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# APIGEE API MANAGEMENT


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Apigee Developer


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# Agenda

- What is API?
- Why API?
- Sample example of API
- API Economy
- API Economy challenges
- What is API Management?
- Vendors of API
- What is Apigee?
- Apigee Features


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# Agenda

- What is Apigee Edge?
- Apigee Edge Architecture
- Components of Apigee Edge
- What is API Proxy?
- What is Policy?
- Policy options in Edge?
- What is Flow?
- Sample UseCase
- Different Policies in Apigee Edge


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# Agenda

- What is API Baas?
- API Baas Features
- What is API Insight?
- API Insight Features


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# What is API?

- An Application Programming Interface(API) is an architecture that makes it easy for one application to **consume** capabilities or data from another application.

- APIs enable developers to easily access and reuse application logic built by other developers.

- Application developers calls these API functions and use them by defined protocols like Soap,Rest architecture style.


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# Why API?

- For re-usability ,Sharing information.
- The applications in cars,appliances, smart phones that communicate with back-end business functions through APIs.
- Hide complexity, expose existing functionality.
- APIs can help companies expose data that they wish to make available to the outside world or select business partners but maintain security.


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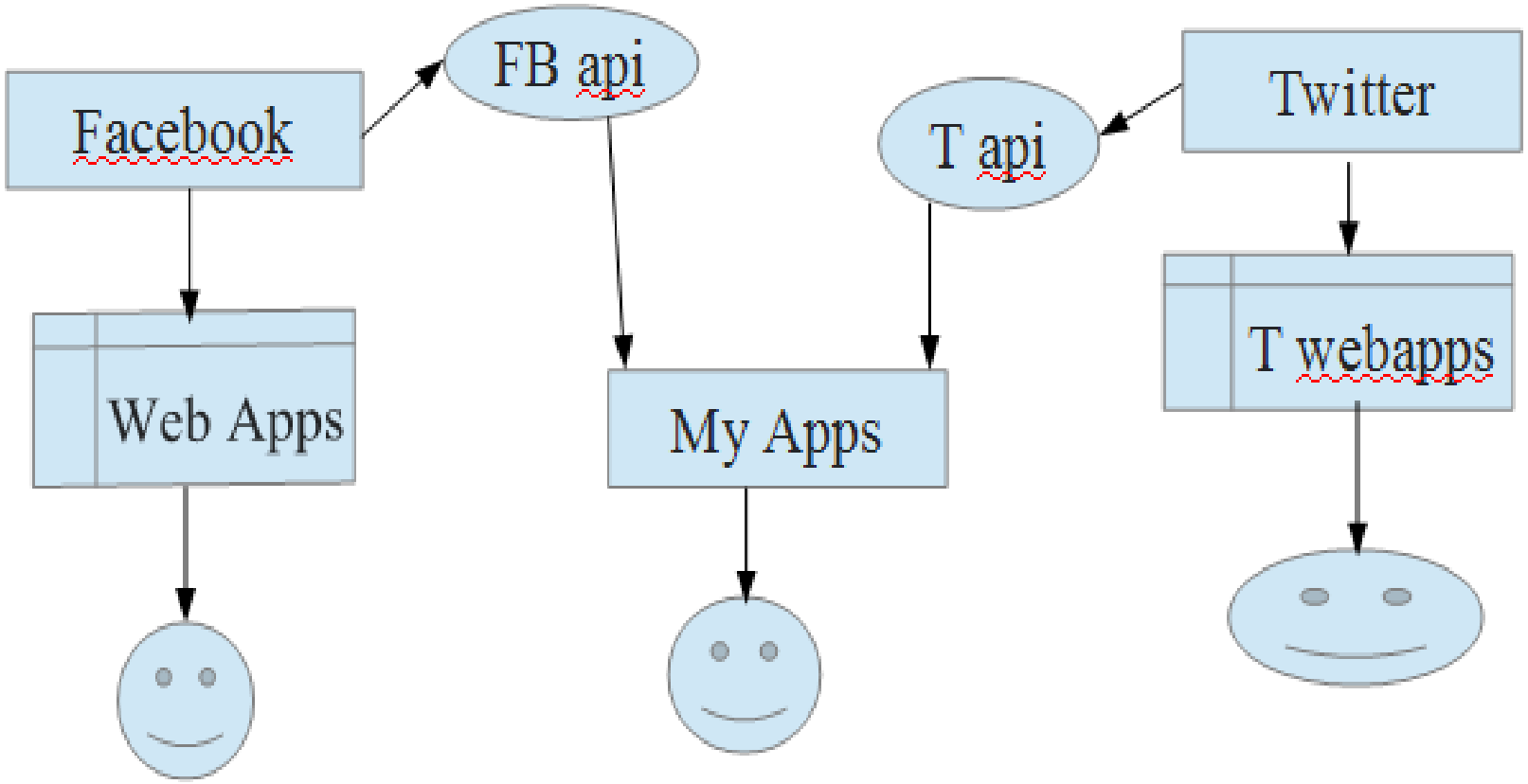
# Sample Example of API





