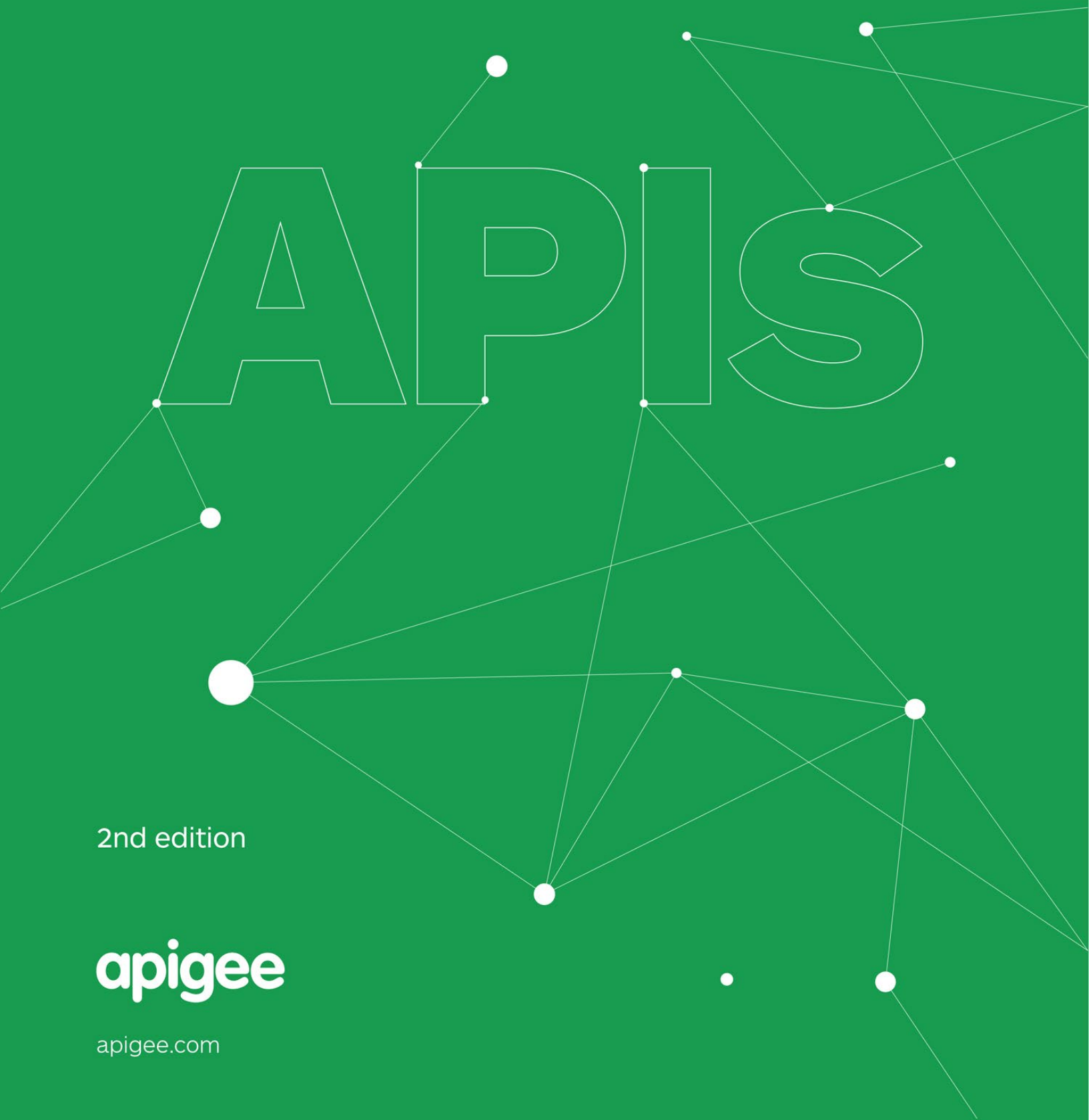
Apigee Edge Deployment Models

Selecting a Model that Fits and Evolves with YOUR Business Needs



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Abstract

Today we are seeing an explosion of information consumption. Enterprises must reach a growing global audience that has moved beyond the browser to thousands of mobile and social apps on hundreds of connected devices. APIs (application programming interfaces) power this new application- and mobile-driven economy. With new markets and opportunities come high expectations for application and service performance.

