

NEO® Series Deep Dive Advanced Training (US/CAN/LATAM)

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Questions: Sales@OverlandTandberg.com

Our Presenter



Jan Hillebrandt

**Pre-Sales Manager
South Europe**

jhillebrandt@overlandtandberg.com

Agenda

1. Introduction
2. LTO Fundamentals
3. LTO-9: The latest generation
4. NEO Series Tape Automation
5. Installation & Administration
6. Bar Code Labels
7. Controllers & Cables
8. Resources / Support
9. Summary / Best Practice

Product Portfolio



Tower and rack servers for maximum performance, scale and adaptability

The Overland-Tandberg Olympus server line consists of tower and rack configurations for businesses that require value, flexibility and a range of performance needs. The servers provide a balance of performance and storage capacity for future growth. They provide a mix of features to maximize performance, scale to meet future demands, and adapt to virtually any workload.



Storage line from NAS/SAN/DAS to cloud-scale architectures

The Overland-Tandberg Titan storage line ranges from NAS/SAN/DAS products for entry level customers up to cloud scale, high density, active and deep archive, scale-up/out storage architecture for data center customers. Powerful performance, exceptional data integrity and availability, and service and support infrastructure to help organizations meet their growing IT needs.



Backup, archive and disaster recovery based on LTO Ultrium tape technology

NEO Series solutions provide unlimited storage space for backup, archive and disaster recovery of digital assets. NEO Series solutions improve business efficiency, eliminate costly downtime and deliver the lowest cost of ownership of any storage technology. Large storage capacities combine with easy-to-use, highly reliable, cost-efficient platforms where data can be securely stored.



The trusted removable disk technology

Overland-Tandberg RDX removable disk solutions are an established standard. Tough, shock-proof, portable design is built for today's remote worker for quick backup of smart devices via USB. Small businesses with limited IT staff can easily manage backup, disaster recovery and archiving for laptops, servers, NAS devices or POS terminals. Air-gap and encryption features help protect against cyber attacks. RDX WORM cartridges ensure compliant archiving. High reliability, low service cost and manageability let RDX pay for itself.



Introduction



Where are removable media used today?



Healthcare



Retail



**Restaurants
+ Franchises**



Hospitality



Professionals



Oil & Gas



Education



Government



Telecom



**Broadcast
Media**



**Public
Safety**



Financial



Construction



**High Tech
Aerospace**

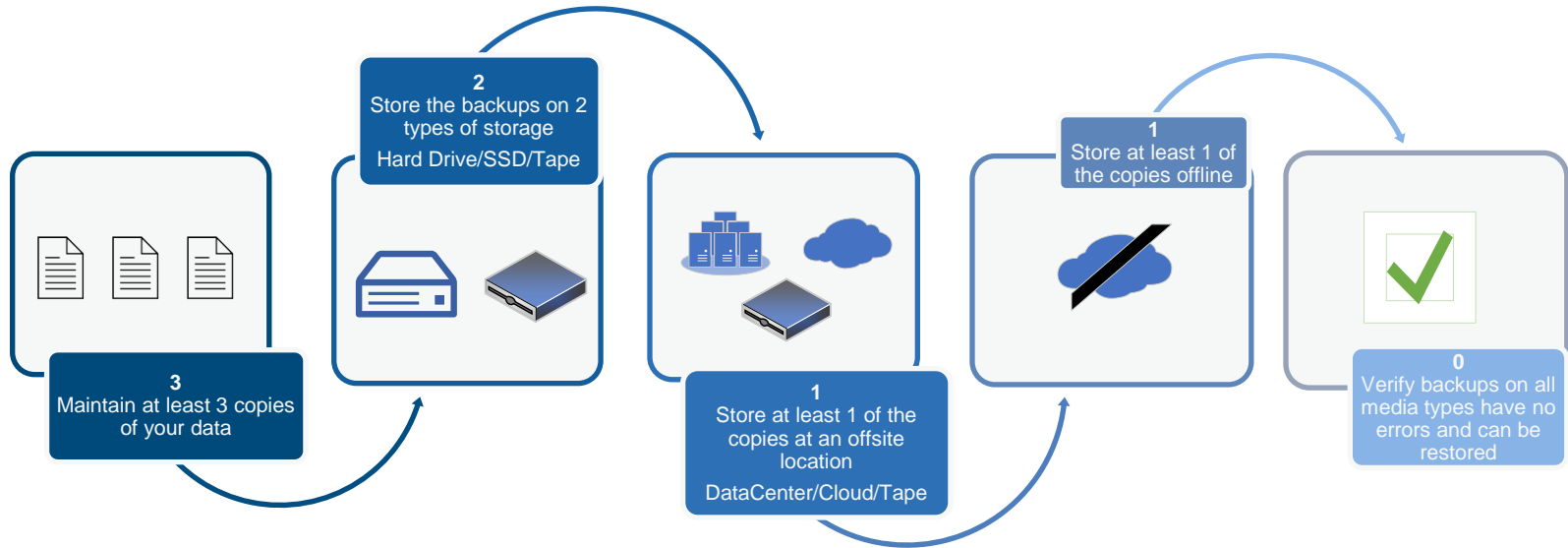


Automotive



Research

3-2-1-1-0 Backup concept incl. AIR GAP



Perform Regular Tests of Backups and Recovery

Data that is subject to frequent changes should be tested more often. If new applications or software are installed on computers—tests and restores should be performed more frequently.

Long Term and Active Archiving

Sometimes you don't need data readily available, but it might need to be accessed at a later time. LTO tape storage can provide for years of protection at a cost much lower than other storage solutions.

Active archiving provides users an automated means to store and manage all archive data by integrating HDDs, SSDs, and tape in the data center or cloud. Active archiving significantly improves tape access time by using HDD or SSD as a cache buffer for tape libraries.



