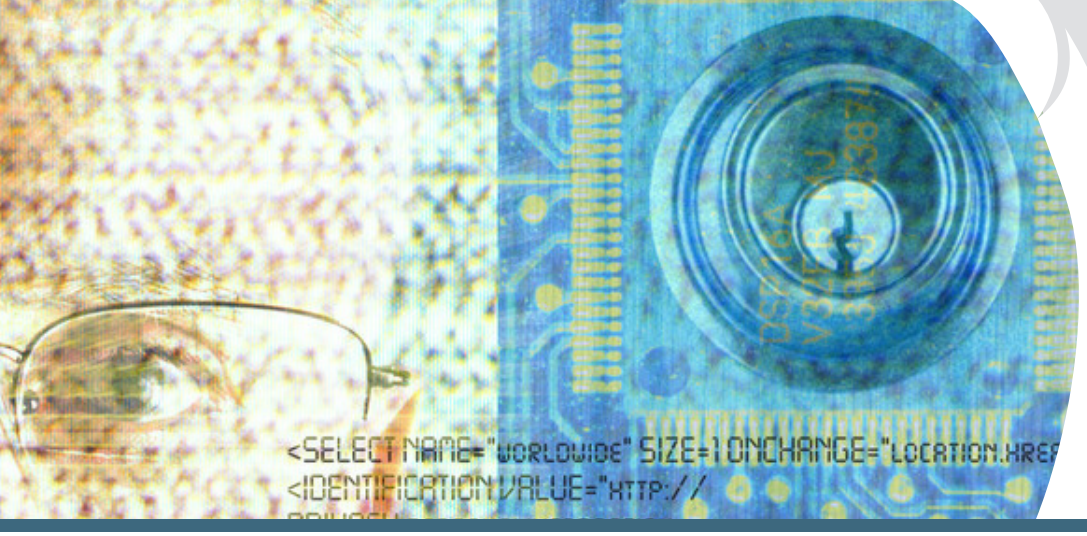

WHITE PAPER

Best Practices in Data Protection

Overland STORAGE®

Save

How long would your company function without access to its CRM, ERP, or messaging data? For many companies today, the answer is: not long. More and more mission-critical business processes depend on fast, reliable access to applications and data stored on hard disks, RAID arrays, and storage area networks. Lost access to mission-critical data, even for a few hours, can mean thousands or millions of dollars in lost revenue, customer satisfaction, and competitive advantage.

Once upon a time late in the 20th century, protecting company data simply meant backing it all up to tape overnight. If access to any data was lost, it was perfectly acceptable to restore it from tape over a period of hours or days. Several 21st century developments have made this strategy less and less viable, however.

- Certain types of data have become so mission-critical that companies cannot afford to be without them for more than a few hours or in some cases even a few minutes.
- Data volumes have exploded, thanks to increasing digitization of formerly paper- based business processes, and increasing reliance on messaging, e-commerce, imaging and video, and Web 2.0 applications.
- At the same time, backup windows have shrunk due to business globalization, e-commerce, and 24/7 business operations. Tape backup alone simply cannot meet the performance and scalability requirements of today's shrinking backup windows.
- Stringent service level agreements (SLAs) have become more and more common in business partnerships.
- Competitive pressures have forced many organizations to cut IT staff to minimal levels, so the resources available to implement and maintain data protection solutions are minimal.
- Federal regulations, such as HIPAA, the Sarbanes-Oxley and Gramm Leach Bliley Acts, and recent changes to the Federal Rules of Civil Procedure (FCRPP) have required companies to retain access to archived data for months or years to come.

That's why for most organizations today, an effective data protection strategy rests on four essential pillars.

Reduce the Backup Window Organizations must find strategies and technologies for backing up a lot more data in a lot less time than ever before.

Improve Recovery Speed With business processes and operations more dependent on mission critical data than ever before, organizations need strategies and solutions for restoring data within hours, or even minutes, rather than days.

