

#### Field Adoption Report: Disk-Based Backup and Restore

The Overland Storage REO SERIES

By Taneja Group December 2005

Principal Analysts: Arun Taneja Brad O'Neill



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### Introduction

As an established industry analyst and consulting group focused on storage and storage-centric server technologies, Taneja Group has a simple mission: to arm you with thoroughly analyzed, relevant and timely information so that you can make the best possible decision for your business. We aim to cut through the clutter and hype in order to make complex technology and products understandable, while bringing a clear perspective on the industry.

To that end, over the course of the past 24 months, we have tracked disk-based data protection as it rose from a promising emerging technology to become a critical component in data backup and recovery. Based on Taneja Group's survey data and interviews with over 200 North American IT executives and managers, we have determined that the overwhelming majority of end users now perceive disk-based data protection as a strategic element in their storage infrastructure. Widely adopted by small, mid-sized, and large enterprise businesses, the number and breadth of disk-based product offerings continues to proliferate. Key open questions include optimal deployment models, competing technology approaches, and acquisition economics. This Field Adoption Report represents Taneja Group's latest "snapshot" of the disk-based data protection landscape and explores some of the main reasons for the rapid shift to disk-based data protection.

In addition to drawing from Taneja Group's existing quantitative market research, this report leverages newly conducted interviews with a cluster of IT managers (end-users) that have already deployed the Overland Storage REO SERIES<sup>™</sup> family of disk-based backup and recovery appliances (REO 1000, REO 4000, or REO 9000). The REO SERIES includes embedded Protection OS<sup>™</sup> software, which provides virtualization, management and connectivity features. It also enables REO to be configured as any combination of virtual tape libraries, standalone virtual tape drives, and/or disk volumes (LUNs). All REO SERIES end users with whom we spoke agreed to participate in this research study independent of any Overland corporate oversight, and all agreed to provide Taneja Group with their unbiased findings regarding their disk-based data protection experiences to-date.

Our research revealed that end users rate the REO SERIES extremely high in terms of overall satisfaction, giving an average satisfaction rating of 9 on a scale of 1-10. This held consistent across all company sizes, industry types, and usage models. As documented in this report, our end user interviews also provided a wealth of detailed information regarding their actual deployment experiences. To date, Overland has shipped over 2,000 REO SERIES systems worldwide, which makes REO the best selling disk-based backup and recovery appliances on the market.



We encourage the reader to leverage this report in their evaluation of disk-based data protection solutions. Our goal is to provide IT decision makers with an evaluative summary of the state of the industry while providing candid insight into the leading disk-based backup and recovery appliance, the REO SERIES from Overland Storage.

#### Section 1: The Impact of Disk Backup

Data protection can be stressful. From our dozens of ongoing conversations with IT managers, we know backup management is fraught with overworked, under-resourced individuals fighting against both shrinking backup windows and shrinking IT budgets. But, precisely speaking, what are the challenges? In order to get a sense of precisely what challenges end users feel are most critical, Taneja Group asked participants in our recent survey to rank their perception of the key challenges faced by data protection professionals. The following seven challenges were returned to us in rank order of perceived challenge:

*Top Challenges in Data Protection:* 

- 1. Backup and Restore Reliability
- 2. Hitting Backup Windows
- 3. Meeting Recovery Time Objectives
- 4. Managing Capacity Growth
- 5. Reducing Operational and Management Costs
- 6. Supporting Application-Specific Tasks
- 7. Making Multiple Backup Copies

-Taneja Group, 2005

For the past two years, Taneja Group has found that concern with hitting backup windows in a reliable fashion and restoring data in a usable format constitutes the top data protection challenges. In a recent survey, we asked over 200 IT professionals what challenges would be solved by implementing disk-based data protection systems - we received the following responses:





(Source: Taneja Group, 2005)

The important insight from this chart is the clear relationship between today's challenges in data protection and the perceived benefits that IT teams believe disk-based data protection technologies can provide. In short: our surveyed IT managers correctly perceive that disk-based data protection holds the key to solving the same challenges that are top of mind in their everyday operations.

