Amazon API Gateway

New Information System for COP system

Managing Business Information Systems (BA 6953)

Poonam Pawar

1429329

Trine University

Dec 12, 2018

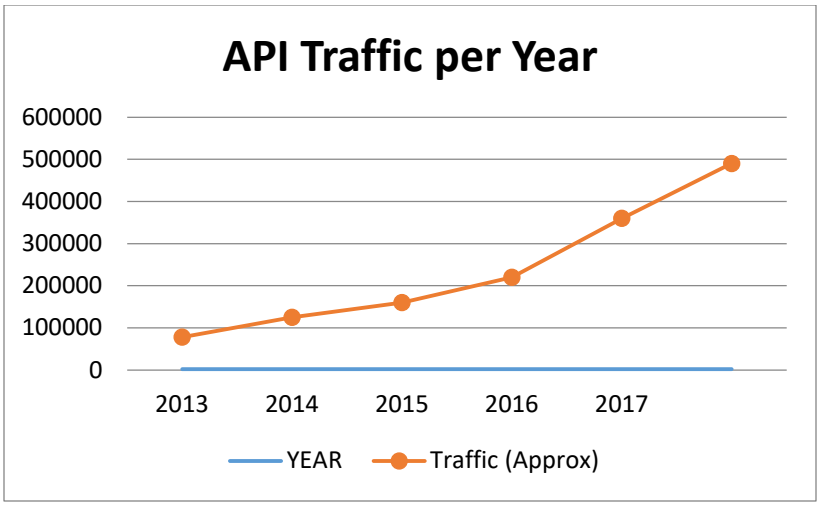
Introduction

I have an experience of over half a decade in the IT industry. One of my previous employers whose all applications and services were web-based can use Amazon API Gateway for managing services, APIs, and web applications. My previous employer was providing a centralized global solution for real-world users like surgeons, sales reps, and hospitals to order orthopedic equipment and implants. The solution was named Centralized Order Processing (COP) System. The web-based solution was accessed by over 10000 users to check inventory, product catalog, pricing, delivery information, and user-feedbacks. All the services under the web-based solution were individual APIs hosted on Amazon Web Services (AWS). After the launch of the solution, the increase in the application traffic is very rapid in the last few years. I would recommend using Amazon API Gateway to manage, scale, and monitor the APIs to improve the business and the performance.

Business Problem

The COP system is accessible globally via the internet. After the inception of the COP system for the company, the response from the surgeons, sales reps, and the hospitals was overwhelming. But with the increase in the business, the performance was deteriorating due to architecture, maintenance efforts, and resources. In the past two years, the COP system shut down eight times for maintenance of the web-services. All these reasons impact the user experience and the business.

The change in the API traffic in the last five years is as below:



The COP system needs an immediate solution/ software/ application which has the capabilities to monitor and manage the APIs so that the user-experience is least impacted and more customers can use the system.

Business Needs

The scope of the project to provide a solution for API management is below:

- The new application should help in managing, monitoring, publishing, and analyzing the existing APIs.
- The new information system should reduce the time and cost required for upgrade, maintenance, and server-migration.
- Improve the user experience and performance. Also, decrease issues related to user interface.
- Better analytics reports for the API management.

Business Value

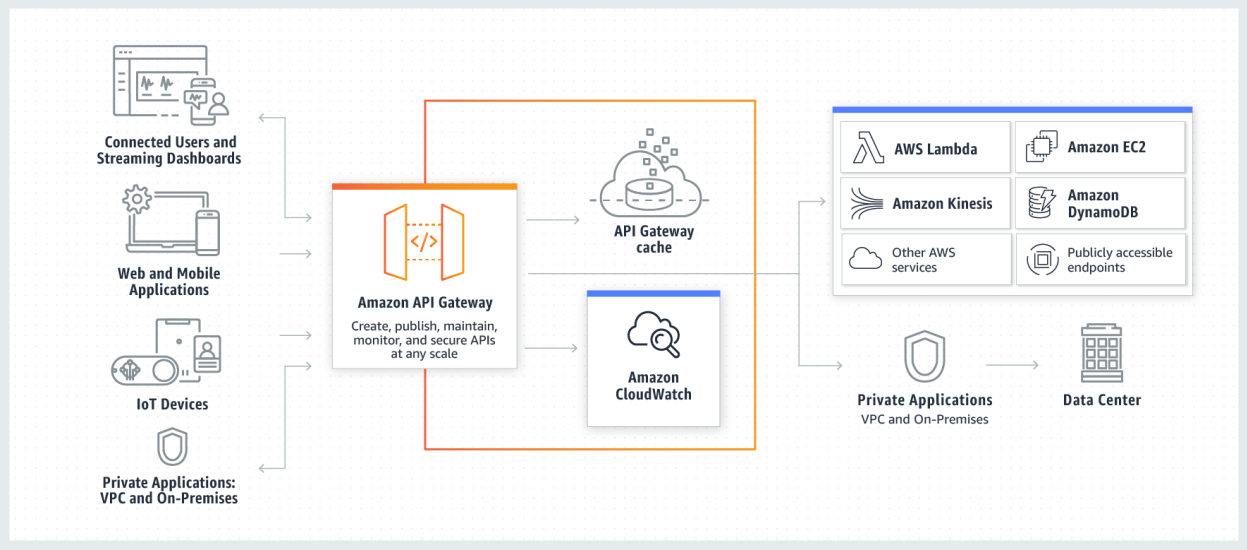
- Low cost for upgrade and maintenance. No annual contract for using API management tool. The company will only pay per use.

