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The Total Economic Impact™ Of The Application Streaming Feature Of Presentation Server 4.5

Single Company Analysis

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The Total Economic Impact™ Of The Application Streaming Feature Of Citrix's Presentation Server 4.5

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Executive Summary

In late 2007, Citrix Systems commissioned Forrester Research to examine the financial impact and potential benefits of implementing the application streaming feature of Citrix Systems' Presentation Server 4.5. To evaluate the impact, Forrester examined the specific costs and risk elements incurred, and benefits and flexibility realized, by a customer that has implemented the application streaming feature of Presentation Server 4.5 to augment Windows application deployment in its server farms. This customer is a large healthcare organization with more than 40,000 employees and 19 hospitals and a network of other care sites across America and throughout the world including: doctors' offices, cancer centers, outpatient treatment centers, specialized imaging and surgery facilities, in-home care, rehabilitation sites, behavioral health care, and nursing homes.

Purpose

The purpose of this study is to provide readers with a framework for evaluating the potential financial impact of implementing the application streaming feature of Citrix Systems' Presentation Server 4.5. Forrester's aim is to clearly show all calculations and assumptions that go into the analysis as a way to further readers' understanding of, and help them to evaluate, the application streaming feature of Presentation Server 4.5.

Methodology

Citrix Systems selected Forrester for this project because of its expertise in application delivery infrastructure solutions and its Total Economic Impact (TEI) analysis methodology. TEI measures not only costs and benefits (areas typically accounted for within IT) but also the enabling value of increasing the overall effectiveness of business processes. Forrester's TEI methodology serves an extremely useful purpose by providing a complete picture of the total economic impact of purchase decisions (Appendix A provides additional information about the TEI methodology).

Approach

Forrester employed a four-step approach in this study.

1. Forrester interviewed Citrix Systems' marketing, product management, and sales employees in an attempt to more fully understand the value proposition of the application streaming feature of Presentation Server 4.5.
2. Using knowledge of the product, as well as input from existing Forrester research and Citrix Systems, a Forrester representative interviewed the *Organization's* manager of Citrix and Remote Access about the costs, benefits, risks, and flexibility options of using the application streaming feature of Citrix Systems' Presentation Server 4.5.
3. Forrester constructed a financial value model representative of the data collected in the interview.
4. Forrester created this study, which examines and represents the estimated value of the findings derived from the customer interview and analysis process as well as from Forrester's independent research.

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Key Findings

Table 1 summarizes the costs the *Organization* will incur and the savings it may realize over a three-year period from deploying the application streaming feature of Citrix Systems' Presentation Server 4.5.

Table 1: Three-Year Summary Financial Results — The *Organization*

Summary of financial results	Risk-adjusted
Total costs (present value) *	(\$39,482)
Total cost savings and benefits (PV)	\$322,058
Total flexibility options	\$104,889
Total (net present value)	\$387,466
Payback period	Within 2.5 months

Source: Forrester Research, Inc.

The three-year, risk-adjusted total net present value (NPV) of **\$387,466** represents the incremental net cost savings and benefits attributed to using the application streaming feature of Presentation Server 4.5 to stream 300 Windows applications to servers as compared to the *Organization's* prior use of Presentation Server without the application streaming feature. (Details are provided below in the Costs, Benefits, Flexibility, and Risk sections.) The *Organization* also achieved a very favorable payback period of **2.5 months**. Forrester Research and the *Organization* also identified significant unquantified business benefits attributable to the application streaming feature of Presentation Server 4.5 (see pages 9-10).

* Note: Forrester did not include license or support costs associated with Citrix Systems' Presentation Server 4.5 because the application streaming feature of Presentation Server 4.5 is "included" in the license fee; no licensing costs are specifically associated with this feature. Therefore, this study focuses on the *incremental* costs and benefits associated with implementing the application streaming feature of a product (Presentation Server 4.5) that the *Organization* has already purchased.

