



M3296

KVM-over-IP

Server Management Daughter Card

Version 1.00

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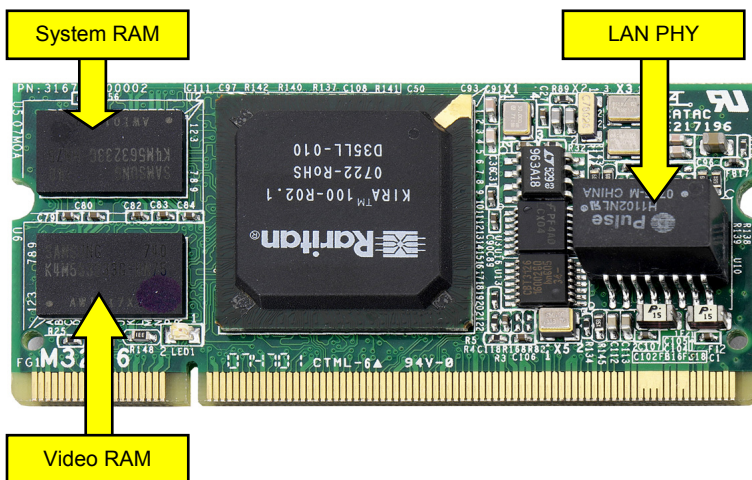
Chapter 1: Quick Start

1.1 - About M3296

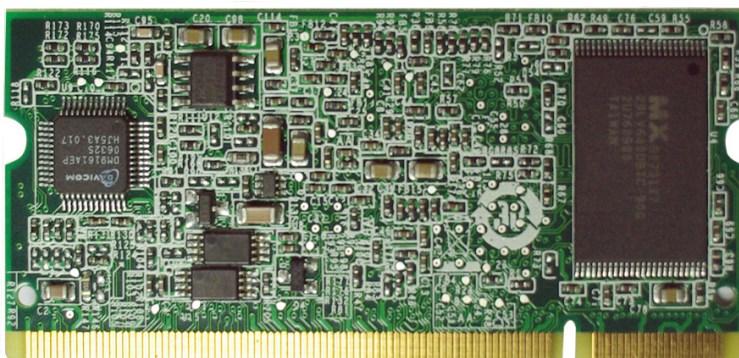
M3296 is a server remote management add-on card. It's IPMI 2.0 compliant. And its remote management gives the ability to monitor and control the remote server resource via HTTP/HTTPS.

M3296 key feature include Hardware monitor, Remote Power Control, KVM over IP and Virtual Media.

Front View



Rear View



1.2 - Install M3296 on Tyan Motherboard

Power off the Motherboard, find M3296 customized DDR2 200pins SO-DIMM slot on board and carefully insert M3296 into the slot. Find the correct M3296 dedicated LAN port on motherboard and connect LAN cable.

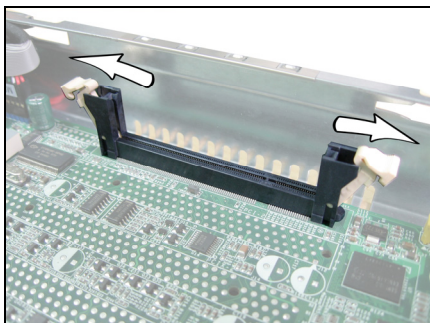
Warning:

As M3296 works with standby power, you should disconnect power completely, including disconnecting the power supply cable.

You can install M3296 card to your motherboard in three easy steps.

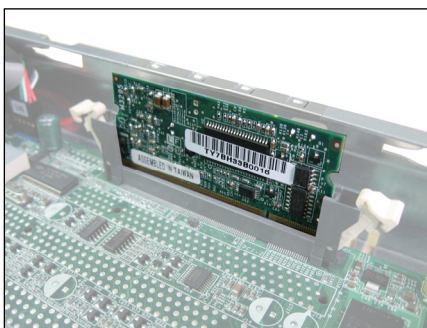
Step 1:

Press the slot locking levers in the direction of the arrows as shown in the following illustration.



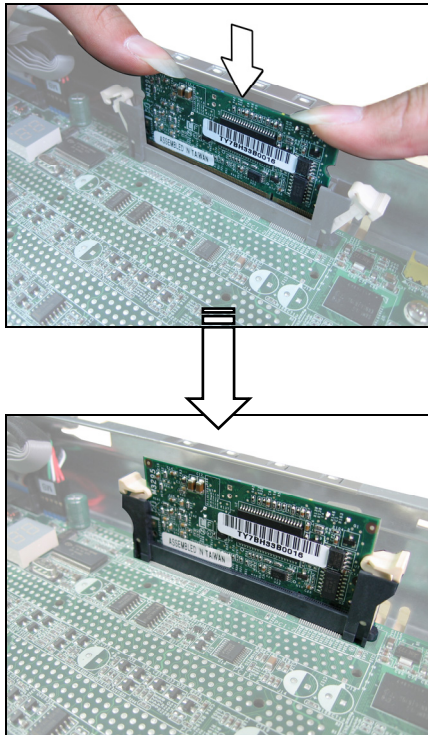
Step 2:

Put the SMDC Card into the slot as shown.



Step 3:

Press the SMDC card until the slot locking levers lock automatically onto the indentations at the ends of the module.



1.3 - Initialize

After you connect the power supply cable, M3296 will take 40-50 seconds to initialize. The initial network interface is configured with DHCP by default. To retrieve the IP address of M3296, you could look the records in DHCP server or use IPMI utility.

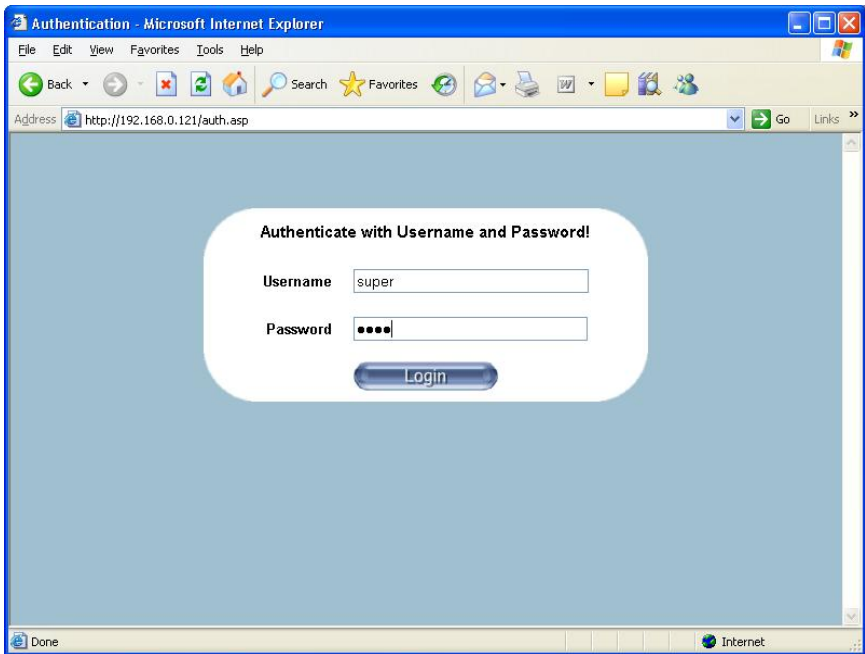
Of course, if DHCP doesn't meet your requirement, you can also use any IPMI software to configure its network interface. Detail procedure is described in following chapters.

1.4 - Web Interface

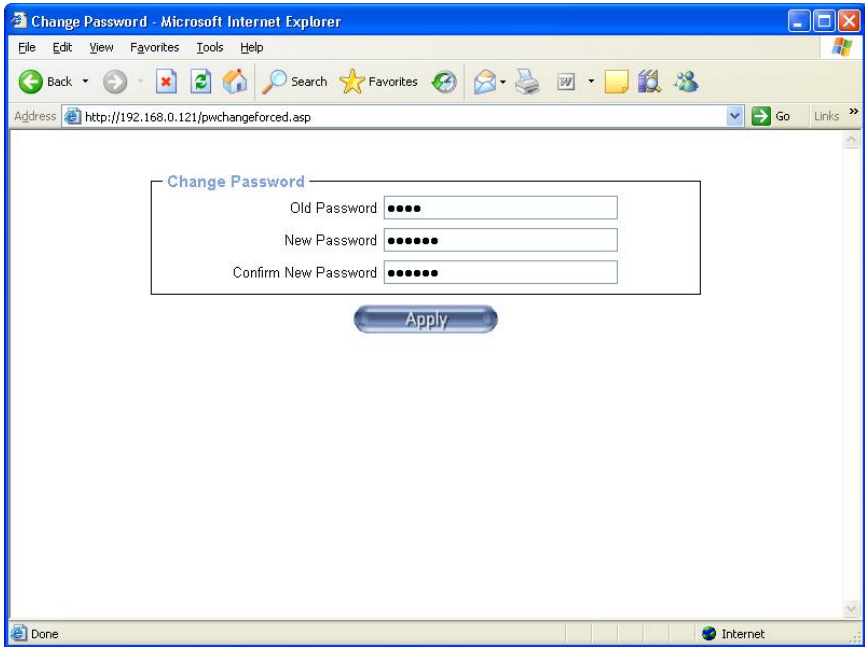
M3296 can be accessed by a standard JAVA enabled web browser. The default protocol is HTTP. Enter M3296 IP address in URL and you will be connected to M3296 login page.

Initial Login Setting:

User Name	super
Password	pass

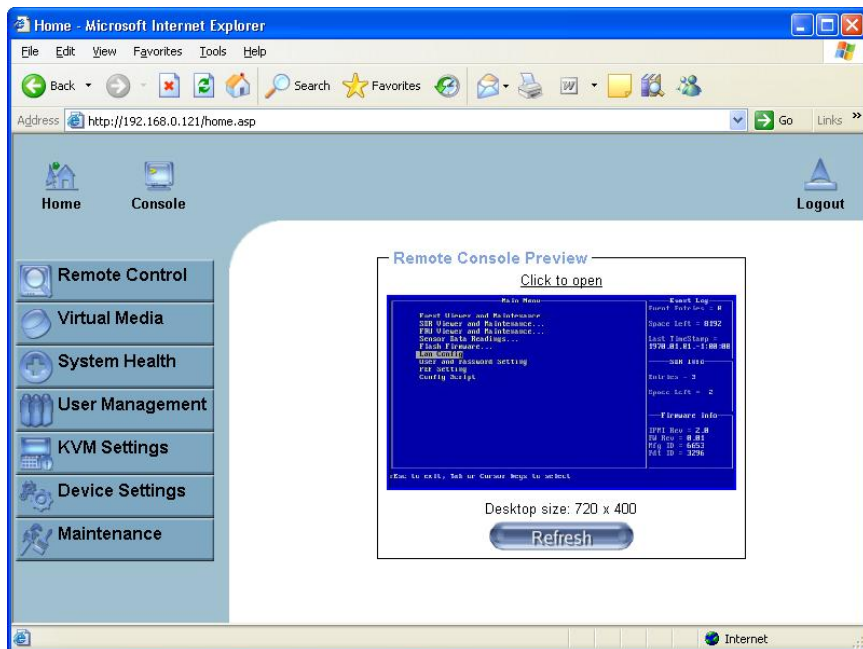


During first login, you will be required to change the password.



1.4 - Remote Console

If login successfully, you will be redirected to following page. Click “Console” on top left corner, you can open the remote console.



```
M3296 Remote Console - 192.168.0.121
Ctrl+Alt+Delete Options
Phoenix TrustedCore(tm) DeskTop
Copyright 1985-2007 Phoenix Technologies Ltd.
All Rights Reserved
FOR EVALUATION ONLY. NOT FOR RESALE.
Build Time: 08/06/07 21:01:22
* "PHOENIX CSS 2005 Q4" *
*****
TYAN Toledo i3210W/i3200R S5211 BIOS 0.030
CPU = 1 Processors Detected, Cores per Processor = 2
Intel(R) Core(TM)2 CPU 6700 @ 2.66GHz
511M System RAM Passed
4096 KB L2 Cache
System BIOS shadowed
Video BIOS shadowed
USB 2.0: PepperC Virtual Disc 1
USB 2.0: PepperC Virtual Disc 2
USB 2.0: PNY Attache 2.0
Mouse initialized
Kernel Library version:03.05.00.03
StrongROM version:03.30 Build:_P

Press <F2> to enter SETUP
Tyan SMDC Card Found << 12 011C 2000 0001 0201 FD8F 0019 0CE0 0000 7257 >>

Console(Norm): Desktop size is 640 x 480 Fps: 0 In: 0 B/s Out: 4 B/s
```

Chapter 2: Overview

Tyan M3296 is a powerful, yet cost-efficient, solution for high-end server management hardware packages. M3296 provides remote system monitoring and control even when the operating system is absent or fails, and empowers server boards with advanced industry standard features. It effectively enables IT Managers to have remote and multi-interface access to monitor, control, and diagnosing activities.

Unlike regular cards such as graphic cards, network cards or SCSI cards, M3296 is not a peripheral card that requires any hardware specific driver. As long as standby power supports the system, M3296 will monitor the system.

