The Total Economic Impact™ Of TeamQuest Performance Software

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Forrester Consulting
Making Leaders Successful Every Day

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About Forrester Consulting

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Executive Summary

In early 2011, TeamQuest commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying TeamQuest Performance Software. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of adopting TeamQuest Performance Software into their organizations.

This study highlights the benefits and costs of deploying TeamQuest Performance Software across the enterprise of a composite *Organization* (see Composite *Organization* Description in Appendix B). The findings in this study are, in large part, based on in-depth interviews conducted by Forrester with four organizations currently using TeamQuest Performance Software. A consensus among the interviewees allows Forrester to report that these organizations quickly experienced significant benefits from TeamQuest Performance Software in excess of the costs of deployment and ownership. 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 our independent research.

The study found that for our composite *Organization*, TeamQuest Performance Software provided a total of $4,552,000 quantifiable benefits and savings (non-risk-adjusted) over three years in the following areas:

- $2,772,000 — server hardware, software, and support cost avoidance.

- $550,000 — capacity management labor savings.

- $330,000 — labor savings using TeamQuest Performance Software to create reports.

- $900,000 — revenue stream protection through downtime avoidance.

Forrester's interviews with these four customers (see Interview Highlights section) and subsequent financial analysis determined that the composite *Organization* is expected to experience the risk-adjusted costs, benefits, ROI, and payback period summarized in Table 1.

Table 1

Composite *Organization* Three-Year Risk-Adjusted ROI And NPV

ROI	Payback period	Total benefits (PV)	Total costs (PV)	NPV
97%	16 months	$3,322,508	($1,683,601)	$1,638,907

Source: Forrester Research, Inc.

The three-year risk-adjusted total NPV of **$1,638,907** represents the net costs and benefits attributed to using TeamQuest Performance Software versus its incumbent solution, which consisted of commercial products and homegrown tools (see details below in the Costs, Benefits, Flexibility, and Risk sections). In addition, the *Organization*'s risk-adjusted benefits (PV) were **$3,322,508**, and the payback period was **16 months**.

If risk-adjusted costs and benefits still demonstrate a compelling business case, it raises confidence that the investment is likely to succeed because 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.

The objective of this study is to identify and quantify the overall costs and benefits experienced by the *Organization*. These results can be used as a guide to allow other organizations to determine the appropriate benefits for their particular environments.

Disclosures

The reader should be aware of the following:

- The study is commissioned by TeamQuest and delivered by the Forrester Consulting group.

- 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 this study to determine the appropriateness of an investment in TeamQuest Performance Software.

- TeamQuest reviewed the study 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 contradict Forrester's findings or obscured the meaning of the study.

- The customer names for the interviews were provided by TeamQuest.

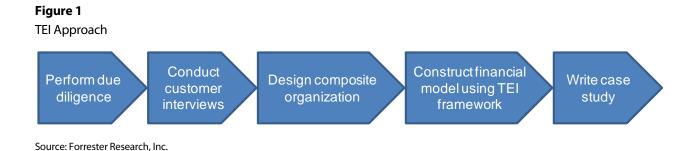## TEI Framework And Methodology

Introduction

From the information provided in the four interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing TeamQuest Performance Software. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

Approach And Methodology

Forrester took a multistep approach to evaluate the impact that TeamQuest Performance Software can have on an organization (see Figure 1). Specifically, we:

- Interviewed TeamQuest marketing, product management, sales, and services staff to gather data relative to TeamQuest Performance Software and the capacity and performance management market in general.

- Interviewed four organizations currently using TeamQuest Performance Software to obtain data with respect to costs, benefits, risk, and flexibility.

- Designed a composite *Organization* based on characteristics of the interviewed organizations (see Appendix B).

- 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*.

Figure 1

TEI Approach

Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling the financial implications of deploying TeamQuest Performance Software:

1. Costs.

2. Benefits to the entire organization.

3. Flexibility.

4. Risk.

Forrester's TEI methodology provides a complete picture of the total economic impact of technology investment decisions. Please see Appendix C for additional information on the TEI methodology.

Framework Assumptions

The discount rate used in the PV and NPV calculations is 10%, and the time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% depending on their current financial situation. Readers are urged to consult with their respective organization's finance department to determine the most appropriate discount rate to use within their own organizations.

Analysis

Interview Highlights

A total of four interviews were conducted for this study in April 2011, involving representatives from the following organizations that wished to remain anonymous.

1. **A Europe-based clearinghouse for a broad range of financial asset classes.** It has been using TeamQuest Performance Software (TeamQuest IT Service Analyzer and IT Service Reporter) for more than three years to manage the performance of hundreds of Unix and Windows servers and nearly 1,000 virtual guests running on several boxes. Server hardware, software, and support cost avoidance along with efficiencies in capacity and performance management were areas where savings occurred from utilizing TeamQuest Performance Software.

