

A Forrester Total Economic Impact™
Study Commissioned By Microsoft
March 2019

The Total Economic Impact™ Of Microsoft Azure For SAP

Cost Savings And Business Benefits
Enabled By Hosting SAP On Microsoft
Azure

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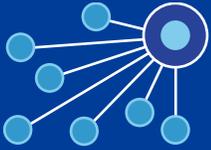
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Executive Summary

Benefits And Costs



Legacy infrastructure cost savings:

\$8.3 million



Business value from rapid infrastructure spin-up:

\$6.4 million



Reallocated IT staff:

\$1.2 million

Public cloud services eliminate capex expenses and reduce the cost of underutilized hardware with on-demand usage models. According to decision-making respondents from Forrester's 2018 Global Business Technographics® Infrastructure survey, the top two drivers for adopting public cloud are: 1) achieving capex savings by lowering the total cost of ownership of hardware infrastructure and 2) delivering on-demand hardware capacity and scalability to the organization now and into the future.¹

Microsoft provides its SAP-certified Microsoft Azure public cloud, which allows organizations to host SAP instances in the cloud. Using Microsoft Azure, the organizations are able to spin up their SAP-related infrastructure more rapidly, compared with their legacy on-premises infrastructure. Organizations can also realize the cost savings associated with moving to the cloud by reducing the need for on-premises hardware, software, and data center real estate.

To measure the financial impact realized by customers, Microsoft commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential ROI enterprises may realize by hosting their SAP instances on Microsoft Azure. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Microsoft Azure for SAP on their organizations. To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four customers with experience hosting SAP instances on Microsoft Azure.

Prior to using Microsoft Azure for SAP, the interviewed organizations required a large, costly, on-premises hardware infrastructure to support SAP instances. The infrastructure also needed substantial support and maintenance from IT staff. New and iterative SAP releases also faced frequent delays as a result of limited testing capabilities, hardware capacity constraints, and shrinking windows for planned downtime.

After migrating their SAP applications to Microsoft Azure, the organizations were able to spin up their SAP-related infrastructure faster and reduce the impact of delays on SAP releases to the business, increasing the speed-to-market for key business capabilities. Organizations also realized significant capex savings by eliminating the hardware, software, and data center space for their SAP instances. This benefit trickled further into the IT organization, allowing them to reallocate personnel who supported the on-premises infrastructure to higher value activities.

Key Findings

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

- › **Avoided cost of on-premises hardware of \$7.2 million.** By migrating their SAP applications to Microsoft Azure, interviewees cited significant cost savings from retiring legacy hardware and software tools. One executive told Forrester: "The objective that we had in mind was a 20% year over year operational cost savings for infrastructure to host and deliver our SAP environment. We achieved this objective and have exceeded it. It has been a substantial savings for us."



ROI
102%



Benefits PV
\$15.9 million



NPV
8.0 million



Payback
9 months

- › **Faster time-to-market for SAP releases worth \$3.3 million.** The interviewed organizations leveraged Azure to more rapidly release new SAP instances (including patches and upgrades) as well as reduce the duration of the testing phase and the number of error-related delays. One executive told Forrester: “We were in a position where we could eliminate what would once be a delay because of a last-minute problem that we found. We were able to fix that and stay on schedule because of the power of cloud. How often does that happen?”
- › **Avoided cost of overprovisioned hardware of \$3.1 million.** Organizations told Forrester that they needed to overprovision hardware associated with their SAP deployment to accommodate peak utilization. Using Azure, interviewees gained access to on-demand capacity and scalability to quickly add or reduce resources when needed, reducing the cost of over-configuring infrastructure.
- › **Reallocation of staff required to manage SAP infrastructure worth \$1.2 million.** By eliminating on-premises hardware from the SAP environment, organizations required fewer IT staff to manage and support the hardware. The organizations were able to rededicate IT staff to higher value tasks and delay additional hiring.
- › **Avoided cost of physical data center space valued at \$1.1 million.** The organizations noted a reliance on data center space to support their legacy SAP deployments. By migrating to Azure, this need was reduced. One executive noted a momentous savings in this area: “I’ve lost count of the amount of data centers we were able to shut down.”