M3296 is powered by a Raritan Kira100 Baseboard Management Control (BMC). Kira100 is a fully-integrated "system-on-chip" microprocessor, which runs embedded Linux to complete a variety of tasks.

The Tyan SMDC M3296 provides many diverse methods to communicate with the hardware. There is flexibility to choose among Keyboard Controller Style (KCS), Intelligent Platform Management Bus (IPMB) and standard IPMI-Over-LAN communication as defined in latest IPMI 2.0 specification. M3296 hardware is OS-independent and fully compatible with all major IPMI compliant software.

Users can access M3296 via any JAVA enabled web browser. There isn't any additional client software needed.

2.1 - Specification

Chipset

- KIRA100 (Single Chip KVM/IP + IPMI processor)

Memory

- KIRA100 32MB SDRAM
- 32MB Video RAM Supports ECC DIMMs
- 8MB flash memory chip

Interface

- Module based on a low cost •DDR2 SO-DIMM 200
- JEDEC form factor, Tyan private SMDC interface
- 10/100 Mbps Ethernet Interface for direct RJ45 connection

Others

- USB 2.0 High Speed Interface
- LPC, GPIO, SMBUS

Power

- Low single 3.3V power consumption (approx 3.5 W)

Form Factor

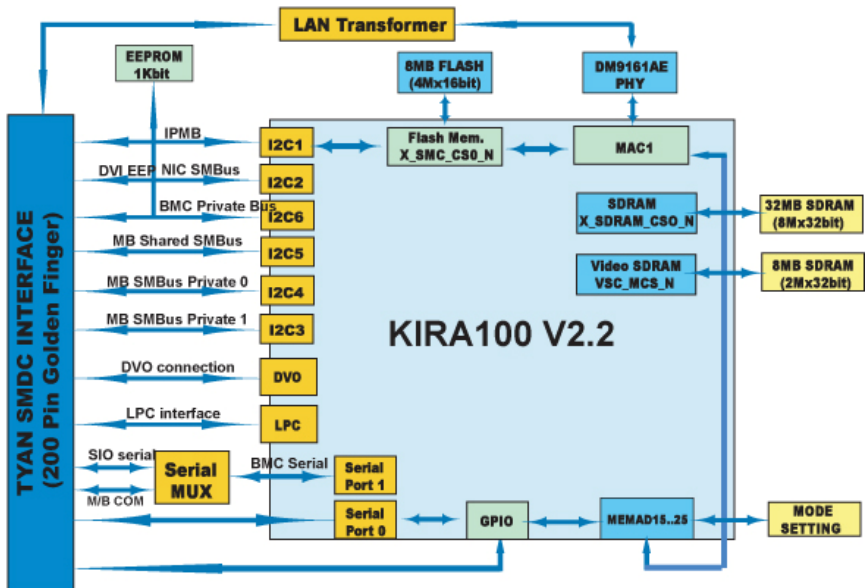
- Size: 67.59mmx31.52mm Six

Features

- IPMI 2.0 Compliant
- KVM (keyboard, video mouse) access over IP or analog telephone line
- Video output over LAN (1280X1024 @ 60Hz)
- No impact on Server or network performance
- Automatically senses video resolution for best possible screen capture
- High-performance mouse tracking and synchronization
- Virtual Disk via USB
- Mouse/Keyboard emulation via USB
- Embedded Web-Server, control via web browser, no additional client software needed
- Up to 256 bit SSLv3/TLSv1 encryption of all data
- Support of SSL certificate management
- Logging of all important events
- Up to 150 user profiles separately definable with individual rights

2.2 – Block Diagram

M3296 Block Diagram



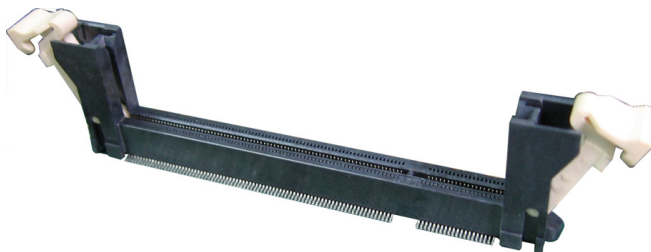
Key Feature

- IPMI 2.0 compliant
- Hardware monitoring
- Remote Power Management
- Serial-over-IP
- KVM-over-IP
- Keyboard/Mouse emulation via USB
- Virtual Disk via USB
- Web browser support
- SSLv3 encryption and certificate
- CMOS Clear
- ID LED
- Warning Buzzer(optional, depend on motherboard design)

Chapter 3: Installation Guide

3.1 - Insert Card

Power off the system, unplug the power supply power cable.
Find M3296 customized DDR2 SO-DIMM slot on motherboard



3.2 - Connect Ethernet

M3296 use a dedicated RJ45 LAN port on motherboard. You can also find the port position on motherboard's illustration. The connector need be connected to a 10/100Mbps Ethernet network.

Chapter 4: Configuration

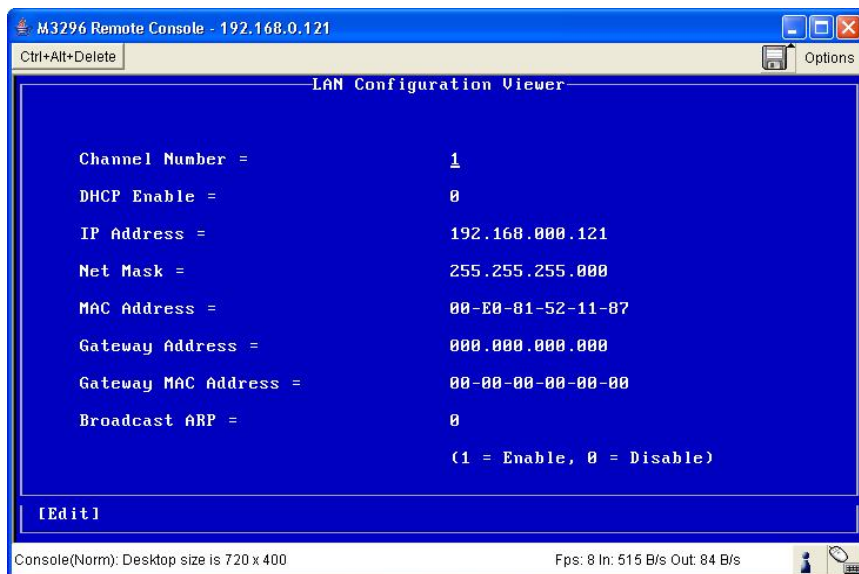
4.1 - Network Configuration

4.1.1 Configure Network Interface via DHCP

By default, M3296 configure its network interface with DHCP. When initializing, M3296 will try to find a DHCP server in network. If found, DHCP server will provide M3296 card IP address, net mask and gateway address. It's recommended to assign M3296 a fixed IP address according to its MAC address. You can find MAC address label on M3296 card.

4.1.2 Configure Network Interface via Tyan BMC utility

Tyan provide both DOS and Linux utility to configure LAN configuration. For example, you can use uh8.exe, which is a DOS BMC utility. You can download them on Tyan Website. http://www.tyan.com/support_download_utility.aspx?model=A.M3296

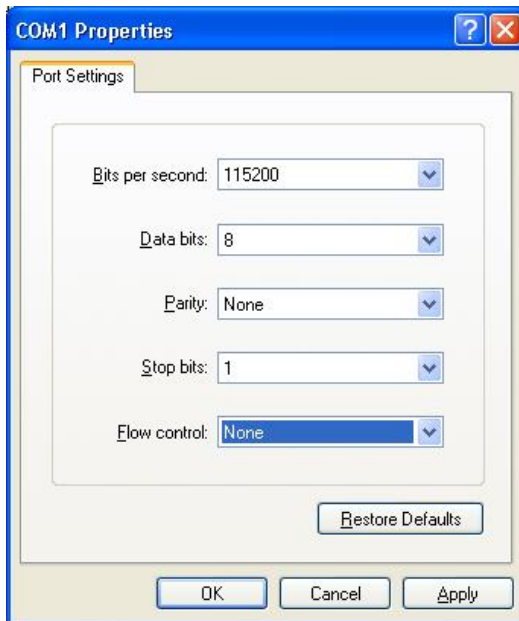


4.1.3 Configure Network Interface via Serial Port

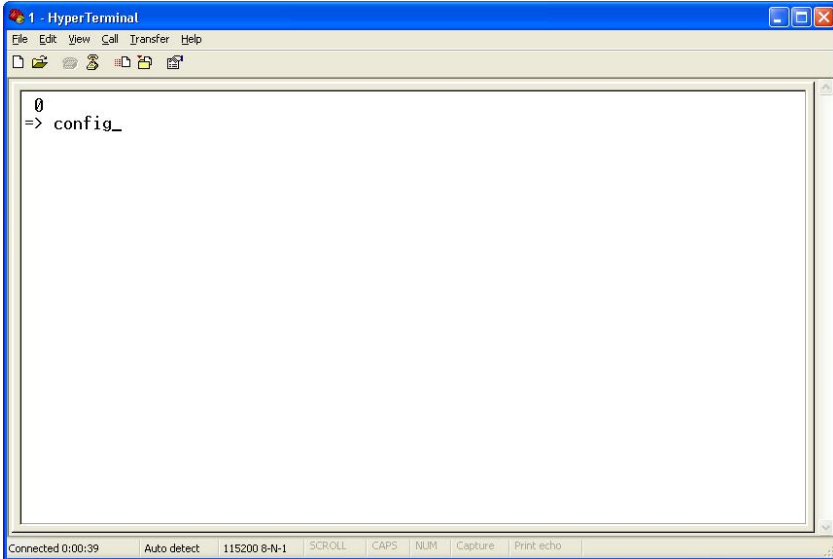
You need prepare another computer, connect a null modem cable between this computer and Tyan motherboard (host system) back panel serial port.

Open the serial console software on your computer (The serial console software can be hyper terminal (Windows) or Kermit(Linux)), configure the serial port with following setting:

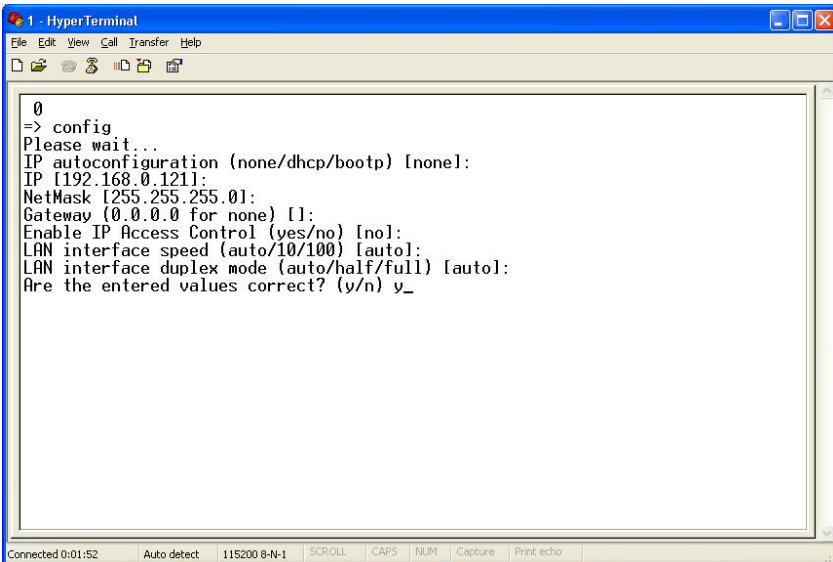
Parameter	Value
Baud Rate	115200
Data bits	8
Parity	No
Stop bits	1
Flow Control	none



Remove the host system power first. Connect power supply cable, and then press ESC key on remote computer immediately. If successfully, you will see “=>” prompt on serial console:



Type “config” and press “Enter” in serial console, wait a while, then you will be brought to a configuration environment.

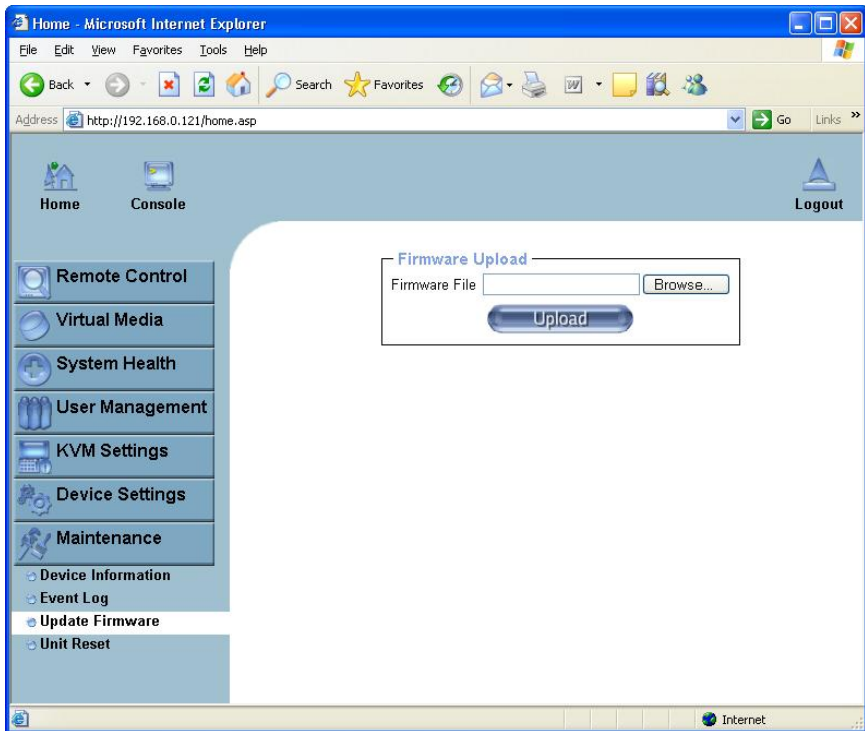


4.1.4 Configure Network Interface with other IPMI software

You can use any IPMI software, such as IPMITool and IPMIUtil to do M3296 LAN configuration.

