eRIC II Installation and User Guide

eRIC II Installation and User Guide:

Based on Firmware 04.00.01
Last updated on 02 June 2005
Document ID: p_eric2_00en_manualv4

Table of Contents

Preface

Copyright

Scheringerstr. 1

08056 Zwickau

Germany

Authors: Peppercon Team

This document was created on 02 June 2005 .

About the eRIC II

The eRIC II provides server management capabilities. You can use the eRIC II to manage and monitor components in your servers through a modem or LAN, even if your network is down. The eRIC II offers a comprehensive hardware solution for server management.

Limited Warranty

The buyer agrees that if this product proves to be defective, Peppercon is only obligated to repair or replace this product at Peppercon 's discretion according to the terms and conditions of Peppercon 's general trading conditions. . Peppercon shall

not be held liable for any loss, expenses or damage, directly, incidentally or consequentially resulting from the use of this product. Please see the Warranty Information shipped with this product for full warranty details.

Limitations of Liability

Peppercon shall in no event be held liable for any loss, expenses or damages of any kind whatsoever, whether direct, indirect, incidental, or consequential (whether arising from the design or use of this product or the support materials provided with the product). No action or proceeding against Peppercon may be commenced more than two years after the delivery of the product to the buyer.

Technical Support

If you need help installing, configuring, or running the eRIC II , call your Peppercon OEM or VAD Technical Support representative.

We invite you to access the Peppercon 's Web site (http://www.peppercon.com/). There you shall find all modifications made after the editorial deadline. You may also contact us via email to < `support@peppercon.com` > .

Chapter 1. The Quick Start Guide

Mounting

Before mounting the eRIC II into your computer check the BIOS settings to make sure that the eRIC II will be recognized as the primary VGA card of the system. In case of an on-board VGA card, a typical setting in the BIOS shell is

`Graphics adapter first`.

Make sure the setting is either “Auto” , “external” , or “PCI” (depending on what your BIOS supports). If the eRIC II is not recognized as a primary VGA card, the local monitor connected to the eRIC II local video out will remain black, and the remote control function of the video screen will not work. Then, mount the eRIC II into a free PCI slot (33 or 66 MHz). Connect the internal cables:

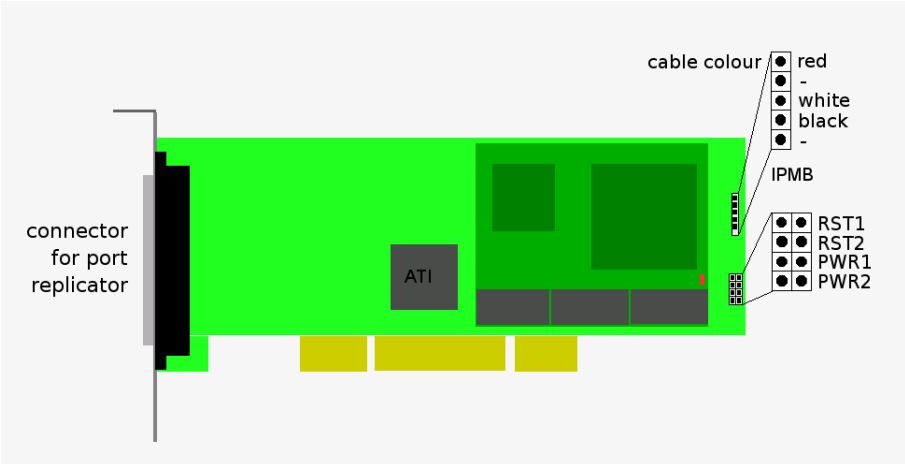


Figure 1-1. eRIC II internal connectors

There are two options to enable reset/power:

a. IPMI over IPMB

If your system supports IPMI over IPMB, use the enclosed IPMB cable as seen on Figure 1-2 below. Connect the IPMB cable either to the three- or four-pin connector (if available) on the motherboard.

Figure 1-2. IPMB cable

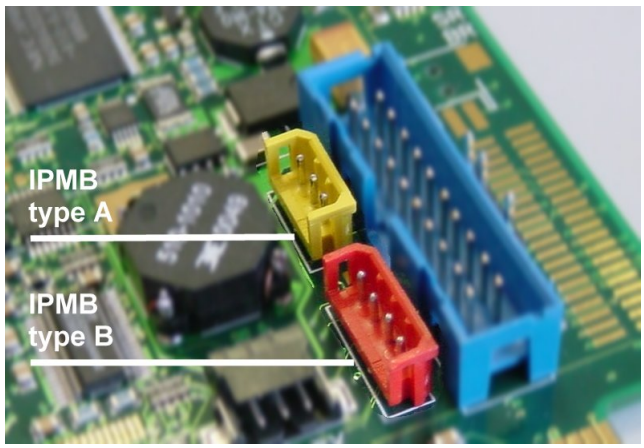


Figure 1-3. IPMB connector

b. If there are separate pins for the reset and power switch connectors on the motherboard, refer to the motherboard manual to find the right connectors for the front panel reset/power switch buttons:

    1. Disconnect the reset cable from the motherboard and connect it to the connector RST1 of the eRIC II .
    2. Connect the connector RST2 on the eRIC II using the enclosed reset cable (two wires, black/red) with the reset connector on the motherboard.
    3. Disconnect the power switch cable from the motherboard and connect it to the connector PWR1 on the eRIC II .
    4. Connect the connector PWR2 on the eRIC II using the enclosed power switch cable (two wires, black/red) with the power switch on the motherboard.

In case your motherboard does not have single pins for reset and power switch, you may use one of the front panel adapters which are offered. In case those adapters do not fit into your system or in case you need further assistance, contact the support via email to < `support@peppercon.com` > .

Finally, connect the external cables.

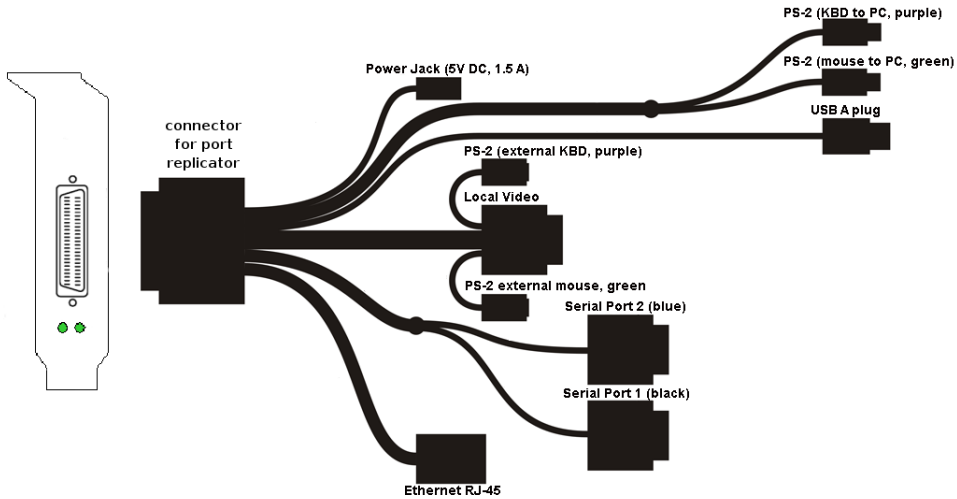


Figure 1-4. eRIC II external connectors

1. The PS/2 (keyboard/mouse) plugs are used to connect to the host's keyboard (purple) and mouse (green) PS/2 sockets.
2. The PS/2 (keyboard/mouse) sockets are used to connect the local keyboard (purple) and mouse (green).
3. The USB plug should be plugged into one of the hosts USB connectors.
4. The VGA socket attaches the server's local monitor to the eRIC II card.
5. The Ethernet jack should be connected to a hub or switch using an UTP 5 cable if required.
6. Connect your optional external power supply to the external power socket. The red LED on the processor module shows the correct function of the eRIC II card.
7. The link state indicator indicates whether there is a link established between the eRIC II and the peer which is an Ethernet hub, mostly.
8. The 10/100 Mbps line speed indicator shows the detected link speed. On 10 Mbps link speed the LED is off, on 100 Mbps the LED is on.

Connector for the Port Replicator

The port replicator always has to be screwed tight to the eRIC II card! Otherwise it may fall out of its socket, and the pins of the connector may be bent.

VGA Terminator

The eRIC II is shipped with an additional VGA Terminator (see Figure 1-5) that is attached to the Port Replicator as shown in Figure 1-6 . The local video plug has to be terminated by either a KVM switch, a monitor, or the VGA Terminator.

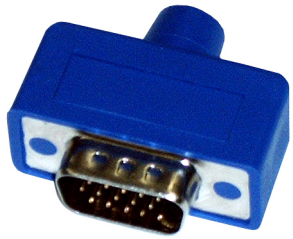


Figure 1-5. VGA Terminator

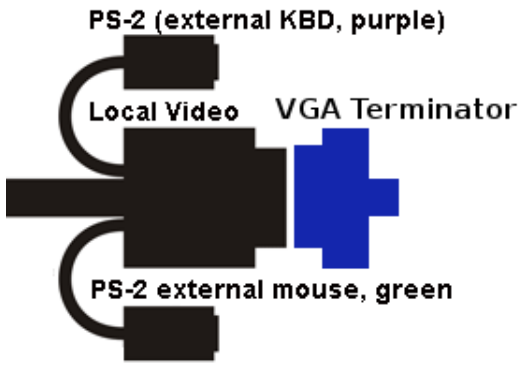


Figure 1-6. Port Replicator with VGA Terminator

Initial Network Configuration

Initially, the eRIC II network interface is configured with the parameters shown in Table 1-1 .

Table 1-1. Initial Network Configuration

Parameter	Value
IP auto configuration	DHCP
IP address	-
Netmask	255.255.255.0
Gateway	none
IP access control	none
LAN interface speed	auto
LAN interface duplex mode	auto

Warning

If the DHCP connection fails on boot up, the eRIC II will not have an IP address.

If this initial configuration does not meet your local requirements, adjust the values to your needs. You may either configure the eRIC II via serial interface, or use the setup tool that can be found on the CD ROM delivered with this package.

eRIC II Setup Tool

Main Window

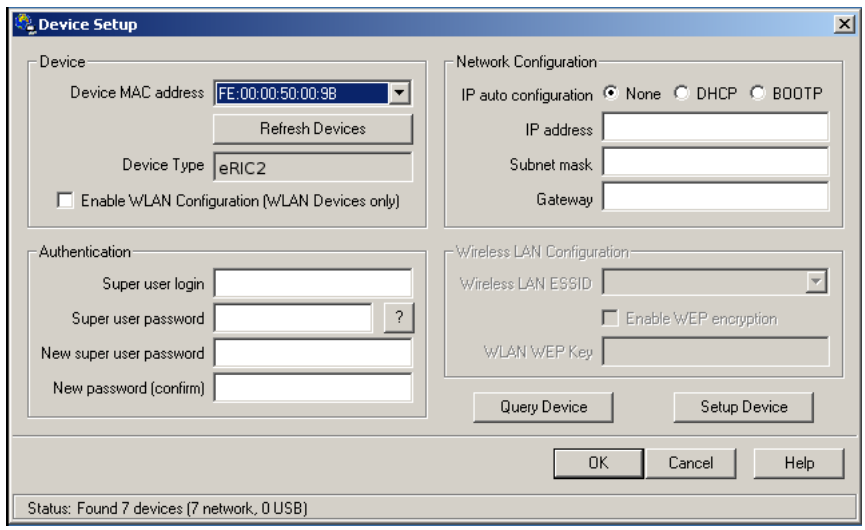


Figure 1-7. eRIC II setup tool

Connect the eRIC II to your computer either via local network or via USB. Start the setup tool from the CD ROM on the computer in which the eRIC II is installed. Depending on the connection (USB or network), the device detection is different.

A window opens as seen in Figure 1-7 .

MAC Address Detection

On the upper left corner, the MAC address of the eRIC II is displayed. To detect the MAC address manually, press the button “Refresh Devices” . The displayed MAC address is the same MAC address printed on the white sticker placed on the back of the eRIC II . If the eRIC II is connected via USB, it is classified as a USB device and an appropriate drive letter is chosen for this device.

On the lower right corner of the window, there are two buttons: “Query Device” and “Setup Device” . Press the “Query Device” button to display the preconfigured values of the network configuration. The values are displayed in the text fields located above. If necessary, adjust the network settings to your needs. To save the changes enter a user name and an according password. Then press the “Setup Device” button.

Authentication

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

Super user login

Enter the login name of the super user. The initial value is “super” .

Super user password

Enter the current password for the super user. This initial value is “pass” .

New super user password

Enter the new password for the super user.

New password (confirm)

Re-type the new password for the super user.

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

Configuration via Serial Interface

To configure the eRIC II via serial interface both a serial port replicator cable and a null modem cable are required (available separately).

Connect the enclosed Null Modem Cable to the serial interface with the black connector on the port replicator .

The serial interface needs to be adjusted with the parameters as shown in Table 1-2 .

Table 1-2. Serial parameters

Parameter	Value
Bits/second	115200
Data bits	8
Parity	no
Stop bits	1
Flow control	none

Use a terminal software (e.g. `hyperterm` or `minicom`) to connect to the eRIC II . Reset the eRIC II , and immediately press the “ESC” key. You will see some device information, and a “ => ” prompt. Enter the command “config” , and press the key “ENTER” . Quite soon afterwards you are asked to adjust the IP auto configuration, the IP address, the net mask, and the default gateway. Pressing the “ENTER” key without entering values does not change settings. The gateway value has to be set to `0.0.0.0` (for no gateway) or any other value for the IP address of the gateway. After the confirmation the eRIC II performs a reset using the new values as set before.

Web Interface

The eRIC II may be accessed using a standard Java enabled web browser. You may use the HTTP protocol or a secure encrypted connection via HTTPS. Just enter the

configured IP address of the eRIC II into your web browser. Initially there is only one user configured who has unrestricted access to all eRIC II features:

Table 1-3. Standard User Settings

Parameter	Value
Login	super
Password	pass

Changing these settings to user specific values is strongly recommended and can be done on the "User Management" page (see the Section called *Users And Groups* in Chapter 6).

Video adapter device driver

Windows 2000 (starting with Service Pack 2) and Windows XP automatically detect the ATI Rage Mobility adapter on the eRIC II and install the correct device driver (for super VGA). However, it is recommended to install the newest available device driver for those operating systems. Under Windows 98/ME, Windows NT4, and OS/2 the driver installation has to be done manually. The Linux X server supports ATI Rage Mobility as well.

The Remote Console

The Remote Console is the redirected screen, keyboard and mouse of the remote host system in which the eRIC II is installed. The web browser which is used for accessing the eRIC II has to supply a Java Runtime Environment version 1.1 or higher. However, it is strongly recommended to install Sun JVM 1.4. The Remote Console will behave exactly the same way as if you were sitting directly in front of the screen of your remote system. That means that both the keyboard and mouse can be used in the usual way. Open the console by choosing the appropriate link in the navigation frame of the HTML frontend. Figure 1-8 shows the top of the Remote Console.

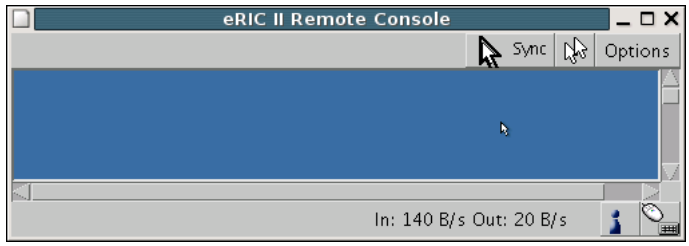


Figure 1-8. Top part of the Remote Console

There are some options to choose from the menu, the important ones are the following:

Sync Mouse 

Choose this option in order to synchronize the local with the remote mouse cursor. This is especially necessary when using accelerated mouse settings on the host system. In general, there is no need to change mouse settings on that.

Chapter 2. Introduction

Introduction

The eRIC II is a manufacturer-independent remote administration system. The eRIC II works as an integrated solution on your server system. Based on an embedded operating system, the eRIC II provides both exceptional stability and permanent availability independent of the present state of the server's operating system. As a system administrator, you have entire control and location-independent remote access to react upon both critical incidents and cases of necessary maintenance.

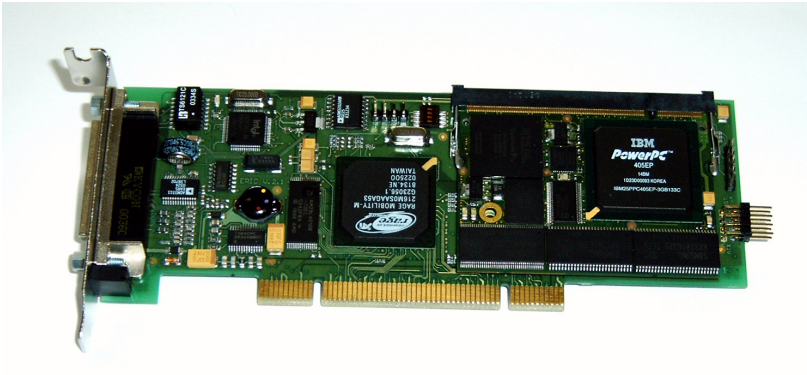


Figure 2-1. eRIC II

Features

The eRIC II defines a new class of remote access devices . It combines digital remote access via IP networks with comprehensive and integrated system management.

The eRIC II offers convenient, remote KVM access and control via LAN or Internet. It captures, digitizes, and compresses video and transmits it with keyboard and mouse signals to and from a remote computer. Remote access and control software runs on its embedded processors only but not on mission critical servers, so that there is no interference with server operation or impact on network performance.

Furthermore, the eRIC II offers additional remote power management with the help of optional available devices. Features of the eRIC II are:

- KVM (keyboard, video, mouse) access over IP or analog telephone line
- No impact on server or network performance
- Automatically senses video resolution for best possible screen capture
- High-performance mouse tracking and synchronization
- Port to connect a user console for direct analogous access to KVM switch
- Local Mouse suppression (only when using SUN's Java Virtual Machine)

When the Server is up and running

The eRIC II gives you full control over the remote server. The Management Console allows you to access the remote server's graphics, keyboard and mouse and to send special commands to the server.

You can also perform periodic maintenance of the server. Using the Console Redirection Service you can do the following:

- Reboot the system (a graceful shutdown)
- Watch the boot process
- Boot the system from a separate partition to load the diagnostic environment
- Run special diagnostic programs

When the Server is dead

Obviously, fixing hardware defects is not possible using a remote management device. Nevertheless, the eRIC II gives the administrator valuable information about the type of a hardware failure.

Serious hardware failures can be categorized into five different categories with different chances to happen [1] :

Table 2-1. Hardware failures

Category	Probability
Hard disk failure	50%
Power cable detached, power supply failure	28%
CPU, Controller, motherboard failure	10%
CPU fan failure	8%
RAM failure	4%

Using the eRIC II , administrators can determine which kind of serious hardware failure has occurred (see Table 2-2).

Table 2-2. Host system failures and how they are detected

Type of failure	Detected by
Hard disk failure	Console screen, CMOS set-up information
Power cable detached, power supply failure	Server remains in power off state after power on command has been given.
CPU, Controller, main board failure	Power supply is on, but there is no video output.
CPU fan failure	By IPMI or server specific management software
RAM failure	Boot-Sequence on boot console

Notes

1. According to a survey made by the Intel Corp.

Chapter 3. Installation

Operation Overview

The eRIC II redirects local keyboard, mouse and video data to a remote administration console. All data is transmitted with the TCP/IP protocol family.

eRIC II 's Video Adapter Capabilities

Table 3-1 lists all supported video modes of the eRIC II :

Table 3-1. eRIC II supported video modes (4 Mbytes Video RAM)

Resolution	256 Colours (8 bits)	High Colour (16 Bits)	True Colour (24 Bits)
640x480	yes	yes	yes
800x600	yes	yes	yes
1024x768	yes	yes	yes
1280x1024	yes	yes	yes
1600x1200	yes	yes	

It is recommended that the Video Adapter of your host system is set to the same resolution as you have chosen for the eRIC II . Otherwise, on the screen a black frame may be visible or the picture will be displayed incomplete (see also the Section called *KVM Settings* in Chapter 6).

Connectors and Jumpers

Figure 3-1 and Figure 3-2 show all connectors and plugs of the eRIC II . The eRIC II is equipped with a link state indicator, a line speed indicator, four ATX Power Reset pins, and an IPMB connector. The port replicator has endings for power (power jack), PS/2 (plugs and sockets), local video, a USB plug, two serial ports, and an Ethernet

jack. Each of these connectors will be explained in the following.

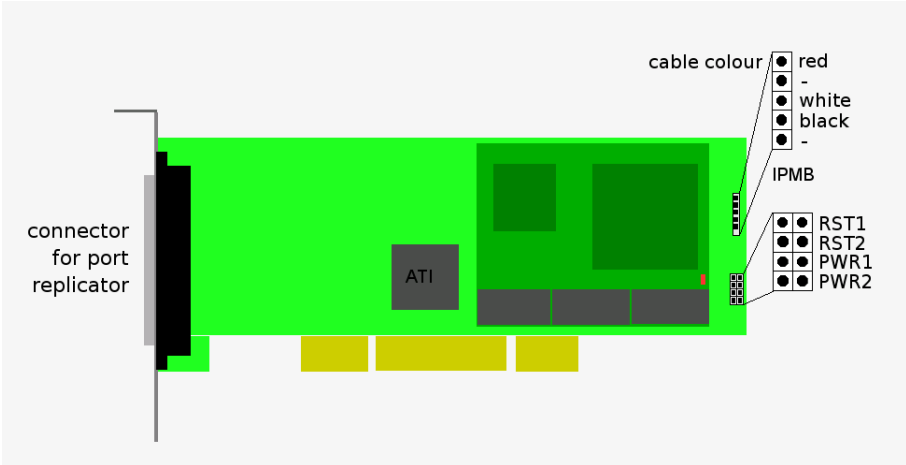


Figure 3-1. eRIC II internal connectors

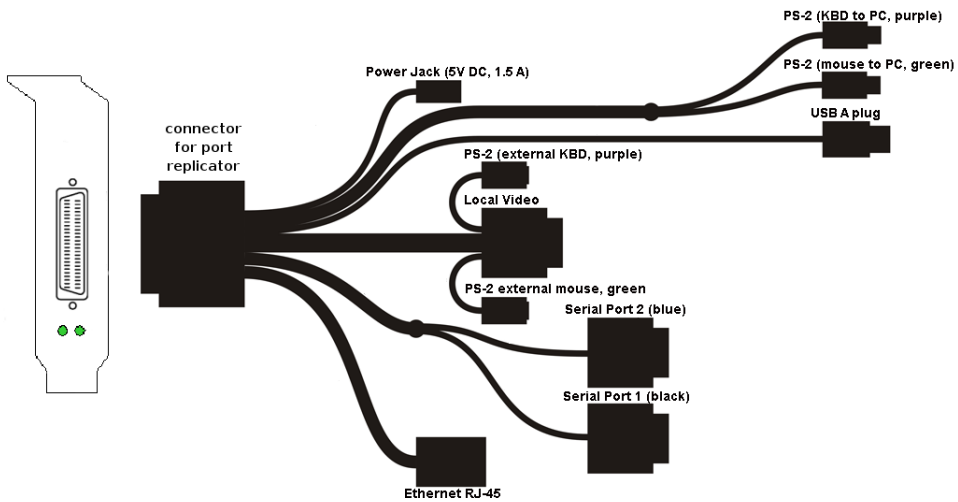


Figure 3-2. eRIC II external connectors

Serial Interface

An optional external modem or IPM 220-L (Inline Power Module) may be connected to the eRIC II using this connector. The connector is compliant to the RS 232 serial line standard with hardware handshake. Actually, there are two connectors on the eRIC II . The first serial interface comes with a black connector, whereas the second serial Interface has a blue connector.