A risk-adjusted NPV that demonstrates a compelling business case 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, because they represent the expected value considering risk, should thus be taken as "realistic" expectations. 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 illustrate the savings and benefits the *Organization* realized from using the application streaming feature of Presentation Server 4.5 to deploy Windows applications to servers; and not savings and benefits that other organizations might obtain by doing so. The results can nevertheless guide other organizations' expectations with respect to the savings and benefits that might be realized in their particular business environments.

Disclosures

The reader should be aware of the following disclosures associated with this study.

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- The study was commissioned by Citrix Systems and delivered by the Forrester Consulting group.
- Citrix Systems and the *Organization* reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study, its findings, and financial data. Forrester did not accept any changes to the study that contradicted its findings, obscured the meaning of the study, or changed any of the data collected.
- The customer name for the study was provided by Citrix Systems.
- Forrester makes no assumptions as to potential savings other enterprises might realize within their business environments. Forrester strongly advises readers to use their own estimates within the framework provided in the study to determine the appropriateness of implementing the application streaming feature of Presentation Server 4.5.
- This study is not an endorsement by Forrester of Citrix Systems or its offerings.
- The study is not a competitive product analysis.

About The Application Streaming Feature Of Citrix Systems' Presentation Server 4.5

Citrix Systems describes application streaming as an innovative new feature of its Presentation Server 4.5 product that enables applications to be streamed to client devices or servers and run in a protected, virtual environment. Applications are managed in a centralized application hub, but are streamed to the user's machine and run in an isolation environment. Caching technology makes the application available even when it is not connected to the network. Presentation Server can dynamically select the best application delivery method based on user profile, application type, and physical location. Applications thereby become an on-demand service that is always available and always up to date.

Customer Challenges

The reality today is that many companies are hitting a wall of complexity when trying to manage their ever-growing number of desktop applications, file servers, and diverse access scenarios. This complexity translates into a huge amount of time and money spent providing what amounts to patchwork solutions. The application streaming feature of Presentation Server 4.5 offers a compelling solution for centrally delivering all Windows-based applications to both Presentation Server environments and desktops.

Simplify Management, Cut Costs

The application streaming feature of Presentation Server 4.5 reduces the cost of testing, installing, and supporting applications. Applications are streamed to a protected isolation environment, greatly simplifying application management.

The application streaming feature of Presentation Server 4.5 enables IT to do the following.

- Deliver Microsoft Windows applications, including 2007 Microsoft Office system and Microsoft Vista applications, to desktops and laptops. Application streaming can also deliver Microsoft Windows Server 2003, Windows Server 2003 x64, and Microsoft Windows 2000 Server applications across Presentation Server farms.

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- Eliminate application conflicts and operating system instability resulting from server application installation.
- Reduce the costs associated with regression testing, deployment, maintenance, updates, and de-provisioning for applications being run locally on users' machines.
- Enable IT to offer applications as an on-demand service.
- Lower application support costs by automatically updating and repairing applications every time they are used.
- Speed regulatory and security compliance by eliminating the need for extensive testing to certify applications.
- Enhance security by giving IT administrators complete control over applications delivered to desktops — even those of unmanaged partners and users.

The *Organization* Goes To Production

The *Organization* has 40,000 employees and is comprised of 19 hospitals and a network of other care sites across America and throughout the world. The *Organization's* business environment includes approximately 30,000 desktops and 1,000 applications. At any given time, approximately 10,000 professionals are remote, disconnected users.

The *Organization* began using the beta version of the application streaming feature of Presentation Server 4.5 in October 2006 and went into production with Presentation Server 4.5 in July 2007 to satisfy a high-level strategic business objective to move to “on demand” computing. Application streaming supported this objective by decreasing time to deploy to the end-user through application conflict reduction.

With application streaming, Presentation Server 4.5 extends the *Organization's* ability to centrally manage and deliver Windows-based applications to over 30,000 users. Applications are cached locally in an isolation environment rather than installed on the device, eliminating silos, application conflicts, and the need for extensive compatibility and regression testing. Since Presentation Server 4.5 also had a large footprint environment in the *Organization*, the application streaming feature also enabled the *Organization* to reduce its hardware costs through server consolidation.