- No downtime required and no interruption in user-experience during server migration, maintenance, and upgrade.
- Increase in sales due to better user-experiences.
- Easy scaling for the company, as all the current solutions are web-based and mostly hosted in AWS.

Amazon API Gateway

Amazon API Gateway is a managed service hosted by Amazon.com that makes it easy for the developers to create, publish, maintain, monitor, and secure APIs. With API gateway, developers can create APIs for any business logic or functionalities. It reduces the development time and effort. API gateway handles all tasks related to accepting and processing of all API calls, including traffic management, authorization, load balancers, server allocations, data transfer, monitoring, and access control. With Amazon API Gateway, the COP system will only pay for the API calls received.

Amazon API Gateway Architecture



The main highlights of Amazon API Gateway include (AWS, 2018):

- The input request can come from any source like user, web applications, mobile applications, IoT devices, private applications, and on-premises applications.
- Amazon API Gateway will monitor and maintain the incoming request from the various sources.
- Along with the API Gateway, Amazon also provides Cloud Watch for monitoring the traffics.
- Based on the incoming request, the application will route the request to the appropriate destination. The destination can be anything from a database to another application.

Benefits

Below are the five major benefits to use Amazon API Gateway in COP System (Janakiram, 2015):

- **Elastic, Self-Service and Pay-by-Use API Facade in the Cloud:** Like all the AWS services, API Gateway is charged based on the use. There is no contract of any kind between the company and AWS. All the resources in the AWS are cloud-based and need no hardware. The architecture is elastic in nature and can be scaled without any restrictions.
- **API Logging, Caching, Throttling, Bursting and Monitoring:** Memory caching in all the API calls helps in the reuse of the resource and provide better performance. This property also makes the system cost-effective.
- **API Lifecycle Management:** API gateway supports staging, versions, and multiple releases. It makes it easy for the COP system to easily deploy, rollback, and scale the solutions easily based on the requirements.

- **Payload Modeling and Transformation:** One main feature of the API Gateway is its capability to modify the payload during request and response. By determining a template, the request and response payloads can be remodeled to match a custom schema based on requirement.

Pricing

Amazon API Gateway provides one-year free tier on subscription. After that, the organization is charged based on the usage. The current price list is as below for the USA location (AWS, 2018):

API Calls

Number of Requests (per month)	Price (per million)
First 333 million	$3.50
Next 667 million	$2.80
Next 19 billion	$2.38
Over 20 billion	$1.51

Apart from the above, for better performance and faster API execution, the COP system can also opt for memory caching. The pricing for memory caching is as below (AWS, 2018):

Cache Memory Size (GB)	Price per Hour
0.5	$0.020
1.6	$0.038
6.1	$0.20
13.5	$0.25
28.4	$0.50
58.2	$1.00
118.0	$1.90
237.0	$3.80

The estimated price calculator is available at http://calculator.s3.amazonaws.com/index.html.

Conclusion

The COP system is a fairly new web-based solution for the organization. The user acceptance of the COP system was very overwhelming, and the number of users and transactions are increasing rapidly. The use of an API management tool is essential for the company to withstand the increase in traffic and load. Having Amazon API Gateway is the most optimal solution as most of the existing web-based solution is hosted in AWS. Apart from that the process of incorporating Amazon API Gateway is easy, secure and cost-effective.

References

- AWS. (2018). Amazon API Gateway. Retrieved 10 Dec 2018 from https://aws.amazon.com/api-gateway/
- Janakiram, MSV. (2015). THENEWSTACK. Five Reasons to Consider Amazon API Gateway for Your Next Microservices Project. Retrieved 11 Dec 2018 from https://thenewstack.io/five-reasons-to-consider-amazon-api-gateway-for-your-next-microservices-project/