Every off-the-shelf modem can be connected to the eRIC II via the RS 232 interface. For details on configuring and using the serial interface, refer to the Section called *Serial Settings* in Chapter 6 .

PS/2 (keyboard/mouse) plugs

These plugs are used to connect to the host's keyboard (purple) and mouse (green) PS/2 socket.

PS/2 (keyboard/mouse) sockets

These sockets are used to connect the local keyboard (purple) and mouse (green).

VGA socket

This connector attaches the server's local monitor to the eRIC II card.

Link state indicator

The LED indicates whether there is a link established between the eRIC II and the peer which is an Ethernet hub in most cases.

10/100 Mbps line speed indicator

The on board Ethernet adapter automatically detects the link speed offered by the Ethernet hub. This LED shows the detected link speed. On 10 Mbps link speed the LED is off, whereas on 100 Mbps the LED is on.

USB Plug

Use this connector to connect the eRIC II with the host's USB interface.

External Power

An external power supply has to be connected to the eRIC II in order to use the remote power on/off features provided by the eRIC II . Please refer to the Section called *Connecting Optional External Power Supply* for further details.

ATX Power Reset

Additional cables are required in order to enable the remote reset and the remote power functions of the eRIC II . The reset/power switch has the pin assignment as shown in Figure 3-3 .

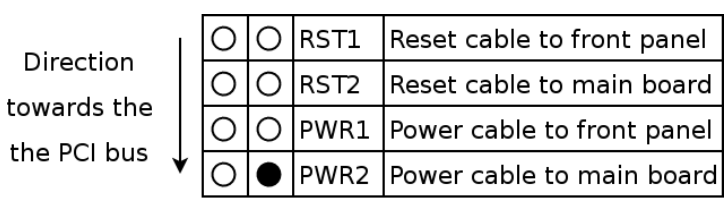


Figure 3-3. eRIC II reset/power connection pinout

Note: On the eRIC II the pin for the power connector is tagged with “ATX” .

Intelligent Management Platform Bus Connector (IPMB)

The IPMB connector (also known as I2C connector) on an IPMI capable motherboard allows direct access to power control functions. Connecting the IPMB connector of the eRIC II with such a port using our IPMB cable makes it possible to use the IPMI over IPMB function of the eRIC II . Refer to Appendix E for the pin assignment details of the IPMB connector.

VGA Terminator

The eRIC II is shipped with an additional VGA Terminator (see Figure 3-4) that is attached to the Port Replicator as shown in Figure 3-5 . The local video plug has to be terminated by either a KVM switch, a monitor, or the VGA Terminator.

Figure 3-4. VGA Terminator

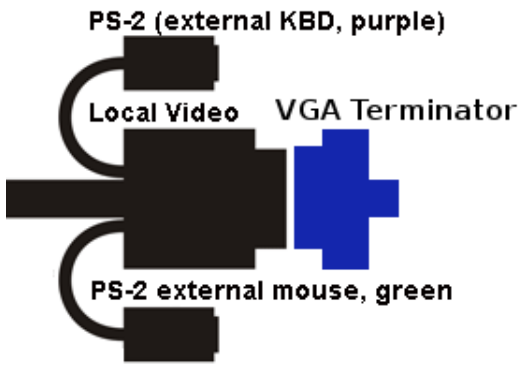


Figure 3-5. Port Replicator with VGA Terminator

Placing the eRIC II into the Server

Preparing Server-VGA

Before mounting the eRIC II into your computer check the BIOS settings to make sure that the eRIC II will be recognized as the primary VGA card of the system. In case of an on-board VGA card, a typical setting in the BIOS shell is

`Graphics adapter first`.

Make sure the setting is either “Auto” , “external” , or “PCI” (depending on what your BIOS supports). If the eRIC II is not recognized as a primary VGA card, the local monitor connected to the eRIC II local video out will remain black, and the remote control function of the video screen will not work. Then, mount the eRIC II into a free PCI slot (33 or 66 MHz).

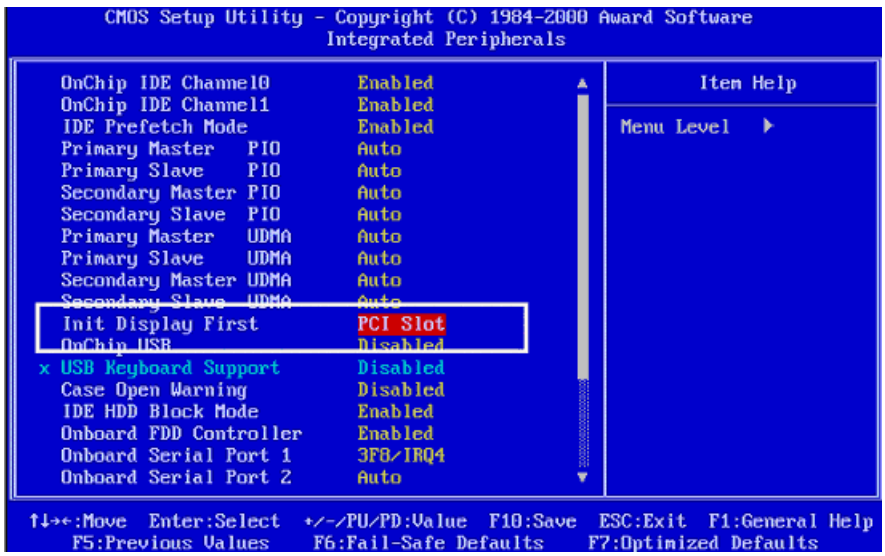


Figure 3-6. eRIC II BIOS settings

Disassembling the server

In order to install the eRIC II you need to open the host system. Detach the host from its power cable and follow the instructions of your system documentation.

Plugging an eRIC II into a PCI Slot

eRIC II PCI

Place the eRIC II into a free PCI slot. You may use any PCI slot (33 or 66 MHz, 32 or 64 Bit, PCIX).

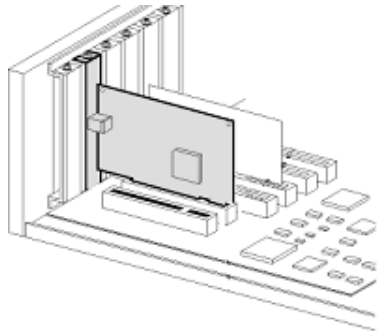


Figure 3-7. Mounting the eRIC II into a PCI slot

Connecting Power and Reset Cables

The eRIC II offers the possibility to remotely control both the power and the reset functions of the host system. In order to support it, there is additional cabling necessary. The preferred way for this cabling are the interfaces offered by IPMI. However, if your host does not support IPMI you may use one of the other possibilities.

Connecting over IPMB

This connection is used to power on or power off the system, or to perform a hard reset. You must have a motherboard that supports IPMI and has a 3 or 4 pin IPMB connector as shown in Figure 3-9 .

- Connect the 5 pin connector of the IPMB cable with the 1x5 pin IPMB connector on the eRIC II as shown in Figure 3-1 .
- Connect the other ending of the cable with one of the IPMB connectors (3 or 4 pin connector) on the motherboard.
- Set the IPMI settings to IPMI over IPMB.
- Make sure that the IPMI function is enabled on the host system.

Figure 3-8. IPMB cable

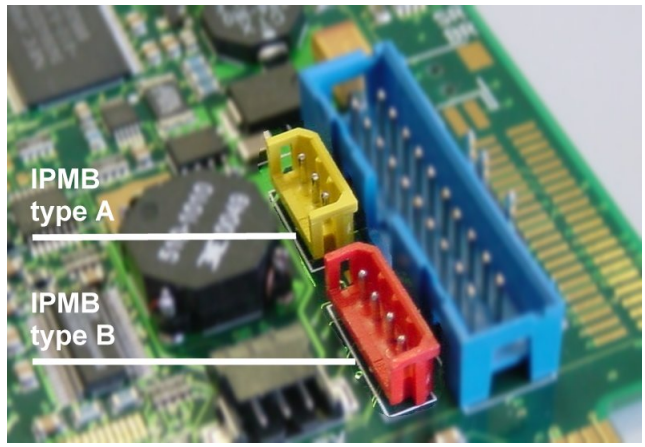


Figure 3-9. IPMB connector

Connecting to ATX Control Signals

In case your system provides separated pins for reset and power on/off, obey the following steps while referring to Figure 3-1 .

1. Find the cable connecting the front panel reset button and the motherboard.
2. Disconnect this cable from the motherboard and connect it to RST2 of the eRIC II . Refer to Figure 3-3 for pin assignment.
3. Take the reset cable provided with the eRIC II and connect it with one ending to the motherboard's reset connector (from where you just disconnected the cable to the front panel), and with the other ending to RST1 of the RST/PWR connector of the eRIC II .
4. Disconnect this cable from the motherboard and connect it to PWR2. For pin assignment details, refer to Figure 3-3 .
5. Take the power cable provided with the eRIC II and connect it with one ending to the motherboard's power connector (from where you just disconnected the cable to the front panel), and with the other ending to PWR1 of the RST/PWR connector of the eRIC II .
6. Check the cabling: there are four cables connected to the RST/PWR connector, finally.

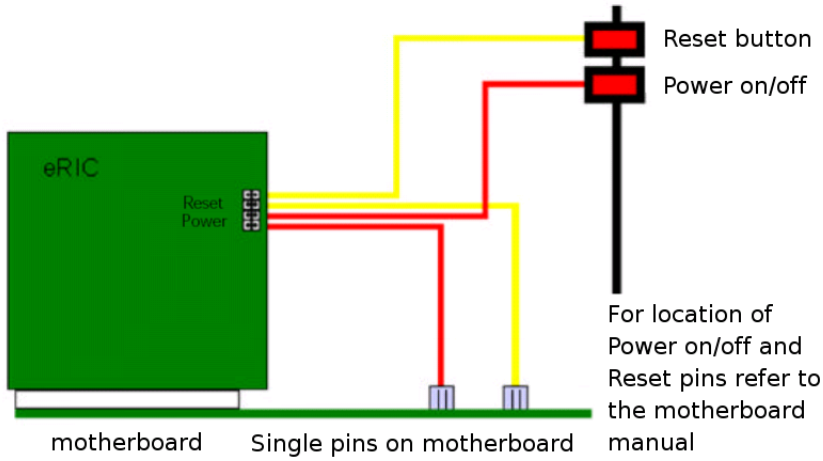


Figure 3-10. eRIC II pins

Connecting with Front Panel Connector

There are motherboards which do not have separated pins for power on/off and reset. Both the reset and the power button are placed on the system's front panel and connected to the motherboard via a common front panel connector. To allow the connection of the eRIC II 's remote reset and power on/off signals to those motherboards a special front panel adapter has to be placed between the front panel connector on the motherboard, and the cable connector to the front panel. Please ask your vendor for assistance.

Connecting Keyboard and Mouse

Keyboard and mouse data can be transmitted via USB and PS/2 to the server system. Connect either the USB or the two PS/2 plugs into the according sockets on the server. The purple plug is for the keyboard and the green one is for the mouse. If there is no mouse/keyboard on the host system to connect with, there is no need to link the connector with the socket.

Connect the local keyboard and the mouse to the according sockets on the port replicator of the eRIC II .

Warning

If you connect a local keyboard and/or mouse to the eRIC II , and you have only an USB connection to the server then these local devices do not work. Remote keyboard/mouse data can be transmitted via USB, only.

Keep in mind that the connection via USB is essential for the Virtual Floppy feature of the eRIC II . Without a connection via USB, it will not function properly.

Connecting Optional External Power Supply

To allow the eRIC II to operate independently from the server system it is possible to connect the card to external power supply. From the technical point of view any power supply can be used unless the following specifications are met:

Table 3-2. Voltage and Power Specifications

Parameter	Value
Voltage	5V
Current	>= 1A
Pining	Plus on inner connector
Dimension	2.1 mm diameter

We recommend a 5V /1A power supply. Contact your local sales representative for a Peppercon approved power supply.

Warning

Any standard power supply compliant with the requirements stated above may be used. Nevertheless, any warranty from Peppercon voids if non- Peppercon power supplies are used in conjunction with the eRIC II . Check for the Peppercon approval label on the external power supply in order to preserve your manufacturer's warranty.

The power supplies used with the eRIC II must not be used with the eRIC II , or the card may also be damaged.

Warning

The eRIC II will work without the external power adapter, but only in case the server is switched on. The AC power adapter is an optional feature that provides power to the eRIC II in case the host power fails, or is switched off. If you do not use the AC power adapter and the server loses power, then you will not be able to access the eRIC II from the remote console.

Connecting Ethernet

The port replicator of the eRIC II provides a RJ45 connector for Ethernet. The connector is used either for a 100 Mbps 100Base-TX connection or for a 10 Mbps 10BASE-T connection. The adapter can sense the connection speed and will adjust to the appropriate operation mode automatically.

10 Mbps Connection

For 10BASE-T Ethernet networks the Fast Ethernet adapter uses category 3, 4, or 5 UTP cable. To establish a 10 Mbps connection, the cable has to be connected to a 10BASE-T hub.

1. Make sure that the cable is wired appropriately for a standard 10BASE-T adapter.
2. Align the RJ45 plug with the notch on the adapter's connector and insert it into the adapter's connector.

100 Mbps Connection

For 100BASE-TX Ethernet networks the eRIC II supports category 5 UTP cabling. To establish a 100 Mbps connection, the cable has to be connected to a 100BASE-TX hub.

1. Make sure that the cable is wired appropriately for a standard 100BASE-TX adapter.
2. Align the RJ45 plug with the notch on the adapter's connector and insert it into the adapter's connector.

Warning

The UTP wire pairs and configuration for 100BASE-TX cable are identical to those for 10BASE-T cable when used with category 5 UTP cable.

Chapter 4. Configuration

Initial Configuration

The eRIC II ’s communication interfaces are all based on TCP/IP. It comes pre-configured with the IP configuration listed in Table 4-1 .

Table 4-1. Initial network configuration

Parameter	Value
IP auto configuration	DHCP
IP address	-
Netmask	255.255.255.0
Gateway	none
IP access control	none
LAN interface speed	auto
LAN interface duplex mode	auto

Warning

If the DHCP connection fails on boot up, the eRIC II will not have an IP address.

If this initial configuration does not meet your requirements, the following describes the initial IP configuration that is necessary to access the eRIC II for the first time.

eRIC II Setup Tool

Main Window

Connect the eRIC II to your computer either via local network or via USB. Start the setup tool from the CD ROM on the computer in which the eRIC II is installed. Depending on the connection (USB or network), the device detection is different.

A window opens as seen in Figure 4-1 .

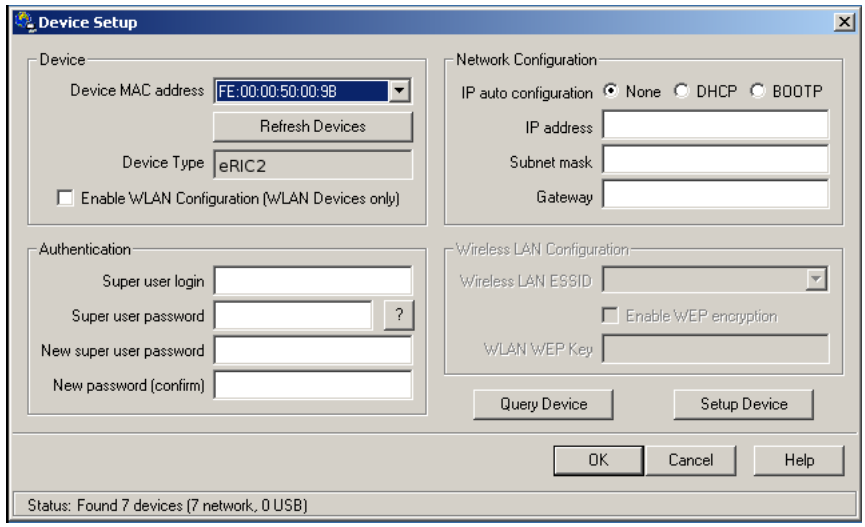


Figure 4-1. eRIC II setup tool

MAC Address Detection

On the upper left corner, the MAC address of the eRIC II is displayed. To detect the MAC address manually, press the button “Refresh Devices” . The displayed MAC address is the same MAC address printed on the white sticker placed on the back of the eRIC II . If the eRIC II is connected via USB, it is classified as a USB device and an appropriate drive letter is chosen for this device.

On the lower right corner of the window, there are two buttons: “Query Device” and “Setup Device” . Press the “Query Device” button to display the preconfigured values of the network configuration. The values are displayed in the text fields located above. If necessary, adjust the network settings to your needs. To save the changes enter a user name and an according password. Then press the “Setup Device” button.

Authentication

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

Super user login

Enter the login name of the super user. The initial value is “super” .

Super user password

Enter the current password for the super user. This initial value is “pass” .

New super user password

Enter the new password for the super user.

New password (confirm)

Re-type the new password for the super user.

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

Initial Configuration via DHCP Server

By default, the eRIC II will try to contact a DHCP server in the subnet to which it is physically connected. If a DHCP server is found, it may provide a valid IP address, gateway address and net mask. Before you connect the device to your local subnet, be sure to complete the corresponding configuration of your DHCP server. It is recommended to configure a fixed IP assignment to the MAC address of the eRIC II . You can find the MAC address on the outside of the shipping box and labeled on the bottom side.

If this initial configuration does not meet your local requirements, use the setup tool to adjust the values to your needs. The setup tool can be found on the CD ROM delivered with this package. You can follow the procedure described below.

Initial Configuration via Serial Console

To configure the eRIC II via serial interface both a serial port replicator cable and a null modem cable are required .

Using a serial terminal, the eRIC II has a serial line interface (port replicator). This connector is compliant with the RS 232 serial line standard. To establish a serial connection use a standard NULL-Modem cable. The serial line has to be configured with the parameters given in Table 4-2 .

When configuring with a serial terminal, reset the eRIC II and immediately press the “ESC” key. You will see a “ => ” prompt. Enter “config” , press “Enter” and wait for a few seconds for the configuration questions to appear.

Table 4-2. Serial line parameters

Parameter	Value
Bits/second	115200
Data bits	8
Parity	no
Stop bits	1
Flow control	none

As you proceed, the following questions will appear on the screen. To accept the default values which are shown in square brackets below, press “Enter” .

```
IP auto configuration (non/dhcp/bootp) [dhcp]:
IP [192.168.1.22]:
Net mask [255.255.255.0]:
Gateway (0.0.0.0 for none) [0.0.0.0]:

Enable IP Access Control (yes/no) [no]:
LAN interface speed (auto/10/100) [auto]:
LAN interface duplex mode (auto/half/full) [auto]:
```

IP autoconfiguration

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

IP address

The IP address the eRIC II uses. This option is only available if IP autoconfiguration is disabled.

Net mask

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

Gateway address

The IP address of the default router for the connected IP subnet. If you do not have a default router, enter `0.0.0.0` . This option is only available if IP autoconfiguration is disabled.

Enable IP Access Control

This option allows you to switch IP packet filtering on or off. It is mainly intended to re-enable access to the eRIC II after a faulty IP access control configuration has been activated.

LAN interface speed

This option allows you to switch the LAN Ethernet interface speed to autosensing/autonegotiation (auto), 10Mbps (10) or 100Mbps (100).

LAN interface duplex mode

This option allows you to switch LAN interface mode to either autosensing/autonegotiation (auto), half duplex (half) or full duplex (full).

Finally, you will be asked if the values are correct, and may adjust them if necessary. After your confirmation the eRIC II performs a reset using the new values.

Note: These settings may also be configured using the web front end. See the Section called *Network* in Chapter 6 for details.

Web Interface

The eRIC II may be accessed using a standard Java enabled web browser. You may use the HTTP protocol or a secure encrypted connection via HTTPS. Just enter the configured IP address of the eRIC II into your web browser. Initially there is only one user configured who has unrestricted access to all eRIC II features:

Table 4-3. Standard User Settings

Parameter	Value
Login	super
Password	pass

Changing these settings to user specific values is strongly recommended and can be done on the "User Management" page (see the Section called *Users And Groups* in Chapter 6).

Mouse, Keyboard and Video configuration

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

eRIC II USB interface

To use the USB interface a correct cabling between the managed host and the managing device is necessary. If the managed host has no USB keyboard support in the BIOS and you have connected the USB cable only, then you will have no remote keyboard access during the boot process of the host. Please see the Section called *Keyboard/Mouse* in Chapter 6 for more details.

eRIC II Keyboard Settings

The eRIC II settings for the host's keyboard type have to be correct in order to make the remote keyboard work properly. Check the settings in the eRIC II front-end. See the Section called *Keyboard/Mouse* in Chapter 6 for details.

Remote Mouse Settings

A common problem with KVM devices is the synchronization between the local and remote mouse cursors. The eRIC II addresses this situation with an intelligent synchronization algorithm. There are three mouse modes available on the eRIC II .

Auto Mouse Speed

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

Fixed Mouse Speed

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

Single/Double Mouse Mode

This mode is described in the Section called *Single and Double Mouse Mode* .

Auto Mouse Speed and Mouse Synchronization

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

Fast Sync

The fast synchronization is used to correct a temporary but fixed skew. Choose the option from the Remote Console options menu. If defined you may also press the mouse synchronization hotkey sequence (see the Section called *Remote Console Control Bar* in Chapter 5 for details).

Intelligent Sync

If the fast sync does not work or the mouse settings have been changed on the host system, use the intelligent resynchronization. This method takes more time than the fast one and can be accessed with the appropriate item in the Remote Console option menu. The intelligent synchronization requires a correctly adjusted picture. Use the auto adjustment function or the manual correction in the Video Settings panel to setup the picture. The Sync mouse button on top of the Remote Console can behave differently, depending on the current state of mouse synchronization. Usually pressing this button leads to a fast sync, except in situations where the KVM port or the video mode changed recently. See also the Section called *Remote Console Control Bar* in Chapter 5 .

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

Host System Mouse Settings

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

Warning

The following limitations do not apply in case of USB and Mouse Type "MS Windows 2000 and newer" .

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

Special Mouse Driver

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

Windows 2003 Server/XP Mouse Settings

Windows XP knows a setting named "improve mouse acceleration" which has to be deactivated.

Active Desktop

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

See also the Section called *Recommended Mouse Settings* for mouse mode recommendations.

Navigate your mouse pointer into the upper left corner of the applet screen and move it slightly forth and back. Thus the mouse will be resynchronized. If resynchronizing fails, disable the mouse acceleration and repeat the procedure.

