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RT-iSCSI-B

iSCSI to SCSI Bridge
User Manual

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Before you start

There are a number of additional pieces of equipment you will require for the successful installation of your Bridge:

Ethernet Cable
You will require a good quality cable of suitable length to go between your network access point and the iSCSI Bridge. This should be marked as certified to Cat 5e and have a RJ45 style connector at the Bridge end.

SCSI Cable
The greatest source of SCSI related faults are due to poor quality SCSI cabling. This is especially true when running at the higher speeds possible with this iSCSI Bridge. We therefore recommend that, you purchase a good quality SCSI 3 compatible cable with High Density 68 way D type connectors for your installation.

You will also need to complete your SCSI bus installation with a SCSI Terminator. This is connected to the last peripheral on the SCSI bus. Again we recommend you use a good quality LVD / SE Terminator.

If you are in any doubt contact your reseller for extra assistance.

1.0 Introduction

The Bridge has been designed to ensure that in the majority of installations it will require the minimum of set up before use. However, we suggest you read the following that will guide you through setting up both the Network and SCSI aspects of the iSCSI Bridge.

The GUI Management section guide you through the initial set up required to install the Bridge on to your network

1.1 Overview

The iSCSI Bridge creates an interface between a network, which utilizes the Ethernet protocol, and peripherals that utilize the SCSI bus. The internal circuitry of the Bridge acts as a two-way interface converting the data packets that are received on the network into data transfers and electrical signals that storage devices such as disks, tape drives and optical disks understand on the SCSI bus.

2.0 Installing the iSCSI Bridge

There are 4 basic steps to installing the iSCSI Bridge

- Connecting the Ethernet cable
- Connecting the SCSI cables and peripherals
- Connecting the Power Supply
- Configuring the Bridge's host name and IP address

2.1 Ethernet Connection

The iSCSI Bridge can be used on the following network configurations

- 10BaseT
- 100BaseT
- 1000BaseT (Gigabit)

It is not necessary to specify which network type you are connected to as the iSCSI Bridge when powered up it will automatically select the correct network speed. The connection to the Ethernet network is via an industry stand copper interface on the front of the unit.

To connect the iSCSI Bridge the Ethernet network, inset the Cat 5E cable into the connector on the unit as shown below. When the plug is in the correct position a "click" should be heard.

2.2 SCSI Bus Connections

The SCSI bus on the iSCSI Bridge is capable of running at speeds of up to 160 Mbytes/s, however, devices that operate at slower speeds can still be connected to this SCSI bus. In a manner similar to the Ethernet connection, the iSCSI Bridge will automatically negotiate with these devices to obtain their optimal operating speed upon power up.

When adding your SCSI peripherals to the SCSI bus it is important to remember that every device on the SCSI bus must have a unique SCSI ID and that SCSI ID 7 is reserved for the iSCSI Bridge.

The iSCSI Bridge can support both Single Ended and LVD peripherals. However, it should be noted that the two buses will have different data transfer speeds and cable length limitations:

- Single Ended termination and/or devices – 2 metres length – (40 MB/s maximum)
- LVD termination and/or devices – 6 metres length – variable speeds up to a maximum of 160 MB/s.

If you are in any doubt, please contact your reseller for further assistance. Connect the SCSI cable to the front of the iSCSI Bridge as shown below, ensuring that connector is the correct way up.

2.3 Connecting the Power Supply

Use a standard 4-pin power connector to J8 in the rear of the PCB to power iSCSI Bridge. Before powering up the iSCSI Bridge be sure that all the peripherals are powered up and have a connection to the network.

3.0 Configuring the iSCSI Bridge

Before the iSCSI Bridge can be used on the network for the first time, it is necessary to configure a number of IP parameters. To make this as easy as possible we have provided the iSCSI Bridge with an inbuilt GUI interface that can be accessed via any web browser.

3.1 Initial set up

Connect the iSCSI Bridge to the SCSI peripherals and network as described in the previous sections and power up the unit.

From within your web browser, connect to the ISCSI Bridge using the IP address **10.10.10.10**.

Depending on how the network parameters are set on the machine you are using to access the iSCSI Bridge, if may be necessary to change your network setting on your computer for the initial set up. See Appendix A and B for further help.

Once you have connected to the GUI interface you will see the entry page shown below.

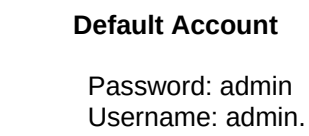

Figure 1 Web based GUI

Note: We suggest that you change your password at the next possible opportunity – see section 3.8.

The GUI interface will now display the root selection screen as shown below.

Figure 2 – Device Configuration

Click on the Connections button under the Network section of the main window. This will now bring up a new configuration page.

