

FORRESTER®

The Total Economic Impact™ Of Microsoft Azure Integration Services

Cost Savings And Business Benefits
Enabled By Azure Integration Services

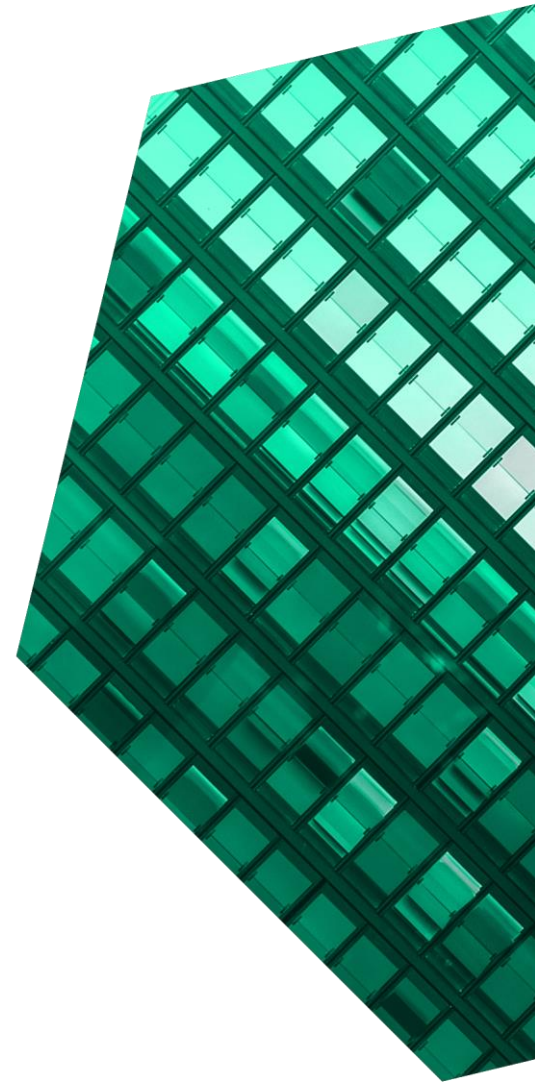
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ABOUT FORRESTER CONSULTING

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Executive Summary

As organizations use Azure Integration Services to securely implement hybrid integration scenarios — including integrating on-premises applications and systems with cloud-based applications and data sources — they benefit from the platform's deep integration with other services in their Azure ecosystems and its built-in DevOps capabilities. Organizations realize improvements in integration development speed, deployment agility, operational efficiency, reduced maintenance efforts, and faster time to market for integration projects.

[Microsoft Azure Integration Services](#) offers a comprehensive suite of tools and services designed to assist organizations in seamlessly and securely integrating their applications and services in the cloud. By leveraging Azure Integration Services, organizations can efficiently modernize their legacy systems and applications while also accelerating the development of new applications, resulting in faster solution delivery. By increasing developer efficiency, Azure Integration Services optimizes productivity and reduces time to market. The platform's robust automation capabilities facilitate the automation of business processes and workflows, streamline operations, and enhance overall efficiency. Moreover, developers can leverage the solution to unlock real-time business insights, gaining a comprehensive understanding of data and customers. This heightened visibility empowers organizations to make informed decisions and respond swiftly to market trends and customer demands, which fosters operational agility.

Microsoft 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 Integration Services. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Azure Integration Services on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five representatives with experience using Azure

KEY STATISTICS



Return on investment (ROI)
295%



Net present value (NPV)
\$8.57M

Integration Services. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single [composite organization](#) that is a global organization with 10,000 employees and a revenue of \$3.5 billion per year.

Prior to implementing Azure Integration Services, these interviewees noted that their organizations' complex IT environments included a mix of on-premises and cloud-based applications, data sources, and systems, which led to integration challenges such as data inconsistency, application silos, and limited visibility into business processes. Integration processes relied solely on manual scripts for infrastructure automation that made it challenging to ensure the security and compliance of data and applications, especially when integrating across different environments. Members of their integration development and cross-functional DevOps teams struggled with manual processes and the lack of automation, which led to inefficiencies, errors, and delays. Overall, executive management had limited

visibility into their data and processes, and that hindered their ability to make informed business decisions.

After the investment in Azure Integration Services, the interviewees' organizations realized the benefits of a unified integration platform that could efficiently and securely connect and integrate data and processes across different systems and environments. They could automate and streamline business processes, reduce data entry errors, and improve IT and business productivity. Real-time data integration and analytics capabilities improved visibility and decision-making, while the ability to quickly adapt to changing business requirements helped unlock more innovation.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Integration developer and data architect productivity increase of 35% to 45%.** Integration developers and data architects at the composite organization utilize prebuilt connectors, templates, and visual designers provided by the platform to streamline the effort of connecting data and systems, reducing the time spent on coding and debugging custom integrations. They create reusable integration components, which eliminate the need to recreate and maintain similar integrations for different systems. These productivity gains from efficiently delivering robust data integration

solutions are worth about \$2.4 million to the composite organization over three years.

- **Efficiencies in application integration design, architecture, and management related tasks of 40% to 50%.** Azure Integration Services simplifies integration deployment with managed scalability, infrastructure management, and automated scaling for the composite organization. Members of the cross-functional DevOps team who spend on average 25% of their time on tasks related to application integration architecture and management leverage the platform's centralized monitoring capabilities to reduce troubleshooting time and to easily scale integrations without reconfiguration. This saves time and effort as their organization grows and evolves. As a result of these efficiencies, the composite organization realizes a benefit totaling \$868,700 over three years.
- **Cost reduction from fewer application support requests.** In an integrated environment, data entry errors occur much less frequently, resulting in a reduced number of support tickets for the composite organization. Furthermore, by eliminating complexities associated with point-to-point connections; enhancing standardization, visibility, and control; and utilizing the error-handling mechanisms in Azure Integration Services, data administrators can identify and resolve data entry errors more quickly when they occur. Reducing manual data entry efforts and eliminating downstream issues caused by bad data is valued at \$654,200 to the organization over three years.
- **Cost avoidance from enabling citizen developers.** Integration developers at the composite organization created reusable components for citizen developers, simplifying the integration process. Citizen developers benefited from this groundwork when building integrations using low-code/no-code platforms

Enhanced productivity across diverse IT roles and tasks

Up to 50%



“Azure's adaptability caters to different types of developers, empowering them to leverage prebuilt connectors or extend functionalities by creating their own connectors based on their unique requirements. The availability of both out-of-the-box connectors and the ability to develop custom connectors allowed us to meet specific integration needs and accomplish tasks that might not have been possible otherwise.”

Head of global IT, manufacturing

like Microsoft Power Platform. By leveraging Azure Integration Services' capabilities and prebuilt connectors, citizen developers could easily connect applications and systems without extensive coding knowledge. Power Platform's intuitive tools allowed them to focus on business logic and user experiences while relying on Azure Integration Services for secure and scalable integrations. This collaboration enabled rapid development and deployment of integrations, driving efficiencies of \$474,500 for the composite organization over three years.

- **Consolidation of legacy systems and solutions.** The composite organization replaces traditional on-premises enterprise service bus (ESB) and API management solutions and leverages Azure's managed services and pay-as-you-go cost model, thus eliminating the expenses associated with maintaining hardware, software licenses, and infrastructure of legacy environments. For the composite organization, the consolidation of legacy systems and solutions totals about \$342,600 over three years.
- **Incremental revenue growth driven by data insights and speed of innovation.** The composite organization's IT group is gradually

introducing new systems while improving integration processes and monitoring for errors to help ensure data integrity and reliability across the organization. By prioritizing these aspects, the organization can provide consistent, accurate, and trustworthy data to users and executives. This enables informed decision-making and allows the organization to concentrate on revenue-generating innovation initiatives, valued at \$3.2 million to the composite organization over three years.

- **End-user efficiency from automated data entry and validation.** The composite organization evaluates integration requests based on several factors, including their potential to save time and improve end-user productivity. By implementing these integrations, employees can focus on more meaningful and productive work rather than manual data entry. Reducing manual tasks and streamlining data entry processes creates efficiencies valued at \$3.5 million for the composite organization over three years.

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include:

- **Ability to easily find and onboard new hires.** The composite organization gains a multitude of advantages from the combined strengths of Azure API Management and Azure Logic Apps. These benefits work cohesively to facilitate the process of discovering and onboarding new hires. Also, setting up access, security, and integration capabilities for new developers can be done more quickly compared to the previous on-premises system. The platform enables developers to quickly start working on integrations and reduces the time required to onboard new team members.
- **Robust security and compliance capabilities.** The composite organization

successfully implements robust security measures, particularly in role-based access control and permissions, resulting in resilience during hacking incidents that affected other companies. Strict access controls and prevention of unauthorized actions ensures compliance and protects production and development environments. Azure's secure infrastructure across software deployment stages helps to mitigate risks of breaches and system failures.

