

A Forrester Total Economic
Impact™ Study
Commissioned By
Equinix

Project Director:
Sarah Musto
August 2015

The Total Economic Impact™ Of Equinix Interconnection Solutions

Cost Savings And Business Benefits
Enabled By Interconnection

FORRESTER®

Table Of Contents

Executive Summary	3
Disclosures	4
TEI Framework And Methodology	5
Analysis	6
Financial Summary	19
Interconnection With Equinix: Overview	20
Appendix A: Composite Organization Description	21
Appendix B: Total Economic Impact™ Overview.....	22
Appendix C: Glossary.....	23

ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

© 2015, Forrester Research, Inc. All rights reserved. Unauthorized reproduction is strictly prohibited. Information is based on best available resources. Opinions reflect judgment at the time and are subject to change. Forrester®, Technographics®, Forrester Wave, RoleView, TechRadar, and Total Economic Impact are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective companies. For additional information, go to www.forrester.com.



Executive Summary

Equinix commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by interconnecting in Equinix facilities. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Equinix on their organizations.

To better understand the benefits, costs, and risks associated with an Equinix implementation, Forrester interviewed several customers with multiple years of experience using Equinix to interconnect. Equinix offers carrier-neutral data centers and Internet exchanges for companies worldwide and provides interconnection solutions, such as Equinix Performance Hub, to colocate corporate IT resources in Equinix data centers close to network service providers. Equinix also offers Equinix Cloud Exchange, which provides direct and secure, software-enabled access to cloud service providers.

Prior to using Equinix, each customer's global user base struggled with application performance issues. Traditional system-centric models of connectivity and reliance on public Internet could not address performance concerns in a cost-effective way and stifled application innovation. In order to resolve these issues and pursue their cloud strategy, which would require even greater responsiveness, the organizations needed to switch to a more user-centric model. This meant bringing data and applications closer to the users; focusing on the interconnection between networks, applications, and users; and ultimately pushing services and applications to the edge of the network. With Equinix Performance Hub and Equinix Cloud Exchange, the organizations have access to reliable, scalable, and secure connectivity, boosting performance and end user satisfaction. They also have access to direct and fast connections to cloud services, enabling their cloud strategies. The Vice President of Platform and Architecture at one organization noted, "We did our due diligence to confirm that Equinix is where we need to be for location, connectivity to partners, connectivity to our existing cloud strategy, and setting the right foundation for international growth."

"The primary value proposition that we're getting with Equinix is all around the ability to interconnect. We definitely need to be able to touch and reach those various cloud providers in the ecosystem and still get the same level of security visibility we have internally."

~Chief technology officer for cloud

EQUINIX IMPROVES APPLICATION PERFORMANCE, ENABLES INNOVATION, AND GENERATES COST SAVINGS

Our interviews and financial analysis found that a composite organization based on four interviewees experienced the risk-adjusted ROI and benefits shown in Figure 1. See Appendix A for a description of the composite organization.

The composite organization analysis points to benefits of \$23,038,257 over three years versus costs of \$5,761,393, adding up to a net present value (NPV) of \$17,276,864.

FIGURE 1

Financial Summary Showing Three-Year Risk-Adjusted Results

**ROI:
300%**

**NPV:
\$17,276,864**

**Payback:
4.2 months**

**Average latency
reduction:
▼ 42%**

Source: Forrester Research, Inc.

