console **Option** menu.

Fixed mouse speed

This mode just translates the mouse movements from the Remote Console in a way that one pixel move will lead to 'n' pixel moves on the remote system. This parameter 'n' is adjustable. However, it should be noted that this works only when mouse acceleration is turned off on the remote system.

3.4.3 Host System Mouse Settings

The host's operating system obtains various settings from the mouse driver.

Note: The following limitations do not apply when using USB mice and Windows 2000 and higher!

Special Mouse Driver

There are mouse drivers which influence the synchronization process and lead to desynchronized mouse pointers. If this happens, make sure you do not use a special vendor-specific mouse driver on your host system.

Windows XP Mouse Settings

If using Windows XP, disable the **enhance pointer precision** setting.

Active Desktop

If the Active Desktop feature of Microsoft Windows is enabled, do not use a plain background. Instead, use some kind of wallpaper. Alternatively, you could also disable the Active Desktop completely.

Navigate your mouse pointer into the upper left corner of the applet screen and move it back and forth slightly. In this way the mouse will be resynchronized. If re-synchronizing fails, disable mouse acceleration and repeat the procedure.

3.4.4 Single and Double Mouse Mode

The information above applies to **Double Mouse Mode**, where both remote and local mouse pointers are visible and need to be synchronized. The IP ACCESS KVM SWITCH CLASSIC also features another mode - **Single Mouse Mode**, where only the remote mouse pointer is visible. Activate this mode in the open Remote Console and click into the window area. The local mouse pointer will be hidden and the remote one can be controlled directly. To leave this mode, use the hotkey combination **[ALT] + [F12]** to free the captured local mouse pointer.

3.4.5 Recommended Mouse Settings

For the different operating systems we can give the following advice...

MS Windows 2000/2003 (Professional and Server), XP

In general, we recommend the use of a USB mouse. Choose USB without Mouse Sync. For a PS/2 mouse choose Auto Mouse Speed. For XP disable the option called **enhance pointer precision** in the Control Panel.

SUN Solaris

Adjust the mouse settings either via **xset m 1** or use the CDE Control Panel to set the mouse to 1:1, no acceleration. As an alternative you may also use the Single Mouse Mode.

MAC OS X

We recommend using the Single Mouse Mode.

3.4.6 Video Modes

The IP ACCESS KVM SWITCH CLASSIC switch recognizes a limited number of common video modes. When running X11 on the host system, please do not use any custom mode lines with special video modes. If you do, the IP ACCESS KVM SWITCH CLASSIC switch may not be able to detect them. We recommend using any of the standard VESA video modes instead.

4. Usage

4.1 Prerequisites

The IP ACCESS KVM SWITCH CLASSIC features an embedded operating system offering a variety of standardized interfaces. This section will describe these interfaces, and the way to use them in a more detailed manner. The interfaces are accessed using the TCP/IP protocol family.

The following interfaces are supported:

Telnet

A standard Telnet client can be used to access an arbitrary device connected to the IP ACCESS KVM SWITCH CLASSIC's serial port via a terminal.

HTTP/HTTPS

Full access is provided by the embedded web server. The IP ACCESS KVM SWITCH CLASSIC switch environment can be entirely managed using a standard web browser. You can access the IP ACCESS KVM SWITCH CLASSIC using the insecure HTTP protocol, or using the encrypted HTTPS protocol. Whenever possible, use HTTPS.

The primary interface of the IP ACCESS KVM SWITCH CLASSIC is the HTTP interface. This is covered extensively in this section. Other interfaces are addressed in the relevant subsections.

In order to use the Remote Console window of your managed host system, the browser must feature Java Runtime Environment version 1.1 or higher support. If the browser has no Java support (such as on a small handheld device), you can still maintain your remote host system using the administration forms displayed by the browser itself.

Important: We recommend you install the latest version of Sun's Java Virtual Machine which can be downloaded from the following web site:

www.java.com

For a non-secure connection to the IP ACCESS KVM SWITCH CLASSIC, we recommend the following browsers:

- Microsoft Internet Explorer version 6.0 or higher
- Netscape Navigator 7.0 or Mozilla 1.6 or higher

In order to access the remote host system using a securely encrypted connection, you need a browser that supports the HTTPS protocol. Strong security is only assured by using a key length of 128 Bit. Some older browsers do not have a strong 128 Bit encryption algorithm.

4.2 Logging In

4.2.1 Login to the IP ACCESS KVM SWITCH CLASSIC

Launch your web browser. Direct it to the address of your IP ACCESS KVM SWITCH CLASSIC which you configured during the installation process. The address used might be a plain IP address or a host and domain name if you have given your IP ACCESS KVM SWITCH CLASSIC switch a symbolic name in the DNS.

Example: Type the following in the address line of your browser when establishing an unsecured connection:

http://<IP address of IP ACCESS KVM SWITCH CLASSIC>

When using a secure connection, type in:

https://<IP address of IP ACCESS KVM SWITCH CLASSIC>

This will lead you to the IP ACCESS KVM SWITCH CLASSIC login page as shown below:



The IP ACCESS KVM SWITCH CLASSIC has a built-in super user account that has all the permissions enabled to administrate your IP ACCESS KVM SWITCH CLASSIC switch:

Login name	super (factory default)
Password	pass (factory default)

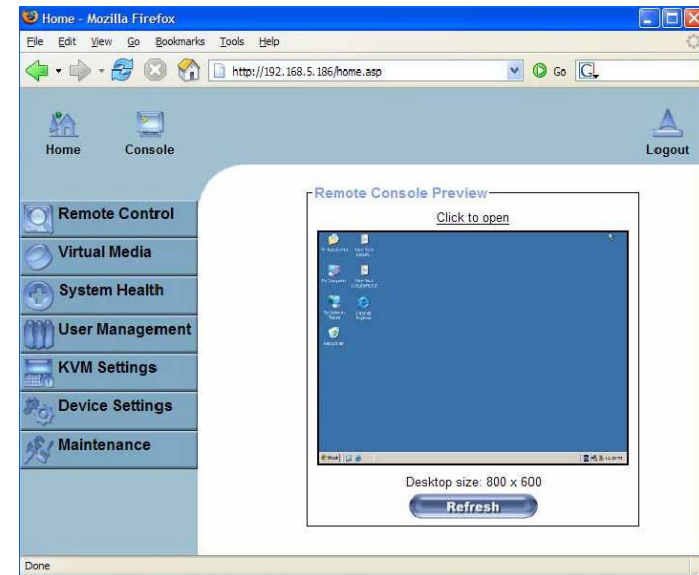
Please note: Your web browser has to accept cookies, or else login is not possible.

Note: The user "super" is not allowed to login via the serial interface of the IP-KVM switch.

Please make sure you change the super user password immediately after you have installed and accessed your IP ACCESS KVM SWITCH CLASSIC for the first time. Not changing the password for the super user is a severe security risk and could result in unauthorized access to the switch and to the host system(s) to which it is connected.

4.3 Navigation

Once logged into the IP ACCESS KVM SWITCH CLASSIC successfully, the main page appears. This page consists of three parts; each of them contains specific information. The buttons in the upper area allow you to navigate within the front end. The lower left area contains a navigation bar and allows you to switch between the different sections of the IP ACCESS KVM SWITCH CLASSIC. Within the main area, task-specific information is displayed.



Home

Return to the main page of the IP ACCESS KVM SWITCH CLASSIC



Logout

Logout from the IP ACCESS KVM SWITCH CLASSIC

This link logs out the current user and presents a new login screen. Please note that an automatic logout will be performed if there is no activity for half an hour. Clicking one of the links will bring you back to the login screen.



Console

Access the Remote Console

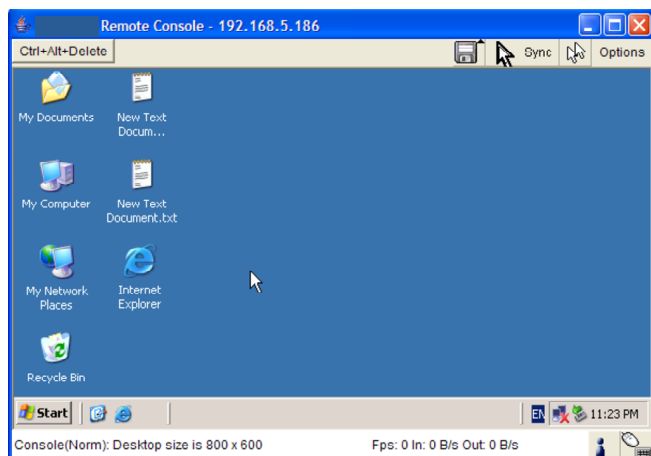
The Remote Console is the redirected screen, keyboard and mouse of the remote host system that the IP ACCESS KVM SWITCH CLASSIC controls. Selecting this button opens the **Remote Console Main Window**.

The Remote Console window is a Java Applet that establishes its own TCP connection to the IP ACCESS KVM SWITCH CLASSIC. The protocol that runs over this connection is neither HTTP nor HTTPS, but RFB (Remote Frame Buffer Protocol). RFB needs to establish a connection to port number 443. Your local network environment has to allow this connection to be made, i.e. your firewall and, if you have a private internal network, your NAT (Network Address Translation) settings have to be configured accordingly.

If the IP ACCESS KVM SWITCH CLASSIC is connected to your local network environment and your connection to the Internet is available using a proxy server only, without NAT being configured, the Remote Console is very unlikely to be able to establish a connection. This is because today's web proxies are not capable of relaying the RFB protocol.

If you experience problems, please consult your network administrator in order to provide an appropriate network environment.

4.3.1 Remote Console Main Window



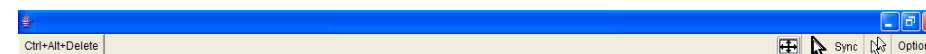
Starting the Remote Console opens an additional window. It displays the screen content of your host system. The Remote Console will behave in exactly the same way as if you were sitting directly in front of the screen of your host system. This means that the keyboard and mouse can be used in the usual way. However, be aware of the fact that the host system will react to keyboard and mouse actions with a slight delay. The delay depends on the bandwidth of the line which you use to connect to the IP ACCESS KVM SWITCH CLASSIC.

Note: Your local keyboard changes its keyboard layout according to the remote host system. If you use a German administration system and your host system uses a US English keyboard layout for instance, some special keys on the German keyboard will not work as expected. Instead, the keys will result in their US English counterpart. You can circumvent such problems by adjusting the keyboard of your remote system to the same mapping as your local one.

The Remote Console window always tries to show the remote screen with its optimal size. That means it will adapt its size to the size of the remote screen initially and after the screen resolution of the remote screen has been changed. However, you can always resize the Remote Console window in your local window system as usual.

4.3.2 Remote Console Control Bar

The upper part of the Remote Console window contains a control bar. Using its elements you can see the state of the Remote Console and influence the local Remote Console settings. A description for each control follows.



Ctrl+Alt+Delete

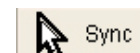
Ctrl+Alt+Delete

Sends the 'Control Alt Delete' key combination to the remote system



Auto Adjust button

If the video display is poor quality or distorted in some way, click this button and wait a few seconds while the IP ACCESS KVM SWITCH CLASSIC tries to adjust itself for the best possible video quality.



Sync mouse

Activates the mouse synchronization process. Choose this option in order to synchronize the local AND remote mouse cursors. This is especially necessary when using accelerated mouse settings on the host system. In general, there is no need to change mouse settings on the host.



Single/Double mouse mode

Switches between the Single Mouse Mode (where only the remote mouse pointer is visible) and the Double Mouse Mode (where remote and local mouse pointers are visible) Single mouse mode is only available if using SUN JVM 1.3 or higher.

Tip: When in single mouse mode use the hotkey combination [ALT] + [F12] to release mouse control and access the menus etc.

Options

Options

Opens the Options menu. A short description of each of the options follows:

Monitor Only

Toggles the 'Monitor Only' filter on or off. If the filter is switched on, no remote console interaction is possible but monitoring is.

Exclusive Access

If a user has the appropriate permission, he can force the Remote Consoles of all other users to close. No one can open the Remote Console at the same time again until this user disables the exclusive access, or logs off.



A change in the access mode is also visible in the status line indicated by this icon.



Scaling

Allows you to scale down the Remote Console window: 25% / 50% / 100% / *Scale to fit*. You can still use both mouse and keyboard; however the scaling algorithm will not preserve all display details.

Mouse Handling

The submenu for mouse handling offers two options for synchronizing the local and the remote mouse pointer.

Fast Sync

The fast synchronization is used to correct a temporary, but fixed skew.

Intelligent Sync

Use this option if the fast sync does not work or the mouse settings have been changed on the host system.

Note: This method takes more time than fast sync and requires a correctly adjusted picture. Use the auto adjustment function or the manual correction in the Video Settings panel to setup the picture.

Local Cursor

Offers a list of different cursor shapes to choose from for the local mouse pointer: Transparent, Default, Big, Pixel, Crosshair. The selected shape will be saved for the current user and activated the next time this user opens the Remote Console. The number of available shapes depends on the Java Virtual Machine; a version of 1.2 or higher offers the full list.

