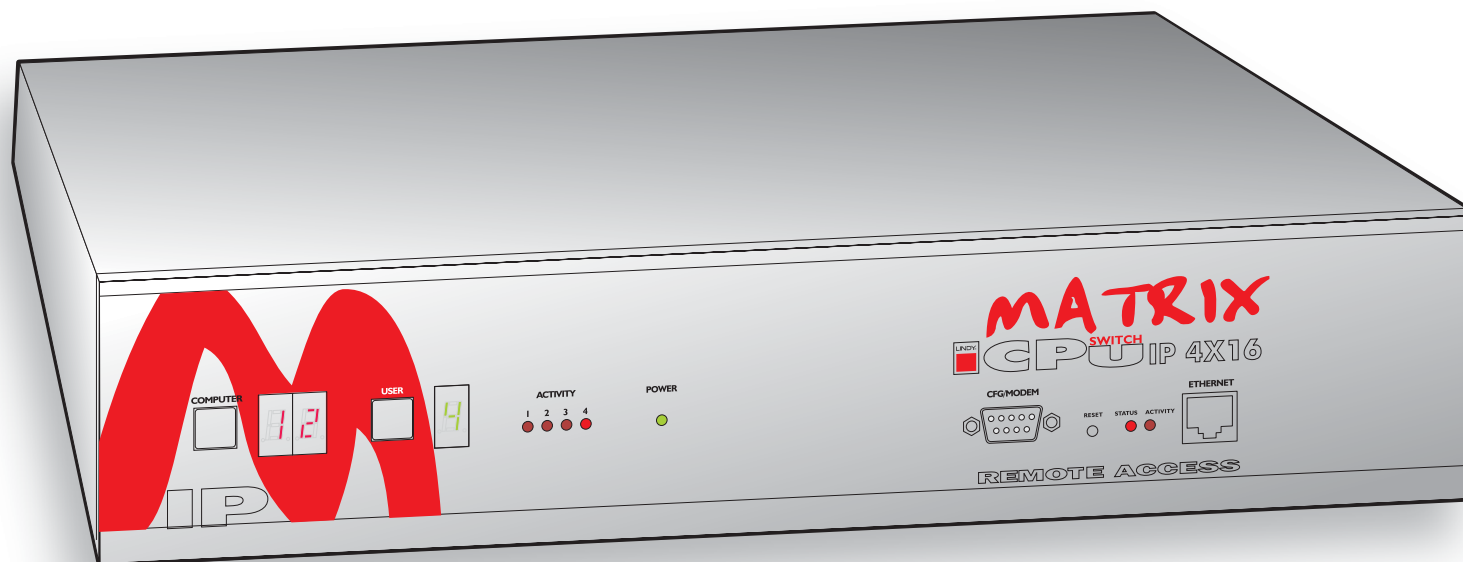




Matrix CPU Switch IP

User Guide



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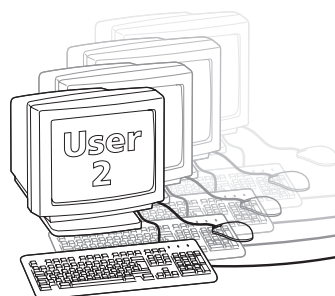


Introduction

Thank you for choosing the Matrix CPU Switch IP from LINDY. Drawing upon our considerable experience in the production of professional switching products, Matrix CPU Switch IP offers the flexibility that you need, together with the reliability that you expect.

At its heart Matrix CPU Switch IP is a high quality Keyboard, Video & Mouse (KVM) switch that simultaneously connects four operators to any of sixteen computer systems. Unlike more basic switches, those operators are not all confined to the location of the switch. Thanks to in-built circuitry, two of the operators can be placed up to 200m away (requiring additional receiver units) and one port is accessible from almost anywhere worldwide, thanks to a self-contained IP section.

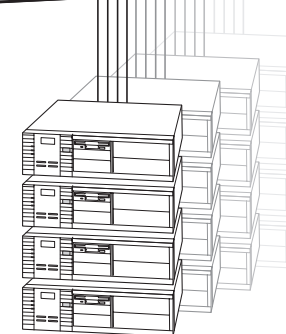
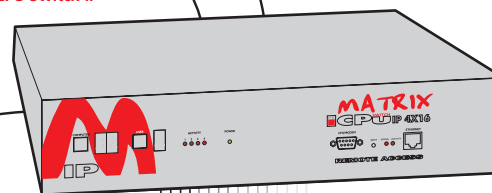
Remote users linked via IP (Internet or Intranet) connections



IP connection

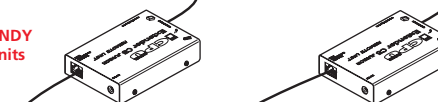


Matrix CPU Switch IP

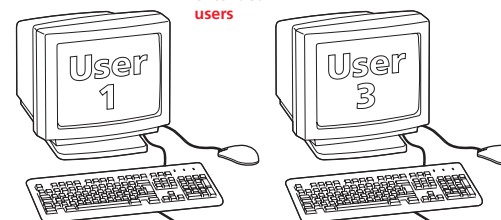


Up to sixteen directly connected computers or many more when used with other switches

Optional LINDY extender units

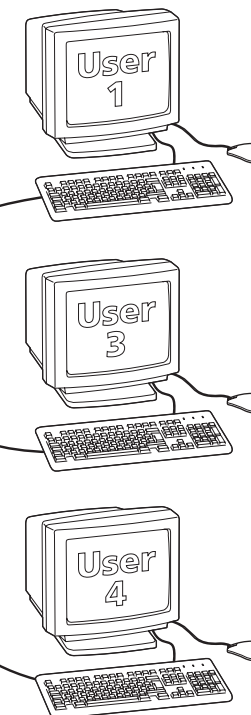


Two extended users



The extended users feed into ports 1 and 3. These can be used in conjunction with the locally connected users of those two ports. Control of each dual access port is arbitrated by the Matrix CPU Switch IP.

Three locally connected users



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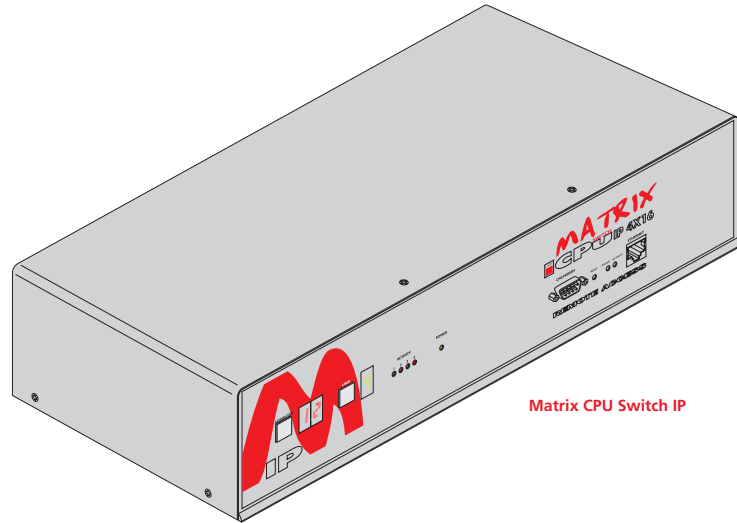
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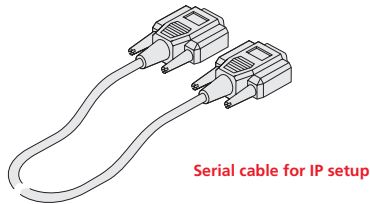
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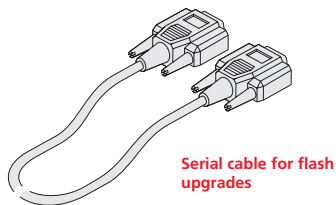
What's in the box



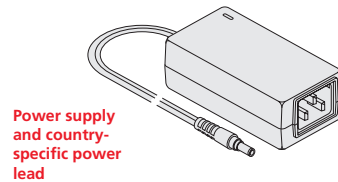
Matrix CPU Switch IP



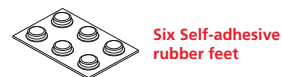
Serial cable for IP setup



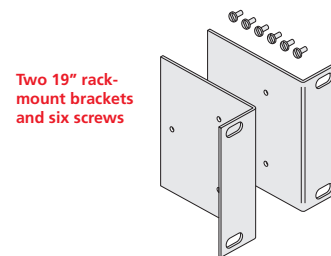
Serial cable for flash upgrades



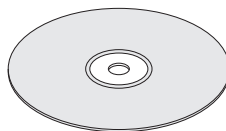
Power supply and country-specific power lead



Six Self-adhesive rubber feet

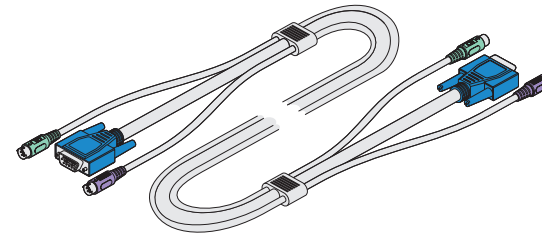


Two 19" rack-mount brackets and six screws

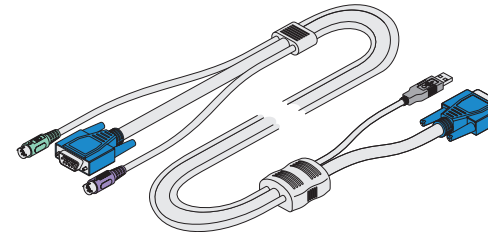


CD-ROM

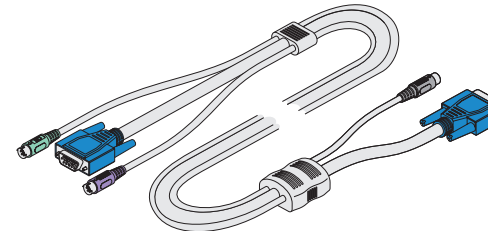
What you may additionally need



KVM cables
One set per connected computer
Part numbers: 33711 - 33718
(cable lengths available:
1, 2, 5 or 10 metres)



USB KVM converter
Required to connect with computers that use a USB port to connect their keyboard and mouse
Part number: 42867



SUN MD8 KVM converter
Required to connect Sun computers that use a mini-DIN port to connect their keyboard and mouse
Part number: 42870

Master power switch for connection to Matrix CPU Switch IP or standalone Ethernet operation

Slave power switches for connection to Matrix CPU Switch IP or master power switch

PS/2 to AT-style keyboard converter
(part number: 70130)

PS/2 to 9-pin serial mouse converter
(part number: 70058)



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Installation

This chapter covers the physical mounting and connection of the Matrix CPU Switch IP.

Mounting

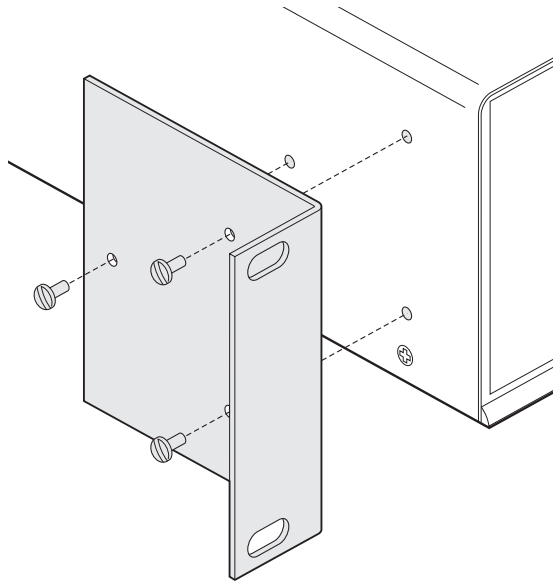
The initial step is to mount the Matrix CPU Switch IP in an optimum position, where:

- It is in close proximity to the various computer systems that will be connected to it.
- There is a power supply socket.
- There is an Ethernet connection for the remote IP section.

The Matrix CPU Switch IP can be used on a desktop or mounted within a 19" rack. For desktop applications, attach the supplied self-adhesive feet to the underside to avoid damage to the desktop surface. For rack-mount applications, attach the supplied brackets and mount the unit within the frame before connecting any cables.

To attach the rack-mount brackets

- 1 On either side of the Matrix CPU Switch IP casing, position a rack mount bracket with the slotted holes facing out from the front of the unit.
- 2 Secure the bracket with three of the supplied screws.



Connections

Installation of the Matrix CPU Switch IP involves numerous connections, which can be classified into the following basic groups:

- [Computer port connections](#)
- [Local user port connections](#)
- [Extended user port connections](#)
- [Remote \(IP\) user port connections](#)
- [Power supply connection](#)

There are also connections that can be made to achieve more advanced configurations:

- [Power switching connections](#)
- [Cascade connections](#)

Computer port connections

The Matrix CPU Switch IP can be *directly* connected to a maximum of sixteen computer systems. Using KVM cable sets (part numbers: 33711 - 33718 - *cable lengths available: 1, 2, 5 or 10 metres*), each computer is connected to one of the sixteen numbered ports at the rear of the Matrix CPU Switch IP.

Further systems may be connected, by linking other LINDY switching products using a cascade arrangement (explained in the 'Cascade connections' section).

To connect a computer

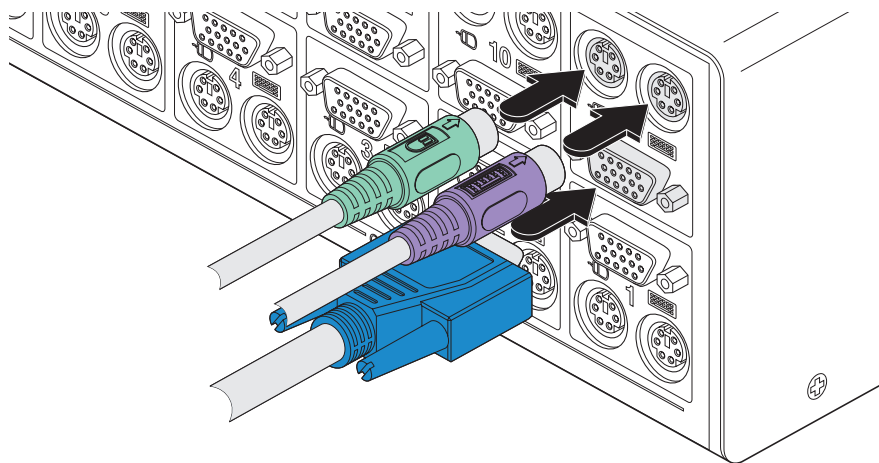
- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all systems to be connected.

(Note: If it is not possible to switch off a system prior to connection, then a 'Hot plug' procedure is available – see the [Hot plugging and mouse restoration](#) section for more details).

- 2 Connect the plugs at one end of a KVM cable set to the keyboard, video and mouse sockets of the computer (for keyboard and mouse plug conversion information – see [Appendix 4](#)).

Monitor (video)		Blue
Keyboard		Purple
Mouse	 or 	Mid green

- 3 Connect the plugs at the other end of the KVM cable set to the corresponding sockets, of the required port (1 to 16), at the rear of the Matrix CPU Switch IP.



Note: Not all sixteen computer ports need be used and not all connected computers need to be switched on, Matrix CPU Switch IP can sense the presence or absence of systems.

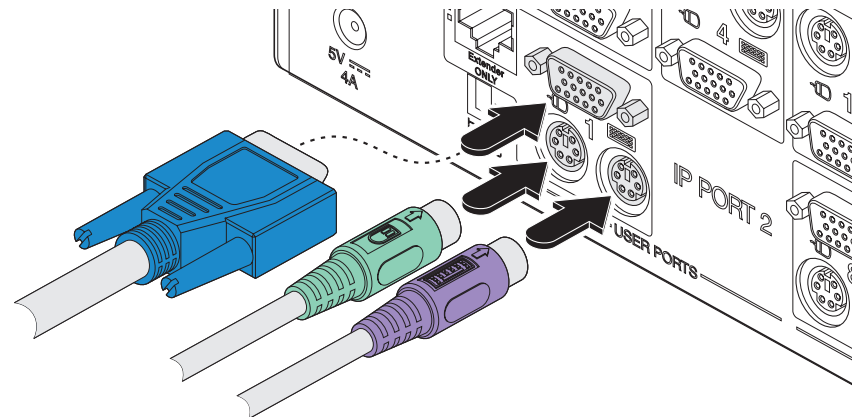
Local user port connections

There are three user ports available at the rear of the Matrix CPU Switch IP. Each port consists of three sockets to accommodate: a keyboard, a video monitor and a mouse. Two of the ports (1 and 3) also have additional extender sockets which (in conjunction with optional remote receiver units) allow their keyboards, monitors and mice to be positioned up to 200 metres from the Matrix CPU Switch IP – see the [Extended user port connections](#) section for more details.

Note: The Matrix CPU Switch IP maintains a log of all keyboard and mouse mode and resolution settings that are requested by each of the connected computers. These settings are automatically restored to the shared keyboard and mouse when the Matrix CPU Switch IP channel is switched, thus ensuring maximum software compatibility. The keyboard num, caps and scroll lock states are a visible example of this process.

To connect a local user port

- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all devices to be attached.
- 2 Connect the cables from your keyboard, video monitor and mouse to the three sockets of the required user port (1, 3 or 4), at the rear of the Matrix CPU Switch IP (for keyboard and mouse plug conversion information – see [Appendix 4](#)).



Note: Between the three user ports, no commonality of keyboards, video monitors or mice is required as all devices attached to each port are handled individually.

Extended user port connections

Of the three user ports at the rear of the Matrix CPU Switch IP, two of these (ports 1 and 3) offer an additional ability to extend the distance between the Matrix CPU Switch IP and the keyboard, video monitor and mouse up to 200m. For this purpose, ports 1 and 3 feature additional RJ45 connectors of the type used for standard Ethernet twisted pair cabling. This arrangement allows standard structured cable runs to be used, however, the signals presented at these connectors are proprietary analogue signals, NOT digital Ethernet signals.

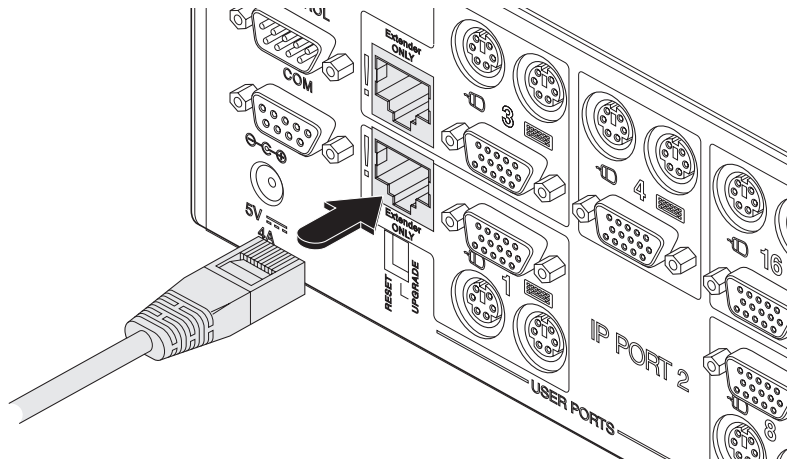
IMPORTANT: *Never connect the port 1 and 3 extender sockets to an Ethernet hub or other digital device, damage to the Matrix CPU Switch IP and/or other equipment may result.*

For each port extender, a single twisted pair cable and a LINDY receiver unit (Extender Junior, Extender Plus, Extender Pro or C5 Extender Junior remote - but NOT KVM C5 Extender Pro remote) is required.

The extender options for ports 1 and 3 can be used in addition to (or instead of) the local keyboard, video and mouse connections on those ports. If the local and extended options for a port are both used, then only one set may operate at any one time. In these cases, access to the Matrix CPU Switch IP is arbitrated on a 'first-come, first-served' basis between the local and extended devices.

To connect an extended user port

- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all devices to be attached.
- 2 Connect an appropriate twisted pair cable (of no more than 200m in total length) between the required port extender socket and the remote receiver unit.



- 3 Connect the cables from your keyboard, video monitor, mouse and power supply to the remote receiver unit in accordance with its user guide.

Remote (IP) user port connections

A key function of the Matrix CPU Switch IP is its remote IP connection capability, which allows universal remote user access to the Matrix CPU Switch IP through a secure web browser link. The physical connection is available at the Matrix CPU Switch IP front panel via a twisted pair Ethernet (10Mbps or 100Mbps) socket or serial port (115Kbps) connector, the latter of which can drive an external modem or ISDN adapter.

There are two essential stages to the connection and configuration of the IP port:

- A *temporary serial connection* (shown below) between a computer and the IP configuration port. This allows you to configure various key low level settings such as the IP address, Subnet mask, Default Gateway, etc. Once the settings have been made, this connection is removed.
- A **final IP connection** to either the twisted pair Ethernet socket or a modem/ISDN adapter to the serial port. Using this connection and a web browser on another system you can then set up security, user permissions and other high level options.

To initially connect and configure the IP port (stage 1 of 2)

Note: This stage only needs to be performed once in order to set the IP address and other basic settings.

- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all devices to be attached.
- 2 Locate the supplied 'IP configuration cable' and connect it between the front panel serial socket of the Matrix CPU Switch IP and the RS232 serial (COM) port of a nearby computer system.
- 3 Power up the computer to which the IP configuration cable is connected.
- 4 Load a serial terminal program on the computer, such as Hyperterminal within Microsoft Windows. Using the terminal program, configure a connection via the chosen computer port using the following parameters:

Data speed	115200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

- 5 Power up the Matrix CPU Switch IP (see the [Power supply connection](#) section) (or press the front panel reset button) and immediately press the Esc key on the computer. Within the terminal program window you should see some device information and a '='>' prompt.



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6 Type 'config' and press . Line by line, you will be presented with a series of setting options with possible responses in (round brackets) and any default values shown in [square brackets]. Enter the required information for each line and press . Alternatively, to accept a default setting, just press .

- *IP auto configuration (none/dhcp/bootp) [dhcp]* : - select 'none'.
- *IP address [192.168.1.22]* : - enter an appropriate IP address for the Matrix CPU Switch IP.
- *NetMask [255.255.255.0]* : - enter an appropriate Subnet mask.
- *Gateway (0.0.0.0 for none) [0.0.0.0]* : - if appropriate, enter an appropriate Gateway address.
- *Enable IP Access Control (yes/no) [no]* : - this setting switches IP packet filtering on or off. It is mainly used to re-enable access after a faulty IP access control configuration has been activated (see [Security settings](#) in the Configuration chapter for more details).
- *LAN interface speed (auto/10/100) [auto]* : - choose an appropriate Ethernet speed or select 'auto'.
- *LAN interface duplex mode (auto/half/full) [auto]* : - choose an appropriate duplex setting or select 'auto'.

7 Once all details have been entered, confirm that they are correct. The IP section of Matrix CPU Switch IP will store the new data and perform an internal reset. You can now power down the Matrix CPU Switch IP and the computer and disconnect the serial link between them.

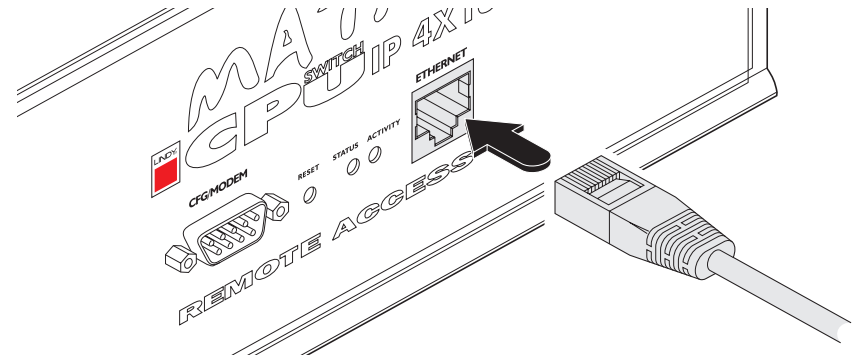
8 Now proceed to the next stage *To make the final IP port connection* ⇨

To make the final IP port connection (stage 2 of 2)

- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all devices to be attached.
- 2 There are two IP main connection methods: using Ethernet or using the serial port (with external modem/ISDN adapter). Both methods are outlined below:

Ethernet connection

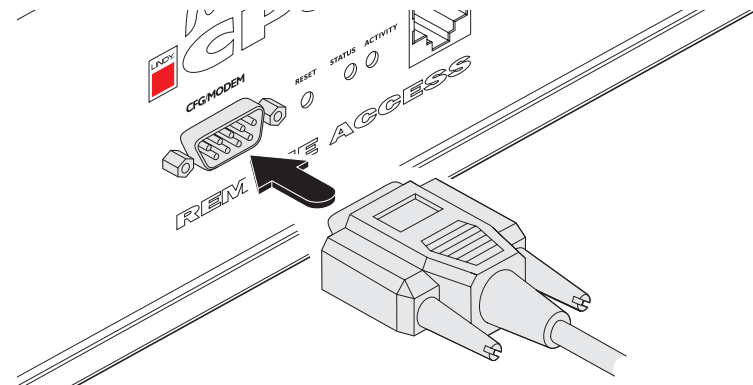
- a Connect a suitable twisted pair cable to the RJ45 socket (labelled 'ETHERNET') on the front panel of the Matrix CPU Switch IP.



- b Connect the other end of the twisted pair cable to an Ethernet hub running a 10Mbps or 100Mbps.