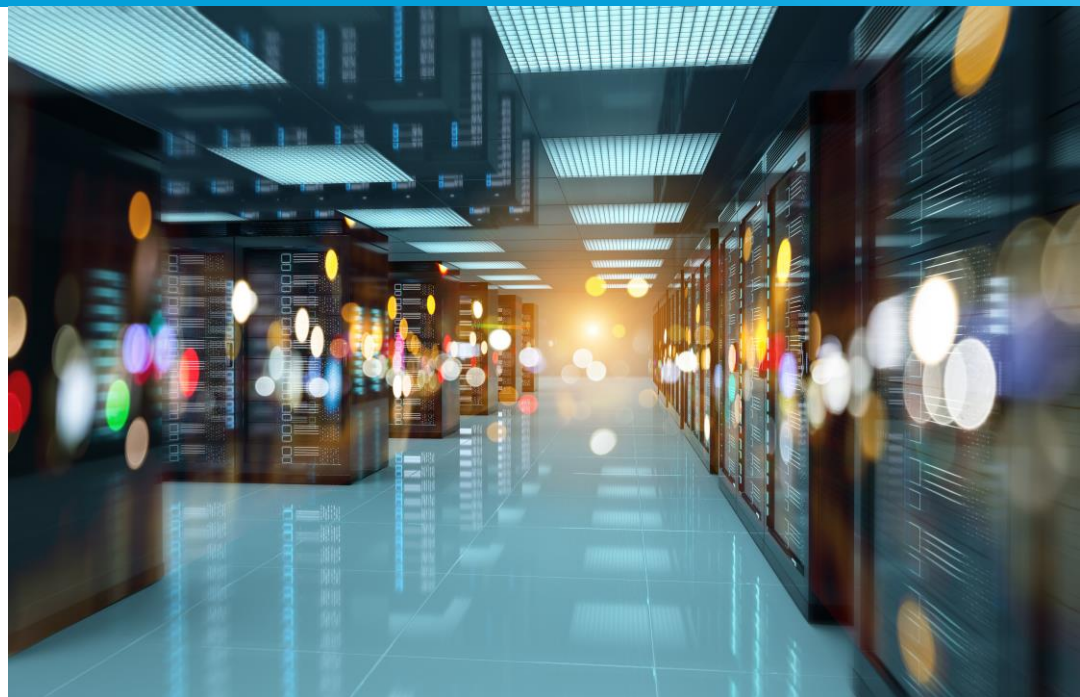
We are proud member of the
Active Archive Alliance

Nearline Storage

Sometimes files need to be in an intermediate state between online storage (very rapid access to data) and offline storage (infrequent access to data) called nearline storage.

With high data transfer speeds, low cost and high capacity, LTO tape is perfect for managing nearline data and bringing it online very rapidly when required.

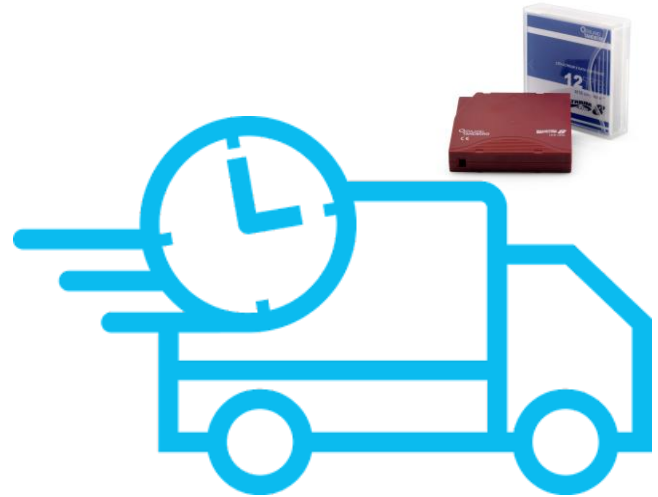
Note: Cost for nearline storage is as low as 0,01\$ per GB!



High Capacity Transfer

Even with some of the fastest connections, transferring terabytes or petabytes of data to the cloud or a remote data center can take days and tax your network resources.

A shipment of an LTO tape can not only get the data there faster in some cases, but it also provides a backup to the original.

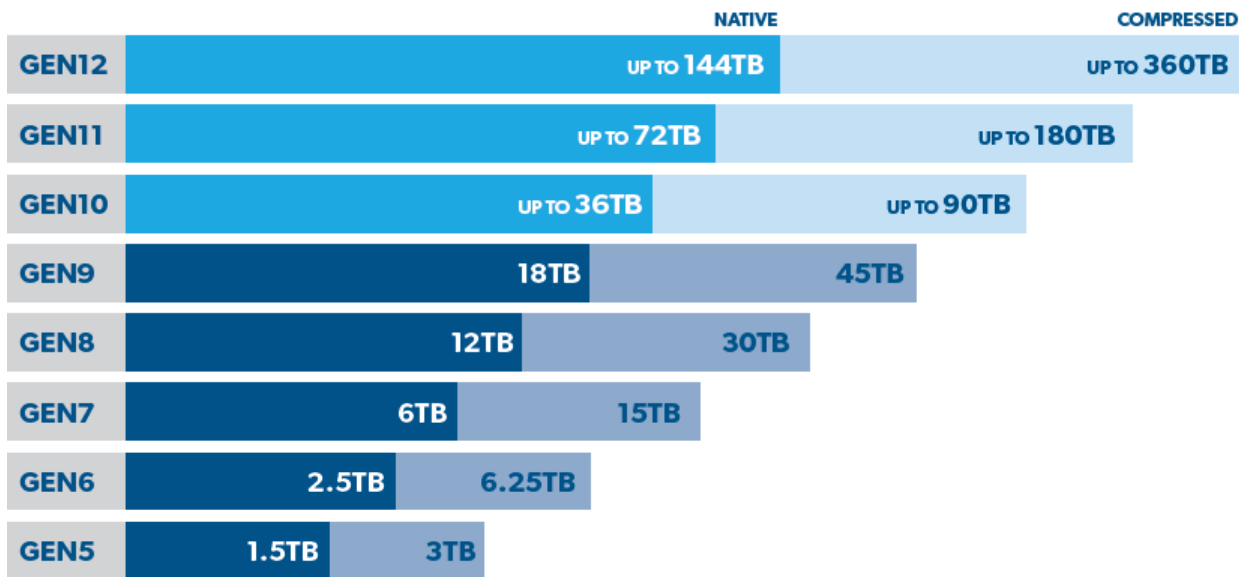




LTO Technology Fundamentals

LTO-9: Increased Storage Capacity

Realize 50% more storage capacity on LTO-9 media over LTO-8 media



Tape Drive/Media Compatibility Matrix

		Media								
		LTO-9	LTO-8	LTO-7	LTO-6	LTO-5	LTO-4	LTO-3	LTO-2	LTO-1
Drives	LTO-9	R/W	R/W							
	LTO-8		R/W	R/W						
	LTO-7			R/W	R/W	Read				
	LTO-6				R/W	R/W	Read			
	LTO-5					R/W	R/W	Read		
	LTO-4						R/W	R/W	Read	
	LTO-3							R/W	R/W	Read
	LTO-2								R/W	R/W
	LTO-1									R/W