2. **A Europe-based organization that operates information and communication technology (ICT) systems for multinational corporations and public sector institutions.** It employs approximately 45,000 people in 20 countries. It has been using TeamQuest Performance Software (TeamQuest IT Service Analyzer, its predecessor [TeamQuest View], and IT Service Reporter since 2007; TeamQuest Model since 2004) to manage the performance of more than 3,500 servers, of which 1,000 are virtual machines. Its goal was to standardize on one tool, TeamQuest Performance Software, before consolidating and virtualizing servers and applications.

3. **One of America's leading apparel retailers, operating approximately 1,000 stores and employing more than 150,000 people throughout the US.** It has been using TeamQuest Performance Software (IT Service Analyzer and its predecessor, TeamQuest View, for more than 10 years; TeamQuest Alert for seven years; TeamQuest Model for one year) to manage the performance of 400 Unix and Linux servers, of which 300 are virtual machines. Its goal was to reduce server hardware, software, and support costs through better capacity planning, and to have better visibility into its virtualized environments.

4. **A large US-based telecommunications company of more than 80,000 employees serving tens of millions of customers nationwide.** It has been using TeamQuest Performance Software (IT Service Analyzer and its predecessor [TeamQuest View], TeamQuest IT Service Reporter and its predecessor [TeamQuest On the Web], and TeamQuest Model for more than seven years; TeamQuest Alert for about one year). Its environment consists of 4,100 active hosts, of which one-third is virtualized. Its goal in investing in TeamQuest Performance Software was to manage capacity for seasonal peaks, which allowed it to avoid investing in incremental server hardware, software, and support costs to manage those peaks.

Composite Organization

The composite *Organization* is a Fortune 1000 global enterprise with two data centers and more than 50 remote branch offices. It has 1,000 Unix and Windows servers, of which 50% are virtualized. The *Organization* participates in both the commercial and consumer markets.

Prior to implementing TeamQuest Performance Software, the *Organization* pulled together a team of several IT resources to address capacity management, processes, and vendor selection. Its goals in selecting a vendor included reducing server hardware, software, and support costs as well as more efficient capacity and performance management processes and reporting.

As with most enterprises, capacity-related activities and decisions were made in silos. The *Organization*'s IT group frequently responded to new business requirements as they appeared, often with short notice and without the ability to fully assess the impact on provisioning and satisfying the new demands on the existing services. The *Organization*'s incumbent solution consisted of commercial products and homegrown tools. As with the interviewed customers, the *Organization* already had tools in place for reports, monitoring, and alarming but was missing an overall view (heterogeneous, high-level view) with automated incident forecasts and consolidated reports for virtual environments.

If the *Organization* updated an operating system, an existing script might have to be changed. With regular updates coming from application and OS vendors, it was very cumbersome, costly, and time-consuming to maintain numerous scripts. In addition, the data was stored in many different places and in various formats. Systems administrators were constantly switching screens in an attempt to analyze issues relating to poor performance. As a result of having poor capacity management tools and processes, the *Organization* was left to heavily overprovision to compensate for the lack of useful capacity information.

The selection of a capacity management software tool set to align with ITIL was also seen as a key objective. The new capacity management group worked with the business, product support, Linux, Windows, and VMware users to define the solution specification to meet everyone's needs. The result of the group's planning and vendor selection efforts was to find a capacity performance and reporting tool that was all-inclusive.

After a competitive analysis, the *Organization* decided to purchase TeamQuest Performance Software, which is made up of four components:

- TeamQuest IT Service Analyzer (performance investigation software).

- TeamQuest IT Service Reporter (customized displays and reports for management).

- TeamQuest Model (capacity planning).

- TeamQuest Alert (real-time status monitoring console).

With the phased implementation of TeamQuest Performance Software, the *Organization* is attempting to address the challenges below. In addition, it expects to achieve savings in labor and server hardware, software, and support costs and to meet SLA and service demands.

The *Organization*'s challenges and expectations are:

- To proactively detect, investigate, and diagnose IT service performance issues.

    o Analyze and report IT service performance across a diverse array of heterogeneous systems.

    o Drill down from IT services to the infrastructure components that support them to investigate and diagnose service performance issues.

    o Identify the root cause of performance issues, regardless of where the infrastructure component may reside.

- To create, customize, and distribute performance management reports via the Web or in PDF or Excel formats.

    o Create dashboard-style reports customized for specific intended audiences.

o   Customize reports with the *Organization*'s logo and explanatory text using a drag-and-drop interface.

o   Provide performance management reports revealing the status of IT services.

- To accurately predict the resources required to support consistent service delivery at appropriate risk levels.

  o   Predict the resources required to meet service levels as demand increases.

  o   Identify which components will or have negatively impact(ed) response time.

  o   Find the least expensive way to accommodate workload increases.

  o   Predict the performance impact of migrating from one operating system/hardware platform to another.

  o   Justify the need for new infrastructure purchases and double-check vendor recommendations.

  o   Help determine the cost of proposed more ambitious service-level requirements.

  o   Compare costs of alternative solutions for accommodating business requirements.

