



Tamar FCSAS FC to SAS Bridge Quickstart Guide Eli-v6.5.391

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1 Introduction

This guide is designed to help you through the steps required to power up and configure the basic settings on a Bridgeworks Tamar FCSAS FC to SAS Bridge. For more detailed configuration options please refer to the Tamar FCSAS FC to SAS Bridge Software Manual (<https://support.4bridgeworks.com/documents/manuals/>).

1.1 Overview

The Tamar FCSAS FC to SAS Bridge creates an interface between a network, which utilises the Fibre Channel protocol, and peripherals that utilise the SAS bus. The Bridge acts as a two-way interface converting the data packets that are received on the Fibre Channel network to SAS data packets. This data is then ready to be sent across a network to SAS-enabled storage devices such as disks and tape drives.

1.2 Definitions

Throughout this manual, selected terms will be used to describe pieces of equipment and concepts. This section provides an explanation of those terms.

1.2.1 Logical Unit Number (LUN)

Each device in a SCSI storage system can support multiple sub-devices; these Logical Units (LU) are indexed by numbers called Logical Unit Numbers (LUN).

2 Pre-Install Checklist

Before connecting any equipment, or performing any patching, please ensure you have completed the pre-installation checklist below.

- FC and SAS connection details
- FC and SAS cables
- IP Addresses for Management interface/s
- PC or Laptop connected to the Management LAN
- Licence Key saved to local machine
- Keyboard and monitor

3 Setup

3.1 Hardware

To set up a hardware Tamar FCSAS FC to SAS Bridge:

- Install the server into a rack using the included rails and ensure it is secure.
- Plug the power leads into the appropriate sockets.
- Connect an Ethernet cable to the management interface on Port A of the onboard Network Interface Controller (NIC).
- Connect the FC and SAS cables to the appropriate interfaces.
- Connect the keyboard and monitor.



Warning: Ensure that the cables you are using are rated for the correct speed. If a cable is rated for a lower speed than the interface, the connection will not run at full capacity.

Now power on the device. The Bridge should boot with a display similar to the one below:

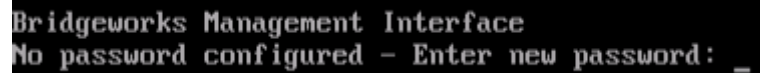


3.1.1 Configuring a Static IP

If the device is installed on a network that is not using DHCP you will need to configure a static IP Address so that you can access the Web GUI to complete the configuration of the Bridge.

Press *ALT-F2* to login to the Bridge.

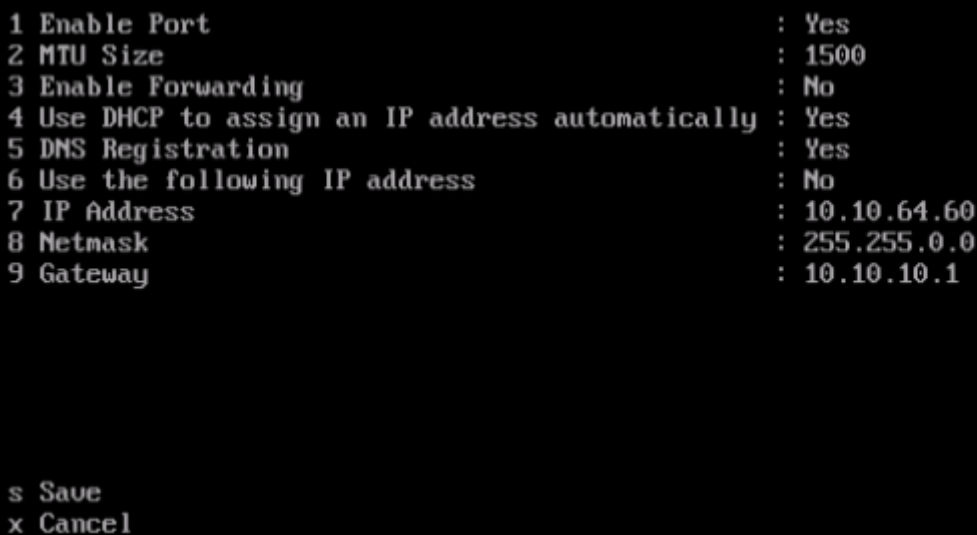
As this will be the first time you have logged into the Bridge you will be required to set an administrator password for the device.



```
Bridgeworks Management Interface
No password configured - Enter new password: _
```

You can now log into the Bridge using the default username *admin*, and the password you set.