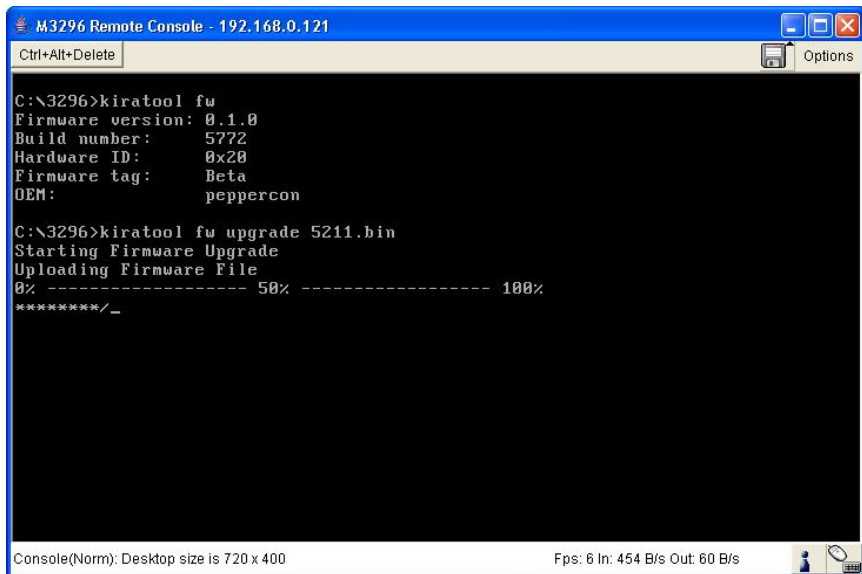
4.2 - Update Firmware

By factory default, M3296 firmware is motherboard independent. You could get most M3296 functions, such as KVM, Power Management and Virtual Disk. But some function, such as the hardware monitor or warning buzzer is motherboard specified. You need update firmware with motherboard specified one. You can download them on Tyan website http://www.tyan.com/support_download_firmware.aspx?model=A.M3296
To update firmware, you can use web page to do it remotely:



You can also use in-band utility “Kiratool” to do that. Raritan provide Dos, Linux and Windows Kiratool. You could download them on Tyan website.

http://www.tyan.com/support_download_utility.aspx?model=A.M3296



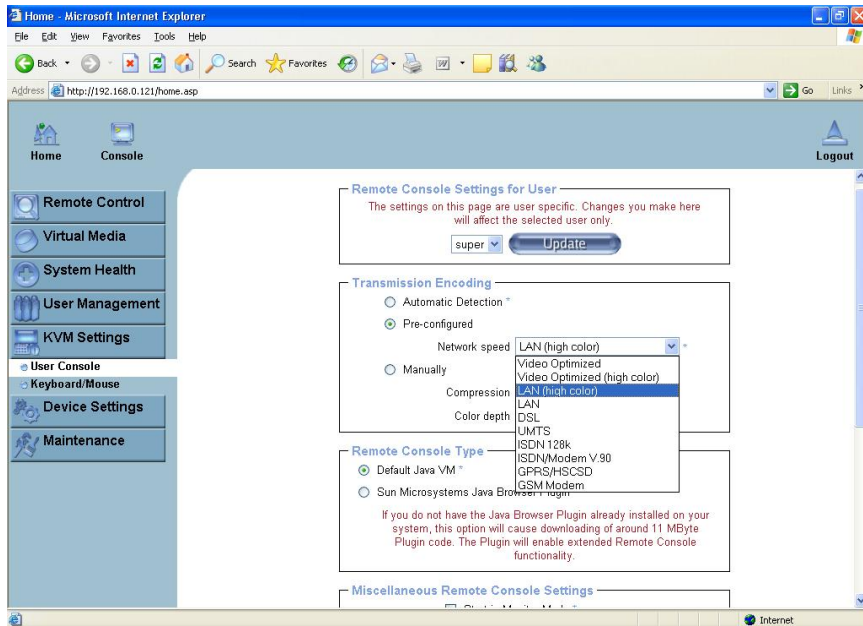
```
M3296 Remote Console - 192.168.0.121
Ctrl+Alt+Delete Options
C:\3296>kiratool fw
Firmware version: 0.1.0
Build number:      5772
Hardware ID:       0x20
Firmware tag:      Beta
OEM:               peppercon

C:\3296>kiratool fw upgrade 5211.bin
Starting Firmware Upgrade
Uploading Firmware File
0% ----- 50% ----- 100%
*****/_
```

Console(Norm): Desktop size is 720 x 400 Fps: 6 In: 454 B/s Out: 60 B/s

4.3 - Configure Video Console

M3296 support host video resolution up to 1280X1024@60Hz and high color. To reduce network traffic, you can configure the video console setting in web pages:



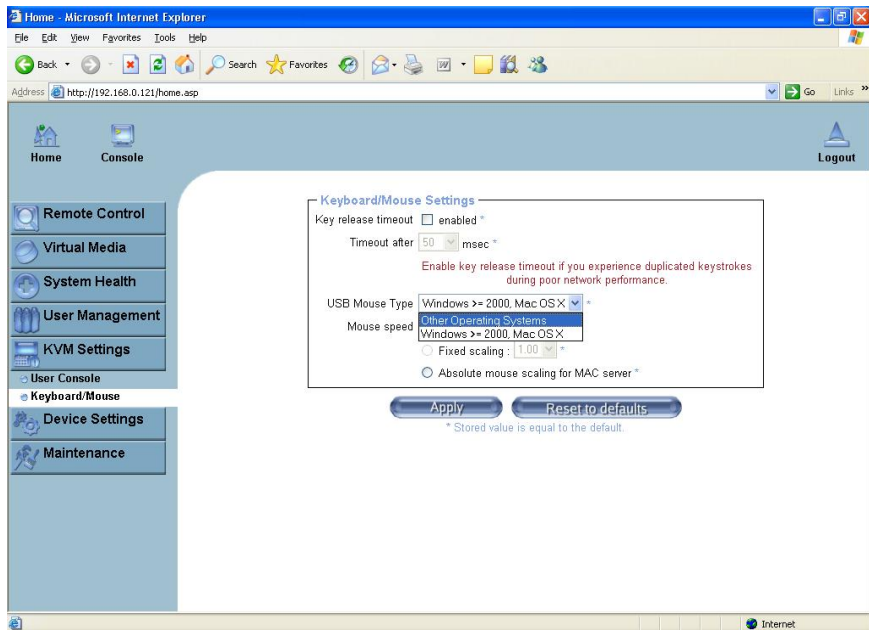
4.4 - Configure Keyboard/Mouse

The proper configuration of a remote mouse is somewhat difficult to understand unless you know some underlying concepts. Basically mouse transmit their movement using two methods: either absolute or relative mode.

Absolute mode means that the mouse transmits absolute co-ordinates to M3296 card. This is information like: "I am moving to screen co-ordinates X,Y". This mode is very easy to track and most modern Windows versions (XP, 2000, 2003) as well as Mac OS X use this. This mode is also easiest for M3296 to track.

The second mode is "relative mode". In this case the mouse transmits information like "I am moving 97 pixels vertically and 88 pixels horizontally from my previous position". This is much more difficult to track. Firstly M3296 has to know the starting point of the movement (hence you need to press a special Synchronize Button, which allows M3296 to enquire the starting point of the mouse). Secondly a lot of other factors come into play like the mouse acceleration which can be different on the remote system and the system you are using to talk to M3296. Hence M3296 has to do a lot more conversion work to track the mouse than using absolute mode.

Relative mode is used by most Linux Systems and older operating system like Windows 95/98. Therefore you need to select "Other Operating Systems" if your PC uses this mode.



4.4.1 Remote Mouse Settings

A common problem with KVM devices is the synchronization between the local and remote mouse cursors. M3296 addresses this situation with an intelligent synchronization algorithm. There are three mouse modes available on M3296:

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.

4.4.2 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 this option from the Remote Console Options menu (entry: Mouse Handling). If defined you may also press the mouse synchronization hotkey sequence

Intelligent Sync

If the Fast Sync does not work or the mouse settings have been changed on the host system, use the Intelligent Synchronization, instead. This method adjusts the parameters for the actual movement of the mouse pointer so that the mouse pointer is displayed at the correct position on the screen. This method takes more time than the Fast Sync and can be accessed with the appropriate item in the Remote Console Option menu (entry: Mouse Handling).

Furthermore, the shape of the mouse pointer has a significant influence on the pointer detection. We recommend use a simple, but common pointer shape. In most cases, the detection and synchronization of animated pointer shapes is likely to fail. In general, pointer shapes that change during the pointer detection process are rather impossible to figure out in the transferred video picture. With the usage of a standard mouse pointer shape the detection is rather simple and the synchronization is at its best.

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.

4.4.3 Host System Mouse Settings

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

While M3296 works with accelerated mouse 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.

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

4.4.4 Single and Double Mouse Mode

The above information applies to the Double Mouse Mode where remote and local mouse pointers are visible and need to be synchronized. M3296 also features another mode, the Single Mouse Mode, where only the remote mouse pointer is visible. Activate this mode in the Remote Console and click into the window area. The local mouse pointer will be hidden and the remote one can be controlled directly. To leave this mode it is necessary to define a mouse hotkey in the Remote Console Settings Panel Press this key to free the captured local mouse pointer.

4.4.5 Recommended Mouse Settings

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

MS Windows 2000, 2003, XP (all versions)

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.

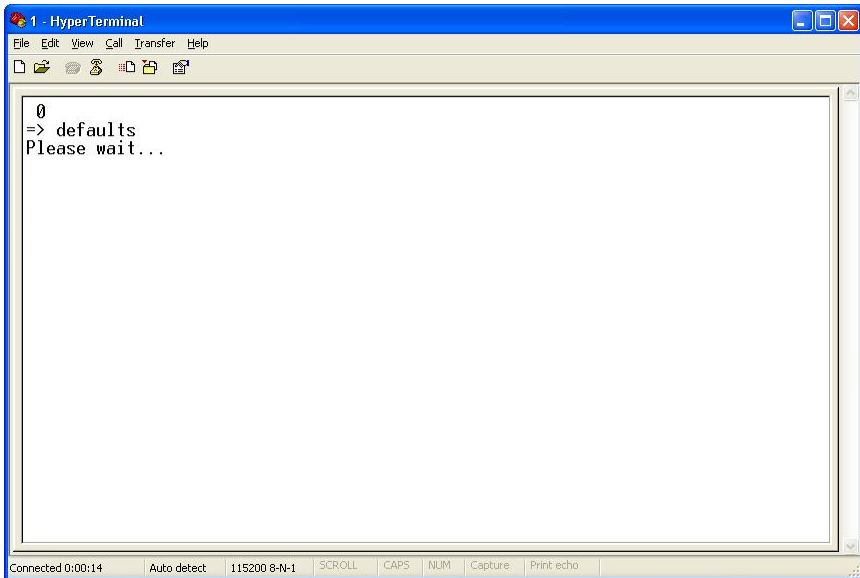
Linux

First, choose the option "Other Operating Systems" from the Mouse Type selection box.

Second, choose the option Auto Mouse Speed. This applies for both USB and PS/2 mouse.

4.5 - Reset M3296 to factory default

You can use serial console to reset M3296 setting to factory default. Connect the power supply cable, press ESC key, then you will see "=>" prompt (detail procedure refer to step in "Configure Network Interface with Serial Console"). Type "defaults" and press Enter, M3296 will reboot. Wait a while, M3296 will return the factory default state.



```
1 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
=>
=> defaults
Please wait...
```

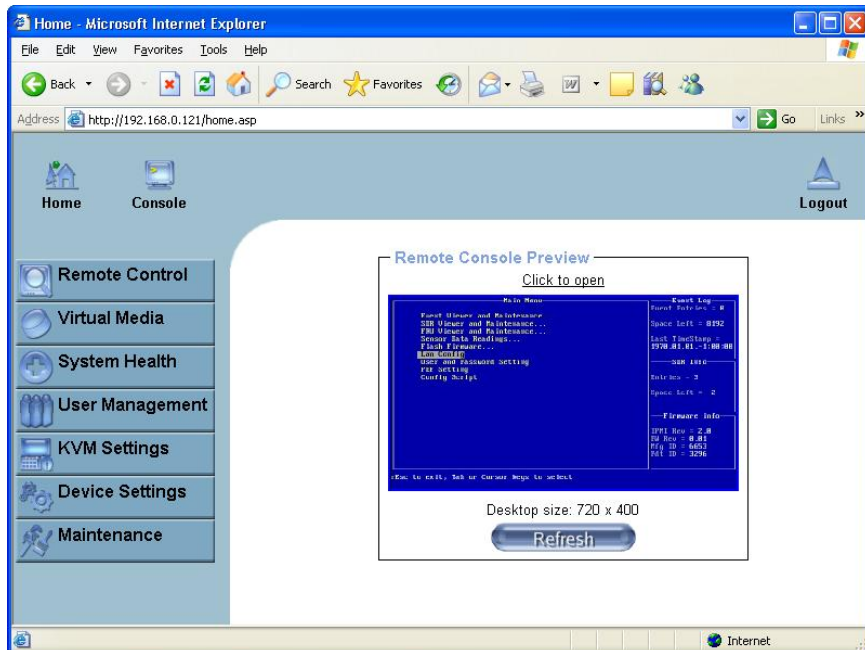
Connected 0:00:14 | Auto detect | 115200 8-N-1 | SCROLL | CAPS | NUM | Capture | Print-echo

Chapter 5: Menu Option

5.1 - Remote Video Console



In M3296 home page, you can click [Console](#) at the top left corner or “Click to open” to open the remote video console.




