

Azure API Management: Driving Digital Transformation in Today's API Economy



Table of contents

03	Introduction
05	Digital transformation: maintaining a competitive edge in a first-digital world
11	APIS: the common denominator for digital transformation world
15	Azure API Management: driving your digital transformation
23	Why Azure API Management, Microsoft Azure, and Microsoft
24	Customer case studies
31	Getting started

01 /

If you're in the business world, you've probably heard the term "digital transformation" more than once

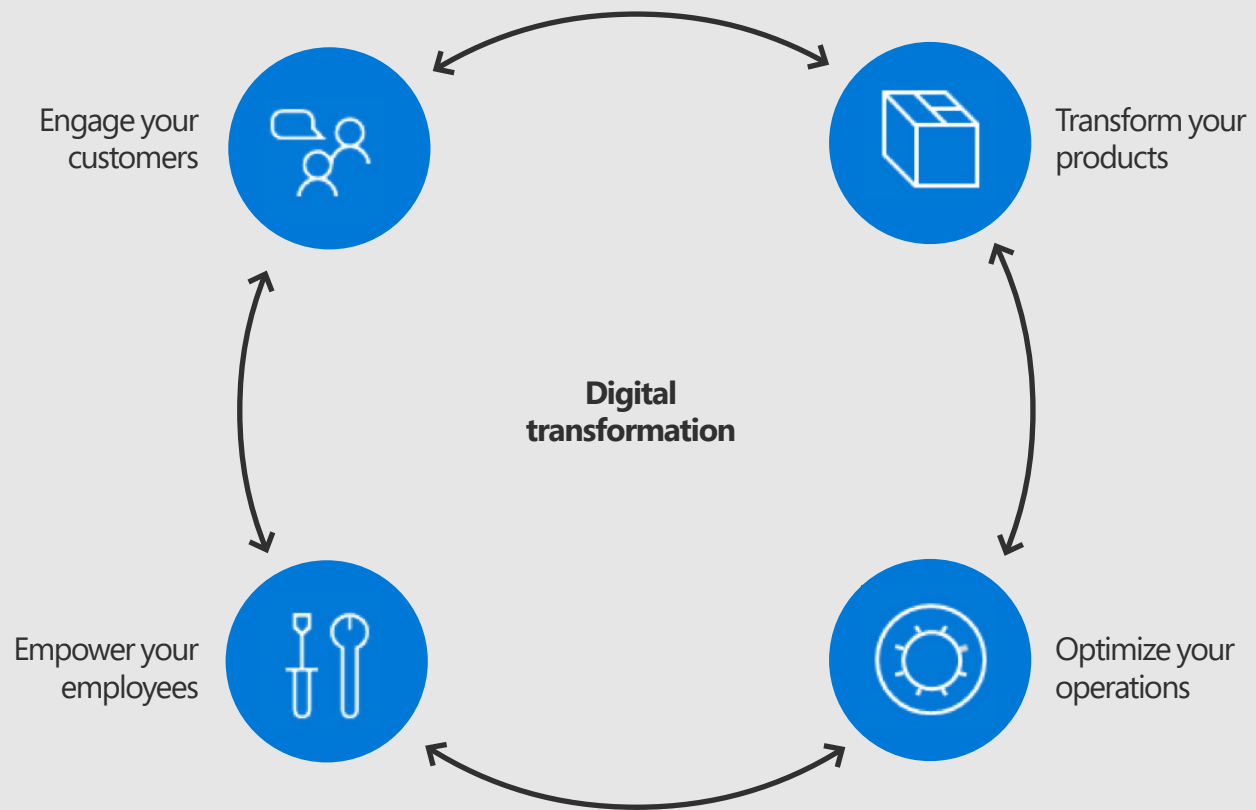
But what exactly does it mean? Is it something you need? And if it is, how or where can you get it? Put simply, digital transformation is about reimagining how you combine people, data, and processes to create new value for customers and maintain a competitive edge in a digital-first world.

Today's business landscape has fundamentally changed due to three unique factors:

1. Advances in big data/advanced analytics, which can expose actionable insights from rapidly increasing data volumes.
2. The rise of cloud computing, which puts limitless compute and storage power within the reach of organizations of all sizes.
3. The ubiquity of mobile computing and smart, connected devices.

To succeed in this new competitive landscape, participants must establish a digital feedback loop that translates the information gained from these dynamics into actions that drive customer engagement, transform their products, empower employees, and optimize operations.

Software services exposed through application programming interfaces (APIs) make delivering on these objectives possible. By exposing APIs externally, companies can break into new markets and reach new customers and partners. Similarly, by exposing APIs internally, they can unlock business-critical data and leverage it throughout the organization.



To fully participate in today's "API Economy," companies must first master the challenges inherent in building, maintaining, managing, and exposing APIs. That's where Microsoft Azure API Management can help. Azure API Management is a turnkey solution for publishing APIs to external and internal customers.

With Azure API Management, you can take any backend system, hosted anywhere, and expose it through a modern API gateway—in a way that decouples your existing system from any product evolution you may want to build upon your APIs. You'll also be able to:

- Secure and protect your APIs from abuse and overuse
- Get insights into their usage and health
- Automate and scale developer onboarding
- Get up and running in minutes, with minimal up-front investment
- Easily scale on-demand as your API program grows

Azure API Management is part of the rapidly expanding portfolio of Microsoft Azure cloud services, running on a global network of cloud datacenters. Microsoft is uniquely qualified to help you increase customer engagement, empower employees, optimize operations, and transform your products and services—sharpening your competitive edge as you embark on your own digital transformation.

02 /

Digital transformation: maintaining a competitive edge in a digital-first world

Disruption through technology creates both opportunity and risk. Product lifecycles are decreasing and customers are more empowered than ever: they expect to be able to get exactly what they want, when they want it. A business that can quickly identify and deliver what the market will want next will have a competitive advantage.

Fortunately, the answer to these challenges is already in your possession. It's your data. It's everywhere, in every form, and it's growing every day. New data sources—enabled by the proliferation of mobile devices, smart connected products, and the Internet of Things (IoT)—are coming online at an ever-increasing pace, far outpacing the ability of legacy approaches to harness that data. Digital transformation—enabled through APIs—helps you turn this data into competitive advantage by reimagining how you combine people, data, and processes to create value for customers.