3.2 Setting the Hostname

In this box enter the name you wish to use to address this iSCSI Bridge in the future. We suggest that you use a name that is relevant to its location and or its purpose.

3.3 Setting the IP Address

There are two possibilities when configuring the IP address of the iSCSI Bridge:

- DHCP - this means the Bridge will seek out the DHCP sever on your network and obtain an IP address from the server each time it powers up.
- Static IP - the IP address set in this page will be the IP address the unit will use each time it powers up.

Depending on your configuration, either click the DHCP button or set your Static IP address.

Note: if you select the DHCP mode, ensure your DHCP server is set to automatically update the DNS server.

3.4 Setting the Subnet Mask

If the Bridge is configured to use DHCP the netmask will be issued from the DHCP server. If you are using static IP address enter the IP mask in this box.

3.5 Setting the Broadcast Address

Enter in this box your Broadcast address for your network.

3.6 Committing the changes

Click the save button to save these parameters and then click the reboot option in the left hand pane.

3.7 Reconnect to the Bridge

If you made changes to you computer, return them to their previous setting and reconnect to the Bridge using the IP address or hostname, depending on which addressing mode you selected.

3.8 Setting the Administration Password

This configuration page will allow the administrator to change the access password for the GUI interface. From within the main menu select the Password and Security icon under the Network section

The GUI will now display the following window

Figure 3 – Password administration

To change your password, type the existing password and the new password into the appropriate boxes and press save.

Note: it is not possible to reset the password without logging into the GUI so ensure you remember your password!

3.9 Network Services

This configuration page will allow the administrator to configure the IP addresses for the Network Time Domain server and the iSNS service.

From within the main menu select the Service Control icon under the Network section

The GUI will now display the following window

Figure 4 – Network Services

The Network Time Protocol (NTP) is a protocol for synchronizing the clocks of computer systems over the IP network.

To enable NTP on the Bridge, click the tick box and enter the IP address for the NTP Server and then click the save button.

Internet Storage Name Service (iSNS) allows automated discovery, management and configuration of iSCSI from a central point. If this option is enabled the Bridge will register its resources with a central iSNS server.

To enable iSNS on the Bridge, click the tick box and enter the IP address for the iSNS Server and click the save button.

3.10 iSCSI Connections

This configuration page will allow the administrator to configure the password and username for the CHAP authorization and the Data Digest error checking on the Bridge From within the main menu select the iSCSI Target icon from the SCSI System section.

The GUI will now display the following window

Figure 5 – iSCSI Connections

CHAP is an authentication scheme used by Servers to validate the identity of clients and vice versa. When CHAP is enabled, the initiator must send the correct Username and Initiator Password to gain access to the bridge. The Target Password is provided to allow iSCSI mutual CHAP. If mutual CHAP is selected on the Initiator, this field contains the Target Password.

To enable CHAP click the tick box and enter the following details

- Username – this is the same name as specified in the iSCSI host
- Initiator Secret – this is the password defined in the iSCSI host
- Target Secret - this is the password that the Bridge will send to the iSCSI Host.

Header & Data Digests

Digests are an advanced form of error-detection specified by iSCSI. These may be used for error detection on the iSCSI Headers and or the Data portion of the packet. Depending on the hardware used, enabling Digests may affect the performance so it is recommended that this option be only enabled when you suspect you are receiving corrupted IP packets.

There are three encoding options for each of the Digests.

- Selecting None forces Data Digests to off
- Selecting CRC32 forces on Data Digests to use the CRC32 encoding.
- Selecting the None/CRC32 option allows the initiator to select the whether Data Digests are enabled

Current Connections
This section lists the current connections i.e. logged on, from iSCSI hosts. It displays which initiator is connected to which Target device.

Note it is possible that more than one host to be connected to any target device or one host to multiple target devices.

It is possible to send a logout request to a host by highlighting the host connection and pressing the logout button.

Note: many initiators are configured to automatically reconnect after completing the logout request. If this is the case then the connections window may not show any change.

3.11 SCSI Bus

This configuration page will allow the administrator to configure a number of parameters that control the behavior of the SCSI bus.

From within the main menu select the SCSI Initiator icon from the SCSI System section.

The GUI will now display the following window

Figure 6 – SCSI Configurations

The settings in the SCSI Initiator page are advanced settings provided for configuration of legacy devices. Typically, no modification to any of these parameters should be required.

Host ID
This defines the ID of the Bridge on the SCSI bus and should not require modification unless using the unit with a shared SCSI bus.

Settle Delay
When devices are first turned or, when a SCSI bus reset is issued most devices will perform a set of tasks to reinitialize settings and reconfigure certain parameters which can take a little time to perform before the device will respond to commands on the SCSI bus. The settling time is the length of time given to allow devices to reset before issuing commands. Some older devices may take longer than the default 3 seconds which may cause them to be missed when the bridge rescans the SCSI bus. Increase this parameter in small steps only.

