

A Forrester Total Economic Impact™ Study Prepared For NetApp

The Total Economic Impact Of NetApp's And Cisco's FlexPod Data Center Platform

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Executive Summary

In summer 2012, Forrester Consulting commenced work on a research project commissioned by NetApp that focused on examining the potential return on investment (ROI) that enterprises may realize by adopting the FlexPod platform. Co-developed by NetApp and Cisco Systems, the FlexPod platform is a predesigned converged infrastructure solution built on Cisco Unified Computing System (UCS) servers, Cisco Nexus data center switches, NetApp FAS storage with Data ONTAP components, and software from a range of partners.

This study highlights the benefits and costs of deploying the FlexPod platform across the enterprise of a composite *Organization* (see the Composite Organization Description section). The findings in this study are in large part based on in-depth interviews conducted by Forrester with four organizations that have invested in and deployed NetApp's and Cisco's FlexPod platform. The study examines the estimated ROI for the composite *Organization* and presents the aggregate findings derived from the interview and analysis process as well as from Forrester's independent research.

Our composite *Organization* is using NetApp's and Cisco's FlexPod platform solution for the following workloads:

- Virtual desktop infrastructure (VDI) — 1,500 users.
- Microsoft Exchange 2010 — 1,500 users.
- Microsoft Office SharePoint 2010 — 1,500 users.
- Microsoft SQL Server 2008 R2 — (standalone only) SQL IOPs = 200:DBMS — 1,000 gigabytes (GBs).

The study found that for our *Organization*, a successful, well-planned implementation will allow quantifiable benefits and cost savings to accrue in the following areas totaling **\$858,185** (risk-adjusted and present-value-adjusted — see Table 6) over three years:

- \$264,228 — efficiency gains through automation of server and storage provisioning with FlexPod.
- \$255,000 — cost avoidance of not replacing physical servers.
- \$51,296 — storage efficiency cost savings — reduction in storage hardware.
- \$264,228 — benefits from NetApp OnCommand Insight and Cisco UCS Manager.
- \$23,434 — cost savings from lower power and cooling costs.

Key Findings

Our interviews and subsequent financial analysis found that the *Organization* experienced the risk-adjusted ROI, payback period, benefits, and costs shown in Table 1.

Table 1

The Organization — Three-Year Risk-Adjusted ROI, Payback Period, Costs, And Benefits

Risk-adjusted ROI	Payback period	Total benefits (present value)	Total costs (present value)	Net present value
120%	Nine months	\$858,185	\$390,885	\$467,300

Source: Forrester Research, Inc.

The three-year risk-adjusted total net present value (NPV) of **\$467,300** represents the net cost savings and benefits attributed to using the FlexPod platform. These results are compared with the costs of the *Organization's* server, storage, and network (including storage area network [SAN] components) environment before consolidation and virtualization (see details in the Costs; Benefits And Savings; Flexibility; and Risk sections). In addition, the risk-adjusted ROI was a **very favorable 120%**.

Table 1 illustrates the risk-adjusted cash flow for the composite *Organization*, based on data and characteristics obtained during the interview process. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimate, incorporating any potential risk factors that may later affect the original cost and benefit estimates. For this study, Forrester applied a **15% risk adjustment — i.e., a reduction of 15%** — to all benefits to reflect the risks. For a more in-depth explanation of risk and the risk adjustments used in this study, please see the Risk section.

The objective of this study is not to illustrate savings that other enterprises can obtain by deploying the FlexPod platform, but rather to identify savings that the organizations we interviewed experienced. These results can be used as a guide to allow other enterprises to determine the appropriate benefits for their particular environment.

Disclosures

The reader should be aware of the following:

- The study was commissioned by NetApp and delivered by the Forrester Consulting group.
- NetApp and Cisco reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study and its findings and did not accept changes to the study that contradicted Forrester's findings or obscured the meaning of the study.
- NetApp and Cisco provided the organization names for the interviews but did not participate in the interviews.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers should use their own estimates within the framework provided in the study to determine the appropriateness of an investment in the FlexPod platform.

- Forrester does not endorse NetApp, Cisco, or the FlexPod platform.
- The study is not a direct or implied market or competitive comparison.

TEI Framework And Methodology

Methodology

NetApp selected Forrester for this project because of our industry expertise in storage, server, and UCS technologies as well as Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of its TEI methodology in modeling and analyzing the *Organization's* use of the FlexPod platform:

- Costs.
- Benefits to the entire organization.
- Flexibility.
- Risk.