5.1.1 Video Console Control Bar

Ctrl+Alt+Delete: 

Special button key to send the "Control Alt Delete" key combination to the remote system.

Virtual Disk: 

Button to open the Virtual Disk Panel.


Option: 

You can click this button to open Option Menu

When you choose option "Other Operating Systems" in mouse setting, the following icons will be visible:

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.

Single and Double Mouse: 

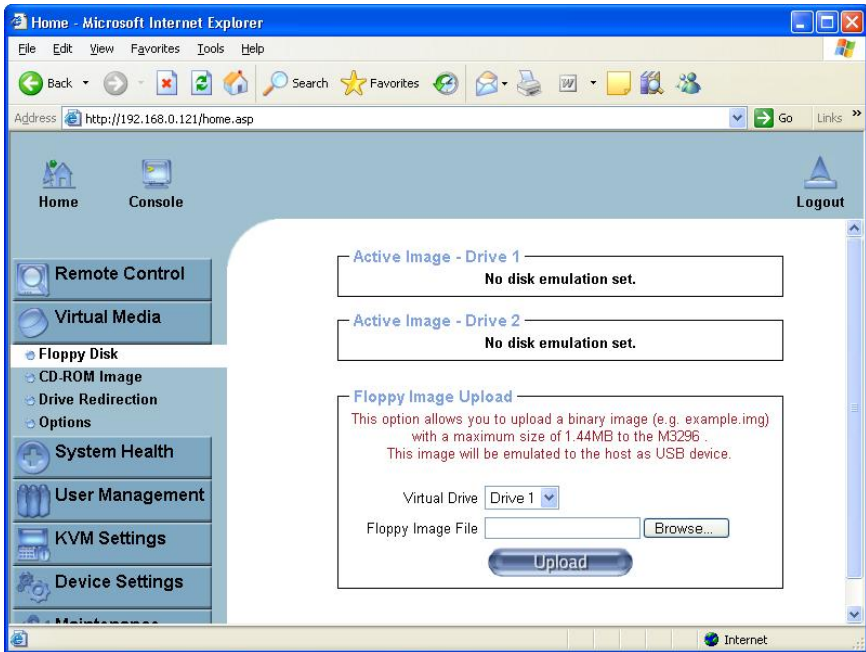
5.2 - Virtual Media

Via M3296, you can redirect remote physical floppy, CD/DVD driver, hard disk and removable driver or their file image to host system. These drivers are emulated as USB driver on host system.

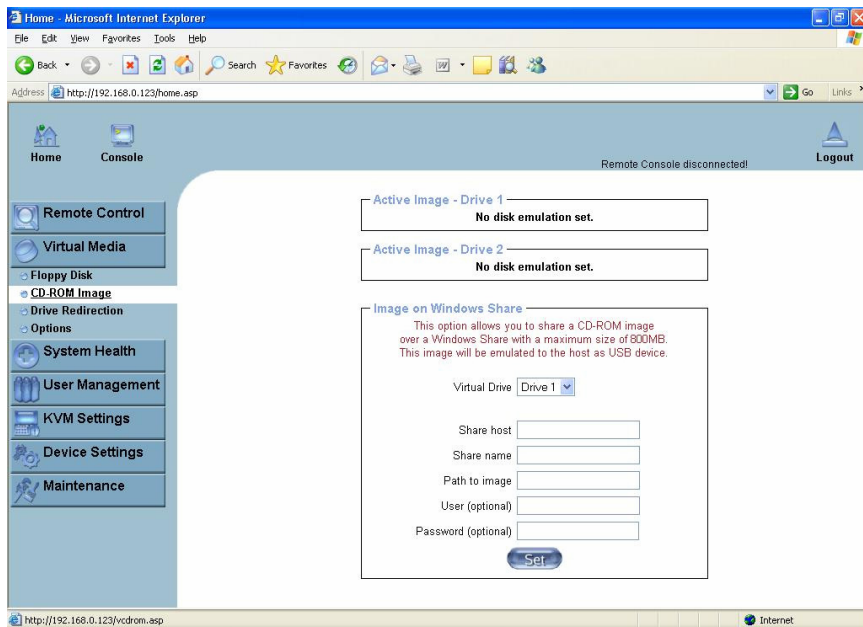
5.2.1 Floppy Image

In following page, you can specify Floppy Image to be emulated as Floppy Disk. You can specify up to two images and the maximum file size is 1.44MB. There're two steps.

First, click on the button "Browse", open the file selection dialog and select the desired image file. Secondly, click on the button "Upload" to initiate the transfer of the chosen image file into M3296 on-board memory. This image file is kept in the on-board memory of M3296 until the end of the current session, until you logged out or initiated a reboot of M3296.



5.2.2 CD-ROM Image



If you want to use image file size over 1.44MB, you could use CD-ROM image via Windows Files Share or SAMBA on Linux. In this case, maximum file size is 800MB. 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.

For an example you may have a look at the previous image: M3296 will look for a server named "192.168.168.97". Then, the entered share name is selected (in our example we

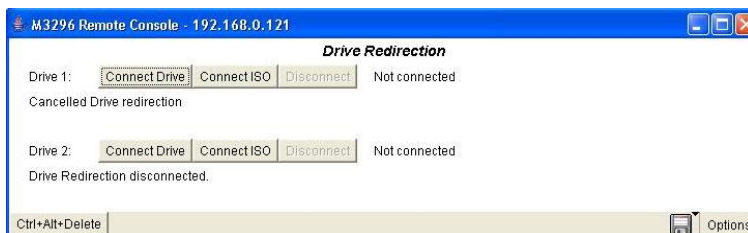
use the share “storage”) and the image file “\cdrom_image.iso” is opened. If this file can only be accessed with both user name and password enter the according values in the input fields for user name and password. In our case the file is owned by the user “raphaeld” and protected by an user-specific pass-phrase (displayed as a number of stars).

Then you need click button “Set” to register the specified file image and its location.

The specified image file is supposed to be accessible from M3296. The information above has to be given from the point of view of M3296. It is important to specify correct IP addresses or device names. Otherwise, M3296 may not be able to access the referenced image file properly, leave the given file un-mounted and will display an according error message, instead. So, we recommend to state correct values and repeat this step if necessary.

5.2.3 Drive Redirection

If you want physical drive, include floppy, hard disk, CD-ROM or USB stick, on your client computer, to be used on remote host system, you could use drive redirection to emulate up to two virtual USB disks. The drivers are shared over TCP network connection. Open the Drive Redirection Panel in Video Console, you can see following image:



Click button “Connect Drive”, you can open the dialog to specify the drive you want to share. You can even enable writing support so that remote host can write data on your local computer disk. The life time of drive redirection is same with Video Console. It is to say, connection will be kept until the Remote Video Console is closed.



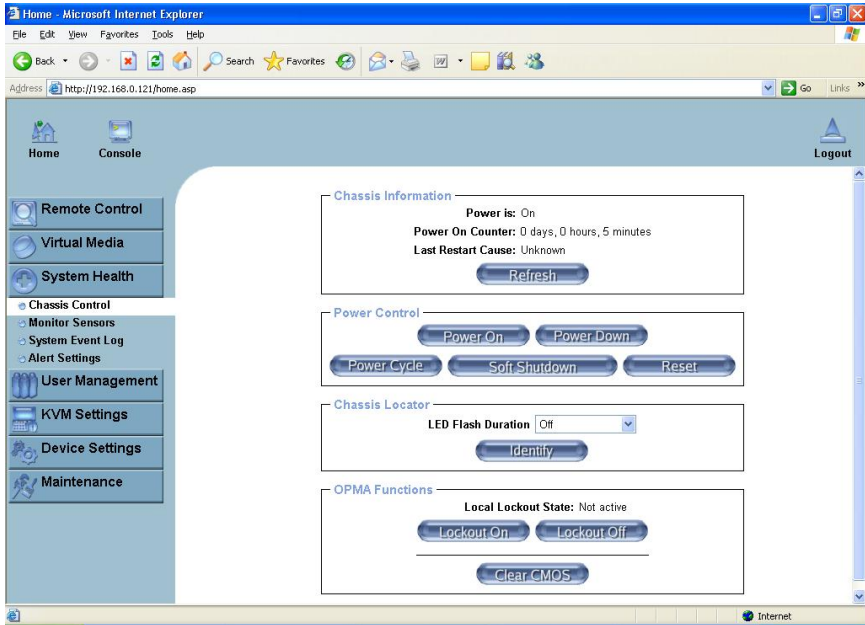
Please note that Drive Redirection works on a level which is far below the operating system. That means that neither the local nor the remote operating system is aware that the drive is currently redirected, actually. This may lead to inconsistent data as soon as one of the operating systems (either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

5.3 - System Health

5.3.1 Chassis Control

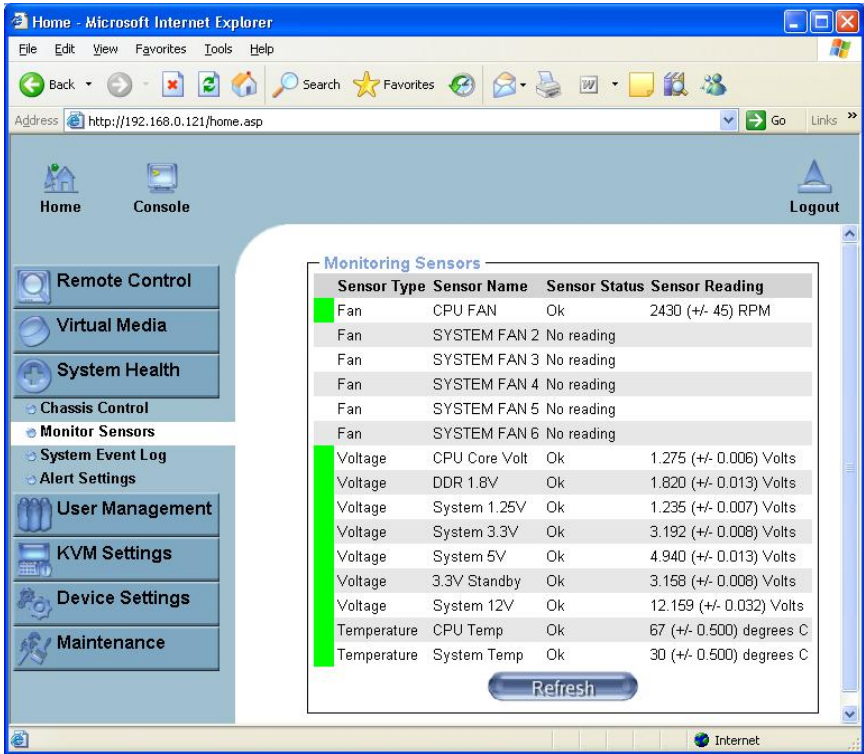
In “Chassis Control” page, you can:

- Monitor system power status
- Power on/off host system
- Flash ID LED and locate host chassis
- Lock local front panel power/reset button
- Clear CMOS.



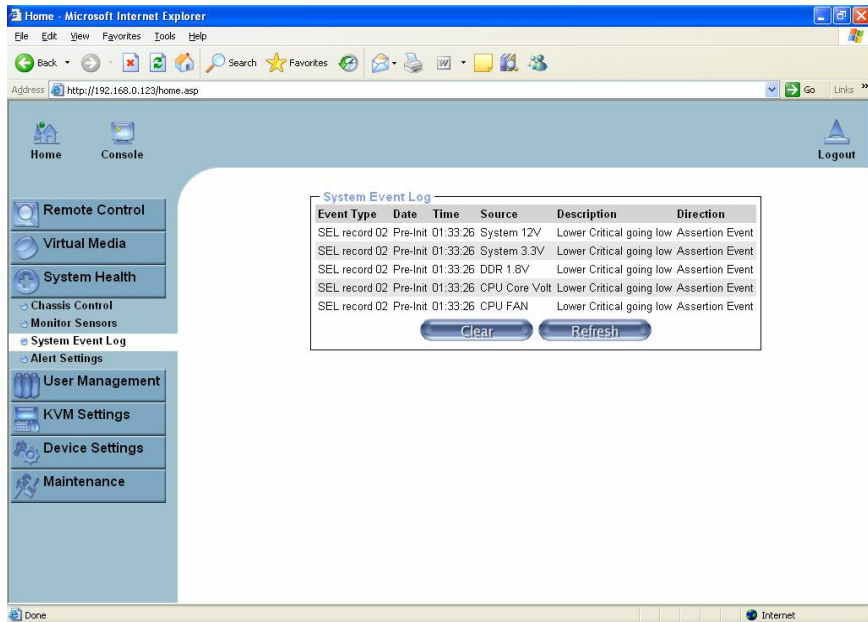
5.3.2 Monitor Sensors

If you use the motherboard specified firmware, you could get sensors reading in this page. With factory default firmware, this page will be empty.



