



SymplyPRO Ethernet Appliance User Guide

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If you have any support questions not addressed in this document, please check our extensive FAQs or submit a support ticket on our support site.

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CE Statement

Herewith confirmed to comply with the EMC requirements set out in the Directive 2014/30/EU of the European Parliament and of the Council of April 20, 2016, on the approximation of the laws of the Member States relating to electromagnetic compatibility. For the evaluation regarding the electromagnetic interference, the following EMC standards were applied :

EMI : Class B	EMS :
EN 55032:2015	EN 55035:2017
EN 61000-3-2:2014	EN 61000-4-2:2009
EN 61000-3-3:2013	EN 61000-4-3:2006+A2:2010
	EN 61000-4-4:2012
	EN 61000-4-5:2014
	EN 61000-4-6:2014
	EN 61000-4-8:2010
	EN 61000-4-11:2004

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UKCA Statement

Herewith confirmed to comply with the EMC requirements set out in the Electromagnetic Compatibility Regulations 2016 apply on the market in Great Britain from 1 January 2021. For the evaluation regarding the electromagnetic interference, the following EMC standards were applied:

EMI : Class B

EN 55032:2015

EN 61000-3-2:2014

EN 61000-3-3:2013

EMS :

EN 55035:2017

EN 61000-4-2:2009

EN 61000-4-3:2006+A2:2010

EN 61000-4-4:2012

EN 61000-4-5:2014

EN 61000-4-6:2014

EN 61000-4-8:2010

EN 61000-4-11:2004

CE Mark



The CE mark is a mandatory conformity mark on many products placed on the single market in the European Economic Area (EEA). The CE marking certifies that a product has met EU consumer safety, health or environmental requirements.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A or Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in industrial environment for Class A device or in residential environment for Class B device. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.



Perchlorate warning

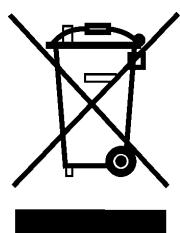
California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. www.dtsc.ca.gov/hazardouswaste/perchlorate".

Recycling and Disposal



NOTE

Disposal of waste equipment by users in private household in the European Union and Norway.



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at this time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Warnings and Symbols



IMPORTANT

All safety and operating instructions should be read before this product is operated and should be retained for future reference. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following basic rules for its installation, use and servicing.



DANGER

High voltage!

Risk of electric shock.

Do not remove cover (or back). No user-serviceable parts inside.
Refer to qualified service personnel.



39 - 66 lbs
18 - 30 kg



DANGER

A danger condition due to the weight of the unit. Weight symbols are accompanied by an approximation of the product's weight.



CAUTION

A discharge of static electricity can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage.



NOTE

Provides additional information.

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. See the next section.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm (± 10 percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.



NOTE

For more information on static electricity, or assistance with product installation, contact your authorized reseller.

Introduction

Congratulations on your purchase of the SymplyPRO Ethernet. The SymplyPRO Ethernet appliance is a revolutionary range of desktop and rack-mountable, high-performance LTO solutions with 10 Gb Ethernet (iSCSI) connectivity. It allows customers to securely and remotely access LTO tape drives via an accelerated Ethernet-to-SAS architecture, providing simplicity, operational flexibility, and overall system efficiency. The SymplyPRO Ethernet is designed for environments including media and entertainment, enterprise IT, and data centres.

SymplyPRO Ethernet is available in three versions:

- SymplyPRO Ethernet Tape
- SymplyPRO Ethernet Bridge
- SymplyPRO XTL Ethernet Module (for XTL Libraries)

The SymplyPRO Ethernet has undergone qualification with industry-leading storage and network infrastructure vendors, as well as leading ISVs. It features support for the Linear Tape File System (LTFS), providing an open standard for both backup and archive applications. LTFS allows organizations to easily protect and interchange data using LTO cartridges.

This document will guide you through the process of installing and operating the SymplyPRO Ethernet product line.

SymplyPRO Ethernet Tape XTH & XTF

The SymplyPRO Ethernet Tape is available as a desktop appliance featuring either one or two half-height LTO drives (XTH) or as a desktop appliance with one full-height LTO drive (XTF).

All models feature host connectivity via two (2) independent 10 Gb Ethernet ports and one (1) 12 Gb HD mini-SAS (SFF-8864) connector. The SAS Expansion Port allows for the connection of up to two additional external LTO drives. These can be standalone LTO drives or drives within an LTO library.

Features of the SymplyPRO Ethernet Desktop XTH and XTF models:

- Supports accelerated iSCSI over TCP/IP
- Two independent 10 Gb Ethernet ports
- Two SFP modules with LC or RJ45 interfaces
- Supports connections to up to four iSCSI initiators with two sessions each (eight total sessions supported)
- Single 12 Gb mini-SAS HD connector for external LTO devices
- Supports up to four SAS tape drives (LTO-7, LTO-8, and LTO-9)
- Supports LTFS (Linear Tape File System)
- Supports SAS TLR (Transport Layer Retries)
- Dedicated GbE RJ45 management port
- Access Control List (ACL) support
- Management via Web UI or CLI over SSH
- Firmware updates via Web UI or SFTP
- SpeedWrite™ technology for accelerated write performance

SymplyPRO Ethernet Tape 1U & 2U Rack

The SymplyPRO Ethernet is available as a 1RU appliance with one or two half-height LTO drives, or as a 2RU appliance with one or two full-height LTO drives.

All models feature host connectivity via two (2) independent 10 Gb Ethernet ports and two (2) 12 Gb HD mini-SAS (SFF-8864) connectors. The SAS Host Port provides connectivity to a SAS host adapter. The SAS Expansion Port allows for the connection of up to two additional external LTO drives. These can be standalone LTO drives or drives within an LTO library.

Features of the 1RU and 2RU SymplyPRO Ethernet with integrated LTO drives:

- 1RU and 2RU appliance with integrated LTO drives.
- Supports accelerated iSCSI over TCP/IP
- Two independent 10 Gb Ethernet ports
- Two SFP Modules with LC or RJ45 interfaces
- Support for connection to up to 4 iSCSI initiators with two sessions each (8 total sessions supported)
- Single 12 Gb mini-SAS HD connector for connection to external LTO devices
- Supports up to 4 SAS Tape Drives (LTO-7, LTO-8, and LTO-9)
- Support for LTFS (Linear Tape File System)
- Support for SAS TLR (Transport Layer Retries)
- Dedicated 1GbE RJ45 Management port
- ACL (Access Control List) Support
- Management via Web UI or CLI over SSH
- Firmware updates via Web UI or SFTP
- SpeedWrite™ technology for accelerated write performance.
- Rack appliances ship with rack-kits as standard.

SymplePRO Ethernet Bridge

The SymplePRO Ethernet Bridge is a 1RU appliance featuring a 10 Gb Ethernet-to-12 Gb SAS controller with two (2) independent 10 Gb Ethernet ports and one (1) 12 Gb mini-SAS HD (SFF-8864) connector.

The SymplePRO Ethernet Bridge supports up to four drives connected via the external SAS connector. These drives can be standalone units, part of a library, or a combination of both.

Features of the SymplePRO Ethernet Bridge:

- Supports accelerated iSCSI over TCP/IP
- Two independent 10 Gb Ethernet ports
- Two SFP modules with LC or RJ45 interfaces
- Supports connections to up to four iSCSI initiators with two sessions each (eight total sessions supported)
- Single 12 Gb mini-SAS HD connector for external LTO devices
- Supports up to four SAS tape drives (LTO-7, LTO-8, and LTO-9)
- Supports LTFS (Linear Tape File System)
- Supports SAS TLR (Transport Layer Retries)
- Dedicated 1 GbE RJ45 management port
- Access Control List (ACL) support
- Management via Web UI or CLI over SSH
- Firmware updates via Web UI or SFTP
- SpeedWrite™ technology for accelerated write performance
- Rack appliances ship with rack-kits as standard.

SymplyPRO XTL Ethernet Module

The SymplyPRO XTL Ethernet Module is an XTL sled designed for use in the SymplyPRO XTL 24, 40, and 80 tape libraries. It features a 10 Gb Ethernet-to-12 Gb SAS controller with two (2) independent 10 Gb Ethernet ports and one (1) 12 Gb mini-SAS HD (SFF-8864) connector.

The SymplyPRO XTL Ethernet Module supports up to four drives connected via the external SAS connector. Multiple XTL Ethernet Modules can be used together in the modular XTL 40 and 80 tape libraries to support the required number of tape drives.

Features of the SymplyPRO XTL Ethernet Module:

- XTL Module design is compatible with SymplyPRO XTL 24, 40 and 80 Tape Libraries.
- Supports accelerated iSCSI over TCP/IP
- Two independent 10 Gb Ethernet ports
- Two SFP modules with LC or RJ45 interfaces
- Supports connections to up to four iSCSI initiators with two sessions each (eight total sessions supported)
- Single 12 Gb mini-SAS HD connector for external LTO devices
- Supports up to four SAS tape drives (LTO-7, LTO-8, and LTO-9)
- Supports LTFS (Linear Tape File System)
- Supports SAS TLR (Transport Layer Retries)
- Dedicated GbE RJ45 management port
- Access Control List (ACL) support
- Management via Web UI or CLI over SSH
- Firmware updates via Web UI or SFTP
- SpeedWrite™ technology for accelerated write performance

SymplyPRO Ethernet Models

Part Number	Description
SYPRO-DE1L7H2B	SymplyPRO Ethernet XTH Tape Desktop 2x10 GbE SFP+ 1xLTO-7 HH (6/15TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPRO-DE1L8H2B	SymplyPRO Ethernet XTH Tape Desktop 2x10 GbE SFP+ 1xLTO-8 HH (12/30TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPRO-DE1L9H2B	SymplyPRO Ethernet XTH Tape Desktop 2x10 GbE SFP+ 1xLTO-9 HH (18/45TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPRO-DE1L9F1B	SymplyPRO Ethernet XTF Tape Desktop 2x10 GbE SFP+ 1xLTO-9 FH (18/45TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPRO-DE1LAF1B	SymplyPRO Ethernet XTF Tape Desktop 2x10 GbE SFP+ 1xLTO-10 FH (30/75TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR1-RE1L7H2B	SymplyPRO Ethernet 1RU Tape 2x10 GbE SFP+ & SAS 1xLTO-7 HH (6/15TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR1-RE1L8H2B	SymplyPRO Ethernet 1RU Tape 2x10 GbE SFP+ & SAS 1xLTO-8 HH (12/30TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR1-RE1L9H2B	SymplyPRO Ethernet 1RU Tape 2x10 GbE SFP+ & SAS 1xLTO-9 HH (18/45TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR2-RE1L9F2B	SymplyPRO Ethernet 2RU Tape 2x10 GbE SFP+ & SAS 1xLTO-9 FH (18/45TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR2-RE1LAF2B	SymplyPRO Ethernet 2RU Tape Gen2 2x10 GbE SFP+ only, 1xLTO-10 FH (30/75TB) including Data Cartridge & cleaning Cartridge. 3 Year Warranty
SYPR1-RE1BD04B	SymplyPRO Ethernet Bridge 1RU 2x10 GbE SFP & SAS Expansion 4 Drives. 3 Year Warranty
SYXTL-ME1BD04B	SymplyPRO XTL Ethernet Module 2x10 GbE SFP & SAS Expansion 4 Drives. 3 Year Warranty

What is iSCSI?

iSCSI is an IP-based standard for transferring data that enables host access by carrying SCSI commands over IP networks. In an iSCSI configuration, the host operating system (OS) sends requests to a target—in this case, the SymplePRO Ethernet appliance. The host contains one or more initiators that connect to an IP network to initiate requests to and receive responses from an iSCSI target. Each initiator and target is assigned a unique iSCSI name, such as an iSCSI Qualified Name (IQN), which ensures worldwide uniqueness.

iSCSI targets are devices that respond to iSCSI commands. In this context, the SymplePRO Ethernet acts as a bridge between IP and SAS devices, specifically for LTO tape drives either installed within the SymplePRO Ethernet or connected externally via the SymplePRO Ethernet Bridge.

Each iSCSI target has a unique iSCSI name. A system can be configured with one or more iSCSI targets. To transport SCSI commands over an IP network, the iSCSI host OS must have an iSCSI driver installed. This driver sends iSCSI commands and responses through the network interface controller (NIC) in the host to the SymplePRO Ethernet appliance (the target).

Windows and Linux operating systems include or offer iSCSI drivers. macOS does not include a built-in iSCSI driver.

For maximum performance, use a 10 Gb Ethernet (or faster) adapter that transmits at 10 Gb/s between the host and the SymplePRO Ethernet appliance.

Host System Requirements

macOS

- A Mac host computer with a 10 GbE NIC and current drivers compatible with the OS version.
- The Data Ports of the SymplePRO Ethernet must be configured on the same network as the 10 GbE NIC.
- macOS version 10.15 or later.
- A macOS-compatible iSCSI initiator (ATTO Xtend SAN is approved).

Windows

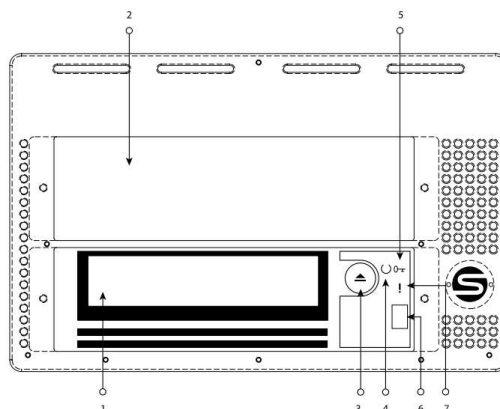
- A Windows host computer with a 10 GbE NIC and current drivers compatible with the OS version.
- The Data Ports of the SymplePRO Ethernet must be configured on the same network as the 10 GbE NIC.
- Microsoft iSCSI Initiator.

Linux

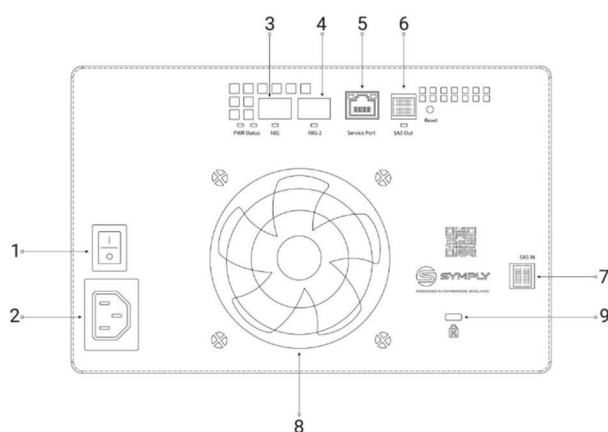
- A Linux host computer with a 10 GbE NIC and current drivers compatible with the OS version.
- The Data Ports of the SymplePRO Ethernet must be configured on the same network as the 10 GbE NIC.
- An iSCSI initiator.

SymplyPRO Ethernet Hardware Guide

SymplyPRO Ethernet XTH Tape

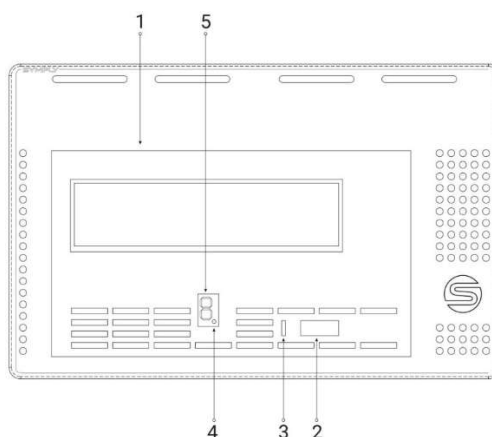


Number	Description
1	Half Height LTO Drive installed in lower LTO Bay
2	Half Height LTO Drive Blanking Plate in upper LTO Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD)
7	Exclamation Symbol (Fault Light)

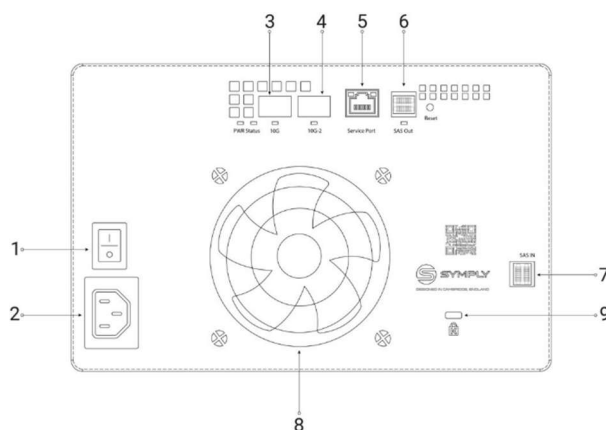


Number	Description
1	Power Switch (On/Off)
2	Power Inlet
3	DP 1 (10 GbE SFP)
4	DP 2 (10 GbE SFP)
5	Service / Management Port (GbE RJ45)
6	SAS Expansion Port
7	N/A
8	Fan
9	Kensington Lock

SymplePRO Ethernet XTF Tape

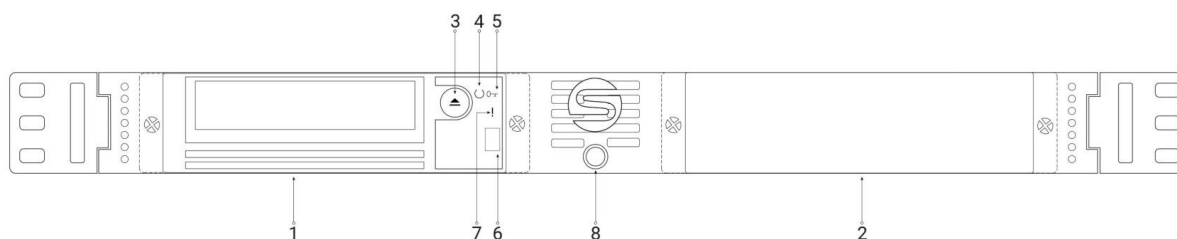


Number	Description
1	Full Height LTO Drive
2	Eject Cartridge Button
3	LED Indicator
4	Single-Character Display (SCD) Dot
5	Single-Character Display (SCD)

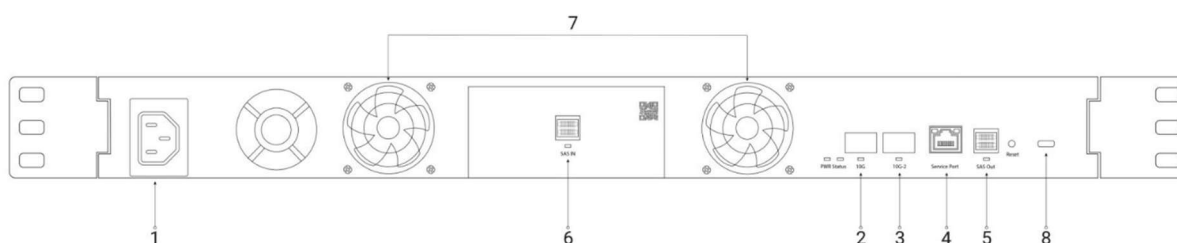


Number	Description
1	Power Switch (On/Off)
2	Power Inlet
3	DP 1 (10 GbE SFP)
4	DP 2 (10 GbE SFP)
5	Service / Management Port (GbE RJ45)
6	SAS Expansion Port
7	N/A
8	Fan
9	Kensington Lock

SymplyPRO Ethernet 1RU Tape

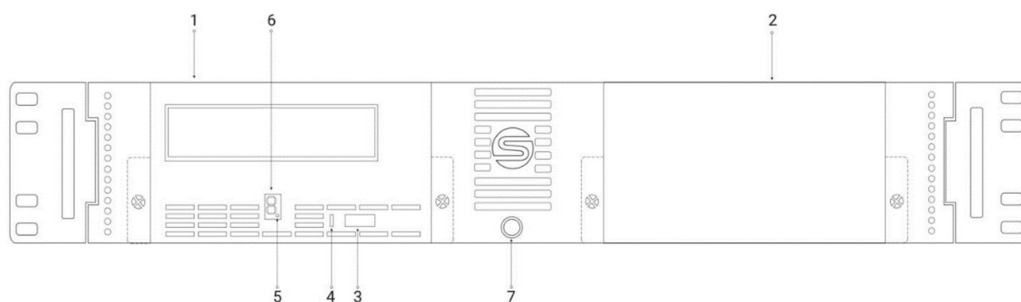


Number	Description
1	Half Height LTO Drive installed in Left-Hand Bay
2	Half Height LTO Drive Blanking Plate in Right Had Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD)
7	Exclamation Symbol (Fault Light)
8	Power Button

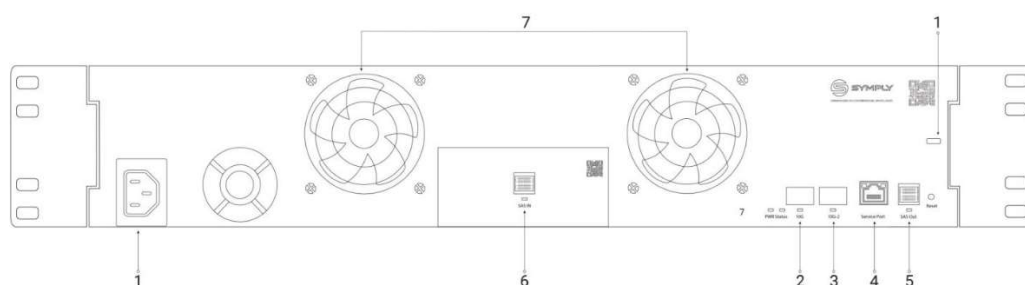


Number	Description
1	Power Inlet
2	DP 1 (10 GbE SFP)
3	DP 2 (10 GbE SFP)
4	Service / Management Port (GbE RJ45)
5	SAS Expansion Port
6	SAS Host Port
7	Fan
8	Kensington Lock