Tactical problems and issues that the *Organization* was trying to remedy or resolve by implementing the application streaming feature of Presentation Server 4.5 are prioritized by the *Organization* below.

- Reducing hardware costs of maintaining applications in silos.
- Relieving time, effort, and frustration with application conflicts.
- Minimizing support calls.
- Reducing costs of regression testing.
- Reducing costs of compatibility testing.

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- Reducing costs by managing one image of the application.
- Reducing application change management costs.

Costs, Benefits, Flexibility, And Risks

To calculate the NPV for the *Organization's* investment in the application streaming feature of Presentation Server 4.5, Forrester analyzed the costs, benefits, flexibility, and risks associated with deploying the solution.

Costs

The incremental costs associated with implementing and maintaining the application streaming feature of Presentation Server 4.5 will total **\$49,538** for the three-year period of this analysis and include the following expenses.

- **Pre- and ongoing planning, deployment, and configuration labor: \$31,538.** Labor associated with planning the implementation of the application streaming feature of Presentation Server 4.5 for the first phase cost \$3,846 for 100 hours of time and effort (using a fully loaded cost per person of \$80,000). In subsequent phases, the *Organization* plans to spend another 720 hours or \$27,692 on preplanning, deployment, and configuration over the next three years. This is based on streaming a total of 300 applications to servers. The pre- and ongoing planning tasks include: architectural planning, application validation, and functional and performance testing.
- **Citrix Systems' Presentation Server 4.5 license and annual support costs: \$0.00 (zero).** The *Organization* has 6000 concurrent licenses for publishing applications as part of Presentation Server 4.5 licenses. Forrester did not include license or support costs associated with Presentation Server 4.5 because the application streaming feature is "included" in the license fee. Since there are no licensing costs specifically associated with this feature, this study focuses instead on the *incremental* costs and benefits associated with implementing a feature (application streaming) of a product (Presentation Server 4.5) that the *Organization* has already purchased.
- **Consulting support: \$18,000.** The initial consulting costs for Phase I production are covered in the Citrix licensing agreement which, as stated earlier, is not included in the Forrester cost computation. However, the *Organization* anticipates a week's worth of consulting support every year from Citrix partner AEC Group during future phases of the roll-out, which will cost \$6,000 annually through the three-year implementation.

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Table 2: The *Organization's* Projection Of Incremental Costs Associated With The Application Streaming Feature Of Presentation Server 4.5.

Projected costs	Year 0 (Ramp-up)	Year 1 (Partially deployed)	Year 2 (Partially deployed)	Year 3 (Fully deployed)	Total	PV
Pre-preplanning, deployment, and configuration labor	\$3,846	\$3,462	\$10,385	\$13,846	\$31,538	\$25,071
CPS license costs	\$0	\$0	\$0	\$0	\$0	\$0
Consulting support (Citrix partner AEC Group)	\$0	\$6,000	\$6,000	\$6,000	\$18,000	\$14,411
Total costs	\$3,846	\$9,462	\$16,385	\$19,846	\$49,538	\$39,482

Source: Forrester Research, Inc.

Benefits: Quantified

The *Organization* says that implementing the application streaming feature of Presentation Server 4.5 will yield significant and quantifiable benefits totaling **\$594,349** (non-risk-adjusted). At the time this study was written, the company was in production for five months and predicting that full implementation for the 300 target applications would occur within the next three years. The ramp-up of the benefits listed below assumes that there will be a total of 50 applications streamed by the end of Year 1; 200 applications streamed by the end of Year 2; and 300 applications by the end of Year 3. Forrester also discusses additional benefits the *Organization* was not able to quantify at this time on pages 9-10.

