

A Forrester Total Economic  
Impact™ Study  
Commissioned By  
Scality And Dell

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August 2016

# The Total Economic Impact™ Of Scality RING With Dell Storage Servers

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### ABOUT FORRESTER CONSULTING

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## Executive Summary

In 2016, Scality and Dell commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study to examine the potential return on investment (ROI) enterprises may realize by deploying RING with Dell storage servers that can scale into the range of petabytes (PB). The purpose of this study is to provide a framework for readers to evaluate the financial impact at their organizations that are facing challenges with scalability, performance, and durability and can potentially benefit from an object storage solution deployed on a Scality RING with Dell storage servers.

The aggregate findings of the benefits, investment costs, and risks outlined within this Forrester study are based on qualitative and quantitative feedback from customers who have deployed the Scality RING with Dell storage servers in multi-petabyte production environments that have been in operation for a number of years.

As the diversity of storage infrastructures increases, organizations are challenged to deliver on the requirement to support multiple workloads that can be a potential mix of object or traditional file storage that is highly durable at scale, with predictable investment costs. The results of the analysis conducted by Forrester show that with minimal compromises, the Scality offering, when combined with Dell storage servers, offers a highly economical scale-out solution.

The Scality offering is a modern scale-out storage software component of a solution that supports object storage and traditional file storage alike while providing highly durable configurations. When offered with Dell storage servers, the solution is highly scalable and offers performance for a variety of workloads and use cases.

Prior to investing in the Scality RING with Dell storage servers, customers had implemented a mixture of traditional file-based storage over older network-attached storage (NAS). More recently, they had implemented newer scale-out NAS solutions. Cost, durability, and performance were all issues that plagued the interviewed organizations, limiting their ability to truly scale their storage capacity in line with the data growth requirements of the business and without limitations or concessions. With Scality RING on Dell storage servers, customers were able to deliver performance across multiple applications and locales, with high availability and durability. They also had the flexibility of not being hardware locked to more expensive proprietary appliances that sometimes also required additional infrastructure upgrades. Said a director of enterprise storage, *“At a large enough scale, there is nothing as cost-effective with this level of performance as Scality.”*

### SCALITY IS A DEPENDABLE AND COST-EFFECTIVE ROUTE TO SCALE INTO THE PETABYTES

Our interviews conducted with three existing customers and subsequent financial analysis found that a composite organization based on these interviewed organizations experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1.<sup>1</sup>

Scality RING with Dell storage servers delivers performance and scale at a fraction of the price of similar scale-out solutions without compromising durability. The composite organization analysis points to benefits of \$5.2 million in the first year versus initial acquisition costs based on list pricing of \$2.1 million. The overall net present value (NPV) of the solution over a three-year term amounted to more than \$8 million.

**Scality RING, when deployed with Dell storage servers, decreases the cost of storage at scale for file and object storage scenarios with uncompromising durability.**

**Our three-year analysis for a composite organization with 4PB of usable storage, based on our interviews, revealed the following financial insights:**

- **Return on investment: 229%.**
- **Solution payback: less than six months after go-live.**
- **Net present value of solution: \$8,020,069.**

**FIGURE 1**  
**Financial Summary Showing Three-Year Risk-Adjusted Results**



Source: Forrester Research, Inc.

› **Benefits.** The composite organization realized the following three-year risk-adjusted benefits that represent those reported during interview feedback:

- **Improved durability, reduction of data downtime, and business continuity benefits resulted in over \$1.5 million in savings.** The average downtime of approximately 2.5 hours annually was eliminated with the Scality and Dell solution on a 5+7 erasure coding configuration. Furthermore, the composite organization avoided spending valuable time rebuilding older legacy RAID-based systems. The total business continuity gains from the reduction in downtime were calculated at a value of \$1,587,015 over a three-year period.
- **Costs averted from alternate scale-out NAS solutions with comparable performance equated to over \$5.2 million at the point of initial acquisition.** For a similar scale-out NAS solution with comparable performance, uprated proprietary servers were required along with additional network infrastructure to facilitate its operation. At scale, similar server equipment was triple the cost of the Scality and Dell solution. Over three years, the savings value, which includes infrastructure maintenance, amounted to \$5,284,826.
- **Costs averted in increasing storage capacity for years 2 and 3 amounted to \$4,650,109.** As the capacity scale increased, the alternate scale-out solution became incrementally more expensive due to the need for additional network infrastructure and appliance software licenses. The Scality license is perpetual and has a one-time fee, resulting in a lower cost to scale.

› **Costs.** The composite organization realized the following three-year risk-adjusted costs:

- **An initial investment of \$2,135,904 was calculated to represent the software and hardware required to manage 2PB of usable capacity.** Projected figures, representing data growth to 4PB useable in Year 3, amounted to \$3,465,881. The majority of these costs are one-time costs, including the hardware, software, and installation fees. Accompanying support and maintenance costs are ongoing but represent a small portion of this cost category.
- **Migration, development, and training costs of \$36,000 were accrued prior to the production usage of the new storage solution.** This was a one-time cost to move files onto the object-based storage system. Costs include some custom development to connect with the Scality RING connectors/API.