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

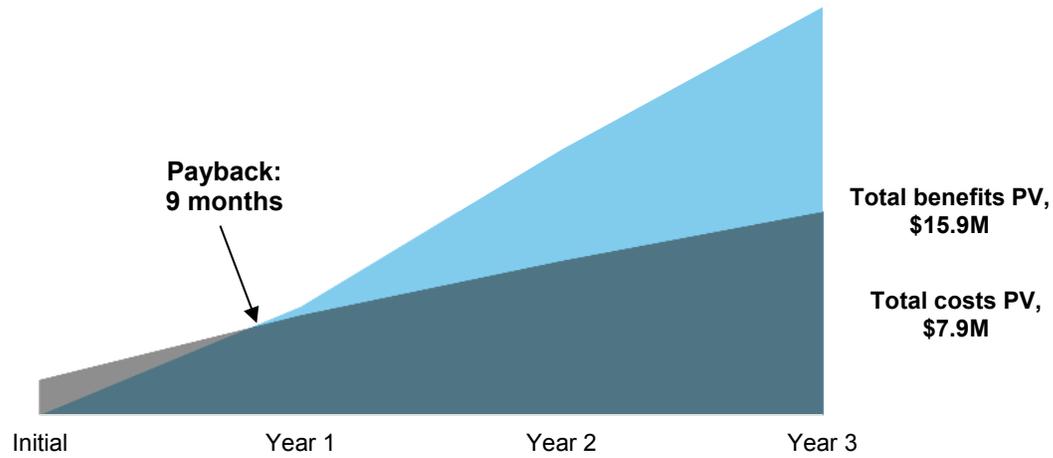
- › **Account support from Microsoft’s Azure team.** Interviewees emphasized the value which they received from Microsoft Azure’s technical account support.
- › **Reduced uncertainty for future migrations.** Several executives told Forrester that they are planning to migrate to SAP S/4HANA. With their SAP applications running on Microsoft Azure, they felt increased confidence (and reduced risk) to successfully navigate this migration.
- › **Increased sophistication of security.** Microsoft Azure’s security and privacy procedures allowed interviewees to feel comfortable trusting their organization’s critical SAP instances and data in a public cloud.

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

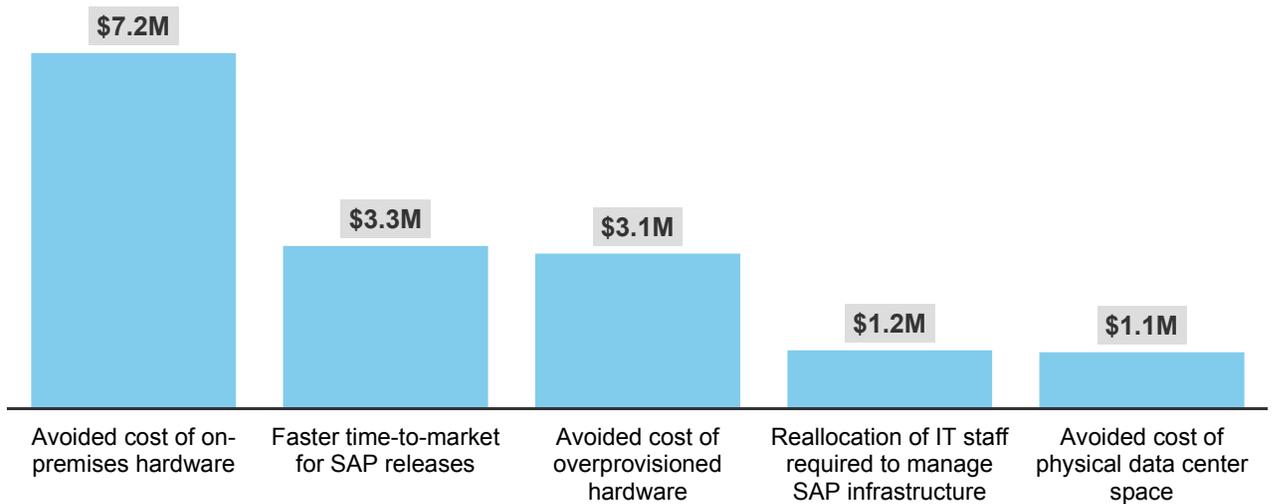
- › **Fees paid for Microsoft Azure infrastructure of 4.7 million over three years.** Total pricing for compute, storage, and IT services (including security) was \$1.8 million per year.
- › **Cost to architect, migrate to, and manage Azure infrastructure of \$3.2 million.** Interviewees cited additional costs related migrating their SAP applications to Microsoft Azure. Some of these expenses included net new hardware and software, ongoing staff management, and initial internal efforts to plan and execute the migrations.

Forrester’s interviews with four existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experienced benefits of \$15.9M over three years versus costs of \$7.9M, adding up to a net present value (NPV) of \$8.0M and an ROI of 102%.

Financial Summary



Benefits (Three-Year)



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 migrating their SAP instances to Microsoft Azure.