- › **Benefits.** The composite organization experienced the following risk-adjusted benefits that represent those experienced by the interviewed companies:
 - **Incremental revenue enabled by Equinix.** High-speed connectivity and secure connections to providers near large user bases generates millions in incremental revenue through enablement of new product opportunities.
 - **Time savings for developers and end users.** Developers are able to save 10% of their overall time, and end users are able to save 30 minutes per week, due to network and application improvements as well as fast provisioning from providers.
 - **Cost savings each year related to application migration to public cloud.** Running applications in the lower-cost cloud providers with Equinix generates cost savings compared with running them internally.
 - **Data center cost savings and cost avoidance.** The organization is able to reduce data center space requirements and avoid future data center investments by pursuing its cloud strategy with Equinix.
 - **A 40% reduction in bandwidth costs.** The organization is able to save \$1.5 million per year due to more competitive pricing and the network service provider choice available with Equinix.
 - **Fifteen percent fewer network incidents and outages, leading to reduced labor costs.** The organization is able to reduce the amount of time spent on troubleshooting connectivity issues.
- › **Costs.** The composite organization experienced the following risk-adjusted costs:
 - **Equinix costs of \$715,000 per year.** These fees include space, power, cross connects, and exchange ports for the Performance Hub and Cloud Exchange solutions.
 - **Capital investment of \$1.65 million upfront and \$330,000 ongoing.** The infrastructure investment associated with the Equinix implementation includes network and security deployments in multiple Equinix facilities.
 - **Costs associated with implementation and ongoing management.** Internal full-time equivalent (FTE) time and professional services support cost \$1.15 million upfront for the implementation and \$145,820 each year for ongoing management.

Disclosures

The reader should be aware of the following:

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

TEI Framework And Methodology

INTRODUCTION

From the information provided in the interviews, Forrester has constructed a Total Economic Impact (TEI) framework for those organizations considering implementing Equinix solutions. 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 Equinix can have on an organization (see Figure 2). Specifically, we:

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

Forrester employed four fundamental elements of TEI in modeling Equinix interconnection solutions: benefits, costs, flexibility, and risks.

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

FIGURE 2
TEI Approach



Source: Forrester Research, Inc.

Analysis

COMPOSITE ORGANIZATION

For this study, Forrester conducted a total of four interviews with representatives from the following Equinix customers:

- › A Fortune 500 financial services firm with a nationwide network of employees, customers, and partners. The organization has been using Equinix hubs for 1.5 years to integrate its public and private cloud services.
- › A multinational global conglomerate that has been using colocation facilities for two years and is integrating with Cloud Exchange to support its cloud strategy.
- › A construction and engineering firm with a global network of employees, customers, and partners. The organization has been using Performance Hub and Cloud Exchange for less than one year.
- › A global company with significant business-to-business (B2B), API, web, and mobile traffic. The organization uses Equinix to run its own private network as well as for peering relationships with cloud providers via cloud connect.

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

- › A global organization with B2B and business-to-consumer (B2C) digital product lines.
- › Recent fiscal year revenue of \$5.1 billion.
- › 5,300 employees.
- › A cloud strategy that involves migrating applications to the public cloud and enabling innovative applications that leverage big data analytics.

INTERVIEW HIGHLIGHTS

The four customer interviews provided common challenges and objectives, highlights, and investment results that formed the foundation for the composite organization's story.

Situation

Prior to investing in Equinix, the interviewed organizations struggled with a number of connectivity-related challenges that included complex network architectures and carrier inflexibility, slow and expensive provisioning of capacity, latency disrupting application performance, and cloud connectivity options that were expensive and lacked security. Key business objectives and drivers for the Equinix investment were:

- › The organizations wanted to streamline their network architectures, with a focus on cost, reliability, and time-to-market. The end goal was to move workloads closer to users to deliver those workloads quickly and consistently.

“We simply couldn’t provide the level of performance necessary globally in a hub-and-spoke model along with being able to get the same security view of the world we had, and so we started to look at Equinix as a solution provider that can help us solve that problem.”

~ CTO for cloud

- › The organizations wanted to pursue a cloud strategy focused on application migration and innovation. Traditional connection models did not meet security or performance requirements, so the organizations needed a more secure way to enable high-speed connectivity to cloud providers.
- › Several of the interviewees sought to differentiate and pursue business growth through delivering new services that leverage big data analytics. The magnitude of these datasets led to performance problems. In order to support this and future business agility, the organizations needed improved time-to-market and quicker provisioning, along with high-speed connectivity that could improve performance.

Solution

The interviewed organizations noted the following key factors in their selection of Equinix:

- › Flexibility provided through expansive choice of network, cloud, and IT service providers.
- › Ability to increase bandwidth while lowering cost.
- › Ability to direct connect to cloud providers versus over the public Internet, to achieve the speed needed for applications while retaining security.
- › Ability to provision additional capacity or services much faster than traditional models.
- › The potential for cross-connect opportunities with key customers and partners.