Savings from server consolidation: \$233,282. The *Organization's* manager of Citrix and Remote Access states that application streaming allows the *Organization* to reduce hardware cost by increasing capacity and reducing underutilized servers through server consolidation. The *Organization* will eliminate the expenses associated with 13 servers in Year 2 of implementation, with projected savings of another six servers in Year 3. At a cost of \$12,278 per blade server, the total savings due to server consolidation is \$233,282. A basic description of these 19 servers includes: Xeon EM64T 2.66GHz Dual Core 2MB and Microsoft NT 2003 Advanced Server License with SA.

Savings from server administration management: \$80,000. The reduction of servers through the implementation of the application streaming feature allowed the *Organization* to reduce .5 FTEs annually (beginning in Year 2) in server management staff. At a fully loaded cost of \$80,000 per FTE, this translates to server management savings of \$40,000 in Years 2 and 3.

Savings in regression testing/upgrades: \$266,667. Prior to implementing the application streaming feature of Presentation Server 4.5, the *Organization's* regression testing represented 75% of the company's overall application deployment cost. The *Organization* had application upgrades that would break four or five other applications with each upgrade, so extensive testing was required to ensure that shared applications would have minimal outage with that one application upgrade. The manager of Citrix and Remote Access estimates that after adding the

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application streaming feature of Presentation Server 4.5, the cost of regression testing will be reduced to 5% of overall costs. This reduction in regression testing time and effort will save the *Organization* an estimated 20 hours per upgrade. At a schedule of four upgrades per week on average, the *Organization* will save labor costs of \$25,333 in Year 1, \$81,333 in Year 2, and when the application streaming feature is fully rolled-out in Year 3, the *Organization* will save \$160,000 in regression testing (at a fully loaded cost per person of \$80,000).

Reduction in support calls: \$14,400. The *Organization* estimates that support calls related to application conflicts will be reduced by 20 calls per month. At a cost of \$20 per call, this results in annual savings of \$4,800 for the *Organization*.

Table 3: Non-Risk-Adjusted Benefits — The *Organization's* Projection Of Incremental Benefits Associated With The Application Streaming Feature Of Presentation Server 4.5.

Projected benefits	Year 0 (Ramp-up)	Year 1 (Partially deployed)	Year 2 (Partially deployed)	Year 3 (Fully deployed)	Total	PV
Savings from server consolidation	\$0	\$0	\$159,614	\$73,668	\$233,282	\$201,240
Savings from server administration management	\$0	\$0	\$40,000	\$40,000	\$80,000	\$60,359
Savings in regression and compatibility testing	\$0	\$25,333	\$81,333	\$160,000	\$266,667	\$201,342
Reduction in support calls	\$0	\$4,800	\$4,800	\$4,800	\$14,400	\$11,529
Total benefits	\$0	\$30,133	\$285,747	\$278,468	\$594,349	\$474,470

Source: Forrester Research, Inc.

Benefits: Unquantified

The *Organization* identified the following benefits of using the application streaming feature of Presentation Server 4.5, but it was *not* able to quantify these benefits at this time.

Better patient care due to reduced application downtime. Prior to the *Organization's* implementation of the application streaming feature of Presentation Server 4.5, an application upgrade would cause two or three other applications on those servers to experience downtime. At the *Organization*, unavailable applications would delay patient care and also affect revenue realization. Citrix's application streaming feature of Presentation Server 4.5 significantly reduced downtime associated with applications upgrades.

Application streaming to the desktop. The *Organization* plans to use application streaming to the desktop in Year 2 for delivery of certain clinical applications to take advantage of running these applications from a local client rather than publishing it from Citrix Presentation Server. This would afford clinicians the flexibility to access the applications from a greater number of desktops.

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In addition, clinicians would have access to these systems and data from their office computers and would not have to visit clinical desktop computers for the needed access. The *Organization* anticipates streaming these applications to 20,000 desktops, although only about 5,000 desktops would most likely use these applications.

Higher productivity for application management team. With the application streaming feature, the *Organization* anticipates that the 10% reduction in time spent on managing application conflicts will free the team to tackle other projects that it did not have the resources for previously. With the elimination of silos, the reduction in upgrade/roll-out complexity also allows the team to focus exclusively on one application per upgrade.