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 Microsoft Azure for SAP can have on an organization:



DUE DILIGENCE

Interviewed Microsoft stakeholders and Forrester analysts to gather data relative to Azure.



CUSTOMER INTERVIEWS

Interviewed four organizations using Microsoft Azure for SAP 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 Microsoft Azure for SAP'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 Microsoft 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 Microsoft Azure for SAP.

Microsoft 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.

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

The Microsoft Azure For SAP Customer Journey

BEFORE AND AFTER THE MICROSOFT AZURE INVESTMENT

Interviewed Organizations

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

| INDUSTRY | REGION | INTERVIEWEE | MIGRATION TYPE |
|-----------------------|----------------|-------------------------------------|---|
| Agriculture | Global | Sr. director, IT technical services | Consolidation of on-premises SAP instances and migration to Azure |
| Professional services | Global | Managing director, CIO organization | Migration of hybrid cloud infrastructure SAP instances to Azure |
| Education | United Kingdom | Head of IT | Migration of on-premises SAP instances to Azure |
| Technology | Russia | CIO | Migration of on-premises SAP HANA instances to Azure |

Key Challenges

After conducting interviews with four companies, Forrester identified the following challenges that they experienced prior to migrating their SAP instances to Microsoft Azure. The challenges included:

- › **Delivering new capabilities to the business on tight IT budgets.** Executives noted that the expense of on-premises infrastructure for their SAP environments represented an inordinate percentage of the annual IT budgets. This limited their ability to invest in other capabilities to support the business.
- › One executive noted that efforts to reduce cost in the IT organization had limited success: “We were doing things to save costs on the endpoints, we were extending the life cycle of PCs, we were doing all this stuff to try to manage our operational cost flow for infrastructure. And yet, I was still being asked to do more and more and more. It became obvious we were going to have to get really dramatic.” Another executive added: “It isn’t the future where we need to be nimble and agile. We need to be able to quickly deliver services to our customers worldwide today.”
- › **Planning the right level of hardware capacity.** Most interviewees described periods of increased traffic throughout the year, which taxed their SAP instances at a higher than average rate. This forced IT to overprovision their hardware infrastructure to support these isolated periods of peak volume, leading to underutilization for much of the hardware for a majority of the year.
- › **Releasing new or updated SAP software.** Interviewees noted difficulties around tasks supporting the release of new or updated SAP instances throughout the year which often led to release delays. These tasks included spinning up test environments, planning for capacity, and troubleshooting errors before release.

“We were doing things to save cost on the endpoints, we were extending the life cycle of PCs, we were doing all this stuff to try to manage our operational cost flow for infrastructure. And yet, I was still being asked to do more and more and more. It became obvious we were going to have to get really dramatic.”

Sr. director, IT technical services agriculture



Solution Requirements

The interviewed organizations searched for a solution that could:

- › **Shift investment from capex to opex.** Interviewees cited internal initiatives to move IT capability procurement from capex to opex. One interviewee told Forrester: “We’ve been looking to transition IT expense from capex to opex in our company, we’ve moved about 60% of our SAP expenses to opex by migrating to Azure.”
- › **Provide high-quality account management.** When evaluating public cloud options for SAP applications, interviewees cited Microsoft Azure’s support and account management team as major reason for the investment. One executive shared: “We’re old school in the sense that we need to occasionally sit across the table from somebody and share our concerns. Microsoft has a full-time account team and provided great support to us. We need to have someone in a position to be a strong advocate for us, and Microsoft was in a much better position to do this for us than the competition.”

“It isn’t the future where we need to be nimble and agile. We need to be able to quickly deliver services to our customers worldwide today.”

Head of IT, education



Key Results

The interviews revealed that key results from the Microsoft Azure for SAP investment include:

- › **Increased ability to deliver new capabilities to the business.** By migrating SAP environments to Microsoft Azure, the organizations were able to rapidly spin up instances to troubleshoot issues, delivering capabilities to the business faster. As a result, the increased speed is snowballing to provide incremental business value across the companies. One executive noted: “My team can use the power of cloud to magically snap our fingers and spin up the environments when we need to fix problems that would otherwise lead to delays.” Another executive added: “Azure gives us the flexibility to tackle transformative change in the future.”
- › **Reduced use of on-premises infrastructure.** Interviewees no longer require significant on-premises hardware infrastructure to support their SAP applications after the migration to Microsoft Azure.
- › **Freed up IT staff.** The IT staff, who are historically responsible for supporting the on-premises SAP-related infrastructure, are being reallocated toward other value-adding projects across their organizations. One executive noted: “We gained agility in terms of managing our infrastructure for both scale-up and scale-down types of approaches. We’re now building development test environments in hours rather than days and weeks at a time.”