Key enablers for digital transformation

While the use of software to transform how companies do business has been going on for years, more recently, the landscape has fundamentally changed due to the convergence of three technology disruptors:

The cloud

The cloud, or cloud computing, provides global connectivity and essentially limitless scalability in terms of data storage and computing power, with economies of scale that put these capabilities within the reach of companies of all sizes. In addition, because cloud solutions can be prebuilt and ready to “plug into,” they offer opportunity to quickly add value. Finally,

solutions in the cloud can be accessed from virtually any location using any device. Companies are quickly moving to drive digital transformation to leverage the power of the cloud: An IDC FutureScape report¹ predicts that by year-end 2017, over 70 percent of the Global 500 will have dedicated digital transformation and innovation teams—and by 2020, 67 percent of all enterprise IT infrastructure and software spending will be for cloud-based offerings.

Mobile computing and smart, connected devices

Connected computing devices are in the hands (and increasingly in the homes) of billions of people. These people are both consuming and generating information on-the-go, at unprecedented rates, changing the way companies must market to and support customers. A person's experience with technology increasingly spans a multitude of devices and becomes more natural and multi-sensory with voice, ink, and gaze interactions. It is creating a new technology paradigm that manifests itself through an intelligent cloud and an intelligent edge where computing is more distributed, AI drives insights and acts on the user's behalf, and user experiences span devices with a user's available data and information. Mobile computing on smartphones is self-explanatory; examples of smart, connected devices include:

- Peloton Cycle, a stationary exercise bike that connects to the web to put the rider in the midst of a virtual exercise class—replete with a trainer and instrumentation on the bike that, again via the web, lets the rider effectively “compete” with others in the class
- Connected cars that are capable of monitoring themselves and, if required, downloading software updates over-the-air
- Connected refrigerators that let you manage your groceries, sync calendars across family members, and can even send you a notification when you leave the door open.

Gartner estimates that, by 2021, 1 million IoT devices will be purchased and installed every hour. What do all of these examples have in common? In addition to enhancing the overall customer experience through connectivity to the cloud, such smart connected products are all capable of providing a wealth of new data that companies can use to better understand, serve, and ultimately

¹IDC FutureScape: Worldwide IT Industry 2017 Predictions, IDC, November 2016, IDC #US41883016.

delight their customers. After all, gaining insight into how customers are using your products—and using this to focus on their desired outcomes—is at the heart of the digital transformation.

Big data & Intelligence

Including both rapidly growing data volumes and advances in data science and machine learning that can be used to turn data into actionable insight that enhances business opportunities. According to Forbes³, by 2020, about 1.7 megabytes of new data will be created *every second, for every person on the planet*. Advanced analytics provides the ability for computers to learn from such massive data volumes, making it possible to predict future results based on historical relationships and trends within a set of data. Put another way, these capabilities enable computers to predict what will happen in the future—such as which products you might be interested in, or when your Uber ride is likely to arrive—based on an examination of what happened in the past.

These fundamental disruptions are having a direct impact on businesses, which are losing the ability to tightly control their product narratives and brands. Online reviews make it easy for consumers to separate good products from bad ones; social media allows any customer to become an instant advocate or critic; and the proliferation of subscription-based products and services facilitate rapid customer acquisition and churn. Not only does this increase in customer empowerment raise the bar in terms of delighting customers, but it also dramatically increases the cost of disappointing them—further underscoring the need for companies to harness their data and use it to transform markets, customer interactions, and internal processes.

Core Opportunities

Many new entrants into today's API Economy are "born digital," with a digital feedback loop that connects them with customers built into their businesses from the ground up. Established companies, however, must embark on a digital transformation to create a digital feedback loop that enables this cycle of continuous improvement.

Opportunities for digital transformation can be categorized into four core scenarios: engaging customers, transforming products, empowering employees, and optimizing operations. Any of these scenarios can translate to new business opportunities, new revenue streams, or even entirely new business models.

² Gartner, Market Trends: The 24-Hour User @ Work — Key Trends for the Digital Workplace of the Future, December 2016, G00315715

³ Marr, Bernard. "[Big Data: 20 Mind-Boggling Facts Everyone Must Read](#)." Forbes. 30 September 2015. Article.

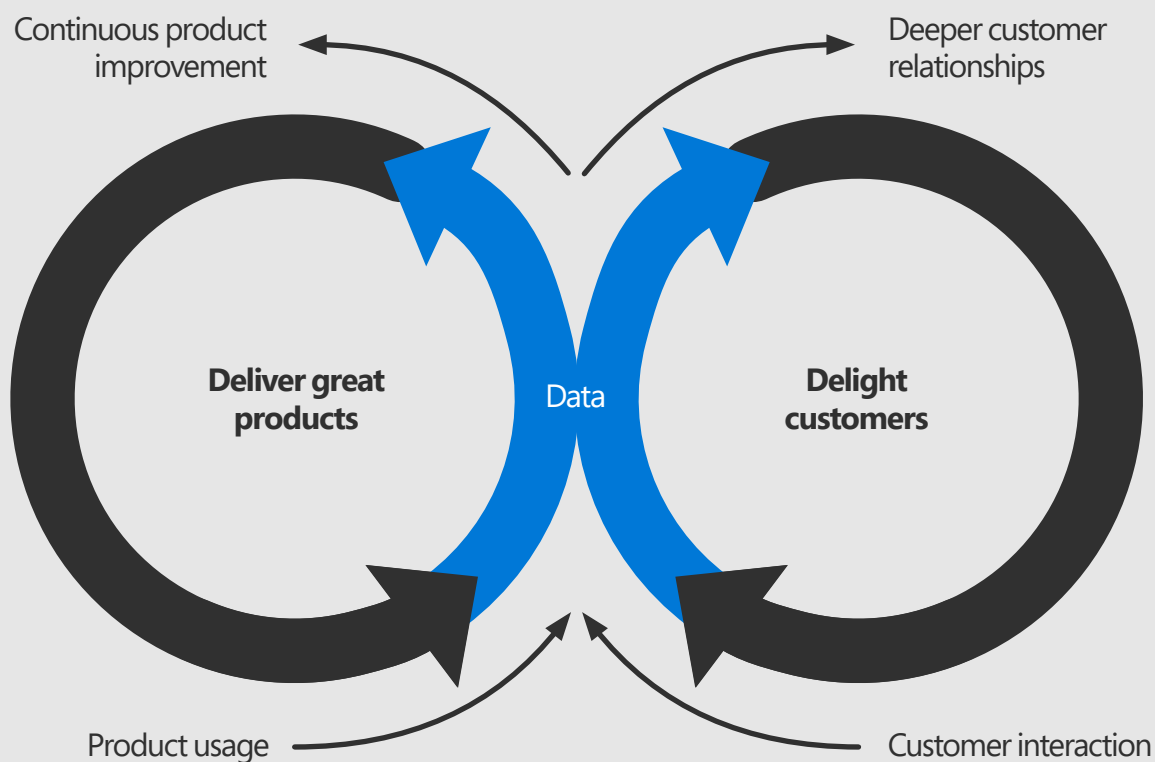
For instance, in the Peloton cycle example, not only does the connected experience increase customer engagement, but it also provides Peloton with a recurring monthly subscription fee.

