



Rialto SE1100 SCSI to iSCSI Bridge User Manual V3.5

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Warning

The Bridgeworks Rialto SCSI to iSCSI Bridge contains no user-serviceable components. Only

an authorised Service Centre should carry out any servicing or repairs. Unauthorised repairs or modifications will immediately void any warranty.

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 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 is poor quality SCSI cabling. This is especially true when running at the higher speeds possible with this Bridge. We therefore recommend that you purchase a good quality SCSI 3 compatible cable with High Density 68 way D type connector for your installation.

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

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1.0 Introduction

Thank you for purchasing the Bridgeworks SCSI to iSCSI Bridge.

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, which will guide you through setting up both the SCSI and Ethernet aspects of the SCSI to iSCSI Bridge.

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

1.1 Overview

The SCSI to iSCSI Bridge creates an interface between Servers that utilise the SCSI bus and iSCSI devices that reside on the Ethernet network. The internal circuitry of the Bridge acts as a two-way interface, taking the commands and data that it receives on the SCSI bus and converting these to iSCSI data packets ready for transporting across a network to iSCSI enabled storage devices such as disks and tape drives.



The Bridgeworks SE1100 Bridge

1.2 Manual Layout

Throughout the manual symbols will be used to quickly identify different pieces of information.

	This icon represents a note of interest about a step or section of information.
	This icon represents an important piece of information.
	This icon represents a warning, care must be taken and the warning should be read thoroughly.

1.3 Definitions

In order to understand the process of identifying and configuring devices on the SCSI bus for the Server to communicate with it is necessary to understand some of the terms used by the menus.

iSCSI Target Device

iSCSI target devices are devices such as disk drives, tape drives or RAID controllers that are attached to the network. Each device is identified by an IQN – iSCSI Qualified Name.

iSCSI Qualified Name (IQN)

Anything connected to a network, be it a computer, printer or iSCSI device must have a unique identifier, such as an IP address, to enable other devices to communicate with it. With iSCSI devices (both targets and initiators) an extra level of identification in addition to the IP address is employed. This is called the IQN. The IQN includes the iSCSI Target's name and an identifier for the shared iSCSI device.

Example: 2002-12.com.4bridgeworks.sdt600a014d10: 5

CHAP

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 Target Password to gain access to the iSCSI Bridge. The Initiator Secret is provided to allow iSCSI mutual CHAP. If mutual CHAP is selected on the Initiator, the iSCSI Bridge will authenticate itself with the initiator using the initiator secret

SCSI Target Device

A SCSI device is a device that is connected to the SCSI bus that can be accessed by the Server. Each device on the SCSI bus has a Unique ID number in the range 0-15.

	Note: By convention, ID 7 on the SCSI Bus is reserved by the Server's Host Bus Adaptor.
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Logical Unit Numbers (LUN)

Each SCSI device on the SCSI bus can support sub-devices. These are called LUNs. Within the iSCSI Connect Bridge each SCSI ID on the SCSI bus can support 7 LUNs.

1.4 Safety Notices

	<p>This device should only be installed by suitably trained personnel.</p> <p>Protection provided by the equipment may be impaired if used in a manner not specified by the manufacturer.</p> <p>Do not block the enclosure's vents. Air enters from the front and is exhausted out the back of the device.</p>
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	<p>This device is connected to the AC power line. Before using the device, please read the instructions carefully, in order to use the device correctly and safely. For the installation instructions, refer to the installation section of this guide.</p> <p>Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.</p> <p>Do not attempt to service the equipment yourself, doing so will void the warranty and may damage the system. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To prevent electric shock, do not remove the cover. There are no user-serviceable parts inside.</p> <p>The power cord is used as a disconnection device. To de-energize the equipment, disconnect the power cord.</p> <p>Do not use the equipment where it can get wet. Protect equipment from liquid intrusion. If your equipment gets wet, disconnect power to the equipment and to any attached devices. If the Bridge is connected to an electrical outlet, turn off the AC power at the circuit breaker before attempting to remove the power cables from the electrical outlet. Disconnect any attached devices.</p> <p>Use only the power supply cord set provided with the system for this unit, should this not be correct for your geographical area, please contact your supplier.</p> <p>The mains plug to the rear of the unit is used as the power disconnect device, please ensure that this is kept clear from any obstruction and is visible at all times.</p> <p>Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.</p> <p>To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.</p>
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	<p>Class 1 Laser Product: Certain models will use a Small Form Factor Pluggable GBIC module for connection to an optical network. These devices may use a Class 1 Laser device – it is important that you do not stare into the Laser beam.</p>
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2.0 Installing the SE1100 Bridge

There are 3 basic steps to installing the Rialto Bridge

- Connecting the Ethernet cable
- Connecting the SCSI Cables
- Connecting the Power Supply

2.1 Connecting the Ethernet Cable

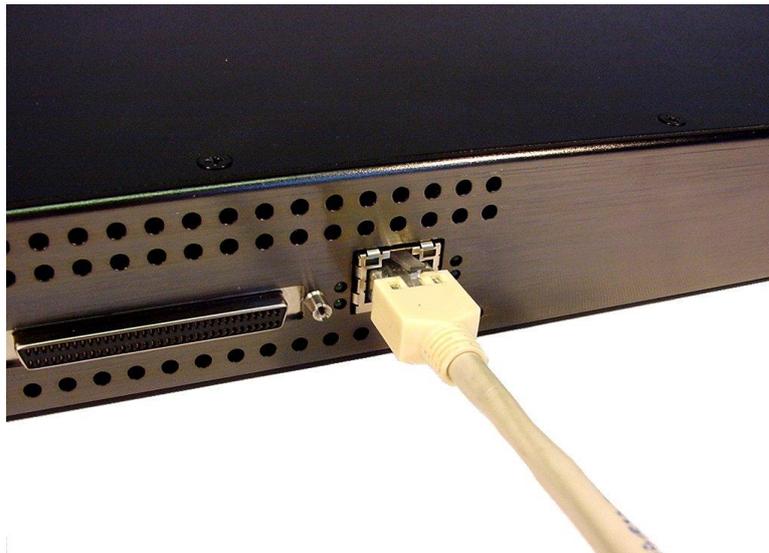
The Bridge can be used on the following network configurations:

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

It is not necessary to specify which network type you are connected to, as when powered up the Bridge will automatically select the correct network speed.

The connection to the Ethernet network is via an industry standard twisted pair, RJ45 copper interface on the front of the unit.

To connect the Bridge to the Ethernet network, insert a Cat 5E cable directly 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 Connection

The SCSI bus on the 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 Bridge will automatically negotiate with these devices to obtain their optimal operating speed upon power up.

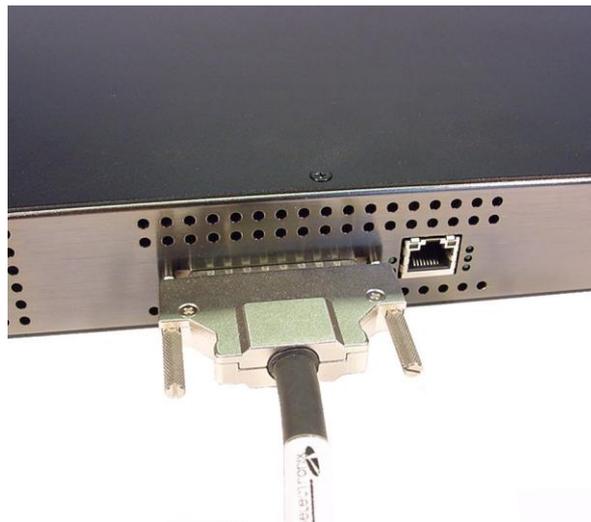
When adding your SCSI Servers to the SCSI bus it is important to remember that every device on the SCSI bus must have a unique SCSI ID and it is normal for SCSI ID 7 to be reserved for the Server.

The Bridge can support both single-ended and LVD Servers. However, it should be noted that the two bus types 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 Bridge as shown below, ensuring that the connector is the correct way up.



Connecting the SCSI Cable to the Bridge SCSI Port



Note: The two securing screws on either side of the connector should ONLY BE FINGER TIGHT.

2.3 Connecting the Power Supply

Before connecting the Power Supply to the unit, ensure the wall plug is removed or switched off.

Connect the Power Supply to the rear of the Bridge as shown below.



Note: Before powering up the Bridge, ensure all the peripherals are powered up and you have a connection to the network.

To turn on the Bridge use the switch next to the power connector and push in the button. (The image above shows the button in the off position). Whenever the Bridge is powered on the blue LED on the front panel will be illuminated.

Now that the Bridge is installed, the next stage is to configure it. This is described in the next chapter.

3.0 Configuring the SE1100 Bridge

Before the Bridge can be used for the first time, it is necessary to configure a number of parameters.

3.1 Using the Web Interface

Now that the Bridge is fully connected the primary method for configuring any option is through its web interface. The following section highlights the requirements needed to access these pages and the consistent layout used throughout.