- To monitor activity throughout the data center and watch for problem conditions that could impact services.

  o   Monitor services across the entire enterprise and report on events.

  o   Spot and report impending problems before they impact service levels.

The *Organization* chose a phased approach by first implementing the TeamQuest IT Service Analyzer component, then the TeamQuest IT Service Reporter and TeamQuest Model components, followed by TeamQuest Alert.

Please see Appendix B for a more detailed description of the composite *Organization*, the TeamQuest solution configuration, and the TeamQuest costs.

Costs

Our *Organization*'s costs associated with implementing and managing TeamQuest Performance Software are:

- **$17,600 — internal planning and implementation.** Systems engineers were involved in planning the implementation, building the console and configuring agents for every host, and installing monitoring agents on Unix and Windows servers. It took 2.0 FTEs one full month (160 hours each at $55.00 per hour, fully loaded) to plan and implement TeamQuest Performance Software.

- **$24,000 — host servers.** It took four virtual machines to host TeamQuest Performance Software and associated data in two data centers. These internal chargeback costs are $2,000 per quarter over the three years of our analysis.

- **$1,025,000 — TeamQuest Performance Software site license costs for 1,000 servers.** There is no CPU limit per server (physical or virtual), and this includes the use of all four TeamQuest Performance Software products. Also, included in the licensing cost is Year 1 software maintenance.

- **No charge — customized deployment plan.** TeamQuest partners with the *Organization* to create a customized deployment plan that includes:

    o   Understanding deployment objectives.

    o   Developing a plan for meeting the deployment objectives.

    o   Identifying training needs and deployment tasks.

- **$32,000 — TeamQuest Professional Services.** Four weeks of TeamQuest Professional Services for training and deployment at $200 per hour.

- **$330,000 — internal labor to manage TeamQuest Performance Software.** One FTE (at $110,000 annually, fully loaded) as part of the capacity management team managing the TeamQuest solution.

- **$400,000 — software maintenance.** Year 1 maintenance is included in the TeamQuest Performance Software site license; thereafter the cost is $200,000 per year over Years 2 and 3 of this analysis.

Total Costs

Total costs for the composite *Organization*'s deployment of TeamQuest Performance Software are reflected in Table 2.

Table 2

Total Three-Year Costs Associated With TeamQuest Performance Software (Non-Risk-Adjusted)

Costs	Initial	Year 1	Year 2	Year 3	Total
Internal planning and implementation	$17,600	0	0	0	$17,600
Servers (four VMs)	0	$8,000	$8,000	$8,000	$24,000
TeamQuest Performance Software site license	$1,025,000	0	0	0	$1,025,000
Customized deployment plan (no charge)	0	0	0	0	0
TeamQuest Professional Services (training and deployment)	$32,000	0	0	0	$32,000
Internal labor to manage TeamQuest Performance Software	0	$110,000	$110,000	$110,000	$330,000
Software maintenance	0	0	$200,000	$200,000	$400,000
Total	$1,074,600	$118,000	$318,000	$318,000	$1,828,600

Source: Forrester Research, Inc.

Benefits

The total value of the benefits of TeamQuest Performance Software is greater than the costs, as interviewees in this study relayed to Forrester. Customers identified the following key *quantified* benefits as a direct result of implementing TeamQuest Performance Software. These benefits are described in more detail below.

- $2,772,000 — server hardware, software, and support cost avoidance.

- $550,000 — capacity management labor savings.

- $330,000 — labor savings using TeamQuest Performance Software to create reports.

- $900,000 — revenue stream protection through downtime avoidance.

From the customer interview process, Forrester also identified two significant *unquantified* business benefits attributed to the use of TeamQuest Performance Software. These benefits are described below and further described in the Flexibility section of this study.

- **Implementing chargeback or showback.** In the future, the *Organization* wants to use TeamQuest Performance Software and a third-party invoicing application to charge business units for the IT resources they use, shifting the burden of IT budget justification to the consumers of the resources and making IT less of a cost center. When business units are charged back for the resources they use, the business units become much more cost-conscious, and decisions are based on a truer cost of obtaining new IT resources. The *Organization* believes that an IT chargeback system will allow the business units to make better investment decisions by including IT costs.

- **Comparing and predicting the cost of implementing new IT services.** In the future, the *Organization* wants to use TeamQuest Model to compare alternative methods of deploying new, or scaling existing, IT or business services in order to determine the most cost-effective implementation mode.

Quantified Benefits

$2,772,000 — server hardware, software, and support cost avoidance. In interviews with the four TeamQuest customers, Forrester determined that the use of TeamQuest Performance Software resulted in hardware and software cost avoidance. Before using TeamQuest Performance Software, the *Organization* was using a very disproportionate amount of CPU and memory in its environment, and its awareness of the breakdown of the processing resources was very low. The TeamQuest solution allowed the *Organization* to right-size its current and future server environment, including accelerating its server and application virtualization schedule. For example, TeamQuest Performance Software:

- Allowed the *Organization* to identify and remediate many runaway tasks on different machines that were using memory and CPU, avoiding the need to upgrade those machines by catching those runaway tasks.