Within the Command Line Interface, you can select an option by entering the number next to it. Navigate to Network Connections using 1, then select the port you will be using to manage your Bridge.



```
1 Enable Port : Yes
2 MTU Size : 1500
3 Enable Forwarding : No
4 Use DHCP to assign an IP address automatically : Yes
5 DNS Registration : Yes
6 Use the following IP address : No
7 IP Address : 10.10.64.60
8 Netmask : 255.255.0.0
9 Gateway : 10.10.10.1

s Save
x Cancel
```

Ensure this port is enabled by checking the *Enable Port* option. If this says *No* next to it, select it, then press *y* to enable it.

DHCP will be enabled by default. To set a static IP address for your Bridge, select *Use the following IP address*.

Next, set your IP address by selecting *IP Address* and entering a valid IPv4 address. You may also need to adjust the netmask and default gateway. When you are done modifying your port settings, press *s* to save.

Once you have saved all your settings, press *x* to reboot your Bridge to apply them.

4 Configuration

You can now perform the rest of the configuration remotely via the web interface using the Management IP address.

If you have not used the CLI as above to configure an Admin password, you will be required to set the admin password for the device. This can be altered later on if required. Once set you will be returned to the login screen to enter the username "admin" with the password you have just configured.

Upon accessing the web interface for the first time, you will be required to accept the End User Licence Agreement.

You should now be on the Home page of the web interface for the Tamar FCSAS FC to SAS Bridge (as shown below).



A guide to configuring the following settings is shown below:

- Section 4.1: Changing the Hostname (Optional)
- Section 4.2: Installing the Licence Key
- Section 4.3: Diagnostics

During the configuration process you will be required to reboot the device several times.

4.1 Changing the Hostname (Optional)

To set the hostname for the device, first return to the Home page using the *Home* button in the sidebar on the left. Then select *Network Connections* and then *General Settings*. You can change

the hostname for the device here. If you wish to display the hostname of the node on the login page select the checkbox labelled "Hostname on Login Page:"

Once you've amended the settings, click *Save* and select *OK* to the prompt that appears. You can make additional configuration changes before rebooting the device.

Return to the Home screen by selecting *Home* at the top left.

4.2 Installing the Licence Key

The licence key for your device contains the licences for the protocols you can connect to.

	Important: If the licence key is not uploaded you will not be able to add the Port Mappings to the ports later on!
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To upload the licence key, first navigate to the Home page using the *Home* button in the sidebar on the left. Next select *Licence Key Management*, then *Browse* and locate the licence key file saved to your local machine.

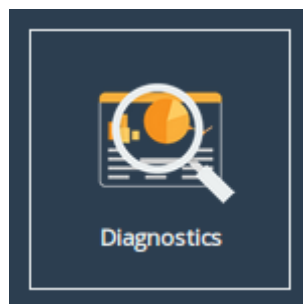
Select the licence key file and then click *Upload*. You should now see which protocols are licensed for your device in the window.

The device requires a reboot for the licence key to take effect. Select *Reboot* from the menu on the left and restart the device.

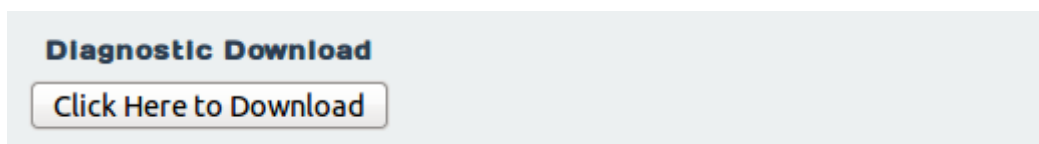
4.3 Diagnostics

In the unlikely event that a problem arises with your Bridge, you may be requested by Bridgeworks Support to provide a diagnostic file.

To download the diagnostic file, click on the *Diagnostics* icon on the Home screen:



Then click on the *Click Here to Download* button.



This will cause the Bridge to collect data regarding various modules and store them in a single file.

Once this process is complete, a download for “diagnostics.bin” will begin.