## Disclosures

The reader should be aware of the following:

- › The study is commissioned by Scality and Dell and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.
- › Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Scality/RING with Dell.
- › Scality reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.
- › Scality provided the customer names for the interviews but did not participate in the interviews.

## TEI Framework And Methodology

### INTRODUCTION

Based on qualitative and quantitative customer feedback, Forrester has constructed a Total Economic Impact (TEI) framework for those organizations considering implementing Scalify/RING with Dell storage servers. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision and to help organizations understand how to take advantage of specific benefits, reduce costs, and improve the overall business goals of winning, serving, and retaining customers.

### APPROACH AND METHODOLOGY

Forrester took a multistep approach to evaluate the impact that Scalify RING with Dell storage servers can have on an organization (see Figure 2). Specifically, we:

- › Interviewed Scalify marketing, sales, and consulting personnel, along with Forrester analysts, to gather data relative to RING with Dell storage servers and the marketplace for RING with Dell storage servers.
- › Interviewed three organizations currently using Scalify RING with Dell storage servers to obtain data with respect to costs, benefits, and risks.
- › Designed a composite organization based on characteristics of the interviewed organizations.
- › Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.
- › Risk-adjusted the financial model based on issues and concerns the interviewed organizations highlighted in interviews. Risk adjustment is a key part of the TEI methodology. While interviewed organizations provided cost and benefit estimates, some categories included a broad range of responses or had a number of outside forces that might have affected the results. For that reason, some cost and benefit totals have been risk-adjusted and are detailed in each relevant section.

Forrester employed four fundamental elements of TEI in modeling Scalify RING with Dell storage servers: benefits, costs, flexibility, and risks.

Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

**FIGURE 2**  
TEI Approach



Source: Forrester Research, Inc.

## Analysis

### INTERVIEW HIGHLIGHTS

For this study, Forrester conducted a total of three interviews with representatives from the following companies, all of which have Scality and Dell implementations:

- › A top American nonprofit scientific research center with nearly \$1 billion in annual funding. This organization uses a variety of storage solutions that include Scality and an alternative scale-out NAS. The current Scality deployment is near 2PB and is envisioned to expand.
- › A European systems implementer organization that deployed and manages a Scality solution at a major government agency. The deployment currently has 5PB of raw capacity and uses object storage for fast access to millions of records.
- › A European research institute that has deployed Scality for distributed computing file storage to replace a traditional storage area network (SAN) that could not be parallelized.

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*“The Scality redundancy works. We had a few incidents with servers and disks, losing sometimes two or three servers at a time, but never was data lost.”*

~ Project director, systems implementer to major government agency

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### THE COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization that Forrester synthesized from these results represents an organization with the following characteristics:

- › It is a US financial services organization, with an extreme dependence on data availability due to business operations and regulatory measures.
- › It had 1PB data that resided on older RAID-based storage devices, along with some low-performance early-generation NAS.
- › Data capacity needs are expected to grow significantly annually.
- › It has two data centers located across the United States.
- › It has annual revenues of \$2.5 billion.

#### Situation

The composite organization runs a gamut of applications specific to the banking industry along with sizeable data repositories. Data is held on-premises between the two data centers and is almost always sensitive in nature. Due to the large number of records and associated file sizes, performance levels when reading data from existing file-based storage were not in line with business requirements, which prompted the desire to move to an object-based storage solution. Additionally, the applications deployed had differing

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*“Once we started pushing petabytes on our other scale-out NAS, it became clear that cost would become an issue. I can have a Scality setup that performs just as well for a quarter of the cost of the other solution.”*

~ Director of enterprise storage, scientific research center

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speed requirements which were reflected in the form of decreased employee efficiency. Further still, the relatively low levels of existing service-level agreements (SLAs) and the downtime that was associated were unacceptable. In addressing the inadequacies of its current storage system, the organization needed to meet several requirements:

- › RAID-based systems needed to be completely eliminated, due to slow rebuild times and low levels of redundancy.
- › The new solution needed to be object-based to retrieve files faster.
- › Scalability was critical, as the institution desired to store and use data in many new ways.
- › The new storage solution needed to have the durability to sustain a full site failure.
- › An API base was necessary to adapt existing applications to the new object store.

### *Solution*

The financial services composite organization chose to evaluate Scalality's RING because of its leadership position in the object-based storage field, guarantee for high durability, and separation between hardware and software to ensure future compatibility and upgradeability. Deployment of two RINGS across the two data centers in a 5+7 erasure coding configuration ensued. See Appendix C: Glossary for more on erasure coding.