Reduction in application management costs. The *Organization* estimates that time spent on application compatibility issues will decrease from 20% to 0% with the implementation of the application streaming feature of Presentation Server 4.5. The *Organization* also estimates that the percentage of time spent on application upgrades and rollout delays will decrease from 20% to 5%.

Seamless to users. The *Organization* has stated that the rollout of the application streaming feature of Presentation Sever 4.5 has been very successful. The *Organization* has received positive feedback from users, and the transition has been seamless.

Flexibility Options

Flexibility, as defined by Forrester's TEI methodology, involves investing in additional capacity or agility today that can be turned into business benefits in the future, at some additional cost. The *Organization* indicated that the application streaming feature of Presentation Server 4.5 can be used to reduce costs for disaster recovery infrastructure and deployment in Year 2 of this analysis.

Future savings in deploying disaster recovery: \$104,889 (risk-adjusted). The *Organization* has started building the infrastructure for disaster recovery and is planning to use the application streaming feature to deploy applications for disaster recovery. This will allow the *Organization* to seamlessly copy all the applications to a disaster recovery location instead of trying to maintain a separate disaster recovery environment and installation process for each application. The *Organization* anticipates Year 2 expenses associated with this flexibility option to be \$20,000 for a file server and associated storage. The maintenance costs of managing this redundant environment will be reduced with savings of \$160,000 in Year 3 for 2.0 FTEs (at a fully loaded cost of \$80,000 per person). The value of the option to use the application streaming feature of Presentation Server 4.5 to deploy applications for disaster recovery is valued at \$104,889 (risk-adjusted) using the Black-Scholes options pricing model.

Some readers of this study might believe that their organizations are ready to take advantage of the flexibility options afforded by the application streaming feature of Presentation Server 4.5; in such instances, the option will have a present value that can be estimated. The flexibility component of TEI captures that value. The value of flexibility is clearly unique to each organization, and the willingness to measure its value varies from organization to organization (see Appendix A for additional information regarding flexibility).

Risks And Risk Mitigation Strategies

Two aspects of risk and risk mitigation are considered in this study: project risks and risks associated with the estimates of costs and benefits in a business case. Each is summarized below.

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Project Risk And Mitigation

The *Organization* identified the following minor risk associated with the application streaming feature of Presentation Server 4.5, in particular.

- The *Organization* anticipated that moving to a new method of application delivery would be challenging. The *Organization* found that the three applications that include drivers and services could not be supported by the application streaming feature. Since only three out of the 1,000 overall the *Organization* applications fit this category, this risk had minimal impact.

The *Organization* believes that the application streaming feature of Presentation Server 4.5 will never be risk-free (as is the case with all IT projects), but IT staff were able to mitigate some risks by taking a slow, phased approach to implementation.

Risks Associated With Estimates Of Costs And Benefits

For this study, the benefit estimates are based on five months worth of production experience (plus eight months of Beta) of the application streaming feature of Presentation Server 4.5. Because the future cannot be accurately predicted, there is risk inherent in predicting costs and benefits. Risk assessments provide a range of possible outcomes that reflect the risks associated with the cost and benefit estimates of IT projects, in general, and specific risks related to moving towards a particular technology solution.

Forrester and the *Organization* agree that benefit projections based on the limited beta and five months of production experience require some significant downward risk adjustments as follows (and summarized in Table 4 below).

Risk Adjustments Reflected In This Study

Savings from server consolidation: \$233,282 (non-risk-adjusted). At the time of the interview, the *Organization* had already saved 13 servers so there is no risk-adjustment applied to these actual savings. The *Organization* anticipates savings of another six servers at project completion; with the prior success reducing servers, Forrester and the *Organization* are confident that no risk adjustments need to be made, resulting in a risk-adjusted savings of **\$233,282** (the same as the non-risk-adjusted number). This benefit is reflected in the risk-adjusted NPV in Table 1 in the Executive Summary and Financial Analysis Summary sections of this study.