5 SAS Initiator

This section details the information displayed on the *SAS Initiator* page. This page allows the administrator to examine physical connections (hereinafter referred to as “phys”) from their SAS devices.

From the Home screen of the web interface, select the *SAS Initiator* icon from the *Devices and Protocols* section.



You will see the following page:

SAS Initiator

Hostname

[Home](#)

[Reboot](#)

[Logout](#)

[Support](#)

[Help](#)

Display Options

Phy display filter:

All

Live Update: ☒

Host - Slot 2

4 links active

A-1
3.0 Gbit
Expander

A-3
3.0 Gbit
Expander

B-1
Unknown
No Device

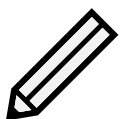
B-3
Unknown
No Device

A-2
3.0 Gbit
Expander

A-4
3.0 Gbit
Expander

B-2
Unknown
No Device

B-4
Unknown
No Device



Note: The *SAS Initiator* page may look different than pictured depending on your configuration.

5.1 SAS Initiator Page

This page displays physical SAS cards (or “hosts”) contained within your unit, and any devices to which they are connected (such as disk drives or expanders). A host will contain four phys for every physical port on the card.

5.1.1 Hosts

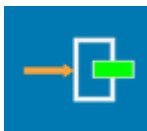
The heading of a host section shows the following information:

Chevron An arrow for expanding or collapsing the section.

Name (e.g. Host 1).

Active Connections A display of the number of connections available (e.g. 4 links active).

Under the host heading, a number of phys will be displayed. The icon represents their state.



End Device A device is connected



No Device No device is connected



Expander Device An expander is connected

The text to the right of each icon displays information relating to the phy:

Device identifier The identifier of the device, shown with a letter and a number (e.g. “B-3”). The letter pertains to the physical port, as displayed on your port mapping page.

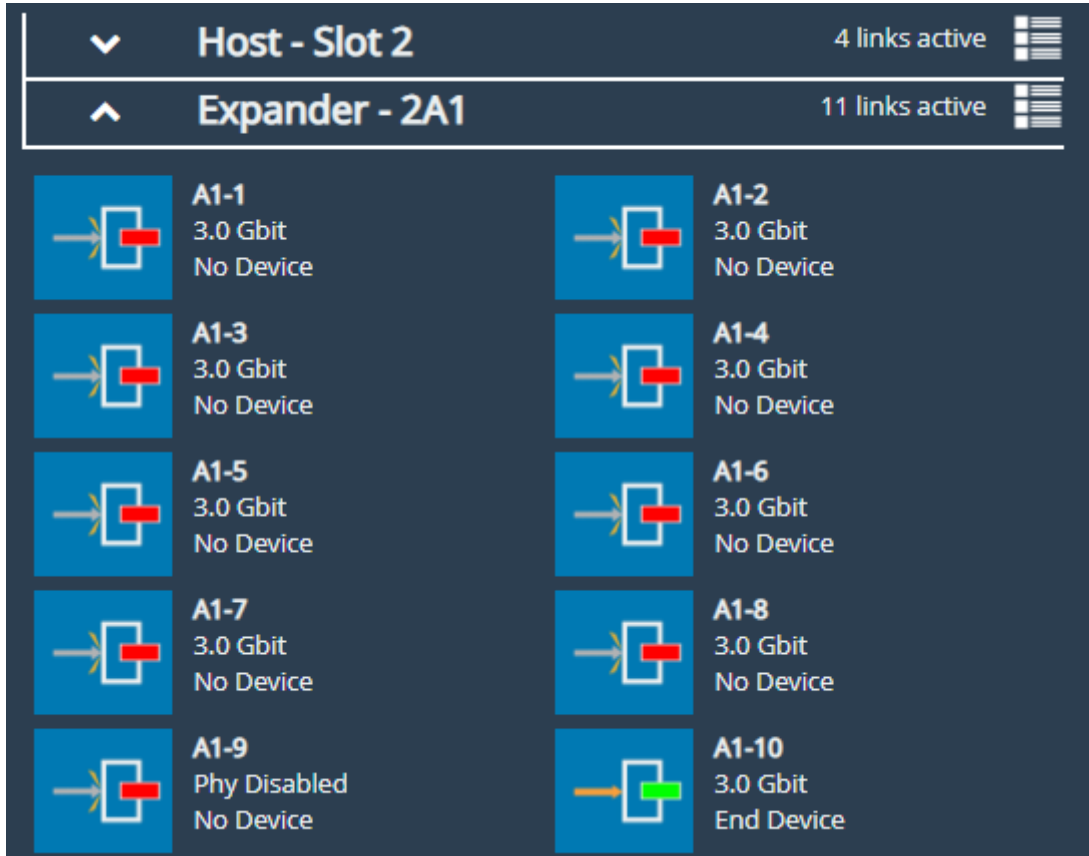
Link speed The negotiated link speed of the device. This will show a speed if a physical connection is made (e.g. “6.0 Gbit”), or otherwise displays “Unknown”.