Advanced Options
The following settings should only be changed if instructed by your support channel:

- Maximum Commands per LUN – This is the maximum of commands that the Bridge will allow any one device to accept at any one time Default 64
- Disable Wide Transfers – This forces the SCSI bus to work in Narrow Mode (8 bit) only. Default off.
- Disable Synchronous Transfers, - This forces the SCSI bus to transfer in Asynchronous Mode only. Default off.

Selecting either of the last two options will have a detrimental affect on the performance of the Bridge.

4.0 Information

The following section describes the various pages that are available to the administrator to monitor the performance, show which devices are connect and review the error log.

4.1 SCSI Devices

This information page will allow the administrator to view the Target devices that are connected to the SCSI bus.

From within the main menu select the Device Information icon from the SCSI System section. The GUI will now display the following window

Figure 7 – SCSI Devices

In the above example we can see a disk drive connected to the SCSI bus 0 with a SCSI ID of 8 and a single LUN – the disk itself.

If a target ID has multiple LUN such as a Tape autoloader with 1 tape unit and a robots Media Changer, the Tape Drive and the Media Changer will be shown as separate devices with the Same SCSI ID but different LUN numbers.

SCSI ID = 8 LUN SCSI bus = 0 = 0
Manufacturer of
device
Direct Access = Disk Drive
Sequential Access = Tape Drive
Model Number

4.2 System Information

This System information page will allow the administrator to view the Performance of the Bridge. From within the main menu select the System Information icon from the Bridge Maintenance section.

The GUI will now display the following window

Figure 8 – System Information

Within the top window the following information is displayed

- Current Firmware Level
- Serial Number of the PCB within the Bridge
- ISCSI IQN – Each iSCSI device be it a Server or a Target device such as a Tape Drive has a unique identifier – this entry shows the IQN for the Bridge.

Within the lower window are 3 bar graphs, which provide an approximation of the follow performance parameters

- Network Speed - This indicates the current performance in MB/s across the network.
- CPU - This indicates the percentage of the time the CPU is occupied undertaking themanagement and scheduling the transfer of data between the two interfaces
- Memory usage- This indicates the percentage of memory used by all processes

4.3 System Log

This System information page will allow the administrator to view the log status that the Bridge encounters whilst running.

From within the main menu select the View Log-file icon from the Bridge Maintenance section. The GUI will now display the following window

Figure 9 – System Log

5.0 Maintenance

5.1 Firmware Updates

The Firmware Updates page will allow the administrator load new firmware into the Bridge From within the main menu select the Firmware Updates icon from the Bridge Maintenance section.

The GUI will now display the following window

Figure 10 – Firmware Updates

From time to time it may be necessary to upgrade the firmware within the Bridge. New versions contain resolutions to known issues as well as new features and improvements to the functionality of the Bridge. It is advisable to check on the latest release on a regular basis. New version of the firmware can be downloaded from the rancho web site at: www.rancho.com. Once you have downloaded the new firmware to a local disk drive:

- Click on the browse button to locate the file you have downloaded from the website
- Then click on the update button.

Updating the firmware will take a few minutes after which it will be necessary to reboot the system to bring the new code into memory.

5.2 Saving the Configuration to Disk

The Load Save Configuration page will allow the administrator save and load the configuration parameters to a local disk partition.

From within the main menu select the Load Save Configuration icon from the Bridge Maintenance section.
The GUI will now display the following window

Figure 11 – Saving Configuration

Once you have finished configuring your Bridge we recommend that you save your configuration data to a local disk. By doing so you could save valuable time if the unit requires replacement or if a configuration is lost during upgrades.

It is possible that creating a “Boiler Plate” configuration and loading this into each new Bridge as it is initialized. This can ease the rollout of multiple Bridge within a enterprise.

To save the configuration data click on the “Click here to Download” link from within the Export Configuration window located in the centre of the page.

Depending upon the browser you are using, select the option to save file to disk.

The Bridge will now download an encoded file that contains all the configuration settings for the Bridge.
To reload the configuration, click on the Browse button and locate the required configuration to upload into the Bridge. Once located click the upload button and the new configuration data will be uploaded.

Once completed, use the various configuration pages to make any further adjustments required and then reboot the system.

Restore Factory Defaults.
By clicking on this button all the parameters will be set back to the factory defaults. This includes IP address, hostname and passwords. We recommend that if you return the Bridge for maintenance that you reset to defaults to protect passwords and other sensitive information

APPENDIX A

A1.Setting up your computer for initial set up

If your computer is running Windows 95, 98 or NT follow the instructions below .For users with Windows 2000,2003 or XP instructions are detailed in Appendix B.