Single and Double Mouse Mode

The information above applies to the Double Mouse Mode where remote and local mouse pointers are visible and need to be synchronized. The eRIC II also features another mode, the Single Mouse Mode, where only the remote mouse pointer is visible. Activate this mode in the Remote Console (see the Section called *Remote Console Control Bar* in Chapter 5) and click into the window area. The local mouse pointer will be hidden and the remote one can be controlled directly. To leave this mode it is necessary to define a mouse hotkey in the Remote Console Settings Panel Press this key to free the captured local mouse pointer.

Recommended Mouse Settings

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

MS Windows NT4

NT4 supports PS/2, only. Please choose the options PS/2 mouse and Auto Mouse Speed.

MS Windows 2000, 2003, XP (all versions)

In general, we recommend the usage of a mouse via USB. Choose USB without Mouse Sync.

For a PS/2 mouse choose Auto Mouse Speed. For XP disable the option “enhance pointer precision” in the Control Panel.

Note: The remote mouse is always synchronized with the local mouse if selecting the option “MS Windows 2000 or newer” .

SUN Solaris

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

MAC OS X

We recommend using the Single Mouse Mode.

OS/2

We recommend using the Single Mouse Mode.

Linux

First, choose the option “Other Operating Systems” from the the Mouse Type selection box. Second, choose the option Auto Mouse Speed. This applies for both USB and PS/2 mice.

Resetting the eRIC II to its Factory Settings

Using the Serial Interface

Reset the eRIC II and immediately press the “ESC” key. On your screen a command prompt “ => ” will be visible. Enter “defaults” , press the “Enter” key and wait for a few seconds for the eRIC II to reboot. Now, you may use the default settings as described in the Section called *Initial Configuration* .

Chapter 5. Usage

Prerequisites

The eRIC II features an embedded operating system and applications offering a variety of standardized interfaces. This chapter will describe both these interfaces and the way to use them in a more detailed manner. The interfaces are accessed using the TCP/IP protocol family, thus they can be accessed using the built-in Ethernet adapter or a modem, too .

The following interfaces are supported:

HTTP/HTTPS

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

Simple Network Management Protocol (SNMP)

Any standard SNMP client can use this protocol. The according Management Information Base (MIB) can be found on the enclosed eRIC II CD ROM or can be retrieved using the eRIC II frontend.

Telnet

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

The primary interface of the eRIC II is the HTTP interface. This is covered extensively in this chapter. Other interfaces are addressed in subtopics.

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

Important: We recommend to install a Sun JVM 1.4.

For an insecure connection to the eRIC II we can recommend the following web browsers:

- Microsoft Internet Explorer version 5.0 or higher on Windows 98, Windows ME, Windows 2000 and Windows XP
- Netscape Navigator 7.0, Mozilla 1.6 and Mozilla Firefox on Windows 98, Windows ME, Windows 2000, Windows XP, Linux and other UNIX-like Operating Systems

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

Using the Internet Explorer, open the menu entry " ? " and "Info" to read about the key length that is currently activated. The dialog box contains a link that leads you to

information on how to upgrade your browser to a state of the art encryption scheme. Figure 5-1 shows the dialog box presented by the Internet Explorer 6.0.

Figure 5-1. The Internet Explorer displaying the encryption key length

Newer web browsers do support strong encryption on default.

Login into the eRIC II and logout

Login into the eRIC II

Open your web browser. Type in the address of your eRIC II which you configured during the installation process. The address used might be a plain IP address or a host and domain name, in case you have given your eRIC II a symbolic name in the DNS. For instance, type the following in the address line of your browser when establishing an unsecured connection:

```
http://192.168.1.22/
```

When using a secure connection type in:

```
https://192.168.1.22/
```

This will lead you to the eRIC II login page as shown in Figure 5-2 .

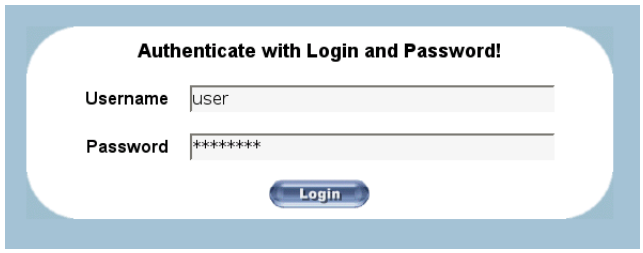


Figure 5-2. Login screen

The eRIC II has a built-in super user that has all permissions to administrate your eRIC II :

Table 5-1. Standard User Settings

Parameter	Value
Login	super
Password	pass

Note: The user “super” is not allowed to login via the serial interface of the eRIC II .

Warning

Please make sure to change the super user password immediately after you have installed and accessed your eRIC II for the first time. Not changing the pass phrase for the super user is a severe security risk and might result in unauthorized access to the eRIC II and to the host system including all possible consequences!

Warning

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

Navigation

Having logged into the eRIC II successfully, the main page of the eRIC II appears (see Figure 5-3). This page consists of three parts, each of them contains specific information. The buttons on the upper side allow you to navigate within the front end (see Table 5-2 for details). The lower left frame contains a navigation bar and allows you to switch between the different sections of the eRIC II . Within the right frame, task-specific information is displayed that depends on the section you have chosen before.

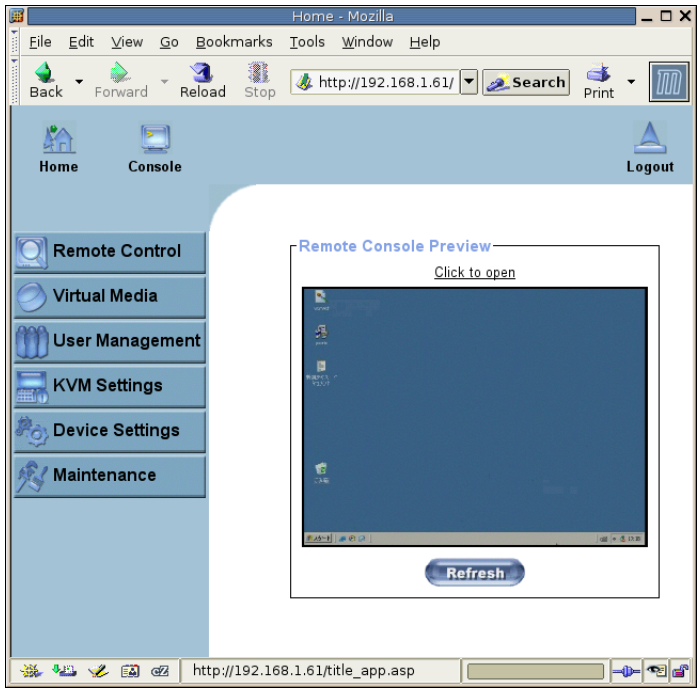


Figure 5-3. Main page

Table 5-2. Buttons from the front end

	Return to the main page of the eRIC II .
	Open the eRIC II Remote Console.
	Exit from the eRIC II front end.

Warning

If there is no activity for half an hour, the eRIC II will log you out automatically. A click on one of the links will bring you back to the login screen.

Logout from the eRIC II

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

The Remote Console

General Description

The Remote Console is the redirected screen, keyboard and mouse of the remote host system that eRIC II controls.

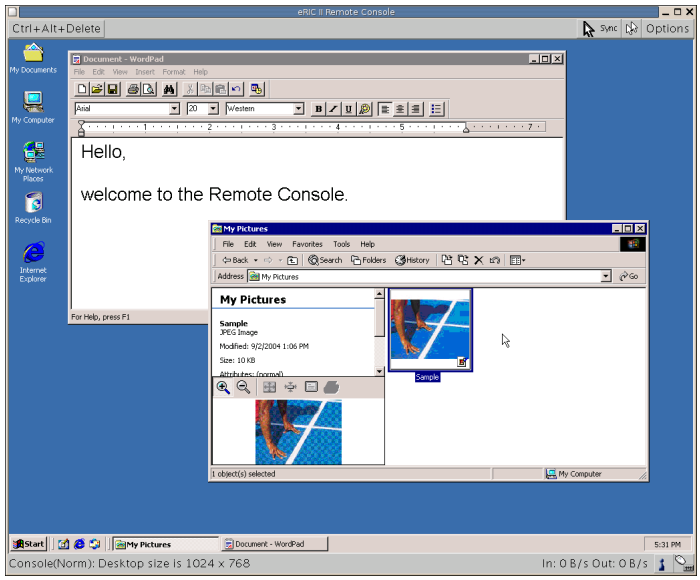


Figure 5-4. Remote Console

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

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

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

Main Window

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

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

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

Warning

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

Remote Console Control Bar

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

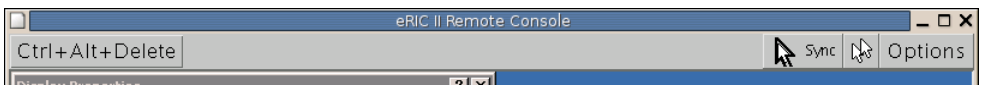
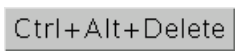


Figure 5-5. Remote Console Control Bar

Ctrl+Alt+Delete 

Special button key to send the “Control Alt Delete” key combination to the remote system (see also the Section called *KVM Settings* in Chapter 6 for defining new button keys).

Note: For the user “super” this button exists on default. Other users have to define this button on their own.

Sync Mouse 

Choose this option in order to synchronize the local with the remote mouse cursor. This is especially necessary when using accelerated mouse settings on the host system. In general, there is no need to change mouse settings on that.

Single/Double Mouse mode 

Switches between the Single Mouse Mode (where only the remote mouse pointer is visible) and the Double Mouse Mode (where remote and local mouse pointers

are visible and need to be synchronized). Single mouse mode is only available if using SUN JVM 1.4 or higher.

Options 

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

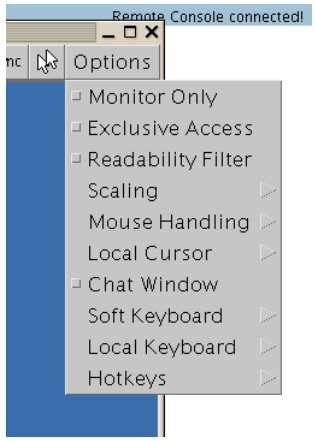


Figure 5-6. Remote Console Options Menu

A short description of the options follows.

- Monitor Only

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

- Exclusive Access

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

  A change in the access mode is also visible in the status line. See the Section called *Remote Console Status Line* for more information.

- Readability Filter

  Toggles the Readability Filter on or off. If the filter is switched on in scaling mode, it will preserve most of the screen details even if the image is substantially scaled down. This option will be available only with a JVM 1.4 or higher.

- Scaling

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

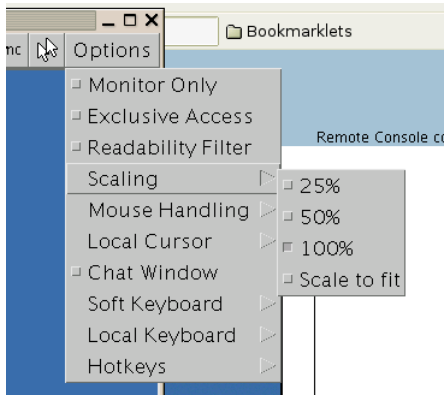


Figure 5-7. Remote Console Options Menu: Scaling

- Mouse Handling

  The submenu for mouse handling offers two options for synchronizing the local and the remote mouse pointer as explained in the Section called *Mouse, Keyboard and Video configuration* in Chapter 4 .

  - Fast Sync

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

  - Intelligent Sync

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

> **Warning**
>
> This method takes more time than the fast one and requires a correctly adjusted picture. To setup the picture you may use either the auto adjustment function or the manual correction in the Video Settings panel .

- Local Cursor

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

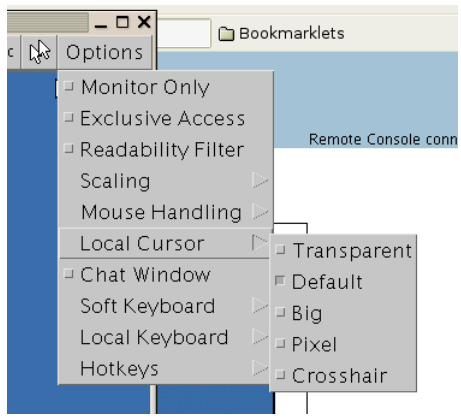


Figure 5-8. Remote Console Options Menu: Cursor

- Chat Window

  The eRIC II Remote Console features a Chat Frame that allows you to communicate with other parties logged into the same card. Figure 5-9 shows an example of the Chat Frame.

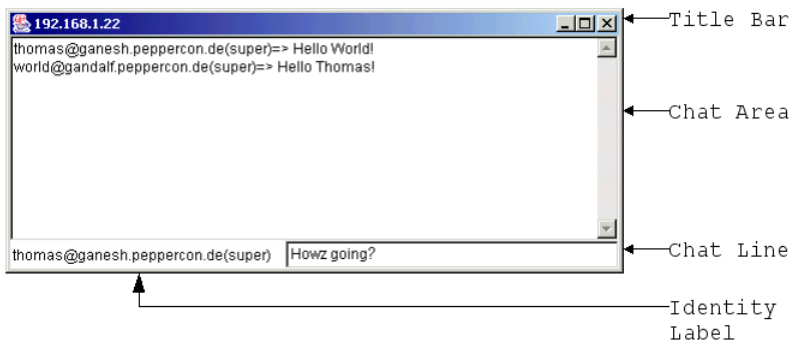


Figure 5-9. Chat Window

The Chat Frame is helpful especially for discussing problems and questions among the users logged into the eRIC II . The remote host's screen should not be changed or misused for that purpose.

Title Bar

Shows the IP address of the eRIC II you are connected to.

Chat Area

Read-only text area showing the messages, which have been received so far, including your own messages sent to others. The identity string of the sender precedes each message.

Identity Label

Shows the identity string used to precede messages sent by this Chat Frame.

The first part of the identity string is the user ID that has been used to log into the client system, i.e. the system the browser runs on. The second

part, behind the " @ " , is the hostname of the client system. The last part in round brackets is the user who logged into the eRIC II . As displayed in Figure 5-9 , it is the user "super" .

Chat Line

This is an editable text line, where a new message can be entered. Once the Enter key is hit the message is broadcasted to every other connected party. In case a connected user has not yet opened the Chat Frame it will be opened automatically in order to receive and display the delivered message.

Warning

Any message sent to the Chat will be broadcasted to all connected users, which are using the Remote Console at the time the message was sent. There is no option to direct a message to a particular user only.

The Chat has no message history. That means, messages will be received only after opening the Remote Console. Messages that possibly have been sent among other users will be lost for a user who opens up his Remote Console afterwards.

- Refresh Video

  Use this option to refresh the video picture.

- Soft Keyboard

  Opens up the Menu for the Soft-Keyboard.

Figure 5-10. Soft Keyboard

- Show

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

- Mapping

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

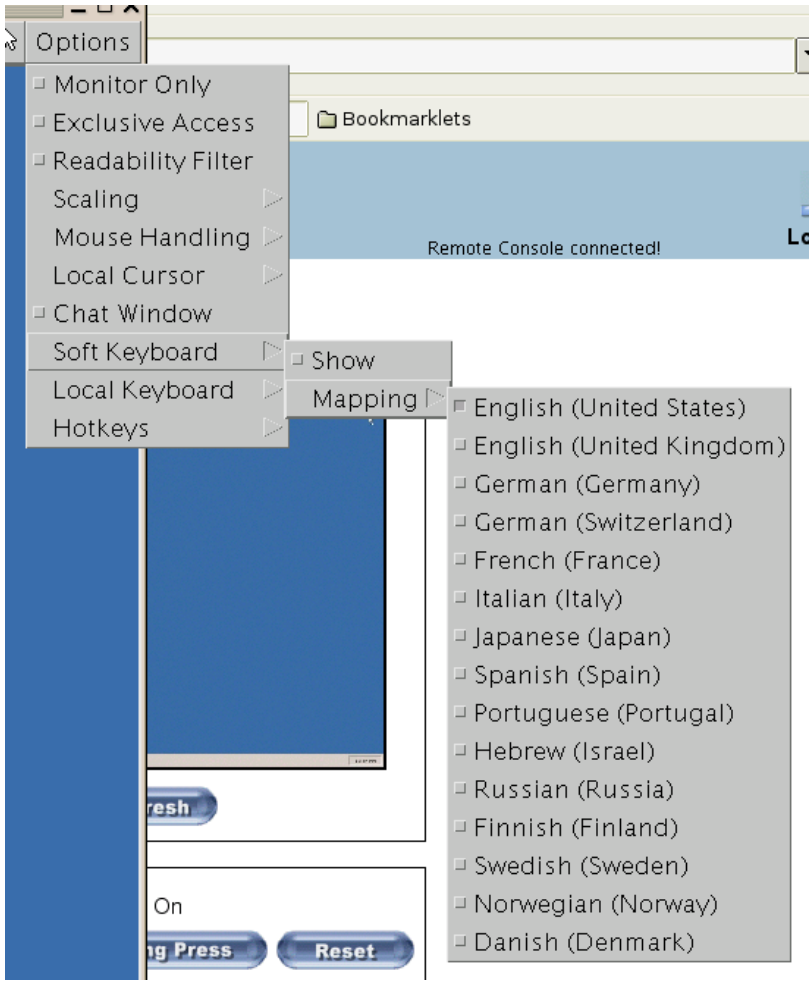


Figure 5-11. Soft Keyboard Mapping

- Local Keyboard

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

- Hotkeys

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

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

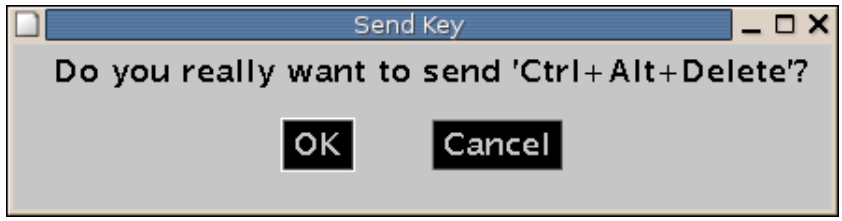


Figure 5-12. Remote Console Confirmation Dialog

Remote Console Status Line

The status line shows both console and the connection state. On the left the size of the remote screen is displayed. Figure 5-13 was taken from a Remote Console with a resolution of 800x600 pixels (see Appendix C for a list of screen resolutions that can be displayed using the eRIC II). The value in brackets describes the connection to the Remote Console. “Norm” means a standard connection without encryption, “SSL” indicates a secure connection using SSL.

Figure 5-13. Status line

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

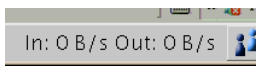


Figure 5-14. Status line transfer rate

The next button displays the Remote Console Access settings.

Table 5-3. Buttons displaying the access state

	One single user is connected to the Remote Console of the eRIC II .
	One or more users are connected to the Remote Console of the eRIC II .
	Exclusive access is set for you. Any other user may not access the remote host via Remote Console unless you disable this option.

A remote user has exclusive access. You may not access the remote host via Remote Console unless the other user disables this option.

The outer right button displays the state of the Monitor Only settings.

Table 5-4. Buttons displaying the Monitor Only state

The option Monitor Only is disabled.

The option Monitor Only is enabled.

For more information about Monitor Only and Exclusive Access settings see the according sections in the Section called *Remote Console Control Bar* .

Chapter 6. Menu Options

Remote Control

KVM Console

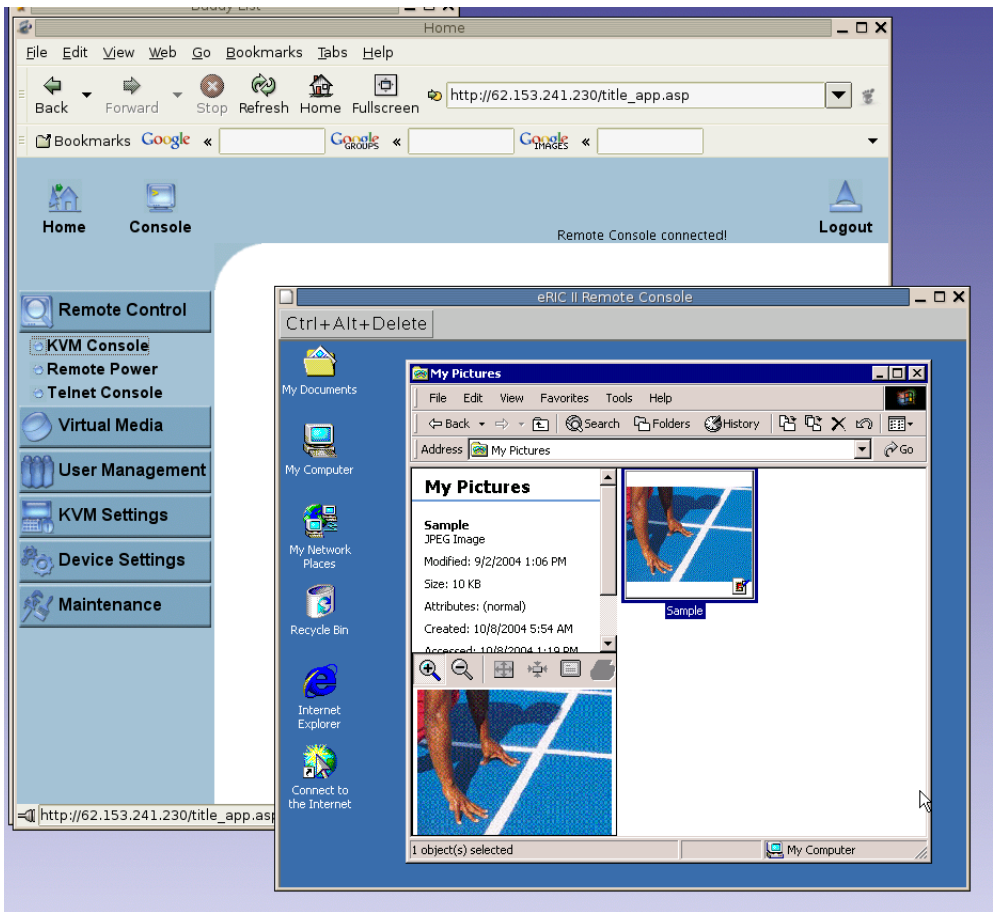


Figure 6-1. KVM Console

Remote Console Preview

To open the KVM console either click on the menu entry on the left or on the console picture on the right. To refresh the picture click on the button that is named “Refresh” .

Remote Power

The power button is the representation of the ATX power button on your host system. It is used to switch on and off the power supply. The ATX power button knows two operation modes: pressing it shortly and pressing it for about 4 seconds.