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

Approach

Forrester used a five-step approach for this study:

1. Forrester gathered data from existing Forrester research relative to NetApp's and Cisco's FlexPod platform.
2. Forrester interviewed NetApp and Cisco marketing, product management, and sales personnel to fully understand the potential (or intended) value proposition of the FlexPod platform.
3. Using knowledge of the FlexPod platform as well as input from existing Forrester research, a Forrester representative conducted in-depth discussions with four organizations that have implemented FlexPod to understand their experiences.
4. Forrester constructed a financial model representative of data collected in the interviews.
5. Forrester created this study, which represents and examines the estimated value of the findings derived from the customer interview and analysis process and from Forrester's independent research.

About NetApp's And Cisco's FlexPod Platform

NetApp's And Cisco's FlexPod Data Center Platform

According to NetApp and Cisco, FlexPod is a data center platform developed by and jointly marketed by both companies. FlexPod hosts infrastructure software and business applications in virtualized and nonvirtualized environments. The platform has been tested and validated with leading hypervisors and operating systems from Citrix, VMware, Red Hat, and Microsoft and can be managed via a range of solutions provided by the FlexPod ecosystem of software partners.

According to NetApp and Cisco, organizations can accelerate their transition to cloud computing with the pre-validated FlexPod data center platform that integrates components into a single flexible architecture, increases efficiencies, and reduces risk. By consolidating what are traditionally disparate data center technology silos (server, storage, and network) into a consolidated and pre-validated offering, the vendors claim to shorten deployment times, decrease operating costs, and simplify management.

FlexPod components include NetApp unified storage systems, Cisco UCS servers, and Cisco Nexus switches. The FlexPod architecture can scale up or out, and it can be optimized for a variety of mixed workloads in both virtualized and nonvirtualized environments.

Key points include:

- A single converged platform delivering networking, computing, and storage.
- A pretested, validated solution platform to reduce risk and increase operational efficiencies.
- Flexible IT architecture for today's needs that scales for future growth.
- A cooperative support model for efficient and streamlined issue resolution.

Cooperative Support Model

NetApp and Cisco, along with VMware, developed the cooperative support model that gives FlexPod customers direct access to engineers or software vendors without going through the extra step of using a middleman. The model has formal processes in place to seamlessly streamline and quickly resolve technical issues. Vendor coordination includes cross-training of technical support engineers, documented communication paths, and seamless escalations so that FlexPod customers receive consistent and high-quality support no matter where the source of the problem lies in their integrated solution.

When a complex issue occurs that cannot be resolved through a normal escalation process, the issue is resolved through the cooperative support lab. In the lab, colocated NetApp and Cisco experts have the ability to mix and match available product components to reproduce complex customer environments and expedite issues.

FlexPod Partner Resources

NetApp and Cisco have an extensive ecosystem of more than 600 FlexPod partners. Every NetApp and Cisco partner that sells FlexPod has an exemplary certification record — having achieved NetApp partner status and Cisco UCT, DCA, or ATP certification. In addition, NetApp and Cisco have a validation process for their most advanced FlexPod partners known as FlexPod Premium Partners. These reseller partners have achieved an exceptional level of sophistication in their FlexPod practice and associated services. Some of the key benefits of the FlexPod Premium Partners to help increase business and drive profitability include extended benefits such as access to demo labs; assistance in planning, designing, and implementing help desks to support post-sales engineers; unique branding for use in go-to-market activities; special incentives; and ongoing advisory board meetings with the most current solution updates.

Validated Management Partners

The NetApp components provide open application programming interfaces (APIs) for easy integration with virtually any ecosystem-partner orchestration and automation tools. Currently, NetApp and Cisco have three validated management partners, CA, Gale Technologies, and Cloupia. These partners offer turnkey solutions that have undergone rigorous testing procedures on a FlexPod platform.

Customer Interview Highlights

Forrester derived its conclusions in large part from information received in a series of in-depth interviews conducted with executives and personnel at four organizations, each of which are using NetApp's and Cisco's FlexPod platform. The following is a brief description of the interviewed organizations, all of whom were promised anonymity:

1. **An independent, not-for-profit, and locally controlled healthcare organization serving the needs of 10 US counties and employing more than 2,000 people.** Forrester interviewed the manager of infrastructure and communication. The company has been using one FlexPod platform with Citrix XenServer for more than 12 months to concurrently support several business-critical healthcare-related applications. It will be adding another FlexPod platform in the near future to support backup and recovery and disaster recovery.
2. **A US-based managed service provider for small and medium-size businesses offering a variety of services, including cloud computing, disaster recovery, custom application development, Microsoft CRM, and VoIP systems.** Forrester interviewed the vice president of cloud services for this study. This company has been using its FlexPod platform with VMware ESXi for 10 months with a goal of providing a precertified, scalable infrastructure-as-a-service (IaaS) platform for its customers. The FlexPod platform concurrently supports the following applications: VDI with Citrix XenDesktop, VMware View, Microsoft Exchange, Microsoft SharePoint, SQL Server, and Great Plains Software.
3. **A large regional science museum with more than 600 employees providing research, education, and collection facilities for an audience of more than 1 million people per year.** Forrester interviewed the director of IT services who indicated that the company's FlexPod platform with VMware vSphere has been in use for more than 18 months. It concurrently supports several business-critical applications such as