SymplePRO Ethernet 2RU Tape

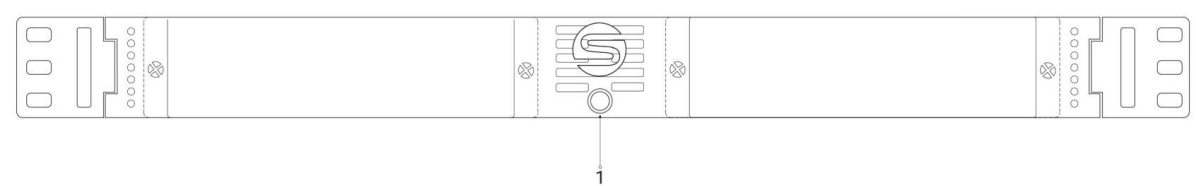


Number	Description
1	Full Height LTO Drive installed in Left-Hand Bay
2	Full Height LTO Drive Blanking Plate in Right Had Bay
3	Eject Cartridge Button
4	LED Indicator
5	Single-Character Display (SCD) Dot
6	Single-Character Display (SCD)
7	Power Button

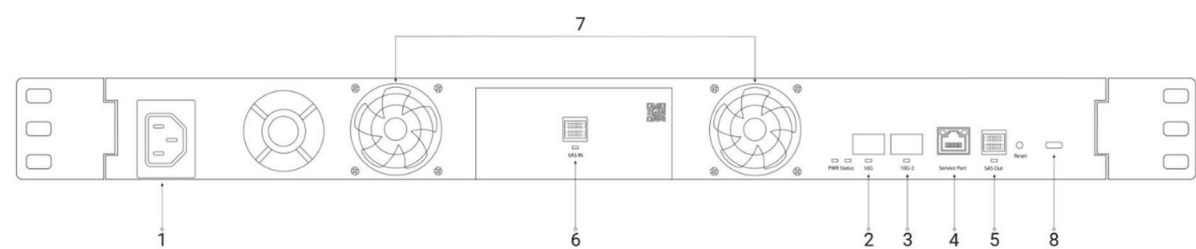


Number	Description
1	Power Inlet
2	DP 1 (10 GbE SFP)
3	DP 2 (10 GbE SFP)
4	Service / Management Port (GbE RJ45)
5	SAS Expansion Port
6	SAS Host Port (Not available on LTO-10 models)
7	Fan
8	Kensington Lock

SymplyPRO Ethernet Bridge

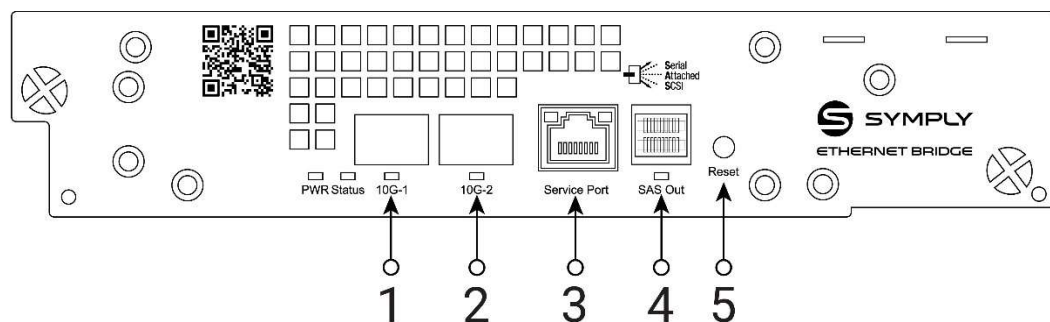


Number	Description
1	Power Switch (On/Off)



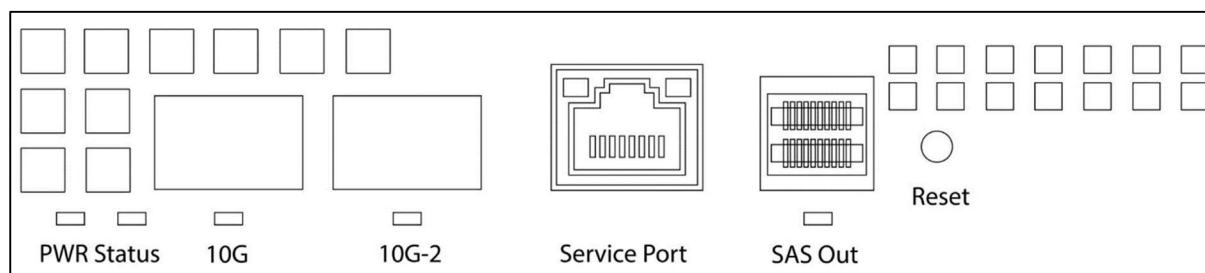
Number	Description
1	Power Switch (On/Off)
2	DP 1 (10 GbE SFP)
3	DP 2 (10 GbE SFP)
4	Service / Management Port (GbE RJ45)
5	SAS Expansion Port
6	N/A
7	Fans
8	Kensington Lock

SymplyPRO XTL Ethernet Module



Number	Description
1	DP 1
2	DP 2
3	Service Port
4	SAS Out (Connection to SAS Tape Drives)
5	Module Reset

SymplyPRO Ethernet LEDs and Reset Button



Item	Description
PWR	Indicates the power status of the IP-to-SAS Bridge. Illuminates green when powered on
Status / Alert LED	Bi-colour green/yellow shared LED. Green indicates the unit has completed initialization and is ready for use. Yellow indicates an alert or fault condition in the IP-to-SAS Bridge.
10G-1 LED	DP 1 LED lights solid green for a valid link and blinks to indicate activity.
10G-2 LED	DP 2 LED lights solid green for a valid link and blinks to indicate activity.
SAS Out LED	Located below the expansion port mini-SAS HD connector. Blinks to indicate SAS activity
Service / Management Port LED 1	The LED on the left (facing the connector, LED1) illuminates solid green when linked at 1 Gb/s, and is off when linked at 100 Mb/s or not linked.
Service / Management Port LED 2	The LED on the right (LED0) blinks green to indicate activity.
Reset	Recessed reset button

SymplyPRO Ethernet Specification – Physical

	Form Factor	No. Drives	Host Interface	Expansion Port	Dimensions	Weight	Power
SymplyPRO Ethernet XTH	Desktop	1 or 2	2 x10 GbE SFP+	1x SFF-8864	27.5 x 21.1 x 9.2 cm (10.8 x 8.3 x 3.6 in)	3.8 to 5.0 kg (8.4 to 11.0 lb)	Internal 200 W (110V ~ 240 V) Typical 161 W
SymplyPRO Ethernet XTF	Desktop	1	2 x10 GbE SFP+	1x SFF-8864	27.5 x 21.1 x 9.2 cm (10.8 x 8.3 x 3.6 in)	5.8 kg (12.7 lb)	Internal 200 W (110V ~ 240 V) Typical 161 W
SymplyPRO Ethernet 1RU	Rack 1RU	1 or 2	2 x10 GbE SFP+ 1 x SAS 12 Gb	1x SFF-8864	43.5 x 48.2 x 4.4cm (17.1x19x1.7 in)	6.1KG (13.4 lb)	Internal 350W (110V~240V), Typical 166W
SymplyPRO Ethernet 2RU	Rack 2RU	1 or 2	2 x10 GbE SFP+	1x SFF-8864	43.5 x 48.2 x 8.8cm (17.1x19x3.5 in)	10.2KG (22.5 lb)	Internal 350W (110V~240V), Typical 166W
SymplyPRO Ethernet Bridge	Rack 1RU	n/a	2 x10 GbE SFP+	1x SFF-8864	43.5 x 48.2 x 4.4cm (17.1x19x1.7 in)	6.1KG (13.4 lb)	Internal 350W (110V~240V), Typical 166W
SymplyPRO XTL Ethernet Module	Module	n/a	2 x10 GbE SFP+	1x SFF-8864	n/a	n/a	n/a

SymplyPRO Ethernet Operational Environment

Environmental Factor	Recommended	Allowable	Non-Operating
Dry-Bulb Temperature	LTO-9 and LTO-10: 15 to 25 °C (59 to 77 °F) LTO-7 and LTO-8: 16 to 25 °C (61 to 77 °F)	LTO-9 and LTO-10: 15 to 30 °C (59 to 86 °F) LTO-7 and LTO-8: 16 to 30 °C (61 to 86 °F)	-23°C to 49°C (-40°F to 140°F)
Relative Humidity	LTO-9 and LTO-10: 20 to 50% (non-condensing) LTO-7 and LTO-8: 20 to 50% (non-condensing)	LTO-9 and LTO-10: 20 to 50% (non-condensing) LTO-7 and LTO-8: 20 to 50% (non-condensing)	5 to 80% (non-condensing)
Maximum Temperature Change	5 °C / hour	5 °C / hour	n/a
Maximum Humidity Change	5% / hour	5% / hour	n/a
Temperature Limitation for Humidity Conditions	LTO-9 and LTO-10: Max Dew Point 22 °C (72 °F) LTO-7 and LTO-8 Wet Bulb Temperature <= 26 °C (79 °F)		
Maximum Altitude	3,048 m (10,000 ft)	3,048 m (10,000 ft)	12,192 m (40,000 ft)

**IMPORTANT**

Data cartridges stored at a temperature in excess of 52°C (125.6 °F) may suffer permanent damage. It is important that both temperature and humidity should be kept constant, as rapid changes in either are not good for the data cartridges or LTO drives.

SymplyPRO Ethernet Bridge Operational Environmental

	Temperature	Humidity	Altitude
Operating	5°C to 40°C (41°F to 104°F)	10% to 90% (non-condensing)	3048 m (10,000 ft)
Non-operating	-40°C to 60°C (-40°F to 140°F)	0% to 90% (non-condensing)	12192 m (40,000 ft)

SymplyPRO and Data Cartridge Acclimatization Time

Acclimatization time is required if the temperature of the SymplyPRO drive when opened is different from the temperature of the environment it will be operated in. The recommended initial acclimation time is four hours after the drive has been unpacked.

If there is no danger of condensation (the air is dry), then the drive temperature may be increased more quickly by powering the drive on for a half hour before using the tape drive. If the SymplyPRO drive is hotter than the maximum allowed operating temperature (30°C or 86°F) there is a danger that the tape may adhere to the read/write head. In this case the SymplyPRO Ethernet LTO drive should be allowed to cool to within the operating temperature range.

It is recommended that the SymplyPRO product and LTO data cartridges are stored together for 24 hours before use in the environment that they will be used in. This will ensure the correct acclimatization.

LTO Drive and Data Cartridge Compatibility Guide

	LTO-5 Data Cartridge	LTO-6 Data Cartridge	LTO-7 Data Cartridge	LTO-8 Data Cartridge	LTO-9 Data Cartridge	LTO-10 Data Cartridge
SymplyPRO LTO-7	Read Only	Read & Write	Read & Write	n/a	n/a	n/a
SymplyPRO LTO-8	n/a	n/a	Read & Write	Read & Write	n/a	n/a
SymplyPRO LTO-9	n/a	n/a	n/a	Read & Write	Read & Write	n/a
SymplyPRO LTO-10	n/a	n/a	n/a	n/a	n/a	Read & Write

LTO-9 Media Optimization

LTO-9 media Optimization, is also referred to as Characterization, is a feature introduced for LTO-9 tape drives with LTO-9 media. Due to the increased number of tracks used in writing data to LTO-9 media, there needs to be greater precision in the writing process. Media optimization creates a referenced calibration for each cartridge that enables the tape drive's intelligent alignment to optimize data placement. LTO-9 media optimization enhances LTO tape long-term media durability. Note that media optimization is not required for LTO-9 tape drives using LTO-8 media.

- The process of media optimization will be performed on the first load only of LTO-9 media during initialization.
- Media optimization is a one-time operation that can be completed on any drive, enabling the media to be used across all tape drives without further optimization.
- Media optimization averages 40 minutes per first load of a cartridge to a tape drive. Although most media optimization will complete within 60 minutes some media optimization may take up to two hours.
- The differing amount of time taken for the one-time optimization to complete has no impact on the performance or functionality of the data cartridge.
- Interruption of the media optimization process is not recommended.
- All LTO-9 media supplied by Symply in-the-box with our LTO-9 product is pre-optimized to save you time.
- Symply offer LTO-9 media for purchase via our network of resellers, this is available with or without pre-optimization performed.

Note: Media Optimization is not required for LTO-10.

About Linear Tape File System (LTFS)

LTFS makes viewing and accessing tape files easier than ever before. The LTFS format is used with LTO data tapes to allow you to share your data with others as it is supported on the Mac, Windows and Linux operating systems and doesn't use a proprietary data format. With LTFS, the LTO data tape is partitioned in two. One partition holds the content and the other holds the content's index so the tape can be self-describing to improve archive management.



IMPORTANT

* ? < > " | \ are illegal characters in LTFS and are not usable in file names, folder names, or file extensions. Most commercially available LTFS software will handle these illegal characters for you. However, to keep your archives software independent it is best to remove any illegal characters from file and folder names prior to writing them to tape.

IBM Spectrum® Archive

The IBM Spectrum Archive is a linear tape file system (LTFS) is a file system that works with LTO Generation tape technology to access data stored on an IBM tape cartridge. IBM Spectrum Archive uses the file system's format and resources of the operating system (OS) on which it is running to graphically display the contents of a tape cartridge in the OS's graphical user interface (GUI) format; typically, a folder/tree structure. Using the host operating system's graphical file manager, reading data on a LTO tape cartridge is as easy as dragging and dropping. Users can run any application designed for disk files against tape data without concern for the fact that the data is physically stored on tape.

For the latest compatibility information on IBM Spectrum Archive please refer to the IBM website

<https://www.ibm.com/docs/en/spectrum-archive-sde>



NOTE

For the macOS the current SDE version 2.4.5.1 is the last release for the platform.

SymplyPRO Ethernet Installation

Unpacking the SymplyPRO Ethernet

Carefully unpack the SymplyPRO Ethernet and retain the packaging. Please inspect the unit for shipping damage. If there is damage, do not install the unit, please report the damage immediately by contacting your place of purchase.

Caution should be used whenever lifting the SymplyPRO Ethernet in and out of the shipping carton, make sure that the working area around you is free from obstructions.



IMPORTANT

Please retain SymplyPRO Ethernet shipping carton and packaging for Warranty Purposes. If you need to return the unit for service, please make sure you do so in the original or equivalent packing material, or the warranty may be invalidated.

SymplyPRO Ethernet Tape – What's in the box?

Item	QTY	Description
SymplyPRO Ethernet Tape	1	Desktop or Rack Appliance with One LTO Drive Pre-installed
SY-SYCBL-SFPPLXXOX5MMA0	2	Symply SFP 10GBASE-SR 850nm 300m DOM Duplex LC/UPC MMF Optical Transceiver Module
SYCBL-SFPPLXXCX5HXA0	2	Symply SFP+ 10GBASE-T Copper 30m RJ-45 Transceiver Module
macOS iSCSI Initiator	1	ATTO XtendSAN iSCSI Initiator License**
LTO Data Cartridge	1	SymplyLTO Media - Ultrium Data Cartridge Tape
LTO Clean Cartridge	1	SymplyLTO Media - Ultrium Universal Cleaning Cartridge
Ethernet Cable	1	5m Cat6 Ethernet Cable (for management port)
Optical Cable	2	3m OM4 LC-LC Optical Cable
Power Cable	1	2 m (6.5 ft) IEC power cord for local region
Rack-kit (for 1RU and 2RU)	1	Rack-kit for 1RU and 2RU models only
Welcome Card	1	Information Card Please Read Carefully
Shipping Carton	1	Please retain shipping carton and packaging for warranty purposes

** Email hello@gosymply.com with your Symply serial number and proof of purchase to claim the free license. The license must be claimed within 90 days of purchase.

SymplyPRO Ethernet Bridge – What's in the box?

Item	QTY	Description
SymplyPRO Ethernet Bridge	1	1RU Rack Appliance
SY-SYCBL-SFPPLXXOX5MMA0	2	Symply SFP 10GBASE-SR 850nm 300m DOM Duplex LC/UPC MMF Optical Transceiver Module
SYCBL-SFPPLXXCX5HXA0	2	Symply SFP+ 10GBASE-T Copper 30m RJ-45 Transceiver Module
macOS iSCSI Initiator	1	ATTO XtendSAN iSCSI Initiator License**
Ethernet Cable	1	5m Cat6 Ethernet Cable (for management port)
Optical Cable	2	3m OM4 LC-LC Optical Cable
Power Cable	1	2 m (6.5 ft) IEC power cord for local region
Rack-kit	1	Rack-kit for 1RU model only
Welcome Card	1	Information Card Please Read Carefully
Shipping Carton	1	Please retain shipping carton and packaging for warranty purposes

** Email hello@gosymply.com with your Symply serial number and proof of purchase to claim the free license. The license must be claimed within 90 days of purchase.

SymplyPRO XTL Ethernet Module – What's in the box?

Item	QTY	Description
SymplyPRO XTL Ethernet Module	1	XTL Ethernet Module for XTL 24, 40 and 80 Tape Libraries
SY-SYCBL-SFPPLXXOX5MMA0	2	Symply SFP 10GBASE-SR 850nm 300m DOM Duplex LC/UPC MMF Optical Transceiver Module
SYCBL-SFPPLXXCX5HXA0	2	Symply SFP+ 10GBASE-T Copper 30m RJ-45 Transceiver Module
macOS iSCSI Initiator	1	ATTO XtendSAN iSCSI Initiator License **
Ethernet Cable	1	5m Cat6 Ethernet Cable (for management port)
Optical Cable	2	3m OM4 LC-LC Optical Cable
Power Cable	1	2 m (6.5 ft) IEC power cord for local region
Welcome Card	1	Information Card Please Read Carefully
Shipping Carton	1	Please retain shipping carton and packaging for warranty purposes

** Email hello@gosymply.com with your Symply serial number and proof of purchase to claim the free license. The license must be claimed within 90 days of purchase.

Situating your SymplyPRO Ethernet Tape (or Ethernet Bridge)

It is important that the SymplyPRO Ethernet is in a clean environment away from sources of dust. The unit should be orientated in a horizontal position with enough space around the unit for airflow and to insert and eject the data cartridge. If the unit is the rackmount 1RU or 2RU appliance, please refer to the racking instructions.

The unit should also be kept away from:

- Areas with high-traffic footfall, especially if the floor is carpeted.
- Areas with moving air such as air conditioners, open windows, fans, and doorways.
- The unit should be located off the floor.

	CAUTION The power source must be connected to a protective earth ground and comply with local electrical codes. Improper grounding may result in an electrical shock or damage to the unit. Failure to do so may cause injury or damage the unit. If you are using a rack, be careful not to exceed the power capabilities of the rack
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Before Powering on SymplyPRO Ethernet Tape

Before powering on the system, ensure that none of the ventilation holes are blocked, that there are no obstructions around the system blocking airflow, that the environment is within the specified operating conditions and that acclimatization time has been allowed.

- Connect the host computer(s) via 10 Gb Ethernet to the 10 Gb Ethernet DP 1 and/or DP 2 on the appliance. This can be done directly or via a network switch.
- Connect the management port of the appliance to the host computer(s).
- Ensure the LTO drives in the XTH, XTF, 1RU and 2RU are correctly installed.
- If connecting to external LTO SAS targets, ensure they are connected with the correct SAS cabling via the 12 Gb SAS Expansion Port.
- Power up external SAS targets (if applicable)
- Power on the SymplyPRO Ethernet Tape

	NOTE When powered on the SymplyPRO Ethernet Tape, the LTO drive(s) will perform a hardware Power on Self-Test (POST) on both the LTO drive(s) and the Ethernet to SAS processor. During POST, the Single Character Display (SCD) on the LTO drive flashes several segmented characters. Each character represents a test performed during POST. When POST finishes, the SCD will momentarily light all segmented characters and will then go blank.
---	---

POST takes approximately 15 seconds, and the Status LED light will also appear Green on the rear of the SymplyPRO Ethernet Tape.



IMPORTANT

Never power off or remove power from the SymplyPRO Ethernet Tape while a data cartridge is loaded. If the SymplyPRO Ethernet Tape is powered off while a data cartridge is installed, then when the system is powered on again, the system will perform a much more intensive POST while the system verifies the integrity of the data on the tape. This extended POST process can take up to 10 minutes, at the end the data cartridge will be ejected.

Before Powering on SymplyPRO Ethernet Bridge

- Connect SAS target devices with the appropriate SAS cable to the SAS Expansion Port.
- Power up the target devices.
- Power On the SymplyPRO Ethernet Bridge.
- Wait for the Status LED to light on the back of the appliance to go Green, indicating the appliances has completed it POST sequence.

Before Powering Off SymplyPRO Ethernet (or Ethernet Bridge)

Check that all LTO operations have been completed and the LTO cartridge(s) have been ejected from the LTO drive(s)



IMPORTANT

Do not disconnect the 10 Gb Ethernet data cables from the SymplyPRO Ethernet Bridge while the LTO drives are in operation.

Installing the XTL Ethernet Module in SymplyPRO XTL Library

The SymplyPRO XTL Ethernet Module occupies one half-height drive bay in either the XTL 24, 40, or 80 libraries. The SymplyPRO XTL Ethernet Module can be installed in either Base or Expansion module of the XTL 40 or 80 Tape Libraries.

1. It is recommended to install the XTL Ethernet Module in the Top Half-Height Drive Bay of either the XTL 24, 40 or 80.
2. To assist in aligning the XTL Ethernet Module, only remove the drive bay covers for one drive at a time. Remove the face plate covering the drive bay by removing the screws holding it in place. Remove one drive bay cover to install one half-height tape drive.
3. Holding the XTL Ethernet Module by the handle and supporting it from the bottom, slide the tape drive along the alignment rails into the drive bay until it is flush with the back of the library.
4. Tighten the blue captive screws with your fingers to secure the tape drive to the chassis. If the thumbscrews cannot be tightened, verify that the XTL Ethernet Module is aligned properly.
5. Use the SAS cable provided by Symply to connect the SAS Out port on the XTL Ethernet Module to the SAS tape drives
 - a. A 2m Fan-Out cable is provided with the XTL 40 and XTL 80 libraries
 - i. The HD Mini-SAS (SFF-8644) connects to the XTL Ethernet Module
 - ii. The Fan end of the cable goes into **Port A of the tape drive**.
 - iii. Coil and secure excess cable length to the rack to minimize stress on the connectors.
 - b. A 2m SAS cable is provided with the XTL 24
 - i. The HD Mini-SAS (SFF-8644) connects to the XTL Ethernet Module
 - ii. The other end (either SFF-8644 or SFF-8080) connects to **Port A of the tape drive**.
 - iii. Coil and secure excess cable length to the rack to minimize stress on the connectors.