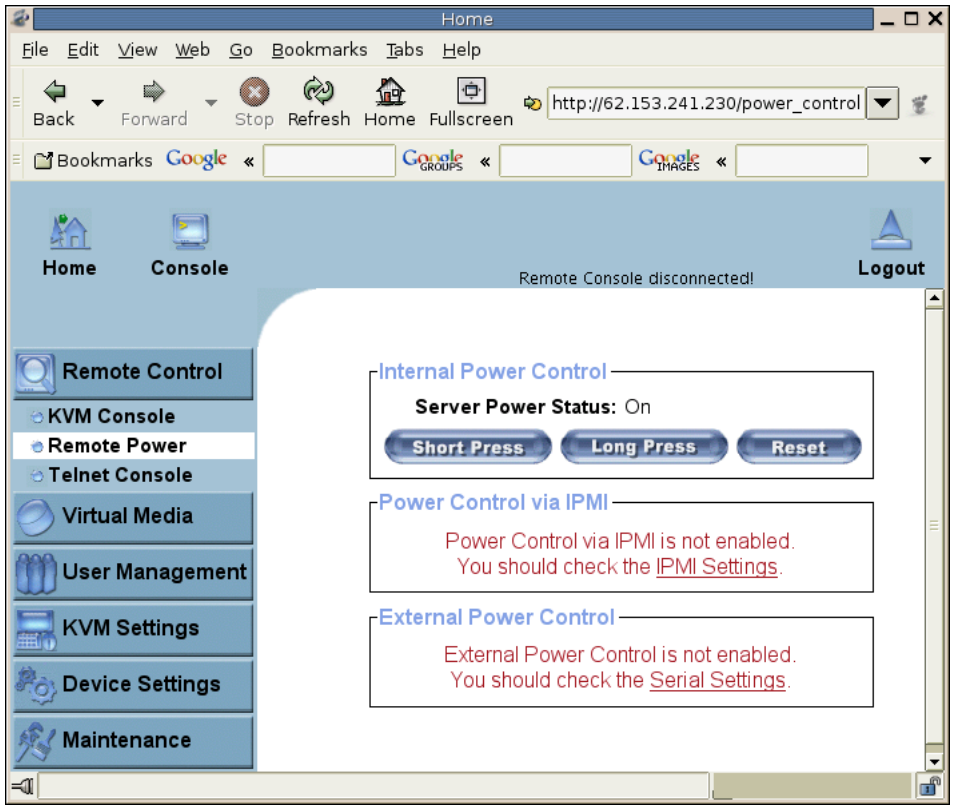


Figure 6-2. eRIC II Power Buttons

As shown in Figure 6-2 these two modes are supported separately.

Short Press

A short press on the ATX button is normally caught by the running operating system that tries to initiate a controlled shutdown.

Usually this should always be the first action you try in case you would like to power off your system. Only in case this is not working you should try the long press button.

Please note that after you have pressed this button the power state displayed in the administration panel will not immediately reflect the requested change. A controlled shut down of the system may take some minutes. You can observe the action caused by your button press using the Remote Console window or by reloading the Server Power Control panel.

Long Press

This will unconditionally power off the system. Even if you have submitted a short press before, this will shut down the power supply of the host system.

The effect of the long button press can be immediately observed on the panel that is loaded into the browser because of the button press. The power state will be off.

Reset

Pressing this button is similar to pressing the reset button directly on the remote system . Be aware that pressing the reset button will result in an unconditional

and immediate cold start of the system. This might damage open files and the file system itself.

Warning

The prerequisite for the remote power/reset button to work is a correct installation of the eRIC II .

Telnet Console

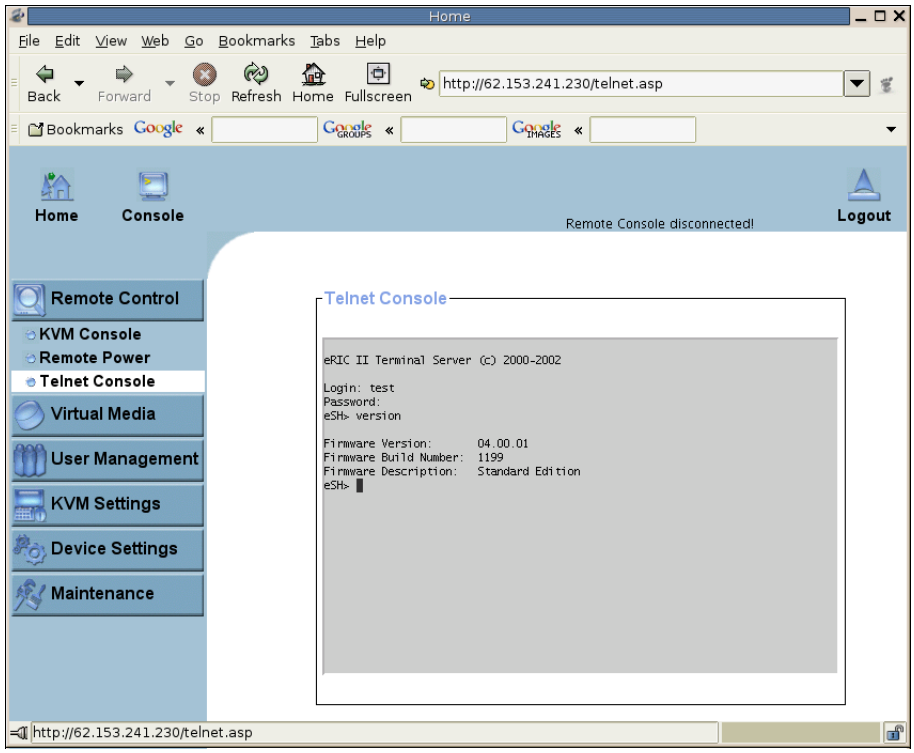


Figure 6-3. Telnet Console

The eRIC II firmware features a Telnet gateway that enables a user to connect to the eRIC II via a standard Telnet client.

For connecting to the eRIC II via Telnet protocol you may use a terminal program such as `xterm`, `TeraTerm` or `Putty`. As an alternative you may also enter the `telnet` command on the command line or use the "Run" dialog from the Windows Start Menu. As an example you may type the following sequence:

```
telnet 192.168.1.22
```

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

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

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

The following list shows the command syntax and their usage.

help

Displays the list of possible commands

cls

Clears the screen

quit

Exits the current session and disconnects from the client

version

Displays the release information

power [on | off [short | long]]

The host is powered on or off. If no new power state is given, the current state will be displayed. The given attribute (either short or long) will determine the ATX duration. The default value is short.

reset [host | card]

Resets the given target, the host system or the eRIC II card. If no reset target is given it defaults to “host” . Note that resetting the eRIC II results in disconnecting every client. This includes also the client the reset command was sent from.

terminal

Starts the terminal pass-through mode for serial port #1. The key sequence `esc exit` switches back to the command mode. The command has an optional parameter (1 or 2) to select the desired serial port for pass-through access.

Virtual Media

Floppy Disk

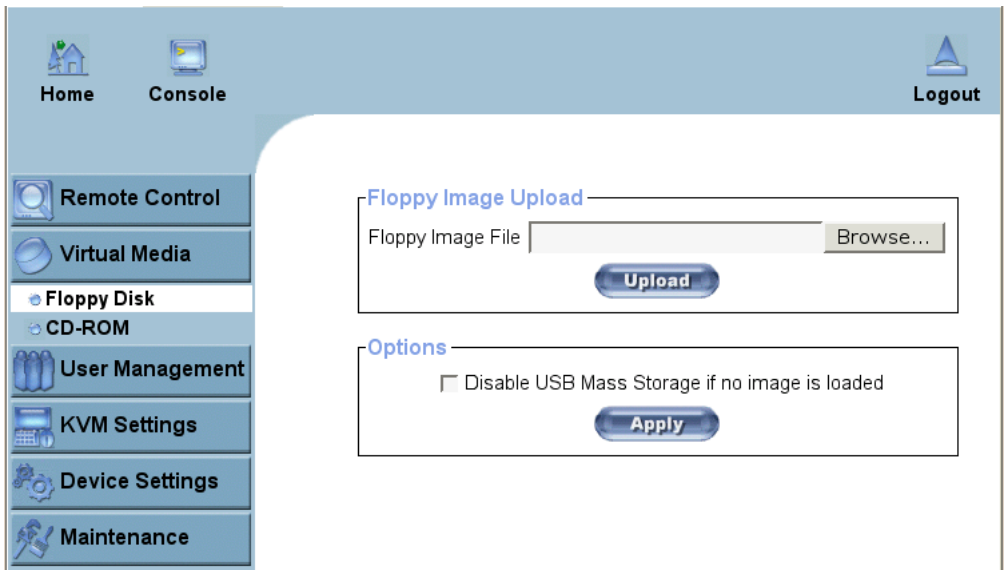


Figure 6-4. Virtual Floppy Area

Upload a Floppy Image

Within two small steps working on the basis of a certain (floppy) image can be achieved.

- First the path of the image has to be specified. You can do that either by hand or by using the file selection dialog of your web browser. To open the file selection dialog click on the button “Browse” and select the desired image file.

Figure 6-5. Select Image File

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

- Secondly, click on the button “Upload” to initiate the transfer of the chosen image file into the eRIC II ’s on-board memory. This image file is kept in the on-board

memory of the eRIC II until the end of the current session, until you logged out or initiated a reboot of the eRIC II .

Options

Figure 6-6. USB mass storage option

Set this option to disable the mass storage emulation (and hide the virtual drive) if no image file is currently loaded. If unset and no file image will be found, it may happen that the host system will hang on boot due to changes in the boot order or the boot manager (LILO, GRUB). This case was reported for some Windows versions (2000, XP), other OS may not be fully excluded. This behaviour depends on the BIOS version used in that machine.

To set this option press the button “Apply” .

CD ROM

Use Image on Windows Share (SAMBA)

To include an image from a Windows share select “ CD-ROM ” from the submenu.

Figure 6-7. Selecting CD ROM

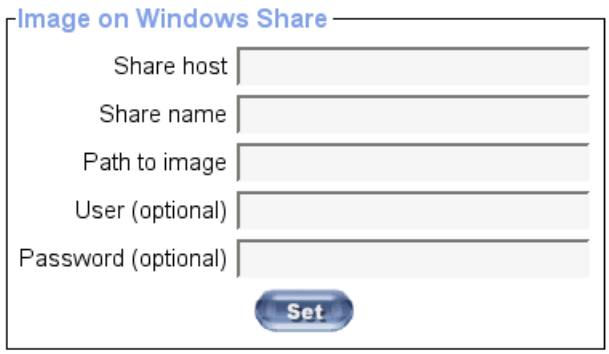


Figure 6-8. Select Windows Share

The following information has to be given to mount the selected image properly:

Share host

The server name or its IP address. On Windows 95, 98 and Windows ME do not specify the IP address but the server name (“NetBIOS Name”).

Share name

The name of the share to be used.

Path to image

The path of the image file on the share.

User (optional)

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

Password (optional)

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

To register the specified file image and its location click on the button “Set” .

The specified image file is supposed to be accessible from the eRIC II . The information above has to be given from the point of view of the eRIC II . It is important to specify correct IP addresses and device names. Otherwise, the eRIC II may not be able to access the referenced image file properly, leave the given file unmounted and will display an according error message, instead. So, we recommend to state correct values and repeat this step if necessary.

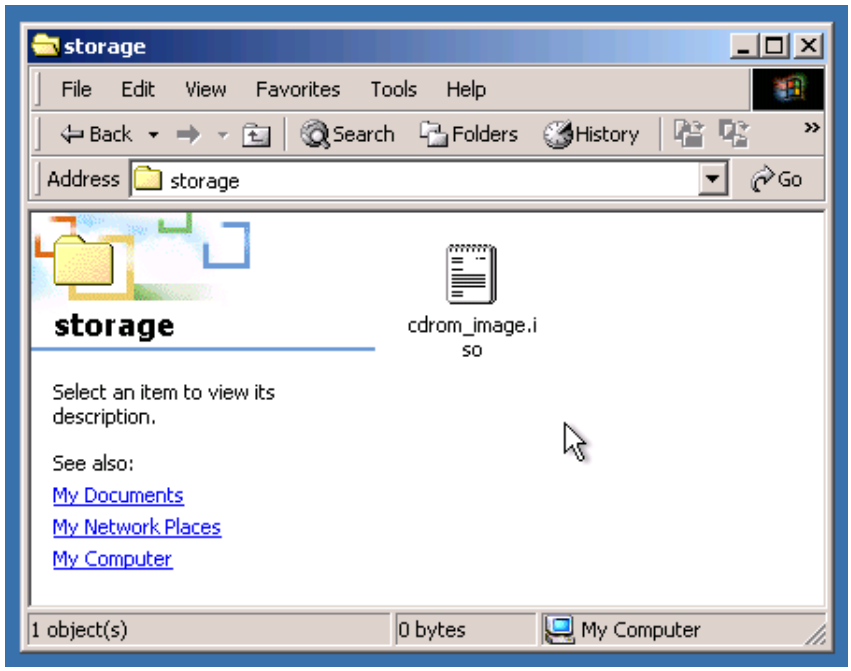


Figure 6-9. The image file on the share

Furthermore, the specified share has to be configured correctly. Therefore, administrative permissions are required. As a regular user you may not have these permissions. You should either login as a system administrator (or as "root" on UNIX systems) or ask your system administrator for help to complete this task.

Windows 2000/XP

Open the Explorer, navigate to the directory (or share) and press the right mouse button to open the context menu. Select "Sharing" to open the configuration dialog (see Figure 6-10).

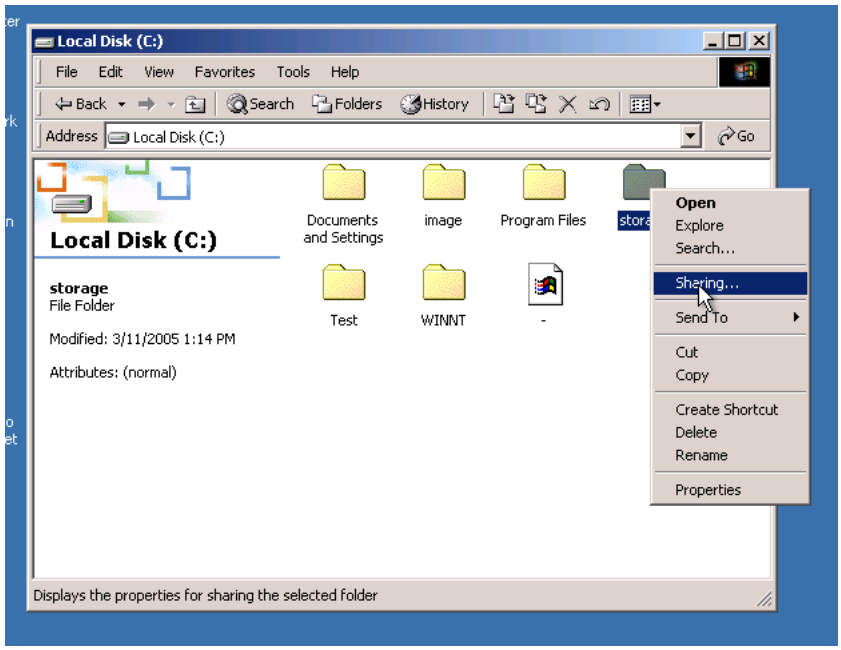


Figure 6-10. Explorer Context Menu

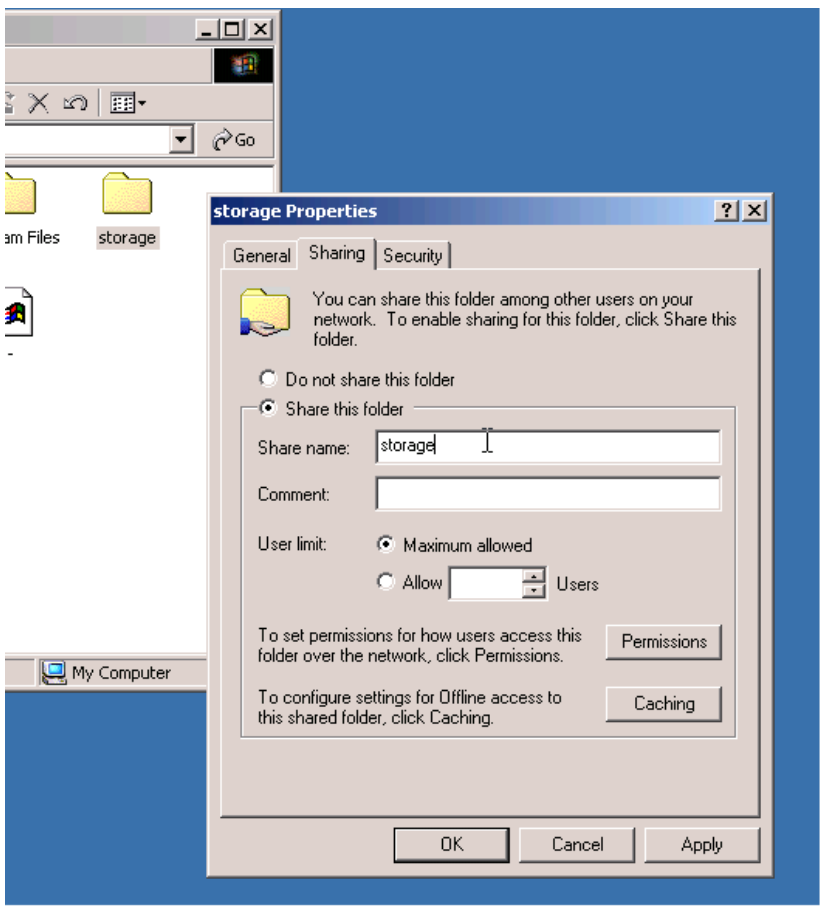


Figure 6-11. Share configuration dialog

Adjust the settings for the selected directory.

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

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

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

For additional options see the Section called *Options* for details.

Creating an Image

Floppy Images

UNIX and UNIX-like OS

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

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

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

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

MS Windows

You can use the tool “RawWrite for Windows” .

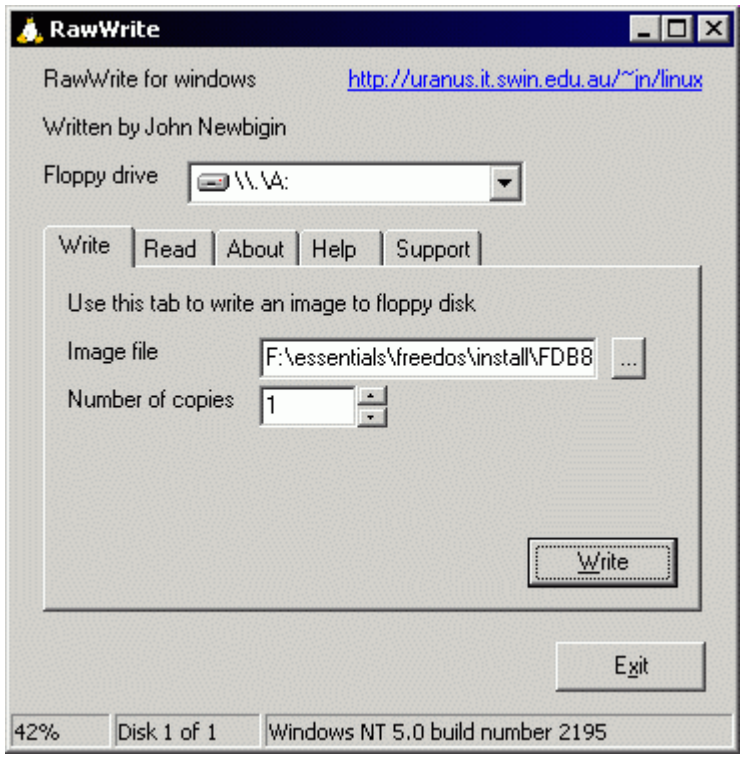


Figure 6-12. RawWrite for Windows selection dialog

Select the tab "Read" from the menu. Enter (or choose) the name of the file in which you would like to save the floppy content. Click on the button "Copy" to initiate the image creation process.

For related tools you may have a look at the homepage of the fdos project (`http://www.fdos.org/ripcord/rawrite/`).

CD ROM/ISO 9660 Images

UNIX and UNIX-like OS

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

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

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

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

MS Windows

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

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

Figure 6-13. Nero selection dialog

User Management

Change Password

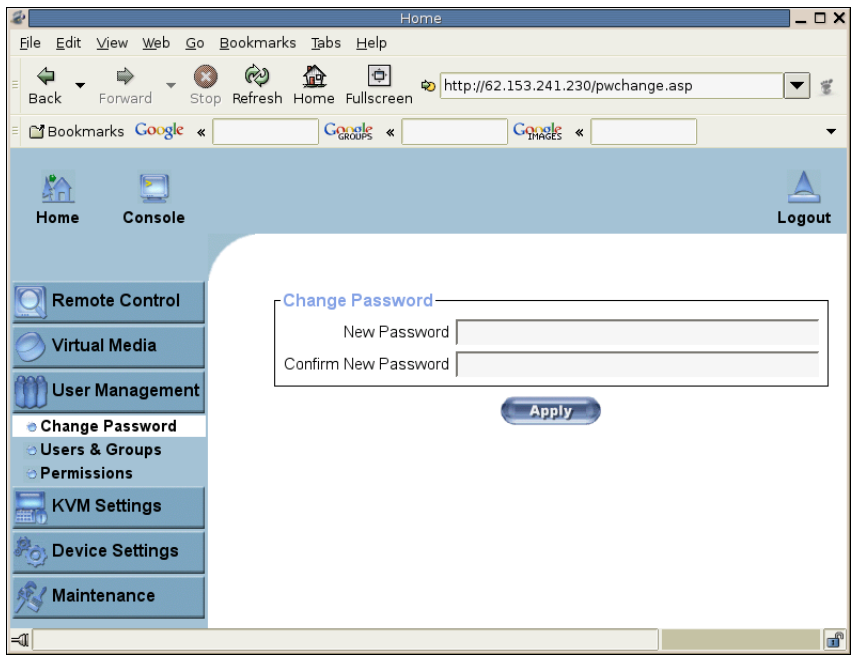


Figure 6-14. Set password

To change your password enter the new password in the upper entry field. Retype the password in the field below.

Click “Apply” to submit your changes.

Users And Groups

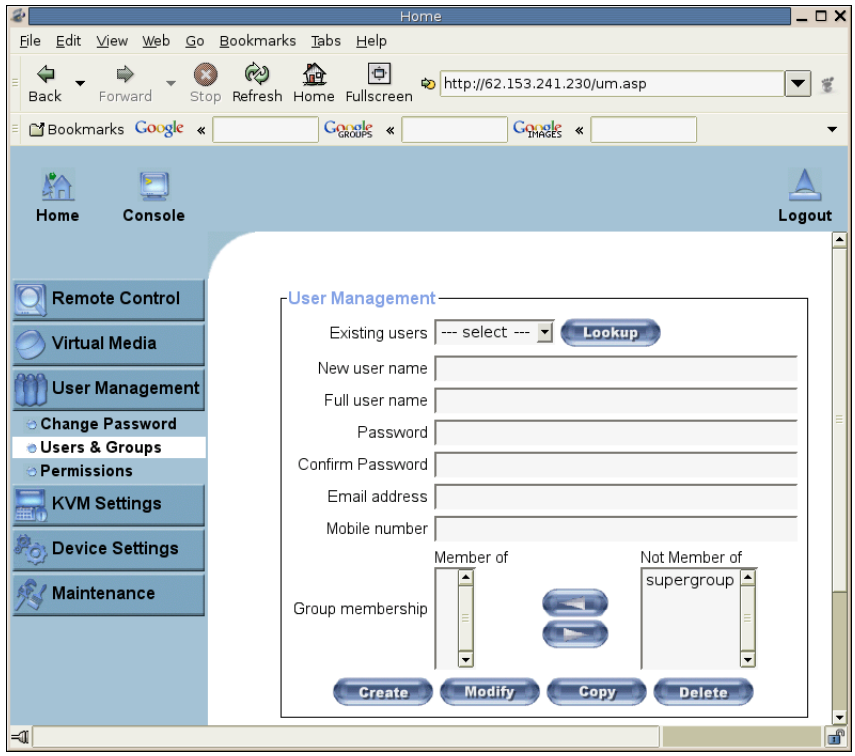


Figure 6-15. Set User

User Management

The user and group management of the eRIC II is based on configurable users and groups. Each user or group may have different permissions.

