

A Forrester Total Economic Impact™
Study Commissioned By Equinix
April 2019

The Total Economic Impact™ Of Equinix

Cost Savings And Business Benefits
Enabled By Interconnecting With Equinix

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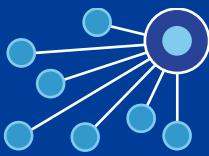
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Key Benefits



Cloud connectivity and network traffic cost reduction:

60% to 70%



Minimum reduction in latency:

30%



Accelerated speed of audits:

60%

Executive Summary

The rules of business are being rewritten nearly every day, driven by business digital transformation and digital technology, which are drastically altering the balance of power between customers and companies. While customers gain the power of information and choice, digital technology dramatically improves the economics of business.¹ Key to achieving this transformation is having the right connectivity model in place to support the demands of a growing digital ecosystem. In fact, Forrester considers connectivity to be the central nervous system of the business – whether it's delivering digital services to customers, facilitating in-store transactions, or supporting back-office operations.² As digital transformation increasingly becomes a mandate for survival in the digital era, organizations must now reassess their networks and how they are contributing to a digitally-enabled ecosystem.³

Interconnection, which enables enterprises to move out of owned islands of data and into interconnected hubs of third-party services located at the “edge”, or at close physical proximity to the users of these services, is quickly becoming table stakes to achieving digital transformation. Consequently, enterprises and service providers alike are now gathering at neutral meetings grounds, such as colocation centers, to leverage the benefits of edge computing and networking.⁴

Equinix provides carrier-neutral colocation centers that facilitate interconnection across an organization's ecosystem of service providers, including network service providers (NSPs), cloud service providers (CSPs), internet service providers (ISPs), and software-as-a-service (SaaS) providers. Organizations primarily use Equinix in two ways: 1) to outsource the hosting and management of physical data infrastructure and 2) to achieve faster, cheaper, and more secure connectivity across networks via Equinix Performance Hubs™, which are extension nodes of an enterprise's network placed in distributed data centers for the purposes of interconnecting networks and clouds. This study examines only the benefits of using Equinix for interconnection, the latter of these two use cases.

Equinix commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential ROI enterprises may realize by deploying at Equinix. 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 this investment, Forrester interviewed several customers with years of experience using Equinix. Prior to using Equinix, these customers relied on legacy multiprotocol label switching (MPLS) networks accessed through single telecommunications providers to provide connectivity across offices, end users, and customers. However, as businesses continued to scale with a growing number of devices and applications accessing the network, providing the necessary bandwidth to all these users became a costly endeavor. These organizations eventually recognized the need for a solution that could not only scale to growing business needs, but also enable and support future digital use cases.



ROI
328%



Benefits PV
\$22.3 million



NPV
\$17.1 million

Composite Organization

Based on the interviews, Forrester constructed a TEI framework and an ROI analysis that illustrates the financial impact to a composite organization. The composite organization is representative of the four companies that Forrester interviewed and is used to present the aggregate financial analysis for this study. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

- › Organization operating globally with a branch network made up of 1,000 locations and offering multiple B2B and B2C services.
- › Annual revenues of \$7B and 15,000 total employees — 8,000 of whom are impacted by increased network bandwidth through Equinix.
- › Uses Equinix for interconnectivity to NSPs, CSPs, ISPs, and other service providers via six Equinix Performance Hubs (PHs).
- › Prior to engaging Equinix, the organization leveraged a legacy MPLS network through a single telecommunications provider, which became increasingly costly as users, customers, and devices grew organically.



Key assumptions

- \$7B annual revenue
- 1,000 branch locations
- 8,000 impacted users
- 6 Performance Hubs

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by an aggregate composite organization based on the companies interviewed:

- › **Slashed cloud connectivity and network traffic costs by 70% and 60%, respectively.** Using the Equinix Cloud Exchange Fabric™, organizations could provision connectivity directly to numerous cloud and SaaS providers via a single virtual circuit rather than multiple physical circuits, resulting in reduced cloud data charges. Furthermore, organizations could also shave their network traffic costs by optimizing for the most cost efficient and highest performance MPLS providers rather than relying on the same ISP across geographies. The subsequent network optimization cost savings totaled a three-year PV of \$15,167,310.
- › **Reduced latency by a minimum of 30%.** Knowledge workers experienced incremental time savings across all applications driven by reduced latency and thus faster application performance. Over three years, the resulting productivity gains amounted to a PV of \$6,552,855.
- › **Faster time to complete audits by 60%.** By distributing their data with Equinix, organizations could take a significant amount of branch traffic out of corporate data centers and into localized Performance Hubs, reducing the length and complexity of information security and information technology audits. The ensuing time savings translated to a three-year PV of \$531,565.