Video Settings

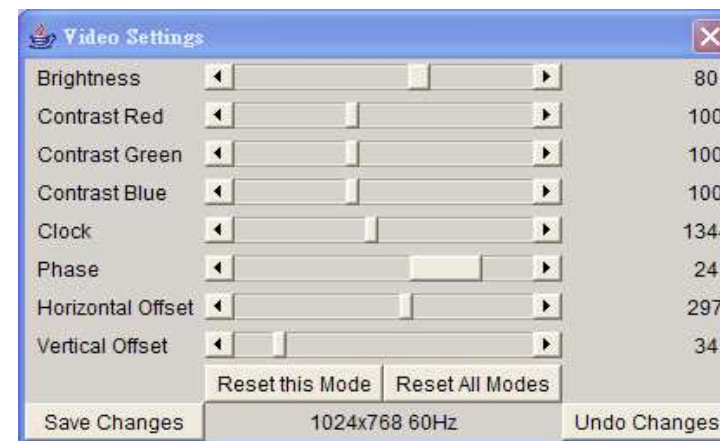
Opens a panel for changing the IP ACCESS KVM SWITCH CLASSIC video settings. The IP ACCESS KVM SWITCH CLASSIC features two different dialogs, which influence the video settings:

Video Settings through the HTML-Frontend: To enable the local video port, select this option. This option decides if the local video output of the IP ACCESS KVM SWITCH CLASSIC is active and passing through the incoming signal from the host system.

The Noise Filter option defines how the IP ACCESS KVM SWITCH CLASSIC reacts to small changes in the video input signal. A large filter setting needs less network traffic and leads to a

faster video display, but small changes in some display regions may not be recognized immediately. A small filter displays all changes instantly but may lead to a constant amount of network traffic even if display content is not really changing (depending on the quality of the video input signal). All in all the default setting should be suitable for most situations.

Video Settings through the remote console:



Brightness

Controls the brightness of the picture

Contrast

Controls the contrast of the picture

Clock

Defines the horizontal frequency for a video line and depends on the video mode. Different video card types may require different values here. The default settings in conjunction with the auto adjustment procedure should be adequate for most common configurations. If the picture quality is still bad after auto adjustment you may change this setting together with the sampling phase to achieve a better quality.

Phase

Defines the phase for video sampling, used to control the display quality together with the setting for sampling clock.

Horizontal Offset

Use the left and right buttons to move the picture in a horizontal direction

Vertical Offset

Use the left and right buttons to move the picture in a vertical direction

Reset this Mode

Reset mode specific settings to the factory-made defaults.

Reset all Modes

Reset all settings to the factory-made defaults.

Save Changes

Save changes permanently

Undo Changes

Restore last settings

Soft Keyboard

Opens up the sub-menu for the Soft-Keyboard:

Show

Pops up the Soft-Keyboard. The Soft-Keyboard is necessary in case your host system runs a completely different language and country mapping than your administration machine.



Mapping

Used for choosing the language and country mapping of the Soft-Keyboard.

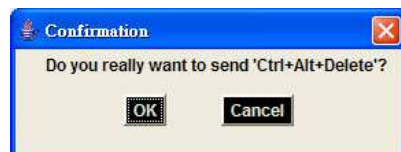
Local Keyboard

Used to change the language mapping of your browser running the Remote Console Applet. Normally, the applet determines the correct value automatically. However, depending on your particular KVM and your browser settings this is not always possible. A typical example is a German localized system that uses a US-English keyboard mapping. In this case you must manually change the local keyboard setting to the correct language.

Hotkeys

Opens a list of previously defined hotkeys. Choose one entry; the command will be sent to the host system.

A confirmation dialog can be added that will be displayed before sending the selected command to the remote host. Select **OK** to perform the command on the remote host.

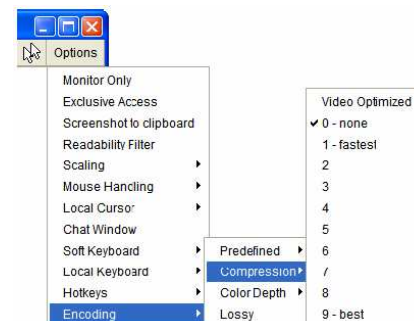


Encoding

These options are used to adjust the encoding level in terms of compression and colour depth. They are only available if "Transmission Encoding" is determined automatically (see the Section called Transmission Encoding in Chapter 5.4).

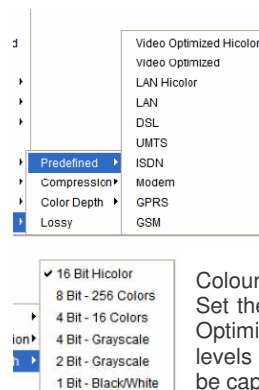
Compression Level:

You may select a value between 1 and 9 with level 1 enabling the fastest compression and level 9 the best compression. The most suitable compression level should always be seen as a compromise between the network bandwidth that is available, on your video picture to be



transferred, and on the number of changes between two single video pictures. We recommend that you use a higher compression level if the network bandwidth is low. The higher the compression level the more time is needed to pack and unpack the video data on either side of the connection. The compression quality depends on the video picture itself, e.g. the number of the colours or the diversity of pixels. The lower the compression quality, the more data have to be sent and the longer it may take to transfer the whole video picture.

If level 0 is chosen the video compression is disabled, completely.



The option "Video Optimized" has its advantages if transferring high-quality motion pictures. In this case the video compression is disabled, completely and all video data is transferred via network as full-quality video snippets. Therefore, a high amount of bandwidth is required to ensure the quality of the video picture.

The next two options allow you to set the compression level to a predefined level OR to set a level for "lossy" compression. This compresses well, but leads to degradation in image quality.

Colour Depth:

Set the desired colour depth. You may select between 8 or 16 bit for Video Optimized/compression level 0, or between 1 and 8 bit for compression levels 1 to 9. The higher the colour depth, the more video information has to be captured and to be transferred.

Note: If displaying motion pictures on a connection with low speed you may achieve an improvement regarding the video transfer rate by lowering the colour depth and disabling the option "Video Optimized". As a general result, the data rate is reduced (less bits per colour). Furthermore, the OPMA module will not have to do any video compression. In total, this will lead to less transfer time of the motion picture.

4.3.3 Remote Console Status Line

Status line

Shows both console and the connection state. The size of the remote screen is displayed. The example below was taken from a Remote Console with a resolution of 1024 x 768 pixels. The value in brackets describes the connection to the Remote Console. **Norm** means a standard connection without encryption, **SSL** indicates a secure connection.



Furthermore, both the incoming (**In:**) and the outgoing (**Out:**) network traffic are visible (in kb/s). If compressed encoding is enabled, a value in brackets displays the compressed transfer rate.

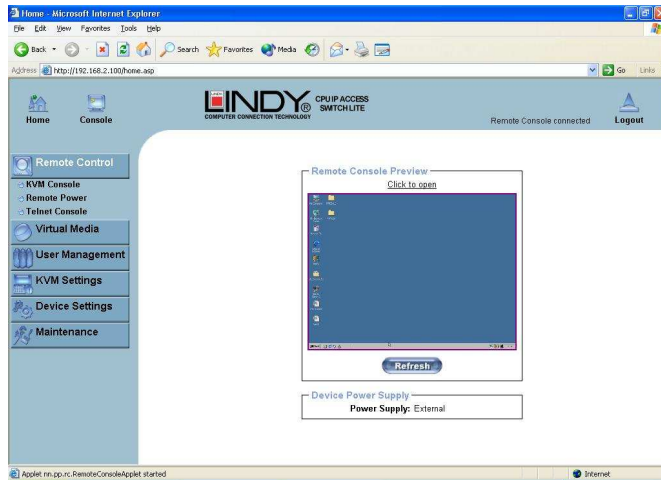
In: 0 B/s Out: 0 B/s

For more information about **Monitor Only** and **Exclusive Access** settings, see the relevant sections.

5. Menu Options

5.1 Remote Control

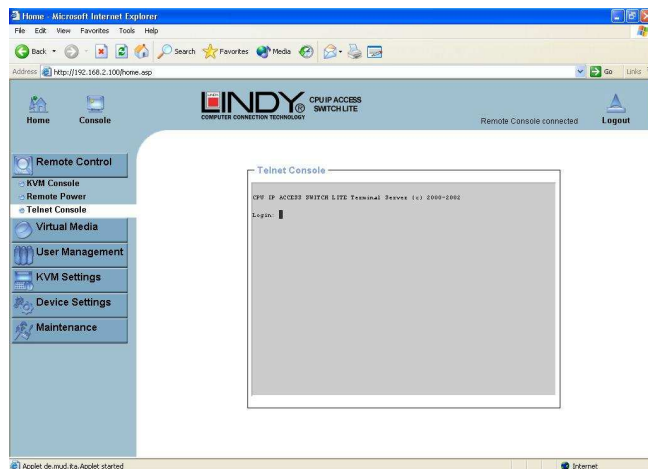
5.1.1 KVM Console



To open the KVM console, click either the menu entry on the left or on the console picture on the right. To refresh the picture, click on the **Refresh** button.

For the **Remote Power** settings see *Section 2.2.5 on page 6*.

5.1.2 Telnet Console



The IP ACCESS KVM SWITCH CLASSIC firmware features a Telnet server that enables a user to connect via a standard Telnet client. If the Telnet program is using a VT 100, VT 102 or VT 220 terminal or appropriate emulation, it is even possible to perform a console redirection, as long as the IP ACCESS KVM SWITCH CLASSIC host is using a text mode screen resolution.

Connecting to the IP ACCESS KVM SWITCH CLASSIC is done as usual and as required by the Telnet client, for instance in a UNIX shell:

```
telnet 192.168.1.22
```

Replace the IP address by the one that is actually assigned to the IP ACCESS KVM SWITCH CLASSIC. This will prompt for the username and password in order to log into the device. The credentials that need to be entered for authentication are identical to those of the web interface. That means the user management of the Telnet interface is entirely controlled with the appropriate functions of the web interface.

Once you have successfully logged into the IP ACCESS KVM SWITCH CLASSIC a command line will be presented and you can enter management commands.

In general, the Telnet interface supports two operation modes: the command line mode and the terminal mode. The command line mode is used to control or display some parameters. In terminal mode the pass-through access to serial port 1 is activated (if the serial settings were made accordingly). All inputs are redirected to the device on serial port 1 and its answers are displayed on the Telnet interface.

The following list shows the command mode syntax and their usage.

Help

Displays the list of possible commands

Cls

Clears the screen

Quit

Exits the current session and disconnects from the client

Version

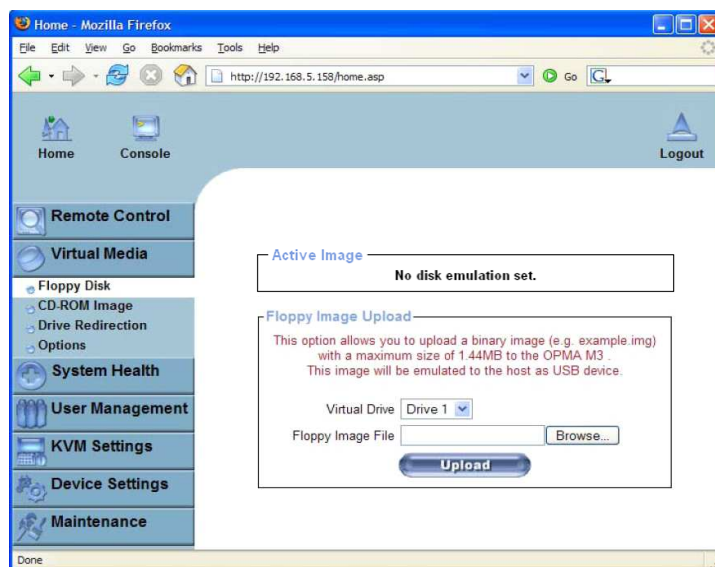
Displays the release information

Terminal

Starts the terminal pass-through mode for the serial port. The key sequence 'esc exit' switches back to the command mode.

5.2 Virtual Media

5.2.1 Floppy Disk



Follow the steps below to upload a virtual floppy image to the IP ACCESS KVM SWITCH CLASSIC and create a virtual floppy drive on the host system

Create a Floppy Image

First, on your client PC you must create an image of your floppy disk which can be uploaded to the IP ACCESS KVM SWITCH CLASSIC's built in memory.

UNIX and UNIX-like OS

To create an image file, make use of **dd**. This is one of the original UNIX utilities and is included in every UNIX-like OS (UNIX, Sun Solaris, Linux).