### **Overland REO Customer Perspective: Reliability and Speed Matter**

Taneja Group interviewed a wide range of Overland REO SERIES customers and discovered that prior to implementing REO, their challenges perfectly matched our repeated quantitative research findings, as outlined above. In alignment with industry trends, REO customers identified the following challenges as factors that led them to consider disk as a viable data protection method:

Top REO SERIES Customer Concerns:

- 1. Meeting Backup Window
- 2. Recovery Speed
- 3. Backup and Restore Reliability



In their own words, REO customers had the following comments on the challenges they faced prior to deploying REO disk-based backup and recovery appliances:

"We had a severe challenge meeting our compliance recovery time objectives relying just on tape." — IT Manager, Manufacturing Firm

"Our backup jobs were running into production hours every day. It became completely unworkable." — Network Architect, Health Care Firm

"About 25% of our tape recoveries for email were unusable data. We realized we needed to look at alternatives." – IT Manager, Government Service

These responses, and many more like them, validate that there are several key potential improvements to be made in the tape-centric data protection paradigm. Further, based on studies to-date, Taneja Group believes there is an established consensus in the IT community that disk-based solutions constitute the best possible solution to these major challenges.

To understand if their perceptions are indeed valid, we turn next to the deployed realities of disk-based data protection in real world data centers.

#### Section 2: The Details on Disk Backup Deployment

Over the past 24 months, Taneja Group has continued to examine the critical issues surrounding disk-based backup - who is deploying it, in support of what applications, and with what economic justification?

Taneja Group asked these questions to hundreds of end users, including those using the Overland REO SERIES. Our collective insights are as follows:

• What kinds of businesses deploy disk-based data protection? The answer: Businesses of all sizes and industries. Holding consistent over the past 24 months, Taneja Group finds that disk-based data protection maintains equal appeal across all businesses types, from small to large Fortune 500 firms, across multiple industry types. While each industry may have specific concerns, (e.g. unique regulatory compliance concerns) all possess a common need for fast, reliable access to data.



- What applications are most attractive for disk-based backup? The answer: Databases and Email. The interesting trend over the past 18 months has been the absolute dominance of email and database as the applications driving disk-based backup purchasing decisions. Specifically, Taneja Group finds that Microsoft® applications such as SQL Server<sup>™</sup> and Microsoft Exchange<sup>™</sup> account for a majority of the support applications in the small-to-midsize markets. In larger enterprises, this trend also holds true, but is extended to other major database platforms, such as Oracle, and their associated top-level applications.
- What kind of storage infrastructure utilizes disk-based backup? The answer: SAN, NAS, and direct-attach. We have found that customers with a storage area network (SAN), network attached storage (NAS) and direct-attach storage environments all have high levels of interest in disk-based data protection. Interestingly, in 95% of the cases, we find that customers intend to maintain their tape-based backup infrastructure and methodologies. Disk-based backup systems complement existing tape libraries and drives, which can now be used primarily for archival storage in support of regulatory compliance and off-site storage requirements.
- How are customers justifying their purchases? The answer: ROI based assessment. Since 2003, the majority of businesses justify their disk-based backup acquisitions by using a return on investment (ROI) approach. In short, while the entry cost of a disk-based solution is often higher than incremental expansion of existing tape capacities, the operational gains from increased management efficiency, speed, and reliability are perceived to far outweigh tape over the long run.

#### **Overland REO Customer Perspective: Protecting Email and Databases**

Taneja Group's interviews with the Overland REO customers revealed the consistent use of the REO to enhance the recovery reliability for email and database applications. In the majority of cases, we found that REO was deployed to protect both email and database environments, simultaneously. Quite simply, the majority of restoration challenges revolve around these two application types. As any IT team that has managed an email recovery operation will attest, increasing the recovery reliability and speed through the use of a disk-based solution could save hours or days.

"A primary objective with REO was getting database recovery into a highly reliable condition." -Paul McVicker, Network Administrator, DCM Indiana



"We wanted to use disk to improve three things about recovery: speed, speed, and speed." -Pete McCallum, Network Administrator, ATK Elkton

#### **Overland REO Customer Perspective:** Disk-to-Disk-to-Tape

The Overland REO customers with whom we spoke were also in uniform agreement on one critical fact: tape is a critical ongoing component in their infrastructure. The emergence of disk in the data protection architecture, which is useful for increasing performance and reliability while decreasing management burden, does not eliminate investments in tape. Specifically, Overland REO customers are leveraging their tape infrastructure for long term onsite and offsite archiving. In some cases, customers chose to write directly to both to their REO disk-based appliance and to their tape libraries for various workloads.