	NOTE	• Symply provide 2m Fan-Out Cables with Each XTL 40 or 80 Base Module • LTO-9 Libraries are supplied with a single 2m SFF-8644 to 4x SFF-8644 cable • LTO-7 and 8 Libraries are supplied with a single 2m SFF-8644 to 4x SFF-8088 • 2m SFF-8644 to 2x SFF-8644 & SFF-8088 cables are available to purchase from Symply
	CAUTION	All drive bays without tape drives installed must have a drive bay cover installed.
	MECHANICAL HAZARD	Danger: Risk of hand pinching. Can trap hands, fingers and cause serious injury. Keep hands clear during operation.

Default IP Configuration, Username and Password

By default, the SymplyPRO Ethernet is configured to use a static IP address which are the same for all the models.

Port Type	IP Address
Management Port (GbE RJ45)	192.168.0.1/24
DP 1 (10 GbE SFP)	10.0.0.1/8
DP 2 (10 GbE SFP)	172.16.0.1/12

By default, the SymplyPRO Ethernet CLI management interface uses the following credentials.

Username	Password
admin	“ATt”+Processor Serial Number

The Processor Serial Number is on the sticker attached to the SymplyPRO Ethernet Tape and can be found on the Welcome Card in the accessories box. It is 13 characters long and starts “ET” For Example: ET8122T100009

The Password for example would be “ATtET8122T100009”

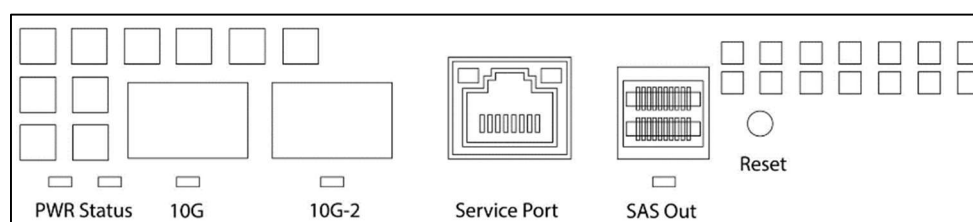


NOTE

The Processor Serial Number is not the same as the Serial Number of the appliance that will start “SY”

Resetting the SymplyPRO Ethernet to Defaults

- Locate the reset button on the rear of the SymplyPRO Ethernet appliance.
- Press and hold the reset button for 5 seconds.
- This will reset all the configurations including the password to default.



Managing the SymplyPRO Ethernet via CLI

The SymplyPRO Ethernet appliances can be managed via CLI or the Web User Interface.

Accessing CLI Management via SSH Connection



NOTE

The SymplyPRO Ethernet uses a keypair that is provided to devices on a network to authenticate. Upon first connection from a host to the SymplyPRO Ethernet you will be prompted to accept the keypair by typing [yes]

- Start an SSH client. This can be a macOS Terminal windows, or in Windows OS the Command Prompt.
- In your SSH client, connect to the SymplyPRO Ethernet using the following command.
SSH admin@[IPaddress]
- Upon first connection you will be prompted to accept the keypair. Type [yes]
- Enter password of the appliance
- The CLI splash will appear.



NOTE

There is more than one way to connect to the SymplyPRO Ethernet using an SSH client. Your SSH client may operate differently than the instructions provided.

Changing the IP Configuration via CLI

The default IP addresses can be changed via the CLI management interface. To do this you will need to connect to the Management Port using SSH and the default user credentials of the appliance.



NOTE

If using DHCP on the Management Port, it is suggested the DHCP server reserve an IP address for the port's MAC address to avoid having the device's IP migrating, possibly losing CLI access.

Setting Management and Data Port IP Address via CLI

Login to the SymplyPRO Ethernet CLI management

- If using IPv4 DHCP to assign Ethernet port addresses then use `set IPDHCP` to enable DHCP for the selected Ethernet port(s).
- If using static IPv4 addresses, then use
 - `set IPAddress` on the selected Ethernet port.
 - `set IPSubnetMask` on the selected Ethernet port.
 - `set IPGateway` on the selected Ethernet port.

Example setting the Management Port to the IP Address 192.168.20.1

```
set IPAddress MP1 192.168.20.1
```

Example setting Data Port 1 to the IP Address 192.168.30.1

```
set IPAddress DP1 192.168.30.1
```

Example setting Data Port 2 to the IP Address 172.16.0.1

```
set IPAddress DP2 172.16.0.1
```

- Type `Info` at the command prompt to check that the IP Addresses are set correctly. This will provide information on all the SymplyPRO Ethernet settings.
- If using IPv6 DHCP to assign Ethernet port addresses use `set IPV6DHCP` to enable DHCP for the selected Ethernet port(s).
- If you are using static IPv6 addresses, then use
 - `set IPV6Address` on the selected Ethernet port.
 - `set IPV6Prefix` on the selected Ethernet port.
 - `set IPV6Gateway` on the selected Ethernet port.

Changing the SymplyPRO Ethernet Password via CLI

- Login to the SymplyPRO Ethernet CLI management
- Type `set Password`
- Enter the old password
- Enter the new password
- Confirm the new password



IMPORTANT

If the password has been lost, the SymplyPRO Ethernet can be defaulted using the reset button. Holding the reset button for 5 seconds will reset all configurations to default, including the password.

Managing the SymplyPRO Ethernet via Web Interface



NOTE

This section details the managing of the 10 Gb Ethernet (iSCSI) to SAS configuration of the appliance; it is not used to directly manage the LTO drive(s).

By default, the SymplyPRO Ethernet is configured to use a static IP address which are the same for all the models.

Port Type	IP Address
Management Port (GbE RJ45)	192.168.0.1/24
DP 1 (10 GbE SFP)	10.0.0.1/8
DP 2 (10 GbE SFP)	172.16.0.1/12

Username	Password
admin	"ATt"+Processor Serial Number

The Processor Serial Number is on the sticker attached to the SymplyPRO Ethernet and can be found on the Welcome Card in the accessories box. It is 13 characters long and starts "ET" For Example: ET8122T100009

The Password for example would be "ATtET8122T100009"

Login into the Web Interface

- Launch a web browser
- Type the default IP address of the SymplyPRO Ethernet into the web browser:
 - <https://192.168.0.1>
- On the login screen, enter the default username and password



**NOTE**

If connected directly from the management port to the computer, change the IP address of the host computer connected to the SymplyPRO Ethernet to 192.168.0.2 and subnet mask 255.255.255.0

General Information and Configuration via Web UI

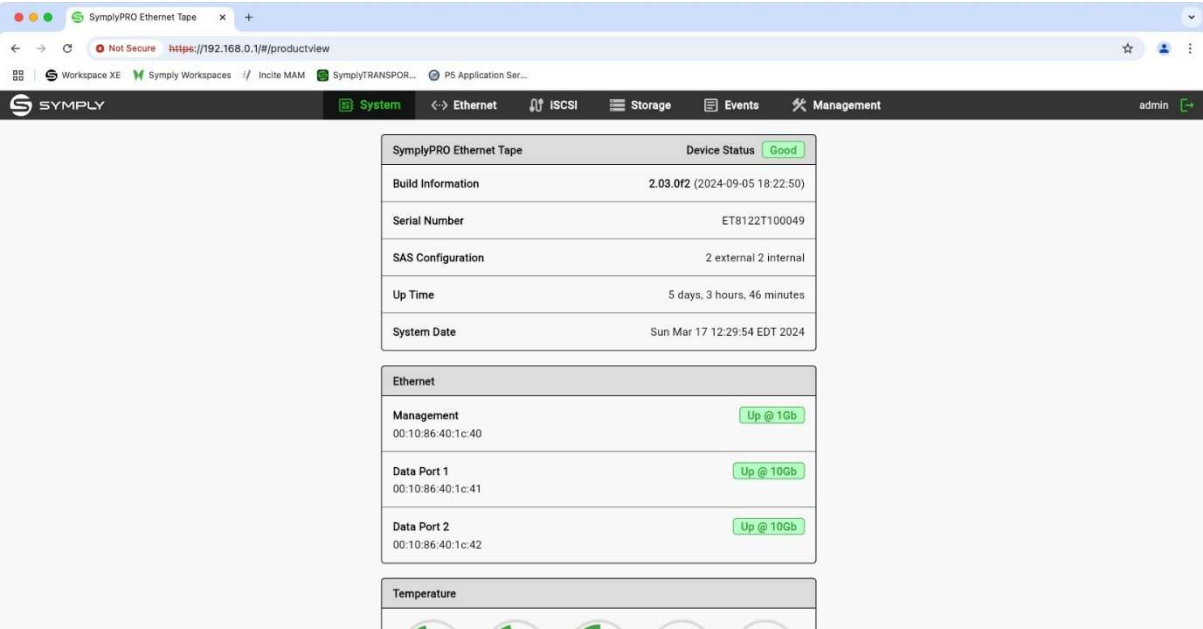
The SymplyPRO Ethernet Appliance Web Interface has the following functions in the top menu bar:



Item	Description
System	Displays general information about the Ethernet to SAS settings.
Ethernet	Displays the Ethernet information for the Management and Data Ports, allows customers to change IP addresses
iSCSI	Displays all the iSCSI information
Storage	Displays the tape devices connect to the system
Events	Displays the Event information
Management	Change Password, Update Firmware, Export Diagnostics, Email Notifications, and Reboot
Sign Out	Logs out of the Web Interface

System

After successfully login in, you will be directed to the “System” page, where general information about the SymplyPRO Ethernet is displayed.



Ethernet Configuration

Provides information for the Management Port (MP), Data Port 1 (DP1), and Data Port 2 (DP2).

The screenshot shows the SymplyPRO web interface for Ethernet configuration. The top navigation bar includes System, Ethernet (active), iSCSI, Storage, Events, and Management. The user is logged in as 'admin'. The 'Management' tab is selected, showing configuration options for the Management Port. The DHCP toggle is turned off. The IP Address is set to 192.168.0.1, Subnet Mask to 255.255.0.0, and Gateway is empty. The MTU is set to Standard (1500), and the MAC Address is 00:10:86:40:1c:40. Save and Discard buttons are at the bottom of the form.

- You can change the IP Address, subnet mask, and gateway of the Management Port, and/or the Data Port(s) as required
- You can change the IP address from static IP to DHCP if desired.



NOTE

When changing the IP address from static IP to DHCP, ensure that you have access to the DHCP server in order to obtain the assigned address(es).

- You can change the default MTU size of the Data Port(s) from 9000 to 1500, if required.
- Select “Save Changes” to update the changes, no reboot is required.



NOTE

For optimal performance, MTU Size of 9000 is recommended for the Data Port(s)

iSCSI



NOTE

By default, all the tape drives are mapped automatically to all Data Ports. If custom mapping, or ACL's (access Control Lists) is preferred then these need to be configured via CLI

The iSCSI page lists all the mapped iSCSI targets (LTO tape drives) that you can login into from your operating system's iSCSI initiator.

Once the SymplyPRO Ethernet Target is discovered by an Initiator, the corresponding login will be displayed in the window below as shown in the screenshot.

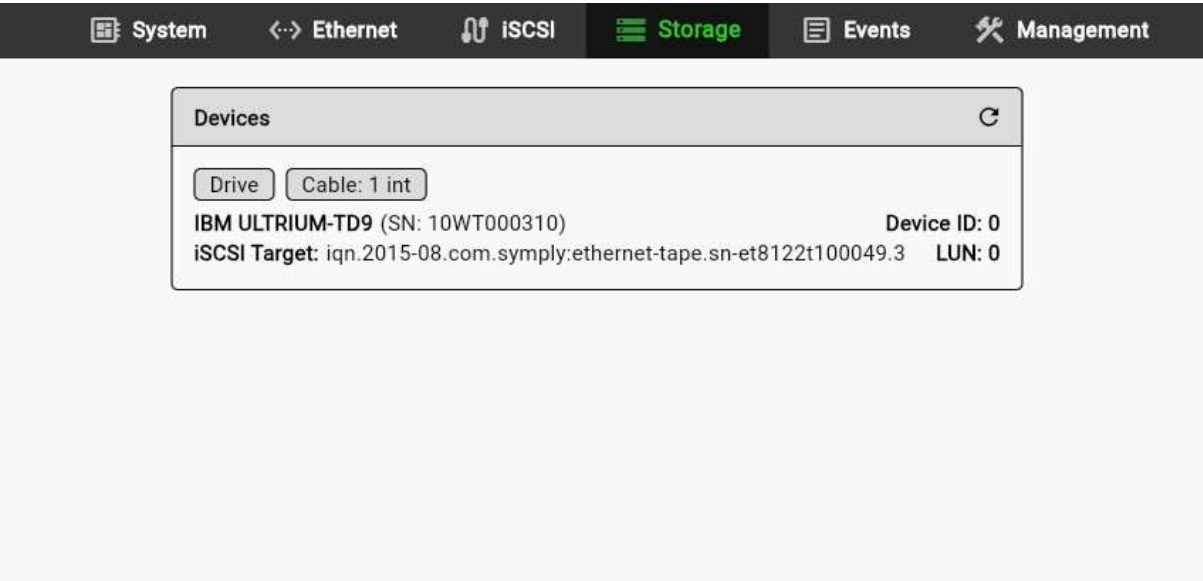
Mapping Mode: automatic

Targets	
DP1 DP2	iqn.2015-08.com.symply:ethernet-tape.sn-et8122t100049.3 Target ID: 3
LUNs	Drive 0: IBM ULTRIUM-TD9 10WT000310

Logins	
iqn.2015-08.com.symply:ethernet-tape.sn-et8122t100049.3 Target ID: 3	Host Name: iqn.1995-12.com.attotech:xtendsan:ser.j9fj641xp Login Time: 2024-03-12 08:59:16
iqn.2015-08.com.symply:ethernet-tape.sn-et8122t100049.3 Target ID: 3	Host Name: iqn.1991-05.com.microsoft:desktop-eekf3go Login Time: 2024-03-16 11:59:56

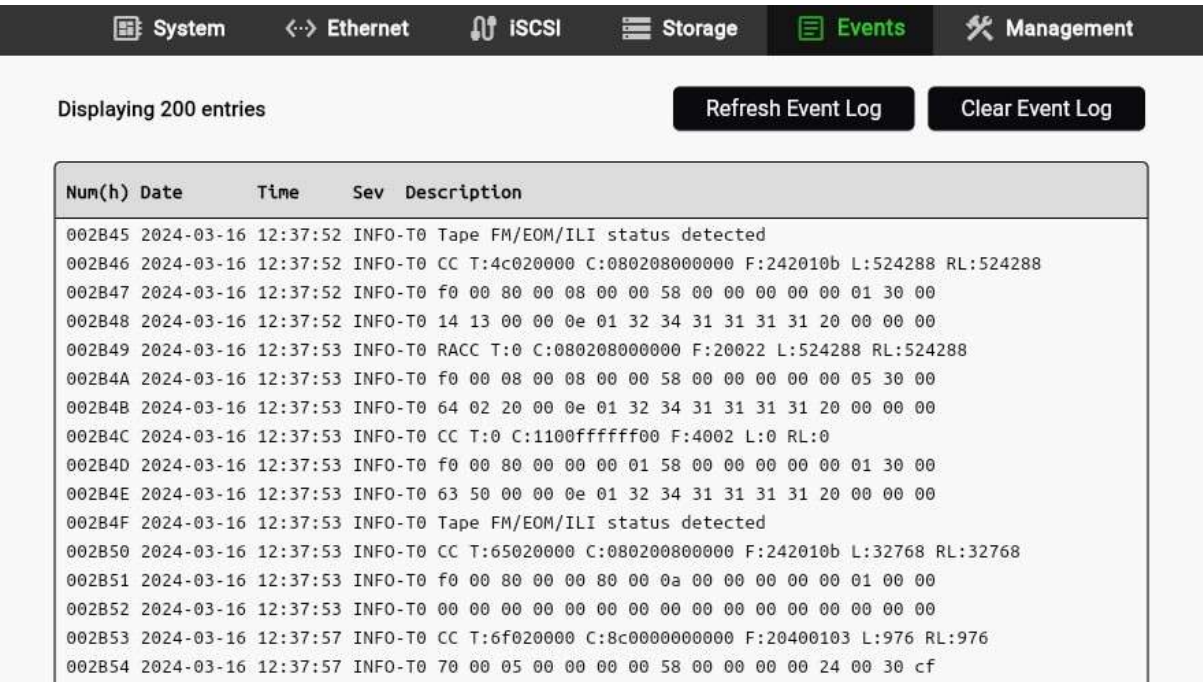
Storage

Shows the tape drives that are visible to the SymplyPRO Ethernet.



Events

Displays the last 200 Events and option to clear the event log.



Management

The management page allows for you to:

- Change the Password
- Email Notifications
- Export Diagnostics
- Update Firmware
- Reboot

The screenshot displays the 'Management' page of the SymplyPRO interface. At the top, a navigation bar includes links for System, Ethernet, iSCSI, Storage, Events, and Management (which is highlighted). The main content area is divided into several sections:

- Change Password:** A section with a title bar. Below it, a text box states: "Password is case sensitive, 8 to 32 characters, must contain at least one digit and cannot contain the following special characters: space tab ' ' \ ;". There are three input fields: "Current Password", "New Password", and "Confirm New Password", each with a toggle icon. A "Change Password" button is at the bottom right.
- Email Notifications:** A section with a title bar. Below it, the text "Alert Settings for Email Notifications" is followed by a "Configure" button.
- Export Diagnostics:** A section with a title bar. Below it, the text "Save diagnostics information to your downloads folder. This operation may take several minutes to complete." is followed by an "Export" button.
- Update Firmware:** A section with a title bar. To the right of the title bar, it says "Current version: 2.06.0f1". Below the title bar, the text reads: "Update device firmware. To download the most recent firmware, contact our customer support. The update process will take several minutes to complete and require a reboot." An "Update Firmware" button is at the bottom right.
- Reboot:** A section with a title bar. Below it, the text reads: "Rebooting will interrupt backup, restore, and verify jobs." A "Reboot" button is at the bottom right.

SymplyPRO Ethernet Best Practices

Network Architecture

It is recommended that the SymplyPRO Ethernet is used on an isolated lossless network when using iSCSI, this will provide the best possible performance.

- When using both ethernet Data Ports on the SymplyPRO Ethernet, each port must be assigned to an independent subnet to achieve full bandwidth. The SymplyPRO Ethernet Management Port must also be assigned to an independent subnet. All Ethernet port subnets must not overlap.
- Spanning-tree protocol (STP) should be disabled on the switch ports being used for iSCSI traffic. This would mean ports connected to the SymplyPRO Ethernet and all iSCSI initiators.
- Global flow control should be enabled on the switch ports and iSCSI initiators.
- It is recommended that unicast storm control is disabled on your switch.
- It is recommended that you use broadcast and multicast storm control on your switch.
- Jumbo frames (large MTU's) should be enabled on all switch ports, the iSCSI initiators, and the SymplyPRO Ethernet Data Ports for optimal performance.
- If Virtual LAN (VLAN) is required, Symply recommends configuring VLAN on your switch. A switch created VLAN is a broadcast domain, which helps separate traffic on switch ports.



NOTE

If you do need STP enabled, it is recommended that you enable the STP Fast Port feature on your switch

Network Configuration

When configuring the IP address for Data Ports (DP 1 & DP2), they should be configured on two different Ethernet LAN segments. The default port for iSCSI is 3260. DHCP should lease two separate subnets.

For example:

- DP 1 at 192.168.1.0/24
- DP 2 at 192.168.2.0/24.

Load Balancing iSCSI Tape Devices

- It is recommended to map a single tape device per iSCSI target to allow for the highest performance. The Automatic mapping feature does this for you (default setting).
- It is recommended to access 1 or 2 tape drives per Data Port for optimal performance. You can evenly split access to multiple tape devices across both Data Ports on the SymplyPRO Ethernet. For Example:
 - SymplyPRO Ethernet Tape with two LTO drives installed. It is recommended to access the two tapes across two iSCSI targets, log into one iSCSI target using the portal on DP 1 and the other using the portal through DP 2.
 - SymplyPRO Ethernet Tape with two drives installed and two drive connected externally. It is recommended to access the four tapes across two iSCSI targets, log into two iSCSI target using the portal on DP 1 and the other two using the portal through DP 2.
 - SymplyPRO Ethernet Bridge with four external drives connected. It is recommended to access the four tapes across two iSCSI targets, log into two iSCSI target using the portal on DP 1 and the other two using the portal through DP 2.
- Or if your OS supports multipathing it is possible access one, two, three, or four tapes across all the corresponding iSCSI targets, logging into all iSCSI targets using the portal on DP 1 and DP 2 simultaneously.



NOTE

The macOS with ATTO XtendSAN initiators supports multipathing. Multipathing in Windows and Linux depends on the version of the OS and IBM driver.

Jumbo Frames

- Care should be taken to ensure end-to-end path maximum transmission unit (MTU) support. Failure to provide a consistent configuration may result in packet fragmentation. All equipment on the same layer 2 network (the same LAN or VLAN) must support the same frame size.
- If the MTU is increased on one end device, the switch and receiving end must also be configured for larger MTUs. A mixture of devices configured for jumbo frames and standard frames on the same network can cause performance issues.



NOTE

Some vendors include the headers in the size settings while others do not. This may require that equipment from different vendors be configured to different values to make the settings match.

IPv6 Connections

IPv6 iSCSI connections may only be made to statically assigned or DHCP dynamically assigned IPv6 addresses on the data ports. For this reason, data port link local addresses (addresses beginning with fe80) are not shown by either the Info or get IPV6Address CLI commands.

Access Control Lists (ACLs)

ACLs must be enabled on a target basis to prevent initiators from discovering a particular SymplyPRO Ethernet target. Once enabled, only initiators configured to be on the whitelist will be able to discover that target. If Access Control is disabled for a target, any initiator with access to the same network the SymplyPRO Ethernet is located on will be able to discover and connect to that target.

CHAP Configuration

To add an additional layer of security against unauthorized access to iSCSI LUNs, CHAP authentication can be configured after an Access Control entry has been created for that initiator-target pair. Access Control must be configured for all nodes except the discovery node; the discovery node cannot have Access Control Lists (ACLs) but can be configured for CHAP.