Upon delivery, each eRIC II is pre-configured with a supervisor user called “super” having the password “pass” . Make sure to change the super user password immediately after you have installed and firstly accessed your eRIC II .

Figure 6-15 shows the User/Group Management panel.

Existing users

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

New User name

The new user name for the selected account.

Password

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

Confirm password

Confirmation of the password above.

Email address

This is optional.

Mobile number

This information may be optionally provided.

Group membership

Each user can be a member of one or more groups. Select an entry in either the field “Member of” or “Not Member of” and press the arrow buttons to change the group membership for a user.

Note: The number of user profiles is limited to 150. The number of users that make use of the eRIC II at the same time should not exceed the value of 25.

Group Management

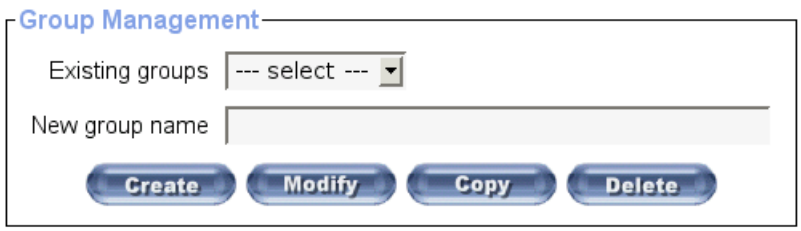


Figure 6-16. Group Management

Existing groups

Selects an existing group for copying, modification or deletion.

New group name

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

For the buttons see the description below.

Examples

The user management of the eRIC II allows many different users. The following examples will describe how to add, change and delete users and group assignments.

Add a User

Fill out the fields “New user name” , “Full user name” , “Password” and “Confirm password” . If desired select the groups the new user should become a member of. Click on the button “Create” in the User Management section to finish the User creation process.

Delete a User

Choose a user from the “Existing user” selection box, first. Click on the button “Lookup” . The complete user information will be displayed. Click on the button “Delete” in the User Management section to delete the selected user.

The user “super” cannot be deleted but renamed if necessary.

Modify a User

Choose a user from the “Existing user” selection box, first. Click on the button “Lookup” 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 finished click on the button “Modify” in the User Management section.

Copy User

Choose a user from the “Existing user” selection box. Enter a new user name in the field “New user name” . Click on the button “Copy” in the User Management section. This will result in the creation of a new user with the given name. The properties of the selected user will be copied to the new one except from the user specific permissions.

Add a Group

Type the name of the new group into the entry field “New group name” and click on the button “Create” in the Group Management section.

Delete a Group

Choose a group from the “Existing group” selection box, first. Click on the button “Delete” in the Group Management section to delete the chosen group.

Modify a Group

To modify an existing group choose the desired group from the “Existing group” selection box, first. The group’s name field can be modified. Finally, click on the button “Modify” in the Group Management section.

Copy a Group

Choose a group from the “Existing group” selection box, first. Type the name of the new group into the field “New group name” . Click on the button “Copy” that will result in the creation of a new group. Both the properties and the permissions of the selected group will be copied to the newly created group.

User/Group Permissions

A set of permissions is assigned to each user or group. These rights are used to authorize the access to certain eRIC II functions for a particular user. By default the user “super” has all the permissions. His permissions cannot be minimized. A newly created user or group has no permissions. A user will inherit the permissions of all groups he belongs to.

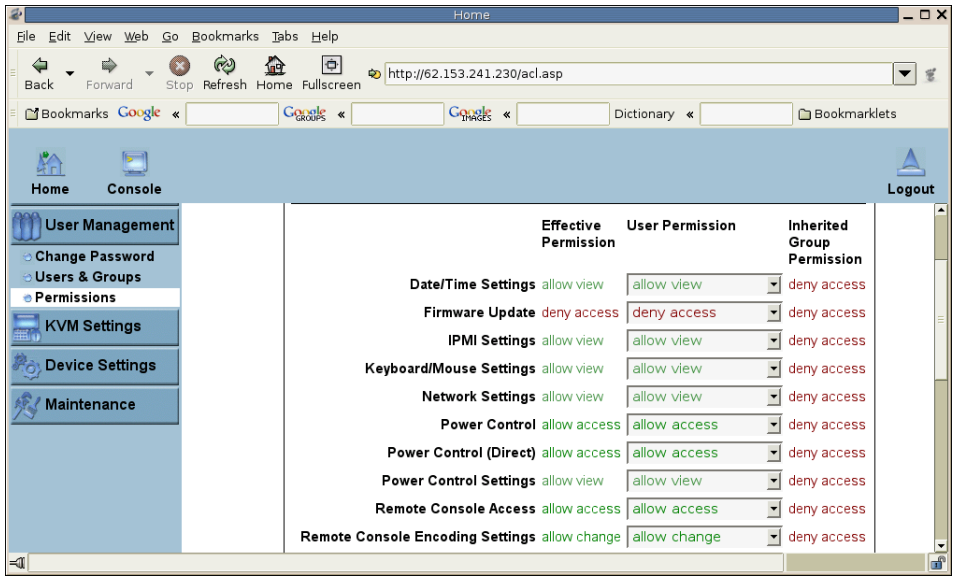


Figure 6-17. User Permissions (example)

The User/Group Permissions panel as shown in Figure 6-17 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 automatically has the right to change his permissions. More general, a certain user has the right to change another user's or group's permissions in case he is in a higher position in the ancestry than the other one. The user "super" stands at the top (or is 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 will not 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.

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 on the button "Update" will display the permission list of that user. Every right in the list has a permission value, which is explained in Table 6-1 .

The displayed columns differ depending on the user/group selected and the user who is currently logged in:

Effective Permission

The final permission which decides if a user may access a specific eRIC II function or not.

User Permission

Permission for the currently selected user/group. If the user selected is equal to the one logged in it is only possible to view the value, otherwise a select box appears to change the value.

Inherited Group Permission

Permission value inherited from the groups a user belongs to. This column is not available while a group is selected.

Table 6-1. eRIC II user and group permissions

Field	Description
deny access	The user cannot use this function.
allow view	The user can view the entry.
deny change	The user cannot change the entry's settings.
allow access	The user can use this function.
group setting	No permission, use the one inherited from the group(s) the user belongs to. Default is to deny the access.

KVM Settings

User Console

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

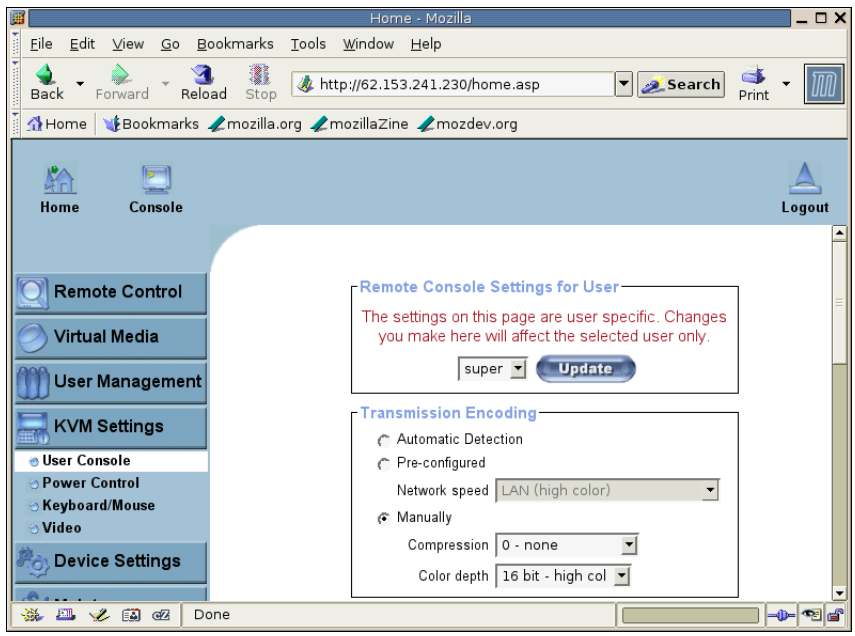


Figure 6-18. User Console Settings (Part 1)

Remote Console Settings for User

This selection box displays the user ID for which the values are shown and for which the changes will take effect. Select the desired user from the selection box and press the button “Update” . This will result in displaying the according user settings below.

> **Note:** You are allowed to change the settings of other users only if you have the necessary access rights for this task. For a regular user without the correct permissions it is not possible to change the settings for any other users.

Transmission Encoding

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

Automatic detection

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

Pre-configured

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

Manually

Allows to adjust both compression rate and the colour depth individually. Depending on the selected compression rate the data stream between the eRIC II and the Remote Console will be compressed in order to save bandwidth. Since high compression rates are very time consuming, they should not be used while several users are accessing the eRIC II simultaneously.

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

Remote Console Type

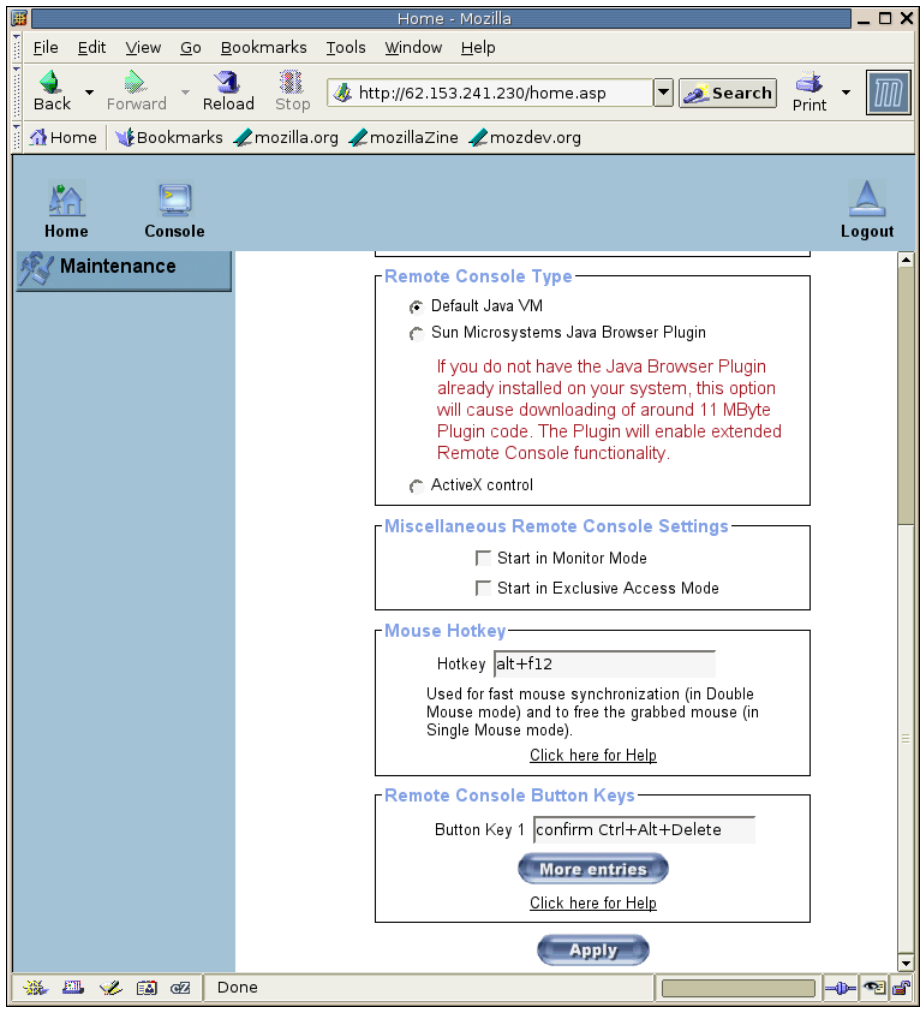


Figure 6-19. User Console Settings (Part 2)

Specifies which Remote Console Viewer to use.

Default Java Virtual Machine (JVM)

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

Sun Microsystems Java Browser Plugin

Instructs the web browser of your administration system to use the JVM of Sun Microsystems. The JVM in the browser is used to run the code for the Remote Console window which is actually a Java Applet. If you check this box for the first time on your administration system and the appropriate Java plug-in is not yet installed on your system, it may be downloaded and installed automatically. However, in order to make the installation possible, you still have to answer the according dialogs with “yes” . The download volume is around 11 Mbytes. The advantage of downloading Sun’s JVM is the usage of a stable and identical JVM

across different platforms. The Remote Console software is optimized for this JVM version and offers a 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.)

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.

> **Note:** You may use the KVM Vision Viewer as delivered on the CD ROM enclosed with the eRIC II or download the latest KVM Vision Viewer release from Peppercon 's website at `http://www.peppercon.com/` in section "Tools" .

Miscellaneous Remote Console Settings

Start in Monitor Mode

Sets the initial value for the monitor mode. By default the monitor mode is disabled. 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. Nobody else can open the Remote Console at the same time again until you disable this feature or log off.

Mouse Hotkey

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

Remote Console Button Keys

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

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

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

"keycode" is the key to be sent. Multiple key codes can be concatenated with a plus or a minus sign. The plus sign builds key combinations, all keys will be pressed until a minus sign or the end of the combination is encountered. In this case all pressed keys will be released in reversed sequence. So the minus sign builds single, separate

keypresses and -releases. The star inserts a pause with a duration of 100 milliseconds. For a list of key codes and aliases the eRIC II recognizes refer to Appendix D .

Note: If you need more button keys than shown use the button “More entries” . This will open a list of additional entry fields.

Power Control

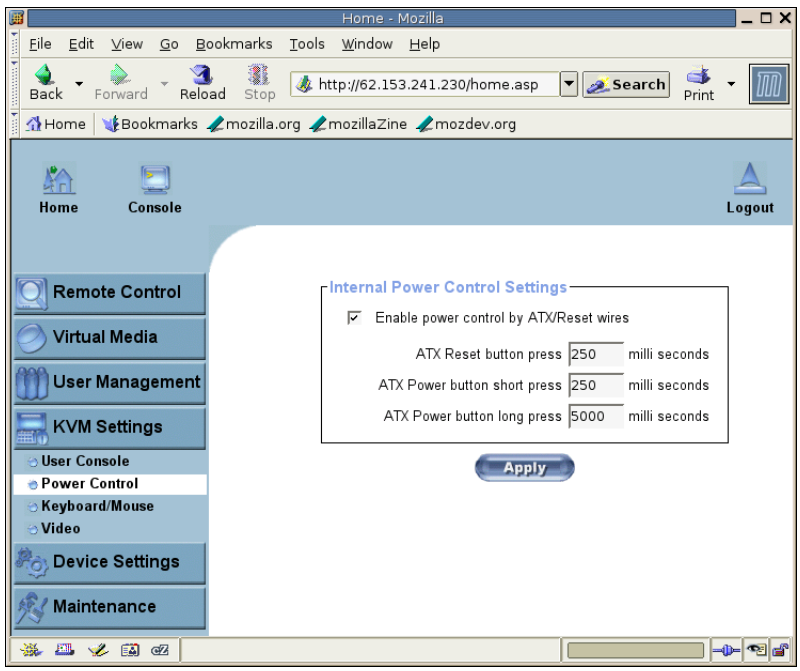


Figure 6-20. Power Control

The Power Control panel enables the access to the most important external buttons of your host system besides from the keyboard. These buttons are the reset and the power button.

To enable power control by ATX/Reset wires, set this option. Furthermore, the duration the according button is pressed can be adjusted. Set the duration for

- ATX Reset button press
- ATX Power button short press
- ATX Power button long press

Then, click “Apply” to submit your changes.

Keyboard/Mouse

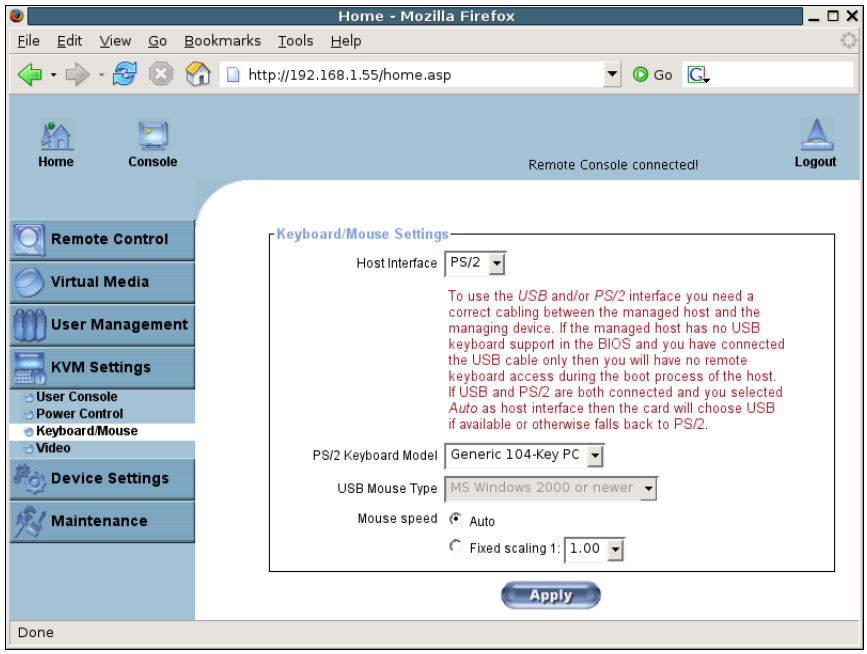


Figure 6-21. Keyboard and Mouse Settings

Host Interface

Enables a certain interface the mouse is connected to. You can choose between “Auto” for automatic detection, “USB” for a USB mouse and “ PS/2 ” for a PS/2 mouse.

> **Warning**
>
> To use the USB and/or PS/2 interface you need a correct cabling between the managed host and the managing device. If the managed host has no USB keyboard support in the BIOS and you have connected the USB cable only then you will have no remote keyboard access during the boot process of the host. If USB and PS/2 are both connected and you selected “Auto” as host interface, then the card will select “USB” if available or otherwise falls back to “ PS/2 ” .

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

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

PS/2 Keyboard Model

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

USB Mouse Type

Enables the USB mouse type. Choose an appropriate option from the selection box. For a detailed description about the mouse type and recommended options for the different operating systems see the Section called *Recommended Mouse Settings* in Chapter 4 .

Mouse Speed

- Auto mouse speed

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

- Fixed mouse speed

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

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

To set the options click on the button "Apply" .

Video

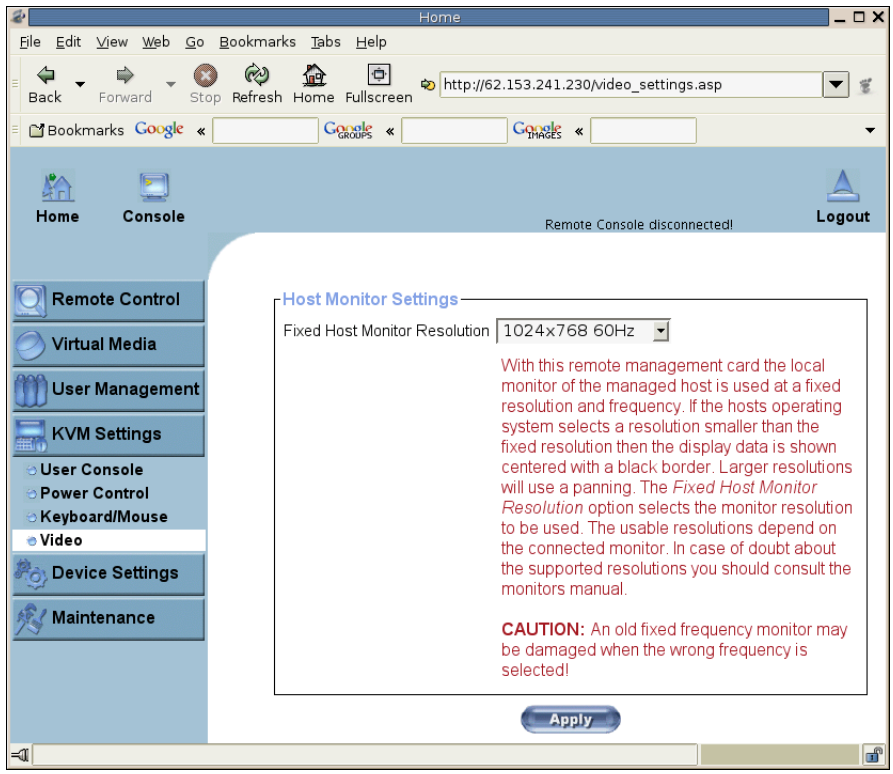


Figure 6-22. Video Settings

To set the options (see below) click on the button “Apply” .

Host Monitor Settings

From the selection box, choose the desired screen resolution for the local monitor.

> **Warning**
>
> An old fixed frequency monitor may be damaged if the wrong frequency is selected!

Device Settings

Network

The Network Settings panel as shown in Figure 6-23 allows changing network related parameters. Each parameter will be explained below. Once applied the new network settings will immediately come into effect.

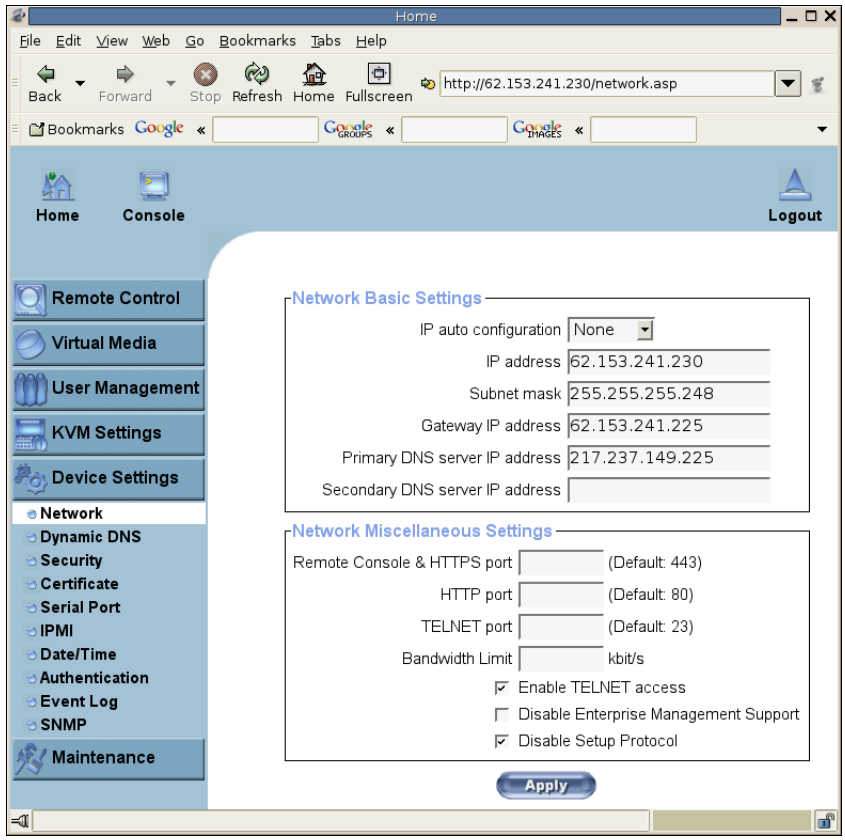


Figure 6-23. Network Settings

> **Warning**
>
> The initial IP configuration is usually done directly at the host system using the special procedure described in Table 4-1 .