It's worth examining each of these opportunities in greater detail:

- **Engaging customers** by tapping into new sources of customer insight and using it to fuel more personalized, seamless customer engagement. This includes predicting what customers want, even before they know they want it, and giving customers newer, more natural ways—such as human speech—to connect with your company.

An example is Lowe's, a leading home improvement store that plans to pilot technology to revolutionize home remodels. Customers will give their Pinterest boards to Lowe's, which will use advanced analytics to match customer interests with its product line. Using an augmented reality (AR) headset, customers will be able to see their new kitchens take shape before their eyes—including

Data powers the digital feedback loop



the ability to change design elements such as wall color by simply saying, “Let me see the wall color in pewter gray.” The result: customers will have confidence that they’ll love their new kitchen after it’s installed, without bringing home a single swatch, card, or sample.

- **Transforming products** by adding the instrumentation, connectivity, and software needed to capture valuable usage and quality data. Just five years ago, most product development relied on extensive, lengthy pre-release testing and focus groups. Through digital means, companies today can connect to customers to “close the loop” and achieve far more rapid product innovation, with customer engagement becoming a core input to the process.

For instance, Rolls-Royce uses advanced analytics in the cloud to collect and analyze massive amounts of aircraft engine data. This will help the company preemptively identify and repair failing parts, thereby minimizing flight delays and disruptions that cost the airline industry millions of dollars every year. This information also gives Rolls-Royce a better understanding of how it should structure its support contracts, how it can better manage risk, and what its product development needs are.

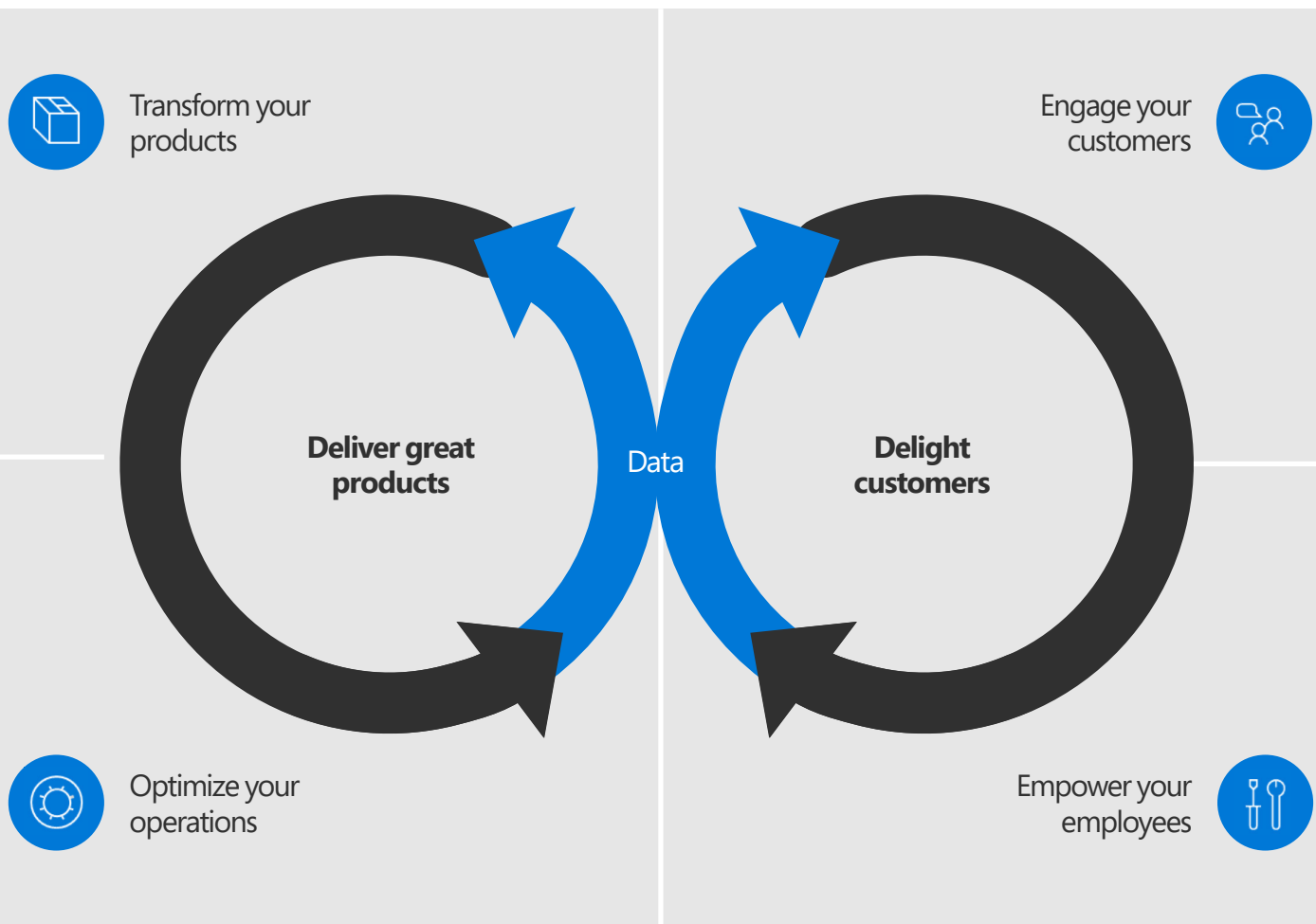
- **Empowering employees** by giving them the tools to work and collaborate, especially between product and customer-facing groups where the digital feedback loop can potentially have the greatest impact. Employees should be able to easily discover information and people of interest, as might be enabled by analyzing emails, documents, and data from line-of-business applications. Even better, what if you could simply ask a voice-enabled digital assistant, “Who in the company is working on self-driving cars? Please send me their most recent research and set up meetings with them for this week.”