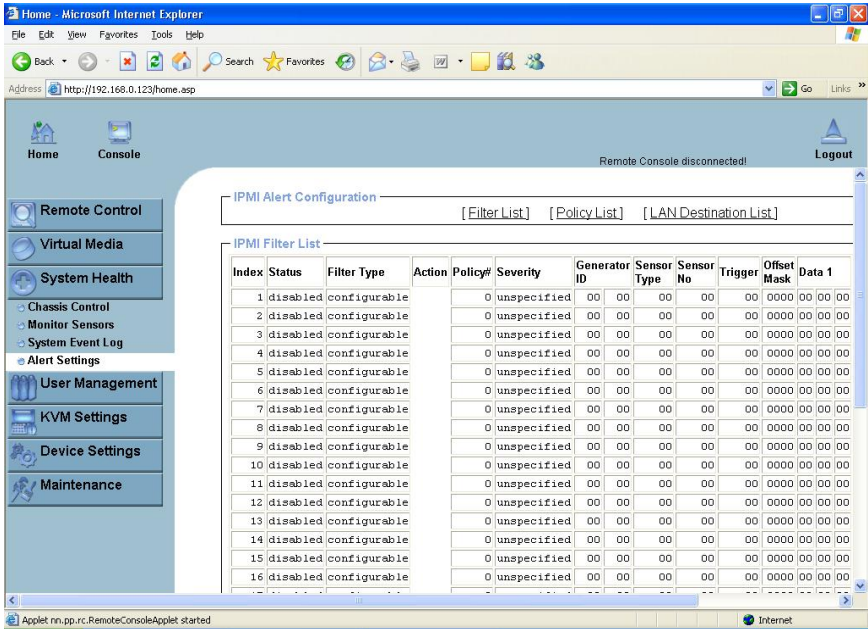
5.3.3 System Event Log

These logs are IPMI events. They're different with M3296 own system logs.



5.3.4 Alert Settings

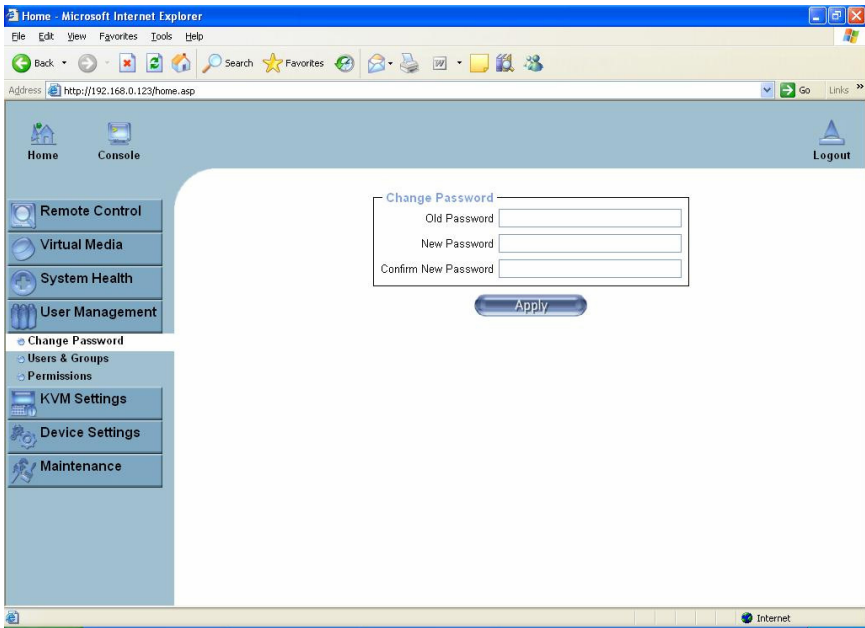
In this page, you can configure the IPMI PEF settings; include filters, policies and destinations.



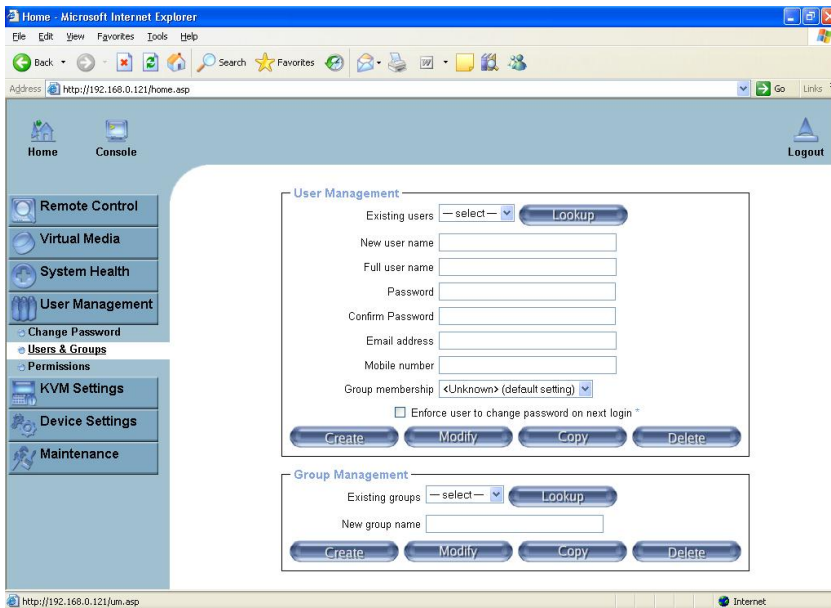
5.4 - User Management

5.4.1 Change Password

You can change your current user's password here.



5.4.2 Users and Groups



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.

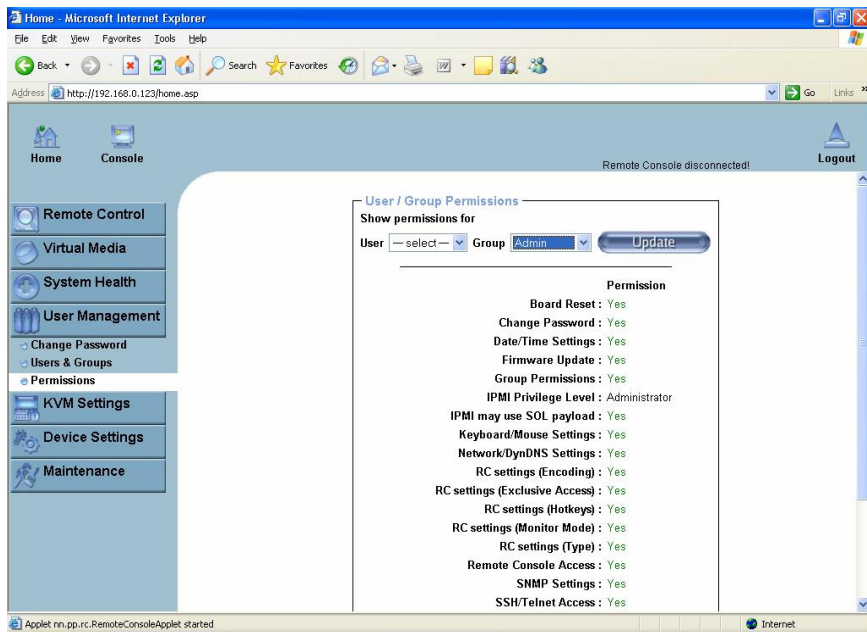
Role

Each user can be a member of a group (named a "role") - either an administrator, or a regular user. Choose the desired role from the selection box.

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

5.4.3 Permissions

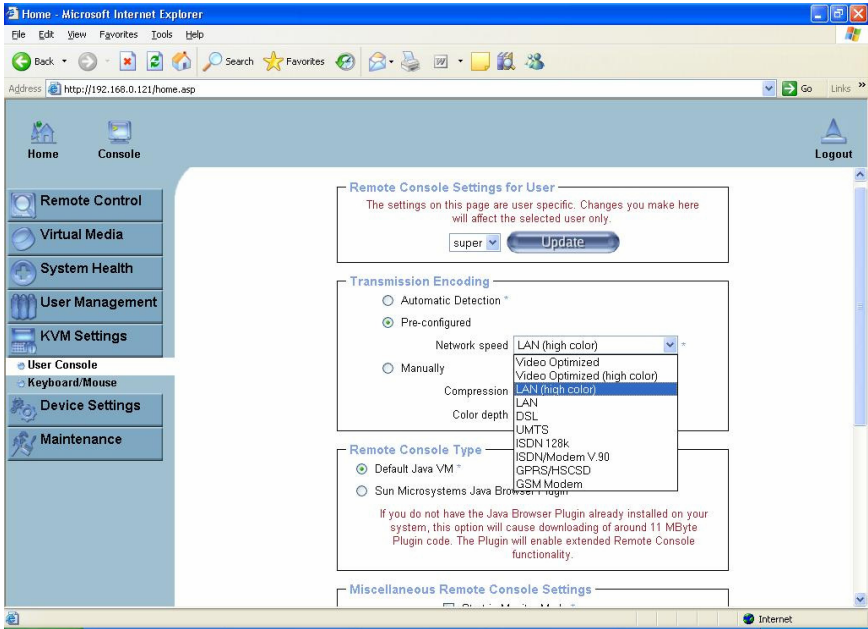
This page allows you to set the permissions for each user or group. You select the item (user and/or group) from the drop-down menu. All changes you make then affect the permission set of the selected entity. The user can only access and use the selected function if the permissions field is set to "yes".



5.5 - KVM Settings

5.5.1 User Console

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



Remote Console Settings for Users

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.

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 color depth for the indicated network speed.

Manually

Allows to adjust both compression rate and the color depth individually. Depending on the selected compression rate the data stream between M3296 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 M3296 simultaneously.

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

Remote Console Type

Specifies which Remote Console Viewer to use.

Default Java 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.

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. This is only available if you have selected the Mouse Mode "Other Operating System".

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 just 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, that is always caught, or the key sequence "Control+Backspace" on Linux that can be used for terminating the X-Server.

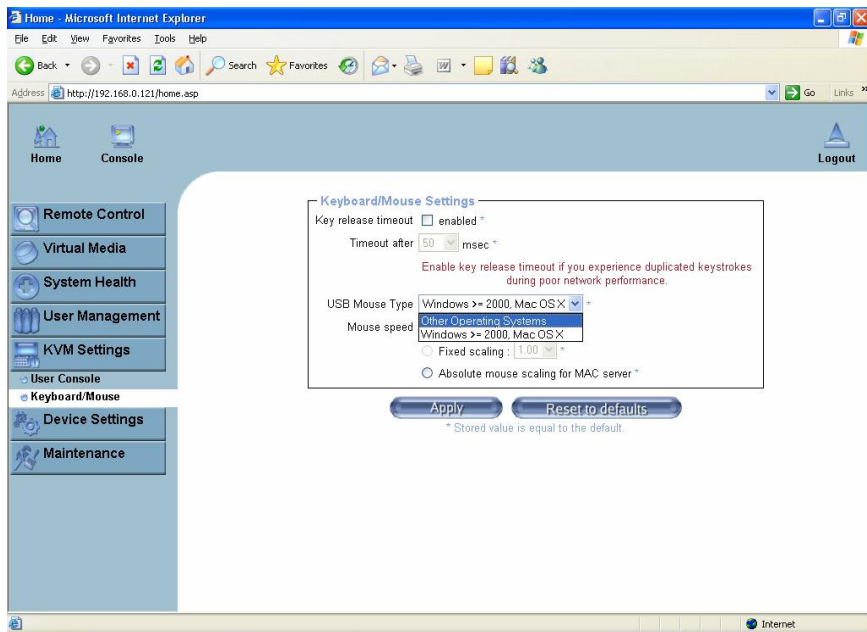
In order to define a new Button Key or to adjust an existing one have a look at the rules that describes the setting for a key. In general, the syntax for a key is as follows:
[confirm] <key code>[+|-]>[*]<key code>*

A term in brackets is optional. The star at the end means that you add further keys as often as required for your case. The term "confirm" adds a confirmation dialogue that is displayed before the key strokes will be sent to the remote host.

The "key code" is the key to be sent. Multiple key codes can be concatenated with either a plus, a minus, or an ">" sign. The plus sign builds key combinations - all the 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 keyreleases. The ">" sign releases the last key, only. The star inserts a pause with a duration of 100 milliseconds.

As an example, the key combination of Ctrl, Alt and F2 is represented by the sequence Ctrl+Alt+F2.

