

A Forrester Total Economic Impact™
Study Commissioned By Virtana
July 2020

The Total Economic Impact™ Of Virtana's Hybrid Infrastructure Optimization

Cost Savings And Business Benefits
Enabled By Hybrid Infrastructure
Optimization

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Project Director:
Bob Cormier
Vice President and Principal
Consultant

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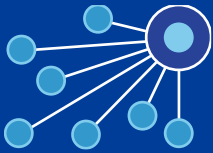
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Executive Summary

Cost Saving Benefits



Private cloud — simplify and accelerate problem resolution: \$256,419



Private cloud — drive agility with global capacity management: \$670,376



Public cloud — right-size cloud service capacities: \$297,945



Public cloud — optimize cloud provider costs: \$913,918

Virtana provides both a private cloud solution in VirtualWisdom and a public cloud solution through CloudWisdom. These products help Virtana's customers optimize their IT infrastructure for cost, performance, and risk and enable customers to accurately monitor, model, simulate, and analyze modern, mission-critical applications and their dynamic workloads.

Virtana commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Virtana's hybrid infrastructure optimization solutions. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Virtana's hybrid infrastructure optimization products on their organizations.

To better understand the benefits, costs, flexibility, and risks associated with this investment, Forrester conducted in-depth interviews with four Virtana customers with a collective 282 months' experience using Virtana's products.

We have used data gathered from these four interviews to create a composite *Organization* that illustrates the quantifiable benefits and costs of investing in Virtana's VirtualWisdom and CloudWisdom products. The composite *Organization* is a global enterprise with operations in North America, APAC, and EMEA. Prior to its investment in Virtana, the composite *Organization* was beginning to move its on-premises applications to the public cloud and was searching for help with its hybrid cloud migration activities. It sought a hybrid cloud solution that would provide a single source of truth and full visibility into the performance, cost, capacity, health, and utilization of its hybrid infrastructure. It had the typical environment of primary data centers and backup data centers and hundreds of virtual machines.

Key Findings

Quantified benefits. The composite *Organization* experiences the following risk-adjusted, present-value (PV) quantified cost savings benefits, totaling \$2,138,658 over three years, compared to its previous environment (see the Analysis Of Benefits section for more details):

- › **Private cloud — simplify and accelerate problem resolution:** \$256,419.
- › **Private cloud — drive agility with global capacity management:** \$670,376.
- › **Public cloud — right-size cloud service capacities:** \$297,945.
- › **Public cloud — analyze, manage, and optimize cloud provider costs:** \$913,918.

Unquantified benefits. In addition to the quantified benefits listed above, the interviewed customers discussed qualitative features or benefits from using Virtana's products (see the Unquantified Benefits section for more details).

Costs. The *Organization* experiences the following risk-adjusted and PV costs totaling \$872,309 over three years (see the Analysis Of Costs section for more details):

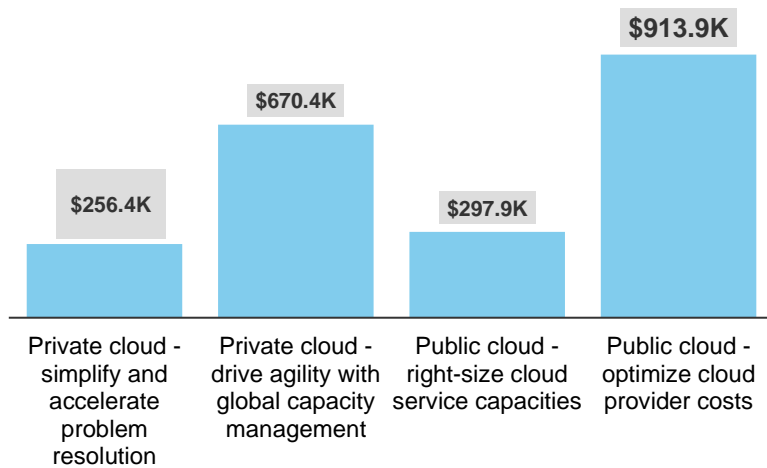
- › **Internal costs to deploy Virtana's products:** \$51,648.