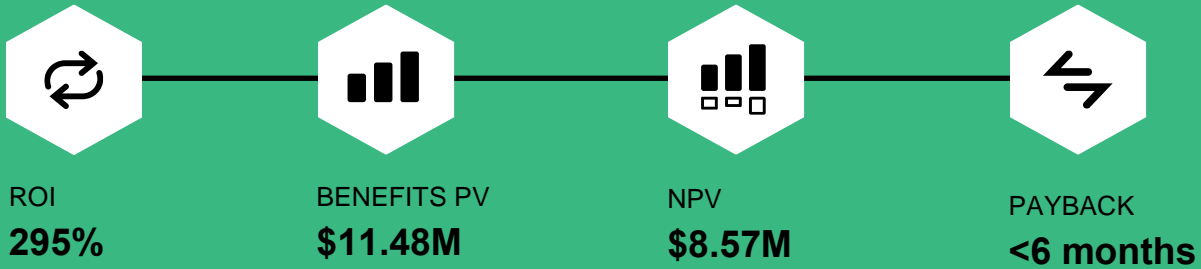
- **Ability to extend capabilities gradually.** The composite organization utilizes Microsoft's blueprint for enterprise-grade API management from the Azure API Management landing zone accelerator repository, which enables quick deployment and implementation of recommended best practices. This includes features like firewalls, private endpoint access, and backend resource access. Scaling up the number of instances and service tiers in Azure Integration Services is straightforward, and upgrading to a production-grade environment can be done with a click of a button.
- **Data silo elimination and better data accessibility.** The integration of systems using Azure Integration Services brings about improved data quality and consistency for the organization, specifically from eliminating fragmentation and duplication across different systems. Teams worldwide now have access to a unified view of data, ensuring consistent operations and information. The removal of data silos and duplicate records leads to a more reliable and accurate understanding of the data.
- **Shared data as a source of knowledge and the foundation for advanced analytics.** The composite organization can seamlessly integrate multiple disparate systems like CRM and ERP, enabling knowledge sharing. This integration also sets the groundwork for advanced analytics, utilizing Azure Synapse and Power BI Premium

as essential components for data integration and reporting. The combination of Azure Integration Services and other components in the Azure stack empowers the organization to harness data for insights and strategic decision-making.

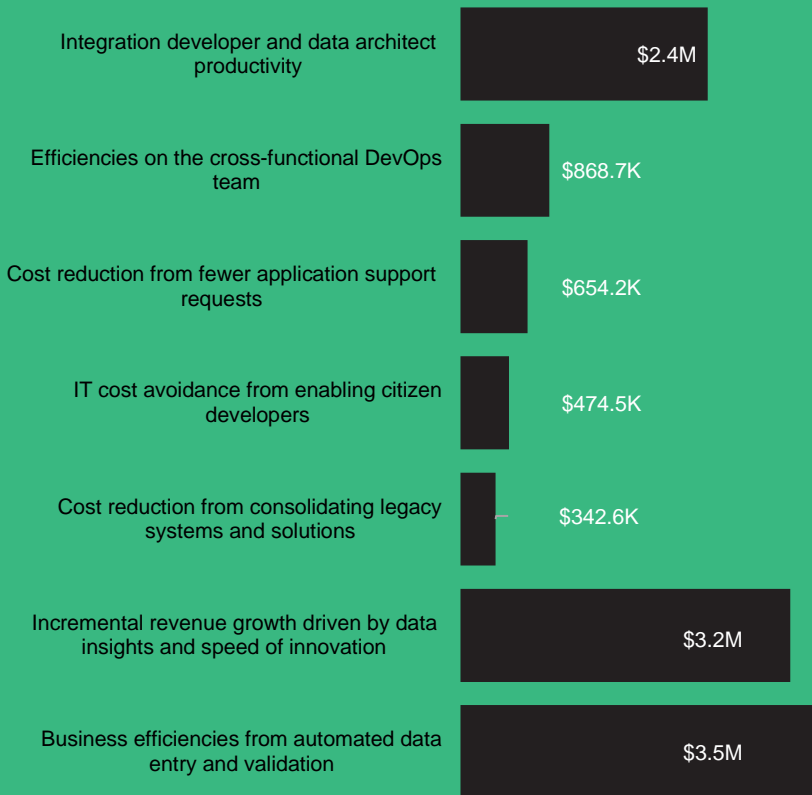
Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **Azure Integration Services costs and professional services.** The composite organization incurs fees for various Azure services — including Azure API Management, Azure Logic Apps, Azure Event Grid, Azure Service Bus, Azure Functions, and Azure Data Factory — each with its own pricing structure. During the implementation phase and the study period, the composite organization relies on Microsoft for professional services and ongoing support. The total risk-adjusted cost for fees, support, and professional services equal close to \$1.5 million over three years.
- **Lifecycle costs.** Internal costs for Azure Integration Services includes those tied to initial implementation and training, while ongoing platform maintenance includes monitoring performance and usage, addressing security settings, implementing backups and recovery processes, optimizing performance, and maintaining documentation. The composite organization incurs additional costs in the time required for citizen developers to create integrations. Together, these investments amount to a total risk-adjusted, three-year cost of just over \$1.4 million.

The representative interviews and financial analysis found that a composite organization experiences benefits of \$11.48 million over three years versus costs of \$2.91 million, adding up to a net present value (NPV) of \$8.57 million and an ROI of 295%.



Benefits (Three-Year)



“Moving to the cloud and using Azure Integration Services has significantly improved our time to market and enhanced the availability of our externally facing applications.”

AVP of engineering, financial services

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Azure Integration Services.

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 Azure Integration Services can have on an organization.

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 study to determine the appropriateness of an investment in Azure Integration Services.

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.



DUE DILIGENCE

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



INTERVIEWS

Interviewed five representatives at organizations using Azure Integration Services to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees' 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 interviewees.



CASE STUDY

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

The Microsoft Azure Integration Services Customer Journey

Drivers leading to the Azure Integration Services investment

Interviews				
Role	Industry	Market Reach	Employees	Azure Integration Services Components In Use
Assistant VP of engineering	Financial services	North America	10,000	Azure API Management, Azure Logic Apps, Azure Event Grid, Azure Service Bus, Azure Functions, Azure Event Hub, Azure Data Factory
API practice owner	Insurance	Global	40,000	Azure API Management, Azure Logic Apps, Azure Event Hub
Head of global IT	Manufacturing	Global	1,000	Azure API Management, Azure Logic Apps, Azure Event Grid, Azure Service Bus
Lead integration architect	Energy	North America	2,000	Azure API Management, Azure Logic Apps, Azure Event Grid, Azure Service Bus, Azure Functions, Azure Event Hub, Azure Data Factory, Azure Synapse
Head of product management	Utility	North America	30,000	Azure API Management, Azure Logic Apps, Azure Event Grid, Azure Service Bus, Azure Functions, Azure Event Hub, Azure Data Factory, Azure Synapse

KEY CHALLENGES

The interviewees' organizations either lacked integration strategies — which led to disconnected systems — or relied on point-to-point integrations and manual scripts to exchange data between systems or to automate processes. Their legacy integration tools were frequently outdated, complex to use, incompatible across environments, and expensive to maintain.

The interviewees noted how their organizations struggled with common challenges, including:

- **The absence of advanced security and compliance features, such as role-based access control, encryption, and adherence to industry standards.** Interviewees emphasized the importance of safeguarding the security and compliance of their data and applications, particularly when integrating across diverse environments.

The lead integration architect at the energy firm said: "Security and compliance have been

significant challenges, particularly during the transition from Canadian Sarbanes-Oxley Act (C-SOX) to Sarbanes-Oxley Act (SOX) controls following our latest company takeover. Azure Integration Services has played a crucial role in helping us address security and compliance requirements effectively."

- **Several interconnected data-consistency type challenges related to integration.** The complexity of IT environments — encompassing a combination of on-premises and cloud-based applications, data sources, and systems — contributed to integration complexities, including data inconsistency, application silos, and a lack of visibility into business processes. Additionally, the absence of automation and heavy reliance on manual processes resulted in inefficiencies, data-entry errors, and delays. Limited visibility into data and processes also hampered the organizations' ability to effectively monitor and control their integration workflows, further exacerbating their integration challenges.

- The head of global IT at the manufacturing firm said: "Before embarking on the journey to adopt the Azure cloud stack, we faced two significant challenges. First, our systems lacked reliable and actionable data due to data duplication, impeding effective decision-making. Second, with a mix of legacy integrations and systems, we recognized the need to transition our systems to the cloud, requiring the integration processes to align with this strategic shift."

The head of global IT at the manufacturing firm summarized: "Prior to the integration, we faced challenges related to operations and data efficiency. There was duplication of data across different systems and a lack of data governance within the existing integrations."

- **The lack of a governance framework to support integration development in a federated distributed environment.**
Interviewees described that integration development in their organizations occurred across multiple teams, business units, or geographical locations. This led to variations in coding standards, naming conventions, error handling, and overall integration approach. These inconsistencies made it harder to maintain and manage integrations, which hindered collaboration and efficient troubleshooting. Without a consistent integration governance framework, resource allocation became inefficient, leading to duplicated efforts, misalignment of priorities, and underutilization of available expertise and resources.

The head of product management at the utility company provided this additional perspective: "We lacked governance and a strong framework to support development in a federated distributed environment without conflicts. Ensuring correct policy implementation was also a concern when different development organizations are involved. We aim to create a centralized infrastructure

while decentralizing the development process to overcome these issues. The goal was to avoid conflicts with other users of shared APIs and ensure effective governance."

Challenges encountered with legacy on-premises integration tools and platforms

- **Traditional enterprise service bus (ESB) integration solutions** are complex, costly and require significant expertise to set up, configure, and maintain. The lack of built-in integration capabilities with cloud services, APIs, or modern integration patterns makes integrating on-premises systems with cloud-based applications or services challenging.
- **Custom integration platforms** built using point-to-point integration tools or custom code require significant development efforts, lack built-in reusability and standardization, struggle to scale effectively, and are difficult to monitor.
- **Cloud-to-cloud integrations** relying on point-to-point integrations pose maintenance challenges as the number of applications and potential integrations increase. Monitoring and troubleshooting become complex, and data discrepancies or conflicts may arise.
- **Partner Integrations** that involve different integration technologies or protocols require additional effort to map and transform data between various formats, which results in increased complexity and potential for errors. Ensuring secure and encrypted data transmission can be challenging.

INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Modernize integration processes to align with their strategy of transitioning applications to the cloud.
- Manage different data sources and securely orchestrate data movement in a hybrid cloud environment.
- Ensure the security and compliance of data and applications across environments.
- Reduce data duplication across systems to enable effective decision-making.
- Enable real-time and more predictable integration to manage latency concerns effectively.
- Offer a cloud-based API management solution and developer portal with self-service capabilities allowing multiple development teams and API producers to manage their APIs independently.
- Create a centralized infrastructure while decentralizing the development process to enable the distribution of the workload among dispersed development teams.
- Enforce centrally defined API management and access policies when different internal or partner development organizations are involved.