“We gained agility in terms of managing our infrastructure for both scale-up and scale-down types of approaches. We’re now building development test environments in hours rather than days and weeks at a time.”

Sr. director, IT technical services, agriculture



Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

The global, \$1 billion organization has a lean IT organization which is continually pushed to deliver new capabilities to the business on tight, uncertain budgets. The organization has completed migration its instances to Azure. While HANA has not yet been deployed by the organization, a migration to HANA is planned in the coming years with confidence due to the Microsoft Azure environment.

Before the Microsoft Azure migration for SAP applications, the organization was spending a significant portion of their yearly budget on on-premises hardware, software, and upgrades. In addition, the organization was renting space in multiple data centers.

The organization has seasonal business cycles, driving large amounts of traffic across its SAP infrastructure in quarterly spikes. In the past, IT needed to build this infrastructure to support these periods of increased demand, which has led to periods of underutilization.

The organization has releases two iterative or new SAP releases per year to deliver new capabilities to the business, though these releases often faced unexpected delays in the past resulting from errors found before release.

After migrating their SAP applications to Microsoft Azure, the composite organization kept their legacy SAP deployment running side-by-side with their Azure environment for six months before retiring the legacy infrastructure.



- **Key composite organization characteristics**

- 2 SAP releases per year
- Pre-HANA
 - \$3.5M per year spent on legacy hardware infrastructure
 - \$1.2M spent per year on rented data center capacity

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 | Avoided cost of on-premises hardware | \$1,890,000 | \$3,465,000 | \$3,465,000 | \$8,820,000 | \$7,185,124 |
| Btr | Faster time-to-market for SAP releases | \$810,000 | \$1,620,000 | \$1,620,000 | \$4,050,000 | \$3,292,337 |
| Ctr | Avoided cost of overprovisioned hardware | \$1,260,000 | \$1,260,000 | \$1,260,000 | \$3,780,000 | \$3,133,434 |
| Dtr | Reallocation of IT staff required to manage SAP infrastructure | \$360,000 | \$540,000 | \$540,000 | \$1,440,000 | \$1,179,264 |
| Etr | Avoided cost of physical data center space | \$324,000 | \$540,000 | \$540,000 | \$1,404,000 | \$1,146,536 |
| | Total benefits (risk-adjusted) | \$4,644,000 | \$7,425,000 | \$7,425,000 | \$19,494,000 | \$15,936,695 |

Avoided Cost Of On-Premises Hardware

Reducing the cost of infrastructure was a major driver for organizations moving their SAP instances to Microsoft Azure. Each of the interviewed organizations told Forrester that a key objective was to reduce the capital expenditure for on-premises infrastructure to support SAP.

By moving to Microsoft Azure, the organization no longer needed the legacy on-premises hardware along with the software needed to run it. It also avoided the cost to upgrade and maintain the hardware. One executive told Forrester that not having to think about hardware upgrade cycles was “liberating.”

In addition, multiple interviewees told Forrester that by migrating their organization’s on-premises SAP environment to Azure, they were able to move these costs from capex to opex to align with organizational initiatives.

For the composite organization,

- › Forrester assumes that \$3.5 million is currently being spent for the legacy hardware infrastructure per year on five-year upgrade cycle.
- › The composite organization spends \$350,000 per year to maintain and refresh the on-premises hardware.
- › In Year 1, the composite organization runs their legacy on-premises infrastructure side by side with their Azure instances for six months before retiring the on-premises deployment permanently.

To account for a variance in hardware spending across different types of organizations, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$7.2 million.

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 nearly \$16 million.

“Azure gives us the flexibility to tackle transformative change in the future.”

Managing director, CIO organization, professional services



Avoided Cost Of On-Premises Hardware: Calculation Table

| REF. | METRIC | CALC. | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|-----------|-------------|-------------|-------------|
| A1 | Cost of on-premises hardware and software | | \$3,500,000 | \$3,500,000 | \$3,500,000 |
| A2 | Legacy hardware cost reduction | Interview | 50% | 100% | 100% |
| A3 | Avoided hardware cost | | \$1,750,000 | \$3,500,000 | \$3,500,000 |
| A4 | Avoided hardware maintenance cost | | \$350,000 | \$350,000 | \$350,000 |
| At | Avoided cost of on-premises hardware | A3+A4 | \$2,100,000 | \$3,850,000 | \$3,850,000 |
| | Risk adjustment | ↓10% | | | |
| Atr | Avoided cost of on-premises hardware (risk-adjusted) | | \$1,890,000 | \$3,465,000 | \$3,465,000 |

Savings From Faster Time-To-Market For SAP Releases

By moving SAP instances to Microsoft Azure, interviewees described an increased ability to spin-up testing instances more rapidly prior to release launches to find and correct issues earlier. One organization was able to test and correct an issue within 48 hours, whereas it would have caused a delay of over a month on their previous infrastructure.