Note: The default IP address of the web interface for the Bridge is <http://10.10.10.10/>

3.1.1 Browsers

This Bridge supports the following browsers

- Microsoft Internet Explorer 7
- Microsoft Internet Explorer 8
- Microsoft Internet Explorer 9
- Mozilla Firefox 9
- Mozilla Firefox 10
- Google Chrome Latest



Note: JavaScript must be enabled within the web browser to use the web interfaces functionality.



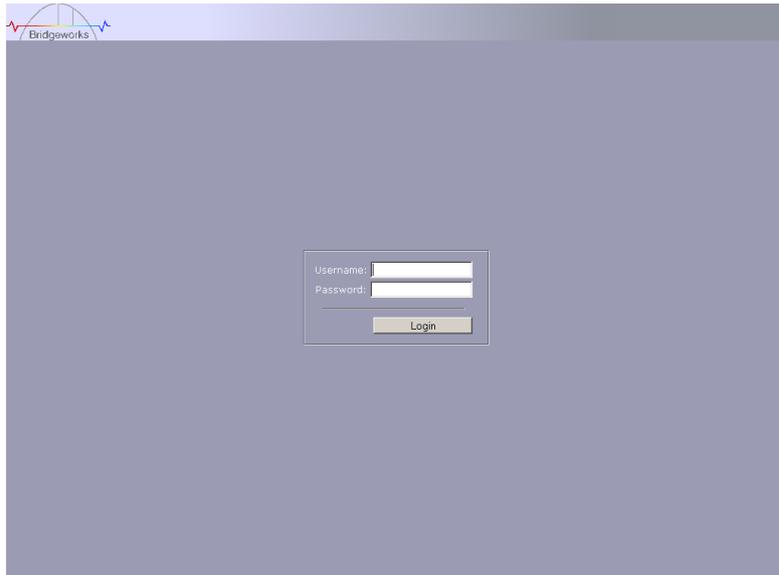
Important: If you choose to use a browser that is not on the list of supported browsers Bridgeworks cannot guarantee the behaviour of the Nodes functionality.

3.1.2 Connecting to the Web Interface

From within your web browser, connect to the Bridge using the address <http://10.10.10.10/> (or, if you have changed this previously, the address of the left-hand network port).

Depending on your current network parameters, it may be necessary to change your network settings on your computer for the initial set up. See Appendix A for further help.

Once you have connected to the web interface on the Bridge you will see the entry page shown below.



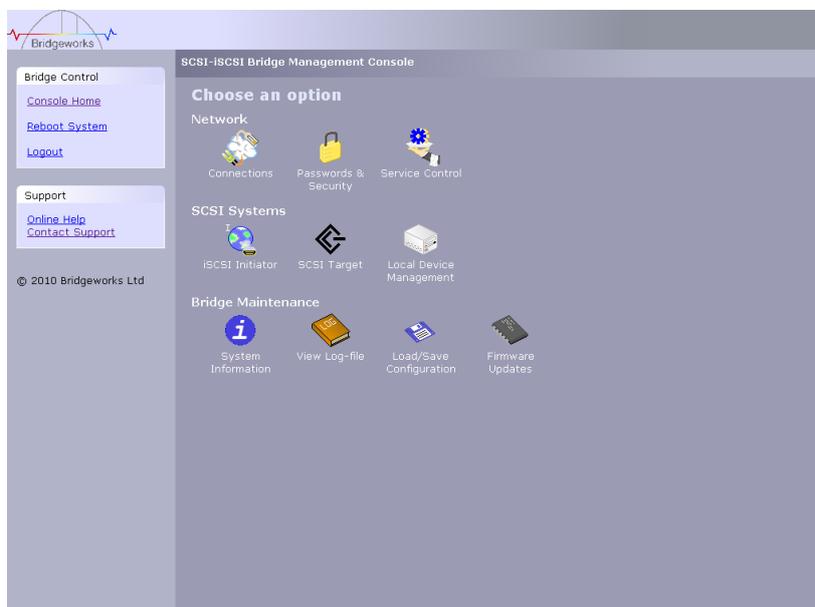
To access the web interface a user name and password must be used, the defaults of which are:

Username: **admin**
Password: **admin**



Note: We suggest that you change your password at the next possible opportunity.

The GUI will now display the Console Home menu screen as shown below.

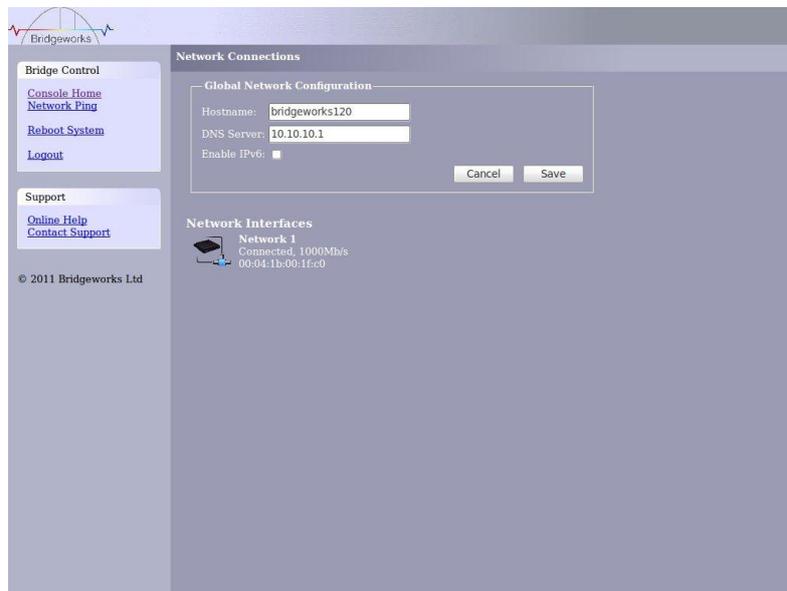


Note: For security reasons only one person can access this GUI at any one time. Therefore, to avoid the situation where one person forgets to logout, effectively locking up the GUI, the Bridge incorporates a five minute idle timer, which will automatically logout any user after this period.

Within the Support section there is a link that will open up your mail service with Bridgeworks' Email address loaded and an Online Help button. The Online help is contextually aware of which GUI page you are currently viewing and will provide you with help relevant to the display and configuration data.

3.2 Configuring the Network Parameters

Click on the Connections icon to enter the network configuration page.



3.2.1 Setting the Hostname

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



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

3.2.2 Enabling IPv6

Checking this box will enable the Bridge to use IPv6 IP addresses. As with Ipv4, you can either choose to use DHCP or assign a static IPv6 address.

To change the settings of the connection, click on the connection. You will be presented with the screen as shown below where you can make changes to the connection.

The screenshot shows the 'Network Port: Network 1' configuration page. On the left is a sidebar with 'Bridge Control' (Console Home, Network Ping, Reboot System, Logout) and 'Support' (Online Help, Contact Support) links. The main area is titled 'Network Port: Network 1' and contains the following sections:

- Port Settings:** MTU Size is set to 1500.
- IP Addressing:**
 - Use DHCP to assign an IP address automatically
 - Use the following IP address:
 - IP Address: 10.10.10.120
 - Netmask: 255.255.255.0
 - Gateway: (empty)
- IPv6 Addressing:**
 - Use automatic IPv6 address assignment
 - Use the following IPv6 address:
 - IPv6 address: (empty)
 - Default gateway: (empty)
- Link Status:**

Link State:	Up	Link Speed:	1000Mb/s
RX Bytes:	161579	TX Bytes:	596400
RX Errors:	0	TX Errors:	0
IPv4 Address:	10.10.10.120		
IPv6 Address:			

At the bottom right are 'Cancel' and 'Save' buttons.

3.2.3 Setting the MTU

Enabling larger frames on a jumbo frame capable network can improve the performance of your backup operations. Jumbo frames are Ethernet frames that contain more than 1500 bytes of payload (MTU). Before enabling jumbo frames, ensure that all the devices/hosts located on the network support the jumbo frame size that you intend to use to connect to the Bridge. If you experience network related problems while using jumbo frames, use a smaller jumbo frame size. Consult your networking equipment documentation for additional instructions.

Some networking switches require you to specify the size of the jumbo frame (MTU) when enabling, as opposed to a simple enable command. On these switches it might be required to add the necessary bytes needed for the frame header (i.e., header information + MTU). Typical header size is 28 bytes, so a 9000 byte MTU would translate to 9028 byte setting. Refer to your switch documentation to understand what the maximum frame size settings are for your switch.

3.2.4 Setting the IP Address

There are two possibilities when configuring the IP address for the Bridge:

DHCP - the Bridge will seek out the DHCP server 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.

3.2.5 Setting the Subnet Mask

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

3.2.6 Setting the Gateway Address

Enter in this box the address of your gateway controller for your network.

3.2.7 Setting an IPv6 IP Address

If IPv6 is enabled on the network connections page, here you can choose to use DHCP to automatically assign an IPv6 address, or you can set a static IPv6 address. If you choose to assign a static IPv6 address, you will also need to assign an IPv6 subnet mask.

3.2.8 Committing the changes



Note: Before you commit these parameters to memory, it is worth checking that all the parameters and spellings are correct and that these have been written down in a safe place for future reference.