Serial port connection

- a Connect a serial (non-crossover) cable to the 9-way D-sub socket (labelled 'CFG/MODEM') on the front panel of the Matrix CPU Switch IP.



- b Connect the other end of the serial cable to a suitable external modem or ISDN adapter.

3 You can now proceed to the IP configuration stage [IP configuration panel](#) in the Configuration chapter.



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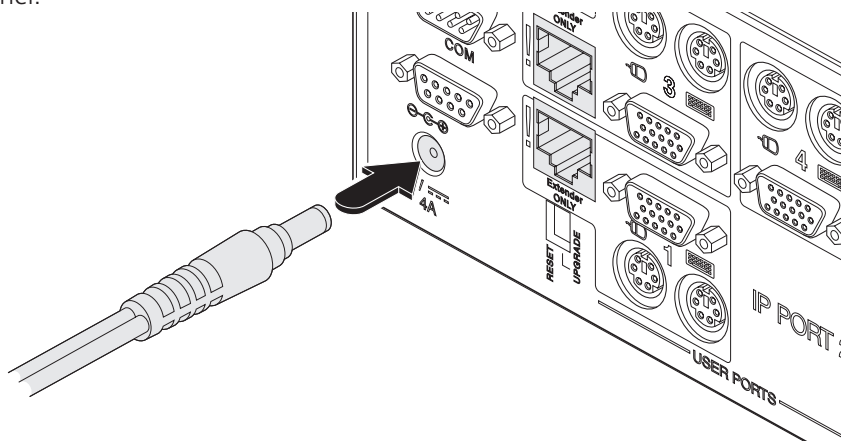
Power supply connection

The Matrix CPU Switch IP is supplied with a single power supply and an appropriate country-specific IEC power lead. The Matrix CPU Switch IP does not have an on/off switch so operation begins as soon as the power supply is connected.

Note: When computers are first powered on they communicate with any attached keyboards and mice in order to setup parameters required by their operating system. It is necessary for the Matrix CPU Switch IP to be attached and powered on during this sequence so that it can give the required responses and keep track of all modes and settings requested by each of the connected computers.

To connect the power supply

- 1 Connect the low voltage output connector from the power supply unit to the Matrix CPU Switch IP power socket in the lower left corner of the rear panel.



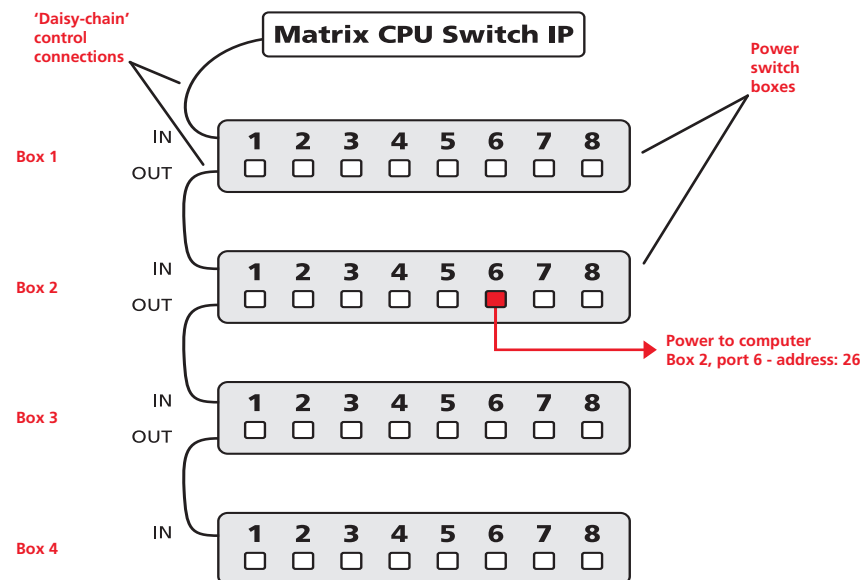
- 2 Connect the IEC connector of the supplied country-specific power lead to the socket of the power supply.
- 3 Connect the power lead to a nearby main supply socket.

Power switching connections

A key feature of the Matrix CPU Switch IP is its ability to remotely control the power of the computers attached to it. The actual power switching process requires the use of optional switch boxes available from a number of suppliers, however, the Matrix CPU Switch IP offers the control port for these switches and the necessary operational integration within its menu system.

The control connector of the first power switch is connected, via serial cable, to the rear panel of the Matrix CPU Switch IP. Any additional power switches are then connected via a 'daisy-chain' arrangement to the first power switch. Each power switch box is then given a unique address and access to each power port (8 ports on each power switch box) is gained using a combination of the switch box address and the port number.

Each power port can then be connected to the power inputs of each computer and each power switch box then connected to a mains power supply.



IMPORTANT: Power switching devices have a maximum current rating. It is essential to ensure that the total current drawn by the equipment connected to the power switching device does not exceed the current rating of the power switching device. You must also ensure that the current drawn from any mains socket does not exceed the current rating of the mains socket.

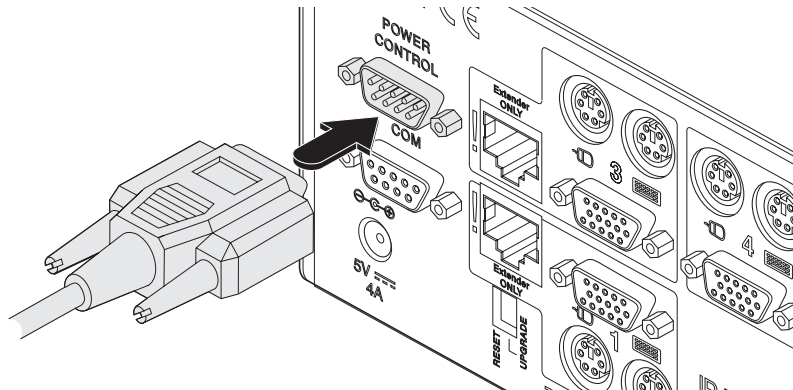
Setting up, configuring and using power switching requires three main steps:

- [Connect and address the switch boxes](#)
- [Configure the power strings](#)
- [Operate remote power switching](#)

To connect and address the switch boxes

Note: The Matrix CPU Switch IP can be powered on during this procedure, however, the switch boxes should be switched off.

- 1 Mount up to four switch boxes in positions where they are close to the computers that they will control and not too distant from the Matrix CPU Switch IP (preferably within 2.5 metres).
- 2 Use a serial cable with an RJ9 and a 9-pin D-type connector (see [Appendix 4](#) for specification). Connect the RJ9 plug to the socket marked 'IN' on the first switch box. Connect the other end to the socket marked 'POWER CONTROL' on the Matrix CPU Switch IP.



- 3 For each of the remaining switch boxes (if used), use a serial cable with RJ9 connectors at both ends (see [Appendix 4](#) for specification). Connect one end to the socket marked 'OUT' of the previous box and the other end to the socket marked 'IN' of the next box.
- 4 Set the addressing switches on each switch box using the two micro switches marked 'Slct' on the front panel. The box connected directly to the Matrix CPU Switch IP is Box 1 and so on down the daisy-chain line to Box 4 at the end.
- 5 Connect IEC to IEC power leads between each port and the power input socket of each computer that requires power switching. Carefully note to which power ports, on which boxes, each computer is connected. If server systems have multiple power inputs, then each input must be connected via separate ports, which can be on the same, or different boxes.
- 6 Connect each box to a suitable mains power input.

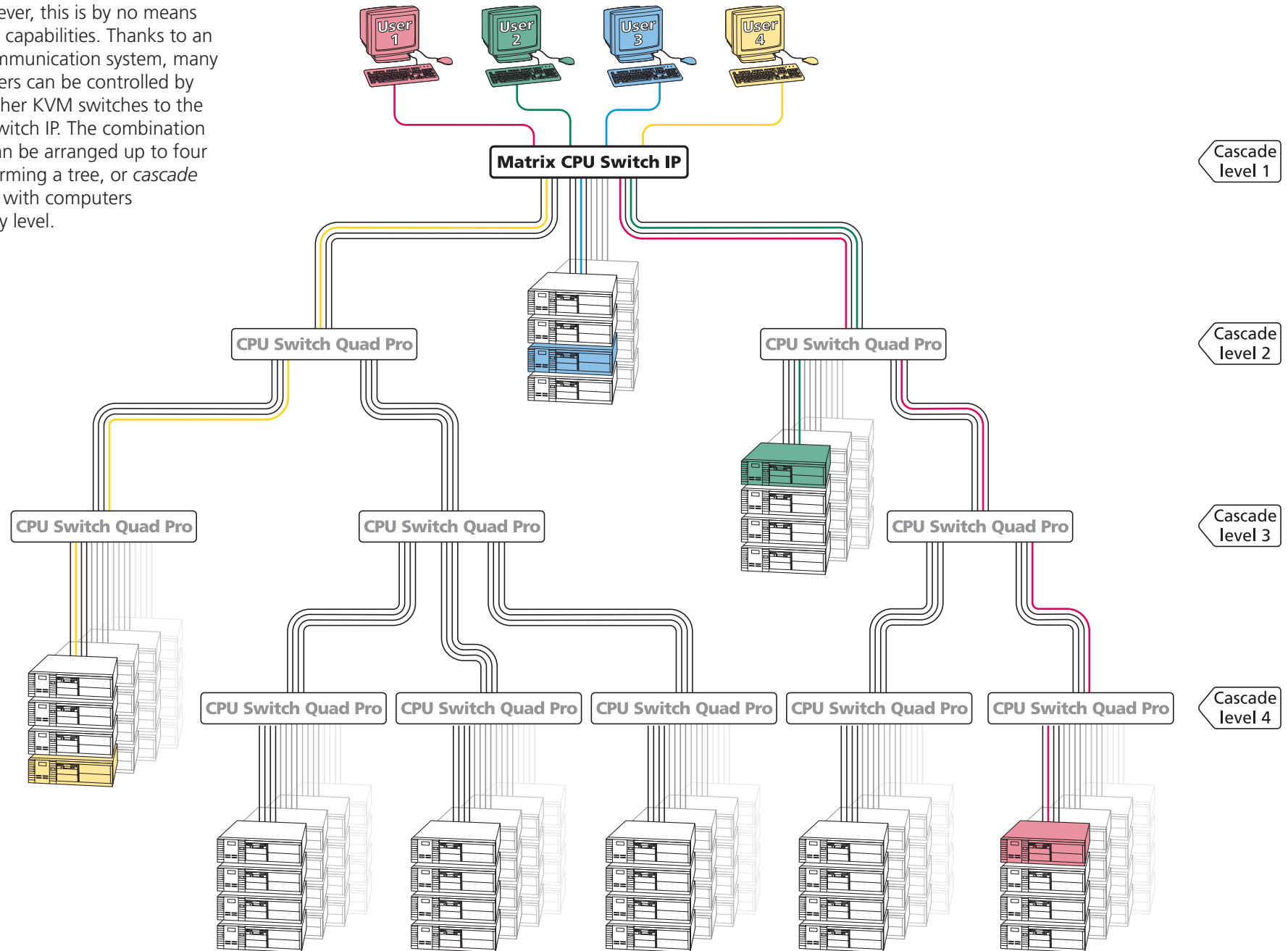
Box	Switch 1	Switch 2
1	Off	Off
2	On	Off
3	Off	On
4	On	On

Off = switch upwards
On = switch downwards
Switch 1 is on the left side

Now proceed to the configuration stage covered in the [Power switching configuration](#) section within the Configuration chapter.

Cascade connections

The Matrix CPU Switch IP supports up to sixteen *directly* connected computer systems, however, this is by no means the limit of its capabilities. Thanks to an intelligent communication system, many more computers can be controlled by connecting other KVM switches to the Matrix CPU Switch IP. The combination of switches can be arranged up to four levels deep forming a tree, or *cascade* arrangement, with computers situated at any level.



How cascade connections operate

The method for cascading switching units is straightforward and requires no hardware settings or lengthy configuration process. This is due to the intelligent communication system employed by all LINDY Matrix CPU Switch IP-family switches that allows them to locate each other and share information.

The method of linking switches is the same regardless of the cascade level, or number of devices attached. Put simply:

- A single cascade link is made by connecting a computer port of one switch to a user port of the switch below it.

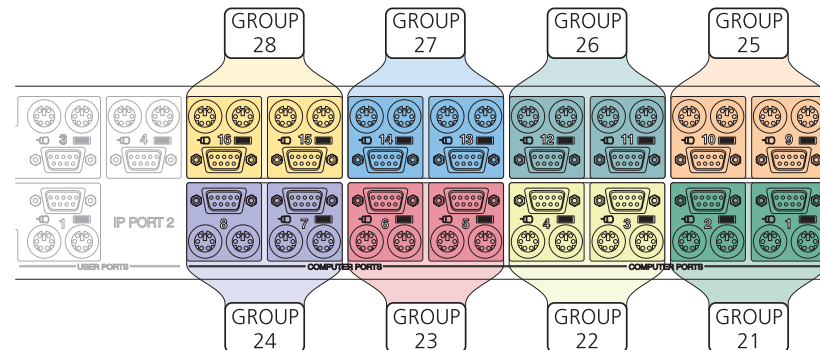
Such a single link would allow just one user from the higher switch to access any of the computers (or other switches) attached to the lower one. However, a single link can cause a bottleneck for multi-user systems, so it is commonplace to make more than one cascade link between switches. Multiple cascade links (up to four on most switches) allow up to four users to simultaneously access computers situated anywhere within the cascade tree.

When multiple cascade links are made between switches, each switch will automatically recognise the multiple links and treat them as a group. The links within a group will then be allocated to users according to their general availability in that group, not as specific individual lines. To do this, each link group has an access number, which is determined by the quantity of links within that group and to which ports they are connected on the switch.

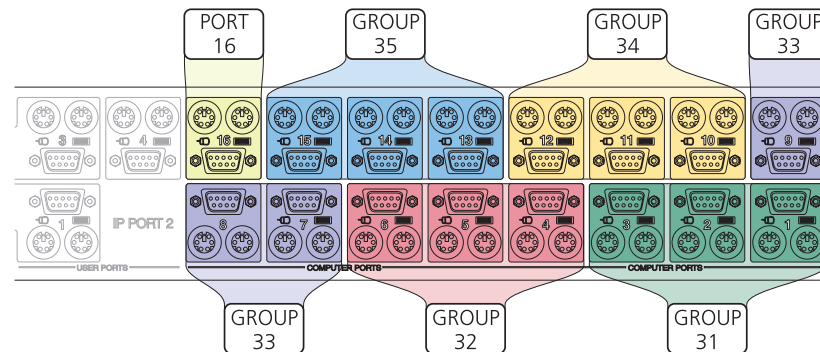
For instance, a group of four links connected to computer ports 1, 2, 3 and 4 of a switch would always be known as 41, the next group of four connected to ports 5, 6, 7 and 8 would always carry the number 42, and so on. The same is also true for two and three link groups which have their own specific numbers. The diagrams here summarise the ports to which groups must be connected and the resulting group numbers attained in the positions here ⇨

The central purpose of the link group system is that each user can use a unique address to locate a particular computer, however, as with the Internet, the route to get there could be slightly different each time. This avoids any route blocking that could easily be caused by other users occupying any specific link lines.

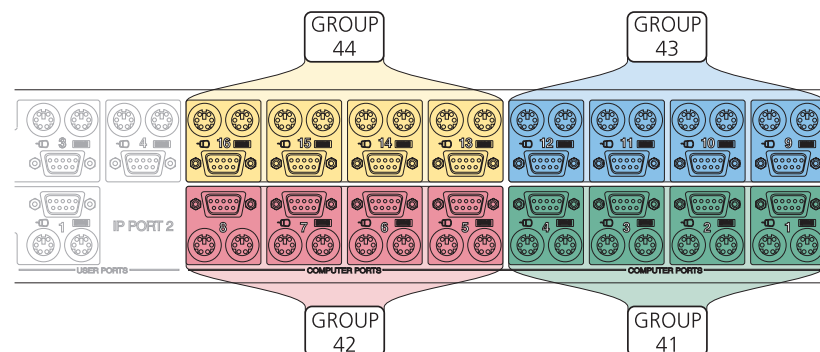
Port boundaries and numbering for two link groups



Port boundaries and numbering for three link groups



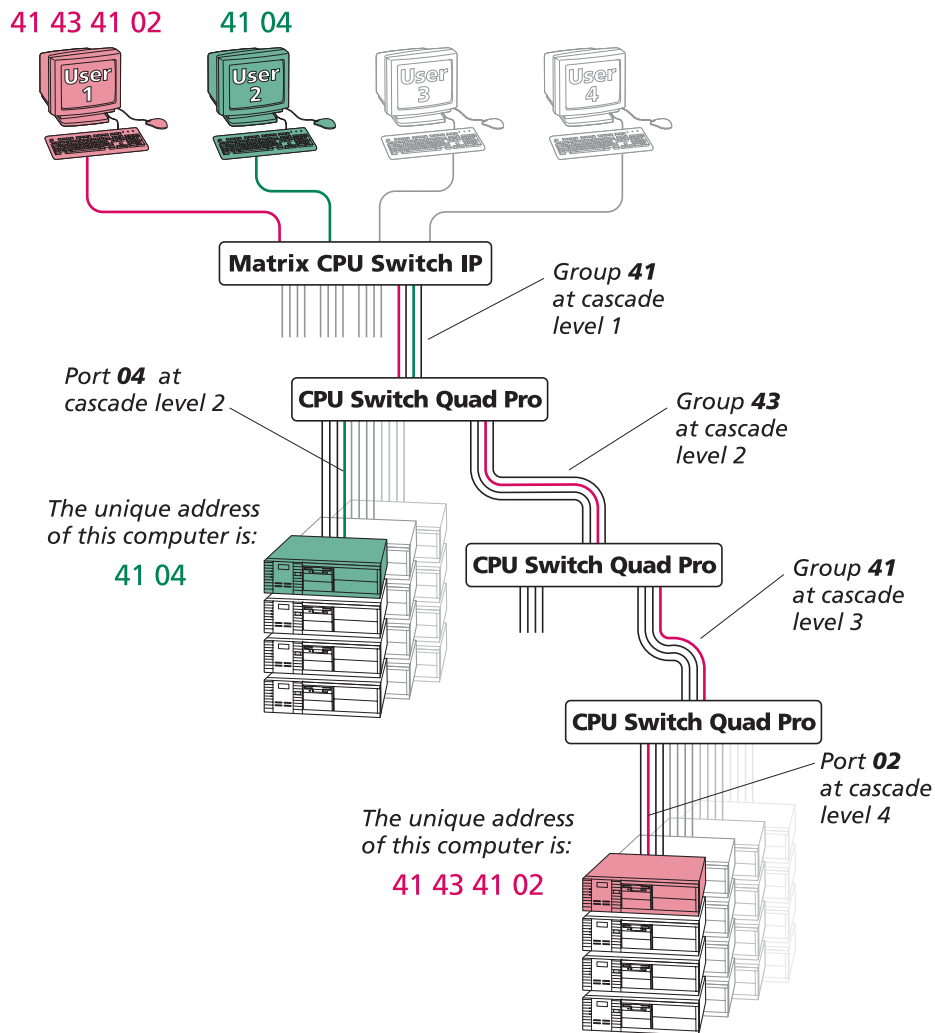
Port boundaries and numbering for four link groups



Note: Link groups of twos, threes and fours may be mixed on one switch providing each size of group lies within the appropriate port boundaries shown above - see [Tips for successful cascading](#) for more details.

Addressing computers in a cascade

The addressing format used by the switches incorporates the various group numbers along with a final specific port number to which a required computer is attached. In the diagram given here, a portion of the previous cascade diagram indicates how the routes to particular computers are formed and addressed.



Each cascade level requires two digits, hence the computer marked in red requires a unique address with eight digits because it is at cascade level 4, compared to the green computer at level 2 with its four digit unique address. A computer connected directly to the Matrix CPU Switch IP at the top level would simply have a two digit port number.

The group at level 2 is numbered 43 because it is a group of four, connected to ports 9, 10, 11 and 12 on the Matrix CPU Switch IP. If it was connected to ports 13, 14, 15 and 16, then the group number would be 44.

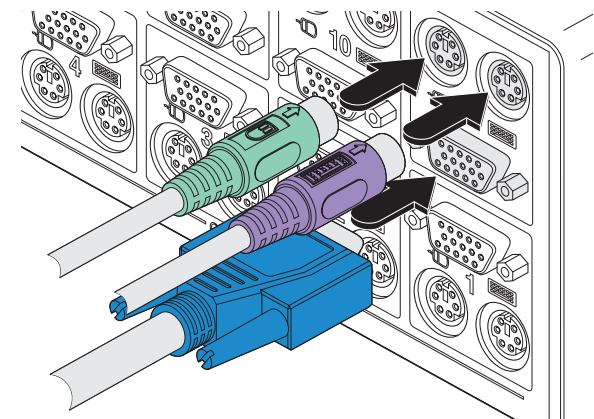
If the group at level 3 was a group of two, connected to ports 1 and 2 of the switch, then the group number would be 21. Similarly, if it was a group of three connected to ports 1, 2 and 3, then the group number would be 31 – this would make the address of the red computer: 41 43 31 02.

While the Matrix CPU Switch IP has four user ports, one of those is a dedicated IP port that cannot be fed to a switch above (i.e. it can feed a maximum of three cascade links upwards). For this reason, the natural position for the Matrix CPU Switch IP is as the master unit with other switch types, most suitably the LINDY CPU Switch Quad Pro units, feeding up into it.

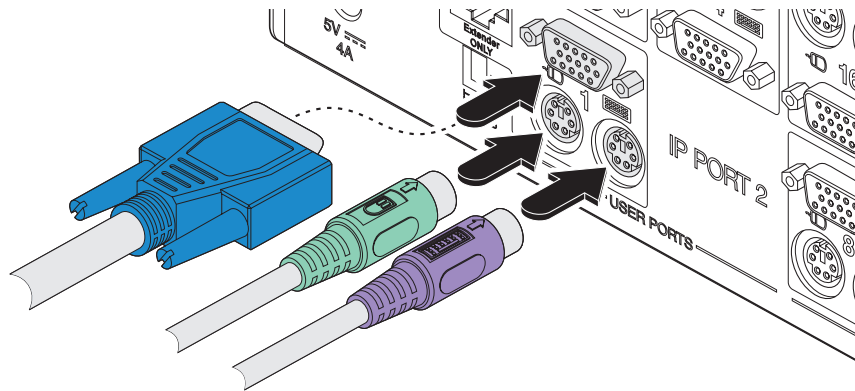
To connect switches in a cascade arrangement

Note: This procedure may be carried out in any order but for clarity this instruction will begin at the higher level switch (here called the upper switch), i.e. the one that is being fed into by a switch at the cascade level below (here called the lower switch). The procedure given here remains the same regardless of exactly which cascade levels are being connected. The basic rule is that each link is made by connecting a computer port of the upper switch to a user port of the lower switch.

- 1 Ensure that power is disconnected from the Matrix CPU Switch IP and all other switches to be connected.
- 2 Locate sufficient KVM cable sets of similar lengths (as short as possible) to form the required link group.
- 3 Connect the plugs at one end of a KVM cable set to the keyboard, video and mouse sockets of an appropriate Computer port on the rear panel of the upper switch. Refer to the [Group numbering diagrams](#) for the correct link group boundaries.



- 4 Connect the plugs at the other end of the KVM cable set to the keyboard, video and mouse sockets of a *User port* on the rear panel of the lower switch. Due to the way in which ports within a group are dynamically allocated, it is not usually important exactly which user port is connected to each computer port of the upper switch.



- 5 Repeat steps 3 and 4 for each of the links within the group, adhering to the [Group numbering diagrams](#) for the correct link group boundaries on the computer ports on the upper switch.

Once the switches and computers have been connected, you can edit their names to make it much easier to locate them. See the [To create/edit computer names](#) section in the Configuration chapter for more details.

Tips for successful cascading

- The maximum number of levels for a cascade is four.
- The number of links between switches determines the number of simultaneous users that can access the computers situated further down the tree.
- Keep all cascade cables as short as possible to maximise video quality.
- Ensure that multiple cascade links (within a group) between switches are approximately the same length.
- Link groups of twos, threes and fours may be mixed on one switch providing each size of group lies within the appropriate port boundaries designated in the [Group numbering diagrams](#). For instance, a group of each size could be accommodated in the first nine ports of a switch providing they were arranged as follows:
 - Group of four – connected to ports 1, 2, 3 and 4 (designation 41)
 - Group of two – connected to ports 5 and 6 (designation 23)
 - Group of three – connected to ports 7, 8 and 9 (designation 33)

All of these connections lie within the set boundaries for each link group size.

Using cascaded computers

In use, cascaded computers can be accessed using exactly the same methods as for those connected directly to the Matrix CPU Switch IP. However, by far the easiest way is to use the on screen menu. This is because it displays the computer names and does not require any knowledge of port addresses, some of which (as discussed above) can be up to eight digits long. See the [Selecting cascaded computers](#) section in the Operation chapter for more details.

Testing specific links to cascaded computers

As mentioned previously, the best and most efficient way to access cascaded computers is by using the on screen menu and via non-specific routes through the link groups. However, during configuration or troubleshooting, it may be useful to test specific routes to computers in order to verify the various strands of each link group. By using specific port addresses for each switch, rather than link group numbers, you can precisely navigate a route through any part of the system.