› **Virtana fees:** \$820,661.

Forrester's interviews with four existing customers and subsequent financial analysis found that the *Organization* based on these interviewed customers experiences benefits of \$2,138,658 over three years versus costs of \$872,309, adding up to a net present value (NPV) of \$1,266,349 and an **ROI of 145%**.

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

Cost Savings Benefits (Three-Year)



“We used to have frequent long conference calls that would include many people sitting on the call and throwing things at the wall to see if it fixed things. Ever since we installed VirtualWisdom, we’ve been able to reduce those calls down to almost nothing.”

Architect and designer, healthcare



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 Virtana's hybrid infrastructure optimization products.

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 Virtana's hybrid infrastructure optimization product can have on an organization:



DUE DILIGENCE

Interviewed Virtana stakeholders to gather data relative to hybrid infrastructure optimization.



CUSTOMER INTERVIEWS

Interviewed four customers using Virtana's products to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite *Organization* based on characteristics of the interviewed customers.



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 customers.



CASE STUDY

Employed four fundamental elements of TEI in modeling Virtana'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 Virtana 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 Virtana hybrid infrastructure optimization products.

Virtana 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.

Virtana provided the customer names for the interviews but did not participate in the interviews.

The Virtana Hybrid Infrastructure Optimization Customer Journey

BEFORE AND AFTER THE VIRTANA INVESTMENT

Interviewed Customers

For this study, Forrester conducted interviews with four Virtana hybrid infrastructure optimization customers. Interviewed customers include the following, each requesting anonymity:

ENVIRONMENT	REGION/INDUSTRY	INTERVIEWEE	PRODUCT
Public cloud	Northeast US/travel	Manager of cloud strategy	CloudWisdom
Private cloud	Southwest US/telecommunications	Storage architect	VirtualWisdom
Public cloud	Northeast/technology	Director of cloud infrastructure	CloudWisdom
Private cloud	Western US/healthcare	Architect and designer	VirtualWisdom

Key Challenges

Below is a summary of the customer interviewees’ key challenges and pain points leading up to their decision to deploy Virtana’s products:

- › They had complex and increasingly hybrid application infrastructure.
- › There were several internal and vendor “silos” (compute, network, storage, and public cloud providers) pointing fingers at each other when problems existed.
- › Firms lacked visibility into their infrastructure. This required more visibility into cloud computing costs than their public cloud companies’ native tools provided.
- › The virtualized environments lacked visibility into storage performance.
- › There were instances at their public cloud providers that were overprovisioned, with no ability to accurately resize them.
- › Interviewed customers were collecting disparate spreadsheets data and logs from hosts and then manually correlating with storage systems data.
- › It was difficult to predict availability and performance issues.
- › Customers lacked understanding of the risks of migrations, upgrades, and new deployments.

“VirtualWisdom sees everything; it sees what’s coming out of the server side, and the I/O traversing the entire SAN and going into the storage array, and sees it coming back out again, giving us concrete data for every frame and I/O through our SAN. We can then determine where delays are happening.”

Storage architect, telecommunications



Goals And Objectives Of Investment In Virtana

The interviewed customers searched for a solution that would:

- › Provide them with full visibility into the performance, cost, capacity, health, and utilization of the hybrid infrastructure supporting their mission-critical applications.
- › Improve response times for mean-time-to-investigate (MTTI) and mean-time-to-repair (MTTR).

- › Avoid multi-silo, multi-vendor war-room escalations.
- › Eliminate guesswork by leveraging quantitative modeling and prove (or disprove) the need for additional capacity.
- › Promote more qualitative responses from storage, server, and network vendors by providing them with insightful VirtualWisdom analytics and reports.
- › Increase productivity of existing IT staff.
- › Retire legacy tools that could be replaced by Virtana offerings.
- › Gain visibility into gaps in their public cloud providers' costs and find performance-safe savings.
- › Eliminate waste from their current platforms by removing idle and overallocated capacity.