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# API Economy

- API Economy is a term that describes the way application programming interfaces can positively affect on organization's profitability.
- API Economy  provides  new opportunities to develop the APIs.
- Example:  Mobile apps  are  connect to back in services.

  → To generate revenue.

  → Extends brand reach.

  → Delivers rich and  targeted mobile experience to end-users.


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# API Economy Challenges

- API Design
- Access Control
- Traffic Control
- Security Policies
- Scalability and Availability
- Versioning and Compatibility
- Reporting
- Documentation

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# What is API Management?

- The process of publishing, promoting, and overseeing APIs in a secure,scalable environment.
- Manages,secures, and mediates your API traffic.
- Automate and control connections between an API and the applications that use it.
- Provide memory management and catching mechanisms to improve application performance.


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# Vendors

Note: Informatica and managed methods have exited the API management business.


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# What is Apigee?

Apigee is the leading provider of API technology and services for enterprises and developers.

**Why Apigee**?

It simplifies the following functionalities:

→ Access control

→ Traffic control

→ Security policies

→ Scalability

→ Compatibility

→ Documentation

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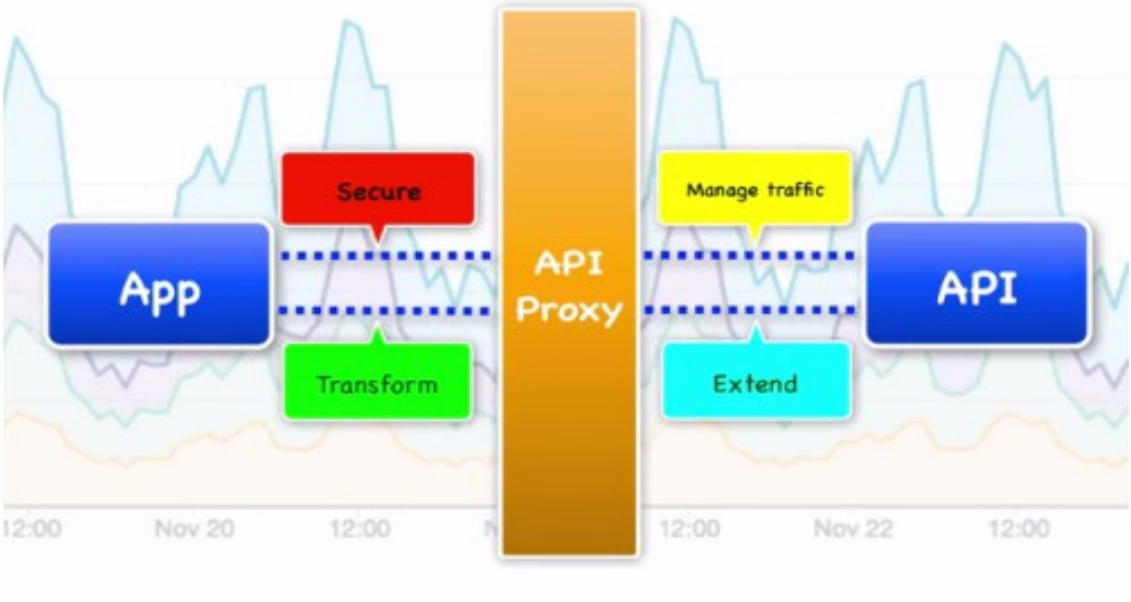
# Features of Apigee





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# What is Apigee Edge?

- Apigee Edge enables you to expose APIs that can be easily consumed by developers who build apps.
- Expose APIs on Edge by building API proxies that act as managed 'facades' for backend services.
- Makes it easy for app developers to consume your services.
- Enables you to change the backend service implementation without affecting the public API.
- Enables you to take advantage of the analytics, monetization, developer portal, and other features built into Edge.