To create a floppy image file copy the contents of a floppy to a file. You can use the following command:

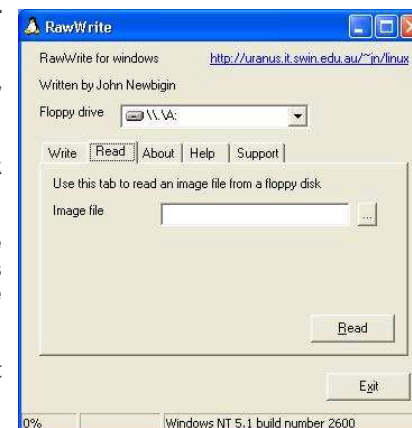
```
dd [ if=/dev/fd0 ] [ of=/tmp/floppy.image ]
```

dd reads the entire disc from the device **/dev/fd0** and saves the output in the specified output file **/tmp/floppy.image**. Adjust both parameters exactly to your needs (input device etc.)

Windows

Windows users should use the tool **RawWrite** for **Windows** which is included on the supplied CD.

Launch **RawWrite**, you will see the window opposite:



Insert your floppy disk into your floppy drive. Click the **Read** tab and then click on 

Select a name and destination for the floppy image file and click the **Read** button. As the image is written, you will see the progress as a percentage figure in the bottom left hand corner.

When the image has been written you can upload it to the IP ACCESS KVM SWITCH CLASSIC.

Uploading a Floppy Image

Click the **Browse** button and navigate to the location of the image file, then click the **Upload** button.



After the image has uploaded you will see the dialog below:

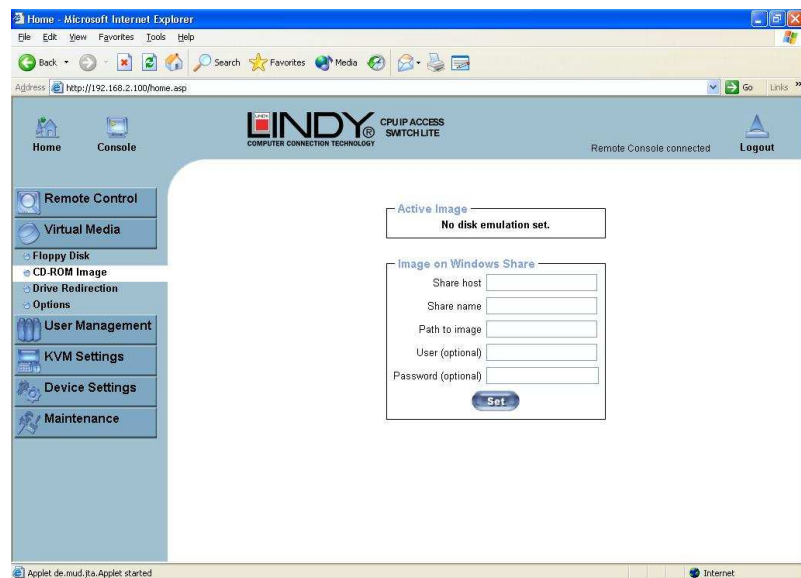


Click **Reactivate**. A virtual floppy drive will be installed on the host system and the image will be downloaded to the virtual floppy drive from the IP ACCESS KVM SWITCH CLASSIC. You can access the virtual floppy drive in the same way you would a regular drive.

You can download the image from the IP ACCESS KVM SWITCH CLASSIC to your remote system by clicking the **Download** button.

Clicking **Discard** removes the virtual floppy image from the IP ACCESS KVM SWITCH CLASSIC and from the hosts system.

5.2.2 Create a CD-ROM/ISO Image



Follow the procedure below to create a CD-ROM image which can be accessed by the host system via the IP ACCESS KVM SWITCH CLASSIC.

First, on your client PC you must create an image of your CD which can be accessed by the host system.

UNIX and UNIX-like OS

To create an image file, make use of **dd**. This is one of the original UNIX utilities and is included in every UNIX-like OS (UNIX, Sun Solaris, Linux).

To create a CDROM image file, copy the contents of the CD-ROM to a file. You can use the following command:

```
dd [ if=/dev/cdrom ] [ of=/tmp/cdrom.image ]
```

dd reads the entire disc from the device **/dev/cdrom**, and saves the output in the specified output file **/tmp/cdrom.image**. Adjust both parameters exactly to your needs (input device etc.).

Windows

To create the image file, use your favourite CD imaging tool. Copy the whole contents of the disc into one single image file on your hard disk.

For example, with 'Nero' you choose 'Copy and Backup'. Then, navigate to the 'Copy Disc' section. Select the CD ROM or DVD drive you would like to create an image from. Specify the filename of the image, and save the CD ROM content in that file.

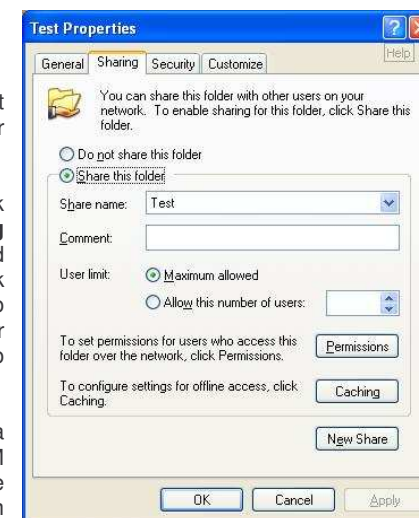


Example:

1. Create a CD image and name it **image.iso**
2. Create a folder on your client PC and name it **Test**. Copy the file **image.iso** to the folder **Test**.
3. Now you need to 'share' this folder. Right click on the folder and select the option **Sharing and Security**. Select **Share this folder** and ensure the **Share Name** is set to **Test**. Click **Permissions** to set permissions for users who access this folder, according to your requirements. Click **Apply** then **OK** to complete.
4. Next you need to mount the image via a Windows Share. In the IP ACCESS KVM SWITCH CLASSIC menu on the left hand side of the browser select **Virtual Media** and from the sub menu select **CD-ROM Image**.
5. Input the following parameters:

Share host:	Enter the IP address of your Console PC here (e.g. 192.168.2.103)
Share name:	Test (The share name of the previously created folder)
Path to image:	image.iso (the name of the CD image)
User:	super (Your user name, the default is super)
Password:	pass (Your password, the default is pass)

6. Click **Set**



7. You will see the dialog below detailing the active image:

Image file set successfully

Active Image

CD-ROM Image

Image Host: 192.168.2.104

Image Share: Test

Image File with Path: image.iso

User name: super

Password: not displayed

Reactivate **Unset**

Image on Windows Share

Share host

Share name

Path to image

User (optional)

Password (optional)

You must remove the current virtual disk to install a CD-ROM image.

8. Click **Reactivate**. Access the console window and you will see that another CD drive has been installed on the host computer. This is the virtual drive you have just set up. You can access the uploaded CD image as though it were a regular CD. Click **Unset** to remove the image.

SAMBA

If you would like to access the share via SAMBA, SAMBA must be set up properly. You may either edit the SAMBA configuration file `/etc/samba/smb.conf`, or use the Samba Web Administration Tool (SWAT) or WebMin to set the correct parameters.

5.2.3 Drive Redirection

Image file unset successfully

Active Image

No disk emulation set.

Drive Redirection

Drive Redirection allows you to share your local drive (floppy, CD-ROM, removable disks and harddisks) with the remote system.

☐ Disable Drive Redirection *

☒ Force read-only connections *

Apply **Reset to defaults**

* Stored value is equal to the default.

The Drive Redirection feature allows the host system to access the CD-Rom drives, hard drives, floppy drives etc. on your client PC.

With Drive Redirection you do not have to use an image file but may work with a drive from your local computer on the remote machine. The drive is hereby shared over a TCP network connection. Devices such as floppy drives, hard discs, CD ROMs and other removable devices like USB sticks can be redirected. It is even possible to enable a write support so that for the remote machine it is possible to write data to your local disc.

Please note that Drive Redirection works on a level which is far below the operating system. That means that neither the local nor the remote operating system is aware that the drive is currently redirected. This may lead to inconsistent data as soon as one of the operating systems (either from the local machine, or from the remote host) is writing data on the device. If write support is enabled the remote computer might damage the data and the file system on the redirected device. On the other hand, if the local operating system writes data to the redirected device the drive cache of the operating system of the remote host might contain older data. This may confuse the remote host's operating system. **Therefore, we recommend to use the Drive Redirection with care, especially the write support.**

Disable Drive Redirection

If enabled the Drive Redirection is switched off.

Force read-only connections

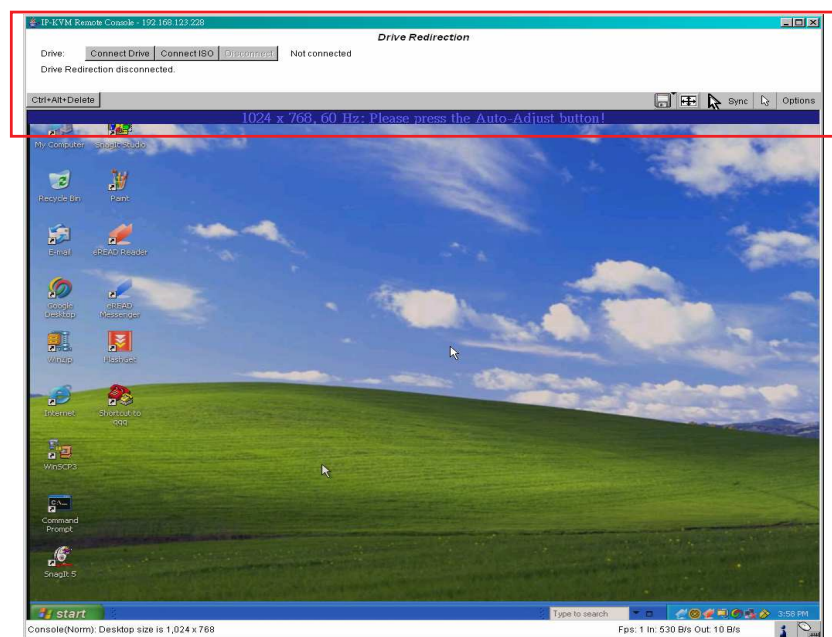
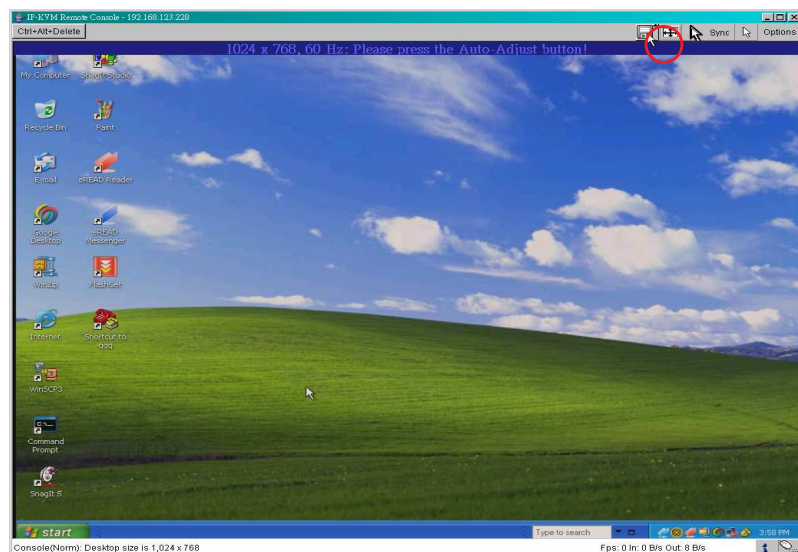
If enabled the Write Support for the Drive Redirection is switched off. It is not possible to write on a redirected device.

Click **Apply** to submit your changes.

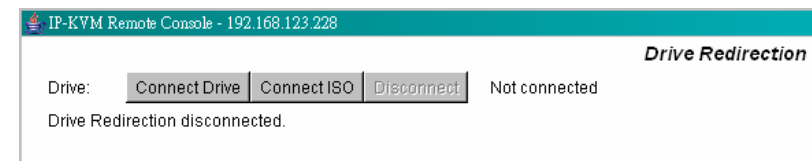
The method of Drive Redirection:

Built-in Java Drive Redirection function in Remote Console

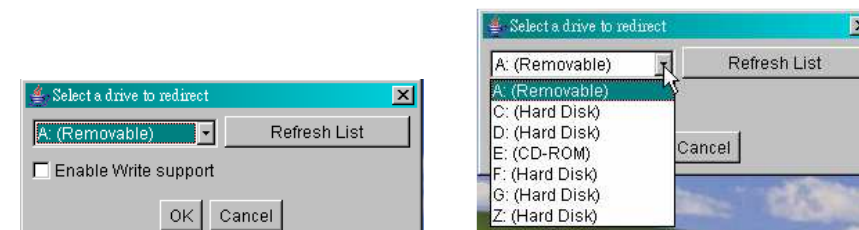
1. Run Remote Control > KVM Console.
2. Click "Floppy" icon 



3. Click **Connect Drive** or **Connect ISO**



4. Select a drive to redirect (if Connect Drive)

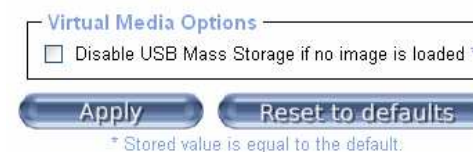


5. Select a ISO image to redirect (if Connect ISO)

IMPORTANT

1. Drive Redirection is only possible with Windows 2000 and later versions.
2. Drive Redirection works on a low SCSI level. The SCSI protocol cannot recognize partitions; therefore the whole drive selected will be shared instead of any particular partition.
3. When connecting to a legacy KVM switch, please select PS/2 mouse from the **Keyboard/Mouse setting** on the web page. Otherwise you will not be able to use Hot-keys.