- Allowed the determination of the least expensive way to accommodate workload increases.

- Helped predict how consolidated servers would perform and optimally configure systems for consolidation.

- Determined best candidates for virtualization projects.

- Forecasted the number of virtual systems its physical hosts would be able handle.

- Helped justify the need for new infrastructure purchases including double-checking vendor recommendations.

- Helped determine the cost of proposed more ambitious service-level requirements.

- Compared costs of alternative solutions for accommodating business requirements, allowing the *Organization* to choose the least expensive alternative.

Based on the reported results from customer interviews, the *Organization* will be able to avoid purchasing the equivalent of 42 physical servers per year at an annual cost savings of $11,000 per server (hardware, software, support, cabling, racking/stacking, and power/cooling costs) as a result of using TeamQuest Performance Software. Built into these projections is TeamQuest Performance Software's ability to accelerate the *Organization*'s server and application virtualization schedule. Over a three-year period, 126 physical servers (42 servers times 3 years) will not have to be purchased, saving the *Organization* $2,772,000.

Total server hardware, software, and support cost avoidance as a result of the composite *Organization*'s deployment of TeamQuest Performance Software is reflected in Table 3.

Table 3

Server Hardware, Software, And Support Cost Avoidance (Non-Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Year 1 — server hardware, software, and support cost avoidance	$462,000	$462,000	$462,000	$1,386,000
Year 2 — server hardware, software, and support cost avoidance	0	$462,000	$462,000	$924,000
Year 3 — server hardware, software, and support cost avoidance	0	0	$462,000	$462,000
Total benefit	$462,000	$924,000	$1,386,000	$2,772,000

Source: Forrester Research, Inc.

$550,000 — capacity management labor savings. The capacity management group, using information delivered by TeamQuest Performance Software, has used the data to improve team productivity and increase efficiency. Listed below are the features and functionality of TeamQuest Performance Software that contributed to the *Organization* saving 1.0 FTE in Year 1 and 2.0 FTEs in Years 2 and 3. Forrester used a fully loaded annual cost per FTE of $110,000.

- One of the top priorities of the *Organization*'s capacity management team was to use TeamQuest Performance Software to identify how much of each server resource is being consumed by each IT service, business process, department, or application in order to begin a performance improvement program.

- The team is not encountering as many incidents relating to performance or capacity since implementing TeamQuest Performance Software; as a result, it is spending less time dealing with incidents. When incidents occur, the team is able to identify the root causes regardless of where the infrastructure component may reside, allowing for faster problem resolution.

- TeamQuest data enhances and accelerates the benefits of new hardware investments, identifying potentially adverse situations before they impacted users and accurately testing new applications going into the new server environment. The *Organization*'s capacity management team was able to get this data in the format of its choice and to make proactive decisions about capacity management strategy.

- The TeamQuest solution was instrumental in helping the team create highly accurate capacity plans that predicted performance, minimized risk, and optimized the use of hardware resources, adding confidence to its ability to align IT decisions with business goals and future business needs.

- TeamQuest Performance Software allows the team to analyze IT resources by combining performance data from multiple servers, applications, or other IT components.

- The TeamQuest solution allows the *Organization* to analyze a wide variety of systems and application performance.

Total capacity management labor savings, including productivity and efficiencies as a result of the composite *Organization*'s deployment of TeamQuest Performance Software, are reflected in Table 4 below.

Table 4

Capacity Management Labor Savings — Productivity And Efficiencies Associated With TeamQuest (Non-Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Capacity management labor savings	$110,000	$220,000	$220,000	$550,000

Source: Forrester Research, Inc.

$330,000 — labor savings using TeamQuest Performance Software to create reports. Prior to implementing the TeamQuest solution, a capacity planning analyst spent 100% of her time gathering metrics and data from multiple databases to create only essential management reports. Today, the TeamQuest solution automatically generates many more reports contributing to the *Organization* saving 1.0 FTE in all three years of this analysis. Forrester used a fully loaded annual cost per FTE of $110,000. With TeamQuest IT Service Reporter, the *Organization* can take advantage of the following time saving features and functionality:

- Analyze and report IT service performance across a diverse array of heterogeneous systems.

- Create, customize, and distribute reports via the Web or in PDF or Excel formats.

- Create dashboard-style reports customized for the intended audience.

- Provide a performance management report revealing the status of IT services.

- Include graphics and annotate reports for report recipients.

- Report how much of each server resource is being consumed by each IT service, business process, department, or application.

- Report on virtualized environments from physical server, hypervisor, and guest points of view.

Total labor savings from using TeamQuest Performance Software to create automated reports are reflected in Table 5 below.

Table 5

Labor Savings Using TeamQuest Performance Software To Create Reports (Non-Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Labor savings to create reports	$110,000	$110,000	$110,000	$330,000

Source: Forrester Research, Inc.