“Our Virtana account team is great; they absolutely know the VirtualWisdom product, and they’re very responsive to any requested changes we’d like them to make.”

Architect and designer, healthcare



Key Results

The interviews revealed that key results from the hybrid infrastructure optimization investment include:

- › Private cloud — simplified and accelerated problem resolution.
- › Private cloud — drove agility with global capacity management.
- › Public cloud — right-sized cloud service capacities.
- › Public cloud — analyzed, managed, and optimized cloud provider costs.

Composite *Organization* Description

Forrester constructed a TEI framework, a composite *Organization*, and an associated ROI analysis that illustrates the areas financially impacted. The composite *Organization* is representative of the four companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. Our composite *Organization* is a global enterprise with operations in North America, APAC, and EMEA.

Prior to its investment in Virtana, it was beginning to move its on-premises applications to the public cloud and was searching for help with its hybrid cloud migration activities. It sought a hybrid cloud solution that would provide a single source of truth and full visibility into the performance, cost, capacity, health, and utilization of its hybrid infrastructure, in support of its mission-critical applications. It had the usual environment including primary data centers and backup data centers made up of servers and their related VMs and hypervisors, the network and related switches, and a storage layer.

After carefully considering several alternatives, the composite *Organization* chose to invest in Virtana’s VirtualWisdom and CloudWisdom offerings to support managing its migration to a hybrid cloud environment. The *Organization* also wanted to enhance its digital transformation efforts including its IT modernization initiatives to provide innovations to create a competitive edge and drive business growth.

“Virtana is so good to work with. And for me it comes down to value; and for all the things we spend money on, Virtana provides the most value. They give me a really good view into my spend. When I’m presenting to management, I feel extremely confident in the accuracy of report data from Virtana. I use CloudWisdom reports constantly to decide where to set our next goals with our cloud provider spend.”

Director of cloud infrastructure, technology



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	Private cloud — simplify and accelerate problem resolution	\$103,110	\$103,110	\$103,110	\$309,329	\$256,419
Btr	Private cloud — drive agility with global capacity management	\$269,568	\$269,568	\$269,568	\$808,704	\$670,376
Ctr	Public cloud — right-size cloud service capacities	\$119,808	\$119,808	\$119,808	\$359,424	\$297,945
Dtr	Public cloud — analyze, manage, and optimize cloud provider costs	\$367,500	\$367,500	\$367,500	\$1,102,500	\$913,918
Total benefits (risk-adjusted)		\$859,986	\$859,986	\$859,986	\$2,579,957	\$2,138,658

Note: Atr, Btr, Ctr, and Dtr refer to benefit totals in the tables below.

Private Cloud — Simplify And Accelerate Problem Resolution

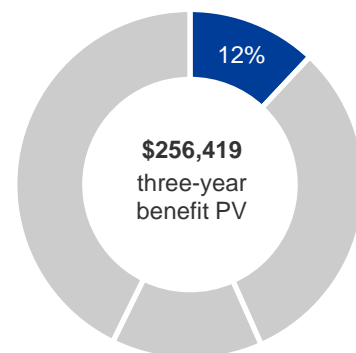
The customer interviewees described a pre-Virtana environment where efforts to resolve problems across internal silos and/or external vendors involved many people on a war-room-type conference call for hours or days. Once VirtualWisdom was installed, the number of calls and the duration of those calls significantly decreased, saving time and effort on the part of IT engineers and administrators.