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

3.2.9 Reconnect to the Bridge

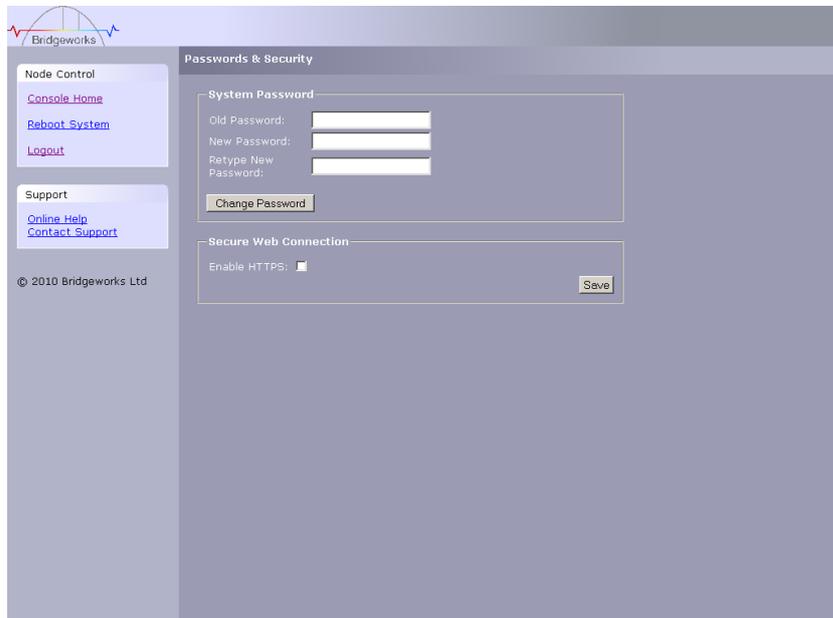
If you made changes to your computer, return them to their previous setting and reconnect to the Bridge using the IP address or hostname, depending on which addressing mode you selected.

3.3 Passwords and Security

This configuration page will allow the administrator to change the access password for the GUI.

From within the main menu select the Password and Security icon under the Network section

The GUI will now display the following window



The screenshot shows the 'Passwords & Security' configuration page in the Bridgeworks GUI. On the left, there is a sidebar with 'Node Control' (Console Home, Reboot System, Logout) and 'Support' (Online Help, Contact Support) sections. The main content area has a 'System Password' section with three input fields for 'Old Password', 'New Password', and 'Retype New Password', followed by a 'Change Password' button. Below that is a 'Secure Web Connection' section with an 'Enable HTTPS' checkbox and a 'Save' button. The footer of the sidebar shows '© 2010 Bridgeworks Ltd'.

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

Secure Connection – by clicking this box it will force all further transactions with the GUI to be done via a secure, encrypted HTTPS connection.

Once you have clicked this option, save the configuration, logout and login again.

	<p>Note: It is not possible to reset the password without logging into the GUI so ensure you remember your password!</p>
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3.4 Network Services

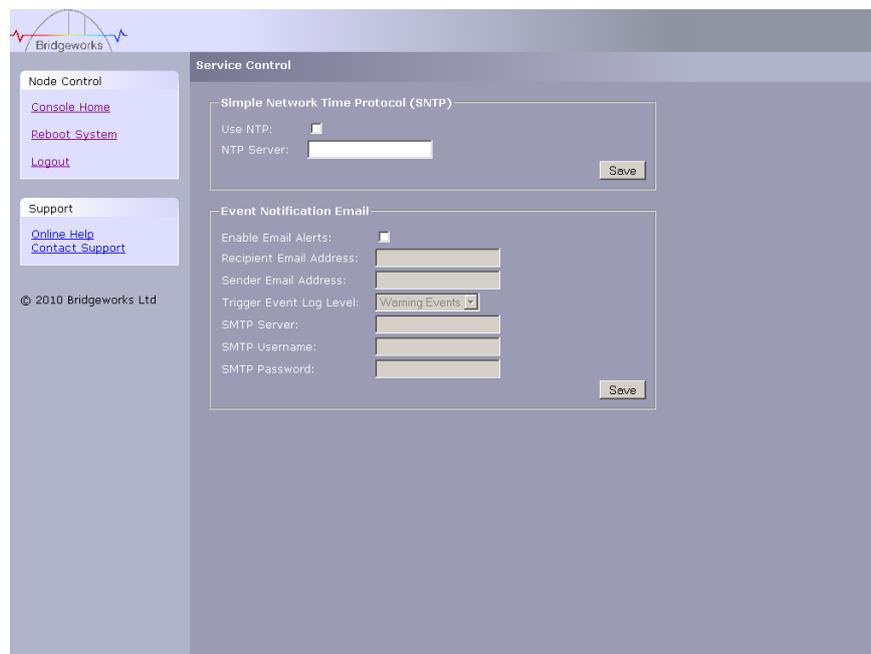
3.4.1 NTP

The Network Time Protocol (NTP) is a protocol for synchronising the clocks of computer systems over the IP network. This is used by the Bridge to synchronise its internal clock with the rest of the network.

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

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

The GUI will now display the following window



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.

3.4.2 Email Alerts

The Bridge can notify a systems administrator when certain level log events are observed in the Bridges logs.

To enable email alerts on the Bridge, click the tick box next to "Enable Alerts", this will allow you to alter the contents of the currently greyed out fields. The following fields need to be completed.

Recipient Email Address - This is the email address to which the emails will be sent.

Senders Email Address - This is the email address that emails will be sent from. This can be any address and does not have to be genuine, which is useful for email filtering. For example entering logs@4bridgeworks.com would allow emails from this address to be filtered to a specified folder in the users email client.

Trigger Event Log Level - This allows the user to specify what severity of event will trigger the log to be emailed with Critical Events being the most severe and Warning Events being the least. For each level picked the higher level logs will also be emailed, for example selecting Error Events will also send all Critical Events.

Below are examples of events that will be sent for each log level

- Critical: The Bridge is running at non recommended temperatures
- Error: The Bridge rejected a login attempt.
- Warning: An Initiator has logged out of the Bridge.

3.5 Configuring and Connecting iSCSI Devices

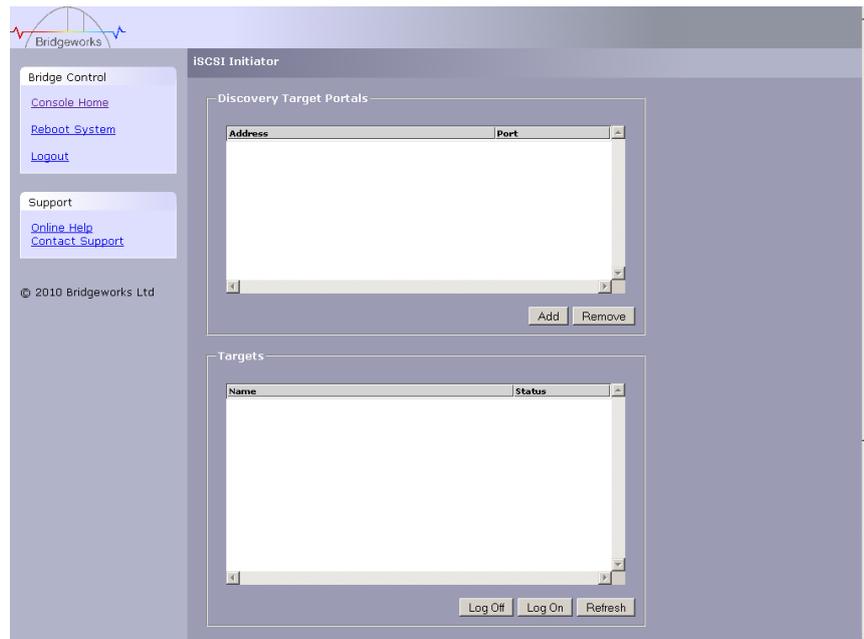
To add a device to the iSCSI Connect Bridge requires 2 basic steps:

- Identify the iSCSI Device(s) you wish to use
- Login to the iSCSI Device(s)

The following sequence is repeated for each device you wish to connect to the iSCSI Bridge.

3.5.1 Discovering iSCSI Targets

From the main menu, click on the iSCSI Initiator logo.



Click on the 'Add' in the 'Discovery Target Portals' window.

Add Discovery Portal

Discovery Portal

IP Address

Port

CHAP Login

User name

Target secret

Ok Cancel

In the “Add Discovery Portal” window insert the IP address of the iSCSI target device you wish to connect to and the source interface.

If the iSCSI device has CHAP enabled for discoveries then you will need to check the ‘CHAP Login’ box and fill in the username and password. When complete click on the ‘OK’ button.

The unit will now go through a process called iSCSI Discovery. This will access the iSCSI Target and request the unit to report on the devices within it. Any devices found will appear in the Targets window below along with its IQN. If the iSCSI Target Device had more than 1 device attached, then all of these devices would be shown.

iSCSI Initiator

Discovery Target Portals

Address	Port
10.0.0.169	3260

Add Remove

Targets

Name	Status
iqn.2006-03.com.kernsafe:kirk.2k3.SCSI0	inactive
iqn.2006-03.com.kernsafe:kirk.2k3.SCSI1	inactive

Log Off Log On Refresh

In the example above we can see that IP Address 10.10.10.169 has two devices attached to it. Their status is inactive; this is because at this point we have only made a Discovery request to

the iSCSI Target Device. To enable the device an iSCSI logon function has to be performed.