$900,000 — revenue stream protection through downtime avoidance. One of the most important benefits realized by the interviewed customers is revenue protection through downtime avoidance. The *Organization* is using TeamQuest Performance Software to maximize availability, decrease downtime, and improve response times for its mission-critical, revenue-producing business services, resulting in revenue protection of $1 million per year. Prior to implementing TeamQuest Performance Software, the *Organization* experienced downtime resulting in a loss of revenue averaging $1 million per year. In this study, Forrester will include a benefit equal to a 30% gross profit margin of the *Organization*'s products or $300,000 per year. Readers of this study should assess their organization's potential revenue protection opportunities, which may vary widely (up or down) from what is portrayed in this study As a result of using TeamQuest Performance Software, the *Organization* protected $900,000 in profit over three years.

Total gross profit benefits as a result of revenue stream protection with TeamQuest Performance Software are reflected in Table 6 below.

Table 6

Revenue Stream Protection Through Downtime Avoidance (Non-Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Gross profit associated with revenue protected	$300,000	$300,000	$300,000	$900,000

Source: Forrester Research, Inc.

Total Quantified Benefits

Table 7 summarizes the quantified benefits accruing from an investment in TeamQuest Performance Software for the composite *Organization*.

Table 7

Total Three-Year Quantified Benefits (Non-Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Server hardware, software, and support cost avoidance	$462,000	$924,000	$1,386,000	$2,772,000
Capacity management labor savings	$110,000	$220,000	$220,000	$550,000
Labor savings to create reports	$110,000	$110,000	$110,000	$330,000
Gross profit associated with revenue protected	$300,000	$300,000	$300,000	$900,000
Total quantified benefits	$982,000	$1,554,000	$2,016,000	$4,552,000

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by TEI, represents investing in additional capacity or agility that can be turned into business benefit for some future additional investment. Forrester and the *Organization* believe that investing in TeamQuest Performance Software lays the groundwork to take advantage of the following flexibility options.

Implementing chargeback or showback. Today, our *Organization*'s IT or accounting departments are able to allocate or charge back IT services to the businesses based on fixed keys such as headcount or number of servers or workstations. It lacks a mechanism to relate the ongoing infrastructure costs to their causal effect, such as which business units require which services per application or per business service.

In the future, the *Organization* wants to charge business units for the IT resources they use, shifting the burden of IT budget justification to the consumers of the resources and making IT less of a cost center. When business units are charged back for the resources they use, the business units become much more cost-conscious, and decisions are based on a truer cost of obtaining new IT resources. The *Organization* believes that investing the development of an IT chargeback system will allow the business units to make better investment decisions by including IT costs.

Three of the four interviewed customers indicated a future interest in adopting the chargeback or showback features of TeamQuest Performance Software.

According to TeamQuest, practicing IT chargeback based on resource utilization calls for some sort of grouping of server activities into logical entities, which the workload mechanism of TeamQuest software can do. Workloads can be defined to capture activities pertaining to specific customers, departments, applications, or any other logical grouping that is useful. This capability becomes even more central when several different workloads are hosted on the same physical server as a result of server consolidation. TeamQuest IT Service Reporter can create dashboard-style reports customized for different customers using a drag-and-drop interface. Organizations can tailor reports to show how much of each server resource is being consumed by each IT service, business process, department, or application. Making this kind of information available to the business units enables them to monitor past and present resource utilization themselves and have a sense for the actual costs of delivering services.

Comparing and predicting the cost of implementing new IT services. In the future, the *Organization* wants to use TeamQuest Model to compare alternative methods of deploying new IT or business services or scaling existing ones in order to determine the most cost-effective implementation mode. The interviewed customers plan on using TeamQuest Model as follows:

- Determine the resources required to meet service levels as demand increases.

- Identify which components will negatively impact response time.

- Determine the least expensive way to accommodate workload increases.

- Compare and predict the performance impact of migrating from one operating system/hardware platform to another.

As none of the interviewed customers were taking full advantage of TeamQuest Performance Software's chargeback or cost comparison modeling functionalities, Forrester will not attempt to quantify these future flexibility options.

The value of flexibility is unique to each organization, and the willingness to measure its value varies from organization to organization (see Appendix C for additional information regarding the flexibility calculation).

Risk

Both risk-adjusted and non-risk-adjusted costs and benefits are discussed in this study. The *Organization*'s costs and benefits in Tables 2 and 7 are quoted 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 capacity and performance management projects in general and specific risks relative to implementing TeamQuest Performance Software. In our research, we saw that this implementation was a relatively low-risk endeavor.

Measurement and calculation 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 that the variation between the risk-adjusted and non-risk-adjusted outcomes is minimized.

The following general risks were considered in this study:

- Lack of organizational discipline in creating processes and procedures to best take advantage of the benefits.

- The potential that the benefits will not be measured and quantified and, as a result, no TEI benefit would be captured and acknowledged.