### *Results*

With Scalality RING on Dell storage servers, the organization was able to recognize the potential value in its requisition requirements. It was demonstrable that the solution was capable of delivering better data availability with much improved performance, all leading to better business outcomes:

- › **Durability was greatly improved, with the IT organization being able to supply an SLA in excess of 10 nines.** The increase in redundancy meant an entire data center could go down without affecting availability of data. Data downtime was reduced, leading to the retention of revenues that would have otherwise been lost. Customer satisfaction and brand loyalty were also maintained, with the organization delivering data more consistently.
- › **File performance was drastically improved in many instances.** With many files mapped in the software layer, employees could more quickly find files in many cases. Employee satisfaction rose, as they became more productive on the new file system.
- › **Uses for the file system increased.** Due to the increase in performance and its competitive price point based on the lack of hardware brand locking, the organization was able to include other mission-critical data sets, such as archive, as part of the Scalality solution. Application delivery, backups, and customer-facing web services all became available with the scalability of both performance and capacity.
- › **Decreased total cost of ownership (TCO).** While cost reduction was not one of the original motives for the new storage system, it became clear that the rationalization of storage systems reduced the need for overall storage management and the associated costs. Compared with some alternative scale-out NAS solutions today, the cost per PB was also significantly lower both initially and when scaling capacity at a later time.

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*“The availability of a connector API and Scalality’s willingness to provide support on the migration were especially important.”*

~ Project director, systems implementer to major government agency

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## BENEFITS

The composite organization experienced the following quantified benefits in this case study:

- › Business value of improved uptime and business continuity.
- › Cost averted for alternate scale-out NAS with comparable performance.
- › Cost savings of increasing storage at scale.



### Business Value Of Improved Uptime And Business Continuity

One of the primary reasons why the composite organization chose the Scality RING solution was the durability of the solution, especially in the 5+7 erasure coding, dual-site configuration that the organization had selected. A simplified description of the durability offered by this 5+7 setup is that the RING could sustain an entire data center site failure and still have two additional nodes as failsafe. With the amount of mission-critical data that the organization stored across its footprint, durability was the key to business continuity. Previously, with its existing file storage solution, the organization used a combination of legacy NAS with RAID solutions and older scale-out file-based NAS storage systems. By consolidating to the newer RING storage on Dell storage servers, the composite organization was able to eliminate downtime with reliability in excess of 10 nines, reducing its storage downtime to near zero. And while absolute terms such as zero are difficult to assert, a RING deployment in such a configuration would be near impossible to incur downtime.

In addition to the avoided downtime from hardware failure, the composite organization demonstrated a reduction in the time required to rebalance and recover full read/write operability after node failure on its older file-based NAS. Rebuild time was also eliminated for its base of storage using RAID and reduced storage administration effort. The overall downtime reduced amounted to 142 minutes in the first year and nearly 200 minutes in each of the second and third years of the analysis. The total value of business continuity for the organization was \$1,670,542 over three years with the improved uptime.

We note that different organizations have a variety of applications that have different requirements. Some, for instance, require maximum performance, while others require maximum durability. This is all dependent on the particular use cases. While the Scality and Dell solution can be configured to support differing workloads, its true benefit is in the ability to economically scale storage with durability. To compensate in the interest of conservatism and this variability, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from improved business continuity over the three years was \$1,587,015, PV. See the section on Risks for more detail.

**TABLE 1**  
**Business Value Of Improved Uptime And Business Continuity**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
A1	Data downtime with existing NAS solution, annually, in minutes			52.6	78.9	78.9
A2	Time to recover or restore full functionality (read/write at full speed), in minutes			90	120	120
A3	Reduction in downtime, with Scality RING/Dell stretched solution on 5+7 EC			99%	99%	99%
A4	Percentage of mission-critical data on Scality			80%	80%	80%
A5	Organizational annual revenue			\$2,500,000,000	\$2,500,000,000	\$2,500,000,000
At	Business value of improved uptime and business continuity	$(A1+A2)*A3*A4*A5$ /525,600 minutes annually	\$0	\$537,192	\$749,281	\$749,281
	Risk adjustment	↓5%				
<b>Atr</b>	<b>Business value of improved uptime and business continuity (risk-adjusted)</b>		<b>\$0</b>	<b>\$510,332</b>	<b>\$711,817</b>	<b>\$711,817</b>

Source: Forrester Research, Inc.



### Cost Averted For Alternate Scale-Out NAS With Comparable Performance

When conducting proof of concepts (POCs) for a new scale-out solution, the composite organization compared the costs of alternate solutions that would be able to meet its mixed-use environment. Some scale-out solutions could meet the requirement, but at a cost that was significantly higher due in large part to the need for proprietary hardware. Without being wed to proprietary hardware, the costs of achieving performance were significantly cheaper for the initial 2PB deployment on the Scality / Dell solution. In comparison, a similarly performing scale-out NAS solution was expected to cost \$4,787,712. Additional network infrastructure and associated maintenance required to operate with the alternate solution further added to the overall costs. The agnostic nature of the RING software to hardware led to a total cost avoidance of \$5,284,826, PV, over the course of three years for a similarly performing scale-out NAS solution.