Optimal Windows OS Ethernet Settings

In general, it is recommended to apply the following settings in the Windows OS.

- Connection speed should be 10 Gb.
- Set the MTU size to 9000.
- The RX and the TX buffer size should be set to the maximum allowable.
- Configure the Windows Registry for iSCSI support

For connectivity and optimum performance some iSCSI registry settings need to be updated, this can be done with the Symply iSCSI Registry Update Tool or manually.

Symply provides a Windows Command Script called [\[SYMPPLY iSCSI Registry Update Tool\]](#) that can automatically update the Windows registry setting. Simply download and double click on the CMD file.

Or, to modify the Registry manually, follow these steps:

- 'HKEY_LOCAL_MACHINE/SYSTEM/CurrentControlSet/Control/Class/{4D36E97B-E325-11CE-BFC1-08002BE10318}/<instance_number>/Parameters'
 - set MaxTransferLength to 100000 (hexadecimal).
 - set MaxBurstLength to 400000 (hexadecimal).
 - set FirstBurstLength to 100000 (hexadecimal).
 - set MaxRecvDataSegmentLength to 400000 (hexadecimal).
 - set InitialR2T to 0 (hexadecimal).
 - set ImmediateData to 1 (hexadecimal).
- Restart the server.

Optimal macOS Ethernet Settings

In general, it is recommended to apply the following settings in the macOS.

- Connection speed should be 10 Gb.
- Set the MTU size to 9000.
- Enable TCP Checksum offloading for Rx and Tx
 - `net.link.generic.system.hwcksum_tx=1`
 - `net.link.generic.system.hwcksum_rx=1`
- Change Rx and Tx Buffer Auto Max to 4 MB
 - `net.inet.tcp.autorcvbufmax=4194304`
 - `net.inet.tcp.autosndbufmax=4194304`
- Responds after every packet (ON)
 - `net.inet.tcp.delayed_ack=0`
- Enable HW LRO if it's not on (gates HW LRO)
 - `net.inet.tcp.lro=1`
- Enable TSO if it's not on (gates TSO)
 - `net.inet.tcp.tso=1`
- NSMB configuration
 - `signing_required=no`

Optimal Linux Ethernet Settings

In general, it is recommended to apply the following settings in the Linux OS

- Connection speed should be 10 Gb.
- Set the MTU size to 9000.
- In `/etc/iscsi/iscsid.conf`
 - `node.session.iscsi.initialr2t = No`
 - `node.session.iscsi.immediatedata = Yes`
 - `node.session.iscsi.firstburstlength = 1048576`
 - `node.session.iscsi.maxburstlength = 16776192`
 - `node.conn[0].iscsi.maxrecvdatabsegmentlength = 4194304`

ATTO 360™

Symple partner with ATTO for ethernet connectivity, and we recommend using the ATTO FastFrame high-performance Ethernet Network Interface Cards (NICs) and ATTO ThunderLink – Thunderbolt 3 to Daul Port Ethernet 25Gb and 10bE adapters.

ATTO 360 is an all-purpose application for Ethernet storage optimization featuring performance tuning, analytics, and monitoring tools designed to get the most out of ATTO FastFrame SmartNICs and ThunderLink Thunderbolt to Ethernet adapters. ATTO 360 simplifies configuration, optimizes performance and analyses real-time metrics to deliver the best performance and most efficient storage networks.

ATTO 360 includes a tuning profile specifically for the SymplePRO Ethernet Tape which automatically configures the ethernet interface and operating system for optimal connectivity.

Initiator Configuration

What is an iSCSI Initiator?

In an iSCSI configuration, the iSCSI host or server sends requests to a node (SymplyPRO Ethernet). The host contains one or more initiators that attach to an IP network to initiate requests to and receive responses from an iSCSI target. Each initiator and target are given a unique iSCSI name such as an iSCSI qualified name (IQN).

It is recommended that the user should connect both DP 1 and DP 2 from the SymplyPRO Ethernet to each host, via an Ethernet switch. This enables the configuration of Multisession support, or host-level multipath support, providing multiple paths between iSCSI initiators and targets, which is useful for high availability and load balancing.



NOTE

Multisession support (multipath support) is possible depending on the version of OS being used.

What is an iSCSI Target?

An iSCSI target is a device that respond to iSCSI commands. In the case of the SymplyPRO Ethernet it is the bridge between the IP and SAS LTO device. Each iSCSI target is identified by a unique iSCSI name (an IQN). The SymplyPRO Ethernet appliance can support multiple iSCSI targets. For the SymplyPRO Ethernet, every LTO tape drive is automatically assigned an IQN.

Configuring the SymplyPRO Ethernet Data Ports

- As default the Data Ports on the SymplyPRO Ethernet are configured with static IP Address.

Port Type	IP Address	Subnet Mask
DP 1 (10 GbE)	10.0.0.1/8	255.255.0.0
DP 2 (10 GbE)	172.16.0.1/12	255.255.0.0

- Ports may be auto configured if connected to a network with DHCP. Otherwise, they will need to be assigned an IP address, which can be done via CLI interface.
- You can test the network connection using the 'ping' command from macOS Terminal, Windows Command Prompt or Linux Terminal.



NOTE

SymplyPRO Ethernet Data Ports must not be configured on the same subnet.

macOS Initiator Configuration

Prerequisites for the macOS.

- macOS host computer with 10 GbE adapter with the latest driver. Symply recommended ATTO FastFrame Adapters and ThunderLink, with ATTO 360 software suite.
- macOS 10.15 or later
- Data Ports from the SymplyPRO Ethernet are configured and connected to the same network as the 10 GbE adapter.
- Configure the Data Ports on SymplyPRO Ethernet Appliance. See the “[Configuring the SymplyPRO Ethernet Data Ports](#)” section of this user guide.
- ATTO Xtend SAN iSCSI Initiator for macOS installed on the macOS host.



NOTE

The macOS does not include a built in iSCSI Initiator. It is recommended to use ATTO Xtend SAN. Quantity one (1) ATTO Xtend SAN license is included with every purchase of a SymplyPRO Ethernet. Email hello@gosymply.com with your Symply serial number and proof of purchase to claim the free license.



NOTE

For information on CHAP and Discovery CHAP please refer to the “[Advanced SymplyPRO Ethernet Configuration](#)” section of this user guide.

Installing ATTO Xtend SAN Initiator (macOS)



NOTE

You must have administrator access to install the program. Remote installations will not work. You must install directly on the macOS.



NOTE

If you are using an Apple Intel Hardware with a T2 Security Chip, or you are using M-Series Silicon you will have to Lower the Security Settings on an Apple Mac. For more information. <https://support.gosymply.com/support/solutions/articles/80000946522-enable-hardware-driver-support-on-t2-and-m1-m2-based-macs>



IMPORTANT

Disable macOS Power Management when running Xtend SAN to avoid losing connections to the SymplyPRO Ethernet.

Download ATTO Xtend SAN Software

<https://www.atto.com/download/xtend-san/>

Watch the ATTO Xtend SAN Installation Procedure

<https://www.youtube.com/watch?v=tbxGqyZzea4>

Download ATTO Xtend SAN Manual

https://www.atto.com/software/files/manuals/Manual_XtendSAN.pdf

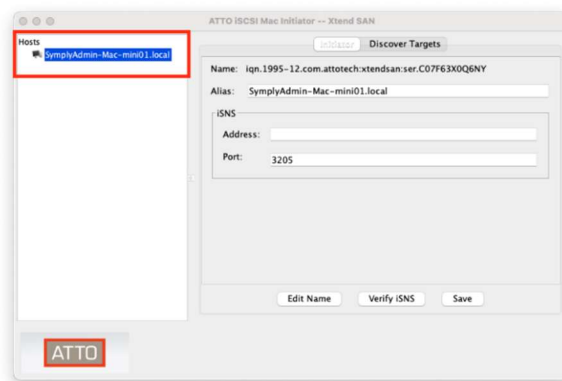
Configuring ATTO Xtend SAN Initiator

Target Discovery (macOS)

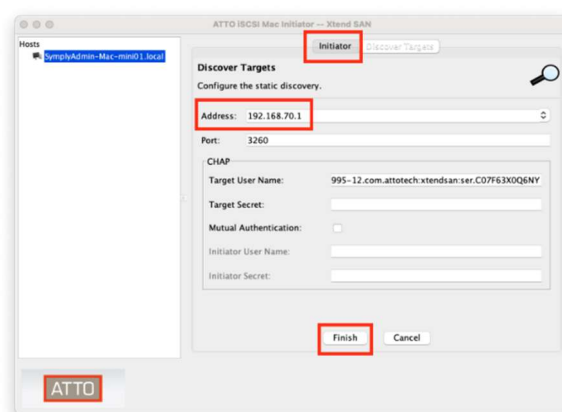
DNS/IP discovery is a mechanism that directly contacts an iSCSI target device (LTO tape drive). The initiator queries the iSCSI target to determine what targets are available to the initiator. You can select all or some of these available targets and the ATTO iSCSI Initiator creates connections to these targets.

You must know the IP address for the SymplyPRO Ethernet Data Ports to discover the iSCSI targets (LTO tape drives).

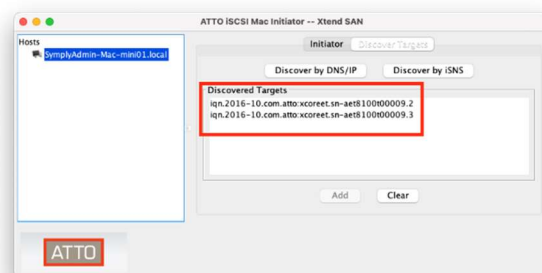
- Run the Xtend SAN Application
- Click on the Initiator with which you wish to work. The central panel contains tabs for **Initiator** and **Discover Targets**.



- Click on the **Discover Targets** tab.
- Click on **Discover by DNS/IP**.
- Type in the IP address of the device with targets you wish to discover. Leave the Port Number as **3260**



- If authentication has been enabled via CHAP on the SymplePRO Ethernet, then:
 - Type in the **Target Secret**
 - If the initiator requires mutual authentication, click on the **Mutual Authentication** check box.
 - Type in the Initiator **Username** and the **Initiator Secret**.
- Click on Finish.
- The discovered targets are listed in the central pane.

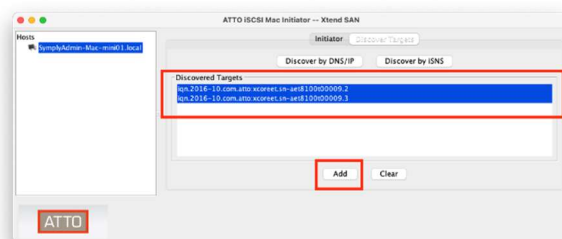


Add Target (macOS)

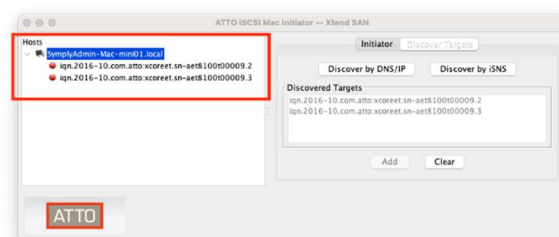
The ATTO iSCSI Initiator maintains a list of added targets that have been discovered after the Mac is reconnected to a network.

Targets are listed under Discovered Targets in the central panel. Targets that have been previously added appear as light grey.

- Highlight the target(s) to be added. Multiple targets may be highlighted at one time.
- Click on **Add**.



The highlighted targets appear in the left-hand panel.



Managing Targets (macOS)

After discovering targets, ATTO Xtend SAN software allows you to connect to and remove targets, configure security, and view or configure several useful features. Remember target = LTO tape drive.

ATTO Xtend SAN software provides the capability to:

- Select target ports for connection.
- Specify automatic login to targets at macOS boot time.
- Connect to targets.
- Remove targets.
- Configure security for each target.
- View the iSCSI login parameters established during a connection.
- Configure iSCSI login parameters for each connection.
- View a list of LUNs exposed by the target.

You must first select targets to manage them. Targets are listed in the left-hand panel. Icons next to each target indicate the status of the target:

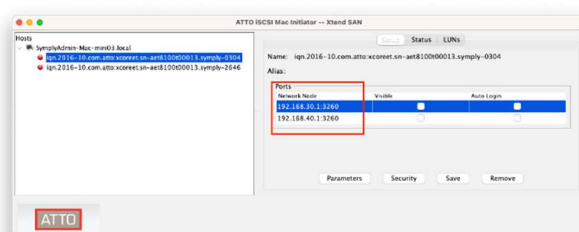
- Red indicates not connected.
- Green indicates connected.
- X indicates the target is unavailable.

Click on the target you wish to manage. The central panel contains tabs for **Setup**, **Status** and **LUNs**. Use the following instruction for the task you wish to accomplish.

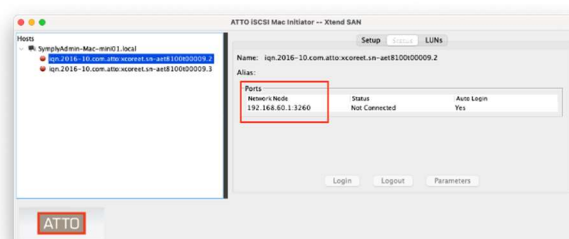
Select Target Ports for Connection (macOS)

The iSCSI targets (LTO tape drives) presented by the SymplyPRO Ethernet may be accessed through one or more ports. The ATTO iSCSI Initiator presents all the ports identified by a target during the discovery process.

You must select each port and identify if the port is visible for connection and if a visible port requires auto login. All ports for a target are listed in the **Setup** tab.



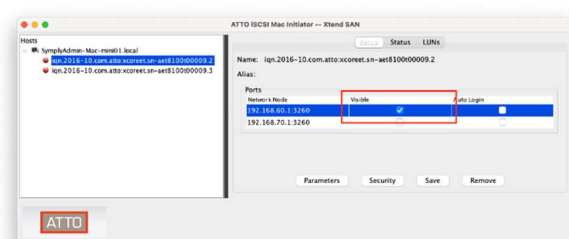
Only visible ports are listed in the **Status** tab.



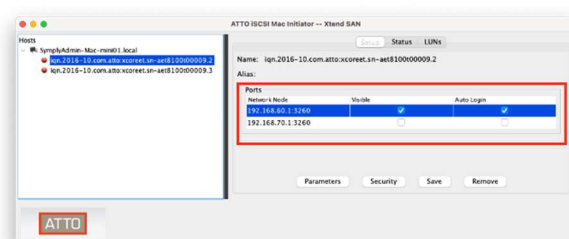
You may automatically log into a target at system boot by clicking the **Auto Login** check box during target setup.

Connect to a Target Port (macOS)

- Click on the **Setup** tab. A list of one or more ports is displayed. Set up each port individually to connect to the target.
 - Highlight one of the target's ports. Click the **Visible** check box if you want to connect using this port.

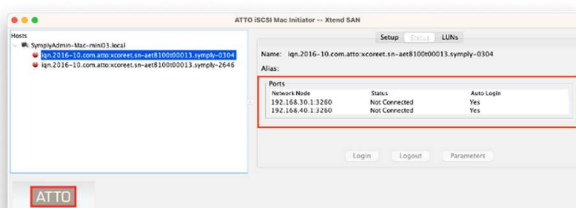
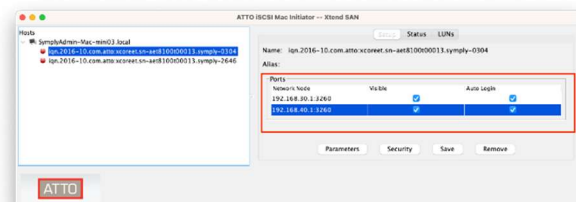


- Click the **Auto Login** check box if you want to automatically connect to this port after the macOS system boots.
- Click on **Security** if your system requires CHAP security. Refer to macOS ATTO Xtend SAN Configuring security using CHAP.
- **Parameters** By default iSCSI login parameters are correct for the SymplyPRO Ethernet, there is no need to reconfigure the iSCSI login parameters.
- Once configured, click on **Save** to save the configuration.
- Continue to manage additional targets or continue to Connect to targets.



**NOTE**

By setting up multiple ports to connect to a target, this is creating multisession support (host-level multipath support) that provides multiple paths between iSCSI initiators and targets, which is useful for high availability and load balancing.



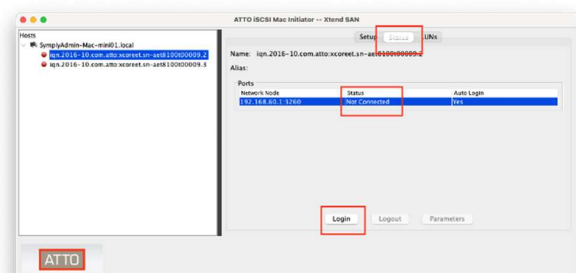
Connect Target (macOS)

The ATTO iSCSI Initiator provides manual and automatic login/logout to iSCSI target ports. Automatic login occurs immediately after the macOS system is booted or after the network interface is re-established. The **Auto Login** check box must be selected to provide automatic logins.

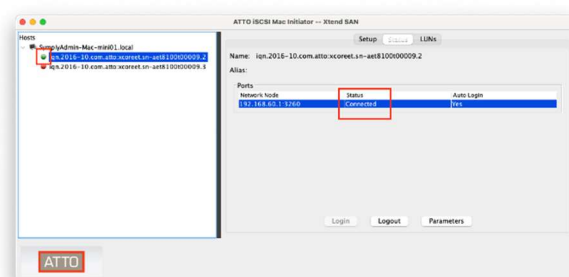
**NOTE**

You can manually log in to any visible iSCSI targets from the **Status** tab.

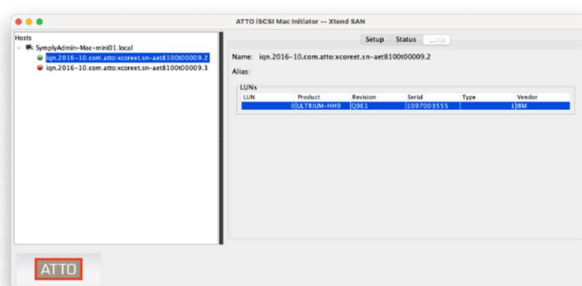
- Click on the **Status** tab. A list of one or more ports is displayed.
- Select the target port.



- Click **Login** at the bottom of the tab. The highlighted target status changes to “connected”.



- Continue selecting other ports or view the iSCSI parameters established for each port during login:
 - Highlight the target's port.
- Click on the **LUNs** tab. View LUNs exposed by the target.



Windows OS Initiator Configuration

Prerequisites for Windows OS

- Windows Server with 10 GbE adapter using the latest drivers.
- Windows 11, 10, Windows 8.1, Server 2025, 2022, 2016, and Server 2019
- SymplyPRO Ethernet Data Ports configured and connected to the same network as the 10 GbE adapter.
- Configure the Data Ports on SymplyPRO Ethernet Appliance. See the “[Configuring the SymplyPRO Ethernet Data Ports](#)” section of this user guide.



NOTE

For information on CHAP and Discovery CHAP please refer to the “[Advanced SymplyPRO Ethernet Configuration](#)” section of this user guide.

Registry Settings for iSCSI Connected Tape Devices in Windows OS

The following iSCSI registry settings are recommended for Windows Hosts connected to the SymplyPRO Ethernet Tape. This will require modifying the Windows registry. This can be done manually or via Symply iSCSI Registry Update Tool, a Windows **Command Script** that will automatically apply the changes to the registry:

Automatically modify the Registry:

- Download [[Symply iSCSI Registry Update Tool](#)].
- Double-click "Symply iSCSI Registry Update Tool.cmd".
- Review the summary and SYMPLY End-User Notice.
- Type YES to proceed (or press Enter to cancel).
- When finished, press Enter to close.
- Reboot Windows once.

To manually modify the Registry, follow these steps:

- In 'HKEY_LOCAL_MACHINE/SYSTEM/CurrentControlSet/Control/Class/{4D36E97B-E325-11CE-BFC1-08002BE10318}/<instance_number>/Parameters'
 - set MaxTransferLength to 100000 (hexadecimal).
 - set MaxBurstLength to 400000 (hexadecimal).
 - set FirstBurstLength to 100000 (hexadecimal).
 - set MaxRecvDataSegmentLength to 400000 (hexadecimal).
 - set InitialR2T to 0 (hexadecimal).
 - set ImmediateData to 1 (hexadecimal).
- Restart the server.



NOTE

The changes in the registry must be made to the “CurrentControlSet” and not other options such as ControlSet001 or ControlSet002 for example.

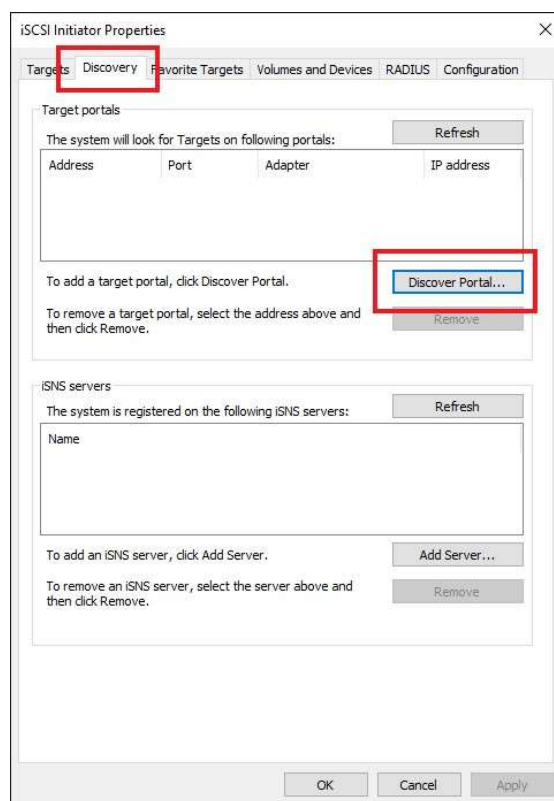
Discover Targets Using iSCSI Software Initiator GUI (Windows OS)

- To open the iSCSI Software Initiator GUI, click on the **Start** button to open the start menu/screen, type in iSCSI Initiator and press enter.
- If prompted to start the iSCSI service, click Yes, and type in iSCSI Initiator in the start menu again.
- You should now see a window titled iSCSI Initiator Properties.