To test a specific link

- 1 Simultaneously press and hold **Ctrl** and **Alt**.

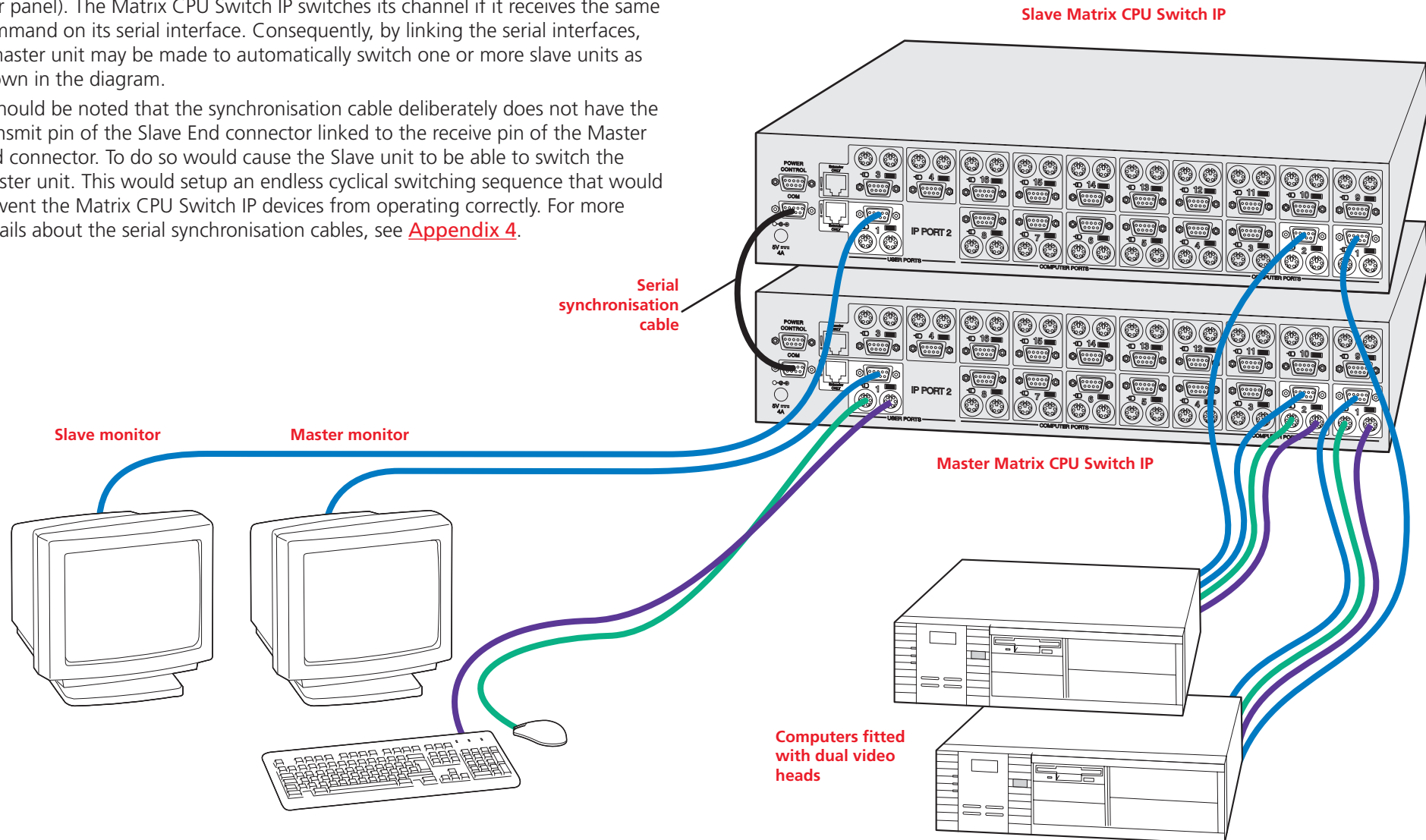
*Note: **Ctrl** and **Alt** are the standard hotkeys and can be **altered** to avoid clashes with other devices or software. If you change the hotkeys, remember to use the new ones in place of **Ctrl** and **Alt** when following these instructions.*

- 2 While still holding **Ctrl** and **Alt**, in sequence, press and release the full address of the required computer – remember to use specific port numbers, not link group addresses, e.g. port 01140203.
- 3 When the last digit has been entered, release all keys.

Multiple video head connections

Two or more Matrix CPU Switch IP units can be connected together so that they operate in a synchronised manner. Synchronised operation is useful for applications that require multiple video signals to be switched together. This type of operation is usually required where each computer is fitted with multiple video cards or video cards with multiple video heads. Such configurations are typically required in banking and engineering applications where greater video 'real estate' is required. Whenever the Matrix CPU Switch IP channel is switched it sends an RS232 command out on its serial interface (marked COM on the rear panel). The Matrix CPU Switch IP switches its channel if it receives the same command on its serial interface. Consequently, by linking the serial interfaces, a master unit may be made to automatically switch one or more slave units as shown in the diagram.

It should be noted that the synchronisation cable deliberately does not have the transmit pin of the Slave End connector linked to the receive pin of the Master End connector. To do so would cause the Slave unit to be able to switch the Master unit. This would setup an endless cyclical switching sequence that would prevent the Matrix CPU Switch IP devices from operating correctly. For more details about the serial synchronisation cables, see [Appendix 4](#).



Configuration



Almost all configuration and operational aspects of the Matrix CPU Switch IP are controlled via on-screen menu displays. There are two main component parts of the Matrix CPU Switch IP and the configurations of these two parts are controlled by separate menu sets. The two main components are:

- *Keyboard, video and mouse (KVM) switching*
see [KVM configuration menus](#) for more details.
- *Internet Protocol (IP) remote access via Web browser*
see [IP configuration panels](#) for more details.

The configuration structures for each are accessed in different ways and the use of each is covered separately in this chapter.

Overall initial configuration

When setting up a new Matrix CPU Switch IP installation, the following stages are recommended:

- 1 [Enable the 'Security' option within the KVM configuration menus.](#)
With security disabled (default setting), all users attached to the Matrix CPU Switch IP have full and unrestricted access to all computers and all Matrix CPU Switch IP settings. In larger installations, especially if the IP port is Internet-connected, you are strongly recommended to enable security and set up individual user accounts with access privileges.
- 2 [Create an ADMIN \(administration\) account password.](#)
The Matrix CPU Switch IP has a fixed user account that cannot be deleted, named ADMIN. This user account is the only one that is able to make important KVM system changes. If you intend to use KVM security, then it is important to allocate a password to the ADMIN account.
- 3 [Create user accounts and allocate access rights.](#)
Use the ADMIN account to add user profiles, passwords and access rights for each of the system users.
- 4 [Provide names for computers.](#)
When numerous computers are attached, you are strongly advised to provide names for each, to assist with recognition.
- 5 Configure the required '[Setup Options](#)' and '[Global Preferences](#)'
Use the ADMIN account to determine key Matrix CPU Switch IP settings and timing characteristics.

The KVM section of the Matrix CPU Switch IP is now configured and can be used via the local and extended user ports.

In a hurry?

- If you don't need KVM security, *skip steps 1, 2 and 3.*
 - If you don't need KVM computer names, *skip step 4*
 - If you don't need IP access, *skip steps 6 to 12.*
- Any of these steps can be completed at a later date.

Additionally, when preparing to use the remote IP features of the Matrix CPU Switch IP, the following extra stages are suggested:

- 6 [Connect and configure the IP Port](#) then [Make the final IP port connection.](#)
These two stages prepare an appropriate IP address for the Matrix CPU Switch IP and forge the physical link to an Intranet or the wider Internet.
- 7 [Access the IP configuration panels](#) from a remote computer and change the standard superuser's password.
Every Matrix CPU Switch IP is shipped with the same default user name and password – it is important to change these as soon as possible.
- 8 [Organise users and groups, and determine their access rights.](#)
Define your remote users and determine exactly which options they are entitled to see and change.
- 9 [Select appropriate security settings for your installation.](#)
From Telnet to HTTPS, match the level of security to the manner in which your configuration will be accessed and used.
- 10 [Determine how computer ports are displayed and selected.](#)
Set the switching codes and name the computers for ease of use.
- 11 [Ensure that mouse acceleration is switched off on your computer\(s\).](#)
Acceleration makes it difficult to align the remote and local mouse cursors.
- 12 [Display the Remote Console window and synchronise operation.](#)
Ensure that each computer is viewed at its best.

KVM configuration menus

The KVM configuration menus allow you to determine many aspects of the Matrix CPU Switch IP switching capabilities. From here you can:

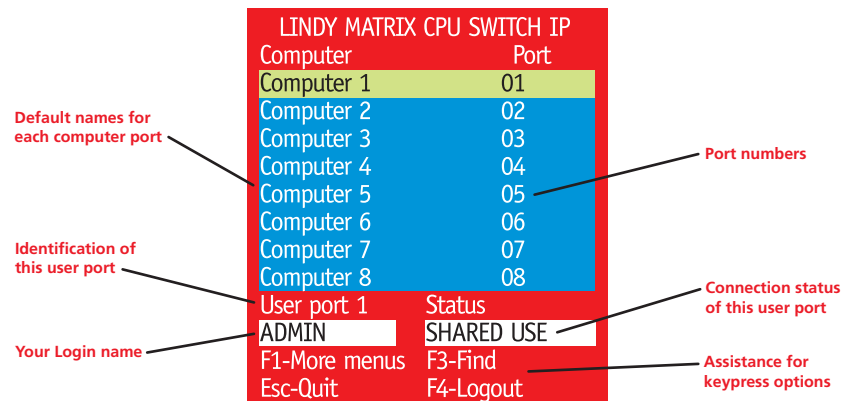
- Create individual user accounts and determine access rights,
- Provide names for all connected computers to allow quick recognition,
- Set individual and global settings for users,
- Run various functions, such as mouse restore operation,
- Save and load Matrix CPU Switch IP configuration settings, and more.

To access the KVM configuration menu

- 1 If the main menu is not already displayed, press and hold **Ctrl** **Alt** and then press **M** using a keyboard attached to a Matrix CPU Switch IP user port.

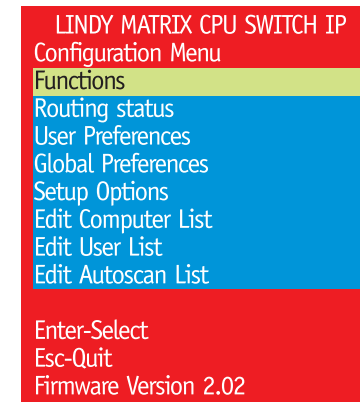
*Note: **Ctrl** and **Alt** are the standard hotkeys and can be **altered** to avoid clashes with other devices or software. If you change the hotkeys, remember to use the new ones in place of **Ctrl** and **Alt** when following these instructions.*

The main menu will be displayed:

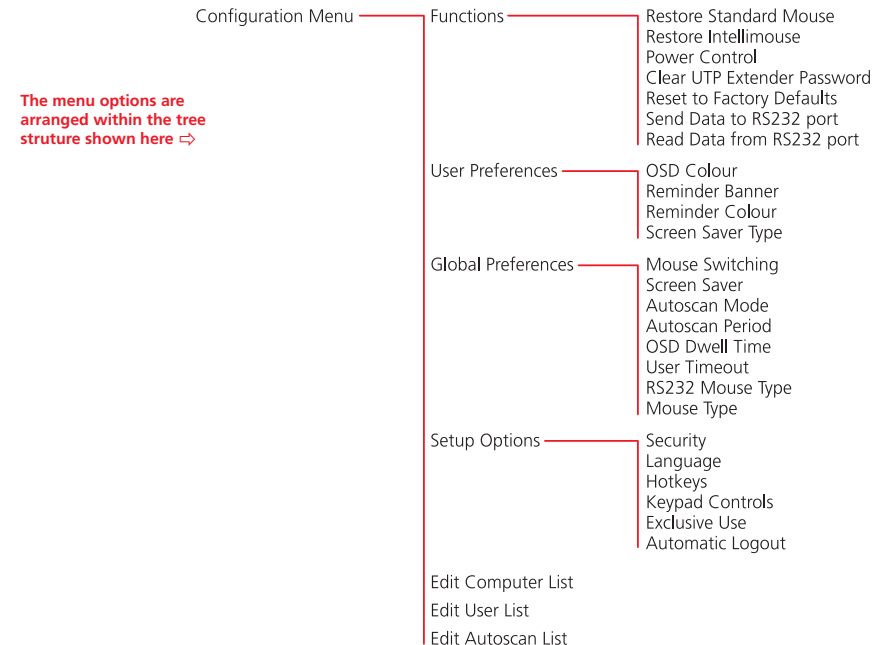


Note: If the security option has been enabled, you will be asked for a valid user name and password before the main menu can be displayed (user names and passwords are not case sensitive).

- 2 Press **F1**. The Configuration Menu will be displayed:



Use the **↓** and **↑** keys to highlight an option, then press **↵** to select.



IMPORTANT: When supplied, the Matrix CPU Switch IP has its KVM security features disabled, which means that any attached users (including remote IP users) have access to all connected computers and all Matrix CPU Switch IP settings. You are strongly recommended to enable the 'Security' feature and set an access password for the ADMIN account.

For a description of each option within the KVM configuration menus, see [Appendix 1](#) for more details.



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To enable KVM security

- 1 Display the [KVM configuration menu](#).
- 2 Use  to highlight 'Setup Options' and press .
- 3 Highlight 'Security' and press  to select 'ENABLED'.
- 4 Now create a new password for the ADMIN user account.

To set an ADMIN password

- 1 Display the [KVM configuration menu](#).
- 2 Use  to highlight 'Edit User List' and press .
- 3 Highlight 'ADMIN' and press . Press  again to accept the name 'ADMIN' without change.
- 4 Enter an appropriate password for the ADMIN user account with regard to the following:
 - The password can be up to 12 characters long.
 - The password can use letters, numerals and/or certain punctuation marks.
 - The password is not case sensitive.
- 5 Press . The 'Edit Access Rights' menu will be displayed. However, as the ADMIN account always has access to all computers, press  again to save the new password.

[What to do if the ADMIN password has been forgotten.](#)

To change the KVM hotkeys

- 1 Display the [KVM configuration menu](#).
- 2 Use  to highlight 'Setup Options' and press .
- 3 Highlight 'Hotkeys' and press  to select the required hotkey combination. The options are: *CRTL+ALT*, *CTRL+SHIFT*, *ALT+SHIFT*, *ALT GR*, *LEFT ALT+RIGHT ALT*, *LEFT CTRL+LEFT ALT*, *RIGHT CTRL+RIGHT ALT* or *DISABLED*.
- 4 Press  to return to the 'Configuration Menu'.

To create/edit KVM user accounts

- 1 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 2 Use  to highlight 'Edit User List' and press .
- 3 Either:
 - *Create a new account* - Press , enter a new user name and press , or
 - *Edit an existing account* - Highlight the required user name and press . Edit the name, if appropriate, and/or press .
- 4 Enter or edit the password with regard to the following:
 - The password can be up to 12 characters long.
 - The password can use letters, numerals and/or certain punctuation marks.
 - The password is not case sensitive.
 - The password field can remain blank to allow open access to this account.
- 5 Press  to display the 'Edit Access Rights' menu. Here you can determine which of the connected computers can be accessed by the selected user account. Only computers that show the '+' marker to the right of the menu box will be accessible to the user account.
Note: Access rights for user accounts to particular computers can also be controlled from the 'Edit Computer List' menu.
- 6 Select and deselect computers as follows:
 - *Individual computer* - Use  and  to highlight a computer name, then press  to apply, or remove, a '+' marker.
 - *Access to all computers* – Press 
 - *Access to no computers* – Press 
- 7 When all settings have been made, press  to save and exit. Press  to return to the 'Configuration Menu'.

To create/edit computer names

- 1 Display the **KVM configuration menu**. *Note: You must be logged-in as the ADMIN user.*
- 2 Use **↓** to highlight 'Edit Computer List' and press **↵**.
- 3 Either:
 - *Create a new computer entry* – Press **Ins** and enter a new name, or
 - *Edit an existing computer entry* – Use **↓** and **↑** to highlight a computer name and press **↵**. Press **←** (Backspace) to delete existing characters and enter the required new name (up to 16 characters).
- 4 Press **↵** and the cursor will move to the computer port column on the right side. Change or enter the port address of the computer as required. See the **Addressing computers in a cascade** section for more details. When the port address is complete, press **↵**. The 'Edit access rights' menu will be displayed. Here you can determine which users should have access to the created/edited computer. Only users that show a '+' marker to the right of the menu box will be granted access to the computer.
Note: Access rights for particular user accounts to computers can also be controlled from the 'Edit User List' menu
- 5 Select and deselect users as follows:
 - *Individual user* - Use **↓** and **↑** to highlight a user name, then press **Space** to apply, or remove, the '+' marker.
 - *Allow access for all users* – Press **F1**
 - *Allow no user access (except ADMIN)* – Press **F2**
- 6 When all settings have been made, press **↵** to save and exit. Press **Esc** to return to the 'Configuration Menu'.

Tips when creating/editing computer names

- Avoid creating two names for the same computer port.
- When cascading to other CPU Switch devices, do not apply individual names to any ports that are forming a link group to another switch (i.e. ports 1, 2, 3 and 4 when they form link group 41).

Autoscanning

The Matrix CPU Switch IP provides an autoscan mode that switches between the connected computers in sequence. This mode is useful to allow users and administrators to sample activity among the connected machines. Three scanning modes are provided:

- *Scan list* – Only computers declared within an autoscan list will be viewed. Computers connected to cascaded switches can be included in the autoscan list.
- *Active PCs* – Only computer ports where an active computer is detected will be viewed. This mode avoids blank screens from being displayed and helps to prevent the viewing monitor from entering a power-down state on every scan cycle. Computers connected to cascaded switches will not be viewed in this mode.
- *All PCs* – This mode visits, in turn, each computer that is connected directly to the Matrix CPU Switch IP. This mode should be used with care due to the reasons given in the warning below. Computers connected to cascaded switches will not be viewed in this mode.

The scanning mode is a global setting and hence will be the one viewed by any user who selects **Ctrl Alt A** on their keyboard. Note, however, that users will only see the scanned computers to which they have access rights. Hence, if four users (with various access rights) simultaneously view an autoscan, they will see differing results depending upon their respective permissions.

WARNING: Many modern monitors are fitted with automatic power saving relays that switch off after a few seconds when connected to an inactive computer. If you are using such a monitor, do not set the Matrix CPU Switch IP to the scan 'ALL PCs' mode. Continual switching on and off of the monitor's relay will eventually damage the monitor. If using such a monitor in conjunction with the 'Scan List' option, ensure that all selected computers are active.

There are up to three steps that need to be configured to use autoscanning:

- *Select the autoscan mode:* List, Active or All.
- *Select the autoscan period.* This is the time that is spent viewing each computer. This step also enables and disables the autoscan feature.
- *Define the autoscan list.* This step is only required when the Scan List option is selected and allows you to select which computers will be scanned.

To select an autoscan mode

- 1 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 2 Use  to highlight 'Global Preferences' and press .
- 3 Use  to highlight 'Autoscan Mode'.
- 4 Press  until the required option is displayed: SCAN LIST, ACTIVE PCs or ALL PCs.

To select an autoscan period

- 1 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 2 Use  to highlight 'Global Preferences' and press .
- 3 Use  to highlight 'Autoscan Period'.
- 4 Press  until the required time to view each computer is displayed, ranging from 2 seconds to 5 minutes.

To define an autoscan list

Note: This stage is required only when the 'Scan List' autoscan mode is selected.

- 1 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 2 Use  to highlight 'Edit Autoscan List' and press . A list of all connected computers will be displayed. Only computers that show a '+' marker to the right of the menu box will be autoscanned.
- 3 Select and deselect computers to scan as follows:
 - Individual computer - Use  and  to highlight a computer name, then press  to apply, or remove, the '+' marker.
 - Mark all computers for scanning – Press .
 - Unmark all computers – Press .
- 4 When all settings have been made, press  to save and exit. Press  to return to the 'Configuration Menu'.

To view autoscan

- At one of the user ports, press   .

*Note:  and  are the standard hotkeys and can be **altered** to avoid clashes with other devices or software. If you change the hotkeys, remember to use the new ones in place of  and  when following these instructions.*

Saving and restoring KVM configuration settings

The Matrix CPU Switch IP can store up to 512 computer names and 16 sets of user access rights. Particularly in cascaded configurations, manually re-entering all computer names, port numbers and access rights can be a lengthy process. Therefore, the Matrix CPU Switch IP provides a method to save and, if required, restore configuration settings using one of its serial ports. Further to this, the saved file can be opened and edited within a spreadsheet and then restored back to the Matrix CPU Switch IP – a useful way to make multiple setup changes.

Note: You must be logged-in as the ADMIN user for this procedure.

Preparations for KVM configuration save/load

- Log on to the LINDY website at www.lindy.com and download the files XPREAD.EXE and XPWRITE.EXE.
- Connect the serial port on the rear panel of the Matrix CPU Switch IP, labelled 'COM', to a serial port on your computer using the serial upgrade cable supplied with the Matrix CPU Switch IP. If this is not available then use a replacement cable that has:
 - A 9-way female D-type connector leading to a 9-way male D-type connector.
 - All lines connected straight through (i.e. pin 1 to pin 1, 2 to 2, 3 to 3 etc.).

To save KVM configuration settings

- 1 Run the program XPREAD.EXE on the computer that is connected to the Matrix CPU Switch IP's serial port. Follow the instructions given by the program.
- 2 Using one of the Matrix CPU Switch IP user ports, display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 3 Highlight 'Functions' and press .
- 4 Use  to highlight 'Send Data to RS232 port' and press .
- 5 The Matrix CPU Switch IP will send the configuration data to your computer. The XPREAD program will store the data in a file named 'XPRODATA.CSV' that will be created in the same directory where the XPREAD program was started - Ensure that you have sufficient rights to write to this directory.

To edit the KVM configuration settings

The saved XPRODATA.CSV file can be opened using a spreadsheet program such as Microsoft Excel. The format of a typical file is shown below. You will see that the computer names (rows) are tabulated against the user profiles (columns):

USERS		ADMIN	Alan	Jim	Sue	Test
PASSWORDS		password	letmein	hello	logmein	Test
COMPUTERS	PORT					
Admin PC	2103	1	1	1	1	
Alan's System	2102	1	1	1		
Comms Server	3	1		1		
Comms PC	4	1	1	1	1	
Gateway 1	8	1				
Gateway 2	5	1				
Test System	15	1	1			
Web Browser	9	1		1		1

Hints for editing

- To grant a user access to a computer, enter the value '1' in the box that is common to the computer's row and the user's column.
- To deny access, leave the box blank.
- To add extra users, add additional columns (up to 16 users).
- To add extra computers, add additional rows (up to 512 computers).
- The ADMIN user will always be granted access to all computers regardless of the values entered.

To restore KVM configuration settings

Note: Ensure that the computer is connected to the Matrix CPU Switch IP as discussed earlier in the 'Preparations' sub section.

- 1 Copy the program XPWRITE and XPRODATA.CSV into the same directory on the computer connected to the Matrix CPU Switch IP's serial port.
- 2 Run the program XPWRITE.EXE and follow the instructions given by the program.
- 3 Using one of the Matrix CPU Switch IP user ports, display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 4 Highlight 'Functions' and press .
- 5 Use  to highlight 'Read Data from RS232 port' and press .
- 6 The Matrix CPU Switch IP should then receive the configuration data from the computer and load the new menu names and access rights into the menu.

What to do if the ADMIN password has been forgotten

If the ADMIN password becomes mislaid or forgotten, you will not be able to access the Matrix CPU Switch IP to add or edit users and computer names. This situation may be resolved by performing a complete reset to return the Matrix CPU Switch IP to its factory default state. A complete reset erases all the user names and computer names that you have setup. You can only perform a complete reset if you have access to both the front and the rear of the Matrix CPU Switch IP.

To perform a complete reset and return the Matrix CPU Switch IP (KVM section) to its factory default state:

Note: This procedure does not affect the IP section.

- 1 Power on the Matrix CPU Switch IP normally.
- 2 Whilst the Matrix CPU Switch IP is powered on move switch 2 on the rear panel of the Matrix CPU Switch IP (labelled UPGRADE) to the ON (down) position.
- 3 Press the USER and the COMPUTER keys together.
- 4 The green USER display will show 'F' for a few seconds to confirm that a reset is taking place.
- 5 Return switch 2 to the normal OFF position (up).



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Hot plugging and mouse restoration

It is strongly recommended that you switch off a computer before attempting to connect it to the Matrix CPU Switch IP. However, if this is not possible then you need to 'hot plug' the computer while it is still running. There is not normally a danger of damage to the computer, however, when mouse communications are interrupted, often they fail to re-initialise when reconnected. The Matrix CPU Switch IP provides a feature to reinstate mouse communications once the necessary connections have been made.

There are two main types of data formats used by current PC mice, these are the older 'PS/2' format and the more recent 'IntelliMouse®' format introduced by Microsoft. These use slightly different data arrangements and it is important to know which type was being used before you hot-plugged the computer to the Matrix CPU Switch IP. The previous setting depends both on the type of mouse and the type of driver, as various combinations of PS/2 and IntelliMouse are possible. Using the incorrect restore function may produce unpredictable results and require the computer to be re-booted.