5.2.4 Options



This option allows you to disable the mass storage emulation (and hide the virtual drive) if no image file is currently loaded. To set this option, press the button **Apply**.

5.3 User Management

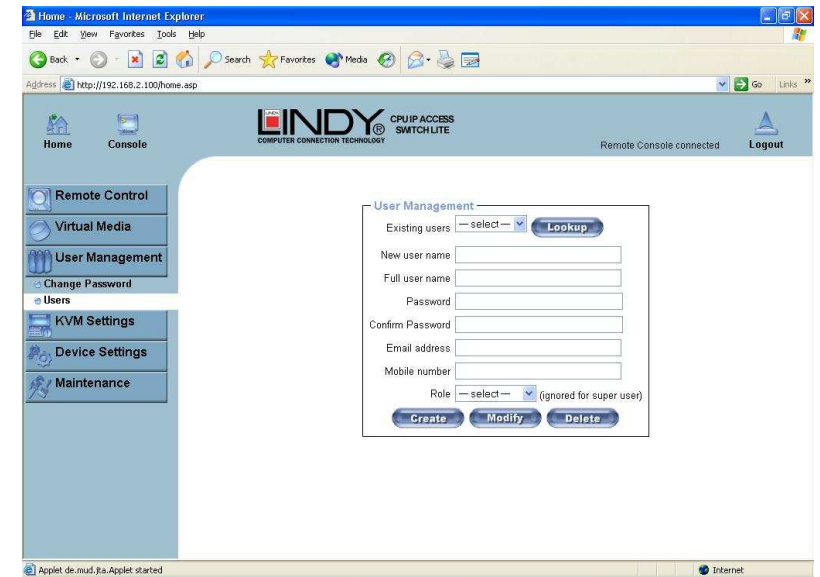
5.3.1 Change Password

To change your password, enter the new password in the upper entry field. Retype the password in the lower field. Click **Apply** to submit your changes.



5.3.2 Users And Groups

The IP ACCESS KVM SWITCH CLASSIC comes with 2 pre-configured user accounts that have fixed permissions. The **super** account has all possible rights to configure the device and to use all functions. The **user** account has only the permission to open and use the Remote Console. The default password for both accounts is **pass**. Ensure you change the passwords as soon as you have installed and accessed the IP ACCESS KVM SWITCH CLASSIC for the first time.



While the **user** account never sees the following options, the **super** account can change the name and password for both accounts.

Existing users

Select an existing user for modification. Once a user has been selected, click the lookup button to see the user information.

New User name

The new user name for the selected account.

Password

The password for the login name. It must be at least four characters long.

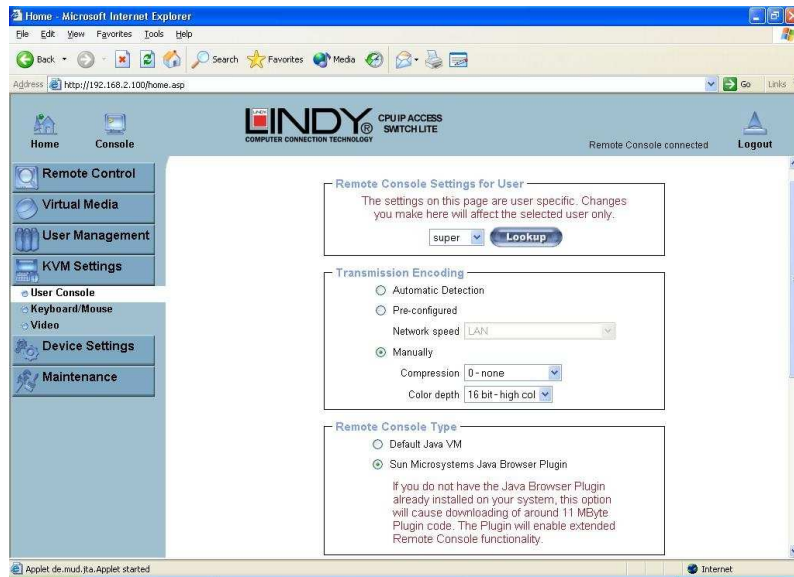
Confirm password

Confirmation of the above password.

5.4 KVM Settings

5.4.1 User Console

The following settings are user specific. This means the super user can customize these settings for individual users separately. Changing the settings for one user does not affect the settings for the other users.



User select box

This box displays the user ID for which the values are shown and for which the changes will take effect. You may change the settings of other users if you have the necessary access rights.

Transmission Encoding

The Transmission Encoding setting allows you to change the image-encoding algorithm that is used to transmit the video data to the Remote Console window. It is possible to optimize the speed of the remote screen depending on the number of users working at the same time and the bandwidth of the connection line (Modem, ISDN, DSL, LAN, etc.).

Automatic detection

The encoding and the compression level are determined automatically from the available bandwidth and the current content of the video image.

Pre-configured

The pre-configured settings deliver the best result because of optimized adjustment of compression and colour depth for the indicated network speed.

Manually

Allows adjustment of both compression rate and colour depth individually. Depending on the selected compression rate the data stream between the IP ACCESS KVM SWITCH CLASSIC and the Remote Console will be compressed in order to save bandwidth. Since high

compression rates are very time consuming, they should not be used when several users are accessing the IP ACCESS KVM SWITCH CLASSIC simultaneously.

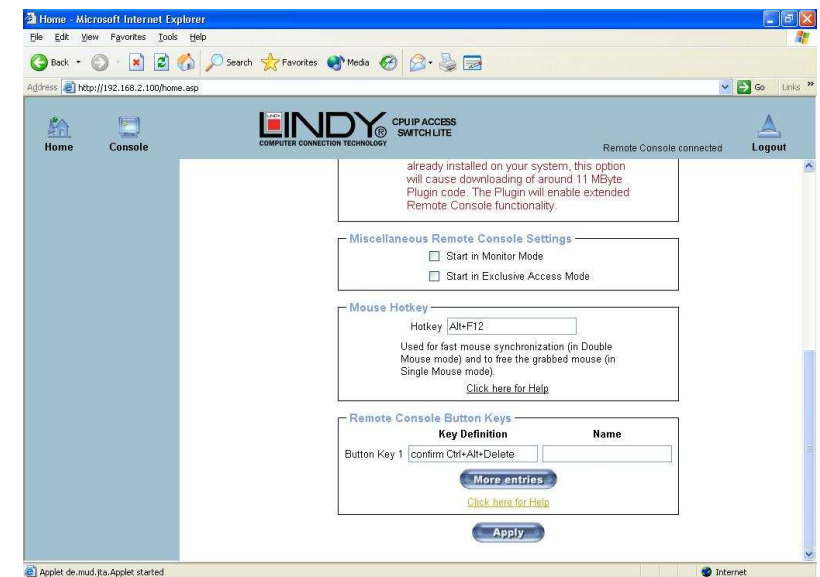
The standard colour depth is 16 bit (65536 colours). The other colour depths are intended for slower network connections in order to allow a faster transmission of data. Therefore compression level 0 (no compression) uses only 16 bit colour depth. At lower bandwidths only 4 bit (16 colours) and 2 bit (4 grey scales) are recommended for typical desktop interfaces. Photo-like pictures have best results with 4 bit (16 grey scales). 1 Bit colour depth (black/white) should only be used for extremely slow network connections.

Remote Console Type

Specifies, which Remote Console Viewer to use.

Default Java-VM

Uses the default Java Virtual Machine of your Browser. This may be the Microsoft JVM for Internet Explorer or the Sun JVM if it is configured this way. Use of the Sun JVM may also be forced (see below).



Sun Microsystems Java Browser Plug-in

Instructs the web browser of your administration system to use Sun's JVM. The JVM in the browser is used to run the code for the Remote Console window which is actually a Java Applet. If you check this box for the first time on your administration system and the appropriate Java plug-in is not already installed on your system, it will be downloaded and installed automatically. However, in order to make the installation possible, you still need to answer the according dialogs with **yes**. The download size is around 11MB. The advantage of downloading Sun's JVM is in providing a stable and identical Java Virtual Machine across different platforms. The Remote Console software is optimized for Sun JVM versions and offers wider range of functionality when run with JVM.

Miscellaneous Remote Console Settings

Start in Monitor Mode Sets the initial value for the monitor mode. By default the monitor mode is off. In case you switch it on, the Remote Console window will be started in a read only mode.

Start in Exclusive Access Mode Enables the exclusive access mode immediately at Remote Console start-up. This forces the Remote Consoles of all other users to close. No one can open the Remote Console at the same time again until this user disables the exclusive access or logs off.

Mouse hotkey

Allows the user to specify a hotkey combination which starts either the mouse synchronization process if pressed in the Remote Console or is used to leave the single mouse mode.

Remote Console Button Keys

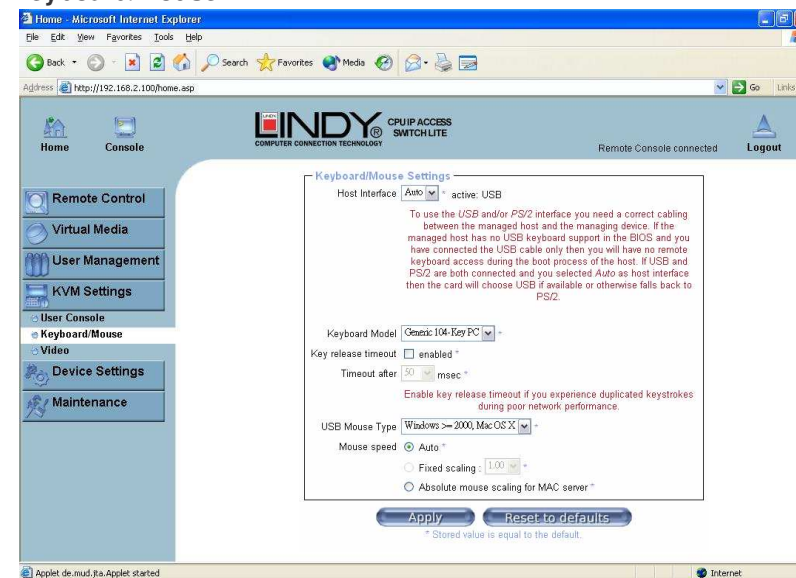
This allows simulating keystrokes on the remote system that cannot be generated locally. The reason for this might be a missing key or the fact that the local operating system of the Remote Console is unconditionally catching this keystroke already. Typical examples are **Control+Alt+Delete** in Windows and DOS, which is always caught, or **Control+Backspace** on Linux for terminating the X-Server. The syntax to define a new Button Key is as follows:

[confirm] <keycode>[+][*]<keycode>]*

confirm requests confirmation by a dialog box before the key strokes will be sent to the remote host.

keycode is the key to be sent. Multiple key codes can be joined with a plus, or a minus sign. The plus sign builds key combinations; all keys will be pressed until a minus sign or the end of the combination is encountered. In this case all pressed keys will be released in reversed sequence. So the minus sign builds single, separate keypresses and releases. The star inserts a pause with a duration of 100 milliseconds.

5.4.2 Keyboard/Mouse



Host Interface

Enables the interface the mouse is connected to. You can choose between **Auto** for automatic detection, **USB** for a USB mouse, or **PS/2** for a PS/2 mouse.

Note: To use the USB and/or PS/2 interface you need the correct cabling between the managed host and the managing device. If the managed host has no USB keyboard support in the BIOS and you have connected the USB cable only, then you will have no remote keyboard access during the boot process of the host. If USB and PS/2 are both connected and you selected **Auto** as host interface, then **USB** will be selected if available, otherwise it will revert to **PS/2**.

To enable USB remote keyboard access during the boot process of the host, the following conditions must be fulfilled:

- the host BIOS must have USB keyboard support
- the USB cable must be connected or must be selected in the Host interface option

PS/2 Keyboard Model

Enables a certain keyboard layout. You can choose between **Generic 101-Key PC** for a standard keyboard layout, **Generic 104-Key PC** for a standard keyboard layout extended by three additional windows keys, **Generic 106-Key PC** for a Japanese keyboard, and **Apple Macintosh** for the Apple Macintosh.

USB Mouse Type

Enables USB mouse type. Choose between **MS Windows 2000 or newer** for MS Windows 2000 or Windows XP, or **Other Operating Systems** for MS Windows NT, Linux, or OS X. In **MS Windows 2000 or newer** mode the remote mouse is always synchronized with the local mouse.

