

8-Port / 16-Port
COMBO FREE
KVM SWITCH
OVER IP
User' s Manual

Version 1.00

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1. Introduction

Thank you for purchasing 8-port & 16-port Combo Free KVM Switch OVER IP (or IP-KVM for simplicity)! You now have a high quality, durable system to control 8 or 16 computers through PS/2 and/or USB connection from one console (PS/2 & USB Mouse, PS/2 & USB Keyboard, and Monitor). And it allows you to control one or more computers locally at the server site or remotely via the Internet using a standard browser. You can securely gain BIOS level access to systems for maintenance, support, or failure recovery over the Internet. Communication is secure via SSL authentication and encryption. Use in conjunction with a KVM switch for multiple-server access.

● Features

KVM Over IP

1. Manage servers around the world
2. Remote KVM (keyboard, video, and mouse) access over IP or analogous telephone line (modem needed)
3. Console your Keyboard/Mouse via PS/2 and/or USB at will
4. Connect computers via PS/2 and/or USB at will
5. Full control under any OS, in BIOS level, during boot, or at Blue Screens
6. On-Screen-Display (OSD) & Cascade Chain functions
7. OSD is intuitive menus driven for quick and efficient navigation.
8. Supports Daisy chain with 3 level cascades: up to 3 levels; control up to 16/256/4096 PCs (16-Port), from a single console; cascaded units don't need special configuration.
9. Emulates PS/2 or USB keyboard on each PC to allow your computers to boot normally without a keyboard error.
10. Supports hot-pluggable. All devices connected to the KVM can be added or removed at any time, without shutting the unit down.
11. Supports 3 types of switching:
 - Hardware Push Button.
 - Hot-Keys on PS/2 and/or USB of keyboard.
 - Menu driven OSD (On Screen Display).
12. Supports Auto-Scan function to switch video inputs automatically among computers in preset intervals sequentially by OSD menu driven.
13. Supports LED display for PC and/or server status monitoring.
14. Supports Beeper during Switching enabled.
15. Fully compliant with the USB 1.1/ 2.0 specification.
16. Rack Mountable in 19" system tack (1U).
17. Remote power wakeup on the target computer
18. Remote mass storage control and redirection
19. Remote control over Java-enabled Browsers
20. No additional software necessary on client console side

21. SSL Secure access through certificate authentication and data encryption
22. 256-bit SSL encryption of all transmitted data
23. Persistent logging of all important events
24. Up to 63 user profiles definable, three user levels
25. Auto-optimize the frame rate and video quality according to the bandwidth availability
26. Automatically senses video resolution for best possible screen capture
27. High-performance mouse tracking and synchronization
28. KVM firmware is upgradeable via on-board mini-USB download connector and external mini-programmer and web interface

KVM Transmission

1. Transmission of video signals through remote console up to resolution 1600 x1200 @ 60 Hz with 16, 8, 4, 2, 1 Bit video encoding, manual and automatic adjustment
2. Supports all of standard VGA and VESA modes (graphics and text)
3. Works with all states of the web browsers

Network access

1. Access via 10/100 Mbps LAN
2. Communication over TCP/IP port 80 and port 443 (reconfiguration possible)
3. IP-configuration via DHCP/BOOTP or static
4. HTTP and HTTPS (secure) Web Server
5. Supports of standard Hayes compatible modems
6. Speed of modem up to 115200 bps
7. Automatic adjustment of video compression ratio to available bandwidth

● **Package Contents**

The product you purchased should contain the following equipment and accessories:

- 1 x 8-Port or 16-Port Combo Free KVM Switch Over IP.
- 1 x RS232 cable (Null modem type)
- 1 x Power adaptor
- 1 x Rack Mount Bracket Kit
- 1 x CD-ROM (software utilities and user manual)

2. Specifications

Specification		
Number Of Computer Controlled		8 or 16
Selection Method		Push Button and Hot-Key (PS2 and/or USB keyboard)
		Or On-Screen-Display(OSD)
LEDs		Red for PC Selection
		Green for PC ON-Line ready
Compliant with USB Version		USB1.0 / USB1.1 / USB2.0
Compliant with HID Version		USB HID 1.11
PC Connectors	Video	8/16 x HDB-15 male
	(KB/MS)	(PS2 & USB signal combined)
Console port	Keyboard	1 x 6 pin mini-DIN female
	Mouse	1 x 6 pin mini-DIN female
	Video	1 x HDB-15 female
	Keyboard	1 x USB – A type female
	Mouse	1 x USB – A type female
Firmware upgrade connector		1 x Mini USB female
Serial port		1 x RS232 male
Ethernet port		1 x RJ45
Virtual Media port		1 x Mini USB female
Remote console screen resolution		Up to 1600 x 1200 @ 60Hz
DDC,DDC2 monitor		Yes (support DDC 2B, max resolution up to 2048 x 1536)
Operating system supported		Win 98/98SE/ME/2000/XP/Vista/7/2003 Mac OS9/X, Linux, Sun Micro OS
Power		By External Adaptor DC 5V 2A
Hot Pluggable		Yes
Device driver		No
Dimensions (LxWxH)		44 x 15.7 x 4.5 cm (17.3 x 6.1 x 1.5 inch)
Unit Weight		1810g/1960g
Housing material		Metal
Operating Temperature		32~122 °F (0~50°C)
Storage Temperature		4~140 °F (-20~60°C)
Humidity		0%~80%RH

3. System Requirements

■ Hardware

- Local Host side :

The following equipment must be equipped with each computer or server

A VGA, SVGA or Multisync card

Type A USB port or PS/2 6 pin mini-DIN for Keyboard and Mouse.

- Local console side:

A VGA, SVGA, Multisync monitor capable of the highest resolution.

PS/2 and/or USB Keyboard/Mouse.

- Remote Console side:

One Computer or Multiple Computers are linked into the network

- Cables

The Combo Free KVM Switch must be used specific custom 4-in-1 cables. To purchase the specific cable sets, please contact your dealer.

■ Remote Console side

- 1 Java Runtime Environment : version 1.5 or above.

- 2 Browser: Microsoft Internet Explorer version 6.0 or above or Netscape or Mozilla or Safari.

4. Installation

4.1. Front View

- 8-Port



Figure 1: 8-port IP-KVM front view

- 16-Port



Figure 2: 16-port IP-KVM front view

- LED Indicators:

- Selected:

RED LED indicates that the IP-KVM is selected to the corresponding PC.

- On-Line:

GREEN LED indicates that the IP-KVM is ready to the corresponding PC.

- **Reset Switch :**

Press Reset switch when you want to reset the system. This switch must be pushed with a thin object like the end of a paper clip, or a ball point pen.

4.2. Rear View

- **8-Port**



Figure 3: 8-port IP-KVM rear view

- **16-Port**

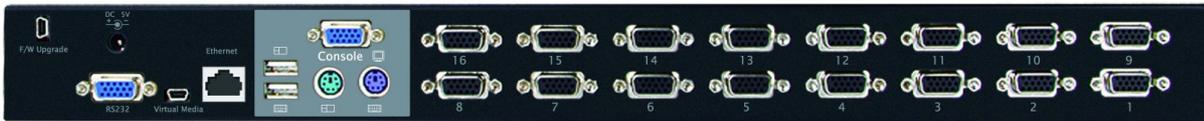


Figure 4: 16-port IP-KVM rear view

- **Ethernet LED Indicators:**

- **IP-Ready:**

ORANGE LED blinking per second when system is ready.

- **Ethernet-Link:**

GREEN LED indicates that Ethernet connection established.

4.3. Single stage installation

4.3.1. Precaution:

- Please turn off computers and devices when you start to install KVM Switch.
- For computers with Keyboard Power On function, please unplug the power cords in advance. Otherwise, the switch might not work properly.
- If your computers work under Windows 98, please connect KVM switch to computers via PS/2 ports, because Windows 98 does not support installation at first time as through USB HID installation driver.
- Some old computers must enable USB setting in BIOS in advance to make USB interface work.
- This KVM switch does not guarantee to fully support USB keyboard with USB HUB.
- (Optional) Connect the USB connectors of USB A-mini cable to the host computer and the IP-KVM module while for remote mass storage control.
- Connect one end of Ethernet cable to ethernet jack of IP-KVM, and the other end to the Remote Console computer.

4.3.2. Console connection:

Plug keyboard, mouse and monitor to the console ports on the real panel of IP-KVM. (Figure 5)

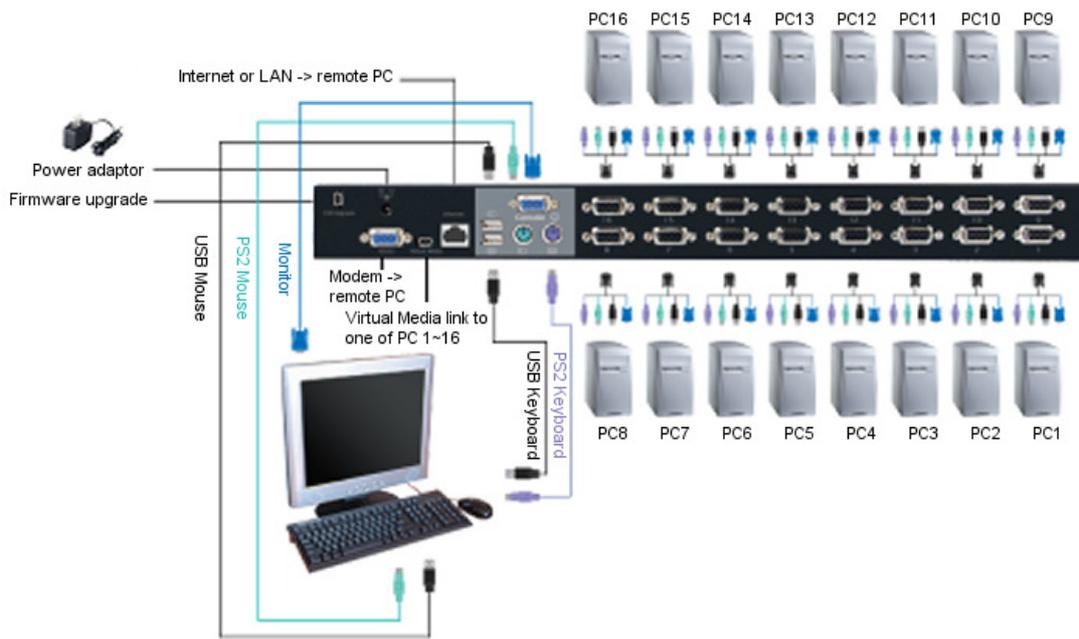


Figure 5: Console connection

4.3.3. System connection:

Please use Custom combo cable to connect your computers.
Please refer to the figures and instruction shown below for System connection.

Note: Please contact your dealer to purchase the custom combo 4-1 cables if you need.



Figure 6: Custom combo 4-in-1 cable

You can connect IP-KVM to computers via three methods shown below:

- A. Connect **USB, PS/2 (keyboard/mouse)** and **VGA** connectors to computers. We recommend users to connect computers in this way. (*Figure 7*)

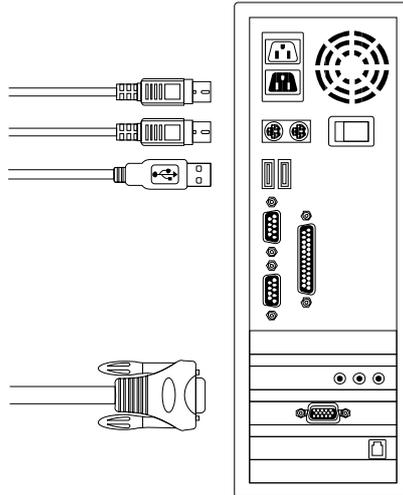


Figure 7: USB & PS/2 (Keyboard & Mouse) and VGA connected

- B. Connect only PS/2 (keyboard/mouse) and VGA connectors to computers (*Figure 8*).

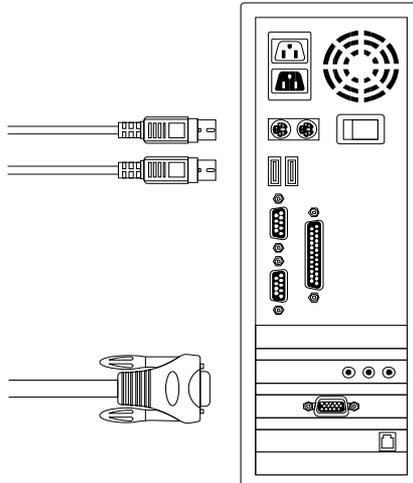


Figure 8: PS/2 (Keyboard & Mouse) and VGA connected

- C. Connect only USB and VGA connectors to computers. (Figure 9).

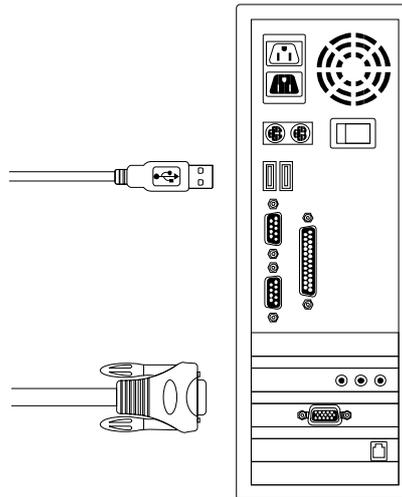


Figure 9: USB and VGA video connected

4.4. Cascade Chaining

Combo Free 8-port & 16-port KVM switch support 3 level cascades; control up to 64/256/4096 PCs, from a single console; cascaded units don't need special configuration. Cascade configuration expands system ability and allows you to select computers connected to the Master or Slave. After connected, KVM Switches automatically configure Master and Slave.

Note: IP-KVM should be the master KVM Switches, and the second & third level must use standard KVM Switches has no Over-IP function.

To Install cascade chain, please follow the instruction below:

- A. Please turn off computers and devices when you start to install KVM Switch.
- B. Use the custom combo cable set (**See Figure 6**), to connect one or more Slave KVM Switches to any PC port of Master KVM Switch. **The connection between KVM to KVM must be connected through PS/2 connection. (Please refer to Figure 7 & Figure 8).**
- C. **You can do console Master KVM Switch via either USB and/or PS/2 keyboard and mouse at will.**
- D. Plug in the power adapter of the first level Master KVM Switch and connect Master KVM switch to computers.
- E. Next, plug in power adapter for each level Slave KVM Switch and connect Slave KVM switch to computers .

- F. The power on sequence should be:
1. Master KVM Switch
 2. Second level Slave KVM Switch (connecting to Master KVM Switch) if any.
 3. Third level Slave KVM Switch (connecting to second level Slave KVM Switch) if any.
 4. All computers connecting to Master/Slave KVM Switch.
- G. After all KVM Switches are powered by power adaptor, trun on the computers.
- Initial Plug-in Process:
Please plug in the Master KVM Switch first before turning on any other devices like montior or computers.
 - Hot plug and Hot Swap:
Combo Free 8-port & 16-port KVM switch support Hot plug and Hot swap function.

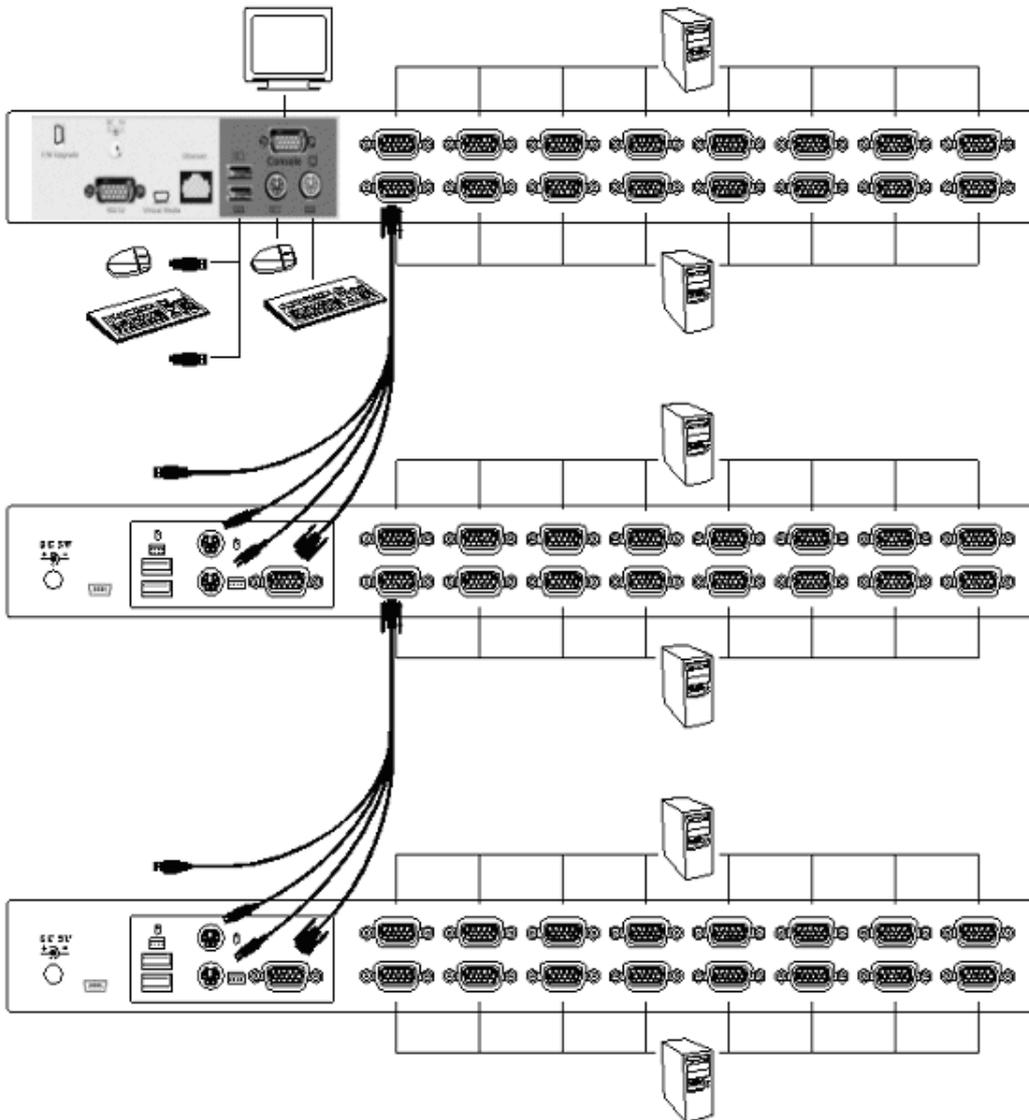


Figure 10: Cascade chaining

4.5. Firmware download connector

The min-USB female connector on the rear of KVM switch is for firmware upgrade function. To update your KVM firmware, please contact with your dealer.

4.6. Rack Mounting

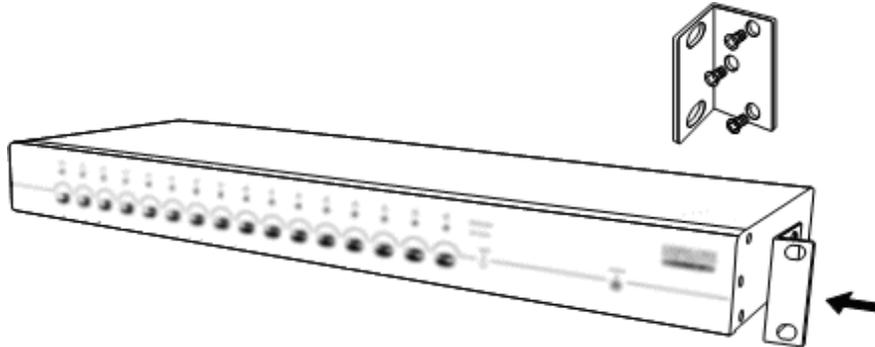


Figure 11: Rack mounting

Figure 11 shows you how to attach mounting brackets to the KVM Switches unit for standard 19-inch rack cabinet.

1. Screw the mounting brackets into the sides of the KVM-Switches unit. (See Figure 11)
2. Install the KVM-Switches unit into the rack cabinet.

5. Operation

You can control computers via 8-Port or 16-Port Combo Free KVM Switch Over IP by push button, hot key and OSD.

Push button operation

Press the front panel push button to select the PC and operate it.

Hot Key operation

Please refer section 6. Hot Key Operation.

OSD operation

Please refer section 7. OSD Operation.

6. Hot Key Operation

6.1. Call OSD Menu

Press < **Scroll Lock**> twice and < **Enter**>, then the OSD “Main Menu” will be displayed on the monitor screen. All of the KVM parameters can be setup in OSD mode. You can also execute some KVM functions in OSD.

<Scroll Lock> → <Scroll Lock> → <Enter>

6.2. Leading Hot Key Select

The two-steps hot key sequence is used for quick function execution.

The leading key is < **Scroll Lock**> by default. However, you can change the leading hot key if you want.

By pressing < **CTRL**> twice, < **New Hot Key**>, then press < **Enter**>, you can change the leading hot key.

The available leading hot key are < **Scroll Lock**>, < **Num Lock** > or < **Caps Lock** > for option.

- **Setup leading hot key to < Scroll Lock >**
< CTRL > → < CTRL > → < Scroll Lock > → < Enter >

- **Setup leading hot key to < Num Lock>**
< CTRL > → < CTRL > → < Num Lock > → < Enter >

- **Setup leading hot key to < Caps Lock >**
< CTRL > → < CTRL > → < Caps Lock > → < Enter >

Note: You can also change leading hot key by pressing < **F1**> in OSD main menu.

Please refer section **7.3.5 Setup in OSD – Hot Key**.

6.3. Channel Select - Single KVM

6.3.1. Specific channel selection

You can select the connected computers by using the two-step Hot Key sequence. Press < **Scroll Lock**> key twice (Step 1), then press **key (1 to 16)** and < **Enter**> (step 2) to select the computer you want to control.



Figure 12: Specific channel selection hot key

<Scroll Lock> → <Scroll Lock> → <1> → <Enter> or
 <Scroll Lock> → <Scroll Lock> → <2> → <Enter> or
 ⋮
 ⋮
 <Scroll Lock> → <Scroll Lock> → <16> → <Enter>

Note: You can also select computers in OSD menu. Move the indicator bar to the channel to switch by using <arrow key>, <Page Up> or <Page Down>, then press <Enter> to select the connected computer. Please refer section **7.2 Channel Selection in OSD.**

6.3.2. Arrow Key Channel Shift Function

Press <Scroll Lock> twice, and press <Left Arrow> or <Right Arrow> key to shift left/right one channel.

- **Switch to left one channel**
 <Scroll Lock> → <Scroll Lock> → <Left Arrow>
- **Switch to right one channel**
 <Scroll Lock> → <Scroll Lock> → <Right Arrow>

6.3.3. <ALT> Channel Shift Function

1. Start <ALT> Channel shift Function

< ALT > channel shift function default was off. You can press Hot-Key <Scroll Lock> twice, <ALT> and then press <Enter> to turn on or turn off this function alternately.

2. Shift the channel by <ALT> key

Press left < ALT > or right < ALT > key twice, the PC channel will automatically shift to left or right one channel (channel decrease / increase to next) when < ALT > channel shift function is enabled.

- **Enable/Disable <ALT> channel shift function**

<Scroll Lock> → <Scroll Lock> → < ALT > → <Enter>

- **Switch to left one channel**
<Left ALT> → < Left ALT >
- **Switch to right one channel**
<Right ALT> → < Right ALT >

6.4. Channel Select - Cascade Chain Layer

You can select the active channel directly under cascade chain connection.

The following hot key sequence is used for quick channel selection.

Press <Scroll Lock> twice, <D>, the cascade **channel number (1, 2, 3.....16)**, and Press <Enter>.

- **Channel select to first layer**
< Scroll Lock > → < Scroll Lock > → <D> → < CH-L1 > → < Enter >
- **Channel select to second layer**
< Scroll Lock > → < Scroll Lock > → <D> → < CH- L1 >
→ <D> → < CH-L2 > → < Enter >
- **Channel select to third layer**
< Scroll Lock > → < Scroll Lock > → <D> → <CH-L1 >
→ <D> → < CH-L2 >
→ <D> → < CH-L3 > → < Enter >

Note: With cascading 3 layers, you can select last layer directly;

Example: press <Scroll Lock> twice, then **D2D5D7**, and <Enter>:

D2 : layer 1 channel 2 links to

D5 : layer 2 channel 5 links to

D7 : layer 3 channel 7 selected

Note: You can also select active channel of cascade chain in OSD menu. Move the indicator bar to the channel selected to switch by using

<arrow key>, <Page Up> or <Page Down>, and then press <Enter> to switch to the target port. Please refer section **7.2.2 Channel select to cascade port.**

6.5. Buzzer sound Disable / Enable

Press <Scroll Lock> twice, then and <Enter>. The buzzer sound will be disabled / enabled alternately. The buzzer sound default setting is **ON**.

<Scroll Lock> → <Scroll Lock> → → <Enter>

Note: You can also enable/disable buzzer sound by pressing <F1> in OSD main menu. Please refer section **7.3.6 Setup in OSD - Sound**.



Figure 13: Buzzer setup hot key

6.6. Auto-Scan Function

When you enable Auto-Scan function by pressing <Scroll Lock> twice, then <S> and <Enter>. The KVM Switch will shift through all the ports and display them on the monitor.

The mouse and keyboard will be disabled under this mode. This is necessary to prevent errors such as erratic movement and wrong characters to display when using the mouse or keyboard in accident.

6.6.1. Start auto-scan function

<Scroll Lock> → <Scroll Lock> → <S> → <Enter>. The auto-scan banner will be shown on screen to indicate the scanning channel.



Figure 14: Auto-scan hot key

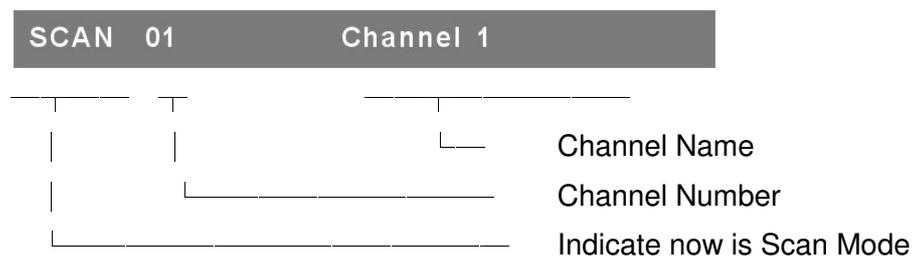


Figure 15: Auto-scan Banner

6.6.2. Stop auto-scan function

Press any key on keyboard to **STOP** the auto-scan function. Press the push button on KVM front panel to select active port can stop the auto-scan function, too.

6.6.3. Auto-scan mode

There are two auto-scan modes, please refer section **7.3.1 Setup in OSD – Scan Mode** to setup the auto-scan mode.

- Scan all working computers.
- Scan all computers which are marked for auto-scan.

6.6.4. Auto-scan time interval

The auto-scan time interval can be adjustable by pressing **<F1>** in OSD main menu. Please refer section **7.3.1 Setup in OSD – Scan Time**.

Note: You can also start auto-scan function by pressing **<F2>** in OSD main menu. Please refer section **7.4 Auto-Scan in OSD**.

6.7. Console Lock

If the security mode is enabled in OSD mode (by pressing **<F5>** in OSD mode), you can lock console by pressing **<Scroll Lock>** twice, and then **<H>** and **<Enter>**. The KVM will be locked until an authorized user login.

<Scroll Lock> → <Scroll Lock> → <H> → <Enter>

To **UNLOCK** console, please press any key according to screen message, then key in User Name and Password. The KVM switch and console devices will be unlocked and back to normal status.

Note: You can also execute console lock function by pressing **<F3>** in OSD main menu. Please refer section **7.5 Console Lock in OSD**.