An example is Pinnacle Hospital, which is taking advantage of the cloud to remain competitive and deliver relevant data to doctors at the point of care. Surgeons now have the data they need to order the correct supplies, and financial officers can tell at a glance if a surgery was within the allowable reimbursement threshold, with insurance claims that used to take 48 to 72 hours to process now taking a few minutes. When patients come in with issues, care-givers can use advanced analytics to determine the best course of treatment—such as which surgical devices and implants may be the best fit for a patient who needs a knee replacement, or the best approach to treat someone diagnosed with diabetes.

- **Optimizing operations** by augmenting them with the abilities needed to quickly turn product and customer insights into action. Oftentimes, the first step toward a digital transformation is focused internally, or between the company and its supply chain partners. By coordinating people and assets more efficiently, you can accelerate the responsiveness of your business, improve service levels, reduce costs, and respond to issues in real time—and even preemptively solve them.

For many companies, a first step toward optimizing operations is to start moving data and applications into the cloud. This alone can deliver abundant benefits that include lower costs, increased scalability, greater flexibility, simplified management, and higher availability. Migrating data and applications from your own datacenter to the cloud may not be especially glamorous, but it can lay the foundation for further digital transformation and generate exciting new capabilities that can help your business become more agile and competitive.

Whole Foods provides an illustration: After putting application sign-on credentials for its 91,000 employees in the cloud, the company has enjoyed improved security, lower support costs (related to password resets and onboarding new SaaS vendors), and savings in on-premises infrastructure.



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Apis: the common denominator for digital transformation

As illustrated by the previous examples, there are many ways to achieve digital transformation. That said, they share a common theme: reimagining how you combine people, data, and processes to create new value. Just as important, they all share a reliance on Application Programming Interfaces (APIs)—the means by which software components interact with each other to facilitate information flow throughout the digital feedback loop. From customer devices to the cloud to the enterprise data center, and at all points in-between, APIs are an essential underpinning of our modern digital world.

The API Economy

As the reach of APIs has grown, so has their importance to the business. Deloitte Consulting captures this well in its article [API economy – From systems to business services](#):

“Application programming interfaces (APIs) have been elevated from a development technique to a business model driver and boardroom consideration. An organization’s core assets can be reused, shared, and monetized through APIs that can extend the reach of existing services or provide new revenue streams. APIs should be managed like a product - one built on top of a potentially complex technical footprint that includes legacy and third-party systems and data.”

Not long ago, to most executives, the idea of making a company’s core information and intellectual property assets externally available was unthinkable. Today, not only are some of the most innovative companies doing just that, but in doing so, they’re realizing enormous business value. For example, according to [Harvard Business Review](#), in 2015, Salesforce.com generated 50% of its revenue through APIs, while eBay

generated 60% and Expedia.com generated 90%. All are examples of how APIs have enabled companies to break into new markets and reach new customers and partners. Similarly, companies that expose APIs internally can make it easier for different parts of the organization to benefit from each other's data and applications.

Essential Elements of an API Management Platform

Even if you understand the value of APIs and how they contribute to digital transformation, including ideas on specific ways these concepts can help you transform your business, it's worth taking the time to ask yourself some key questions:

- How will we protect the backend systems that are exposed through our APIs?
- How will we hide the complexity of our legacy internal systems?
- How will we engage with developers to help them easily discover and adopt our APIs?
- How can we enable developers to use our APIs to target the broadest range of scenarios?
How can we productize our APIs—and measure their impact and use?

All of these are important considerations, and all are areas where an API management platform can help. At its simplest, such a platform serves as a proxy between your business and the customers, partners, or developers using your APIs. Instead of connecting to your backend services directly, consumers of your APIs connect to an API management layer that provides the capabilities required for their safe, successful, and scalable use.

A full-featured API management platform should also provide other capabilities: a portal for managing relationships with the "customers" that use your APIs, including their discovery and use; a comprehensive set of tools for "productizing" your APIs and tailoring them to address the wide variety of potential usage scenarios; and visibility into how your APIs are being used and by whom—including a way to give those users similar information.

Before moving on, it's worth taking a deeper look at each of these areas.

Decoupling your APIs

Companies need a means to systematically evolve their APIs and the backend services they rely on without forcing the developers who consume those APIs to make changes. An API management platform helps you provide a simple "façade" that decouples the API from its internal implementation, so that changes can be made without impacting developers' applications. Such facades also make it possible to support a mix of evolving standards (think XML, SOAP, JSON, and REST) without having to recode the original API—or requiring developers who consume that API to adopt newer standards. IT professionals are often torn between protecting their legacy systems and accommodating requests from the business for new capabilities; the ability to decouple one from the other through an API facade—and enable what is frequently called a "two-speed IT architecture"—is often enough to justify an investment in API management.

Supporting developers

The process for giving developers access to your APIs—and information on how to use them—should be as automated and self-service as possible. Developers will want to be productive quickly, which means they'll need interactive documentation, an API console, and code samples. Creating and maintaining such a portal manually can be time-consuming, which is why best practices in this area call for an API management platform that automatically generates this content when APIs are published and keeps it updated based on any changes to the APIs.

Secure, controlled access

You'll need to ensure that your APIs are secure, and that access to them is controlled—so that they're not misused or overused. For example, you can use access keys to provide controlled access to APIs. Similarly, you can use throttling to prevent a developer from intentionally (or unintentionally) inundating an API with requests.

Analytics and metrics

You'll need to know how your APIs are being used, and by whom. You'll also need insights into API performance, responsiveness, and other aspects of API health. A comprehensive API management platform should not only provide such information for API publishers, but it should also provide similar information for developers who consume your APIs.

API Management in the Cloud

Technically, an API management platform can be hosted on-premises or in the cloud. That said, given the fundamental nature that the cloud plays in digital transformation, a cloud-based API management platform will make the most sense for most organizations. It can help alleviate the security risks of running such a solution in your own datacenter while delivering a wealth of other benefits, including unprecedented elasticity, scalability, economies of scale, and time to market—all with minimal up-front costs. Scenarios where it makes sense to implement API management on-premises are rare. They're usually limited to organizations where all API consumers are internal, or where industry-specific requirements dictate or mandate such an approach.

04/

Azure API Management: driving your digital transformation

Azure API Management, a component of the Microsoft Azure collection of integrated cloud services, provides a comprehensive solution for publishing, managing, and maintaining your APIs. With Azure API Management, you'll have immediate access to all the core competencies needed to ensure a successful API program, starting with the ability to take any backend systems, hosted anywhere, and expose them through a modern API gateway. You can also secure and protect your APIs from abuse and overuse, get insights into their usage and health, and automate and scale developer onboarding. Best of all, you can get up and running in minutes, with minimal up-front investment, and easily scale on-demand as your API program grows. And unless you want to, you won't need to understand or use any other Azure services or Microsoft technologies.