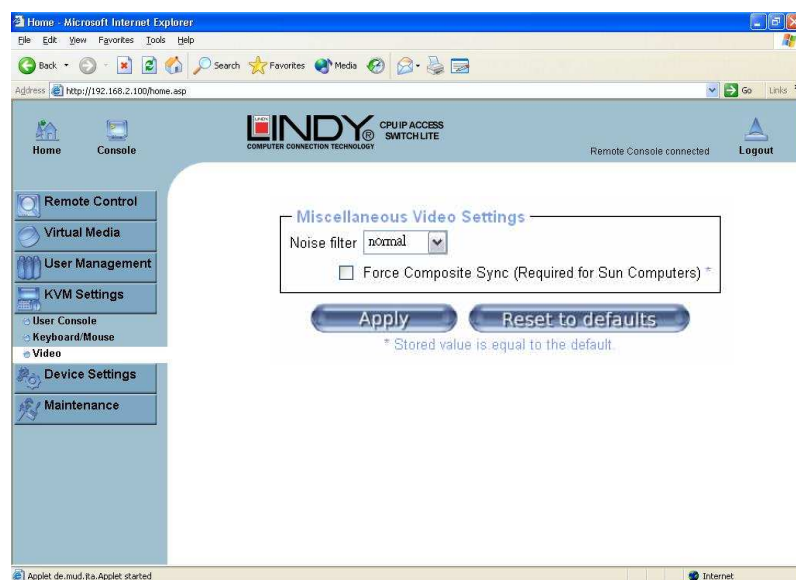
Mouse Speed

- **Auto mouse speed** Use this option if the mouse settings on the host use an additional acceleration setting. The IP ACCESS KVM SWITCH CLASSIC tries to detect the acceleration and speed of the mouse during the mouse sync process.
- **Fixed mouse speed** Use a direct translation of mouse movements between the local and the remote pointer.

You may also set a fixed scaling which determines the amount the remote mouse pointer is moved when the local mouse pointer is moved by one pixel. This option only works when the mouse settings on the host are linear. This means that there is no mouse acceleration involved.

To set the options, click on the **Apply** button.

5.4.3 Video



Miscellaneous Video Settings

Noise filter

This option defines how the IP ACCESS KVM SWITCH CLASSIC reacts to small changes in the video input signal. A large filter setting needs less network traffic and leads to a faster video display, but small changes in some display regions may not be recognized immediately. A small filter displays all changes instantly but may lead to a constant amount of network traffic even if the display content is not really changing (depending on the quality of the video input signal). All in all the default setting should be suitable for most situations.

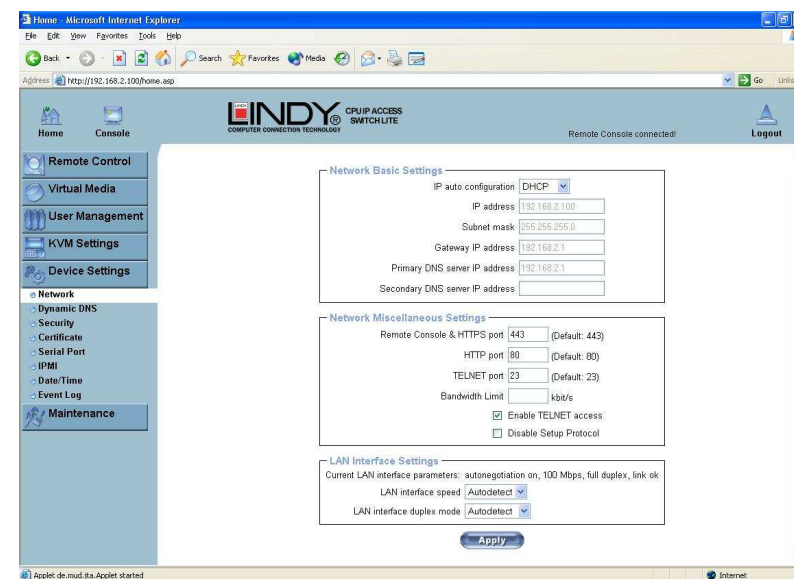
Force Composite Sync (Required for Sun Computers)

To support signal transmission from a Sun machine, enable this option. If not enabled the picture of the remote console will not be visible. To set the options, click **Apply**.

5.5 Device Settings

5.5.1 Network

The Network Settings panel allows network related parameters to be changed. Each parameter will be explained below. Once applied the new network settings will immediately come into effect.



Note: The initial IP configuration is usually done directly at the host system using the special procedure described in **Section 3, page 7**.

Changing the network settings of the IP ACCESS KVM SWITCH CLASSIC might result in losing connection to it. In case you change the settings remotely make sure that all the values are correct and you still have an option to access the IP ACCESS KVM SWITCH

IP auto configuration

With this option you can control if the IP ACCESS KVM SWITCH CLASSIC should obtain its network settings from a DHCP or BOOTP server. For DHCP, select **dhcp**, and for BOOTP select **bootp**. If you choose **none** then IP auto configuration is disabled.

IP address

IP address in the usual dot notation.

Subnet Mask

The net mask of the local network.

Gateway IP address

In case the IP ACCESS KVM SWITCH CLASSIC is accessible from networks other than the local one, this IP address must be set to the local network router's IP address.

Primary DNS Server IP Address

IP address of the primary Domain Name Server in dot notation. This option may be left empty; however, the IP ACCESS KVM SWITCH CLASSIC will not be able to perform name resolution.

Secondary DNS Server IP Address

IP address of the secondary Domain Name Server in dot notation. It will be used in case the Primary DNS Server cannot be contacted.

Remote Console and HTTPS port

Port number at which the IP ACCESS KVM SWITCH CLASSIC's Remote Console server and HTTPS server are listening. If left empty the default value will be used.

HTTP port

Port number at which the IP ACCESS KVM SWITCH CLASSIC's HTTP server is listening. If left empty the default value will be used.

Telnet port

Port number at which the IP ACCESS KVM SWITCH CLASSIC's Telnet server is listening. If left empty the default value will be used.

Bandwidth limitation

The maximum network traffic generated through the IP ACCESS KVM SWITCH CLASSIC's ethernet device. Value in Kbit/s.

Enable Telnet access

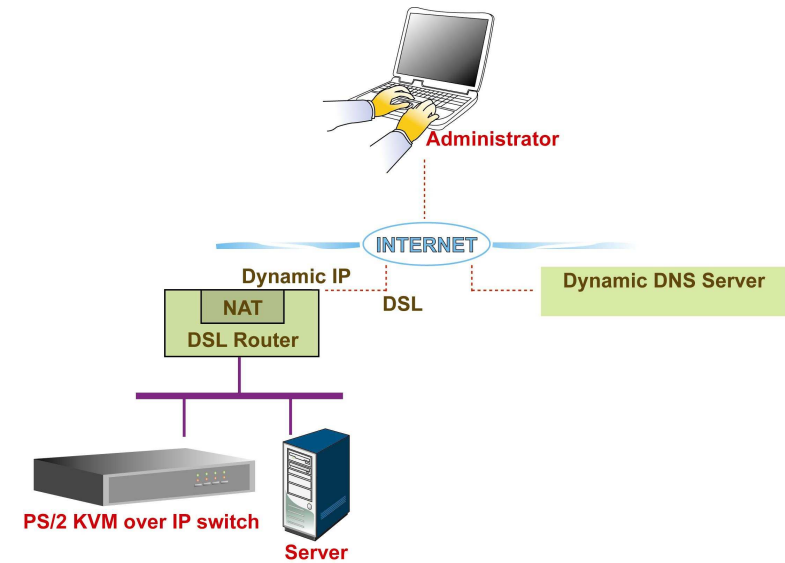
Set this option to allow access to ARA express using the Telnet Gateway (see the Section called Telnet Console on page 23).

Disable Setup Protocol

Enable this option to exclude the IP ACCESS KVM SWITCH CLASSIC from the setup protocol.

5.5.2 Dynamic DNS

A freely available Dynamic DNS service (dyndns.org) can be used in the following scenario (see illustration below)

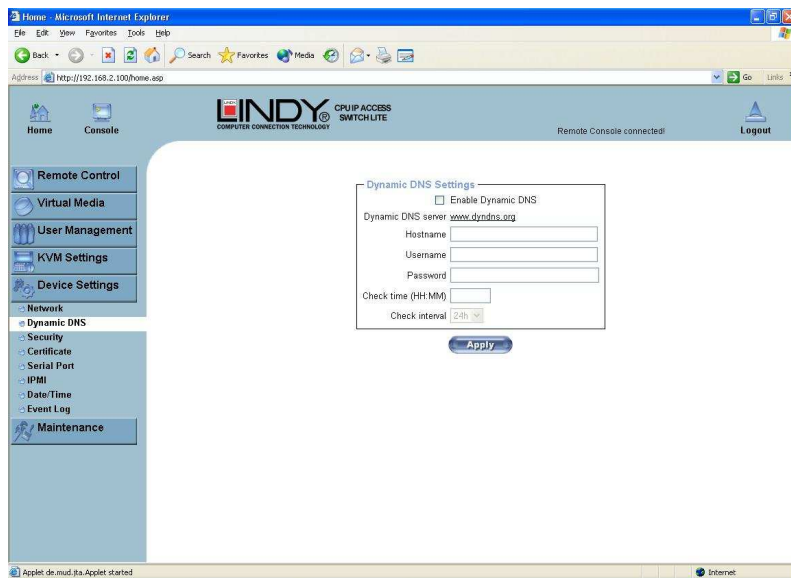


The IP ACCESS KVM SWITCH CLASSIC is reachable via the IP address of the DSL router, which is dynamically assigned by the provider. Since the administrator does not know the IP address assigned by the provider, the IP ACCESS KVM SWITCH CLASSIC connects to a special dynamic DNS server in regular intervals and registers its IP address there. The administrator may contact this server as well and pick up the same IP address belonging to his device.

The administrator has to register an IP ACCESS KVM SWITCH CLASSIC that is supposed to take part in the service with the Dynamic DNS Server and assign a certain hostname to it. He will get a nickname and a password in return. This account information, together with the hostname, is needed in order to determine the IP address of the registered IP ACCESS KVM SWITCH CLASSIC.

You have to perform the following steps in order to enable Dynamic DNS:

- Make sure that the LAN interface of the IP ACCESS KVM SWITCH CLASSIC is properly configured.
- Open the Dynamic DNS Settings configuration dialog
- Enable Dynamic DNS and change the settings according to your needs (see the next page).



Enable Dynamic DNS

Enables the Dynamic DNS service. This requires a configured DNS server IP address.

Dynamic DNS server

This is the server name where the IP ACCESS KVM SWITCH CLASSIC registers itself in regular intervals. At the time of writing, this is a fixed setting since only dyndns.org is currently supported.

Hostname

This is the hostname of the IP ACCESS KVM SWITCH CLASSIC that is provided by the Dynamic DNS Server. (Use the whole name including the domain, **e.g. testserver.dyndns.org** not just the actual hostname).

Username

You have registered this username during your manual registration with the Dynamic DNS Server. Spaces are not allowed in the nickname.

Password

The password used during manual registration with the Dynamic DNS Server.

Check time

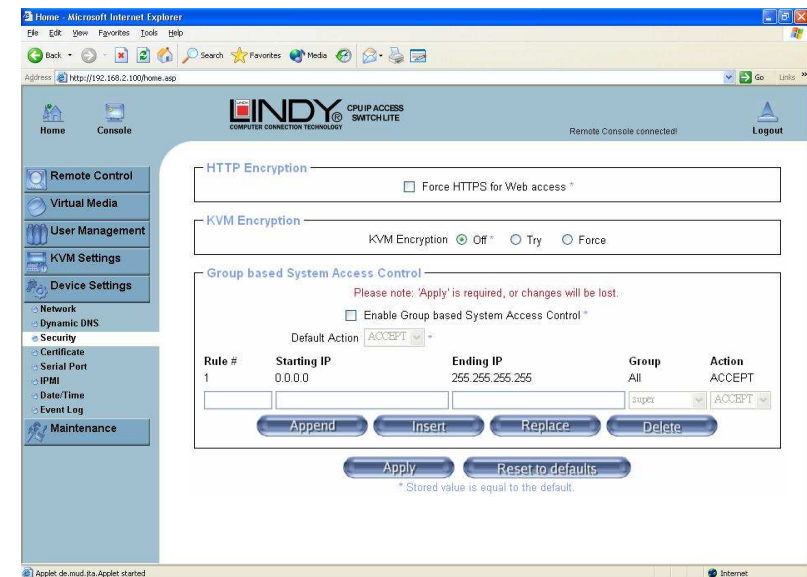
The IP ACCESS KVM SWITCH CLASSIC registers itself in the Dynamic DNS server at this time.

Check interval

This is the interval for reporting again to the Dynamic DNS server by the IP ACCESS KVM SWITCH CLASSIC.

Note: The IP ACCESS KVM SWITCH CLASSIC has its own independent real time clock. Make sure the time setting of the IP ACCESS KVM SWITCH CLASSIC switch is correct. (See the Section called Date and Time on page 50)

5.5.3 Security



Force HTTPS

If this option is enabled, access to the web front-end is only possible using an HTTPS connection. The IP ACCESS KVM SWITCH CLASSIC will not listen on the HTTP port for incoming connections.