You need an API platform that fits and evolves with *your* business model—one that simplifies the API lifecycle and enables your business to manage the entire API ecosystem, drive customer reach, create innovative apps, and improve business insight. Given the pace of revolution and evolution in the marketplace, a rigid infrastructure that cannot adapt to meet the demands of your business will prevent growth and slow innovation.

Apigee provides a complete API platform that adapts to your enterprise requirements. It is available to deploy as an **on-demand cloud service**, or as an **on-premises solution**.

Which model is right for your business? This ebook outlines the options for Apigee Edge deployment including cloud deployment and software deployed in your local datacenters (on premises). It explores the considerations and questions you should ask about your business in order to arrive at the right deployment infrastructure solution. It also describes the Payment Card Industry (PCI) option and how the Apigee API Delivery Network (API-DN) can boost application speed for a global audience.

Cloud computing basics

The National Institute of Standards and Technology (NIST) defines cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (such as networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

The overall aim of the cloud model is to promote improved availability and connectivity. Well-known cloud computing models include Software as a Service (SaaS), Platforms as a Service (PaaS), Infrastructure as a Service (IaaS), and cloud storage models.

> Ten years ago no one would have believed that the largest vendor of compute, storage, and networking in the world would be the world's largest bookstore.

Most (if not all) enterprises today have similar technical challenges with storage solutions, redundancy and failover, data synchronization, and networking infrastructure, as well as with delivering fast, reliable, and consistent services globally. Large organizations, including many

Apigee customers, turn to a cloud model to address these challenges.

Companies and organizations from NASA to Netflix have seen tremendous success doing everything in the cloud.

NASA is leading the way in the adoption of cloud computing across the federal government. In August 2012 when NASA's Mars rover Curiosity landed on the red planet, million of viewers watched history unfold and experienced no video streaming problems. NASA's Jet Propulsion Laboratory used the Amazon AWS to stream the images and video associated with Curiosity's landing[Footnote].

Netflix owes much of its success in becoming a successful on-demand streaming service to cloud computing[Footnote].

The app economy

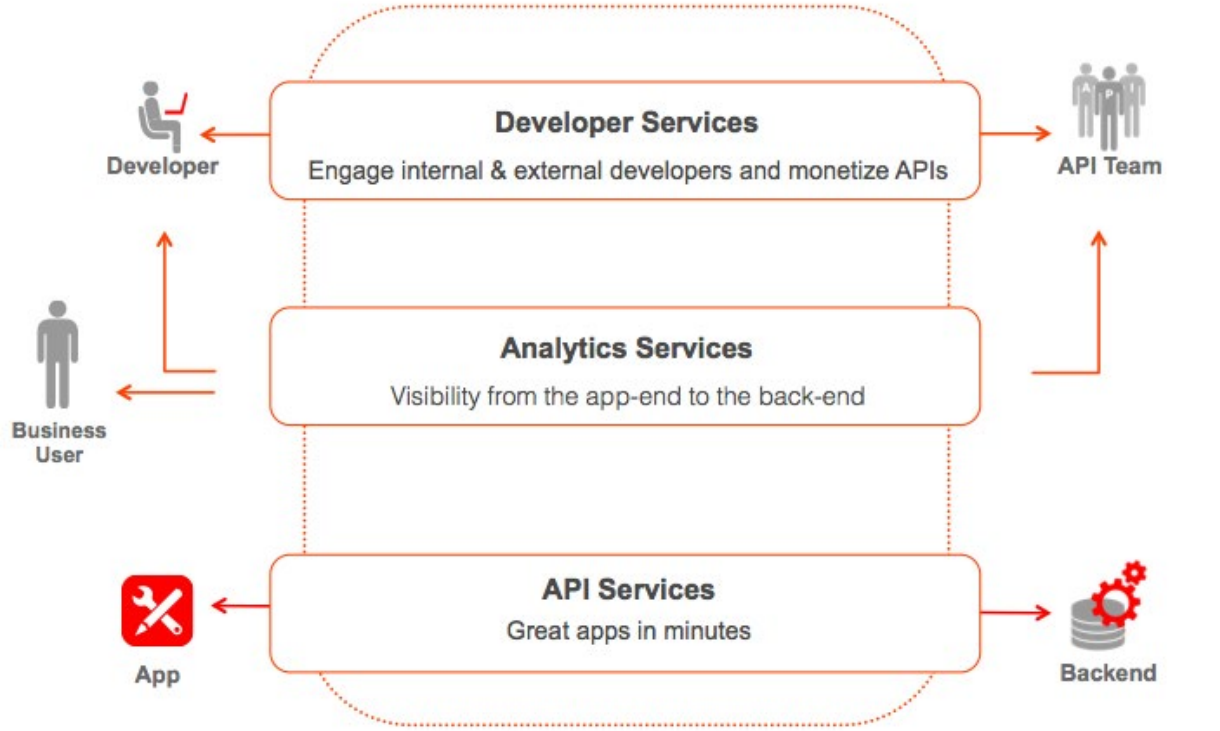
Driven by advances in cloud computing as well as the explosion of mobile and social computing, the world is more connected and interactive than ever. A tectonic shift has occurred toward a mobile and apps-driven economy in which apps can be a key differentiator for a business. Apps are powered by APIs. Companies of all sizes are opening up their services and data via APIs to power those apps, to spur innovation with app developers, and to reach customers beyond the browser and beyond the edge of the enterprise.