Implementation times ranged from six months to one year and involved:

- › Multiple data center deployments to place IT infrastructure near customers, partners, and employees in key regions, with an emphasis on security infrastructure deployment.
- › Connecting a majority of office locations to Equinix hubs to provide faster and more reliable connectivity.
- › Direct connections to key cloud providers early, with additional connections to follow.

Results

The interviews revealed that:

- › **The key to achieving high performance and consistent user experience is to create a network architecture focused on users.** The interviewees were dissatisfied with the cost-effectiveness and reliability of their previous connectivity, and a complex topology created an inconsistent user experience and difficulty in manageability. By using Equinix performance hubs, the organizations could create a streamlined, flexible architecture with global coverage through access to the provider ecosystem and deploying performance hubs closer to users. This improved performance and user experience was easier to manage and resulted in cost savings.

“With Equinix and their facilities, many of the service providers and partners that my company needs to do business with are already there. So by investing to build and connect my enterprise into an Equinix facility, I immediately unlock the opportunity for my business to directly connect to a number of services.”

~ VP of Data Center, Network, Storage Services

› **A key enabler of the organizations' cloud strategies was upgrading their networks to effectively deliver cloud services.** Creating a simplified and flexible network architecture through Equinix allowed the organizations to more easily enable the benefits mentioned above compared with their prior use of public Internet. It also allowed the organizations to more easily and cost-effectively pursue their focus on cloud delivery. Cloud applications in particular require proximity between users and providers, reliable delivery, and consistent high performance, often while working with large volumes of data. By being able to locally peer with cloud providers through secure, direct interconnections and get out at the edge capabilities to access cloud services, the organizations are able to provision cloud services quickly and provide an improved end user experience. The VP of Data Center, Network, and Storage Services at one organization noted: "There's a lot of security benefit to me directly peering with cloud providers in an Equinix facility versus me building that peering over the public Internet. So I can open my business to new cloud services, but not have the dependency on the public Internet. That's a huge differentiation."

› **The organizations all mentioned the strong present and expected future business value of their Equinix partnership.** Along with the business benefits that the organizations are able to achieve through the Equinix investment, the interviewees also felt that they will gain additional benefits in the future from the services Equinix provides, the ecosystem created within Equinix data centers, and the direction that Equinix is taking. As one vice president of platform and architecture said: "Every time I talk to Equinix, they are very progressive. They're thinking smart, thinking future. They are an easy partner, and I wanted to partner with somebody who is going to be innovating on my behalf that I can leverage from."

"I think the Cloud Exchange offering is highly valuable from a speed and market innovation standpoint. If you envision the world in that multicloud standpoint, you get to a model that allows you to bring the next kind of startup online in a very rapid fashion."

~ CTO for cloud

BENEFITS

The composite organization experienced a number of quantified benefits in this case study:

- › Incremental revenue.
- › Developer and end user time savings.
- › Cloud deployment cost savings.
- › Data center cost savings and cost avoidance.
- › Bandwidth cost savings.
- › Cost savings from improved network reliability.

Other important benefits mentioned by the composite organization were improved end user experience and ability to engage the global workforce due to better application performance. Additionally, the organization felt that security was dramatically improved due to the ability to direct connect versus connect via the public Internet.



Incremental Revenue

A key benefit for the composite organization is the ability to leverage big data analytics to drive new revenue streams, among other potential product innovations. In order to enable this incremental revenue, the organization needs to be able to make high-speed, secure connections to end users, customers, and cloud providers. Traditional network and cloud connectivity models could not provide the security view and performance necessary to access against these large datasets. With Equinix, the organization can implement its security stack and additional infrastructure in Equinix facilities near large user bases and direct connect to cloud providers, providing real-time analytics capabilities at the edge where data is created. Additionally, the improved reliability and consistency of performance with Equinix frees up time that would otherwise be spent on troubleshooting and can now be used to focus on these and other revenue-generating product enhancements. These new revenue streams make up 0.15% of total revenue, or over \$2.4 million in gross revenue, by Year 3. As the senior VP and CIO at one organization said, “We can make more creative designs, more innovative designs . . . the outcome will directly impact our ability to improve profitability.”