VMware View, VMware Zimbra, Microsoft SharePoint, and a niche customer relationship management (CRM) application.

4. **A global architectural firm with a staff of 100 professionals with expertise in urban design, residential design, and mixed-use designs.** Forrester interviewed a senior IT associate to learn about this firm's experience with its two FlexPod platforms — one in its primary data center and the other in its secondary data center for disaster recovery (DR). The FlexPod platforms concurrently support Microsoft Exchange and SQL Server applications.

Composite Organization Description

For this study, we have built a composite *Organization* to help illustrate the quantifiable benefits and cost savings that can be achieved using NetApp's and Cisco's FlexPod for multiple workloads. This *Organization* is based on a combination of attributes and feedback collected from organizations interviewed within the scope of this study as well as from other NetApp customers with similar business needs. The *Organization* is a \$1 billion-plus multinational manufacturer and service provider headquartered in North America with operations in Europe and Asia. Prior to investing in NetApp's and Cisco's FlexPod platform, it was challenged by the need to keep pace with the annual 30% growth in its overall storage requirements.

Our *Organization* will invest in FlexPod for VMware, which will support 1,500 users simultaneously for the following workloads:

- Virtual desktop infrastructure (VDI) — 1,500 users.
- Microsoft Exchange 2010 — 1,500 users.
- Microsoft Office SharePoint 2010 — 1,500 users.
- Microsoft SQL Server 2008 R2 — (standalone only) SQL IOPs = 200:DBMS — 1,000 gigabytes (GBs).

FlexPod Configuration And Pricing For The Organization

The *Organization* contacted a FlexPod distributor to purchase the following FlexPod platform-related hardware, software, hypervisor, and maintenance for a total discounted cost of **\$354,825**. Pricing is based on FlexPod's normal list price and average discounts in its list price as of December 2012.

For the FlexPod configuration of NetApp storage and Clustered ONTAP, the major configuration components include:

- FAS3220 HA system with controller and IOXM (one) and 57.6 TB capacity.
- Flash Cache 256 GB PCIe Module.
- NFS, CIFS.
- Clustered Data ONTAP 8.

- SupportEdge Premium 4-hour Onsite — 36 months paid in advance.

For the FlexPod configuration of Cisco UCS, the major configuration components include:

- UCS 5108 Blade Server AC Chassis (one).
- UCS Manager.
- 12 UCS Blades.
- 2 Fabric Interconnects UCS 6248.
- 2 x I/O modules.
- 192 GB memory per server.
- 6 B200 M3 blades.
- Nexus 55548 switch.
- Onsite 24x7x4 for 36 months paid in advance.

For the FlexPod configuration of the hypervisor, the major configuration components include:

- VMware View, vSphere, and eight blades in the above configuration, with an enterprise license with three years of maintenance.

As with the organizations interviewed by Forrester, the composite *Organization's* high-level business objectives for investing in FlexPod were as follows:

- **Reducing cost:** to reduce the time and money spent on managing its servers and storage.
- **Supporting business needs:** to create a more flexible and agile server and storage infrastructure to respond to the business needs faster.
- **Reducing risk with pre-validated design and vendor support:** to reduce risk with pre-validated FlexPod workload configurations, cooperative vendor support, and a broad ecosystem of delivery partners.
- **Reducing energy consumption:** to consolidate data center servers and storage, saving in power and cooling costs, with FlexPod providing consistency with known capacity, floor space, and power requirements.
- **Reducing time-to-market:** to provide the ability to deploy new applications and workloads in minutes versus weeks (previously).

TEI Framework

Introduction

From the information gathered in the in-depth customer interviews, Forrester has constructed a TEI framework for those organizations considering an investment in NetApp's and Cisco's FlexPod platform. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

Composite Organization

Based on the interviews with the four existing organizations that NetApp provided, Forrester constructed a TEI framework, a composite *Organization*, and an associated ROI analysis that illustrates the areas affected financially. The composite *Organization* that Forrester synthesized from these results is described above.