Which restore setting do I use?

The general rule is that unless both the mouse *and* the driver are *both* IntelliMouse compatible then you need to restore the mouse as 'PS/2'. An IntelliMouse can operate in either mode, whereas a PS/2 mouse cannot.

Recognising an IntelliMouse-style mouse

The IntelliMouse format was introduced to support, among other features, the scroll wheel function. If the mouse has a scroll wheel, then it is likely to support the IntelliMouse format. If it is a Microsoft-branded mouse, then it will usually state that it is an IntelliMouse on its underside label.

Recognising an IntelliMouse driver

Before hot plugging to the Matrix CPU Switch IP (or afterwards using only keyboard control), access the Windows Control Panel of the computer and select either the *Mouse* option (on Windows NT, 2000 and XP) or the *System* option (on Windows 95, 98, ME). Look for the name of the driver, which will usually include the words *PS/2* or *IntelliMouse*.

To restore mouse operation when hot plugging:

- 1 Using a KVM cable set, carefully make the connections between the keyboard, monitor and mouse sockets of the computer and the required Matrix CPU Switch IP port.
- 2 **Select the port** of the newly connected computer and then display the **KVM configuration menu**.
- 3 Highlight 'Functions' and press .
- 4 As appropriate, use  to highlight one of the following options:
 - *Restore Standard Mouse* – if PS/2 mode is required, or
 - *Restore IntelliMouse* – if IntelliMouse mode is required.

Then press .

- 5 Move the mouse a short distance and check for appropriate on-screen cursor movement. If the mouse cursor darts erratically around the screen, then cease moving the mouse. This is an indication that the chosen restore function is incorrect. Try again using the other restore function.

Note: The restore functions predict the likely mouse resolution settings but may not restore the exact speed or sensitivity settings that were originally set.



Resetting user port keyboards and mice

The Matrix CPU Switch IP provides the option to perform a complete power off reset of the keyboard and mouse that are connected to a selected user port. This can be useful if you wish to disconnect the keyboard or mouse and replace them with alternatives. Keyboards will enable themselves automatically if they are disconnected and then re-connected to the Matrix CPU Switch IP. Mice will not normally re-enable themselves after they have been disconnected and re-connected although they will do so automatically if the Matrix CPU Switch IP channel has been changed whilst the mouse is disconnected.

Consequently you will normally need to perform a power-off reset of the user port if you have disconnected and re-connected a mouse. The power off reset function only affects the selected user port and does not affect any of the computer connections or any of the other user ports.

To perform a power-off reset for a selected user port

- 1 Press the USER key on the front panel of the Matrix CPU Switch IP to select the user port whose keyboard and mouse you wish to reset.
- 2 The selected user port number should now be shown on the green USER display.
- 3 Press and hold down the USER key for 5 seconds until the green USER display goes off. The keyboard and mouse will then be powered off.
- 4 As soon as the green display goes off, release the USER key. The green display will then resume and a few seconds later the keyboard and mouse will be powered on, ready for use.

Power switching configuration

Power switch configuration comprises three main steps:

- Configure the serial port to the same settings used by the power switch boxes.
- Configure a power ON string for each power port.
- Configure a power OFF string for each port.

The procedures used to achieve the latter two steps are almost identical. For each power port there needs to be a valid 'Power ON string' and similarly an appropriate 'Power OFF string'. In each case, the strings are a short sequence of characters that combine a port address and a power on or off value. Where a particular computer has more than one power input (and thus requires an equivalent number of power ports to control them), collections of strings can be associated to switch all of the required ports together as a group.

To configure the power-control serial port

- 1 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user. The settings given below are given as a general example for reference only - other power switches may require different settings.*
- 2 The 'Function' should be highlighted, press .
- 3 Use  to highlight 'Power Control' and press .
- 4 Use  to highlight 'Serial Port Setup' and press .
- 5 Press  until the 'Baud Rate' entry shows '9600'.
- 6 Use  to highlight 'Format' and press  until the entry shows 'NONE.8.1'.
- 7 Press  to quit the screen and save the settings.

To configure the power strings for each computer

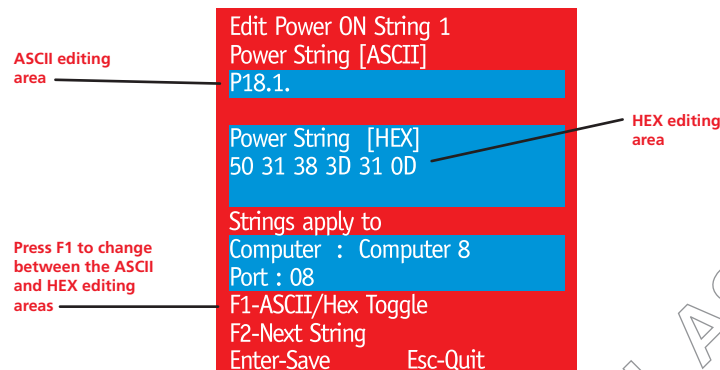
- 1 Switch to the computer port whose power port(s) need to be set.
- 2 Display the [KVM configuration menu](#). *Note: You must be logged-in as the ADMIN user.*
- 3 The 'Function' option should be highlighted, press .
- 4 Use  to highlight 'Power Control' and press .
- 5 Use  to highlight 'Edit Power ON String' and press .
- 6 Edit the power switch string according to the guidelines given overleaf in the [Editing power strings](#) section. If the current computer port requires more than one power port, press  to begin editing the next string for the next associated port. Up to four ports may be grouped in this way.
- 7 Press  to save and exit.
- 8 Repeat steps 5 to 7 for the corresponding 'Edit Power OFF String'.

For details about operating this feature, see [Using remote power switching](#) section within the Operation chapter.



Editing power strings

The string editing screen has two editing areas where you can enter and view the power switch code as either: *ASCII characters* or *HEX values*.



The two areas are linked so that as you change one, the other changes in response. The ASCII edit area has two limitations:

- The ASCII edit area cannot display the '=' character, and represents it with a fullstop when you type '='. However, even though it is not displayed, the character is correctly stored and used.
- You cannot add the 'Enter' character (which is needed at the end of the line) within the ASCII edit box. This must be added within the HEX area, using the code '0D'. The 'Enter' character is also represented in the ASCII area by a fullstop, so the HEX area provides the truest representation of the string contents.

To change between the ASCII and HEX edit areas

- Press **F1**

The structure of power strings

Note: The settings given below are given as a general example for reference only - other power switches may require different settings. Please refer to LINDY for advice on how to configure the Matrix CPU Switch IP to control other power switches.

The ASCII structure of each string (OFF and ON) is as follows:

Pxy=z ↵

Where:

- x** is the switch box number,
- y** is the power port number,
- z** is '0' for OFF or '1' for ON, and
- ↵ is the Enter (or Carriage return) character (0D in Hex).

Example 1

To switch ON port 5 of switch box 2, the ASCII and HEX codes would be as follows:

- ASCII string: P25=1 ↵
- HEX characters: 50 32 35 3D 31 0D

Example 2

To switch OFF port 8 of switch box 3, the ASCII and HEX codes would be as follows:

- ASCII string: P38=0 ↵
- HEX characters: 50 33 38 3D 30 0D

ASCII characters and equivalent HEX codes

The table given here shows the various ASCII characters that you will need along with their HEX equivalents:

ASCII	Hex
P	50
1	31
2	32
3	33
4	34
5	35
6	36
7	37
8	38
=	3D
Enter	0D

*Note: Remember, you cannot add the 'Enter' command within the ASCII area, you must change to the HEX area (using **F1**) and type the equivalent code '0D'.*

Creating power port groups

Where multiple power inputs to a server require simultaneous switching, up to four ports can be formed into a power port group.

To add/edit further power strings in order to switch extra ports

- 1 Edit the first power ON string as described above.
- 2 Press **F2** to edit an additional power ON string. Input the appropriate switch box number and port address for the next power port.
- 3 Repeat step 2 for each power port that must be simultaneously switched.
- 4 Repeat all of these steps for the corresponding power OFF strings.

Note: The second, third and fourth strings are actually sent in quick succession. If required, this feature could be used to create one long string for a single port.

IP configuration panels

The IP configuration panels allow you to determine how the Matrix CPU Switch IP appears and operates to a remote user connected via a Web browser and IP link. The layout and operation of the IP configuration panels are quite different to the menus of the Matrix CPU Switch IP KVM configuration section. The most apparent differences are:

- The top level user login is 'super' rather than 'ADMIN'.
- Navigation is primarily via mouse clicks on browser panels as opposed to keypresses within a more-traditional menu structure.
- User names and passwords are case-sensitive (in the KVM switching section of Matrix CPU Switch IP they are not).

The IP section of the Matrix CPU Switch IP also maintains its own security access user names and passwords, which are independent to those within the KVM switching section. This provides an extra level of security against unauthorised users who might infiltrate the system via an IP connection. The separate IP and KVM user names and passwords for each user can be made the same or different according to your requirements.

Note: Matrix CPU Switch IP supports 128bit encryption and you are recommended to use secure links whenever possible using the following browsers:

- Microsoft Internet Explorer version 5.5 or higher
- Netscape Navigator version 7.0 or higher
- Mozilla 1.0 or higher

Use the prefix *https* to engage a secure link (e.g. *https://192.168.1.22*).

To access the IP configuration panels

Before the IP section of the Matrix CPU Switch IP can be accessed, ensure that the two connection and configuration stages have first been completed:

- [To initially connect and configure the IP port \(stage 1 of 2\)](#)
- [To make the final IP port connection \(stage 2 of 2\)](#)

- 1 Use a suitable web browser on an IP-connected computer to access the IP address given to the Matrix CPU Switch IP during the initial connection stage. If the connection is successful, the login screen will be displayed:



WEB SERVER

- 2 At the login screen enter the following default superuser responses:

- Matrix CPU Switch IP Login: *super*
- Password: *lindy*

If the login is successful, the Matrix CPU Switch IP home page will be displayed:

Remote Console not connected!

Home | Logout

Remote Console

- Show Remote Console
- Remote Console Settings
- Telnet Console

Server

- Power Control
- Keyboard/Mouse Settings
- KVM Settings
- Video Settings

Administration

- User/Group Management
- User/Group Permissions
- Network Settings
- Serial Port Settings
- Security Settings
- SNMP Settings
- IPMI Settings
- LDAP Settings
- Maintenance

Home

KVM Switch

Computer 1

Console Redirection

Power and Reset

Remote Keyboard

Remote Mouse

Matrix CPU Switch IP Short Summary

Server Power Status: On

Firmware Version: 03.02.04 (Build 555)

Device Management: self contained

Users: super (80.225.165.11) active



INSTALLATION

CONFIGURATION

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FURTHER INFORMATION

INDEX

- 3 As all Matrix CPU Switch IP devices are shipped with the same login and password settings, your new 'default' setup will offer easy unauthorised access to any knowledgeable users. Therefore, your first step **MUST** be to change the standard supervisor password - see below.
- 4 After changing the standard supervisor password, you are then advised to perform the following stages to prepare the system for general use:
 - *Organise users and groups, and determine their access rights* ⇨.
 - [Select appropriate security settings for your installation.](#)
 - [Determine how computer ports are displayed and selected.](#)
 - [Display the Remote Console window and synchronise operation.](#)

To change the superuser's password

- 1 Within the Matrix CPU Switch IP home page, select the 'User/Group Management' option in the 'Administration' section. The User Management panel will be displayed.
- 2 Use the 'Existing users' control to select the 'super' entry and then click the 'Lookup User' button. The existing details held for the superuser will be displayed (the existing password will not be displayed).
- 3 In the 'Password' field, enter a new password and then repeat the new password in the 'Confirm Password' text box.
- 4 Click the 'Modify User' button. If the change is carried out, then the panel will display a message at the top to confirm this.

Organising users and groups

The IP section of the Matrix CPU Switch IP has the ability to maintain multiple lists of individual users as well as groups of users. Each user can be assigned a separate login and password, and each can be allowed access to different sets of menu panels. Where numerous users will be granted access it is often advantageous to collect them together within one or more groups, where permissions can be arranged collectively. Users placed within groups can inherit global group settings, maintain their own or obtain a mixture of both depending on how options are set. Individual users can be added to any number of groups and can then inherit differing permissions from those groups. In this way a hierarchical arrangement of users can be organised, as required.

The organisation of users and groups are split into two functional areas:

- *User/Group Management* (see below) – In this panel, users and groups alike can be created, copied, modified and deleted. Here also, users can be assigned into groups.
- [User/Group Permissions](#) – In this panel, individual users and/or groups can be assigned access rights to the various features and menus within the IP section of the Matrix CPU Switch IP.

Using the User/Group Management panel

To add a user

- 1 Within the Matrix CPU Switch IP home page, select the 'User/Group Management' option in the 'Administration' section. The User Management panel will be displayed.
- 2 Enter a suitable login name into the 'New user name' field. Use the 'Full user name' field to enter a more complete name by which the user will be identified within the system.

Note: Spaces are not permitted in user or group names, or within passwords. As users and groups are stored within the same list, it is advisable to name users and groups distinctly so that they are easy to differentiate.

- 3 Enter a suitable login password into the 'Password' field (characters are represented by '*') and then repeat the password in the field below.

Note: To maximise security, ensure that all passwords are at least eight characters long and that they include a mixture of upper and lower case letters, as well as numerals.

- 4 Optionally enter an email address and mobile phone number.
- 5 You can add the new user to a group either this stage or at any time later on. The 'Not member of' field indicates the groups that are currently available. To add the new user, click on a group name and click the '<-' button. You can repeat this procedure to also add the user to other groups.
- 6 Click the 'Create User' button to add the entered details into the list of users.

To modify, copy or delete a user

- 1 Within the Matrix CPU Switch IP home page, select the 'User/Group Management' option in the 'Administration' section. The User/Group Management panel will be displayed.
- 2 Use the 'Existing users' control to locate the required user entry and then click the 'Lookup User' button. The existing details held for the user will be displayed, except for the existing password.
- 3 Then you can:
 - *Modify* – Make the necessary changes to the user details and then click the 'Modify User' button. The 'Member of' and 'Not member of' fields indicate the groups that are currently belonged-to and available, respectively. Click on a group name and click either the '<-' or '->' buttons to include or exclude the user as necessary. A user can belong to more than one group.
 - *Copy* – Change the user name along with any other details and then click the 'Copy User' button. All properties of the selected user will be copied to the new one, except user specific permissions.
 - *Delete* – Click the 'Delete User' button. Note: The 'super' user cannot be deleted.

To add a group

- 1 Within the Matrix CPU Switch IP home page, select the 'User/Group Management' option in the 'Administration' section. The User Management panel will be displayed.
- 2 Optionally use the 'Existing groups' control to check which groups currently exist.
- 3 Enter a new name in the 'New group name' field and press the 'Create Group' button. *Note: Spaces are not permitted in user or group names, or within passwords. As users and groups are stored within the same list, it is advisable to name users and groups distinctly so that they are easy to differentiate.* The new group will be added to the list. You can now add users to the group and/or edit the permissions for the group – these two operations can be carried out in any order. Use the 'User/Group Permissions' panel to assign appropriate access to various functions for each user and group – see [Using the User/Group Permissions panel](#) for more details.

To modify, copy or delete a group

- 1 Within the Matrix CPU Switch IP home page, select the 'User/Group Management' option in the 'Administration' section. The User Management panel will be displayed.
- 2 Use the 'Existing groups' control to locate the required group entry.
- 3 Then you can:
 - *Modify* – Change the group name and then click the 'Modify Group' button.
 - *Copy* – Change the group name and then click the 'Copy Group' button. All properties and permissions of the selected group will be copied to the new one.
 - *Delete* – Click the 'Delete User' button.

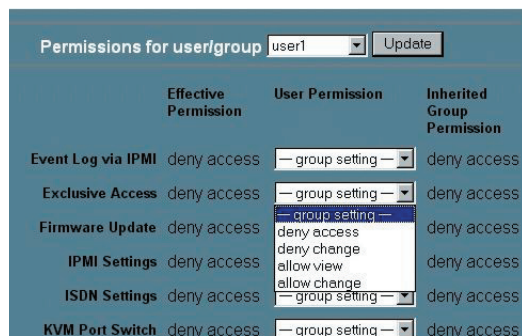
Using the User/Group Permissions panel

This is where you determine exactly how the Matrix CPU Switch IP home page appears to each user who connects via an IP link. By altering the permissions granted to each individual user or collective group, the many options given in the home page can be configured to be anything from fully accessible to totally invisible. Permissions can be granted (for every operational aspect) either: individually, or by group or by a combination of both.

When a user or group is selected within the permissions panel, the columns displayed will vary depending on whether you selected a single user or a group and also on your hierarchy in relation to that user or group. Generally speaking:

A user permissions panel shows:

- **Effective Permission** – This column indicates the actual permissions for the user. This column combines the highest permissions inherited from one or more groups as well as those given individually in the 'User Permission' column.



	Effective Permission	User Permission	Inherited Group Permission
Event Log via IPMI	deny access	group setting	deny access
Exclusive Access	deny access	group setting	deny access
Firmware Update	deny access	deny access, deny change, deny view, allow change, allow view	deny access
IPMI Settings	deny access	group setting	deny access
ISDN Settings	deny access	group setting	deny access
KVM Port Switch	deny access	group setting	deny access

- **User Permission** – This column allows you to view/alter permission levels that are granted to the user, over and above those inherited from any group(s) that they may belong to.
- **Inherited Group Permission** – This column indicates the permissions that are granted to the user by virtue of his association with one or more groups.

A group permissions panel shows:

- **Group Permission** – This column allows you (depending on your status) to alter the permission levels that will be applied to all members of the group.
- **Current Permission** – This indicates the current permission levels that are currently applied to all members of the group.



	Group Permission	Current Permission
Event Log via IPMI	deny access	deny access
Exclusive Access	deny access	deny access
Firmware Update	deny access, deny change, deny view, allow change, allow view	deny access
IPMI Settings	deny access	deny access
ISDN Settings	deny access	deny access

There are six possible settings for each of the 26 functions (not all settings are offered for each function) within each column. Roughly speaking the settings below are listed in decreasing order of status, i.e. if the inherited group permission gave 'allow view' and the individual user setting for the same function was 'allow change', then the 'Effective Permission' would be 'allow change'.

- **allow change** The user can change the entry settings.
- **allow access** The user can use this function.
- **allow view** The user can view the entry.
- **deny change** The user can see but not change the entry's settings.
- **deny access** The user cannot see or use this function.
- **group setting** Use the permission inherited from the group(s) the user belongs to. Default is to deny access.

To edit permissions for a user or group

- 1 Within the Matrix CPU Switch IP home window, select the 'User/Group Permissions' option in the 'Administration' section. The User/Group Permissions panel will be displayed.
- 2 Use the 'Permissions for user/group' control to locate the required user or group name and then click the 'Update' button. The current permissions for the selected user or group will be displayed. If you have sufficient status, then the 'User Permission' or 'Group Permission' column will feature changeable controls for each function.
- 3 Using the controls, select the appropriate permission for each function. For a user, to inherit the permission from the group(s) belonged to, select the 'group setting' option.
- 4 When all permissions have been selected, scroll to the foot of the panel and click the 'Apply' button. The settings will be saved, the panel updated and a message displayed at the top of the panel to confirm the operation.



Selecting appropriate security settings

The Matrix CPU Switch IP, IP section provides a flexible approach to security that allows you to determine an overall level of cover that suits your requirements.

There are four main parts to the Security Settings panel:

- *Force HTTPS* – Select this option to compel remote IP users to use the secure version of http with 128-bit strong encryption.
- *KVM encryption* – Select the 'Try' or 'Force' options to use encrypted screen, keyboard and mouse data. The former option will resort to normal mode if encryption is not possible, the latter will produce an error message.
- *TELNET settings* – The use of Telnet can induce security loop holes that could be employed by potential hackers. For higher security, you are recommended to leave Telnet disabled.
- *IP Access Control* – This option allows you to limit access to distinguished number of remote users by listing particular IP addresses that you wish to accept. This option provides good security but is really only viable for a relatively small number of IP users who will always use the same systems for access.

For the highest possible security level, select the following:

- *Force HTTPS* – On
- *KVM Encryption* – Force
- *TELNET Settings* – Disabled
- *IP Access Control* – Configure for all users

To select security settings

- 1 Within the Matrix CPU Switch IP home page, select the 'Security Settings' option in the 'Administration' section. The User Management panel will be displayed.
- 2 Make the appropriate settings. See the [Security Settings](#) in Appendix 2 for more details.
- 3 Click the 'Apply' button. The settings will be saved, the panel updated and a message displayed at the top of the panel to confirm the operation.

Note: To improve security still further, ensure that all user passwords are at least eight characters long and that they include a mixture of upper and lower case letters, as well as numerals.

The screenshot shows the 'Security Settings' panel with the following sections:

- SSL Settings**:
 - ☒ Force HTTPS
 - KVM Encryption: ☒ Off ☐ Try ☐ Force
 - [Follow this link if you want to create your own SSL certificate.](#)
- TELNET Settings**:
 - ☒ Enable TELNET access
- IP Access Control**:
 - ☒ Enable IP Access Control
 - Default policy:
 - Table with columns: Rule #, IP/Mask, Policy
 - Buttons: Append, Insert, Replace, Delete
 - Apply button

Determining computer ports display and selection

When shipped, the Matrix CPU Switch IP, IP section will be configured to view only one computer port. With a full sixteen ports to choose from, this setting and several others need to be changed in order to make full use of the Matrix CPU Switch IP KVM capabilities. For each KVM port, you can edit the names that are presented within the Matrix CPU Switch IP home page and the Remote Console - It is most sensible to make them the same as they are within the KVM selection menu.

To set the number of KVM ports

- 1 Within the Matrix CPU Switch IP home page, select the 'KVM Settings' option in the 'Server' section. The User Management panel will be displayed.
- 2 Use the 'Number of Ports' control to select the required number of KVM ports. Ordinarily, this will be 16 to equal the physical ports on the Matrix CPU Switch IP. However, when cascading a large number of switches and computers, it can be useful to create extra ports to access the systems lower down the cascade structure. The options here are 1, 2, 4, 8, 16, 32 and 64.
- 3 Click the Update button. A number of fields equal to the 'Number of Ports' setting will appear lower down the panel. Each row allows you to define a name, KVM switching code (Hotkey) and an option to show the link as a button within the Remote Console. The section opposite deals with editing these items.

Note: For most systems you are recommended to select the default Matrix CPU Switch IP configuration and then click the 'Set Defaults' button. This automatically fills in all the boxes with a suitable set of default values that makes configuration easier.

- 4 Click the 'Apply' button at the foot of the panel to save your changes.

To edit computer names and switching codes

- 1 Within the Matrix CPU Switch IP home page, select the 'KVM Settings' option in the 'Server' section. The KVM settings panel will be displayed. Dependant on the 'Number of Ports' control setting, between 1 and 64 rows of computer port entries will be displayed in the lower section of the panel. Here, for each port, you can define a name, KVM switching code (hotkey) and an option to show the link as a button within the Remote Console.
- 2 For each port:
 - Enter a name – this will be displayed within the Matrix CPU Switch IP home page and also within the Remote Control window.
 - Enter a KVM switching code (Hotkey) – this code will be passed to the KVM section to select the particular KVM port. It is essential that the code entered here matches those used by the KVM section.

The standard sixteen settings (e.g. CTRL+ALT+1, etc.) are correct, providing the standard hotkeys within the KVM configuration section are not changed (Main Menu / Configuration Menu / Setup Options / Hotkeys). If the codes do not match then the various ports will not be selectable. For instance, if the KVM section hotkeys are changed to 'CTRL + SHIFT' then the Hotkey entry within this panel for port 8 must be 'CTRL+SHIFT+8' in order for Remote Console to switch to that system. The various KVM and IP hotkey settings are listed below:

KVM setting	IP section setting	Delimiters
CTRL+ALT	CTRL+ALT	+ KeyA+KeyB means 'press KeyA together with KeyB'
CTRL+SHIFT	CTRL+SHIFT	
ALT+SHIFT	ALT+SHIFT	
ALT GR	ALTGR	> KeyA>KeyB means 'press KeyA then KeyB'
L + R ALT	LALT+ALTGR	
L CTRL+ALT	LCTRL+ALT	
R CTRL+ALT	RCTRL+ALT	

Note: Addresses for cascaded computers should be entered as in their basic KVM form, with the addition of '+' and '>' delimiters between each character. For instance, (with the KVM hotkeys set to 'CTRL and ALT') a cascaded computer with address 41434108 would be entered as:

CTRL + ALT + 4 > 1 > 4 > 3 > 4 > 1 > 0 > 8

For KVM hotkey setting, see [To change the KVM hotkeys](#) for details.

- Select/deselect the 'Show in Console' checkbox – All ports are shown within the Matrix CPU Switch IP home page, however, you have the option to include or exclude ports within the Remote Console window.
- 3 When all settings have been made, click the 'Apply' button to save.