Interviewed organizations provided a broad range for the magnitude of revenue enhancements, since there are a variety of outside forces that might also have an impact on this, and revenue generation can be difficult to estimate and attribute to specific solutions. To compensate, this benefit was risk-adjusted and reduced by 25%. The risk-adjusted total benefit resulting from incremental revenue over the three years was \$3,581,749. See the section on Risks for more detail.

TABLE 1
Incremental Revenue

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Annual revenue		\$5,100,000,000	\$5,253,000,000	\$5,410,590,000
A2	Revenue resulting from Equinix investment		0.05%	0.10%	0.15%
A3	Gross margin		30%	30%	30%
At	Incremental gross revenue	$A1 \cdot A2 \cdot A3$	\$765,000	\$1,575,900	\$2,434,766
	Risk adjustment	↓ 25%			
Atr	Incremental gross revenue (risk-adjusted)		\$573,750	\$1,181,925	\$1,826,074

Source: Forrester Research, Inc.



Developer And End User Time Savings

Developers at the composite organization achieve time savings due to improved simplicity through having a reliable and consistent platform to roll out and run applications. With the Equinix implementation, developers now spend very little time worrying about environments. Additionally, network and cloud providers can provision in days versus months, and there is less work needed to do the physical connectivity necessary for new deployments. These improvements help to speed project time and accelerate innovation. Forrester conservatively estimates that the 500 developers at the composite organization have a 5% overall time savings in the first year and up to 10% time savings in years 2 and 3.

End users at the organization also save time. Placing infrastructure closer to users and connecting to more efficient networks reduces latency and improves the performance of frequently used applications. Additionally, network disruptions and outages are significantly reduced and have very little impact on the end user. The combined effect of these improvements allows 3,000 end users to save 15 minutes per week in Year 1 and 30 minutes per week in years 2 and 3. Forrester assumes that 50% of the developer and end user time savings are repurposed for further productive use.

Interviewed organizations provided a range of time savings improvements, since there are a variety of outside forces that might affect this benefit, which can be difficult to measure. To compensate, this benefit was risk-adjusted and reduced by 15%. The risk-adjusted total benefit resulting from developer and end user time savings over the three years was \$7,881,625. See the section on Risks for more detail.

TABLE 2
Developer And End User Time Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Developers		500	500	500
B2	Average developer time savings		5%	10%	10%
B3	Average annual fully loaded developer compensation		\$100,000	\$100,000	\$100,000
B4	End users affected		3,000	3,000	3,000
B5	Average end user time savings (hours)	30 minutes/week	13	26	26
B6	Average fully loaded end user compensation per hour	\$65,000/2,080	\$31	\$31	\$31
B7	Productivity capture		50%	50%	50%
Bt	Developer and end user time savings	$((B1*B2*B3)+(B4*B5*B6))*B7$	\$1,854,500	\$3,709,000	\$3,709,000
	Risk adjustment	↓ 15%			
Btr	Developer and end user time savings (risk-adjusted)		\$1,576,325	\$3,152,650	\$3,152,650

Source: Forrester Research, Inc.



Cloud Deployment Cost Savings

Using Equinix Cloud Exchange, the organization can make fast interconnections to cloud services and manage its usage much more easily, while retaining the right security levels. As the organization migrates applications, it achieves cost savings by running the applications in the lower-cost cloud providers versus running them internally, which results in charges being sent to various business segments. By using a single port and API to automate connections to multiple clouds with Equinix, instead of using the traditional model of a physical cable per port per partner, the organization saves costs and reduces the time required to provision resources and manage the one-to-many connection. With traditional connectivity models, it is very difficult to deliver multicloud services to users efficiently and economically. As the CTO for cloud at one organization noted, “We would have a degradation in performance had we not placed our cloud strategy in Equinix facilities.” While the composite organization begins application migration slowly in Year 1, by the end of Year 3 it achieves a cumulative \$770,000 cost savings from application migration.