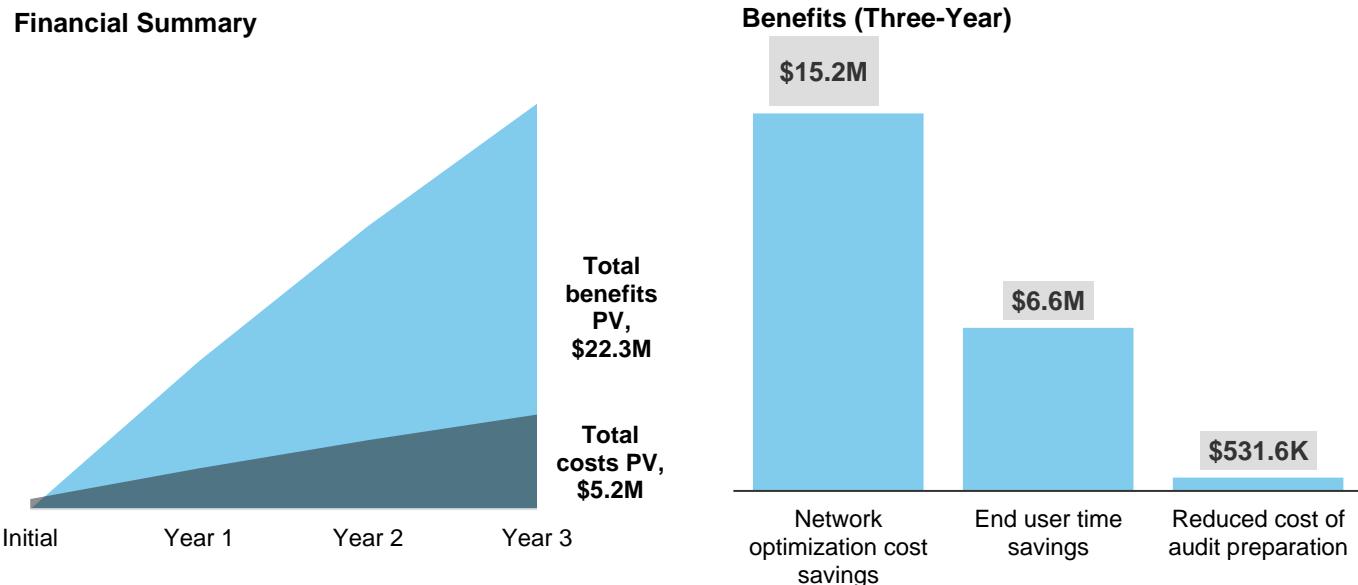
Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

- › Accelerated adoption of services.
- › Improved planning and budgeting.
- › Heightened experience.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

- › Equinix fees, including the cost of Performance Hubs, additional cross-connects to service providers, and Cloud Exchange ports for each hub, accumulated to a three-year cost PV of \$4,470,962.
- › Planning, implementation, and ongoing management costs, and associated labor costs, involved in the designing and deploying of Performance Hubs for each region, adding or removing connections, and managing the Equinix partnership accumulated to a three-year cost PV of \$723,593.

Forrester's interviews with four existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experienced benefits of \$22,251,730 over three years versus costs of \$5,194,555, adding up to a net present value (NPV) of \$17,057,175 and an ROI of 328%.



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 Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Equinix.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Equinix can have on an organization:



DUE DILIGENCE

Interviewed Equinix stakeholders and Forrester analysts to gather data relative to Equinix.



CUSTOMER INTERVIEWS

Interviewed four organizations using Equinix to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

Employed four fundamental elements of TEI in modeling Equinix's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This 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 in 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.