Interviewed organizations also noted the speed improvement of the RING object-based storage compared with the file-based storage architecture. While other solutions also offer object-based storage, the native APIs and file protocols offered with the Scality solution were heralded as superior in speed and interoperability with existing applications. This specific benefit has not been quantified due to the sheer variety of applications that require API

handling, but it should be an important consideration for organizations that need to pull massive quantities of files.

**TABLE 2**  
**Cost Averted For Alternate Scale-Out NAS With Comparable Performance**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
B1	Cost aversion of comparable storage servers of similar performance at scale, inclusive of software licensing and additional support/maintenance contracts		\$4,787,712			
B2	Accompanying network infrastructure and maintenance required for sustained performance		\$383,017		\$38,302	\$38,302
B3	Cost of IT resources to migrate to object storage on alternative solution		\$30,000	\$0	\$15,000	\$15,000
Bt	Cost averted for alternate scale-out NAS with comparable performance at scale	B1+B2+B3	\$5,200,729	\$0	\$53,302	\$53,302
	Risk adjustment	0%				
<b>Btr</b>	<b>Cost averted for alternate scale-out NAS with comparable performance at scale (risk-adjusted)</b>		<b>\$5,200,729</b>	<b>\$0</b>	<b>\$53,302</b>	<b>\$53,302</b>

Source: Forrester Research, Inc.



### Cost Savings Of Increasing Storage At Scale

The composite organization cited a concern in the ability to scale its previous scale-out NAS solution within a reasonable budget. The primary issues were the proprietary nature of the existing solution, requiring the purchase of the same branded appliances, as well as the need to pay for additional software licensing and supporting infrastructure. When all costs were computed, increasing the storage capacity became a rather expensive endeavor. The increase in demand for storage in years 2 and 3 of 1PB per year would have amounted to nearly \$3 million per PB. The total averted costs of this increase in capacity were \$4,650,109, PV, over a three-year horizon. The comparative costs of adding this capacity with the Scalify Dell solution are shown in Table 5 in the Costs section.

**TABLE 3**  
**Cost Aversion Of Increasing Storage At Scale, Due To Hardware-Agnostic Architecture**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	Cost aversion of adding storage hardware, per petabyte, with alternate scale-out NAS				\$2,393,856	\$2,393,856
C2	Software license savings of additional scale-out, per petabyte				\$330,000	\$330,000
C3	Accompanying network infrastructure and maintenance required				\$191,508	\$191,508
C4	Added costs of upgrading setup				\$9,000	\$9,000
Ct	Cost aversion of increasing storage at scale, due to hardware-agnostic architecture and lack of additional licenses	C1+C2+C3+C4	\$0	\$0	\$2,924,364	\$2,924,364
	Risk adjustment	0%				
Ctr	<b>Cost aversion of increasing storage at scale, due to hardware-agnostic architecture and lack of additional licenses (risk-adjusted)</b>		<b>\$0</b>	<b>\$0</b>	<b>\$2,924,364</b>	<b>\$2,924,364</b>

Source: Forrester Research, Inc.

### Total Benefits

Table 4 shows the total of all benefits across the three areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than \$11.5 million.

**TABLE 4**  
**Total Benefits (Risk-Adjusted)**

Ref.	Benefit Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Atr	Business value of improved uptime and business continuity	\$0	\$510,332	\$711,817	\$711,817	\$1,933,966	\$1,587,015
Btr	Cost savings to achieve comparable performance at scale	\$5,200,729	\$0	\$53,302	\$53,302	\$5,307,332	\$5,284,826
Ctr	Cost aversion of increasing storage at scale, due to hardware-agnostic architecture and lack of additional licenses	\$0	\$0	\$2,924,364	\$2,924,364	\$5,950,729	\$4,650,109
	<b>Total benefits (risk-adjusted)</b>	<b>\$5,200,729</b>	<b>\$510,332</b>	<b>\$3,689,483</b>	<b>\$3,689,483</b>	<b>\$13,192,027</b>	<b>\$11,521,950</b>

Source: Forrester Research, Inc.

## COSTS

The composite organization experienced two main costs categories associated with the Scality RING and Dell Storage solution:

- › Solution hardware and software costs.
- › Migration and training costs.

These represent the mix of internal and external costs experienced by the composite organization for initial planning, implementation, and ongoing maintenance associated with the solution.



### Solution Hardware And Software Costs

Software licensing and installation fees for Scality RING were incurred during the initial implementation period. In subsequent years, annual support and maintenance fees were also applied for same-day hardware service and software support. During the initial implementation, the composite organization incurred a total of \$2,135,904 in costs, for a total of 2PB of usable storage in a two-site, 5+7 erasure coding setup. In years 2 and 3, the organization continued to add 1PB of storage per year for distributed computing storage and archival data, at a cost of roughly \$800,000 per PB. While the cost per usable petabyte could have been reduced in a different erasure coding format, the durability of the storage was of paramount importance and thus produced the costs indicated in Table 5 below. In the interest of conservatism, solution acquisition costs (on reference line D1) below have been represented in list pricing. Interested parties could potentially realize a higher ROI and NPV by contacting Dell for buyer-specific requisitions.