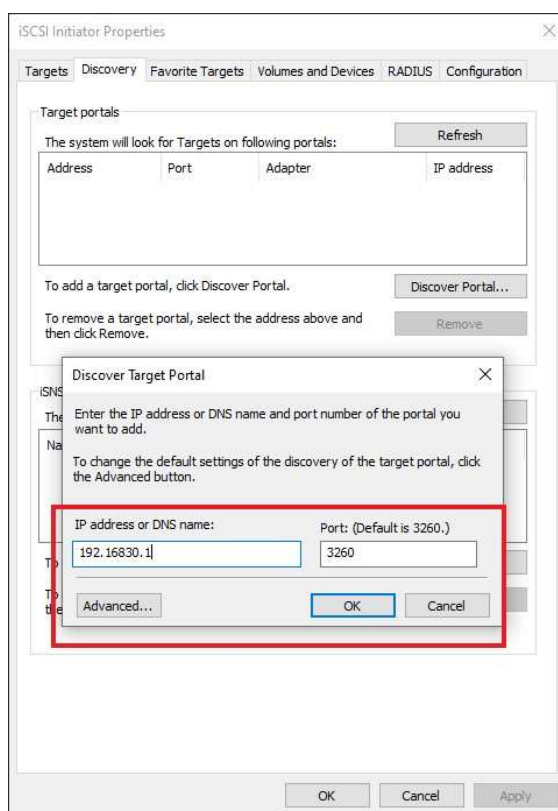


Create Discovery Portal (Windows OS)

- Click on the **Discovery** tab near the top of the iSCSI Initiator Properties window.
- Click on the **Discovery Portal** button.



- In the **Discover Target Portal** window, under IP address, enter the IP address of the SymplePRO Ethernet Data Port to connect through.



- Click OK in the Discovery Target Portal window.

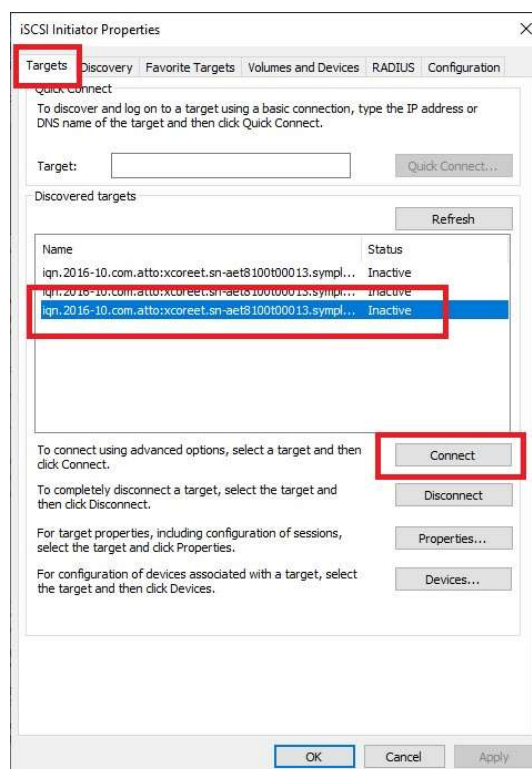


NOTE

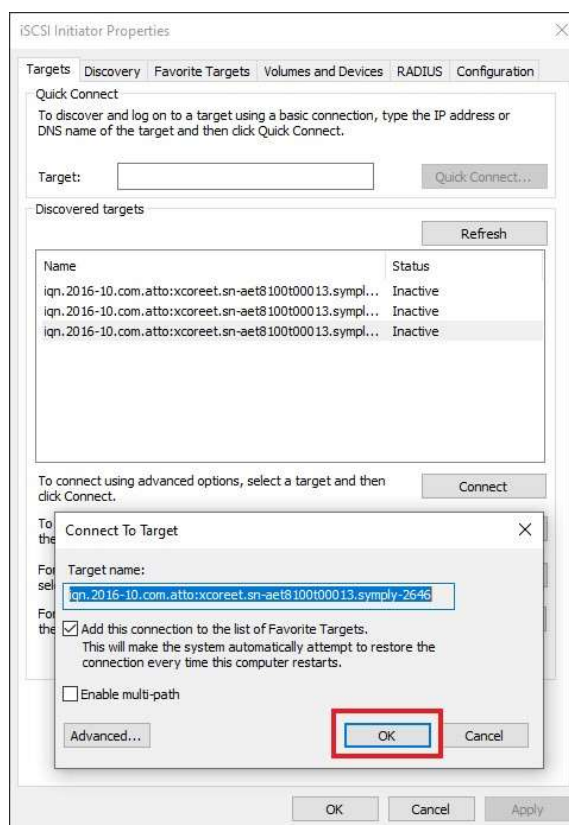
If you wish to use CHAP, please refer to the "[Advanced SymplePRO Ethernet Configuration](#)" section of this user guide.

Connect to the Target using iSCSI Software Initiator GUI (Windows OS)

- In the **iSCSI Initiator Properties** window, click on the **Targets** tab.
- Under **Discovered** targets, click on the **Refresh** button.



- Select the name of the target and click on the **Connect** button.
- Click **OK** in the **Connect To Target** window.



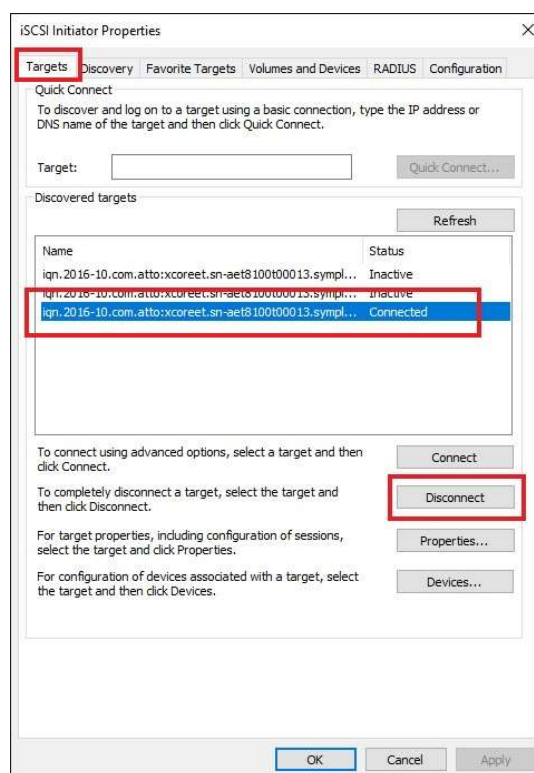
NOTE

If you wish to use CHAP. Please refer to the “[Advanced SymplePRO Ethernet Configuration](#)” section of this User Guide. Remember that the Initiator CHAP secret must match the CHAP Out secret configured on SymplePRO Ethernet for the target. The secret is case-sensitive.

Disconnect from a Target (Windows OS)

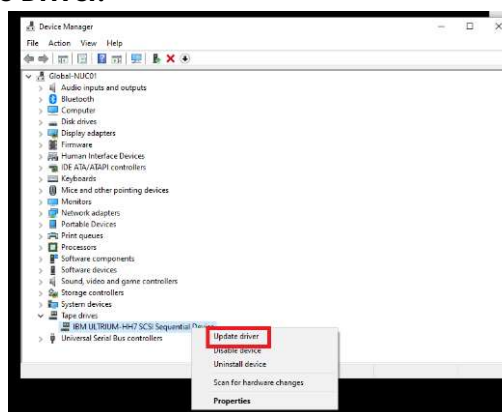
Using iSCSI Software Initiator GUI

- Click on the **Targets** tab along the top of the **iSCSI Initiator Properties** window.
- Under **Discovered targets**, select the name of the target, and click on the **Disconnect** button.

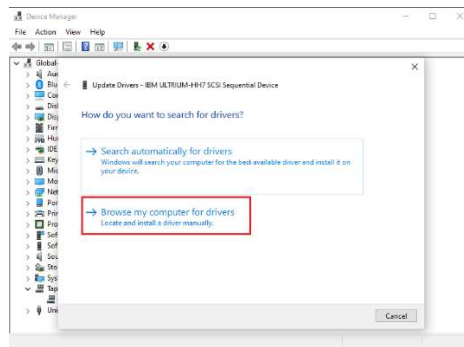


Installing Windows Tape Driver

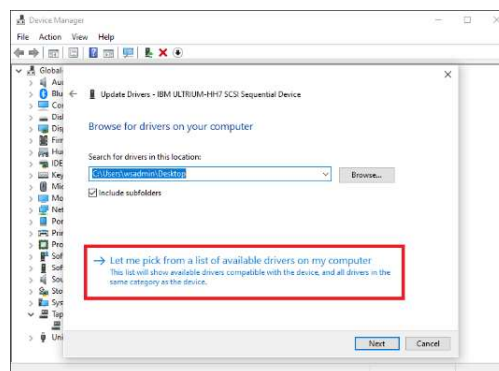
- Open the Device Manager.
- Under the **Other devices** category, you will see **IBM ULTRIUM-XXX SCSI Sequential Device**.
- Right-click and select **Update Driver**.



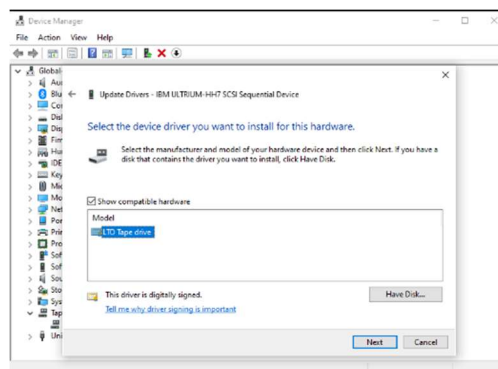
- Click **Browse my computer for drivers**.



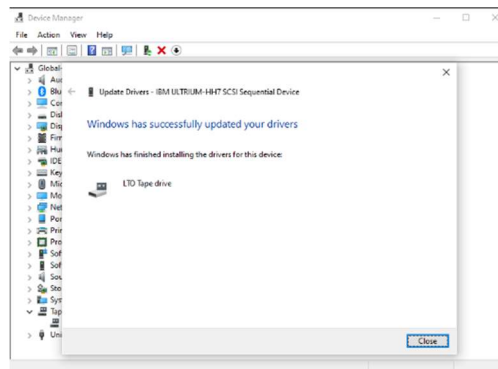
- Click **Let me pick from a list of available drivers on my computer**.



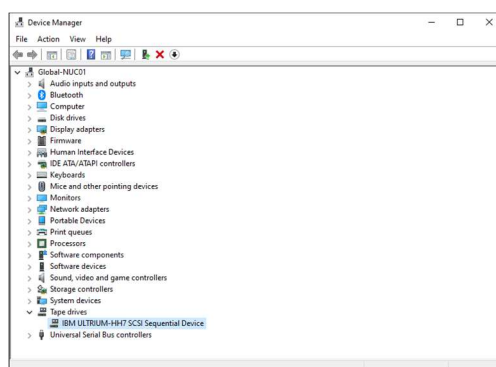
- Select **LTO Tape drive** (or **Cassette Drive**) and click **Next**.



- When a warning is displayed select **"Yes"** to continue
- The Windows LTO driver will install.



- Close the dialog box and check that the drive is now displayed in the "Tape Drive" section of the Device Manager.
- Device Manager will show the IBM drive under the Tape drives icon.



NOTE

For Windows Server you will need to download and install the IBM LTO Tape driver for the relevant version of Windows Server. These can be downloaded from the Symply support website. Follow the instructions in the installer.

Windows Server: Install IBM LTO Tape driver. For Windows Server 2016, 2019 & 2022 you will need to download and install the IBM LTO Tape driver for the relevant version of Windows Server.

OS	IBM Driver
Windows Server 2022	[2022 Driver]
Windows Server 2019	[2019 Driver]
Windows Server 2016	[2016 Driver]

Always check IBM **Fix Central** for the latest version

Linux OS Initiator Configuration

Prerequisites for Linux OS

- Server with 10 GbE adapter running a supported Linux kernel.
- SymplyPRO Ethernet Data Ports configured and connected to the same network as the 10 GbE adapter.
- Configure the Data Ports on SymplyPRO Ethernet Appliance. See the “[Configuring the SymplyPRO Ethernet Data Ports](#)” section of this user guide.



NOTE

For information on CHAP and Discovery CHAP please refer to the “[Advanced SymplyPRO Ethernet Configuration](#)” section of this user guide.

Initiator Setup Instructions (Linux OS)



NOTE

If any command fails with permission denied, prefix the command with `sudo`, and try again.

For systems using apt package management, enter the following command: `apt install open-iscsi`

For systems using yum package management, enter the following command: `yum install iscsi-initiator-utils`



NOTE

To determine which package management software is used by your Linux distribution, use the following command:

```
which yum
```

If the output is similar to `/bin/yum`, this distribution uses yum, otherwise it uses apt.

Discover Targets (Linux OS)

- Discover SymplyPRO Ethernet targets by entering the following command:

```
iscsiadm -m discovery -t st -p ipaddress
```

The command should return a list of all SymplyPRO Ethernet targets available to this initiator. If "Login failed to authenticate with target" is returned, check that the credentials set in `/etc/iscsi/iscsid.conf` match the credentials configured on the SymplyPRO Ethernet.



NOTE

If an SymplyPRO Ethernet target exists but is not returned through discovery, check that this initiator is in the list of Allowed Initiators for that target. Please refer to the "[Access Control Lists](#)" section of this user guide.

Connect to Target (Linux OS)

- Log in to the target by entering the following command:

```
iscsiadm -m node -T target -p ipaddress -l
```

- Sample Output: Drives mapped to that target should now appear in the /dev/ directory as new SCSI devices, for example /dev/sdc.



NOTE

Target must match the full target name returned from the discovery command above. `ipaddress` is the address of the SymplyPRO Ethernet Data Port used in the discovery command above.

- To refresh available LTO drives enter the following command:

```
iscsiadm -m session -rescan
```

If "iSCSI login failed due to authorization failure" is reported, ensure the CHAP credentials (if any) entered above match those configured on the SymplyPRO Ethernet for this target.

Disconnect from Target (Linux OS)

To log out from a target, enter the following command:

```
iscsiadm -m node -T target -p ipaddress -u
```



NOTE

- Target must match the full target name returned from the discovery command above. IP address is the address of the SymplyPRO Ethernet Data Port used in the discovery command above.
- You can connect/disconnect to/from all discovered targets by omitting the -T target parameter from the log in/out commands

Advanced SymplyPRO Ethernet Configuration

SymplyPRO Ethernet Firmware

The SymplyPRO Ethernet has several processors which control the flow of data and the IP to SAS bridge. The firmware to control these processors can be upgraded in using the Web User Interface, or via the CLI.

! IMPORTANT	Updating the Firmware requires a reboot and will take 2 to 5 mins. Stop all LTO activity and eject tape cartridges from the LTO drives before updating the Firmware.
---------------------------	---

 NOTE	Do not confuse the firmware for the SymplyPRO Ethernet, that manages the IP to SAS bridge, with the firmware for the LTO tape drive(s). • IP to SAS Bridge firmware = *.zbd file • LTO tape drive firmware = *.fmrz file
--	--

The SymplyPRO Ethernet firmware is distributed as a .zbd file from the [Symply Support Web Site](#)

Updating SymplyPRO Ethernet Firmware via Web User Interface

- Login to the Web Interface
- Navigate to “**Management**” section
- Click on “Update Firmware”
 - Point the browser to the location of the *.zbd file
- Once the firmware update is complete, click on “**Reboot**” to enable the new firmware.
- The reboot will take approximately 5 minutes.

Updating SymplyPRO Ethernet Firmware via CLI

- Establish an SFTP link to the SymplyPRO Ethernet that is to be flashed.
- OpenSSH, the connection would be made with the following command `sftp -P 22 [username]@[x.x.x.x]`
- Enter your password when prompted.
- Once logged in, upload the zbd file using the “put” command:
 - Put `c:\firmware\[filename.zbd]`
- Once the upload is complete, check the SymplyPRO Ethernet log to verify successful upload using the FlashStatus, FlashImages or DumpEventLog command
- If the upload and firmware update were logged as successful, cycle power on the SymplyPRO Ethernet using the FirmwareRestart command to apply the new firmware.



NOTE

From firmware version 2.03 the storage controller SFTP server is at port 22 (it was previously port 20 in older versions of firmware).

Email Notification

It is possible to configure email notifications for the SymplyPRO Ethernet.

- Login to the Web Interface
- Navigate to “**Management**” section
- Go to “Email Notifications” section
 - Click on “Configure”



NOTE

Email notification available from firmware version 2.06.0f1

Manual LUN Mapping

All LUNs (LTO tape devices) are automatically mapped within the appliance, so in most installation there is no requirement to manually map LUNs manually.

To change mapping mode to manual mode, perform the following:

- Run the `set iSCSIMappingMode Manual` command while there are no initiators logged in. This will delete all target nodes on the device. A reboot of the SymplyPRO Ethernet is required.
 - This can be achieved via the `FirmwareRestart` command.
- Target nodes will need to be created using the `iSCSITargetCreate` command, specifying the name of the target and which Data Ports the target is accessible from. Up to four iSCSI targets may be created.
- New LUNs can be added to the target by using the `iSCSIMap` command. This command uses the target name (or the target ID as displayed in the `iSCSIShowMaps`) along with the device ID (as seen in `ShowDevices`) and the desired LUN. The LUN typically starts at zero and increments for each iSCSI target.

**NOTE**

Some host operating systems may require a device at LUN 0 on each iSCSI target

Discovery Target Visibility

Access Control Lists (ACLs) must be enabled on a target basis to prevent initiators from discovering a particular SymplyPRO Ethernet target (LTO drive). Once enabled, only initiators configured to be on the whitelist will be able to discover that target. If Access Control is disabled for a target, any initiator with access to the same network the SymplyPRO Ethernet is located on will be able to discover and connect to that target.

Access Control Lists

Use the following steps to create an Access Control entry for any target node:

- Create a CLI session.
- Use `Set AccessControl [Target]` enabled to configure that target node to use ACLs.
- For each initiator allowed to access the node, use `Set AccessEntry [Target] [Initiator IQN]` to write the initiator into the allowed initiator list.

CHAP Target Configuration

CHAP is a mechanism for authenticating the device at the other end of a network link. CHAP requires that the target device challenges the initiator first (Target Challenge) and that the initiator challenges the target second (Initiator Challenge).

To add an additional layer of security against unauthorized access to iSCSI LUNs, CHAP authentication can be configured after an Access Control entry has been created for that initiator-target pair. Access Control must be configured for all nodes except the discovery node; the discovery node cannot have Access Control Lists (ACLs) but can be configured for CHAP.

Discovery CHAP Target Configuration

- Create a CLI session.
- Use `iSCSICHAPMode` to configure the CHAP mode of the target desired, where One-way authenticates an initiator challenge from the host to the SymplyPRO Ethernet and Two-way additionally sends a challenge back from the SymplyPRO Ethernet to the host.
 - Two-way CHAP only. Configure the iSCSI CHAP Out Account Name and CHAP Out Secret using the `set iSCSICHAP Discovery Out` command.
- Configure the iSCSI CHAP In Account Name and CHAP In Secret using the `set iSCSICHAP Discovery In` command.
- See the help text for `iSCSICHAP` for examples of setting up discovery CHAP. Or check out the FAQs on the Symply Support pages.

Target CHAP Configuration

- Create a CLI session.
- Set the target's ACL using the steps in the Access Control Lists section.
- Use `iSCSI CHAP Mode` to configure the CHAP mode of the target, where One-way authenticates an initiator challenge from the host to the SymplyPRO Ethernet and Two-way additionally sends a challenge back from the SymplyPRO Ethernet to the host.
 - Two-way CHAP only. Configure the iSCSI CHAP Out Account Name and CHAP Out Secret using the `set iSCSI CHAP [target] Out` command.
- Configure the iSCSI CHAP In Account Name and CHAP In Secret using the `set iSCSI CHAP [target] In` command.
- See the help text for `iSCSI CHAP` for examples of setting up target CHAP. Or check out the FAQs on the Symply Support pages.

CHAP Initiator Configuration

macOS ATTO Xtend SAN Configuring Security Using CHAP

CHAP is a mechanism for authenticating the device at the other end of a network link. CHAP requires that the target device challenges the initiator first (Target Challenge) and that the initiator challenges the target second (Initiator Challenge).

The CHAP challenge mechanism requires that both ends know the Target Secret and the Initiator Secret. The Target Secret answers the Target Challenge, and the Initiator Secret answers the Initiator Challenge.

The ATTO iSCSI Initiator does not impose rules for formatting CHAP secrets.

! IMPORTANT	iSCSI targets have formatting rules which determine the format of the ATTO iSCSI CHAP secrets. • Do not use a tab or space. • Do not use special control characters. • Secrets are case sensitive: you may use all upper case, all lower case or a combination of upper and lower case. • Secrets should be longer than 12 characters.
---------------------------	--

To implement CHAP, do the following in Xtend SAN:

- Click on the **Setup** tab.
- Click on **Security**.
- The Configure Security screen appears.
- Type in the Target Secret. If the initiator requires mutual authentication, click on the **Mutual Authentication** check box.
- Type in the Initiator Username and the Initiator Secret.
- Click **OK** when you have completed your choices.
- Click **Save** to save your configuration.

Discovery CHAP Windows OS

This section only applies when using one-way or two-way CHAP for discovery sessions.

- Click on the **Advanced...** button in the lower left corner of the **Discover Target Portal** window.
- Check the box next to **Enable CHAP log on.**
- Inside **CHAP Log on** information fill in the Name and Target Secret used for discovery.
- (Two-way discovery CHAP only) Check the box next to **Perform mutual authentication.**
- Click **OK** in the **Advanced Settings** window.
- Click **OK** in the Discovery Target Portal window. The IP address should now be displayed in the list under **Target portals**. If "Connection failure" is reported, make sure that the firewall is configured to pass iSCSI traffic. If using CHAP, ensure the name and secrets are configured correctly on both the iSCSI Software Initiator GUI and SymplyPRO Ethernet for discovery.

! IMPORTANT	The Name and Target Secret must match the CHAP In Account Name and CHAP In Secret configured on the SymplyPRO Ethernet for discovery. Both Name and Target Secret are case-sensitive.
---------------------------	--

Using CHAP Windows OS

This section only applies when using One-way or Two-way CHAP to connect to this target.