Device type Whether there is an end device, no device, or expander (as represented by the icon).

If expanders are connected to a host, they will appear in their own sections starting underneath all listed hosts. The header contains number and letter designations pertaining to host it is connected to. For example, the 1st expander connected to port **A** of Host **2** will be labelled “SAS Expander - 2A1”. The display of the heading and the phys of an expander mirrors the host phys exactly.

5.1.2 Expanders

Expanders are displayed in a similar manner to hosts. The title bar continues to show a chevron, the name of the expander, and the links active. All the phys of the expander are shown underneath this heading, using the same icons as hosts.



The name of an expander signifies its origin, and its level. For example, an expander named **2A1** originates from the **2nd** host, from physical port **A**, and is the **1st** level of expander from that port.

Phys from an expander are similarly named. A phy from expander **2A1** may be labelled **A1-12**, where **A** represents the physical origin port, **1** represents the level of expander from that port, and **12** represents the number of the phy.

5.1.3 Display Options

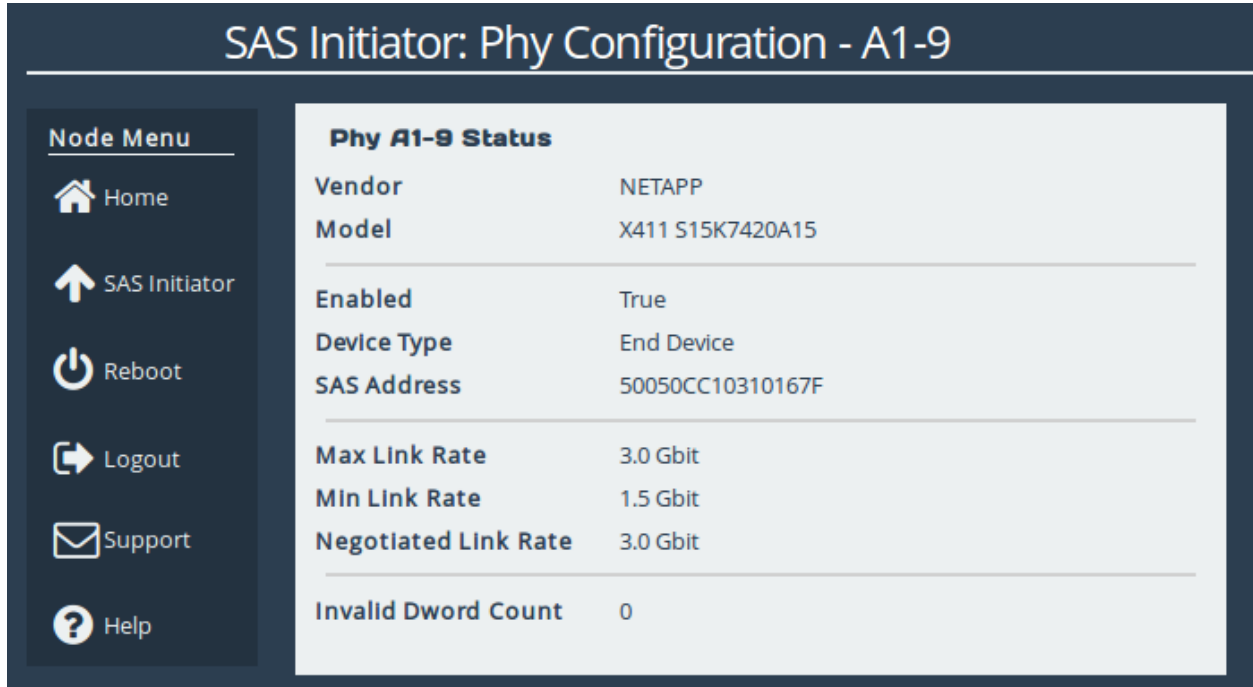
Options are available for configuring how devices are viewed. These are:

Phy display filter Show all phys, or choose to display phys based on whether they are connected.