Savings from server administration management: \$80,000 (non-risk-adjusted). The reduction of servers through the implementation of the application streaming feature allowed the *Organization* to reduce .5 FTEs annually (beginning in Year 2) in server management staff. At a fully loaded cost of \$80,000 per FTE, this translates to server management savings of \$40,000 in Years 2 and 3. From a *risk adjustment* standpoint, Forrester's experience is that organizations that plan to re-deploy server administration management staff (and eliminate costs) delay such moves by an average of six to nine months. To reflect this potential delay in cost avoidance, Forrester **risk adjusted the savings downward by 50%** in each of the three years **resulting in a risk-adjusted total savings of \$40,000**. This lower benefit is reflected in the risk-adjusted NPV in Table 1 in the Executive Summary and Financial Analysis Summary sections of this study.

Savings in regression testing/upgrades: \$266,667 (non-risk-adjusted). The *Organization's* manager of Citrix and Remote Access states that the reduction in regression testing and upgrade time and effort will save labor costs of \$25,333 in Year 1, \$81,333 in Year 2, and when the application streaming feature is fully rolled-out in Year 3, the *Organization* will save \$160,000. From a *risk adjustment* standpoint, Forrester's experience is that organizations that plan to re-deploy IT staff (and eliminate costs) delay such moves by an average of six to nine months. To reflect this

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potential delay in cost avoidance, Forrester **risk adjusted the savings downward by 50%** in each of the three years **resulting in a risk adjusted total savings of \$133,333**. This lower benefit is reflected in the risk-adjusted NPV in Table 1 in the Executive Summary and Financial Analysis Summary sections of this study.

Reduction in support calls: \$14,400 (non-risk-adjusted). The *Organization* estimates that support calls related to application conflicts will be reduced by 20 calls per month. At a cost of \$20 per call, this results in annual savings of \$4,800 for the *Organization*. Forrester has chosen not to apply risk factor to this benefit; therefore the risk-adjusted number is the same at **\$14,400**. This benefit is reflected in the risk-adjusted NPV in Table 1 in the Executive Summary and Financial Analysis Summary sections of this study.

Table 4: Risk Adjusted Benefits — The *Organization's* Projection Of Incremental Benefits Associated With The Application Streaming Feature Of Presentation Server 4.5

Projected benefits	Year 0 (Ramp-up)	Year 1 (Partially deployed)	Year 2 (Partially deployed)	Year 3 (Fully deployed)	Total	PV
Savings from server consolidation	\$0	\$0	\$159,614	\$73,668	\$233,282	\$179,679
Savings from server administration management	\$0	\$0	\$20,000	\$20,000	\$40,000	\$30,179
Savings in regression testing and compatibility testing	\$0	\$12,667	\$40,667	\$80,000	\$133,333	\$100,671
Reduction in support calls	\$0	\$4,800	\$4,800	\$4,800	\$14,400	\$11,529
Total benefits	\$0	\$17,467	\$225,081	\$178,468	\$421,015	\$322,058

Source: Forrester Research, Inc.

Financial Analysis Summary — The *Organization*

Key Findings

Table 1 (repeated from the Executive Summary) summarizes the costs and savings the *Organization* will realize over a three-year period from deploying the application streaming feature of Citrix Systems' Presentation Server 4.5.

Table 1: Three-Year Summary Financial Results — The *Organization*

Summary of financial results	Risk-adjusted
Total costs (present value) *	(\$39,482)
Total cost savings and benefits (PV)	\$322,058
Total flexibility options	\$104,889
Total (net present value)	\$387,466
Payback period	Within 2.5 months

Source: Forrester Research, Inc.

The three-year, risk-adjusted total net present value (NPV) of **387,466** represents the incremental net cost savings and benefits attributed to using the application streaming feature of Presentation Server 4.5 to stream 300 Windows applications to servers as compared to the *Organization's* prior use of Presentation Server without the application streaming feature. (Details are provided in the Costs, Benefits, Flexibility, and Risk sections.) The *Organization* also achieved a very favorable payback period of **within 2.5 months**. Forrester Research and the *Organization* also identified significant unquantified business benefits attributable to the application streaming feature of Presentation Server 4.5 (see pages 9 - 10).