LTO Single Drives



Internal 5,25" HH
LTO-7, LTO-8, LTO-9
SAS/FC



External HH
LTO-7, LTO-8, LTO-9
SAS

Performance (native/compressed): 300 MB/s (750 MB/s)

Capacities (native/compressed): 6TB/15TB (LTO-7), 12TB/30TB (LTO-8), 18TB/45TB (LTO-9)



LTO features

- Linear Tape File System (LTFS) functionality for easy file access and drag and drop performance
- AES-256 bit data encryption, with core hardware encryption and decryption capabilities
- Ransomware protection
 - Write-once-read-many (WORM) functionality
 - Physical “air gap” barrier

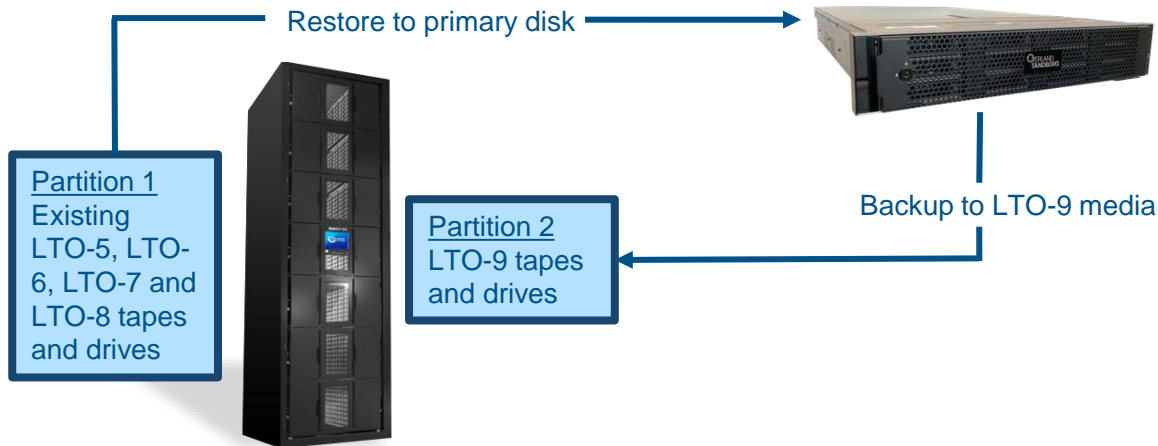
LTFS
Linear Tape File System



Data Migration 1/2

Customers have two basic options for migrating data

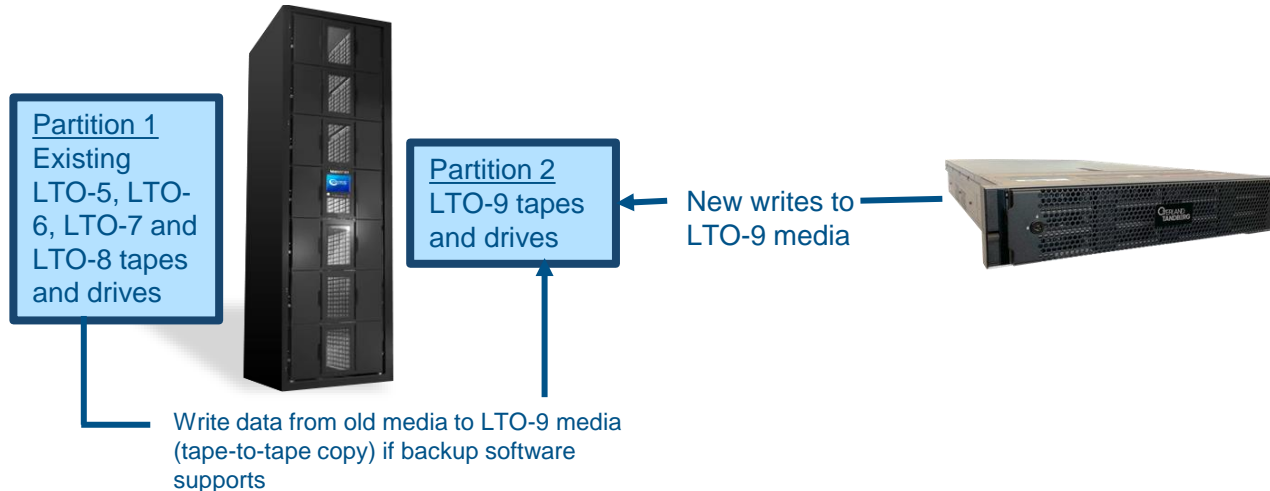
1. Hard Migration – Restoring data from LTO older generation media to primary storage and then backing it up again to new media using latest generation drives



Data Migration 2/2

Customers have two basic options for migrating data

2. Soft Migration – Making tape-to-tape copies directly without having to restore the data to disk first before writing to the new media. This capability varies by the backup/archive software application being used.



LTO - Highlights

LTO is an open standard – all drives and media must work with each other
BUT: Inter-generational compatibility is limited

LTO has a very high storage density

Compression depends on the data

LTO media have an extremely low cost/TB

Native connectivity is SAS and FC

Archive Storage up to 30 years



All you need to know about LTO-9

LTO-9: Increased Storage Capacity

How is 45TB of data per media achieved?

- 2.5:1 data compression
- TMR (Tunneling Magnetoresistance) head
- BaFe (Barium Ferrite) media
- 32 Channel, 3 bump WRW head, 2 direction read after write
- 280 wraps, 8,960 tracks, enabled with **smaller** (1.16 μ m) **track pitch**
- 545kbp/track bit **density**
- 1,035m **tape length**, 5.2 μ m **tape thickness**



LTO-9: Media Initialization / Optimization

Media optimization is a new feature for the LTO-9 tape drive with LTO-9 media

Considerations for media optimization:

- Media optimization **averages 40 minutes** per first load of a cartridge to a tape drive. Although most media optimizations will complete within 60 minutes some media optimizations may take **up to 2 hours**.
- Interruption of the process is not recommended.
- A different mount will not necessarily improve the time to complete the one-time optimization.



LTO-9: Library Firmware Enhancements

The NEOxl 40 and NEOxl 80 LTO-9 library firmware can initialize LTO-9 media in designated drives while performing read and write operations in other drives

- Initialization is done via a WebGUI Wizard application
- Customer designates media and drives to perform the initialization in the Wizard
- Reduces the waiting time of the user by not having to initialize each piece of media via single load commands

**OVERLAND
TANDBERG**
LTO-9 New Media Initialization Wizard

Information
▶ **Select Cartridges**
Select Drives
Finish

Select Cartridges

Select the cartridges you want to be initialized.
NOTE: If a cartridge has not been previously loaded into a tape drive, the cartridge generation cannot be recognized without a valid barcode label.