Live update Ticked will update all phy information on the page every two seconds. Unticked will leave device information as it is at the time of unticking.

5.2 Phy Status Page

Clicking on a phy, either under a host or an expander, will lead to a status page showing information about that phy, as shown below. This shows information about the device as it was at the time of page load.



Phy A1-9 Status	
Vendor	NETAPP
Model	X411 S15K7420A15
Enabled	True
Device Type	End Device
SAS Address	50050CC10310167F
Max Link Rate	3.0 Gbit
Min Link Rate	1.5 Gbit
Negotiated Link Rate	3.0 Gbit
Invalid Dword Count	0

Information differs per connected device and not all fields will show on the page. Possible data includes:

Vendor Manufacturer of the device.

Product Product name of the attached expander.

Model Model name of the attached end device.

Enabled True or false.

Device Type No device, end device, or expander.

SAS Address Unique address of the SAS host the phy is from.

Max Link Rate Maximum link speed allowed by the hardware.

Min Link Rate Minimum link speed allowed by the hardware.

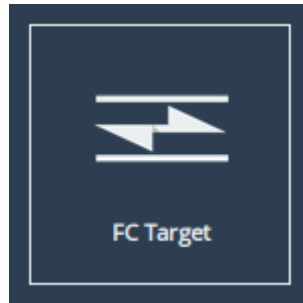
Negotiated Link Rate Link speed currently used for transfers. Unknown if no link rate has been decided.

Invalid Dword Count Number of malformed Dwords received.