There are a variety of outside forces that might affect the magnitude of these savings and speed to realize them. To compensate, this benefit was risk-adjusted and reduced by 15%. The risk-adjusted total benefit resulting from cloud deployment cost savings over the three years was \$1,079,925. See the section on Risks for more detail.

TABLE 3
Cloud Deployment Cost Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Cost savings for application migration to cloud		\$115,500	\$385,000	\$770,000
Ct	Cloud deployment cost savings	C1	\$115,500	\$385,000	\$770,000
	Risk adjustment	↓ 15%			
Ctr	Cloud deployment cost savings (risk-adjusted)		\$98,175	\$327,250	\$654,500

Source: Forrester Research, Inc.



Data Center Cost Savings And Cost Avoidance

The composite organization can leverage the scalable solution that Equinix provides to connect to multiple clouds quickly and cost-effectively. This supports the organization's cloud strategy, including the migration of its B2B and B2C applications to the public cloud, thereby removing those applications from its own data centers. As a result, the organization reduces its facilities spending and data center space requirements. While these savings are lower in Year 1 as application migration ramps up, the organization is able to achieve a cumulative \$1.75 million cost savings by Year 3.

In order to achieve equivalent levels of performance and functionality by pursuing a cloud strategy on its own, the organization would need to build out its own data center facilities in various locations. By using Equinix Cloud Exchange and performance hubs, the organization can pursue its cloud focus while avoiding this future investment. The organization estimates it can avoid an additional \$4.5 million in data center investments in Year 1, and avoid maintenance and power costs associated with that investment in subsequent years.

Data center and infrastructure costs can vary substantially from organization to organization since there are a variety of outside forces that might have an impact on these costs. To compensate, this benefit was risk-adjusted and reduced by 15%. The risk-adjusted total benefit resulting from data center savings over the three years was \$6,757,500. See the section on Risks for more detail.

TABLE 4
Data Center Cost Savings And Cost Avoidance

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Data center cost savings		\$250,000	\$1,000,000	\$1,750,000
D2	Data center cost avoidance due to cloud hub deployment		\$4,500,000	\$225,000	\$225,000
Dt	Data center cost savings and cost avoidance	D1+D2	\$4,750,000	\$1,225,000	\$1,975,000
	Risk adjustment	↓ 15%			
Dtr	Data center cost savings and cost avoidance (risk-adjusted)		\$4,037,500	\$1,041,250	\$1,678,750

Source: Forrester Research, Inc.



Bandwidth Cost Savings

Prior to using Equinix, the composite organization was using a number of partners for connectivity, and in some locations the organization only had access to one carrier. Long-term, inflexible contracts locked the organization into inefficient and costly routes. With Equinix, network service provider choice leads to more cost-effective and flexible pricing and improved throughput capacity at better price points. The composite organization reduced its bandwidth spend by an average of 40%, saving \$1.5 million each year.

Interviewed organizations differed in the level of cost savings they were able to negotiate. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from bandwidth cost savings over the three years was \$4,275,000. See the section on Risks for more detail.

TABLE 5
Bandwidth Cost Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
E1	Prior bandwidth spend		\$3,750,000	\$3,750,000	\$3,750,000
E2	Average percent reduction in spend		40%	40%	40%
Et	Bandwidth cost savings	E1*E2	\$1,500,000	\$1,500,000	\$1,500,000
	Risk adjustment	↓ 5%			
Etr	Bandwidth cost savings (risk-adjusted)		\$1,425,000	\$1,425,000	\$1,425,000

Source: Forrester Research, Inc.



Cost Savings From Improved Network Reliability

In the organization's prior environment, maintaining service levels and performance between locations was difficult and unpredictable. The organization was also exposed to risk in locations where carrier options were limited. By avoiding public Internet with cross connects and gaining access to broad network service provider choices, the organization is able to save time that was previously devoted to troubleshooting connectivity issues. The organization is able to save about \$1.5 million in troubleshooting time and noted that it is able to prevent revenue loss with improved reliability, though this is not quantified.