**TABLE 5**  
Solution Hardware And Software Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Scality and Dell solution acquisition costs		\$2,045,904		\$797,952	\$797,952
D2	Support costs		\$70,000		\$35,000	\$35,000
D3	Installation costs		\$20,000		\$10,000	\$10,000
Dt	Solution hardware and software costs	D1+D2+D3	\$2,135,904	\$0	\$842,952	\$842,952
	Risk adjustment	0%				
<b>Dtr</b>	<b>Solution hardware and software costs (risk-adjusted)</b>		<b>\$2,135,904</b>	<b>\$0</b>	<b>\$842,952</b>	<b>\$842,952</b>

Source: Forrester Research, Inc.



### Migration And Training Costs

The composite organization required migration from its former scale-up NAS storage system as well as training for the Scality software and APIs. The IT resources took less than a week to implement object storage on the Dell storage rack servers. The object file definitions and APIs took an additional 280 hours to complete the migration,

largely due to the integration of APIs and some custom coding for REST calls to the new object store system. At a rate of \$75 for senior IT developers and storage administrators, the total initial cost of training and migration was estimated at \$30,000 in internal resources.

In general, migrations pose the greatest risk for organizations, and this migration was no exception. Different organizations have different use cases for the object store, and to truly maximize performance and the utility of object storage, an increased amount of administration and development is required. To compensate, this cost was risk-adjusted up by 20%. The risk-adjusted cost of migration in the initial deployment phase was \$36,000. See the section on Risks for more detail.

**TABLE 6**  
**Migration And Training Costs**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Internal migration hours, from NAS storage to object storage		320			
E2	Internal training hours		80			
E3	Hourly cost of storage administrator		\$75			
Et	Migration and training costs	$E1+E2 \times E3$	\$30,000	\$0	\$0	\$0
	Risk adjustment	↑20%				
<b>Etr</b>	<b>Migration and training costs (risk-adjusted)</b>		<b>\$36,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Source: Forrester Research, Inc.

### Total Costs

Table 7 shows the total of all costs as well as associated present values (PVs), discounted at 10%. Over three years, the composite organization expects total costs to be a PV of a little more than \$3.5 million.

**TABLE 7**  
**Total Costs (Risk-Adjusted)**

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Dtr	Solution hardware and software costs	\$2,135,904	\$0	\$842,952	\$842,952	\$3,821,808	\$3,465,881
Etr	Migration and training costs	\$36,000	\$0	\$0	\$0	\$36,000	\$36,000
	<b>Total costs (risk-adjusted)</b>	<b>\$2,171,904</b>	<b>\$0</b>	<b>\$842,952</b>	<b>\$842,952</b>	<b>\$3,857,808</b>	<b>\$3,501,881</b>

Source: Forrester Research, Inc.

## FLEXIBILITY

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit resulting in additional funds to invest in future projects. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement RING with Dell storage servers and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

Storage today is often defined in two categories: 1) scale-up, where IOPS and latency are of prime importance and 2) scale-out, where scale of raw storage capacity is of primary importance. The Scalify RING architecture allows for the implementation of both by being hardware-agnostic and software-definable, but it is especially adept at scaling to multi-petabyte levels. The use cases are many, but due to the ability to incorporate multiple hardware providers and increase durability easily without being tied to infrastructure like InfiniBand switches, the RING solution offers a highly malleable and economical solution for those organizations that have the need for enormous amounts of storage but have yet to define a concrete road map on future strategic use cases.

For future adopters of the Scalify RING solution, Dell now delivers the SD7000-S storage server that has 688TB of raw capacity for mixed-workload environments and supports rapid deployment of the RING solution. This 4U server is purpose-built for Scalify and provides storage density that excels in space-constrained environments. Red Hat or CentOS is preloaded, which decreases overall deployment variability and time. Our expectation is that a preconfigured solution such as this can be up and ready for use in as little as a day.

## RISKS

Forrester defines two types of risk associated with this analysis: “implementation risk” and “impact risk.” Implementation risk is the risk that a proposed investment in RING with Dell storage servers may deviate from the original or expected requirements, resulting in higher costs than anticipated. Impact risk refers to the risk that the business or technology needs of the organization may not be met by the investment in RING with Dell storage servers, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

**TABLE 8**  
**Benefit And Cost Risk Adjustments**

Benefits	Adjustment
Business value of improved uptime and business continuity	↓ 5%
Costs	Adjustment
Migration and training costs	↑ 20%

Source: Forrester Research, Inc.