3.5.2 Logon

To logon to an IQN, highlight the IQN by clicking on its entry in the Targets window and then click the 'Log On' button.

At this point a new window will appear.

The screenshot shows a dialog box titled "Login to iSCSI Target". It contains the following fields and options:

- IQN: `iqn.2006-03.com.kernsafe:kirk2k3.SCSI0`
- Persistent Connection: Automatically restore this connection on boot.
- Connect by using:
 - Source Interface: Network 1
 - Target Portal: 10.0.0.169:3260,1
- CRC / Checksum:
 - Data Digest
 - Header digest
- CHAP Login:
 - Username: [text input]
 - Password: [text input]

Buttons: Ok, Cancel

Persistent Connection

If you wish for the unit to connect to this IQN after a reset or reboot, then this box needs to be checked. It is recommended that this feature be enabled.

Connect by using

Source interface: The source interface is the physical network interface you are using to connect to your target from your board. For example if you are connecting using the left network port you would select network 1 and the right network port would be network 2.

Target Portal: The target portal is the IP address and port that you want to connect to on the target device. The IP address must be an address allocated to a network interface that the Bridge has a network link to. The ports that are supported by the Bridge are either 3260 or 860.

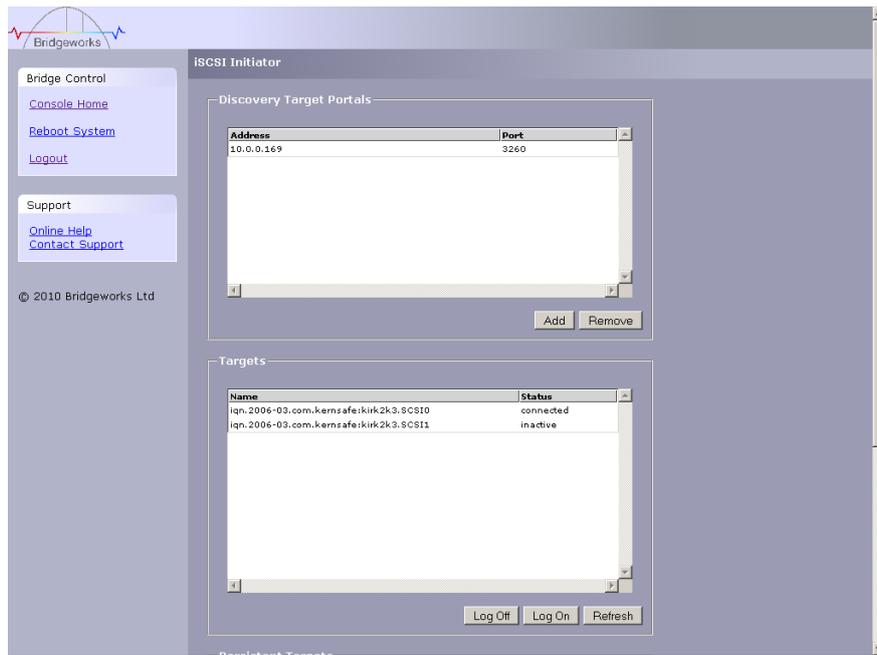
CHAP Login

If the iSCSI Target Device has CHAP enabled, check the tick box and enter the username and password to communicate with this device.

Once you have completed this window, click the OK button.

The Bridge should now display the IQN with a connected status as shown below.

Repeat this process for all the required iSCSI Target Devices



 **Note:** If you enabled Persistent Connection these devices will be also displayed in the Persistent Targets window below the Targets window.

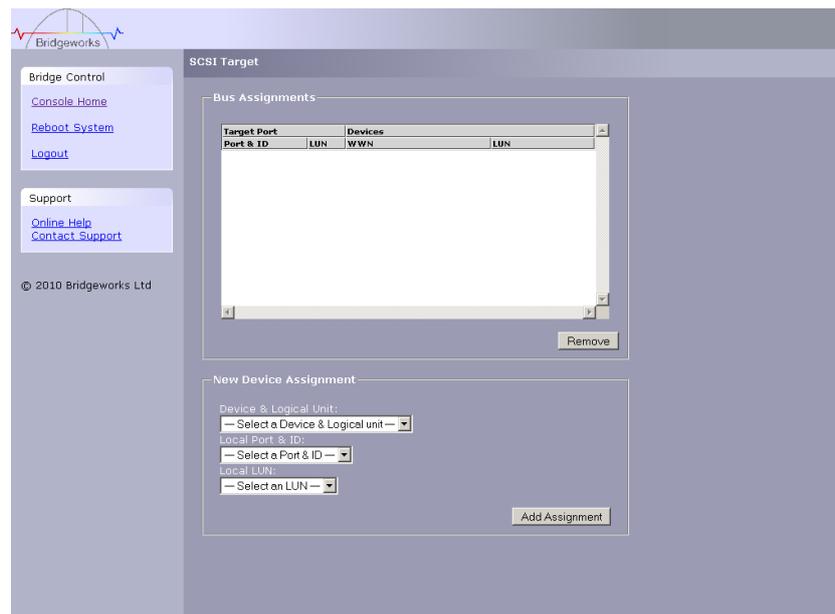
3.6 SCSI Target

To add a device to the SCSI Connect Bridge requires 2 basic steps:

- Identify the Device(s) you wish to use
- Identify and configure the SCSI device(s) on the SCSI bus

The following sequence is repeated for each device you wish to connect to the SCSI Connect Bridge.

From within the Console Home menu select the SCSI Target icon.



To enable this device on the SCSI Bus (SCSI Parallel Interface – SPI) you have to select the device from the interface and then define its address on the SCSI Bus. This is best understood via an example.

Example:

Configuring device naa.50060B000057E758 LUN 0x00000000 to a SCSI bus 0 an ID of 1 and a single LUN of 0.

Select the device naa.50060B000057E758 LUN 0x00000000 from the 'Device & Logical Unit' pull down menu.

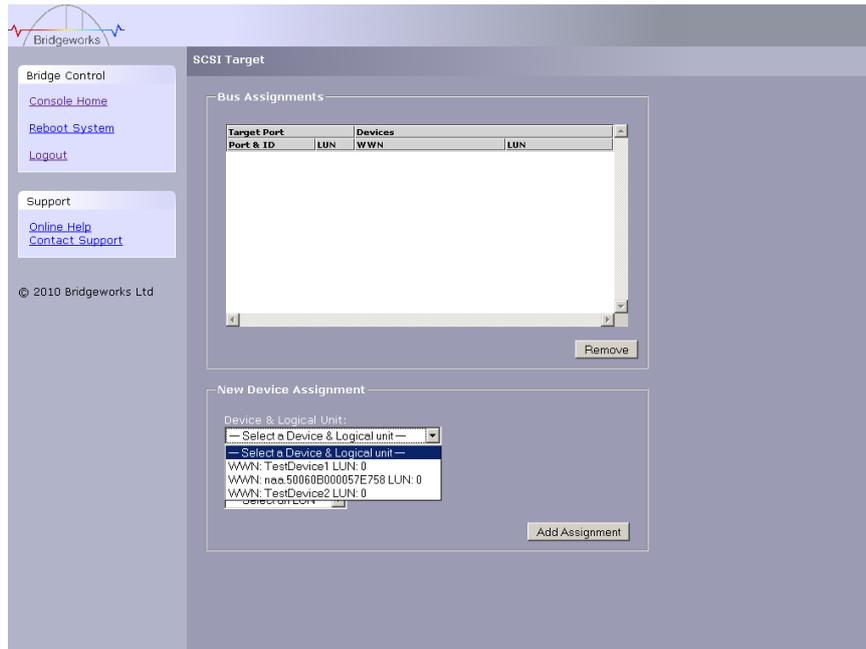
Select 01:00 from the 'Local SCSI ID' pull down menu.

Select 0 from the 'Local LUN' pull menu.