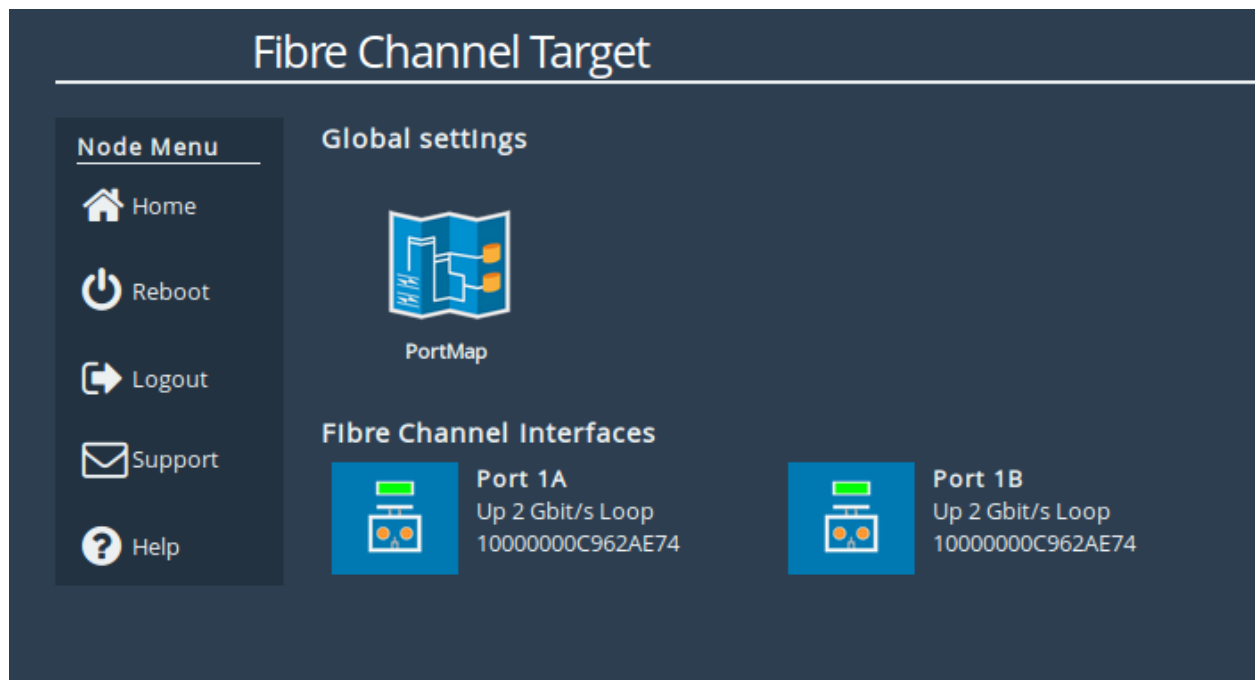
6 Fibre Channel Target Connections

This configuration page allows the user to configure ports designated as Fibre Channel Target interfaces.

From the Home screen of the web interface, select the *FC Target* icon from the *Devices and Protocols* section.



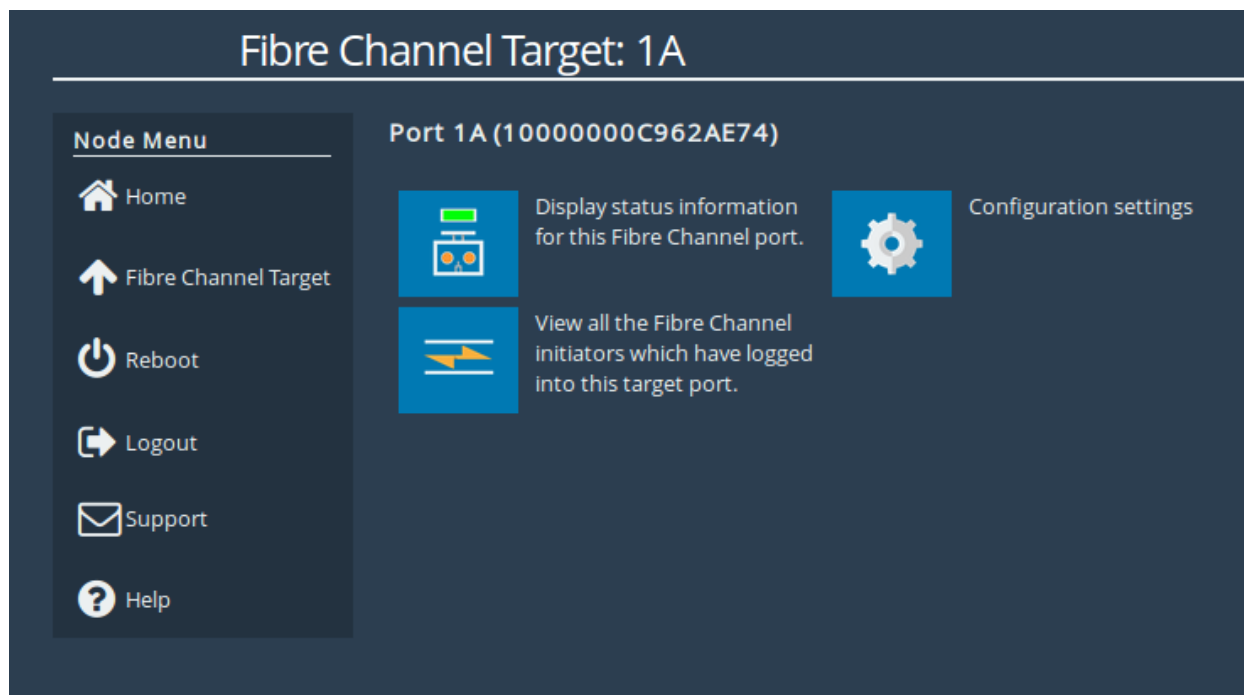
The web interface will then display the following:



The icons displayed in the *Fibre Channel Interfaces* section show the current state of each Fibre Channel Port.