“Navigating the complexities of integrating on-premises and cloud systems poses significant challenges in today's landscape. Just getting data in and out and managing different types of data — the presence of various data sources and systems further adds to the complexity.”

Lead integration architect, energy

“The goal is to avoid creating individual, cost-inefficient APIM services for each country. We wanted to have a single APIM service for an entire region, but individualized API developer portals for each country. By having separate developer portals but a unified APIM service, we can strike a balance between efficiency and tailored support for each country within the region.”

API practice owner, insurance

The API practice owner in the insurance industry summarized several of their organization's key objectives: "We sought a cloud-based solution to address the limitations of our on-premises product. We wanted to avoid the traffic going through on-premises before reaching the cloud, aiming for direct traffic flow to the cloud whenever applicable. The switch from [our previous solution] to Azure APIM aimed to solve several challenges, including needing a better developer portal, a cloud-based API management solution, and self-service capabilities for multiple development teams and API producers to manage their APIs independently."

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the five interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The global, multibillion-dollar organization integrates, on average, 16 applications per year. At the end of Year 3, the development team creates and manages integrations

between 48 applications in hybrid on-premises and cloud environments. This means that 500 Logic Apps invoke over 100 APIs and over one million API requests are processed per day by Year 3.

Deployment characteristics. The composite organization's journey begins with the decision to transition the majority of its integration stack from on-premises to the cloud. It chooses Azure as its preferred cloud platform for integration.

With the help of a Microsoft partner, the organization conducts a three-month proof of concept (POC) to assess the functionality and effectiveness of the Azure Integration Services platform. The POC proves the performance and suitability of the solution and concludes with the decision to standardize the platform.

Over the next 12 months, the integration project follows a phased approach. Initially, the focus is on connecting and testing the connections between different lines of business applications. This involves establishing basic integrations between systems to ensure they could communicate and exchange data effectively.

As the project progresses, the composite brings new line-of-business applications online, and it implements integrations with back-office applications to facilitate data movement between the systems.

The approach is to continuously bring online new business applications while simultaneously implementing the necessary integrations. This iterative process allows for the gradual expansion of the integrated systems and ensures that each new application is seamlessly integrated with the existing ecosystem.

For example, the organization has an on-premises CRM platform. However, during the project's first year, it transitions to a cloud-based system. This means that the legacy integration and the migration to Azure and the cloud system are carried out simultaneously. The phased approach ensures a

smooth transition and allows integration and migration processes to progress in tandem.

Throughout the project, the composite organization makes improvements to existing integrations and adds new ones. This includes enhancing monitoring capabilities, implementing error-handling mechanisms, and addressing any evolving needs or changes within the business. This allows the integration projects to evolve alongside the organization's growth.

Moreover, the integrations are improving overall efficiency by establishing a single source of truth for data across different systems. This eliminates the need for multiple copies of data in various systems, streamlining data management processes. Having a centralized and reliable data source enhances decision-making and ensures consistency across the organization.

“Configuring the system architecture to ensure high-quality performance and transparency was key. Microsoft has provided valuable assistance in achieving this. Without their support, the launch within the three-month timeframe would not have been possible.”

Head of product management, utility

Specific Azure components used. Integration developers use Azure Logic Apps to create and run workflows or business processes to integrate various systems, services, and data sources. They utilize the Azure Logic Apps visual designer with a wide range of prebuilt connectors to interact with different services and triggers to initiate workflows based on events or schedules.

The Azure API Management platform helps developers at the composite organization expose,

manage, and secure APIs. It provides tools and capabilities to publish APIs to external developers, control access and usage, enforce policies, and monitor API performance.

The use of a combination of Azure Integration Services capabilities allows the organization to:

- Expose Azure Logic App workflows as managed APIs with enhanced security, scalability, and governance provided by Azure API Management.
- Apply policies and transformations to the incoming requests and outgoing responses to meet specific business requirements.
- Monitor and analyze the usage and performance of APIs through Azure API Management analytics and monitoring capabilities.
- Leverage the extensive connector ecosystem of Azure Logic Apps to integrate with various services and systems, both within and outside of Azure.
- Build event-driven architectures and loosely coupled systems using Azure Event Grid and Azure Service Bus.
- Expose Azure Functions as APIs through Azure API Management, enabling controlled access, security, and governance.
- Leverage Azure Functions' scalability and serverless capabilities for event processing and triggering specific actions.
- Analyze API usage, monitor events, and gain insights into the overall system using Azure API Management and other Azure monitoring and analytics services.
- Use Azure Data Factory for data integration and orchestration scenarios, and Azure Synapse for advanced analytics, data warehousing, and unified data integration and analytics.

After the initial configuration, Azure API Management automatically detects new APIs and prompts developers at the composite organization to define the desired behavior. Azure API Management takes care of the execution and routing of API requests based on the mappings defined by the organization. Developers can focus on developing and deploying APIs without having to manage the API management platform on a daily basis.

Additionally, since Azure Integration Services offers deep integration with other Azure services — including compute, storage, database, and analytics services — the composite organization takes advantage of its existing investments into the Azure cloud ecosystem. The built-in DevOps capabilities, such as integration with Azure DevOps and GitHub, enable users to manage integration projects using industry-standard development processes. This helps improve the speed and quality of integration, as well as enables more efficient collaboration and version control among development teams.

Key Assumptions

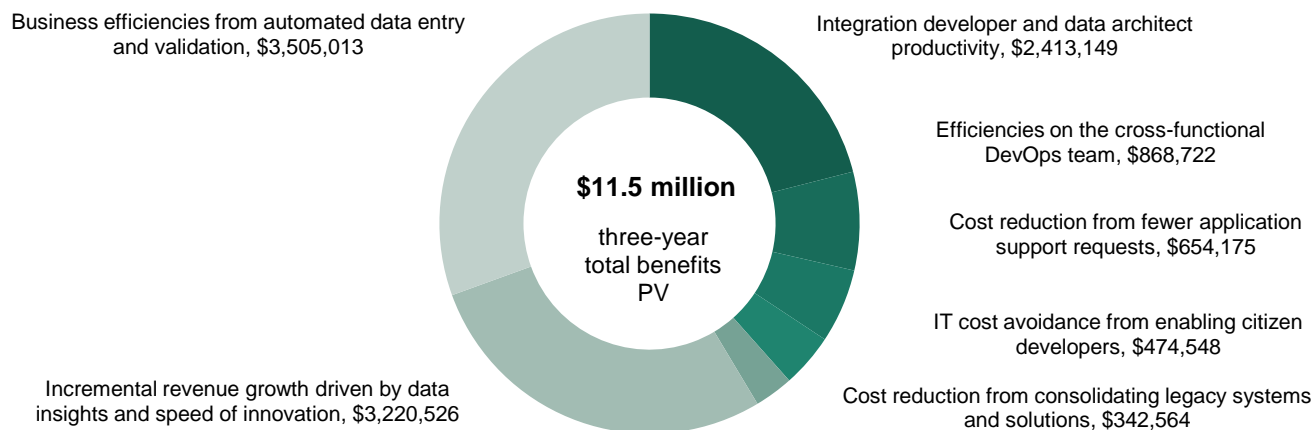
- **10,000 employees**
- **26 integration developers**
- **Adopts cloud-focused orchestration and integration of both on-premises and cloud resources**
- **Integrates on average 16 applications per year**
- **Integrations span internally facing, customer-facing and vendor-facing applications**
- **500 Logic Apps in use**
- **Creates over 100 APIs**
- **Processes over 1M API calls per day**

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	Integration developer and data architect productivity	\$855,855	\$978,120	\$1,100,385	\$2,934,360	\$2,413,149
Btr	Efficiencies on the cross-functional DevOps team	\$312,716	\$351,806	\$390,896	\$1,055,418	\$868,722
Ctr	Cost reduction from fewer application support requests	\$231,002	\$265,225	\$299,447	\$795,674	\$654,175
Dtr	IT cost avoidance from enabling citizen developers	\$110,916	\$196,236	\$281,556	\$588,708	\$474,548
Etr	Cost reduction from consolidating legacy systems and solutions	\$137,750	\$137,750	\$137,750	\$413,250	\$342,564
Ftr	Incremental revenue growth driven by data insights and speed of innovation	\$882,000	\$1,323,000	\$1,764,000	\$3,969,000	\$3,220,526
Gtr	Business efficiencies from automated data entry and validation	\$805,729	\$1,450,313	\$2,094,896	\$4,350,938	\$3,505,013
Total benefits (risk-adjusted)		\$3,335,969	\$4,702,449	\$6,068,929	\$14,107,347	\$11,478,697

BENEFITS BY CATEGORY



This section examines seven quantified benefits and provides insight into the data points and evidence collected during the customer interviews, as well as the underlying models and assumptions used in the financial analysis for this use case.

INTEGRATION DEVELOPER AND DATA ARCHITECT PRODUCTIVITY

Evidence and data. Interviewees reported that their organizations' data architects and integration developers used Azure Integration Services' prebuilt connectors, templates, and visual designers to streamline the integration development process. This approach simplified the development effort required to connect systems, reducing the time they spent on coding and debugging custom integrations.

Additionally, Azure Integration Services enabled their teams to create reusable integration components, such as connectors, APIs, and workflows. They leveraged these components across multiple integrations, which saved time and effort by avoiding the need to recreate and maintain similar integrations for different systems.

Interviewees provided the following specific insights about the impact of Azure Integration Services on integration developer and data architect productivity:

- **Efficiencies due to shifting from on-premises, manual processes to automated processes.**

The assistant VP (AVP) of engineering at the financial services firm said: "Previously, our integration processes relied solely on manual scripts for infrastructure automation, specifically for web server and middleware deployments. Our Java applications and front-end components were deployed on-premises using web servers and application servers. However, we lacked comprehensive integration tools. The shift to Azure Integration Services enabled us to streamline and automate our deployment processes, marking a substantial improvement over the previous manual methods."