- Click on the **Advanced...** button in the **Connect To Target** window.
- Check the box next to **Enable CHAP log on.**
- In the CHAP Log on information fill in the **Name** and **Target Secret** used for this target.
- (Two-way CHAP only) Check the box next to Perform mutual authentication.
- Click **OK** in the **Advanced Settings** window.
- Click **OK** in the **Connect To Target** window. In the **Discovered targets list** the Status of the target should now show as Connected. If an "Authentication Failure" error message appears check that the name and secret(s) are configured correctly on both the iSCSI Software Initiator GUI and SymplyPRO Ethernet for this target.

Discover CHAP Linux OS

- If one-way or two-way CHAP authentication has been configured on the SymplyPRO Ethernet for the discovery session, open `/etc/iscsi/iscsid.conf` in a text editor and add or modify the following lines:

```
discovery.sendtargets.auth.authmethod = CHAP

discovery.sendtargets.auth.username = username

discovery.sendtargets.auth.password = password
```

- If two-way CHAP authentication has been configured on the SymplyPRO Ethernet for discovery, also add or modify the following lines in `/etc/iscsi/iscsid.conf`:

```
discovery.sendtargets.auth.username_in = username_in

discovery.sendtargets.auth.password_in = password_in
```

! IMPORTANT	The Name and Target Secret must match the CHAP In Account Name and CHAP In Secret configured on the SymplyPRO Ethernet for discovery. Both Name and Target Secret are case-sensitive.
--------------------	---

Configure Target CHAP Linux OS

This section only applies when one-way or two-way CHAP authentication has been configured on the SymplyPRO Ethernet to connect to a target.

Enter the following commands:

```
iscsiadm -m node -T target -o update -n
node.session.auth.authmethod -v CHAP
```

```
iscsiadm -m node -T target -o update -n
node.session.auth.username -v username
```

```
iscsiadm -m node -T target -o update -n
node.session.auth.password -v password
```

**NOTE**

Target must match the full target IQN returned by the discovery command above. username must match the CHAP In Account Name configured on the SymplyPRO Ethernet for this target. password must match the CHAP In Secret configured on the SymplyPRO Ethernet for this target. Both username and password are case-sensitive.

- (Two-way CHAP only) Enter the following commands:

```
iscsiadm -m node -T target -o update -n  
node.session.auth.username_in -v username_in
```

```
iscsiadm -m node -T target -o update -n  
node.session.auth.password_in -v password_in
```

**NOTE**

- Target must match the full target IQN returned by the discovery command above. username must match the CHAP In Account Name configured on the SymplyPRO Ethernet for this target. password must match the CHAP In Secret configured on the SymplyPRO Ethernet for this target. Both username and password are case-sensitive.
- You must log out of any current sessions and reperform discovery for the CHAP settings to take effect.
- Target must match the full target name returned from the discovery command above.

Operating the LTO Tape Drive

This chapter covers the operation of the tape drive, loading media, maintenance for the tape drive and best practice for media handling. It is also best practise to use a dedicated backup or archive application to control the tape drive.



NOTE

Make sure to disable all Energy Saving features on the host computer when using LTO devices to provide the best performance and avoid data loss and/or corruption.

Software Partners

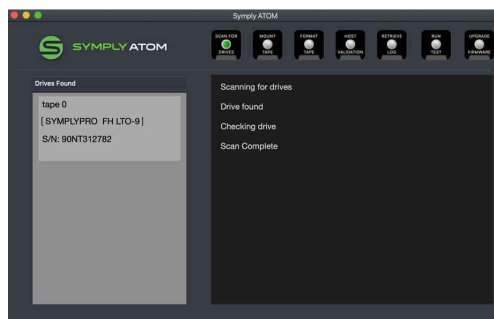
SymplyPRO has undergone extensive testing with the leading software backup and archive software providers on the market. Using purpose built commercial software applications that utilise either LTFS, TAR and/or other tape formats provides a much better user experience than command line driven LTFS commands. After all you have invested in LTO technology to backup and archive valuable data, it makes sense to use the best available tools.

Symply is partners with and recommend Archiware P5, Arcserve, Atempo, Commvault, Hedge Canister, Imagine Products Inc., Qstar, storageDNA, Tiger Technology Bridge, Veeam, Veritas, XenData, and YoYotta. In addition, since Symply partner with IBM for tape drive technology the SymplyPRO range has is compatible with software packages that are approved for use with IBM standalone drives.

SymplyATOM (Admin Tape Operation and Management)

SymplyATOM is a free macOS tool, designed to work with the SymplyPRO LTO family of products. It is intended to provide casual and expert-level users equal access to the essential features for diagnostic control, log gathering and updating firmware of the SymplyPRO LTO products.

ATOM also supports the latest version of LTFS for the macOS to provide basic tools for formatting, mounting and unmounting LTFS tapes. ATOM can support up to two (2) LTO drives from LTO generation 6 upwards and is free to download from our support portal.



SymplyATOM2

SymplyATOM2 is currently available as a Beta software for Mac and Windows but will be available as a full release in September 2026. It is free LTO tape management software for Mac and Windows. It checks your drive is healthy, keeps firmware up to date, and helps recover a tape if something goes wrong – no command line, no third-party tools, no fuss.

It's a complete rebuild of the original SymplyATOM, and it's faster, more reliable, and easier to use. If you're already using SymplyATOM, this is the upgrade – and it's free.

SymplyATOM2 can look inside a tape and tell you its condition, then offer options to fix it if needed.

What's included in this LTO tape management software

- **Works on Mac and Windows** – for the first time, Symply's tape tools are available on Windows as well as macOS, built to feel right at home on either.
- **Know what's wrong, faster** – diagnostics run quickly and break results down step by step, so if something's not right, you'll see exactly where.
- **Support without the hassle** – send your diagnostic results straight to Symply Support in one click, linked directly to your ticket.
- **Put new tapes to the test** – run a full test across a new tape to check it's working properly before you rely on it.
- **Firmware updates you can trust** – every update is verified before it's installed, so you're never at risk of a corrupted or unsafe upgrade.
- **Everything logged, automatically** – every check, update, and repair is saved for 30 days, so the history's there if you need it.

Works with

- **Symply products:** SymplyDIT, SymplyPRO, SymplyPRO 1U Rackmount, SymplyPRO 2U Rackmount, SymplyPRO XTL
- **LTO drives:** LTO-6, LTO-7, LTO-8, LTO-9, LTO-10
- **Connections:** Thunderbolt, SAS, Ethernet (iSCSI), Fibre Channel

Compatible with the full Symply LTO tape range and is [free to download now](#).

What you'll need

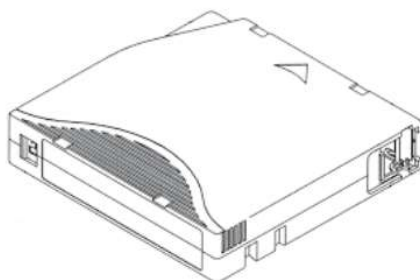
Mac	macOS 14 (Sonoma) or newer
Windows	Windows 10 or 11
LTO drives	LTO-6 through LTO-10

Everything you need is included in the installer – nothing extra to download or set up separately.

Loading and Unloading LTO Data Cartridge in the SymplyPRO

Make sure the SymplyPRO has completed its Power On Self-Test (POST). When the system is ready the Green Ready Light is illuminated. Do not try to insert a data cartridge if the POST has not been completed and the ready light is illuminated.

Before inserting the data cartridge, check that it is compatible with the LTO generation tape drive, see LTO Drive and Data Cartridge Compatibility Guide. Insert the compatible LTO tape into the drive in the direction of the arrow on the top of the data cartridge.



The drive will grab the data cartridge and move it into the LTO mechanism. If an incompatible data cartridge is inserted the Single-Character Display (SCD) will display the error code J. If this occurs, press the Eject cartridge button.

In normal operation, to eject the cartridge press the cartridge eject button. Note that this operation will fail if the data cartridge is in use, for example if the tape is currently mounted. You will need to unmount the tape from your computer before trying to eject the cartridge from the drive. It is best practice to use a backup or archive application to control the tape SymplyPRO. Always make sure the tape is unmounted from the OS before the cartridge is ejected.



NOTE

Leaving an LTO data cartridge in the SymplyPRO for long periods of time without use can damage both the data cartridge and the tape drive mechanism.



! IMPORTANT

Do not power the SymplyPRO off with a data cartridge in the tape drive mechanism. This can damage both the data cartridge and the LTO mechanism. If the SymplyPRO is powered off with a cartridge inside it will take longer to complete the POST when the SymplyPRO is turned back on.

Using and Maintaining Tape Cartridges

 CAUTION	Do not degauss LTO data cartridges! These data cartridges are pre-recorded with a magnetic servo signal. This signal is required to use the cartridge with the LTO tape drive. Keep magnetically charged objects away from the cartridge.
--	---

To ensure the longest possible life for your data cartridges, follow these guidelines:

- Use only the data cartridges designated for your device.
- Clean the tape drive when the SCD on a drive indicates a “C”
- Do not drop a cartridge. Excessive shock can damage the internal contents of the cartridge or the cartridge itself, making the cartridge unusable.
- Do not expose data cartridges to direct sunlight or sources of heat, including portable heaters and heating ducts.
- The operating temperature range for data cartridges is 10 °C to 30 °C (50 °F to 86 °F). The storage temperature range is -40 °C to +60 °C (-40 °F to 140 °F) in a dust-free environment in which relative humidity is always between 20 percent and 80 percent (non-condensing).
- If the data cartridge has been exposed to temperatures outside the specified ranges, stabilize the cartridge at room temperature for the same length of time it was exposed to extreme temperatures or 24 hours, whichever is less.
- Do not place data cartridges near sources of electromagnetic energy or strong magnetic fields such as computer monitors, electric motors, speakers, or X-ray equipment. Exposure to electromagnetic energy or magnetic fields can destroy data and the embedded servo code written on the media by the cartridge manufacturer, which can render the cartridge unusable.
- Place identification labels only in the designated area on the cartridge.

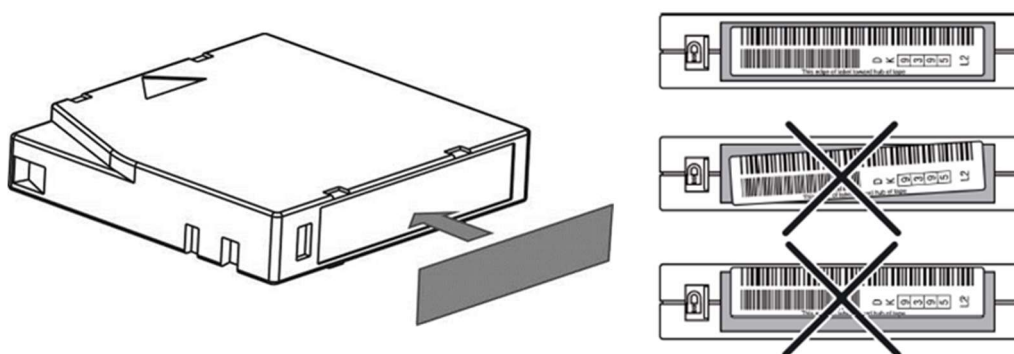
Labeling Tape Cartridges

Having a barcode label on each tape cartridge enables the operator or tape library to easily identify tape cartridge. It is highly recommended to use barcode labels on your tape cartridges.

A correct barcode label includes the media ID in the last two characters of the barcode. The library will not load an incompatible cartridge, based on the barcode media ID, into a tape drive. For example, a library will not load a cartridge labelled as LTO-7 into an LTO-9 tape drive. This saves the time needed to load the cartridge and have the tape drive reject it.

 IMPORTANT	Misusing and misunderstanding barcode technology can result in backup and restore failures. Use only high-quality labels. Self-printed labels are not recommended as they are often a source of barcode reading issues.
--	---

LTO tape cartridges have a recessed area located on the face of the cartridge next to the write-protect switch. Use this area for attaching the adhesive-backed bar code label. Only apply labels as shown:

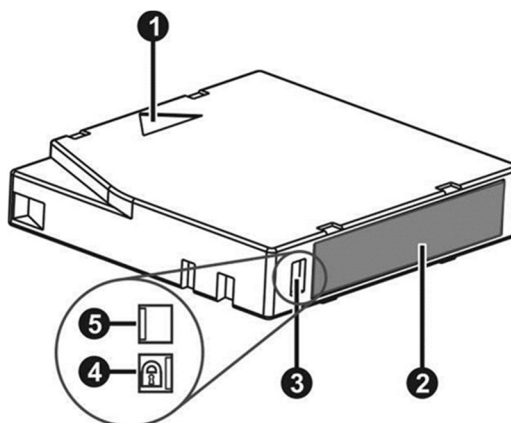


IMPORTANT

- The barcode label should only be applied as shown, with the alphanumeric portion facing the hub side of the tape cartridge.
- Never apply any label, anywhere else on the tape cartridge. This will cause the cartridge to jam in a tape drive.
- Never apply multiple labels onto a cartridge because extra labels can cause the cartridge to jam in a tape drive.

Write Protecting Tape Cartridges

All LTO data cartridges have a write protection feature. This is a RED tab that displays a lock symbol when it is moved to the write protected position. Once this is set the data cartridge can only be read from, so it is a very useful feature that prevents accidental overwriting or formatting of a data cartridge. It is generally considered best practice to write protect each cartridge after you have finished a backup or archiving task.



Number	Description
1	Insertion Arrow
2	Barcode Label Area
3	Write-Protection Switch
4	Write-Protected
5	Write-Enabled

If an application tries to write to a data cartridge with this feature enabled the Single-Character Display (SCD) on the front of the SymplyPRO will display the error code P.

Read and Write Compatibility

Ultrium Read/Write Compatibility:

Number	LTO-7 Drive	LTO-8 Drive	LTO-9 Drive	LTO-10 Drive
LTO-5 Media	Read Only	Incompatible	Incompatible	Incompatible
LTO-6 Media	Read & Write	Incompatible	Incompatible	Incompatible
LTO-7 Media	Read & Write	Read & Write	Incompatible	Incompatible
LTO-8 Media	Incompatible	Read & Write	Read & Write	Incompatible
LTO-9 Media	Incompatible	Incompatible	Read & Write	Incompatible
LTO-10 Media	Incompatible	Incompatible	Incompatible	Read & Write

Cleaning the SymplyPRO LTO drive mechanism.

It is important to remember not to use the SymplyPRO system in dusty and dirty environments as this can cause damage to the LTO data cartridges and the LTO mechanism itself. In normal operation the drive heads will need to be cleaned periodically, when cleaning is required the Single-Character Display (SCD) on the front of the SymplyPRO will display the error code “C”.



NOTE

This is a capital “C” not a lowercase “c” which indicates an LTO-9 tape optimization (sometimes referred to a characterization) is in progress.

The SymplyPRO ships with a cleaning cartridge. When and only when the SCD displays C, you should insert the cleaning cartridge into the mechanism, only ever in the direction of the arrow on the top of the cleaning cartridge. The SymplyPRO will automatically start the cleaning process, and the cleaning cartridge will be ejected when the cleaning is complete. In the unlikely event that after the cleaning has completed the SCD still shows a C error code then raise a support ticket. Do not use the cleaning cartridge again.

It is important to clean the SymplyPRO system when prompted to do so, but it is equally important only to do this when prompted by the SymplyPRO. Cleaning the drive without being prompted to so will reduce the lifespan of the LTO mechanism and may invalidate your warranty.

Cleaning cartridges have a finite life span. Cleaning cartridges supplied with the SymplyPRO will last for a maximum of 50 cleaning cycles. If you need additional cleaning cartridges, they can be purchased via Symply authorized resellers.

Using SymplyPRO Ethernet Tape SAS Out Port

The SymplyPRO Ethernet Tape connect one (1) or two (2) internal SAS LTO devices to an Ethernet Storage Area Network (SAN), via 2 x 10 Gb SFP Ethernet Data Ports. The appliances also feature the ability to connect an additional two (2) SAS LTO device to the SymplyPRO Ethernet Tape via the SAS Expansion Port (SFF-8644)

The additional LTO tape drives connected via the SAS Expansion Port can be either standalone tape drives, or a SAS connected tape library. We recommend using a SAS cable no longer than 2 m (6.5 ft) to ensure good SAS connectivity.

**NOTE**

SymplyPRO Ethernet Tape does not ship with a SAS cable, but they are available to purchase via Symply authorized resellers.

Using SymplyPRO Ethernet Bridge (XTL Ethernet Module) SAS Out Port

Both the SymplyPRO Ethernet Bridge and XTL Ethernet Module connects to four (4) external SAS LTO devices via the SFF-8644 SAS port to an Ethernet Storage Area Network (SAN), via 2 x 10 Gb Ethernet Data Ports.

The external LTO tape drives can be either standalone tape drives, or a SAS connected tape library. We recommend using a SAS cable no longer than 2 m (6.5 ft) to ensure good SAS connectivity.

**NOTE**

SymplyPRO Ethernet Bridge does not ship with a SAS cable, but they are available to purchase via Symply authorized resellers.

Using SymplyPRO Ethernet Tape SAS Host Port (1U and 2U Only)

The SAS Host Port is designed to allow the SymplyPRO Ethernet Rackmount 1U and 2U (not Gen2 LTO-10) to be used without an Ethernet connection as a SAS only device. In this scenario the SymplyPRO Ethernet Rackmount 1U and 2U could be connected to a host computer that has a SAS host interface. Note the host computer would need a compatible SAS host adapter, SAS cable, and driver to connect to the SymplyPRO. We recommend using a SAS cable no longer than 2m (6.5ft).

The SAS Host Port cannot be used to share the SymplyPRO Ethernet between two computers at the same time, one via the 10 Gb Ethernet and another via the SAS connection. The interface can only be used independently and the SymplyPRO Ethernet needs to be power cycled between changing the connections.

**NOTE**

The SymplyPRO Ethernet XTH, XTF, 2U Gen2 (LTO-10) do not have SAS Host Ports.

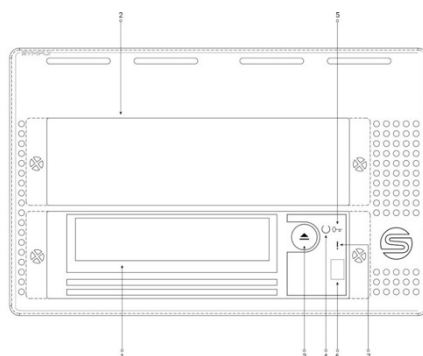
**NOTE**

None of the SymplyPRO Ethernet Appliances ship with a SAS cable, but they are available to purchase via Symply authorized resellers.

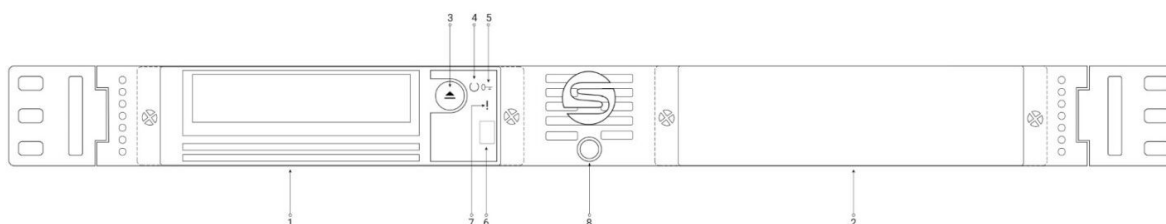
Upgrading the SymplePRO Ethernet Tape XTH, 1 RU or 2RU Appliances with a Second LTO Drive

The SymplePRO XTH, 1RU and 2RU appliances are designed to be upgraded in the field with minimal downtime. As standard the SymplePRO XTH, 1RU and 2RU ships in a default configuration with a single LTO drive installed in the Lower Bay (in the XTH), or Left-Hand Side Bay (in the 1RU and 2RU) and a blanking plate installed in the spare bay.

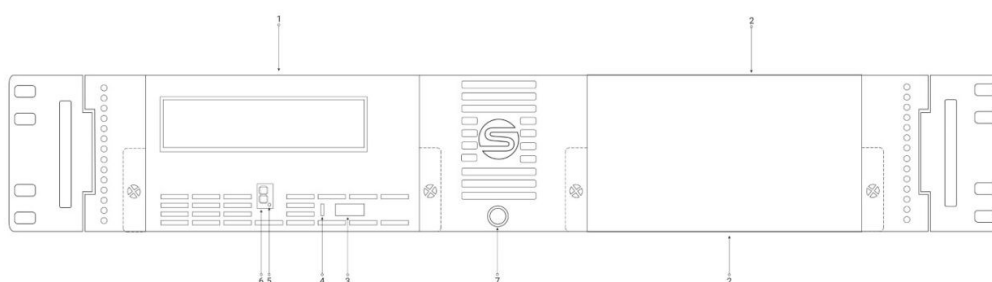
SymplePRO XTH



SymplePRO 1RU



SymplePRO 2RU



SymplyPRO LTO Upgrade Part Numbers

These are the part number options for upgrading the SymplyPRO XTH, SymplyPRO 1RU and SymplyPRO 2RU

Part Number	LTO Gen	Product	Description
SYLTO-iSCL7HH1	7	XTH	Symply LTO-7 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSCL8HH1	8	XTH	Symply LTO-8 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSCL9HH1	9	XTH	Symply LTO-9 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL7HH1	7	1RU	Symply LTO-7 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL8HH1	8	1RU	Symply LTO-9 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL9HH1	9	1RU	Symply LTO-9 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSCL9FH1	9	2RU	Symply LTO-9 Full Height Drive upgrade for 2RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSTLAFH1	10	2RU	Symply LTO-10 Full Height Drive Upgrade for 2U Gen2 Rackmount Enclosures Data Tape; 3 Year Warranty

Avoiding damage to Symply LTO Drive upgrade (SYLTO)

To avoid static electricity, and other damage when handling the drive, please take the following precautions.

- Prepare the SymplyPRO for receiving the upgrade or replacement drive before removing the new drive from its static-protective packaging.
- Limit your movements. By limiting your movements, this limits static electricity buildup around you.
- Handle the drive carefully ensuring there is enough space in the area around the SymplyPRO.
- Never touch the exposed circuitry of the upgrade drive.
- Ideally the upgrade drive should be removed from its static-protective packaging and installed directly into the SymplyPRO
- Do not place the upgrade drive on the metal cover of the SymplyPRO or any other metal surfaces.
- If you must set the upgrade drive down, do so on a level surface, and on the packing, it was shipped in.

