



Overland Storage Libraries — Enterprise Storage for an Open Systems Environment

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Management Summary

Have you ever watched a child play with a set of *Legos*? They consist of different colored building blocks, with many different shapes. The creative child starts by making a single figure, then several figures. After that, the child may take the figures apart and reuse the blocks to make a larger shape, a building or a rocket, perhaps. No matter what the shape, no matter what the color, the bricks always fit together into interesting, if not totally functional, creations. The child can put all of the small bricks (components) together to make an object, or all of the medium, or all of the large. Moreover, he can let his imagination run wild and use all of the bricks together.

As we get older, our electronic toys become more sophisticated, more complex, and more expensive. However, they remain based upon the same component architecture as Legos, independent pieces that fit together to make a whole. Take our entertainment systems, for example. We choose a tuner from one manufacturer, a CD player from a second, a DVD player from another, speakers from a company that specializes in them. We seek to find the best combination we can, integrate them into a rack, and turn on the power for great sound. Well, the same component architecture that we use in our toys turns out to become a useful tool in the data center.

One of the biggest problems facing Information Technology (IT) teams in every data center across the country, in fact, around the world, is the storing, protection, archiving, and management (SPAM) of rapidly expanding data. Corporate interests dictate what data needs to be recoverable, and how quickly, to maintain access to the enterprise's mission-critical data. Best industry practices, as well as legislative action, now also dictate what data and which emails need to be preserved to protect the enterprise officers from legal action in the future. **The growth of the data being stored in on-line, primary disk storage has become so dramatic that the IT staff no longer has the adequate means to back it up in the time allotted for that activity.** This overrun of the backup window affects the ability of the enterprise to do business in the face of a data recovery.

The answer rests with the consolidation of backup/recovery resources into an easily managed, scalable solution. Please read on to see how Overland Storage has taken the concept of component architecture and applied it to tape libraries, turning backup and recovery into child's play.

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Data Center Storage Needs

Every data center faces many of the same storage problems. For some, they may be more complex and more heterogeneous than for others. The mix of hardware and operating systems in the data center often dictates what kind of a consolidation or backup and recovery solution is required. For the enterprise with 30 or 40 years of mainframe legacy, IBM and StorageTek have dominated the tape storage market. The ability to integrate enterprise tape drives into a proprietary, mainframe architecture, however, is rapidly becoming a niche market.

Today's data center often consists of a heterogeneous mix of open systems servers running commodity operating systems, with *Linux*, *Windows* and some variant of *UNIX*¹ leading the way. These systems are available from any number of server providers with HP, IBM, and Sun controlling a major portion of that application execution environment. The major providers of the ancillary peripheral equipment, however, are independent manufacturers who provide tape drives and libraries to any number of system providers, and independent VARs, to complete a product offering. Increasingly, we see that systems manufacturers no longer see the necessity to try to "reinvent the wheel" and produce their own peripherals. They see this as best left to the experts, one of whom is Overland Storage of San Diego.

Unfortunately, with this proliferation of vendors and products, we often see an incompatible mix of tape solutions co-resident within the enterprise, not only within the data center, but also across the environment. We will not attempt to describe the different tape formats and architectures that are possible here; that has already been done in a previous bulletin.²

Any data center with legacy hardware will be facing a requirement to integrate or consolidate tape solutions involving AIT, DLT, and LTO architectures, among others. IT staffs will do this to enable the completion of their

primary tasks, backup, recovery, etc., within the time space allotted, or less! In addition, they hope to simplify the operation of the data center, reduce costs, and to increase the availability of tape within a "lights-out" environment. None of these tasks is easy.

The environment that today's IT staff finds does not fit into the schedule posted in the "glass house". Today's backups, neither the incremental nor the full, do not fit within their proscribed windows. An SDLT cartridge does not work with LTO drives; neither does an LTO cartridge with SDLT drives. Small libraries have been dedicated to single use application servers. Some of them may be running with full utilization, most are not. System administrators are assigned to each, to manage the physical resource and to ensure that all data is recoverable. In addition, in a distributed environment, the IT Manager may find remote application servers throughout the network. Each could have its own library, requiring remote management. The CIO has to be able to find a simple solution to manage local and remote resources simply, in order to reduce the costs that have been escalating through the years.