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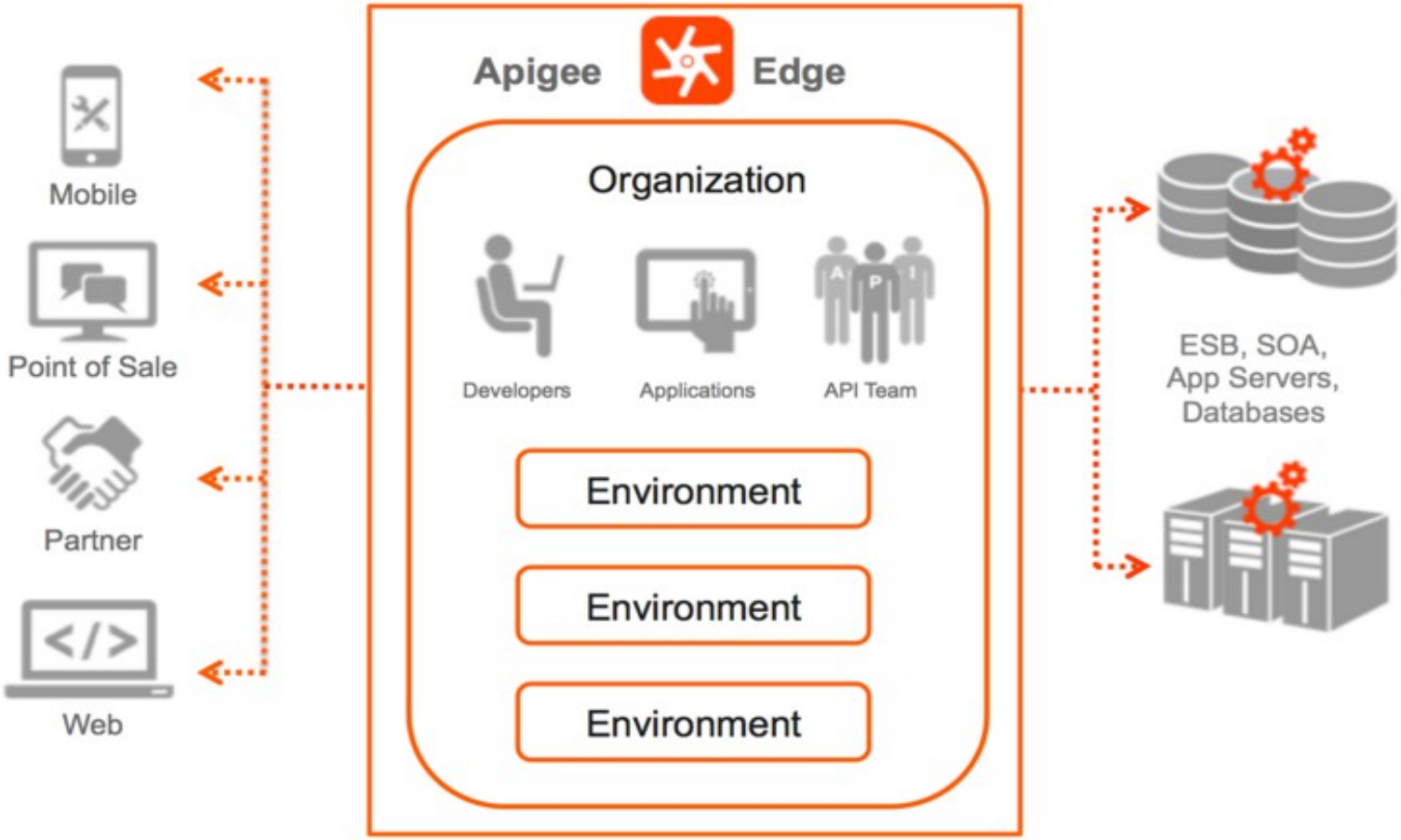
# Apigee Edge Architecture