Framework Assumptions

Table 2 lists the discount rate used in the present value (PV) and NPV calculations, the time horizon used for the financial modeling, and other costs.

Table 2

General Assumptions

General assumptions	Value
Discount rate used to compute PV and NPV	10%
Length of analysis	Three years
Annual fully loaded cost of a storage, SAN, or server administrator	\$125,000
Fully loaded weekly cost of a storage, SAN, or server administrator	\$2,404

Source: Forrester Research, Inc.

Costs

Costs are an important part of the TEI model. Costs, or IT impact, are calculated as a change in costs primarily for IT as a result of the introduction of the technology to the *Organization*. Therefore, the introduction of the FlexPod solution affects IT budgets with the purchase of the solution. It also affects the *Organization* positively, in terms of the cost savings and efficiencies created by the investment (see the Benefits And Savings section that follows).

The impact of cost is accrued in two different areas described in the following: FlexPod platform costs of \$354,825 and the *Organization's* internal preparation, planning, and data migration costs of \$36,060. Total three-year costs are **\$390,885**.

Costs For The FlexPod Solution: \$354,825

See the Composite *Organization* Description section for configuration details.

Labor Costs For Internal Preparation, Planning, And Data Migration: \$36,060

A readiness assessment that looks at costs, benefits, and risks along with detailed planning is essential for a successful server and storage consolidation initiative for multiple workloads on a single platform. Based on interviews with current FlexPod customers, our *Organization* required 1.5 full-time-equivalent (FTE) storage and SAN administrators and 1.0 FTE server administrators to spend six weeks of their time — before and during implementation — choosing hypervisors and thin clients, setting up service profiles, and planning and testing methods of migrating data from legacy servers, storage, and SANs to the new FlexPod environment. The fully loaded cost for this effort is calculated as follows: 2.5 administrators times six weeks times \$2,404 (the fully loaded weekly cost of a storage, SAN or server administrator) for a total of \$36,060.

The costs associated with deploying the FlexPod platform solution are reflected in Table 3.

Table 3

The *Organization* — Total Costs (Non-Risk-Adjusted)

Total costs	Year 0	Year 1	Year 2	Year 3	Total
FlexPod platform costs — hardware, software, and maintenance for 36 months	\$354,825	\$0	\$0	\$0	\$354,825
Costs for internal preparation, planning, and data migration labor	\$36,060	\$0	\$0	\$0	\$36,060
Total costs	\$390,885	\$0	\$0	\$0	\$390,885

Source: Forrester Research, Inc.

Benefits And Savings

In addition to the costs associated with the NetApp solution, there were positive IT and business cost savings and benefits with NetApp's and Cisco's FlexPod platform.

Based on an analysis of the interviews with the participating customers, we could quantify the following benefits as a result of deploying NetApp's and Cisco's FlexPod platform. These benefits total **\$1,186,796** over three years (before risk or PV adjustments).

Efficiency Gains Through Automation Of Server And Storage Provisioning With FlexPod: \$375,000

The *Organization* was at the end of its server and storage life cycle when it deployed FlexPod. It could either have done a 1 to 1 replacement of those 33 physical servers, or virtualize the 33 servers. It chose the NetApp and Cisco FlexPod platform and virtualized the 33 servers for an annual savings of \$125,000 for 0.5 server FTEs and 0.5 storage FTEs (fully annual loaded costs for server and storage administrators are \$125,000). This labor savings is attributed to avoiding the following one-time and ongoing activities: rack and stack 33 servers and connect them to the SAN, run cables, build the server boxes, allocate the storage, update the firmware, perform Windows patches, and maintain each physical server over its useful life. The cost-avoidance labor savings total \$125,000 annually or **\$375,000** over three years.

Cost Avoidance Of Not Replacing Physical Servers: \$330,000

The *Organization* will experience significant savings by replacing its normal four-year physical server refresh cycle with server virtualization via FlexPod. As the 33 legacy servers reach the end of their useful life in Year 1, the *Organization* will consolidate and virtualize the applications onto FlexPod. The *Organization* estimates that it will save \$10,000 per server (hardware, software, support, cabling, and racking/stacking costs) for each physical server it does not have to buy, as a result of server consolidation and virtualization. Over a one-year period, 33 physical servers and applications will be migrated to the FlexPod platform, saving the *Organization* **\$330,000** in Year 1 of our analysis. (The costs for the 13 FlexPod blade servers are included in the Costs section of this study.)

Storage-Efficiency Cost Savings — Reduction In Storage Hardware: \$72,800

The interviewed organizations reported using combinations of three NetApp storage optimization technologies (data deduplication, thin provisioning, and FlexClone) to reduce their storage costs. The FlexPod customers using these NetApp technologies reported significant storage cost savings, averaging 60% to 70% in their production and backup environments.