Key capabilities provided by Azure API Management enable you to:

Work with any host, API, and scale

Azure API Management is built to work the way you do. You'll be able to securely connect to back-end services built and running on any technology stack—it doesn't matter if you select Azure or another service to host your APIs. Azure API Management is available worldwide and ready to scale up and down on demand, without service interruption, to handle any traffic growth or spike.

Attract more developers

Azure API Management includes a self-service developer portal that provides access to an auto-generated API catalog, documentation, and code samples. Developers can sign in using existing customer or work identities, manage their own

access keys, view reports on their API usage, and make API calls without writing a line of code using an OAuth-enabled, interactive API console.

Secure and optimize your APIs

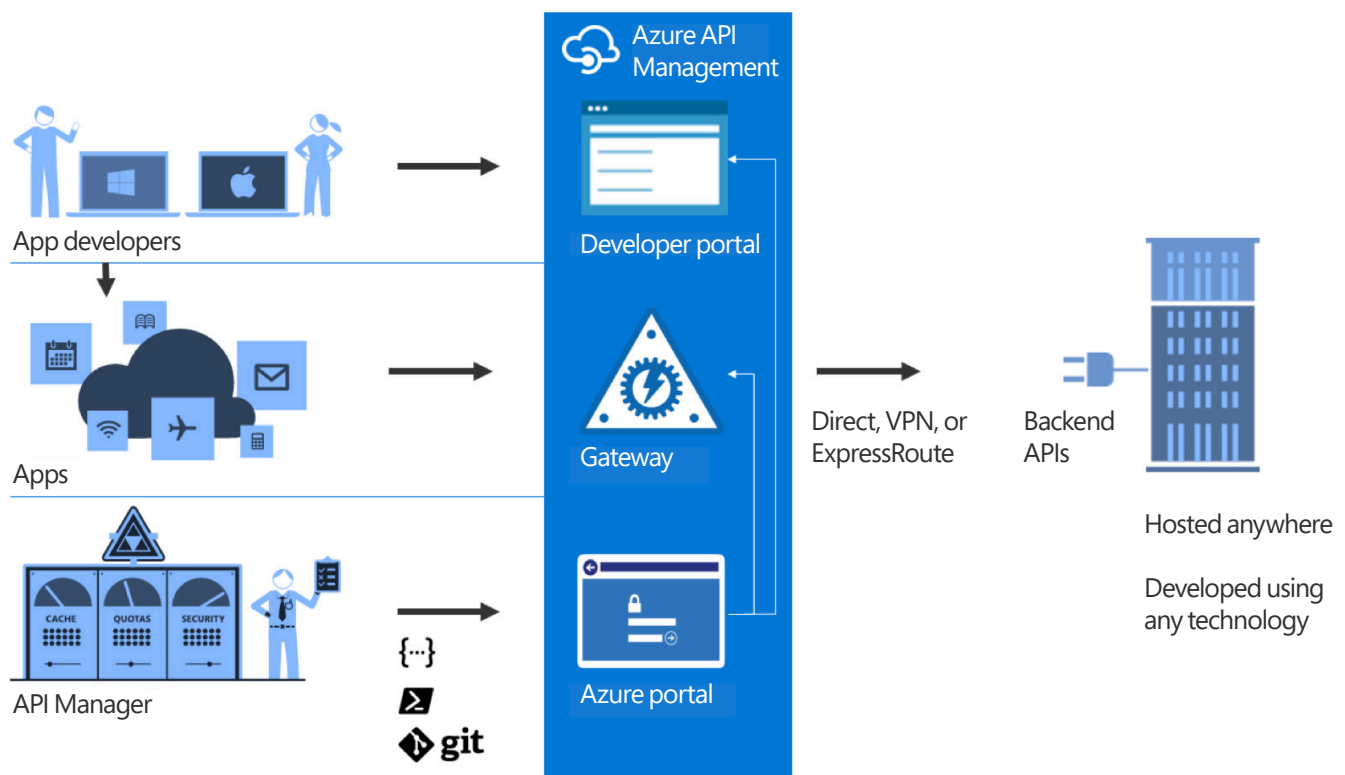
You can secure your APIs using a key, token, and IP filtering; enforce flexible and fine-grained quotas and rate limits; modify the shape and behavior of your APIs using policies; and improve latency and scale your APIs with response caching.

Gain insights into your APIs

You'll have the insights to understand how your APIs are being used and how they're performing—including near-real-time analytics to help you identify trends that might affect your business. You can also log request and response data for additional online and offline analysis.

How Azure API Management Works – A Brief Overview

The following diagram provides a high-level overview of how Azure API Management works:



API Gateway	Azure portal	Developer portal
<p>The API Gateway is the endpoint that:</p> <ul style="list-style-type: none">• Accepts API calls and routes them to your backend services—even if your backend services are hosted on-premises or on an isolated private network• Verifies API keys, JSON Web Tokens (JWTs), certificates, and other credentials• Enforces usage quotas and rate limits• Transforms your API on the fly, without code modifications• Caches backend responses where this has been set up. Logs metadata on API calls for analytics purposes	<p>The Azure portal provides the administrative interface where you implement your APIs. You can use it to:</p> <ul style="list-style-type: none">• Define or import API schema• Package APIs into products• Set up policies such as quotas or transformations on your APIs• Manage users• Get insights from built-in analytics	<p>The developer portal serves as the main web presence for developers, where they can:</p> <ul style="list-style-type: none">• Read API documentation• Try out an API via the interactive console• Create an account and subscribe to get API keys• Access analytics on their own usage

Azure API Management runs on the Microsoft Azure platform as a private, single-tenant cloud implementation. This provides a secure, isolated environment with an allocated set of resources, enhancing performance and privacy. It also ensures predictable performance, enables governance, and eliminates the “noisy neighbor” problem that can be characteristic of multi-tenant applications. (Noisy neighbor is a phrase used to describe a cloud computing infrastructure co-tenant that monopolizes bandwidth, disk I/O, CPU and other resources, and can negatively affect other users’ cloud performance.)