The API platform for the app economy

Apigee Edge is a complete solution that simplifies the API lifecycle, adapts it to the enterprise, and enables business innovation in the app economy. Apigee Edge delivers the most comprehensive set of tools to support your mobile value chain, including:

- **an API layer to securely transform backend services to easily consumable APIs and accelerate app development**
- **a developer layer to enable, engage, and transact with your developer community (represented by the gray people in the following graphic)**
- **a data layer to provide visibility from the app-end to the back-end for business and technical teams**

Figure 1: Apigee Edge—API Services, Analytics Services, Developer Services



Apigee Edge provides services for API management, analytics, and developers.

API Services brings together powerful API management tools with a BaaS platform built for cloud scale, and offers:

- powerful capabilities to securely transform existing backend capabilities to easily consumable APIs
- a data services platform to create new back-ends required by engaging apps and expose them as APIs
- all of this power via a self-service UI

Analytics Services delivers business value with customer insights from interactions at the edge of your business, provides unprecedented information about how your entire value chain is interacting with your services, and includes information about:

- the health and performance of your API execution
- how developers are using your APIs and services
- how developers' apps are performing, and the stability and performance of apps on devices

Developer Services enables you to create a great developer onboarding and community experience to increase adoption. Your API initiative is only as successful as the developers who use it and Developer Channel Services help you engage those developers and make them successful building apps with your API. Developer Services helps you:

- empower developers with an API explorer that helps them learn your API with test requests and responses
- streamline the API adoption process with automatic workflow for registration and key management and with the flexibility to adapt to custom registration and key management processes
- onboard developers and maintain compatibility with enterprise authentication standards.
- build an active community for developers that helps them learn from each other and each others' work with forums, blogs, and FAQs

Your API platform: in the cloud or on premises?

Apigee Edge—the Apigee API Infrastructure—is available as a cloud or an on-premises deployment. In the enterprise, cloud-deployed services often compete with the in-house deployment of software. Which model should you choose?

It depends on your business needs—whether you need to manage your APIs or control your customer data in-house. Let's examine what each deployment model looks like, the pros and cons of each, the considerations, and the questions you should ask to arrive at the right solution for your enterprise.