5.5.2 Keyboard and Mouse



Key Release Timeout

This is an important option if you are accessing M3296 over a slow or congested network. In such a situation you transmit a network packet containing the key PRESS to M3296. When you release the key, then M3296 will receive a corresponding RELEASE packet. When the network is slow then it takes too long for the RELEASE packet to arrive. This might mislead M3296 to replicate the key pressing, this is like you holding down the desired key.

The Key Release Timeout in milliseconds tells M3296 to consider the key released, even if no RELEASE packet has arrived. This avoids keys being unwantedly repeated.

USB Mouse Type

Enables the USB mouse type. Choose an appropriate option from the selection box. Choose between "MS Windows 2000 or newer" for MS Windows 2000, 2003 Server, XP, or "Other Operating Systems" for MS Windows NT, Linux, or OS X.

In "MS Windows 2000 or newer" mode the remote mouse is always synchronized with the local mouse. 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. M3296 will try 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.

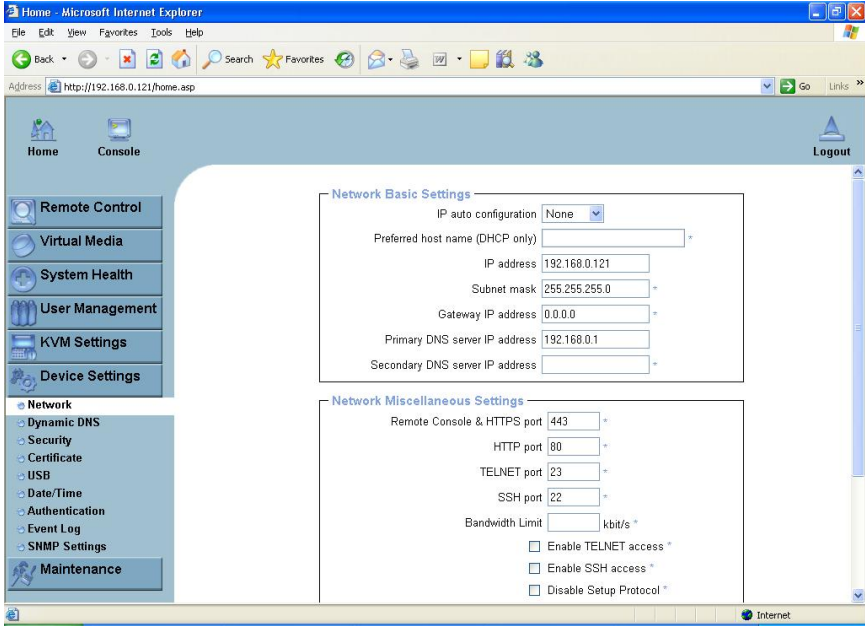
You may also set a fixed scaling which determines the amount the remote mouse pointer is moved when the local mouse pointer is moved by one pixel. This option only works when the mouse settings on the host are linear. This means that there is no mouse acceleration involved.

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

5.6 - Device Settings

5.6.1 Network Settings

Following is Network Setting Panel, you can change network related parameter here. If click the “Apply” button, the new networking setting will take effect immediately. As changing the M3296 network setting may cause connection lost, please be careful.



Basic Network Settings

IP auto configuration

With this option you can define if the M3296 should fetch its network settings from a DHCP or BOOTP server. For DHCP select "dhcp" and for BOOTP select "bootp" accordingly. If you choose "none" then IP auto configuration is disabled.

Preferred host name

Preferred host name to request from DHCP server. Whether the DHCP server takes the M3296's suggestion into account or not depends on the server configuration.

IP address

IP address in the usual dot notation.

Subnet Mask

The net mask of the local network.

Gateway IP address

In case the M3296 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 M3296 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 M3296 Remote Console server and HTTPS server are listening. If left empty, the default value (port 444) will be used.

HTTP port

Port number at which the M3296 HTTP server is listening. If left empty, the default value(port 80) will be used.

Telnet port

Port number at which the M3296 Telnet server is listening. If left empty, the default value(port 25) will be used.

SSH port

Port number at which the M3296 SSH (Secure SHell) server is listening. If left empty, the default value (port 22) will be used.

Bandwidth Limit

The maximum network traffic generated through the M3296 Ethernet device. Value in Kbit/s.

Enable Telnet

This enables the Telnet client mode.

Enable SSH

This enables the SSH (Secure SHell) client mode.

Disable Setup Protocol

Enable this option to exclude the M3296 from the setup protocol.

LAN Interface Settings

This entry field displays the current settings for the Ethernet/LAN interface of the OPMA module. You may choose between auto negotiation and a fixed setting for the Ethernet transceiver settings "interface speed" and "duplex mode" in case auto negotiation does not work correctly.

LAN interface speed

Depending on your network connection you may select an according speed value for this interface. To adjust the interface automatically, choose "auto detect" (default value). If this selection results in misbehavior of the interface, choose one of other speed options to work with. The interface will transmit and receive data with that fixed speed.

LAN interface duplex mode

If necessary you may also select a specific duplex mode. The default value is set to "auto detect" which leads to an automatic setting of the duplex mode depending on your network (recommended). As an alternative you may explicitly set the interface to either "half duplex" or "full duplex" mode

5.6.2 Dynamic DNS

A freely available Dynamic DNS service (dyndns.org) can be used

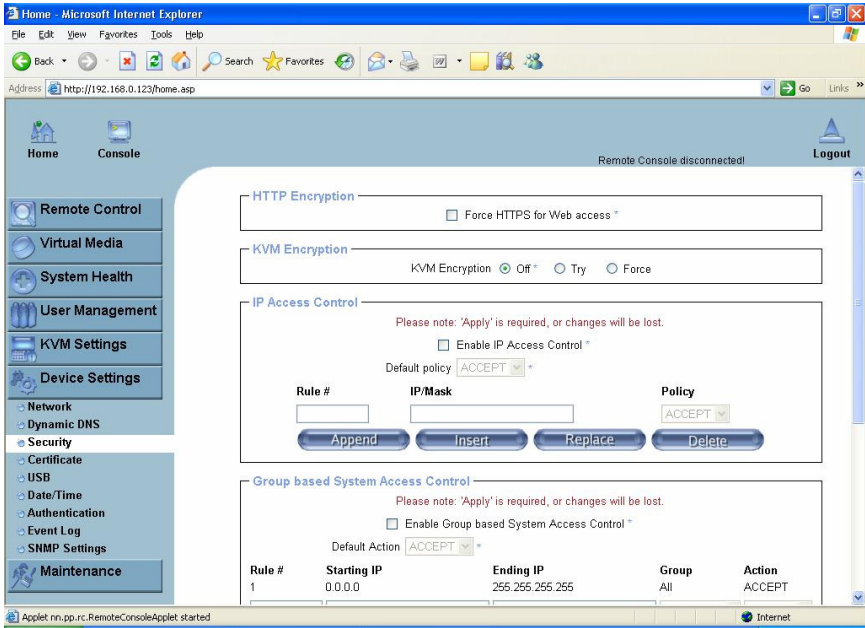
The screenshot shows a web browser window displaying a management console. The browser's address bar shows `http://192.168.0.123/home.asp`. The console has a sidebar with various settings categories: Remote Control, Virtual Media, System Health, User Management, KVM Settings, Device Settings, Network, Dynamic DNS (selected), Security, Certificate, USB, Date/Time, Authentication, Event Log, SNMP Settings, and Maintenance. The main content area is titled "Dynamic DNS Settings" and contains the following fields and controls:

- Enable Dynamic DNS *
- Dynamic DNS server: www.dyndns.org
- DNS System: Dynamic (dropdown menu)
- Hostname (eg. yourhost.dyndns.com): [text input field]
- Username: [text input field]
- Password: [text input field]
- Check time (HH:MM): [text input field] *
- Check interval: 24h (dropdown menu) *
- Delete saved external IP: [Delete button]
- [Apply button]
- [Reset to defaults button]

* Stored value is equal to the default.

The browser's status bar at the bottom shows the address `http://192.168.0.123/dyndns.asp` and an Internet icon.

5.6.3 Security



HTTP Encryption

If "Force HTTPS" option is enabled, access to the web front-end is only possible using a HTTPS connection. M3296 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 M3296 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 will try 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 allows you to set an IP address policy in order to specify which networks are allowed to access M3296. Make sure you press "Apply" to save and enable your changes.

Group Based System Access Control

This is similar to the option above, except that you can specify a group of IP addresses and not a network with a network mask.

User Blocking

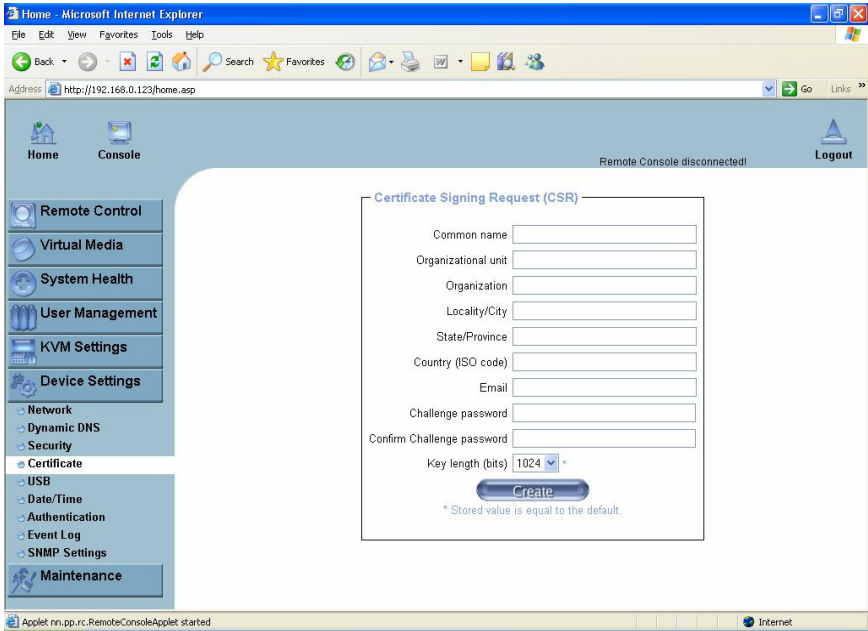
When someone attempts to login to M3296 and fails, you can specify how many failed login attempts the OPMA module should tolerate before waiting for the specified number of "Block Time" minutes before it allows further logins. This is useful for blocking automated hacking and cracking attempts.

Login Limitations

You can specify if only a single user is allowed to login to the OPMA module at one time. Note that if you do so, this greatly reduces the usefulness, for example the chat window, because you can then only talk to yourself. Also if another administrator is logged in from a different location, then you will be blocked accessing the M3296.

Password aging is the time interval at which users are required to change the password. Some systems refer to this as "Password Expiry".

5.6.4 Certificate



The M3296 uses the Secure Socket Layer (SSL) protocol for any encrypted network traffic between itself and a connected client. During the connection establishment, M3296 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 M3296 ever produced and certainly will not match the network configuration that will be applied to the M3296 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 M3296 card. In order to do that, the OPMA module 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 M3296 the following steps are necessary:

1. Create a SSL Certificate Signing Request. 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.
2. Send the saved CSR to a CA for certification. You will get the new certificate from the CA after a more or less complicated traditional authentication process (depending on the CA).

3. Upload the certificate to the OPMA module using the "Upload" button.

After completing these three steps, M3296 has its own certificate that is used for identifying the card to its clients.

Common name

This is the network name of M3296 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 M3296 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 M3296 is accessed using HTTPS.

Organizational unit

This field is used for specifying to which department within an organization the M3296 host system belongs.

Organization

The name of the organization to which the M3296 host system 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

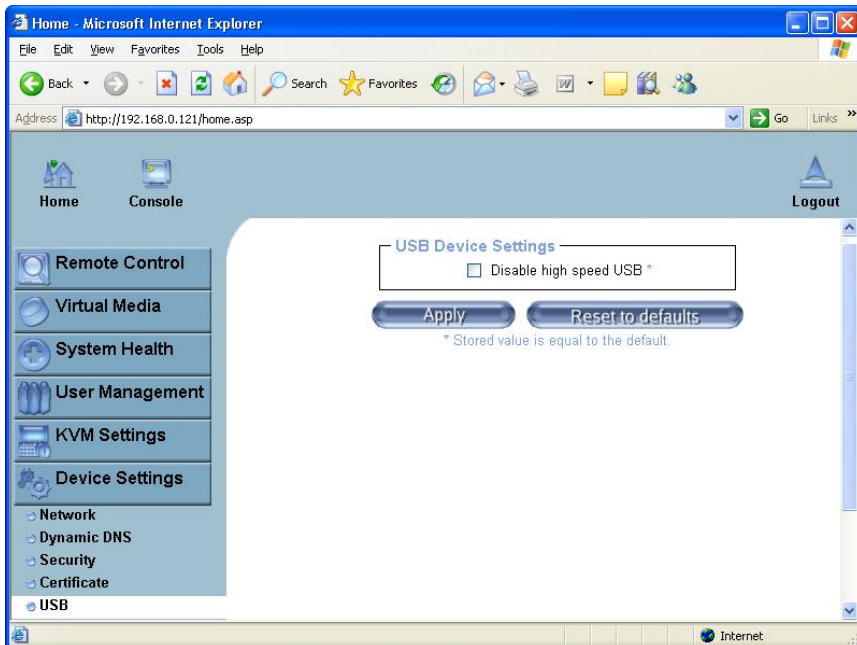
The email address of a contact person that is responsible for the M3296 host system and its security.