As we have seen across the industry, most IT managers implement both disk and tape in their backup environment. Because of this fact, preservation of tape-centric backup and recovery methodologies is critical. This is supported by our research, which shows that customers utilized REO's virtual tape functionality in order to easily integrate REO into their backup environment without changing established processes or procedures. By utilizing the virtual tape interface, IT teams can easily manage the REO and their existing tape systems through a common process and backup software while gaining all the advantages associated with disk-based backup. In addition, virtual tape functionality enables multiple simultaneous data streams for extremely fast backup and recovery.

"We now just view the REO disk backup as a logical extension to our tape data protection." -Greg Crary, Network Administrator, Horizon Credit Union

"We use disk and tape together. The REO is a great tool for accelerating backups and recovery. Our investment in tape is now primarily archival." -Randy Nielsen, IT Manager, Fort Smith Police Department

Taneja Group believes that this tape-centric methodology preservation will continue for several years to come. Based on our surveys, we have found that 95% of end users view their existing tape backup architecture as a key element in their future data backup and recovery strategies (see chart below.)





(Source: Taneja Group, 2005)

Because of the co-existence of disk and tape, Taneja Group often refers to the emergence of a "disk tier" within the data protection hierarchy. Whereas in a traditional tape backup architecture, the tape library maintains a direct relationship with the backup server and software, disk-based data protection solutions create a platform that can interact directly with the existing backup server environment, in addition to or in lieu of the tape library's functionality. By deploying a disk tier for backup and recovery, users achieve increased flexibility while preserving the traditional functionality originally established with their tape environment.

In addition, many disk-based backup users are now retaining up to three or more months worth of data on their disk-based backup systems in order to facilitate fast data recovery. This trend is expected to continue since recovering data from disk-based systems is typically much faster than recovering data from physical tape, due to the linear nature of tape cartridges and tape robotics. And if the needed physical cartridges are no longer in the tape library or are off-site, then recovery can take even longer.



### **REO Customer Perspective: Deployment Examples**

The following architectural schematics illustrate how two different Overland customers are deploying REO SERIES appliances in their existing environment.



#### Large Enterprise Customer

The above architecture depicts a large enterprise customer in the Manufacturing industry. In this example, the Overland REO 9000 is deployed in an environment with (150) Windows  $2000^{TM}$  servers. Within this deployment, the REO 9000 is responsible for protecting (3) SQL Server database servers and (3) Microsoft Exchange Servers. The customer has a fibre-channel SAN deployment, and leverages CA ARCserve® as their backup software platform. The REO 9000 is utilized as a virtual tape library and deployed behind the ARCserve backup server, where it is responsible for daily differential and weekly full backups. Every two weeks, the REO



9000 archives its data to an Overland NEO  $8000^{\text{TM}}$  tape library. This customer stated a 5x increase in restore speeds using REO versus their prior restores from tape.



#### Small-to-Midsized Customer

The above architecture depicts a small-to-midsized customer in the Services industry. In this case, the Overland REO 1000 is deployed in an environment with (10) Windows 2000 servers. In this infrastructure, the customer utilizes an Ethernet (iSCSI) SAN and VERITAS Backup Exec<sup>TM</sup> 9.1 to support a Microsoft SQL Server, Microsoft Exchange Server and several Windows file servers. The REO 1000 is utilized as a virtual tape library and deployed behind the VERITAS backup server, where it is responsible for daily incrementals and weekly full backup jobs. On a weekly basis, the REO 1000 archives its data to a tape library. This customer achieved their immediate goal of reducing backup job time by 70% by deploying REO.



In addition, the customers we interviewed took advantage of REO's patent-pending Dynamic Virtual Tape<sup>TM</sup> technology, which enables users to create virtual tape cartridges that automatically expand or shrink to match the exact capacity requirements of the backup operation. Dynamic Virtual Tape ensures that no storage capacity is wasted while eliminating the manual effort and guesswork of sizing, configuring, provisioning, and deleting virtual tape cartridges.