The following risks associated with implementing TeamQuest Performance Software were considered in making risk adjustments to the benefits:

- There is risk associated with a lack of required technical, capacity, and performance management skills within the *Organization*, making achievement of the benefits more challenging.

- In order to optimize the benefits of TeamQuest Performance Software, IT organizations must have already reached a level of maturity or have a sincere desire to develop skills in the following processes: capacity management, incident and problem management, change management, and configuration management.

- TeamQuest Performance Software does not reduce anticipated capacity management and reporting headcount, thereby negating the labor benefits. It's possible that TeamQuest Performance Software could be instrumental in significantly reducing tasks associated with capacity management and reporting tasks, but the *Organization* then backfills that excess capacity with other tasks that it deems worthy. If headcount is not reduced, the labor savings would not be realized.

For this study, Forrester applied a 10% risk adjustment (decrease of 10%) to the benefits associated with TeamQuest Performance Software in Table 8 to reflect the risks listed above. These risks were partially mitigated by our *Organization* investing in TeamQuest Professional Services (training and deployment).

Forrester did not risk-adjust the costs because 82% of the expenses represented TeamQuest's fixed-price quote for software license, annual maintenance, and training.

Table 8

Total Three-Year Quantified Benefits (Risk-Adjusted)

Benefits	Year 1	Year 2	Year 3	Total
Server hardware, software, and support cost avoidance	$415,800	$831,600	$1,247,400	$2,494,800
Capacity management labor savings	$99,000	$198,000	$198,000	$495,000
Labor savings to create reports	$99,000	$99,000	$99,000	$297,000
Gross profit associated with revenue protected	$270,000	$270,000	$270,000	$810,000
Total quantified benefits	$883,800	$1,398,600	$1,814,400	$4,096,800

Source: Forrester Research, Inc.

If risk-adjusted benefits and ROI 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.

Financial Summary

The risk adjusted financial results calculated from the Costs and Benefits sections can be used to determine the ROI, NPV, and payback period for the *Organization*'s investment in TeamQuest Performance Software. These are shown in Table 9 below.

Table 9

Cash Flow — Risk-Adjusted

Cash Flow — Costs And Benefits						
	Initial	Year 1	Year 2	Year 3	Total	PV
Costs	($1,074,600)	($118,000)	($318,000)	($318,000)	($1,828,600)	($1,683,601)
Benefits	0	$883,800	$1,398,600	$1,814,400	$4,096,800	$3,322,508
Net benefits	($1,074,600)	$765,800	$1,080,600	$1,496,400	$2,268,200	$1,638,907
ROI	97%					
Payback period	16 months					

Source: Forrester Research, Inc.

The data collected in this study indicates that an investment in TeamQuest Performance Software has the potential to provide significant quantifiable benefits. The three-year, risk-adjusted very positive **ROI of 97% along with a 16-month payback period** (breakeven point) raises confidence that the investment is likely to succeed, especially after the risks and uncertainty that may affect the project have been considered, quantified, and incorporated into the business case.

The study found that for our composite *Organization*, TeamQuest Performance Software provided a total of $4,552,000 quantifiable benefits and savings (non-risk-adjusted) over three years in the following areas (Table 7):

- $2,772,000 — server hardware, software, and support cost avoidance.

- $550,000 — capacity management labor savings.

- $330,000 — labor savings using TeamQuest Performance Software to create reports.

- $900,000 — revenue stream protection through downtime avoidance.

In addition, most interviewed organizations indicated that their original investment in the TeamQuest solution could provide them with the flexibility and agility to take advantage of implementing a chargeback or showback process. When business units are charged back for the resources they use, the business units become much more cost-conscious, and decisions are based on a truer cost of obtaining new IT resources. The *Organization* believes that an IT chargeback system will allow the business units to make better investment decisions by including IT costs.

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

- Have a business or competitive need to provide high-quality IT services for mission-critical applications and databases.

- The desire to have formal and repeatable processes for capacity planning and provisioning.

- IT organizations must have already reached a level of maturity or have a sincere desire to develop skills in the following processes — capacity management, incident and problem management, change management, and configuration management — in order to take full advantage of TeamQuest Performance Software.

- High transaction volumes, typically seen in large financial services, telecommunications, or retail companies.

For our *Organization*, implementing TeamQuest Performance Software carried a low level of risk, **a very positive 97% risk-adjusted ROI, and a 16-month horizon** to recoup the investment.

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

Appendix A: About TeamQuest Performance Software

According to TeamQuest, its TeamQuest Performance Software is a suite of four integrated products that help organizations optimize IT services, from performance management and reporting to event monitoring and capacity modeling. Products can be used individually or in combination to address various needs, and they scale to thousands of servers in complex, heterogeneous, and virtualized environments.

TeamQuest Performance Software comprises these products:[1]

TeamQuest Model — Capacity Planning Software

Accurately predict the resources required for consistent service delivery at appropriate risk levels. Predict the impact of configuration changes, consolidation options, and varying demand levels without requiring hardware to be configured or artificial loads to be applied. Predict the impact of migrating from one operating system/hardware platform to another, including taking into consideration multithreaded behavior and the various partitioning configuration options that different operating systems have. Determine the effects of changes to memory, I/O devices, network bandwidth, and size or number of CPUs. Ensure selected configurations satisfy service levels while meeting cost and power consumption limitations.