Available Cartridges			
Slot	Barcode	Gen.	Init.
1.5	No Label	N/A	N/A

Selected Cartridges			
Slot	Barcode	Gen.	Init.
1.37	F30033L9	9	N/A

Buttons: >> << Select All Select All Back Next Finish Exit



NEO[®] series – Tape Automation Solutions

NEO Tape Automation Portfolio

neoserIES®

All NEOs and NEOxl libraries are compatible with LTO-9 drives via a firmware update



rack enclosure not included



NEOs StorageLoader



NEOs T24



NEOxl 40



NEOxl 80



The NEO Tape Automation Portfolio

Maximum library storage capacity increases by 50% with LTO-9



	NEOs StorageLoader	NEOs T24	NEOxl 40	NEOxl 80
# Slots	8	24	40	80
# Drives	1	Up to 2	Up to 3/module	Up to 6/module
Maximum Capacity (TB)	360*	1,080*	1,800*/module 12,600* total	3,600*/module 25,200* total
Transfer Rate (TB/hr)	1.0-2.7*	1.0-5.4*	1.0-8.1*/module	1.0-16.2*/module
Form Factor	1U	2U	3U+	6U+



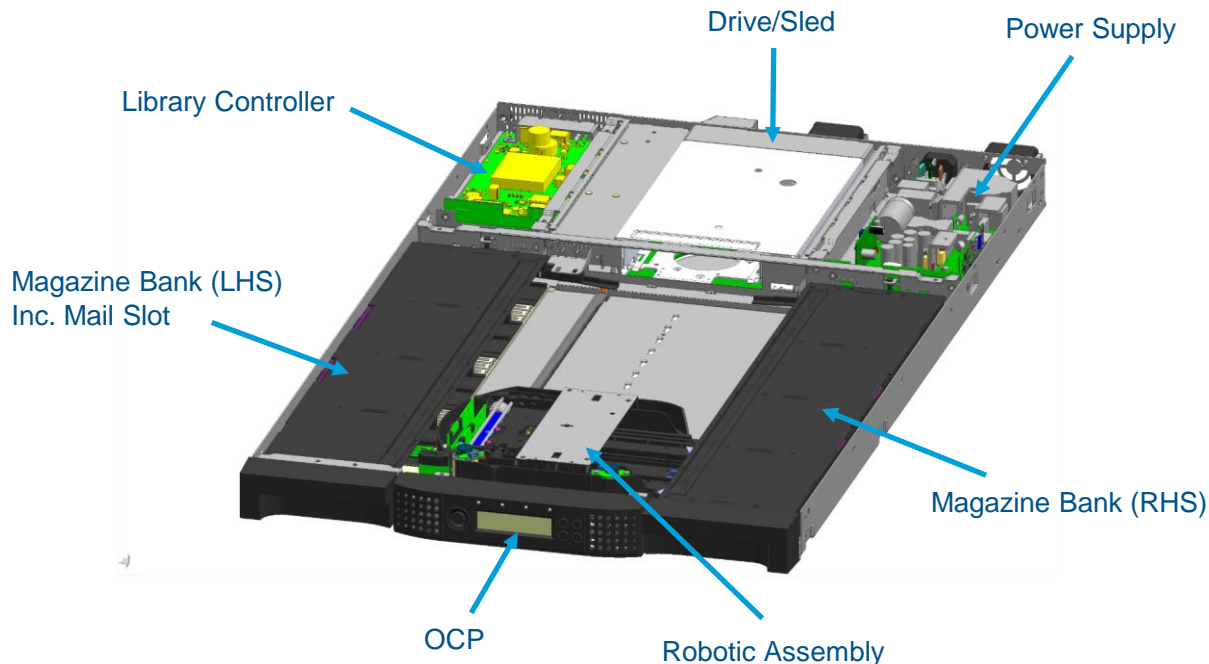
NEOxl 80 Scaled**

Performance scales when adding modules in the NEOxl 40 and NEOxl 80 products



NEO Tape Automation – inside views

NEOs StorageLoader



GENERAL

Drive Type	Half-height
Interface-Type	SAS, Fibre Channel
Form Factor	1U

CONFIGURATION

Drive Capacity	1x HH Drive
Slot Capacity	8
Mailslot Quantity	1
No. of Magazines	2

CAPACITY

Native Capacity	max. 144TB (LTO-9)
Compressed Capacity	max. 360TB (LTO-9)

RELIABILITY

Robotic MCBF	2.000.000 cycles
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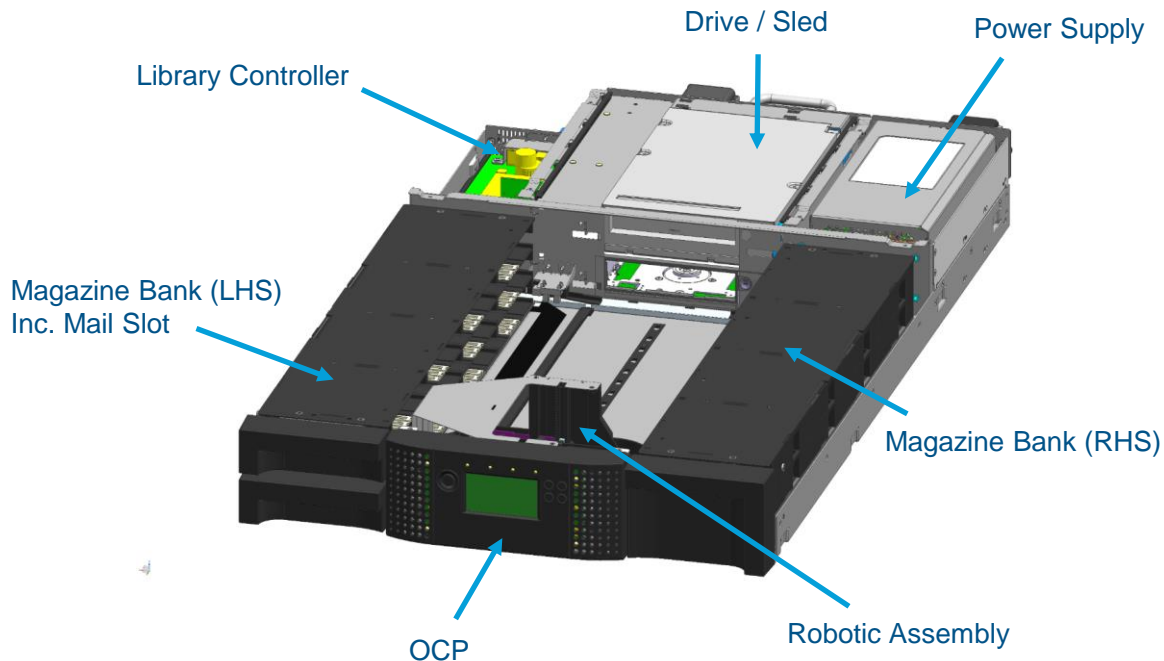
ACCESS AND OPERATION