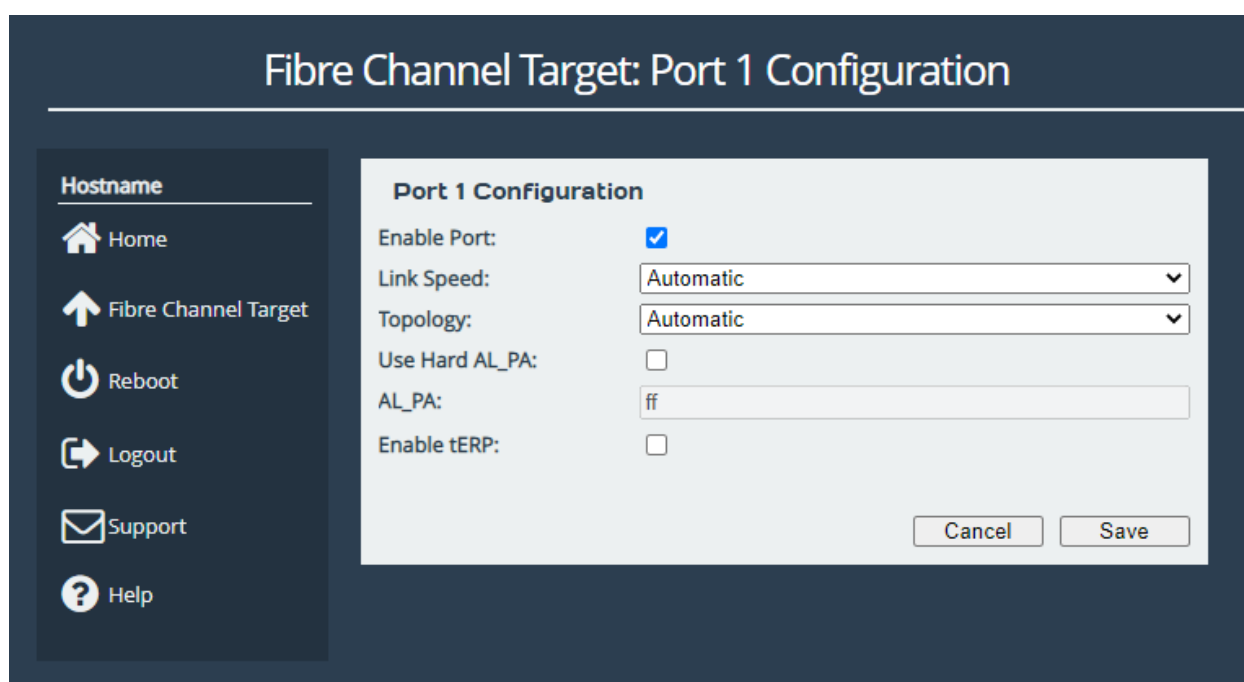
The green or red light in the icon show whether the port is up or down. This is also shown in the text next to each icon with the negotiated Fibre Channel speed and the selected topology. The port WWN is also shown next to each icon.

Clicking on an icon will display different options related to the specific port as shown:



6.1 Port Configuration

Selecting the *Configuration settings* icon will display the following:

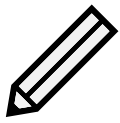


The first parameter is the *Port Enable* check box. Check this to enable the link onto the Fibre Channel Storage Area Network (SAN).

The *Link Speed* drop down menu allows you to select the Fibre Channel network speed. In most cases this can be kept as *Automatic*.

The *Topology* drop down menu allows you to force the Fibre Channel topology when the Bridge

logs on to the Fibre Channel SAN.



Note: It is recommended to leave *Hard AL_PA* unchecked unless you are conversant with the lower levels of the Fibre Channel protocol, as certain AL_PA addresses are reserved.

The *Enable tERP* check box, which is only present for 8Gb/s cards, will enable or disable the Target Error Recovery Protocol for the port. tERP will attempt to recover frames that are missed or time out during transfer. For tERP to correctly function, the connected initiator must also support tERP.

Clicking **Save** will save the configuration to memory for use at the next reboot.

6.2 Connected Hosts

To list which hosts are connected to the Bridge, select a port under *Fibre Channel Interfaces*, then select the icon labelled *View all the Fibre Channel initiators which have logged into this target port*. The following will then be displayed:

Fibre Channel Target: Connected Hosts - Port 1

Hostname

- Home
- Fibre Channel Target
- Reboot
- Logout
- Support
- Help

Host initiators connected to Port 1

World Wide Node Name	World Wide Port Name	Port ID
20000090fa79d339	10000090fa79d339	010000

6.3 Port Map

The *Port Map* page allows the user to assign devices to Fibre Channel ports with a fixed Logic Unit Number (LUN).

From the *Fibre Channel Target* page select the *Port Map* icon.