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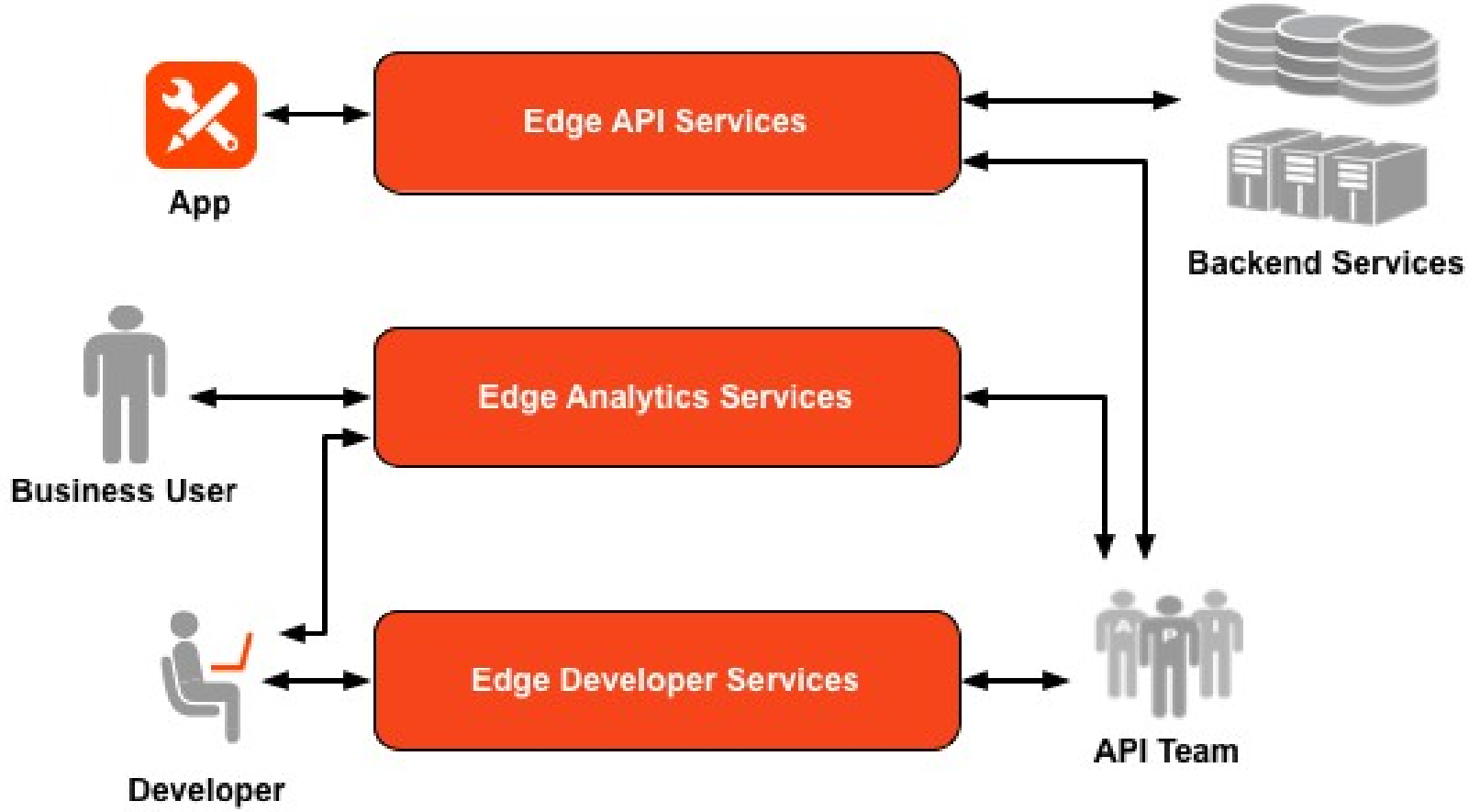
# Components of Apigee Edge