7. OSD Operation

7.1. OSD Main Menu

Press **< Scroll Lock>** twice and **<Enter>**, then you will enter to **OSD (On Screen Display)** main menu. The channel number, names and the status will be displayed on the monitor screen. Please refer fig. 8

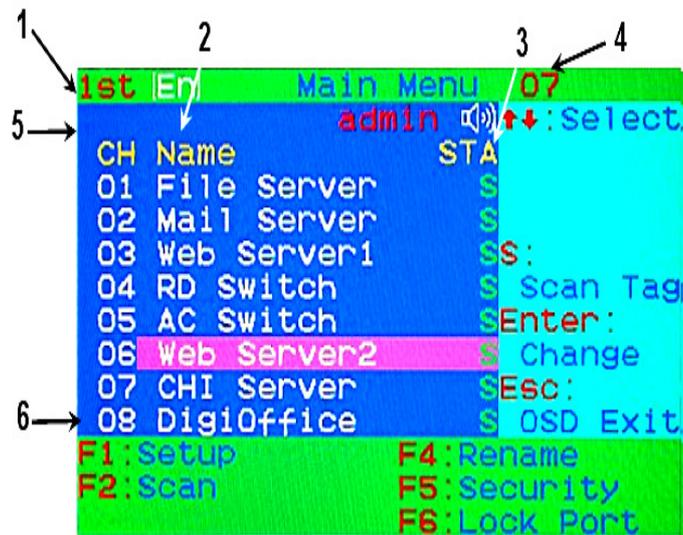


Fig. 16: OSD main menu

7.1.1. KVM layer number

1st, 2nd or 3rd. indicates the current cascade level.

7.1.2. Channel name

- The channel name can be defined by using function key **F4**, it can remind user which computer is connected to this channel.
- A highlighted pink bar is shown in the selected channel row.
- A plus mark (+) showing in the left of channel name indicates that the port has cascades.

7.1.3. Computer & KVM status

- **KVM buzzer stauts**
 - ◀ Buzzer sound on
 - ✘ Buzzer sound off
- **Logged user name**
The system has one administrator and 3 users for security management. The name of current logged in is displayed here.
- **Channel LOCK indicator (Status STA)**
L: Indicating this channel is locked.
BLANK: Indicating this channel is normal without locked.
- **Computer power on indicator (Status STA)**, OSD menu will update the flag automatically if the computer status is changed
A: Indicating this computer is powered on and ready to select.
BLANK: Indicating this computer is not connected or powered on.
- **Channel scan indicator (Status STA)**
S: This channel is marked for auto-scan if the scan mode is **Select** type.

BLANK: Indicating this computer is not marked for auto-scan.

7.1.4. **Current active channel number**

Indicate current active channel number. The channel of the currently selected computer is displayed in the right-upper corner.

If the active channel is in 2nd or 3rd cascade layer, the display string is like XX-YY-ZZ. For example, 02-05-07 means the active channel is layer 1 channel 2 links to layer 2 channel 5, and layer 3 channel 7 is selected as active channel.

7.1.5. **Cascade parent channel number**

Indicate the parent channel of this cascade layer. The number at the left-upper corner below KVM layer number shows the number of port for the upper layer, i.e. 8 means link from channel 8 of upper KVM.

It's valid only for 2nd and 3rd cascade layer. It will show blank for 1st layer since there is no parent channel.

7.1.6. **Page down / up indicator**

This is for 16-port KVM only. The information of port 1 ~ 8 are display in the first page, and information of port 9 ~ 16 are display in the second page. Since the port information is divide to two pages, the **page down / up indicator** can remind you to switch to alternative page by using **<page down>** and **<page up>** key.

7.1.7. **Function Control Menu**

The detail of control functions will be described in later sections. The list of control functions:

F1: Set up: basic set up menu

F2: Scan: autoscan function

F3: Lock: setup lock/unlock, only available when **F5 Security** is enabled.

F4: Rename: rename selected channel name.

F5: Security: security function and user authority settings

F6: Lock Port: PC port lock function (for administrator only)

7.2. Channel selection in OSD

7.2.1. **Channel select to computer**

Use the **<UP>** and **<DOWN>** arrow keys to highlight a computer and then **<ENTER>** to select it and leave OSD menu. A banner with the channel name will be shown on left-upper corner of the screen.





Fig. 17: Channel Banner (Single Layer)

7.2.2. Channel select to cascade port

A plus mark (+) showing in the left of channel name indicates that the port is under cascade channing. Pressing **<ENTER>** in this channel will enter one level down, and the screen pops up the listing of the computers of the slave KVM.

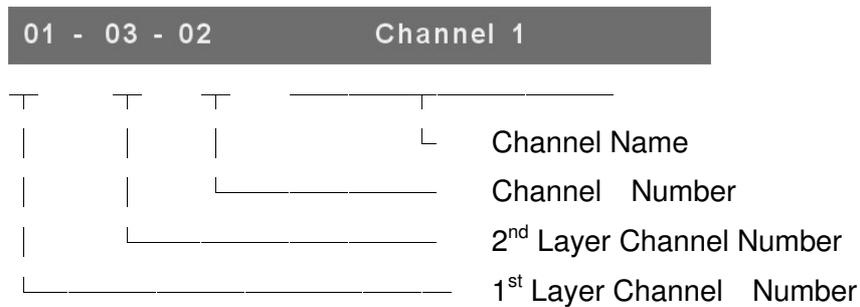


Fig. 18: Channel Banner (Cascade Layer)

7.2.3. Return from cascade port

After entering cascade port, press **<R>** will return to upper layer OSD menu.

7.3. Setup in OSD: <F1>

Please use **<Up>** or **<Down>** arrow key to select the item you want to change, and use **<Left>** or **<Right>** arrow key to change the settings. Press **<ESC>** to exit and save the setup settings.

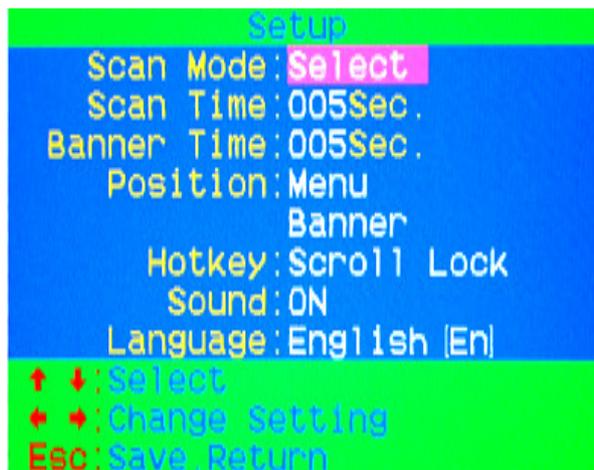


Figure 19: OSD Setup

7.3.1. Scan Mode

- **Select:**
Scan the selected channels marked with **S** in **STA** column on OSD main menu.
- **PC ON:**
Scan all powered on PC channels

7.3.2. Scan Time

The default scan time is 5 seconds. It can be changed up to 90 seconds by stepping 5 seconds.

7.3.3. Banner Time

The default banner time is 5 seconds. It can be changed to 10 seconds, 15 seconds, or always on (∞).

7.3.4. Position

➤ Menu:

Use four arrow keys to move the OSD main menu to the desired position. Press **<ESC>** to save the changed menu position.

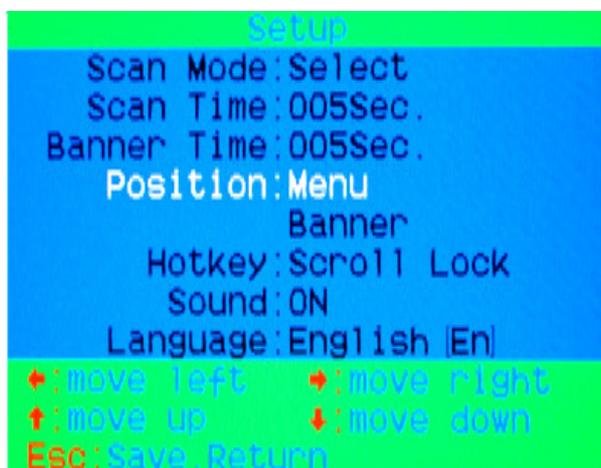


Figure 20: Menu Position Setup

Note: The different resolution setting between PC and KVM will change the desired position of OSD block shown on screen.

➤ Banner:

Use four arrow keys to move the channel banner to the desired position. Press **<ESC>** to save the changed banner position.



Figure 21: Banner Position Setup

7.3.5. Hot key

- **Scroll Lock:** **<Scroll Lock>** becomes the hot key.
- **Num Lock:** **<Num Lock>** becomes the hot key.
- **Cap Lock:** **<Cap Lock>** becomes the hot key.

Note: You can also change leading hot key via hot key by using **< CTRL >** → **< CTRL >** → **< New Hotkey >** → **< Enter >** outside the OSD mode. Please refer section **6.2 Leading Hot Key Select.**

7.3.6. Sound

- **ON:** Buzzer sound enabled.
- **OFF:** Buzzer sound disabled.

Note: You can also enable/disable buzzer sound via hot key by using **<Scroll Lock> → <Scroll Lock> → → <Enter>** outside the OSD mode. Please refer section **6.5 Buzzer sound Disable / Enable**.

7.3.7. Language

English (En) / Deutsch (De) / Francais (Fr), 3 languages are available.

7.4. Auto-Scan in OSD: <F2>

7.4.1. Start to auto-scan in OSD

Press **<F2>** in OSD main menu. The auto-scan banner will be shown to indicate the scanning channel.

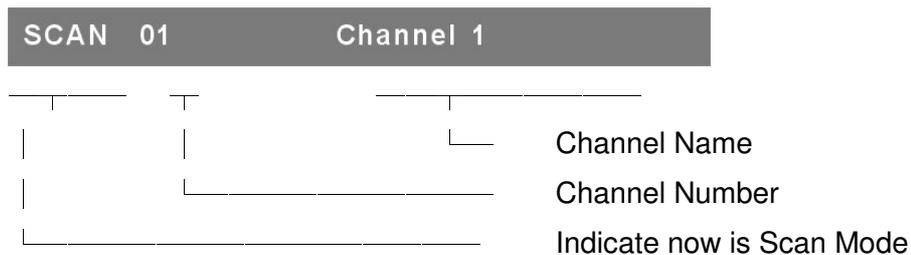


Figure 22: Auto-Scan Banner

Note: You can also start auto-scan function via hot key by using **<Scroll Lock> → <Scroll Lock> → <S> → <Enter>** outside the OSD mode. Please refer section **6.6.1 Start Auto-Scan Function**.

7.4.2. Stop auto-scan

Press any key on keyboard to **STOP** the auto-scan function. The auto-scan banner will be disappeared when the scan stopped.

7.4.3. Auto-scan mode

There are two auto-scan modes, please refer section **7.3.1 Setup in OSD – Scan Mode** to set up the auto-scan mode.

- Scan all computers which are power on.
- Scan all computers which are marked for auto-scan.

7.4.4. Auto-scan time interval

The auto-scan time interval of each port displayed can be adjustable by pressing **<F1>** in OSD main menu. Please refer section **7.3.2 Setup in OSD – Scan Time**.

7.5. Console Lock in OSD: <F3>

If the security mode is enabled in OSD mode (by pressing **<F5>** in OSD mode, please refer section **7.7 Security Setup in OSD**). You can logout to lock console by pressing **<F3>** In OSD mode. The **Console Lock Banner** will be shown on the screen.



Figure 23: Console Lock Banner

The KVM will be locked until an authorized user login.



Figure 24: Unlock window

Note: You can also logout to lock console via hot key by using **<Scroll Lock>** → **<Scroll Lock>** → **<H>** → **<Enter>** outside the OSD mode. Please refer section **6.7 Console Lock**.

Note: If you forget the password, the only way to permanently disable the security function is to key in a universal password to unlock KVM. You need to key in this unlock password to release your device and KVM, and then you can restart everything. Please contact with your agency/distributor to get the universal password.

7.6. Channel rename: <F4>

Select the channel to rename by using up/down arrow key and press <F4> in OSD main menu. The channel rename window will be shown for setting up the channel name. Press <ENTER> to save the renamed channel name or <ESC> to cancel.

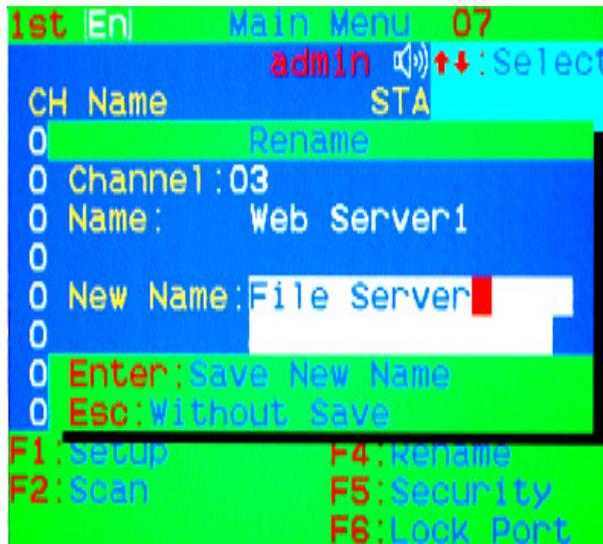


Figure 25: Channel Rename window

7.7. Security Setup: <F5>

7.7.1. Security mode login

Press <F5> in OSD main menu to enter security setup mode, the administrator login is required before entering into the security mode.



Figure 26: Security mode login window

The default administrator account is:

User Name: admin
Password: 123456

After login, the security setup main window will be shown on the screen. Please select the security item to setup via <up arrow> and <down arrow> key, and press <left arrow> or <right arrow> key to change the settings.



Figure 27: Security setup main window

7.7.2. Security Mode

To change the security mode setting, please move the highlight bar to **Security Mode**, and press <left arrow> or <right arrow> key to change it. The <F3> **Console Lock** and **user authority functions** can not be executed until the security mode is enabled.

7.7.3. Change administrator password

To change the administrator password, move the highlight bar to **Admin/password**, and press <left arrow> or <right arrow> key. The administrator password setup window will be shown on the screen. Input the new password twice and press <ENTER> to confirm, or press <ESC> to exit.

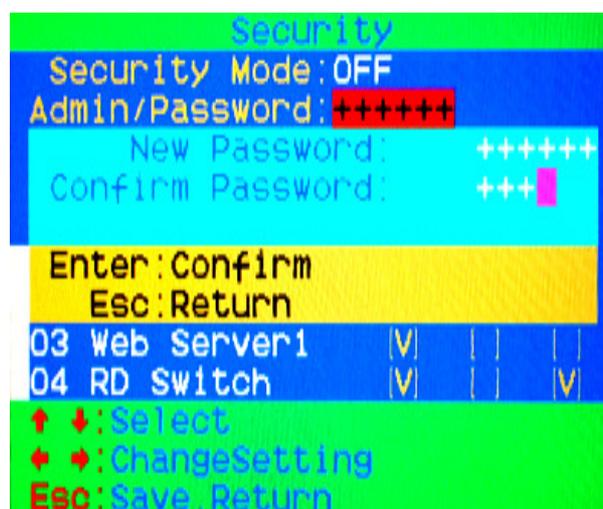


Figure 28: Administrator password setup window

7.7.4. Authorized user setup

3 authorized users are admitted to manage the KVM switch. To change the user name and password, please move the highlight bar to the user for editing. Press <left arrow> or <right arrow> key, the user name and password setup window will be shown on the screen. Please Input the new user's name and password twice, then press <ENTER> to confirm or <ESC> to cancel.

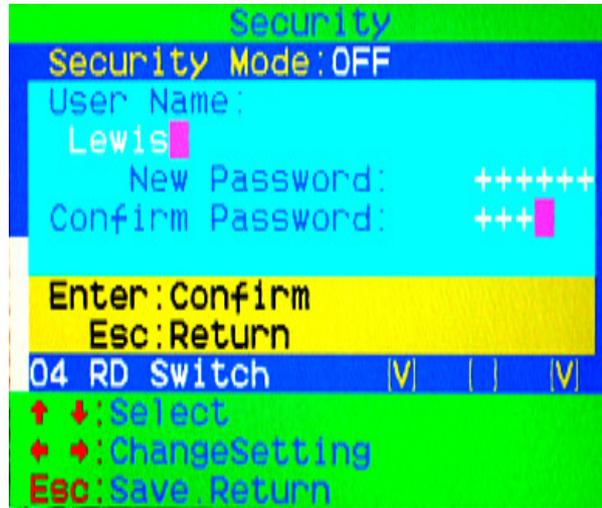


Figure 29: User name password setup window

7.7.5. User Authority setup

You can setup the authority which **only support Layer 1 and Layer 2**, and **Layer 3 authority always enable for each user**. Different user has different access right for each channel. To change the access authority of each channel for certain user, please move the highlight bar to the channel, and press **<A>**, **<1>**, **<2>** or **<3>** to setup the channel access authority for all or certain user. You don't have to setup the authority of administrator since the administrator has all channel access authorized right.

Please refer section 7.2.2 and 7.2.3 to operate OSD menu properly.



Figure 30: User authority setup window

7.8. Lock Port: <F6>

7.8.1. Lock Port

Only administrator can lock port. Please move the highlight bar to the channel to lock, and press **<F6>** to lock the selected channel. A red **L** mark will be shown in **STA** column of locked port.

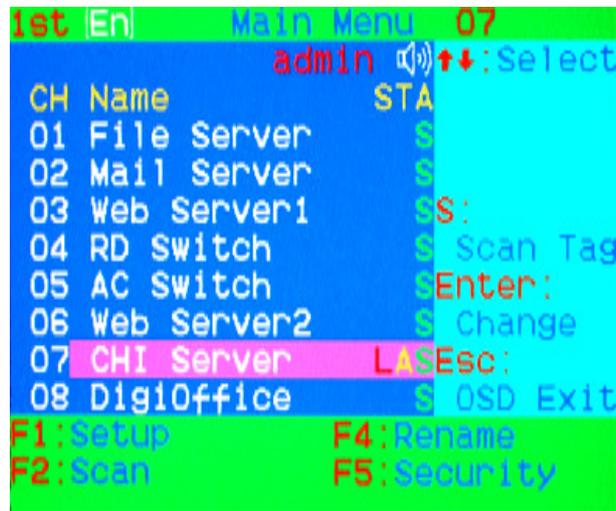


Figure 31: Lock port in OSD main window

7.8.2. Channel selection of the locked port

If anyone selects the channel of the locked port either by panel push-button or hot key, the system will enter OSD mode waiting for administrator to unlock the port.

7.8.3. Unlock Port

Only administrator login with correct password can unlock the port. After the administrator login, the red **L** mark in **STA** column will disappear.

7.9. Exit OSD: <ESC>

Press <ESC> to exit OSD and to return to the selected computer. A banner with the channel name will be shown on left-upper corner of the screen.

8. Sun Microsystems Function Key Emulation:

There are 16 special functions on the Sun Microsystems keyboard, Combo Free KVM Switch can emulate these function keys via PS/2 and/or USB keyboard.

Please refer to the table shown below for Sun Microsystems keyboard special functions operation.

To active these emulation on the PS/2 and/or USB keyboard, you have to press the **<LEFT Window>** key first (this key usually is located between the **<LEFT CTRL>** and **<LEFT ALT>**). Then press the second key (Sun Microsystems Function Key) .

Please do not release **<LEFT Window>** when you press the second key.

Sun Microsystems Function Key	USB or PS/2 Keyboard
Stop	L_Win & L_Alt
Props	L_Win & L_Ctrl
Compose	L_Win & L_Shift
Front	L_Win & F1
Open	L_Win & F2
Find	L_Win & F3
Again	L_Win & F4
Undo	L_Win & F5
Copy	L_Win & F6
Paste	L_Win & F7
Cut	L_Win & F8
Help	L_Win & F11
Power	L_Win & F12
Mute	L_Win & 1
Volume Down	L_Win & 2
Volume UP	L_Win & 3

9 Configuration

9.1 Network configuration using PSetup utility

The Factory default settings for the IP-KVM unit are as below:

DHCP: Disable

Default IP address: 192.168.0.70

Default Net Mask: 255.255.255.0

If DHCP mode is enabled (IP auto configuration = DHCP), the IP-KVM 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-KVM. 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 you will not be able to 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.

IP-KVM Setup Tool

If this initial configuration does not meet your local requirements, use the setup tool to change the configurations to your needs. The setup tool **PSetup** can be found on the CD-ROM delivered with this package. You can follow the procedures described below.

DHCP

If you have installed the IP-KVM on a network that enables DHCP, you can use the **PSetup** to find out the IP-KVM's IP.

- (1) Plug Ethernet cable to IP-KVM. IP-KVM will get an IP via DHCP.
- (2) Using **PSetup** to look for IP-KVM.
 - a. Click **Refresh Devices** button to detect connected devices
 - b. Select MAC address of the IP-KVM in "Device MAC address" box. You can find the MAC address labeled on the bottom side of the IP-KVM unit. MAC address is detected as connection from computer and IP-KVM is valid through USB or network.
 - c. Click **Query Device** to find the IP configuration on the right panel.

Notes:

- **BOOTP**, a static configuration protocol, uses a table that maps IP addresses to physical addresses.
- **DHCP**, an extension to BOOTP that dynamically assigns configuration information. DHCP is backward compatible with BOOTP.

Device Setup 1.1.0

Device

Device MAC address: 00:0D:5D:01:64:AE

Refresh Devices

Device Type: IP KVM

Enable WLAN Configuration (WLAN Devices only)

Network Configuration

IP auto configuration: None DHCP BOOTP

IP address: 192.168.123.228

Subnet mask: 255.255.255.0

Gateway: 192.168.123.1

Authentication

Super User login: []

Super User password: [] ?

New Super User password: []

New password (confirm): []

Wireless LAN Configuration

Wireless LAN ESSID: []

Enable WEP encryption

WLAN WEP Key: []

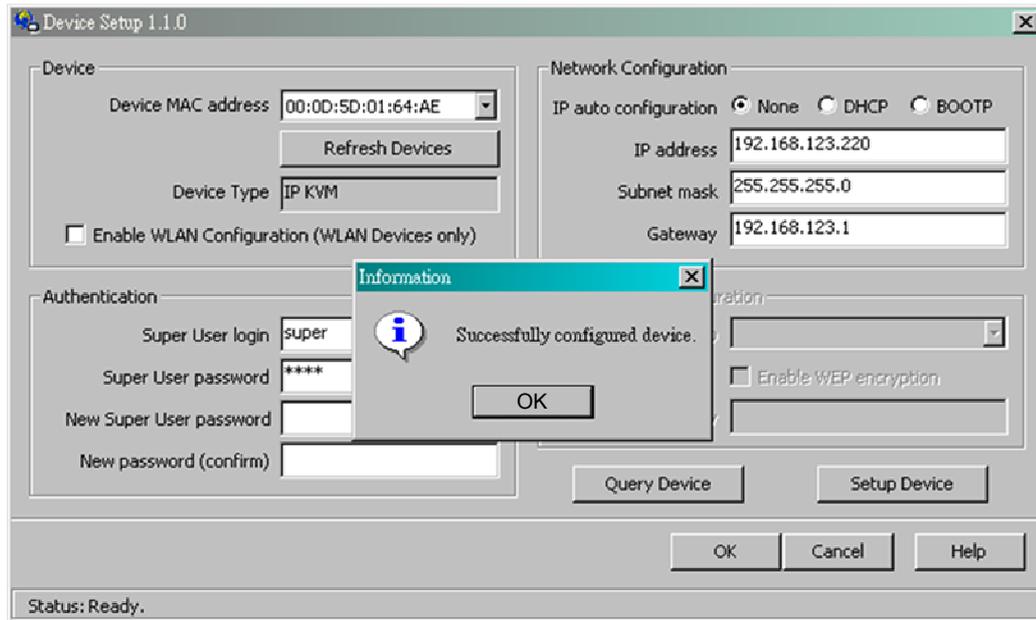
Query Device Setup Device

OK Cancel Help

Status: Ready.

Set up a fixed IP

- Setup "IP auto configuration" as "**None**"; setup IP address and Subnet mask
- Enter Super user login and password for Authentication (default : super/pass)
- Click **Setup Device**. If super login was authenticated, it'll show "Successfully configured device". Otherwise it'll show "Permission Denied".



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 characters are in lower case.

Super user password

Enter the current password for the super user. This initial value is “pass”. All characters are in 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 for confirmation.

To close the window and accept the changes, press the “OK” button; otherwise press the “Cancel” button.

9.2 Configuration Setup via Serial Console

For using serial terminal, the IP-KVM has a serial line interface (host side). This connector is compliant with the RS-232 serial line standard. The serial line has to be configured with the parameters given in Table below.

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

When configuring with a serial terminal, e.g., Hyper Terminal, reset the IP-KVM and immediately press the “ESC” key. You will see some device information, and a “=>” prompt. Enter “config”, press “Enter” key and wait for 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 “Enter” key.

```

IP auto configuration: None
IP address: [192.168.0.70]
Net mask: [255.255.255.0]
Gateway: [0.0.0.0] -- (0.0.0.0 for none)

```

IP auto-configuration

With this option, you can specify whether the IP-KVM should get its network settings from a DHCP or BOOTP server. For DHCP, enter “dhcp”, and for BOOTP enter “bootp”. If you do not specify any of these, the IP auto-configuration is disabled and subsequently you will be asked for the following network settings.

IP address

The IP address the IP-KVM. This option is only available if IP auto-configuration is disabled.

Net mask

The net mask of the connected IP subnet. This option is only available if IP auto-configuration is disabled.

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. This option is only available if IP auto-configuration is disabled.

9.3 Keyboard, Mouse, and Video configuration

Between the IP-KVM 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.

9.3.1 IP-KVM keyboard settings

The IP-KVM settings for the host's keyboard type have to be corrected in order to make the remote keyboard work properly. Check the settings in the IP-KVM Web front-end for details.

9.3.2 Remote Mouse Settings

A common seen problem with KVM devices is the synchronization between the local and remote mouse cursors. The IP-KVM addresses this situation with an intelligent synchronization algorithm. There are two mouse modes available on the IP-KVM:

Auto mouse speed

The automatic mouse speed mode tries to detect the speed and acceleration settings of the host system automatically. See the section below for a more detailed explanation.

Fixed mouse speed

This mode just translates the mouse movements from the Remote Console in a way that one pixel move will result in n-pixel moves on the remote system. This parameter n is adjustable with the scaling. Please note that this works only when mouse acceleration is turned off on the remote system.

9.3.3 Automatic mouse speed and mouse synchronization

The automatic mouse speed mode performs the speed detection during mouse synchronization. Whenever the local and remote mouse cursors move synchronously or not, there are two ways for re-synchronizing local and remote mouse cursors:

Fast Sync

The fast synchronization is used to correct a temporary, but fixed skew. Choose the option using the Remote Console options menu or press the mouse synchronization hotkey sequence in case you defined one.

Intelligent Sync

If the fast sync does not work or the mouse settings have been changed on the host system, use the intelligent resynchronization. This method takes more time than the fast one and can be accessed with the appropriate item in the Remote Console option menu. The intelligent synchronization requires a correctly adjusted picture. Use the auto adjustment function to setup the picture, and make sure that there are no window at the top left corner of the remote desktop

that are able to change the mouse cursor shape from the normal state. 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 changed recently.

Note: At first start, if the local mouse pointer is not synchronized with the remote mouse pointer, press the Auto Adjust Button once.

9.3.4 Host system mouse settings

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

Note: The following limitations do not apply in case of USB and Mouse Type “Windows >= 2000, MacOSX”.

While the IP-KVM works with accelerated mice and is able to synchronize the local with the remote mouse pointer, there are the following limitations, which may prevent this synchronization from working properly:

Special Mouse Driver

There are mouse drivers that 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

Windows XP knows a setting named “improve mouse acceleration”, which has to be deactivated.

Active Desktop

If the Active Desktop feature of Microsoft Windows is enabled do not use a plain background. Instead, use some kind of wallpaper. As an alternative, you could also disable the Active Desktop completely. Navigate your mouse pointer into the upper left corner of the applet screen and move it slightly forth and back. Thus the mouse will be resynchronized. If re-synchronizing fails, disable the mouse acceleration and repeat the procedure.