Unpacking the Symply LTO upgrade drive (SYLTO)

Carefully unpack the Symply LTO Drive upgrade and store the packaging for future transport. If you need to return the unit for service, please make sure you do so in the original or equivalent packing material, or the warranty may be invalidated.

Please inspect the unit for shipping damage. If there is damage, do not install the unit, please report the damage immediately by contacting your place of purchase.

If you have a problem, please, check out our FAQs, or submit a support ticket.

<https://support.gosymply.com/>

Installing the Symply LTO upgrade drive (SYLTO)

This upgrade can be performed with the SymplyPRO powered ON or OFF.

- Remove the drive blanking plate from the Upper LTO Bay and retain for future use.
- Carefully remove the Symply LTO Drive upgrade from its static-protective packaging.
- Ensuring the Symply LTO Drive upgrade is oriented the correct way up (with serial number label visible on the top of the drive). Carefully insert the Symply LTO Drive upgrade into available Bay of the SymplyPRO, sliding the drive, until the drive connects with the backplane of the SymplyPRO.
- Tighten the thumbscrews on the newly installed drive to secure it in place.
- If the SymplyPRO was powered on during this process, the LTO drive would have initialized and carried out POST checks as soon as it was connected to the backplane of the system.
- If the SymplyPRO was powered OFF during the upgrade, it can now be powered on if desired.

Installing the Symply LTO LTO-10 Full Height upgrade drive

The LTO-10 Full Height drive is physically longer than the previous generations of LTO-9 Full Height drives. The SYLTO-iSTLAFH1 is only compatible with the SymplyPRO 2RU Gen2 rack enclosures, and the 2U LTO-10 full-height models use a **cabled** design. Drives are supplied in **user-installable canisters**.

The upgrade to the SymplyPRO 2RU Gen2 rack enclosures must be performed with the SymplyPRO powered OFF.

- Remove the drive blanking plate from the LTO Bay and retain for future use.
- Inside the drive bay will be the SAS cable and power cable for the LTO-10 drive, pull these gently forward so they are just outside of the drive bay.
- Carefully remove the Symply LTO Drive upgrade from its static-protective packaging.
- Ensuring the Symply LTO Drive upgrade is oriented the correct way up (with serial number label visible on the top of the drive).
 - Connect the SAS cable and power cable to the LTO-10 drive.
 - Carefully insert the Symply LTO Drive upgrade into available bay of the SymplyPRO 2RU Gen2 rack, sliding the drive, until the drive connects with the locking pin in the chassis.
- Tighten the thumbscrews on the newly installed drive to secure it in place.

The SymplyPRO can now be power powered ON if desired

Matching Firmware on Upgraded Systems

It would be considered best practice to make sure the firmware on the two LTO drives in a SymplyPRO are matching.

The Symply LTO Drive upgrades ship from Symply with the latest firmware available at the time. As new firmware becomes available it will be posted to the Symply support pages. The firmware can be upgraded on the SymplyPRO via our SymplyATOM software application or the IBM ITDT application.

Appendix “A” Cabling

The SymplyPRO Ethernet LTO and SymplyPRO Ethernet Bridge connect SAS LTO devices to an Ethernet Storage Area Network (SAN), via 2 x 10 Gb Ethernet Data Ports. Both appliances feature a SAS connector allows for connections to external SAS LTO devices.

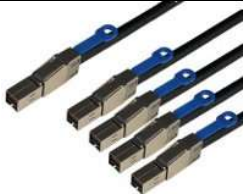
- **SymplyPRO Ethernet Tape** SAS Out Connector allows for connection to two (2) external LTO devices either standalone or within a tape library.
- **SymplyPRO Ethernet Bridge** SAS Out connector allows for connection to four (4) external LTO devices either standalone or within a tape library.
- **SymplyPRO XTL Ethernet Module** SAS Out connector allows for connection to four (4) external LTO devices within a tape library.

When connecting external devices to the SAS connector make sure all cables are anchored securely at both ends with the proper connectors.

SAS Cables

The SymplyPRO Ethernet supports 12 Gb & 6 Gb SAS LTO Tape Drives. The SymplyPRO Ethernet auto-negotiates the appropriate sync rates with the connected devices. Check the type of cable and cable length limit. It is recommended to keep as short as possible to ensure the highest signal quality and performance.

Symply provide high quality SAS cables that are qualified with the SymplyPRO Ethernet appliance.

Part Number	Description	Image
SYCBL-ESAS-222-200A	2m SFF-8644 – SFF-8644	
SYCBL-ESAS-221-200A	2m SFF 8644 – SFF 8088	
SYCBL-ESAS-422-200A	2m SFF 8644 – x4 SFF 8644	
SYCBL-ESAS-421-200A	2m SFF 8644 – x4 SFF 8088	
SYCBL-ESAS-423-200A	2m SFF 8644 – x2 SFF 8088 and 2xSFF-8644	

Ethernet Data Cables and Connections

Ethernet technology offers a variety of cabling options. The type of cable required varies depending upon the application, environment, and distance. The 10 Gb Ethernet Data Ports provide host connectivity.



NOTE

The Data Ports do not support 1GbE connectivity

The table shows support cable distances and connections:

Cable Type	10 Gb/Second
50 µm OM2	Up to 80m
50 µm OM3	Up to 300m
50 µm OM4	Up to 400m
Cat6	Up to 30m
DAC	Up to 5m



NOTE

- SymplyPRO Ethernet includes quantity two (2) of 3m LC to LC 50 µm OM4 cables as standard.
- Using Cat6 or better cables require SFP+ RJ45 modules available from Symply. The maximum recommended distance for 10 GbE connectivity via RJ45 is 30m.

Part Number	Description
SYCBL-SFPPLC0010AXA0	10GBASE-T SFP+ Copper RJ-45 30m Transceiver Module
SYCBL-SFPPL01010CMA0	10GBASE-SR SFP LC Module 300m
SYCBL-DACA010B00D	1m 10G SFP+ Passive Direct Attach Copper Twinax Cable
SYCBL-DACA010E00D	3m 10G SFP+ Passive Direct Attach Copper Twinax Cable
SYCBL-DACA010F00D	5m 10G SFP+ Passive Direct Attach Copper Twinax Cable

Appendix “B” CLI Provides ASCII-based Interface.

CLI commands

The command line interface (CLI) provides access, configuration, and monitoring for SymplyPRO Ethernet services through a set of ASCII commands. CLI commands are entered through the SSH session.

CLI commands are context sensitive and generally follow a standard format:

[Get|Set] Command [Parameter1|Parameter2] followed by the return or enter key.

CLI commands are case insensitive: you may type all upper or all lower case or a mixture. Upper and lower case in this manual and the help screen are for clarification only.

- Commands generally have three types of operation: get, set and immediate.
- The get form returns the value of a parameter or setting and is an informational command.
- Responses to get commands are followed by Ready.
- The set form is an action that changes the value of a parameter or configuration setting. It may require a restart of the system before it is implemented. The restart can be accomplished by using a separate `FirmwareRestart` command if not prompted to reboot. Several set commands may be issued before restart command.
- Immediate commands are set commands which are executed right away and do not require a Save Configuration command.
- Responses to Immediate commands are either an error message or data results followed by Ready.

Symbols, typefaces and abbreviations used to indicate functions and elements of the command line interface used in this user guide.

Symbol	Indicates
[]	Required entry
< >	Optional entry
	Pick one of
...	Ellipses, repetition of preceding item
\n	End of line
-	A range (6 – 9 = 6, 7, 8, 9)
El	Ethernet LUN (0 <= el <= 1024)
Dp	Ethernet Data Port number (1 <= dp <= 2)
sasCon	SAS connector name (A)
mp	Ethernet Management port number (mp1)

CLI error messages

The following error messages may be returned by the Command line Interface:

- ERROR. Invalid Command. Type 'Help' for command list.
- ERROR. Wrong/Missing Parameters
- Usage: <usage string>
- ERROR. Command Not Processed

CLI Command Explanation

Command	Command Description	Command Syntax
AccessControl	AccessControl enables or disables access control on a target node. Access to the target node is keyed to the iSCSI qualified name of whitelisted initiators in the target's access control list.	set AccessControl [Target Name target ID] [enabled disabled] get AccessControl [Target Name target ID all]
AccessEntry	AccessEntry allows the addition or deletion of an initiator entry from the access control list of a target node. The initiator name must be between 16 and 223 characters. Note that for 'set AccessEntry' 'delete' is optional when specifying an initiator name, but is required if specifying 'all'.	set AccessEntry [Target name target ID] [initiator name all [delete]] get AccessEntry [Target name target ID all]
ClearCliLog (Immediate)	Clears the contents of the CLI command log.	ClearCliLog
ClearEventLog (Immediate)	Clears the contents of the event log.	ClearEventLog
ControllerName (Disabled on Error)	ControllerName provides a descriptive ASCII name assigned to the unit. This field is used by applications to identify individual units. The specified name can be up to a maximum of 32 characters. If the name contains spaces, it must be enclosed in quotation marks.	set ControllerName [name] get ControllerName
CoreDumpInfo (Immediate)	Displays information concerning all core dumps stored by a prior fault.	CoreDumpInfo
Date	Sets/displays the current date and time, in the format of YYYY-MM-DD HH:MM:SS. Note that when using this command to configure the date, "Timesync" must already be disabled.	set Date [YYYY-MM-DD] [HH:MM:SS] get Date
DumpCliLog (Immediate)	Dumps the contents of the CLI command log to the current CLI session.	DumpCliLog
DumpConfiguration (Immediate)	Dumps the configuration of the unit	DumpConfiguration
DumpEventLog (Immediate)	Dumps the contents of the event log to the current CLI session. With no parameters, the last 2048 entries are displayed. The optional parameter "all" specifies all entries will be displayed. An optional numeric parameter specifies the maximum number of newest entries to display.	DumpEventLog

Command	Command Description	Command Syntax
EncryptionKey (Immediate)	Allows the SSH/SFTP server-side encryption keys to be generated or displayed. Displaying the encryption keys will cause all available server-side public keys to be displayed, as well as the signatures of the server-side private keys. Revoking existing keys can be performed with the Generate option.	EncryptionKey [Generate Display]
EthCongestionAlgorithm (Disabled on Error)	Configures the congestion algorithm for Ethernet traffic on the unit's data ports	set EthCongestionAlgorithm [cubic reno] get EthCongestionAlgorithm
EthFlowControl (Disabled on Error)	Sets the PAUSE frame behavior for the given data port(s). The "enabled" and "disabled" settings affect both rx and tx.	set EthFlowControl [DP[n] all] [enabled disabled] get EthFlowControl [DP[n] all]
EthMTU (Disabled on Error)	Configures the MTU, or maximum transmission unit (Frame Size), used by the specified Ethernet port.	set EthMTU [DP[n]] [296 - 9024] get EthMTU [DP[n] MP[n] all]
EthPort (Disabled on Error)	Lists the available Ethernet ports, current status (Up or Down), and link speed. Specifying a port name followed by enabled or disabled configures the port to be persistently enabled or disabled, respectively.	set EthPort [DP[n] MP[n] all] [enabled disabled] get EthPort
EthSack (Disabled on Error)	Configures the SACK (Selective Acknowledgements) networking parameter. SACK is a refinement of TCP's traditional "cumulative" acknowledgements.	set EthSack [enabled disabled] get EthSack
EthStats (Disabled on Error)	Displays port statistics for the selected Ethernet port	get EthStats [DP[n] MP[n] all]
Exit (Immediate)	Terminates the current CLI session over SSH	Exit
FirmwareRestart (Immediate)	Causes an immediate reboot of the unit.	FirmwareRestart
FlashStatus (Immediate)	Displays the status of a firmware update in progress, or the most recent firmware update if no update is in progress. By default, only fifteen lines of status are displayed. The argument "verbose" will result in one hundred lines of status being displayed.	FlashStatus<verbose>
Help (Immediate)	The Help command issued with no parameters displays a list of available CLI commands. When a CLI Command name is specified, a command usage string and command description is presented on the CLI.	Help<command>
Info (Immediate)	Displays version number and other system information for key components of the unit.	Info
IPAddress (Disabled on Error)	Configures the current IP address of any Ethernet port(s). If IPDHCP is enabled, the 'get' command reports the current IP address assigned by the network DHCP server, followed by the (DHCP) identifier.	set IPAddress [DP[n] MP[n]] [xxx.xxx.xxx.xxx] get IPAddress [DP[n] MP[n] all]
IPDHCP (Disabled on Error)	Configures the current DHCP setting. DHCP allows acquisition of an IP address from a network DHCP server. When this option is disabled, the IP address used is specified by the "IPAddress" command	set IPDHCP [DP[n] MP[n] all] [enabled disabled] get IPDHCP [DP[n] MP[n] all]

Command	Command Description	Command Syntax
IPGateway (Disabled on Error)	Configures the current default gateway used by the specified Ethernet port.	set IPGateway [DP[n] MP[n] all] [IP Address] get IPGateway [DP[n] MP[n] all]
IPSubnetMask (Disabled on Error)	Configures the current subnet masks used by the specified Ethernet port.	set IPSubnetMask [DP[n] MP[n] all] [xxx.xxx.xxx.xxx] get IPSubnetMask [DP[n] MP[n] all]
IPv6Address (Disabled on Error)	Configures the current IPv6 address of any Ethernet port(s). If IPv6DHCP is enabled, the 'get' command reports the current IP address assigned by the network DHCP server, followed by the (DHCP) identifier.	set IPv6Address [DP[n] MP[n]] [IPv6 Address] get IPv6Address [DP[n] MP[n] all]
IPv6DHCP (Disabled on Error)	Configures the current DHCPv6 setting. DHCP allows acquisition of an IP address from a network DHCP server. When this option is disabled, the IP address used is specified by the "IPv6Address" command.	set IPv6DHCP [DP[n] MP[n] all] [enabled disabled] get IPv6DHCP [DP[n] MP[n] all]
IPv6Gateway (Disabled on Error)	Configures the current default gateway used by the specified Ethernet port.	set IPv6Gateway [DP[n] MP[n] all] [IP Address] get IPv6Gateway [DP[n] MP[n] all]
IPv6Prefix (Disabled on Error)	IPv6Prefix controls the current IPv6 prefix of any Ethernet port(s).	set IPv6Prefix [DP[n] MP[n]] [Prefix length] get IPv6Prefix [DP[n] MP[n] all]
iSCSIChangeTargetSuffix (Immediate)	Automatic mapping mode only. Change the default iSCSI qualified name (IQN) suffix. The changeable suffix begins following the serial number in the IQN formatted as follows: iqn.yyyy-mm.<naming authority>:<unit serial number>.<changeable suffix> The changeable suffix must be 1-32 characters in length. Executing the command without providing an argument reverts the changeable suffix to the default.	iSCSIChangeTargetSuffix [Target ID name]

Command	Command Description	Command Syntax
iSCSICHAP	<p>Specifies the incoming and outgoing usernames/passwords for iSCSI CHAP sessions. Passwords are case sensitive, 12 to 16 characters, and cannot contain spaces, tabs, or the following characters: () . ' " `</p> <p>Usernames are case sensitive, 4 to 223 characters, and cannot contain the following characters:</p> <pre>~ ! @ # \$ % ^ & ( ) + [ ] { } * ; : ' " . , %   < > ? / \ = `</pre> <p>The 'in' password is for authentication of the initiator by the target. It is used for both one-way and two-way authentication. There is only one 'out' username/password pair per target.</p> <p>If 'discovery' is specified, the setting will apply to CHAP during discovery sessions.</p> <p>Note: Access Control must be enabled and iSCSICHAPMode set to one-way (or) two-way for the CHAP password to apply.</p>	<pre>set iSCSICHAP [[Target name target ID] [in [Access entry] out] [discovery] [in out]] [username] [password] get iSCSICHAP all discovery [[Target name target ID]]</pre> <i>Display CHAP credentials for discovery and for all targets</i> <pre>get iSCSICHAP all</pre> <i>Display CHAP credentials for target ID 0's access entry</i> <pre>get iSCSICHAP 0 iqn.initiator.00</pre> <i>Display CHAP credentials for target name 'iqn.target.1' with an access entry of 'iqn.initiator.01'</i> <pre>get iSCSICHAP iqn.target.1 iqn.initiator.01</pre> <i>Set the 'in' CHAP credentials for target ID 2's access entry 'iqn.initiator.0A, with username 'user1' and password 'pa\$\$word35410'</i> <pre>set iSCSICHAP 2 in iqn.initiator.0A user1 pay\$\$word35410</pre> <i>Set the 'out' CHAP credentials for the target name 'iqn.target.3', with username 'user2' and password 'P@ssW0Rd!8833'</i> <pre>set iSCSICHAP iqn.target.3 out user2 P@ssW0Rd!8833</pre> <i>Set the 'in' CHAP credentials for discovery, with username 'user_discovery' and password 'p@\$\$w0rDdiscover'</i> <pre>set iSCSICHAP discovery in user_discovery p@\$\$w0rDdiscover</pre>
iSCSICHAPMode	iSCSICHAP specifies the type of CHAP to be used for initiator logins. In 'One-way' authentication, the target authenticates the initiator using the 'in' CHAP password, but the initiator does not authenticate the target. In 'Two-way' authentication, an additional level of security enables the initiator to authenticate the target using the 'out' CHAP password. 'Disabled' means no authentication will be enforced and any initiator will have access to the target. If 'discovery' is specified, the selected CHAP authentication will apply to discovery sessions.	<pre>set iSCSICHAPMode [Target Name target ID discovery] [disabled one-way two-way]</pre> <pre>get iSCSICHAPMode [Target Name target ID discovery all]</pre>

Command	Command Description	Command Syntax
iSCSILatency (Immediate)	Captures and reports iSCSI read and write latency on a per target basis. All times are in microseconds and are an average of multiple commands sampled during a short period when this CLI command is executed. Reads or writes must be occurring when executing this command. Length represents the command length in bytes seen during the sampling period. Response time is the time from receipt of an iSCSI command until a response and possibly data has been transmitted back to the initiator. Queue time is how long a command that's ready has waited before being submitted to the device. Applies to writes only. Device time represents how long the SAS device took to complete a command. Response to Command time is the time between transmitting a response for one command and beginning iSCSI processing of the next. Includes host delay. R2Ts are the number of Ready to Transfer messages that were needed to fetch all data for a write command. Applies to writes only.	iSCSILatency
iSCSILogins (Immediate)	Displays details of the initiators currently logged in (active), and optionally of initiators previously logged in as well (inactive). Displays active logins by default and both active and inactive if the 'all' argument is specified.	iSCSILogins <all>
iSCSIMap (Immediate, Disabled on Error)	Manual mapping mode only. Map a device to an iSCSI target. Use CLI commands iSCSIShowMaps and ShowDevices to see the target and device IDs.	iSCSIMap [Target ID name] [Device ID] [LUN]
iSCSIMappingMode (Disabled on Error)	Changes the iSCSI mapping mode. In automatic mode devices are assigned to predefined iSCSI targets based on SAS topology. iSCSI targets are only accessible when devices are attached. Manual mode allows user creation and deletion of iSCSI targets and user mapping of devices to targets. Changing the mapping mode may require a reboot before taking effect	set iSCSIMappingMode [automatic manual] get iSCSIMappingMode
iSCSISetPorts (Immediate)	Configure the iSCSI target data port accessibility.	iSCSISetPorts [Target ID name] [DP1 DP2 all none]
iSCSIShowMaps (Immediate)	Display mapping details between iSCSI targets and devices.	iSCSIShowMaps

Command	Command Description	Command Syntax
iSCSITargetCreate (Immediate, Disabled on Error)	Manual mapping mode only. Create an iSCSI target. The target name is formatted as follows: iqn.yyyy-mm.<naming authority>:<unit serial number>.<IQN suffix> The provided IQN suffix must be between 1-32 characters	iSCSITargetCreate [IQN suffix] [DP1 DP2 all none]
iSCSITargetDelete (Immediate, Disabled on Error)	Manual mapping mode only. Delete an iSCSI target	iSCSITargetDelete [Target ID name]
iSCSIUnMap (Immediate, Disabled on Error)	Manual mapping mode only. Remove a mapping between device and iSCSI target. Use CLI commands iSCSIShowMaps and ShowDevices to see the target and device IDs.	iSCSIUnMap [Device ID]
Licenses (Immediate)	Displays the collection of relevant open-source licenses used by the unit.	Licenses
Password (Disabled on Error)	Specifies the password used for all interactive sessions that require a login. Password is case sensitive, 8 to 32 characters, must contain at least one numeric character {0-9} and cannot contain the following special characters: {space, tab, ", ', \, ;}.	set Password
Ping (Immediate)	Ping will send an ICMP echo request to the specified host via the specified network interface.	Ping [DP[n] MP[n]] [IP Address] <count <size>>
RestoreConfiguration (Immediate, Disabled on Error)	Resets the unit to factory defaults. The unit may reboot repeatedly in order to complete the reset.	RestoreConfiguration
SASConnectorStats (Immediate)	Displays SAS PHY error statistics.	SASConnectorStats
SASPortList (Immediate)	Displays SAS PHY link information.	SASPortList
SendEOMDeferredError (Disabled on Error)	End Of Medium (EOM) deferred error configuration controls early warning deferred errors generated by SpeedWrite. Enable this setting if there are issues with end of tape handling.	set SendEOMDeferredError [enabled disabled] get SendEOMDeferredError
SFPInfo (Disabled on Error)	SFPInfo displays information about the specified SFP(s).	get SFPInfo [DP1 DP2 all]
ShowDevices (Immediate)	Display SAS device details.	ShowDevices
Temperature (Immediate)	Displays the current operating temperatures of the various temperature sensors in degrees Celsius.	get Temperature
Timesync	Configures the "timesync" service. Timesync automatically adjusts the system date and time based on well-known time servers.	set Timesync [enabled disabled] get Timesync

Command	Command Description	Command Syntax
TimesyncServer (Disabled on Error)	Sets/displays timesync servers.	<pre>set TimesyncServer [Primary Fallback] [NTP Address Comma-separated list of NTP Addresses in Quotes Default] get TimesyncServer [Primary Fallback Active All] Set 0.arch.pool.ntp.org and 1.arch.pool.ntp.org as primary servers: set timesyncserver primary "0.arch.pool.ntp.org,1.arch.pool.ntp.org" Set ntp.ubuntu.com as the single fallback server: set timesyncserver fallback ntp.ubuntu.com Set the default fallback server: set timesyncserver fallback default</pre>
TimeZone (Disabled on Error)	Timezone sets/displays the time zone.	<pre>set TimeZone [[EST CST MST PST] [Index from TimeZoneList command]] get TimeZone</pre>
TimeZoneList (Immediate)	Displays available time zones for setting the timezone.	TimeZoneList
Uptime (Immediate)	Returns the time [days hrs:min:sec] since the last reboot	Uptime

Appendix “C” LTFS Best Practices

- Always make at least two archive copies and keep them in different locations to protect against loss or damage.
- Once you have written the LTO tape we recommend sliding the tab on the LTO tape cartridge to closed, this will write protect the tape.
- If you have intermittent power, make sure both the computer and tape drive are on an Uninterruptible Power Supply (UPS).
- Do not unplug the Thunderbolt cable while the system is in use as this can lead to data corruption.
- **Type-M (also known as M8):** We do not recommend using Type-M for archiving, the tapes are only readable in an LTO-8 drive (not in an LTO-7 or LTO-9 drive). The format was a short-term solution to historical availability problems with LTO-8 media.
- **Compression:** Using tape compression is recommended internally the LTO drive will compress files that are uncompressed. The compression is lossless and varies from 1:1 to 2.5:1. Note that the LTFS application you are using needs to support compression. Typically, only text documents, spreadsheets and other office type documents can be compressed to the 2:5:1, it is unlikely that you will see the advertised compressed capacities of data cartridges.
- **Source media:** The speed of the source media may affect the performance of the tape drive. Data sources such as slower NAS systems or USB connected drives might not perform to the recommended minimum sustained speed of 100MB/sec to allow the SymplyPRO drives to function optimally.