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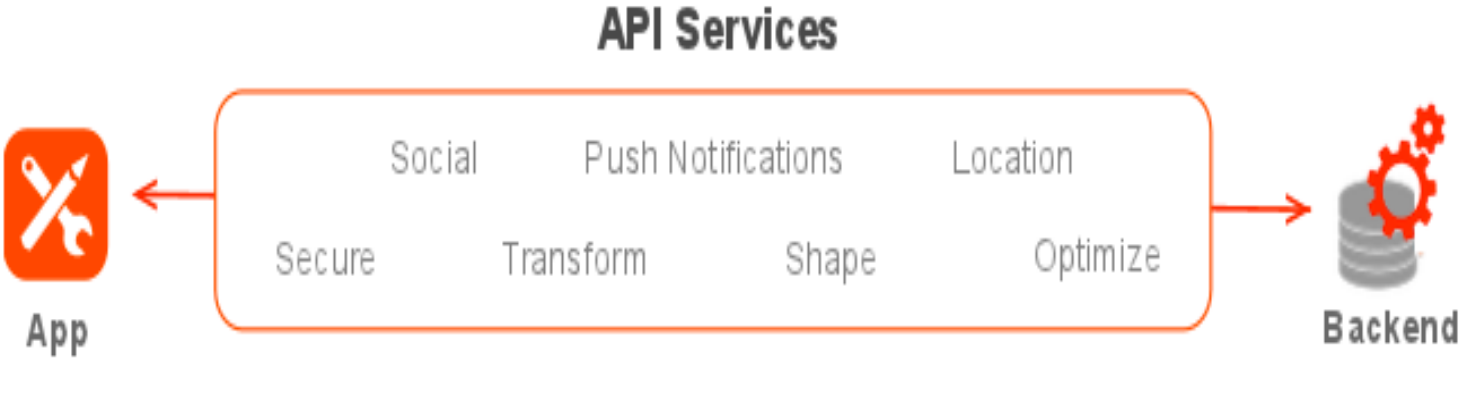
# Edge API Services

- Apigee Edge API Services are all about creating and consuming APIs.
- On the API-building side, the API management server provides tools for adding and configuring your API proxies, setting up API products, and managing app developers and client apps.





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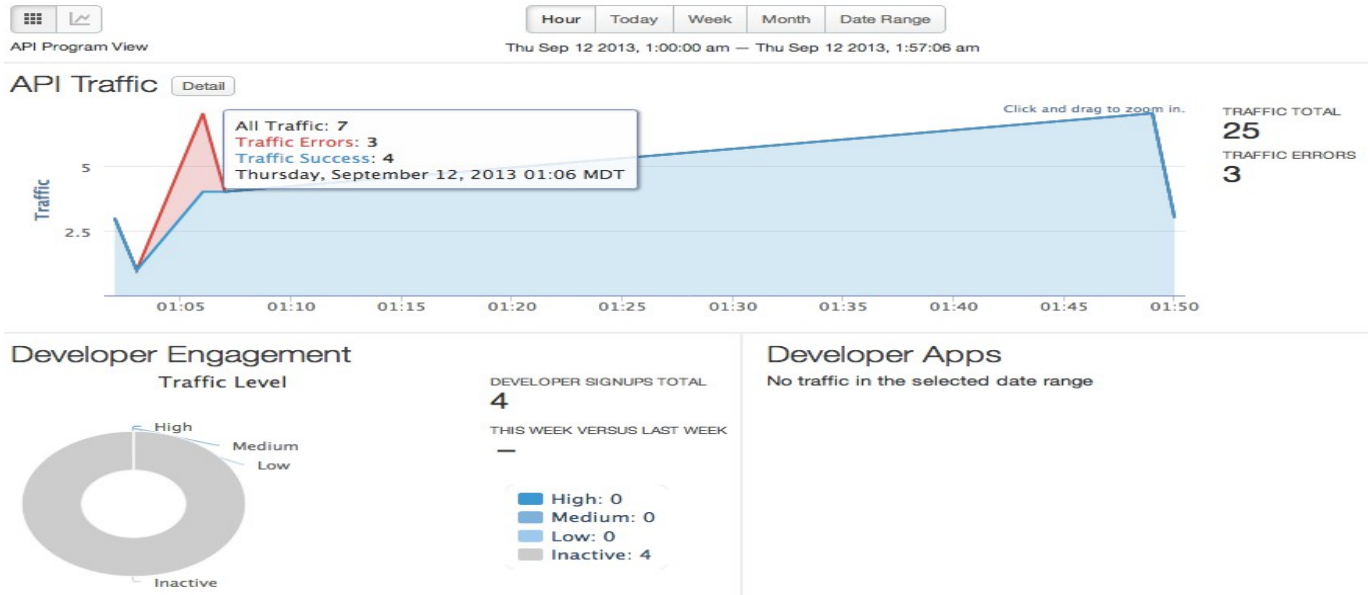
# Edge Analytics Services

- Apigee Edge Analytics Services provides powerful tools to see short- and long-term usage trends of your APIs.
- It can also access and control the Analytics Service by a command-line interface or through RESTful APIs.





