

A Forrester Total Economic  
Impact™ Study

Commissioned By  
Cloudyn

Project Director:  
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June 2016

# The Total Economic Impact™ Of Microsoft Azure Cost Management By Cloudyn

Cost Savings And Business Benefits  
Enabled By Azure Cost Management

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### ABOUT FORRESTER CONSULTING

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## Executive Summary

In June 2016, Cloudyn commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Azure Cost Management by Cloudyn for enterprise users. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the solution on their organizations.

Azure Cost Management by Cloudyn is a software-as-a-service (SaaS) solution that enables enterprises to monitor, optimize, and analyze cloud usage and cost trends; allocate cloud costs; and implement chargeback. Customers gain better visibility into and accountability of cloud spend while achieving efficiency in monitoring and cost optimization. These benefits are especially highlighted and compounded when an organization is engaged in a multicloud strategy that produces several different types of reports, metrics, and recommendations from different cloud service providers.

To better understand the benefits, costs, risks, and long-term flexibility associated with Azure Cost Management, Forrester interviewed an existing customer with at least six months of experience using the solution. Prior to adopting the solution, the interviewed customer, a large US software company, relied on manually downloading reports from cloud providers and updating spreadsheets to monitor usage. The customer's IT team wanted to consolidate and automate monitoring tools, gain visibility to enable optimization and to build leverage for price negotiations, and evolve into a cloud broker model for the organization. The customer selected Azure Cost Management after the proof of concept (POC) satisfied the IT team's goals and met the requirements of being cloud SaaS, supporting the three largest public cloud providers, and being easy to use.

### AZURE COST MANAGEMENT EFFICIENTLY MONITORS MULTIPLE CLOUD ENVIRONMENTS AND OPTIMIZES USAGE TO AVOID UNNECESSARY COSTS WHILE ACCELERATING GROWTH IN CLOUD FOOTPRINT

Our interview with an existing customer and subsequent financial analysis found that the interviewed organization experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1.<sup>1</sup> See Appendix A for a description of the interviewed organization.

The interviewed customer experienced three-year, risk-adjusted benefits of \$1,092,893 versus costs of \$283,264, resulting in a net present value (NPV) of \$809,629.

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*“Monitoring and keeping tabs on our 100-plus [public cloud] subaccounts without Cloudyn would be a nightmare. We save at least two to three resources by using Cloudyn instead of manually tracking spend and generating reports.”*

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~ Cloud architect, large US software company

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#### FIGURE 1

#### Financial Summary Showing Three-Year Risk-Adjusted Results

**ROI:**  
**286%**

**NPV:**  
**\$809,629**

**Payback:**  
**< 1 month**

Source: Forrester Research, Inc.

› **Benefits.** The interviewed organization experienced the following risk-adjusted benefits:

- **Monitoring efficiency (\$421,443).** This benefit focuses on avoiding manually collecting data and downloading reports from different tools and cloud providers, and then consolidating the data into spreadsheets to generate reports. Leveraging Azure Cost Management for a single view of distributed data allows organizations to use a common language and normalized metrics when communicating. The interviewed organization avoided the allocation or hiring of two to three resources to do manual tracking by adopting the solution, which can provide a single view for multicloud environments.
- **Cost and utilization optimization (\$671,450).** This benefit centers on costs saved by optimizing usage. The customer was able to save at least \$300,000 by sizing more effectively and leveraging reserved instances during the first year after using Azure Cost Management. The customer became more effective in deploying to the cloud, selecting and sizing resources, understanding trends in more detail to plan for the future, and ultimately, optimizing utilization and cloud spend.
- **Accelerated cloud growth.** This ancillary benefit highlights the customer's ability to accelerate its cloud strategy by using Azure Cost Management. Accelerated cloud strategy may result in quicker provisioning time and time-to-market for products developed on the cloud or earlier decommissioning of infrastructure and data centers. While both results could be quantified, the main proponent is an organization's shift to the cloud, where Azure Cost Management is only part of that strategy and accelerating that shift. Customers should keep this in mind and may want to attribute partial value of cloud deployment acceleration to Azure Cost Management.