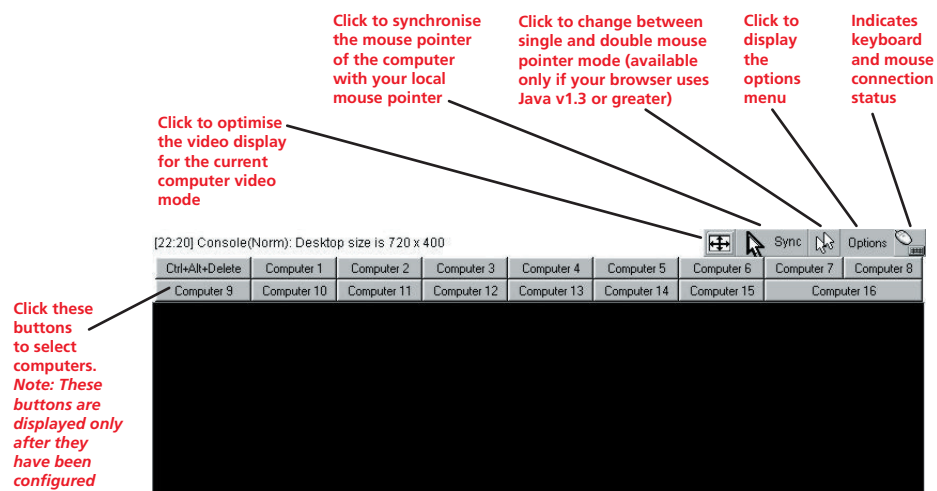


Selecting computers (IP section)

This section covers the various ways that you can select a computer when using the remote IP connection.

To select a computer

- 1 Click the 'Show Remote Console' option. If the login menu is displayed, log-in first. Otherwise, the Remote Console window will be displayed:



This is where you select computer ports and view the resulting screen images.

Note: If the security option has been set within the KVM section, you will need to enter an additional Login and Password – see [Logging in and out \(KVM section\)](#) for more details.

- 2 Select the required computer port in one of three main ways:
 - Click the required computer button from the selection at the top of the Remote Control window. This is the preferable method because any screen setup parameters that are set for a particular computer will be invoked every time the same computer is re-selected in this manner. This method of selection uses the switching codes that are configured within the [KVM settings](#) panel discussed on the previous page.
 - Use a KVM hotkey sequence, such as **Ctrl** **Alt** **6** (selects port 6). For cascaded computers with lengthy addresses, one of the other two methods is recommended.
 - Display the KVM menu (**Ctrl** **Alt** **M**) and select a computer by name from the list.

Whichever method is used, when a channel is selected, the resulting video image will be shown within the Remote Console window.

Using Remote Console to synchronise operation

When the Matrix CPU Switch IP first accesses a computer via IP connection it is likely that the screen arrangement and mouse responses, from the remote machine, are not as optimal as they can be. If this is the case then you need to carry out two steps for each computer. These steps need only be carried out once for each port as the Matrix CPU Switch IP will store the optimal settings. The mouse has two modes that are selectable from the Options menu within the Remote Console window, under the 'Mouse Handling' option: Fast Sync and Intelligent Sync. The former creates a quick synchronisation between the 'local' movement of your mouse and the response of the remote mouse pointer of the computer. The Intelligent Sync option takes a little more time than the fast mode, and requires a fully optimised screen, but it gives a better correlation between your movements and the response of the remote computer.

To synchronise screen and mouse operation

- 1 Within the Matrix CPU Switch IP home page, select the 'Show Remote Console' option in the 'Server' section. The Remote Console window will be displayed - see opposite.
- 2 Carry out the following two steps as necessary:
 - To adjust the video display: Click the button. The Matrix CPU Switch IP will determine the optimum display settings – while this process takes place the Remote Console window will go blank for a few moments.
 - To synchronise the mouse: Click the button. The Matrix CPU Switch IP will match the response of the mouse pointer on the remote computer to the movement of your mouse.

Note: To optionally change between the two mouse synchronisation modes ('Fast Sync' and 'Intelligent Sync') click the 'Options' button (within the Remote Console window), select the 'Mouse Handling' option and select the required mode from the resulting flyout.



Disabling mouse acceleration

Certain operating systems, such as Windows XP provide an option to use 'mouse acceleration' or 'Enhance pointer precision'. If this option is enabled on a computer connected to the Matrix CPU Switch IP it can cause problems when accessed via a remote IP link. Generally, the remote mouse pointer becomes erratic and difficult to control. For this reason, you are strongly recommended to disable such features on systems that will be accessed remotely.

To disable mouse acceleration

- 1 On the computer connected to the Matrix CPU Switch IP, access the Mouse driver within the Control Panel.
- 2 Locate and disable the setting variously labelled as 'Mouse acceleration' or 'Enhance pointer precision'.

Note: If a remote system has mouse acceleration enabled and you need to disable it remotely, then it can be difficult to accurately position the remote cursor. In this case, display the KVM on screen menu (Ctrl Alt M). While it is displayed, you can move the your local cursor to the required screen position and then deactivate the on screen menu.

Logging access activity

By connecting the Matrix CPU Switch IP's serial port to a computer, a time stamped log of the Matrix CPU Switch IP's activity can be generated. This is useful for applications where it is necessary to keep track of which users have accessed which computers. A simple data logging program, called XPLOG.EXE, is available on the supplied CD-ROM or may be downloaded from the LINDY website (www.lindy.com). This enables the activity log to be saved to a file or printed to a printer. This logging program uses the Excel-compatible file XPRODATA.CSV to cross reference the port and user information to computer and user names in order to generate an informative activity log.

To make use of the activity logging features

- 1 Locate the program XPLOG.EXE on the supplied CD-ROM, or download it from the support section of the LINDY Technology website.
- 2 Follow the instructions in the section [Saving and restoring KVM configuration settings](#) to create the Excel compatible file XPRODATA.CSV that contains a list of user and computer names and port numbers.
- 3 Copy the XPRODATA.CSV file into the same directory as the XPLOG.EXE file.
- 4 Run the XPLOG file using the following command format:

```
XPLOG {activity_log_destination} {com_port}
```

where:

- {activity_log_destination} is the file name where the log is to be stored or the word PRINT if the log is to be printed on a printer attached to the computer's parallel port. LPT1
- {com_port} is the computer's serial port that is connected to the Matrix CPU Switch IP. Options are 1 (for COM1) or 2 (for COM2).

For example:

- XPLOG datalog.txt 1
would log activity information received on COM1 to the file datalog.txt.
- XPLOG PRINT 2
would print activity information received on COM2 to the printer attached to the computer's LPT1 printer port.

These programs will run continuously until you press .

More information

If you wish to integrate activity data logging with your own applications, contact LINDY for a list of serial data logging codes and their associated meanings. It is possible to use the activity logging and Matrix CPU Switch IP synchronisation features together but this requires a specially constructed serial cable. Please contact LINDY for further details.



Operation

Powering on

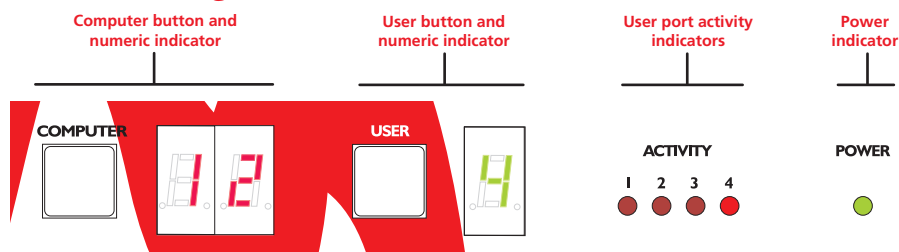
The Matrix CPU Switch IP does not have a power switch, so whenever power is applied via the supplied adapter, the unit is operational. A green indicator on the front panel (labelled 'Power') shows power input status.

Note: Before applying power to the Matrix CPU Switch IP, ensure that the two option switches at the rear panel are both set to the OFF (up) position.

The front panel controls

The Matrix CPU Switch IP front panel provides a range of buttons, indicators and connectors. The items on the left side of the front panel are linked with the KVM switching aspects, while the right-side are solely concerned with the remote IP access features.

KVM switching items



Computer button and numeric indicator

These items allow you to select any one of the Matrix CPU Switch IP's sixteen computer ports. As the button is pressed, the number shown by the red numeric indicator will increment to the next available computer channel. The computer port selected will then be connected to the user port that is currently selected by the adjacent user button and green numeric indicator.

User button and numeric indicator

These items allow you to select any one of the Matrix CPU Switch IP's four user ports. With each press of the button, the number displayed by the green numeric indicator will advance from port 1 through to port 4 and then loop back to port 1. At the same time, as each user port number is displayed, the computer port that is currently associated with that port will be indicated by the red numeric indicator.

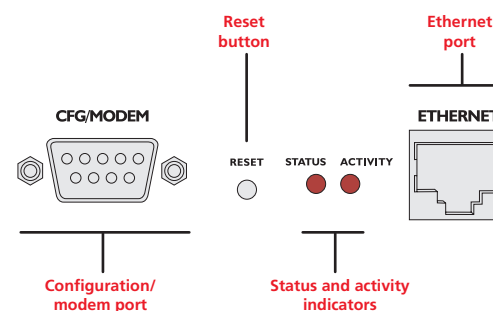
User port activity indicators

These four red indicators provide confirmation that keyboard and mouse activity is being detected from each of the four user ports.

Power indicator

Glowes green whenever power is applied to the Matrix CPU Switch IP.

IP remote-connection items



Configuration/modem port

Used to make initial configuration settings and also to connect the Matrix CPU Switch IP to a modem or ISDN adapter.

Reset button

When this small recessed button is pressed, a full reset is carried out on the IP section of the Matrix CPU Switch IP. The KVM switching section remains unaffected.

Status indicator

This red indicator illuminates continuously to show that the IP section is operating correctly.

Activity indicator

This red indicator flashes whenever traffic is detected on either the serial or Ethernet ports.

Ethernet port

Provides a high speed connection point to IP networks.

Using the KVM switching section

Selecting a computer (local and extended users)

There are four main ways to connect a particular user port to a specific computer port:

- *Using the front panel controls* (discussed below) – this is a straightforward method, if the Matrix CPU Switch IP is nearby.
- *Using the on-screen menu* (shown right) – this is the best method when there are many connected computers.
- **Using hotkeys** – this is a good method if you continually access a small number of computers.
- **Using mouse buttons** – this is a good method for switching between a small number of systems.

In all cases, when the required port is selected, a pop up message will be displayed to either confirm the port connected to, and its status, or an error message explaining why a connection is not possible (press **Esc** to cancel the latter type of message).

To select a computer using the front panel controls

Note: It is possible for the front panel controls to be limited to selecting only the on screen menu or a blank screen. If this is the case please use a different switching method or contact your system administrator for details.

- 1 Press the User button until the green numeric indicator displays the port number to which your keyboard, video monitor and mouse are connected.
- 2 Press the Computer button until the red numeric indicator shows the required computer port number.

Note: If KVM security has been enabled then only computer ports to which the current user port has permission will be displayed.

As well as the sixteen standard computer ports, there are also two additional special ports that appear after port 16 and before port 1:

- ▣ This port provides no video signal so that a connected power saving monitor will be prompted to enter into its power saving mode.
- ▣ This port connects the current user port to the on-screen menu.

To select a computer using the on-screen menu

- 1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.

*Note: The **Ctrl** and **Alt** keys when pressed in combination are called 'hotkeys' and they signal to the Matrix CPU Switch IP that you wish to control it, rather than the computer. However, if these particular hotkeys clash with another device or program, then your administrator may change them to a different combination. If the **Ctrl** **Alt** **M** combination fails to work, then please contact the system administrator for details.*

- By pressing the middle and right buttons of a three button mouse, or
Note: The mouse switching option is usable only if the Mouse switching option is enabled. See [Global preferences](#) for more details.

- By selecting port **1** using the front panel buttons (see the above section).

At this point, depending on the security settings and the current log in situation, one of two things will be displayed, either the login screen, or the Selection menu:

The login screen - here you enter a valid User Name and Password – see [Logging in and out \(KVM section\)](#) for more details. When you do so, the Matrix CPU Switch IP selection menu will be displayed:

Computer	Port
Computer 1	01
Computer 2	02
Computer 3	03
Computer 4	04
Computer 5	05
Computer 6	06
Computer 7	07
Computer 8	08

User port 1	Status
ADMIN	SHARED USE
F1-More menus	F3-Find
Esc-Quit	F4-Logout

The Selection Menu – here you can select computers by name.



- 2 Use the  and  keys (or the scroll wheel of an IntelliMouse) to highlight the required computer name. Alternatively (for large configurations), press  to perform an alphabetical search for a particular port name.

Note: If KVM security has been enabled then only computer ports to which the current user port has permission will be displayed.

- 3 Select the highlighted port in one of three ways:
 - *Shared mode* - press  - This *standard* method allows other users to view the same computer port. Control of the port is given to one user at a time, on a first-come, first-served basis and is relinquished after a certain period of inactivity.
 - *Exclusive mode* - press   - This mode prevents any other user from viewing or controlling the computer port until you either select another computer or log off. This mode should be used with care – it can also be blocked as an option by the administrator.
 - *Video Only mode* - press   - This mode displays the video picture of the port, but prevents keyboard or mouse activity from controlling the computer.

To select a computer using hotkeys

- 1 Simultaneously press and hold  and .

Note: The  and  keys when pressed in combination are called 'hotkeys' and they signal to the Matrix CPU Switch IP that you wish to control it, rather than the computer. However, if these particular hotkeys clash with another device or program, then your administrator may change them to a different combination. If the   combination fails to work, then please contact the system administrator for details.

- 2 While still holding  and , press the first numeral of the required port address, then:
 - If the port address is a single character, release all of the keys.
 - If the port address is two or more characters, release the first numeral key and press the second – repeat this procedure until all of the port address numerals have been entered, then release  and .

Note: The numbers on your keyboard's numeric keypad are not valid, use only the numeral keys above the QWERTY section.

Note: If your user port does not have authorisation to view the selected port then an 'Insufficient user rights' messages will be displayed.

Standard hotkeys

The range of hotkey combinations are as follows:

Note: If your hotkeys have been changed, substitute them for  and  in the examples given here.

  1

Selects port 1

  2

Selects port 2

•

•

  1 then 

Selects port 10

•

  1 then 

Selects port 16

  Tab

Selects the next available port

  A

Selects autoscan mode where each (authorised) port is displayed for a period determined by the administrator. To cancel autoscan mode, simply select any fixed channel using any of the suggested methods.

  0

Switches off the video signal – this will cause a power saving monitor to enter its standby mode. To awaken the monitor, simply select any fixed channel using any of the suggested methods.

  L

Logs out the current user (if security is enabled) or selects port 0 to disable the video signal (if security is disabled).

  & , ,  or 

Moves the currently displayed on-screen menu around the screen.

To select a computer using mouse buttons

Note: This procedure works only with three-button or IntelliMouse devices and only if the 'Mouse Switching option has been enabled by your administrator'

- 1 Hold down the middle button (or scroll wheel) of the mouse.
- 2 Click the left mouse button to select the next computer port. When the correct port is reached, release the middle button.

Note: If KVM security has been enabled then only computer ports to which you have permission will be displayed.

To select a computer using mouse buttons – Advanced method

- 1 Select the on-screen menu by pressing the middle and right buttons of a three button mouse.
- 2 Use the scroll wheel to highlight the required computer port.
- 3 Then, select either:
 - *Shared mode* - press the left mouse button - This *standard* method allows other users to view the same computer port. Control of the port is given to one user at a time, on a first-come, first-served basis and is relinquished after a certain period of inactivity.
 - *Exclusive mode* - press  and the left mouse button – This mode prevents any other user from viewing or controlling the computer port until you either select another computer or log off. This mode should be used with care – it can also be blocked as an option by the administrator.
 - *Video Only mode* - press  and the left mouse button – This mode displays the video picture of the port, but prevents keyboard or mouse activity from controlling the computer.
 - *Escape without selecting a port* – press the right mouse button.

Logging in and out (KVM section)

The Matrix CPU Switch IP features a straightforward security system that helps to prevent unauthorised access to some, or all, connected computers.

Note: If you are a remote IP user, then a separate IP login and password are required in addition to (and in advance of) the KVM details – see [Logging in and out \(IP section\)](#) for more details.

If the security option has been selected by your administrator then you will be asked to enter a User Name and Password when you first access a user port. When you have finished using the system, it is then good practice to logout, forcing any other users to authenticate themselves prior to use.

Note: If the security option has not been enabled then no login is required.

To log in to the Matrix CPU Switch IP (KVM section)

- 1 If it is not already displayed, move the mouse or press any key to display the log in screen.



- 2 Enter your designated User Name and press .
- 3 Enter your designated Password and press . If both entries are correct then the selected port will be displayed.

Note: If either the User Name or Password are incorrect, the entries will be cleared to allow another attempt.

To log out from the Matrix CPU Switch IP (KVM section)

- 1 Select the on-screen menu in one of three ways:
 - By simultaneously pressing and then releasing   .
 - Note: The  and  hotkeys may have been changed. If the combination fails to work, then please contact the system administrator for details.*
 - By pressing the middle and right buttons of a three button mouse, or
 - By selecting port  using the front panel buttons

- 2 Press . The KVM login window will be displayed.

Alternatively:

- Press   and  at any time to log out.



Selecting cascaded computers

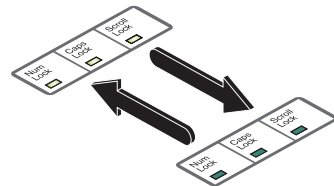
The Matrix CPU Switch IP is not limited to sharing just sixteen computers. By joining numerous LINDY CPU Switch products together in a tree-like or *Cascade* arrangement, it is possible for each user port to view many more computers. Although you can use exactly the same selection methods to choose any computer, you are strongly recommended to use the on screen menu method for the following reasons:

- The **on screen menu** – this method displays the names of each computer in alphabetical order and also allows you to search for them by name, press **F3** – a useful feature in a long list. This really is the best way to access a large number of computers.
- The **mouse method** – this method is fine for small numbers of computers but can take too long to reach the required computer in an extensive configuration.
- The **hotkey method** – depending on their position within the connection structure, each computer can have an address up to eight digits long which can be difficult to remember and lengthy to type.

Using the dual access ports

The Matrix CPU Switch IP is equipped with two dual access ports - ports 1 and 3. These dual access ports each allow a keyboard, video monitor and mouse set to be connected locally as well as via an extender, such as the LINDY Extender Junior, Extender Pro or C5 Extender Junior (not C5 Extender Pro). Either the local KVM set, or the extended set may be used to access the Matrix CPU Switch IP. The video picture is duplicated on both the local and extended access points, however, the Matrix CPU Switch IP will accept keyboard and mouse data from only one KVM set at a time. When one of the KVM sets is active, the keyboard indicators will flash on the KVM set that does not have control.

After a set timeout period has elapsed since the last keyboard or mouse input, the option to control the Matrix CPU Switch IP is opened up to both ports, and the first to respond will gain control.



The reminder banner

As many computer screen layouts can appear very similar, the Matrix CPU Switch IP provides a Reminder banner option that indicates which computer port you are currently viewing. The banner is usually displayed at the top of the screen, using blue lettering and transparent background. You have the option to:

- Move the banner
- Change the banner colours, and/or
- Disable the banner

To move the reminder banner

- 1 While viewing a computer port, press and hold **Ctrl** and **Alt**.

*Note: The **Ctrl** and **Alt** hotkeys may have been changed. If the combination fails to work, then please contact the system administrator for details.*

- 2 Press the **↓**, **↑**, **←** and **→** keys to move the banner to the required position.

To change banner colours or disable the banner

- 1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.
- By pressing the middle and right buttons of a three button mouse, or
- By selecting port **1** using the front panel buttons

If you are not already **logged in**, do so now.

- 2 Press **F1** to select 'More menus'.
- 3 Use **↓** or your mouse scroll wheel to highlight the 'User Preferences' option.
- 4 Press **↓** or the left mouse button to select. Then, highlight the required option:
 - To disable the banner – highlight 'Reminder Banner' and press **Space** until 'DISABLED' is shown.
 - To change colours – highlight 'Reminder Colour' and press **Space** until the desired colour combination is displayed.
- 5 Press **Esc** to save the settings. Press **Esc** twice more to return to the computer port and view your changes.

Routing status

On occasions it may be useful to know which computers are being accessed, in which modes and by whom. The most common reason for this would be if you were denied access to a computer port and needed to find out if another user has selected 'Exclusive' access. For this purpose the Matrix CPU Switch IP provides the very handy Routing status feature which provides an 'at a glance' view of all current user connections.

To use the Routing status feature

1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.

*Note: The **Ctrl** and **Alt** hotkeys may have been changed. If the combination fails to work, then please contact the system administrator for details.*

- By pressing the middle and right buttons of a three button mouse, or
- By selecting port **B** using the front panel buttons

If you are not already **logged in**, do so now.

- 2 Press **F1** to select 'More menus'.
- 3 Use **↓** or your mouse scroll wheel to highlight the 'Routing status' option.
- 4 Press **↵** or the left mouse button to select. The Routing status screen will be displayed where you can instantly see which computer ports are being accessed and by whom. The screen will be displayed for ten seconds.

Routing Status	
User 1	: ADMIN
Computer	: Internet Gateway
Port:4109	EXCLUSIVE USE
User 2	: SAM
Computer	: Technical Server
Port:16	SHARED USE
User 3	: DALE
Computer	: Comms Server
Port:09	VIDEO ONLY
User 4	: JOSHUA
Computer	: Firewall
Port:414105	SHARED USE
Esc-Quit	

User preferences and functions

In addition to customising the reminder banner as described earlier, you can also:

- Change the colour of the on screen menu,
- Select the screen saver style,
- Restore mouse operation, or
- Perform power control functions.

All of these options are discussed within [Appendix 1](#).

Using remote power switching

When used in conjunction with optional power switch boxes, the Matrix CPU Switch IP allows you complete remote control over the connected computers – from almost anywhere. The primary function of the power switching option is to remotely power down and reset systems that are failing to respond.

To switch a computer on or off

1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.

*Note: The **Ctrl** and **Alt** hotkeys may have been changed. If the combination fails to work, then please contact the system administrator for details.*

- By pressing the middle and right buttons of a three button mouse, or
- By selecting port **B** using the front panel buttons.

If you are not already **logged in**, do so now.

2 Switch to the computer port that needs to be switched on or off.

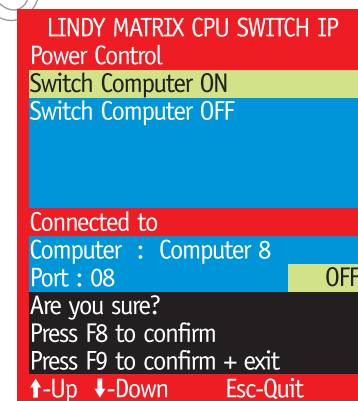
Note: If the computer is responding at all, try to shut it down normally before attempting a power switch operation.

3 Display again the on screen menu and press **F1** to select 'More menus'.

4 The 'Function' option should be highlighted, press **↵**.

5 Use **↓** to highlight 'Power Control' and press **↵**.

6 Use **↓** to highlight either 'Switch Computer ON' or 'Switch Computer OFF' as necessary and press **↵**. A warning message with two options will be displayed:



7 Press **F8** to confirm or **F9** to confirm and exit. The latter option clears the KVM menu so that, if required, you can be ready to enter any escape sequences that are needed by the computer (to access its BIOS setup area), during the bootup sequence.



Using the remote IP section

A key feature of the Matrix CPU Switch IP is its ability to let you switch between, view and control computers from almost anywhere. When you are logged in via your web browser, Matrix CPU Switch IP provides you with the same abilities and controls as though you were sitting next to each computer.

Logging in and out (IP section)

Before you can gain access to the IP section of the Matrix CPU Switch IP, you require three items of information from your administrator:

- *The Matrix CPU Switch IP address* – this will be an IP or web address that will take one of two forms, either: 'http://nnn.nnn.n.nn' or www.xyz.com'.
– where n are numerals and xyz are characters/numerals.
- *Your Login name*
- *Your Password*

Additionally, you may also require a separate Login and Password for the KVM switching section, if they have been configured differently.

To log in to the Matrix CPU Switch IP (IP section)

- 1 Open your web browser and enter the address of the Matrix CPU Switch IP, in the same way as any other web page – this will be available from your administrator. The Matrix CPU Switch IP login page will be displayed:



Authenticate with Login and Password!

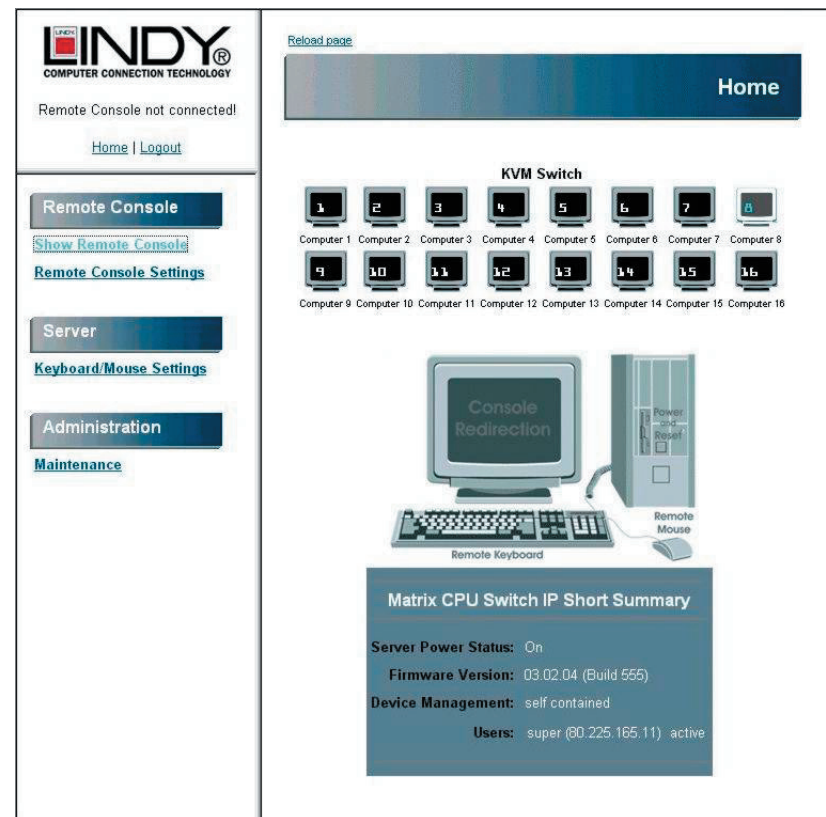
Matrix CPU Switch IP Login

Password

Login

WEB SERVER

- 2 Enter your Login name and your Password, and then click the 'Login' button. If the entered details are correct, the Matrix CPU Switch IP home page will be displayed:



The menu options available to you will depend upon the permissions granted by your administrator.