VirtualWisdom has the following features, functionality, and results, which enable significant improvements in mean-time-to-problem-resolution (MTTR):

- › The ability to obtain visibility across silos and to use AI-driven analytics to quickly pinpoint and resolve application bottlenecks in real time.
- › The elimination of war rooms — i.e., the ability to identify and resolve performance issues without the need for costly, time-consuming IT war rooms.
- › The ability to free-up previous war-room participants to focus on more value-added priorities as organizations can resolve infrastructure service issues automatically.
- › The ability to use VirtualWisdom to avoid future problems and outages.

Modeling and Assumptions. With VirtualWisdom, interviewed customers described labor savings for IT administrators and application engineers as a result of significant improvements in MTTR. Before installing VirtualWisdom, the average war-room call would involve six staff and last 6 hours — and sometimes not reach a resolution. These weekly war-room calls would consume an average of 36 man-hours (six staff times 6 hours) a week, or 1,872 hours per year (36 man-hours times 52 weeks). Interviewed customers described an 85% reduction in labor saved due to VirtualWisdom. Forrester used a labor cost of \$72.00 per

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 \$2.1 million.



Simplify and accelerate problem resolution: **12%** of total benefits

hour to calculate the savings for simplifying and accelerating problem resolution with VirtualWisdom.

Risks. Forrester has risk-adjusted the savings benefit downward by 10% in the table below due to the wide range of results among interviewed customers. This yields a three-year, risk adjusted PV of \$256,419.

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.

Private Cloud — Simplify And Accelerate Problem Resolution: Calculation Table

REF.	METRIC	CALC./SOURCE	YEAR 1	YEAR 2	YEAR 3
A1	War-room labor hours before VirtualWisdom	Interviews	1,872	1,872	1,872
A2	VirtualWisdom reduced hours by 85%	Interviews	85%	85%	85%
A3	Labor hours saved with VirtualWisdom	A1*A2	1,591	1,591	1,591
A4	Labor cost per hour	Industry average	\$72.00	\$72.00	\$72.00
At	Private cloud — simplify and accelerate problem resolution	A3*A4	\$114,566	\$114,566	\$114,566
	Risk adjustment	↓10%			
Atr	Private cloud — simplify and accelerate problem resolution (risk-adjusted)		\$103,110	\$103,110	\$103,110

Private Cloud — Drive Agility With Global Capacity Management

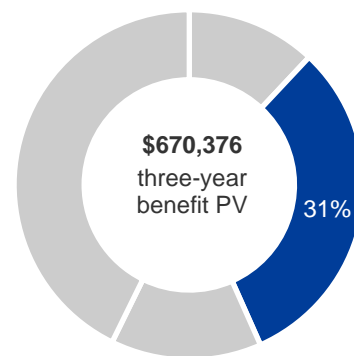
As with the interviewed customers, the *Organization* sought a solution that would provide a single source of truth and full visibility into the performance, cost, capacity, health, and utilization of its hybrid infrastructure.

Interviewed customers reported the ability to drive infrastructure agility with Virtana’s global capacity management and monitoring taking advantage of the following features and functionality:

- › The ability to track utilization and forecast just-in-time capacity thresholds throughout the environment.
- › The configuration of capacity alarms that track infrastructure resourcing usage and trends.

This functionality allows the *Organization* to make optimal infrastructure capacity assessments and leverage workload insights to reduce the risk and expense of poor capacity planning. It also enables the *Organization* to continuously balance application workloads in conjunction with infrastructure resources with workload automation solutions.

Modeling and Assumptions. With VirtualWisdom, interviewed customers described labor savings for IT administrators utilizing the features and functionality described above, as compared to attempting (and failing) to deliver the same results with their pre-Virtana



Drive agility with global capacity management: **31% of total benefits**

environments. On average, the interviewed customers saved 80 hours per week, or 4,160 hours per year. Forrester used a labor cost of \$72.00 per hour to calculate the savings associated with driving agility and global infrastructure capacity management using VirtualWisdom.

Risks. Forrester has risk-adjusted the savings benefit downward by 10% in the table below due to the wide range of results among interviewed customers. The results in a three-year risk-adjusted total PV of \$670,376.