Using Azure API Management – Key Scenarios and Concepts

A few common scenarios for using API management include:

- **Protecting and securing mobile infrastructure** by gating access with API keys, preventing denial-of-service attacks by using throttling, or by using advanced security policies like JWT validation
- **Enabling ISV partner ecosystems** through fast partner onboarding through the developer portal—and an API facade that decouples partner APIs from internal implementations that are not ripe for partner consumption
- **Supporting an internal API program** by offering a centralized location for discovering APIs and providing gated access to them based on organizational accounts—with a secured channel between the API gateway and backend services

Using Azure API Management to support any of these scenarios is straightforward. Administrators use the Azure portal to create **APIs**, each of which consists of one or more **operations**, and each of which can be added to one or more **products**. **Developers** subscribe to the products containing the APIs they want to use, after which they can call the API’s operation, subject to any usage **policies** that may be in effect. Following is a closer look at each of the terms in bold.

APIs and Operations

APIs are the foundation of an Azure API Management service instance. Each API represents a set of operations available to developers. Each API contains a reference to the back-end service that implements the API, and its operations map to the operations implemented by the back-end service. Operations in Azure API Management are highly configurable, with control over URL mapping, query and path parameters, request and response content, and operation response caching. Rate limits, quotas, and IP restriction policies can also be implemented at the API or individual operation level.

Azure API Management also supports flexible API Versioning, allowing you to publish multiple versions of your API at the same time; and API Revisions, helping you to safely edit, change, and document updates to specified versions of your API.

For more information on creating APIs, see [How to create APIs](#) and [How to add operations to an API](#).

Products

APIs are surfaced to developers through products in Azure API Management. Products have one or more APIs, and are configured with a title, description, and terms of use. Products can be open or protected. Protected products must be subscribed to before they can be used, while open products can be used without a subscription. When a product is ready for use by developers it can be published. Once it is published, it can be viewed (and subscribed to in the case of protected products) by developers. Subscription approval is configured at the product level and can either require administrator approval, or be auto-approved.

For more information on products, see [How to create and publish a product](#).

Groups

Groups are used to manage the visibility of products to developers. Products grant visibility to groups, and developers can view and subscribe to the products that are visible to the groups in which they belong.

Azure API Management has the following immutable system groups.

- **Administrators.** Azure subscription administrators are members of this group. Administrators manage Azure API Management service instances and create the APIs, operations, and products that are used by developers.
- **Developers.** Authenticated developer portal users fall into this group. Developers are the customers that build applications using your APIs. Developers are granted access to the developer portal and build applications that call the operations of an API.
- **Guests.** Unauthenticated developer portal users—such as prospective customers visiting the developer portal of an Azure API Management instance—fall into this group. They can be granted certain read-only access, such as the ability to view APIs but not call them.

In addition to these system groups, administrators can create custom groups or leverage external groups in associated Azure Active Directory tenants. Custom and external groups can be used alongside system groups in giving developers visibility and access to API products. For example, you could create one custom group for developers affiliated with a specific partner organization and allow them access to the APIs from a product containing relevant APIs only. A user can be a member of more than one group.

For more information, see [How to create and use groups](#).

Developers

Developers represent the user accounts in an Azure API Management service instance. Developers can be created or invited to join by administrators, or they can sign up from the developer portal. Each developer is a member of one or more groups, and can be subscribed to the products that grant visibility to those groups. When developers subscribe to a product, they are granted the primary and secondary key for the product. This key is used when making calls to the product's APIs.

For more information, see [How to create or invite developers](#) and [How to associate groups with developers](#).

Policies and Policy Expressions

Policies are a powerful capability of Azure API Management, allowing the publisher to change the behavior of the API through configuration. Policies are a collection of statements that are executed sequentially on the request or response of an API. Format conversion from XML to JSON is one popular policy statement. Another is call rate limiting, which restricts the number of incoming calls that are accepted and processed by the API. Many other policies are available and, although Azure API Management does not require any development by default, policies can be tailored using C# expressions if desired.

For a complete list of Azure API Management policies, see [Policy reference](#). For information on using and configuring policies, see [API Management policies](#). For a tutorial on creating a product with rate limit and quota policies, see [How to create and configure advanced product settings](#). For more information on Policy Expressions, see [API Management Policy Expressions](#). A GitHub repository with policy examples can be found [here](#).

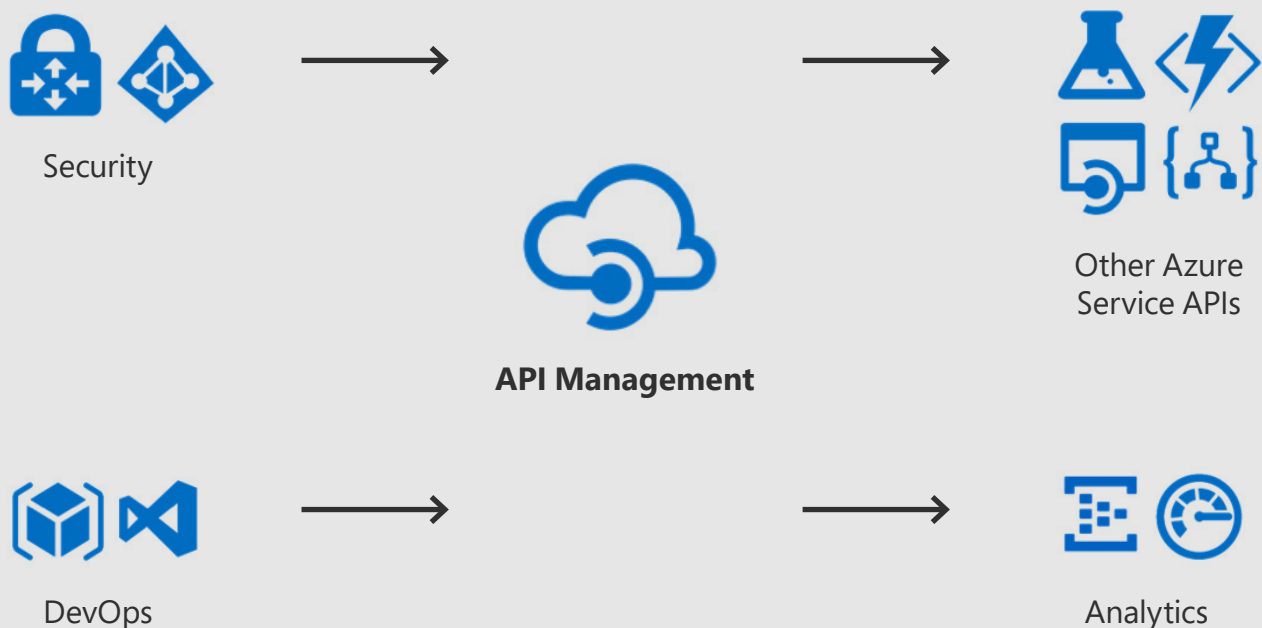
Integration with Other Microsoft Azure Services