The cloud deployment model

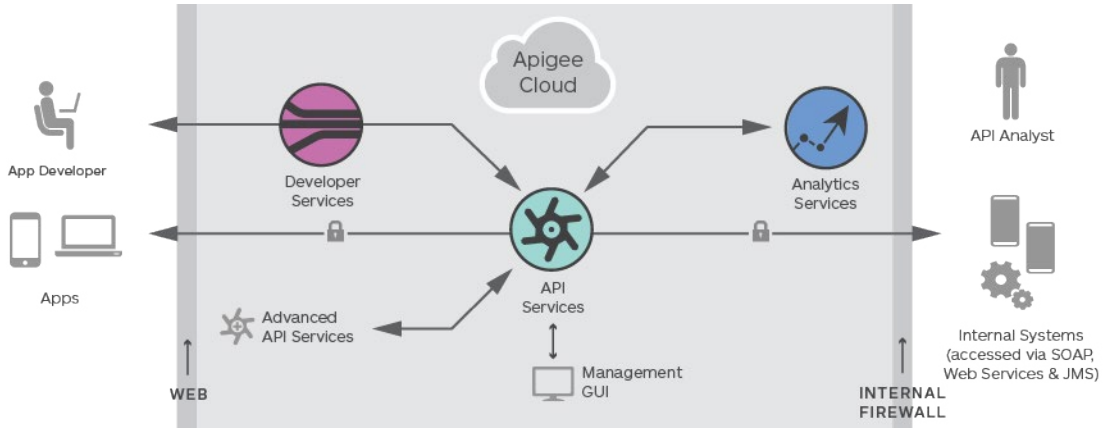


Figure 2: Apigee cloud deployment model

In a cloud model, all of the services provided in Apigee Edge are deployed in Apigee's cloud.

Cloud characteristics

The primary advantage of a cloud deployment is the ability to do seamless and immediate updates, improving your pace of innovation. Each Apigee customer gets frequent bug fixes and upgrades, and customers can provision capacity based on need, which ensures that they get the performance Apigee promises.

A general advantage of a cloud-computing model is that it aggregates many users and can leverage economies of scale. This advantage applies to all aspects of the IT infrastructure, including software, hardware, staffing, and the data center itself.

The primary tradeoff associated with a cloud-computing model is that it puts your services and data outside of the traditional walls of your enterprise, and some companies still require that their business processes, their data, and their customers' data are controlled within their enterprise.

Reliability: Is running a datacenter a core competency of your business? It's difficult to imagine a situation where a company's datacenter is more reliable than businesses with a long and reliable reputation for reliability and availability where the Apigee products run. Even when there are outages in one datacenter, it does not risk taking out all datacenters.

Time to market, time to value: When a company has a pressing event, a launch, a PR event, or a conference—something that it needs up and running quickly—the choice is almost always a cloud deployment. Going through the normal procurement processes for servers, getting them configured, racked, and stacked typically takes much longer than having Apigee spin up your API platform in the cloud.

Capital and operational expenditure: A company that is not cash rich—for which the capital expenditure and ongoing in-house operational costs for an on-premises deployment are prohibitive—will typically choose the operational subscription model provided by a cloud deployment. It allows a business to get in the game more quickly than it would if it were to spin up its own data center, and avoids up-front capital expenditure.

Management overhead: Letting Apigee focus on data center infrastructure enables you to focus on building and improving your business. When an enterprise's API platform is deployed in the cloud, there's simply less for the enterprise to manage. In addition to avoiding the hardware and set-up cost, a company doesn't need to have the knowledge and expertise to run a data center of their own. Apigee manages the infrastructure, including availability, performance, analytics data, API credentials, traffic limits, and more. Updates, fixes, and new versions of software can be rolled out quickly and easily. You manage your API services and back-end systems.

"Overall cost and flexibility benefits aside, the ability to test the effectiveness of an application's infrastructure relatively easily and inexpensively is turning out to be one of the big benefits of cloud computing."

How NASA battle-tested its Mars Rover live stream – GigaOm, August 2012

Availability: By being deployed in the Apigee cloud, your system is protected from network outages and you don't have to manage uptime and downtime issues yourself. A business purchases provisioned and dedicated capacity and Apigee handles the planning for traffic bursts, and makes capacity adjustments based on customer needs.

Agility: As a business' requirements change, a cloud-based system can be reconfigured to expand and adjust to demand, supporting agility and faster innovation. A company bears a license cost rather than the cost of adding and configuring more hardware, training new personnel, or writing, testing and deploying new software.