Private Cloud — Drive Agility With Global Capacity Management: Calculation Table					
REF.	METRIC	CALC./SOURCE	YEAR 1	YEAR 2	YEAR 3
B1	Labor saved (hours) from capacity management	Interviews	4,160	4,160	4,160
B2	Labor cost per hour	Industry average	\$72.00	\$72.00	\$72.00
Bt	Private cloud — drive agility with global capacity management	B1*B2	\$299,520	\$299,520	\$299,520
	Risk adjustment	↓10%			
Btr	Private cloud — drive agility with global capacity management (risk-adjusted)		\$269,568	\$269,568	\$269,568

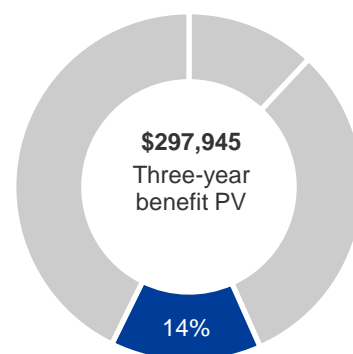
Public Cloud — Right-Size Cloud Service Capacities

As with interviewed customers, the *Organization* sought to right-size its public cloud service capacities. Virtana’s CloudWisdom product offers the following features and functionality to help right-size cloud service capacities:

- › The ability to conceptualize actual versus ideal configurations.
- › Using CloudWisdom’s recommendation to customize preferences and adjust instance parameters.
- › The ability to accurately size individual projects and scope instances based on risk tolerance.
- › The ability to right-size public cloud service capacities based on real-time performance data and automated analytics with a goal to match capacities to workloads.

Prior to investing in CloudWisdom, the *Organization* used a mix of cloud provider standard services, tagging, third-party tools, and in-house developed solutions to manage the sizing and performance of the infrastructure that underlies its applications and services. It proved challenging to get a simple, complete view of cloud provider resource usage. Using CloudWisdom, the *Organization* finds problems it was unaware of such as Microsoft SQL server instances that were overprovisioned and unattached Elastic Container Service (ECS) volumes. Native tools could not provide the visibility needed, and tagging caused problems, e.g., changes to object tags resulted in lost associations and groupings.

The *Organization’s* use of CloudWisdom provides immediate visibility



Right-size cloud service capacities: 14% of total benefits



Right-size capacities: One FTE saved at about \$120K annually

into its resource usage and utilization levels.

Modeling and assumptions. This benefit category quantifies labor savings associated with IT administrators. The actual optimized costs billed by the cloud provider are quantified in the next benefit section. For this benefit, interviewed customers cited average labor savings of one full-time equivalent (FTE) from using the above listed features and functionality.

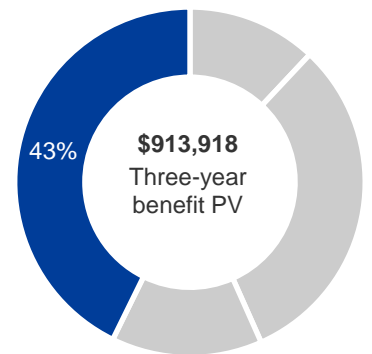
Risk. Forrester has risk-adjusted the savings benefit downward by 20% in the table below due to the wide range of results among interviewed customers. This yields a three-year, risk adjusted PV of \$297,945.

Public Cloud — Right-Size Cloud Service Capacities: Calculation Table					
REF.	METRIC	CALC./SOURCE	YEAR 1	YEAR 2	YEAR 3
C1	Average labor savings	Hours for 1 FTE	2,080	2,080	2,080
C2	Labor cost per hour	Industry average	\$72.00	\$72.00	\$72.00
Ct	Public cloud — right-size cloud service capacities	C1*C2	\$149,760	\$149,760	\$149,760
	Risk adjustment	↓20%			
Ctr	Public cloud — right-size cloud service capacities (risk-adjusted)		\$119,808	\$119,808	\$119,808

Public Cloud — Optimize Cloud Provider Costs

Once the interviewed customers right sized their initial public cloud service capacities (see benefit above), they continued to use Virtana’s CloudWisdom to optimize their cloud provider workload resource utilization and achieve ongoing savings from their investments. Customers reported immediate value from visibility into resource consumption. Daily usage and executive-ready views enable transparency into exactly what resources are being used in the AWS environments.