Interviewed organizations provided a range of time savings, since there are a variety of outside forces that might also affect this. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from improved network reliability over the three years was \$4,210,625. See the section on Risks for more detail.

TABLE 6
Cost Savings From Improved Network Reliability

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
F1	Time savings for network administration (FTEs)		0.25	0.25	0.25
F2	FTEs on operations team		50	50	50
F3	Average operations team time savings		60%	60%	60%
F4	Average annual fully loaded compensation		\$100,000	\$100,000	\$100,000
F5	Productivity capture		50%	50%	50%
Ft	Cost savings from improved network reliability	$((F1 \cdot F4) + (F2 \cdot F3 \cdot F4)) \cdot F5$	\$1,512,500	\$1,512,500	\$1,512,500
	Risk adjustment	↓ 5%			
Ftr	Cost savings from improved network reliability (risk-adjusted)		\$1,436,875	\$1,436,875	\$1,436,875

Source: Forrester Research, Inc.

Total Benefits

Table 7 shows the total of all benefits across the six areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than \$23 million.

TABLE 7
Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Year 1	Year 2	Year 3	Total	Present Value
Atr	Incremental revenue	\$573,750	\$1,181,925	\$1,826,074	\$3,581,749	\$2,870,345
Btr	Developer and end user time savings	\$1,576,325	\$3,152,650	\$3,152,650	\$7,881,625	\$6,407,151
Ctr	Cloud deployment cost savings	\$98,175	\$327,250	\$654,500	\$1,079,925	\$851,440
Dtr	Data center cost savings and cost avoidance	\$4,037,500	\$1,041,250	\$1,678,750	\$6,757,500	\$5,792,261
Etr	Bandwidth cost savings	\$1,425,000	\$1,425,000	\$1,425,000	\$4,275,000	\$3,543,764
Ftr	Cost savings from improved network reliability	\$1,436,875	\$1,436,875	\$1,436,875	\$4,310,625	\$3,573,295
Total benefits (risk-adjusted)		\$9,147,625	\$8,564,950	\$10,173,849	\$27,886,424	\$23,038,257

Source: Forrester Research, Inc.

COSTS

The composite organization experienced the following costs associated with the Equinix investment:

- › Equinix costs.
- › Additional infrastructure investment.
- › Implementation and ongoing management.

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



Equinix Costs

The fees charged by Equinix for the Performance Hub and Cloud Exchange include space, power, cross connects, and the Cloud Exchange port to connect to multiple cloud providers. These fees can vary based on a number of features related to an organization's deployment. For the composite organization, we have estimated that the fees sum up to \$715,000 per year, yielding a three-year risk-adjusted cost of \$2,145,000.



Additional Infrastructure Investment

The composite organization invested in additional infrastructure as part of the Equinix implementation, including multiple deployments of its security stack and network stack in Equinix facilities. The organization also replaced aging infrastructure with newer-generation hardware. We estimate the upfront investment to total \$1.65 million, with \$330,000 in maintenance costs and incremental investments in each of the following years. The three-year risk-adjusted total for additional infrastructure was \$2.64 million.



Implementation And Ongoing Management

As part of the implementation effort, a number of internal FTEs worked part or full time over the course of several months on planning and design. Following this period, these FTEs spent a little over six months on the implementation and deployment of the performance hubs and Cloud Exchange access, and they spent minimal time on training. On an ongoing basis, internal FTEs work on enhancements to the platform and application migration. In addition, one FTE spends a few hours each month on the Equinix partnership and future direction. The composite organization also used some professional services support upfront to help with design and new hardware and minimal support on an ongoing basis. The three-year risk-adjusted cost for implementation and ongoing management was just over \$1,587,000.

Total Costs

Table 8 shows the total of all costs as well as associated present values, discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of a little more than \$5.7 million.