› **Costs.** The interviewed organization experienced the following risk-adjusted costs:

- **Azure Cost Management solution cost (\$283,264).** This cost focuses on the enterprise solution fee for using the service. The customer described the cost as a percentage of the organization's annual cloud spend.

## Disclosures

The reader should be aware of the following:

- › The study is commissioned by Cloudyn 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 the solution.
- › Cloudyn 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.
- › Cloudyn provided the customer names for the customer interview but did not participate in the interview.

## 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 deploying Cloudyn. 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 Cloudyn can have on an organization (see Figure 2). Specifically, we:

- › Interviewed Cloudyn marketing, sales, and/or consulting personnel, along with Forrester analysts, to gather data relative to Cloudyn's marketplace.
- › Interviewed one organization currently using Cloudyn to obtain data with respect to costs, benefits, risks, and long-term flexibility.
- › 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.
- › Risk-adjusted the financial model based on issues and concerns the interviewed organization highlighted in interviews. Risk adjustment is a key part of the TEI methodology. While the interviewed organization 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 Cloudyn's value: 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

### INTERVIEWED CUSTOMER DESCRIPTION

For this study, Forrester interviewed a large, US-based software company with the following characteristics:

- › Over \$4.5 billion in annual revenue selling packaged software, custom solutions, and accompanying professional services.
- › Approximately 15,000 staff, with 1,000 allocated to internal IT and five specifically allocated to architecture.
- › Active engagement with two of the top three public cloud providers in the US, with plans to deploy a third in the near future.

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*“We want to be the company’s cloud broker. Cloudyn helps you become a better shared service and bring products to market faster.”*

~ Cloud architect, large US software company

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### INTERVIEW HIGHLIGHTS

The interviewed customer highlighted the following pre-Azure Cost Management issues and gaps, technology selection criteria and goals, and post-Azure Cost Management deployment results.

#### *Situation*

Prior to engaging Cloudyn, the interviewed customer did not have a unified solution to monitor its private and public cloud usage. Resources were dedicated to manually parse out cloud vendor bills, download usage reports, and consolidate data into spreadsheets to generate reports. The process was time-consuming and not scalable as the organization’s cloud footprint and demand continued to grow. The organization adopted a “cloud first” strategy and planned to shift a large portion of internal operations and future development to the cloud. As the shift materialized, the IT team wanted to shift with confidence and grow the cloud footprint responsibly.

#### *Solution*

The interviewed customer’s “Cloud Governance Board” reviewed several tools and selected Azure Cost Management by Cloudyn based on the following criteria:

- › Align with a cloud-first strategy. The solution must be cloud SaaS and not on-premises.
- › Support multicloud environments, including the top three US public cloud providers.
- › Display minimal complexity, require immaterial training time, and incorporate a user experience that can be described as “easy to use.”

After selecting the solution, the interviewed customer deployed with the following goals:

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*“\$300,000 was saved by looking at different areas, reserving instances, and sizing properly. We were able to maximize the budget and plan for the future.”*

~ Cloud architect, large US software company

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- › Consolidate monitoring tools and automate processes. Avoid using resources to manually generate reports, and enable scalable, self-service reporting for project teams.
- › Achieve spending and usage visibility, which can be used for cost and utilization optimization at a later stage.
- › Eventually evolve into the organization's cloud broker.

### Results

The interview revealed the following themes:

- › **Hybrid, multicloud environments result in multiple cloud monitoring tools, consoles, and viewing panes that can be consolidated.** While the purpose of this TEI case study is not to explain the benefits of leveraging multiple clouds, there is a solid expectation that using multiple solutions in the same space can lead to challenges in tracking utilization metrics. Even expanded and rapid growth with just one cloud provider to cater to dozens of different project teams may lead to confusion and challenges in monitoring and efficiently generating intelligent insight regarding over- and under-usage. The interviewed customer highlighted that over 80 people have access to Cloudyn reporting and rely on the tool for insight regarding utility and spending. Without the tool, the customer mentioned that "it would be a nightmare" and would take at least two to three dedicated resources to manually collect data from different sources and generate reports. Cloudyn provides an automated method of creating that single view of hybrid, multicloud environments. It clearly shows usage metrics for related teams, even for organizations only engaged with one cloud provider.
- › **Gaining spend visibility enables more advanced maneuvers like forecasting and optimization.** For every packaged software or custom solution that submits a request to the infrastructure team, the needs and budgets are assessed, costs for Year 1 and out years are roughly estimated, and a decision is made whether to host internally in a data center or on one of the public cloud providers. Applications typically have a three-year lifespan and at least three to six requests are submitted each month. Having spending visibility into all those projects allows for accountability in the form of sending standard alerts and courtesy notes to individual project teams if there is an overspending trend against the known quarterly or annual budget. It also allows the IT team to uniformly leverage known budgets and forecasted spend to negotiate with cloud vendors on future costs and reserved instances.
- › **The ultimate goal of leveraging one unified monitoring tool and becoming one uniform billing and negotiating unit is to evolve from a cloud builder to a cloud operator and finally to a cloud broker.** The customer highlighted that its goal is to become the organization's cloud broker. Readers may map their own cloud journeys based on certain characteristics and phases. Cloud builders are typically experimenting, gathering business requirements, defining metrics, establishing policies, and monitoring costs. Cloud operators are more focused on building management capabilities, automating operations, enforcing policies, and optimizing costs. Lastly, cloud brokers become the internal cloud manager and expand platforms, enable chargeback systems, and broker costs. While each organization's path may be different and not necessarily linear, readers can use the characteristics above to map their journey to becoming a cloud broker.

## BENEFITS

The interviewed organization experienced three benefits in this case study:

- › Cost and utilization optimization.
- › Monitoring efficiency.
- › Accelerated cloud growth.



### Cost And Utilization Optimization

The customer highlighted that it saved \$300,000 by looking at different areas, reserving instances, and sizing correctly. This savings was also based on a \$2.5 million internally controlled portion of a larger \$7.5 million cloud spend. As cost optimization and savings may decrease and vary as the footprint is scaled up, this model accounts for the \$300,000 savings across each year, in a three-year model.

Alternatively, readers may also apply a savings per dollar spent formula by dividing the savings by the basis, which is \$2.5 million in this case. The resulting 12% is the savings ratio, which can then be applied to the total cloud spend. As the multiplier's increase or decrease as cloud spend increases is variable and highly dependent on each organization's use case, this model only provides the formula for readers below. The actual results and ROI are based only on the \$300,000 validated savings by the customer as opposed to applying the 12% multiplier to the total spend (e.g., 12% of \$7.5 million in Year 1 is \$900,000), which would be logical but also speculative in this case. Over three years, the risk-adjusted total is \$810,000, as shown in Table 1.

**TABLE 1**  
**Cost And Utilization Optimization**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
A1	Cost savings from optimizing	Customer provided		\$300,000	\$300,000	\$300,000
A2	Cloud spend basis for optimizing	Customer provided		\$2,500,000	\$2,500,000	\$2,500,000
A3	Cost savings multiplier	A1/A2		12%	12%	12%
A4	Total cloud spend	C1		\$7,500,000	\$10,500,000	\$13,650,000
At	Cost and utilization optimization	A1 or conceptually A3*A4 with higher risk adjustment		\$300,000	\$300,000	\$300,000
	Risk adjustment	↓10%				
Atr	<b>Cost and utilization optimization (risk-adjusted)</b>		<b>\$0</b>	<b>\$270,000</b>	<b>\$270,000</b>	<b>\$270,000</b>

Source: Forrester Research, Inc.



### Monitoring Efficiency

The interviewed customer mentioned that by adopting the solution, it avoided at least two to three dedicated resources to manually collect data, populate spreadsheets, and generate reports for project teams. Assuming an average, fully loaded salary of \$70,000, an annual growth rate of 3%, and a ramp-up from two to three resources over three years, the total three-year, risk-adjusted cost avoided is \$515,887, as shown in Table 2. Depending on the volume of data and reporting, readers may estimate and substitute the amount of monitoring full-time equivalents (FTEs) avoided as appropriate.