The Equinix Customer Journey

BEFORE AND AFTER THE EQUINIX INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with Equinix customers. Interviewed customers include the following:

INDUSTRY	SIZE	OPERATING REGIONS	INTERVIEWEE
Manufacturing	\$20B to \$50B revenue 50K to 100K FTEs	Global	Global IT operations director
Travel	\$20 to \$50B revenue 50K to 100K FTEs	Global	Enterprise architect
Financial services	\$1B to \$20B revenue 1K to 50K FTEs	Americas	Vice president of data centers
Professional services	\$1B to \$20B revenue 1K to 50K FTEs	Global	Senior director of infrastructure services

Key Challenges

Interviewees faced several challenges in their previous environments that caused them to seek out a more effective way of interconnecting users, data, and service providers:

- › **Organizations lacked agility due to overreliance on a single carrier.** Using a single carrier meant that organizations would often be locked into expensive, inflexible, long-term contracts offering suboptimal bandwidth, and that data or services would be effectively bound to locations where the carrier had a presence. As an enterprise architect for a travel organization stated, “A huge benefit [of Equinix] is that it opens up our options as far as where our applications and data can go so that we’re no longer landlocked to a specific region.”
- › **Centralization of data infrastructure drove up data transport costs and created additional administrative burden.** With legacy MPLS networks, organizations were constantly backhauling data from their ISPs and other service providers to their core data centers before reaching end users. Not only did this produce suboptimal network speeds and magnify transport costs, it also made security more time-consuming and expensive because traffic would need to be inspected at these centralized data centers instead of at distributed Equinix facilities.
- › **Digital transformation efforts were hampered due to slow or expensive access to service providers.** Some regions could not reliably access cloud-based services due to bandwidth constraints or slow provisioning times, even when these services were readily available and users were ready to embrace them. As one organization recalled, “We used to have to go through a 90-day carrier circuit cycle to build a connection to host an application.”
- › **Limited bandwidth slowed user productivity and acted as a barrier to adopting newer digital use cases.** Tight bandwidth constraints and high latency translated to slower and less reliable application performance and sometimes even prevented the adoption of a service altogether.

“A huge benefit [of Equinix] is that it opens up our options as far as where our applications and data can go so that we’re no longer landlocked to a specific region.”

Enterprise architect, travel



“We leveraged Equinix for our network strategy and road map, which helped us access the full benefits of the cloud and ultimately positioned us for digital transformation.”

Vice president of data centers, financial services



“For the first time in my IT career, we are actually ahead of the business demand for connectivity.”

Global IT operations director, manufacturing



Solution Requirements

The interviewed organizations chose to engage Equinix for the following reasons:

- › **Equinix has a significant presence in 52 key markets across 24 countries globally.** As a result, organizations could bring their data and services closer to users while saving on network costs. As a global IT operations director for a manufacturing organization explained: “We are generally not in what I would call fiber-rich metropolitan areas, so as you could imagine, our network costs are not trivial. By pivoting to Equinix’s regional Performance Hubs, we gained the ability to reach our users at a much lower cost. In one example alone, we were able to reduce our connectivity costs by 90% by pivoting to these regional service hubs.”
- › **Equinix facilitates compliance through a distributed data and security model.** Equinix’s global hubs allowed organizations to better comply with data regulations, many of which require strict localization. One organization said: “Equinix’s global footprint, along with the consistency of services provided across its data centers, was appealing to us. It has increased our visibility, helped us deal with audits, and made localization much easier.”
- › **Equinix facilities feature a rich ecosystem of service providers, including 1,800+ networks and 2,900+ cloud and IT service providers.** Carrier neutrality and the presence of different cloud service providers and SaaS providers meant organizations could have faster and cheaper access to digital services. As an enterprise architect for a travel organization articulated, “The single biggest reason we went with Equinix was because of the carrier quantity and diversity we get in its facilities.”

Key Results

The interviews revealed that key results from the Equinix investment include:

- › **Optimized network infrastructure.** Equinix enables organizations to leverage local carrier networks and direct connect to numerous collocated service providers, ultimately helping to bring services closer to their users. This distributed architecture allowed interviewed organizations to optimize for both cost and performance at each region with a Performance Hub. As the vice president of data centers for a financial services firm stated, “Equinix unlocked for us the ability to decentralize, regionalize, and build out high capacity, low latency connections to the places that need them.”
- › **Boosted end user productivity.** Low bandwidth and high latency can chip away at user productivity by seconds or even minutes each time an application is used. By leveraging Equinix for interconnectivity, organizations optimized their network throughput, which helped recapture this productivity and in some cases even enabled additional productivity tools. While comparing network environments pre- and post-Equinix, a senior director of infrastructure services for a professional services organization mentioned, “We used to have offices in Latin America that could barely make a phone call, and now they are all doing video calls.”