Azure API Management is a standalone service, meaning you won't need to understand or use any other Azure services or Microsoft technologies. That said, the benefits multiply as you integrate additional Azure cloud services:

- **Security:** Azure Active Directory (and Azure Active Directory B2C) can be used to secure connections between the outside world and your Azure API Management layer, and between Azure API Management and your internal APIs and applications. Azure VPN Gateway can be configured to secure connections between Azure API Management and your internal network to expose internal APIs and services.
- **Other Azure service APIs:** Many Azure services automatically generate APIs that can be directly imported into Azure API Management to present a consistent façade across your cloud API infrastructure. Azure Logic Apps, Azure Functions, and Azure Machine Learning web services all can be easily integrated using the tooling or management APIs. These technologies, in turn, support a variety of development languages, architectures, and scaling and pricing models—

meaning that one centralized API layer can surface predictive modeling, line of business applications, data services, and on-demand processing.

- **DevOps:** API Management is a PaaS service, so you're not managing any infrastructure. Each piece can be provisioned and configured using declarative Resource Manager Templates and the Azure automation APIs. This means your API management processes—such as standing up new environments, importing and upgrading APIs, and managing products and policies—can all be part of your continuous delivery and deployment pipelines and orchestrated through Visual Studio Team Services, just as you're doing with the underlying APIs themselves.
- **Analytics:** Azure API Management integrates into Azure Event Hubs to capture telemetry about API usage, which can subsequently be persisted into the various Azure data repositories for analysis and reporting. Azure Monitor also can be integrated to a single source for monitoring all your Azure resources, enabling you to visualize, query, route, archive, and take actions on the metrics and logs coming from Azure API Management.



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Why Azure API Management, Microsoft Azure, and Microsoft

With Azure API Management, you'll benefit from a trusted technology partner that's committed to helping you protect your business, along with delivering the openness and flexibility needed to build solutions freely and deploy them anywhere. You'll also have access to a wealth of capabilities for accelerating application in the cloud, along with the data, intelligence, and insights needed to power your business apps and decision-making.

As of June 2017, Azure API Management is available in 28 Azure regions worldwide. So regardless of location, you'll have access to a single-tenant, cloud-based platform for aggregating, securing and managing your APIs that's all yours—ready to turn on, configure, and go. Multiple price tiers support cost-effective growth, delivering the scalability to support everything from small, single use-case APIs to enterprise-wide deployments. All updates and patching are handled by Microsoft, which is constantly adding new features based on customer input.

Azure API Management is also well-proven, having launched on Microsoft Azure more than three years ago. Today it supports some 6,750 customers, including 21 companies on the Fortune 100 list. It collectively supports almost 26,000 APIs, which generate a collective 11 billion API calls per month—including 100 million calls per day by a single customer.

"Compared with customers of other vendors in our analysis, they (Azure API Management customers) were among the most satisfied with both the vendor and the solution." -The Forrester Wave™: API Management Solutions Q4 2016.

Best of all, because Azure API Management is built from the ground up on Microsoft Azure, it works seamlessly with other Azure features and services such as Azure Active Directory, Azure Event Hubs, Azure Logic Apps, Azure IoT suite, and Cortana Intelligence Suite—giving you everything that you need to embark on your own digital transformation and sharpen your competitive edge.

This doesn't mean that you're locked-into the cloud. Microsoft is unique in having a firm stance in both on-premises customer datacenters and the cloud, enabling it to support a hybrid approach that can serve as a bridge on your cloud journey. With Microsoft, you'll be able to support your digital transformation regardless of where your data or compute power resides—in your own datacenter, an Azure datacenter, other public cloud datacenters, an edge device such as a connected car, or a mobile device such as a smartphone.

06 /

Customer case studies

More than 6,000 Microsoft customers are already using Azure API Management to help them transform their businesses. Following are just a few examples:

Newmarket: transforming global hospitality with cloud services

Part of the global Amadeus IT Group, Newmarket delivers hospitality solutions across 154 countries to firms such as Hyatt Hotels Corporation, the Trump Hotel Collection, and Embassy Suites Hotels. To help customers take advantage of its offerings, Newmarket wanted to create a new business model by offering access to its backend systems via APIs, which could then be used by the company's and partners to deliver a better guest experience.

Newmarket decided to host its APIs in the cloud, on Microsoft Azure, and to manage them with Azure API Management. The company's first offering is a set of APIs that give hotels the ability to provide personalized information to guests on virtually any device. Newmarket is now looking forward to expanding its API portfolio into other areas and plans to expand its use of Azure, moving most of its operations to the cloud within two years to support multiple business processes.

"We didn't want to invest heavily up front without knowing what the adoption rate would be," says Melissa Jurkoic, Product Strategist at Newmarket. "We were a skeleton crew trying to launch a greenfield initiative. With Azure API Management, we found what we were hoping for, which was something that we could turn on really quickly to get data so that we could know whether our vision was something worth pursuing."

The full case study can be found at <https://customers.microsoft.com/en-us/story/transforming-global-hospitality-with-cloud-services>

Earth Networks: weather data lights up more applications with cloud-based API publishing

Earth Networks owns one of the world's largest weather, lightning, and greenhouse gas monitoring networks. When the company began selling its Sferic API, which delivers real-time weather data, it wanted to minimize the work of registering partners, provisioning the API, monitoring usage, and billing.

The company chose Azure API Management, which Earth Networks is using to provide access to its Sferic API through either an enterprise model or a self-service model. Enterprise customers are provisioned through Salesforce.com, which uses an API hosted on Azure API Management to create the user account, assign products to it, deploy the API, and automate billing. Under the self-service model, anyone can visit the Earth Networks website, register for an account, choose a subscription level that matches their needs, and pay using PayPal—with an API hosted on Azure API Management again being used to generate the subscription and provision the account.

"With Azure API Management, we have a stable API delivery platform that frees us to expand our API business," says Anuj Agrawal, Chief Marketing Officer at Earth Networks. We've added some very large Sferic API customers, and serve up to one billion API calls a month, with no interruptions in service."

The full case study can be found at <https://customers.microsoft.com/en-us/story/earthnetworks>

Blackbaud: harnessing the power of Azure to help drive social good

Blackbaud provides software solutions that power “social good” organizations—including nonprofits, foundations, educational institutions, healthcare organizations, and corporate social responsibility. When the company decided to transition from selling on-premises software to a cloud-driven, SaaS solution, it chose Azure API Management as a turnkey solution for publishing its APIs to the company’s developer community.