TABLE 8
Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Gtr	Equinix costs	\$0	\$715,000	\$715,000	\$715,000	\$2,145,000	\$1,778,099
Htr	Additional infrastructure investment	\$1,650,000	\$330,000	\$330,000	\$330,000	\$2,640,000	\$2,470,661
Itr	Implementation and ongoing management	\$1,150,000	\$145,820	\$145,820	\$145,820	\$1,587,460	\$1,512,633
	Total costs (risk-adjusted)	\$2,800,000	\$1,190,820	\$1,190,820	\$1,190,820	\$6,372,460	\$5,761,393

Source: Forrester Research, Inc.

FLEXIBILITY

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

While Forrester could not quantify flexibility options for this study, organizations noted that using Equinix Interconnection Solutions for their own benefit was a first step. The interviewees believe that the Equinix investment will enable partners and customers, colocated within the same facilities as their organizations, to proactively connect to them as they innovate their B2B product lines.

RISKS

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

TABLE 9
Benefit And Cost Risk Adjustments

Benefits	Adjustment
Incremental revenue	↓ 25%
Developer and end user time savings	↓ 15%
Cloud deployment cost savings	↓ 15%
Data center cost savings	↓ 15%
Bandwidth cost savings	↓ 5%
Cost savings from improved network reliability	↓ 5%
Costs	Adjustment
Equinix costs	↑ 10%
Additional infrastructure investment	↑ 10%
Implementation and ongoing management	↑ 15%

Source: Forrester Research, Inc.

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

The following impact risks that affect benefits are identified as part of the analysis:

- › Incremental revenue and time savings impacts will vary from organization to organization and can also be more difficult to measure and attribute to the Equinix investment.
- › Costs related to eliminating data center space and minimizing the hardware footprint, as well as avoidance of future data center and hardware investments, are highly dependent on location and the needs of the company.

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

- › The cost figures for the composite organization represent an average of the common cost categories indicated by the interviewees, scaled to fit the size of the composite organization. Costs associated with the Equinix investment will vary substantially from customer to customer based on the specifics of each deployment.

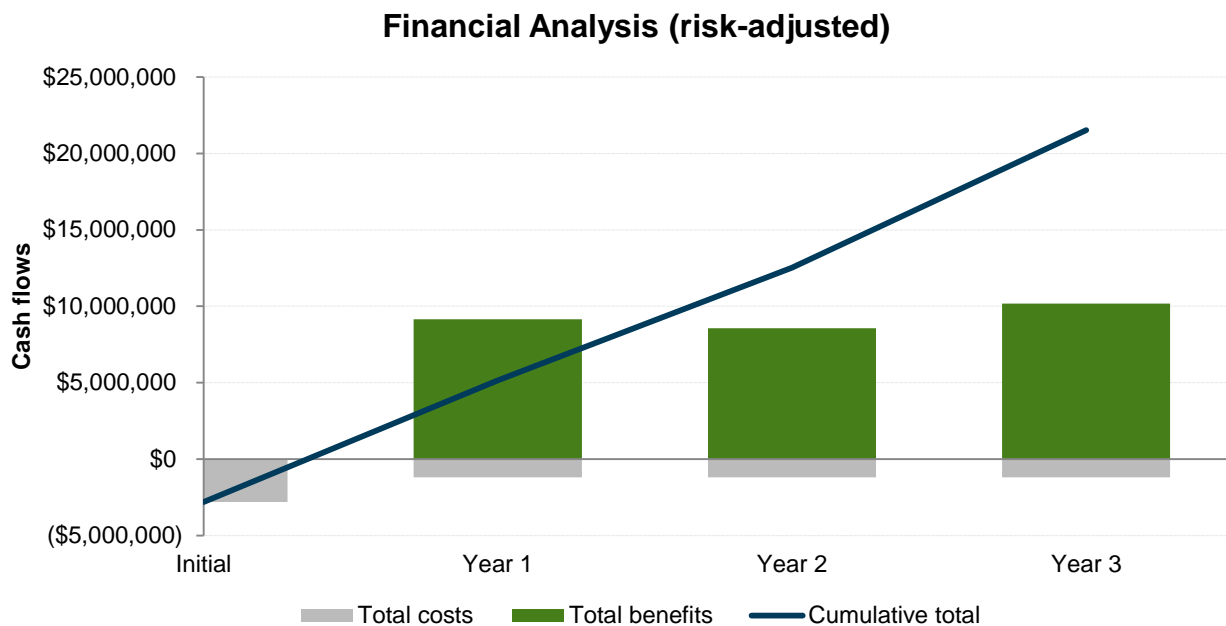
Table 9 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment in interconnection at Equinix.