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# Edge Developer Services

- Apigee Edge Developer Services provide the tools to manage the community of app developers using your services.
- Developer Services provides the ability to onboard developers and create a developer portal for your publicly available API products.
- Developer Services offers the flexibility to work with internal and external developers and formalize these relationships with financial models.


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# What is API Proxy

- Expose APIs on Apigee Edge by implementing API proxies.
- API proxies decouple the app-facing API from your backend services, shielding those apps from backend code changes.
- As you make backend changes to your services, apps continue to call the same API without any interruption.
- There are **two** types of end points in API Proxy:

  → **Proxy End Point:**Defines the way client apps consume your APIs.

  → **Target End Point:**Defines the way the API proxy interacts with your backend services.


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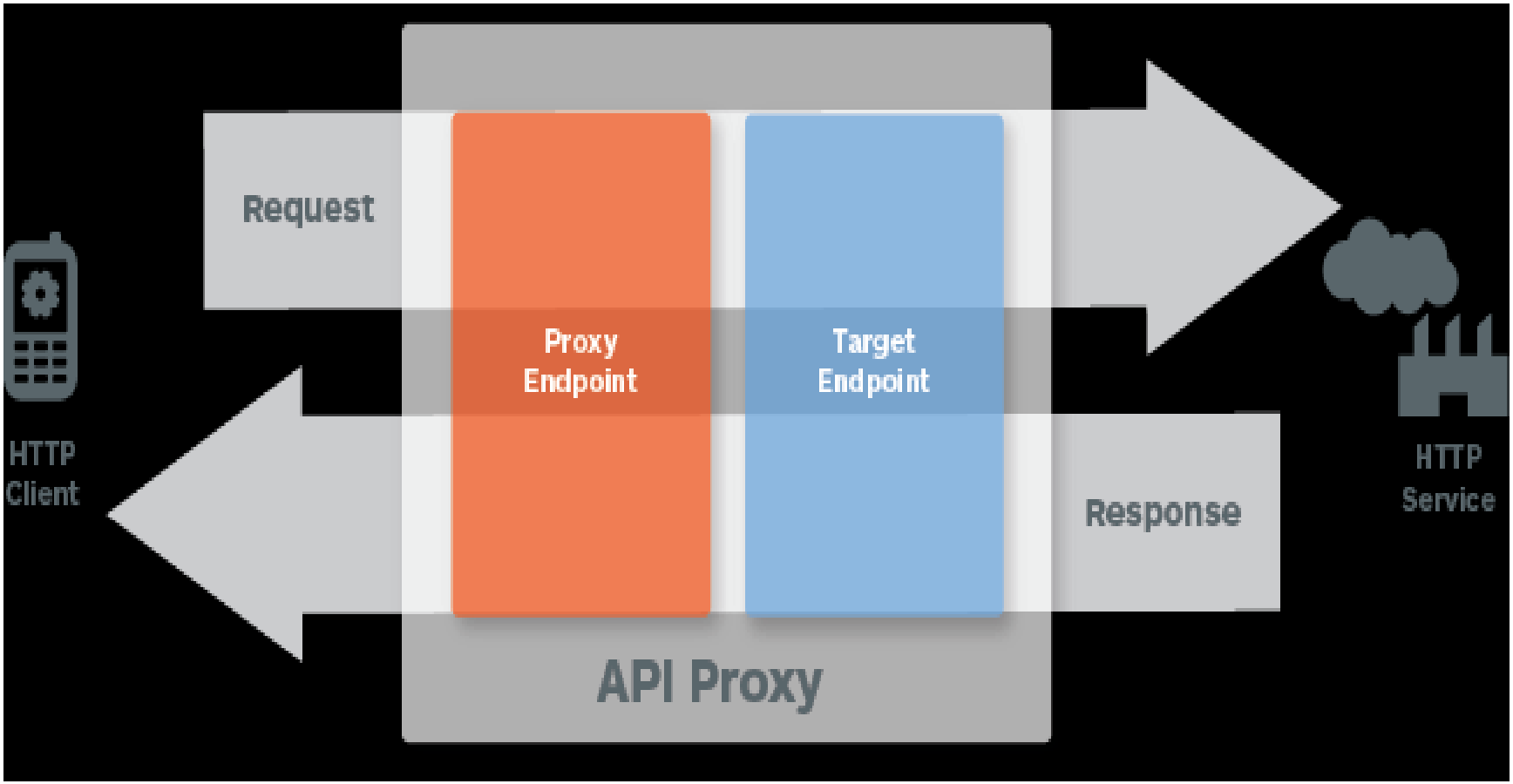
# Proxies





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# What is Policy?