Virtana’s CloudWisdom allows the interviewed customers and our composite *Organization* to analyze and optimize ongoing public cloud costs. CloudWisdom’s cost optimization services provide visibility over public cloud costs, allowing the *Organization* to identify idle resources and to right-size over-allocated resources. CloudWisdom can also catch sudden fluctuations in public cloud spending before negatively affecting the budget. Interviewed customers took advantage of the following features and functionality to optimize public cloud costs:



Optimize cloud provider costs: 43% of total benefits

- › Ability to use billing insights to optimize consumption and plan future purchases.
- › Ability to plan the purchasing of cloud provider virtual server instances to capture long-term savings.
- › Bill analysis and cost alerts to detect unusual changes in billing.
- › Recommending reserve instance purchases based on granular usage analysis.
- › Detecting performance bottlenecks to ensure safe capacity adjustments.

On an ongoing basis, the *Organization* discovers unused or idle resources; for example: unattached elastic load balancers, old Elastic Block Store (EBS) snapshots, idle Elastic Compute Cloud (EC2) instances, etc. The *Organization* is then able to decommission servers and EBS volumes, avoiding future costs from its cloud provider.

Modeling and Assumptions. Interviewed customers reported cloud provider cost avoidance savings equal to between five and 10 times the cost of CloudWisdom. Forrester used the average of 7.5 times the \$70,000 annual cost of CloudWisdom. After a 30% downward risk adjustment, the annual savings is \$367,500.

Risks. Forrester has risk-adjusted the savings benefit downward by 30% in the table below due to the wide range of results among interviewed customers. This yields a three-year, risk adjusted PV of \$913,918.

“CloudWisdom was able to immediately show us our complete AWS resource set, and how those resources were utilized. It takes the drama out of understanding all the nuances of AWS resource selection, helping us to keep resource consumption in budget while also delivering on SLAs.”

Manager of cloud strategy, travel



Public Cloud — Optimize Cloud Provider Costs: Calculation Table

REF.	METRIC	CALC./SOURCE	YEAR 1	YEAR 2	YEAR 3
D1	CloudWisdom license fees	F2 (cost table)	\$70,000	\$70,000	\$70,000
D2	Cloud provider cost savings	D1*7.5	\$525,000	\$525,000	\$525,000
Dt	Public cloud — optimize cloud provider costs	D2	\$525,000	\$525,000	\$525,000
	Risk adjustment	↓30%			
Dtr	Public cloud — optimize cloud provider costs (risk-adjusted)		\$367,500	\$367,500	\$367,500

Unquantified Benefits

In addition to the quantified benefits listed above, the interviewed customers discussed qualitative features or benefits from using Virtana’s VirtualWisdom and CloudWisdom.

Workload automation. VirtualWisdom’s workload automation solutions enable organizations to continuously balance application workloads and infrastructure resources. Enterprise workload automation services ensure performance and uptime through continuous optimization of applications and infrastructure services as follows:

- › **Balance workloads.** Leverage recommendation engines from compute to storage.



Enterprise workload automation ensures performance and uptime through continuous optimization of apps and infrastructure.

- › **Optimize in real time.** Do not wait weeks or months to correct workload imbalance issues
- › **Control automation policies.** Retain control over the governance of automated processes.

More strategic focus. Organizations successfully transitioned IT teams from being reactive problem solvers to focusing on value-added strategic activities.