9.3.5 Single and Double Mouse Mode

The information above applies to the Double Mouse Mode, where remote and local mouse pointers are visible and need to be synchronized. The IP-KVM also features another mode, the 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, it is necessary to define a mouse hotkey in the Remote Console Settings Panel. Press this key to free the captured local mouse pointer.

9.3.6 Recommended Mouse Settings

For the different operating systems we give the following advices:

MS Windows

In general, we recommend the usage of a mouse via USB. Choose USB without **Mouse Sync**. For a PS/2 mouse choose Auto Mouse Speed. For XP disable the option “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.

9.3.7 Video Modes

The IP-KVM 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-KVM may not be able to detect them. We recommend using any of the standard VESA video modes, instead.

10 Usage

10.1 Prerequisites

The IP-KVM features an embedded operating system and applications offering a variety of standardized interfaces. This chapter will describe both these interfaces, and the way to use them in a more detailed manner. The interfaces are accessed using the TCP/IP protocol family, thus they can be accessed using the LAN port of the device.

The following interfaces are supported:

■ HTTP/HTTPS

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

■ Telnet

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

The primary interface of the IP-KVM is the HTTP interface. This is covered extensively in this chapter. Other interfaces are addressed in subtopics.

In order to use the Remote Console window of your managed host system, the browser has to come with a Java Runtime Environment version 1.5 or above. If the browser has no Java support (such as on a small handheld device), you are still able to maintain your IP-KVM using the administration forms displayed by the browser itself.

For secure connection to the IP-KVM, we recommend the following browsers versions:

- 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 of the old browsers do not have a strong 128 Bit encryption algorithm.

Using the Internet Explorer, open the menu entry “?” and “Info” to read about the key length that is currently activated. The dialog box contains a link that leads you to information on how to upgrade your browser to a state of the art encryption scheme. Figure below shows the dialog box presented by the Internet Explorer 6.0.



Figure 32 The Internet Explorer displaying the encryption key length

Newer web browsers generally support strong encryption on default.

10.2 Log in/out IP-KVM

10.2.1 Log in the IP-KVM

There are three levels of access privileges:

User Name	Default Password	Access Privileges
super (factory default)	pass (factory default)	Full access
administrator	(user define)	Has partial rights to change configuration of critical parts
user	(user define)	Has permission to access basic function of open Remote Console

The **super** user can add or remove a user easily via the web pages of **User Management > Users**. Please refer to Addendum C for detailed permission items for each user level.

Launch your web browser. Direct it to the address of your IP-KVM, which you configured during the installation process. The address used might be an IP address or a domain name, in the case where you have given your IP-KVM a symbolic name in the DNS. For instance, type the following in the URL field of your

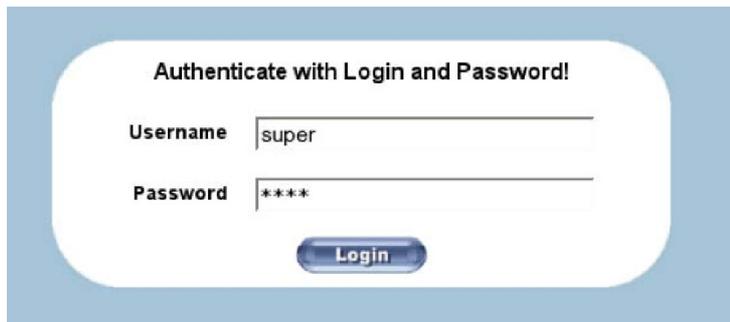
browser when establishing an unsecured connection:

http://<IP address of IP-KVM>

When using a secure connection, type in:

https://<IP address of IP-KVM>

This will lead you to the IP-KVM login page as shown below



When connecting to the IPK-KVM unit, the IPK-KVM system (web server, Telnet server or SSH server) will prompt user to enter the user name and password in order to access to the system. If this is the first time logging in, log in with the factory default username and password, you will be prompted to change the default password

Warning

Please make sure to change the super user password immediately after you have installed and accessed your IP-KVM for the first time. Unchanging of the password for the super user is a severe security risk and might result in unauthorized access to the IP-KVM and to the host system including all possible consequences!

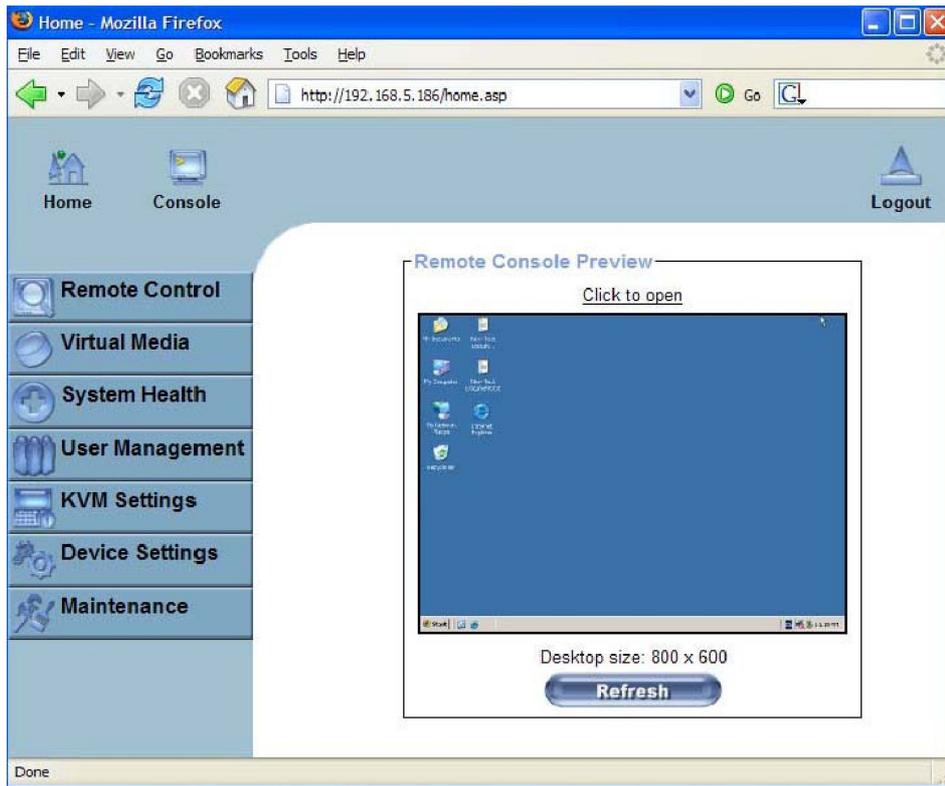
Warning

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

Navigation

Having logged into the IP-KVM successfully, the main page of the IP-KVM appears. This page consists of three parts; each of them contains specific information. The buttons on the upper side allow you to navigate within the front

end. Within the right frame, task-specific information is displayed that depends on the section you have chosen before.



The Buttons of the front end:



Home

Return to main page of IP-KVM access page



Console

Open the IP-KVM remote console



Logout

Exit from the IP-KVM front end.

Warning

If there is no activity for 30 minutes, the IP-KVM will log you out, automatically. A click on one of the links will bring you back to the login screen.

Remote Console Preview

Click on **Click to open** to start the remote console redirection

Click on **Refresh** to refresh the picture.



10.2.2 Log out from the IP-KVM

This link logs out the current user and presents a new login screen. Please note that an automatic logout will be performed in case there is no activity for 30 minutes.

10.3 The Remote Console

The Remote Console is the redirected screen, keyboard and mouse of the remote host system that IP-KVM controls.

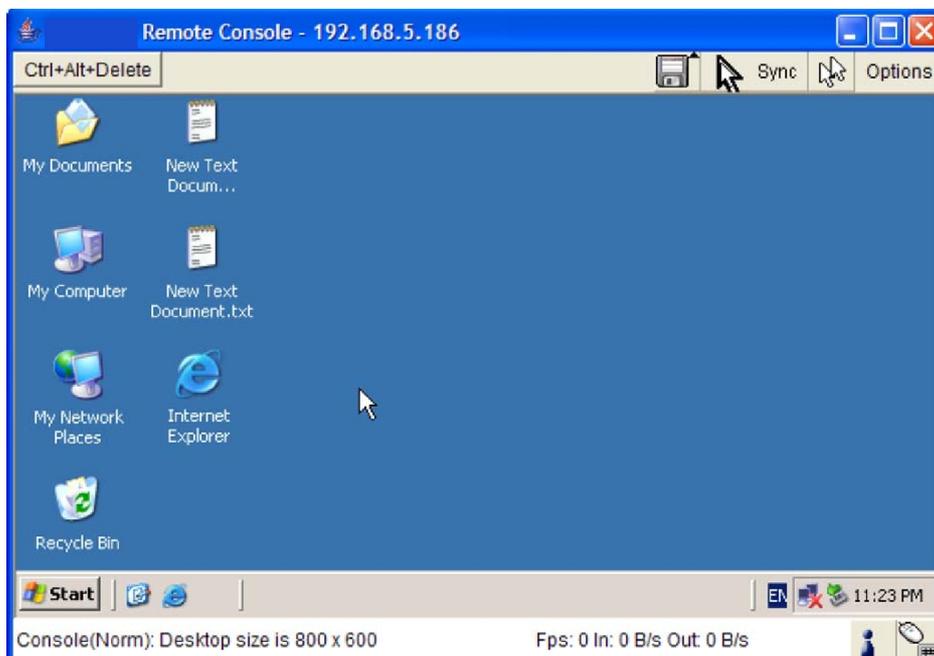
The Remote Console window is a Java Applet that tries to establish its own TCP connection to the IP-KVM. The protocol that is running over this connection is neither HTTP nor HTTPS, but RFB (Remote Frame Buffer Protocol). As default, RFB tries to establish a connection to TCP port number 443. Your local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

In case the IP-KVM 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 the desired connection. This is because today's web proxies are not capable of relaying the RFB protocol.

In case of problems, please consult your network administrator in order to provide an appropriate networking environment.

10.3.1 Main Window of Remote Console

To open the KVM console either click on the icon **Console** or **Remote Control** > **KVM Console** of the menu entry on the left or **Click to open** of the console picture on the right.



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

With respect to the keyboard, the very exact remote representation might lead to some confusion as 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, 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.

Warning

In difference to the remote host system, the Remote Console window on your local window system is just one window among others. In order to make keyboard and mouse work, your Remote Console window must have the local input focus.

10.3.2 Control Bar of Remote Console

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 adjust the local Remote Console settings. A description for each control follows.

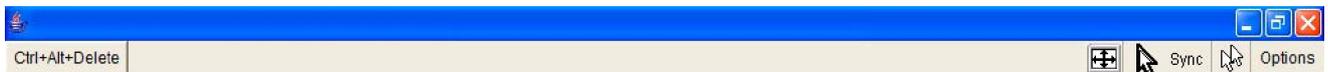
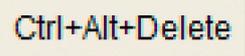


Figure 33 Remote Console Control Bar

Ctrl+Alt+Delete 

Special button key to send the “Control Alt Delete” key combination to the remote system (see also section 6.4.1 for defining new button keys).

Auto Adjust button 

If the video display is of bad quality or distorted in some way, press this button and wait a few seconds while the IP-KVM tries to detect the video mode of VGA port to the controlled host and adjust itself for the best possible video quality.

Sync mouse 

Activates the mouse synchronization process. Choose this option in order to synchronize the local with the remote mouse cursor. 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 and need to be synchronized). Single mouse mode is only available if using SUN JVM 1.5 or higher.

Options Options

To open the Options menu, click on the button “Options”.

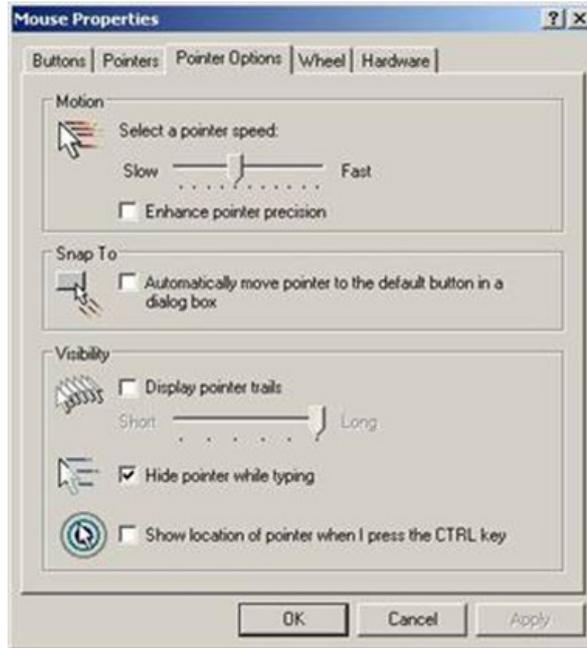


Figure 34 Remote Console Options Menu

Notice:

If your IP-KVM enable Double Mouse mode, in order to keep remote and local mouse pointers in sync, please take the following actions:

1. **Disable** the “Enhance pointer precision” and “Automatically move mouse pointer to the default button in a dialog box” in the mouse settings of host (target) computer OS.



2. If mouse pointers not in sync, please click on **Sync** button or **Options > Mouse Handling > Intelligent Sync**.

A short description of the options as follows.

- **Monitor Only**

Toggles the Monitor only filter on or off. If the filter is switched on no remote console interaction is possible, and monitoring is possible.

- **Exclusive Access**

If a user has the appropriate permission, he or she 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.



Figure 35 Remote Console Exclusive Mode

- **Scaling**

Allow you to scale down the Remote Console. You can still use both mouse and keyboard, however the scaling algorithm will not preserve all display details.

When you designate 25%, 50%, or 100% scaling, the size of Remote Console window is calculated according to the remote host video setting with scaling algorithm execution. When you designate “Scale to fit”, the remote video displaying is scaled to fit the size of Remote Console window.

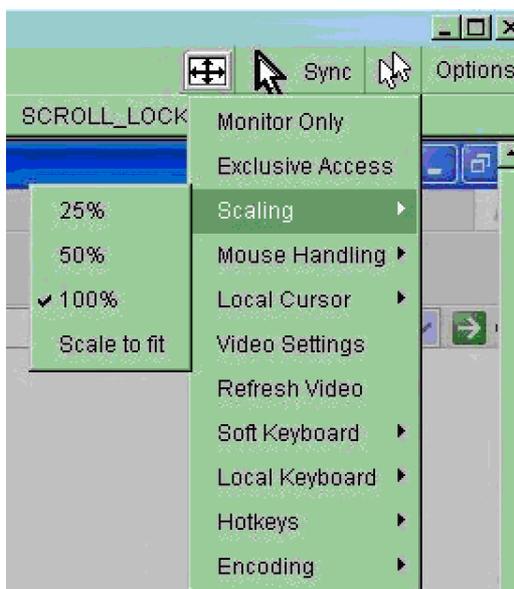
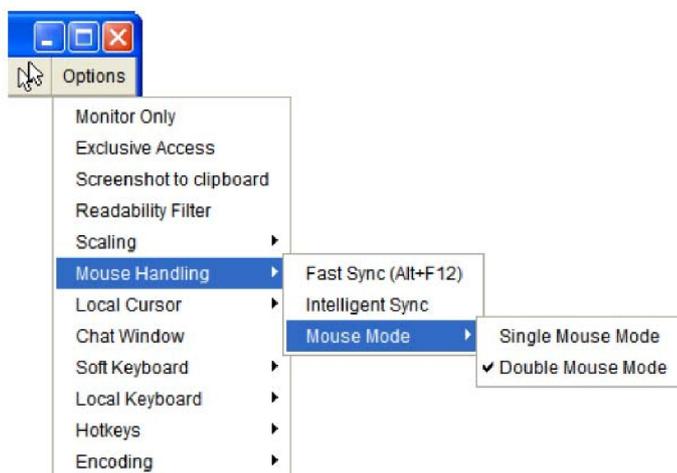


Figure 36 Remote Console Options Menu:Scaling

• Mouse Handling

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



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.

Warning

This method takes more time than the fast one and requires a correctly adjusted picture. Use the auto adjustment function to setup the picture.

• Local Cursor

Offers a list of different cursor shapes to choose from for the local mouse pointer. 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 1.5 or above offers the full list.



Figure 37 Remote Console Options Menu:Cursor

• Video Settings

Opens a panel for changing the IP-KVM video settings. IP-KVM features two different dialogs, which for adjusting the video settings.

Video Settings through the HTML-Frontend

To enable local video port, select this option. This option decides if the local video output of IP-KVM is active and passing through the incoming signal from the host system.

The option Noise Filter defines how IP-KVM reacts to small changes in the video input signal. Turning on the noise filter can help reduce video flickering that is often caused by distortions, as well as lowering unnecessary bandwidth consumption. 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

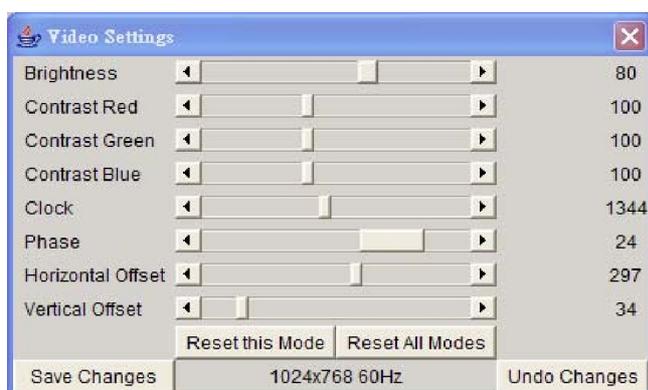


Figure 38 Video Settings Panel

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 all common configurations. If the picture quality is still bad after auto adjustment you may try to 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 Position Use the left and right buttons to move the picture in horizontal direction while this option is selected.

Vertical Position Use the left and right buttons to move the picture in vertical direction while this option is selected.

Reset this Mode Reset mode specific settings (Clock , Phase and Position) to the

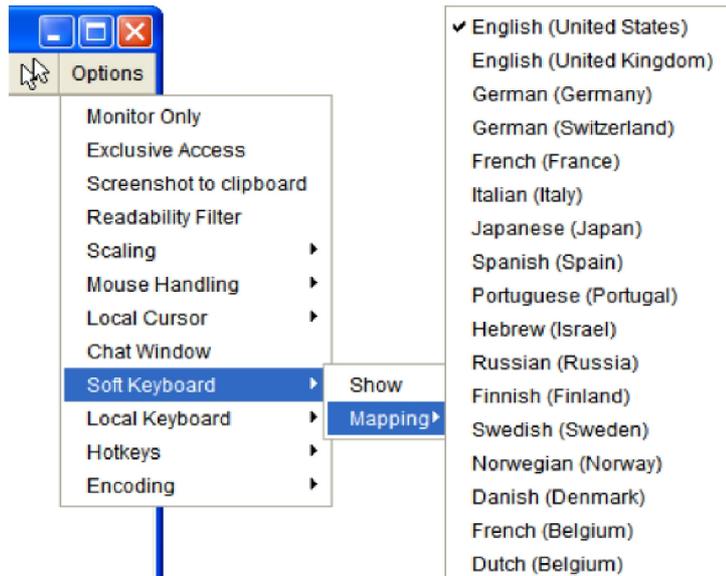


Figure 40 Soft Keyboard Mapping

- **Local Keyboard**

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

- **Hotkeys**

Opens a list of hotkeys defined before. 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 execute the command on the remote host.

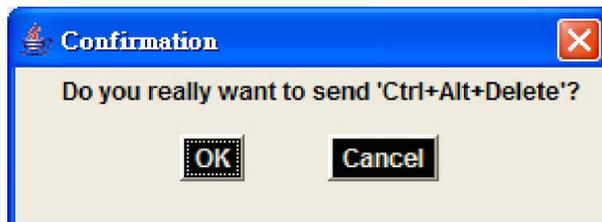


Figure 41 Remote Console Confirmation Dialog

- **Encoding**

These options are used to adjust the encoding level in terms of compression and color depth. They are available only when "Transmission Encoding" is determined manually (select **Manually** in **KVM Settings > User Console > Transmission**

Encoding of web page).

Transmission Encoding

Automatic Detection *

Pre-configured

Network speed LAN (high color) *

Manually

Compression 0 - none *

Color depth 0 - none

Remote Console Type

Default Java VM

Sun Microsystems Java Brows

If you do not have the Java Browser installed on your system, this option will cause the Remote Console Plugin code. The Plugin will not function properly.

0 - none
Video Optimized
1 - lowest
2
3
4
5
6
7
8
9 - highest

Compression Level

You may select a value between 1 and 9 for the desired compression level 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 to 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 colors 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.

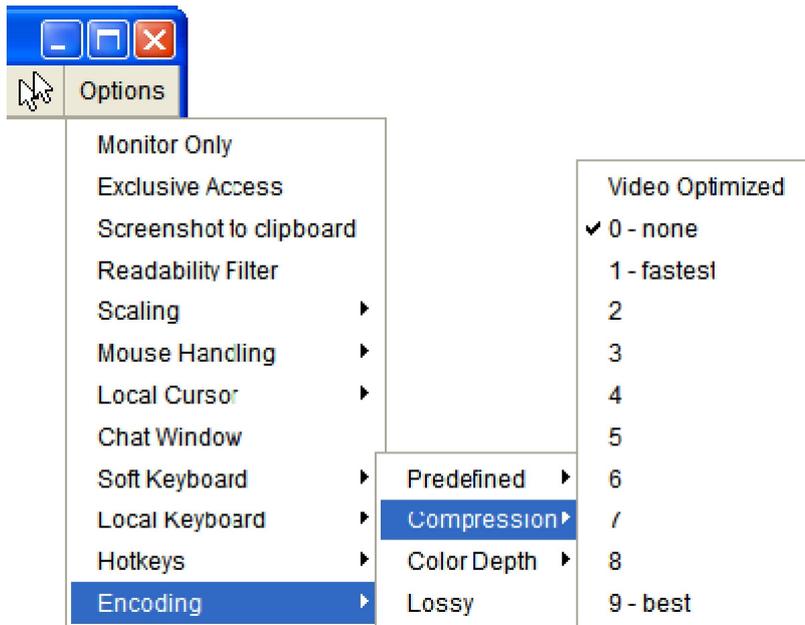


Figure 42 Encoding Compression

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 level for "lossy" compression. This compresses well, but leads to degradation in image quality.

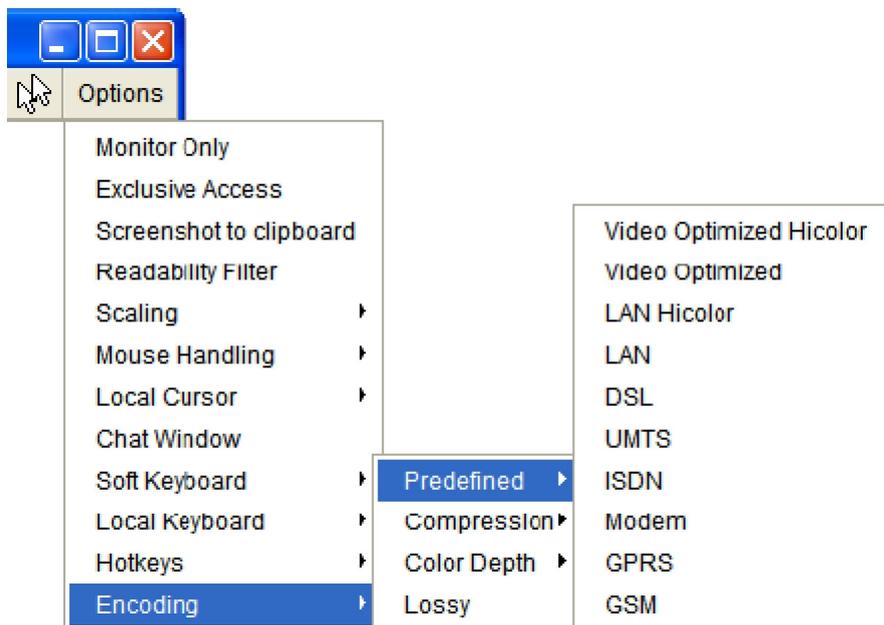


Figure 43 Predefined Compression

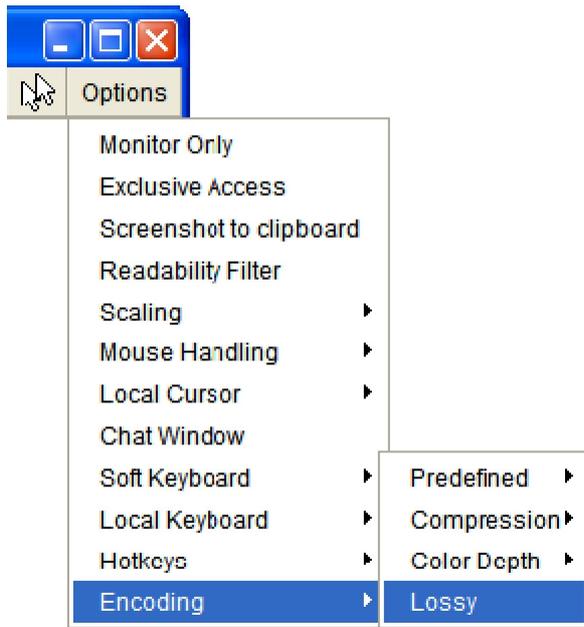


Figure 44 Lossy Compression

Color Depth:

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

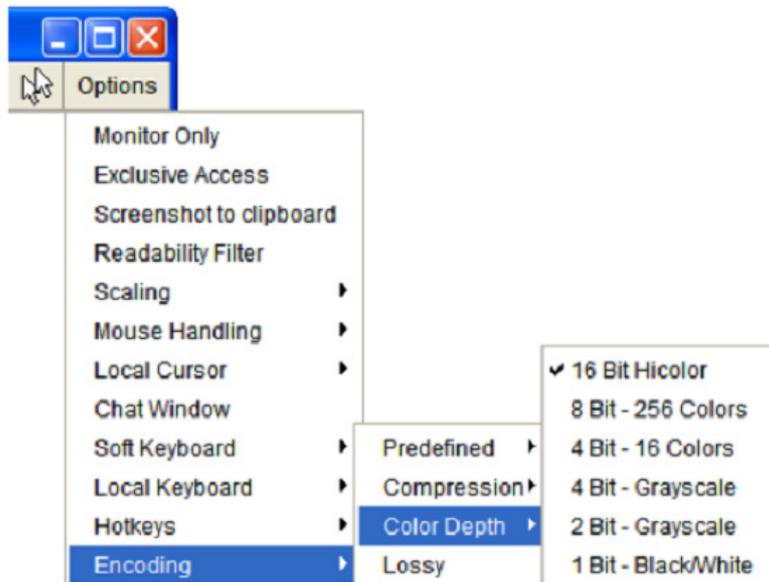


Figure 45 Encoding Color depth

Note: If displaying motion pictures on a connection with low speed you may achieve an improvement regarding the video transfer rate by lowering the color

depth and disabling the option "Video Optimized". As a general result, the data rate is reduced (less bits per color). Furthermore, the IP-KVM will not have to do any video compression. In total, this will lead to less transfer time of the motion picture.

10.3.3 Status Line of Remote Console

Status line

Shows both console and the connection state. The size of the remote screen is displayed. Figure below was taken from a Remote Console with a resolution of 800x600 pixels. The value in brackets describes the connection to the Remote Console. "Norm" means a standard connection without encryption, "SSL" means a secure connection.



Figure 46 Status line

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

Figure 47 Status line transfer rate

For more information about Monitor Only and Exclusive Access settings, see related sections

11 Menu Option

11.1 Remote Control



The Remote Console is the redirected screen, keyboard and mouse of the remote host system that IP-KVM controls. The Remote Console window is a Java Applet that tries to establish its own TCP connection to the IP-KVM.

Starting the Remote Console opens a new window displays screen movement of host system, with its size automatically adjusted to optimum. Keyboard and mouse are redirected to control the host system simultaneously. A slight delay may present depending on the bandwidth of network.