Make Disaster Recovery Affordable Not only does disaster recovery have to be quick, it has to be affordable, both in the initial purchase and the resources required to manage it over time. This is especially true for small and mid size organizations with limited or no IT staff.

Simplify Data Retention Organizations affected by current regulations must find ways to reduce the cost and complexity of long-term data archiving. They need archiving solutions that are affordable, efficient, scalable, accessible, secure, and easy to manage.

Tiered Storage

Anyone who has had contact with the storage industry has undoubtedly heard of tiered storage, a strategy that recognizes that not all business data has the same value and requires the same level of storage performance and reliability.

Mission critical stock trading, ERP, CRM, e-commerce, and supply chain data often hold the most value for the organization and therefore has the most stringent service level requirements. A tiered storage strategy would most likely assign this data to the fastest performing, most reliable, accessible, and secure storage the organization could afford. A perfect example might be high performance Fibre Channel RAID 6 array with 99.999 percent availability.

At the other end of the spectrum, a company doesn't necessarily need lightning-fast access to certain types of departmental file-and-print data, and may be able to function without it for days or weeks. Instead of spending a lot of money to store this data on the most expensive, most reliable, and fastest performing storage possible, it makes perfect economic sense to use much lower cost, less fault-tolerant storage, such as server-based SATA hard disk drives. In between those two extremes might be any number of data and storage tiers, such as a tier of less expensive but still fast and reliable Fibre Channel RAID arrays holding certain types of non-mission-critical financial data. Since data tends to lose value as it ages, company policies may migrate much of their data from tier 1 to tier 2 or 3 over time.

A tiered storage strategy saves money over the long run because it allocates the most expensive storage only to the data that truly needs it. Mission-critical systems become more efficient, stable, and better performing because they're not bloated with unnecessary data and expensive storage upgrades are required much less often.

Overland Storage, a leader in the data protection industry for more than 25 years, has extended the widely-accepted concepts of storage tiering to backup and disaster recovery. Just as it doesn't make sense to apply the same level of storage to all your data, neither does it make sense to apply the same level of data protection.

Tiered Data Protection is the answer.

For most of today's 24/7 organizations, a data protection strategy that backs everything up to tape alone is no longer viable. Tape backup and restore alone lack the performance and reliability for the protection needs of mission-critical data, which often must be recovered in hours or even minutes after an interruption.

At the same time, there may be no economic reason to invest in anything other than traditional tape backup and archiving to protect data that is rarely accessed and won't have to be retrieved quickly for compliance or other reasons. In between those tier extremes lies any number of tiers that combine disk and tape. For example an organization might back up mission-critical data to disk for fast performance and recovery, then archive the data from the secondary disk to tape stored offsite once a week -- a strategy known as disk-to-disk-tape (D2D2T). In these scenarios, a technology called data deduplication allows organizations to keep huge amounts of data quickly accessible on disk-based storage for long periods of time.

Data deduplication simply eliminates redundant data. A perfect example is messaging data that contains emails and attachments sent to multiple parties. Rather than saving every single instance of that attachment, data deduplication saves the first instance and uses it as a reference for the others. The amount of storage saved can be dramatic.

Implementing a Tiered Data Protection strategy starts with analyzing and categorizing all your data into tiers, then applying the most appropriate, cost-effective data protection strategies to each tier in order to reduce overall data protection costs and ensure that recovery time and recovery point objectives are met.

Some of the factors to consider in defining each of your data protection tiers include:

1. **The value of your data.** Is there any mission-critical data whose loss or lost access would affect your company revenue so quickly, dramatically, and directly that you simply cannot afford to be without it even for a few hours or a few minutes? This data would fit into your top protection tier, requiring bulletproof reliability and quick restores in the event of data loss from application errors, hardware failures, or local natural disasters. In analyzing data value, it's important to take into consideration both tangible costs of data loss -- such as lost revenue -- and intangible costs -- such as damaging publicity, lost reputation, and lost or disgruntled customers. Other tiers might be devised for data that your company could function without for a day or two, such as payroll data, or even weeks for retained messaging data that is rarely accessed.