#### **Section 3: Disk-based Data Protection Economics**

In the course of end user discussions, Taneja Group often explores the economic impact of disk-based data protection. There is already a wealth of early learning that is taking place amongst end users, with particular emphasis on how to justify their initial investment. Quite often, we find that end users are still unsure of how to precisely evaluate the value of a disk-based data protection offering. Given the wide range of technologies available, there simply are no hard and fast rules to which we can point. However, we encourage end users to evaluate any potential technology acquisition in terms of Return on Investment (ROI) calculations that consider three general parameters – Process, Technology, and People. By utilizing an ROI approach, IT managers can more easily justify their expenditures and gain the internal support needed to move forward.

Process +/-	Technology +/-	People +/-
Change to Methodologies	Capital/Leasing Expense	Impact on Headcount
Impact on Backup Speed	Deployment Expense	Training Requirements
Impact on Restore Speed	Incremental HW or SW	Utilization per Employee
Impact on Uptime	Operation Expense	Support Requirements

#### Key ROI Factors



#### Process

Most importantly, we ask prospective users to examine what the overall impact of the solution will mean from an IT process perspective. Will the solution require a disruptive shift in methodologies or support existing methodologies? Given best estimates based on the environment and the solution's performance profile, what will the impact be on backup and restore speeds? What is the general economic impact of these improvements for the IT workflow? And finally, what is the reliability impact of the potential technology once deployed? Will it increase overall uptime and reduce IT touches or require additional human interaction to ensure uptime? Typically, Taneja Group finds that process-centric factors drive more investment decisions for disk-based data protection. But, we also find that users often do not adequately anticipate the precise impact of these process changes. The more detailed the understanding, the more likely the user is to make the best possible IT investment.

#### Technology

Beginning with the new disk-based backup technology under consideration, users should walk through a detailed financial analysis of what the offering will mean in terms of capital acquisition and deployment impact. In this regard, users should look carefully at the incremental hardware and software costs that will be associated with the offering over its useful life (e.g. 3-5 years). Will the usage model for the potential disk technology likely create more or less investment in your existing tape media? What about backup software licensing? Next, we encourage the user to look at the operating expense of the solution by considering a range of factors such as floor space, power consumption, and field replacement costs. Taken together, these technology factors can provide a better view into the costs and benefits of the technology in the context of the user's deployed infrastructure.

#### People

Finally, one of the most overlooked economic variables is the impact on personnel. Quite simply, how will the given solution impact the data protection team? Based on the solutions capabilities and intended usage model, will it create the need for more headcount or less? Is there training involved in the offering, and if so, how disruptive or extensive and ongoing is the training? What kind of estimates can be made regarding the utilization rates of employees with this solution deployed? And finally, what are the additional support requirements for this offering from a team perspective? Will they be additive or synergistic versus existing technologies already deployed in the data center? All of these human factors have costs and trade-offs that will determine if the given solution will truly add net value to the organization.

By considering technology acquisitions in terms of the impact on Process, Technology, and People, IT managers can develop their own ROI equation in order to make an informed purchase decision. We encourage managers to use this approach when evaluating disk-based data protection solutions.



#### **Overland REO Customer Perspective: Economics Matter**

Our interviews with Overland REO SERIES end users further validated our observed ROIcentric purchasing trends. Specifically, all REO customers viewed their purchases in terms of long-term economic gains due to increased overall efficiencies and cost reductions.

Utilizing the Process, Technology, and People approach to developing an ROI analysis revealed the following:



Based on interviews conducted by Taneja Group, REO SERIES end users identified the following key ROI factors that supported their decision to purchase REO:

- Improved reliability. Because the disk-based approach of the REO is highly reliable, backup and restore failures are extremely rare. Users often cited the increase in reliability as a contributing factor in their return on investment justification. Specifically, interviewees referenced lost productivity due to re-running tape-based recovery operations, a problem that is solved by implementing REO.
- Increased restore speeds. Recovery Time Objectives (RTO) have become a common metric in many IT environments. Even if not formally established, we find that users want to greatly reduce the amount of time required to restore data since downtime results in lost revenue for the business. REO users we spoke with also stated that faster restore speeds translated into less tactical management and increased overall IT efficiencies.
- Increased backup speeds. REO users found that increasing backup performance results in a direct cost savings. Users referenced that faster backups provide an increased amount of time available for operational tasks, a decrease in network congestion, and reduced management resources.