**TABLE 2**  
**Monitoring Efficiency**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
B1	Monitoring FTE avoided	Customer provided		2.0	2.5	3.0
B2	Annual salary	Year 1: assumption Years 2 and 3: $B2_{py} * 103\%$		\$70,000	\$72,100	\$74,263
Bt	Monitoring efficiency	$B1 * B2$		\$140,000	\$180,250	\$222,789
	Risk adjustment	↓5%				
<b>Btr</b>	<b>Monitoring efficiency (risk-adjusted)</b>			<b>\$133,000</b>	<b>\$171,238</b>	<b>\$211,650</b>

Source: Forrester Research, Inc.



### Accelerated Cloud Growth

As this area is an indirect or derived benefit, it is included in this case qualitatively as a reminder to readers. Results of cloud growth may include quicker time-to-market for products or earlier decommissioning of infrastructure and data centers. In this case, the customer noted a plan to close four data centers in the near future. The customer also noted that these data centers would likely close at some point, but Cloudyn allowed the customer to more confidently and rapidly grow the cloud footprint, which indirectly allowed for accelerated decommissioning of infrastructure.

Thus, readers may want to build the benefit value of quicker time-to-market or earlier decommissioning of infrastructure into a business case for Azure Cost Management. In this scenario, readers should also apply an attribution ratio to account for the acceleration, specify whether the solution is the only reason for acceleration, and calculate what that acceleration translates to in time.

### Total Benefits

Table 3 shows the total of all benefits across the two quantified areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the interviewed customer expects risk-adjusted total benefits to be a PV of \$1,092,893.

TABLE 3

## Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Atr	Cost and utilization optimization	\$0	\$270,000	\$270,000	\$270,000	\$810,000	\$671,450
Btr	Monitoring efficiency	\$0	\$133,000	\$171,238	\$211,650	\$515,887	\$421,443
	<b>Total benefits (risk-adjusted)</b>	<b>\$0</b>	<b>\$403,000</b>	<b>\$441,238</b>	<b>\$481,650</b>	<b>\$1,325,887</b>	<b>\$1,092,893</b>

Source: Forrester Research, Inc.

## COSTS

The interviewed organization experienced one primary cost associated with the solution:

- › Azure Cost Management by Cloudyn solution cost.

Technology solutions typically have some form of labor time and effort related to deployment. However, a key reason the interviewed customer selected Cloudyn was for ease of use, and the customer highlighted an immaterial amount of learning or preparation time to use the solution. Readers should note that deployment experiences may vary based on organizations, and they should consider including labor time and effort for deployment or maintenance as appropriate. Product demos and POCs are effective methods to assess the intuitiveness of a product and the analytics reports, which can determine if any material internal labor is needed for deployment and maintenance.



### Solution Cost

The customer described its cost model with using the solution as a ratio based on its annual cloud spend. In this case, the customer's cloud spend in Year 1 is \$7.5 million with a growth rate of 40% in Year 1 and 30% in Year 2. The total three-year, risk-adjusted cost is \$348,150, as shown in Table 4. Readers are encouraged to forecast their own cloud spend and growth rates and engage with Cloudyn for an accurate enterprise quote. A range of 1% to 5% was used for modeling.

**TABLE 4**  
**Cloudyn Solution Cost**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	Cloud spend	Year 1: customer provided Years 2 and 3: $C1_{py} * (1 + C2_{py})$		\$7,500,000	\$10,500,000	\$13,650,000
C2	Estimated growth rate	Assumption		40%	30%	25%
C3	Azure Cost Management pricing model	Customer and Cloudyn advised		1% to 5% (contact Microsoft for quote)		
Ct	Azure Cost Management solution cost	$C1 * C3$		\$75,000	\$105,000	\$136,500
	Risk adjustment	↑10%				
<b>Ctr</b>	<b>Azure Cost Management solution cost (risk-adjusted)</b>		<b>\$0</b>	<b>\$82,500</b>	<b>\$115,500</b>	<b>\$150,150</b>

Source: Forrester Research, Inc.

## Total Costs

Table 5 shows the total of all costs as well as associated PVs, discounted at 10%. Over three years, the interviewed organization expects total costs to be a PV of \$283,264.

**TABLE 5**  
**Total Costs (Risk-Adjusted)**

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ctr	Azure Cost Management solution cost	\$0	\$82,500	\$115,500	\$150,150	\$348,150	\$283,264
	<b>Total costs (risk-adjusted)</b>	<b>\$0</b>	<b>\$82,500</b>	<b>\$115,500</b>	<b>\$150,150</b>	<b>\$348,150</b>	<b>\$283,264</b>

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 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).