Quantitatively capturing implementation risk and impact risk by directly adjusting the financial estimates results provides more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as “realistic” expectations since they represent the expected values considering risk.

The following impact risk that affects benefits is identified as part of the analysis:

- › The real benefit of business continuity can be affected multiples ways. Some organizations choose to utilize the Scalify RING for their mission-critical business applications, considering the durability of the solution. Meanwhile, other

organizations may place mission-critical services elsewhere. To add further complexity, the chances of node failure are predictable based on the number of data centers and the number of nines that industry solutions may offer. There is not a certain chance of downtime, nor is it guaranteed that downtime can be remediated within a prescriptive time allotment. Given the variance, even in light of the number of nines of durability that the Scality solution offers, we've adjusted the benefit downwards by 5% to stay on the side of conservatism.

The following implementation risk that affects costs is identified as part of this analysis:

- › Migration and training costs are a variable figure, determined in large part by the amount files that need to be arranged in the software-defined environment of object storage. Due to the possible ranges in use cases and the differing existing file systems to be migrated, this cost category was adjusted upwards by 20% to reflect the uncertainty.

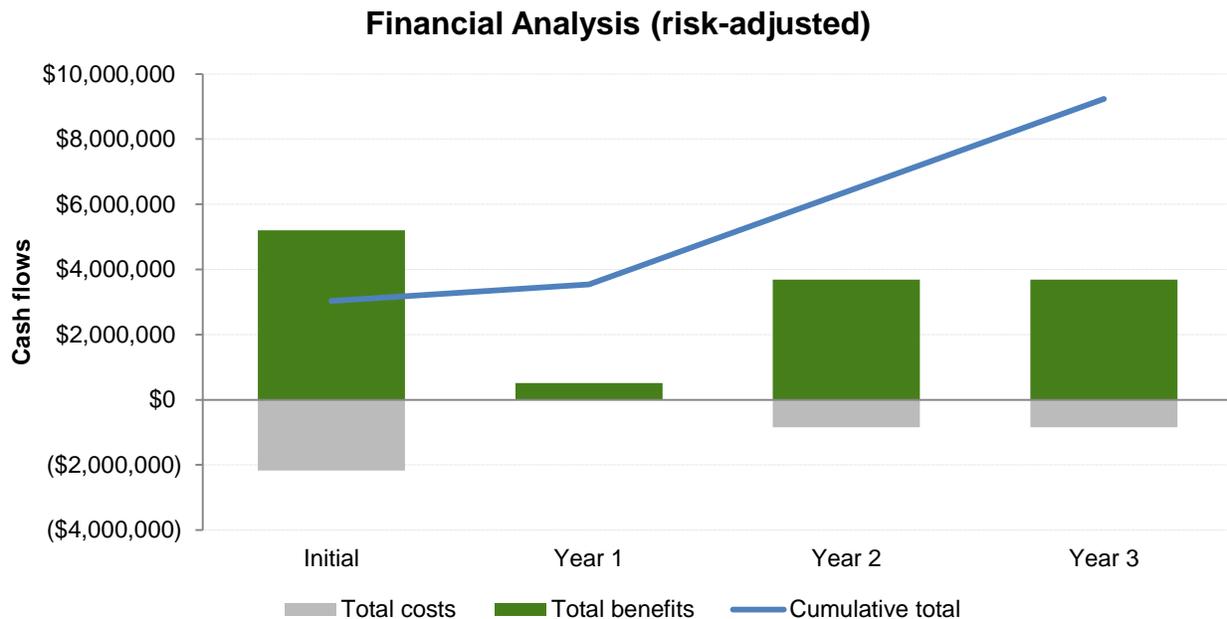
Table 8 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

## Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment in the Scalify RING with Dell storage servers.

Table 9 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 8 in the Risks section to the unadjusted results in each relevant cost and benefit section.

**FIGURE 3**  
Cash Flow Chart (Risk-Adjusted)



Source: Forrester Research, Inc.

**TABLE 9**  
Cash Flow (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Costs	(\$2,171,904)	\$0	(\$842,952)	(\$842,952)	(\$3,857,808)	(\$3,501,881)
Benefits	\$5,200,729	\$510,332	\$3,689,483	\$3,689,483	\$13,192,027	\$11,521,950
Net benefits	<b>\$3,028,825</b>	<b>\$510,332</b>	<b>\$2,846,531</b>	<b>\$2,846,531</b>	<b>\$9,334,219</b>	<b>\$8,020,069</b>
ROI						229%
Payback period						< 6 months