2. **Your organization's service level policies, including Recovery Time Objective (RTO) and Recovery Point Objective (RPO).** The former measures the time and service level, according to company policy, in which a certain business process must be restored in order to avoid serious consequences. The latter refers to the length of time for which data changes and additions can be lost without incurring serious business damage, and

therefore the point in time to which data must be restored. These factors closely align with data value.

3. **The amount of data to protect.** How much data do you need to protect and what type of data growth do you expect? Does this data have the potential to grow suddenly, say when a new project takes off? This will determine the scalability requirements of your data protection tiers.
4. **Retention requirements.** How long do you need to archive the data for compliance or legal discovery purposes, and how quickly must it be available in the event of an audit, legal discovery demand, or compliance related event? Do you need to protect the data from being altered?
5. **Backup windows.** How much of a backup window can your organization afford without a major disruption in operations? In the case of some of your most mission-critical data, there may simply be no backup window at all, whereas it may be perfectly acceptable to back up file-and-print data overnight.
6. **Remote site storage requirements.** How vulnerable is your location to disasters such as hurricanes, earthquakes, or even terrorism? What data simply must be available off-site in the event of a local disaster and how quickly must it be available?
7. **Reliability requirements.** How much reliability risk can be tolerated with each data tier?

Once these considerations have been analyzed and your data protection tiers devised, it will become more apparent what level of investment is required and appropriate for each tier.

Obviously the higher the level of protection you require, the more investment will be required. A typical tiered storage strategy might contain the following categories.

Tier 5: Tape Backup. At the low end of the cost/protection spectrum is simple tape backup, which is characterized by relatively slow backup, slow recovery, and reliability issues—but it is inexpensive and, for certain types of non-mission critical data, does the job.

Tier 4: Backup to Disk. The next level up in performance and reliability is backing up to disk using virtual tape library (VTL) technology. In the past five years, the cost of disk storage has come down so far, reliability has improved so much, and the performance advantages compared to tape have been so dramatic, that backup to disk—particularly low cost SATA disks—can be an affordable and high performance solution for data that require fast performing backup and recovery.

VTL technology emulates traditional tape devices and formats on disk, backing up data to disk as if it were a tape library, but much faster. Depending on your reliability requirements, this might be all that is required.

Tier 3: Backup to Disk, Archive to Tape. For a slightly larger investment, a VTL could be an intermediate stage combined with archiving the data periodically from secondary storage to tape, which is often stored off site. This combines the fast backup and recovery advantages of disk with inexpensive protection from local natural disasters.

Tier 2: Backup to Disk, Nearline Archive. If archived data is rarely accessed but occasionally needs to be available more quickly and reliably than tape allows, the next level of protection in terms of investment would be backing up to a virtual tape library and archiving to nearline disk storage. Frequently, advanced compression and deduplicating technologies are used to reduce the volume of data that must be archived to disk.

Tier 1: Backup to Disk, Archive Off-Site. Finally, even higher in the investment and protection spectrum is a combination of VTL backup and VTL archiving, with off site data copy to tape or even disk at a remote disaster recovery site. This might be appropriate for your most mission critical data.

The Overland Solution

A 28-year veteran of the data protection market, Overland Storage has designed a Tiered Data Protection architecture to support the needs of any mid-range and distributed organization. It has done so using affordable, easy-to-manage solutions that employ patent-pending technology to make data protection efficient and trouble-free.

Several factors serve to make Overland's product lines and Tiered Data Protection strategy unique.

World-class channel. For more than two decades, Overland has cultivated a passionate focus on a channel-only sales model.

Appliance format. All of Overland's products are sold as preconfigured appliances that can be purchased, installed, and configured easily and quickly by end users and channel partners. No complex hardware tuning and no operating systems installation and tweaking are necessary. You just drop the appliance into the network, configure a few simple parameters, and you're up and running in less than an hour. These are perfect solutions for mid-sized or distributed organizations with limited IT staffs.