Front Operator Panel	LCD
Remote Management Interface	Web-based Password-protected

POWER

Power Supply	1
Input Voltage	100-240 VAC (50-60Hz)
Power Supply	80W

NEOs T24



GENERAL

Drive Type	Half-height
Interface-Type	SAS, Fibre Channel
Form Factor	2U

CONFIGURATION

Drive Capacity	2x HH Drive
Slot Capacity	24
Mailslot Quantity	1
No. of Magazines	2

CAPACITY

Native Capacity	max. 432TB (LTO-9)
Compressed Capacity	max. 1.080TB (LTO-9)

RELIABILITY

Robotic MCBF	2.000.000 cycles
--------------	------------------

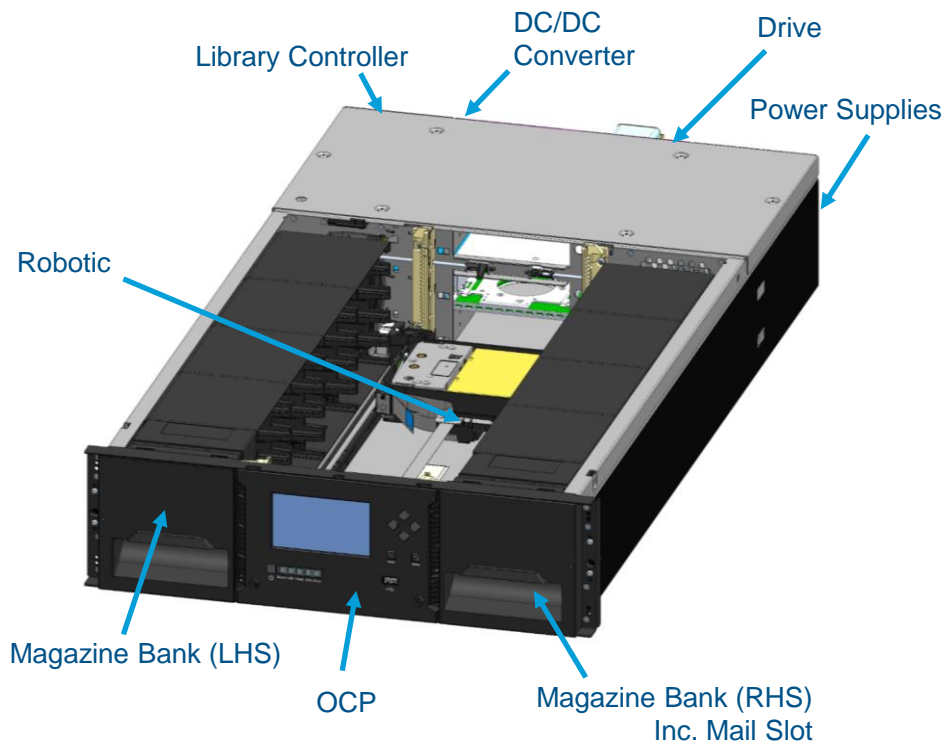
ACCESS AND OPERATION

Front Operator Panel	LCD
Remote Management Interface	Web-based Password-protected

POWER

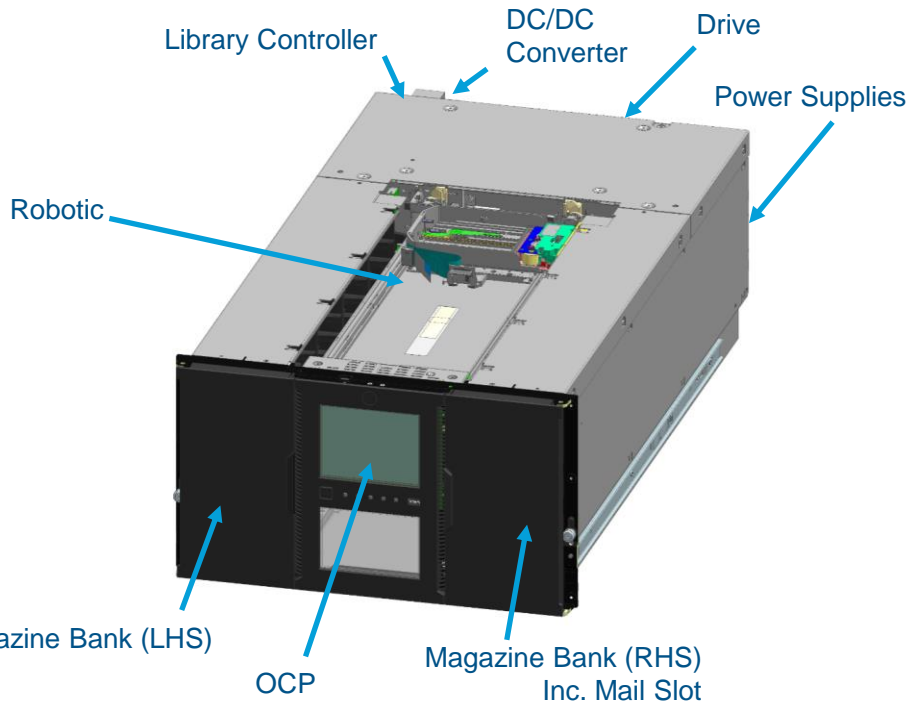
Power Supply	1
Input Voltage	100-240 VAC (50-60Hz)
Power Supply	160W

NEOxi 40



GENERAL	BASE MODULE	FULL STACK
Drive Type	Half-height	
Interface-Type	SAS, Fibre Channel	
Form Factor	3U	max. 21U
CONFIGURATION		
No. of Modules	1 Main Module	Main Module with 6 Expansions
Drive Capacity	3x HH Drive	max. 21x HH Drive, mixing possible
Slot Capacity	40	280
Mailslot Capacity	5	max. 35
No. of Magazines	2	14
CAPACITY		
Native Capacity	max. 720TB (LTO-9)	max. 5.04PB (LTO-9)
Compressed Capacity (2.5:1)	max. 1.8PB (LTO-9)	max. 12.6PB (LTO-9)
RELIABILITY		
Robotic MCBF	2.000.000 cycles	
ACCESS AND OPERATION		
Front Operator Panel	LCD	
Remote Management Interface	Web-based Password-protected	
POWER		
Power Supply	1 (+1 option)	
Input Voltage	100-240 VAC (50-60Hz)	
Power Supply	300W each	