- Policies are in Edge what we use to define actions.
- Policies are bits of logic that can be executed during the course of processing an API request and can be grouped together into a flow.
- Features of Policy:

  → Security

  → Rate Limit

  → Transformations

  → Mediation Capabilities


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# Policy options in Edge

**Manage** interactions with API consumers and optimize performance

**Transform**, translate and reformat data for easy consumption

**Secure** APIs and protect back-end systems from attack

**Extend** with programming when you need it


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# What is flow?

- **Flow**: API proxies define request and response flows that are executed in a specific order. The order allows you to apply logic and behavior at specific points in the API proxy execution.
- **Types of Flows**:

  → **Pre Flow**: PreFlows always execute first, and the logic you attach in the PreFlow applies to all calls made to the API proxy.

  → **Conditional Flow**:API proxy programming starts to get interesting when you implement the logic for an API.


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→ **Post Flow**: PostFlow is useful when you need to log some data, send a notification that something happened and transform the message format.

→ **Post Client Flow**: It executes after the response is returned to the requesting client app. Only MessageLogging policies can be attached to this flow.


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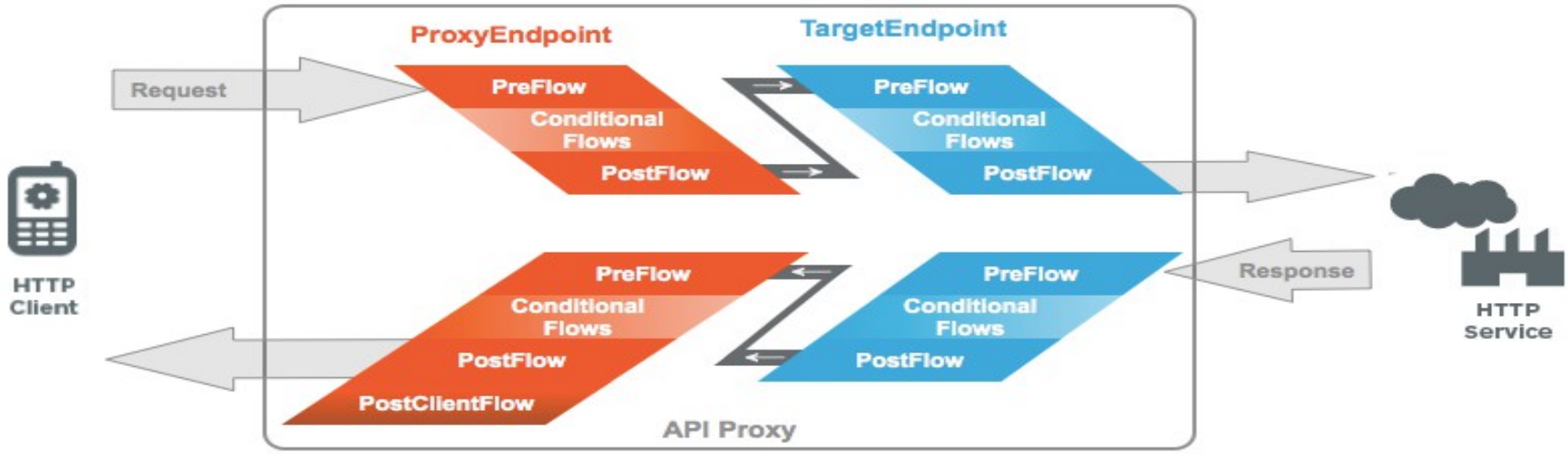
# Policy Flow




```
<ProxyEndpoint name="default">
    <PreFlow>
        <Request/>
        <Response/>
    </PreFlow>
    <Flows>
        <Flow name="flow1">
          <Condition/>
          <Request/>
          <Response/>
    </Flows>
    <PostFlow>
        <Request/>
        <Response/>
    </PostFlow>
    <PostClientFlow/>
    …
</ProxyEndpoint>
```

```
<TargetEndpoint name="default">
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        <Request/>
        <Response/>
    </PreFlow>
    <Flows>
        <Flow name="flow2">
          <Condition/>
          <Request/>
          <Response/>
    </Flows>
    <PostFlow>
        <Request/>
        <Response/>
    </PostFlow>
    …
</TargetEndpoint>
```


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# Sample Use Case

- In the following usecase different policies can be applied to the policy.
- Initially we had created one API proxy with SOAP URL.
- Before apply policy we have to check the response.
- After applying Spike Arrest and Quota policies we have to check the response.