11.1.1 KVM Console

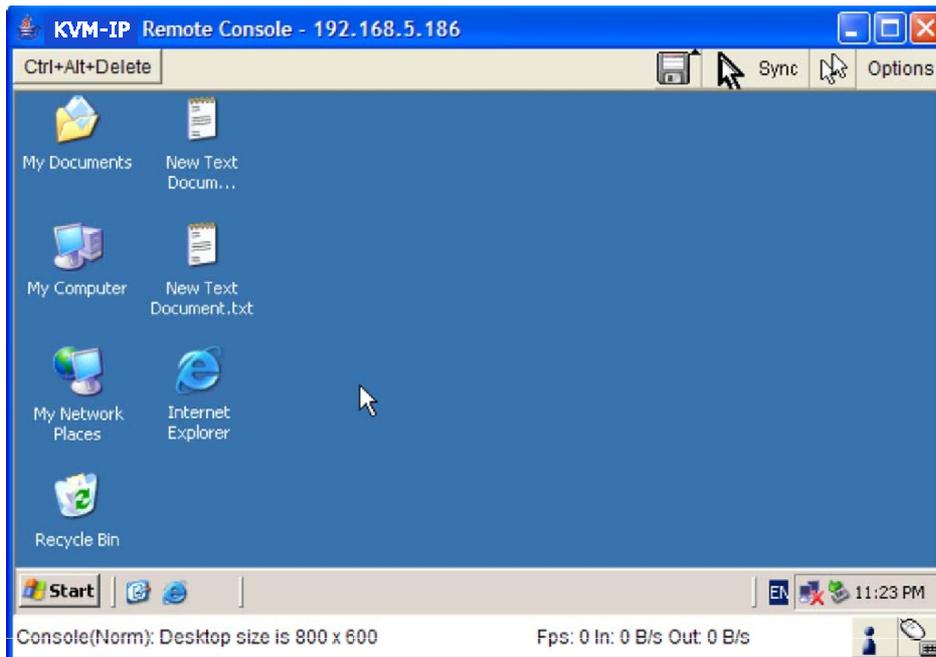


Figure 48 KVM Console

To open the KVM console either click on the icon **Console** or **Remote Control > KVM Console** of the menu entry on the left or **Click to open** of the console picture on the right.

11.1.2 Telnet Console/SSH Console

In general, the Telnet or SSH 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 is activated (if the serial settings were configured accordingly). All inputs are redirected to the device on serial port and its answers are displayed on the Telnet interface.

In order to log in with Telnet or SSH, you have to enable the access settings from **Device Settings > Network**.

Network Miscellaneous Settings

Remote Console & HTTPS port *

HTTP port *

TELNET port *

SSH port *

Bandwidth Limit kbit/s *

Enable TELNET access

Enable SSH access

Disable Setup Protocol *

Apply **Reset to defaults**

* Stored value is equal to the default.

Telnet Console

The IP-KVM firmware features a Telnet server that enables a user to connect via a standard Telnet client. In case the Telnet program is using a VT 100, VT 102 or VT 220 terminal or an according emulation, it is even possible to perform a console redirection as long as the IP-KVM host machine is using a text mode screen resolution.

To log in Telnet Console by one of the following way:

1. clicking **Remote Control > telnet Console**

Telnet Console

```

EVM-IP Terminal Server (c) 2000-2002

Login: super
Password:
eSB> help

Usage: help [<cmd> [<subcmd> [<subcmd> ...]]

A help screen for specified command is printed.
With no arguments given a table of all commands
is printed to the screen.

The following commands are supported :

  help          quit          cls          version
  terminal      vscpp          vscreset

eSB>

```

Figure 49 Telnet Console

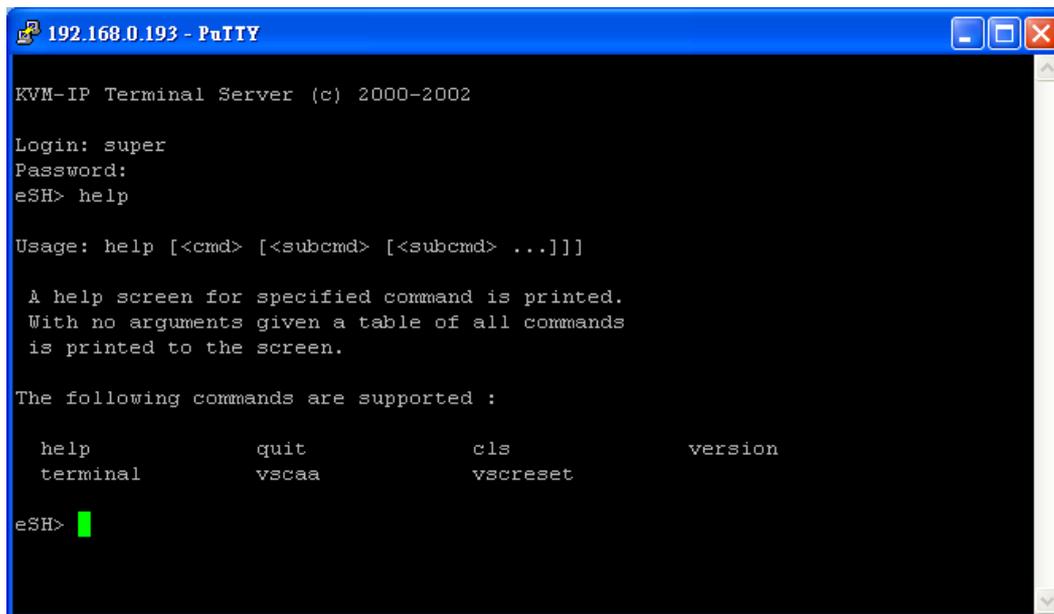
2. or telnet command as required by the Telnet client, for instance in a UNIX shell:

```
telnet 192.168.0.70
```

3. or run the SSH-supported terminal emulation program (such as **PuTTY**).

Replace the IP address by the one that is actually assigned to the IP-KVM. This will prompt for 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 according functions of the web interface.

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



```
192.168.0.193 - PuTTY
KVM-IP Terminal Server (c) 2000-2002
Login: super
Password:
eSH> help

Usage: help [<cmd> [<subcmd> [<subcmd> ...]]

A help screen for specified command is printed.
With no arguments given a table of all commands
is printed to the screen.

The following commands are supported :

  help          quit          cls          version
  terminal      vscaa         vscreset

eSH> █
```

Key in **help** to list all available commands.

The following list shows the according command mode command 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 **passthrough** mode for RS-232 serial port. This mode provides **Serial over IP** function. The key sequence *ESC + exit* switches back to the command mode.

vscaa

Auto adjustment of the Remote Console.

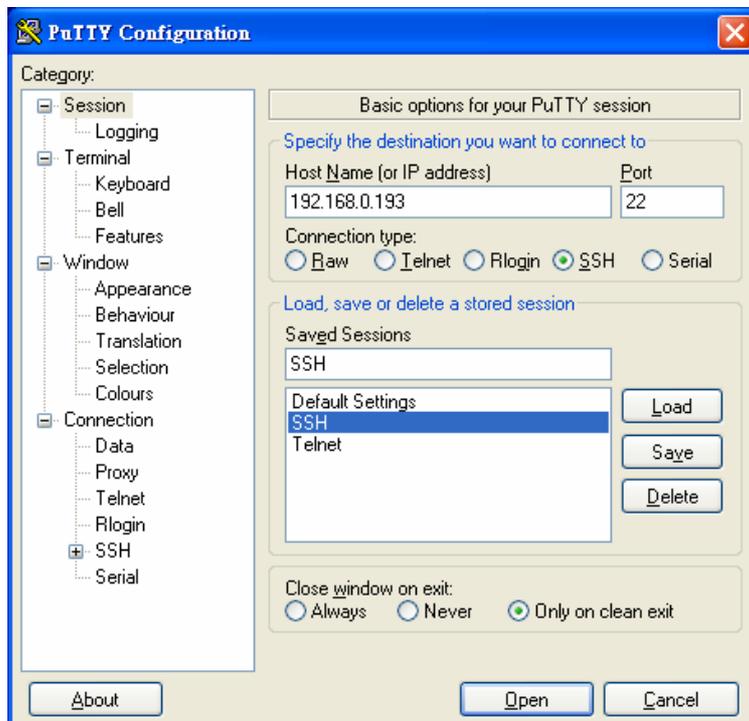
vsreset [modes/allmodes/all]

Reset the video modes like in the remote console under option "Video Settings".
vsreset modes: reset settings for the current video mode
vsreset allmodes: reset settings for all video modes
vsreset all: reset all video modes and global settings (Brightness and Contrast)

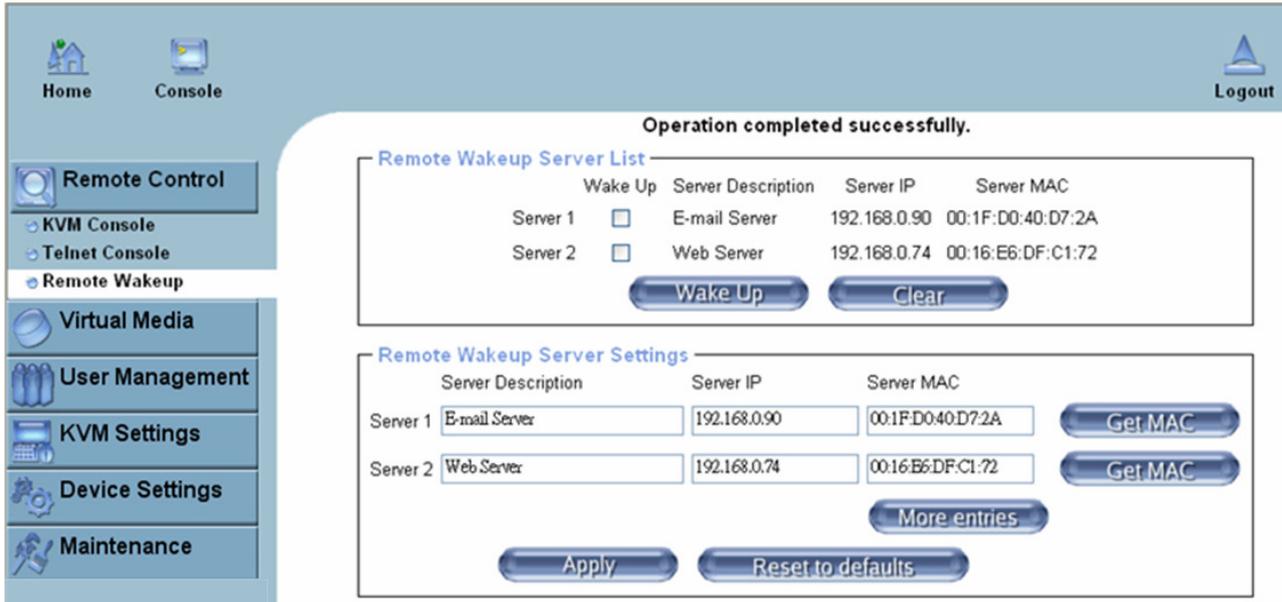
SSH Console

The IP-KVM supports SSH security protocol. The SSHv2 will encrypt the transferred data so as to keep the data communication secured. Basically, the SSH's configuration interface is the same as Telnet console's, except that SSH data is encrypted and secured.

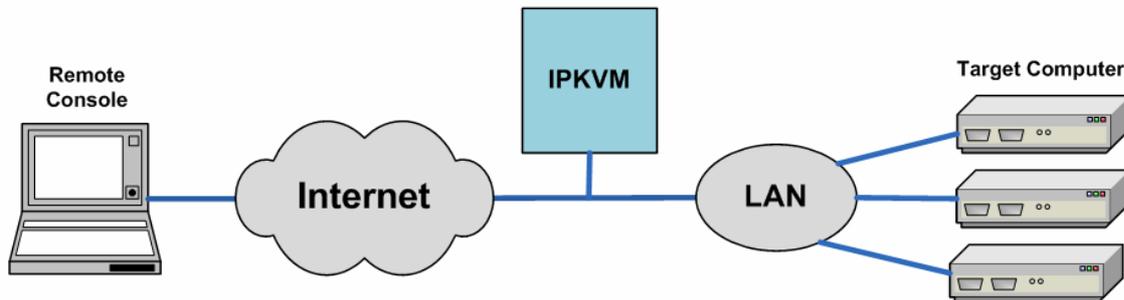
Please run the SSH-supported terminal emulation program (such as **PuTTY**).



11.1.3 Remote Wakeup



The IP-KVM provides the remote power wakeup function, which can remotely wake up the sleeping computer. With this feature, the computers that are not in use for now can be shut down and remotely wake up the computer when want to use it, and thus save the power energy.



Settings on target computer:

In order to be waked up, some settings have to be done on the target computer:

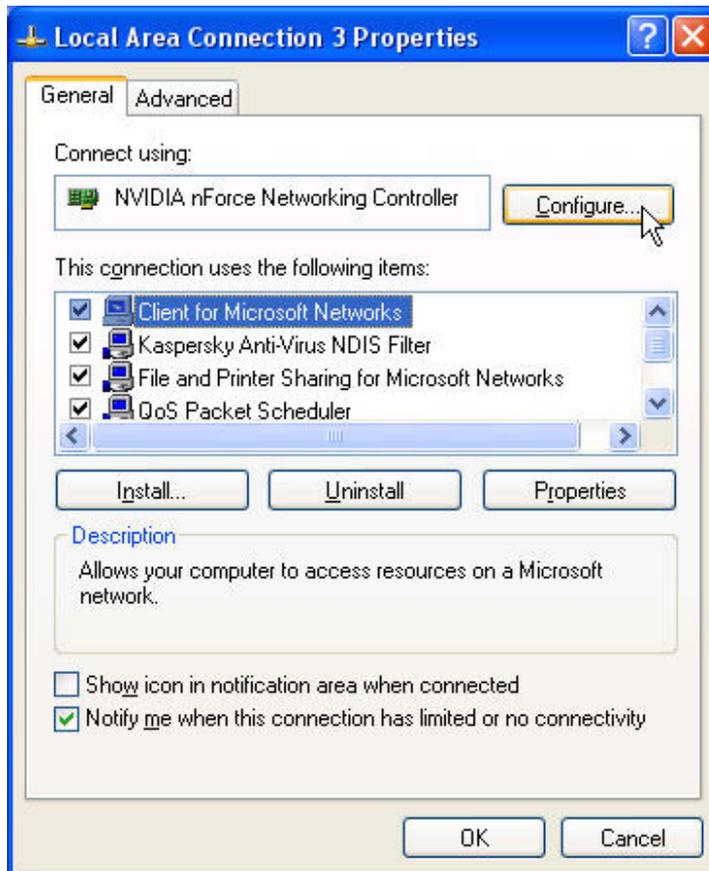
1. BIOS setting:

Have the wake up function in BIOS **Enabled**

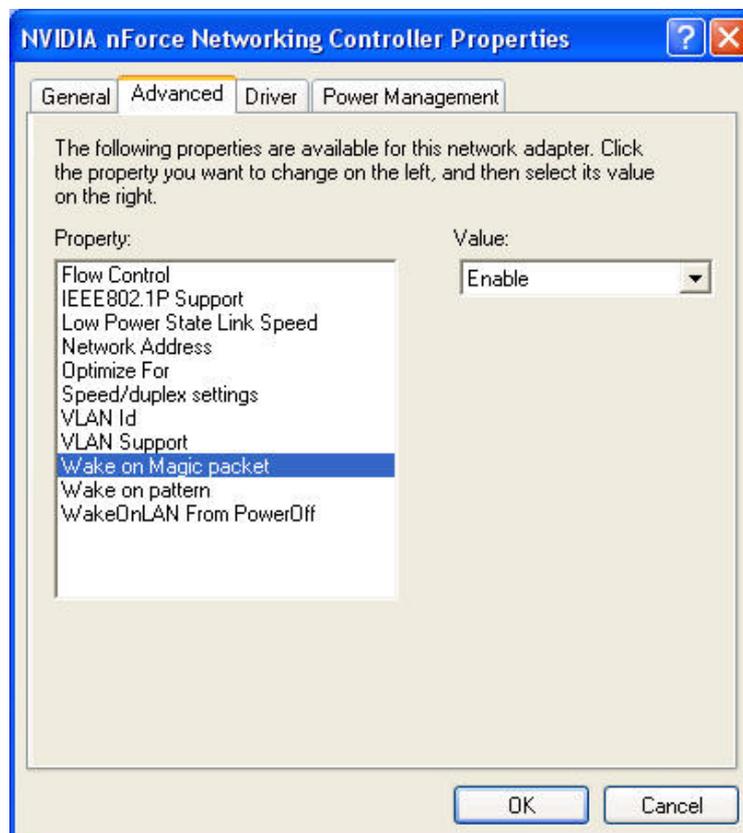
Note: the naming in BIOS varies depending on the BIOS type, it may be **Wake On LAN/PME**, **PME Event Wake Up**, or **Power On By PCI Device**.

2. Windows Settings:

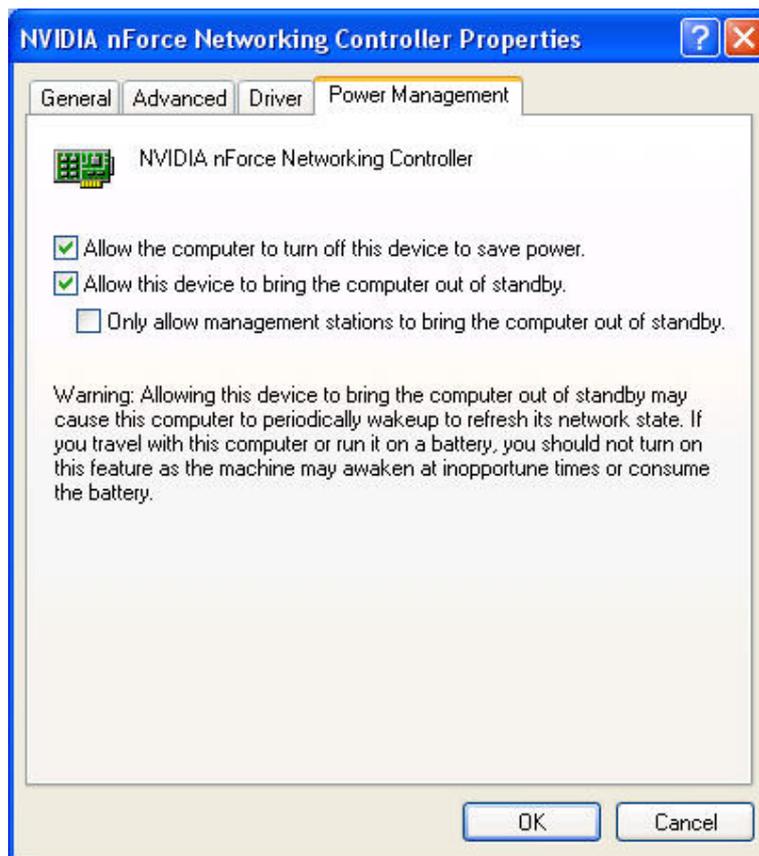
Enter the Properties of Local Area Connection.



Make sure Wake on Magic packet is **Enable**.



Make sure the following two items are selected.



Settings on IP-KVM:

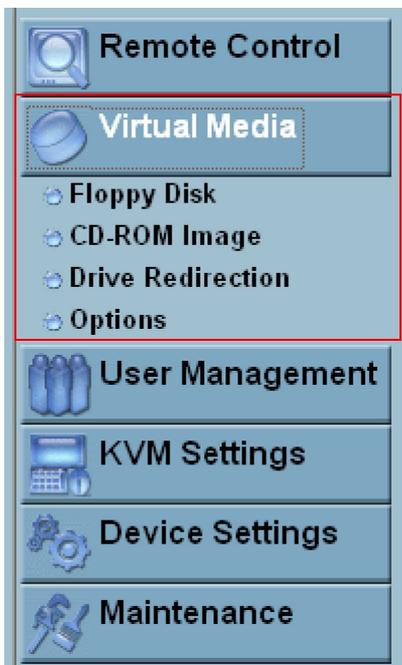
The control can be easily set up from the web page.

1. Click on **Remote Control > Remote Wakeup** to bring up the configuration page.
2. Click on **More entries** to add additional controlled target
3. Key in the server description and the server's IP address
4. Click on **Get MAC** to get the corresponding MAC address of the server
5. Click on **Apply** to save the entry
6. Click on **Reset to defaults** if want to clear all entries

11.2 Virtual Media

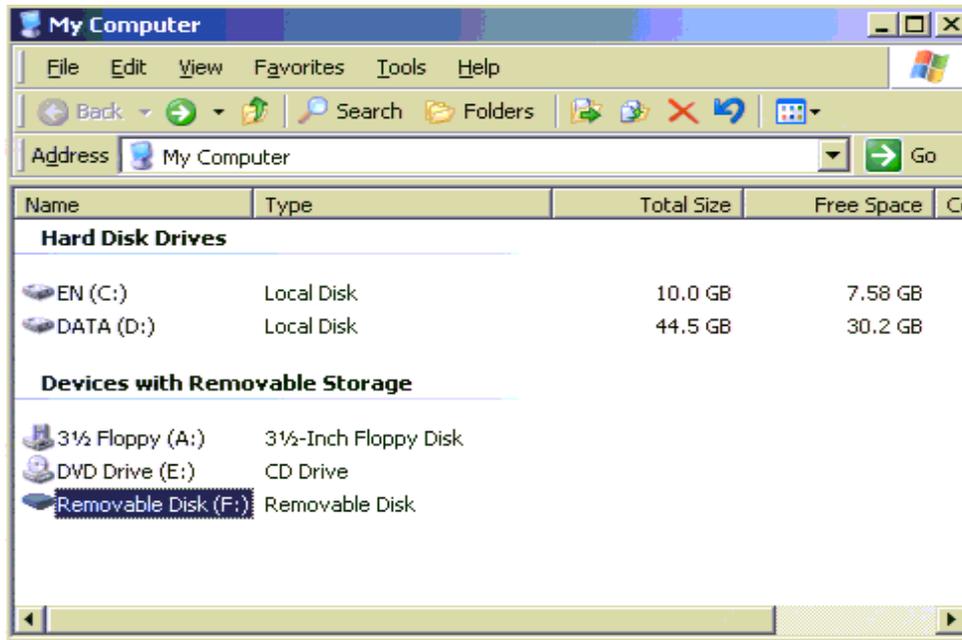
The IP-KVM provides a powerful capability called Virtual Media (or Virtual Disk). Using the USB port, the IP-KVM can present either a local floppy disk image or a redirected remote CD/DVD-ROM image to the target computer. This can allow system recovery in conditions as bad as having local disks down and no primary network connection. With Floppy Disk Image, the user can upload an image to the IP-KVM's memory, which then emulates a locally attached floppy drive. With CD/DVD-ROM Image, a Windows or other SAMBA share can emulate a locally attached CD/DVD-ROM, for instance to update software.

Drive Redirection allows you to share (redirect) your local drive (floppy drives, hard disks, CD ROMs and other removable devices like USB sticks) with the remote system over a TCP network connection. Thus, with Drive Redirection, you can use a virtual disk drive on the remote computer instead of an image file. It is also possible to enable a remote machine to write data to your local disc.



Before go ahead with this setup, both remote user computer and local computer (the one connected with the IP-KVM unit) would have to have Operating System Win2000, XP or above. This function would not work on other platforms at this moment.

Before using Virtual Media, please connect the USB cable from IP-KVM to host computer. After connecting the USB cable, you can see a "Removable Disk" on the host computer. Below is the host computer screen (the computer which connected with IPKVM).



11.2.1 Drive Redirection

The Drive Redirection is another possibility to use a virtual disc drive on the remote computer. 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

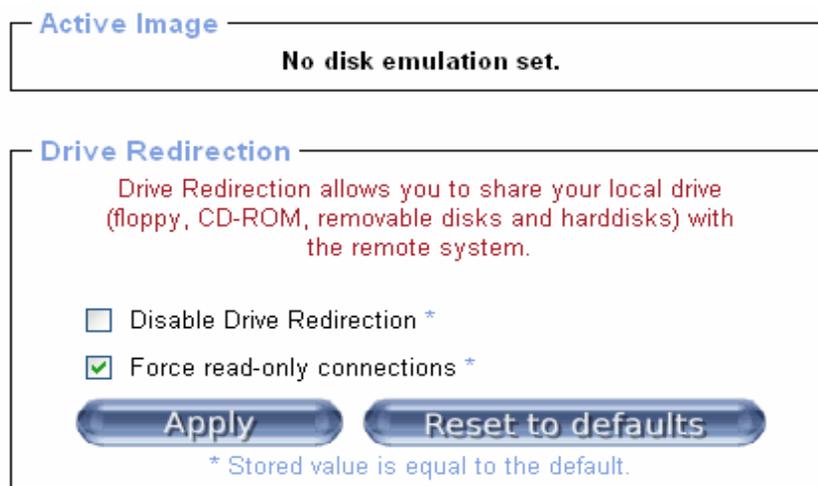


Figure 50 Options of Drive Redirection

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, actually. 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. We recommend to use the Drive Redirection with care, especially the write support.

Disable Drive Redirection

To disable the function of Drive Redirection.

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.

11.2.2 Virtual Drive

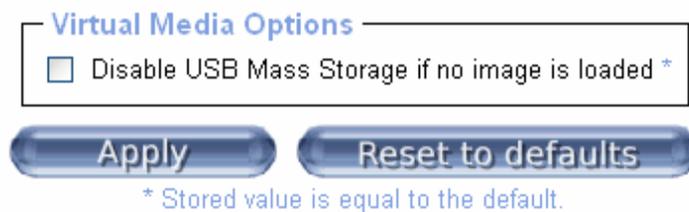


Figure 51 USB mass storage option

Set this option to disable the mass storage emulation (and hide the virtual drive) if not mounting a image file or drive to the host system. To set this option, press the button "Apply".

Note: If unset, and no file image will be found it may happen that the host system will hang on boot due to changes in the boot order, or the boot manager (LILO, GRUB). This case was reported for some Windows versions (2000, XP), other OS might not be fully excluded. This behavior depends on the BIOS version used in that machine.

11.2.3 CD/DVD Image

Use Image on Windows Share (via SAMBA)

To include an image from a Windows share, select “CD/DVD Image” from the submenu.

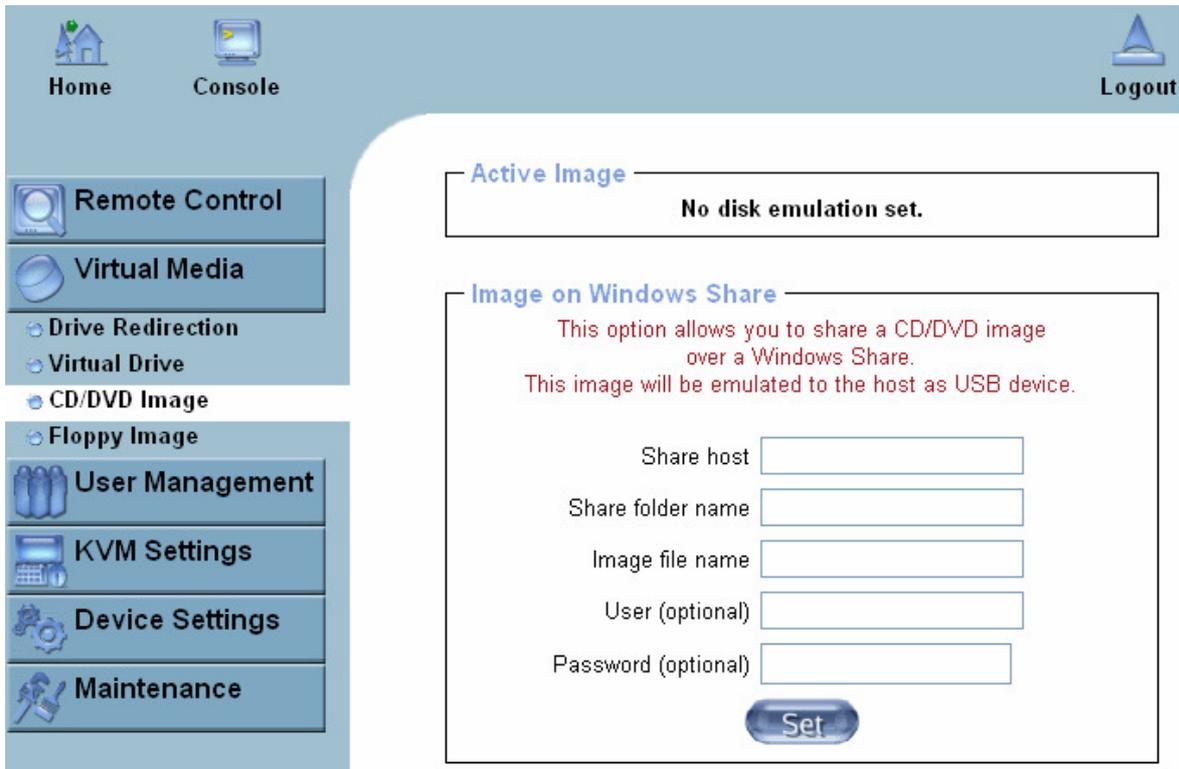


Figure 52 Virtual Media - CD-ROM Image

Share host

The server name or its IP address (the PC that shares out the image file). On Windows 95, 98 and Windows ME do not specify the IP address but the server name ("NetBIOS Name").