NEOxI 80



GENERAL	BASE MODULE	FULL STACK
Drive Type	Half-height	
Interface-Type	SAS, Fibre Channel	
Form Factor	6U	max. 42U
CONFIGURATION		
No. of Modules	1 Main Module	Main Module with 6 Expansions
Drive Capacity	6x HH Drive	max. 42x HH Drive, mixing possible
Slot Capacity	80	560
Mailslot Capacity	10	max. 70
No. of Magazines	2	14
CAPACITY		
Native Capacity	max. 1.440TB (LTO-9)	max. 10.08PB (LTO-9)
Compressed Capacity (2.5:1)	max. 3.6PB (LTO-9)	max. 25.2PB (LTO-9)
RELIABILITY		
Robotic MCBF	2.000.000 cycles	
ACCESS AND OPERATION		
Front Operator Panel	LCD	
Remote Management Interface	Web-based Password-protected	
POWER		
Power Supply	2	
Input Voltage	100-240 VAC (50-60Hz)	
Power Supply	300W each	



NEO Tape Automation - Installation

Where to place a tape module?

Safety:

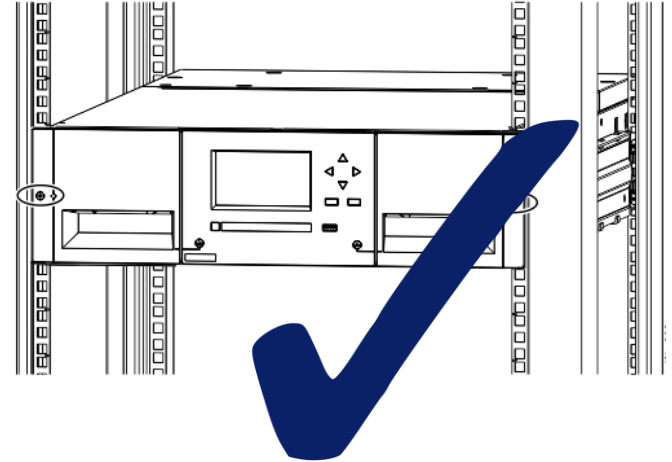
- locate the library and all shelf-resident cartridges in an area where access is controlled

Air quality:

- Place the library in an area with minimal sources of particulate contamination.
- Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, printers, and smoke-filled rooms.
- Excessive dust and debris can damage tapes and tape drive.

Rack:

- Do not place the library on the bottom of the rack (dust/comfort)



Installation

- always check the Quick Start Guides that come with the libraries
- NEOs and NEOxl have different specifications
- Expansion modules have their own Quick Start Guides

OVERLAND TANDBERG Quick Start Guide

NEOs™ T24 2U Tape Library



IMPORTANT: The shipping lock, which prevents the library accessor from moving, **must be removed** before the library is powered ON.

NOTE: If the temperature in the room where the library will be installed varies by 25°C (30°F) from the room where the library was stored, allow the library to acclimate to the surrounding environment for at least 12 hours before unpacking it.

The shipping lock is held in place with a label and is located in the top center of the library. After the shipping lock is removed, store it on the right side of the back panel for future use.

1. Using two people, remove the library from its box and set it on a secure surface.
2. Remove blue securing label.



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NEOxl 80 6U Tape Library Base Module Quick Start Guide

Step 1

It is **essential** that you activate your warranty. Technical and warranty support are **not available** until the warranty is active. The serial number is located on the pull-out tab at the rear.



Enter only the core characters skipping the parenthesis, "PN:", and "SN:" components.



This document describes how to install a NEOxl 80 6U Tape Library Base Module. Expansion Modules can be added to the Base Module to enhance the system.

Step 2

WARNING: Due to the weight of the module, it is recommended that at least two people be used to lift the module out of the box to prevent injury.

WARNING: Um Verletzungen zu vermeiden, empfehlen wir aufgrund des Gewichts des Moduls, dass mindestens zwei Personen das Modul aus der Verpackung heben.

AVERTISSEMENT: En raison du poids du module, il est recommandé d'utiliser deux personnes au moins pour soulever l' module hors de la boîte pour éviter les blessures.

NOTE: If the temperature in the room where the module will be installed varies by 25°C (30°F) from the room where the boxed module was stored, allow it to acclimate to the surrounding environment for at least 12 hours before unpacking it.

from its box and

OVERLAND TANDBERG

NEOxl 80 6U Expansion Module Quick Start Guide



This document describes how to add an optional Expansion Module to a NEOxl 80 6U tape library system.

Step 1

It is **essential** that you activate your warranty. Technical and warranty support are **not available** until the warranty is active.

Step 2

WARNING: Due to the weight of the module, it is recommended that at least two people be used to lift the module out of the box to prevent injury.

WARNING: Um Verletzungen zu vermeiden, empfehlen wir aufgrund des Gewichts des Moduls, dass mindestens zwei Personen das Modul aus der Verpackung heben.

AVERTISSEMENT: En raison du poids du module, il est recommandé d'utiliser deux personnes au moins pour soulever l' module hors de la boîte pour éviter les blessures.

NOTE: If the temperature in the room where the module will be installed varies by 15°C (30°F) from the room where the boxed module was stored, allow it to acclimate to the surrounding environment for at least 12 hours before unpacking it.

ask kit for easy a 19-inch

OVERLAND TANDBERG

Unpack the Module



NEO Tape Automation - Administration

Remote Interface in NEOs Storagelader and T24

Identity	Status	Configuration	Operations	Service						
System	<i>Logical Libraries</i>	<i>License Key</i>	<i>Drive</i>	<i>Network</i>	<i>SNMP</i>	<i>User</i>	<i>Date/Time</i>	<i>Log</i>	<i>Email Notification</i>	<i>Restore Defaults</i>

System Configuration	
Library Master Drive	1 ▾
Library Mode	<input type="radio"/> Random <input type="radio"/> Sequential <input checked="" type="radio"/> Automatic <input type="checkbox"/> Autoload <input type="checkbox"/> Loop
Active Slots	23 ▾
Telnet Enabled	<input type="checkbox"/>
Mailslot Enabled	<input checked="" type="checkbox"/>
Auto Clean Enabled	<input type="checkbox"/>
Barcode Label Length Reported To Host	15 ▾
Barcode Label Alignment Reported To Host	Left ▾
Select Language	English ▾
Enable Extended Mode	<input type="checkbox"/>

This screen allows the user to change the system configuration.