If you want to create your own SSL certificate that is used to identify the IP ACCESS KVM SWITCH CLASSIC **please refer to the section called Certificate on page 45.**

KVM encryption

This option controls the encryption of the RFB protocol. RFB is used by the Remote Console to transmit both the screen data to the administrator's machine and the keyboard and mouse data back to the host. If set to **Off** no encryption will be used. If set to **Try**, the applet tries to make an encrypted connection. If connection establishment fails for any reason an unencrypted connection will be used. If set to **Force** the applet tries to make an encrypted connection. An error will be reported if connection establishment fails.

Group-based System Access Control

This is the IP filtering function, it keeps unauthorized hosts from accessing to the IP-KVM by specifying IP filtering rules. It is important to fully understand what an IP filter is. If you don't fully understand this, you will get unexpected results against your original plan.

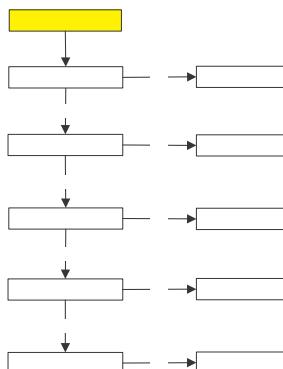
Chain rule

The Chain rule determines whether the access from the hosts is allowed or not. It can be one of these two values:

- ACCEPT : access allowed
- DROP : access not allowed

The rule can be configured to apply to a particular Group level (All, User, Super, Administrator).

When the IP-KVM receives a TCP packet, it will process the packet with the chain rule depicted below. The process ordering is important; the packet will enter the chain at rule 1 first, if it meets the rule then take action directly, otherwise go to chain rule 2.



Check the “Enable Group based System Access Control” to edit the rules

Users can add a new IP filtering rule by populating the fields in the new line by using Append or Insert. Users can remove a rule by using Replace or Delete. Use Apply to save your changes.

HTTP Encryption

☐ Force HTTPS for Web access *

KVM Encryption

KVM Encryption ☒ Off * ☐ Try ☐ Force

Group based System Access Control

Please note: 'Apply' is required, or changes will be lost.

☒ Enable Group based System Access Control *

Default Action: **ACCEPT**

Rule #	Starting IP	Ending IP	Group	Action
1	0.0.0.0	255.255.255.255	All	ACCEPT
2	192.168.123.99	192.168.123.230	super	ACCEPT

Buttons: Append, Insert, Replace, Delete, Apply, Reset to defaults

* Stored value is equal to the default.

Group dropdown: All, User, Super, Administrator

Action dropdown: ACCEPT, DROP

5.5.4 Certificate

Certificate Signing Request (CSR)

Common name: _____

Organizational unit: _____

Organization: _____

Locality/City: _____

State/Province: _____

Country (ISO code): _____

Email: _____

Challenge password: _____

Confirm Challenge password: _____

Key length (bits): 1024

Create

The IP ACCESS KVM SWITCH CLASSIC uses the Secure Socket Layer (SSL) protocol for any encrypted network traffic between itself and a connected client. During the connection establishment the IP ACCESS KVM SWITCH CLASSIC has to expose its identity to a client using a cryptographic certificate.

This certificate and the underlying secret key is the same for all IP ACCESS KVM SWITCH CLASSIC units and certainly will not match the network configuration that will be applied to the IP ACCESS KVM SWITCH CLASSIC by its user. The certificate's underlying secret key is also used for securing the SSL handshake. Hence, this is a security risk (but far better than no encryption at all).

However, it is possible to generate and install a new certificate that is unique for a particular IP ACCESS KVM SWITCH CLASSIC. In order to do this, the IP ACCESS KVM SWITCH CLASSIC is able to generate a new cryptographic key and the associated Certificate Signing Request (CSR) that needs to be certified by a certification authority (CA). A certification authority verifies that you are the person you claim you are, and signs and issues a SSL certificate to you.

The following steps are necessary to create and install an SSL certificate for the IP ACCESS KVM SWITCH CLASSIC.

1. Create an SSL Certificate Signing Request using the panel shown in the screen shot above. You need to fill out a number of fields that are explained on the next page. Once this is done, click on the **Create** button to initiate the Certificate Signing Request generation. The CSR can be downloaded to your administration machine with the **Download CSR** button (see the illustration on the next page).
2. Send the saved CSR to a CA for certification. You will get the new certificate from the CA after a more or less complicated traditional authentication process (depending on the CA).

No

Rule 2

Yes

Action 2

3. Upload the certificate to the IP ACCESS KVM SWITCH CLASSIC switch using the **Upload** button.

The image shows two web forms. The top form, titled 'Certificate Signing Request (CSR)', displays the following details: countryName = TW, stateOrProvinceName = taipei, localityName = taipei, organizationName = test org, organizationalUnitName = test, commonName = test, and emailAddress = test@test.com. It has 'Download' and 'Delete' buttons. The bottom form, titled 'Certificate Upload', has an 'SSL Certificate File' input field with a 'Browse...' button and an 'Upload' button.

After completing these three steps, the IP ACCESS KVM SWITCH CLASSIC has its own certificate that is used to identify it to its clients.

Note: If you destroy the CSR on the IP ACCESS KVM SWITCH CLASSIC there is no way to get it back! In case you deleted it by mistake, you have to repeat the three steps as described previously.

Common name

This is the network name of the IP ACCESS KVM SWITCH CLASSIC once it is installed in the user's network. It is identical to the name that is used to access the IP ACCESS KVM SWITCH CLASSIC with a web browser (without the "http://" prefix). In case the name given here and the actual network name differ, the browser will pop up a security warning when the IP ACCESS KVM SWITCH CLASSIC is accessed using HTTPS.

Organizational unit

This field is used for specifying to which department within an organization the IP ACCESS KVM SWITCH CLASSIC belongs.

Organization

The name of the organization to which the IP ACCESS KVM SWITCH CLASSIC belongs.

Locality/City

The city where the organization is located.

State/Province

The state or province where the organization is located.

Country (ISO code)

The country where the organization is located. This is the two-letter ISO code, e.g. DE for Germany, or US for the USA.

Challenge Password

Some certification authorities require a challenge password to authorize later changes on the certificate (e.g. revocation of the certificate). The minimal length of this password is 4 characters.

Confirm Challenge Password

Confirmation of the Challenge Password

Email

The email address of a contact person that is responsible for the IP ACCESS KVM SWITCH CLASSIC and its security.

Key length

This is the length of the generated key in bits. 1024 bits are sufficient for most cases. Longer keys may result in slower response time by the IP ACCESS KVM SWITCH CLASSIC during connection establishment.

5.5.5 Serial Port

The image shows a screenshot of the IP ACCESS KVM SWITCH CLASSIC web interface. The 'Serial Port 1 Settings' window is open, showing the 'Configuration login' tab. The 'Modem' section is selected, and the 'Serial line speed' is set to 115200 bits/s. The 'Modem init string' is set to 'ATZHD OK:ATL0ND&K3X1 OK'. The 'Modem server IP address' is 192.168.3.1 and the 'Modem client IP address' is 192.168.3.2. The 'Passthrough access to serial port 1 via Telnet' is selected, and the 'Speed' is set to 115200, 'Data bits' to 8, 'Parity' to none, 'Stop Bits' to 1, and 'Handshake' to Hardware. The 'ipm20_name (Inline Power Module)' is also visible. The 'Apply' button is at the bottom.

The IP ACCESS KVM SWITCH CLASSIC Serial Settings allow you to specify what device is connected to the serial port and how to use it.

Configuration or console login

Do not use the serial port for any special function; use it only for the initial configuration

Modem

The IP ACCESS KVM SWITCH CLASSIC offers remote access using a telephone line in addition to the standard access over the built-in Ethernet adapter. The modem needs to be connected to the serial interface of the IP ACCESS KVM SWITCH CLASSIC.

Connecting to the IP ACCESS KVM SWITCH CLASSIC using a telephone line allows you to set up a dedicated point-to-point connection from your console computer to the IP ACCESS KVM SWITCH CLASSIC. In other words, the IP ACCESS KVM SWITCH CLASSIC acts as an Internet Service Provider (ISP) to which you can dial in. The connection is established using the Point-to-Point Protocol (PPP). Before you connect to the IP ACCESS KVM SWITCH CLASSIC,

make sure you configure your console computer accordingly. For instance, on Windows based operating systems you can configure a dial-up network connection, which defaults to the right settings like PPP.

The Modem Settings panel allows you to configure remote access to the IP ACCESS KVM SWITCH CLASSIC using a modem. The meaning of each parameter will be described below. The modem settings are part of the serial settings panel.

- **Serial line speed**

The speed the IP ACCESS KVM SWITCH CLASSIC is communicating with the modem. Most modems available today will support the default value of 115200 bps. In case you are using an old modem and discovering problems try to lower this speed.

- **Modem Init String**

The initialization string used by the IP ACCESS KVM SWITCH CLASSIC to initialize the modem. The default value will work with all modern standard modems directly connected to a telephone line. In case you have a special modem or the modem is connected to a local telephone switch that requires a special dial sequence in order to establish a connection to the public telephone network, you can change this setting by entering a new string. Refer to your modem's manual about the AT command syntax.

- **Modem server IP address**

This IP address will be assigned to the IP ACCESS KVM SWITCH CLASSIC during the PPP handshake. Since it is a point-to-point IP connection virtually every IP address is possible but you must make sure, it is not interfering with the IP settings of the IP ACCESS KVM SWITCH CLASSIC and your console computer. The default value will work in most cases.

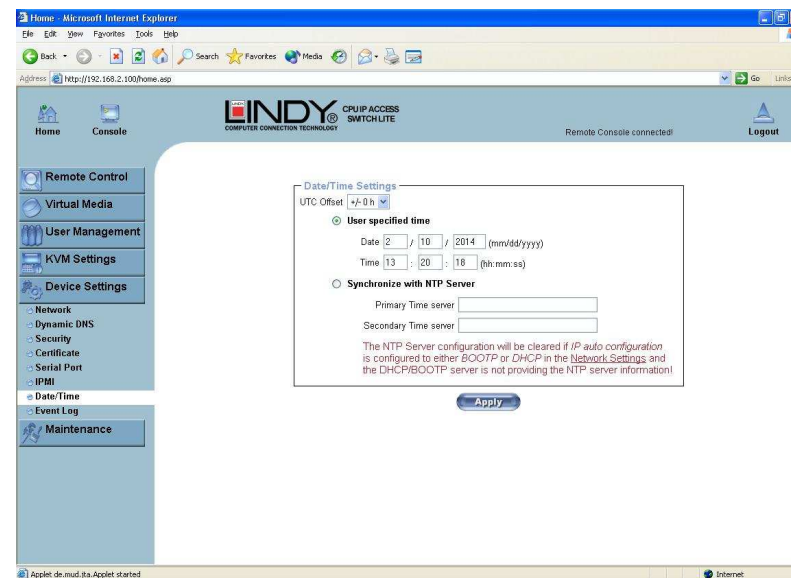
- **Modem client IP address**

This IP address will be assigned to your console computer during the PPP handshake. Since it is a point-to-point IP connection virtually every IP address is possible but you must make sure, it is not interfering with the IP settings of the IP ACCESS KVM SWITCH CLASSIC switch and your console computer. The default value will work in most cases.

Pass-through access to serial port via Telnet

Using this option, it is possible to connect an arbitrary device to the serial port and access it (assuming it provides terminal support) via Telnet. Select the appropriate options for the serial port and use the Telnet Console, or a standard Telnet client to connect to the IP ACCESS KVM SWITCH CLASSIC.

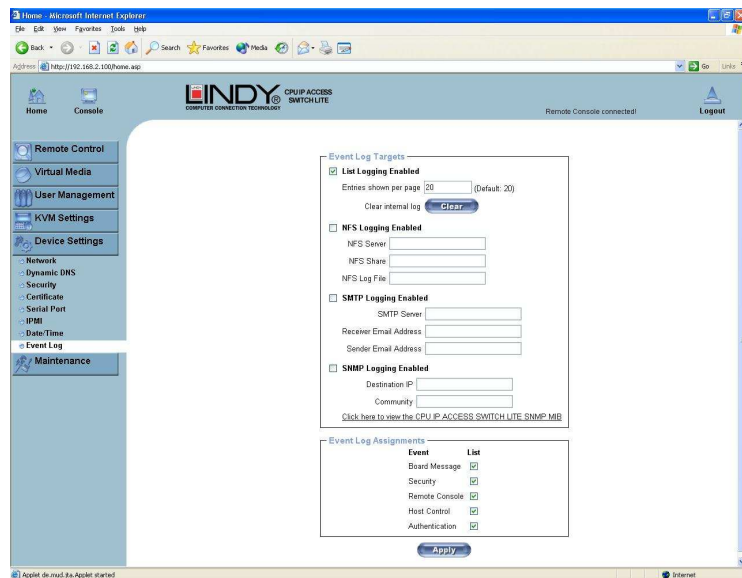
5.5.6 Date And Time



Here you can set the internal real-time clock of the IP ACCESS KVM SWITCH CLASSIC. You can adjust the clock manually or use an NTP timeserver. Without a timeserver your time setting will be lost if the IP ACCESS KVM SWITCH CLASSIC is powered down for more than a few minutes. To avoid this, you can use an NTP timeserver which sets up the internal clock automatically to the current UTC time. Because the NTP server time is always UTC, there is a setting that allows you to set up a static offset to get your local time.