The same interviewee offered: "The impact of the tool we have adopted is truly remarkable. Previously, manual deployments took around a week to complete. We had to write release documents and coordinate with the infrastructure team to execute each step manually. With our

Integration developer responsibilities

- Develop and implement integration solutions.
- Create and configure integration workflows and API management policies.
- Write code and scripts to customize and extend the functionality of the platform.
- Define integration interfaces and data mappings in collaboration with application developers and system owners.
- Implement authentication, authorization, and encryption mechanisms.
- Conduct testing and debugging of integration solutions.
- Document integration solutions, including design specifications, deployment procedures, and troubleshooting guides.

Data architect responsibilities

- Define data integration requirements.
- Design data integration solutions.
- Develop data integration patterns and strategies.
- Design and implement data mappings, transformations, and data flows.
- Ensure consistency in the integration of data sources and systems.
- Optimize data integration performance and scalability.
- Define and implement data integration security measures.

current solution, we simply click a button, and everything is done within seconds. Previously, we allocated approximately 1 hour each day for build and deployment tasks, which amounted to about five hours per week. Now these tasks are reduced to just a few seconds per day, or approximately 1 minute per week."

The head of product management at the utility company explained: "Automation is also a key aspect of our approach. Through automation scripts, you can seamlessly move through

different environments without needing direct assistance from the platform provider. These scripts were thoroughly vetted and approved by our security team and stakeholders, ensuring alignment and reliability. Our goal is to create a clean and streamlined environment for application developers where they can execute procedures with a click of a button. This automation process was challenging in the older environment, but with the implementation of APIM, we have made significant progress."

- **Productivity improvement from reusable components and Azure connectors.** The lead integration architect at the energy company said: "Using these reusable components and connectors significantly reduces the effort required compared to developing a custom C++ integration from scratch. If a project typically takes around three months to complete with these reusable components, developing custom code for everything would approximately take six to nine months."

The same interviewee added: "Azure Integration Suite empowers integration developers with connectivity tools, low-code development platforms, prebuilt adapters, testing and debugging capabilities, CI/CD integration, monitoring and performance optimization features, and collaboration support. These capabilities enhance the efficiency of integration development processes, enabling integration developers to deliver high-quality integrations more quickly and effectively."

- **Faster onboarding and productivity of new developers.** The head of global IT for the manufacturing firm said: "The onboarding process for new developers has become faster and more streamlined. With a senior developer's assistance, access, security, and integration capabilities can be set up within a few hours. This is a significant improvement compared to the

"Azure Integration Services provides several built-in features that streamline the development process. These include handling exceptions, telemetry, and other essential functionalities that would otherwise require additional development effort. These features come out of the box, eliminating the need for custom development, and reducing the time and resources required to build and maintain such functionalities."

Lead integration architect, energy

longer timeframes required in the past for on-prem systems. The efficiency of the Azure platform enables developers to start working on integrations quickly and reduces the overall time needed to get new team members up to speed."

- **Streamlined processes for data architects.** The lead integration architect at the energy company explained: "Azure Integration Suite provides data architects with a wide range of tools and services that enhance data integration, orchestration, hybrid integration, real-time streaming, data governance, scalability, performance, monitoring, and troubleshooting. By leveraging these capabilities, data architects can streamline their processes, improve efficiency, and deliver robust data integration solutions more effectively."
- **Reliance on the Azure Integration Services toolset by integration developers, vendors, and partners.** The AVP of engineering in financial services said: "Our integration developers heavily rely on Azure Integration Services for deployment purposes. With our agile development approach, we release service updates or new features every two weeks. This means the developers utilize Azure Integration

services consistently throughout their workday, 160 hours per month."

- The head of product management at the utility company noted: "The developer community within the US region consists of approximately five to 10 API producers responsible for publishing their APIs. Each API producer has around five to 10 developers working within their respective teams. Additionally, some vendors and partners also utilize APIM, and the number of external users will vary based on the activities of each producer organization."

Modeling and assumptions: For the financial model, Forrester assumes the following about the composite organization:

- The composite organization employs a total of 26 integration developers and data architects. While the number of integrations to maintain increases year over year, team members become more efficient and can take on more work each year.
- The average fully burdened annual cost of a developer or data architect is \$165,000.

- The integration developers and data architects spend 80% of their time using the Azure toolset.
- Compared to point-to-point integrations, they are 35% more productive in Year 1. With the reuse of code from previous integrations, they become 40% more productive in Year 2 and 45% more productive in Year 3.
- They reapply 75% of these efficiencies to productive tasks.

Risks. The impact of this benefit will vary based on:

- The prior environment. Productivity increases would be more significant if the prior environment was point-to-point integrations and would be lower if the previous environment was an integration platform-as-a-service (iPaaS) solution.
- The number of integration projects per year and the complexity of the integrations.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$2.4 million.

Integration Developer And Data Architect Productivity					
Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Total number of integration developers and data architects	Composite	26	26	26
A2	Average fully burdened annual labor cost	TEI standard	\$165,000	\$165,000	\$165,000
A3	Percentage of time spent using Azure Integration Services	Interviews	80%	80%	80%
A4	Percentage improvement in integration developer productivity	Interviews	35%	40%	45%
A5	Productivity recapture rate	Forrester research	75%	75%	75%
At	Integration developer and data architect productivity	A1*A2*A3*A4*A5	\$900,900	\$1,029,600	\$1,158,300
	Risk adjustment	↓5%			
Atr	Integration developer and data architect productivity (risk-adjusted)		\$855,855	\$978,120	\$1,100,385
Three-year total: \$2,934,360			Three-year present value: \$2,413,149		

EFFICIENCIES ON THE CROSS-FUNCTIONAL DEVOPS TEAM

Evidence and data. Interviewees reported that their organizations' systems, security, and operations architects and site reliability engineers valued Azure Integration Services as a managed and scalable platform that simplified integration deployment. With features like infrastructure management and automated scaling, they could deploy integrations faster and with minimal effort compared to traditional point-to-point integrations that required manual setup and maintenance. Azure Integration Services offered centralized management and monitoring capabilities and provided visibility into the status and performance of integrations. This centralized monitoring reduced the time interviewees' organizations spent troubleshooting and identifying issues in individual integrations.

Additionally, Azure Integration Services allowed members of cross-functional DevOps teams at the interviewees' organizations to easily scale integrations based on workload demands without needing to reconfigure or rebuild the entire integration infrastructure. As the organizations grew and their business needs evolved, this scalability and adaptability saved time and effort in managing integrations.

Interviewees elaborated on four specific areas Azure Integration Services had an impact on when it came to the cross-functional DevOps team member productivity:

- **Simplified deployment of integrations to deploy integrations faster and with minimal effort.** The head of global IT for the manufacturing firm highlighted: "Previously, the process of implementing new systems or obtaining approval for integration requirements involved multiple steps and could take anywhere from a few weeks to several months. This included submitting requests, obtaining approvals, and having someone install the

The cross-functional DevOps team consists of systems, security, and operations architects and site reliability engineers. Their responsibilities include:

- Identify integration needs and ensure alignment with organizational goals.
- Design and architect the overall integration solutions.
- Understand the business requirements and translate them into technical designs.
- Evaluate and select the toolset based on the requirements and integration patterns.
- Define and enforce adherence to architectural standards and best practices.
- Configure and manage the infrastructure aspects of the toolset, including resource provisioning, scaling, and monitoring.
- Implement and maintain high availability, fault tolerance, and disaster recovery strategies for integration solutions.
- Optimize performance and troubleshoot issues, including monitoring system health, analyzing logs, and resolving problems.

necessary components. However, with Azure, the time frame for these tasks has significantly reduced. Today, the deployment of new systems and the availability of required resources can be accomplished within a matter of hours or even seconds. This accelerated timeline is made possible by Azure's efficient provisioning and deployment capabilities, enabling faster access to resources and minimizing the time required for manual installations and configuration."

- **Centralized management and monitoring for visibility into the status and performance of integrations.** The lead integration architect at the

energy company summarized: "Azure Integration Services provides our IT operations and support personnel with tools and capabilities for infrastructure management, monitoring and alerting, logging and diagnostics, scalability, high availability, governance and compliance, Azure DevOps integration, change management, and versioning. These capabilities enhance the efficiency of operations and support processes that allow us to manage integrations effectively, ensure reliability, and deliver optimal performance."

The same interviewee said: "When you start using Azure or Azure Integration Services, the role of systems engineers and the tasks associated with infrastructure provisioning and ongoing maintenance are significantly reduced. Functions such as patch management and regular maintenance become less time-consuming or are eliminated. This shift in responsibilities results in the reduction of IT operations roles within the organization."

- **Addressing security and compliance requirements effectively.** The head of product management at the utility company summarized: "We work closely with the security teams as partners to ensure compliance and alignment with security standards. Additionally, the enterprise architecture team plays a role in obtaining approvals for using APIM and defining the overall architecture. They define how APIM will be integrated with backend systems, manage traffic flow into APIM, and handle external traffic. The architecture team is considered another important partner for the API management team."

The lead integration architect at the energy company explained: "We have implemented processes for secure deployments and utilized tags within Azure Logic Apps in Azure Integration Services to track work order and ticket numbers. This ensures traceability from Logic Apps back to

the original request or help desk ticket. Azure Integration Services has played a crucial role in helping us address security and compliance requirements effectively."

- **Built-in scalability and adaptability for reduced effort in managing integrations.** The head of global IT for the manufacturing firm said: "By leveraging Azure and its scalable capabilities, the integration project has addressed these issues. It has enabled real-time or more predictable integration, effectively managing latency concerns. Azure's scalability ensures that the integration can handle varying workloads as needed."