Before you can access the KVM computer port switching elements of Matrix CPU Switch IP, you may need to provide an additional Login and Password – see [Logging in and out \(KVM section\)](#) for more details.

To log out from the Matrix CPU Switch IP (IP section)

- In the top left hand corner of the Matrix CPU Switch IP home page, click the 'Logout' entry. The Matrix CPU Switch IP login page will be displayed.



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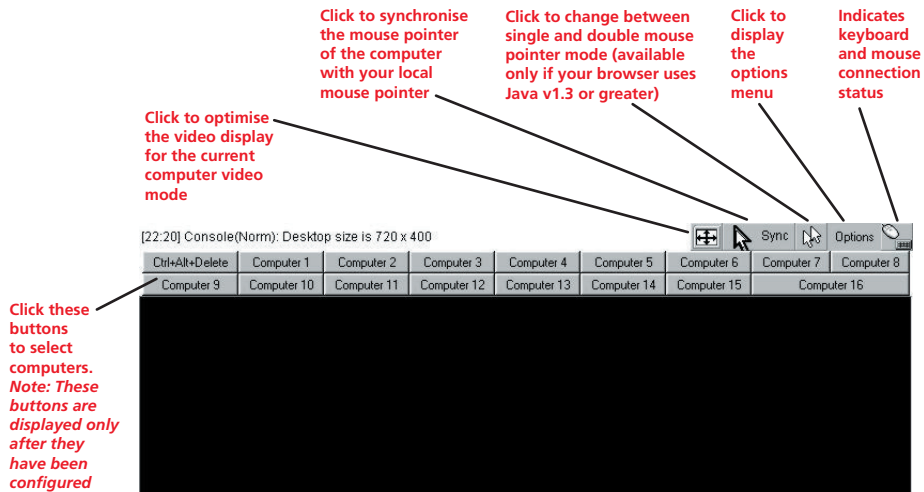
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Selecting a computer (remote IP users)

To select a computer

- 1 Click the 'Show Remote Console' option. If the login menu is displayed, log-in first. Otherwise, the Remote Console window will be displayed:



This is where you select computer ports and view the resulting screen images.

Note: Before you can access the KVM computer port switching elements of Matrix CPU Switch IP via the remote IP connection, you may need to provide an additional Login and Password – see [Logging in and out \(KVM section\)](#) for more details.

- 2 You can select computer ports in three main ways:
 - Click the required computer button from the selection at the top of the Remote Control window,
 - Use a KVM hotkey sequence, such as **Ctrl** **Alt** **6** (selects port 6), or
 - Display the KVM menu (**Ctrl** **Alt** **M**) and select a computer by name from the list.

Whichever method is used, when a channel is selected, the resulting video image will be shown within the Remote Console window.

Using remote chat

Remote chat allows you to swap messages with other remote Matrix CPU Switch IP users who are currently also connected via an IP connection.

To use remote chat

- 1 Within the Remote Console window, click the 'Options' button.
- 2 Click the 'Chat Window' option. A small chat window will be displayed:



- 3 Enter your message within the 'chat line' at the base of the window and press **Enter**. Your message will be sent to all other remote IP users of Matrix CPU Switch IP who are currently logged in. Your message will appear within a similar small window on their desktop. Optionally, select the 'Beep' option to cause an audible signal on other users' computers when your message arrives.

Note: Remote chat can only be received by other remote IP connected Matrix CPU Switch IP users, not by locally connected users. Chat messages are not saved until users log in at a later time.



Further information

This chapter contains a variety of information, including the following:

- Troubleshooting - see below
- Getting assistance - see right
- Appendices
 - Appendix 1 - [KVM configuration menu items](#)
 - Appendix 2 - [IP configuration panels](#)
 - Appendix 3 - [Firmware upgrade](#)
 - Appendix 4 - [Cable and connector specifications](#)
- [Other products in the Matrix CPU Switch IP range](#)
- [Safety information](#)
- [Warranty](#)
- [Radio frequency energy statements](#)

Troubleshooting

Poor video quality with smearing, fuzziness or ripple

- Use coaxial video cables to connect your devices to the Matrix CPU Switch IP.

Remote console doesn't switch to new ports when they are selected

- The KVM section Hotkeys may have been changed but not similarly updated within the IP section.

When power switching, the selected computer does not power on or off

- Check the power switch port(s) to which the computer is connected. Check the indicator status for that/those ports on the power switch front panel - do they illuminate/extinguish when the switching command is sent?
- If a multi-feed server is attached to more than one power port, check that all of the power inputs are connected to ports and that all those ports are being switched.

Local and remote mouse pointers won't synchronise when using the IP connection

- Ensure that mouse acceleration is switched off on the target computer. If necessary, activate the OSD menu to deliberately de-synchronise the mice so that the remote mouse can be "nudged" to the mouse properties menu to make the necessary mouse acceleration changes.

Getting assistance

If you are still experiencing problems after checking the list of solutions in the Troubleshooting section then we provide a number of other solutions:

- LINDY website – www.lindy.com

Check the Support section of our website for the latest solutions and driver files.

- | | | |
|---------|-----------------|-------------------------------|
| • Email | in the UK: | postmaster@lindy.co.uk |
| | in the US: | usa@lindy.com |
| | in Germany: | info@lindy.de |
| | in France: | info@lindy.fr |
| | in Italy: | info@lindy.it |
| | in Switzerland: | info@lindy.ch |
| | elsewhere: | postmaster@lindy.com |
| • Fax | in the UK: | 01642 765274 |
| | in the US: | (256) 771-0460 |
| | in Germany: | 0621-4700530 |
| | in France: | 03 88 20 57 74 |
| | in Italy: | 031 48 06 52 |
| | in Switzerland: | 061-3359709 |
| | elsewhere: | +44 (0)1642 754029 |
| • Phone | in the UK: | 01642 754000 |
| | in the US: | (256) 771-0660 |
| | in Germany: | 0621-470050 |
| | in France: | 0 825 825 111 |
| | in Italy: | 031 48 40 11 |
| | in Switzerland: | 061-3359700 |
| | elsewhere: | +44 (0)1642 754020 |



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Appendix 1 – KVM configuration menu items

The following configuration menus are available within the KVM configuration section of the Matrix CPU Switch IP:

- *Setup Options* - see below
- [Global Preferences](#)
- [User Preferences](#)
- [Functions](#)

Setup Options

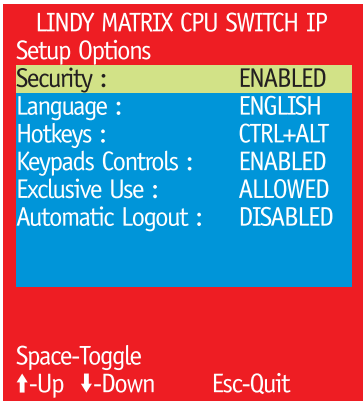
Setup options are available only to the Admin user and consist of key settings that are normally made only during the initial installation stage.

To access Setup Options:

- 1 Select the on-screen menu in one of three ways:
 - By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.
 - By pressing the middle and right buttons of a three button mouse, or
 - By selecting port **1** using the front panel buttons.

If you are not already logged in, do so now. [What to do if the ADMIN password has been forgotten](#).

- 2 Press **F1** to select 'More menus'.
- 3 Use **↓** to highlight 'Setup Options' and press **↵**.
- 4 Use the following keys:
 - ↑** and **↓** to highlight required options.
 - Space** to change option values.
 - Esc** to quit and save the changes.



Security

Settings: DISABLED, ENABLED

With security disabled there is no requirement for users to log-in to the system. All users have full access to all the connected computers and full administration rights. With security enabled, users are required to log-in to the Matrix CPU Switch IP. Each user is allocated access rights to computers by the system administrator and they are only able to see the computers that they have access to on their on-screen menu.

Language

Settings: ENGLISH, FRENCH, GERMAN, SWEDISH

This option specifies the language that is used for the on-screen menu and the keyboard layout that is assumed for the keyboard. When the French option is selected the keyboard is assumed to have an AZERTY format. When the English, German and Swedish options are selected the keyboard is assumed to have a QWERTY format. The new language settings are enabled when you quit from the SETUP OPTIONS menu. The language option only affects the way that the Matrix CPU Switch IP interprets the keyboard keys, it does not affect the way that the computers interpret the keyboard. It is advisable to avoid setting a language that you do not understand as all the menus will change to use the new language and you may have difficulty reselecting your original language.

Hotkeys

Settings: CTRL+ALT, CTRL+SHIFT, ALT+SHIFT, ALT GR, LEFT ALT+RIGHT ALT, LEFT CTRL+LEFT ALT, RIGHT CTRL+RIGHT ALT, DISABLED

The keyboard hotkeys are special combinations of keys that, when used together with certain keyboard "command keys", perform special Matrix CPU Switch IP functions. For example, pressing the hotkeys together with the "M" key will cause the on-screen menu to be displayed on your monitor. Other hotkey combinations allow you to query which computer you are connected to and to move the on-screen menu around the screen. You can also use the hotkeys together with the port number to select a particular connected computer.

Keypad Controls

Settings: ENABLED, DISABLED

The key controls on the front of the Matrix CPU Switch IP may be disabled so that it is only possible to select the special channels "o" and "0" (the on-screen menu and the non-existent channel zero).



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Exclusive Use

Settings: *ALLOWED, DISABLED*

In normal operation, the Matrix CPU Switch IP will allow two or more users to share access to a computer. In this mode, the computer's video picture will be displayed on all the user's monitors but only one user may have active control of the computer's keyboard and mouse at any one time. The Matrix CPU Switch IP detects an active user by looking for keyboard and mouse data.

A user becomes inactive if no keyboard or mouse data has been received by the Matrix CPU Switch IP for a specified timeout period. Whilst one user is active all the other users that are connected to the same computer will see a "video only" message displayed on their screen. There may be situations where particular users want to be able to control and view their computers in private with exclusive use. The Matrix CPU Switch IP has the facility to allow users to select exclusive use of computers but this facility should be used with care. When exclusive use is requested the video from the selected computer is only available to the user with exclusive access.

Users that have selected exclusive access are never timed out by the Matrix CPU Switch IP and so all other users are effectively "locked out" until the exclusive user switches to another computer or logs out. This could potentially be very irritating if a user has selected exclusive use and has then left their desk without logging out. This would prevent other users from working on the computer until they came back. Consequently the system administrator can disable all exclusive use so that all connections are shared.

Automatic Logout

Settings: *DISABLED, ENABLED*

The Matrix CPU Switch IP enables you to restrict access to your computers on a login basis. If a user forgets to logout when they have finished accessing the Matrix CPU Switch IP then the user console may unintentionally be left with full access to all the computers. The Matrix CPU Switch IP may be set to automatically logout unattended user consoles when the screen saver kicks in. This reduces the risk of security problems by preventing user consoles remaining in a permanent "logged-in" state when there is no keyboard or mouse activity. The automatic logout feature is only enabled when the screen saver feature is active (i.e. not disabled).

Global Preferences

Global preferences are available only to the Admin user and allow settings to be made that affect all users attached to the Matrix CPU Switch IP.

To access Global Preferences:

1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing   .
- By pressing the middle and right buttons of a three button mouse, or
- By selecting port  using the front panel buttons

If you are not already **logged in**, do so now. [What to do if the ADMIN password has been forgotten.](#)

2 Press  to select 'More menus'.

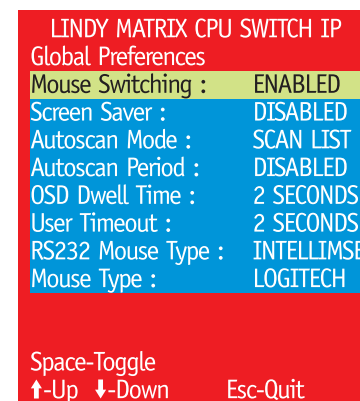
3 Use  to highlight 'Global Preferences' and press .

4 Use the following keys:

 and  to highlight required options.

 to change option values.

 to quit and save the changes.



Mouse Switching

Settings: *ENABLED, DISABLED*

Like most LINDY KVM switches, the Matrix CPU Switch IP's channel may be switched using a three button mouse or IntelliMouse. Pressing the central button or wheel button together with the left hand mouse button will cause the Matrix CPU Switch IP to switch to the next available computer. When mouse switching is enabled the central mouse button or wheel mouse button is allocated to control the Matrix CPU Switch IP and is not therefore available for use by computer applications. If you want to use the central mouse button within your applications you will need to disable mouse switching. The rotation action of an IntelliMouse wheel is not affected and is always available to the computer application.



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Screen Saver

Settings: DISABLED; 2, 5, 7, 10, 15, 20 & 30 MINUTES

To avoid burning out the phosphor on CRT monitor screens, the Matrix CPU Switch IP can be set to blank the screen after no keyboard or mouse activity has been detected for a selected timeout period. If preferred, the user can blank the screen manually by selecting channel '0' using the keyboard hotkeys or by pressing ESC from the login screen.

Autoscan Mode

Settings: SCAN LIST, ACTIVE PCs, ALL PCs

The Matrix CPU Switch IP supports an autoscan mode that automatically scans between the connected computers in sequence. The Matrix CPU Switch IP supports three autoscan modes. In the first mode the Matrix CPU Switch IP will scan all the named computers that are defined in the autoscan list (SCAN LIST). The computers defined in the scan list may be connected to cascaded Matrix CPU Switch IPs. If you wish to scan the ports on the current Matrix CPU Switch IP then you may select ALL the available computers or just the available computers that are currently powered on (the ACTIVE computers). Scanning just the active computers avoids blank screens from being displayed and stops the monitor from going into a power down state on every scan cycle.

WARNING - Many modern monitors are fitted with automatic power save relays and will switch off after a few seconds if connected to an inactive PC. If you are using such a monitor you must not set the Matrix CPU Switch IP to scan ALL ports. Constant switching on and off of your monitor's relay will eventually damage your monitor. If you are using the SCAN LIST option then you should ensure that all the computers are active if you are using one of these monitors.

If you choose to use the SCAN LIST option then you may define the computers to be scanned in the following manner.

To define the autoscan list

*Note: Ensure that you are **logged in** as the ADMIN user.*

- 1 From the main on-screen menu press F1 for MORE MENU.
- 2 Select EDIT AUTOSCAN LIST from the menu. A list of defined computers will appear. The starred computers will be autoscanned during the autoscan cycle. To add a computer to the autoscan list, move the selection bar over the computer name and press SPACE BAR. To add all named computers press F1. To remove all named computers press F2.
- 3 When all the computers that you wish to scan have a star to the right hand side of their name, press RETURN or ENTER to save the selections. The selected computers will be autoscanned in alphabetical order when you activate autoscan mode (when the SCAN LIST option is selected).

Autoscan Period

Settings: DISABLED; 2, 5, 7, 10, 15, 20, 30 SECONDS, 1, 5 MINUTES

The autoscan time defines the length of time that the Matrix CPU Switch IP will display video from an autoscanned computer before changing to the next computer. If the DISABLED setting is chosen then no autoscan functions will be available.

OSD Dwell Time

Settings: 1, 2, 3, 5, 10 SECONDS

After a successful computer channel change the Matrix CPU Switch IP will display a confirmation message for a few seconds. The length of time that this confirmation message dwells on the screen may be changed.

User Timeout

Settings: 1, 2, 5, 10, 30 SECONDS, 1, 5, 10 MINUTES

When two users are connected to the same computer only one can have access at any one time. When no keyboard or mouse data has been received from the active user port for the user timeout period, the Matrix CPU Switch IP will allow other users to access the computer. The new port then becomes the active port until it too times out. To avoid confusion between users it is desirable to set the timeout period to be sufficiently long so that user's work is not needlessly interrupted by other users and sufficiently short to ensure good overall system efficiency. The user timeout value also controls the timeout between the local and remote access points on user ports 1 and 3.

RS232 Mouse Type

Settings: INTELLIMOUSE, 2 BUTTON, 3 BUTTON

This setting controls the type of RS232 mouse that the Matrix CPU Switch IP reports to computers. All the necessary conversions are dealt with automatically with the Matrix CPU Switch IP. The IntelliMouse setting sends four byte mouse reports to the computers and is therefore very slightly more sluggish than the others that send three byte mouse reports. RS232 mice are almost always more sluggish than PS/2 types because the data rate is much slower.



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User Preferences

The User Preferences are system operating parameters that are independently selectable for each user and affect only their screen.

To access User Preferences:

- 1 Select the on-screen menu in one of three ways:
 - By simultaneously pressing and then releasing **Ctrl** **Alt** **M**.
 - By pressing the middle and right buttons of a three button mouse, or
 - By selecting port **B** using the front panel buttons

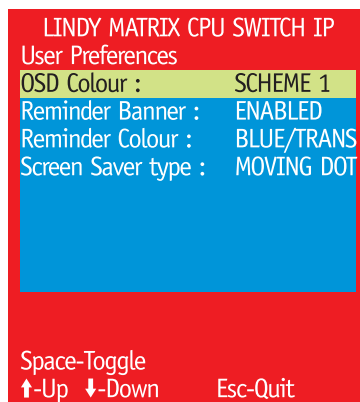
If you are not already **logged in**, do so now.

- 2 Press **F1** to select 'More menus'.
- 3 Use **↓** to highlight 'User Preferences' and press **↓**.
- 4 Use the following keys:

↑ and **↓** to highlight required options.

Space to change option values.

Esc to quit and save the changes.



OSD Colour

Settings: *SCHEME 1, SCHEME 2, SCHEME 3*

As you toggle between these options you will see the colour of the menu change to show the selected scheme. The menu schemes have been specially chosen to provide a high contrast with the colours that you would normally see on a computer screen.

Reminder Banner

Settings: *ENABLED, DISABLED*

When the reminder banner is enabled, the name of the currently selected computer will appear in a small reminder banner. This is normally located at the top of the screen in a central position but may be moved as required (see [To move the reminder banner](#)).

Reminder Colour

Settings: *BLUE/TRANS, PINK/TRANS, BLUE/WHITE, WHITE/RED*

You may select the colour of the reminder banner. The BLUE/TRANS and PINK/TRANS select blue or pink text with a transparent background. The BLUE/WHITE and WHITE/RED settings select blue and white text on solid white and red backgrounds.

Screen Saver Type

Settings: *BLANK, MOVING DOT*

You may select the type of screen saver. If you select BLANK then the screen will blank completely. If you select MOVING DOT then a moving dot will be displayed on a blank background. The dot regularly changes colour and bounces off the sides of the screen in a zigzag pattern.



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Functions

The Functions menu contains a collection of procedures that affect various aspects of Matrix CPU Switch IP operation. Only the Admin user will have access to all functions, other users are offered only the following options:

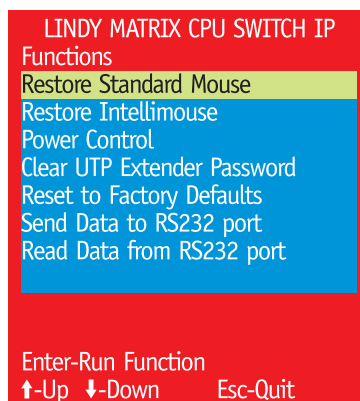
- *Restore Standard Mouse*,
- *Restore Intellimouse*,
- *Power control* - only computers to which a user has access rights can be switched.

To access Functions

- 1 Select the on-screen menu in one of three ways:
 - By simultaneously pressing and then releasing   .
 - By pressing the middle and right buttons of a three button mouse, or
 - By selecting port  using the front panel buttons

If you are not already **logged in**, do so now.

- 2 Press  to select 'More menus'.
- 3 Use  to highlight 'Functions' and press .
- 4 Use the following keys:
 -  and  to highlight required options.
 -  to change option values.
 -  to quit and save the changes.



Restore Standard Mouse

This option is used to resume standard mouse operation if it has ceased to operate, for instance, if it has been connected without rebooting the Matrix CPU Switch IP. See [Hot plugging and mouse restoration](#) for more details.

Restore Intellimouse

This option is used to resume Microsoft Intellimouse operation if it has ceased to operate, for instance, if it has been connected without rebooting the Matrix CPU Switch IP. See [Hot plugging and mouse restoration](#) for more details.

Power Control

The options within this section are usable only when the Matrix CPU Switch IP is used in conjunction with one or more external power switch units. For more details see: power switching [connections](#), [configuration](#) or [operation](#).

Switch Computer ON

Select this option to power on one or more computers.

Switch Computer OFF

Select this option to power off one or more computers.

Edit Power ON String

Select this option to alter the special codes that are sent from the Matrix CPU Switch IP to the connected power switch(es) in order to switch computers on.

Edit Power OFF String

Select this option to alter the special codes that are sent from the Matrix CPU Switch IP to the connected power switch(es) in order to switch computers off.

Serial Port Setup

Select this option to configure the basic serial settings of the port used to attach the power switching units to the Matrix CPU Switch IP.

Clear UTP Extender Password

Use this option to reset the password set within an extender unit. If you are connected to user ports 1 or 2, then the extender on port 1 will be cleared. If you are connected to user ports 3 or 4, then the extender on port 3 will be cleared.

Reset to Factory Defaults

Returns all key settings within the Matrix CPU Switch IP to their original states.

WARNING: This function will clear all computer and user lists that are stored within the Matrix CPU Switch IP.

When this option is selected, you must press  to confirm the action. The internal data will be rewritten and a completion message displayed after a short period.

Send Data to RS232 port

This option is used to save Matrix CPU Switch IP configuration information to a specially connected computer. A temporary link must be made to one of the serial ports at the rear of the Matrix CPU Switch IP and the computer must run a custom routine available from LINDY. The resulting download file can be optionally edited (using Microsoft Excel) and/or reloaded into the Matrix CPU Switch IP. This option is especially useful in complex cascade arrangements where many computers are attached. See [Saving and restoring KVM configuration settings](#) for more details.

Read Data from RS232 port

This option is used to reload configuration information into the Matrix CPU Switch IP from a specially connected computer. See above for more details.



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Appendix 2 – IP configuration panels

The items discussed in this appendix are accessible within the Matrix CPU Switch IP home page. However, their appearance and access are determined by your user permission, therefore, certain items may not be available to you.

The following configuration panels are available within the IP configuration section of the Matrix CPU Switch IP:

- [Keyboard/Mouse Settings](#) - see right
- [Remote Console Settings](#)
- [KVM Settings](#)
- [Video Settings](#)
- [User/Group Management](#)
- [User/Group Permissions](#)
- [Network Settings](#)
- [Serial Port Settings](#)
- [LDAP Settings](#)
- [Security Settings](#)
- [SNMP Settings](#)
- [IPMI Settings](#)
- [Remote Console Video Settings](#)
- [Remote Console Options](#)
- [Maintenance](#)

Keyboard/Mouse Settings

The Matrix CPU Switch IP supports different keyboard and mouse models. The Keyboard/Mouse Settings panel is used to adjust those settings as well as some other ones - the default settings are usually suitable without alteration. Their meanings are listed below:

Targeted KVM port

Each port has its own individual settings. For each port, select the port number, click Update, change the keyboard and mouse settings as necessary and then click Apply.

Keyboard Model

Selects the keyboard model used on the remote host system.

Mouse Model

Selects the mouse model that is used on the remote system. A wrongly selected mouse model may result in strange mouse effects.

Mouse Mode

Direct (1:n) mouse mode

Use a direct translation of mouse movements between the local and the remote pointer.

Scaling (n)

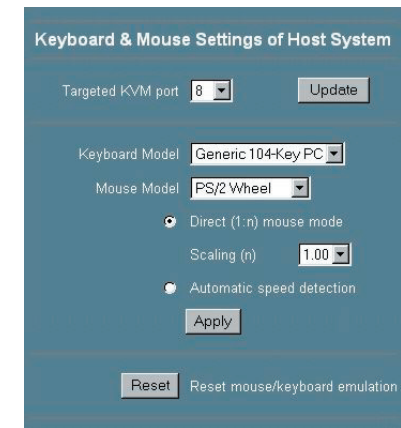
You may also set a fixed scaling which determines the amount the remote mouse pointer moves when the local mouse pointer is moved by one pixel. This option only works when the mouse settings on the host are linear, which means that there is no mouse acceleration involved.

Automatic speed detection

Use this option if the mouse settings on the host use an additional acceleration setting. The Matrix CPU Switch IP tries to detect the acceleration and speed of the mouse during the mouse sync process.