Share folder name

The name of the share to be used.

Image file name

The image file name on the share folder.

User (optional)

If necessary, specify the user name for the share named before. If unspecified and a guest account is activated, this guest account information will be used as your login.

Password (optional)

If necessary, specify the password for the given user name.

Notes:

1. The output image extension file name has to be 'iso', e.g. CD-Rom_vir.iso.
2. You may create an ISO image size up to 650Mb (for CD-ROM). This drive would be in read-only mode and would not allow you to write any information on this drive but copying only. This drive would be bootable under DOS mode if the motherboard/BIOS on the host computer supports USB BOOTABLE function. For emulating DVD Drive, please use **Drive Redirection** function.
3. The above information has to be given from the point of view of IP-KVM with correct IP address and device name. Administrative permission is required as regular user may not have the right to access. Please login as a system administrator (or as "root" on UNIX systems).
4. The specified image file is supposed to be accessible from the IP-KVM. The information above has to be given from the point of view of the IP-KVM. It is important to specify correct IP addresses, and device names. Otherwise, IP-KVM may not be able to access the referenced image file properly, leave the given file unmounted and will display an according error message, instead. So, we recommend to state correct values and repeat this step if necessary.
5. Furthermore, the specified share has to be configured correctly. Therefore, administrative permissions are required. As a regular user you may not have these permissions. You should either login as a system administrator (or as "root" on UNIX systems), or ask your system administrator for help to complete this task.

Operation Procedures:

1. Please run Nero or any CD/DVD imaging tool to create CD/DVD ISO image.
2. Please create a folder and share this folder **in the PC that shares out the image file**. Copy the CD/DVD ISO image file to this sharing folder. (Please make sure password has to be setup with the authorized user during Sharing => Permission settings)

MS Windows

Open the Explorer, navigate to the directory (or share) and press the right mouse button to open the context menu. Select **Sharing** to open the configuration dialog

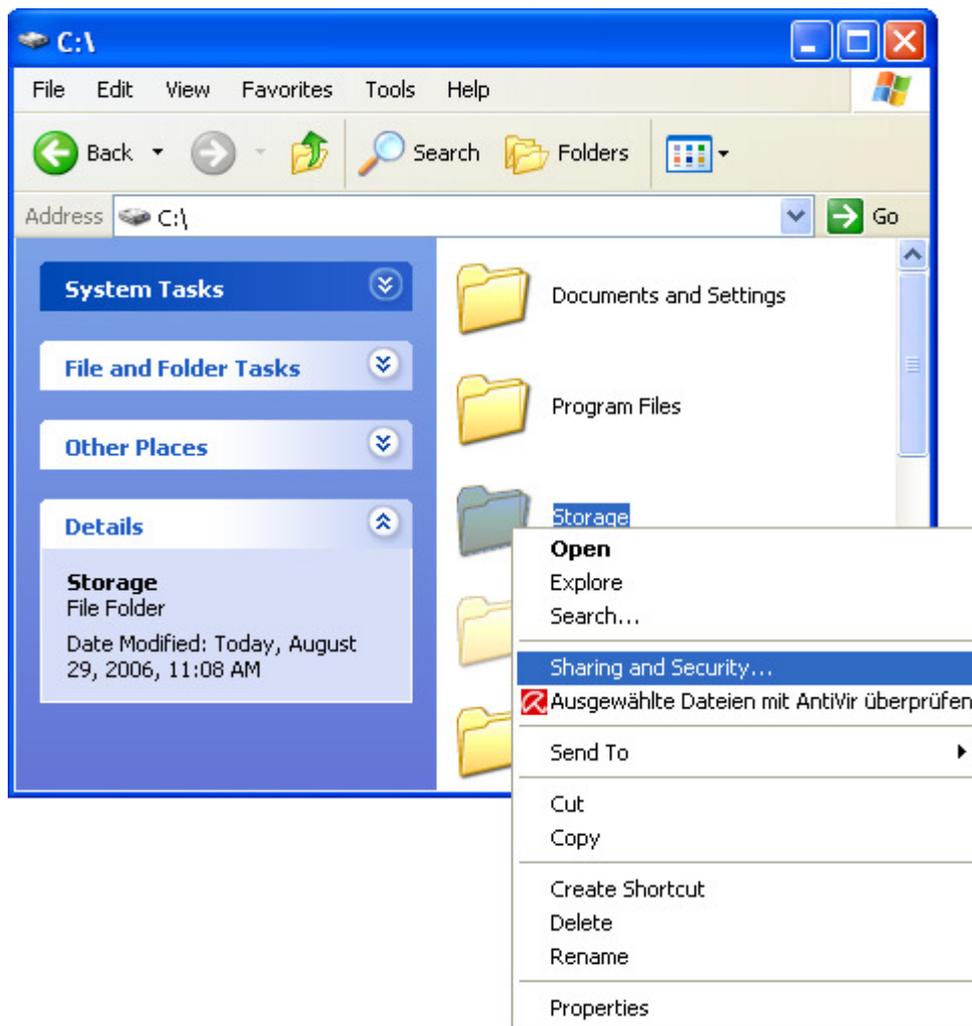


Figure 53 Explorer Context Menu

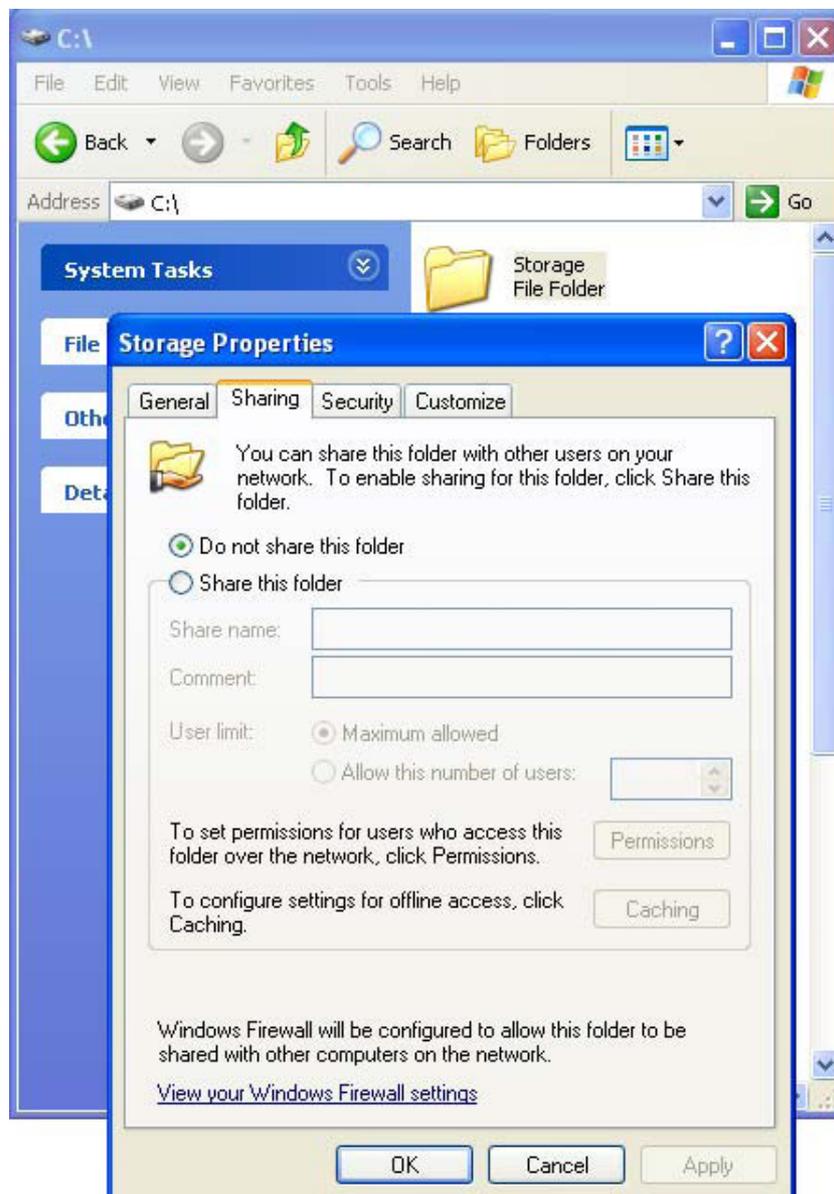


Figure 54 Share Configuration Dialog

Adjust the settings for the selected directory.

- Activate the selected directory as a share. Select **Share this folder**.
- Choose an appropriate name for the share. You may also add a short description for this folder (input field **Comment**).
- If necessary, adjust the permissions (**Permissions** button).
- Click **OK** to set the options for this share.

UNIX and UNIX-like OS (UNIX, Solaris, Linux)

If you like to access the share via SAMBA, SAMBA has to 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.

Also looking at the **man**-entry of **smb.conf** is very helpful.

3. Fill in the sharing information on **Image on Windows Share**, click on the **Set** button.

Image on Windows Share

This option allows you to share a CD/DVD image over a Windows Share.
This image will be emulated to the host as USB device.

Share host:

Share folder name:

Image file name:

User (optional):

Password (optional):

4. If the Image file set successfully.

Image file set successfully

Active Image

CD-ROM Image

Share Host: 59.120.208.56

Share folder name: storage

Image file name: Cdrom_image.iso

User name: fae

Password: not displayed

5. Open the remote console and you can see the virtual CD as below picture.



11.2.4 Floppy Disk

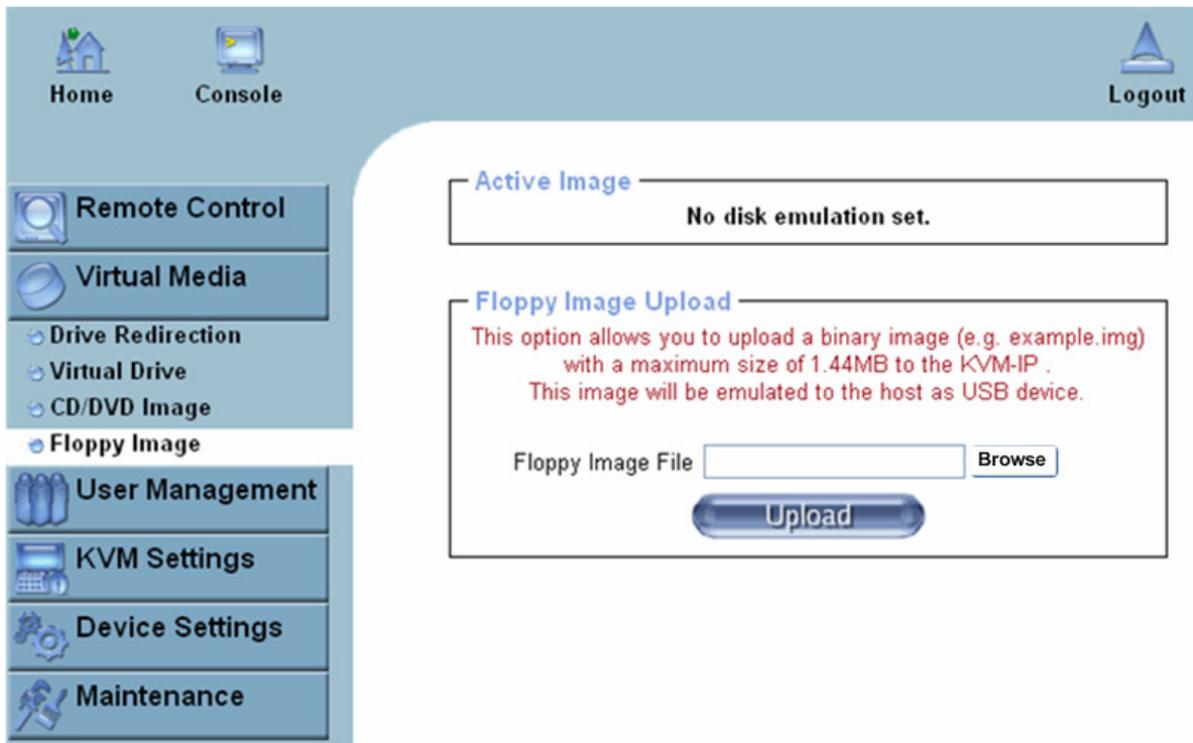
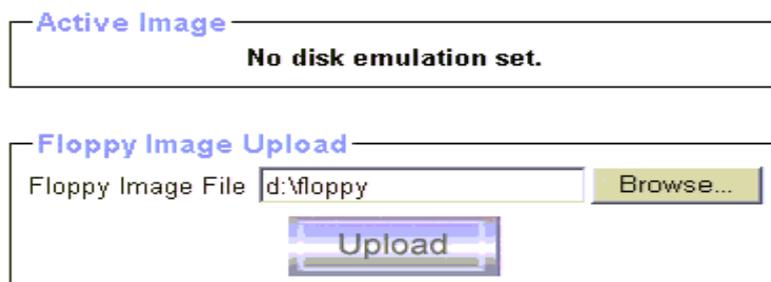


Figure 55 Virtual Media - Floppy Disk

The maximum image size is limited to 1.44MB. To use a larger image mount this image via Windows Share (or SAMBA) (see the Section called Use Image on Windows Share (via SAMBA) for details)

Operation Procedures:

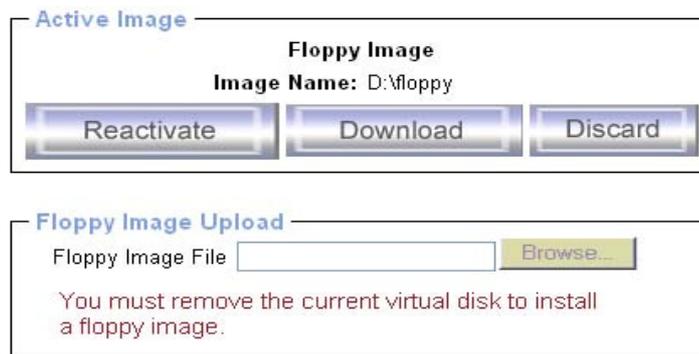
1. You need to create the floppy image file first (Please refer to the section “Creating a floppy image”). For this example, we use RawWrite software (or any other image-creator software) to create floppy image. Please use licensed software for this purpose.
2. You can find an image file saved at desire destination after you created it with RawWrite.
3. Open the browser to log into the IP-KVM. Click **Virtual Media > Floppy Disk**. Click the Browse button to choose the image file.



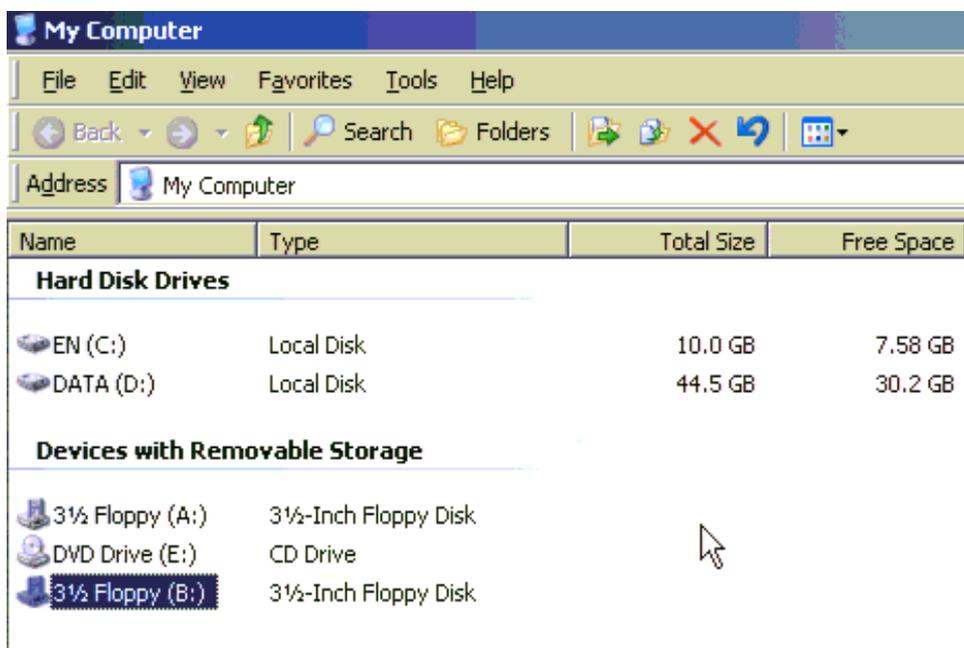
Click on the button **Upload** to initiate the transfer of the chosen image file into the IP-KVM module's on-board memory

4. After you uploading the image file, you will see the information below..

Floppy image uploaded successfully.



5. Open the remote console and you will see a virtual Floppy drive is created on the host computer that connect to IP-KVM.



You may create a floppy image size up to 1.44Mb. This drive would be in read-only mode and would not allow you to write any information on this drive but copying only. This drive would be bootable under DOS mode if the motherboard/BIOS on the host computer supporting USB BOOTABLE function.

Notes:

1. If using other image-creator software, the output image extension file name has to be 'img', e.g. floppy_vir.img.
2. The uploaded image file will be kept in the onboard memory of the IP-KVM until the end of the current session, as you logged out, or initiated a reboot of the IP-KVM

11.2.5 Creating an Image

11.2.5.1 Creating a Floppy Image

MS Windows

You can use the tool “Raw Write for Windows”. You can get the RawWrite software from the website <http://www.chrysocome.net/rawwrite>.

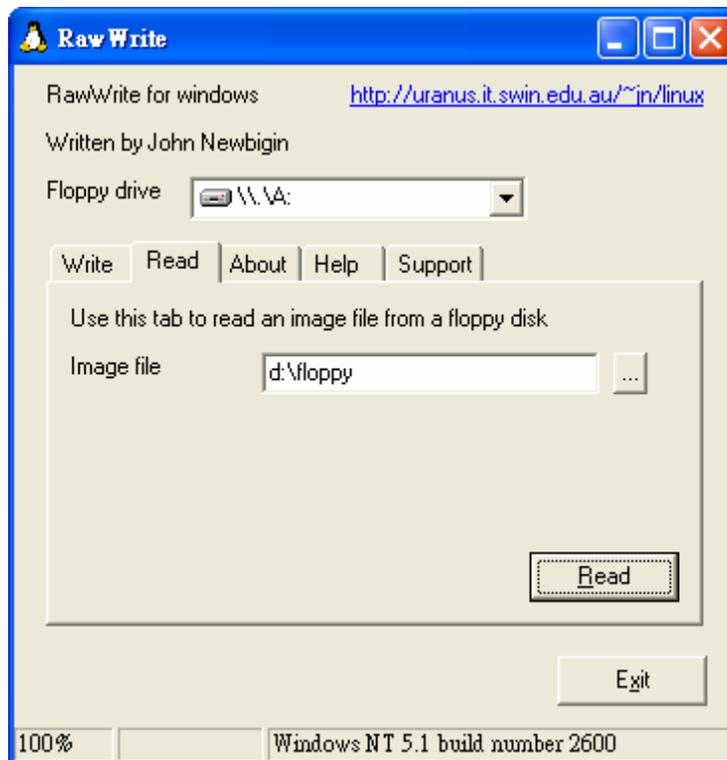


Figure 56 RawWrite for Windows selection dialog

From the menu, select the tab “Read”. Enter (or choose) the name of the file in which you would like to save the floppy content. Click on the button “Copy” to initiate the image creation process.

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, and 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.).

11.2.5.2 Creating a CD/DVD ISO Image

MS Windows

To create the image file, use your favorite 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.



Figure 57 Nero selection dialog

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, and Linux).

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

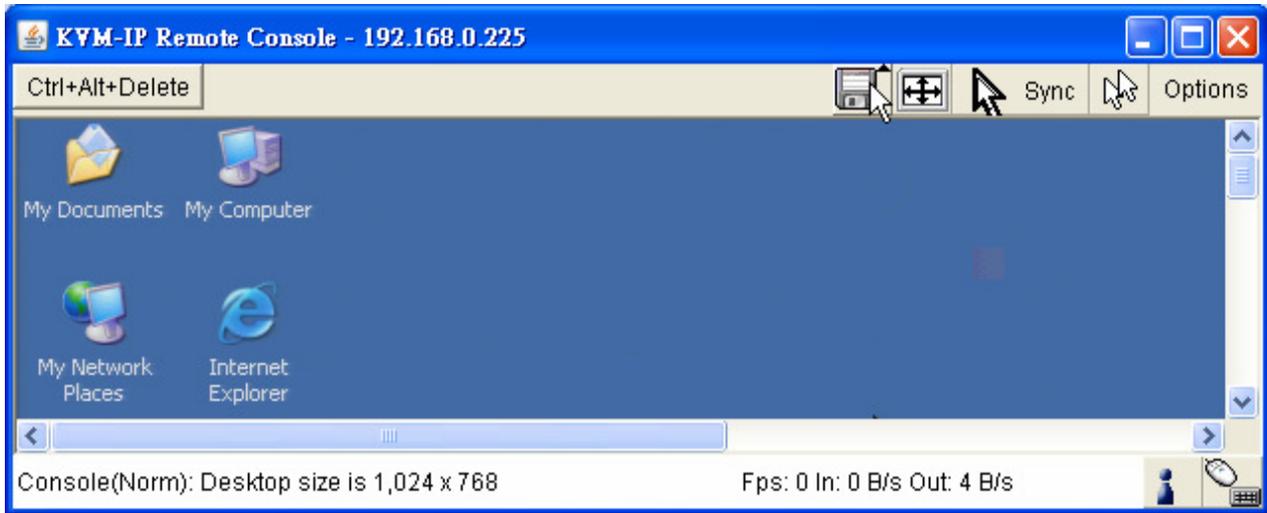
```
dd [ if=/dev/cdrom ] [ of=/tmp/cdrom.image ]
```

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.).

11.2.6 Making a Drive Redirection

The operation procedures to make a drive redirection are as follows.

1. Run **Remote Control > KVM Console**.
2. Click on the “Floppy” icon 



You will see the Drive Redirection window as below

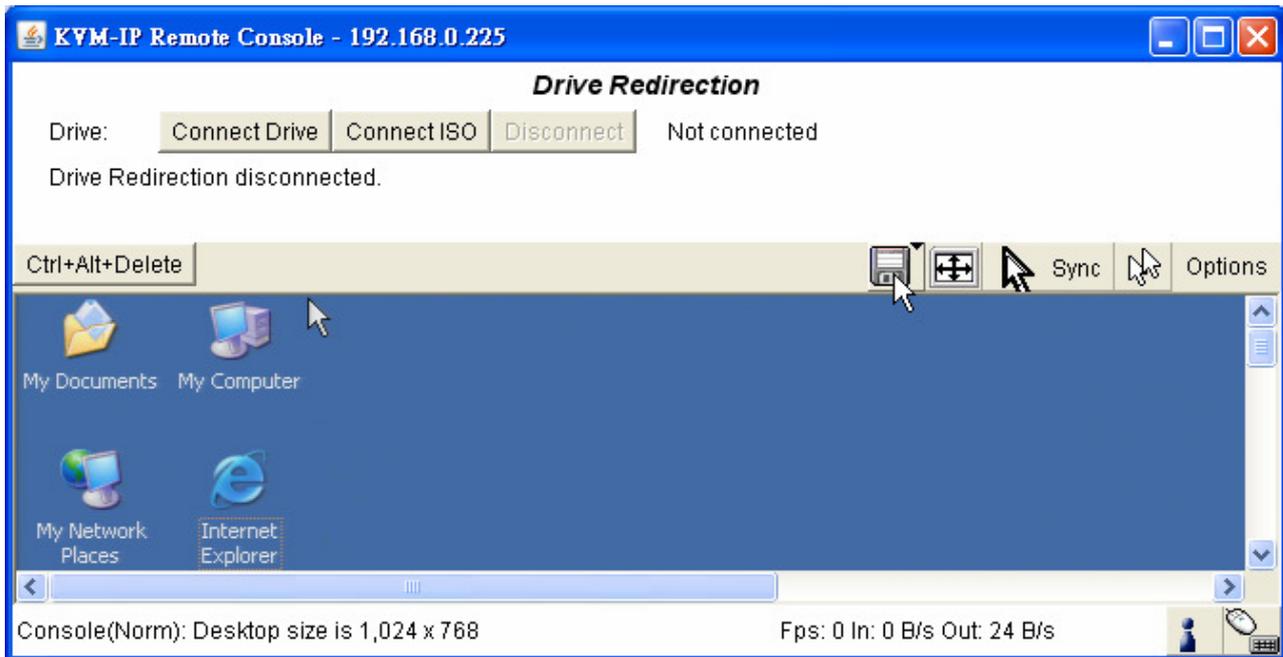
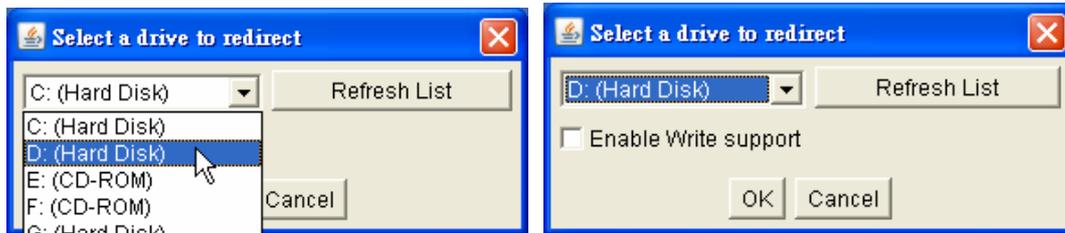


Figure 58 Built-in Java Drive Redirection

3. You can either redirect a local drive (only available under Windows) or redirect an ISO CD/DVD image.

3a. If click on **Connect Drive**



Select the drive to be redirected and click **OK**.

Select the drive you would like to redirect. All available devices (drive letters) are shown here. Please note that the whole drive is shared with the remote computer, not only one partition. If you have a hard disc with more than one partition all drive letters that belong to this disc will be redirected. The Refresh button may be used to regenerate the list of drive letters, especially for an USB stick.

Warning

Please be cautious that if “Allow Write Support” is selected, all data on the shred media might be destroyed.

Write Support

This feature may be enabled here. Write support means that the remote computer is allowed to write on your local drive. As you can imagine, this is very dangerous. If both the remote and the local system try to write data on the same device, this will certainly destroy the file system on the drive. Please use this only when you exactly know what you are doing.