“By pivoting to Equinix’s regional Performance Hubs, we gained the ability to reach our users at a much lower cost. In one example alone, we were able to reduce our connectivity costs by 90% by pivoting to these regional service hubs”

Global IT operations director, manufacturing



“The single biggest reason we went with Equinix was because of the carrier quantity and diversity we get in its facilities.”

Enterprise architect, travel



“Equinix unlocked the ability to decentralize, regionalize, and build out high capacity, low latency connections to the places that need them.”

Vice president of data centers, financial services



“We used to have offices in Latin America that could barely make a phone call, and now they are all doing video calls.”

Senior director of infrastructure services, professional services



- › **Faster compliance.** By distributing data in Equinix facilities rather than centralizing it in core data centers, data could be localized in specific regions, which helped maintain compliance with region-specific data regulations. Additionally, organizations could significantly reduce the cost and complexity of data center audits by avoiding the need to inspect backhauled traffic, ultimately slashing the time and labor needed to complete the audit process.
- › **Enhanced visibility.** Organizations moving data to the “edge” with Equinix benefit from a digital portal, which provides key information about their Performance Hubs. In addition to being helpful for compliance reasons, this additional layer of visibility enabled administrators to easily order, configure, and validate connections to and from their hubs without going through laborious provisioning processes that could extend time-to-connectivity by weeks to months. For instance, a virtual circuit on the Cloud Exchange Fabric can be provisioned almost instantly over an online portal.

“Equinix has positioned us for what we’re expecting to be a much higher degree of data sovereignty and localization in the coming years.”

*Global IT operations director,
manufacturing*



Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Network optimization cost savings	\$6,099,000	\$6,099,000	\$6,099,000	\$18,297,000	\$15,167,310
Btr	End user time savings	\$2,635,000	\$2,635,000	\$2,635,000	\$7,905,000	\$6,552,855
Ctr	Reduced cost of audit preparation	\$213,750	\$213,750	\$213,750	\$641,250	\$531,565
	Total benefits (risk-adjusted)	\$8,947,750	\$8,947,750	\$8,947,750	\$26,843,250	\$22,251,730

Network Optimization Cost Savings

Over time, network speeds have continued to increase as improved network technology has enabled faster connectivity across users and devices. However, the cost of this connectivity has largely been determined by the physical distance between nodes. Typically, organizations partner with a single telecommunications provider to provide connectivity for their MPLS networks, but this strategy means that organizations can incur higher costs in geographies that are not well covered by their carriers. Furthermore, by relying on a single provider, organizations run the risk of being locked into long-term, inflexible contracts simply due to lack of competition.

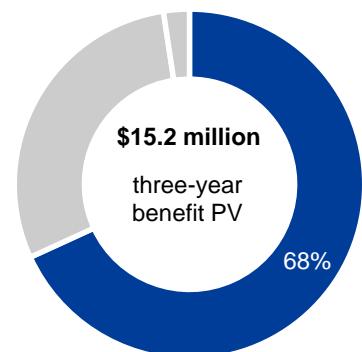
By using Equinix's Performance Hubs, interviewed organizations were able to shorten the physical distance between service providers and end users, meaning not only could organizations reduce network transport costs, but end users could also benefit from higher speed and lower latency connectivity. Oftentimes these providers would be collocated in the same Equinix facilities, allowing organizations to provision direct connectivity to their providers using cross-connects or Cloud Exchange ports.

- › In describing the benefits of leveraging multiple carriers, one organization said, "Instead of having our old carrier provide our MPLS in EMEA, we were able to use two separate carriers who could provide us up to two hundred times the bandwidth for the same price we were paying our old provider."
- › Another organization reflected on the ease of procuring cloud connectivity using Equinix: "As long as I'm staying under my threshold of 10 gigabytes, I'm able to build as many connections as I want to my cloud service providers. I don't need to get a virtual express circuit or any other circuit because it's now just a simple point and click."

For the composite organization, Forrester assumes that:

- › Cost savings are driven by six Performance Hubs that are deployed at the beginning of Year 1.
- › The organization uses a single carrier to provide its MPLS network and virtual circuits to connect to its SaaS and cloud service providers.

The table above shows the total of all benefits across the areas listed below, 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 \$22 million.



Network optimization: 68% of total benefits

"We're now in a place where we can freely reach out and change, add, or remove carriers. Instead of a carrier telling me how much I need to pay for service, I can simply mention that I'm working with four or five different carriers and they'll come at me with a competitive offer instead."