> **Warning**
>
> Changing the network settings of the eRIC II might result in losing connection to it. In case you change the settings remotely make sure that all the values are correct and you still have an option to access the eRIC II .

Basic Network Settings

IP auto configuration

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

IP address

IP address in the usual dot notation.

Subnet Mask

The net mask of the local network.

Gateway IP address

In case the eRIC II 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 eRIC II will not be able to perform name resolution.

Secondary DNS Server IP Address

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

Miscellaneous Network Settings

Remote Console And HTTPS port

Port number at which the eRIC II 's Remote Console server and HTTPS server are listening. If left empty the default value will be used.

HTTP port

Port number at which the eRIC II 's HTTP server is listening. If left empty the default value will be used.

Telnet port

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

Bandwidth Limit

The maximum network traffic generated through the eRIC II Ethernet device. Value in Kbit/s.

Enable Telnet access

Set this option to allow accessing the eRIC II using the Telnet gateway (see the Section called *Telnet Console*).

Disable Enterprise Mangement

With this option you may exclude the eRIC II from management by a Peppercon-EMX .

Disable Setup Protocol

Enable this option to exclude the eRIC II from the setup protocol.

Dynamic DNS

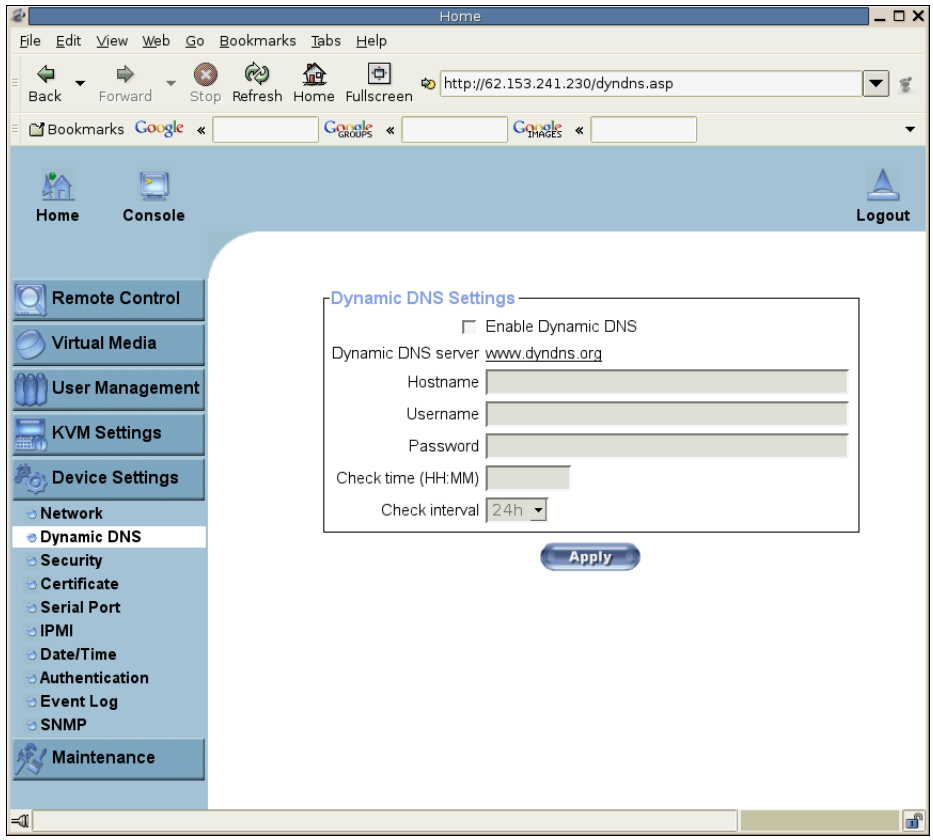


Figure 6-24. Dynamic DNS

A freely available Dynamic DNS service (`dyndns.org`) can be used in the following scenario (see Figure 6-25):

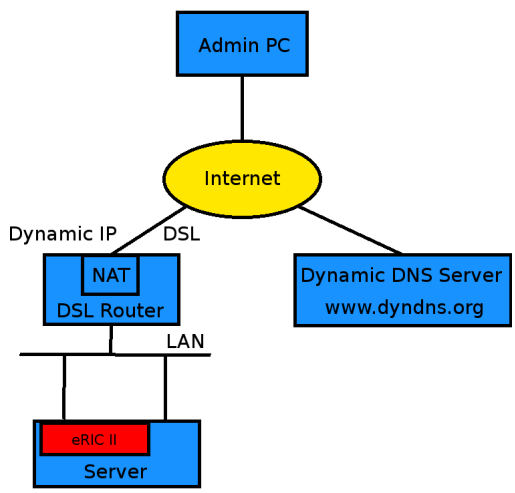


Figure 6-25. Dynamic DNS Scenario

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

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

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

- Make sure that the LAN interface of the eRIC II is properly configured.
- Enter the Dynamic DNS Settings configuration dialog as shown in Figure 6-24 .
- Enable Dynamic DNS and change the settings according to your needs (see below).

Enable Dynamic DNS

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

Dynamic DNS server

This is the server name where eRIC II registers itself in regular intervals. Currently this is a fixed setting since only `dyndns.org` is supported for now.

Hostname

This is the hostname of the eRIC II that is provided by the Dynamic DNS Server. (use the whole name including the domain, e.g. `testserver.dyndns.org` , not just the actual hostname).

Username

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

Password

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

Check time

The eRIC II card registers itself in the Dynamic DNS server at this time.

Check interval

This is the interval for reporting again to the Dynamic DNS server by the eRIC II .

Warning

The eRIC II has its own independent real time clock. Make sure the time setting of the eRIC II is correct. This can be achieved by configuring a timeserver (see the Section called *Date And Time*).

Security

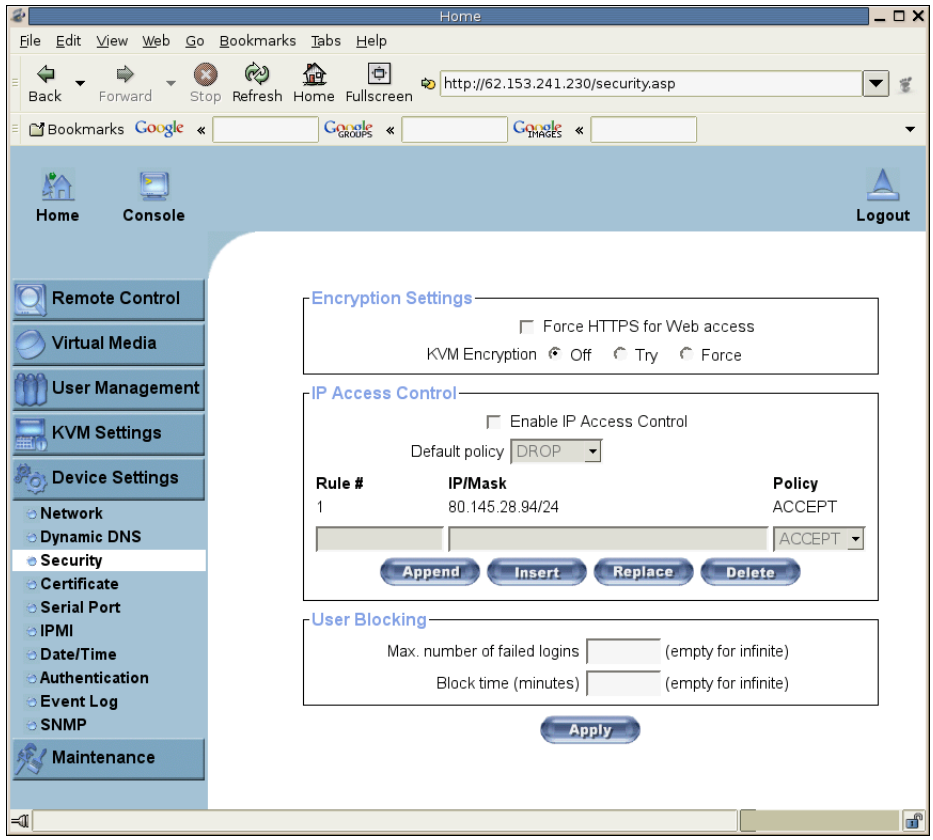


Figure 6-26. Device Security

Encryption Settings

Force HTTPS

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

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

KVM encryption

This option controls the encryption of the RFB protocol. RFB is used by the Remote Console to transmit both the screen data to the administrator machine and keyboard and mouse data back to the host.

If set to “Off” no encryption will be used. If set to “Try” the applet tries to make an encrypted connection. In case that the connection cannot be established an unencrypted connection will be used instead. If set to “Force” the applet tries to make an encrypted connection. An error will be reported in case the connection establishment fails.

IP Access Control

This section explains the settings related to IP access control. It is used to limit the 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.

> **Warning**
>
> 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 do not match any of the configured rules. They can be accepted or dropped.

> **Warning**
>
> If you set this to “DROP” and you have no “ACCEPT” rules configured, the access to the web front-end over LAN is actually impossible! To enable access again you can change the security settings via modem or by temporarily disabling IP access control with the initial configuration procedure (see Table 4-1)

Rule Number

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

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 either accepted or dropped.

> **Warning**
>
> 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 the button “Append” .

Inserting a rule

Enter the rule number, the IP/Mask and set the policy. Finally, press the button “Insert” .

Replacing a rule

Enter the rule number, the IP/Mask and set the policy. Finally, press the button “Replace” .

Deleting a rule

Enter the rule number and press the button “Delete” .

Anti Brute Force Setting

The Anti Brute Force user blocking mechanism allows to disable the login of a certain user if his password was entered incorrectly for a specific number of times. The duration of the blocking is also configurable.

Maximum number of failed logins

Enter the maximum number of failed login attempts after which it should not be possible for this user to login anymore. Leave this field empty to disable the user blocking feature.

Block time

The number of minutes the user is blocked after he exceeded his maximum number of failed login attempts. Leave this field empty to block him for an infinite amount of time until he is manually unblocked again.

Unblocking Users

There are two possibilities to unblock a blocked user.

- A parent user may go to the user management settings (see the Section called *User Management*) and press the button “Unblock” for the user.
- It is also possible to use the serial console as for the initial configuration (see Table 4-1) and login as the user “unblock” . The eRIC II will ask for the superuser password and present a list of blocked users which may be unblocked.

Certificate

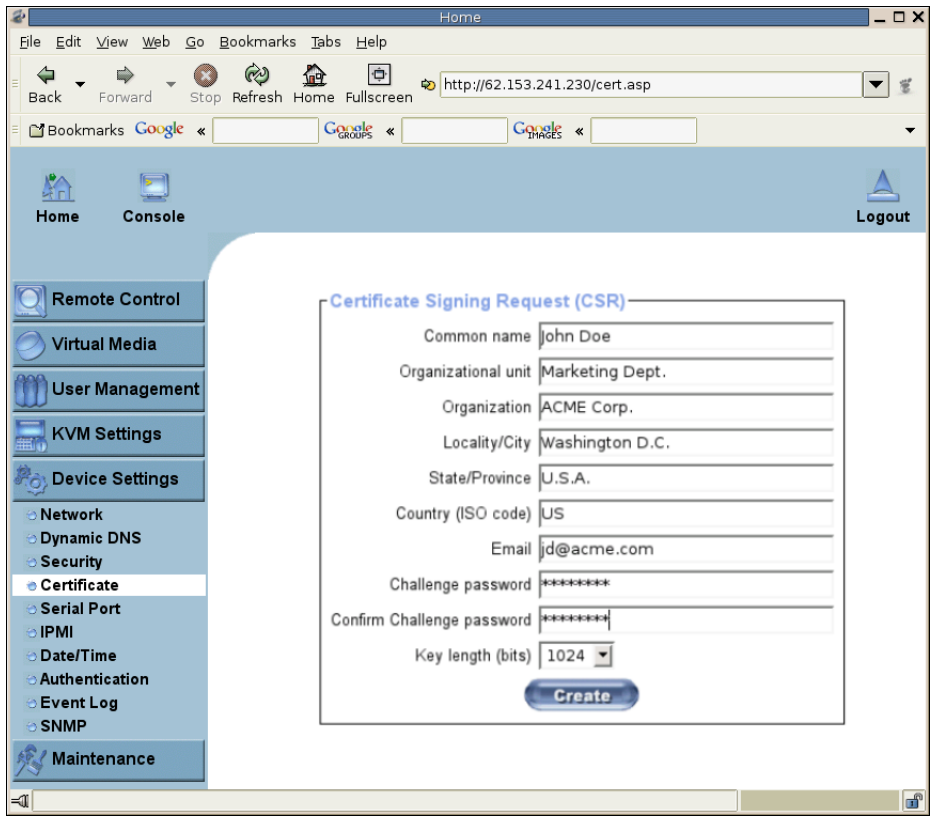


Figure 6-27. Certificate Settings

The eRIC II uses the Secure Socket Layer (SSL) protocol for any encrypted network traffic between itself and a connected client. During the connection establishment the eRIC II has to expose its identity to a client using a cryptographic certificate. Upon delivery this certificate and the underlying secret key is the same for all eRIC II ever produced and certainly will not match the network configuration that will be applied to the eRIC II cards by its user. The certificate's underlying secret key is also used for securing the SSL handshake. Hence, this is a security risk (but far better than no encryption at all).

However, it is possible to generate and install a new base64 x.509 certificate that is unique for a particular eRIC II card. In order to do that, the eRIC II is able to generate a new cryptographic key and the associated Certificate Signing Request (CSR) that needs to be certified by a certification authority (CA). A certification authority verifies that you are the person who you claim you are and signs and issues a SSL certificate to you.

To create and install a SSL certificate for the eRIC II the following steps are necessary:

- Create a SSL Certificate Signing Request using the panel shown in Figure 6-27 . You need to fill out a number of fields that are explained below. Once this is done, click on the button "Create" which will initiate the Certificate Signing Request generation. The CSR can be downloaded to your administration machine with the "Download CSR" button (see Figure 6-28).

- Send the saved CSR to a CA for certification. You will get the new certificate from the CA after a more or less complicated traditional authentication process (depending on the CA).
- Upload the certificate to the eRIC II using the “Upload” button as shown in Figure 6-28 .

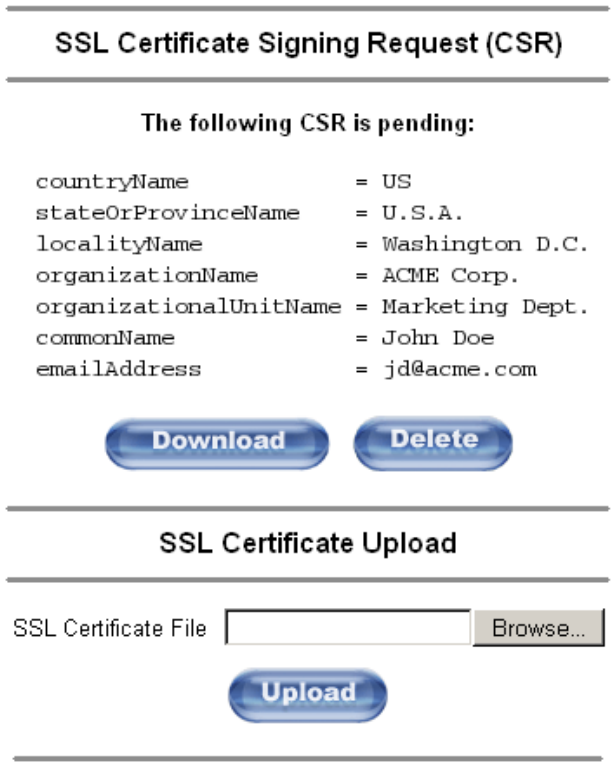


Figure 6-28. SSL Certificate Upload

After completing these three steps the eRIC II has its own certificate that is used for identifying the card to its clients.

> **Warning**
>
> If you destroy the CSR on the eRIC II there is no way to get it back! In case you deleted it by mistake, you have to repeat the three steps as described above.

Common name

This is the network name of the eRIC II once it is installed in the user’s network (usually the fully qualified domain name). It is identical to the name that is used to access the eRIC II with a web browser but without the prefix “ http:// ” . In case the name given here and the actual network name differ, the browser will pop up a security warning when the eRIC II is accessed using HTTPS.

Organizational unit

This field is used for specifying to which department within an organization the eRIC II belongs.

Organization

The name of the organization to which the eRIC II belongs.

Locality/City

The city where the organization is located.

State/Province

The state or province where the organization is located.

Country (ISO code)

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

Challenge Password

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

Confirm Challenge Password

Confirmation of the Challenge Password.

Email

The email address of a contact person that is responsible for the eRIC II and its security.

Key length

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

Serial Settings

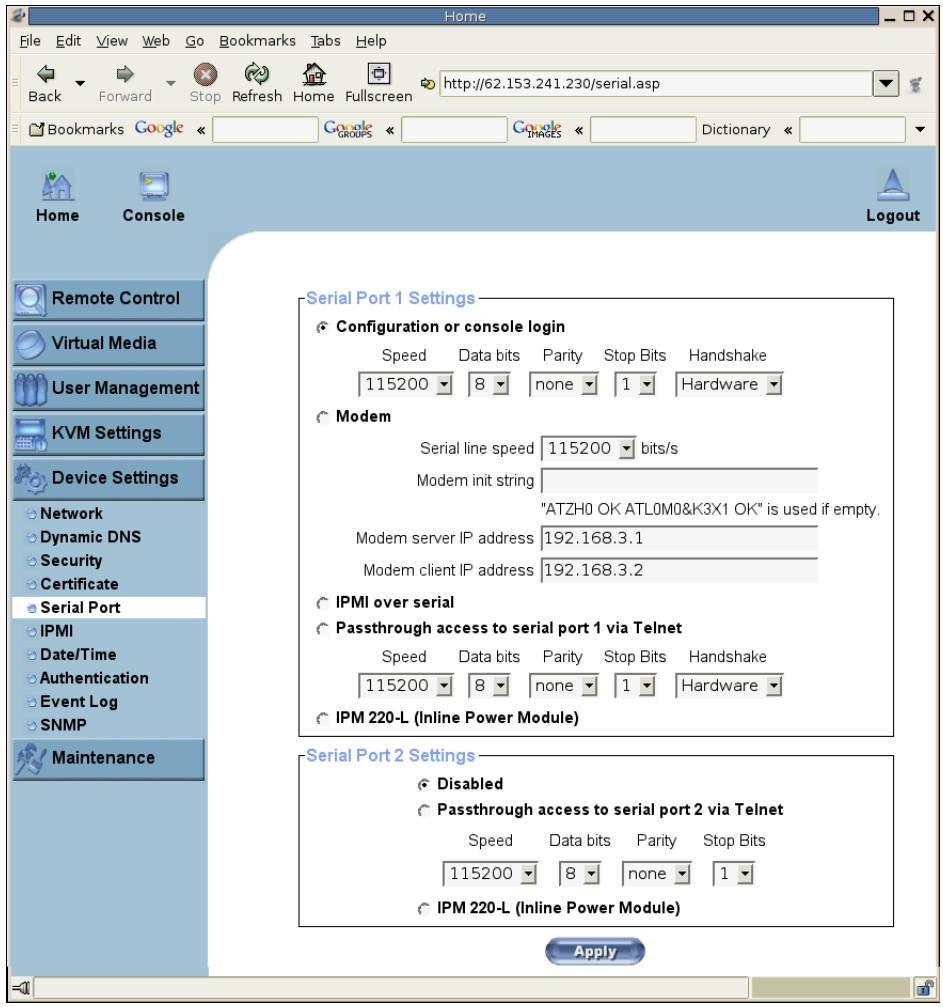


Figure 6-29. Serial Settings

The eRIC II Serial Settings (Figure 6-29) allow you to specify what device is connected to the serial port and how to use it.

Configuration or console login

Do not use the serial port for any special function, use it only for the initial configuration (see Table 4-1).

Modem

The eRIC II offers remote access using a telephone line in addition to the standard access over the built-in Ethernet adapter. The modem needs to be connected to the serial interface of the eRIC II .

Logically, connecting to the eRIC II using a telephone line means nothing else than building up a dedicated point-to-point connection from your console computer to the eRIC II . In other words, the eRIC II acts as an Internet Service Provider (ISP) to which you can dial in. The connection is established using the Point-to-Point Protocol (PPP). Before you connect to the eRIC II make sure to

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

The Modem Settings panel allows you to configure the remote access to the eRIC II using a modem. The meaning of each parameter will be described below. The modem settings are part of the serial settings panel .

Serial line speed

The speed with which the eRIC II is communicating with the modem. Most of all modems available today will support the default value of 115.200 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 eRIC II to initialize the modem. The default value will work with all modern standard modems directly connected to a telephone line. In case you have a special modem or the modem is connected to a local telephone switch that requires a special dial sequence in order to establish a connection to the public telephone network, you can change this setting by giving a new string. Refer to the modem's manual about the AT command syntax.

Modem server IP address

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

Modem client IP address

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

IPMB over serial

To enable IPMB over serial enable this option.

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 eRIC II . For more information about the Telnet interface you may have a look at the Section called *Telnet Console* .

IPM 220-L (Inline Power Module)

This is an optionally available external module to switch power of a single system by putting it in the power supply line of the controlled system.