Since Blackbaud launched its SKY API program in late 2016, new developers have continued to come onboard and API traffic has grown steadily. “The difference between what we’ve had in the past and what we’ve been able to do now, thanks largely to Azure API Management, is scale at the level we set our sights on, and to effectively deliver a consistent, delightful experience for our developers,” says Dan Bowman, Staff Product Manager at Blackbaud. “In addition, we can now protect our internal resources and our system performance.”

The full case study can be found at <https://customers.microsoft.com/en-us/story/blackbaud>

FantasyData: Game- Changing Cloud Development in Fantasy Sports

FantasyData, which provides data to the fantasy sports industry, provides everything from real-time player stats to historical data sets. Because such information can be difficult and costly to acquire, the data industry for fantasy sports has historically been dominated by large, incumbent players. FantasyData wanted to become a game changer by making real-time sports data more affordable and accessible—and that meant offering services that could support cross-platform app development and work with virtually any programming language.

FantasyData chose Azure API Management, which enables the app developers who are its customers to easily build fantasy sports apps for virtually any device, demand for which has increased exponentially with the rise of mobile computing. What's more, it's enabling developers that were using other data providers switch to FantasyData and go live within a matter of weeks.

"This platform definitely opens the door for a lot of people to build their own sports applications for websites and mobile devices," says Scott Gimpel, Chief Executive Officer at FantasyData. "We've succeeded in creating an open API that empowers people to be as creative as they want."

The full case study can be found at <https://customers.microsoft.com/en-us/story/game-changing-cloud-development-in-fantasy-sports>

Løvenskiold-Vækerø: Building supplies retailer constructs lucrative B2B portal

Løvenskiold Handel, a subsidiary of Norway-based Løvenskiold-Vækerø, oversees a popular building supplies chain under the MAXBO brand. A few years ago, the company decided that it needed a B2B portal to complement its existing B2C e-commerce site. Unfortunately, the same architecture did not suit the needs of a B2B solution, where pricing varies according to customer size, projects, and promotional and volume discounts—all negotiated per customer. This added up to millions of different price combinations that overloaded the company's original e-commerce platform, with customers experiencing long delays just to receive a quote for a simple order.

To address this issue, Løvenskiold Handel built a hybrid solution based on Azure API Management and BizTalk Server. Now, when a customer generates a quote on the B2B site, the request for price data is handled by an API hosted by Azure API Management. Behind the API, Azure API Management connects through an Azure App Service to Azure Table Storage, which stores products and prices for all B2B customers and is updated nightly. Submitted orders are passed to Microsoft BizTalk Server, which translates them for consumption by the company's ERP system.

The new solution has dramatically improved response times on the B2B site, enabling Løvenskiold Handel to move ahead with new APIs that will support further enrichment of its B2B offerings. "In the last 30 days, we have seen 130,000 calls to the APIs in our solution," says Per Ringnes, IT Architect at Løvenskiold Handel. "Queries that used to take 10 to 20 seconds now return in 80 milliseconds, on average. The Azure API Management hybrid architecture is working so well we've attracted 900 customers to the B2B portal in three months."

The full case study can be found at <https://customers.microsoft.com/en-us/story/lovenskiold>

Sanoma: Top European media company transforming digital services with Azure

Sanoma Corporation, one of the largest media companies in Europe, has operations in multiple countries and offerings across virtually every type of media. To simplify the delivery of online services across its business groups, Sanoma began building reusable APIs that provide access to identity, payment, and subscription data. This required a secure and scalable API management platform—including tools for monitoring API usage across various digital channels and geographies; the flexibility to support a complex mix of brands and digital assets; and the ability to support developers working in a variety of programming environments as they target different platforms and devices.

After examining several options, including several cloud vendors and building its own in-house solution, Sanoma chose Azure API Management. “Because of regulatory requirements, we had to serve our APIs within EU boundaries, which was a requirement that Microsoft, with two datacenters in Europe, could easily fulfill,” says Timo Tervo, Director of Technology Strategy at Sanoma Corporation. “And we had a list of privacy and security requirements in our RFP that Microsoft also satisfied. Microsoft Azure’s stance on privacy and security is well known and meets the tight EU privacy rules, so we’re happy that we’re in safe hands with Azure API Management.”

The company’s new solution based on Azure API Management uses Azure ExpressRoute to connect diverse assets hosted in Sanoma datacenters and other environments, such as Amazon Web Services. Azure API Management also supports a self-service portal that enables developers to easily access and test APIs as they build out new cloud services, and gives the company the insights needed to monitor API health and usage in its operational improvement.

The full case study can be found at <https://customers.microsoft.com/en-us/story/top-european-media-company-transforming-digital-service>

07 /

Getting started

More than 6,000 Microsoft customers are already using Azure API Management to help them transform their businesses. Following are just a few examples.

Digital transformation is in every company's future, and it's easier than you may think to get started. After you begin reimagining how you can combine people, data, and processes to create new value for customers and maintain a competitive edge in a digital-first world, you'll be surprised at the ideas that begin to percolate.

With Microsoft Azure and Azure API Management, you'll have the means to turn those possibilities into realities. Gathering and storing vast quantities of product and customer data will no longer be cost-prohibitive, analyzing data will be push-button easy, and you'll be able to add speech or image recognition to your business or customer-facing applications with just a few lines of code. Just as important, you'll be able to expose the capabilities of the solutions you build through a comprehensive API management platform that enables you to work with any host, API, and scale; attract more developers; secure and optimize your new API offerings; and gain valuable insights into their use, performance, and health.

Don't get left behind in transforming your business to meet the new requirements of the hyper- digital age

Azure API Management

<https://azure.microsoft.com/apim>

Request a demo

<https://azure.microsoft.com/en-us/services/api-management/demo-request/>

Try out Azure API Management and other Azure services for free

<https://azure.microsoft.com/en-us/free/>

Pricing for Azure API Management

<https://azure.microsoft.com/en-us/pricing/details/api-management/>

Documentation on Azure API Management

<https://docs.microsoft.com/en-us/azure/api-management/>

Public Roadmap for Azure API Management

<https://trello.com/b/FAA147vS/azure-api-management-product-roadmap>

Channel 9 videos on Azure API Management

<https://channel9.msdn.com/Search?term=Azure+API+Management>



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