Enterprise architect, travel



The network optimization cost savings other organizations experience may vary based on the following factors:

- » Previous environments will impact the magnitude of efficiencies gained by using Equinix. For example, organizations already using other carrier-neutral collocation centers may experience smaller benefits than organizations relying on single carriers.
- » The number of connections to service providers will impact the cost savings achieved by using Equinix.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$15,167,310.

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Network Optimization Cost Savings: Calculation Table

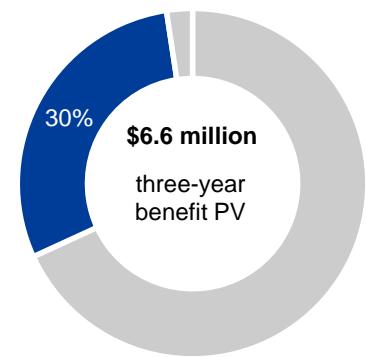
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Cost of cloud connectivity		\$3,000,000	\$3,000,000	\$3,000,000
A2	Percentage cost reduction of cloud connectivity		70%	70%	70%
A3	Cost of network traffic using legacy MPLS circuits		\$7,200,000	\$7,200,000	\$7,200,000
A4	Percentage cost reduction of network traffic		60%	60%	60%
At	Network optimization cost savings	(A1*A2)+(A3*A4)	\$6,420,000	\$6,420,000	\$6,420,000
	Risk adjustment	↓5%			
Atr	Network optimization cost savings (risk-adjusted)		\$6,099,000	\$6,099,000	\$6,099,000

End User Time Savings

While reduced networking costs may be the most easily measurable byproduct of network optimization, another outcome is the impact on speed of applications, and ultimately, on end users' productivity. By reducing the physical distance from node-to-node and optimizing for the fastest network providers in a given geography, organizations could reduce the latency of their applications, saving an average of 30 minutes per week per impacted end user.

- » A senior director of infrastructure services for a professional services firm quantified the reduction in latency after leveraging Equinix for interconnectivity, "Percentage-wise, we have seen 30% to 40% reductions in latency on average across our infrastructure by consolidating our services and connectivity into our Performance Hubs."

For the composite organization, Forrester assumes that:



End user time savings:
30% of total benefits

- › Six Performance Hubs are deployed at the beginning of Year 1. They impact 8,000 end users in the geographic vicinity of each hub.
- › Applications uniformly experience lower latency, and as a result, all impacted end users experience the same magnitude of time savings.
- › The blended fully burdened hourly salary of end users in the organization is \$31.⁵
- › End users work 50 weeks per year.
- › End users can effectively capture 50% of time savings.

The time savings that end users of other organizations experience may vary based on the following factors:

- › Deployment characteristics of Equinix Performance Hubs, such as timing and geography, will impact the number of users who experience the benefits of increased bandwidth and lower latency in a given year.
- › Prior network speeds and latency will impact the magnitude of time savings benefits experienced procuring bandwidth at Equinix.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of \$6,552,855.

"Percentage-wise, we have seen 30% to 40% reductions in latency on average across our infrastructure by consolidating our services and connectivity into our Network Performance Hubs."

Senior director of infrastructure services, professional services



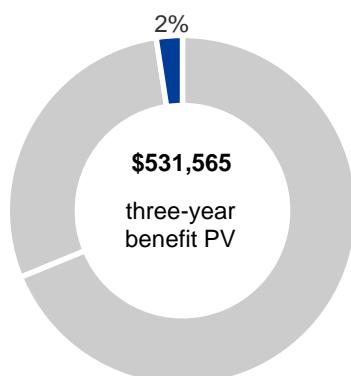
End User Time Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of end users impacted by improved network performance		8,000	8,000	8,000
B2	Hours saved per week for end users		0.5	0.5	0.5
B3	Fully loaded end user compensation per hour		\$31	\$31	\$31
B4	Productivity capture		50%	50%	50%
Bt	End user time savings	$B1*B2*B3*B4*50$	\$3,100,000	\$3,100,000	\$3,100,000
	Risk adjustment	↓15%			
Btr	End user time savings (risk-adjusted)		\$2,635,000	\$2,635,000	\$2,635,000

Reduced Cost Of Audit Preparation

Traditionally, organizations must deal with complex information security and information technology audit processes that involve in-depth reviews of the organization's data centers and data center personnel. This process is made even more cumbersome for organizations that have an extensive number of branch locations or offices, all backhauling data into corporate data centers. By using Equinix's Performance Hubs as data transit points, organizations no longer need to backhaul data to their on-premises servers and can reduce the length and complexity of their data center audits.