Intelligent Platform Management Interface (IPMI)

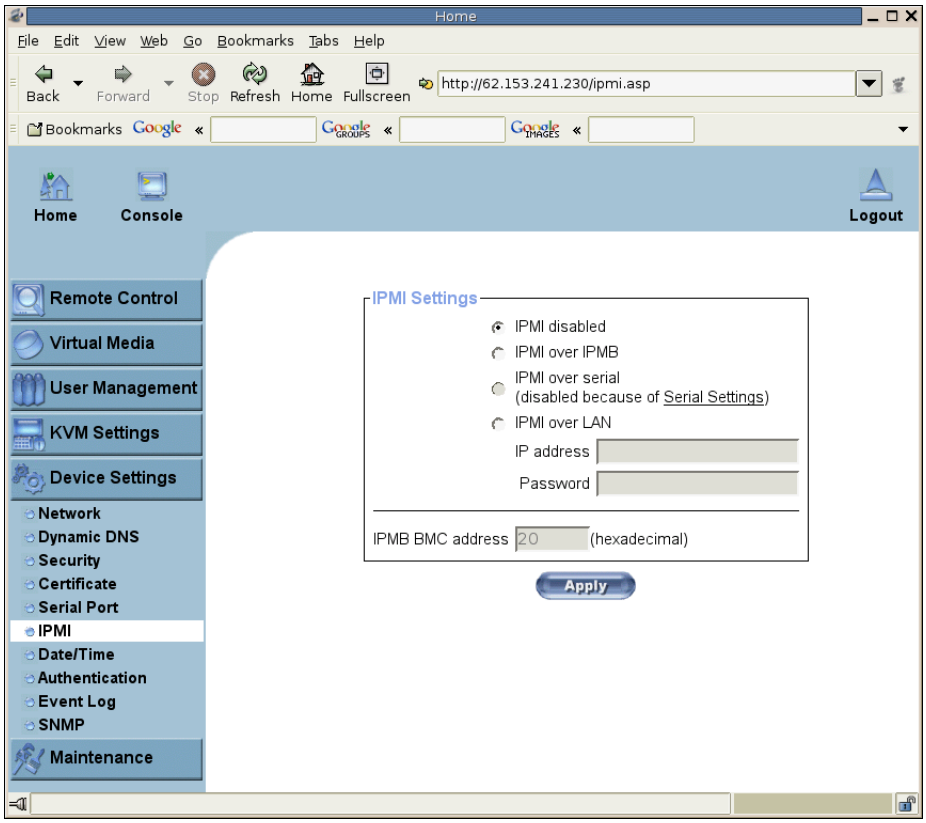


Figure 6-30. IPMI

Generals

By using the eRIC II IPMI 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 IPMB
- IPMI over Serial (IPMI V1.5 is required)
- IPMI over LAN (IPMI V1.5 is required)

IPMI Settings

Figure 6-30 shows the eRIC II IPMI settings panel. Its options will be explained below.

IPMI disabled

Disables IPMI on the eRIC II . This means that Status via IPMI and Event Log via IPMI are not available and the power on/off and reset functions do not use

IPMI rather than the ATX and the reset cable connected from the eRIC II to the motherboard.

IPMI over IPMB

This connection type uses an IPMB cable connected from the 1x5pin IPMB connector on the eRIC II card to the 3/4pin IPMB/I2C connector on the motherboard. IPMI over IPMB does not need any passwords. This access mode allows only power on/off and reset function. Status and Event Log via IPMI are disabled.

IPMI over Serial

If your host system supports IPMI V1.5 and has an Intel EMP (Emergency Management Port, usually COM2) connector, you can connect IPMI through serial port 1 on the eRIC II . There are some additional points to note:

- The EMP port has to be set to “Always enable” and the “Restricted Mode” has to be switched off.
- The BMC should accept a “null username” and a “ non-null password ” account as login.
- Passwords are 4 to 16 characters long.
- A null modem cable is used for the connection (available separately).

IPMI over LAN

You can connect the IPMI over a LAN connection, too. The prerequisite for this access type 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 have to enter the IP address of this host system and the correct password for the LAN connection. You can also access other IPMI systems if you enter their IP address.

Date And Time

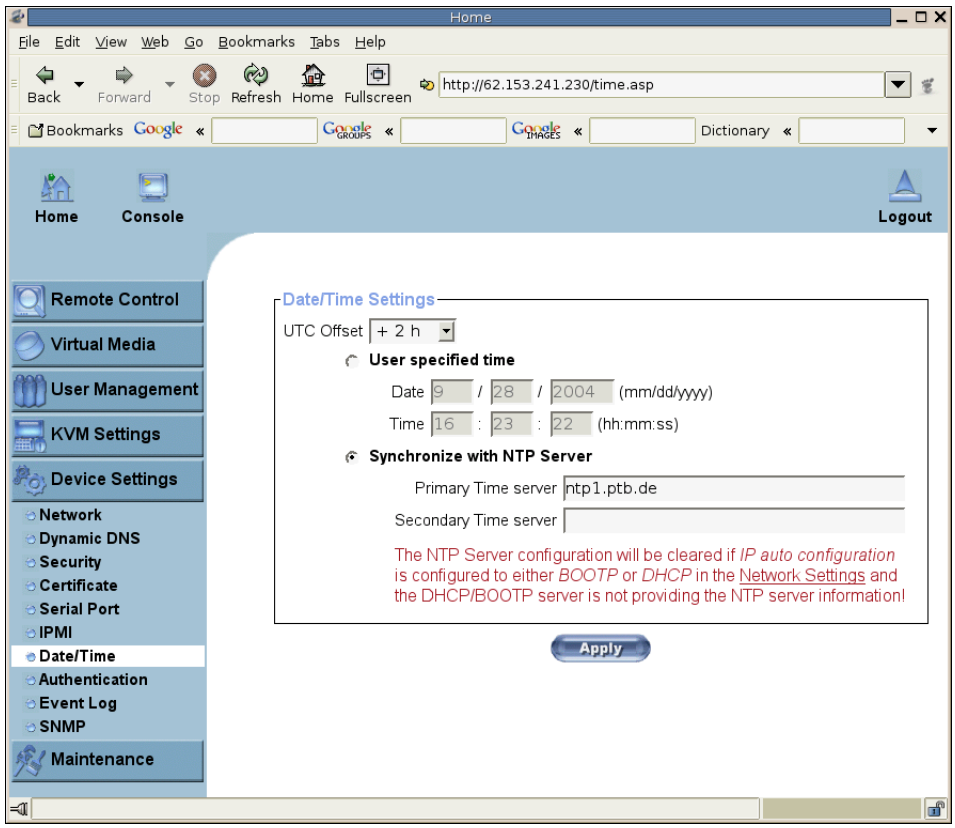


Figure 6-31. Date and Time

This link refers to a page where the internal realtime clock of the eRIC II can be set up (see Figure 6-31). You have the possibility to adjust the clock manually or to use a NTP time server. Without a time server your time setting will not be persistent, so you have to adjust it again after the eRIC II loses power for more than a few minutes. To avoid this you can use a NTP time server which sets up the internal clock automatically to the current UTC time. Because NTP server time is always UTC, there is a setting that allows you to set up a static offset to get your local time.

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

Authentication

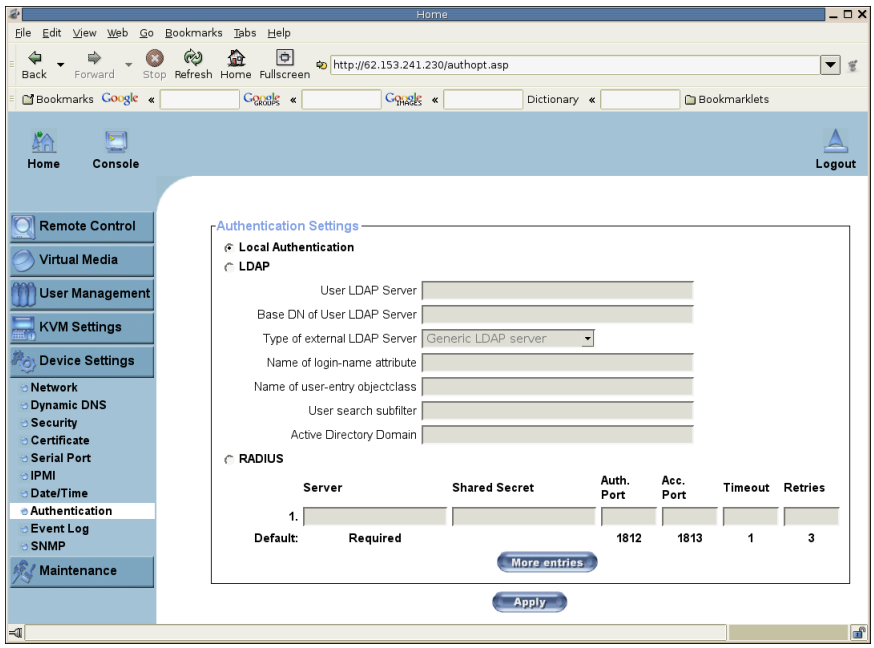


Figure 6-32. Authentication

With the eRIC II you have the possibility to use either a local authentication or keep the information in a central LDAP directory or in a RADIUS server. For LDAP or RADIUS you have to specify some information in the Authentication settings panel. For more information regarding the LDAP and RADIUS settings see below.

LDAP

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

Name of login-name attribute

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

Name of user-entry object class

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

User search subfilter

Here you can refine the search for users that should be known to the eRIC II .

Active Directory Domain

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

Remote Authentication Dial In User Service (RADIUS)

RADIUS is a protocol specified by the Internet Engineering Task Force (IETF) working group. There are two specifications that make up the RADIUS protocol suite: Authentication and Accounting. These specifications aim to centralize authentication, configuration, and accounting for dial-in services to an independent server.

The RADIUS protocol exists in several implementations such as freeRADIUS, openRADIUS or RADIUS on UNIX systems. The RADIUS protocol itself is well specified and tested. We can give a recommendation for all products listed above, especially for the freeRADIUS implementation.

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

To access a remote device using the RADIUS protocol you have to login, first. You are asked to specify your user name and password, then. The RADIUS server reads your input data (Authentication) and the eRIC II looks for your profile (Authorization). The profile defines (or limits) your actions and may differ depending onto your specific situation. If there is no such profile your access via RADIUS will be refused.

In terms of the remote activity mechanism the login via RADIUS works similar to the Remote Console. If there is no activity for half an hour your connection to the eRIC II will be interrupted and closed.

Server

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

Shared Secret

A shared secret is a text string that serves as a password between the RADIUS client and RADIUS server. In this case the eRIC II serves as a RADIUS client. A shared secret is used to verify that RADIUS messages are sent by a RADIUS-enabled device that is configured with the same shared secret and to verify that the RADIUS message has not been modified in transit (message integrity).

For the shared secret you can use any standard alphanumeric and special characters. A shared secret may consist of up to 128 characters in length and may

contain both lowercase and uppercase letters (A-Z,a-z), numerals (0-9) and other symbols (all characters not defined as letters or numerals) such as an exclamation point (“ ! ”) or an asterisk (“ * ”).

Authentication Port

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

Accounting Port

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

Timeout

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

Retries

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

Event Log

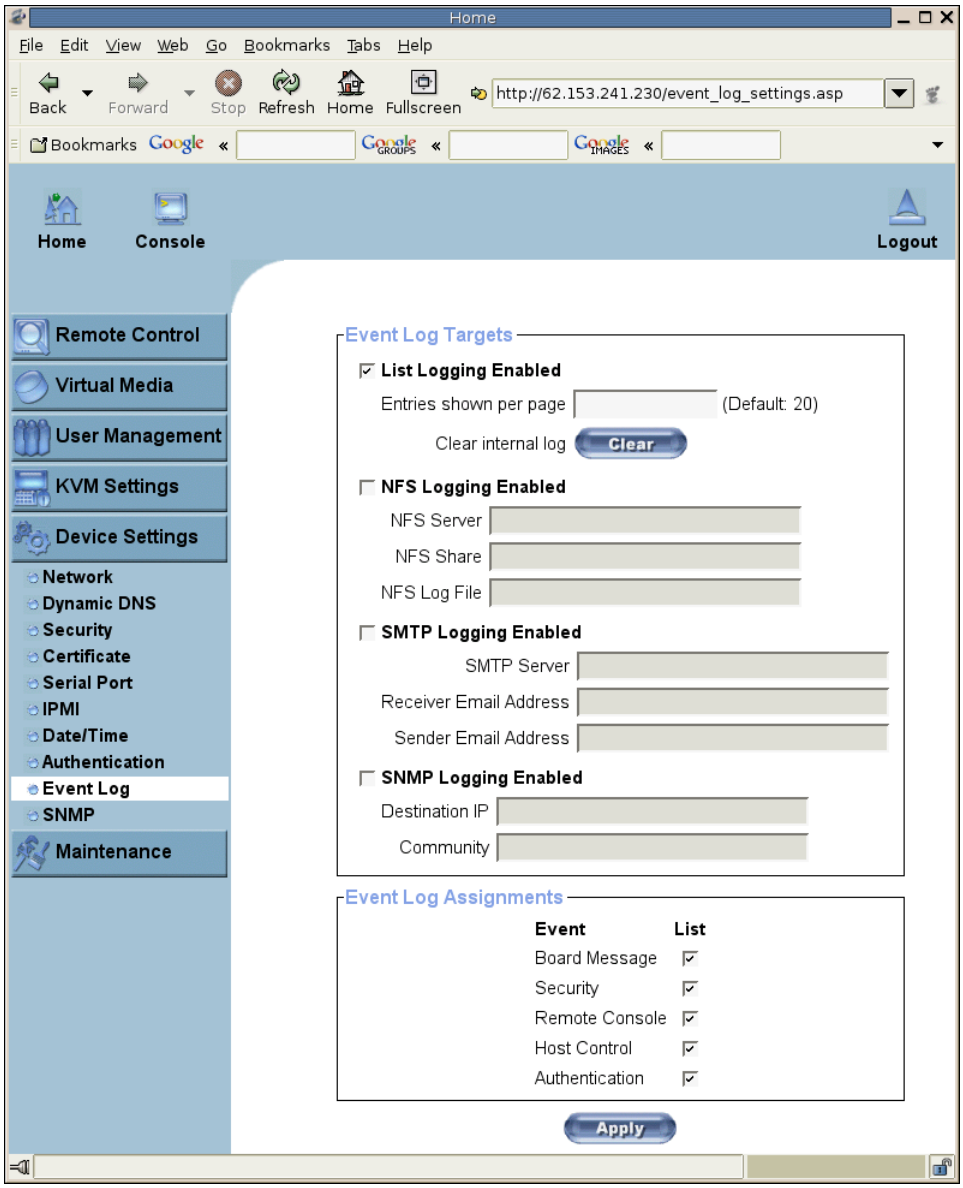


Figure 6-33. Event Log

Important events like a login failure or a firmware update are logged to a selection of logging destinations (see Figure 6-33). Each of those events belong to an event group which can be activated separately.

The common way to log events is to use the internal log list of the eRIC II . To show the log list click on “Event Log” on the “Maintenance” page. In the Event Log Settings you can choose how many log entries are shown on each page. Furthermore, you can clear the log file here.

Event Log Targets

List logging enabled

To log events you may use the internal log list of the eRIC II . To show the log list click on “Event Log” on the “Maintenance” page.

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

Warning

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

NFS Logging enabled

Define a NFS server where a directory or a static link has to be exported to, in order to write all logging data to a file that is located there. To write logging data from more than one eRIC II devices to only one NFS share, you have to define a file name that is unique for each device. When you change the NFS settings and press the button “Apply” , the NFS share will be mounted immediately. That means the NFS share and the NFS server must be filled with valid sources or you will get an error message.

Warning

In contrast to the internal log file on the eRIC II , the size of the NFS log file is not limited. Every log event will be appended to the end of the file so it grows continuously and you may have to delete it or move it away from time to time.

SMTP Logging enabled

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

SNMP Logging enabled

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

Event Log Assignments

You may choose which actions of the eRIC II will be saved in the log file. Tick the desired box(es) and click “Apply” to confirm your selection.

SNMP

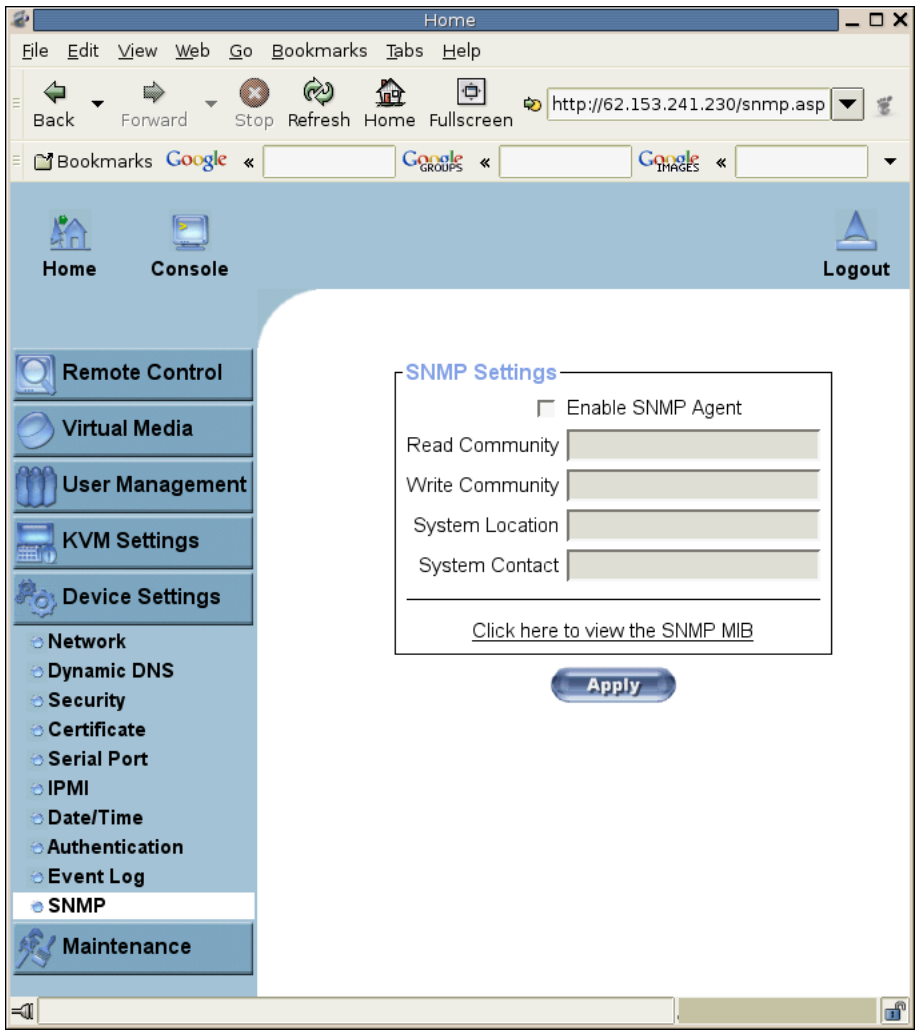


Figure 6-34. SNMP settings

The following information is available via SNMP:

- Serial number
- Firmware version
- MAC address / IP address / Netmask / Gateway of LAN interface
- Server’s power state

The following actions can be initiated via SNMP:

- Reset server
- Power on/off server
- Reset the eRIC II

The following events are reported by the eRIC II via SNMP:

- Login trial at the eRIC II failed.
- Login trial at the eRIC II succeeded.
- Denying access to a particular action.
- Server was reset.
- Server was powered on/off.

The SNMP settings panel as shown in Figure 6-34 are described below, allows you to change SNMP related parameters.

Enable SNMP Agent

If this option is checked, the eRIC II will answer to SNMP requests.

Hint: If a community is left blank, you cannot perform the according request. E.g. if you want to disable the possibility to reset the eRIC II via SNMP then do not 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 eRIC II or the host via SNMP, i.e. all that effects the host or the eRIC II .

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 " .

The eRIC II SNMP MIB

This link allows you to download the eRIC II SNMP MIB file. This file may be necessary for an SNMP client to communicate with the eRIC II .

Maintenance

Device Information

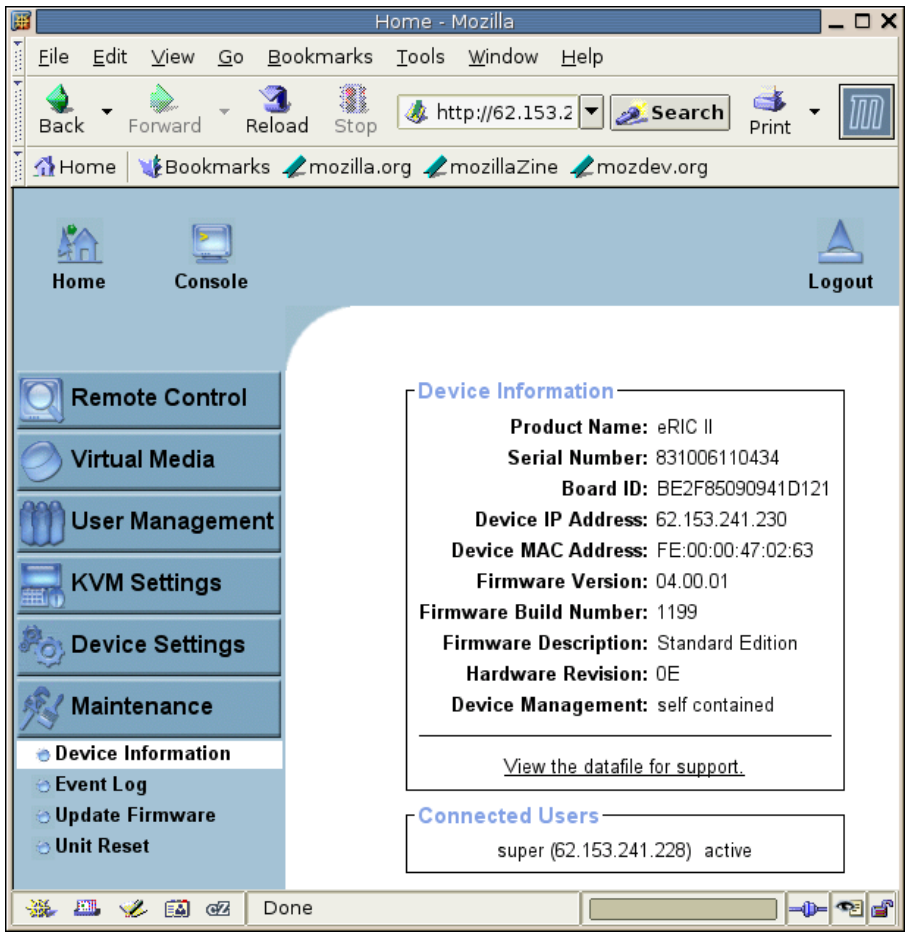


Figure 6-35. Device Information

This section contains a summary with various information about this eRIC II and its current firmware and allows you to reset the card. You may have a look at Figure 6-35 for an example.

The Data file for support allows you to download the eRIC II data file with specific support information. This is an XML file with certain customized support information like the serial number etc. You may send us this information together with a support request. It will help us to locate and solve your reported problem.

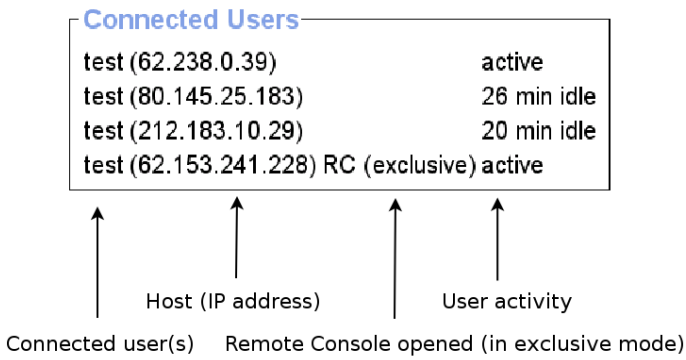


Figure 6-36. Connected Users

Figure 6-36 displays the eRIC II activity. From left to right the connected user(s), its IP address (from which host the user comes from) and its activity status is displayed. “RC” means that the Remote Console is open. If the Remote Console is opened in “exclusive mode” the term “ (exclusive mode) ” is added. For more information about this option see the Section called *Remote Console Control Bar* in Chapter 5 . To display the user activity the last column contains either the term “active” for an active user or “20 min idle” for a user who is inactive for a certain amount of time.