Scalability and elasticity: In addition to the ability to dynamically increase capacity or add capabilities without investing in new infrastructure or training new personnel, cloud environments are ideal for horizontally scaling architectures. A company doesn't have to be able to predict or guess what its hardware, storage, and networking needs will be as its business grows and matures. The number of processes and machines can vary as needed according to load and demand.

Apigee's API Delivery Network, or API-DN, can also improve scalability and protect your back-end systems by offloading intensive API functionality to local regions.

PCI compliance: Staying compliant with the requirements of the Payment Card Industry Data Security Standard (PCI DSS), required for credit card transactions, is often cited as a challenge and a disadvantage of cloud computing for businesses. Apigee is a PCI-compliant cloud provider and will help you meet the PCI requirements of web security and log management in the cloud.

Latency: If your servers are not in the same region as Apigee servers, there's risk of increased latency of API calls. Yes, another layer in the cloud introduces latency, but the value that the API management layer adds increases overall quality of service, including overall speed of service to the customer through caching and optimizing for mobile devices. In other words, the API management layer adds more value than the latency delay introduces.

API-DN can help decrease the latency disadvantage. In fact, taking advantage of API-DN can make for a latency advantage.

The on-premises deployment model

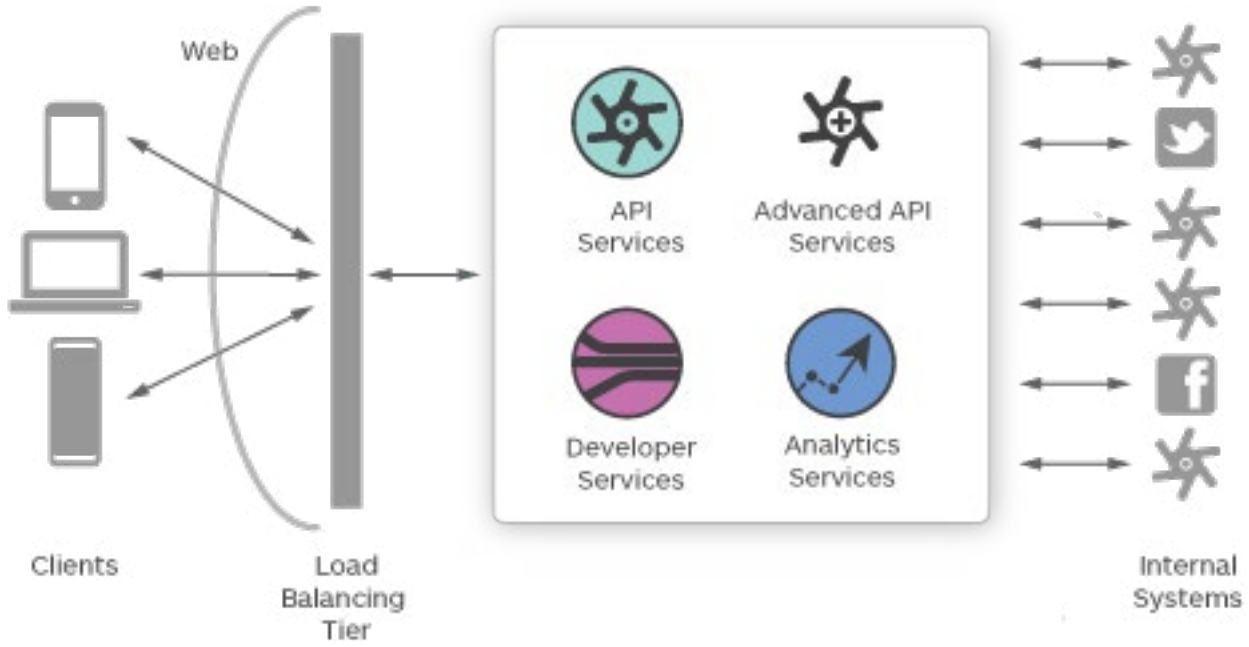


Figure 3: Apigee on-premises deployment model

In an on-premises model, you're running the entire API platform in your own datacenter, including API Services, Analytics Services, and Developer Services.

You control and are responsible for installing **Apigee Edge** in your own datacenter, managing messaging processing and key stores. You monitor performance, scale up and down, deal with outages and downtime, update and manage software versions, and replace hardware as it fails.