Each of the interviewed organizations launched between one and four new SAP releases per year. These releases deliver key capabilities to the business which correlate to tangible business benefits.

Due to infrastructure constraints or last-minute issues, many releases are delayed until they can be resolved, which delays the delivery of new functionality to the business. One organization estimated that a single SAP release delay costs the business over \$2 million in lost revenue. The same organization noted that nearly 50% of their releases face a delay.

In Forrester's model:

- › The composite organization has two SAP releases per year, one of which typically encounters delay.
- › It takes the composite organization four months per delay to create the test environment, find, fix, and launch the release.
- › Each month of delay represents \$450,000 of lost business value to the organization, as key capabilities on the release are delayed to decision makers on the business-side.
- › Moving SAP instances to Microsoft Azure allowed the composite organization to reduce the impact of delays by 50% in Year 1 and reduce delays entirely in Year 2 and Year 3.

Forrester adjusted this benefit downward by 10% to account for the variance of business value per SAP releases across different types of organizations, yielding a three-year risk-adjusted total PV of \$3.3 million.

Interviewed organization average delay of SAP releases using legacy infrastructure: 4 months

Faster Time-To-Market For SAP Releases: Calculation Table

| REF. | METRIC | CALC. | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|---------------|-----------|-------------|-------------|
| B1 | New SAP releases per year | Interview | 2 | 2 | 2 |
| B2 | On-premises SAP releases which encounter delays | Interview | 1 | 1 | 1 |
| B3 | Average length of delay | Months | 4 | 4 | 4 |
| B4 | Average business value lost per month of delay | Interview | \$450,000 | \$450,000 | \$450,000 |
| B5 | Percentage of release delay avoided on MS Azure | Interview | 50% | 100% | 100% |
| Bt | Faster time-to-market for SAP releases | $B2*B3*B4*B5$ | \$900,000 | \$1,800,000 | \$1,800,000 |
| | Risk adjustment | ↓10% | | | |
| Btr | Faster time-to-market for SAP releases (risk-adjusted) | | \$810,000 | \$1,620,000 | \$1,620,000 |

Avoided Cost Of Overprovisioned Hardware

When planning hardware infrastructure purchases, interviewees told Forrester that they needed to overprovision in order to accommodate the periods of highest SAP traffic throughout the year. As a result, much of the hardware purchased and maintained by these organizations had gone unutilized for long stretches of the year.

After moving to Microsoft Azure, interviewees said that the “on-demand” capacity allows them to pay just for the capacity they need for certain periods during the year and turn it off when they no longer need it during slower points in the year. One executive added: “I don’t have to worry about overbuying. I’ll just stop buying if I have too much capacity.”

The composite organization:

- › Has a seasonal business with a few peak periods throughout the year of above average traffic moving across the SAP infrastructure.
- › Overprovisions 40% of its total hardware to account for periods of high usage.
- › Pays for capacity on an as-needed basis, scaling up capacity during the peak periods of the year and scaling down in the slower months.

Forrester adjusted this benefit downward by 10% to account for the variance in capacity requirements during the year across different types of organizations, yielding a three-year risk-adjusted total PV of \$3.1 million.



With on-premises infrastructure, organizations are forced to overprovision hardware to meet demand for peak capacity.

Avoided Cost Of Overprovisioned Hardware: Calculation Table

| REF. | METRIC | CALC. | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|-------|-------------|-------------|-------------|
| C1 | Cost of hardware | | \$3,500,000 | \$3,500,000 | \$3,500,000 |
| C2 | Overprovisioned hardware | | 40% | 40% | 40% |
| Ct | Avoided cost of overprovisioned hardware | C1*C2 | \$1,400,000 | \$1,400,000 | \$1,400,000 |
| | Risk adjustment | ↓10% | | | |
| Ctr | Avoided cost of overprovisioned hardware (risk-adjusted) | | \$1,260,000 | \$1,260,000 | \$1,260,000 |

Reallocation Of IT Staff Required To Manage SAP Infrastructure

While interviewed organizations told Forrester that acquiring and maintaining the on-premises infrastructure for their SAP environments was costly, they also expressed that paying for IT staff to maintain the hardware was nearly as expensive.