TeamQuest IT Service Analyzer — Performance Investigation Software

Detect, investigate, and diagnose service performance issues. Analyze and report the performance of IT services, combining performance data from multiple servers, applications, or other IT components. Analyze a problematic IT service or multitiered application, and zero in on the IT component causing the problem, regardless of where that component may reside.

TeamQuest IT Service Reporter — Customized Displays And Reports For Management

Automatically create and distribute periodic performance reports customized with your logo and explanatory information. Generate reports customized for the intended audience, whether for your CIO, a business unit manager, or an IT operations manager.

TeamQuest Alert — Real-Time Status Monitoring Software

Monitor activity throughout the enterprise, and watch for problem conditions that could impact services. Report alarms when thresholds are exceeded, and drill down to the cause before users are affected.

More On TeamQuest Performance Software

Scalability

TeamQuest Performance Software scales to accommodate thousands of heterogeneous servers in complex environments.

- Use a silent installation process to install the software on hundreds of servers in a single day.

- Centralize administration, making it easy to maintain.

- Control the granularity and frequency of data collection.

- Distribute performance data in whatever way is optimal for your operation.

- Define storage time periods.

- Aggregate data for long-term storage.

- Use the TeamQuest Capacity Management Information System (CMIS) to examine enterprise IT components as a single entity, analyzing the performance of multitiered applications.

Platforms Supported

- AIX on POWER.

- HP-UX on Itanium and PA-RISC.

- Red Hat Enterprise Linux on POWER, x86, x64, Itanium, zSeries.

- Solaris on UltraSPARC, x86, x64.

- SUSE Linux Enterprise Server on POWER, x86, x64, Itanium, zSeries.

- Virtual environments: POWER Hypervisor, Solaris Zones, VMware.

- Windows on x86, x64, and Itanium.

Resources Analyzed

- Operating systems: AIX, HP-UX, Solaris, Linux, and Windows.

- Virtual environments: POWER Hypervisor, Solaris Zones, VMware.

- Databases: DB2, Oracle, SQL Server, and Sybase.

- Web servers: Apache, IIS, and others.

- Network devices (routers, switches, etc.) via SNMP.

- Network traffic between tiers.

- EMC Symmetrix.

Third-Party Integration

TeamQuest Performance Software integrates with a variety of third-party tools, including:

- Databases.

- Reporting tools.

- CMDBs.

- System management frameworks.

Enterprise Focus

IT is often managed according to technology silos, such that each set of applications and servers is managed by its own organization. Occasionally, there are functions, such as capacity planning, which span multiple silos. TeamQuest Performance Software is a heterogeneous solution that can make cross-silo performance and capacity management much simpler.

TeamQuest allows you to standardize on one tool and integrate data from various silos, providing a single point of reference with the same look and feel across every platform. A single tool providing consistent data and standardized processes creates a strategic advantage. Flexible reporting allows you to view that data in various ways and easily tailor reports for different needs.

TeamQuest Performance Software also provides drilldown analysis across enterprise IT operations. TeamQuest's IT Resource concept together with the TeamQuest CMIS makes it simple to drill down across multiple heterogeneous IT infrastructure components to quickly isolate the root cause of performance problems. You can start your analysis at a problematic IT service or multitiered application and then zero in on the IT infrastructure component that is causing the problem, regardless of where that component may reside within your enterprise.

IT Service Performance Analysis

Analyze and report in terms that make sense to your business, helping ensure that IT service performance is aligned with business objectives.

- Analyze and report IT service performance using IT Resources to combine performance data of various IT components that together form a service.

- Analyze all of the IT components comprising a service, including all of the server tiers and the network.

- Determine how much of each resource is being consumed by each IT service, business process, department, or application.

- Analyze performance in business terms to see how infrastructure is used or will be used by each business service.

- Accurately predict the resources required to support consistent service delivery at appropriate risk levels.

- Predict response time from different components in a multitiered environment.

- Mitigate the risks of stacking applications on a single server by understanding the impact on services before you consolidate.

Efficient And Comprehensive Data Collection

TeamQuest provides a wide variety of data collection agents for capturing performance data from applications, middleware, databases, operating systems, and other IT components.

TeamQuest Performance Software makes it possible for large IT operations to keep the optimal amount of performance data distributed in a manner that ensures efficient data collection and storage. You can access, analyze, and report on distributed performance data without regard to where it is stored using the TeamQuest CMIS capability.

Appendix B: Composite Organization Description

Composite Organization, Configuration, And Costs

The composite *Organization* is a Fortune 1000 global enterprise with two data centers and more than 50 remote branch offices. It has 1,000 Unix and Windows servers, of which 50% are virtualized. The *Organization* participates in both the commercial and consumer markets.