Remote Interface in NEOxl 40/80

The screenshot displays the NEOxl 40/80 Remote Interface. At the top is the **Top Banner** with a navigation bar containing Home, Logout, and Help (?) buttons. It also shows the library health status, current status (Idle), the name 'Top Banner', the time (13:54:23), the date (07/13/2018), and the user (administrator). The interface is divided into three main panes:

- Left Pane:** Displays library identity (Serial #: DE08101108, Hostname: TL-1C247A, IPv4: 10.20.64.41, Firmware: 2.60) and module status (Module 1 (Base) with 3 drives, all empty).
- Center Pane:** Features the 'neoserries' logo and six main function buttons: Open Mailslot, Open Magazine, Configuration, Maintenance, Operation, and Status.
- Right Pane:** Shows a 'Recent Events' log with a list of system activities, including user logins, logouts, and configuration backups.

Top Banner – Contains the Home, Logout, and Help (?) buttons and displays the overall status and general information about the library and user.

Left Pane – Displays the library identity and module status.

Center Pane – Provides access to operate and configure the library and to view additional status information.

Right Pane – Displays a log of recent events (Home page default) or additional functions when a Center Pane option is selected



LTO Bar Code Label - small thing, big impact

LTO Bar Code Labels

Overland-Tandberg recommends putting a bar code label on each LTO data and cleaning cartridge used with the NEO tape library.

The bar code label contains:

- A human-readable volume serial number
- A bar code the NEO library can read
- Identification whether the cartridge is a data or cleaning cartridge

- The LTO cartridge label uses the bar code symbology of USS-39



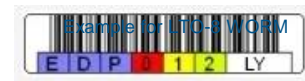
Only upper case alpha A through Z or numeric 0 through 9 characters are allowed.

How to identify LTO Bar Code Labels?

L1 corresponds to LTO-1
L2 corresponds to LTO-2
L3 corresponds to LTO-3
L4 corresponds to LTO-4
L5 corresponds to LTO-5
L6 corresponds to LTO-6
L7 corresponds to LTO-7
L8 corresponds to LTO-8
L9 corresponds to LTO-9



WORM Generation 1 Tapes (LR)
WORM Generation 2 Tapes (LS)
WORM Generation 3 Tapes (LT)
WORM Generation 4 Tapes (LU)
WORM Generation 5 Tapes (LV)
WORM Generation 6 Tapes (LW)
WORM Generation 7 Tapes (LX)
WORM Generation 8 Tapes (LY)
WORM Generation 9 Tapes (LZ)



Cleaning Tapes

Auto cleaning setting in the library – add cleaning tapes with CLNxxxL1x labels. Some customers prefer to use software scheduling for cleaning but setting it up in the library is better (?)

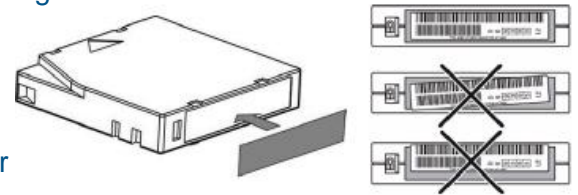
Cleaning tapes – 50 uses only. Multiple cleans and often (every day) causes damage to the read/write head. Once per week is usually enough for common usage.



Example for LTO-7 Cleaning Cartridge

Potential issues with LTO Bar Code Labels

- Do not place any type of mark on the white space at either end of the bar code. A mark in this area may prevent the NEO tape library from reading the label.
- Tapes labeled with the wrong media identifier may be prevented from being inserted into a drive by the library or the ISV application.
- Cleaning cartridges that are not labeled as cleaning cartridges may be prevented from being used in a cleaning operation.
- Data cartridges labeled as cleaning cartridges may be inserted in a drive for a cleaning operation, but the cleaning will not be possible.
- Disoriented labels located in the correct recessed location of the cartridges may fall off or become jammed in the drive and cause a drive failure.
- Disoriented labels may be read by some libraries in some locations but not by all libraries or in all slot locations.
- Labels placed anywhere but the correct recessed location of the cartridge specifically designed for them may become jammed in the drive and cause a drive failure.
- Labels with more characters than recommended may lead to inconsistent ability to read the label



SAS Connector, HBAs & Cables

SAS Connectors

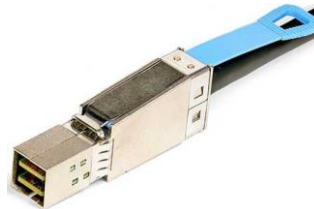
Make sure to choose the right connector

The SAS connector for the external and automation LTO-9 drives has changed to SFF-8644 as it is compliant with the SAS 3.0 spec and supports 12Gb/s data transfer protocol

Drive Generation	External & Automation Drives	Internal Drives
LTO-7	SFF-8088 (Mini SAS)	SFF-8482
LTO-8	SFF-8088 (Mini SAS)	SFF-8482
LTO-9	SFF-8644 (Mini SAS HD)	SFF-8482



SFF-8088



SFF-8644



SFF-8482

LTO-9: HBAs



	OV-HBASAS12Gb4	OV-HBASAS12Gb8	OV-HBAFC16Gb
Data Rate:	12 Gb/s	12 Gb/s	16 Gb/s
Transfer Rate:	9,600 MB/s	9,600 MB/s	3,200 MB/s
Ports:	4 Int/ 4 Ext	8 External	2
Bus Type:	PCIe 4.0	PCIe 4.0	x8 PCIe 3.0
Included Optics:	N/A	N/A	2 SFP+

12Gb/s SAS HBAs can be used with LTO-9 Drives;
throttled-down 6Gb/s performance realized when used with LTO-7 or LTO-8 drives