Reset mouse/keyboard emulation

This option will reset the Matrix CPU Switch IP keyboard and mouse emulation for the host system. Use it if the keyboard or mouse seems to react irrationally. It's just like pulling out the keyboard and mouse connectors and plugging them in again.



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Remote Console Settings

The Remote Console settings allow you to customize the Remote Console window prior to its start. Some of the parameters you might still change while the Remote Console is running while others have to be set in the Remote Console settings.

All the settings for the Remote Console window are user specific. That means, each user can individually customise the Remote Console for his needs. Changing the settings for one user does not affect the settings for others.

User select box

This control will show the user ID for which the values are shown and for which changes will take effect. You might change the settings of other users in case you have the necessary access rights.

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. Using those settings it is possible to optimise the speed of the remote screen depending on the number of parallel users and the bandwidth of the connection line (Modem, ISDN, DSL, LAN, etc.).

The screenshot shows the 'Remote Console Settings' web interface. At the top, there's a 'super' dropdown menu and an 'Update' button. A note states: 'The settings on this page are user/group specific, changes you make here will affect the selected user.' The interface is divided into several sections: 1. 'Transmission Encoding' with radio buttons for 'Automatic Detection', 'Normal (best for high bandwidth connections)', and 'Compressed (best for low bandwidth connections)'. The 'Compressed' option is selected, and it has a sub-setting 'optimized for: Modem V.90'. 2. 'Various Remote Console Options' with checkboxes for 'Start in Monitor Mode' and 'Start in Exclusive Access Mode'. 3. 'Remote Console Type' with radio buttons for 'Default Java VM' and 'Sun Microsystems Java Browser Plugin'. A 'Note' explains that the latter option requires a Java Browser Plugin and may cause a download. The 'ActiveX control' option is also present. 4. 'Mouse Hotkey' with a text input field for a hotkey and a description: 'Used for fast mouse synchronization (in Double Mouse mode) and to free the grabbed mouse (in Single Mouse mode)'. 5. 'Remote Console Button Keys' with four input fields for 'Button Key 1' (containing 'confirm Ctrl+Alt+Delete'), 'Button Key 2', 'Button Key 3', and 'Button Key 4'. A 'Click here for Help' link is below these fields. At the bottom is an 'Apply' button.

Automatic detection

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

Normal

The Standard Encoding algorithm well suited for many parallel users and/or in a LAN environment.

Compressed

The data stream between the Matrix CPU Switch IP and the Remote Console window will be additionally compressed to save bandwidth. Choosing one of the rates between LAN (lowest) and GSM modem (highest) adjusts the compression rate. Typical applications generate traffic between 5 Kbytes/s (compression rate GSM modem) and 10 Kbytes/s (compression rate LAN). The compression encoding is well suited for a Modem or ISDN environment. However, since the compression takes processing time on the Matrix CPU Switch IP itself, this encoding shouldn't be used when many parallel users want to access the Matrix CPU Switch IP at the same time.

Various Remote Console Options

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.



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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 (Java Virtual Machine) 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 optimised for this JVM version and offers wider range of functionality when run in SUN's JVM. (Hint: If you are connected over a slow connection to the Internet you can also pre-install the JVM on your administration machine. The software is available on the CD that is delivered along with the Matrix CPU Switch IP.)

ActiveX control

This option instructs the Web browser to use the ActiveX-Control of the KVM Vision Viewer, an application available separately. You have to install this program on your local system, please refer to the manual of the KVM vision viewer for further information. This option only works with Microsoft Internet Explorer on Win32 Systems.

Mouse hotkey

Hotkey

Allows you to specify a hotkey combination that starts either the mouse synchronisation process if pressed in the Remote Console or is used to leave the exclusive mouse mode.

Remote Console Button Keys

Button Keys are meant for 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, which are always caught or 'Control Backspace' on Linux for terminating the X-Server. The syntax to define a new Button Key is as follows:

`[confirm] < keycode > [+| - [*] < keycode >]*`

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

keycode is the key to be sent. Multiple key codes can be concatenated with a + or a - sign. The + sign builds key combinations, all keys will be pressed until a - sign or the end of the combination is encountered. In this case all pressed keys will be released in reversed sequence. So the - sign builds single, separate keypresses and -releases. The > sign signifies press and then release (The hotkeys for ports 10 and above should be of the format CTRL+ALT+1>0 etc.). The * sign inserts a pause with a user-definable duration.

Pressing the Apply button finally changes the values permanently in the Matrix CPU Switch IP, IP section.



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KVM Settings

These KVM settings allow you to control the interface between the two main components of the Matrix CPU Switch IP: The IP section and the KVM switching section.

Switch Active Port

This indicates which of the KVM computer ports that the IP connected user port is currently switched to, and also allows you to change to another port.

KVM Configuration

Number of Ports

The number of physical ports on the Matrix CPU Switch IP is fixed at 16. However, in situations where other KVM switches and computers are cascaded from the Matrix CPU Switch IP ports, it can be useful to create new 'virtual' ports that can then be assigned to access indirectly connected systems. This setting has the following options: 1, 2, 4, 8, 16, 32 or 64.

Duration of pause for KVM and Remote Console Button Keys

This setting defines the length of time (in milliseconds) that should elapse when a '*' character is inserted into a hotkey switching sequence. Such pauses are used to allow enough time for the switching circuitry to complete each operation.

Default Configuration

These are the settings to which the Matrix CPU Switch IP will revert whenever a complete reset is performed.

Nr	Name	Hotkey (Help)	Show in Console
1	Computer 1	CTRL+ALT+1	☒
2	Computer 2	CTRL+ALT+2	☒
3	Computer 3	CTRL+ALT+3	☐
4	Computer 4	CTRL+ALT+4	☐
5	Computer 5	CTRL+ALT+5	☐
6	Computer 6	CTRL+ALT+6	☐
7	Computer 7	CTRL+ALT+7	☐
8	Computer 8	CTRL+ALT+8	☒
9	Computer 9	CTRL+ALT+9	☐
10	Computer 10	CTRL+ALT+1>0	☐
11	Computer 11	CTRL+ALT+1>1	☐
12	Computer 12	CTRL+ALT+1>2	☐
13	Computer 13	CTRL+ALT+1>3	☐
14	Computer 14	CTRL+ALT+1>4	☐
15	Computer 15	CTRL+ALT+1>5	☐
16	Computer 16	CTRL+ALT+1>6	☒

KVM Port Settings

In this section, you have the option to change three aspects of operation for each of the 16 Matrix CPU Switch IP computer ports:

Name

The name entered here will be displayed within the Remote Console, providing that the corresponding 'Show in Console' option is ticked.

Hotkey

This section allows you to determine the hotkey combinations that are used by the home page and the Remote Console to select each KVM port. It is important that the hotkey codes entered here match the hotkey combinations set within the KVM configuration section (*Main Menu / Configuration Menu / Setup Options / Hotkeys*) of the Matrix CPU Switch IP. If the codes do not match then the various ports will not be selectable. For instance, if the KVM section hotkeys are changed to 'CTRL + SHIFT' then the Hotkey entry within this panel for port 8 must be 'CTRL + SHIFT + 8' in order for Remote Console to switch to that system. The various KVM and IP hotkey settings are listed below:

KVM setting	IP section setting	Delimiters
CTRL+ALT	CTRL+ALT	+ KeyA+KeyB means 'press KeyA together with KeyB'
CTRL+SHIFT	CTRL+SHIFT	
ALT+SHIFT	ALT+SHIFT	
ALT GR	ALTGR	> KeyA>KeyB means 'press KeyA then KeyB'
L + R ALT	LALT+ALTGR	
L CTRL+ALT	LCTRL+ALT	
R CTRL+ALT	RCTRL+ALT	

Note: Addresses for cascaded computers should be entered as in their basic KVM form, with the addition of '+' delimiters between each character. For instance, (with the KVM hotkeys set to 'CTRL and ALT') a cascaded computer with address 41434108 would be entered as:

CTRL + ALT + 4 > 1 > 4 > 3 > 4 > 1 > 0 > 8

For KVM hotkey selection, see [To change the KVM hotkeys](#) for more details.

Show in Console

This option determines whether the corresponding name of the port is displayed within the Remote Console window. This setting does not prevent the port being displayed on the home page, nor does it disable the relevant hotkey combination for the port.

Apply

Click to save and implement alterations.



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Video Settings

Note: A selection of local and global video image adjustments are available within the Remote Console window by clicking the 'Options' button and selecting the 'Video Settings' option. See [Remote Console Video settings](#) for more details.

Noise filter

This option defines how the Matrix CPU Switch IP reacts to small changes in the video input signal.

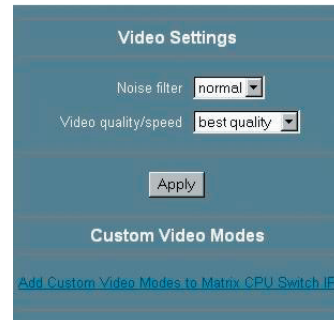
- A large filter setting needs less network traffic and leads to a faster video display, but small changes in some display regions may not be recognised immediately.
- A small filter displays all changes instantly but may lead to a constant amount of network traffic even if display content is not really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

Video Quality and Speed

Using this option it is possible to tune the video system of the Matrix CPU Switch IP to either maximise picture quality or speed. When set to 'best quality' the picture looks clean but the video update speed won't be as fast as possible. If responsiveness is more important to you than achieving the best quality, set the option to 'high speed'. In this mode, artifacts will appear. An intermediate setting is also available. Please note that the difference is only clearly visible when using fast network links and the normal compression for the Remote Console.

Custom Video Modes

Using this option it is possible to add video modes that are not recognised using the factory settings. This may be useful when using special mode lines in a X-Window configuration on the host or with uncommon hosts or operating systems. This option is for advanced users only, it is possible to influence the correct video transmission by using this option, so use it with care! The maximum number of custom video resolutions is 4.



Custom Modes Handling

Options are 'Off' (disabled – no custom modes), 'Additional' (custom modes used in addition to the standard video resolutions) or 'Only' (custom modes used exclusively). With the last option it is also possible to force a special video mode for the Matrix CPU Switch IP.

To change the parameters for a mode, choose the number and click 'Update'. It is necessary to provide some information so the video mode may be correctly recognised:

X Resolution

Visible number of horizontal pixels.

Y Resolution

Visible number of vertical pixels.

Horizontal Frequency (Hz)

The horizontal (line) frequency in Hz.

Vertical Frequency (Hz)

The vertical (refresh) frequency in Hz.

Total horizontal pixels

The total amount of pixels per line, including the non-visible and blanking area.

Polarity

The polarity (positive/negative) of the synchronization signals. V means vertical, H means horizontal.

Description

Here you can provide a mode name that is displayed in the Remote Console if this custom mode is activated.



User/Group Management

The user and group management of the Matrix CPU Switch IP IP section is based on configurable users and groups. Each user or group may have different permissions. The various options within the User and Group Management panel are as follows:

Existing users

Select an existing user for modification or deletion. Once a user has been selected, click the Lookup User button to see the complete user information.

New user name

In order to create a new user, enter a new login name in this field. The new name must not yet exist as user or group. In case it does, an error message will be displayed on top of the panel.

Full user name

This name is the full name belonging to the login name.

Password

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

Confirm Password

Confirmation of the password above.

Email address

This information may be optionally provided.

Mobile number

This information may be optionally provided.

Group membership

Each user can be a member of one or more groups.

Existing groups

Selects an existing group for copying, modification or deletion.

The screenshot shows two panels. The top panel is titled 'User Management' and contains fields for 'Existing users' (a dropdown menu), 'New user name', 'Full user name', 'Password', 'Confirm Password', 'Email address', and 'Mobile number'. There is a 'Lookup User' button next to the 'Existing users' dropdown. Below these fields is a 'Group membership' section with two boxes: 'Member of' and 'Not Member of'. The 'Not Member of' box contains the text 'supergroup'. There are four buttons: 'Create User', 'Modify User', 'Copy User', and 'Delete User'. The bottom panel is titled 'Group Management' and contains fields for 'Existing groups' (a dropdown menu) and 'New group name'. There are four buttons: 'Create Group', 'Modify Group', 'Copy Group', and 'Delete Group'.

New group name

In order to create a new group, enter a new and unused group name.

The user management of the Matrix CPU Switch IP IP section allows many different users. The following sections will describe how to add, change and delete users.

Create User

Fill out the fields 'New user name', 'Full user name', 'Password' and 'Confirm password'. Optionally select the groups of which the new user should become a member.

Click the 'Create user' button.

Delete User

Select a user in the 'Existing user' control. Click the 'Lookup' button. The complete user information will be shown. Click the 'Delete user' button.

Note: The pre-configured supervisor user 'super' can't be deleted, however, it can be renamed.

Modify User

Select a user in the 'Existing user' control. Click the lookup button to get all the user's information.

All fields can be modified as required. The old password is not displayed, but can be modified. If all changes are done click the 'Modify user' button.

Copy User

Select a user in the 'Existing user' control. Enter a new user name in the field 'New user name'. Click the 'Copy User' button. This will create a new user with the given name. All properties of the selected user will be copied to the new one, except user specific permissions.

Create Group

Type the name of the new group into the field 'New group name' and click the 'Create group' button.

Delete Group

Select a group in the 'Existing group' control. Click the 'Delete group' button.

Modify Group

To modify an existing group, select the group in the 'Existing group' control. The group's name field can be modified. Finally click the 'Modify group' button.

Copy Group

Select a group in the 'Existing group' control and type the name of the new group into the field 'New group name'. Click the 'Copy Group' button. This will create a new group and copy all properties and permissions of the selected group to the newly created group.

User/Group Permissions

A set of permissions is assigned to each user or group. Those rights are used to authorise access to certain Matrix CPU Switch IP functions for a particular user. By default the 'super' user has all permissions and these permissions cannot be reduced. A newly created user or group has no permissions. A user will inherit the permissions from all groups to which he belongs.

The User/Group Permissions panel allows you to change the permissions of a certain user or group. The right of one user for changing another user's or group's access rights is determined by the parent/child relationship between them. When one user is creating another user, he will implicitly become the parent of that new user and hence has the right to change his permissions. More generally, a certain user has the right to change another user's or group's permissions only if he stands higher in the ancestry than the other one. The 'super' user stands at the top (or the root) of the ancestry, hence has the right to change everybody's permissions.

Additionally, there is the restriction that a user can never give more permission to others than those he has. For example, if a user has no permission to change the network settings he won't be able to grant this right to somebody else. However, a user has always the right to reduce the set of permissions of his descendants.

	Group Permission	Current Permission
Event Log via IPMI	deny access	deny access
Exclusive Access	deny access	deny access
Firmware Update	deny access	deny access
IPMI Settings	deny change	deny access
ISDN Settings	deny access	deny access
Video Settings	deny access	deny access
Video Settings (Advanced)	deny access	deny access

In order to change the permissions of a user/group you have to select the user/group first. This is done using the selection list at the top of the User/Group Permissions panel. The selection list will show only users and groups for which you have the right to change their permissions. Next, clicking the 'Update' button will show the permission list of that user. Every right in the list has a permission value, which is explained below. The displayed columns differ, depending on the user/group selected and the one logged in:

- *Effective Permission* - The final permission which decides if a user may access a specific Matrix CPU Switch IP function or not.
- *User Permission* - Permission for the currently selected user/group. If the user selected equals to the one logged in it is only possible to view the value, otherwise a select box appears to change it.
- *Inherited Group Permission* - Permission value inherited from the groups a user belongs to. This column is not available while a group is selected.

User and group permissions

There are 26 functions and for each, the superuser can apply one of up to six different settings. Roughly speaking the settings below are listed in decreasing order of status, i.e. if the inherited group permission gave 'allow view' and the individual user setting for the same function was 'allow change', then the 'Effective Permission' would be 'allow change'.

- *allow change* The user can change the entry settings.
- *allow access* The user can use this function.
- *allow view* The user can view the entry.
- *deny change* The user can see but not change the entry's settings.
- *deny access* The user cannot see or use this function.
- *group setting* Use the permission inherited from the group(s) the user belongs to. Default is to deny access.



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Network Settings

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

Note: The initial IP configuration is usually done directly at the host system using the special procedure described in [Connect and configure the IP Port](#). However you can also connect to the Matrix CPU Switch IP using its pre-configured IP settings.

Note: Changing the network settings of Matrix CPU Switch IP might result in losing connection to it. In case you change the settings remotely make sure all the values are correct and you still have an option to access the IP section.

IP auto configuration

With this option you can control if the Matrix CPU Switch IP should fetch it's network settings from a DHCP or BOOTP server. For DHCP you have to enter dhcp and for BOOTP supply bootp accordingly. If you specify none then IP autoconfiguration is disabled.

IP auto configuration timeout

Time within a DHCP/BOOTP server is expected to respond to the Matrix CPU Switch IP DHCP/BOOTP client request. If there is no response, the last known IP settings will be used to configure the Matrix CPU Switch IP.

IP address

IP address in the usual dot notation.

Subnet mask

The net mask of the local network.

Gateway IP address

In case the Matrix CPU Switch IP 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 Matrix CPU Switch IP won't 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 can't be contacted.

Primary Time Server

IP address of the primary NTP (Network Time Protocol) compliant timeserver in dot notation. The Matrix CPU Switch IP will synchronize its own absolute time with the timeserver's one. This is important for writing log entries and for the Dynamic DNS Service.

Secondary Time Server

IP address of the secondary NTP compliant timeserver in dot notation. It will be used in case the Primary Time Server can't be contacted.

Remote Console & HTTPS port

Port number at which the Matrix CPU Switch IP Remote Console server and HTTPS server are listening. If left empty the default value will be used.

HTTP port

Port number at which the Matrix CPU Switch IP HTTP server is listening. If left empty the default value will be used.

Telnet port

Port number at which the Matrix CPU Switch IP Telnet server is listening. If left empty the default value will be used.

Bandwidth limitation

The maximum network traffic generated through the Matrix CPU Switch IP Ethernet device. Unit is Kbit/s.

Disable Setup Protocol

With this option you may exclude the Matrix CPU Switch IP from setup protocol.

The screenshot shows the 'Network settings' panel with the following fields and values:

- IP auto configuration: **None** (dropdown menu)
- IP auto configuration timeout: **5** seconds
- IP address: **62.254.213.52**
- Subnet mask: **255.255.255.248**
- Gateway IP address: **62.254.213.54**
- Primary DNS server IP address: (empty)
- Secondary DNS server IP address: (empty)
- Primary Time server: (empty)
- Secondary Time server: (empty)
- Remote console & HTTPS port: (empty) (Default: 443)
- HTTP port: (empty) (Default: 80)
- TELNET port: (empty) (Default: 23)
- Bandwidth Limit: (empty) kbit/s
- ☐ Disable Setup Protocol
- Apply** button
- [Dynamic DNS settings](#) link



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Serial Port Settings

The Matrix CPU Switch IP Serial settings allow you to specify which devices are connected to the front panel serial port and how to use it. The port may be used for different purposes. All possible options are listed and described below.

Configuration login

Don't use the serial port for any special function, use it only for the initial configuration.

Modem

Serial line speed

The speed that the Matrix CPU Switch IP 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 Matrix CPU Switch IP 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.

Client IP address

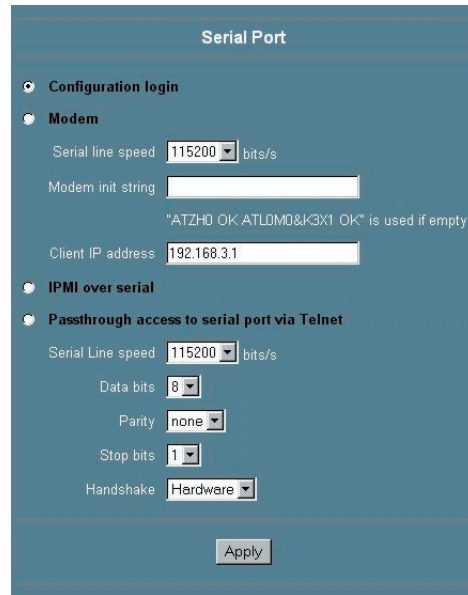
This IP address will be assigned to your console computer during the PPP handshake. Since it is a point-to-point IP connection virtually every IP address is possible but you must make sure, it is not interfering with the IP settings of the Matrix CPU Switch IP and your console computer. The default value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

IPMI over Serial

Enables the possibility to use this serial port for IPMI 1.5 over serial.

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 Matrix CPU Switch IP.



LDAP Settings

With the Matrix CPU Switch IP you have the possibility to keep authentication information in a central LDAP directory. To use this feature you need to configure an LDAP server that contains this information. The settings are explained in the following.

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.

Base DN of User LDAP Server

Here you specify the distinguished name (DN) where the directory tree starts in the user LDAP server.

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 schema are set appropriately. You can choose between Generic LDAP Server, Novell Directory Service and Microsoft Active Directory. If you have neither Novell Directory Service nor Microsoft Active Directory then choose Generic LDAP Server and edit the LDAP schema used (see below).

Name of login-name attribute

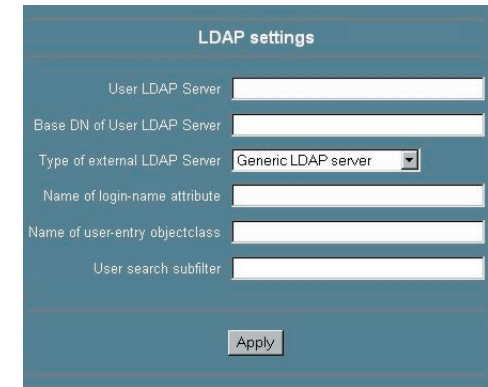
This is the name of the attribute containing the unique login name of a user. To use the default leave this field empty. The default depends on the selected LDAP server type.

Name of user-entry objectclass

This is the objectclass 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 Matrix CPU Switch IP.



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Security Settings

SSL Settings

Force HTTPS

If this option is enabled access to the Web front-end is only possible using an HTTPS connection. The Matrix CPU Switch IP won't listen on the HTTP port for incoming connections.

KVM encryption

This option controls the encryption of the RFB protocol, the protocol used by the Remote Console to transmit 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. An error will be reported in case connection establishment fails.

Telnet Settings

Enable Telnet access

If this option is enabled, access over Telnet client is possible. For higher security we recommend to disable Telnet access.

IP Access Control

This section explains the settings related to IP access control. It is used to limit access to a distinguished number of clients only. These clients will be identified by their IP address, from which they are trying to build up a connection.

Note: The IP access control settings apply to the LAN interface only.

Enable IP Access Control

Enables access control based on IP source addresses.

Default policy

This option controls what to do with arriving IP packets that don't match any of the configured rules. They can be accepted or dropped.

IMPORTANT: If you set this to DROP and you have no ACCEPT rules configured, access to the Web front-end over LAN is actually disabled. To enable access again you can change the security settings via modem or ISDN dial in or by temporarily disabling IP access control with the initial configuration procedure.

SSL Settings

☒ Force HTTPS

KVM Encryption ☒ Off ☐ Try ☐ Force

[Follow this link if you want to create your own SSL certificate.](#)

TELNET Settings

☒ Enable TELNET access

IP Access Control

☒ Enable IP Access Control

Default policy:

Rule #	IP/Mask	Policy
		ACCEPT

Rule Number

This should contain the number of a rule for which the following commands will apply. This field will be ignored, in case of appending a new rule.

IP/Mask

Specifies the IP address or IP address range for which the rule applies.

Examples (the number concatenated to an IP address with a '/' is the number of valid bits that will be used of the given IP address):

192.168.1.22/32 matches the IP Address 192.168.1.22

192.168.1.0/24 matches all IP packets with source addresses from 192.168.1.0 to 192.168.1.255

0.0.0.0/0 matches any IP packet

Policy

The policy determines what to do with matching packets. They can be accepted or dropped.

Note: The order of the rules is important. The rules are checked in ascending order until a rule matches. All the rules below the matching one will be ignored. The default policy applies if no match has been found.

Appending a rule

Enter the IP/Mask and set the policy. Finally, press 'Append'.

Inserting a rule

Enter the rule number, the IP/Mask and set the policy. Finally, press 'Insert'.

Replacing a rule

Enter the rule number, the IP/Mask and set the policy. Finally, press 'Replace'.

Deleting a rule

Enter the rule number and press 'Delete'.



SNMP Settings

The following information is available via SNMP (Simple Network Management Protocol):

- Serial number
- Firmware version
- MAC address / IP address / Netmask / Gateway of LAN interface
- Configured users
- Currently active users with login time (login time is only valid if time is synchronised on the Matrix CPU Switch IP)
- Server's power state

The following actions can be initiated via SNMP:

- Reset server
- Power on/off server
- Reset the Matrix CPU Switch IP

The following events are reported by the Matrix CPU Switch IP via SNMP:

- Login trial at the Matrix CPU Switch IP failed.
- Login trial at the Matrix CPU Switch IP succeeded.
- Denying access to a particular action.
- Server was reset.
- Server was powered on/off.

The SNMP settings panel allows you to change SNMP related parameters.