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are scenarios in which a customer might choose to implement Virtana's hybrid infrastructure optimization and later realize additional uses and business opportunities, for example:

- › One interviewed customer has a Fibre Channel storage area network (SAN) environment and a network-based network-attached storage (NAS) environment, and VirtualWisdom can produce consolidated reports and an executive dashboard for both the SAN and NAS environments at the same time. Other storage vendors have separate SAN and NAS reporting tools, which require a third tool to consolidate data from both environments.

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

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.

"I can't say enough Virtana's hands-on about approach. You do not just get a tool; you get them. Our ability to get significant value is directly related to Virtana's staff involvement both during implementation and after. I'm not a guy who understands cost management, but Virtana really does; they know it inside and out."

*Manager of cloud strategy,
travel*



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
Etr	Internal costs to deploy Virtana	\$51,648	\$0	\$0	\$0	\$51,648	\$51,648
Ftr	Virtana fees	\$0	\$330,000	\$330,000	\$330,000	\$990,000	\$820,661
	Total costs (risk-adjusted)	\$51,648	\$330,000	\$330,000	\$330,000	\$1,041,648	\$872,309

Note: Etr and Ftr refer to cost totals in the tables below.

Internal Costs To Deploy Virtana

The *Organization* conducted an extensive multi-vendor review process, which resulted in the selection of Virtana's VirtualWisdom and CloudWisdom solutions. The processes for vendor reviews, designing, planning, implementation, and deployment involved key stakeholders from the following roles: architects, designers, application managers, and storage administrators. The *Organization* sought to ensure success by involving as many stakeholders as it could. In addition to labor costs, the *Organization* spent \$20,000 on fiber optic cable to connect storage to the Virtana physical probes.

Modeling and Assumptions. For the interviewed customers, the overall deployment process for the job titles referenced above took 200 hours for VirtualWisdom and 120 hours for CloudWisdom for a total of 320 hours. Forrester used a labor cost of \$72.00 per hour to calculate the deployment costs.

Risks. Forrester has risk-adjusted this cost upward by 20% in the table below due to the wide range of internal labor hours and costs among interviewed customers. This yields a three-year, risk adjusted PV of \$51,648.

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 \$954,375.



320 hours
 Only 320 labor hours to get Virtana products up, running and delivering value to the *Organization*

Internal Costs To Deploy Virtana: Calculation Table

REF.	METRIC	CALC./SOURCE	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Initial VirtualWisdom deployment	Hours/Interviews	200	0	0	0
E2	Initial CloudWisdom deployment	Hours/Interviews	120	0	0	0
E3	Labor cost per hour	Industry average	\$72.00	\$72.00	\$72.00	\$72.00
E4	Internal labor costs to deploy Virtana	$(E1+E2)*E3$	\$23,040	\$0	\$0	\$0
E5	Fiber optic cable (VirtualWisdom)	Interviews	\$20,000	\$0	\$0	\$0
Et	Internal costs to deploy Virtana	$E4+E5$	\$43,040	\$0	\$0	\$0
	Risk adjustment	↑20%				
Etr	Internal costs to deploy Virtana (risk-adjusted)		\$51,648	\$0	\$0	\$0

Virtana Fees

Interviewed customers described their desire to have Virtana staff help with the implementation, training, and ongoing professional services. In addition, there are ongoing license subscription fees.

Modeling and assumptions. Virtana provided the fees in the table below. Over the three years of our analysis, the *Organization* incurs \$990,000 in license subscription and professional services fees.

Readers should contact Virtana directly for fees related to their environments.

Risks. All fees are fixed quotes from Virtana; therefore, Forrester did not risk-adjust these costs. This yields a three-year, total PV of \$820,661.