Note: The IP ACCESS KVM SWITCH CLASSIC does not adjust to daylight saving time automatically. So you have to set up the UTC offset according to the local conventions of your country.

5.5.7 Event Log



Important events like a login failure or a firmware update are logged to a selection of logging destinations. Each of those events belongs to an event group, which can be activated separately.

In the Event Log Settings you can choose how many log entries are shown on each page. Furthermore, you can clear the log file here.

List logging enabled

The common way to log events is to use the internal log list of the IP ACCESS KVM SWITCH CLASSIC. To show the log list, click on **Event Log** on the **Maintenance** page.

Since the IP ACCESS KVM SWITCH CLASSIC's system memory is used to save all the information, the maximum number of possible log list entries is restricted to 1000 events. Every entry that exceeds this limit overrides the oldest one.

Note: If the reset button on the HTML front end is used to restart the IP ACCESS KVM SWITCH CLASSIC all logging information is saved permanently and is available after the IP ACCESS KVM SWITCH CLASSIC has been started. If the IP ACCESS KVM SWITCH CLASSIC loses power or a hard reset is performed, all logging data will be lost. To avoid this, use one of the log methods described below.

NFS Logging enabled

Defines an NFS server to write all logging data to a file that is located there. To write logging data from multiple IP ACCESS KVM SWITCH CLASSIC units to only one NFS share, you have to define a file name that is unique for each device. When you change the NFS settings and press **Apply**, the NFS share will be mounted immediately. That means, the NFS share and the NFS server must be filled with valid sources or you will get an error.

SMTP Logging enabled

With this option, the IP ACCESS KVM SWITCH CLASSIC is able to send Emails to an address given by the Email address text field in the Event Log Settings. These mails contain the same description strings as the internal log file and the mail subject is filled with the event group of the occurred log event. In order to use this log destination you have to specify an SMTP server that has to be reachable from the IP ACCESS KVM SWITCH CLASSIC and that needs no authentication at all (<serverip>:<port>).

SNMP Logging enabled

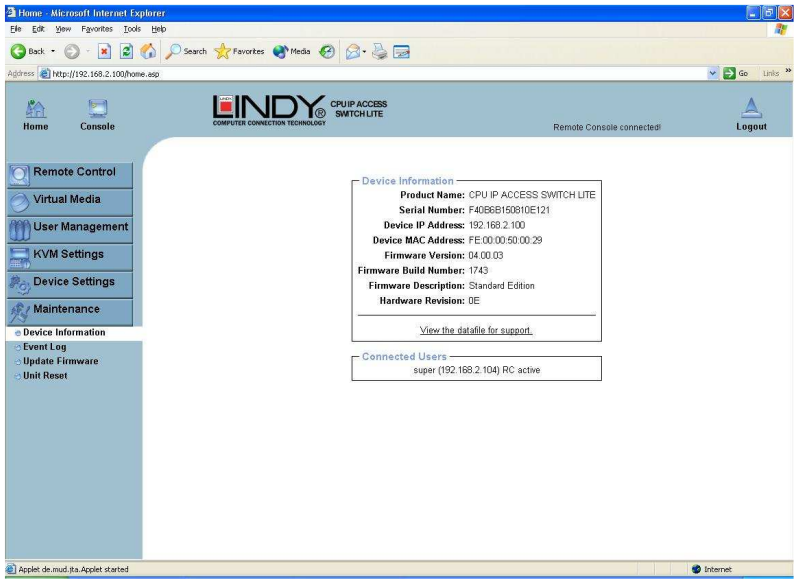
If this is activated, the IP ACCESS KVM SWITCH CLASSIC sends an SNMP trap to a specified destination IP address every time a log event occurs. If the receiver requires a community string, you can set it in the appropriate text field. Most of the event traps only contain one descriptive string with all information about the log event. Only authentication and host power events have a trap class that consists of several fields with detailed information about the occurred event. To receive these SNMP traps, any SNMP trap listener may be used.

Warning In contrast to the internal log file on the IP ACCESS KVM SWITCH CLASSIC, the size of the NFS log file is not limited. Every log event will be appended to the end of the file so it grows continuously, so you may have to delete it or move it from time to time.

5.6 Maintenance

5.6.1 Device Information

This section contains a summary with various information about the IP ACCESS KVM SWITCH CLASSIC and its current firmware. It also allows you to reset the unit.



View the data file for support

Allows you to download the IP ACCESS KVM SWITCH CLASSIC data file with specific support information. This is an XML file with certain customized support information like the serial number etc. You can send this information if you contact LINDY technical support. It may help us solve any problems.

Connected Users

The example below displays the IP ACCESS KVM SWITCH CLASSIC activity. From left to right the connected user(s), its IP address (from which host the user comes from) and its activity status is displayed. **RC** means that the Remote Console is open. If the Remote Console is opened in exclusive mode the term (exclusive) is added. For more information about this option see the section called Remote Console Control Bar on page 17.

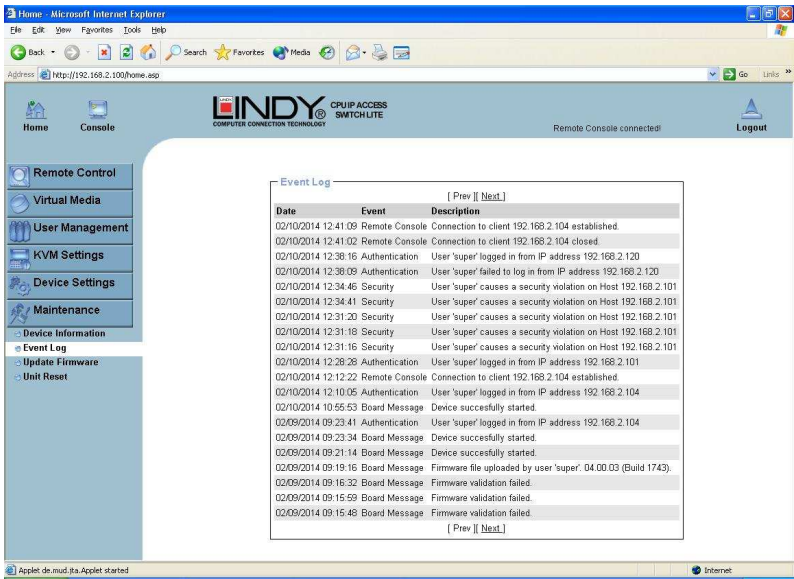
To display the user activity, the last column contains either the term **active** for an active user or **20 min idle** for a user who is inactive for a certain amount of time.

Connected Users

test (62.238.0.39)	active
test (80.145.25.183)	26 min idle
test (212.183.10.29)	20 min idle
test (62.153.241.228) RC (exclusive)	active

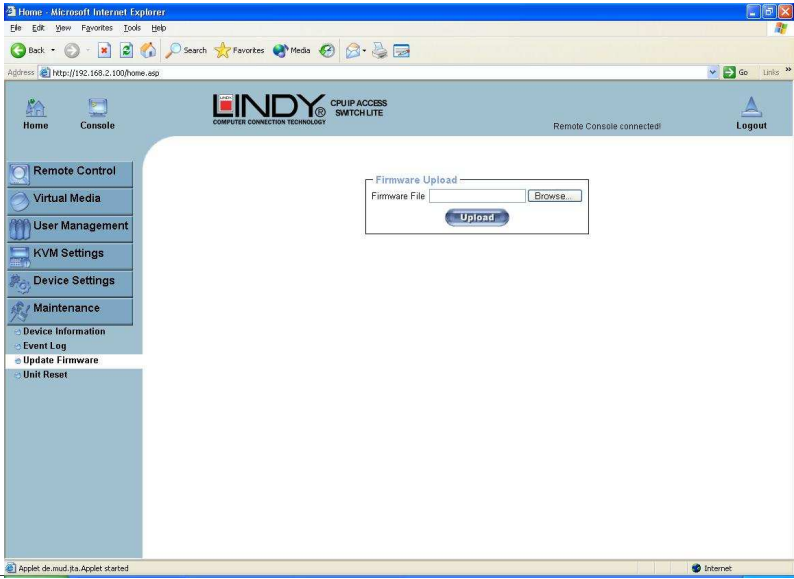
5.6.2 Event Log

Displays the log list including the events that are logged by the IP ACCESS KVM SWITCH CLASSIC.



5.6.3 Update Firmware

The IP ACCESS KVM SWITCH CLASSIC is a complete standalone computer. The software it runs is called the firmware. The firmware of the IP ACCESS KVM SWITCH CLASSIC can be updated remotely in order to install new functionality or special features.



A new firmware update is a binary file which can be sent to you by email from the Technical Support team of LINDY.

Updating the firmware is a three-stage process:

1. The new firmware file is uploaded to the IP ACCESS KVM SWITCH CLASSIC. In order to do this you need to select the file on your local system using the **Browse** button on the Upload Firmware panel. Once the firmware file has been uploaded it is checked whether it is a valid firmware file and whether there were any transmission errors. In case of any error the Upload Firmware function will be aborted.
2. If everything went well you will see the Update Firmware panel. The panel shows you the version number of the currently running firmware and the version number of the uploaded firmware. Pressing the **Update** button will replace the old version with the new one.

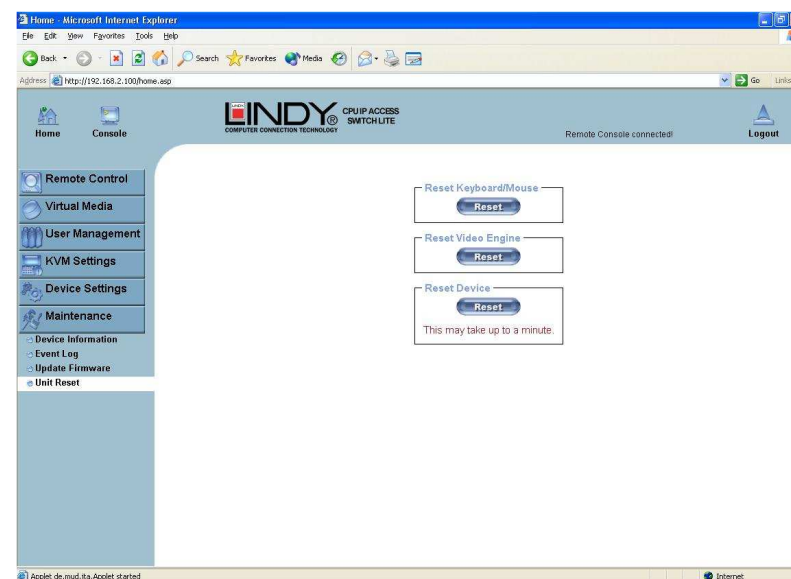
Note: This process is not reversible and may take some minutes. Make sure the IP ACCESS KVM SWITCH CLASSIC's power supply will not be interrupted during the update process.

3. After the firmware has been stored, the panel will request you to reset the IP ACCESS KVM SWITCH CLASSIC manually. Half a minute after the reset the IP ACCESS KVM SWITCH CLASSIC will run with the new firmware version and should be accessible. However, you will be required to login once again.

Note: The three-stage firmware update process and consistency check means that making a mistake when updating the firmware is very unlikely. However, we recommend only experienced users or administrators should perform the firmware update. Make sure the IP ACCESS KVM SWITCH CLASSIC's power supply will not be interrupted during the update process!

5.6.4 Unit Reset

This section allows you to reset specific parts of the device. This involves the keyboard and mouse, the video engine and the IP ACCESS KVM SWITCH CLASSIC itself.



Resetting the unit itself is mainly needed to activate a newly updated firmware. It will close all current connections to the administration console and to the Remote Console.

The whole process will take about half a minute. Resetting sub devices (e.g. the video engine) will take a few seconds only and does not result in connections closing. To reset individual IP ACCESS KVM SWITCH CLASSIC functionality, click on the Reset button.

Note: Only the super user is allowed to reset the IP ACCESS KVM SWITCH CLASSIC.

6. Troubleshooting

Q 001: The remote mouse doesn't work or is not synchronized

A 001: Make sure the mouse settings in IP ACCESS KVM SWITCH CLASSIC match the mouse model. Use the **Intelligent Sync** option from the **Mouse Handling** sub menu of the Remote Console **Options** menu.

Q 002: The video quality is bad or the picture is grainy

A 002: Try to correct the brightness and contrast settings (**see Page 19**) until they are out of a range where the picture looks grainy. Use the auto adjustment feature to correct a flickering video.

Q 003: Login on IP ACCESS KVM SWITCH CLASSIC switch fails.