- **Data deduplication.** NetApp provides the benefit of sharing identical data that reside on disk storage through data deduplication technology. By sharing common data — which is written only once per data store — the storage hardware requirements are greatly reduced. The *Organization* was able to reduce workload storage costs by deduplicating redundant data stored across production and backup copies. In addition, customers reported using NetApp's deduplication across all storage protocols (NFS, FC, and iSCSI) and saving 60% in future storage costs. During a three-year implementation of FlexPod, our *Organization* was able to avoid purchasing 10 TB of primary and backup storage (disk shelves and drives) at an average cost of \$5,200 per TB and at a three-year cost avoidance of **\$52,000**, or \$17,333 annually over three years.

The interviewed customers reported additional storage hardware savings using the combination of NetApp thin provisioning and FlexClone features, although it was difficult for these customers to segregate the savings between the two. Our *Organization* was able to avoid purchasing another 4 TB of storage hardware (disk shelves and drives) over three years at an average cost of \$5,200 per TB, or **\$20,800** (or \$6,933 savings annually). These features are described below:

- **Thin provisioning.** Three of the interviewed customers described a traditional (pre-virtualization) environment in which administrators routinely overprovisioned storage to avoid running out and to avoid the downtime related to expanding volumes. NetApp's thin provisioning technology provides storage on demand by treating storage as a shared resource that is consumed only when individual VMs require it. It allows administrators to

over-allocate physical storage and increase effective capacity utilization, compared with traditional thick-provisioned storage. Thin provisioning and data deduplication are independent features designed to reduce the need for more storage by increasing the utilization rates of existing storage. Thin provisioning allows consumption on demand, while deduplication removes any redundancy — together they optimize utilization of all available array capacity. Both deduplication and thin provisioning can be enabled or disabled on a data object basis, providing fine-grained administrator controls.

- **FlexClone.** The *Organization* is doing rapid provisioning with NetApp's Rapid Cloning Utility (RCU), which is included with the NetApp FlexClone license. RCU is an integrated cloning and provisioning utility for VMs that instantly replicates data volumes and data sets as transparent virtual copies. It allows the *Organization* to create and provision hundreds of virtual servers and desktops in minutes and then make them available to users. With NetApp's FlexClone, any storage object (file, LUN, or volume) can be cloned and made available for immediate access. With FlexClone, common storage blocks between the clone and the original consume no additional physical storage space. Clones can increase in size as unique data is added to them. Should any of this cloned data become redundant, data deduplication technology will again remove duplicates, returning the previously used storage back to the pool for reuse.

Total storage-efficiency cost savings as a result of a reduction in storage hardware and software costs were **\$72,800** over our three-year analysis.

Benefits From NetApp OnCommand Insight And Cisco UCS Manager: \$375,000

Interviewed FlexPod customers reported that NetApp's OnCommand Insight enabled them to proactively manage their multivendor environment, while optimizing resources and workloads. Customers were able to gain a holistic view of their storage infrastructure as a unified set of services using discovery, correlation, service paths, simulation, and root-cause analysis.

Customers reported that Cisco's UCS Manager provides unified, embedded management of software and hardware components. Interviewed customers were able to manage dozens of resources with less operational overhead using UCS Manager's flexible workload automation tools. Each of Cisco's server, network, and voice products has a similar intuitive user interface and can be managed remotely, further accelerating IT responsiveness and boosting productivity.

Using the combination of NetApp OnCommand Insight and Cisco UCS Manager, our *Organization* was able to achieve annual savings of \$125,000 for 0.5 server FTEs and 0.5 storage FTEs (fully annual loaded costs for server and storage administrators are \$125,000). Total three-year savings is **\$375,000**.

Savings From Lower Power And Cooling Costs — \$33,996

The *Organization* was at the end of its server and storage life cycle when it deployed FlexPod. It could either do a 1 to 1 replacement of those 33 physical servers or virtualize the 33 servers. It chose the NetApp and Cisco FlexPod platform and virtualized the 33 servers. The *Organization* experienced a *net* reduction of 20 physical servers (the original 33 servers less 13 FlexPod blade servers) with the reductions occurring over an initial 12-month period and beyond. Annualized power and cooling savings for 20 servers is \$13,876, or \$693.79 per server (see Table 4 below for annualized calculations). For our *Organization*, we estimate that the savings associated with a reduction in the *existing* servers' power and cooling costs would be \$693.79 annually per server as follows:

- **Year 1** — Reduction of nine (average net) servers during Year 1, thereby saving an average of \$693.79 in power and cooling per server or **\$6,244** in savings.
- **Year 2** — Reduction of a net 20 servers throughout Year 2, thereby saving \$693.79 in power and cooling per server or **\$13,876** in savings.
- **Year 3** — Reduction of a net 20 servers throughout Year 3, thereby saving \$693.79 in power and cooling per server or **\$13,876** in savings.