Table 10 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 9 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 3
Cash Flow Chart (Risk-Adjusted)



Source: Forrester Research, Inc.

TABLE 10
Cash Flow (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Costs	(\$2,800,000)	(\$1,190,820)	(\$1,190,820)	(\$1,190,820)	(\$6,372,460)	(\$5,761,393)
Benefits	\$0	\$9,147,625	\$8,564,950	\$10,173,849	\$27,886,424	\$23,038,257
Net benefits	(\$2,800,000)	\$7,956,805	\$7,374,130	\$8,983,029	\$21,513,964	\$17,276,864
ROI						300%
Payback period (months)						4.2

Source: Forrester Research, Inc.

Interconnection With Equinix: Overview

The following information is provided by Equinix. Forrester has not validated any claims and does not endorse Equinix or its offerings.

Equinix connects businesses to their customers, employees, and partners inside interconnected data centers. In 33 markets across five continents, Equinix is where companies come together to realize new opportunities and accelerate their business, IT, and cloud strategies. Equinix offers the following products and services:

- › **Equinix Direct Connect.** A direct, secure intra-data center connection between a purchaser of cloud services and a cloud service provider.
- › **Equinix Performance Hub.** This places corporate IT resources in distributed data centers connected to many networks and clouds and delivers improvements in application performance and IT agility.
- › **Equinix Cloud Exchange.** This enables on-demand, direct connections to multiple cloud providers and networks from a single port.
- › **Equinix Internet Exchange.** This connects peers at 19 Internet exchange point locations in 17 global metro areas.
- › **Equinix Cross Connects.** These directly link customers in the same data center or metro, for secure, instant, and private one-to-one connections.
- › **Equinix Metro Connect.** This links data center customers in the same metro to each other and our broader global footprint.
- › **Equinix Global Roaming Exchange.** This platform allows mobile data providers to exchange GPRS roaming traffic with other providers through a single connection.

Appendix A: Composite Organization Description

For this TEI study, Forrester has created a composite organization to illustrate the quantifiable benefits and costs of implementing Equinix solutions. The composite company is intended to represent a global organization with 5,300 employees and is based on characteristics of the interviewed customers.

The composite company has multiple B2B and B2C digital product lines and is focusing on migrating applications to the public cloud and enabling innovative applications that leverage big data analytics.

In partnering with Equinix, the composite company has the following objectives:

- › Simplify its network architecture and improve network reliability, performance, and cost-effectiveness.
- › Improve application performance and end user satisfaction by placing IT resources near large user populations.
- › Enable business and IT agility with scalable capacity and fast connections to providers.
- › Enable new revenue streams by leveraging big data with high-speed connections.

For the purpose of the analysis, Forrester assumes that the composite organization is able to migrate a sizeable percentage of its applications to the public cloud, and that the organization has the opportunity to leverage large datasets within its product offerings by building out innovative applications that can capture and analyze that data for its clients' benefit. Forrester also assumes that application migration and innovation begin slowly in the first year and pick up speed by Year 2. This will affect the speed at which some cost savings benefits are realized.

FRAMEWORK ASSUMPTIONS

Table 11 provides the model assumptions that Forrester used in this analysis.

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% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

TABLE 11
Model Assumptions

Ref.	Metric	Calculation	Value
X1	Hours per week		40
X2	Weeks per year		52
X3	Hours per year (M-F, 9-5)		2,080
X4	Hours per year (24x7)		8,736

Source: Forrester Research, Inc.

Appendix B: Total Economic Impact™ Overview

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

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

BENEFITS

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

COSTS

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

FLEXIBILITY

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

RISKS

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

Appendix C: Glossary

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

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

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

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

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

A NOTE ON CASH FLOW TABLES

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

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

TABLE [EXAMPLE]
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.