Before moving the SAP instances to Microsoft Azure, interviewees described a reliance on several key members of their IT team to maintain the hardware and infrastructure. The team members leaned on the most were hardware administrators, server administrators, and database administrators.

After the migration to Azure, the interviewed organizations told Forrester that the staffing requirements to support the SAP environment decreased significantly. One executive told Forrester that their staffing requirements decreased by over 75%.

The composite organization:

- › Employed 12 IT FTEs maintaining the legacy on-premises infrastructure before the migration to Azure.
- › In Year 1, eight FTEs were required since the on-premises hardware remained in-use for the first six months.
- › By Year 2 and Year 3, this requirement was reduced to six FTEs.

By reducing the burden on the IT staff to maintain the on-premises infrastructure, the composite organization is able to re-deploy FTEs no longer required to higher value-added activities and reducing the need to hire for other projects.

Forrester adjusted this benefit downward by 10% to account for the variance in IT staff skill and experience across different organizations, yielding a three-year risk-adjusted total PV of \$1.2 million.

Reallocation Of IT Staff Required To Manage SAP Infrastructure: Calculation Table

| REF. | METRIC | CALC. | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|------------------|-----------|-----------|-----------|
| D1 | IT staff required before MS Azure | Interview | 12 | 12 | 12 |
| D2 | Staff reduction | Interview | 33% | 50% | 50% |
| D3 | IT staff reduction after MS Azure | $D1-(D1*D2)$ | 8 | 6 | 6 |
| D4 | Average burdened IT staff salary | Industry average | \$100,000 | \$100,000 | \$100,000 |
| Dt | Reallocation of IT staff required to manage infrastructure | $D3*D4$ | \$400,000 | \$600,000 | \$600,000 |
| | Risk adjustment | ↓10% | | | |
| Dtr | Reallocation of IT staff required to manage infrastructure (risk-adjusted) | | \$360,000 | \$540,000 | \$540,000 |

Avoided Cost Of Physical Data Center Space

As part of their legacy on-premises SAP infrastructure, interviewees described a reliance on data center space either rented from a third party or owned. After migrating their SAP instances to Microsoft Azure, the organizations were able to reduce the need for data center capacity. One executive Forrester interviewed, noted that their organization was able to shut down around 90% of the data centers in use for their legacy SAP environment.

The composite organization:

- › Rents data center capacity for their SAP environment from a third party for \$100K per month, totaling \$1.2 million per year.
- › In Year 1, the organization needed to wait six months before cancelling their data center contract due to their current agreement in place.
- › In Year 2 and Year 3, this cost was reduced by 50%.

Forrester adjusted this benefit downward by 10% to account for the variance in current contract or ownership status for data centers across different organizations, yielding a three-year risk-adjusted total PV of \$1.1 million.

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.

Avoided Cost Of Physical Data Center Space: Calculation Table

| REF. | METRIC | CALC. | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|------------------|-------------|-------------|-------------|
| E1 | Yearly data center cost | \$100K per month | \$1,200,000 | \$1,200,000 | \$1,200,000 |
| E2 | Data center reduction | Interview | 30% | 50% | 50% |
| Et | Avoided cost of physical data center space | $E1*E2$ | \$360,000 | \$600,000 | \$600,000 |
| | Risk adjustment | ↓10% | | | |
| Etr | Avoided cost of physical data center space (risk-adjusted) | | \$324,000 | \$540,000 | \$540,000 |

Unquantified Benefits

In addition to the benefits outlined above, the interviewed organizations shared other benefits that did not have specific financial implications. Specifically, the companies benefited from:

- › **Account support from Microsoft's Azure for SAP team.** Interviewees noted that the technical account support, which they receive from Microsoft's Azure for SAP team, provided the ability to plan and execute on their infrastructure and migration strategies for SAP.
- › **Reduction of uncertainty of future migrations.** Multiple organizations told Forrester that they plan to migrate to SAP S/4HANA in the near future. With their SAP applications on Microsoft Azure, interviewed executives expressed confidence in their increased ability to successfully navigate this migration.
- › **Increased sophistication of security.** As one IT executive said: "However much money any one organization spends on security, it's less than the billions that Microsoft spends on security. The best defense is to be in their cloud. We could do backups, some our own — we could do monitoring on our own. We would not be able to scale to their level of security on our own."

Interviewees who had not yet migrated to SAP HANA expressed increased confidence in their ability to do so on Microsoft Azure.