The interviewee elaborated: "By leveraging serverless functions, we have achieved increased scalability without the need to manually manage and worry about scalability concerns. The service tier we chose automatically handles scalability, which allows us to focus on other aspects of our applications without the need for manual scaling efforts."

Modeling and assumptions. For the financial model, Forrester assumes the following about the composite organization:

- The cross-functional DevOps team has 21 members impacted by Azure Integration Services.
- The average fully burdened annual cost of a DevOps team member is \$165,000.
- DevOps team members spend 25% of their time on application integration design, architecture, and management-related tasks.
- Due to the impact of Azure Integration Services, DevOps team members are more productive in their tasks compared to when the previous point-to-point integrations were in place. They are 40% more productive in Year 1, 45% more productive in Year 2, and 50% more productive in Year 3.

- Cross-functional DevOps team members reapply 95% of these efficiencies to productive tasks.

Risks. The impact of this benefit will vary based on:

- The size of the DevOps team impacted by integrations.
- The percentage of time these IT resources spend on tasks related to application integration design, architecture, and management as part of their roles.
- The number of net-new integrations per year.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$868,700.

“Logic Apps have a run history that allows you to view the history of past instances. The run history shows the 10 most recent Logic Apps that have run, indicating their status with green, yellow, or red. Green signifies successful runs, yellow represents ongoing runs, and red indicates failures. By exploring the Logic App, you can examine its various shapes and actions to identify where issues occurred. The run history is crucial to the functioning of Logic Apps.”

Lead integration architect, energy

Efficiencies On The Cross-Functional DevOps Team

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Total number of cross-functional DevOps team members impacted by Azure Integration Services	Composite	21	21	21
B2	Average fully burdened annual labor cost	TEI standard	\$165,000	\$165,000	\$165,000
B3	Percent of time spent on application integration design, architecture, and management related tasks	Interviews	25%	25%	25%
B4	Percentage improvement in DevOps team productivity	Interviews	40%	45%	50%
B5	Productivity recapture rate	Forrester research	95%	95%	95%
Bt	Efficiencies on the cross-functional DevOps team	$B1*B2*B3*B4*B5$	\$329,175	\$370,322	\$411,469
	Risk adjustment	↓5%			
Btr	Efficiencies on the cross-functional DevOps team (risk-adjusted)		\$312,716	\$351,806	\$390,896
Three-year total: \$1,055,418			Three-year present value: \$868,722		

COST REDUCTION FROM FEWER APPLICATION SUPPORT REQUESTS

Evidence and data. Several interviewees mentioned how Azure Integration Services simplified the integration landscape; provided better visibility and control; promoted standardization; offered robust error-handling mechanisms; and contributed to easier identification, resolution, and prevention of data entry errors compared to the complexity of point-to-point connections.

- The lead integration architect at the energy company said: "There are cost savings from the integrations because they eliminated the effort to enter into multiple systems. It also eliminated the bad data that then causes issues downstream and takes people a longer time to fix and figure out what's going on."

The interviewee elaborated further: "In the absence of integration, when an error or change occurs in the source data, it often requires reaching out to the respective data sources to rectify the issue. This involves fixing the data at the source and making corresponding updates in all downstream systems that are not integrated. For instance, if a user's name is entered incorrectly and it needs to be corrected in ten different systems, separate tickets would need to be created for every system for admins to make the necessary updates."

The interviewee added: "When an issue or ticket is submitted to the integration team, the established integrations enable quicker investigation and resolution. It now takes approximately half an hour to an hour to identify and address the problem. In contrast, in [our previous] nonintegrated environment, resolving similar issues would have taken double the time."

- The AVP of engineering at the financial services firm said: "During our transition to Azure, we experienced a significant decrease in site support tickets compared to the previous on-premises

environment. The reduction in support tickets can be attributed to the successful migration of our workloads to Azure and the subsequent automation of various integration processes. Users now encounter fewer manual errors as many tasks have been automated, resulting in improved accuracy and efficiency. While there may still be support tickets related to integration issues with third-party systems, these are not directly associated with Azure itself. The move to Azure has helped alleviate many manual errors and streamlined our support ticket process."

Modeling and assumptions. For the financial model, Forrester assumes the following about the composite organization:

- Before Azure, the number of requests for support submitted by employees is 100 per week. This is 1% of the total employee population.
- With Azure, the number of requests for support submitted is 65 per week in Year 1, 45 per week in Year 2, and 25 per week in Year 3. The number of requests decreases year over year because as more applications are integrated, the number of manual data entry errors requiring remediation decreases.
- Before Azure, the average time to resolve a ticket is 90 minutes.
- With Azure, the average time to resolve a ticket is 45 minutes, resulting in a savings of 45 minutes per support request. Remediation time is reduced because the monitoring and observability tools in Azure help to more quickly identify the root cause of the problem.
- The total number of hours saved by data administrators due to avoided tickets is 2,730 in Year 1, 4,290 in Year 2, and 5,850 in Year 3.
- The total number of hours saved by data administrators due to shortened error remediation

time is 2,535 hours in Year 1, 1,755 hours in Year 2, and 975 hours in Year 3.

- The average hourly loaded cost of a data administrator is \$65.
- Data administrators apply 75% of these efficiencies to productive tasks.

Risks. The impact of this benefit will vary based on:

- The number of data entry error-related support requests and the average time to resolution.
- The ability of the organization to integrate internally facing applications.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$654,200.

“While we are indeed reducing the number of tickets because of integrations, it’s important to note that the nature of the tickets we receive has also changed. The impact of integrations goes beyond ticket reduction, as it significantly reduces the time required to resolve issues. This reduction in both ticket count and resolution time is crucial to improving overall efficiency.”

Lead integration architect, energy

Cost Reduction From Fewer Application Support Requests

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Weekly data entry error related support requests before using Azure Integration Services	Interviews	100	100	100
C2	Weekly data entry error-related tickets with Azure Integration Services	Interviews	65	45	25
C3	Weekly support requests avoided	C1-C2	35	55	75
C4	Average ticket remediation minutes before with Azure Integration Services	Interviews	90	90	90
C5	Average ticket remediation minutes with Azure Integration Services	Interviews	45	45	45
C6	Average remediation minutes reduction per support request	C4-C5	45	45	45
C7	Support hours saved for data administrators from avoided tickets	C3*52 weeks *C4/60 minutes	2,730	4,290	5,850
C8	Support hours saved for data administrators due to shortened error remediation times	C2*52 weeks *C6/60 minutes	2,535	1,755	975
C9	Average fully burdened hourly cost of a data administrator	TEI standard	\$65	\$65	\$65
C10	Productivity recapture rate	Forrester research	75%	75%	75%
Ct	Cost reduction from fewer application support requests	(C7+C8)*C9 *C10	\$256,669	\$294,694	\$332,719
	Risk adjustment	↓10%			
Ctr	Cost reduction from fewer application support requests (risk-adjusted)		\$231,002	\$265,225	\$299,447

Three-year total: \$795,674

Three-year present value: \$654,175

IT COST AVOIDANCE FROM ENABLING CITIZEN DEVELOPERS

Evidence and data. In the interviews with Azure Integration Services customers, Forrester found an interesting dynamic between integration development teams and their business.

Integration developers designed and implemented integration solutions, configured connectors, mapped data fields, and defined data transformation rules using Azure Integration Services. They also ensured that data security, authentication, and compliance considerations were addressed. Additionally, integration developers created reusable components, templates, or APIs that simplified the integration process for citizen developers. Once the teams completed these foundational steps, citizen developers could build integrations using low-code/no-code platforms like the Power Platform, focusing on specific business logic and user experiences without delving into the intricacies of integration implementation.

Citizen developers could benefit from the work integration developers did with Azure Integration Services when building integrations using the Power Platform. By leveraging the capabilities and prebuilt connectors offered by Azure Integration Services, citizen developers could easily connect various applications and systems within their organization without extensive coding knowledge. They could utilize the Power Platform's intuitive low-code/no-code tools to design and create custom workflows, automate processes, and streamline data flows while relying on Azure Integration Services for secure and scalable integrations. This collaboration empowered citizen developers to rapidly develop and deploy their own integrations, which drove innovation, efficiency, and agility across their organizations.

- The lead integration architect at the energy company offered the following advice: "Compared to corporatewide initiatives that require data integration across systems, the

“Something built by a citizen developer in a day or two would typically take at least two weeks for the central team to gather requirements, document the solution, and develop it as part of a proper sprint.”

Lead integration architect, energy

Power Platform is primarily designed for individual use cases and personal automation. Finding the right balance between individual citizen developers and the enterprise integration team is crucial. While citizen developers can create their own personal integrations using tools like Power Automate, it is important to involve the enterprise integration team in initiatives that require proper monitoring, visibility, and support at a companywide level. The enterprise integration team offers additional services, such as centralized monitoring, issue response, and integration fixes, which are unavailable to individual developers. Both approaches have their place, and there is room for both in the integration landscape."

The same interviewee expanded on this thought: "The time required to create these individual solutions varies. Business users can quickly connect components and achieve functionality. However, from a comprehensive integration perspective, we need to incorporate monitoring, issue checks, and proper documentation."

The interviewee concluded: "In our integration processes, we adhere to a structured software development lifecycle, including change advisory board (CAB) approval, release cycles, and separate development, testing, and production

environments. In comparison, such a disciplined approach does not exist for citizen developers who are most often focused on their own personal data analysis requirements."

Modeling and assumptions. For the financial model, Forrester assumes the following about the composite organization:

- Citizen developers delivered 13 individual integration projects in Year 1, 23 in Year 2, and 33 in Year 3.
- The number of projects increases yearly as more and more applications are connected each year.
- If an integration developer had handled the integration instead, they would have spent 120 hours per project building a complete integration with their standard agile approach compared to the one-off connection built by the citizen developer with Azure Integration Services.

- The average hourly loaded cost of an integration developer is \$79.