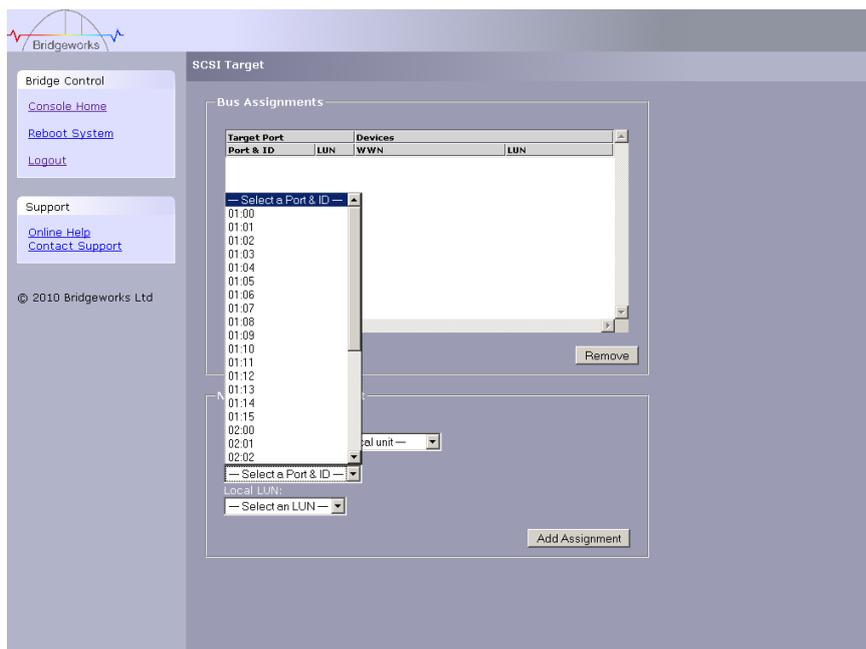
Once you are happy with the chosen options click on 'Add Mapping'. The device will now be shown in the 'Bus Assignments' window.

Below is the sequence of steps to perform this function.

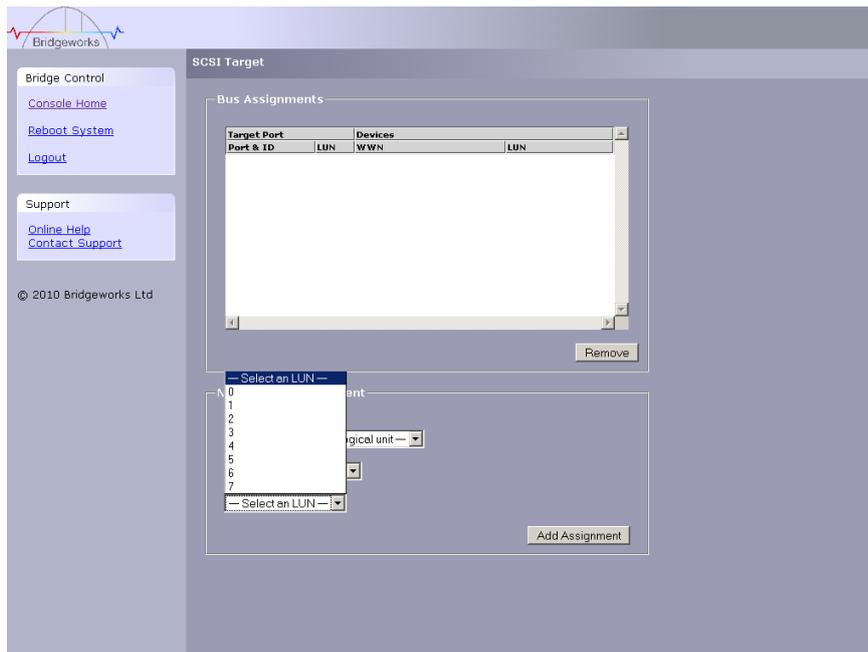
First we select the device we wish to connect to.



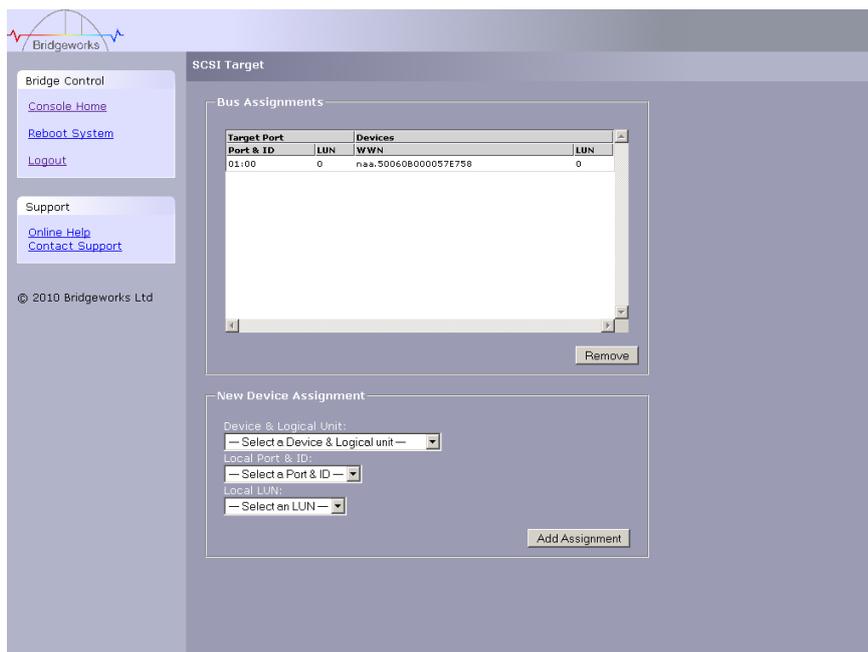
Then select the bus and ID – the first two digits denote the SCSI bus and the second two digits denote the SCSI ID on that bus.



Lastly we select the Local LUN for the device for the SCSI bus and SCSI ID.

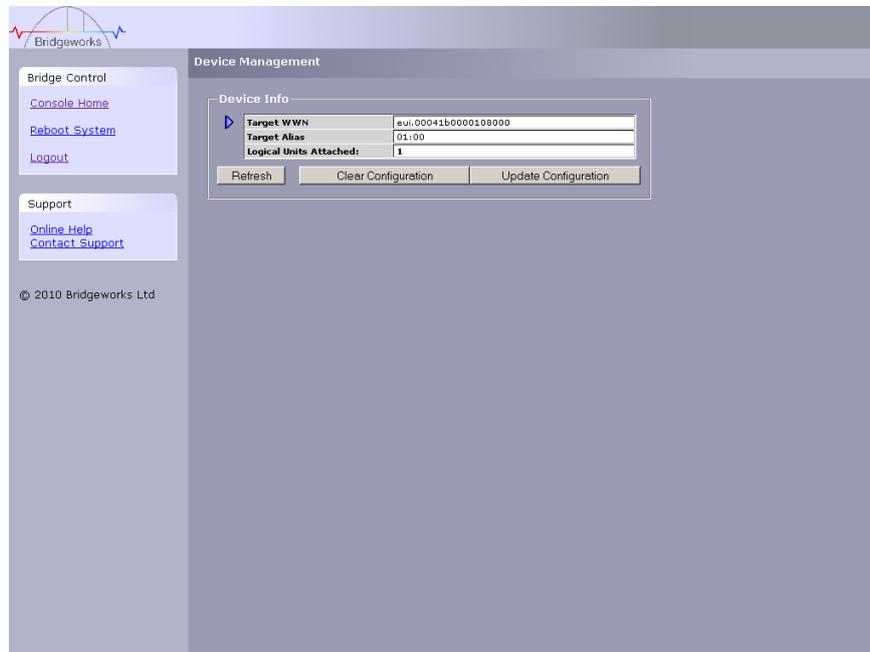


Once completed and Added via the assign button the mapped device will appear in the Bus Assignments device list.

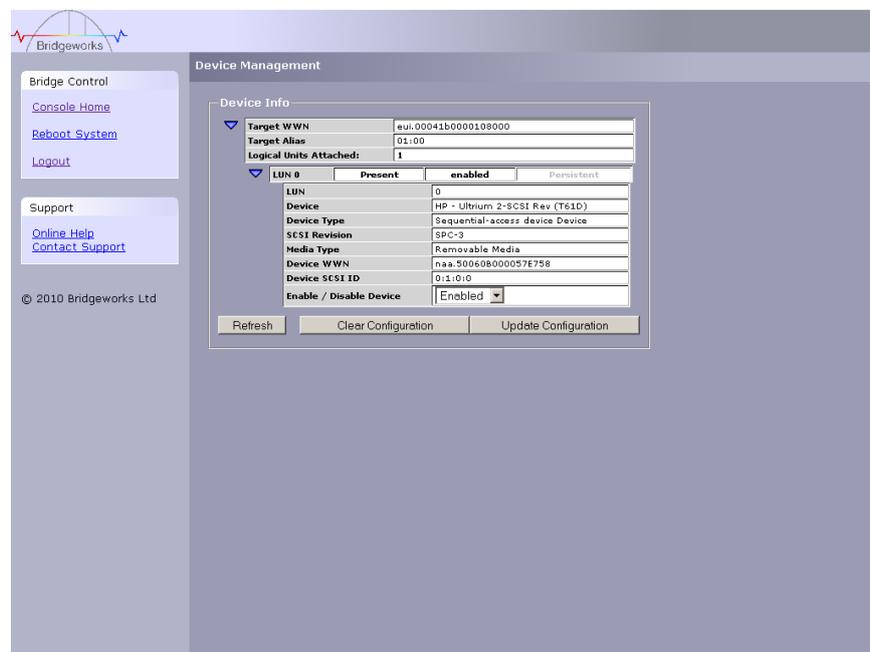


3.7 Device Manager

From within the Console Home menu select the Device Management icon. This will display all the configured devices.