Developer Services and Analytics Services, including Cassandra database(s) for storage of developers, apps, keys and associated metadata, developer and app access controls to APIs, customizing and publishing API content to the staging and production developer portals is done on premises as well.

On-Premises characteristics

Customers typically choose an on-premises deployment when they have requirements to keep aspects of API management in house.

Management and control: You manage API Services including messaging processing, key stores, your data, and your customers' data within your own datacenter. You have full control over performance, scaling, updating and managing software and hardware.

Analytics Services requires working with storage and processing of your analytics data, managing different kinds access to data, and managing developer access and data.

As your API strategy takes off, a lot more data from both your API and contextual data from your customers will exist elsewhere in the ecosystem—outside of your enterprise and your traditional systems of record.

Additionally, as Apigee continues to expand and advance analytics capabilities, the technology becomes increasingly complicated and may be better handled as part of the Apigee cloud.

An internal private development network: For some companies, an advantage of running your API platform on premises is to provide API and app developers with an internal private network. However, more and more companies are realizing that the barriers between internal and external networks are not what they used to be.

As companies are opening their systems to external developers and partners to spur innovation and expand channels, the need and desire for private networks diminishes. Engineers who work in the cloud are developing skills that are increasingly relevant as cloud computing becomes a dominant platform for companies of all sizes.

Latency: An advantage of deploying in your own datacenter is a reduction in latency. In other words, deploying your API platform on the Apigee cloud might introduce latency depending on where you are relative to Apigee datacenters.

Apigee's API-DN can decrease the latency disadvantage. API-DN can in fact become a latency advantage because you can take advantage of Apigee datacenters in various parts of the world. See the API-DN section below.

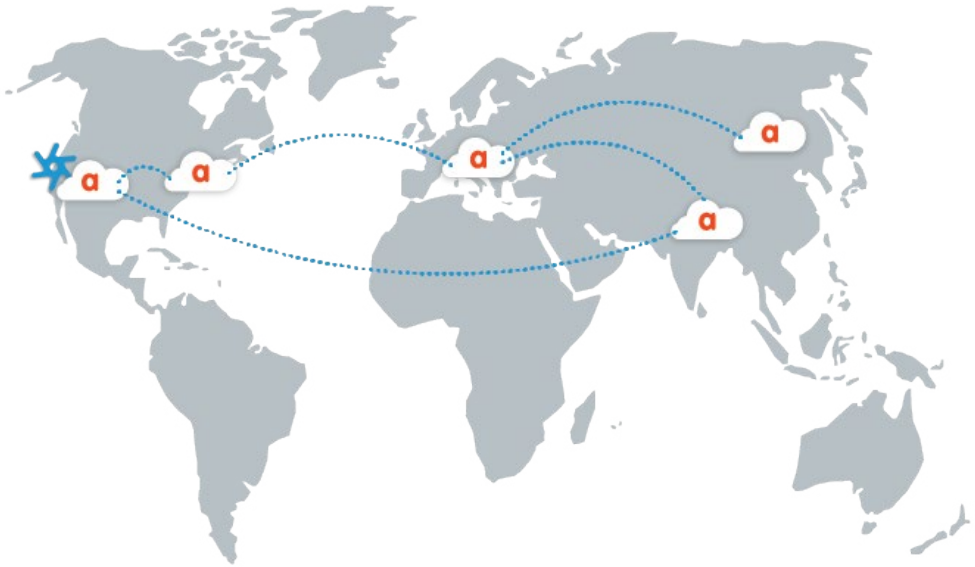
Security: With Apigee Edge deployed on premises, you can run any security system you want. This has the advantage that security can be controlled at whatever level the customer needs, and makes it easier to satisfy increased audit needs.

API-DN for global distribution

The quality of your customers' mobile app experience is only as strong as your ability to deliver fast, reliable, and consistent service to app end-users through your APIs. Apigee's API-DN puts your API where your customers are, giving global enterprises global reach into the thousands of new market niches created by mobile, social, and cloud apps.