Event Log

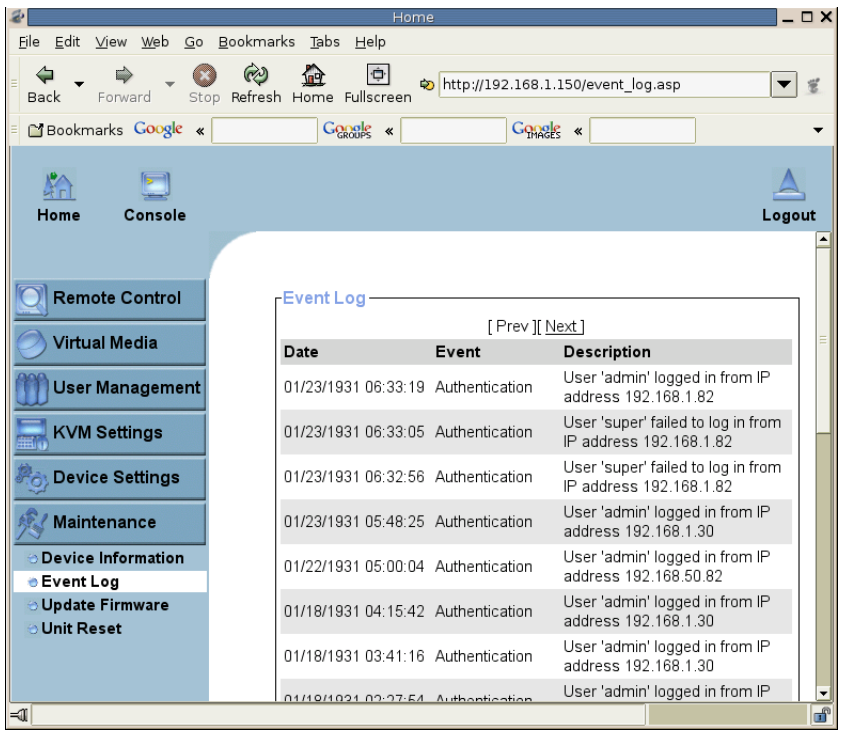


Figure 6-37. Event Log List

Figure 6-37 displays the Event Log list. It includes the events that are kept by the eRIC II extended by the event date, a short event description and an IP address the request was sent from.

You may use the text buttons “Prev” and “Next” to browse within the data.

Update Firmware

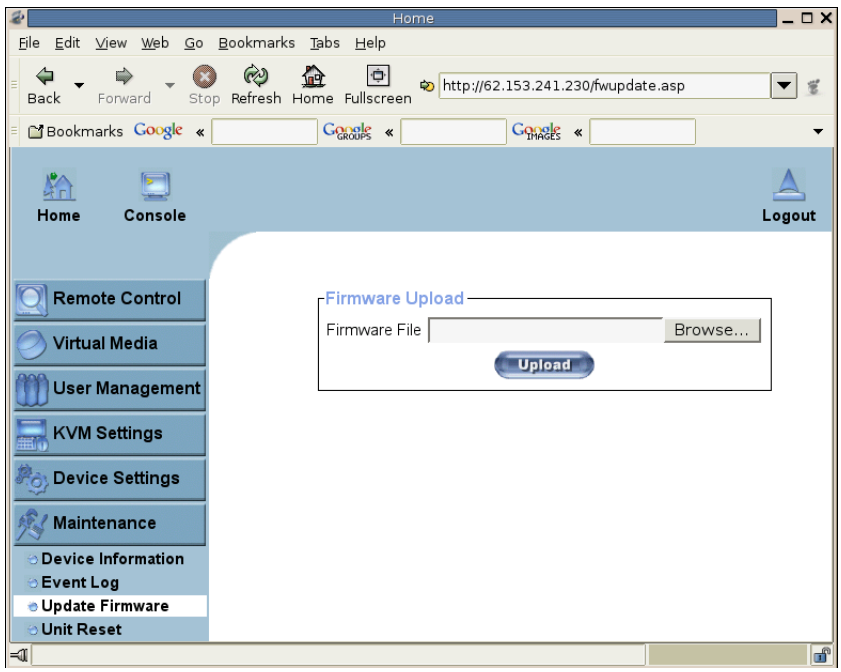


Figure 6-38. Update Firmware

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

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

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

Updating the firmware is a three-stage process:

- Firstly, the new firmware file is uploaded onto the eRIC II . In order to do that you need to select the file on your local system using the button “Browse” of the Upload Firmware panel (see Figure 6-38). Then, click “Upload” to transfer the previously selected file from your local file system onto the eRIC II . 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 and the current firmware is kept as is.

- Secondly, if everything went well, you see the Update Firmware panel . The panel shows you the version number of the currently running firmware and the version number of the uploaded firmware. Pressing the button “Update” will store the new version and substitute the old one completely.

Warning

This process is not reversible and might take some minutes. Make sure the eRIC II ’s power supply will not be interrupted during the update process, because this may cause an unusable device.

- Thirdly, after the firmware has been stored, the eRIC II will reset automatically. After about one minute you will be redirected to the Login page and requested to login once again.

Warning

The three-stage firmware update process and complete consistency check are making a mistake in updating the firmware almost impossible. However, only experienced staff members or administrators should perform a firmware update. Make sure the eRIC II ’s power supply will not be interrupted!

Unit Reset

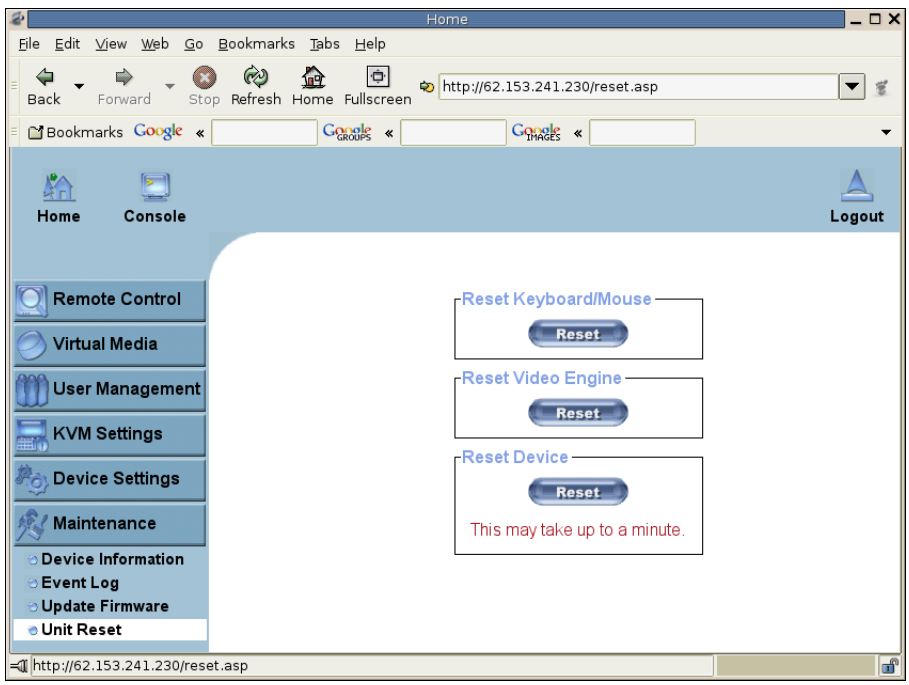


Figure 6-39. Unit Reset

This section allows you to reset specific parts of the device. This involves the both keyboard and mouse, the video engine and the eRIC II itself. Resetting the card itself is mainly needed to activate a newly updated firmware. It will close all current connections to the administration console and to the Remote Console. The whole process will take about half a minute. Resetting subdevices (e.g. video engine) will take some seconds only and does not result in closing connections.

To reset a certain eRIC II functionality click on the button “Reset” as displayed in Figure 6-39 .

Appendix A. Frequently Asked Questions

1. The remote mouse does not work or is not synchronous.

First, check the VGA connection. Both the eRIC II and the local monitor have to support the same video resolution.

Make sure that your mouse settings match your mouse model, i.e. PS/2 or wheel mouse. The mouse model has to be set similarly on both the eRIC II and the Operating System you use on your host.

In some circumstances the mouse synchronization process could behave incorrectly, refer to the Section called *Mouse, Keyboard and Video configuration* in Chapter 4 for further explanation.

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

Adjust both settings for brightness and contrast in the Remote Console Video Settings (see the Section called *Remote Console Control Bar* in Chapter 5) until the picture is not grainy. If the video is flickering, use the auto adjustment button to change this.

3. Login on the eRIC II fails.

Verify both your user login and your password. On default, the user “super” has the password “pass” . Moreover, your web browser has to be configured to accept cookies.

4. The Remote Console window of the eRIC II does not open.

A firewall may prevent the access to the Remote Console. The TCP ports #80 (for HTTP) and #443 (for both HTTPS and RFB) have to be open (the server providing the firewall has to accept incoming TCP connections on these ports).

5. Remote console is unable to connect and displays a timeout error.

Have a look on your hardware. If there is a proxy server between the eRIC II and your host, then you may not be able to transfer the video data using RFB. Establish a direct connection between the eRIC II and the client.

Furthermore, check the settings of the eRIC II and choose a different server port used for RFB transfer. If you use a firewall then check the according port for accepting connections. You may restrict these connections for the IP addresses used by the eRIC II and your client.

6. No connection can be established to the eRIC II .

Have a look on your hardware. Is the eRIC II attached to a power supply? Verify your network configuration (IP address, router). You may send a “ping” request to the eRIC II to find out whether the eRIC II is reachable via network.

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

You have to define a so-called “Button Key” . This can be done in the Remote Console settings (see the Section called *Remote Console Control Bar* in Chapter 5).

8. The eRIC II web pages are not displayed correctly.

Check your browser’s cache settings. Make sure the cache settings are not set to something like “never check for newer pages” . Otherwise the eRIC II pages may be loaded from your browser cache and not from the card.

9. Windows XP does not awake from standby mode.

This is possibly a Windows XP problem. Try not to move the mouse pointer while XP switches into standby mode.

10. For SUN computers a USB keyboard does not work.

The eRIC II emulates a USB keyboard. If you attach a USB keyboard to your host two keyboards are detected. It cannot be predicted which one of these comes first and you will be able to work with. SUN supports only one USB keyboard.

11. Cannot upload the signed certificate in MacOS X.

If an "internal error" occurs while uploading the signed certificate either change the extension of the file to `.txt` or add a file helper using the Internet Explorer preferences for this type of file. Make sure that the encoding is set to "plain text" and the checkbox "use for outgoing" is set. As an alternative, you may also use a Mozilla based browser (Mozilla, FireFox).

12. Every time I open a dialog box with some buttons the mouse pointers are not synchronous anymore.

Disable the setting "Automatically move mouse pointer to the default button of dialog boxes" in the mouse settings of your operating system.

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

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

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

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

14. The Remote Console remains black.

Check the eRIC II for being USB powered only. If there is not enough power via USB the remote Console opens but remain black. Attach an external power supply to the eRIC II .

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

This is not a failure. The local monitor is programmed to a fixed video mode that can be selected in the video settings of the eRIC II . Refer to the Section called *Remote Console Control Bar* in Chapter 5 for further planation.

16. Text modes are distorted and/or flicker but graphics modes work fine.

This is a known but currently unsolvable problem. It happens only if a fixed monitor resolution of 1280x1024 or higher is selected (see the Section called *Remote Console Control Bar* in Chapter 5). As a workaround you may select a smaller resolution. The resolution 1280x768/60Hz is affected partially only so it is worth a try.

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

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

18. No local monitor is connected but the remote screen remains blank.

If the Remote Console is connected (look at the status line of the Remote Console) you should verify that the Monitor Dongle is connected to the VGA socket on the port replicator. This is a connector shipped with your eRIC II . If it was not connected you should fix this and reboot the server afterwards.

19. I forgot my password. How can I reset the eRIC II to factory defaults?

You may use the serial interface . For a detailed description see the Section called *Resetting the eRIC II to its Factory Settings* in Chapter 4 .

Appendix B. Glossary

ACPI

Advanced Configuration and Power Interface

A specification that enables the operating system to implement power management and system configuration.

ATX

Advanced Technology Extended

A particular specification that covers the style of motherboards and enclosure introduced by Intel in 1995.

DHCP

Dynamic Host Configuration Protocol

A protocol for dynamically assigning IP configurations to host names, especially used in a local network.

DNS

Domain Name System

A protocol used to locate computers on the Internet by their name.

FAQ

Frequently Asked Questions

HTTP

Hypertext Transfer Protocol

One of the protocols used for communication between single computers, especially between web browsers and web servers.

HTTPS

Hypertext Transfer Protocol Secure

The secure version of HTTP.

LED

Light Emitting Diode

A semiconductor device that emits incoherent monochromatic light when electrically biased in the forward direction.

PS/2

Personal System/2

IBM's second generation of personal computers, which was released to the public in 1987. Today, PS/2 is known as a device interface for mouse and keyboard.

SNMP

Simple Network Management Protocol

A widely used network monitoring and control protocol.

SSL

Secure Socket Layer

An encryption technology for the Internet used to provide secured data transmissions.

SVGA

Super Video Graphics Array

A refinement of the Video Graphics Array (VGA) that provides increased pitch and resolution performance.

UTP

Unshielded Twisted Pair

A cable with two conductors twisted as a pair and bundled within the same outer PVC covering.

Appendix C. eRIC II Video Modes

Table C-1 lists the video modes the eRIC II supports. Please do not use any other custom video settings besides of these. If done so, the eRIC II may not be able to detect them.

Table C-1. eRIC II Video Modes

Resolution (x,y)	Refresh Rates (Hz)
640x340	70, 85
640x400	56, 85
640x480	60, 67, 72, 75, 85, 90, 100, 120
720x400	70, 85
800x600	56, 60, 70, 72, 75, 85, 90, 100
832x624	75
1024x768	60, 70, 72, 75, 85, 90, 100
1152x864	75
1152x870	75
1152x900	66, 76
1280x960	60, 85
1280x1024	60, 75, 85
1600x1200	60, 65, 70, 75
2048x1536	85 (local port only)

Appendix D. Key Codes

Table D-1 shows the key codes used to define the key strokes or hotkeys for several functions. Please note that these key codes do not necessarily represent the key characters that are used on international keyboards. A key on a standard 104 key PC keyboard with a US English language mapping is named. The layout for this keyboard is shown in Figure D-1 . However, most modifier keys and other alphanumeric keys used for hotkey purposes in application programs are on a similar position, no matter what language mapping you are using. Some of the keys also have aliases. This means that a key can be named by two different key codes.

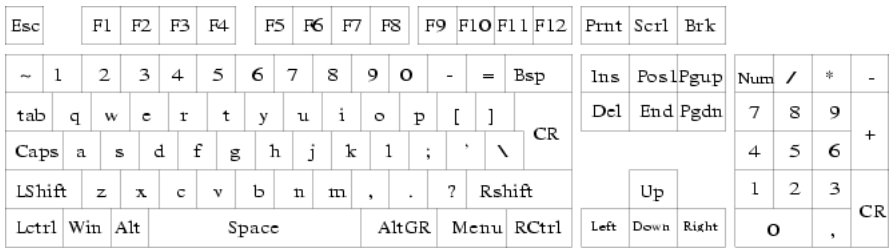


Figure D-1. English (US) keyboard Layout, used for the key codes

Table D-1. Key Names

Key	Alias Key(s)
0 - 9	
A - Z	
~	TILDE
_	MINUS
=	EQUALS
;	
’	
<	LESS
,	
.	
/	SLASH
BACKSPACE	
TAB	
[	
]	
ENTER	
CAPS LOCK	
\	BACK SLASH
LSHIFT	SHIFT
RCTRL	CTRL, STRG
RSHIFT	SHIFT
LCTRL	CTRL, STRG

Key	Alias Key(s)
LALT	ALT
SPACE	
ALT GR	
ESCAPE	ESC
F1	
F2	
F3	
F4	
F5	
F6	
F7	
F8	
F9	
F10	
F11	
F12	
PRINTSCREEN	
SCROLL LOCK	
BREAK	
INSERT	
HOME	POS 1
PAGE_UP	
PAGE_DOWN	
DELETE	DEL
END	
UP	
LEFT	
DOWN	
RIGHT	
NUM_LOCK	
NUMPAD0	
NUMPAD1	
NUMPAD2	
NUMPAD3	
NUMPAD4	
NUMPAD5	
NUMPAD6	
NUMPAD7	
NUMPAD8	
NUMPAD9	
NUMPADPLUS	NUMPAD_PLUS, +

Key	Alias Key(s)
NUMPAD /	/
NUMPADMUL	NUMPAD_MUL, x
NUMPADMINUS	NUMPAD_MINUS, -
NUMPADENTER	
WINDOWS	
MENU	

Appendix E. Pin Assignment

VGA HD-15

Figure E-1. VGA HD-15

Table E-1. VGA HD-15

Pin	Assignment	Pin	Assignment
1	Red	9	Not connected
2	Green	10	GND sync
3	Blue	11	Not connected
4	Not connected	12	SDA, DDC ...
5	GND	13	HSYNC
6	GND red	14	VSYNC
7	GND green	15	SCL, DDC
8	GND blue		

RJ45 Connector Ethernet

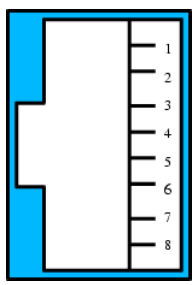


Figure E-2. RJ45

Table E-2. RJ45

Pin	Assignment	Pin	Assignment
1	TX +	5	Not connected
2	TX -	6	RX-
3	RX +	7	Not connected
4	Not connected	8	Not connected

IPMB/I2C Connector

Table E-3. IPMB/I2C Connector

Pin	Assignment
1	IIC SCL (Clock)
2	Not connected
3	GND
4	IIC SDA (Data)
5	Not connected

Serial SUB-D 9 Connector 1 and 2

Figure E-3. Serial Connector

Table E-4. Serial Connector 1

Pin	Assignment	Pin	Assignment
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table E-5. Serial Connector 2

Pin	Assignment	Pin	Assignment
1	Not connected	6	Not connected
2	RX	7	Not connected
3	TX	8	Not connected
4	Not connected	9	Not connected
5	GND		

PS/2 Connector

Table E-6. PS/2 Connector

Pin	Assignment	Pin	Assignment
1	KBD_Data_Host	7	GND
2	KBD_CLK_Host	8	GND
3	Mouse_Data_Host	9	KBD_Data_Dev
4	Mouse_CLK_Host	10	KBD_CLK_Dev
5	+5V_Mouse_Host	11	Mouse_Data_Dev
6	+5V_KBD_Host	12	Mouse_CLK_Dev

USB

Table E-7. USB Connector

Pin	Assignment	Pin	Assignment
1	USB PWR	3	USB D+
2	USB D-	4	USB GND

Appendix F. Specifications

Sizes and Weight

Table F-1. eRIC II Specification

Attribute	Value
Height	13mm
Width	173.4mm
Depth	64.4mm
Weight	110g (w/o replicator cable)
Power Consumption	up to 1A

Environment

Temperature

Table F-2. Temperature

Attribute	Value
Operating	0 C to 55 C (32 F to 131 F)
Storage	-18 C to 70 C (-0.4 F to 158 F)

Humidity

Table F-3. Humidity

Attribute	Value
Operating	10% to 90% (non-condensing)
Storage	5% to 95% (non-condensing)

Appendix G. eRIC II Operation Advices

This device has to be operated with the provided power supply only (PEPPERCON SA-051A5-12). The use of other power supplies voids the product liability of the manufacturer. If the power supply shows a malfunction, it must not be opened. Instead a request a replacement from the manufacturer or the vendor.

The power cord of the power supply is the point of junction to the supply network AC 230 V. Therefore both the power supply and the socket have to be easily accessible to disconnect them quickly if it is necessary.

Appendix H. Peppercon Warranty Information

Limited Warranty

Peppercon AG, Zwickau (Saxony), Germany. (“Peppercon”) manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Peppercon warrants that the hardware products including the firmware will be free from defects in materials and workmanship under normal use. Any implied warranties on the Peppercon firmware and hardware are limited to 24 months, respectively, beginning on the date of invoice. Some states/jurisdictions do not allow limitations on duration of an implied warranty, so the above limitation may not apply to you. Additionally Peppercon grants a special warranty for 6 month.

Customer Remedies

Peppercon ’s entire liability and exclusive remedy shall be, at Peppercon ’s option, either (a) return of the price paid, or (b) repair or replacement of the firmware or hardware that does not meet this Limited Warranty and which is returned to Peppercon with a copy of your receipt. Damage due to shipping the products to you is covered under this warranty. Otherwise warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Peppercon , usage not in accordance with product instructions, failure to perform required preventive maintenance and problems caused by use of parts and components not supplied by Peppercon . Any replacement hardware will be warranted for the remainder of the original period or thirty (30) days, whichever is longer. Peppercon will repair or replace products returned to Peppercon ’s facility. To request warranty service you must inform Peppercon within the warranty period. If warranty service is required, Peppercon will issue a Return Material Authorization Number. You must ship the products back to Peppercon in their original or an equivalent packaging, prepay shipping charges, and insure the shipment or accept the possibility of loss or damage during shipment.

No Other Warranties

To the maximum extend permitted by applicable law, Peppercon disclaim all other warranties, either express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the firmware, the accompanying written materials, and any accompanying hardware. This limited warranty gives you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

No Liability For Consequential Damages

To the maximum extent permitted by applicable law, in no event shall Peppercon be liable for any damages whatsoever (including without limitation, special, incidental, consequential or indirect damages for personal injury, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use this product, even if Peppercon has been advised of the possibility of such damages. In any case, Peppercon ’s entire liability under any provision of this agreement shall be limited to the amount actually paid by you for the firmware and/or hardware. Because some states/jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

Appendix I. GNU General Public License (GPL)

Version 2, June 1991

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program" , below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification" .) Each licensee is addressed as "you" .

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work

based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding

source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on

consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version" , you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each

file should have at least the “copyright” line and a pointer to where the full notice is found.

<one line to give the program’s name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type "show w". This is free software, and you are welcome to redistribute it under certain conditions; type "show c" for details.

The hypothetical commands “show w” and “show c” should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than “show w” and “show c” ; they could even be mouse-clicks or menu items-- whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a “copyright disclaimer” for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program “Gnomovision” (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

Appendix J. The OpenLDAP Public License

Version 2.8, 17 August 2003

Redistribution and use of this software and associated documentation (“Software”), with or without modification, are permitted provided that the following conditions are met:

1. Redistributions in source form must retain copyright statements and notices,
2. Redistributions in binary form must reproduce applicable copyright statements and notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution, and
3. Redistributions must contain a verbatim copy of this document.

The OpenLDAP Foundation may revise this license from time to time. Each revision is distinguished by a version number. You may use this Software under terms of this license revision or under the terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS CONTRIBUTORS “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OPENLDAP FOUNDATION, ITS CONTRIBUTORS, OR THE AUTHOR(S) OR OWNER(S) OF THE SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in advertising or otherwise to promote the sale, use or other dealing in this Software without specific, written prior permission. Title to copyright in this Software shall at all times remain with copyright holders.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.