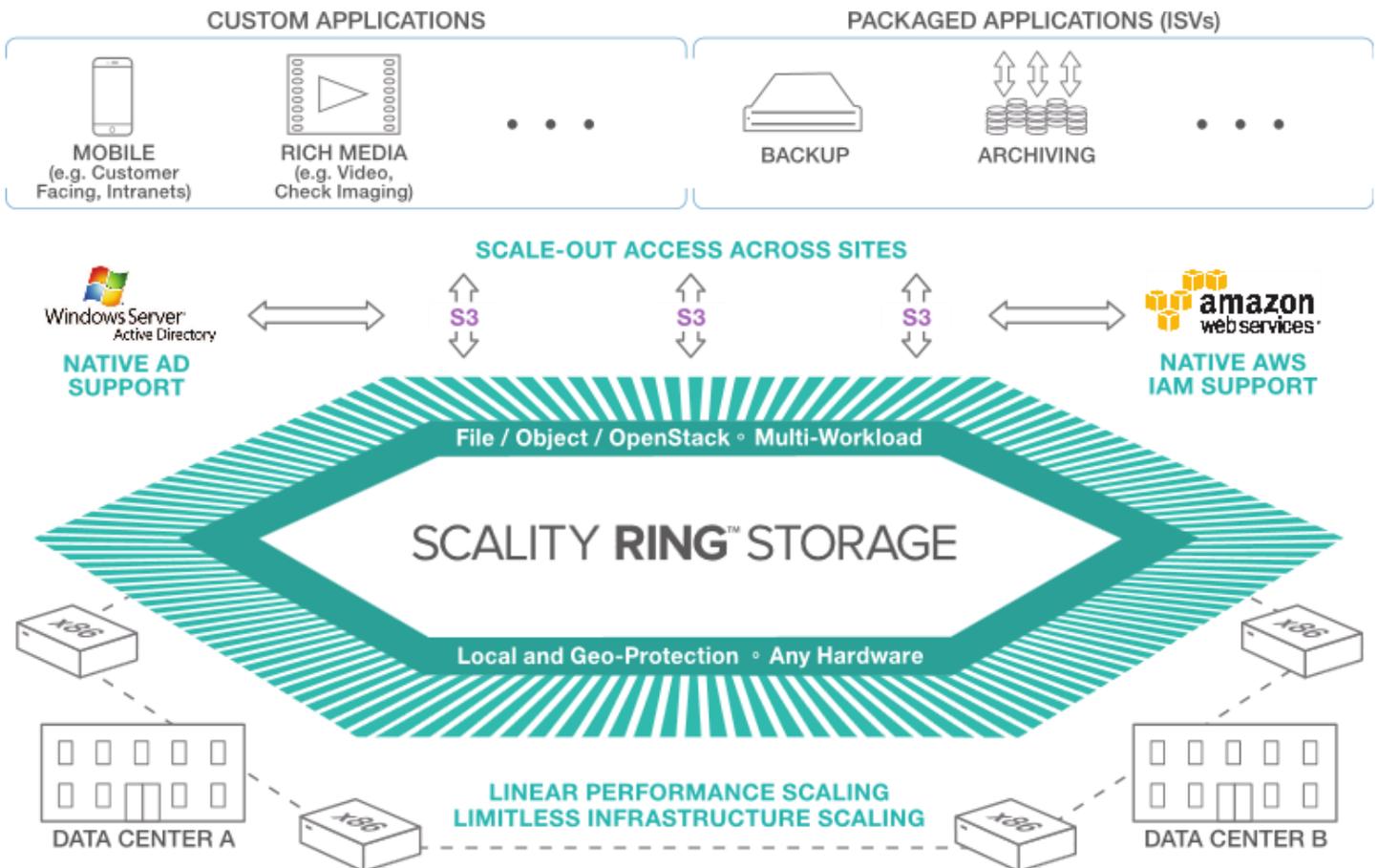
Source: Forrester Research, Inc.

## Scality RING With Dell Storage Servers: Overview

The following information is provided by Scality and Dell. Forrester has not validated any claims and does not endorse Scality, Dell, or their offerings.

Scality RING object storage enables enterprises and cloud service providers to run petabyte-scale, data-rich services like web applications, VOD, active archives, compliance archives, and private storage clouds. The RING is software, so you can deploy it on standard x86 servers of your choice, taking advantage of server and media innovation over time. Acting as a single, distributed system, the RING can scale linearly across thousands of servers, multiple sites, and an unlimited number of objects, with continuous availability. Data is protected with policy-based replication, erasure coding, and geo-distribution, achieving up to 14 nines of durability. Powered by S3, file, and OpenStack interfaces, the RING provides high performance across a variety of workloads at up to 90% lower TCO than legacy storage.

The Scality RING is a software-defined storage (SDS) solution for petabyte-scale data storage that is designed to interoperate in the modern software-defined data center (SDDC). The RING software is designed to create unbounded scale-out storage systems that converge the storage of petabyte-scale data from multiple applications and use cases, including both object- and file-based applications. The RING is a distributed system deployed on industry standard servers, with a minimum cluster of six storage servers that can be seamlessly scaled out to very large systems of thousands of storage servers with hundreds of petabytes of storage capacity.



Source: Scality, Inc.

## Appendix A: Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders. TEI assists technology vendors in winning, serving, and retaining customers.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, flexibility, and risks.