The interviewed customer will continue to leverage Azure Cost Management as the organization scales up and expands its cloud footprint to include more cloud providers. The customer has even set a goal of \$1 million in benefits due to scaled and broader cost and utilization optimization.

Furthermore, the organization is planning to improve its ability to compare and report costs. The organization wants to find a cost for a fixed unit of compute so that it can compare the cost of its public cloud providers with the cost of its private cloud. Lastly, the organization is looking to get further capability from Azure Cost Management to add more tags and allow for more sophisticated filtering and granular data breakdowns.

## 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 Azure Cost Management 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 the solution, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

**TABLE 6**

**Benefit And Cost Risk Adjustments**

Benefits	Adjustment
Cost and utilization optimization	↓ 10%
Monitoring efficiency	↓ 5%
Costs	Adjustment
Azure Cost Management solution cost	↑ 10%

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:

- › Organizations may continue to manually collect data and generate reports instead of allowing self-service reporting.
- › Organizations with deployments in the early stage (zero to three months) and slow adoption may not experience the cost saving benefits of optimization as quickly.

- › Cost optimization is partially dependent on pre-Azure Cost Management over -or under-usage and volume.
- › Azure Cost Management continues to invest in its platform and align with cloud vendor pricing models.

The following implementation risks that affect costs are identified as part of this analysis:

- › Cloud spend and annual growth rate.
- › Vendor quotations.

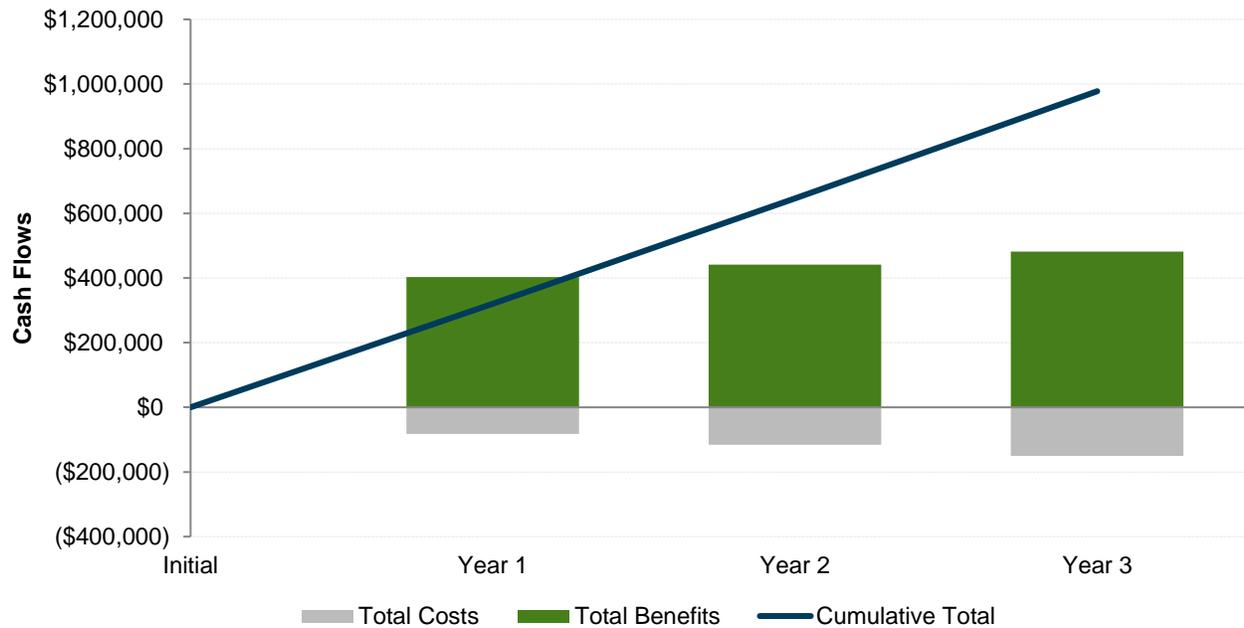
Table 6 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the interviewed organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