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 Microsoft Azure for SAP and later realize additional uses and business opportunities, including:

- › **Downstream benefits of decreasing time-to-market for SAP releases.** Interviewees noted that by decreasing the time-to-market for SAP releases, they're also decreasing their time-to-market for key capabilities for the business which correlate directly with revenue. While this value is quantified within the three-year model for this study, the downstream benefit of new capabilities delivered to the business more rapidly is not. Interviewees emphasized their optimism about the "snowballing" effect of faster capability delivery to the business year after year in the long term. In other terms, a capability which arrives for the business two months earlier due to an avoided delay is two months earlier in Year 1, but is also two months earlier in Year 10.

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.

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 |
| Ftr | Fees paid for Microsoft Azure services | \$0 | \$1,890,000 | \$1,890,000 | \$1,890,000 | \$5,670,000 | \$4,700,150 |
| Gtr | Cost to architect and migrate to Azure | \$1,361,250 | \$880,000 | \$660,000 | \$660,000 | \$3,561,250 | \$3,202,572 |
| | Total costs (risk-adjusted) | \$1,361,250 | \$2,770,000 | \$2,550,000 | \$2,550,000 | \$9,231,250 | \$7,902,722 |

Fees Paid For Microsoft Azure Infrastructure

Pricing for Microsoft Azure is flexible and allows customers to configure granular levels of compute, storage, and related services such as security and monitoring. For the purposes of this study, Forrester profiled an organization with 1,200 VMs and 2 petabytes PB of storage. The total cost over three years was \$1.8 million per year. To account for variation in the pricing to specific customers, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$4.7 million.

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 nearly \$7.9 million.

Fees Paid For Microsoft Azure Services : Calculation Table

| REF. | METRIC | CALC. | INITIAL | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|-------|---------|-------------|-------------|-------------|
| F1 | Collective cost for Microsoft Azure services | | | \$1,800,000 | \$1,800,000 | \$1,800,000 |
| Ft | Fees paid for Microsoft Azure infrastructure | =F1 | | \$1,800,000 | \$1,800,000 | \$1,800,000 |
| | Risk adjustment | ↑5% | | | | |
| Ftr | Fees paid for Microsoft Azure services (risk-adjusted) | | | \$1,890,000 | \$1,890,000 | \$1,890,000 |

Cost To Architect And Migrate To Azure Infrastructure

Interviewees cited additional costs related to migrating their SAP applications to Microsoft Azure. The expense included:

- › New hardware and software required for the Microsoft Azure SAP deployment.
- › IT staff FTE time for planning and executing the migration. Some interviewees used a system integrator to manage the migration.
- › Ongoing maintenance for IT staff. Some interviewees outsourced this work to a system integrator.

The composite organization paid a one-time, initial cost of \$750,000 for new hardware for their deployment. An additional, initial \$487,500 was spent on IT FTE time to plan and execute the migration. Six IT FTEs were used to maintain the SAP environment once migrated to Microsoft Azure in Year 2. In Year 1, two additional IT staff FTEs were required.

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.

To account for variance in the size and nature of an organization's Microsoft Azure for SAP deployment and the effect on the above, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$3.2 million.

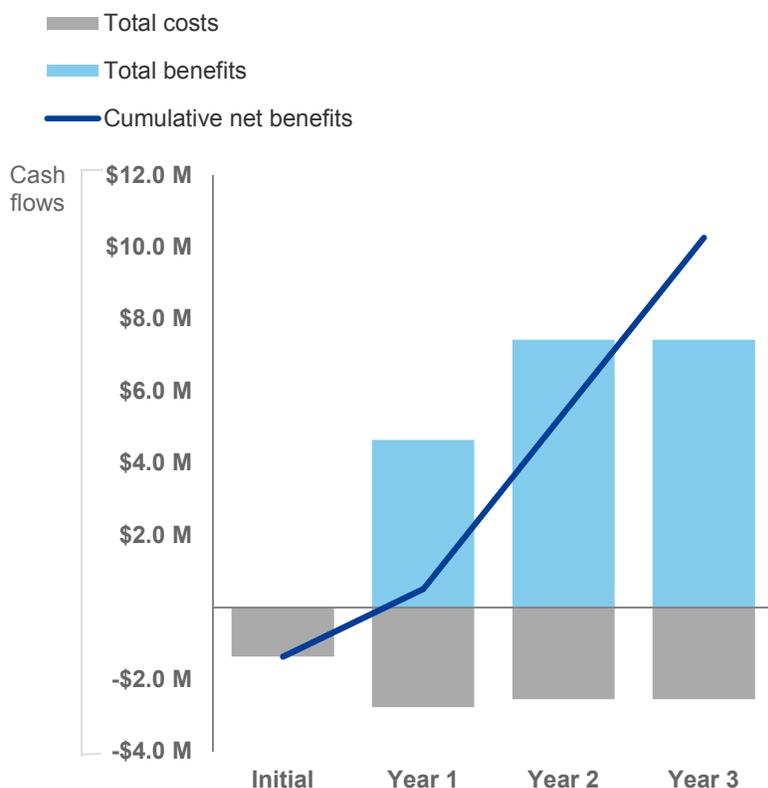
Cost To Architect And Migrate To Azure: Calculation Table