- › One organization spoke to the benefits of easier compliance with industry data standards, such as those set by the payment card industry (PCI): "We've turned our data centers into destinations and not transits. Distributed security has given us the ability to take our payment traffic and PCI traffic completely out of our data center and right into our panel processing without having our data centers sit through PCI audits."



**Reduced cost of audit preparation:
2% of total benefits**

- Another organization described the benefits of reducing the labor involved in managing audits: "It's now much easier for us to manage and control the audit process. We used to have people from all different functions combing through laws and configurations and drawing architecture diagrams for auditors. All of this is much easier now that we have a simplified architecture."

For the composite organization, Forrester assumes that:

- 50 FTEs across multiple functions are involved during information technology and security audits. These FTEs earn a blended fully burdened salary of \$100,000 per year.

Actual benefits realized from reducing the cost of audit preparation may vary based on the factors below:

- Industry will determine the standards and regulations that the organization must comply with and will have an impact on the subsequent complexity of managing audits.
- Size and complexity of the organization will determine the length of the audit process and the number and type of resources that are required.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$531,565.

"What Equinix allowed us to do is use distributed security models so we could get the visibility we needed for audits without having to drag traffic back to a centralized facility. We're now able to send traffic directly to where it needs to go without it having to come back to where we house all of our critical assets and data."

Enterprise architect, travel



Reduced Cost Of Audit Preparation: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of FTEs needed to prepare for audits		50	50	50
C2	Percentage of FTE time spent preparing for audits		30%	30%	30%
C3	Time spent preparing for audits (in years)		0.25	0.25	0.25
C4	Fully burdened annual salary of FTEs involved in auditing process		\$100,000	\$100,000	\$100,000
C5	Percentage reduction in time required to prepare for audits by distributing data		60%	60%	60%
Ct	Reduced cost of audit preparation	$C1*C2*C3*C4*C5$	\$225,000	\$225,000	\$225,000
	Risk adjustment	↓5%			
Ctr	Reduced cost of audit preparation (risk-adjusted)		\$213,750	\$213,750	\$213,750

Unquantified Benefits

Organizations experienced additional benefits from Equinix that could not be quantified for the purposes of this study but were nonetheless a core part of the value received.

- › **Accelerated adoption of services.** By using Cloud Exchange Fabric ports, organizations could digitally onboard any number of cloud-based services if they fit within the allotted bandwidth capacity of the port. Furthermore, provisioning these connections could be done centrally via a portal, taking hours to days rather than weeks. As one organization recalled: “Equinix allowed us to onboard our services in a matter of minutes, rather than weeks or even months. One time, a business of ours wanted to work with a SaaS service that was listed within a cloud service provider and I remember IT saying that it was going to be a six-month initiative to get that connectivity onboarded.”
- › **Improved planning and budgeting.** Equinix portals offer a consolidated view of all Performance Hub deployments as well as individual connections to that hub, providing greater visibility to engineering and data center teams, and ultimately finance. As one organization described, “Having a single window or portal that includes the entire life cycle from deployment to decommission has enhanced our ability to hit our financial targets.”
- › **Heightened experience.** Optimizing networks helped organizations address some of the issues associated with high latency, such as slow loading times, choppy application performance, and downtime. Interviewed organizations maintain that these improvements have contributed to a positive end user and customer experience.

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement Equinix and later realize additional uses and business opportunities, including:

- › **Unlocking future business use cases.** Interviewed organizations affirmed that interconnectivity with Equinix has helped reduce latency by at least 30% across impacted users. This lower latency manifested in smoother application performance and incremental time savings. However, beyond these incremental productivity benefits, organizations also believe that this higher bandwidth, lower latency connectivity can become foundational for enabling a number of emerging technology use cases, such as the internet of things (IoT), AI, or ML (machine learning), many of which require fast, or even real-time connectivity.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

“Equinix allowed us to onboard our services in a matter of minutes, rather than weeks or even months.”

Senior director of infrastructure services, professional services



Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a 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.

Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Dtr	Equinix fees	\$0	\$1,797,840	\$1,797,840	\$1,797,840	\$5,393,520	\$4,470,962
Etr	Planning, implementation, and ongoing management	\$552,000	\$69,000	\$69,000	\$69,000	\$759,000	\$723,593
	Total costs (risk-adjusted)	\$552,000	\$1,866,840	\$1,866,840	\$1,866,840	\$6,152,520	\$5,194,555

Equinix Fees

Organizations paid Equinix fees for the physical infrastructure necessary for Performance Hubs, Cloud Exchange Fabric ports and cross-connects that provide connectivity to various service providers. Organizations incurred these fees on a monthly basis based on the number of Performance Hubs deployed and the number of connections made. For the composite organization, Forrester assumes the following:

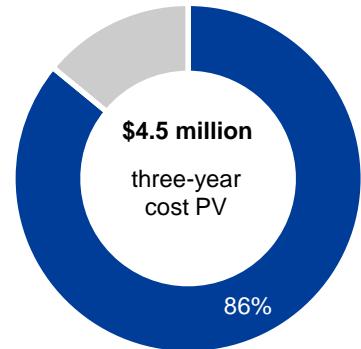
- › Performance Hub fees of \$20K per month, per hub. This fee is for a large Performance Hub and includes basic infrastructure and two cross-connects per hub.
- › Additional cross-connect fees of \$300 per month, per cross-connect.
- › Cloud Exchange Fabric port fees of \$1,500 per month, per port for a 10 GB port. The organization needs one port per Performance Hub.

Actual Equinix fees that other organizations incur will vary based on the following factors:

- › The size and complexity of each Performance Hub deployment will determine the monthly cost of that hub. Larger hubs requiring a heavier infrastructure investment may incur higher fees.
- › Data usage through direct connections will impact the monthly charges incurred through those connections.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of \$4,470,962.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of \$5.2 million.



**Equinix fees:
86% of total costs**

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

Equinix Fees: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
D1	Performance Hub fees			\$1,440,000	\$1,440,000	\$1,440,000
D2	Cloud Exchange Port fees			\$108,000	\$108,000	\$108,000
D3	Additional cross-connect fees			\$86,400	\$86,400	\$86,400
Dt	Equinix fees	D1+D2+D3	\$0	\$1,634,400	\$1,634,400	\$1,634,400
	Risk adjustment	↑10%				
Dtr	Equinix fees (risk-adjusted)		\$0	\$1,797,840	\$1,797,840	\$1,797,840

Planning, Implementation, And Ongoing Management

To ensure successful deployment of the Performance Hubs, organizations engaged several resources over the course of six months to facilitate the planning and design of each Performance Hub. Following this period, some FTEs were also required for ongoing management of the hubs and any additional connections, as well as paving the strategic direction of the Equinix partnership.

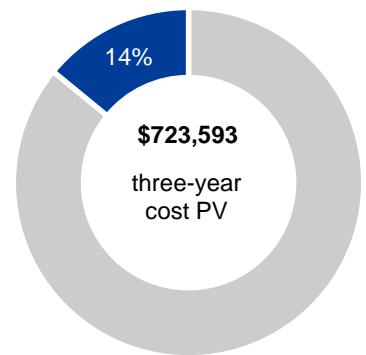
For the composite organization, Forrester assumes:

- › Two FTEs are required for planning and implementation, per Performance Hub.
- › One FTE is required for ongoing management, per Performance Hub.
- › The blended fully burdened annual salary across FTEs involved in planning, implementation, and ongoing management is \$100K.

Actual planning, implementation, and ongoing management costs that other organizations incur will depend on the following:

- › The size and complexity of each Performance Hub deployment may impact the amount of planning and design time needed. Larger hubs with a more complex networking environment would require more upfront time.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV of \$723,593.