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 OPMA module during connection establishment.

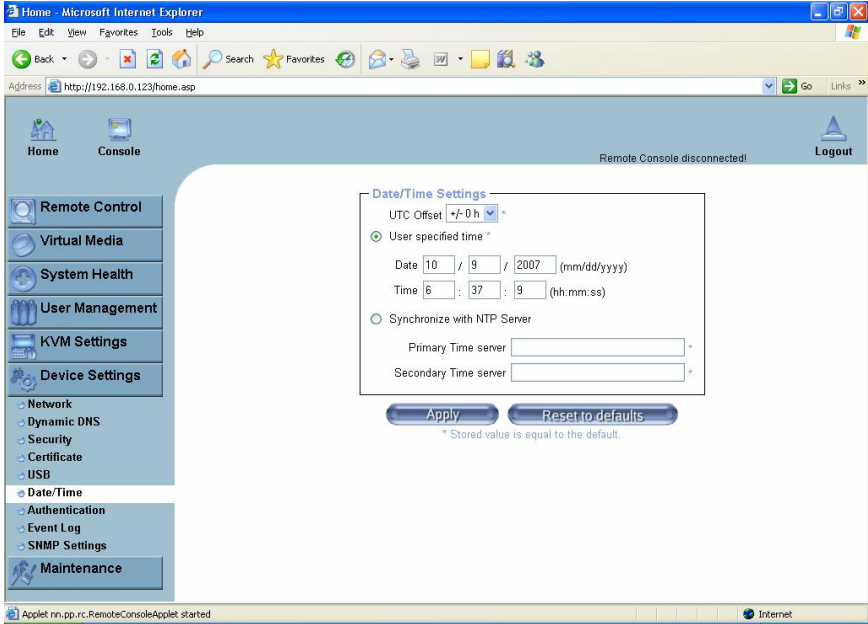
5.6.5 USB Setting

In some case, OS and BIOS driver cannot handle USB emulation driver on M3296 well. For example, installing RHEL4 U4 via USB CDRROM on Nvidia chipset board, Linux kernel will hang up during booting. You have to disable high speed USB mode and use full speed mode. This approach has a disadvantage, disk emulation will get slower. So we disable this option by default.



5.6.6 Date and Time

In this panel, you can set up where the internal real time clock of M3296 comes from. 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 wait BIOS to adjust it again after M3296 loses power for more than a few minutes(Our motherboard BIOS will set its time to M3296). 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.

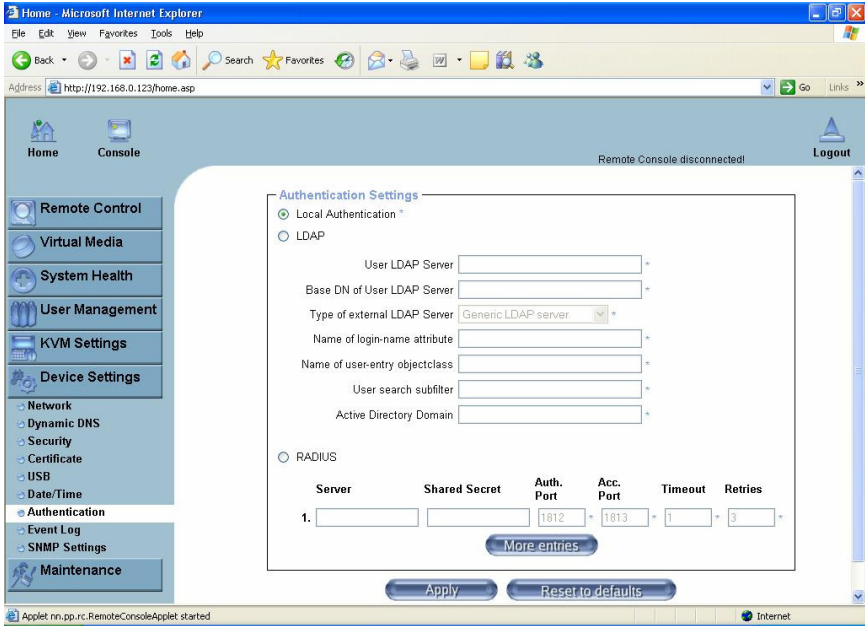


5.6.7 Authentication Settings

You can specify where the M3296 will look in order to authenticate the users. You can either use "Local Authentication", this means you need to have created the user account on the M3296 and the user/group information residing on the M3296 will be used for authentication.

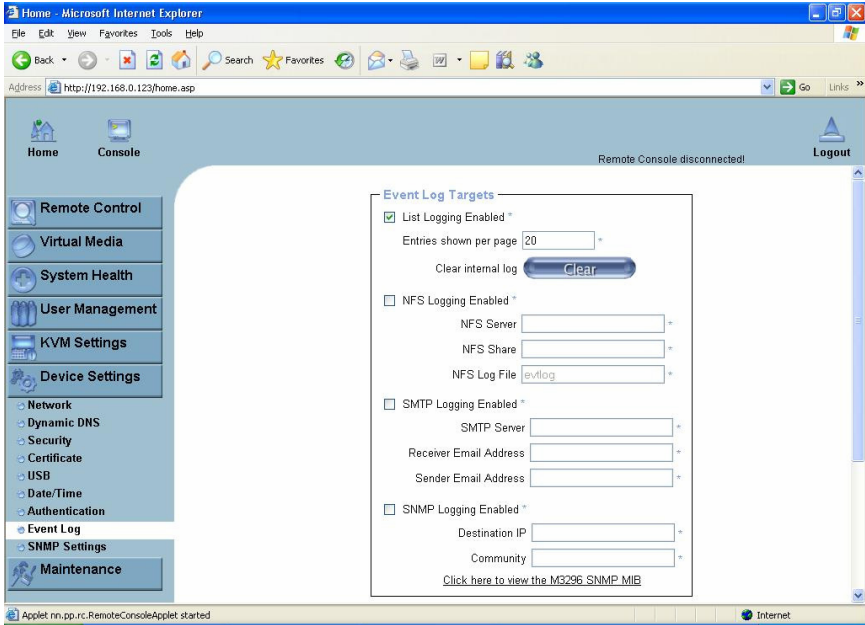
The other options allow you to specify an LDAP or a RADIUS Server to use for the login authentication. These methods are very useful when you want to map users into specific groups which have certain privileges. It is usually far easier and simpler to refer to already existing groups, rather than having to re-enter everything into M3296.

Note: Whatever you configure, you can always login over the network as the user "super". The super user is always authenticated and authorized locally, so you always have a "back door" to M3296.



5.6.8 Event Log Settings

Important events like a login failure or a firmware update are logged to a selection of logging destination. Each of those events belongs to an event group which can be activated separately. The common way to log events is to use the internal log list of the M3296. To show the log list, click on the item "Event Log" from the section "Maintenance". In the Event Log Settings you can choose how many log entries are shown on each page. Furthermore, you can clear the log file here.



List logging enabled

To log events you may use the internal log list of the M3296. To show the log list, click on "Event Log" on the "Maintenance" page. Since the M3296 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.

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 M3296 card to only one NFS share, you have to define a file name that is unique for each device. When you change the NFS settings and press the button "Apply", the NFS share will be mounted immediately. That means the NFS share and the NFS server must be filled with valid sources or you will get an error message.

SMTP Logging enabled

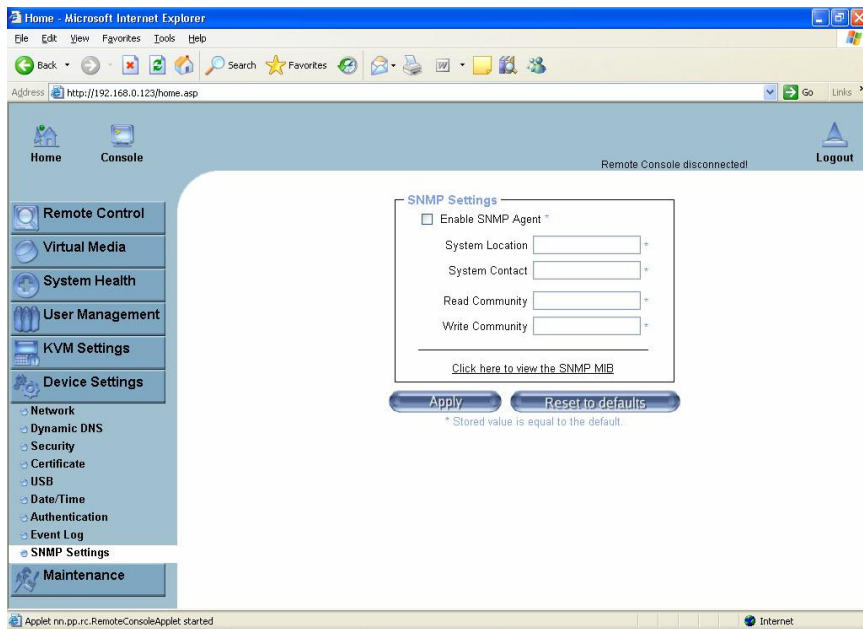
With this option the M3296 is able to send Emails to an address given by the Email address text field in the Event Log Settings. These mails contain the same description

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 M3296 card and that needs no authentication at all (<server ip>:<port>).

SNMP Logging enabled

If this is activated, M3296 will send 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.

5.6.9 SNMP Settings



The following information is available via SNMP:

- Serial number
- Firmware version
- MAC address / IP address / Net mask / Gateway of LAN interface
- Host system power state

The following actions can be initiated via SNMP:

- Reset server
- Power on/off server
- Reset M3296

The following events are reported by the M3296 via SNMP:

- Login trial at M3296 failed.
- Login trial at M3296 succeeded.
- Denying access to a particular action.
- Host system was reset.
- Host system was powered on/off.

Enable SNMP Agent

If this option is checked, the M3296 will reply 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 M3296 via SNMP, 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 M3296 or the host via SNMP, i.e. all that affects the host or the M3296.

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 system. The value will be used in reply to the SNMP request "sysContact.0".

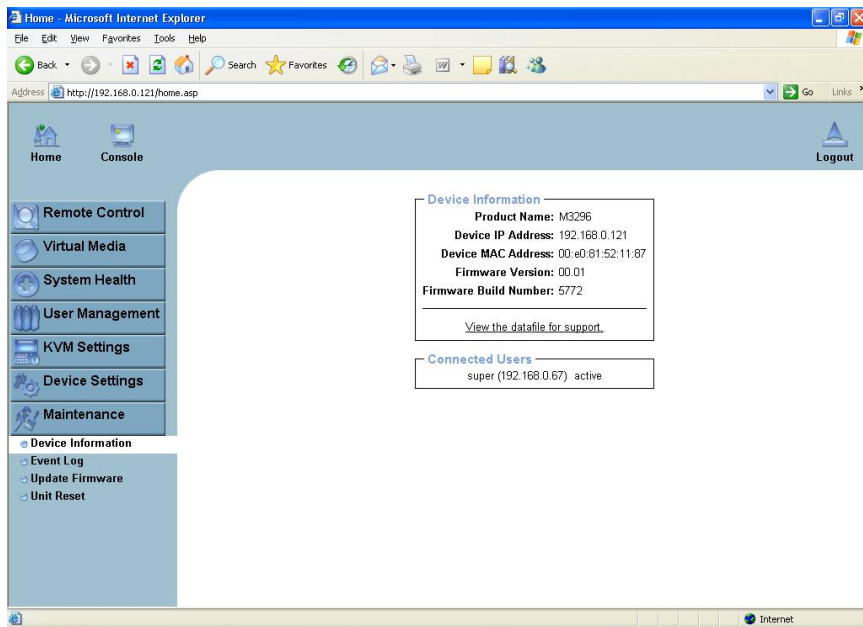
SNMP MIB

This link allows you to download the M3296 SNMP MIB file. This file may be necessary for an SNMP client to communicate with M3296.

5.7 - Maintenance

5.7.1 Device Information

In device information page, you can get the firmware version and build number, which will be useful to our technical support.



5.7.2 Event Log

It includes the events that are kept by M3296, extended by the event date, a short event description and an IP address the request was sent from.