Affordability. Overland continually strives to provide mid-range businesses with enterprise level features and scalability for prices that are much more affordable than those of competitors.

Multi-tier protection. Overland has solutions for multiple tiers of protection and levels of recovery.

Tiered Data Protection Offerings

Overland's Tiered Data Protection solutions cover a wide range, from nearline storage, to disk-based backup and archiving, to tape.

ULTAMUS® RAID for Application Data Storage. Last year, Overland introduced a new generation of Fibre Chanel RAID storage solutions, the ULTAMUS RAID 1200 and ULTAMUS RAID 4800. The ULTAMUS RAID1200 features a high-performance Serial Attached SCSI (SAS) architecture, with support for both high performance SAS and low-cost, high capacity SATA disk drives, and is expandable to 45 TB. The 4800 holds the greatest storage density of any product on the market today allowing the use of 48 one terabyte drives within only 4U of rack space and can scale to 96 terabytes with an additional chassis. Both feature Web-based management for easy deployment and intuitive administration.

REO® for Disk Backup and Recovery. The REO SERIES® is a longtime leader in the disk-based back-up and recovery market and has several features that make it among the highest performing and most easily managed backup solutions available. Like the ULTAMUS RAID 1200, the REO 4500 and 4500c use a SAS architecture that supports SAS and SATA drives. REO also uses high speed VTL technology, operating like a tape library that works with any backup software solution, but with the backup and almost instant recovery performance of disk. Further performance comes from REO's ability to write data to disk sequentially in large blocks.

Typical file-system-based disk backup is inefficient and difficult to manage because the administrator must estimate and assign disk capacity requirements manually for each backup and emulated cartridge. The most common results of this guesswork are either large amounts of unused disk space, which is costly and inefficient, or a sudden need to reconfigure disk allocation to accommodate inevitable data growth. REO solves this problem with a unique, patent pending thin provisioning technology called dynamic virtual tape technology (DVT). Thin provisioning refers to a number of technologies that allocate disk space to applications only at the exact time it is needed. Overland's DVT, one of the first thin provisioning technologies available in an actual product, automatically grows and shrinks virtual cartridges on the disk on the fly based on the amount of data being written or expired. The result is much more efficient use of disk space, and therefore lower cost and much fewer staff resources required for data protection tasks.

Compression and data deduplication are options in some REO products that are particularly suited to compliance related data retention. Data deduplication can save huge amounts of disk space and expense. The REO 4500, 4500c, 9100, and 9100c connect to both Fibre Channel and more affordable iSCSI storage networks.

The REO 9500D is particularly suitable for compliance data retention uses, while the 1500, 4500, 4500c, 9100 and 9100c are geared for high speed backup. Usable storage capacities range up to 187 TB with optional expansion arrays.

NEO® and ARCvault™ for Backup to Tape. The NEO and ARCvault product lines are industry leading, field-tested automatic tape backup and archiving solutions, including several tape library products and a low-cost tape autoloader, with flexible configurations. The higher end NEO SERIES has advanced fault tolerant features such as redundant robotics, tape drives, power supplies, controller cards, and interfaces. Capacities range up to 800 TB. Both product lines can be combined with REO SERIES disk based backup and recovery appliances for a tightly configured, easy-to-manage disk to disk to tape (D2D2T) configuration suitable for the highest tier of data protection.

Overland's Four Pillars of Protection

By offering a complete Tiered Data Protection strategy and product line, Overland Storage meets all four requirements of data protection better than any other solution provider in the market.

Reduce the Backup Window

Overland Storage's wide range of Tiered Data Protection solutions lets mid-range and distributed enterprises meet even the narrowest backup window targets with D2D2T appliance configurations that are affordable, simple to manage, and scalable to meet rapidly growing storage requirements without compromising performance.

For example, ULTAMUS RAID storage arrays feature near-instantaneous snapshots based on standard Windows Volume Shadow Copy VSS technology, so you can run snapshot-style backups many times a day without affecting application performance. You can also run fast traditional backup on ULTAMUS hardware.