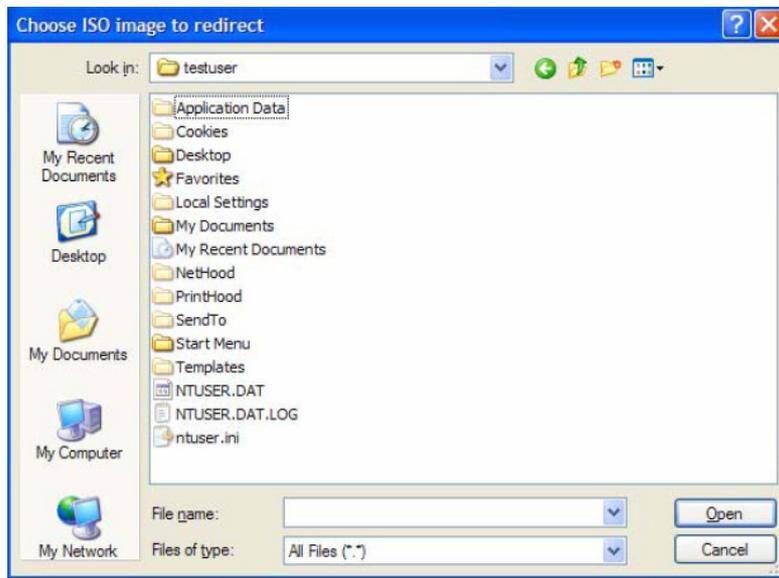
Device Authentication

The factory default Username is “super” and the default Password is “pass”.
Click **Connect** to redirect drive

Warning

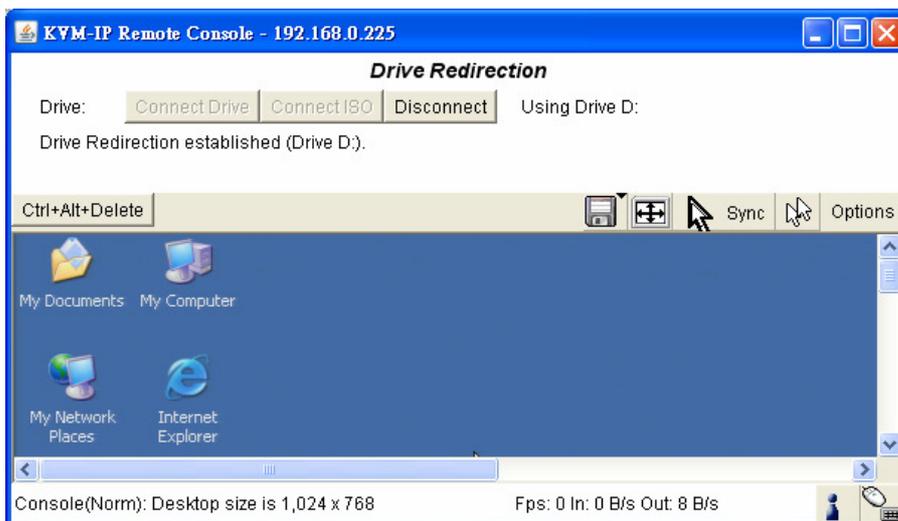
1. Drive Redirection is only possible with Windows 2000 or later versions.
2. The Drive Redirection works on a low SCSI level and the SCSI protocol cannot recognize partitions; therefore the whole drive selected will be shared instead of any particular partition.
3. While connecting to a legacy KVM switch,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

3b. If click on **Connect ISO**

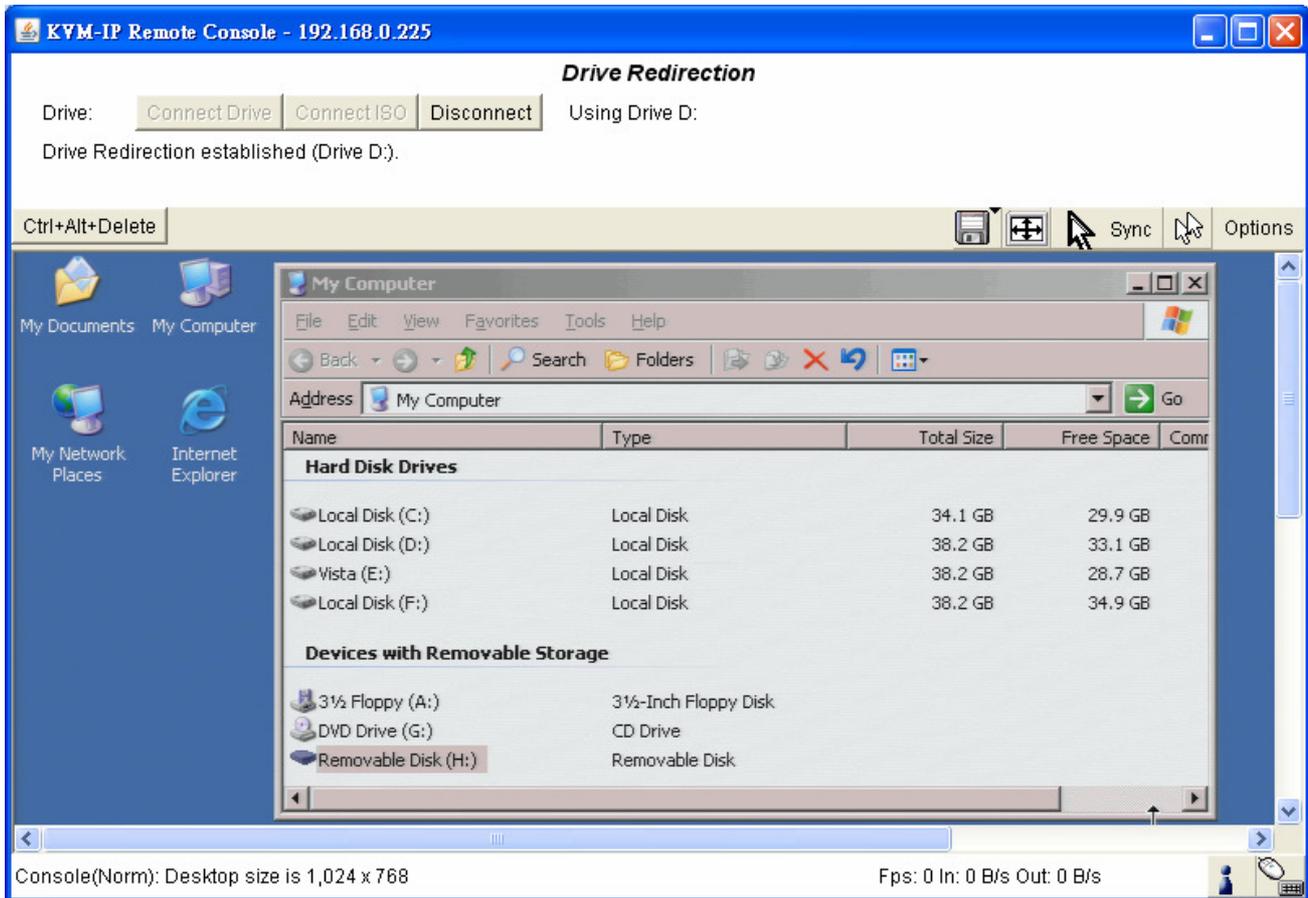


Select the ISO image file and click **Open**

4. Finally the established Drive Redirection connection will be displayed



Open **My Computer** you will see the virtual drive appears on the remote host PC window.



The drive redirection software tries to lock the local drive before it is redirected. That means that it tries to prevent the local operating system from accessing the drive as long as it is redirected. This may also fail, especially if a file on the drive is currently open. In the case of a locking failure, you will be prompted if you want to establish the connection anyhow. This should not be a serious problem when the note above is respected. If the write support is enabled, a drive which is not locked might be damaged by the Drive Redirection.

Clicking on the **Disconnect** button will disconnect the Drive Redirection connection.

Please note that Virtual Drive creation is by Device manner not by Partition. Which means it looks for I/O in BIOS and sends the corresponding signal to host computer. This way, you are sending the entire hard drive (may consist of 'X' numbers of partitions) and emulate whatever number of partitions on host computer. You may also emulate a DVD-Drive with the same procedure. However, this DVD-Drive **Does NOT** support Bootable function like Floppy and CD-ROM emulation.

11.3 User Management

On an IP-KVM, each user name has settings and permissions associated with it. Settings affect how the user interfaces with the Remote Console. Permissions allow or forbid the user from performing various actions on the IP-KVM's web pages. A newly assigned user has permissions inherited from an assigned group, if any, or individual permissions if no group is assigned



11.3.1 Change Password

Change Password

Old Password

New Password

Confirm New Password

Apply

Figure 59 Setting Password

Change password of currently logged in user:

Old Password: type in current password

New Password: type in new password

Confirm New Password: re-type new password for verification

Click "Apply" to submit your changes.

11.3.2 Users and Groups



The image shows a 'User Management' form with the following fields and controls:

- Existing users:** A dropdown menu with the text '--- select ---' and a 'Lookup' button.
- New user name:** A text input field.
- Full user name:** A text input field.
- Password:** A text input field.
- Confirm Password:** A text input field.
- Email address:** A text input field.
- Mobile number:** A text input field.
- Role:** A dropdown menu with 'Administrator' selected.
- Enforce user to change password on next login *:** A checkbox.
- Buttons:** Three buttons labeled 'Create', 'Modify', and 'Delete' are located at the bottom of the form.

There are three kinds of levels of user accounts:

- **Super** -- Has all possible rights to configure the device
- **Administrator** -- Has partial rights to change configuration apart from critical settings
- **User** -- Has permission to access basic function of open Remote Console

You can choose the desired level from the selection box **role**.

The IP-KVM comes with 1 pre-configured user account that has fixed permissions. The account “super” has all possible rights to configure the device and to use all functions IP-KVM offers.

Upon delivery, the account “super” has the password “pass”. Make sure to change password immediately after you have installed and on initial access of your IP-KVM.

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 three characters long.

Confirm password

Confirmation of the password above.

Email address

This is optional.

Mobile number

This information may be optionally provided.

Role

Each user can be a member of a group (named a “role”) – there kinds can be shose from: super, administrator, or an regular user.

To create an user press the button **Create**. The **Modify** button changes the displayed user settings. To delete an user press the button **Delete**.

Note:The IP-KVM is equipped with an host-independent processor and memory unit which both have a limitation in terms of the processing instructions and memory space. To guarantee an acceptable response time we recommend not to exceed the number of 15 users connected to the IP-KVM at the same time. The memory space that is available onto the IP-KVM mainly depends on the configuration and the usage of the IP-KVM (log file entries etc.). That’s why we recommend not to store more than 63 user profiles.

11.4 KVM Settings



11.4.1 User Console

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

Remote Console Settings for User

The settings on this page are user specific. Changes you make here will affect the selected user only.

super

Transmission Encoding

Automatic Detection *

Pre-configured

Network speed

Manually

Compression *

Color depth *

Remote Console Type

Default Java VM *

Sun Microsystems Java Browser Plugin

If you do not have the Java Browser Plugin already installed on your system, this option will cause downloading of around 11 MByte Plugin code. The Plugin will enable extended Remote Console functionality.

Miscellaneous Remote Console Settings

Start in Monitor Mode *

Start in Exclusive Access Mode *

Mouse Hotkey

Hotkey (Help) *

Used for fast mouse synchronization (in Double Mouse mode) and to free the grabbed mouse (in Single Mouse mode).

Remote Console Button Keys

Key Definition (Help) Name

Button Key 1 *

* Stored value is equal to the default.

Figure 60 User Console Setting

User select box

This selection 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 required privileges.

Transmission Encoding

The Transmission Encoding setting allows changing 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 processing depending on the number of users working at the same time and the network bandwidth of the connection line (Modem, ISDN, DSL, LAN, etc.).

Automatic detection

The encoding and the compression level is 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 color depth for the indicated network speed.

Manually

Allows to adjust both compression rate and the color depth individually. Depending on the selected compression rate the data stream between the IP-KVM and the Remote Console will be compressed in order to save bandwidth. Since high compression rates consume more computing power of IP-KVM, they should not be used while several users are accessing the IP-KVM simultaneously.

The standard color depth is 16 Bit (65536 colors). The other color 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 color depth. At lower bandwidths only 4 Bit (16 colors) and 2 Bit (4 gray scales) are recommended for typical desktop interfaces. Photo-like pictures have best results with 4 Bit (16 gray scales). 1 Bit color 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 the 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 Plugin

Instructs the web browser of your administration system to use the JVM of Sun Microsystems. 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 volume is around 11 Mbytes. The advantage of downloading Sun's JVM lays in providing a stable and identical Java Virtual Machine across different platforms. The Remote Console software is optimized for this JVM versions and offers wider range of functionality when run in SUN's JVM. Please make sure that you are installing Sun JVM 1.5 or above to your client system.

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 startup. 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 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

Button Keys allow 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” on Windows and DOS, what is always caught, or “Control+Backspace” on Unix or Unix-like OS 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 concatenated 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 should be released in reversed sequence. The minus sign builds single, separate key presses and releases. The star inserts a pause with duration of 100 milliseconds.

11.4.2 Keyboard/Mouse

Keyboard/Mouse Settings

Keyboard Model *

Key release timeout enabled *

Timeout after msec *

Enable key release timeout if you experience duplicated keystrokes during poor network performance.

USB Mouse Type *

Mouse speed Auto *

Fixed scaling : *

Absolute mouse scaling for MAC server *

* Stored value is equal to the default.

Keyboard/Mouse Settings

Keyboard Model *

Key release timeout enabled *

Timeout after msec *

Enable key release timeout if you experience duplicated keystrokes during poor network performance.

USB Mouse Type *

Mouse speed Auto *

Fixed scaling : *

Absolute mouse scaling for MAC server *

* Stored value is equal to the default.

Figure 61 Keyboard and Mouse Settings

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.

Keyboard timeout

Recommended as “enable” for keyboard timeout when host is UNIX or UNIX-like OS.

USB Mouse Type

Enables USB mouse type. Choose between “Windows >= 2000 , MacOSX” for MS Windows 2000 or Windows XP, Mac OSX or “Other Operating Systems” for MS Windows NT, Unix or Unix-like OS, or OS X. In “Windows >= 2000 , MacOSX” mode the remote mouse is always synchronized with the local mouse.

Mouse Speed

- Auto mouse speed

Use this option if the mouse settings on host use an additional acceleration setting. The IP-KVM 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 pixel-amount of the remote mouse pointer movement when the local mouse pointer is moved by one pixel. This option is used to manually control the remote mouse speed and only works when the mouse settings on the host are linear. This means mouse acceleration of OS should be disabled, and the intelligent mouse synchronization of IP-KVM is not functioning under this setting.

- Absolute mouse scaling for MAC server

Use this option for MAC server.

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

11.4.3 Video



Figure 62 Video Settings

Miscellaneous Video Settings

- **Noise filter**

This option defines how the IP-KVM reacts to small changes in the video input signal. Turning on the noise filter can help reduce video flickering that is often caused by distortions, as well as lowering unnecessary bandwidth consumption. 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 change 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)**

When connecting the device directly to legacy Sun computer (with composite sync as the video output, it may be possible that IP-KVM don't recognize the composite sync automatically. 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 on the button **Apply**.

11.5 Device Settings



11.5.1 Network

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

Network Basic Settings

IP auto configuration None *
 Preferred host name (DHCP only) *
 IP address
 Subnet mask *
 Gateway IP address
 Primary DNS server IP address *
 Secondary DNS server IP address *

Network Miscellaneous Settings

Remote Console & HTTPS port *
 HTTP port *
 TELNET port *
 SSH port *
 Bandwidth Limit kbit/s *
 Enable TELNET access *
 Enable SSH access *
 Disable Setup Protocol *

LAN Interface Settings

Current LAN interface parameters: autonegotiation on, 100 Mbps, full duplex, link ok

LAN interface speed Autodetect *
 LAN interface duplex mode Autodetect *

Apply **Reset to defaults**

* Stored value is equal to the default.

Figure 63 Network Settings

Warning

Changing the network settings of the IP-KVM 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-KVM.

IP auto configuration

With this option you can control if the IP-KVM should fetch its network settings from a DHCP or BOOTP server. For DHCP, select “dhcp” , and for BOOTP select “bootp” accordingly. If you choose “none” then IP auto configuration is disabled.

Preferred host name

Preferred host name to request from DHCP server. Whether the DHCP server takes the IP-KVM suggestion into account or not depends on the server configuration.

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-KVM should be 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-KVM 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-KVM'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-KVM's HTTP server is listening. If left empty the default value will be used.

Telnet port

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

SSH port

Port number at which the IP-KVM SSH (Secure SHell) server is listening to. If left empty the default value (port 22) will be used.

Bandwidth limitation

The maximum network traffic generated through the IP-KVM ethernet device.
Value in Kbit/s.

Enable Telnet access

This enables the Telnet function.

Enable SSH access

This enables the SSH (Secure Shell) function.

Disable Setup Protocol

Enable this option to exclude the IP-KVM from the setup protocol. Setup protocol is a proprietary layer-2 MAC-based protocol to allow some configuration software to detect IP-KVM devices in the network, even without IP address, and then config network related settings to IP-KVM..

LAN Interface Settings

The “Autodetect” will set the Ethernet speed to the fastest possible value supported by both endpoints of the link. For example, if you use a 10M/half duplex HUB, this speed will be auto-selected. If this option does not work with some network device (HUB, switches, and routers), you can set the Ethernet interface speed of IP-KVM manually to the values as supported by the network device.

11.5.2 Dynamic DNS

Dynamic DNS Settings

Enable Dynamic DNS *

Dynamic DNS server www.dyndns.org

DNS System

Hostname (eg. yourhost.dyndns.com)

Username

Password

Check time (HH:MM) *

Check interval *

Delete saved external IP

* Stored value is equal to the default.

Figure 64 Dynamic DNS

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

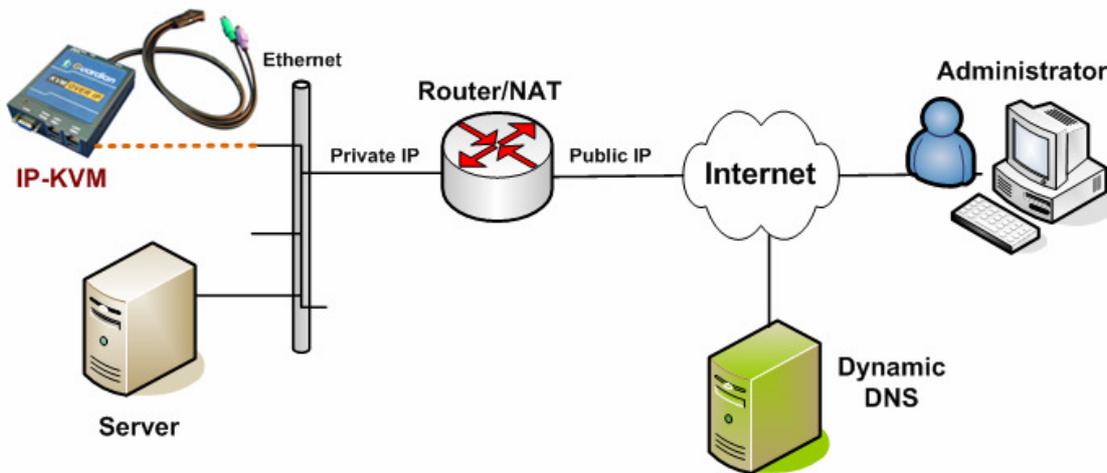


Figure 65 Dynamic DNS Scenario

The IP-KVM 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-KVM 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 card.

The administrator has to register an IP-KVM 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 to the registration process. This account information together with the hostname is needed in order to determine the IP address of the registered IP-KVM.

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

- Make sure that the LAN interface of the IP-KVM is properly configured.
- Enter the Dynamic DNS Settings configuration dialog as shown in Figure.
- Enable Dynamic DNS and change the settings according to your needs (see below).

Enable Dynamic DNS

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

Dynamic DNS server

This is the server name where IP-KVM registers itself in regular intervals. Currently, this is a fixed setting since only dyndns.org is supported for now.

DNS System

Choose Dynamic for free DNS service. Custom for your own domain.

Hostname

This is the hostname of the IP-KVM 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

You have used this password during your manual registration with the Dynamic DNS Server.

Check time

The IP-KVM registers itself for initiating the IP address of IP-KVM stored in the Dynamic DNS server at this time.

Check interval

This is the interval for reporting again to the Dynamic DNS server for updating the IP address associated with the Domain Name of the IP-KVM.

Warning

The IP-KVM has its own independent real time clock. Make sure the time setting of the IP-KVM is correct. (see the Section *Date And Time*)

11.5.3 Security

The screenshot displays three configuration sections:

- HTTP Encryption:** A checkbox labeled "Force HTTPS for Web access *" is currently unchecked.
- KVM Encryption:** Radio buttons for "Off*" (selected), "Try", and "Force".
- Group based System Access Control:**
 - A red warning message: "Please note: 'Apply' is required, or changes will be lost."
 - An unchecked checkbox: "Enable Group based System Access Control *"
 - A "Default Action" dropdown menu set to "ACCEPT".
 - A table with columns: Rule #, Starting IP, Ending IP, Group, and Action.
 - Buttons: Append, Insert, Replace, Delete, Apply, and Reset to defaults.
 - A footnote: "* Stored value is equal to the default."

Rule #	Starting IP	Ending IP	Group	Action
1	0.0.0.0	255.255.255.255	All	ACCEPT

Figure 66 Device Security

Force HTTPS

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

In case you want to create your own SSL certificate that is used to identify the IP-KVM refer to the Section called *Certificate*.

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 machine and 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. In case connection establishment fails for any reason an unencrypted connection will be used.

If set to "Force" the applet tries to make an encrypted connection with certificate. An error will be reported in case 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 rule 1 first, if meet the rule then take action directly, otherwise go to chain rule 2.

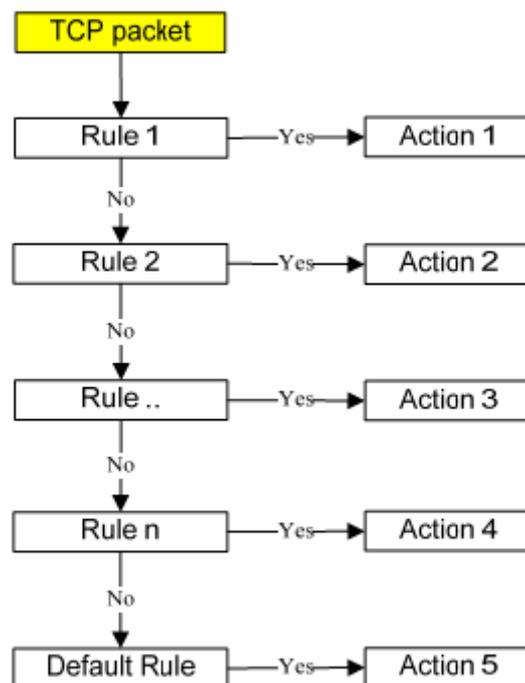


Figure 67 Chain Rules of IP Filtering

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

Users can add a new IP filtering rule by setting the properties at adding line by **Append** or **Insert**. User can remove a rule by **Remove** or **Delete**.

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 *

Rule #	Starting IP	Ending IP	Group	Action
1	0.0.0.0	255.255.255.255	All	ACCEPT
<input type="text" value="2"/>	<input type="text" value="192.168.123.99"/>	<input type="text" value="192.168.123.230"/>	<input type="text" value="super"/>	<input type="text" value="ACCEPT"/>

* Stored value is equal to the default.

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 *

Rule #	Starting IP	Ending IP	Group	Action
1	0.0.0.0	255.255.255.255	All	ACCEPT
<input type="text" value="2"/>	<input type="text" value="192.168.123.99"/>	<input type="text" value="192.168.123.230"/>	<input type="text" value="super"/>	<input type="text" value="ACCEPT"/>

* Stored value is equal to the default.

Figure 68 IP Filter Settings

11.5.4 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) *
▼

Create

* Stored value is equal to the default.

Figure 69 Certificate Settings

The IP-KVM uses the Secure Socket Layer (SSL) protocol for any encrypted network traffic between itself and a connected client. During the connection establishment the IP-KVM has to expose its identity to a client using a cryptographic certificate. The default certificate comes with IP-KVM device upon delivery is for testing purpose only. System administrator should not rely on this default certificate as the secured global access mechanism through Internet.

However, it is possible to generate and install a new base64 X.509 certificate that is unique for a particular IP-KVM. In order to do that, the IP-KVM 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 who you claim you are, and signs and issues a SSL certificate to you.

The following steps are necessary to create and install a SSL certificate for the IP-KVM:

- Create a SSL Certificate Signing Request using the panel shown in Figure. You need to fill out a number of fields that are explained below. Once this is done, click on the button “Create” which will initiate the Certificate Signing Request generation.

The CSR can be downloaded to your administration machine with the “Download CSR” button.

- Send the saved CSR string 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).
- Upload the certificate to the IP-KVM using the “Upload” button as shown in Figure below.

Certificate Signing Request (CSR)

The following CSR is pending:

countryName	=	TW
stateOrProvinceName	=	taipei
localityName	=	taipei
organizationName	=	test org
organizationalUnitName	=	test
commonName	=	test
emailAddress	=	test@test.com

Download Delete

Certificate Upload

SSL Certificate File Browse...

Upload

Figure 70 SSL Certificate Upload



Figure 71 CSR string

After completing these three steps, the IP-KVM has its own certificate that is used for identifying the card to its clients.

Warning

If you destroy the CSR on the IP-KVM there is no way to get it back! In case you deleted it by mistake, you have to repeat the three steps as described above.

Common name

This is the network name of the IP-KVM once it is installed in the user's network (usually the fully qualified domain name). It is identical to the name that is used to access the IP-KVM 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-KVM is accessed using HTTPS.

Organizational unit

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

Organization

The name of the organization to which the IP-KVM 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. (Note: the country code has to be entered in CAPITAL LETTERS.)

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-KVM and its security.

Key length

This is the length of the generated key in bits. 1024 Bits are supposed to be sufficient for most cases. Longer keys may result in slower response time of the IP-KVM during connection establishment.

11.5.5 Serial Port

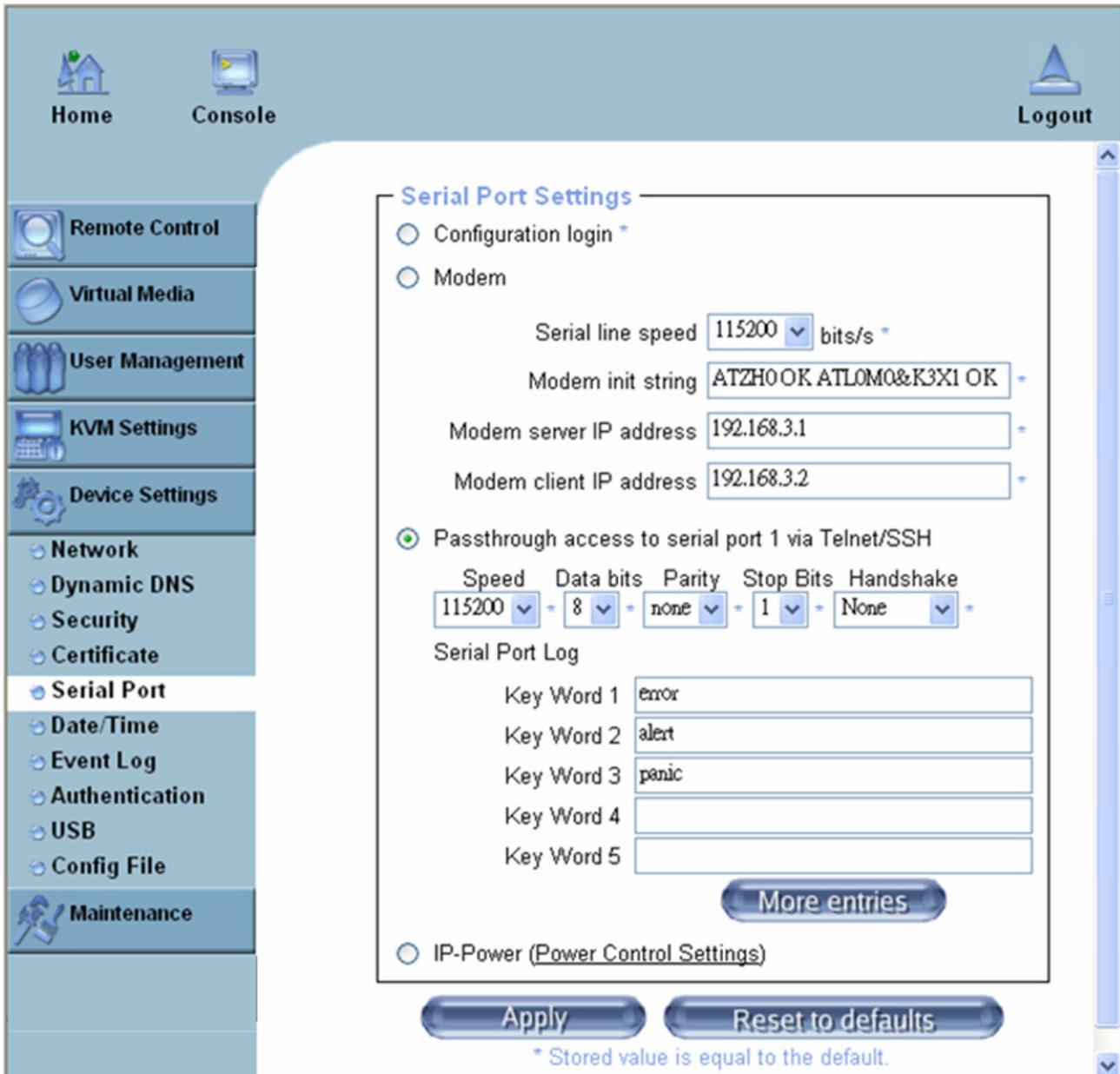


Figure 72 Serial Port

The IP-KVM Serial Settings allows 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-KVM 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-KVM .