Risks. The impact of this benefit will vary based on:

- The number of integration projects handled by citizen developers per year.
- The average time it takes for integration developers to deliver an integration project using their standard approach to agile development.
- The preparedness and ability of the IT organization to facilitate citizen development initiatives.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$474,500.

IT Cost Avoidance From Enabling Citizen Developers					
Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Annual number of projects delivered by citizen developers	Interviews	13	23	33
D2	Estimated duration of the project when handled by the integration development team (hours)	Interviews	120	120	120
D3	Average fully burdened hourly cost of an integration developer	Forrester research	\$79	\$79	\$79
Dt	IT cost avoidance from enabling citizen developers	$D1 \times D2 \times D3$	\$123,240	\$218,040	\$312,840
	Risk adjustment	↓10%			
Dtr	IT cost avoidance from enabling citizen developers (risk-adjusted)		\$110,916	\$196,236	\$281,556
Three-year total: \$588,708			Three-year present value: \$474,548		

COST REDUCTION FROM CONSOLIDATING LEGACY SYSTEMS AND SOLUTIONS

Evidence and data. When implementing Azure Integration Services, the interviewees' organizations replaced traditional on-premises enterprise service bus (ESB) and API management solutions. By leveraging Azure's managed services and pay-as-you-go cost mode, they eliminated costs associated with maintaining the hardware, software licenses, and infrastructure related to these legacy environments.

Additionally, Azure Integration Services, with its support for various communication protocols and integration patterns, simplified partner integrations as it reduced the need to maintain multiple point-to-point integration tools and custom solutions. Interviewees mentioned cost savings from reduced licensing, development, and maintenance efforts.

Most interviewees had previously adopted multiple cloud-based applications and platforms. They said that the many required point-to-point integrations related to these applications had become complex and costly to manage. With Azure Integration Services, they could streamline cloud-to-cloud integrations by using prebuilt connectors and easy-to-use workflows, reducing the development effort and the associated costs.

- The AVP of engineering at the financial services company stated: "Previously, our integration processes relied solely on manual scripts for infrastructure automation, specifically for web server and middleware deployments. Our Java applications were deployed on-premises using web servers and application servers. However, we lacked comprehensive integration tools. As part of our migration to the cloud, we have decommissioned some of the servers that were hosting our applications. To compensate for the decommissioned servers, we have moved the logic and functionality of those applications into serverless functions."

"By leveraging serverless functions, we achieved increased scalability without the need to manually manage and worry about scalability concerns. The service tier we chose automatically handles scalability, allowing us to focus on other aspects of our applications without the need for manual scaling efforts."

Head of global IT, manufacturing

- The API practice owner at the insurance company explained: "We were looking for a cloud-based solution to address the limitations of our existing on-premises API management platform. We wanted to avoid the traffic going through an on-premises [system] before reaching the cloud, aiming for direct traffic flow to the cloud whenever applicable."

The interviewee added: "The switch to Azure APIM solved several challenges, including the need for a better developer portal, a cloud-based API management solution, and self-service capabilities for developers to manage their APIs independently. With multiple API producers and consumers, we wanted to unify our efforts using Azure APIM as a single, cost-effective service to address these challenges."

Overall, the serverless nature of Azure Integration Services, which supports automatic scaling and simplified management, made it an attractive option for interviewees' organizations to build integrations efficiently and with lower up-front and ongoing investments.

Modeling and assumptions. For the financial model, Forrester assumes that the average cost of consolidated legacy tools at the composite organization — and the labor hours to support them — is \$145,000 per year.

Risks. The investments in hardware, software licenses, development, maintenance, and support can range from tens of thousands to hundreds of thousands of dollars per year or more, depending on the organization's previous environment and scale. The impact of this benefit varies based on the previous investment in traditional on-premises tools and solutions and on the following factors:

- The size of the organization.
- The complexity of integration requirements.
- The scale of operations.
- The specific vendors and solutions chosen.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$342,600.

Cost categories associated with legacy on-premises ESB and API management solutions

Software

- The cost of software licenses and annual maintenance fees for updates and support.

Infrastructure

- The dedicated hardware servers, networking equipment, and infrastructure components — including initial purchase or lease of the hardware, ongoing maintenance, upgrades, and replacements as needed.
- Day-to-day operational costs include power consumption, cooling, backup systems, and physical security measures to ensure the availability and reliability of the infrastructure.

IT resources

- Labor costs to customize and configure an on-premises solution.
- Labor costs associated with regular maintenance, including software patches, upgrades, bug fixes, and troubleshooting.

Cost Reduction From Consolidating Legacy Systems And Solutions

Ref.	Metric	Source	Year 1	Year 2	Year 3
E1	Annual cost of legacy tools (infrastructure, software, labor)	Composite	\$145,000	\$145,000	\$145,000
Et	Cost reduction from consolidating legacy systems and solutions	E1	\$145,000	\$145,000	\$145,000
	Risk adjustment	↓5%			
Etr	Cost reduction from consolidating legacy systems and solutions (risk-adjusted)		\$137,750	\$137,750	\$137,750
Three-year total: \$413,250			Three-year present value: \$342,564		

INCREMENTAL REVENUE GROWTH DRIVEN BY DATA INSIGHTS AND SPEED OF INNOVATION

Evidence and data. Forrester learned throughout the customer interviews that their organizations' integration projects followed a phased approach. They gradually rolled out new systems and focused on enhancing the integrations and the associated monitoring and error-handling processes.

Interviewees found monitoring and error handling were crucial for maintaining data integrity and reliability. As a result, monitoring and error handling have become increasingly critical aspects of integration. By focusing on these, the interviewees' organizations could provide users and executives with consistent, accurate, and trustworthy data. This then facilitated informed decision-making and empowered organizations to focus on and swiftly pursue revenue-generating innovation projects.

- The head of global IT at the manufacturing firm said: "The integration has established a single source of truth for data across different systems. Having a centralized and reliable data source ensures consistency across the organization and enhances decision-making."

Modeling and assumptions. For the financial model, Forrester assumes the following about the composite organization:

- The composite organization's annual revenue is \$3.5 billion per year.
- The incremental revenue growth from innovation and new services is 1% in Year 1, 1.5% in Year 2, and 2% in Year 3. This percentage increases year over year as more applications are integrated each year that offer the organization more insights leading to innovation.
- The incremental revenue that can be attributed to Azure Integration Services is 20%.
- The composite organization's operating margin is 14%.

Risks. The impact of this benefit will vary based on the composite organization's annual revenue and the speed with which the organization can innovate.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$3.2 million.

Incremental Revenue Growth Driven By Data Insights And Speed Of Innovation					
Ref.	Metric	Source	Year 1	Year 2	Year 3
F1	Annual revenue	Composite	\$3,500,000,000	\$3,500,000,000	\$3,500,000,000
F2	Incremental revenue growth from improved decision-making, innovation velocity and speed-to-market	Composite	1.0%	1.5%	2.0%
F3	Percentage of incremental revenue attributed to Azure Integration Services	Composite	20%	20%	20%
F4	Operating margin	Composite	14%	14%	14%
Ft	Incremental revenue growth driven by data insights and speed of innovation	$F1 * F2 * F3 * F4$	\$980,000	\$1,470,000	\$1,960,000
	Risk adjustment	↓10%			
Ftr	Incremental revenue growth driven by data insights and speed of innovation (risk-adjusted)		\$882,000	\$1,323,000	\$1,764,000
Three-year total: \$3,969,000			Three-year present value: \$3,220,526		

BUSINESS EFFICIENCIES FROM AUTOMATED DATA ENTRY AND VALIDATION

Evidence and data. Interviewees cited their organizations' focus on automation and integration as an enabler for employees to focus on more meaningful and productive work rather than manual data entry or integration processes.

- The lead integration architect at the energy company elaborated on how their team constantly received requests from the business for additional integrations and how they assessed the potential benefits of these integrations in terms of their potential to save time and improve end-user productivity, saying: "To quantify the value of these integrations, we evaluate the amount of manual effort by end users currently being invested and estimate the associated costs. For example, if 5 hours per week are spent on manual tasks, we calculate the annual cost of this effort. We then consider the value of reclaiming and redirecting that time towards more valuable work, such as strategic tasks or higher-level responsibilities."

These integrations greatly enhanced efficiency and productivity across the organization by reducing manual tasks and streamlining data entry processes. When asked to quantify the efficiencies for end users, the lead integration architect noted: "The time saved by automating these integrations varies depending on the specific area. On average, we estimate that some users save around 2 hours per day by eliminating manual data reentry. For instance, one recent human capital management application integration has saved users 30 minutes to an hour per day in manual time entry."

- Explaining how automation has been a key driver in streamlining processes for end users, the AVP of engineering at the financial services firm said: "Automation has played a crucial role in our

"The impact of our integrations extends across various departments and functions within [the company]. We automate tasks like time entry and user creation that affect the entire organization. These integrations are implemented in areas such as supply chain management, human resources, and others. In one way or another, they impact the majority of our user base."

Lead integration architect, energy

cloud migration journey. While we had some level of automation in our on-premises environment, transitioning to the cloud enabled us to achieve a higher level of automation. This has led to a significant reduction in manual tasks, especially in areas such as data entry. Users no longer need to manually input data into various systems because the processes deployed with Azure Integration Suite capture and process the information automatically. This automation has not only improved efficiency but also delivered a return on investment (ROI) for our company."

- The lead integration architect at the energy company shared insights related to the organization's success building fully integrated application systems into the IT landscape of a newly built facility in the context of their organization's recent expansion: "When constructing the new facility, we prioritized automation to streamline processes and maximize efficiency. We embraced the opportunity to build a robust and automated system from the ground up, ensuring that efficiency and integration were integral to the facility's operations."

The same interviewee added: "Since the facility was a new venture, we had the advantage of implementing integrations right from the beginning. The goal was to automate as many tasks as possible because we recognized the significant savings and benefits associated with automation."