A risk-adjusted NPV that demonstrates a compelling business case 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, because they represent the expected value considering risk, should thus be taken as "realistic" expectations. Assuming normal success at mitigating risk, the risk-adjusted numbers should more closely reflect the expected outcome of the investment.

Conclusions

This study is meant to provide the reader with a framework for examining the costs and benefits of deploying the application streaming feature of Presentation Server 4.5. Based on our in-depth discussions with the *Organization*, Forrester projects a three-year risk-adjusted NPV of **\$387,466**. The *Organization* also achieved a very favorable payback period of **within 2.5 months**.

For the *Organization*, a well-planned implementation will result in hardware cost reduction, relief of frustration with application conflicts, and reduction of costs of application management and support calls. The *Organization* anticipates that these demonstrated gains in the first five months of production with 13 applications will continue until the last implementation phase of the project with a target of 300 applications. The *Organization* also believes that its investment in the application streaming feature of Presentation Server 4.5 provides it with the flexibility option benefit of **\$104,889 (risk-adjusted)** in the deployment of applications for disaster recovery.

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Other organizations likely to see beneficial results from using the application streaming feature of Presentation Server 4.5 will have the following characteristics or attributes.

- Installing and maintaining numerous applications and servers in large farms.
- Need to reduce the cost of testing, installing, and supporting applications for their users.
- Are small to midsize organizations with 100 to 5,000 employees.
- Not yet invested in ESD tools or unhappy with existing ESD tools.
- Frustrated with desktop application conflicts.
- Need help managing the Microsoft Vista transition (although this was not a factor for the *Organization*).

Forrester makes no assumptions regarding the effects of the application streaming feature of Presentation Server 4.5 in other organizations. This study examines the financial impact on the *Organization* of effects attributable to the implementation of the application streaming feature of Presentation Server 4.5. The underlying objective of this document is to provide guidance for technology decision-makers seeking to identify areas in which value can potentially be created by using the application streaming feature of Presentation Server 4.5.

Appendix A: Total Economic Impact Overview

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

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

Costs

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

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 for analysis of the impact of the technology on the entire organization. The TEI methodology and resulting financial model place equal weight on the measure of benefits to that of costs, supporting a full examination of the impact of the technology on the entire organization. Calculation of benefit estimates requires a clear dialogue with the user organization to understand the specific value that is being created. In addition, Forrester requires that a clear line of accountability be 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.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. Although direct benefits are typically 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 that builds on the initial investment already made. For instance, an initial investment in an enterprisewide upgrade of an office productivity suite can increase standardization (to increase efficiency) and reduce licensing costs. Later, the implementing organization might decide to take advantage of an embedded collaboration feature that might translate into greater worker productivity if activated. But this collaboration feature can only be used with an additional investment in user training. The ability to capture the benefit associated with this collaboration feature has a present value that can be estimated. The flexibility component of TEI captures that value using the Black-Scholes option pricing model.

Risk

Risk, the fourth component of the TEI methodology, is a measurement of the uncertainty of benefit and cost estimates obtained for the investment. Uncertainty is measured in two ways: 1) as the likelihood that the cost and benefit estimates will meet the original projections, and 2) as the likelihood that the estimates will be measured and tracked over time.

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

Appendix B: About The Project Director



Bob Cormier
Principal Consultant

Bob is a principal consultant for Forrester's Total Economic Impact™ (TEI) service. He specializes in advising clients on the TEI framework, services that help organizations make decisions about the overall financial value of IT strategies and investments.

Bob, who came to Forrester through its acquisition of Giga Information Group, has more than 25 years' experience in the IT and consulting industries. Prior to joining Giga, 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 by incorporating leading-edge, professional service automation (PSA) applications and enterprise resource planning (ERP) systems. He has also held management positions at Digital Equipment and Anixter International.

Bob earned an M.B.A. from Bentley College 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.