Planning, implementation,
and ongoing management:
14% of total costs



Six months
Total planning and
implementation time

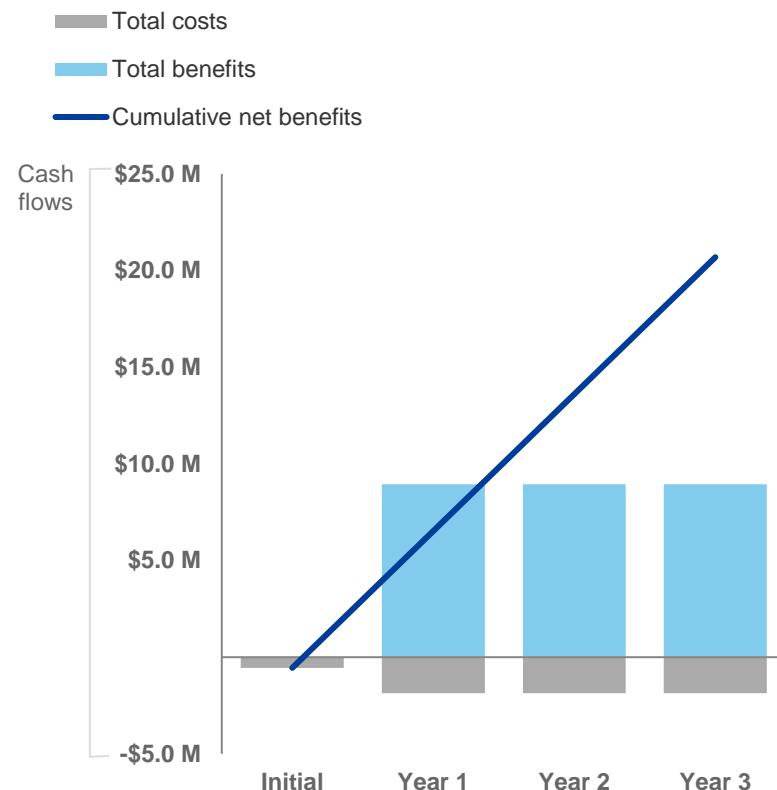
Planning, Implementation, And Ongoing Management: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Number of FTEs involved in Equinix planning and implementation		12			
E2	Percentage of FTE time spent on planning and implementation		80%			
E3	Length of planning and implementation period (in years)		0.5			
E4	Number of FTEs involved in ongoing management of Equinix			6	6	6
E5	Percentage of FTE time spent on ongoing management			10%	10%	10%
E6	Fully burdened annual salary of planning and implementation FTEs		\$100,000	\$100,000	\$100,000	\$100,000
Et	Planning, implementation, and ongoing management costs	(E4*E2*E3*E6) +(E4*E5*E6)	\$480,000	\$60,000	\$60,000	\$60,000
	Risk adjustment	↑15%				
Etr	Planning, implementation, and ongoing management costs (risk-adjusted)		\$552,000	\$69,000	\$69,000	\$69,000

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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. Forrester assumes a yearly discount rate of 10% for this analysis.



These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$552,000)	(\$1,866,840)	(\$1,866,840)	(\$1,866,840)	(\$6,152,520)	(\$5,194,555)
Total benefits	\$0	\$8,947,750	\$8,947,750	\$8,947,750	\$26,843,250	\$22,251,730
Net benefits	(\$552,000)	\$7,080,910	\$7,080,910	\$7,080,910	\$20,690,730	\$17,057,175
ROI						328%

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 is a digital infrastructure provider enabling businesses to come together and engage with the world's leading cloud, network and commercial partners across the most-interconnected data centers in more than 50 markets on five continents.

Platform Equinix® is a global interconnection platform designed for digital business that more than 9,800 companies are using to distribute services and controls closer to customers, employees and partners. By leveraging industry-proven best practices of an Interconnection Oriented Architecture®, these companies are using Platform Equinix to solve for network optimization, hybrid multicloud, distributed security and distributed data, and to achieve the latency and connectivity benefits outlined in this report.

Platform Equinix is physically and virtually integrated around the world, enabling you to reach everywhere, interconnect everyone and integrate everything. A complete list of data center, interconnection and edge services can be found at <https://www.equinix.com/services/>. The services outlined in this report include:

- › **Equinix Performance Hub.** This places a network hub in distributed data centers to interconnect many networks and clouds and deliver improvements in application performance and IT agility.
- › **Equinix Cloud Exchange Fabric.** This enables on-demand, direct and dynamic connections to multiple cloud providers and networks from a single port.
- › **Equinix Cross Connects.** This provides a direct, secure intra-data center connection between a purchaser of cloud services and a cloud service provider.

Appendix A: Total Economic Impact

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.

Total Economic Impact Approach



Benefits represent the value delivered to the business by the product. The TEI methodology places 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.



Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.



Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in 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.



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.



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.



Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



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.

Appendix B: Endnotes

¹ Source: "Digital Rewrites The Rules Of Business," Forrester Research, Inc., February 26, 2018.

² Source: "Adapt Your Network Strategy To Thrive In A Shifting Ecosystem," Forrester Research, Inc., July 28, 2017.

³ Source: "Global Interconnection Index, Volume 1," Equinix., 2017.

⁴ Source: "Vendor Landscape: Colocation And Data Center Services," Forrester Research, Inc., April 4, 2017.

⁵ Source: "The Total Economic Impact™ of Equinix Interconnection Solutions," Forrester Consulting, Inc., August, 2015.