• Reduced management concerns. Because the REO SERIES can be configured to emulate a tape library, many interviewees cited reduced "hands on" management requirements with their REO versus their prior experience with physical tape libraries. This translates into higher levels of team efficiency due to reduced media management activities.

"We knew we wanted disk, and Overland REO came out on top as the most cost-effective option without sacrificing functionality, by far."

-Chad Bittinger, Analyst, West Virginia University Hospital

#### **Customer Perspective: Rapid ROI for REO Disk-based Backup**

Taneja Group discovered that the payback period reported by Overland's REO SERIES customers was faster than had been initially projected by the purchasing teams. All of the IT managers with whom we spoke felt that their REO disk-based appliances easily paid for themselves, with an average payback period of approximately 12 months.

"Our VP of IT was actually surprised, but the REO is going to pay for itself in less than a year. That is far better than the other options we considered early on." -IT Manager, Large Services Firm

"We consider our payback period with REO to be nearly immediate given the amount of time and money we were spending on our aging tape libraries. The REO really pays for itself in efficiency." -IT Manager, Government Service

This trend now concurs with what we expect from IT teams that deploy their first disk-based backup solution. For a range of reasons, disk creates a cycle of efficiency that compounds into faster than expected ROI.

#### Section 4: User Experiences with Disk Data Protection

To this point in our report, we have explored disk-based data protection in terms of key challenges solved, sample deployments, and purchase justification using a return on investment methodology. However, once the technology is in place, what are IT teams experiencing? Taneja Group has spent considerable effort over the past 24 months understanding the tactical impact of disk-based backup and recovery solutions, especially



when deployed along side tape libraries. As a result of this research, we now routinely refer to several key "disk impact" themes that we encounter again and again in surveys and interviews:

- Common End User "Disk Impact" Themes:
- 1. Increased backup and restore speeds
- 2. Increased reliability
- 3. Reduced management burden
- 4. Expanded protection schemes

Obviously, these are all very powerful statements regarding the impact of disk-based technology. However, we know that the true value resides in uncovering the details regarding how end-users are benefiting from any given technology. To that end, when we spoke with Overland REO users, we spent a significant amount of time exploring the precise manner in which their REO appliance has impacted their infrastructure after at least six months of deployment.

#### **Overland REO - Performance & Reliability Impact**

All of the Overland REO end users that we spoke with had previously utilized tape-based technologies as their targets for backup and restore. For all interviewees, the REO constituted their first exposure to a disk-based data protection solution. The following details provide a summary of the impact REO had on end-user operating environments:

**Backup Window Impact:** 

Deploying REO enabled users to reduce their allotted backup window by 40% to 90%, which represents a significant improvement over their previous tape-based solutions. Further, users indicated a 100% success rate in completing backup jobs within the allotted window for all backup job types (differential, incremental, and full backups).

**Backup Speed Impact:** 

Overland REO users achieved an average backup speed increase of "over 3x" versus their previous tape-only data protection environments.





**Restore Speed Impact:** 

Overland REO users achieved an average restore speed increase of "over 5x" versus their previous tape-only data protection environments.

#### **Restore Reliability Impact:**

Overland REO users all indicated a significant increase in restore reliability versus their previous tape-only environments. All interviewees attained "98% to 100% restore success rates" after deploying REO SERIES appliances in their data protection environments.

#### **Overland REO - Management and Integration Impact**

A key question that Taneja Group always asks regarding data protection technology is, how does it impact the IT teams? In most cases, user concerns revolve around increased hands-on management time, new training requirements and troubleshooting due to integration issues. We know that ease of management and integration are always top concerns, with 65% of recently surveyed end-users stating it as one of their top considerations in vendor selection. Specific to Overland REO users, we found that approximately 75% of our interviewees consider integration "very critical."



"When we were backing up with tape, we had to check literally every job. Now, we can check the REO once a week. We can trust it."

-Randy Nielsen, IT Manager, Fort Smith Police Department

"Because of our current tape environment, we definitely considered ease of integration as a major consideration in our decision to go with REO."

-Karen Gillan, IT Operations Supervisor, Ajilon Inc.