Overland Storage has introduced a set of products that can solve these problems. With the availability of its *NEO* family of libraries, Overland Storage has the scalability and form factor that any data center will appreciate as they implement a staged consolidation of their tape resources into a single platform.

Overland Storage Libraries

The Overland Storage product set consists of three families of scalable library platforms: the *NEO 2000*, the *NEO 4000*, and the *NEO 8000*. In addition, Overland Storage has implemented a high-speed, disk-based backup and recovery platform, the *REO 4000*, to improve those mission-critical operations. This solution returns control of the operation of the data center to its staff, rather than letting backup/recovery force mainstream operations to work around them

All of the Overland Storage libraries are built with a modular component architecture, allowing for early implementation of entry-level configurations, with scalability to allow

¹ AIX, HP-UX, SCO, and Solaris are the major variants found in the data center.

² See **The Clipper Group Explorer** dated May 7, 2004, entitled *Tape Drive Selection – A How-To Guide* at <http://www.clipper.com/research/TCG2004040.pdf>.

for growth as additional functions or departments are added to the environment. Built with Overland Storage's *NEO LiveSwap* feature, **IT staff can remove/replace any supported tape drive (SDLT or LTO) or power supply without interrupting the SCSI bus or power source.**

NEO libraries can interconnect with a single application server or a network of servers directly connected to the library or through a SAN. Using Overland Storage's *Virtual Interface Architecture (V.I.A.)*, the IT staff has four options to connect the library to the server environment:

- High-Voltage Differential Option (HVO)
- Fibre Channel Option (FCO)
- Gigabit Ethernet Option (GEO) and
- Library Partition Option (LPO)

This allows the Overland Storage library to be accessed by a variety of host systems in a manner that most efficiently meets the needs of your networking application and provides the library with the best possible network performance. (See Exhibit 1.) Host connections include UNIX, Linux, NetWare, and Windows NT/2000 servers.

Overland Storage also provides the IT staff with a web-based management tool, *WebTLC*, to monitor your library and control its functions from any browser. WebTLC enables the ability to check the system, move tapes, load/unload drives, upload firmware upgrades, make configuration changes, and perform diagnostics, from anywhere.

Now let's look at each platform to understand their scalability and flexibility.

NEO 2000

Designed to provide tape resources to the SMB or small department in a larger enterprise, the NEO 2000 is an entry-level platform capable of supporting two drives, and up to 30 cartridges per module within a non-stop operation. Using SDLT 600 drives, the NEO 2000 can support up to 26 cartridges with 300GB of uncompressed data on each, for a total of 7.8 TB, with a throughput of 129.6 GB/hour, in a 5U drawer. If the data center standardizes on LTO-2 as a format, then the NEO 2000 can support 30 cartridges with an

Exhibit 1 –

Virtual Interface Architecture. Options

- **HVO** – A generation bridge between NEO Series libraries and the installed base of HVD SCSI based systems.
- **FCO** – Enables simple, massive data movement across the SAN. Allows up to nine extended operations concurrently. Supports Fabric, Arbitrated Loop, and Point-to-Point.
- **GEO** – Provides the ability to transform a SCSI library into a network-enabled addressable device. Supports NDMP and iSCSI. Ideal for SAN and NAS.
- **LPO** – Enables IT to divide the physical library for use by multiple heterogeneous systems. Creates virtual libraries within a distributed robotics architecture.

uncompressed capacity of 200 GB on each, for 6.0 TB, with a throughput of 108 GB/hour. The data center can interconnect up to eight NEO 2000 modules, consolidating SDLT and LTO needs. This allows up to 16 drives and a maximum compressed capacity of 124.8 TB (SDLT) or 96.0 TB (LTO) and a throughput of 4147.2 GB/hour (SDLT) or 3456 GB/hour (LTO). In addition, each module has two V.I.A. slots to enable host connections for HVD, FC, or Gigabit Ethernet, with an optional capability for library partitioning.