The total three-year cost savings associated with reduced power and cooling costs is **\$33,996**.

Table 4

The *Organization*: Annualized Power And Cooling Calculations

Description	Value
Number of Windows servers to be consolidated/eliminated (net)	20
Average power draw (watts)	400
Average energy cost per KWH	\$0.11
Number of hours in a year	8,760
Cooling factor (1+incremental power needed for cooling)	1.8
Annualized savings	\$13,876

Source: Forrester Research, Inc.

(Calculation is 20 net servers x 400/1,000 (KWH) x \$0.11 cost per KWH x 8,760 hours/year x 1.8 cooling factor = \$13,876 or \$693.79 annually for each server.)

Table 5 represents the *Organization's* total non-risk-adjusted benefits and costs savings over three years.

Table 5The *Organization* — Total Quantified Benefits And Cost Savings (Non-Risk- Or PV-Adjusted)

Total benefits and cost savings	Year 1	Year 2	Year 3	Total
Efficiency gains through automation of server and storage provisioning with FlexPod	\$125,000	\$125,000	\$125,000	\$375,000
Cost avoidance of not replacing physical servers	\$330,000	\$0	\$0	\$330,000
Storage efficiency cost savings — reduction in storage hardware	\$24,266	\$24,266	\$24,268	\$72,800
Benefits from NetApp OnCommand Insight and Cisco UCS Manager	\$125,000	\$125,000	\$125,000	\$375,000
Savings from lower power and cooling costs	\$6,244	\$13,876	\$13,876	\$33,996
Total benefits and cost savings	\$610,510	\$288,142	\$288,144	\$1,186,796

Source: Forrester Research, Inc.

Risk

Risk-adjusted and non-risk-adjusted ROI are both discussed in this study. The *Organization's* individual costs and benefits are quoted above in non-risk-adjusted (best-case) terms and before risk adjustments are made. The assessment of risk provides a range of possible outcomes based on the risks associated with IT projects in general and specific risks relative to NetApp's and Cisco's FlexPod platform projects. In our research, we discovered that deploying the FlexPod platform was a relatively low-risk endeavor if organizations took the time to thoroughly plan the implementation.

TEI uses risk factors to widen the possible outcomes of the costs and benefits (and resulting savings) associated with a project. As the future cannot be accurately predicted, there is risk inherent in any project. TEI captures risk in the form of risks-to-benefits and risks-to-costs.

Measurement of risk is a way of incorporating the levels of confidence and uncertainty regarding the cost and benefit estimates of a given investment. Higher confidence that the cost and benefit estimates will be met implies that the level of risk is lower and the variation between the risk-adjusted and non-risk-adjusted outcomes is minimized.

Forrester considered the following *general* risks in this study:

- A lack of organizational discipline in creating processes and procedures to best take advantage of the benefits.
- A lack of appropriate training for the server, storage, and SAN administrators who will be responsible for optimizing the full benefit potential of the FlexPod platform.

- Failures to reduce, transfer, or redeploy IT support headcount made redundant by deploying the FlexPod platform.
- The possibility that the benefits will not be measured and quantified in the future, and as a result, no TEI benefit would be captured and acknowledged.
- Internal inertia, conflicting priorities, and turnover, reducing an organization's ability to achieve the benefits.

The following risk associated with NetApp's and Cisco's FlexPod platform solution was considered in this study:

- The inability of the *Organization* to find, train, and retain administrators fluent in technologies such as NetApp's Data ONTAP 8 operating system, Cisco's UCS Manager, and the applicable hypervisor to take full advantage of the benefits outlined in this study.

For this study, Forrester applied a **15% risk adjustment — i.e., a reduction of 15%** — to all benefits to reflect the risks listed above. We did not risk-adjust costs, as these were primarily fixed quotes from NetApp and Cisco distributors.

Table 6 represents the PV of benefits and cost savings (risk-adjusted by 15%) of deploying NetApp's and Cisco's FlexPod platform.