To display further details of the connected devices, click on the blue triangle the left of the target.



The expanded information also gives you a device control option

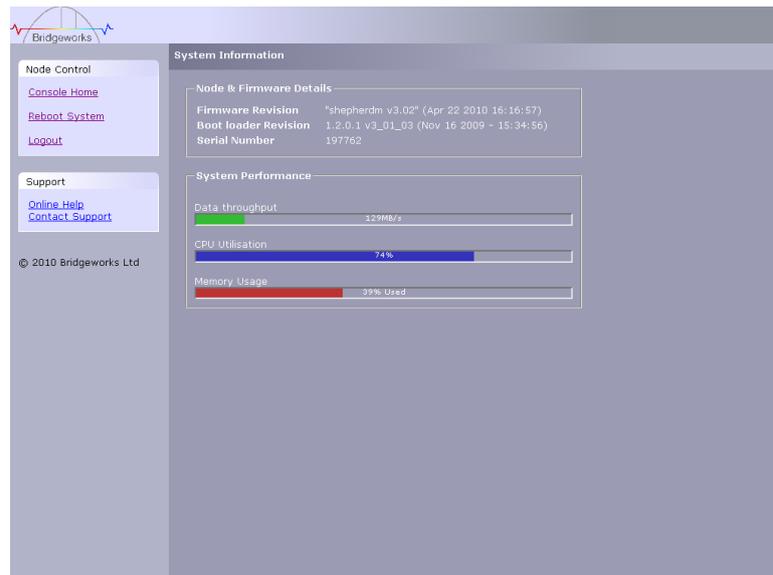
Enable / Disable Device – This pull down menu option allows you to disable a device from appearing on the interface.

4.0 Information

4.1 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



Within the top window the following information is displayed

- Current Firmware & Boot Loader Revision Level
- Serial Number of the Bridge
- iSCSI Qualified Name (IQN)

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

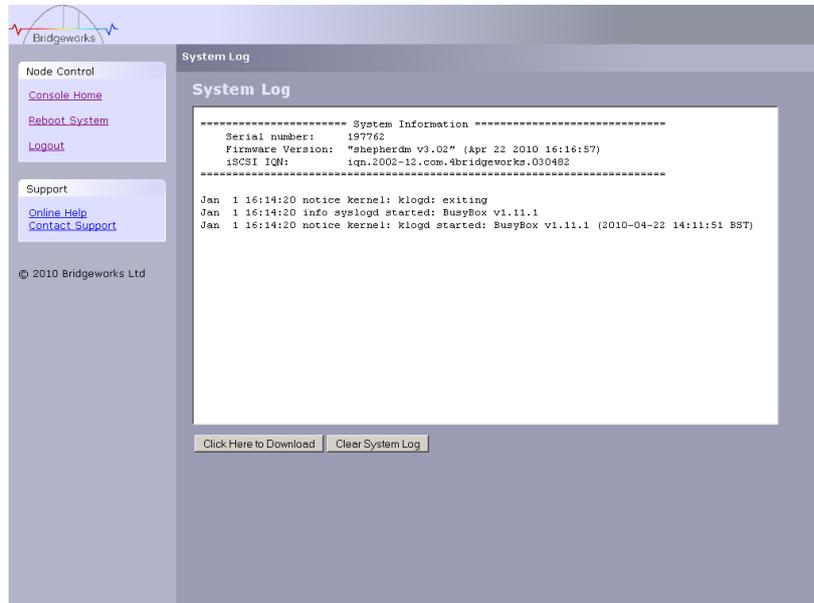
- Data Throughput - This indicates the current performance in MB/s.
- CPU - This indicates the percentage of the time the CPU is occupied undertaking the management and scheduling the transfer of data between the two interfaces
- Memory Usage - This indicates the percentage of memory used by all processes

4.2 System Log

This System Log page allows the administrator to view the logged status of the Bridge.

From within the main menu select the View Log-file icon from the Bridge Maintenance section.

The GUI will now display the following window



Below the log display pane are two options:

- Clear System Log – this will delete the current and saved logs within the Bridge
- Download – this will download the log file to your local disk. You may be asked by our support team to email this log file to them to aid them in any problem resolution.

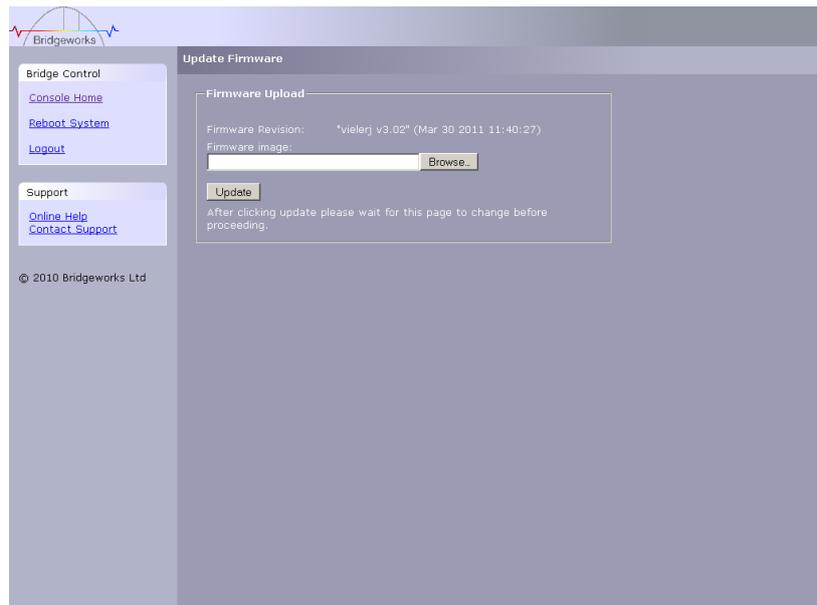
5.0 Maintenance

5.1 Firmware Updates

The Firmware Updates page will allow the administrator to 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.



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 for the latest release on a regular basis.

New versions of the firmware can be downloaded from the Bridgeworks web site at:

http://www.4bridgeworks.com/software_downloads.phtml

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.
- Click on the update button.

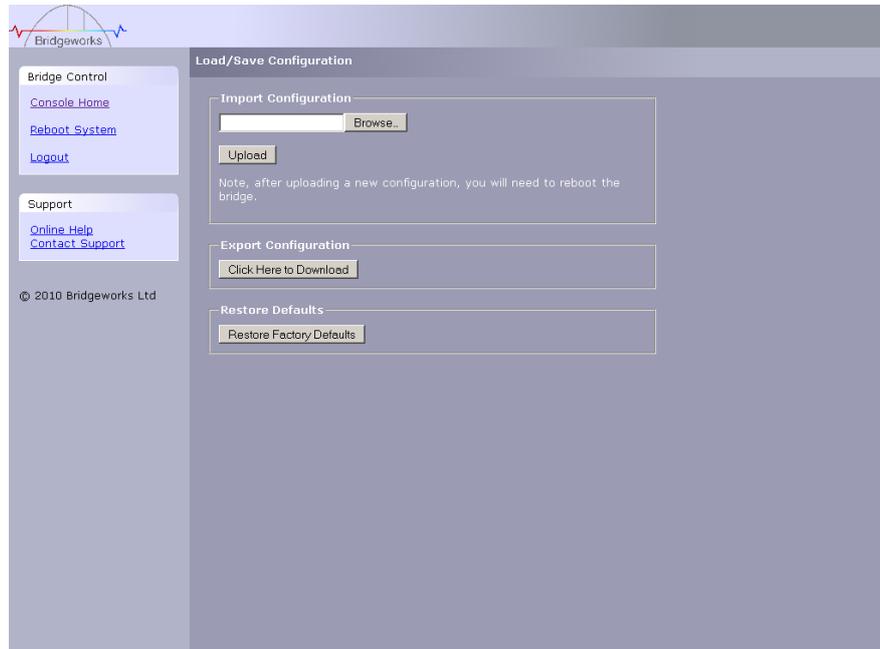
Updating the firmware will take a few minutes after which it will be necessary to reboot the system to bring the new code into memory.

5.2 Saving the Configuration to Disk

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

From within the main menu select the Load/Save Configuration icon from the Bridge Maintenance section.

The GUI will now display the following window



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 you require restoring an old firmware version, as the configuration may change due to upgrades.

It is possible to create a “Boiler Plate” configuration and load this into each new Bridge as it is initialised. This can ease the rollout of multiple Bridges within an 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 on 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.

5.3 Restoring a Saved Configuration

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.