Logically, connecting to the IP-KVM using a telephone line means nothing else than building up a dedicated point-to-point connection from your console computer to the IP-KVM. In other words, the IP-KVM 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-KVM, make sure to 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 the remote access to the IP-KVM 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-KVM is communicating with the modem. Most of all 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-KVM 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 giving a new string. Refer to the modem's manual about the AT command syntax.

Modem server IP address

This IP address will be assigned to the IP-KVM itself 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-KVM 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-KVM and your console computer. The default value will work in most cases.

Passthrough 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-KVM.

11.5.6 Date/Time

Date/Time Settings

UTC Offset

User specified time *

Date / / (mm/dd/yyyy)

Time : : (hh:mm:ss)

Synchronize with NTP Server

Primary Time server *

Secondary Time server *

* Stored value is equal to the default.

Figure 73 Date / Time

This link refers to a page, where the internal real-time clock of the IP-KVM can be set up. You have the possibility to adjust the clock manually, or to use a NTP timeserver. Without a timeserver, your time setting will not be persistent, so you have to adjust it again, after IP-KVM loses power for more than a few minutes. To avoid this, you can use a NTP timeserver, which sets up the internal clock automatically to the current UTC time. Because NTP server time is always UTC, there is a setting that allows you to set up a static offset to get your local time.

Warning

There is currently no way to adjust the daylight saving time automatically. So you have to set up the UTC offset twice a year properly to the local rules of your country.

11.5.7 Event Log

The screenshot displays the 'Event Log Targets' configuration page. On the left is a navigation menu with 'Event Log' selected. The main content area is divided into two sections: 'Event Log Targets' and 'Event Log Assignments'.

Event Log Targets

- List Logging Enabled *
Entries shown per page: *
- Clear internal log:
- NFS Logging Enabled
 - NFS Server:
 - NFS Share:
 - NFS Log File:
- SMTP Logging Enabled *
 - SMTP Server:
 - Receiver Email Address:
 - Sender Email Address:
- SNMP Logging Enabled *
 - Destination IP:
 - Community:

[Click here to view the KVM-IP SNMP MIB](#)

Event Log Assignments

Event	List	NFS
Board Message	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *
Security	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *
Remote Console	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *
Host Control	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *
Authentication	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *
Serial Port	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/> *

Buttons:

Figure 74 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.

The common way to log events is to use the internal log list of the IP-KVM. To show the log list, click on “Event Log” on the “Maintenance” page. 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-KVM . To show the log list, click on “Event Log” on the “Maintenance” page.

Since the IP-KVM's system memory is used to save all the information, the maximum number of possible log list entries is restricted to 1.000 events. Every entry that exceeds this limit overrides the oldest one, automatically.

Warning

If the reset button on the HTML frontend is used to restart the IP-KVM, all logging information is saved permanently and is available after the IP-KVM has been started. If the IP-KVM loses power or a hard reset is performed, all logging data will be lost. To avoid this, use one of the following log methods.

NFS Logging enabled

Define a NFS server, where a directory or a static link has to be exported, to write all logging data to a file that is located there. To write logging data from more than one IP-KVM devices 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 the button “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 message.

SMTP Logging enabled

With this option, the IP-KVM 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 a SMTP server, that has to be reachable from the IP-KVM device and that needs no authentication at all (<serverip>:<port>).

SNMP Logging enabled

If this is activated, the IP-KVM sends a 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 an own trap class that consists of several fields with detailed information about the occurred event. To receive this SNMP traps, any SNMP trap

listener may be used.

Here is a example of all generated event and its event group.

Device successfully started	device
Board Reset performed by user...	device
Firmware upload failed.	device
No firmware file uploaded.	device
Uploaded firmware file discarded.	device
Firmware validation failed.	device
Firmware file uploaded by user...	device
Firmware updated by user...	device
Internal log file cleared by user...	device
Security Violation	security
Host Power	host
Host Reset	host
Connection to Remote Console failed: reason.	console (several)
Connection to client ... established.	console
Connection to client ... closed.	console
Login failed.	auth
Login succeed.	auth

Warning

In contrast to the internal log file on the IP-KVM, 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 and you may have to delete it or move it away from time to time.

11.5.8 Event Log

Authentication Settings

Local Authentication *

LDAP

User LDAP Server *

Base DN of User LDAP Server *

Type of external LDAP Server *

Name of login-name attribute *

Name of user-entry objectclass *

User search subfilter *

Active Directory Domain *

RADIUS

	Server	Shared Secret	Auth. Port	Acc. Port	Timeout	Retries
1.	<input type="text"/>	<input type="text"/>	<input type="text" value="1812"/> *	<input type="text" value="1813"/> *	<input type="text" value="1"/> *	<input type="text" value="3"/> *

* Stored value is equal to the default.

On this screen you can specify where the IP-KVM will look in order to authenticate the users. You can use "Local Authentication", this means you need to have created the user account on the IP-KVM and the user/group information residing on the IP-KVM for authentication. The other options allow you to specify an LDAP or a RADIUS Server to use for the login authentication. These methods are very useful when you want to map users into specific groups which have certain privileges. It is usually far easier and simpler to refer to already existing groups, rather than having to re-enter everything into the IP-KVM.

Note: Whatever you configure, you can always login over the network as the superuser "super". The superuser is always authenticated and authorized locally, so you always have a "back door" to the IP-KVM.

LDAP Access

The IP-KVM uses LDAP only for authentication (password verification). User privileges and private settings are still stored locally at the IP-KVM. That's why a user account has to be created on the IP-KVM before this user can login via LDAP. Also, all privilege configurations have to be done within the IP-KVM user management.

In order to configure the LDAP access, you can set the following options:

User LDAP Server

Here you enter the name or IP address of the LDAP server containing all the user entries. If

you choose a name instead of an IP address you need to configure a DNS server in the network settings. E.g.: 192.168.1.250

Base DN of User LDAP Server

Here you specify the distinguished name (DN) where the directory tree starts in the user LDAP server. E.g.: dc=test,dc=domain,dc=com

Type of external LDAP Server

With this option you set the type of the external LDAP server. This is necessary since some server types require special handling. Additionally, the default values for the LDAP scheme are set appropriately. You can choose between a Generic LDAP Server, a Novell Directory Service and a Microsoft Active Directory. If you have neither a Novell Directory Service nor a Microsoft Active Directory then choose a Generic LDAP Server and edit the LDAP scheme used (see below).

Name of login-name attribute

This is the name of the attribute containing the unique login name of a user. To use the default leave this field empty. The default depends on the selected LDAP server type.

Name of user-entry object class

This is the object class that identifies a user in the LDAP directory. To use the default leave this field empty. The default depends on the selected LDAP server type.

User search subfilter

Here you can refine the search for users that should be known to the IP-KVM.

Active Directory Domain

This option represents the active directory domain that is configured in the Microsoft Active Directory server. This option is only valid if you have chosen a Microsoft Active Directory as the LDAP server type. E.g.: test.domain.com

Using the RADIUS Server

RADIUS (Remote Authentication Dial In User Service) is a protocol specified by the Internet Engineering Task Force (IETF) working group. There are two specifications that make up the RADIUS protocol suite: Authentication and Accounting. These specifications aim to centralize authentication, configuration and accounting for dial-in services to an independent server. The RADIUS protocol exists in several implementations such as freeRADIUS, openRADIUS or RADIUS on UNIX systems. The RADIUS protocol itself is well specified and tested. We can give a recommendation for all products listed above, especially for the freeRADIUS implementation.

Note: *Currently, we do not support challenge/response. An Access Challenge response is seen and evaluated as an Access Reject.*

To access a remote device using the RADIUS protocol you have to login, first. You are asked to specify your user name and password, then. The RADIUS server reads your input data (Authentication) and the IP-KVM looks for your profile (Authorization). The profile defines (or limits) your actions and may differ depending on your specific situation. If there is no such profile your access via RADIUS will be refused. In terms of the remote activity mechanism the login via RADIUS works similar to the Remote Console. If there is no activity for half an hour your connection to the IP-KVM will be aborted and closed.

Server

Enter either the IP address or the hostname of the RADIUS Server to connect to. For the hostname DNS has to be configured and enabled.

Shared Secret

A shared secret is a text string that serves as a password between the RADIUS client and RADIUS server. In this case the IP-KVM serves as a RADIUS client. A shared secret is used to verify that RADIUS messages are sent by a RADIUS-enabled device that is configured with the same shared secret and to verify that the RADIUS message has not been modified in transit (message integrity). For the shared secret you can use any standard alphanumeric and special characters. A shared secret may consist of up to 128 characters in length and may contain both lowercase and uppercase letters (A-Z,a-z), numerals (0-9) and other symbols (all characters not defined as letters or numerals) such as an exclamation mark (!) or an asterisk (*).

Authentication Port

The port the RADIUS server listens for authentication requests. The default value is #1812.

Accounting Port

The port the RADIUS server listens for accounting requests. The default value is #1813.

Timeout

Sets the request time-to-live in seconds. The time-to-live is the time to wait for the completion of the request. If the request job is not completed within this interval of time it is cancelled. The default value is 1 second.

Retries

Sets the number of retries if a request could not be completed. The default value is 3 times.

11.5.9 USB

USB Device Settings

Force using USB 1.1 *

USB 2.0 is the default setting, if the operating system of the managed computer does not support USB 2.0, please force it to USB 1.1.

Apply **Reset to defaults**

* Stored value is equal to the default.

USB 2.0 is the default setting, if the operating system of the managed computer does not support USB 2.0, please force it to USB 1.1.

11.5.10 Config File

Device Configuration

Configuration Restore **Browse** **Restore**

Configuration Backup **Backup**

With this function, the configuration settings can be saved (Backup) in a file (config.gz), or reloaded (Restore) from a previously saved configuration file

11.6 Maintenance

The administrator performs various maintenance activities on the IP-KVM. These include viewing its status, update firmware, view the event log and reset the unit



11.6.1 Device Information

The Device Status page contains a table with information about the IP-KVM's hardware and firmware. This information is useful if technical support is required.

Device Information

Product Name: KVM-IP
Server Name: KVM Server
Serial Number: ABC00001
Board ID: 0623d9013448456a
Device IP Address: 192.168.0.220
Device MAC Address: 00:22:e4:00:00:0f
Firmware Version: 04.02.00
Firmware Build Number: 6302
Firmware Description: Standard_101_090423
Hardware Revision: 0x15

[View the datafile for support.](#)

Connected Users

super (192.168.0.98) RC active
super (192.168.0.30) 15 min idle

Figure 75 Device Information

The Data file for support allows you to download the IP-KVM data file with specific support information. This is an XML file with certain customized support information like the serial number etc. You may send us this information together with a support

request. It will help us to locate and solve your reported problem.

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

Figure 76 Connected Users

Figure above displays the IP -KVM 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 mode) is added. For more information about this option see the Section called Remote Console Control Bar.

To display the user activity the last column contains either the term active for an active user or 30 min idle for an user who is inactive for a certain amount of time.

11.6.2 Event log

The figure below displays the log list including the events that are logged by the IP-KVM

Event Log

[Prev] [Next]		
Date	Event	Description
10/12/2007 07:26:07	Authentication	User 'super' logged in from IP address 220.135.171.106
10/12/2007 00:07:54	Remote Console	Connection to client 59.120.210.87 closed.
10/12/2007 00:06:19	Remote Console	Connection to client 59.120.210.87 established.
10/12/2007 00:05:57	Authentication	User 'super' logged in from IP address 59.120.210.87
10/12/2007 00:05:41	Remote Console	Connection to client 59.120.210.87 closed.
10/12/2007 00:05:20	Remote Console	Connection to client 59.120.210.87 established.
10/12/2007 00:04:39	Authentication	User 'demo' logged in from IP address 59.120.210.87
10/11/2007 10:22:00	Remote Console	Connection to client 220.135.171.106 closed.
10/11/2007 10:17:11	Remote Console	Connection to client 220.135.171.106 established.
10/11/2007 10:16:46	Authentication	User 'demo' logged in from IP address 220.135.171.106
10/11/2007 08:31:28	Remote Console	Connection to client 60.250.63.98 closed.
10/11/2007 08:30:15	Remote Console	Connection to client 60.250.63.98 established.
10/11/2007 08:29:56	Authentication	User 'super' logged in from IP address 60.250.63.98
10/11/2007 08:29:16	Authentication	User 'super' logged in from IP address 60.250.63.98
10/11/2007 07:06:54	Remote Console	Connection to client 60.250.63.98 closed.
10/11/2007 07:00:15	Remote Console	Connection to client 60.250.63.98 established.
10/11/2007 07:00:02	Authentication	User 'super' logged in from IP address 60.250.63.98
10/11/2007 06:59:30	Remote Console	Connection to client 60.250.63.98 closed.
10/11/2007 06:55:26	Remote Console	Connection to client 60.250.63.98 established.
10/11/2007 06:55:20	Remote Console	Connection to client 60.250.63.98 closed.
[Prev] [Next]		

Figure 77 Event Log List

11.6.3 Update Firmware

Firmware can be easily upgraded via web page. This section describes the upgrade procedures.

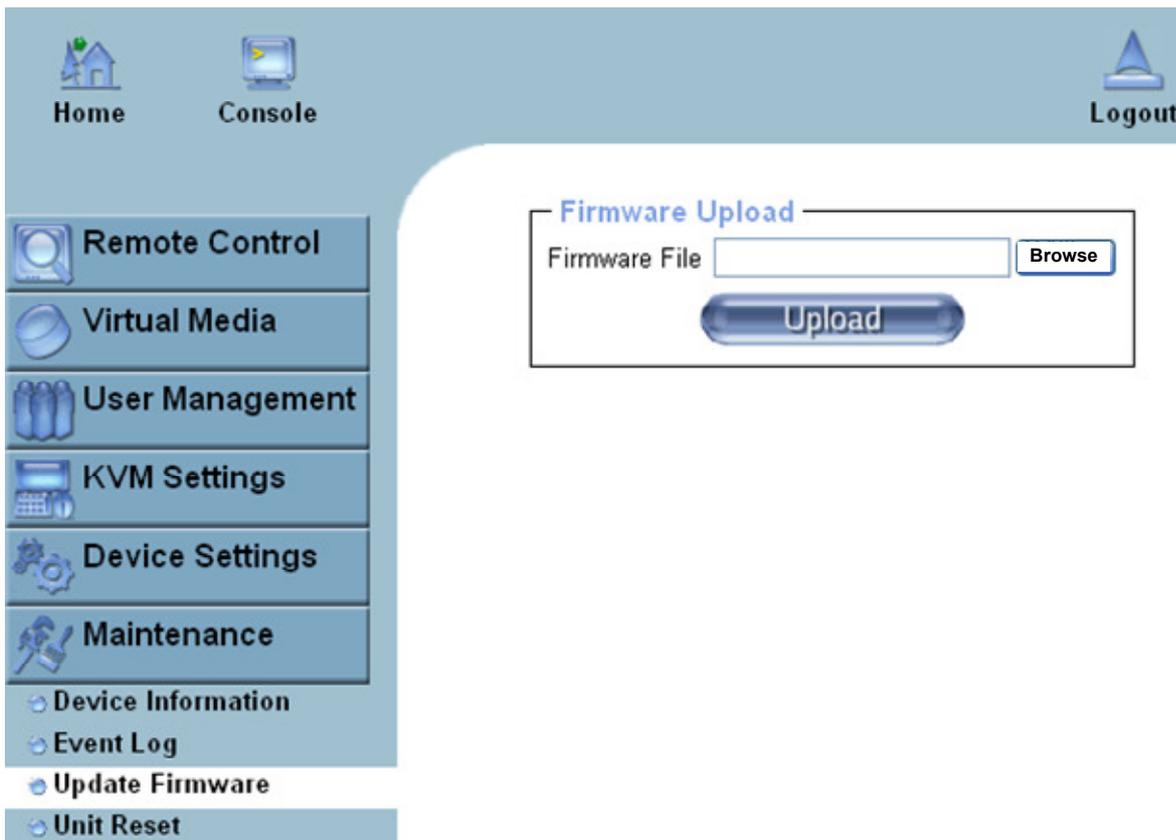


Figure 78 Update Firmware

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

A new firmware update is a binary file which will be sent to you by email or which you can download from the supplier web site. If the firmware file is compressed (file suffix .zip) then you must unzip it before you can proceed. Under the Windows operating system you may use WinZip from <http://www.winzip.com/> for decompression. Other operating systems might provide a program called unzip.

Before you can start updating the firmware of your IP-KVM the new uncompressed firmware file has to be accessible on the system that you use for connecting to the IP-KVM.

Warning !!!

This process is not reversible and might take few minutes. During this upgrading process, we should not disconnect the power or the Ethernet cable, since it may causes upgrade failure and destroy the image in Flash memory.

The IP-KVM will automatically initiate a self-reboot upon completion of upgrade process to make newly upgraded firmware effective. At the end of countdown counter expires, the browser will redirect user to the login homepage. Users shall refer to **Maintenance > Device Information** page to check the firmware version and confirm the operation.

Warning !!!

IP-KVM will verify firmware checksum before proceed upgrade procedure. The mechanism help to prevent false firmware file to damage IP-KVM. It is crucial to keep a steady power supply during the procedure otherwise the power-off event may damage the permanent storage and disable IP-KVM.

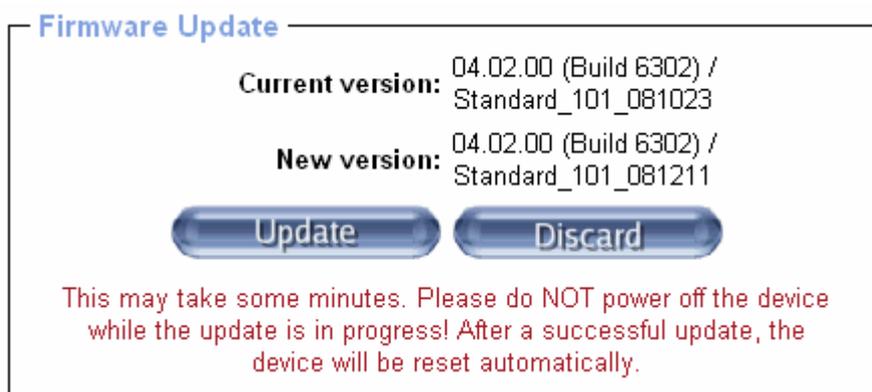
Updating the firmware is a three-stage process:

1. Upload the new firmware file onto the IP-KVM unit.



In order to do that you need to select the file on your local system using the button **“Browse”** of the Upload Firmware panel. Click **Upload**. 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 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 **Update** will store the new version and substitute the old one completely.

3. After the firmware updated successfully, the device will be rebooted and redirected to the login web page automatically.

Home Console Logout

Firmware updated successfully.
The device will be reset in a few seconds.

Notice
 You should be automatically redirected to the login page in 1 minute. If this does not work, use this [link to the login page](#).

Authenticate with Username and Password!

Username

Password

Login

Check out the device information to see the updated firmware is running.

Home Console Logout

Remote Control

Virtual Media

User Management

KVM Settings

Device Settings

Maintenance

Device Information

Event Log

Update Firmware

Unit Reset

Device Information

Product Name: KVM-IP
Serial Number: ABC00001
Board ID: 0936b201a64790ca
Device IP Address: 192.168.0.193
Device MAC Address: 00:11:c2:33:aa:56
Firmware Version: 04.02.00
Firmware Build Number: 6302
Firmware Description: Standard_101_081211
Hardware Revision: 0x15

[View the datafile for support.](#)

Connected Users

super (192.168.0.98) active

11.6.4 Unit Reset

This section allows you to reset specific parts of the device. This involves resetting keyboard/mouse, USB, video engine, or the IP-KVM device itself.

In general, the IP-KVM requires a reset when implementing a firmware update. In the event of an abnormal operation, a number of subsystems may be reset without resetting the entire IP-KVM.

Click **Maintenance > Unit Reset**, the following window displays.

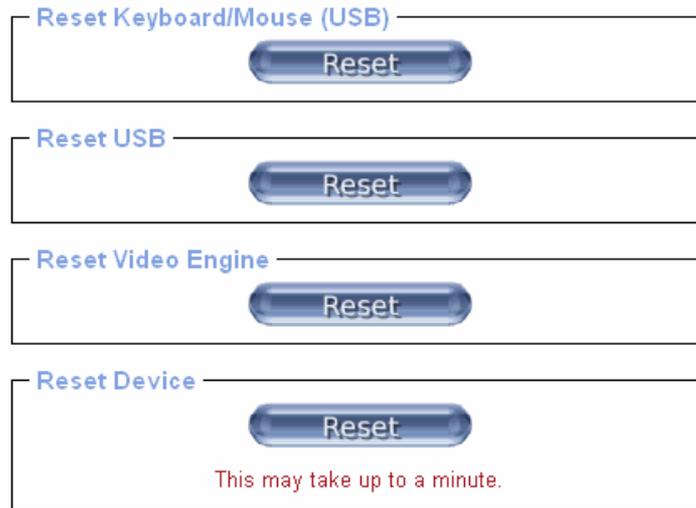


Figure 79 Unit Reset

To reset a certain IP-KVM functionality click on the **Reset** button as displayed in figure below.

Clicking on **Reset** of **Reset Device** will reboot the IP-KVM system. It will close all current connections to the administration console and to the Remote Console. The whole process will take about one minute. Resetting subdevices (e.g. video engine) will take few seconds only and does not result in closing connections.

Note: Only the **super** user is allowed to reset the IP-KVM.

11.6.5 Reset Factory Defaults

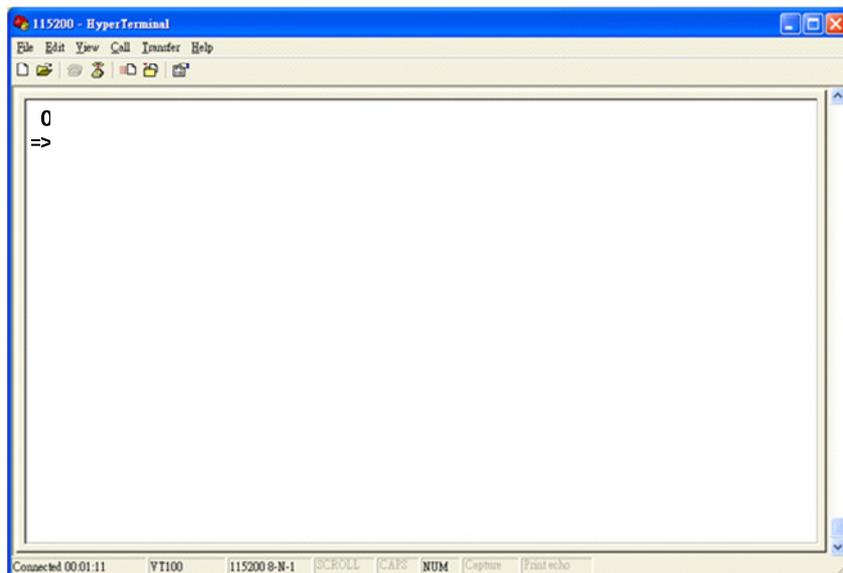
This function may be used when you forgot the password to log in the IP-KVM.

Note: The unit will reboot after this command. All current settings will be lost.

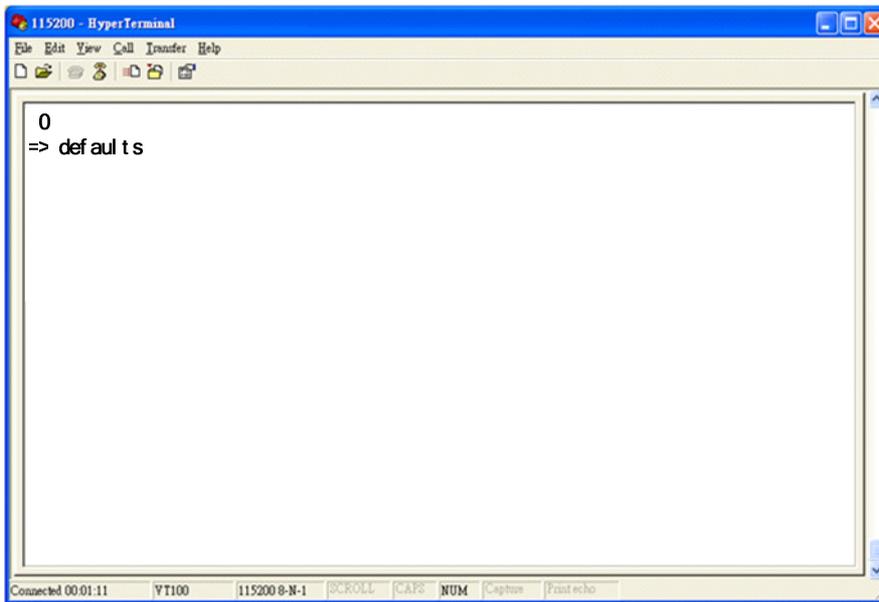
The following procedures will revert to factory default settings:

1. Connect a RS232 null modem cable from your local console PC to the IP-KVM Serial port. Configure your terminal emulation program (such as **HyperTerminal** or **PuTTY**) to the following settings: Baudrate **115200**, Data/stop bits **8-1**, Parity **none**, Flow control **none**.
2. Enter the debugging mode via reboot the IP-KVM system and hit the ESC key. There are two ways to enter the debugging mode:
 - (a) Power cycle (reboot) the IP-KVM device. Within 2 seconds of booting the IP-KVM, enter the **Esc** key a few times to get a => prompt.
 - (b) Press & hold **ESC** AND push and release **Reset** button, and then release **ESC** in 2 seconds.

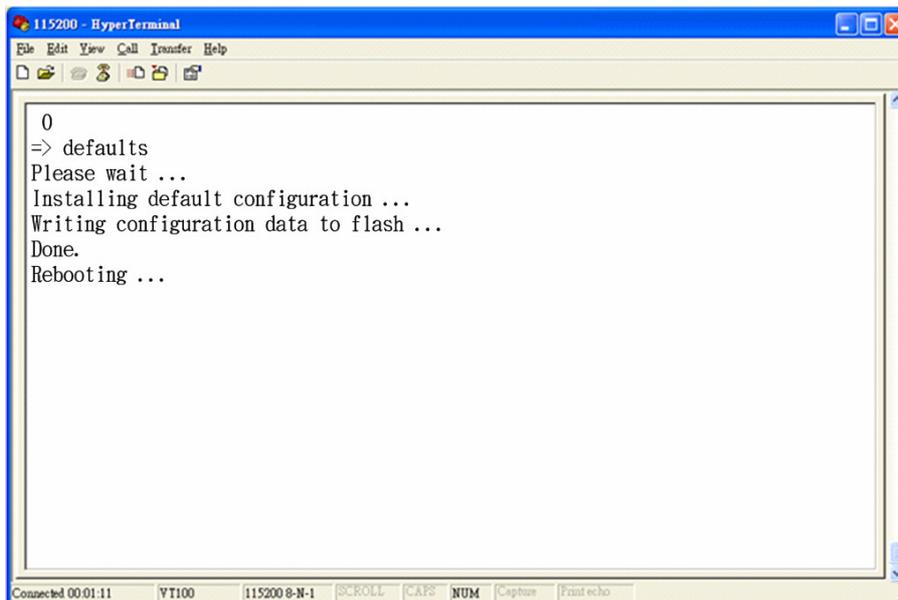
The debugging mode window will display as below.