The NEO 2000 has enterprise quality reliability, with an MTBF rating for each drive at 250,000 hours and a MTTR of less than 10 minutes.

NEO 4000

With capacity similar to the NEO 2000, the NEO 4000 provides a highly performant, scalable solution for reliable protection with a slightly larger form factor. With a variety of models - *4100*, *4200*, *4300*, and *4400* – the NEO 4000 can be configured to meet your IT needs. A single module 4100 can support up to 4 drives (SDLT or LTO) and up to 52 (SDLT) or 60 (LTO) cartridges, for a compressed capacity of either 31.2 TB (SDLT) or 24 TB

(LTO) in a 10U rack space. Drive performance for the 4100 is the same as with the NEO 2000, however, with four drives, a single module can support a throughput of 1,036.8 GB/hour (SDLT) or 864 GB/hour (LTO). The 4100 can support up to five V.I.A. controllers for expanded connectivity and performance.

To protect your investment, IT can add additional modules for expanded scalability, with the 4200 supporting 2 modules, the 4300 with 3 modules, and the 4400 with 4 modules. A 4400 can support up to 16 drives and 208 (SDLT) or 240 (LTO) cartridges with the same metrics as the NEO 2000.

NEO 8000

The NEO 8000 is an ideal solution for the high-performance, on-demand SAN environment found in today's enterprise data center. The NEO 8000 is configured with 500 (LTO) or 425 (SDLT) cartridge slots. However, you can order it with as few as 100 (LTO) or 85 (SDLT) slots and activate additional cartridge positions in an on-demand manner, enabling additional capacity as you require it via software key. The data center buys what it needs, when it needs it. This protects the data center investment even before you have made it!

In addition to the cartridge capacity, a single NEO 8000 cabinet can support up to 12 drives. This provides 200 TB (LTO) or 255 (SDLT) TB of compressed capacity and 2,592 GB/hour (LTO) or 3,110 GB/hour of throughput per rack. The NEO 8000 has been designed to support up to 2000 cartridges and 48 drives to ensure that the enterprise cannot outgrow the investment made in Overland Storage products.

Overland Storage Backup/Recovery

If the enterprise needs to reduce the size of the backup window or improve recovery time, the *REO 4000* with its disk-to disk architecture will help to redefine the use of tape in the data center. With scalability from 2 to 8 TB, **the REO 4000 provides immediate restores, eliminating the time delay, expense, and burden involved in restoring data from tape, while retaining the convenience and economy of tape for long-term storage.** The REO 4000 is a shared storage resource, interfacing multiple servers, increasing backup, and

recovery performance and reducing cost.

Using an optional RAID-5 capability with block-level data transfer, the REO 4000 can deliver secure, high-performance backup and recovery of mission-critical data. With connectivity for both iSCSI and Fibre Channel interfaces, the REO 4000 can integrate into an existing network. Moreover, with Overland's tape emulation feature, data is written to disk in tape format, providing an easy installation and integration with the existing backup software environment and most commodity operating systems. Using redundant power and hot-swappable SATA disks, the REO 4000 is scalable from 2 TB (M4001) to 8 TB (M4004) in a 2U rack-mounted drawer. This enables the REO 4000 to integrate easily with a rack-mounted NEO tape library.

Conclusion

With over 20 years in the data protection business, enterprise can trust Overland Storage to deliver reliable products. **With the availability of scalability and on-demand features, they are now delivering enterprise level features, common to the mainframe environment, to the open-systems data center.** With the NEO tape libraries and REO D2D2T backup and recovery solution Overland is also delivering products that focus on emerging needs within the data center. Limited backup windows and resources, tight budgets, and costly downtime are challenges that must be addressed. If these are problems in your data center, perhaps you should look to Overland Storage for your solution.



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