A screen similar to the following will be displayed:

Fibre Channel Target: Port Map

Hostname
[Home](#)
[Fibre Channel Target](#)
[Reboot](#)
[Logout](#)
[Support](#)
[Help](#)

Configuration Type
Automatic ▾

Port Assignment

Target Port	LUN	Devices	LUN
Port		WWN	
FCTPORT1	13	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001	7
FCTPORT1	2	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001	18
FCTPORT1	5	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001	15
FCTPORT1	0	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001	20
FCTPORT1	7	iqn.1991-05.com.microsoft:win-rdp25uho	13

Cancel Remove All Remove

New Device Assignment

Device & Logical Unit: --- Select a Target --- ▾
Port: --- Select a Port --- ▾
LUN: Input LUN Number

Add Assignment

Save

There are two modes of operation:

Automatic will assign all devices to all Fibre Channel target ports, so that any connected host will see all devices.

Manual will allow the user to manually assign which target devices appear on which Fibre Channel port.

When switching between modes all changes are held pending until the user selects *Save*.

6.3.1 Automatic

In this mode, the *Port Assignments* table shows the active mappings. When switching from manual to automatic mode the display will show the manual mappings greyed out until the user selects *Save* at which point they will be updated with the active automatic mappings.



Important: When *Automatic* port mapping is selected, LUN order is not guaranteed to be the same between reboots.

6.3.2 Manual

Selecting *Manual* will show something similar to the following:

The screenshot displays a configuration window with the following sections:

- Configuration Type:** A dropdown menu set to "Manual".
- Port Assignment:** A table with columns for Target Port, LUN, and Devices. It contains five entries, all with a green background indicating pending changes.
- Buttons:** "Cancel", "Remove All", and "Remove" are located below the Port Assignment table.
- New Device Assignment:** A section with three input fields: "Device & Logical Unit:" (dropdown), "Port:" (dropdown), and "LUN:" (text input). An "Add Assignment" button is at the bottom right of this section.
- Save:** A "Save" button is located at the bottom right of the entire window.

Target Port	LUN	Devices
Port	LUN	WWN
FCTPORT1	13	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001
FCTPORT1	2	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001
FCTPORT1	5	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001
FCTPORT1	0	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001
FCTPORT1	7	iqn.1991-05.com.microsoft:win-rdp25uho s8m-ramdisk-target,t,0x000001

When switching from *Automatic* to *Manual* the mapping is prepopulated with the same settings as those currently active. Initially, all entries are shown in green to indicate these are pending changes which will be added upon save. Similarly, if the user deletes an active mapping it will be shown in red as a pending removal as shown in the following example:

Port Assignment

Target Port	Devices		
Port	LUN	WWN	LUN
FCTPORT1	0	iqn.1991-05.com.microsoft:win-rdp25uhos 8m-ramdisk-target,t,0x000001	0
FCTPORT1	1	iqn.1991-05.com.microsoft:win-rdp25uhos 8m-ramdisk-target,t,0x000001	1
FCTPORT1	1	iqn.1991-05.com.microsoft:win-rdp25uhos 8m-ramdisk-target,t,0x000001	16

Cancel
Remove All
Remove

To assign a target device to a Fibre Channel Port:

1. Select a target device from the list in the *Device & Logical Unit* drop down menu. Note that devices that are already mapped are greyed out.
2. Select which Fibre Channel Port you wish the device to appear on.
3. Select the LUN you wish the device to have on the selected Fibre Channel Port.
4. Click the *Add Assignment* button at the bottom of the panel.

To remove a mapped device, select the device from the table and click the *Remove* button below the table. To remove all mapped devices, click the *Remove All* button.

Selecting *Cancel* allows the user to abandon any pending changes.



Important: Manually assigned LUN mappings should be sequential and include a LUN 0 to ensure correct operation.

7 Additional Features

Congratulations on finishing the basic setup of your Tamar FCSAS FC to SAS Bridge. Consider browsing the manuals for a complete list of capabilities (available at <https://support.4bridgeworks.com/documents/manuals/>).

8 Useful Links

Further documentation and support is available through our website: <https://support.4bridgeworks.com/>

If your question is not answered in our documentation, please submit a ticket: <https://support.4bridgeworks.com/contact/>