### BENEFITS

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often, product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

### COSTS

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

### FLEXIBILITY

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprise wide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point. However, having the ability to capture that benefit has a PV that can be estimated. The flexibility component of TEI captures that value.

### RISKS

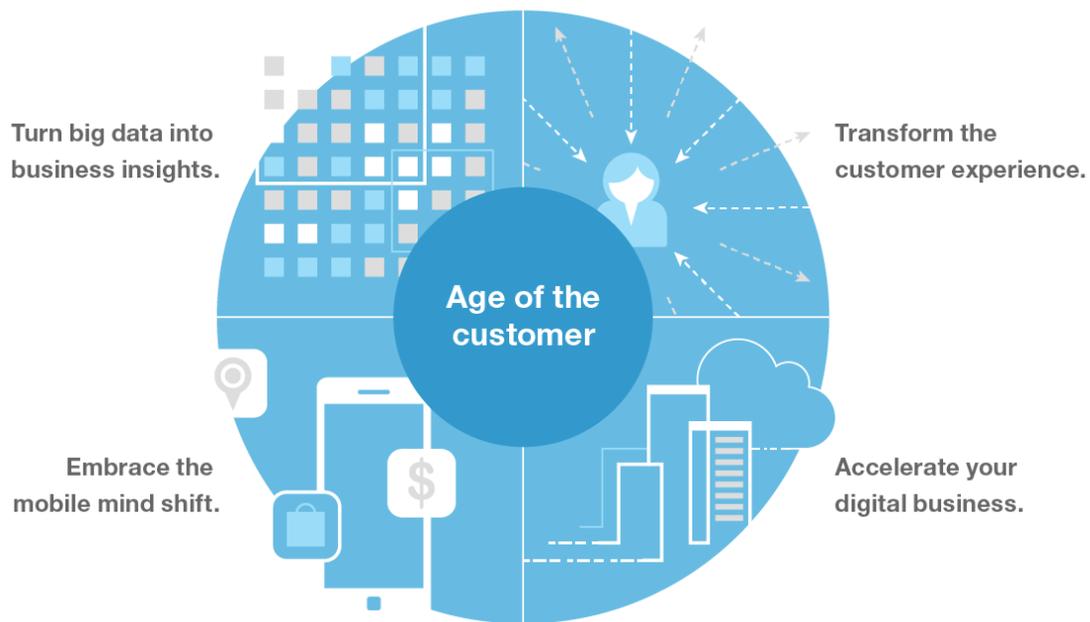
Risks measure the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections and 2) the likelihood that the estimates will be measured and tracked over time. TEI risk factors are based on a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the risk factor around each cost and benefit.

## Appendix B: Forrester And The Age Of The Customer

Your technology-empowered customers now know more than you do about your products and services, pricing, and reputation. Your competitors can copy or undermine the moves you take to compete. The only way to win, serve, and retain customers is to become customer-obsessed.

A customer-obsessed enterprise focuses its strategy, energy, and budget on processes that enhance knowledge of and engagement with customers and prioritizes these over maintaining traditional competitive barriers.

**CMOs and CIOs must work together to create this companywide transformation.**



Forrester has a four-part blueprint for strategy in the age of the customer, including the following imperatives to help establish new competitive advantages:



Transform the customer experience to gain sustainable competitive advantage.



Accelerate your digital business with new technology strategies that fuel business growth.



Embrace the mobile mind shift by giving customers what they want, when they want it.



Turn (big) data into business insights through innovative analytics.

## Appendix C: Glossary

**Discount rate:** The interest rate used in cash flow analysis to take into account the time value of money. Companies set their own discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organizations to determine the most appropriate discount rate to use in their own environment.

**Erasure coding:** Erasure coding (EC) is a data protection method that offers resiliency by breaking original data down and encoding smaller pieces of redundant data fragments across a set of storage drives, nodes, or locations. The encoded data fragments distributed across the storage systems can then be used to reproduce and reconstruct original data without the storage overhead that accompanies traditional redundant storage models.

**Net present value (NPV):** The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

**Present value (PV):** The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

**Payback period:** The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

**Return on investment (ROI):** A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

### A NOTE ON CASH FLOW TABLES

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in years 1 through 3 are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations are not calculated until the summary tables are the sum of the initial investment and the discounted cash flows in each year.

Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

**TABLE [EXAMPLE]**  
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.

## Appendix D: Supplemental Material

### *Related Forrester Research*

“Software-Defined Storage Will Sound The Death Knell For Traditional Storage Provisioning,” Forrester Research, Inc., May 13, 2013

“Seven Influential Storage Trends Shaping Your Near-Term Strategy,” Forrester Research, Inc., May 21, 2014

“Market Overview: Software-Only Storage,” Forrester Research, Inc., August 1, 2014

## Appendix E: Endnotes

<sup>1</sup> Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information, see the section on Risks.