You have to be willing to do some deployment in the cloud to take advantage of API-DN for global distribution. With an on-premises deployment, every round trip may have to go to your one and only datacenter. Taking advantage of caching and API-DN, you can reduce the number of round trips.

Figure 4: Apigee API-DN provides global enterprises with global reach



Apigee API-DN is like a content delivery network (CDN) for your API, dramatically improving speed, reliability, and consistency of service to improve app end-user experience. API-DN also improves your scalability and protects your back-end systems by offloading intensive API functionality to the local regions.

Apigee API-DN is delivered as a fully managed cloud service. The API-DN service consists of clustered deployments of a complete configuration of the Apigee infrastructure in up to four global regions.

Latency: API-DN can dramatically improve the speed of apps and API calls. Critical runtime, content, and operational data is replicated. Dynamic content is served and API operational policies are executed in region nearest to the end-user. This latency advantage is further solidified by other operations Apigee can perform through the API-DN, such as caching, compression, and transformation.

Caching: Programmatic API response caching gives fine-grained control over dynamic content. When API results are cached locally, API calls are faster and mobile device performance is improved.

Compression and transformation: Streamlined content, response caching, pagination, and protocol and format transformations reduce the amount of data sent over networks, helping optimize for mobile.

Security: Operational policies on API traffic, including authentication and authorization (including OAuth) are executed in the local region gateway clusters where possible. If an invalid request is made for an API, it doesn't go over the network to your back-end system. Rather, Apigee can handle the request.

Redundancy: Apigee deploys your API proxies in multiple locations, thereby providing redundancy.

What about multi-tenancy?

The Apigee cloud is a multi-tenant environment, which means that each Apigee customer gets frequent bug fixes and upgrades. Customers can provision capacity based on need, which ensures that they will get the performance that we promise.

Common management infrastructure: A common management infrastructure allows customers to get faster availability of software update; a monthly software release or update, a security fix or update is rolled out to all customers at the same time. Having the requirement and the ability to serve multiple customers at once means faster response times when issues arise.

Best of both worlds: The Apigee infrastructure provides the best of both worlds. A multi-tenant management infrastructure means that updates and fixes can be rolled out quickly and seamlessly to all tenants. But Java code, custom scripts, and so on, are isolated in separate nodes.

You buy provisioned and dedicated capacity units (for example, 10k messages/sec) and Apigee can adjust the formula based on customer needs.

Summary

An increasingly global marketplace as well as the explosion of mobile apps and APIs place new demands on businesses. The quality of your customers' mobile app experience is only as strong as your ability to deliver fast, reliable, and consistent service to app end-users through your APIs.

Apigee provides a platform to satisfy those demands. Apigee Edge is available as a cloud or an on-premises deployment. In addition, customers can take advantage of Apigee's cloud-based API-DN to put their APIs where their customers are, giving enterprises the global reach they need in today's marketplace.

A major benefit of a cloud deployment is seamless and immediate updates for customers. The pace of innovation is faster than with on-premises software because you can iterate more quickly, picking up changes on your schedule without the need to provision new infrastructure or software. A cloud deployment model aggregates many users and can leverage economies of scale: Apigee provides the infrastructure, and Apigee runs the operations. A cloud deployment is safe, because Apigee takes care of data protection and isolation.

The Apigee cloud is a multi-tenant environment, which means that each Apigee customer gets frequent bug fixes and upgrades. Customers get dedicated capacity, which is provisioned and adjusted based on customers' needs.

For customers who need to control their business logic within their enterprises, and who can afford the operational and capital costs of running their own datacenters, an on-premises deployment model offers advantages for control, security, and auditing.

Which deployment model right for your enterprise? To learn more about how an API platform can fit your business model and evolve with your changing needs, explore Apigee's offerings here: http://apigee.com/about/plans. Or, to get started right away, visit our sign-up page at https://accounts.apigee.com/accounts/sign_up.

About Apigee

Apigee empowers enterprises to thrive in today's digital world by transforming digital assets into innovation engines. Results are delivered as apps, optimized by data and catalyzed by APIs. Hundreds of companies including Walgreens, eBay, Shell, Bechtel, Marks & Spencer & Vodafone partner with Apigee to accelerate their digital transformations. To learn more, see apigee.com.

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