| REF. | METRIC | CALC. | INITIAL | YEAR 1 | YEAR 2 | YEAR 3 |
|------|--|-------------------|-------------|-----------|-----------|-----------|
| G1 | Hardware and software capital expenditure | | \$750,000 | | | |
| G2 | Initial IT staff implementation efforts | | \$487,500 | | | |
| G3 | Ongoing IT staff management | IT FTEs at \$100K | | \$800,000 | \$600,000 | \$600,000 |
| Gt | Cost to architect and migrate to Microsoft Azure | | \$1,237,500 | \$800,000 | \$600,000 | \$600,000 |
| | Risk adjustment | ↑10% | | | | |
| Gtr | Cost to architect and migrate to Microsoft Azure (risk-adjusted) | | \$1,361,250 | \$880,000 | \$660,000 | \$660,000 |

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 | (\$1,361,250) | (\$2,770,000) | (\$2,550,000) | (\$2,550,000) | (\$9,231,250) | (\$7,902,722) |
| Total benefits | \$0 | \$4,644,000 | \$7,425,000 | \$7,425,000 | \$19,494,000 | \$15,936,695 |
| Net benefits | (\$1,361,250) | \$1,874,000 | \$4,875,000 | \$4,875,000 | \$10,262,750 | \$8,033,973 |
| ROI | | | | | | 102% |
| Payback period | | | | | | 9 months |

SAP on Azure: Overview

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

Why Azure for SAP applications

Microsoft Azure provides a trusted path for moving SAP applications to a secure, scalable, and enterprise-proven cloud platform. With an established partnership of over 25 years with SAP, Microsoft and SAP have a shared vision to provide businesses with a clear roadmap so they can confidently drive innovation in the cloud. Customers can make the most of the SAP investments they've already made by leveraging unique insights and rich product integration provided by the joint Microsoft and SAP ecosystem. Azure provides a robust and reliable cloud environment that features the broadest global footprint, the largest compliance portfolio, embedded security, enterprise-grade SLAs, and industry-leading support.

When you migrate your SAP workloads to Azure, you get:

- Largest compliance profile with over 85 offerings, including tools for GDPR.
- Global support of over 50+ Azure regions to keep your business running.
- The ability to bring your own SAP license, reduce capital expenses, and monitor costs.
- Advanced threat protection and single-sign-on (SSO) with multi-factor authentication.
- Development and testing environments on a scalable, high-fidelity, on-demand infrastructure.
- On-demand Azure virtual machines certified for SAP.
- Freedom to move to HANA on your terms.

Trusted partnership with SAP built on 25+ years of experience

Microsoft and SAP are committed to empowering digital transformation and innovation for their customers. Roadmaps and innovation are driven by co-located developers. SAP is running on Azure for their business-critical systems and Microsoft has 110,000 internal users running SAP. In addition, integrated enterprise-class support is provided by co-located support staff, while co-located engineering and aligned sales and marketing teams ensure a seamless customer experience.

Infrastructure for all your SAP workload needs

Drive performance, agility and innovation using SAP-certified infrastructure for SAP HANA applications like SAP S/4 HANA and SAP NetWeaver-based applications like SAP Business Suite or ECC on AnyDB. Support your largest SAP workloads and spin up systems within minutes with up to 24 TB scale-up and 60 TB scale-out for SAP HANA. High-performance virtual machines, purpose-built bare metal instances, and storage help you get the most from your SAP investments.

Insights and innovation to put you in control of your data

Marry SAP transactional data with other data to power business intelligence and move to a dynamic real-time insight-to-action model with Microsoft services such as Azure Data Lake and Power BI. By moving your SAP systems to the Azure cloud, you can integrate your data – including unstructured and external data – to power better predictions, insight, decision making, and innovation.

Learn more about SAP on Azure: www.azure.com/sap

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

ⁱ Source: Forrester Analytics Global Business Technographics Infrastructure Survey, 2018.