## 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 interviewed organization's investment in Azure Cost Management.

Table 7 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 6 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 7**  
Cash Flow (Risk-Adjusted)

Summary	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	\$0	(\$82,500)	(\$115,500)	(\$150,150)	(\$348,150)	(\$283,264)
Total benefits	\$0	\$403,000	\$441,238	\$481,650	\$1,325,887	\$1,092,893
<b>Total</b>	<b>\$0</b>	<b>\$320,500</b>	<b>\$325,738</b>	<b>\$331,500</b>	<b>\$977,737</b>	<b>\$809,629</b>
<b>ROI</b>				<b>286%</b>		
<b>Payback period (months)</b>				<b>&lt; 1 month</b>		

Source: Forrester Research, Inc.

## Cloudyn: Overview

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

### **Cloudyn manages hybrid cloud deployments, enabling customers to fully realize their cloud potential.**

Cloudyn enables IT and finance managers to monitor, govern and optimize cloud consumption and spend, allocate costs and enable chargeback/showback at any level in the enterprise hierarchy, facilitating cloud accountability across multiple cost entities.

Solution highlights include:

#### › **Full granular visibility of consumption, cost and performance of multi-platform cloud deployments:**

- Insights derived from a combination of operational and financial metrics.
- Trend identification based on highly granular data visibility.
- Detection and root cause analysis of anomalies.

#### › **Empowering enterprise-wide cloud accountability and governance:**

- Accurate and reliable chargeback (cost allocation).
- Control of policies and consumption through proactive alerts and reports.

#### › **Optimization and streamlining of cloud consumption and spend:**

- Financial and operational optimization for highly-efficient cloud deployments.
- Growing enterprise-scale clouds with hierarchical cost entity management and role-based viewing and permissions.

*Cloudyn was acquired by Microsoft in July 2017. In addition to Azure, Cloudyn will continue to support all cloud platforms.*

## Appendix A: Interviewed Customer Description

For this study, Forrester interviewed a large, US-based software company with the following characteristics:

- › Over \$4.5 billion in annual revenue selling packaged software, custom solutions, and accompanying professional services.
- › Approximately 15,000 staff, with 1,000 allocated to internal IT and five specifically allocated to cloud architecture.
- › Active engagement with two of the top three public cloud providers in the US, with plans to deploy a third in the near future.

### INTERVIEW HIGHLIGHTS

The interviewed customer highlighted the following pre-Azure Cost Management issues and gaps, technology selection criteria and goals, and post-Azure Cost Management deployment results.

#### *Situation*

Prior to engaging Cloudyn, the interviewed customer did not have a unified solution to monitor its private and public cloud usage. Resources were dedicated to manually parse out cloud vendor bills, download usage reports, and consolidate data into spreadsheets to generate reports. The process was time-consuming and not scalable as the organization's cloud footprint and demand continued to grow. The organization adopted a "cloud first" strategy and planned to shift a large portion of internal operations and future development to the cloud. As the shift materialized, the IT team wanted to shift with confidence and grow the cloud footprint responsibly.

#### *Solution*

The interviewed customer's "Cloud Governance Board" reviewed several tools and selected Azure Cost Management by Cloudyn based on the following criteria:

- › Align with a cloud-first strategy. The solution must be cloud SaaS and not on-premises.
- › Support multicloud environments, including the top three US public cloud providers.
- › Display minimal complexity, require immaterial training time, and incorporate a user experience that can be described as "easy to use."

After selecting the solution, the interviewed customer deployed with the following goals:

- › Consolidate monitoring tools and automate processes. Avoid using resources to manually generate reports, and enable scalable self-service reporting for project teams.
- › Achieve spending and usage visibility, which can be used for cost and utilization optimization at a later stage.
- › Eventually evolve into the organization's cloud broker.

## FRAMEWORK ASSUMPTIONS

Table 8 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 8**  
**Model Assumptions**

Ref.	Metric	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)	8,760
X5	Annual salary (monitoring FTE)	\$70,000
PY	Previous year	

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.

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 enterprisewide 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
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Source: Forrester Research, Inc.

## Appendix D: Endnotes

<sup>1</sup> Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information, see the section on Risks.