3. Key in "**defaults**" command and then **Enter**. The unit will automatically set to factory default settings and reboot the system.



4. The following window displays if reverting to factory default is complete.



12. FAQ

1. **Does any software require on servers which connect to the IP-KVM?**

No, the IP-KVM is a 100% hardware solution. No extra software require on servers.

2. **What operating systems does IP-KVM support?**

The IP-KVM supports Windows, Unix, Unix-like Operating System (Sun Solaris, Linux) and Mac OS.

3. **What web browsers does IP-KVM support?**

The IP-KVM support Microsoft Internet Explorer version (v6.0 or above), Netscape, Mozilla, Safari, Firefox, Avant, World, Opera, and others.

4. **What Java version shall we install?**

We need to install Java Runtime Environment (version 1.5 or above) on the remote console PC.

5. **Does the IP-KVM work with other brand's KVM switch?**

Yes, the IP-KVM can work with most of standard KVM.

6. **How many letters the username and password can be set on IP-KVM?**

The IP-KVM accepts 32 letters of username and password.

7. **How many concurrent user of IP-KVM?**

The IP-KVM accepts 15 concurrent users.

8. **How many bits of data encryption provided by IP-KVM?**

The IP-KVM provides RSA 2048-bit encryption for authentication, and AES 256 bits encryption for data.

13. Troubleshooting

■ KVM Part

Symptom	Possible Cause	Recommended Solution
Keyboard and/or Mouse not working.	Keyboard and/or Mouse need to be reset	To unplug from console port(s), and then replug it / them into console in.
	Failed connection to the computer.	Check the cable connected from switch to computer and make sure it is connected properly.
	IP KVM needs to be reset	Power off all of devices and then power up again.
Master/ Slave daisy chained doesn't work	Incorrect configuration or improper installation procedures	Make sure the console of the Slave's connected to Master's PC port. Remove any possible power supplies to the slave (unplug all cables), before connecting it to the Master.
Double OSD images at cascade configuration	Improper slave connection procedure. Fail connection	Remove any possible power supplies to the Slave (unplug all cables), before connecting it to the Master. Make sure cable is connected well, Slave console link to Master port.
OSD menu is not at the proper position	OSD menu has fixed resolution and its size varies due to the changes of computer VGA resolution	Use <F1>: Set/Position to move OSD menu and banner to proper position.

■ OVER IP Part

1. Can't bring up the login page of IP-KVM web server.

Is the IP-KVM powered on? Verify your network configuration (IP address, subnet mask, router, firewall, etc.) are correct. You may ping the IP address of the IP-KVM to find out whether the IP-KVM is reachable via network. Without a ping functioning, IP-KVM can't work either.

2. I forgot my password. How can I reset the IP-KVM to factory defaults?

For a detailed description see the Section called **Reset to Factory Defaults** in Chapter 5 for detailed operation.

3. Login to IP-KVM fails.

Was the correct combination of user and password given? On delivery, the user "super" has the password "pass". Moreover your browser must be configured to accept

cookies.

4. **When a PC connects to the host USB (mini connector) and runs the PSetup utility, an error message occurred: “Exception processing message ...”**

This problem may be due to BIOS setting improperly. This problem will be disappeared after correcting the BIOS setting. If the PC does not equip with floppy diskette, please set BIOS to "**floppy not installed**", not "floppy 1.44MB".

5. **In the browser the web pages are inconsistent or chaotic.**

Make sure your browser cache settings are feasible. Especially make sure the cache settings are not set to something like “never check for newer pages”. Otherwise web pages may be loaded from your browser cache and not from the IP-KVM device itself.

6. **The Remote Console window of IP-KVM can not be opened.**

(1) Please make sure the remote console PC has been installed with Java Runtime Environment

(v1.5 or above). When trying to open the Remote Console, the  icon will appear on the upper-right corner if no Java Runtime Environment.

Notes:

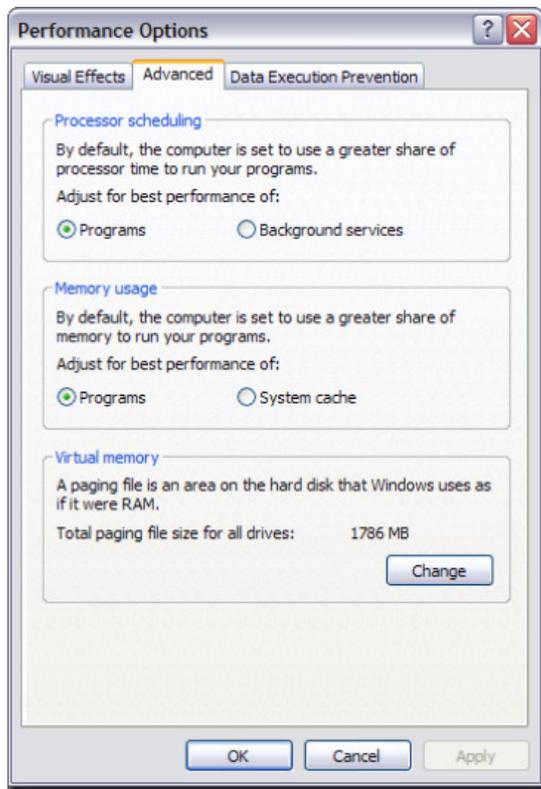
1. In order to run this function, the system need support JRE (Java Runtime Environment) version 5.0 (v1.5) or above. You can get the Java Software from the website <http://www.java.com/en/download/>
2. It's recommended to install newer Java version (e.g., version 6 update 11 or above) for better performance.

(2) Possibly a firewall prevents access to the Remote Console. Make sure the TCP port **443** (for both HTTPS and RFB) and #80 (for HTTP) are open for incoming TCP connection establishments.

7. **The Remote Console (Java Applet) hanged.**

The reason may be hidden in the very details of the Windows memory management configuration. The issue was that Windows was allocating more memory to system cache than to applications. Solving the issue is trivial:

- (a) Go to Control Panel - System.
- (b) In the Advanced tab, click Performance Settings.
- (c) Click the Advanced tab.
- (d) Memory Usage is probably adjusted for Best performance of System cache, change it to Best performance of **Programs** (default value) and click OK.
- (e) Restart computer. The problem should then disappear.

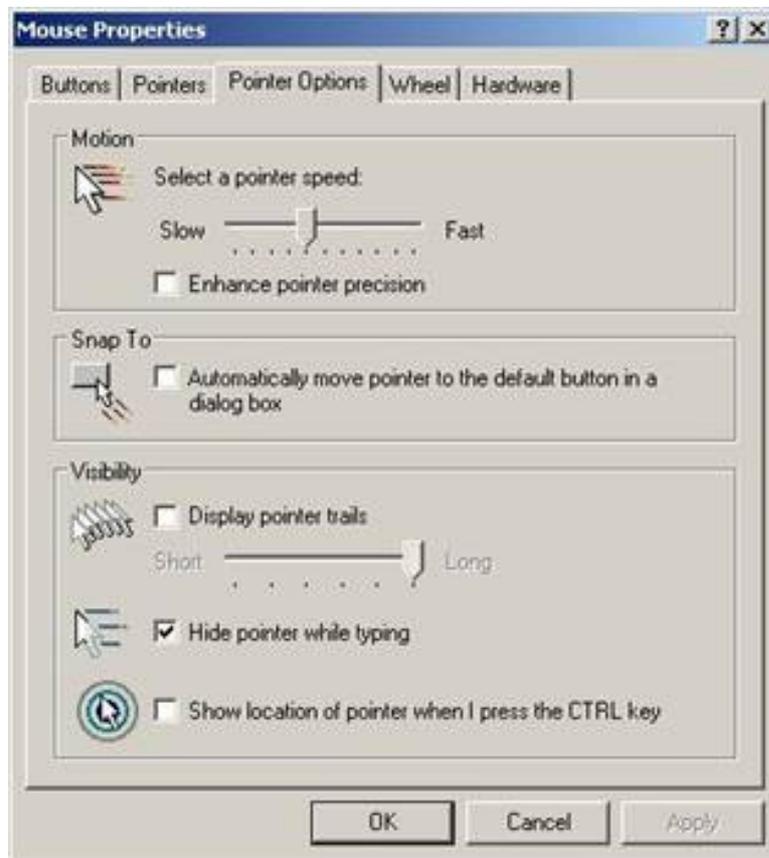


8. **Local mouse and remote mouse are not in sync after doing mouse Intelligent Sync.**

Please don't place mouse on upper-left corner of remote console window. Intelligent Sync (Options > Mouse handling) will re-calculate the coordinate of mouse from upper-left corner of remote console window. If still not in sync, please check whether the "Enhance pointer precision" is **disable** in the mouse settings of host (target) computer OS (see the next item).

9. **In Double mouse mode the local and remote mouse pointers are not in sync even after clicking the Sync button.**

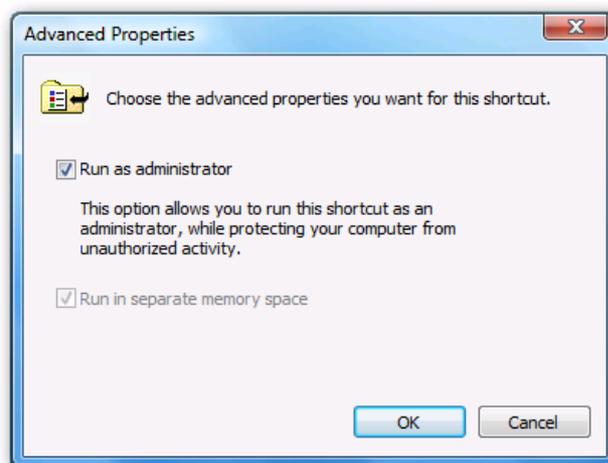
If your IP-KVM connects to PS/2 host computer and select Double mouse mode, please **disable** the "Enhance pointer precision" and "Automatically move mouse pointer to the default button in a dialog box" in the mouse settings of host (target) computer OS.



10. In Windows Vista, when Remote Console is opened, the mouse won't work in Remote Console window, and Drive Redirection won't work either.

You should run IE in Administrator mode;

- (a) right-click on IE shortcut, select "Run as administrator", or
- (b) right-click on IE shortcut, select properties, Shortcut-Advanced properties, select "Run as administrator". Note: this will always start IE in Administrator mode.



11. Virtual Media (Drive Redirection) fails to connect to an USB drive

This problem may be due to BIOS setting improperly. This problem will be disappeared after correcting the BIOS setting. If the PC does not equip with floppy diskette, please set BIOS to "**floppy not installed**", not "floppy 1.44MB".

12. When connecting Local console, the computer VGA resolution does not match the monitor's resolution.

Make sure VGA resolution works fine if directly connect the monitor to the computer. Please turn off the computer, wait few seconds then turn on again. Notice that during

computer startup, it will try to obtain the information of the connected monitor resolution from its VGA port. So before computer startup, the monitor and KVM switch should be already ON and running.

Please follow the power up procedures: power on monitor, power on IP-KVM, wait for IP-KVM startup complete (about 60 seconds), and then power on the Host (Target) computer.

13. The video quality is bad or the picture is grainy

Try to correct the brightness and contrast settings (in Options > Video Settings) until satisfaction, or simply click on the “Auto Adjust Video” button  to correct a flickering video.

14. The video data on the local monitor is surrounded by a black border.

This is not a failure. The local monitor is programmed to a fixed video mode that can be selected in the video settings of the IP-KVM. Refer to the Section called **Control Bar of Remote Console** in Chapter 4 for further explanation.

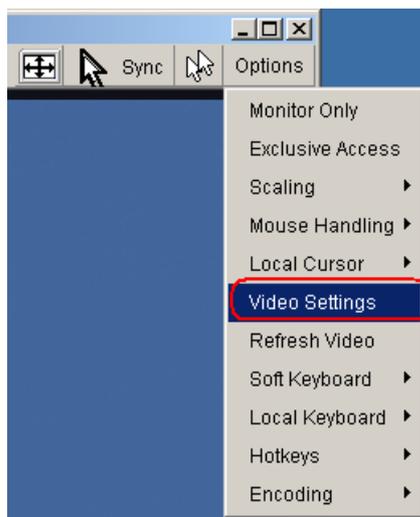
15. The local monitor displays video data but the remote screen remains blank.

If the Remote Console is connected (look at the status line of the Remote Console) you should verify that the flat panel interface is not switched off by the video driver of your operating system.

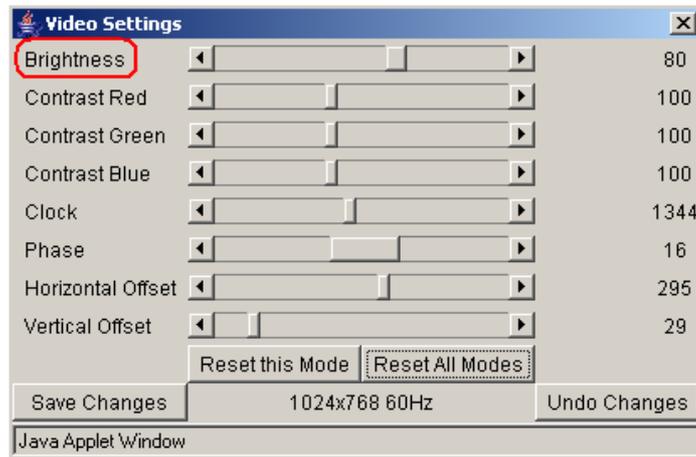
16. The color of remote console displaying a pinkish tint.

If you are experiencing the **remote control screen displaying a pinkish tint** with some graphic cards, please try adjusting the brightness of the remote console by following steps below.

(a) Click **Video Settings** in Options menu of the remote console.



(b) Adjust the **Brightness** setting until the pinkish tint is reduced or eliminated.



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

You have to define a so-called “Button Key”. This can be done in the Remote Console settings.

18. Windows XP doesn't awake from standby mode

This is possibly a Windows XP problem. Try not to move the mouse while XP goes in standby mode.

19. Can't upload the signed certificate in MacOS X

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 (Mozilla, FireFox).

20. The Remote Console does not open with Opera in Linux.

Some versions of Opera do not grant enough permissions if the signature of the applet cannot be verified. To solve the problem, add the lines

```
grant codeBase "nn.pp.rc.RemoteConsoleApplet" {
permission java.lang.RuntimePermission
"accessClassInPackage.sun.*";
```

to the java policy file of opera (e.g. /usr/share/opera/java/opera.policy).

14. Addendum

A. Key Codes

Table below shows the key codes used to defines keystrokes or hotkeys for several functions. Please note that these key codes do not represent necessarily key characters that are used on international keyboards. They name a key on a standard 104 key PC keyboard with an US English language mapping. The layout for this keyboard is shown in figure below. However, most modifier keys and other alphanumeric keys used for hotkey purposes in application programs are on an identical position, no matter what language mapping you are using. Some of the keys have aliases also, means they can be named by 2 key codes (separated by comma in the table).

Esc	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	Prnt	Scr1	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	CR
Lctrl	Win	Alt	Space					AltGR	Menu	RCtrl	Left	Down	Right				0	.		

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

B. Video Modes

Table below lists the video modes IP-KVM supports. Please don't use other custom video settings besides of these. If done so, IP-KVM may not be able to detect them.

Resolution (x, y)	Refresh Rates (Hz)
640 x 480	60, 72, 75
800 x 600	56, 60, 70, 72
1024 x 768	60, 70, 72
1152 x 864	75
1280 x 960	60
1280 x 1024	60, 75
1600 x 1200	60
1920 x 1200 (local console)	60

C. User Role Permissions

Table below lists the user role permissions granted for three user role groups:

“Superuser”, “Administrator”, and “User”

Function	User	Administrator	Super
Remote Control: KVM	x	x	x
Remote Power Wakeup	-	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

D. 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	Color 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 color)	Video Optimized	16 bit	4.3 - 5.0 MB/s	uncompressed, synchronized video data, most bandwidth needed
LAN (high color)	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 colors
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

E. 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, UCP
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

H. Protocol Glossary

BOOTP (Bootstrap Protocol)

Similar to DHCP, but for smaller networks. Automatically assigns the IP address for a specific duration of time.

CHAP (Challenge Handshake Authentication Protocol)

A secure protocol for connecting to a system; it is more secure than the PAP.

DHCP (Dynamic Host Configuration Protocol)

Internet protocol for automating the configuration of computers that use TCP/IP.

DNS (Domain Name Servers): A system that allows a network name server to translate text host names into numeric IP addresses.

LDAP (Lightweight Directory Access Protocol)

A protocol for accessing directory information.

NAT (Network Address Translation)

An Internet standard that enables a LAN to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. This enables a company to shield internal addresses from the public Internet.

NFS (Network File System)

A protocol that allows file sharing across a network. Users can view, store, and update files on a remote computer. You can use NFS to mount all or a portion of a file system. Users can access the portion mounted with the same privileges as the user's access to each file.

NTP (Network Time Protocol)

A protocol used to synchronize time on networked computers and equipment.

PAP (Password Authentication Protocol)

A method of user authentication in which the username and password are transmitted over a network and compared to a table of name-password pairs.

PPP (Point-to-Point Protocol)

A protocol for creating and running IP and other network protocols over a serial link.

RADIUS (Remote Authentication Dial-In User Service)

An authentication and accounting protocol. Enables remote access servers to communicate with a central server to authenticate dial-in users and their access permissions. A company stores user profiles in a central database that all remote servers can share.

SNMP (Simple Network Management Protocol)

A protocol that system administrators use to monitor networks and connected devices and to respond to queries from other network hosts.

SMTP (Simple Mail Transfer Protocol)

TCP/IP protocol for sending email between servers.

SSL (Secure Sockets Layer)

A protocol that provides authentication and encryption services between a web server and a web browser.

SSH (Secure Shell)

A secure transport protocol based on public-key cryptography.

Telnet

A terminal protocol that provides an easy-to-use method of creating terminal connections to a network host.

15. Firmware Upgrade Procedures

The KVM switch provides the firmware update for the following functions:

- **USB console:** Update for USB console keyboard/mouse compatibility.
The firmware filename for USB console is like **OTG_182S_SCAN_Vx.xx.300**.
- **PS/2 console:** Update for PS/2 console keyboard/mouse compatibility.
The firmware filename for PS/2 console is like **CONSOLE_Vx.xx.28**.
- **OSD:** Update for on-screen-display functions.
The firmware filename for OSD is like **OSD_Vx.xx.56**.

To update the firmware, please do the followings:

1. Disconnect all the KVM cable between KVM and computer.
2. Disconnect all the keyboard and mouse plugged on KVM.
3. Disconnect the VGA cable between KVM and monitor.
4. Apply 5V adapter to the KVM.



Figure 80

5. Execute the firmware update utility "Prog182S.EXE".

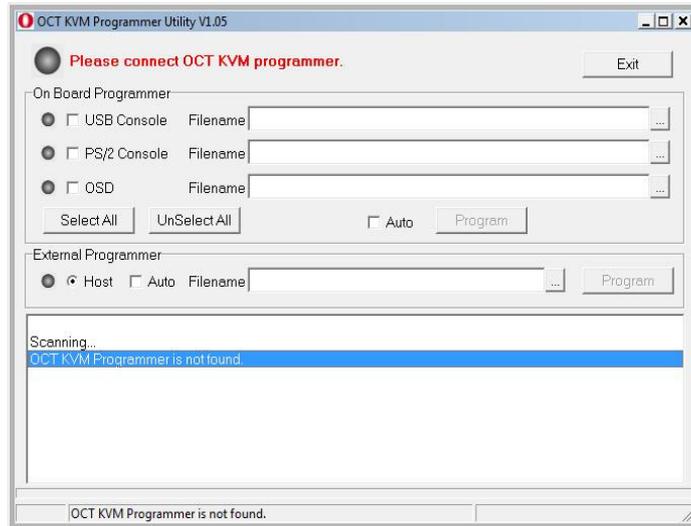


Figure 81

6. Use the mini-USB cable to connect KVM firmware update port and the USB port of computer which runs the firmware update utility.



Figure 82

7. The utility will scan the KVM programmer automatically.

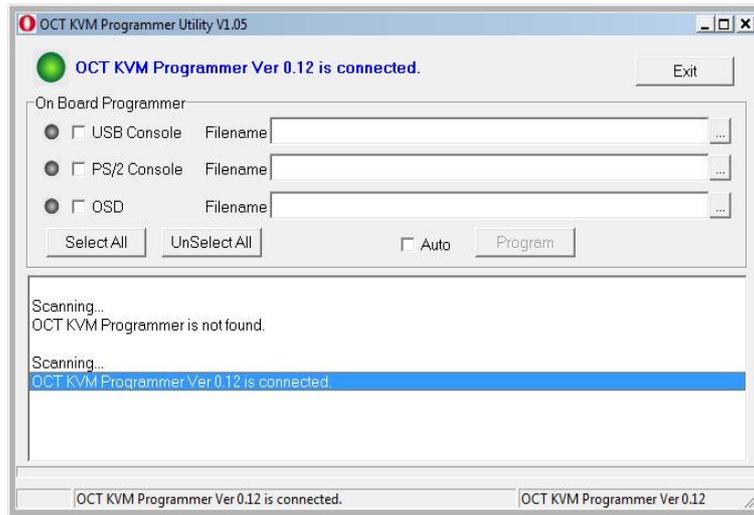


Figure 83

8. Please select the target by enabling the check box, for example “USB Console”, and click the file browsing button to select the firmware file to update.

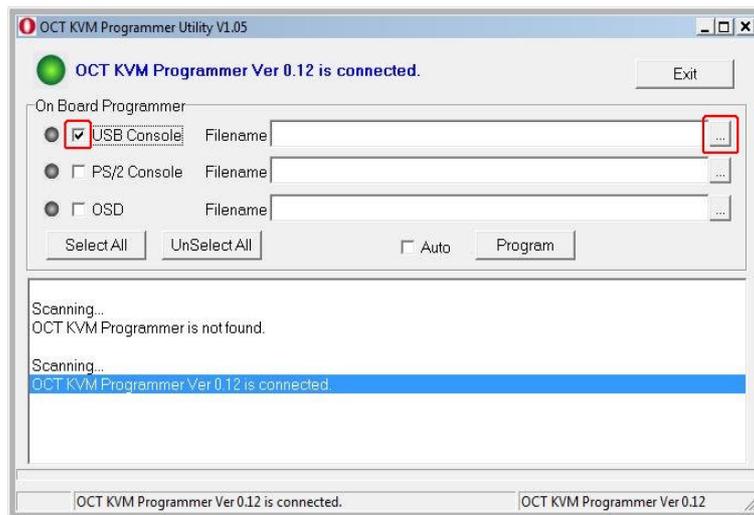


Figure 84

9. Select the firmware file to update.

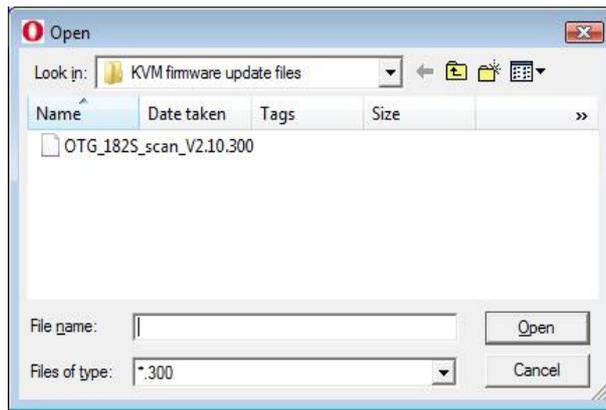


Figure 85

10. Click the “Program” button to start firmware programming.

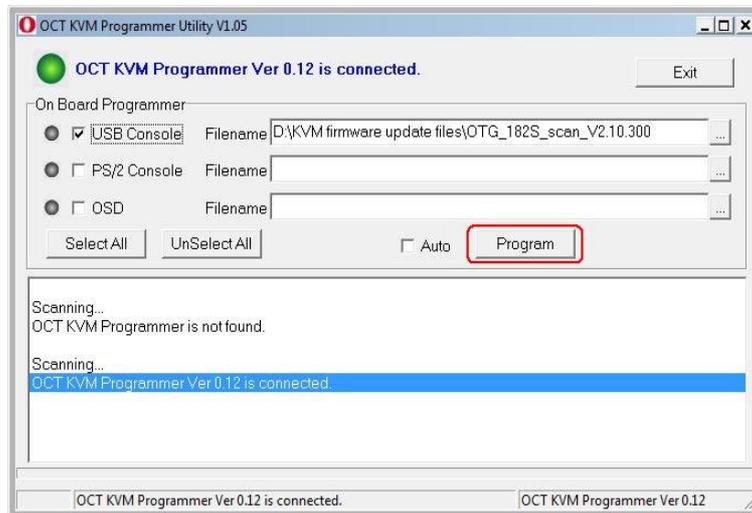


Figure 86

11. A status bar is shown under the panel to indicate the update progress.

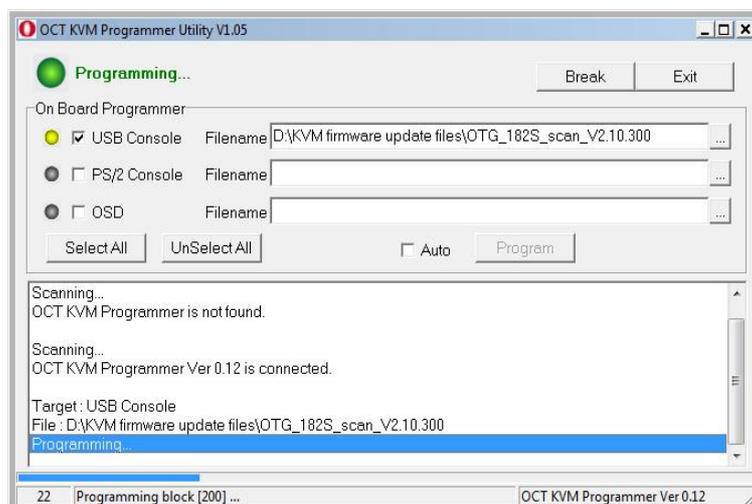


Figure 87

12. The firmware is updated successfully.

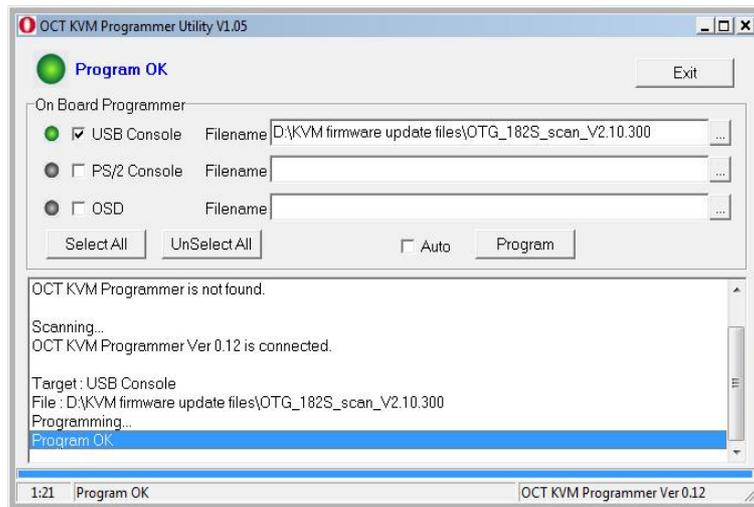


Figure 88

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FCC Statement

This device generates and uses radio frequency and may cause interference to radio and television reception if not installed and used properly. This has been tested and found to comply with the limits of a Class B computing device in accordance with the specifications in Part 15 of the FCC Rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by plugging the device in and out, the user can try to correct the interference by one or more of the following measures:

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