Modeling and assumptions. For the financial model, Forrester assumes the following about the composite organization:

- The composite organization has a total of 10,000 employees.
- The percentage of employees using integrated applications is 25% in Year 1, 45% in Year 2, and 65% in Year 3. This increase is due to more applications being integrated and available to end users each year.
- This results in a total of 2,500 employees using integrated applications in Year 1, 4,500 employees in Year 2, and 6,500 employees in Year 3.

- The amount of time each employee saves per day is 10 minutes. This reduction is due to spending less time entering data into multiple systems.
- The average fully burdened hourly cost of a clerical employee is \$35.
- Clerical employees recapture 25% of these efficiencies for productive tasks.

Risks. The impact of this benefit will vary based on:

- The total number of employees.
- The number of applications integrated each year.
- The amount of time saved per day from reduced redundancy in data entry.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of \$3.5 million.

Business Efficiencies From Automated Data Entry And Validation					
Ref.	Metric	Source	Year 1	Year 2	Year 3
G1	Number of employees	Composite	10,000	10,000	10,000
G2	Percentage of employees using integrated applications	Composite	25%	45%	65%
G3	Number of employees using integrated applications	G1*G2	2,500	4,500	6,500
G4	Minutes saved per day per end user due to reduced redundancy in data entry	Composite	10	10	10
G5	Average fully burdened annual cost of a clerical employee	TEI standard	\$35	\$35	\$35
G6	Percentage of time recaptured	Forrester research	25%	25%	25%
Gt	Business efficiencies from automated data entry and validation	$(G3*G4*260/60)*G5*G6$	\$947,917	\$1,706,250	\$2,464,583
	Risk adjustment	↓15%			
Gtr	Business efficiencies from automated data entry and validation (risk-adjusted)		\$805,729	\$1,450,313	\$2,094,896
Three-year total: \$4,350,938			Three-year present value: \$3,505,013		

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- Ability to easily find and onboard new hires.** The head of product management at the utility company talked about the benefits of Azure being a widely used platform, “Due to the popularity of Azure APIM and the availability of resources that know the platform, it’s easier to find knowledgeable individuals and access relevant information compared to some of the other products in the market.”

Another interviewee found that the onboarding process for new developers grew faster and more streamlined with Azure Integration Services, explaining that with the assistance of a senior developer, setting up access, security, and integration capabilities for a new developer could be accomplished within a few hours. This was a significant improvement compared to the longer timeframes required with their previous on-premises system. The head of IT at the manufacturing firm shared, “The efficiency of the Azure platform enables developers to quickly start working on integrations and reduces the overall time needed to get new team members up to speed.”
- Robust security and compliance capabilities.** One organization was able to successfully implement robust security measures, particularly in the areas of role-based access control and permissions. This proactive approach to security was beneficial, as the organization remained unaffected during hacking incidents that impacted other companies during the same time. The head of global IT at the manufacturing firm explained: “Our strict access controls ensure that only authorized personnel have production or development access within specific environments. Access restrictions are in place to

"The fact that APIM is part of the Azure ecosystem makes it easier to integrate and use, as most Azure products are already familiar to the developers. This facilitates a smoother learning curve for those already familiar with Azure."

API practice owner, insurance

prevent unauthorized actions, such as spinning up new virtual machines or environments, and to ensure compliance with established protocols."

The interviewee added, “Security is a critical factor, and the Azure infrastructure provides a secure environment for deploying software in development, user acceptance testing, and production stages, which mitigates risks of breaches and system failures.”

- A low-risk project with the ability to extend capabilities gradually.** Several organizations in the study leveraged Microsoft’s blueprint for an enterprise-grade API management setup that they accessed through the Azure APIM landing zone accelerator repository. Interviewees reported that this allowed them to quickly deploy and implement the recommended best practices for API management, including firewalls, private endpoint access, and access to backend resources. From there, it was easy to scale up both the number of instances and the tier of service in Azure Integration Services, and they could easily upgrade to a production-grade environment.
- Elimination of data silos and better data accessibility.** Several organizations in the study reported that the integration of systems with Azure Integration Services resulted in a significant improvement in the quality and consistency of data. Previously, data was often

fragmented across different systems, leading to duplication and inconsistencies. In the current environment, teams around the globe now have access to a unified view of data that ensures everyone operates with the same parameters and information. This has eliminated data silos or the presence of duplicate customer records, leading to a more reliable and accurate understanding of the data. Overall, the integrations have brought about considerable improvements in data management and accessibility.

- **Data as a source of knowledge and as the foundation for advanced analytics.** One interviewee mentioned how other components in the Azure stack built on top of the capacities Azure Integration Services provided for their organization. This topic came up in the context of how the evolution of cloud systems has transformed them from transactional systems into knowledge systems. Organizations utilize multiple disparate systems such as CRM, ERP, and others, but seamlessly integrate them and enable knowledge sharing. This integration of systems also lays the foundation for advanced analytics, with Azure Synapse and Power BI Premium serving as key components for data integration and reporting.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Azure Integration Services and later realize additional uses and business opportunities, including:

- **Reliability in handling high transaction volumes.** The head of product management at the utility company mentioned that the platform's ability to handle large traffic volumes and maintain reliability was crucial, saying: "The design of the system and our knowledge of it provides strong confidence in its handling of

high traffic. Smart meters allow users to group devices and schedule specific hours for activation or deactivation. These smart meters generate a significant amount of data, with each meter producing around 100 transactions per day. With millions of devices in operation, the [integration] platform must be capable of handling this level of traffic and effectively intercepting any issues or failures. While the project has recently been launched and is currently in its initial phase, the expectation is that the traffic will increase over time."

- **Connecting IoT devices and historical data.** One interviewee highlighted how Microsoft provided new capabilities that support business innovations their organization has successfully implemented. At the time of the interview, the company manufactured specialized technical equipment and was considering incorporating IoT devices into this equipment. By connecting the equipment to the Azure integration stack, they hoped to share historical data and enable customers to make informed decisions based on industry insights spanning several decades. This project, enabled by the integration platform, would facilitate valuable connections between devices and enable data-driven decision-making across various industries and locations.
- **Upcoming developments in AI and high-level monitoring.** The head of global IT in manufacturing said: "Microsoft allows us to conduct testing of new capabilities without worrying about production. We can explore different scenarios in Azure and assess their potential impact on our business. We are interested in upcoming advancements such as AI and high-level monitoring, both in terms of incremental and strategic enhancements."

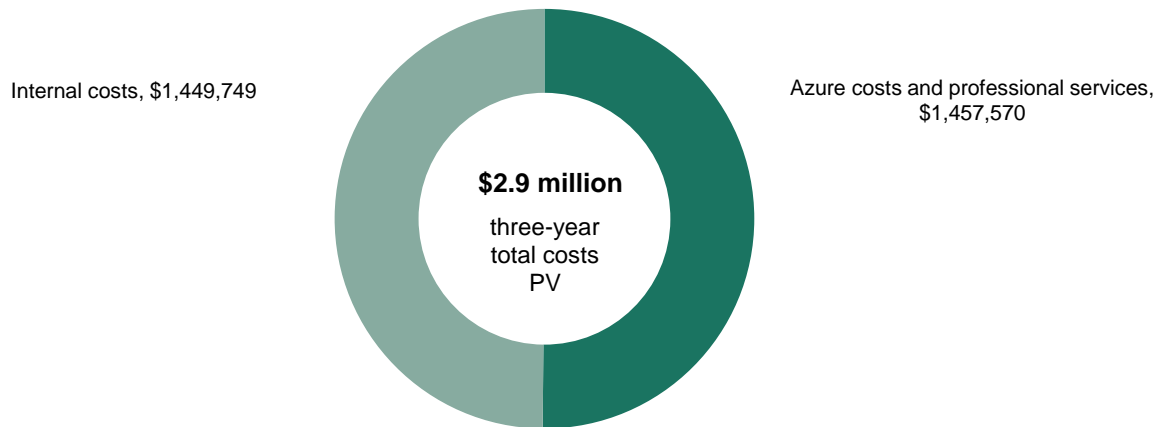
Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in [Appendix A](#)).

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
Htr	Azure costs and professional services	\$151,200	\$165,900	\$512,400	\$974,400	\$1,803,900	\$1,457,570
Itr	Lifecycle costs	\$462,858	\$385,717	\$397,597	\$409,477	\$1,655,650	\$1,449,749
	Total costs (risk-adjusted)	\$614,058	\$551,617	\$909,997	\$1,383,877	\$3,459,550	\$2,907,319

COSTS BY CATEGORY



This section examines the costs incurred for the Azure Integration Services components and for setting up, customizing, and managing the Azure Integration Services platform.

AZURE COSTS AND PROFESSIONAL SERVICES

Evidence and data. Microsoft charged usage fees for Azure Integration Services to interviewees' organizations. Each service in the suite had its own pricing and cost structure. Most organizations in the study used the platform's API Management, Logic Apps, Event Grid, Service Bus, Functions, and Data Factory services. The interviewees also mentioned Event Hub and Azure Synapse as additional components their organizations utilized in the Azure stack. Some organizations leveraged external architects' services during the initial implementation phase; others spoke highly of Microsoft's professional service and ongoing support.

- The AVP of engineering at the financial services firm noted: "During our journey, we sought external expertise to complement our architectural knowledge and broaden our capabilities. We engaged the architects, whose role was to provide architectural guidance and collaborate with our on-site architects to establish best practices and reference architectures for our specific use cases."
- The head of product management at the utility company shared two specific use cases for engaging with the Microsoft experts: "One area where we leveraged the expertise of the assigned Microsoft architects was in implementing Azure Data Factory and other related technologies. In one case, we needed to handle long-running Azure functions, and we explored using durable functions as a specialized form of Azure Functions. This allowed us to solve some challenges without relying on Logic Apps. The architect determined that durable functions could introduce maintenance complexities, so we employed them selectively and only when their capabilities were essential. In most cases, we relied on serverless functions for this project."