Home Microsoft Internet Explorer

Address http://192.168.0.123/home.asp

Home Console Remote Console disconnected Logout

Remote Control
Virtual Media
System Health
User Management
KVM Settings
Device Settings
Maintenance
Device Information
Event Log
Update Firmware
Unit Reset

Event Log [Prev | Next]

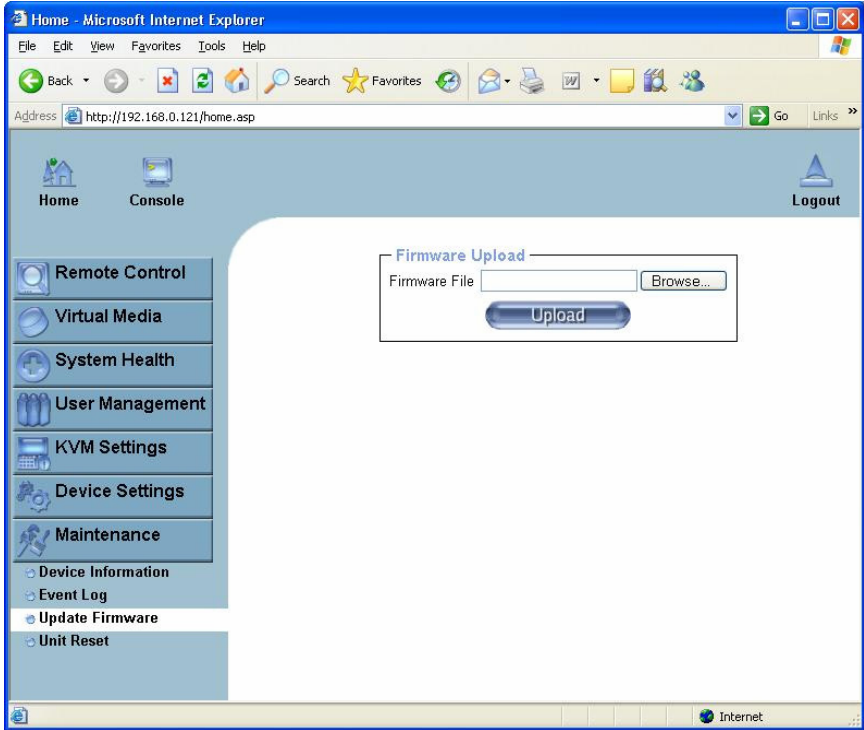
Date	Event	Description
10/09/2007 06:13:20	Remote Console	Connection to client 192.168.0.67 closed.
10/09/2007 06:13:04	Remote Console	Connection to client 192.168.0.67 established.
10/09/2007 06:12:56	Remote Console	Connection to client 192.168.0.67 closed.
10/09/2007 06:12:52	Remote Console	Connection to client 192.168.0.67 established.
10/09/2007 06:12:46	Remote Console	Connection to client 192.168.0.67 closed.
10/09/2007 06:12:08	Remote Console	Connection to client 192.168.0.67 established.
10/09/2007 06:11:50	Authentication	User 'super' logged in from IP address 192.168.0.67
10/09/2007 06:10:53	Authentication	User 'super' logged in from IP address 192.168.0.67
10/09/2007 06:07:42	Authentication	User 'super' logged in from IP address 192.168.168.97
01/01/1970 00:11:06	Authentication	User 'super' logged in from IP address 192.168.168.97
01/01/1970 00:10:20	Authentication	User 'super' logged in from IP address 192.168.168.97
01/01/1970 00:07:56	Authentication	User 'super' logged in from IP address 192.168.168.97
01/01/1970 00:03:39	Authentication	User 'super' logged in from IP address 192.168.168.97
01/01/1970 00:01:34	Authentication	User 'super' logged in from IP address 192.168.0.120
01/01/1970 00:00:22	Board Message	Device successfully started.
01/01/1970 00:00:22	Board Message	Device successfully started.
01/01/1970 00:00:22	Board Message	Device successfully started.
01/01/1970 00:00:22	Board Message	Device successfully started.
01/01/1970 00:00:20	Board Message	Device successfully started.
01/01/1970 00:00:20	Board Message	Device successfully started.

Applet m.pp.rc.RemoteConsoleApplet started Internet

5.7.3 Update Firmware

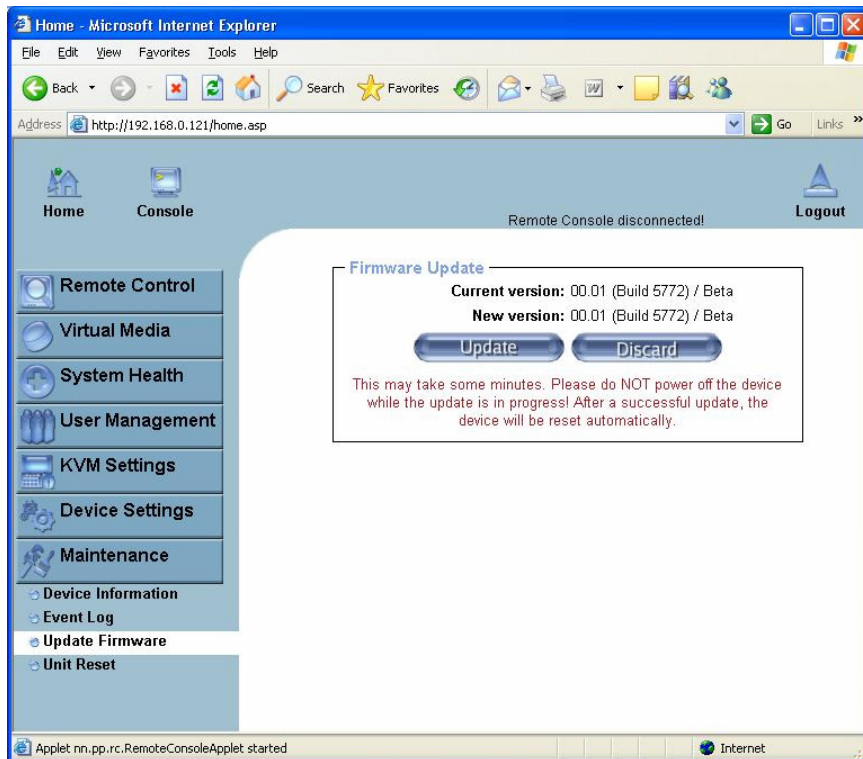
M3296 is a complete standalone computer. The software it runs is called the firmware. The firmware of M3296 can be updated remotely in order to install new functionality or special features. Normally, the factory default firmware is mother board independent. If you want specified feature, such as monitoring sensors, you need update firmware.

First, click the button “Browse” and specify the firmware file you want to update. Then click button “Upload” to transfer the file to M3296 memory. M3296 will check if this file is a valid firmware or not.

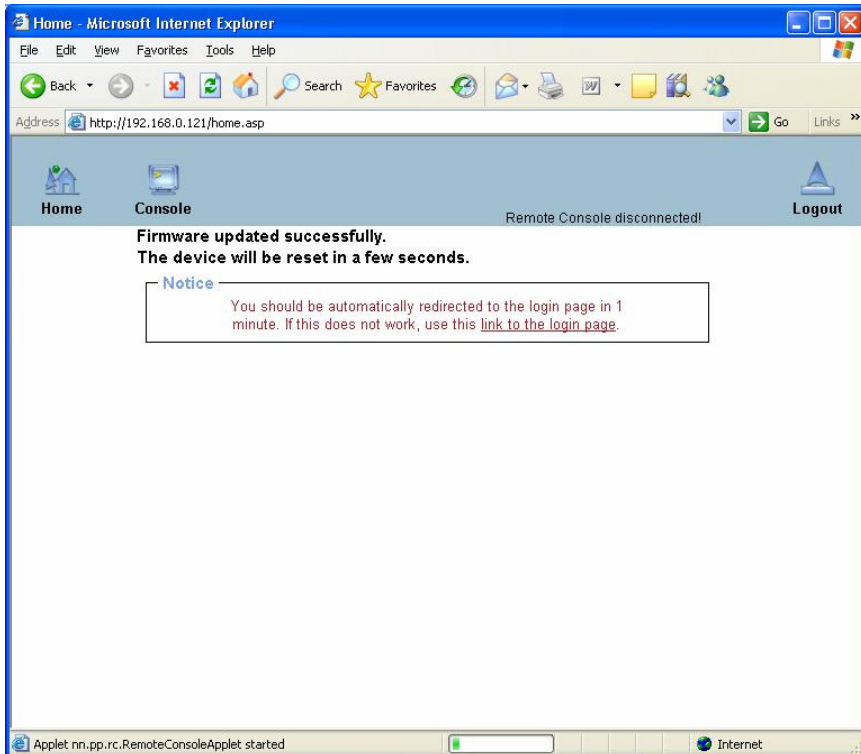


Secondly, if everything went well, you will see the Update Firmware panel. The panel shows you the version number of the currently running firmware and the version number of the uploaded firmware. Pressing the button "Update" will store the new version and substitute the old one completely.

Warning: Firmware updating is very critical. During this step, please make sure power supply will not be interrupted. Otherwise, M3296 will become unusable.

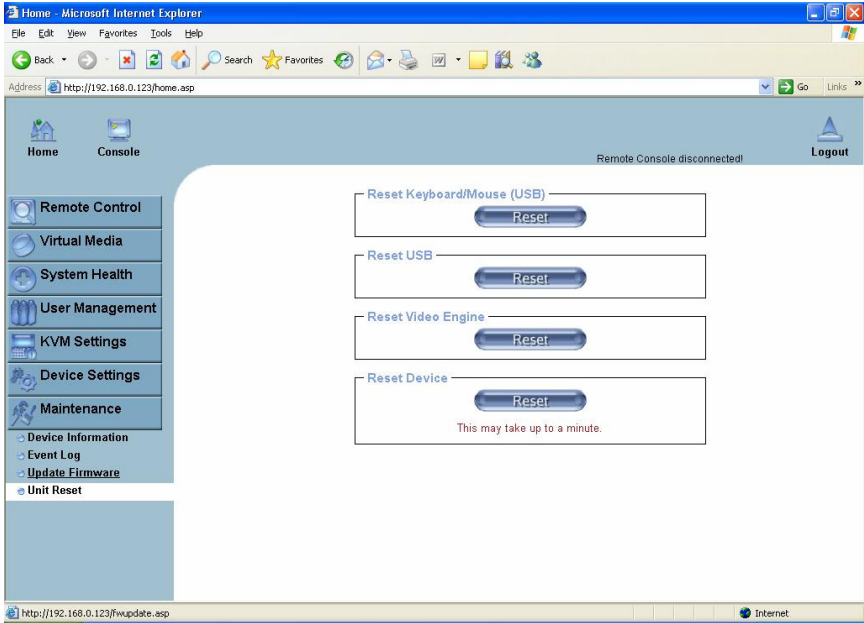


Thirdly, after the firmware has been stored, M3296 will reset automatically. After about one minute you will be redirected to the Login page and requested to login once again.



5.7.4 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 M3296 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 one minute. Resetting sub devices (e.g. video engine) will take some seconds only and does not result in closing connections. Only administrator users are allowed to do reset.



FAQ

1. Driver and Software Support

As M3296 is OS independent, normally you don't need load any driver at all. But in some cases, if you want to use some in-band utility or application, generic IPMI driver is needed.

Open IPMI driver on Linux

M3296 can use the Open IPMI driver in Linux Kernel.

```
"modprobe ipmi_devintf"
```

```
"modprobe ipmi_si"
```

If you use old version Linux Kernel, module "ipmi_si" is replaced by "ipmi_kcs"

To load driver correctly, motherboard DMI table IPMI entry should be right. The correct value is base address 0xCA2, I/O mapping and byte spacing.

Windows IPMI Driver

M3296 also support Intel reference driver, you can get it on

<http://www.intel.com/design/servers/ipmi/tools.htm>.

From Windows Server 2003 R2, Microsoft also provide in box IPMI driver. You can use it also.

IPMITool and other IPMI software Support

M3296 support open source software IPMITool, you can also use other one like OpenIPMI, IPMI Util.

2. M3296 Web Pages

No connection can be established to M3296.

Have a look on your hardware. Is M3296 attached to a power supply? Verify your network configuration (IP address, router). You may send a "ping" request to M3296 to find out whether M3296 is reachable via network.

M3296 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 M3296 pages may be loaded from your browser cache and not from the card.

Login to M3296 fails.

Verify both your user login and your password. By default, the user "super" has the password "pass".

Moreover, your web browser has to be configured to accept cookies.

Cannot upload the signed certificate in Mac OS 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).

3. Remote Video Console

The Remote Console window of M3296 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).

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

Have a look on your hardware. If there is a proxy server between M3296 and your host, then you may not be able to transfer the video data using RFB. Establish a direct connection between M3296 and the client. Furthermore, check the settings of M3296 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 M3296 and your client.

The Remote Console does not open with Opera in Linux.

Some versions of Opera do not grant enough permission 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 "access Class In Package. sun.*"; to the java policy file of opera (e.g./usr/share/opera/java/opera.policy).

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 M3296.

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 video chip DVO interface is not switched off by the video driver of your operating system. Normally, video chip onboard has 2 interfaces. One is analog and connected to local monitor. The other is DVO and wired to M3296 slot. Some video driver will switch off the DVO output by default.

For example, RHEL 4.5 and 5 default XGI driver will disable the DVO interface. It's to say, when screen is switch to X window, remote screen will be blank. You have to use text mode or upgrade driver. RHEL4.5 need driver R1.12.02 and RHEL5 use R1.12.03.

4. Mouse and Keyboard

The mouse does not react correctly in the applet screen. The mouse is not in sync with the mouse of the host.

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

I have a crazy mouse.

Verify your mouse settings. Disable the mouse acceleration. For instance in Windows 2000 this can be done in 'Settings -> System control -> Mouse'. Make sure that your mouse settings match your mouse model, i.e. PS/2 or wheel mouse.

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. Alternatively you can use the soft keyboard feature.

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 stand by mode

For SUN computers a USB keyboard does not work.

M3296 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.

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.

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website (<http://www.tyan.com>) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.