A 003: Was the correct combination of user and password given? The default user name is **super** and the password is **pass**. Furthermore, your browser must be configured to accept cookies.

Q 004: The Remote Console window can't connect to the IP ACCESS KVM SWITCH CLASSIC.

A 004: Possibly a firewall prevents access to the Remote Console. Make sure the TCP port numbers 443 or 80 are open for incoming TCP connections. Install the latest version of Java Virtual Machine,

Q 005: No connection can be established to the IP ACCESS KVM SWITCH CLASSIC.

A 005: Check whether the network connection is working in general (ping the IP address of IP ACCESS KVM SWITCH CLASSIC). If not, check the network hardware. Is the IP ACCESS KVM SWITCH CLASSIC powered on? Check whether the IP address of IP ACCESS KVM SWITCH CLASSIC switch and all other IP related settings are correct! Also verify that all the IP infrastructure of your LAN, like routers etc., is correctly configured.

Q 006: Special key combinations, e.g. ALT+F2, ALT+F3 are intercepted by the console system and not transmitted to the host.

A 006: You have to define a so-called **Button Key**. This can be done in the Remote Console settings.

Q 007: In the browser the IP ACCESS KVM SWITCH CLASSIC switch pages are inconsistent.

A 007: Check your browser cache settings. Especially make sure that the cache settings are not set to something like 'never check for newer pages'. Otherwise the IP ACCESS KVM SWITCH CLASSIC pages may be loaded from your browser cache and not from the unit.

Q 008: Windows XP doesn't awake from standby mode

A 008: This could be a Windows XP problem. Try not to move the mouse while XP goes into standby mode.

Q 009: Using MacOS X an HTTPS connection fails

A 009: You have to install the IP ACCESS KVM SWITCH CLASSIC certificate using our certificate installer, available on the utility CD. Please refer to the instructions on this CD for further information on how to install the certificate.

Q 010: Can't upload the signed certificate in Mac OS X

A 010: If an 'internal error' occurs while uploading the signed certificate either change the extension of the file to .txt or add a file helper using the Internet Explorer preferences for this type of file. Make sure that the encoding is plain text and the checkbox 'use for outgoing' is checked. Another possibility is to use a Mozilla based browser.

Q 011: Every time I open a dialog box with some buttons the mouse pointers are not synchronous anymore

A 011: Please check, if you have an option like '**Automatically move mouse pointer to the default button of dialog boxes**' enabled in the mouse settings of the operating system. This option needs to be disabled.

7. Key Codes

This table shows the key codes used to defines keystrokes or hotkeys for several functions. Please note that these key codes do not necessarily represent key characters that are used on international keyboards. They name a key on a standard 104 key PC keyboard with US English language mapping.

Key (and aliases)
0 - 9
A - Z
, TILDE
- MINUS
=, EQUALS
:
<, LESS
.
/, SLASH
BACK SPACE
TAB
[
]
ENTER
CAPS LOCK
\, BACK SLASH
LSHIFT, SHIFT
RCTRL
RSHIFT
LCTRL, CTRL
LALT, ALT
SPACE
ALTGR
ESCAPE, ESC
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
F12
PRINTSCREEN
SCROLL LOCK
BREAK
INSERT
HOME
PAGE UP
DELETE
END
PAGE DOWN
UP
LEFT
DOWN
RIGHT
NUM LOCK
NUMPAD0
NUMPAD1
NUMPAD2
NUMPAD3
NUMPAD4
NUMPAD5
NUMPAD6
NUMPAD7
NUMPAD8
NUMPAD9
NUMPADPLUS,NUMPAD PLUS
NUMPAD/
NUMPADMUL,NUMPAD MUL
NUMPADMINUS,NUMPAD MINUS
NUMPADENTER
WINDOWS
MENU

The layout for this keyboard is also shown. However, most modifier keys and other alphanumeric keys used for hotkey purposes in application programs are in an identical position, no matter what language mapping you are using. Some of the keys have aliases also; they can be named by 2 key codes (separated by a comma in the previous table).

Esc	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	Prnt	ScrL	Brk					
~	1	2	3	4	5	6	7	8	9	0	-	=	Bsp	Ins	Pos1	Pgup	Num	/	*	-
tab	q	w	e	r	t	y	u	i	o	p	[	]		Del	End	Pgdn	7	8	9	
Caps	a	s	d	f	g	h	j	k	l	;	'	\					4	5	6	+
LShift	z	x	c	v	b	n	m	.	.	?			Rshift		Up		1	2	3	
Lctrl	Win	Alt	Space					AltGR	Menu	RCtrl			Left	Down	Right		0	.		CR

8. Video Modes & User Permissions

Video Modes supported

The table below lists the video modes that the IP ACCESS KVM SWITCH CLASSIC supports. Please do not use any other custom video settings; the IP ACCESS KVM SWITCH CLASSIC may not be able to detect them.

Resolution (x, y)	Refresh Rates (Hz)
640 x 350	70, 85
640 x 400	56, 70, 85
640 x 480	60, 67, 72, 75, 85, 90, 100, 120
720 x 400	70, 85
800 x 600	56, 60, 70, 72, 75, 85, 90, 100
832 x 624	75
1024 x 768	60, 70, 72, 75, 85, 90, 100
1152 x 864	75
1152 x 870	75
1152 x 900	66
1280 x 960	60
1280 x 1024	60, 75
1600 x 1200	60 (moving 1280x1024 window)

User Role Permissions

The table below lists the user role permissions granted for three user role groups: “Superuser”, “Administrator” and “User”

Function	User	Administrator	Superuser
Remote Control: KVM	X	X	X
Remote Control: Remote Power	-	X	X
Remote Control: Telnet Console	X	X	X
Virtual Media	X	X	X
User Management: Change Password	X	X	X
User Management: Users	-	-	X
KVM Settings: User Console	x (w/o Misc. Settings)	X	X
KVM Settings: Keyboard/Mouse	-	X	X
KVM Settings: Video	-	X	X
Device Settings	-	-	X
Maintenance: Device Information	X	X	X
Maintenance: Event Log	-	-	X
Maintenance: Update Firmware	-	-	X
Maintenance: Unit Reset	Keyboard/ Mouse, Video	Keyboard/ Mouse, Video	Keyboard/ Mouse, Video, Device

9. Technical Specifications

Model No.	IP Access KVM Switch Classic
Target Device Connection	1 x Keyboard PS/2 Mini Din 6 Pin 1 x Mouse PS/2 Mini Din 6 Pin 1 x VGA HDDB 15 Pin 1 x USB 2.0 Type B receptacle
Local Access Connection	1 x PS/2 Keyboard Mini Din 6 Pin 1 x PS/2 Mouse Mini Din 6 Pin 1 x VGA HDDB 15 Pin
Remote Access Connection	1 x RJ-45
Network Connection	10/100 Ethernet, telephone line (modem needed)
Firmware Upgrade Port	1 x Serial DB9 Pin
Max. Video Resolution	Local- 1600 x 1200 Remote- 1280 x 1024
OS Compatibility	MS Windows family, Unix, Sun Solaris, Linux, Mac OSX
Browser Compatibility	IE 6.0, Netscape 7.0, Mozilla 1.6 (or above)
IP Setting	DHCP, Bootp, Fixed IP (DDNS supported)
Management Interface	Web, Utility, Telnet, Serial port
Event Log	NFS, SMTP, SNMP trap
Housing Material	Metal
Power adaptor	Dual input- 5V/2.6A x 2 (Redundancy)
Operating Temperature	0-50 degrees C
Storage Temperature	-20 – 60 degrees C
Weight	0.7 kg , incl. accessories and packaging 2.2 kg
Size (mm)	192 (L) X 120 (W) X 44 (H)

Bandwidth Consumption

The preconfigured network speed selection simply results in a different Compression and Color Depth configuration in order to match the different bandwidth limitations of the network type (UMTS, ISDN, etc.)

The following suggested network bandwidth planning table for IP-KVM installation is from the test results with 3D-Labyrinth screen saver at Resolution 800x600, the worst case consuming the highest network bandwidth.

	Compression	Colour Depth	Used Bandwidth	Comment
Video Optimized	Video Optimized	8 bit	3.0 - 3.3 MB/s	uncompressed, synchronized video data, most bandwidth needed
Video Optimized (high colour)	Video Optimized	16 bit	4.3 - 5.0 MB/s	uncompressed, synchronized video data, most bandwidth needed
LAN (high colour)	0 (no compression)	16 bit	1.0 - 1.3 MB/s	uncompressed video data
LAN	0 (no compression)	8 bit	500 - 700 kb/s	uncompressed video data
DSL	2	8 bit	110 - 140 kb/s	slower video because of compression
UMTS	4	8 bit	80 - 100 kb/s	slower video because of compression
ISDN 128k	6	4 bit	20 - 30 kb/s	16 colours
ISDN/Modem V.90	7	2 bit	13 - 17 kb/s	gray scale
GPRS/HSCSD	8	2 bit	5 - 7 kb/s	gray scale
GSM Modem	9 (best compression)	1 bit	1 - 3 kb/s	Black & white video

Well-Known TCP/UDP Port Numbers

Port numbers are divided into three ranges: Well Known Ports, Registered Ports, and Dynamic and/or Private Ports. Well Known Ports are those from 0 through 1023. Registered Ports are those from 1024 through 49151. Dynamic and/or Private Ports are those from 49152 through 65535.

Well Known Ports are assigned by IANA, and on most systems, can only be used by system processes or by programs executed by privileged users. Table below shows some of the well-known port numbers. For more details, please visit the IANA website:

<http://www.iana.org/assignments/port-numbers>

Port Number	Protocol	TCP/UDP
21	FTP (File Transfer Protocol)	TCP
22	SSH (Secure Shell)	TCP
23	Telnet	TCP
25	SMTP (Simple Mail Transfer Protocol)	TCP
37	Time	TCP, UDP
39	RLP (Resource Location Protocol)	UDP
49	TACACS, TACACS+	UDP
53	DNS	UDP
67	BOOTP server	UDP
68	BOOTP client	UDP
69	TFTP	UDP
70	Gopher	TCP
79	Finger	TCP
80	HTTP	TCP
110	POP3	TCP
119	NNTP (Network News Transfer Protocol)	TCP
161/162	SNMP	UDP
443	HTTPS	TCP

IP-KVM TCP port number

Port	Protocol	Purpose
23	Telnet over TCP	Web & Telnet client
80	HTTP over TCP	Web
443	HTTPS over TCP	Web
443	RFB over TCP	Remote Console
443	HTTPS over TCP	Drive Redirection
139	SMB over TCP	CD-ROM Image (Samba Service)
139	SMB over TCP	Floppy disk(Samba Service)
1024	SMB over TCP	Samba Service source port
162	SNMP over TCP	SNMP trap reception port
1024	SNMP over TCP	SNMP source port
443	RFB over TCP	Remote Keyboard and Mouse data

10. Radio Frequency Energy, Certifications

CE Conformity

This equipment has been tested and found to comply with the relevant European Community Directive 93/68/EEC and 2004/108/EC for Electromagnetic Compatibility for Information Technology Equipment.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A 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 the instruction manual, 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 own expense.

The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced technician for help



WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electronic Products

Europe

In 2006 the European Union introduced regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process.

Each individual EU member state has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose of any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.

Germany

Die Europäische Union hat mit der WEEE Richtlinie umfassende Regelungen für die Verschrottung und das Recycling von Elektro- und Elektronikprodukten geschaffen. Diese wurden im Elektro- und Elektronikgerätegesetz – ElektroG in deutsches Recht umgesetzt. Dieses Gesetz verbietet vom 24. März 2006 an das Entsorgen von entsprechenden, auch alten, Elektro- und Elektronikgeräten über die Hausmülltonne!

Dies ist ein B2B Produkt. Entsprechend dem deutschen ElektroG hat der gewerbliche Endverwender dieses Gerät zum Zweck der Verschrottung entweder der LINDY-Elektronik GmbH zum Recycling zurück zu geben (kostenlose Rücknahme) oder es auf eigene Kosten einem geordneten Recycling zuzuführen.

France

En 2006, l'union Européenne a introduit la nouvelle réglementation (DEEE) pour le recyclage de tout équipement électrique et électronique.

Chaque Etat membre de l' Union Européenne a mis en application la nouvelle réglementation DEEE de manières légèrement différentes. Veuillez suivre le décret d'application correspondant à l'élimination des déchets électriques ou électroniques de votre pays.

Italy

Nel 2006 l'unione europea ha introdotto regolamentazioni (WEEE) per la raccolta e il riciclo di apparecchi elettrici ed elettronici. Non è più consentito semplicemente gettare queste apparecchiature, devono essere riciclate. Ogni stato membro dell' EU ha tramutato le direttive WEEE in leggi statali in varie misure. Fare riferimento alle leggi del proprio Stato quando si dispone di un apparecchio elettrico o elettronico.

Per ulteriori dettagli fare riferimento alla direttiva WEEE sul riciclaggio del proprio Stato.

LINDY No. 39415

www.lindy.com