The interviewee added: "In another case, Microsoft supported the project in addressing

"Microsoft has provided valuable assistance in configuring the system architecture to ensure high-quality performance and transparency. Without their support, the launch within the planned three-month timeframe would not have been possible."

Head of product management, utility

technical and governance challenges. In the smart metering project, using Event Hub and Event Grid was a new experience for the team. Microsoft provided guidance on configuring these components within the architecture and ensuring they could handle high traffic volumes. In consultation with Microsoft, the team had to consider performance testing, capacity scaling, and deployment choices. The goal was to avoid conflicts with other shared API users and ensure effective governance. Through collaboration, the team decided to utilize Event Hub and recently added the Service Bus, all with Microsoft's assistance throughout the process."

Modeling and assumptions. Assumptions for the composite organization include:

- Microsoft offers usage-based pricing and several pricing tiers that provide different levels of features and capabilities. The composite organization leverages transaction pricing for specific platform components, while other components are licensed under the Standard and Premium pricing models. Annual costs may vary based on the desired services and usage levels.
- Annual support for Azure Integration services is calculated at 10% of the yearly fees and provides the organization with advanced troubleshooting and ongoing support.

- Professional services are provided by Microsoft or a certified Microsoft partner. The cost of professional services covers integration design, initial implementation and setup, configuration, and fine-tuning workflows. It may also include training and knowledge transfer.

Risks and results. Many factors go into pricing for online services, and estimated costs across organizations will vary. To account for this, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$1.5 million.

Azure Costs And Professional Services						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
H1	Azure Integration Services costs	Composite		\$100,000	\$400,000	\$800,000
H2	Standard support contract	H1*10%		\$10,000	\$40,000	\$80,000
H3	Professional services	Interviews	\$144,000	\$48,000	\$48,000	\$48,000
Ht	Azure costs and professional services	H1+H2+H3	\$144,000	\$158,000	\$488,000	\$928,000
	Risk adjustment	↑5%				
Htr	Azure costs and professional services (risk-adjusted)		\$151,200	\$165,900	\$512,400	\$974,400
Three-year total: \$1,803,900			Three-year present value: \$1,457,570			

LIFECYCLE COSTS

Evidence and data. Internal costs included the initial implementation and training effort, while ongoing platform maintenance efforts were comprised of setting up monitoring to track performance and usage and receive alerts for any issues such as reviewing and updating security settings and access controls, implementing backup strategies and test recovery processes, optimizing performance by identifying and addressing bottlenecks, and maintaining up-to-date documentation of configurations and solutions.

Interviewees’ organizations shared a wide range of implementation scenarios that were dependent on the sequence of services they introduced and the specific use cases they implemented. Most organizations started their journeys with proof-of-concept implementations and were able to launch new services to the business within a few months.

- The lead integration architect at the energy firm shared: “Following the proof of concepts, we developed a framework that established the processes and guidelines for utilizing Azure Integration Services. Well-defined processes for code migration between environments were important to ensure efficient code management and streamlined the development process.”
- The head of product management at the utility company highlighted the time and considerations involved with transitioning from a legacy API management solution to Azure: “The timing of the switch from the old platform to the new platform and how to run both platforms in parallel need to be carefully evaluated. Maintaining two platforms can be challenging, so the goal is to consolidate them into one platform. Transitioning from an older platform with a large number of APIs introduces additional complexities. Regression

testing and thorough processes will be required, and it will take time to migrate all APIs successfully.”

The amount of training required to become a professional user of each service within Azure Integration Services varied for each organization depending on the developers’ and DevOps personnel’s existing knowledge and experience with cloud integration and related technologies.

- The AVP of engineering at the financial services firm said: "The key focus of developer training was understanding how to leverage the services provided by Azure effectively, rather than learning entirely new programming languages or technologies. Our developers adapted quickly to this transition, with almost everyone gaining proficiency within a month."
- The API practice owner in the insurance industry echoed this sentiment: "It takes about one week of training for individuals to become familiar with the environment, and an additional week of hands-on work in the environment helps them gain confidence in performing tasks independently. After this initial period, they are expected to work autonomously. So, a total of two to four weeks is typically required for a developer to become proficient and effectively use the environment."

Modeling and assumptions. Assumptions for the composite organization include:

- Initial implementation and setup of Azure Integration Services requires the investment of 80% of the time for three FTEs over six months (for the calculation, this equals 40% over 12 months).
- After the initial implementation, these three IT resources invested 50% of their time per year into ongoing platform strategy, architecture, and operations.

“During our transition to Azure, we hired a few individuals who already had knowledge and experience with Azure. However, the majority of our team members learned Azure Integration Services from scratch on their own. Surprisingly, the learning curve was not as challenging as anticipated. Within a month, they were able to develop applications and utilize Azure services effectively.”

AVP of engineering, financial services

- The average fully burdened annual cost of an IT resource is \$165,000.
- The number of users requiring training on Azure Integration Services is 47. This includes the 21 members of the cross-functional DevOps team and the 26 members of the integration development and data architect team.
- Training comprises one week of full-time classroom training and one week of hands-on training at 50% of their time. That equals up to 60 hours initially and 2 hours per month going forward, or 24 hours per year.
- The average fully burdened hourly cost of trainees is \$79.
- Citizen developers create 13 integrations in Year 1, 23 in Year 2 and 33 in Year 3.
- The time it takes for citizen developers to create an integration or report varies significantly depending on several factors, including the complexity of the integration/report, the skills and experience of the citizen developer, and the availability of relevant data and resources. Citizen developers at the composite organization

invest 24 hours into each integration project on average.

- The average fully burdened hourly cost of a citizen developer is \$45.

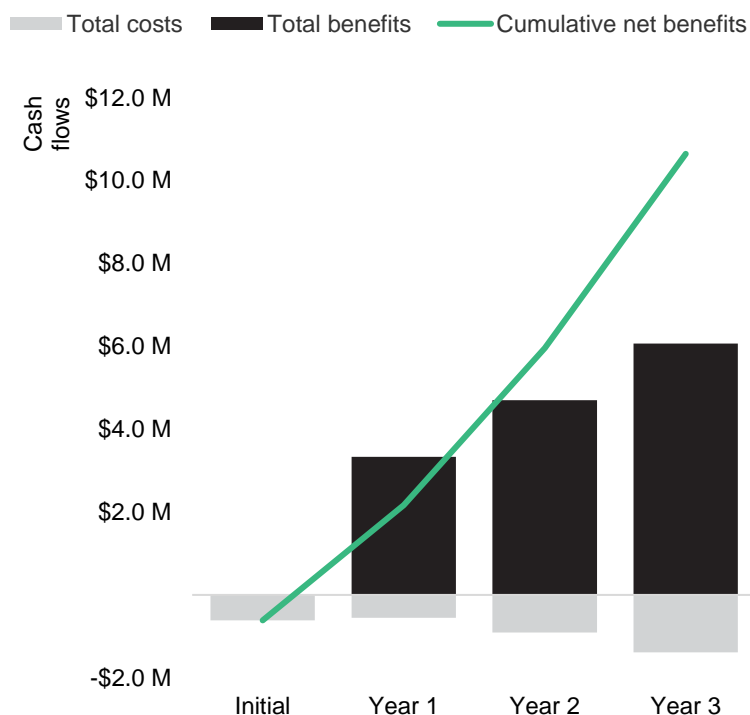
Risks and results. To allow for underestimation, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of \$1.4 million.

Lifecycle Costs						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
I1	IT resources required for initial setup and ongoing platform strategy, architecture, and operations	Interviews	3	3	3	3
I2	Average fully burdened annual cost of an IT resource or developer	TEI standard	\$165,000	\$165,000	\$165,000	\$165,000
I3	Percentage of time dedicated to implementation and ongoing platform operations	Composite	40%	50%	50%	50%
I4	Subtotal: Cost of internal resources required for implementation and ongoing platform operations	I1*I2*I3	\$198,000	\$247,500	\$247,500	\$247,500
I5	Number of IT personnel and integration developers requiring training	A1+B1	47	47	47	47
I6	Hours of formal training	Composite	60	24	24	24
I7	Average fully loaded hourly cost of IT personnel and integration developers	TEI standard	\$79	\$79	\$79	\$79
I8	Subtotal: Initial and ongoing training costs	I5*I6*I7	\$222,780	\$89,112	\$89,112	\$89,112
I9	Number of citizen developer projects	Interviews	0	13	23	33
I10	Hours invested by citizen developers per integration project	Composite	0	24	24	24
I11	Average fully loaded hourly cost of a citizen developer	Composite	\$0	\$45	\$45	\$45
I12	Subtotal: Cost of citizen developer time	I9*I10*I11	\$0	\$14,040	\$24,840	\$35,640
It	Internal costs	I4+I8+I12	\$420,780	\$350,652	\$361,452	\$372,252
	Risk adjustment	↑10%				
Itr	Internal costs (risk-adjusted)		\$462,858	\$385,717	\$397,597	\$409,477
Three-year total: \$1,655,650			Three-year present value: \$1,449,749			

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 Analysis (Risk-Adjusted Estimates)						
	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$614,058)	(\$551,617)	(\$909,997)	(\$1,383,877)	(\$3,459,550)	(\$2,907,319)
Total benefits	\$0	\$3,335,969	\$4,702,449	\$6,068,929	\$14,107,347	\$11,478,697
Net benefits	(\$614,058)	\$2,784,352	\$3,792,452	\$4,685,052	\$10,647,797	\$8,571,378
ROI						295%
Payback period						< 6 months

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: Supplemental Material

Related Forrester Research

["Integration Usages Checklist,"](#) Forrester Research, Inc., March 22, 2022.

["Tackle Your API And Integration Challenges With Forrester's Scenario Quick Start Cards,"](#) Forrester Research, Inc., April 17, 2023.

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