LTO-9: SAS Cables

12Gb/s SAS HBAs require new SAS cables

OT PN	Description	Where used?
OV-CBLE8088FAN	2M external SAS 4-way fanout cable – mini-SAS HD (SFF-8644) to (4x) mini-SAS (SFF-8088)	For use with 12Gb/s SAS HBA & up to 4 total LTO-7 and/or LTO-8 SAS automation and/or external drives. Two of these cables can be used to attach up to 8 drives when used with OV-HBASAS12Gb8 12Gb/s SAS HBA.
OV-CBLE8644FAN	2M external SAS 4-way fanout cable – mini-SAS HD (SFF-8644) to (4x) mini-SAS HD (SFF-8644)	For use with 12Gb/s SAS HBA & up to 4 total LTO-9 SAS automation and/or external drives. Two of these cables can be used to attach up to 8 drives when used with OV-HBASAS12Gb8 12Gb/s SAS HBA.
OV-CBLEXT8088	2M external SAS cable – mini-SAS HD (SFF-8644) to mini-SAS (SFF-8088)	For use with 12Gb/s SAS HBA & 1 LTO-7 or LTO-8 SAS automation or external drive
OV-CBLEXT8644	2M external SAS cable – mini-SAS HD (SFF-8644) to mini-SAS HD (SFF-8644)	For use with 12Gb/s SAS HBA & 1 LTO-9 SAS automation or external drive
OV-CBLINT8482	0.5M internal SAS cable - mini-SAS (SFF-8643) to 4x29 Pin (SFF-8482) with SAS 15 Pin Power Port	For use with only the OV-HBASAS12Gb4 12Gb/s SAS HBA & up to 4 LTO-7, LTO-8 or LTO-9 internal SAS drives



Service and Support

Resources / Support

Service & Support Details:

<https://www.overlandtandberg.com/service-support/contact-service-support/>

Documentation & Knowledge Base:

<https://overlandtandberg.atlassian.net/wiki/spaces/KNOW/pages/104726594/>

[Tape+Archive+Solutions+NEO+LTO+Drives](#)

Downloads:

<https://ftp.overlandtandberg.com/>

- Drivers
- Firmware
- Utility

Knowledge Database

Direct link: [Overland-Tandberg Knowledge Base NEO series & LTO Drives](#)

Tape Archive Solutions (NEO & LTO Drives)



Created by Dean Urban (Unlicensed)
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Documents related to Overland-Tandberg Tape Archive Solutions (NEO & LTO Drives) can be found in this section and corresponding subsections. General documents that relate to the category or a combination of products are listed further down on this page. You can either choose a specific document from that list or use the search option to narrow your choices.

For additional information on compatible HBA devices, refer to our online [Overland-Tandberg SAS & FC HBA Compatibility Matrix](#).

Click a link below to see documents for a specific product type.

[NEO & LTO Firmware/Driver Links & Release Notes](#)

[NEO & LTO Manuals & Guides](#)

[NEO & LTO Technical Bulletins & FAQs](#)

[NEO Integration & Solution Briefs](#)

Logs

- O-T Support always needs a detailed description of the issue
- both library and drive logs are needed, even for issues that seem only related to one or the other.
- Drive logs can also be obtained using ITDT (IBM Tape Diagnostic Tool)

Identity: Status: Configuration: Operations: Service

General Drive Firmware Reboot **Library Logs** Clean Cartridge
Diagnostic Diagnostic Drive Memory

Logs

Log Type: Error Trace

Total Number Of Entries: 3

Start Entry: 1

Number Of Entries Per Page: 5

Update Clear Log Dump Log Save Service Dump

```
18.09.02 10:37:35.23 LIB/ERR <80 F3 01 00 2B 00 00 00 00 00 00 00 FF 04  
01 FF FF FF 00 20 20 20 20 20 20 20 20 20 20 20  
20 20 20 20 20 20 00 00 00 00 00 00 00 00  
00 > HE: drive broken: needs repair  
18.09.01 08:21:36.36 LIB/ERR <80 F3 01 00 2B 00 00 00 00 00 00 FF 04  
01 FF FF FF 00 20 20 20 20 20 20 20 20 20 20
```

Maintenance > Download Drive Logs

Drive Logs

Please select a drive first

Drive	Type	Firmware	Serial	Module	Partition
<input type="checkbox"/>	1	IBM - LTO5 - HH - SAS G9N1	11C247A0B5	1	1
<input type="checkbox"/>	2	IBM - LTO5 - HH - SAS O9N1	11C247A0BF	1	1
<input type="checkbox"/>	3	IBM - LTO6 - HH - SAS H991	11C247ADC9	1	2

Save ...



Summary / Best Practices

LTO Tape Backup - Best Practices

To ensure that your tape backups are securely stored, you should deploy the following tape backup practices:

1. Enable **data encryption** to protect your data from unauthorized access. (AME, or KMIP license available for NEOxl 40/80)
2. Transport tapes **offsite** as soon as you finished backing up data. This allows you to minimize the risk of them being stolen from you.
3. Select a reliable **data protection solution** capable of performing tape backups and protecting the entire infrastructure.
4. Ensure that a limited number of **trustworthy employees** have access to the place where the tape backups are stored.

LTO Tape Backup – Take care of the cartridges!

Even though some tape cartridges can last up to thirty years, their state may significantly deteriorate without proper care and maintenance. If a tape gets damaged, you will not be able to retrieve the data it contains.

To protect tape drives, you should do the following:

1. Keep your tape cartridges in their boxes when not in use.
2. Store tapes in a cool, dry place; do not expose them to direct sunlight or heat.
3. Follow the manufacturer's instructions when cleaning tape cartridges.
4. Avoid storing tapes alongside electronic devices which can produce strong magnetic fields.
5. Keep the record of existing tapes to know exactly where the required information is stored. Moreover, when transporting multiple tapes from across sites, you can be sure that no tape cartridges are left behind.



Performance Considerations

Setting expectations: compression is not guaranteed

LTO performs best with steady streams of data

LTO drives can adapt their speed – within limits!

Avoid “shoe-shining”

The tape drive is only one element – consider:

- the data structure

- the performance of the backup server(s)

- the performance of the source storage

- the bandwidth between source storage and backup server(s)

Top 7 Benefits of Tape Automation

Longevity: 30-year lifespan, durable cartridges

Security: cyber-resilience through air-gap, GDPR & compliance with WORM

Portability: easy transport, to off-site location

Efficiency: no power consumption when not in use, small carbon footprint

Scalability: scalable in capacity and performance by additions expansions

Capacity: LTO-cartridges hold large capacities in small shape

Cost: lowest cost per GB, reduces data center floorspace

Resources: NEO Series

- [NEO Series Overview](#)
- NEO xl 80 | [Page](#) | [Data Sheet](#) |
- NEO xl 80 25.2 PB – Expansion | [Data Sheet](#)
- NEO xl 40 | [Page](#) | [Data Sheet](#)
- NEO T24 | [Page](#) | [Data Sheet](#)
- NEO StorageLoader| [Page](#) | [Data Sheet](#)
- LTO Drives| [Page](#) | [Data Sheet](#)
- LTO Ultrium Tape Media| [Page](#) | [Data Sheet](#)

Thank You !

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