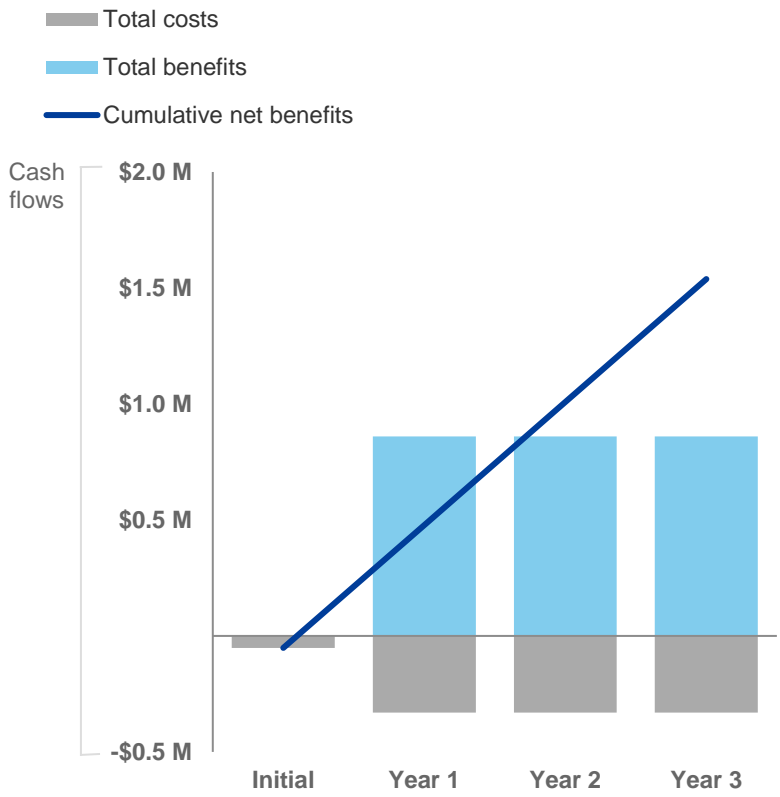
Virtana Fees: Calculation Table

REF.	METRIC	CALC./SOURCE	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	VirtualWisdom license fees	Virtana	\$0	\$215,000	\$215,000	\$215,000
F2	CloudWisdom license fees	Virtana	\$0	\$70,000	\$70,000	\$70,000
F3	Virtana services (ongoing professional services and training)	Virtana	\$0	\$45,000	\$45,000	\$45,000
Ft	Virtana fees	$F1+F2+F3$	\$0	\$330,000	\$330,000	\$330,000
	Risk adjustment	0%				
Ftr	Virtana fees		\$0	\$330,000	\$330,000	\$330,000

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	(\$51,648)	(\$330,000)	(\$330,000)	(\$330,000)	(\$1,041,648)	(\$872,309)
Total benefits	\$0	\$859,986	\$859,986	\$859,986	\$2,579,957	\$2,138,658
Net benefits	(\$51,648)	\$529,986	\$529,986	\$529,986	\$1,538,309	\$1,266,349
ROI						145%
Payback period						<6 months

If risk-adjusted costs, benefits, and ROI still demonstrate a compelling business case, it raises confidence that the investment is likely to succeed because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as realistic expectations, as they represent the expected value considering risk. Assuming normal success at mitigating risk, the risk-adjusted numbers

should more closely reflect the expected outcome of the investment.

Virtana Hybrid Infrastructure Optimization: Overview

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

Below is what is required for hybrid infrastructure optimization and automation and what Virtana delivers:

1. Know where applications live within the infrastructure.
2. Understand the business value of the applications.
3. Understand how applications are stressing the infrastructure.
4. Adapt to workload changes.

Virtana's products:

VirtualWisdom: Assure the performance and availability of mission-critical workloads with Virtana's AI-powered monitoring, analytics, and automation platform.

WorkloadWisdom: Elevate your decision making by testing the performance and scale of any storage system with real-world application workloads.

Cloud Migration Readiness (CMR): A service that provides answers to key questions before the actual migration takes place. The CMR service prepares organizations with vital insights into applications and workloads targeted for cloud migration.

CloudWisdom: Leverage simple yet powerful analytics to lower cloud costs and assure performance.

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.