Prior to implementing TeamQuest Performance Software, the *Organization* pulled together a team of several IT resources to address capacity management, processes, and vendor selection. There goals in selecting a vendor included reducing server hardware, software, and support costs as well as more efficient capacity and performance management processes and reporting.

As with most enterprises, capacity-related activities and decisions were made in silos. The *Organization*'s IT group frequently responded to new business requirements as they appeared, often with short notice and without the ability to fully assess the impact of provisioning, and satisfy the new demands on the existing services. The *Organization*'s incumbent solution consisted of commercial products and homegrown tools. As with the interviewed customers, the *Organization* already had tools in place for reports, monitoring, and alarming but was missing an overall view (heterogeneous, high-level view) with automated incident forecasts and consolidated reports for virtual environments.

If the *Organization* updated an operating system, an existing script might have to be changed. With regular updates coming from application and OS vendors, it was very cumbersome, costly, and time-consuming to maintain numerous scripts. In addition, the data was stored in many different places and in various formats. System administrators were constantly switching screens in an attempt to analyze issues relating to poor performance. As a result of having poor capacity management tools and processes, the *Organization* was left to heavily overprovision to compensate for the lack of useful capacity information.

The selection of a capacity management software tool set to align with ITIL was also seen as a key objective. The new capacity management group worked with the business, product support, Linux, Windows, and VMware users to define the solution specification to meet everyone's needs. The result of the group's planning and vendor selection efforts was to find a capacity performance and reporting tool that was all-inclusive.

After a competitive analysis, the *Organization* decided to purchase TeamQuest Performance Software, which is made up of four components:

- TeamQuest IT Service Analyzer (performance investigation software).

- TeamQuest IT Service Reporter (customized displays and reports for management).

- TeamQuest Model (capacity planning).

- TeamQuest Alert (real-time status monitoring console).

With the phased implementation of TeamQuest Performance Software, the *Organization* is attempting to address the challenges below. In addition, it expects to achieve savings in labor and capital and to meet SLA and service demands.

The *Organization*'s challenges and expectations are:

- To proactively detect, investigate, and diagnose IT service performance issues.

- o Analyze and report IT service performance across a diverse array of heterogeneous systems.

  - o Drill down from IT services to the infrastructure components that support them to investigate and diagnose service performance issues.

  - o Identify the root cause of performance issues, regardless of where the infrastructure component may reside.

- To create, customize, and distribute performance management reports via the Web or in PDF or Excel formats.

  - o Create dashboard-style reports customized for specific intended audiences.

  - o Customize reports with the *Organization*'s logo and explanatory text using a drag-and-drop interface.

  - o Provide performance management reports revealing the status of IT services.

- To accurately predict the resources required to support consistent service delivery at appropriate risk levels.

  - o Predict the resources required to meet service levels as demand increases.

  - o Identify which components will or have negatively impact(ed) response time.

  - o Find the least expensive way to accommodate workload increases.

  - o Predict the performance impact of migrating from one operating system/hardware platform to another.

  - o Justify the need for new infrastructure purchases and double-check vendor recommendations.

  - o Help determine the cost of proposed more-ambitious service-level requirements.

  - o Compare costs of alternative solutions for accommodating businesses requirements.

- To monitor activity throughout the data center and watch for problem conditions that could impact services.

  - o Monitor services across the entire enterprise and report on events.

  - o Spot and report impending problems before they impact service levels.

The *Organization* chose a phased approach by first implementing the IT Service Analyzer component, then the IT Service Reporter and Model components, followed by Alert.

Proposed TeamQuest Performance Software Solution Configuration
Below is TeamQuest Performance Software configuration and pricing for the *Organization*.

Initial Costs
- **$1,025,000.** Site license costs for 1,000 servers. There is no CPU limit per server (physical or virtual), and this includes the use of all four TeamQuest Performance Software products.

- **No charge.** Partner with organization to create a customized deployment plan (no cost):

  - o   Understand deployment objectives.

  - o   Develop a plan for meeting the deployment objectives.

  - o   Identify training and deployment tasks.

- **$32,000.** Four weeks of professional services for training and deployment at $200 per hour.

- **$600,000.** Software maintenance ($200,000 annually for Years 1, 2, and 3).

Appendix C: 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 companies 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.

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 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 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 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 D: 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, companies 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 16% based on their current environment. Readers are urged to consult their respective 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. 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 Framework Assumptions section) 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 flows in each year.

Table [Example]

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix E: About The Project Director

Bob Cormier
Vice President, Principal Consultant

Bob is a vice president, principal consultant for Forrester's Total Economic Impact™ (TEI) 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:

- **Technology vendor 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.

- **CIOs and their staff.** Bob serves as a trusted advisor to create consistent, repeatable, and best-practice processes to justify and add credibility to technology investments business cases 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 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.

Appendix F: Endnotes

[1] A list of TeamQuest Performance Software products can be found at the company's website (http://www.teamquest.com/products/index.htm).