REO SERIES VTLs are based on patent-pending technology that yields backup performance unapproachable for competing tape and disk backup solutions at the same price point.

The Reagan family of companies, a leading power industry pioneer, managed to triple the speed of its disk-to-disk backups with the new REO 4500c while reducing backup windows by 75 percent from the error-prone 14-hour nightly backup it had endured in the past. "We decreased nightly backups to two-and-a-half hours," says network administrator Leon Langley. "Restores, which once could take up to eight hours, now take minutes. We now sleep much better at night."

NEO SERIES and ARCvault tape autoloaders and libraries provide the most compatible, reliable final tape destination for your data in a D2D2T configuration.

All of Overland's product lines have been designed to scale simply and affordably, so users can solve their problems now with the knowledge that they won't have to solve them again soon when their data inevitably grows. ULTAMUS RAID arrays scale from 3 TB to 96 TB. REO SERIES products scale from a simple 1 TB iSCSI-connected REO 1500 appliance to 114 TB on a REO 9100c that features hardware compression for an incredibly low dollar per TB cost.

Data deduplication technology in the REO 9500D can also reduce storage requirements by up to 12:1 or even 25:1, for up to 280 TB on a single compact 5U appliance. "We're achieving data deduplication ratios of 10-to-1 or better with the REO 9500D and we're confident the ratio will

increase as we perform more backups," says Carlo Saggesse, vice president of application development for Vistage International, a world leading CEO advisory organization. "We'll be able to meet our retention objectives, reduce our reliance on offsite tapes and improve overall customer service levels."

Overland's tape products scale from a single drive, 12-cartridge library to a 24-drive, 1,000 cartridge library with a simple modular design. "Only Overland was positioned to meet our explosive storage growth," says Jonathan Woytek, computing manager for the National Robotics Engineering Center at Carnegie Mellon University, "enabling us to increase capacity by up to four times while protecting our original tape library investment."

Finally, all of Overland's solutions are very easy to install and manage. Most can be up and running in less than an hour. With Dynamic Virtual Tape technology, administrators can derive maximum value from Overland REO solutions without having to constantly monitor them and adjust settings. Simplified wizard-driven assistants and capacity management make ULTAMUS RAID solutions easy to administer, and Web-based secure management makes Overland solutions easily accessible from remote locations. "Using the REO VTL is a 'set it and forget it' operation," says Mark Solyst, network administrator for Bozeman Deaconness Hospital Gallatin County, Montana.

Improve Recovery Speed

Overland Storage offers a complete range of enterprise level solutions for improving recovery speed, minimizing the cost of downtime, and meeting the most demanding storage service level agreements at affordable prices. Its best-in-class storage architectures are backed by more than 30 years of data protection experience

ULTAMUS RAID nearline storage ensures your data is fully protected and instantly available with features such as multiple RAID level support, standard snapshot functionality, active/active high availability, and dynamic scalability. REO SERIES solutions provide VTLs on high performance disk-based hardware for fast reliable backup and recovery. NEO SERIES tape libraries feature redundant core components and support for the latest tape drive technologies for high-speed, reliable long-term data archival and recovery.

"We've accelerated backup and recovery dramatically with the REO 9100c," says Jay Kaffai, manager of technical services for Vistage International. "Last week we restored a one gigabyte file in less than 30 seconds when it used to take an hour to recover 20 MB."

"Our file restores with the REO 9100 are nearly instantaneous," says Bozeman Deaconess' Solyst.

Make Disaster Recovery Affordable

Overland Storage offers a comprehensive line of solutions geared specifically to the cost and disaster recovery requirements of midrange and distributed enterprises. ULTAMUS RAID, REO SERIES, and NEO SERIES solutions boast a scalable design that lets you add storage quickly and inexpensively as it's needed, whether on-site or off-site. NEO SERIES and ARCvault automated tape libraries provide a variety of capacity points to meet just about any data retention requirements.