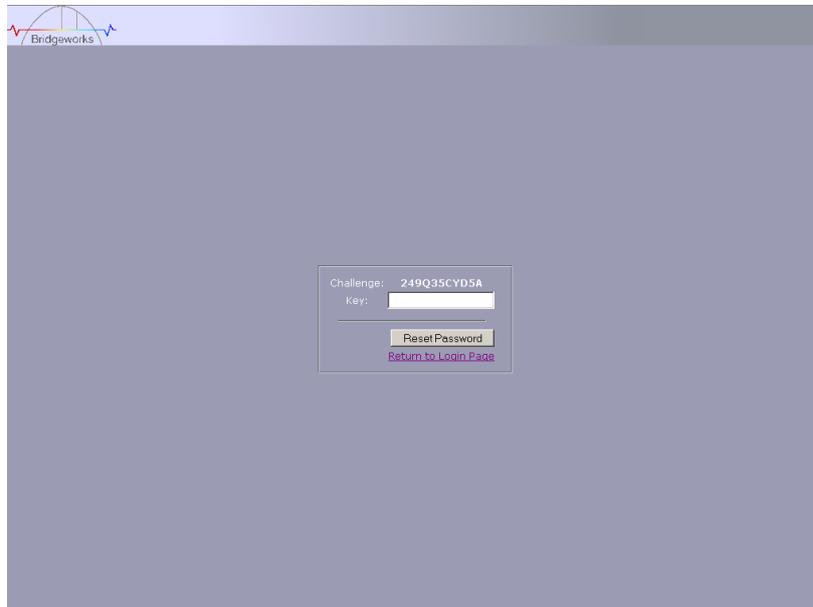
5.4 Restoring Factory Defaults

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

6.0 Troubleshooting

6.1 Lost Password

If you have lost the admin password it is possible to reset it with help from Bridgeworks.



First ensure that there is nothing entered into the user field and then type PASSWORDRESET into the password field.

The unit will respond with a challenge key.

Copy this key into an email along with your name, company and contact details – you must include your company's personnel email address for security purposes.

Send this email to support@4bridgeworks.com and a key will be returned for you to enter into the key field.

Press the reset button once you have entered the key – this will reset the admin user password back to admin.

6.2 Network problems

Under normal operation you should be able to “ping” the network address of the Bridge and receive a response. If this fails, run through the following checklist to help you identify the problem.

- Ensure that the Bridge is properly plugged into the library and that the library is powered on. Make sure that the power LED on the Bridge is illuminated.
- Ensure that the Ethernet cable is plugged in at both ends .
- Note the status of the LEDs positioned within the Ethernet connector – make sure that the “Link present” LED is illuminated. If it is not, check with your Network Administrator.
- If you are using a Bridge with two Ethernet ports and only one network cable, try using the other network address and/or the other network port.
- Ensure you are using the correct network address and netmask.
- Scan the network using the LAN Scan utility to find all the Bridges connected to the network in case the network address is different from that expected. See Section Lost IP Address.

If none of the above resolves your problem, then after consulting with your Network Administrator, please contact support.

6.3 Device related problems

Once the Bridge has booted and the target devices have finished initialising, these devices should be available on the host machine. After checking that you have correctly configured the initiator, run through the following checklist to help you identify the problem.

- Ensure that the devices are powered on and are ready – some libraries can take 5 minutes or more before they are ready and appear on the Bridge. (The power up status of libraries are usually displayed on the front panel).
- Ensure that the cables between the Bridge and the devices are connected.
- Connect to the Bridge via the GUI and check that devices are present in the Device management window and are enabled – you will need to drill down each device entry to see this option.
- If you can “ping” the Bridge but the GUI fails to appear check the setting within the Web Browser you are using. If you are directly connected to the Bridge then any proxy setting will require adjustment and may require you to contact your administrator.
- Ensure that the CHAP settings for the initiator and the Bridge are the same.
- A common mistake is when enabling CHAP only for a device after the initial discovery by the initiator. It will be necessary to remove the address from the discoveries tab and recreate it with the appropriate CHAP settings, otherwise any rediscoveries will be attempted without CHAP and no devices will be returned.
- Force a rediscovery from the initiator.
- Reboot the devices and Bridge.

If none of the above resolves your problem, please contact support.

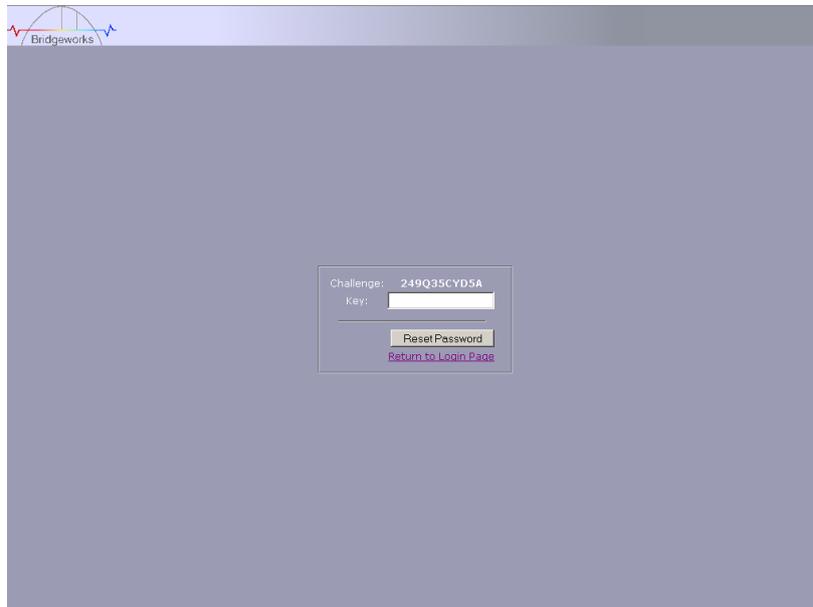
6.4 Poor Performance

Poor performance can be caused by many differing reasons. The following checklist is provided as a guide to where you may find ways to improve performance.

- Ensure your initiator and Bridge are communicating at the fastest possible network speed. Within the GUI is the Network Connections window, select this and check the Link Speed entry in each of the Link Status Boxes. This should be 1000Mb/s - if this is 10 or 100Mb/s, this will limit the performance dramatically.
- Packet loss can be a cause of poor performance. Within the Link Status Box check the number of TX and RX errors for both network Interfaces that are displayed in the Network Connections window. This should be zero or a very small number. If these are showing large numbers of errors, check the connections between the Bridge and the initiator. Also check that the entire network cabling between the Initiator and the Bridge is Cat5e certified.
- By enabling Jumbo packets (increasing the MTU size to 9000 from within the GUI Network Connections window (section 3.2.2)) you can improve the throughput performance of the Bridge. This will only work if ALL of the components in the infrastructure between the Initiator and the Bridge are enabled for Jumbo packets. That includes the HBA, all switches and routers and the Bridge itself. If any of the components are not enabled or not capable of handling Jumbo packets then unexplained packet loss or corruption can happen.
- Data Digests are an extra level of checksum error checking on top of the standard TCP/IP checksum error checking (configured on the initiator). However, the calculation of these extra checksums can greatly affect overall performance. Therefore, Header and Data Digests should only be enabled where the integrity of the Network connection is in doubt.
- Poor GUI performance. If the Bridge is transferring large amounts of data then the response from the GUI may seem a little slow as the process that controls the GUI has the lowest priority for Network and CPU resources.
- It is possible to configure the Bridge so that the data from the initiator is balanced across both the Network Connections. Ensure that you have connected and configured these in accordance with Appendix C and not by enabling the Multipath connection option in the Windows initiator login screen. You should also check the routing tables in your switches, routers and initiator to ensure both IP addresses are not routed down one Network link at any stage.

6.5 Lost IP Address

If you have lost the admin password it is possible to reset it with help from Bridgeworks.

A screenshot of a web interface for password reset. At the top left, there is a logo for 'Bridgeworks' featuring a stylized bridge and a signal wave. The main content area is a light blue-grey color. In the center, there is a white box containing the following text: 'Challenge: 249Q35CYD5A', 'Key: [input field]', a 'Reset Password' button, and a link 'Return to Login Page'.

First ensure that there is nothing entered into the user field and then type PASSWORDRESET into the password field.

The unit will respond with a challenge key.

Copy this key into an email along with your name, company and contact details – you must include your company's personnel email address for security purposes.

Send this email to support@4bridgeworks.com and a key will be returned for you to enter into the key field.

Press the reset button once you have entered the key – this will reset the admin user password back to admin.

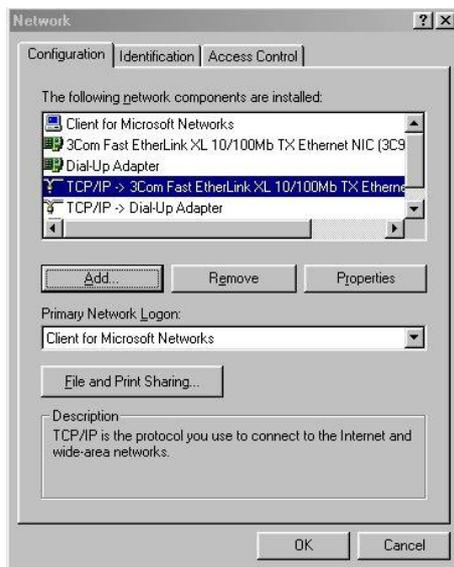
Appendix A Setting up your Computer for Initial Setup

A1 Windows 95, 98 or NT

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 A2 and for Windows Server 2008, 7 or Vista, instructions are detailed in Appendix A3.

From the **Start** menu, choose **Settings** then **Control Panel**.