From the **Start** menu, choose **Settings** then **Control Panel**.
Then click the **Network** icon

In the **Network** window's **Configuration** tab,
Select the **TCP/IP** entry
Then the **Properties** Button

Figure 12 – PC Network Configuation

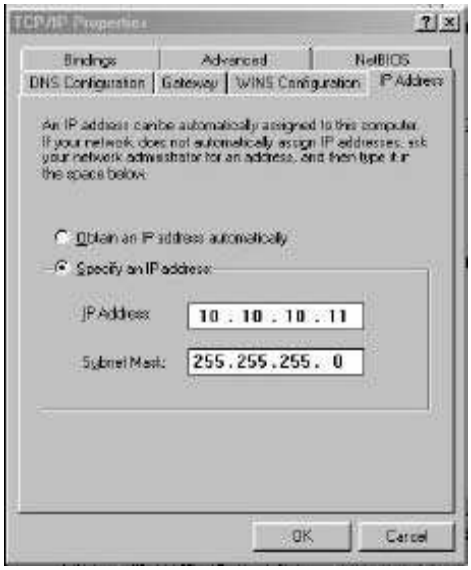

Figure 13 – IP Setting

Click on the **IP Address** tab
Make a Note of your current set up then:
Click on the **Specify an IP** address button

Enter **10.10.10.11**into the **IP Address** field
Enter **255.255.255.0** into the **Subnet Mask** field

Finally click the OK button and reboot your computer.

<u>Note:</u> Once you have completed the initial set up of the iSCSI Bridge, return your computer to the original settings and reconnect to the iSCSI bridge.

Appendix B

B1.Setting up your computer for initial set up

If your computer is running Windows, 2000,2003 or XP follow the instructions below .For users with Windows 95, 98 or NT instructions are detailed in Appendix A.

From the **Desk Top** or **Start** menu, select **My Computer**

In the My Computer window select **Network and Dial-up Connections** positioned in the bottom left hand corner

Figure 14 – Initial Setup

From within the displayed **Network and Dial-up Connections** select the interface connection that will be used to connect to the iSCSI Bridge – in this example we have selected the Gigabit Ethernet interface.

Figure 15 – Network Connections

A general status page will be displayed. From with in this page select **Properties**

Figure 16 – Network Property

Select the **Internet Protocol** (TCP/IP) entry and then **Properties**

Figure 17 – Network Property

Make a Note of your current set up then:
Click **Use the following IP Address**
Enter **10.10.10.11** into the **IP Address** field
Enter **255.255.255.0** into the **Subnet Mask** field

Finally click the OK button.

Figure 18 – IP Setting

Note: Once you have completed the initial set up of the iSCSI Bridge, return your computer to the original settings and reconnect to the iSCSI bridge.

Appendix C

LED Indicators

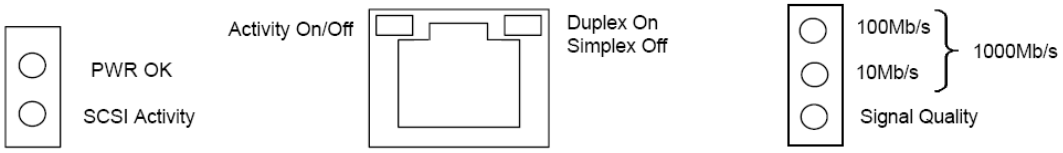

Figure 19 – Front View of the iSCSI Bridge

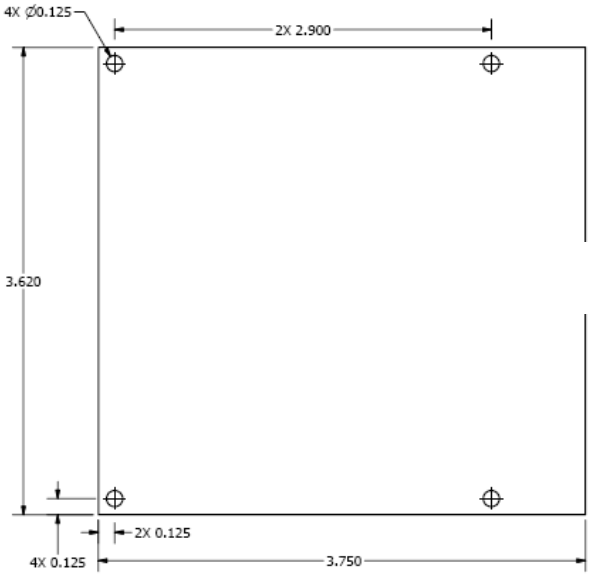

Figure 20 – Board Dimension