Total cost of ownership reducing features such as simplified capacity management and wizard driven assistants in ULTAMUS RAID solutions; dynamic virtual tape, flexible iSCSI and Fibre Channel connectivity, hardware compression, data deduplication, and compatibility with all backup software in the REO SERIES; and reliable and scalable architectures across all product lines help you maximize your bottom line and concentrate your resources on enhancing profits, rather than managing data protection.

These features and technologies also optimize the use of valuable disk capacity, ensuring that you use the storage you have in a cost-efficient manner.

BumbleBee Foods, makers of Bumble Bee tuna, among other products, used an Overland REO and ARCvault based D2D2T solution to cope with 300 percent data growth from corporate acquisitions. "The addition of Overland's REO and ARCvault will enable Bumble Bee to cut its annual data protection costs in half while saving up to 10 hours in administrative overhead each week," says CIO and senior vice president Tony Costa.

Simplify Data Retention

Overland Storage offers midrange and distributed enterprises a comprehensive range of data archiving solutions to solve today's data retention challenges.

Whether for regulatory compliance or internal purposes, ULTAMUS RAID arrays offer high-speed Fibre Channel connectivity, high speed controllers, optional high availability, and high-performance disk drives to ensure that nearline retained data is instantly available when it's needed for an audit or other compliance event. REO SERIES VTL products optimize accessibility with speedy disk technologies and easy integration with traditional tape based technologies. NEO SERIES and ARCvault tape libraries use automated operations and the speed of industry leading drive technologies to maximize the speed of data access from tape.

As organizations are forced to archive more data for longer periods of time, maximizing storage capacity is an absolute necessity. Dynamic capacity management, hardware compression, and data deduplication provide the most efficient use of disk capacities in REO SERIES products. NEO SERIES and ARCvault tape libraries provide a wide variety of capacity points to meet just about any data retention requirements. All three product lines use a scalable design that lets you add storage capacity as your data retention requirements increase.

Long term data integrity and availability are crucial in any compliance situation. ULTAMUS RAID products use multiple host connections and fault tolerant RAID protection to ensure mission-critical data availability and reliability. NEO SERIES and ARCvault combine best of breed enterprise reliability with technologies such as WORM and encryption to ensure that data is captured and retained securely and reliably.

All three product lines are fully interoperable and exhaustively tested in a broad range of operating environments.

Conclusion

Data is the lifeblood of today's fast changing business environment. As businesses become more and more reliant on data for day-to-day operations, they'll require the most bulletproof, cost-effective data protection solutions possible to avoid busted budgets, data disasters, and easily preventable business failures. Tiered Data Protection represents the most effective, cost efficient strategy for meeting data protection requirements today. Overland Storage offers a complete line of Tiered Data Protection solutions backed by a solid 28-year record as a leader in the storage industry, combined with the latest and highest performing data protection technologies, all at affordable prices targeted directly at midrange and distributed organizations.

Save

Worldwide Headquarters
4820 Overland Avenue
San Diego, CA 92123 USA
TEL 1-800-729-8725
TEL 1-858-571-5555
FAX 1-858-571-3664
EMAIL sales@overlandstorage.com

United Kingdom (EMEA Office)
Overland House
Ashville Way
Wokingham, Berkshire
RG41 2PL England
TEL +44 (0) 118-9898000
FAX +44 (0) 118-9891897
EMAIL europe@overlandstorage.com

France Office
88 ter avenue du General Leclerc
92100 Boulogne Billancourt
France
TEL + 33 (0) 1 74 31 10 70
FAX + 33 (0) 1 74 31 11 31
EMAIL europe@overlandstorage.com

Germany Office
Humboldtstr. 12
85609 Dornach Germany
TEL +49-89-94490-214
FAX +49-89-94490-414
EMAIL europe@overlandstorage.com

Asia Pacific Office
Level 44, Suntec Tower 3
8 Temasek Boulevard
Singapore, 038988
TEL +65.6866.3847
FAX +65.6866.3838
EMAIL asia@overlandstorage.com

www.overlandstorage.com

Overland STORAGE®