**Team Efficiency Impact:** 

All end users indicated that the REO reduced their overall data protection management burden. Responses ranged from "we don't even think about tape anymore" to "I've probably created 50% more time for existing team members to do other work." And end users rated the REO SERIES extremely high in terms of overall satisfaction, giving an average satisfaction rating of 9 on a scale of 1-10.

Flexibility Impact:

A majority of Overland REO customers indicated that they found the ability to easily configure REO appliances as any combination of virtual tape libraries, standalone virtual tape drives and/or disk volumes (LUNs) to be an attractive feature that gave them deployment flexibility.

**Backup Application Impact:** 

All end users were able to successfully integrate the REO appliances with their existing backup software of choice.

Methodology and Integration Impact:

All Overland REO users stated that their pre-existing data protection methodologies and processes were preserved when they deployed REO. The REO SERIES was intuitive to use and easy to integrate into their current Ethernet (iSCSI) and Fibre channel environments.

### Section 5: The Future of Disk Data Protection

Over the past 12 months, end user surveys conducted by Taneja Group confirm our projection that businesses predominantly utilize virtual tape functionality when deploying disk-based backup. Because virtual tape is typically easy to use and preserves existing processes and tape



investments, we believe it will continue to gain in popularity as the deployment method of choice. Our conversations with Overland REO end users further validated this perception.

In addition, all of our interviewees intend to expand the capacity of their REO or purchase additional REO appliances and all plan to use their REO to protect additional applications. Some users also indicated a desire to extend their REO deployments to replicate data at remote offices (Overland REO Multi-Site PAC<sup>™</sup> software provides remote replication functionality), a trend we believe will become increasingly common over the next 24 months as disk-based remote archiving becomes more popular.

"I definitely see more REO devices in our future as we move to protect more of our data with disk."

-Karen Gillan, Supervisor of IT Operations, Ajilon, Inc.

"We will continue to add capacity to our REO, and look at deploying it at remote locations as well."

-Chad Bittinger, Network Administrator, West Virginia University Hospital

Taneja Group believes that the most likely areas for disk-based data protection deployment over the next 24 months will continue to be predominantly focused on high-priority "mission critical" applications. Specifically, most organizations will seek to move all database and email applications to disk-based data protection, as well as strategic business operational platforms such as ERP and CRM.

Once the application protection platform is established, we expect to see an increase in the amount of time data is retained on disk to facilitate fast recovery - an activity already observed in a number of enterprises. As disk-based data retention periods increase from weeks to months in duration, we firmly expect to see disk-based backup solutions become highly integrated with online "archive" data.

#### **Section 6: Summary Findings**

The goal of this Field Adoption Report has been to provide user-driven feedback on the state of disk-based data protection, and specifically, to provide contextual details on a leading product in the category, Overland's REO SERIES disk-based backup and recovery appliances. To achieve that goal, we interviewed a number of Overland REO SERIES end users and then validated those findings with pre-existing Taneja Group quantitative studies. As a result of this research effort, the major findings that we can provide to the end user community are as follows:



#### REO resolves data protection challenges.

Based on our interviews, end users find that the REO solves the key data protection challenges that Taneja Group has identified in the marketplace. Specifically, REO solves the challenges regarding speed of backup and restore, reliability of data protection, and ease of management.

#### REO justifies itself in economic terms.

Overland REO end users uniformly agree that the offering is cost effective and provides a rapid payback period, citing these as major reasons for acquiring the product. We found that the purchasing rationale for the REO corresponds with larger industry trends that Taneja Group finds with regard to disk-based data protection investments.

#### REO utilized to protect mission-critical applications.

All users with whom we spoke are using the REO appliances to backup and recover mission critical applications - primarily databases and email. Not surprisingly, these findings also correlate extremely well with Taneja Group's general market survey research.

#### REO integrates with existing infrastructure.

REO customers uniformly indicate that the product is easy to manage and deploy, and that virtual tape functionality is intuitive and non-disruptive to their pre-existing tape infrastructure. These findings correspond with our research indicating the criticality of methodology preservation for data protection solutions.

Based on these findings and criteria, Taneja Group can state without hesitation that the Overland REO SERIES constitutes an outstanding offering for end users seeking a fast, reliable, cost-effective, and easy to use disk-based backup and recovery solution.

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