Table 6

The *Organization* — Total Quantified Benefits And Cost Savings (Risk- And PV-Adjusted)

Total benefits and cost savings	Year 1	Year 2	Year 3	Total	PV
Efficiency gains through automation of server and storage provisioning with FlexPod	\$106,250	\$106,250	\$106,250	\$318,750	\$264,228
Cost avoidance of not replacing physical servers	\$280,500	\$0	\$0	\$280,500	\$255,000
Storage efficiency cost savings — reduction in storage hardware	\$20,626	\$20,626	\$20,628	\$61,880	\$51,296
Benefits from NetApp OnCommand Insight and Cisco UCS Manager	\$106,250	\$106,250	\$106,250	\$318,750	\$264,228
Savings from lower power and cooling costs	\$5,307	\$11,795	\$11,795	\$28,897	\$23,434
Total risk-adjusted benefits and cost savings (PV)	\$518,934	\$244,921	\$244,922	\$1,008,777	\$858,185

Source: Forrester Research, Inc.

The risk-adjusted PV of benefits is **\$858,185**. If risk-adjusted benefits still demonstrate a compelling business case, it raises confidence that the investment is likely to succeed as the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as realistic expectations, as they represent the expected value considering risk. Assuming normal success at mitigating risk, the risk-adjusted numbers should more closely reflect the expected outcome of the investment.

Flexibility

Flexibility, as defined by TEI, represents investing in additional capacity or agility that can be turned into benefit for some future additional investment. We believe organizations that invest in NetApp's and Cisco's FlexPod platform lay the foundation for a virtualized DR environment. For our *Organization*, server, desktop, and storage virtualization using FlexPod is the future direction to enhance and simplify DR.

Over a three-year period, the *Organization* will be migrating PCs to thin clients and moving traditional installed desktop applications to VMs. In addition, Exchange, SharePoint and SQL Server applications will be virtualized on the FlexPod platform. As a result of consolidating applications and data into a central location, data protection and DR in the data center will become even more important. Customers indicated that they will no longer be able to rely on tape backups to protect these virtualized workloads because of slow backup speeds and the physical distance between the primary data center and the DR site.

Interviewed customers expressed an interest in or the intent to take advantage of the option to use NetApp SnapMirror replication technology along with VMware's Site Recovery Manager (SRM) to reduce the impact of a site disaster on the business. With SnapMirror technology, a virtual infrastructure can be replicated over the wireless area network (WAN) to a remote data center. Recovery of VMs affected by a site disaster can be completed in minutes instead of hours or days. In addition, SRM can leverage NetApp's FlexClone technology to make immediate zero-cost clones of the DR data, allowing storage administrators to test their DR policies at any time without interrupting the production environment or replication operations. Our *Organization* also plans to leverage NetApp's data deduplication technology in its DR plans.

Two of the four interviewed organizations indicated that their original investment in a single FlexPod platform provided them with the flexibility and agility to take advantage of this DR option and the potential savings that a virtualized DR environment (second FlexPod at the DR site) can bring to their organizations. At present, none of the customers Forrester interviewed were currently taking advantage of VMware's SRM and SnapMirror technologies. Therefore, this study will not attempt to quantify these benefits. However, we encourage the reader to learn more about these technologies to determine the potential quantifiable benefits within their organizations.

The value of flexibility is clearly unique to each organization, and the willingness to measure its value varies from organization to organization. For the purpose of this analysis, we have assumed that the *Organization* sees the future value in being able to reduce future backup storage acquisition costs or achieve longer intervals between storage capacity upgrades using deduplication. The value of the option (when calculated) is based on the Black-Scholes Option Pricing formula. (For additional information regarding the flexibility calculation, please see Appendix A.)

Financial Summary

The financial results calculated in the Costs, Benefits And Savings, and Risk sections can be used to determine the risk-adjusted NPV of benefits, ROI, and payback period for the *Organization's* investment in NetApp's and Cisco's FlexPod platform. Table 7 below (repeated from the Executive Summary) shows the summarized risk-adjusted values, applying the risk-adjustment method described in the Risk section, which was to apply a 15% risk adjustment — i.e., a reduction of 15% — to all benefits. No risk adjustments were made to the costs, as these represented fixed quotes from NetApp or internal planning costs.

Table 7

The *Organization* — Three-Year Risk-Adjusted ROI, Payback Period, Costs, And Benefits

Risk-adjusted ROI	Payback period	Total benefits (PV)	Total costs (PV)	NPV
120%	Nine months	\$858,185	\$390,885	\$467,300

Source: Forrester Research, Inc.

The three-year risk-adjusted total NPV of **\$467,300** represents the net cost savings and benefits attributed to using the FlexPod platform. These results are compared with the costs of the *Organization's* server, storage, and SAN environment before consolidation and virtualization (see details below in the Costs, Benefits And Savings, Flexibility, and Risk sections). In addition, the risk-adjusted ROI was a **very favorable 120%**.