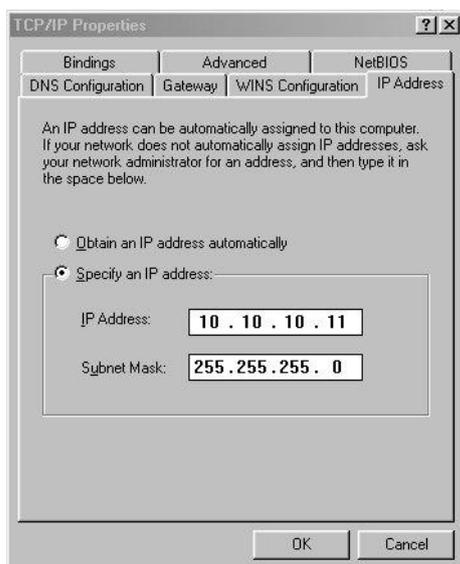
Then click the **Network** icon



In the **Network** window's **Configuration** tab,

Select the **TCP/IP** entry

Then the **Properties** Button



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.



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

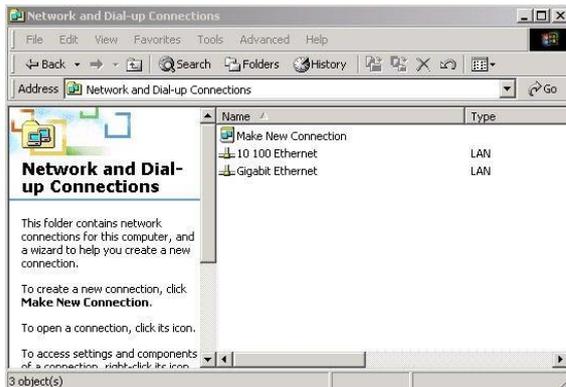
A2 Windows 2000, 2003, XP

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 A1 and for Windows Server 2008, 7 or Vista, instructions are detailed in Appendix A3.

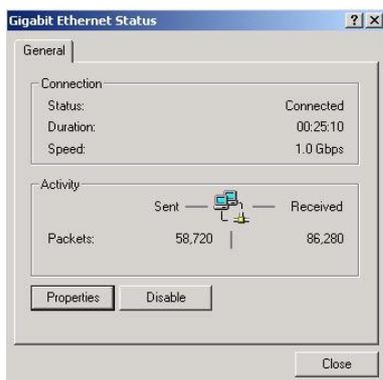
From the **Desktop** or **Start** menu, select **My Computer**



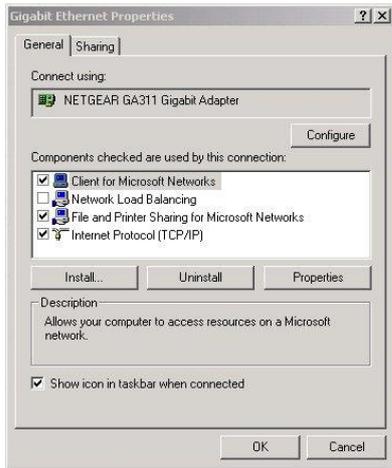
In the My Computer window select **Network and Dial-up Connections** positioned in the bottom left hand corner



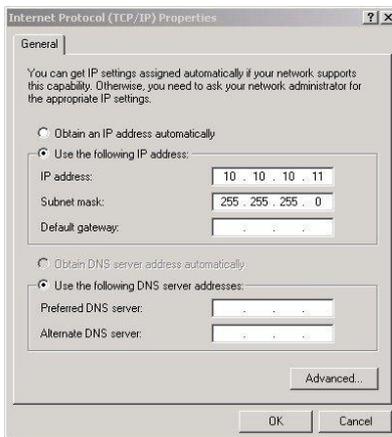
From within the displayed **Network and Dial-up Connections** select the interface connection that will be used to connect to the Bridge – in this example we have selected the Gigabit Ethernet interface.



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



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



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.

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

A3 Windows Vista / Server 2008 or Vista or 7

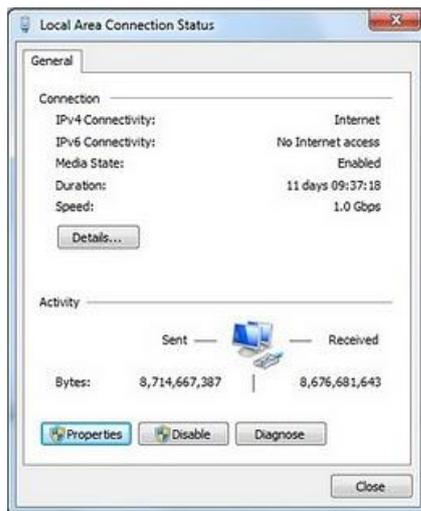
If your computer is running Windows, Vista or 7 follow the instructions below .For users with Windows 95, 98 or NT instructions are detailed in Appendix A1 and for Windows 2000, 2003 or XP, instructions are detailed in Appendix A2.

From the **Start** menu, select **Control Panel**

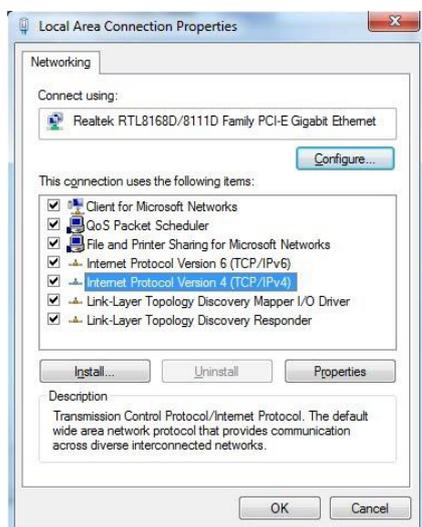


From the control panel select the **Network and Internet** link, followed by the **Network and Sharing Centre** link.

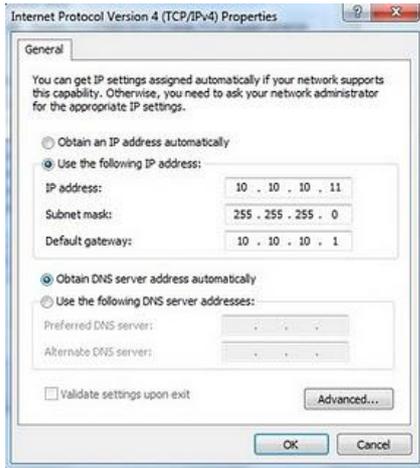
Now you can see the **Local Area connection** dialogue box. Double click Local Area Connections.



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



Select the **Internet Protocol Version 4 (TCP/IP)** entry and then **Properties**



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

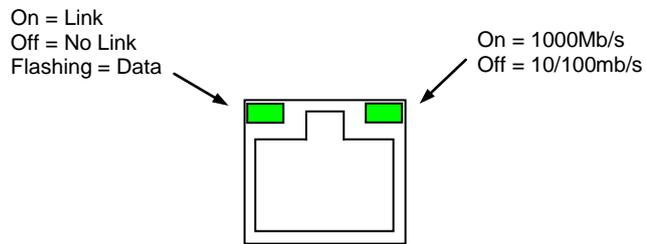
Finally click the OK button.



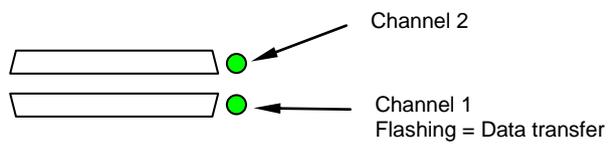
Note: Once you have completed the initial set up of the Bridge, return your computer to the original settings and reconnect to the Bridge.

Appendix B Visual Indicators

Ethernet



SCSI



Note: During heavy data transfers, the LEDs may appear off for an extended period.

Appendix C Technical Specifications

Physical	
Form Factor	19" 1U Rack mount
Depth	170mm (10.6 in)
Height	44mm (1.7 in)
Width	437mm (17.2 in)
Weight	5.1Kg
Recommended minimum clearance for cooling	100mm (4.in) on front and rear faces
Electrical	
Input voltage	110 - 240V
Frequency	50 - 60Hz
Input current	1 Amp Maximum
Maximum Power Consumption	60 Watts Maximum
Environmental	
Operating	0 to 40C (32F to 104F)
Non Operating	-20C to 60C (-4F to 140F)
Operating Humidity	5% to 90% Non-condensing
Storage Humidity	5% to 90% Non-condensing
Operating Altitude	3,000m (9,842ft)
Non Operating Altitude	8,000m (26,250ft)
iSCSI Interface	
Physical	RJ 45
Speed	10, 100, 1000Mb/s
Protocol	IPv4, IPv6, CHAP, DHCP, NTP, iSNS
ISCSI Protocol	ISCSI RFC3270, 3721, ERL0, ERL1 ERL2
Visual Indicators	Link and Link activity
SCSI Interface	
Physical	VHDL 68way LVD/SE
Speed	Auto negotiation up to Ultra160 (Ultra 320)
Width	Auto negotiation for narrow and wide
Visual Indicators	SCSI Bus busy