The screenshot shows a web-based configuration interface for the Matrix CPU Switch IP SNMP MIB. It is divided into several sections:
1. **Agent**: Contains a checkbox for 'Enable SNMP Agent', and input fields for 'Read Community', 'Write Community', 'System Location', and 'System Contact'.
2. **Traps**: Contains three checkboxes: 'Enable SNMP Authentication Traps', 'Enable Matrix CPU Switch IP Authentication Traps', and 'Enable Host Traps'.
3. **Trap Destinations**: A table with columns 'IP address' and 'Community'. It shows 'Entry 1' with empty fields and a 'More entries' button below.
4. **The Matrix CPU Switch IP SNMP MIB**: A section with a link 'Click here to view the Matrix CPU Switch IP SNMP MIB' and an 'Apply' button at the bottom.

Agent

Enable SNMP Agent

If this option is checked, the Matrix CPU Switch IP will answer to SNMP requests. Note: If a community is left blank, you cannot perform the according request. e.g. if you want to disable the possibility to reset the Matrix CPU Switch IP via SNMP then don't set a write community.

Read Community

This is the SNMP community, which allows you to retrieve information via SNMP.

Write Community

This community allows you to set options and to reset the Matrix CPU Switch IP or the host via SNMP, i.e. all that effects the host or the Matrix CPU Switch IP.

System Location

Enter a description of the physical location of the host. The description will be used in reply to the SNMP request "sysLocation.0".

System Contact

Enter a contact person for the host. The value will be used in reply to the SNMP request "sysContact.0".

Traps

Enable SNMP Authentication Traps

If this option is checked, an SNMP trap will be sent in case somebody has tried to access the Matrix CPU Switch IP via SNMP using a wrong SNMP community.

Enable Matrix CPU Switch IP Authentication Traps

If this option is checked, an SNMP trap will be sent in case somebody has tried to login via the Web front-end. Both successful and failed logins trials will be indicated. Furthermore, there will be notification about other security violations like trying to perform an action via Web front-end for which a user has no permission.

Enable Host Traps

If this option is checked, the Matrix CPU Switch IP will send SNMP traps whenever the host is reset, powered down or powered up.

Trap destinations

Here you can enter the IP addresses, to which the traps will be sent. For every IP address, you have to set an according community. This is necessary so that your management client can identify the SNMP traps.

The Matrix CPU Switch IP SNMP MIB

This link allows you to download the Matrix CPU Switch IP SNMP MIB file. This file may be necessary for an SNMP client to communicate with the Matrix CPU Switch IP.



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IPMI Settings

By using the Matrix CPU Switch IP, IPMI (Intelligent Platform Management Interface) facilities, you have an additional way to power on or off the system or to perform a hard reset. Furthermore, it provides the possibility to show an event log of the host system and the status of some system sensors (i.e. temperature). If your host system supports IPMI, you can access it by one of the following ways:

- IPMI over Serial (IPMI V1.5 is required)
- IPMI over LAN (IPMI V1.5 is required)

IPMI disabled

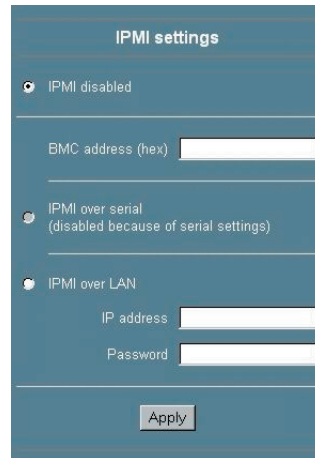
Disables IPMI on the Matrix CPU Switch IP. This means that Status via IPMI and Event Log via IPMI are not available and the power on/off and reset functions don't use IPMI rather than the ATX and the reset cable connected from the Matrix CPU Switch IP to the motherboard.

BMC address

The hexadecimal Baseboard Management Controller address, which is needed for all communication types to the IPMI-interface. Usually you can find this address in the BIOS of the host system. The default and common value for this address is 20.

IPMI over LAN

The prerequisite for IPMI over LAN is a host system with IPMI V1.5 and a network adapter with a sideband connection to the BMC (mostly on board). In the IPMI Settings, you must enter the IP-address of this host system and the correct password for the LAN connection. You can also access other IPMI systems when you enter their IP address.



Power Control

If IPMI is enabled, these functions are performed over IPMI requests. These requests may take a few seconds.

If IPMI is disabled, the power control functions (power on, power off, reset) are performed over the internal or external power control options.

Event Log via IPMI

The Event Log via IPMI accesses the SEL (System Event Log) repository and reads every entry sequentially. The first time you use this function after starting the Matrix CPU Switch IP the complete repository has to be read, what may take 1 or 2 minutes.

When all entries have been read, the Matrix CPU Switch IP displays the entries with their time, sensor and description in accordance with the filter settings. You have the choice between several pre-settings (i.e. last day, last week) or an exact declaration of the start and the end date.

Once you changed the filter settings, click on 'Update' in order to update the shown entries. If the checkbox 'Get sensor names' is checked all sensor IDs will be shown with their respective names.

The time that is shown in the log entries is the SEL time, which means that this time is independent to the system time. The actual SEL time is shown at the top of the log table. With the button 'Clear Event Log' you can delete all entries in the SEL repository.

Status via IPMI

The Status via IPMI function shows the current values and the min/max-thresholds of all fans, temperatures and voltages existing in the host system. You can change the thresholds by editing the according values and pressing 'Apply'. The first time you call this page, it may take up to two minutes until the sensor data will be shown.

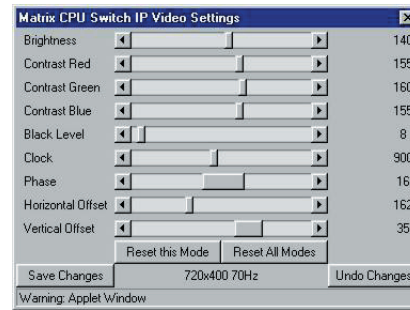
Note: If IPMI is disabled, Status via IPMI and System Log via IPMI are not available (the corresponding menu options are not visible).



Remote Console Video Settings

The 'Video Settings' option within the Remote Console offers a range of adjustments to obtain the best results from the screen image.

Note: Brightness, Black Level and Contrast affect all modes and KVM ports globally, the other settings are changed specifically for each mode on each KVM port.



Brightness

Controls the brightness of the picture.

Black level

Defines what intensity of colour is still recognized as black.

Contrast

Controls the contrast of the red, green and blue elements 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

Adjusts the horizontal positioning of the video image within the window.

Vertical Position

Adjusts the vertical positioning of the video image within the window.

Reset this Mode

Resets mode specific settings to their factory defaults.

Reset all Modes

Resets all settings to their factory defaults.

Save changes

Save changes permanently.

Undo changes

Restore last settings.



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Remote Console Options

Monitor Only

When selected, this option prevents any keyboard or mouse input being sent to the selected computer. The  icon within the Remote Console window changes to  when the option is selected.

Exclusive Access

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

Scaling

Allows you to scale down the Remote Console. You can still use mouse and keyboard, however the scaling algorithm won't preserve all display details.

Mouse handling

The submenu for mouse handling offers two options for synchronizing the local and the remote mouse pointer. The option for 'Fast Sync' shows the hotkey in parentheses in case you defined one using the Remote Console Settings.

Video Settings

Displays a window where local video settings can be adjusted. See [Remote Console video settings](#) for more details.

Refresh Video

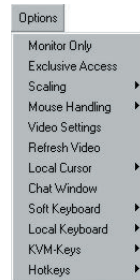
Completely redraws the screen image.

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 again next time this user opens the Remote Console. The number of available shapes depends on the Java Virtual Machine, only a version of 1.2 or higher offers the full list.

The Remote Console title bar shows some information about the incoming ('In:') and outgoing network traffic ('Out:').

If you are using the compressed encoding, compressed and uncompressed incoming traffic will be shown.



Chat Window

Displays a window that you can use to send messages to all other user who are logged into the IP section of the Matrix CPU Switch IP (this does not include the users attached directly to the KVM section of the Matrix CPU Switch IP). See [Using remote chat](#) for more details.

Soft Keyboard

Two options are available here: 'Show' and 'Mapping'. The 'Show' option displays a window containing a language specific keyboard layout. This is useful when the keyboard layout that you are using does not match the one used by the remote computer being accessed and certain characters need to be entered. The 'Mapping' option allows you to select the language layout of the soft keyboard.

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 machine 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 manually to the right language

KVM-Keys

Displays a list of all listed computer ports so that you can easily select one.

Hotkeys

Displays any defined button key sequences that have been programmed within the 'Remote Console Settings' panel using the 'Remote Console Button Keys' option. The sequences listed here will also be available as buttons along the upper edge of the Remote Console window.



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Maintenance

Matrix CPU Switch IP Board Summary

This section contains a summary with various data about this Matrix CPU Switch IP and its current firmware.

Maintenance features

Update Firmware

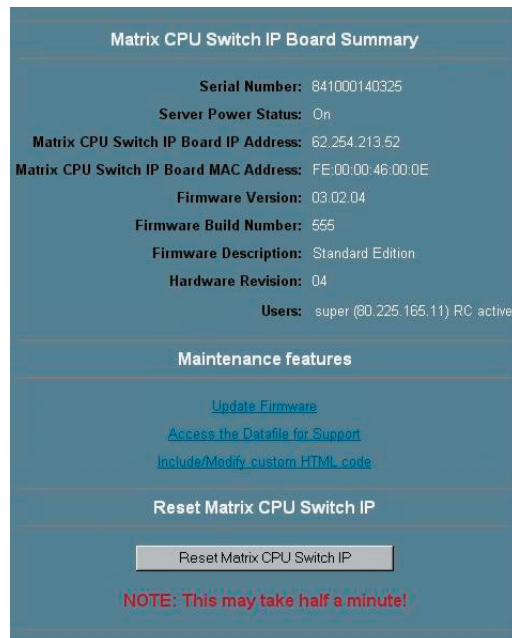
The firmware of the Matrix CPU Switch IP can be updated remotely in order to install new functionality or special features.

A new firmware update is a binary file, which can be sent to you by email. 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 for decompression. Other operating systems might provide a program called unzip.

Before you can start updating the firmware of the Matrix CPU Switch IP the new decompressed firmware file must be accessible on the system that you use for connecting to the Matrix CPU Switch IP.

Updating the IP section firmware is a three-stage process:

- Firstly the new firmware file is uploaded onto the Matrix CPU Switch IP. In order to do that you need to select the file on your local system using the browse button of the Upload Firmware panel. Once the firmware file has been uploaded, it is checked whether it is a valid firmware file and whether there were any transmission errors. In case of any error the Upload Firmware function will be aborted.
- Secondly, if everything went well, you will see the Update Firmware panel. The panel shows you the version number of the currently running firmware and the version number of the uploaded firmware. Pressing the update button will store the new version over the old one. Attention: this process is not reversible and might take some minutes. Make sure the Matrix CPU Switch IP power supply won't be interrupted during the update process, because this may cause an unusable device.
- Thirdly, after the firmware has been stored, the panel will request you to reset the Matrix CPU Switch IP manually. Half a minute after the reset, the Matrix CPU Switch IP will run with the new firmware version and should be accessible. However, you are requested to login once again.



IMPORTANT: The three-stage firmware update process and complete consistency check ensure that making a mistake in updating the firmware almost impossible. However, only experienced administrators should perform a firmware update. Make sure the Matrix CPU Switch IP power supply won't be interrupted.

Access the Data file for support

This link allows you to download the Matrix CPU Switch IP data file with support information. This is an XML file with certain customised support information like the serial number, etc. You may send this information along together with a support request. It will help us troubleshooting your problem.

Reset Matrix CPU Switch IP (IP section)

This part allows you to reset the Matrix CPU Switch IP. This function is mainly needed to activate a newly updated firmware. A reset will close all current connections to the administration console or to the Remote Console. The whole process will take about half a minute.



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Appendix 3 – Firmware upgrade (KVM section)

The Matrix CPU Switch IP uses flash memory technology that allows you to upgrade the firmware code. Upgrades are performed by connecting the serial port of a nearby computer to the port marked COM on the rear panel of the Matrix CPU Switch IP. You can then download an upgrade program from the LINDY website and run it on the computer. This will download the new firmware to the Matrix CPU Switch IP and check that the data has been programmed correctly.

Note: The normal flash upgrade process does not clear the computer names, user names, security passwords or other configuration settings.

Items needed to perform the upgrade

- The supplied flash upgrade cable (see [Appendix 4](#) for specifications).
- A computer with an RS232 serial port and an operating system that supports DOS.
- The latest version of the Matrix CPU Switch IP firmware - available either from www.lindy.com or on-request via [email](#). You will need your product serial number and model number when requesting an upgrade.

To check your current firmware version

1 Select the on-screen menu in one of three ways:

- By simultaneously pressing and then releasing   .

Note: The  and  hotkeys may have been changed. If the combination fails to work, then please contact the system administrator for details.

- By pressing the middle and right buttons of a three button mouse, or
- By selecting port  using the front panel buttons

If you are not already [logged in](#), do so now.

2 Press  to select 'More menus'.

The version number of the current firmware will then be displayed at the bottom of the Configuration Menu.

To perform a flash upgrade on the Matrix CPU Switch IP

Stage 1 - Prepare your computers.

Ensure that you have saved any important work on the connected computers. The Matrix CPU Switch IP can be upgraded whilst attached to live systems but remember that the mouse connections will probably need to be reconstituted after the upgrade is finished. Where possible, mission critical servers should be switched off or disconnected before performing an upgrade.

Stage 2 - Connect your computer to the Matrix CPU Switch IP

Connect the serial port of the computer to the port marked COM on the rear panel of the Matrix CPU Switch IP. You do not need to set the serial baud rate and protocol because the upgrade program will do this automatically (for reference, the RS232 baud rate used by the upgrade program is 19200 and the protocol is 8 bits, 1 stopbit and no parity).

Stage 3 - Select flash upgrade mode using option switch 2 (labelled UPGRADE)

Move option switch 2 on the back of the Matrix CPU Switch IP to the ON position (down).

Stage 4 - Power off the Matrix CPU Switch IP

Remove the power supply plug from the rear panel of the Matrix CPU Switch IP.

Stage 5 - Power on the Matrix CPU Switch IP with the UPGRADE switch ON

Attach the power adapter to the Matrix CPU Switch IP whilst the UPGRADE switch is ON. The green USER display should now show . This indicates that the Matrix CPU Switch IP is ready to be upgraded.

Stage 6 - Run the upgrade program

The latest version of the Matrix CPU Switch IP firmware is available from the LINDY website at www.lindy.com. The upgrade files are supplied as a group and should be copied to the same directory on your computer. From that directory run the upgrade file using the following command line:

SVW4X16



IMPORTANT: The upgrade programs are DOS based to enable compatibility with the widest range of operating systems. They run efficiently on DOS, Windows 3.X, Workgroups, 95, 98, ME and NT. The upgrades will take approximately 10 minutes. However, upgrades run from computers using Windows 2000 or XP can take very substantially longer due to the way that these operating systems handle the DOS programs. The upgrade will be reliable but can take around 3 hours to complete!

For Windows XP, one way of overcoming this problem is to create a DOS bootup disk (Insert a blank disk into the A drive, then from My Computer, right mouse click on the "3.5 Floppy A icon" and select "Format". Check the "Create MS DOS startup disk option" and then select "Start"). When the disk has been formatted, copy the upgrade files onto the disk and boot the computer with the disk inserted. When the DOS prompt appears type SVW4X16 and the upgrade process will be performed within 10 minutes.

Follow the instructions given on the screen to perform the upgrade. When the upgrade is complete the program will confirm that the upgrade has been successful and then quit.

Stage 7 - Switch the UPGRADE key to the OFF position and cycle the power
Switch the UPGRADE switch on the rear of the Matrix CPU Switch IP to the OFF position and disconnect the power. When the power is re-applied the Matrix CPU Switch IP will operate using the new firmware.

Issues to consider when performing flash upgrades

The upgrade program rewrites the Matrix CPU Switch IP firmware code. If the upgrade process is interrupted then the Matrix CPU Switch IP will have invalid code and will not be able to operate. It is therefore good practice to ensure that the upgrade process is always fully completed. A partial or failed upgrade may be rectified by performing another upgrade. If the upgrade process is interrupted accidentally then you should immediately repeat the upgrade process without moving switch 2 from the upgrade (ON) position. Switch 2 forces the Matrix CPU Switch IP into flash upgrade mode and prevents the upgraded code from being run. Running faulty or partially upgraded code may have unpredictable results and may damage your Matrix CPU Switch IP or computing equipment.

WARNING: Running faulty or partially upgraded code may have unpredictable results and may damage your Matrix CPU Switch IP or computing equipment.



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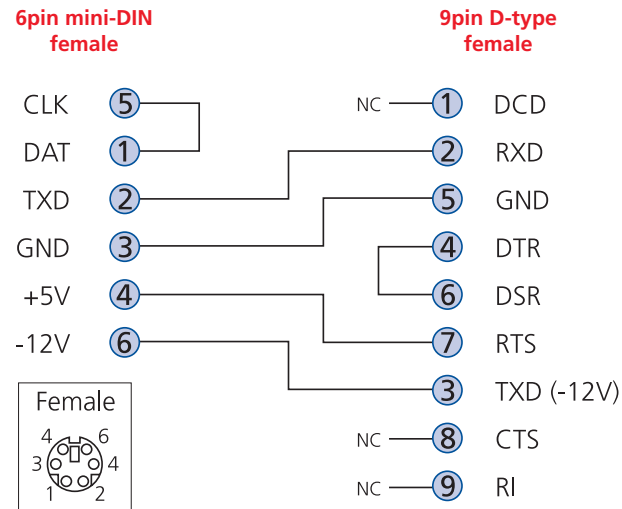
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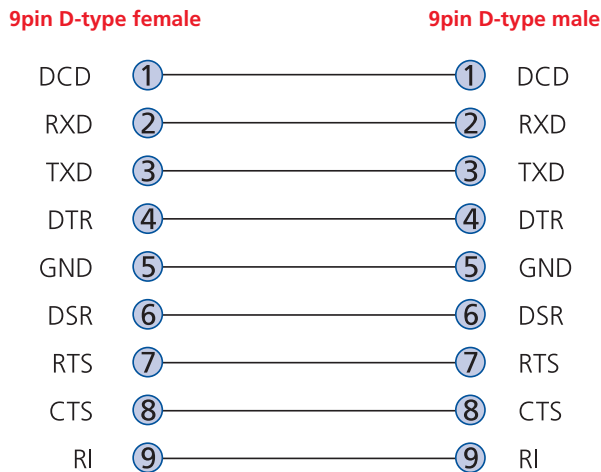
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Appendix 4 – Cable and connector specifications

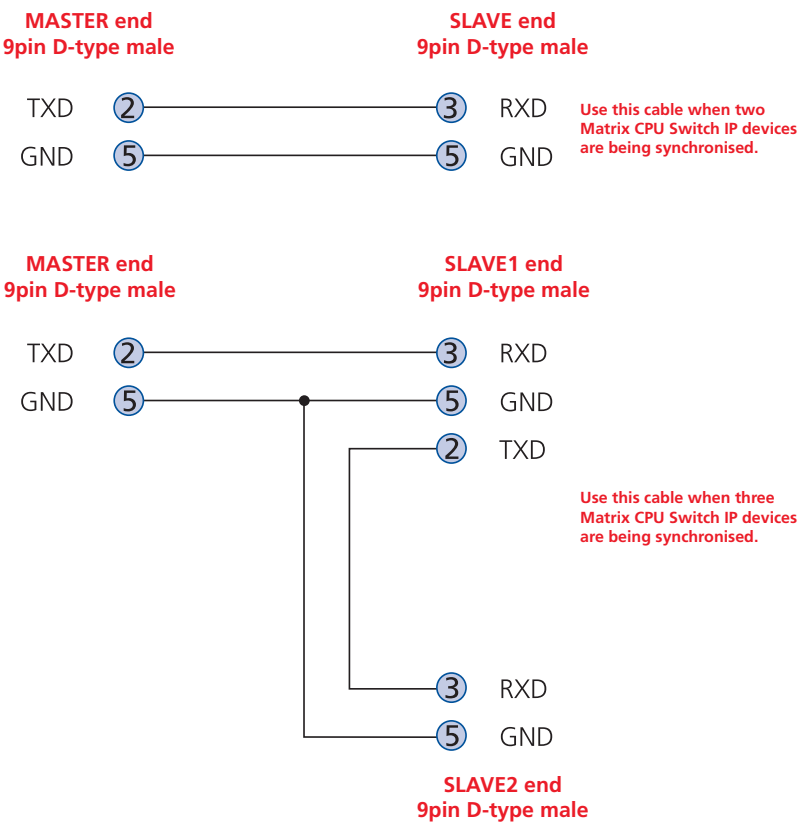
RS232 serial mouse to PS/2 converter cable



RS232 serial flash upgrade cable



RS232 serial synchronisation cable



Matrix CPU Switch IP setup cable



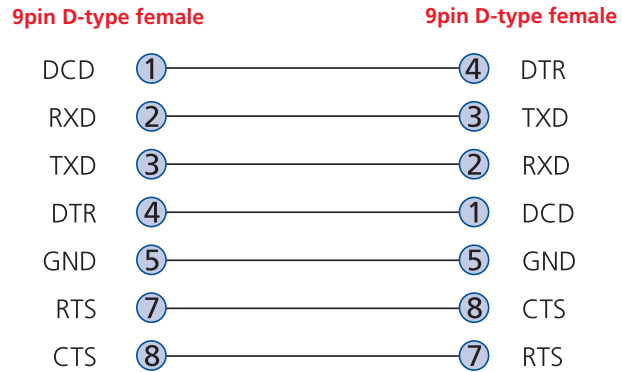
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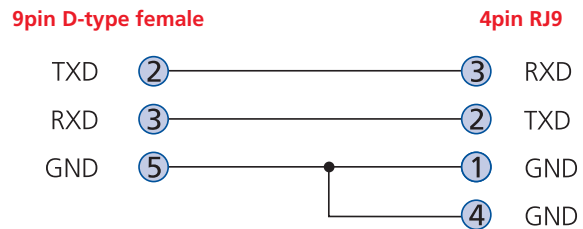
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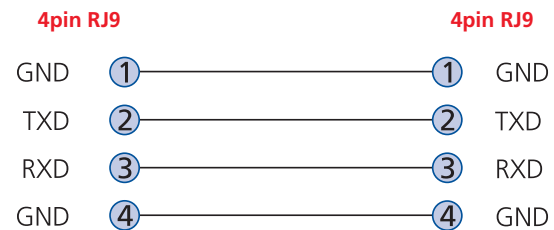
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Matrix CPU Switch IP to power switch cable



Power switch to power switch daisy chain cable



Other products in the CPU Switch range

The following related LINDY CPU Switch items are available:

- Matrix CPU Switch Dual Junior 2 user, 8 computer (part number: 32351)
- Matrix CPU Switch Dual Junior 2 user, 16 computer (part number: 32352)
- Matrix CPU Switch Dual Pro 2 user, 4 computer (part number: 32361)
- Matrix CPU Switch Dual Pro 2 user, 8 computer (part number: 32362)
- Matrix CPU Switch Quad Pro 4 user, 16 computer (part number: 32364)
- Extender Junior - remote unit (part number: 32391)
- Extender Plus - remote unit (part number: 32396)
- Extender Pro - remote unit (part number: 32392)
- C5 Extender Junior - remote unit (part number: 39391)

Safety information

- For use in dry, oil free indoor environments only.
- Warning - live parts contained within power adapter.
- No user serviceable parts within power adapter - do not dismantle.
- Plug the power adapter into a socket outlet close to the module that it is powering.
- Replace the power adapter with a manufacturer approved type only.
- Do not use the power adapter if the power adapter case becomes damaged, cracked or broken or if you suspect that it is not operating properly.
- If you use a power extension cord with the Matrix CPU Switch IP, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure that the total ampere rating of all the devices plugged into the wall outlet does not exceed the wall outlet's ampere rating.
- Do not attempt to service the Matrix CPU Switch IP yourself.

Safety considerations when using power switches with Matrix CPU Switch IP

- Follow the manufacturer's instructions when setting up and using power switching products.
- Always ensure that the total ampere rating of the devices plugged into the power switching product does not exceed the power switching product's ampere rating. Also, make sure that the total ampere rating of all the devices plugged into the wall outlet does not exceed the wall outlet's ampere rating.

Warranty

LINDY warrants that this product shall be free from defects in workmanship and materials for a period of three years from the date of original purchase. If the product should fail to operate correctly in normal use during the warranty period, LINDY will replace or repair it free of charge. Any faulty items are to be returned to LINDY at the owner's expense. No liability can be accepted for damage due to misuse or circumstances outside LINDY's control. Also, LINDY will not be responsible for any loss, damage or injury arising directly or indirectly from the use of this product. LINDY's total liability under the terms of this warranty shall in all circumstances be limited to the replacement value of this product. This warranty goes on top of any applicable legal regulation and does not limit any customer rights compared to the legal regulations.



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Radio Frequency Energy

A Category 5 (or better) twisted pair cable must be used to connect all units in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All other interface cables used with this equipment must be shielded in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

European EMC directive 89/336/EEC

This equipment has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in the European standard EN55022. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions may cause harmful interference to radio or television reception. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to correct the interference with one or more of the following measures: (a) Reorient or relocate the receiving antenna. (b) Increase the separation between the equipment and the receiver. (c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. (d) Consult the supplier or an experienced radio/TV technician for help.

FCC Compliance Statement (United States)

This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in Subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canadian Department of Communications RFI statement

This equipment does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques publié par le ministère des Communications du Canada.



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