If the connection to the SymplyPRO drive is too slow, the drive will run out of data and the tape will have to keep rewinding and start writing again. This is sometimes called “Shoe Shining” and you will be able to hear the behaviour if you listen to the sound the tape drive is making. Shoe Shining will mean the average transfer time to the LTO drive will drop drastically. This behaviour will not damage the LTO data cartridge, but if it is a constant issue, it will increase the wear on the LTO drive heads in the mechanism and reduce the lifespan of the LTO drive.

- **TAR / PAX Format:** TAR and PAX are both older methods of storing files as a bundle on a LTO tape. There is no directory like LTFS and so the tapes cannot be mounted on the desktop as they can be with LTFS. The SymplyPRO family is compatible with applications that use these formats, but they are rare these days.
- **WORM Tapes:** LTFS does not support WORM (Write Once Read Many times), but the SymplyPRO LTO XTH family does support WORM media if you have an application that supports this feature of LTO.

- **LTFS Formatting and Labels:** LTFS tapes must be formatted with a unique six-character label that should match the barcode label on the tape for ease of tracking media.
 - The code can have the letters A-Z and numbers 0-9. For example: 123456, ABCDEF, SY1234 etc
 - After formatting an LTFS tape you cannot change the label. To change the label, you must reformat the LTFS tape.
 - The tape barcode label is eight characters. This comprises the user selectable six characters followed by the LTO generation identifier L5, L6, L7, L8, and L9. For example: 123456L8, ABCDEF**L9**, SY1234**L7** etc.
 - We recommend not to use / * ? < > " | \ : characters or spaces in file and directory naming as these are not supported across all operating systems. This is best practice for file and path naming.
 - We recommend keeping the file names less than 250 characters and a path name of less than 1024 characters.
- **Deleting files from LTFS tapes:** If files or folders are deleted from the LTFS tape using Windows Explorer, the macOS Finder, or via command line they will be removed from the tape directory. Note, however, that deleted space is not recovered in this process. Once any changes are made to the LTFS tape it is recommended the tape is unmounted. If many files need to be removed from the LTFS tape it is best to reformat the tape and start again. But make sure you have copies of the tape media you need first.
- **Moving files from LTFS tapes:** Files can be moved using the OS (Finder/Explorer), and files and folders can be renamed. However, folders cannot be moved on tape. Once any changes are made to the LTFS tape it is recommended the tape is unmounted.
- **Cleaning Symply LTO drives:** It is important to remember not to use the LTO drives in dusty and dirty environments, this can cause damage to the LTO data cartridge and the LTO mechanisms. In normal operation the drive heads will need to be cleaned periodically, when cleaning is required the tape drive will display "C" on the front display. When this happens simply insert an approved cleaning cartridge into the tape drive and the cleaning process will start automatically.

It is important not to clean the LTO mechanism routinely, only do so when you are prompted to do so by the "C" message on the front of the tape drive. If you clean the LTO mechanism without being prompted this will damage the LTO drive head over time and void the warranty.

- **LTO cartridge health and errors:** LTO cartridges are designed to be read and re-written hundreds of times in their lifetime. For most archive applications there should never be any issues.

When an LTFS tape is mounted by some LTFS applications, the application queries the tape and gets the information regarding any errors on the tape media, as described here.

- **Recovered Write Errors:** This is when the LTO drive rewrites data when retries have occurred. This can have the effect of slightly reducing the amount of capacity available on the tape and can commonly occur on new LTO media. It is nothing to be concerned about if the rates are low, but large counts in the hundreds or thousands can indicate poor tape quality or a potential problem with the tape drive.
- **Recovered Read Errors:** This indicates that the tape drive has had to retry a read again. It is nothing to be concerned about if the rates are low, but large counts in the hundreds or thousands can indicate poor tape quality or a potential problem with the tape drive.
- **Permanent Read and Write Errors:** These happen when the tape drive fails to read or write to the LTO tape. These errors can be caused if an LTO drive is powered off or disconnected while a tape is loaded. They can also be caused by a faulty tape drive, or damage to the tape itself caused by improper handling.

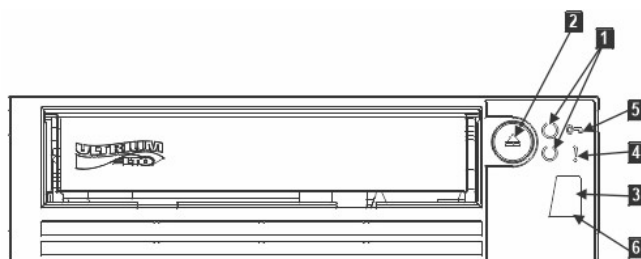
Appendix “D” Glossary

Term	Definition
iSCSI	iSCSI is an IP-based standard for transferring data that supports host access by carrying SCSI commands over IP networks
Target	An iSCSI targets are devices that respond to iSCSI commands, for the SymplyPRO Ethernet the target is always an LTO Drive.
Initiator	An iSCSI host contains one or more initiators that attach to an IP network to initiate requests to, and receive responses from an iSCSI target
IQN	iSCSI qualified name (IQN). A unique identifier given to both Initiators and Targets
LUN	A logical unit number (LUN) is a unique identifier for designating an individual or collection of physical or virtual storage devices, defined by the SCSI protocol.
CHAP	Challenge Handshake Authentication Protocol. A mechanism for authenticating the device at the other end of a network link. The authentication is successful when the challenged device knows the CHAP secret of the challenging device.
CLI	Command Line Interface.
Discovery Domain	A concept of the iSNS Server that allows iSCSI initiators and targets to be segregated into management groups called domains. All initiators in a domain can discover all the targets in the domain. Initiators cannot discover targets in a Discovery Domain in which they are not a member. A device can be a member of one or more domains.
Initiator Challenge	A CHAP authentication request that is sent from the initiator device to the target device. The target device must know the Initiator Secret to complete the challenge successfully. An Initiator Challenge is only performed during Mutual Authentication.
Initiator Secret	The CHAP secret held by the initiator used as the basis for challenging the target during the Initiator Challenge. The target must know this secret to build the proper response when challenged.
IP / DNS Discovery	The method used to discover an iSCSI target by specifying the IP address or the DNS name for the target device.
iSCSI Digests	Header and Data Digests which are negotiated during iSCSI logon to ensure data integrity
iSNS Discovery	The method used to discover all the iSCSI targets in the same Discovery Domain(s) as the initiator
Mutual Authentication	CHAP procedure in which a Target Challenge is performed and, if that is successful, then an Initiator Challenge is performed.
Target Challenge	A CHAP authentication request that is sent from the target device to the initiator device. The initiator device must know the Target Secret to complete the challenge successfully.
Target Connection	The procedure to establish a connection between an initiator and a target. The procedure includes parameter negotiation and may include authentication.
LTFS	Linear Tape File System (LTFS) is a file system that allows files stored on an LTO data cartridge.

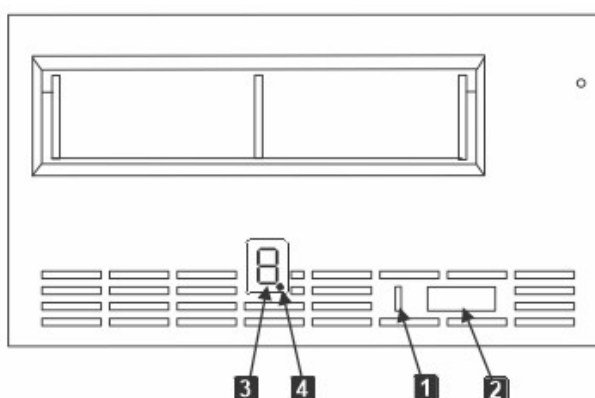
Appendix “E” LTO Drive Status and Warnings

For more information and FAQs please visit www.support.gosymply.com

Single-Character Display (SCD) Information



Number	Description
1	Two status LED indicators (green)
2	Unload button
3	Single-Character Display (SCD)
4	Fault light (amber)
5	Encryption light (white)
6	Single-Character Display (SCD) Dot



Number	Description
1	LED indicator
2	Unload button
3	Single-Character Display (SCD)
4	Single-Character Display (SCD) Dot

Error code on Single-Character Display (SCD)

Error Code	Description
1	The SymplyPRO has detected system temperature outside the operational range. Please ensure that room temperature is between 15°C and 25°C (59°F to 77°F). Also check for a blocked fan or other obstructions blocking air flow. If the fan is operating correctly and room temperature is within parameters, please submit a support ticket at support.gosymply.com
2	The SymplyPRO has detected a problem with either the incoming power or an internal power issue. Please ensure the system is connected to clean wall power using the power cord supplied. To ensure incoming power is good, connect the system to a different outlet or power strip. Do not connect using extension cords. If the problem persists, please submit a support ticket
3 and 4	The SymplyPRO has detected an internal microcode or drive problem. Please power cycle the device, making sure to ejecting any data cartridge (if there is one in the drive) before turning off the power. Wait 20 seconds, then power back on. If the problem persists, please submit a support ticket
5	The SymplyPRO has detected a drive error. The drive has determined that a tape path or read/write error occurred. To prevent damage to the drive or tape, the tape drive will not allow you to insert a cartridge if the current cartridge was successfully ejected. The error code may clear when you cycle power to the tape drive or place it in maintenance mode. Before power cycling please Retrieve Log. If the problem persists, please submit a support ticket.
6	The SymplyPRO has detected a drive or media error, but it cannot isolate the error to faulty hardware or to the tape cartridge. Ensure the tape cartridge is the correct media type. If the tape cartridge is the correct media type, then power cycle the drive and retry the operation that caused the error to occur. If the problem persists, please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000849166-error-code-6
7	The SymplyPRO has detected a Media error due to a faulty tape cartridge or an invalid tape cartridge. Ensure the tape cartridge is the correct media generation. If the tape cartridge is the correct media type, retry the operation, or try another tape cartridge. If the problem persists, please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000849181-error-code-7

Error Code	Description
8 or E	Internal Communication Error. The SymplyPRO drive has determined that there is either an internal or external SAS port interface problem. Error will clear after 10 seconds or power cycle. If the problem persists, please submit a support ticket
A	Drive Error. The SymplyPRO drive has determined that a drive hardware failure has occurred, most likely because of performance degradation. This may be linked to degraded data cartridges. The error condition will clear when the drive is powered off. Please try an alternative data cartridge. If the problem persists, please submit a support ticket
C	Drive needs to be cleaned. The SymplyPRO LTO drive has determined that the tape drive needs to be cleaned. When this message is displayed, please insert the Cleaning Tape that was supplied along with the SymplyPRO into the tape drive. Once the Cleaning Tape has been inserted the cleaning process will start automatically. At the end of the process the Cleaning Tape will be ejected, and the error will be cleared. It is possible that dirty or faulty tapes can cause the Cleaning Error to be displayed. If the Cleaning Error is coming on regularly it is likely that you have one or more bad or dirty tapes and they should be retired, and new media used. Do not routinely use a Cleaning Tape in the SymplyPRO as this will damage the tape heads over time and may void your warranty. Only insert a Cleaning Tape when prompted to do so by the SymplyPRO drive. If the Error C persist after the drive has been cleaned do not clean the drive again. Please submit a support ticket
J	Incompatible Media. The SymplyPRO LTO drive has determined that the drive has been loaded with a data cartridge that is not supported. For example, LTO-6 media loaded into an LTO-8 drive mechanism. Always make sure that you purchase your media from a trusted source. If the problem persists and you are confident you are using the correct media, please submit a support ticket
P	Write Protect. A write operation has been attempted on an LTO data cartridge that has write protection enabled. If you want to write to the LTO data cartridge, then unload the LTO cartridge (making sure the tape is unmounted from the OS) and disable write protection (move the red switch so the graphic lock sign is no longer visible). If the red switch is not covering the hole, but the drive is still reporting the error P, please submit a support ticket.
u	Microcode update is in progress. The SymplyPRO drive is in the process of uploading and flashing new firmware code to the tape drive. SymplyATOM and IBM ITDT applications allows you to upgrade firmware on the SymplyPRO tape drive, but please only do this when you have been instructed to do so by a member of the Symply Support Team.

Error Code	Description
c	Optimization (also called Characterization) is in progress on an LTO-9 tape drive with an LTO-9 data cartridge inserted. Media optimization will be performed on the first load of LTO-9 media during initialization. Media optimization averages 40 minutes per first load of a cartridge to a tape drive. Although most media optimization will complete within 60 minutes some media optimization may take up to two hours. Interruption of the media optimization process is not recommended. For further information please see https://support.gosymply.com/support/solutions/articles/80000977749-what-is-media-optimization-
e	The SymplyPRO has detected an Encryption Error. The drive detected a configuration or set-up error prior to an encryption operation. The problem may exist with the encryption key manager communication path. Check your software application that is using encryption. If the “e” error appears immediately after power-on, there could be a hardware failure if you are not using cryptographic software. Please submit a support ticket.
o	The SymplyPRO has detected Broken or Excessively slack tape in the LTO drive. The drive has encountered a condition where it cannot unload the tape or determine that the tape is in the path of the head. Do not power cycle the drive. Please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000948603-error-code-o-lower-case-

Status Light Information LTO Drives

Display	Single-Character Display (SCD)	Ready LED (Green)	Fault LED (Amber)
Standby Operation	Blank	On	Off
Activity Operation (tape in movement)	Black	Flashing	Off
Maintenance	Solid character	Flashing	On
Executing Maintenance Selection	Flashing character	Off	On
Error	Solid Character	Off	Flashing
Power On, or Power Cycle	POST Display	Off	On

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
Off	Off	Off	Off	Off	The drive is powered off
Solid Green	Off	On or Off	Off	Off	The drive is powered on but is idle
Flashing Green @ 1Hz (one flash per second)	Off	On or Off	Off	Off	The drive is carrying out standard operations
Flashing Green @ 1Hz (one flash per second)	Off	Off	Off	Off	If the drive contained a data cartridge when powered off, the drive undergoes an extended POST process when turned back on as the tape rewinds slowly. This can take up to 10 minutes. The light stops blinking and becomes solid when the drive completes the recovery process and is ready for standard operations. To eject the cartridge, press the eject button.
Off	Solid Amber	Off	Displaying Error Code	On or Off	The drive is displaying an error code on the SCD. See SCD Error code table.

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
On or Off	On or Off	On or Off	Displaying random characters, then blank, then displaying random characters	On or Off	During power on or a drive reset, the SCD displays the following: 1) SCD will display random characters (no LEDs on) 2) SCD will display random characters (LEDs - green on, amber off) 3) SCD will display random characters (LEDs - green off, amber on) 4) SCD will display [8] (LEDs - green off, amber on) 5) SCD will go blank (LEDs - green on, amber off) after the power is turned on or after the drive is reset. If an error is detected during the POST process it is displayed on the SCD. See SCD Error code table
Off	On	Off	[0]	On/Off	The drive is entering or exiting from Maintenance mode
Off	On	Off	Flashing selected function	On/Off	The drive is running the selected function while in Maintenance mode

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
Off	Flashing Amber @ 1Hz (one flash per second)	Off	Displaying Error Code	Off	An error has occurred and the drive or media may require attention, or cleaning. See SCD Error code table.
Off	Flashing	Off	Displaying [C]	Off	The drive needs cleaning
Off	Flashing amber @ 2Hz (two flashes per second)	Off	Off	Off	The drive detected an error and is performing a recovery. It will be reset automatically
Off	On	Off	Flashing [C]	Off	The drive is requesting a cartridge to be loaded
Off	Flashing amber @ 2Hz (two flashes per second)	Off	Off	On	There is a drive memory dump in flash memory

Appendix “F” Product Release Notes

These product release notes define the features, known issues and release details that apply to the SymplyPRO Ethernet firmware version 2.06 that was released 8th July 2025.

Version 2.06 (Released 8th July 2025)

- Release Features:
 - Introduces e-mail-based notification alerts, tape hardware and media management capabilities
- Improvements:
 - Includes CLI-based commands specific to e-mail notifications, tape hardware and media management functions
 - Includes improvements to GUI allowing users to configure and setup e-mail notifications, reporting of tape hardware statistics and logs – both drive and media.
 - Improved the handling of persistent reservations in certain multiple initiator environments

Version 2.05 (Released 5th May 2025)

- Release Features:
 - Added support for reporting/displaying network connections associated with initiators.
 - Includes additional network configuration management updates.

Version 2.04 (Released 3rd February 2025_

- Release Features:
 - Includes fix for interoperability issues with Archiware P5.
 - Added fix to prevent corruption of persistent configurations.
 - Addresses GUI web browser login and caching issues.
- Improvements:
 - Includes the ability to set multiple default gateways
 - Includes improvements to GUI

Version 2.03.1 (Released 13th November 2024)

- Improvements:
 - Revised SpeedRead™ with the addition of a read command counter.

Version 2.03 (6th September 2024)

- **Release Features:**
 - Added new feature, SpeedRead™, for improved tape read performance over iSCSI.
 - Includes product improvement(s) and GUI updates.
 - **NOTE:** Starting with firmware version 2.03, the procedure to connect to the SymplyPRO Ethernet via SFTP has changed. There is a new 'sftp' user and port 22 (as opposed to 20) is now used.

Version 2.02 (Released 1st July 2024)

- **Release Features:**
 - Includes updates key to product improvement(s) and GUI enhancements.
 - Added support for vendor specific product configurations

Version 2.01 (Released 13th May 2024)

- **Release Features:**
 - Added fix for bug causing incorrect target IP addressing.
 - Includes fix for webserver certificate updates and certificate generation.
 - Added updates to event log messaging and entries
 - GUI redesign and new features included

Version 2.00 (Released 1st April 2024)

- **Graphical User Interface (GUI) for SymplyPRO Ethernet**
 - Initial Release.
 - Simple, easy-to-use device configuration and management web interface.
 - Highlights - System information, Ethernet configuration, iSCSI Devices and Maps, Device and User Management.
 - Supported browsers – Google Chrome, Mozilla Firefox, Safari, Microsoft Edge.

Appendix “G” Warranty Information

The SymplyPRO system comes with a limited three (3) year warranty, but with the option to purchase an upgrade to a five (5) year warranty at the time of purchase, or within thirty (30) days of the original purchase. Terms and conditions apply.

Warranty and technical support service can be accessed at www.support.gosymply.com

SYMPLY (“the Company”) warrants its products will be free from defects in material and workmanship for three years from the date of purchase of the product.

This Limited Warranty only applies to the original purchaser of the product and is not transferable to subsequent owners.

This Limited Warranty is void if the product is subjected to abuse, misuse, abnormal, excessive or improper conditions (including, without limitation, attempts to utilize the product under any condition that exceeds its design capabilities, or any other use beyond the use specified in any product instructions), or if the product is altered or modified in any manner. This Limited Warranty does not cover damage to the product due to external causes (including, without limitation, accident, liquids, chemicals, oxidation, corrosion, or exposure to the elements), or problems caused by use of parts and components not supplied by the Company.

The sole remedy under this Limited Warranty is product repair, replacement, or refund of the purchase price, at the sole discretion of the Company. In order to make a claim the purchaser must ship the product to the Company at the purchaser’s expense, together with proof of purchase and a description of the nature of the defect. The Company will not be held responsible for any product that is damaged or lost in transit to the Company.

PURCHASER AGREES THAT SYMPLY SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, SECONDARY OR CONSEQUENTIAL DAMAGES, OR FOR THE DAMAGE, INJURY, OR LOSS OF LIFE, PROPERTY OR OTHER PRODUCTS THE PURCHASER CONNECTS TO THE PRODUCT, OR LOSS OF REVENUE OR DATA, WHETHER BASED ON CONTRACT, TORT, PRODUCTS LIABILITY OR ANY OTHER LEGAL THEORY, EVEN IF THE DAMAGE, INJURY OR LOSS IS CAUSED BY THE NEGLIGENCE OR OTHER FAULT OF SYMPLY. THE FOREGOING WARRANTY IS THE ONLY WARRANTY MADE BY SYMPLY, AND SYMPLY MAKES NO OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This Limited Warranty shall be governed by the laws of England and the parties hereby submit to the exclusive jurisdiction of the English courts for that purpose. If any provision is declared void or unenforceable by a court of competent jurisdiction with respect to circumstances, such provision shall remain in full force and effect in all other circumstances. If any provision is declared entirely void or unenforceable by a court of competent jurisdiction all other provisions of these Terms and Conditions shall remain in full force and effect.