Study Conclusions

As the data in this study indicates, NetApp's and Cisco's FlexPod platform has the potential to provide very good ROI. In addition, the favorable **risk-adjusted ROI of 120%, along with a nine month payback period** (breakeven point), raises confidence that the investment is likely to succeed, as the risks that may threaten the project have already been taken into consideration and quantified. In this study, risks have been modeled conservatively in the hopes of showing worst-case expectations.

The study found that for our *Organization*, a successful, well-planned implementation will allow quantifiable benefits and cost savings to accrue in the following areas totaling **\$858,185** (risk-adjusted and present-value-adjusted — see Table 6) over three years:

- \$264,228 — efficiency gains through automation of server and storage provisioning with FlexPod.
- \$255,000 — cost avoidance of not replacing physical servers.
- \$51,296 — storage efficiency cost savings — reduction in storage hardware.

- \$264,228 — benefits from NetApp OnCommand Insight and Cisco UCS Manager.
- \$23,434 — cost savings from lower power and cooling costs.

Organizations that are likely to achieve similar ROI have the following characteristics:

- Organizations that have the desire to virtualize nearly 100% of their desktop, server, and storage environments, including business-critical applications such as Exchange, SharePoint, and SQL Server.
- Organizations where the costs of pre-virtualization server infrastructure (servers, storage, and networks) continue to increase, sacrificing new investment opportunities.
- Organizations in industries that have highly regulated desktop environments (e.g., finance and insurance, government, healthcare, and manufacturing).
- Medium-size to large organizations moving in the direction of thin-client technology.
- Interest in adoption of a disk-to-disk backup strategy environment.
- An IT staff with the requisite skills to manage virtual desktop, server and storage environments, including knowledge of NetApp's Data ONTAP 8 operating system, Cisco's UCS Manager, and the applicable hypervisor.

For our *Organization*, NetApp's and Cisco's FlexPod platform carries a low level of risk, **a very positive 120% risk-adjusted ROI, and a nine month horizon** to recoup the investment.

We make no assumptions regarding the effects of NetApp's and Cisco's FlexPod platform at other organizations. This study examines the potential impact attributable to the four customers that participated in our examination and applies the common costs and benefits to a representative composite *Organization*. The underlying objective of this document is to provide guidance to technology and business decision-makers seeking to identify areas where value can potentially be created based on using NetApp's and Cisco's FlexPod platform.

Appendix A: Total Economic Impact™ Overview

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

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility. For the purpose of this analysis, the impact of flexibility was not quantified.

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 forms of fully burdened labor, subcontractors, or materials. Costs consider all of 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.

Risk

Risk measures 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 applies a probability density function known as “triangular distribution” to the values entered. At a minimum, three values are calculated to estimate the underlying range around each cost and benefit.

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 enterprisewide 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 in time. However,

having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix B: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, organizations often set a 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 15% based on their current environment. Readers are urged to consult their organization to determine the most appropriate discount rate to use in their own environment.

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 net present value 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 shown in Table 2 at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash inflows and outflows in each year.

Table [Example]

Example Table

Ref.	Category	Calculation	Year 0	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix C: About The Project Manager



Bob Cormier
Vice President, Principal Consultant

Bob is a vice president and principal consultant for Forrester's Total Economic Impact service. He is a leading expert on deriving business value from technology investments, specializing in advising clients on the TEI framework — services that help organizations understand the overall financial value of IT strategies and investments. He serves the following client roles:

Vendor marketing and sales enablement professionals. Bob works with these professionals in their efforts to clearly articulate the unique value proposition of their solutions to prospects and customers using Forrester's TEI methodology.

Bob has authored numerous TEI case studies for Forrester's vendor clients. He has also delivered his acclaimed Justifying Technology Investments (JTI) workshop to more than 800 participants representing 400 organizations.

Bob has more than 25 years of experience in the IT and consulting industries. Prior to joining Forrester, he held senior-level positions at two leading eBusiness consulting firms, Zefer and Cambridge Technology Partners. Bob has successfully led company efforts to optimize financial, operational, and resource planning activities, incorporating leading-edge professional service automation (PSA) applications and enterprise resource planning (ERP) systems. He has also held senior financial management positions at Digital Equipment and Anixter International.

During his career, Bob has consulted with global users and vendors of IT and has been a frequent speaker at conferences, events, and seminars.

Education

Bob earned an M.B.A. from Bentley University and a B.S. in business from The University of New Hampshire. As an adjunct professor, he has taught finance and economics courses for more than 10 years at Southern New Hampshire University and Daniel Webster College.