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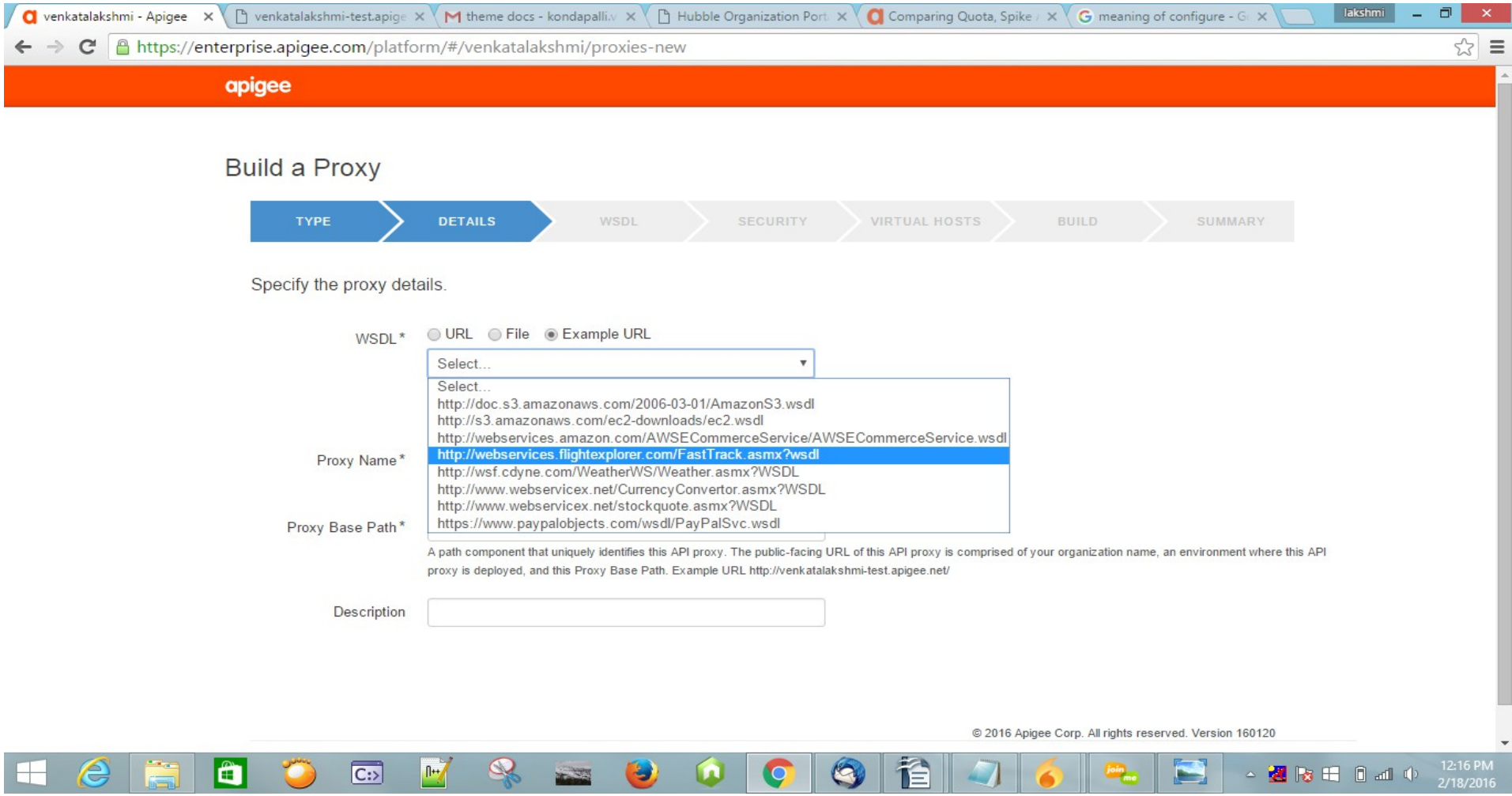
→ Initially we had created one API Proxy with the SOAP URL.





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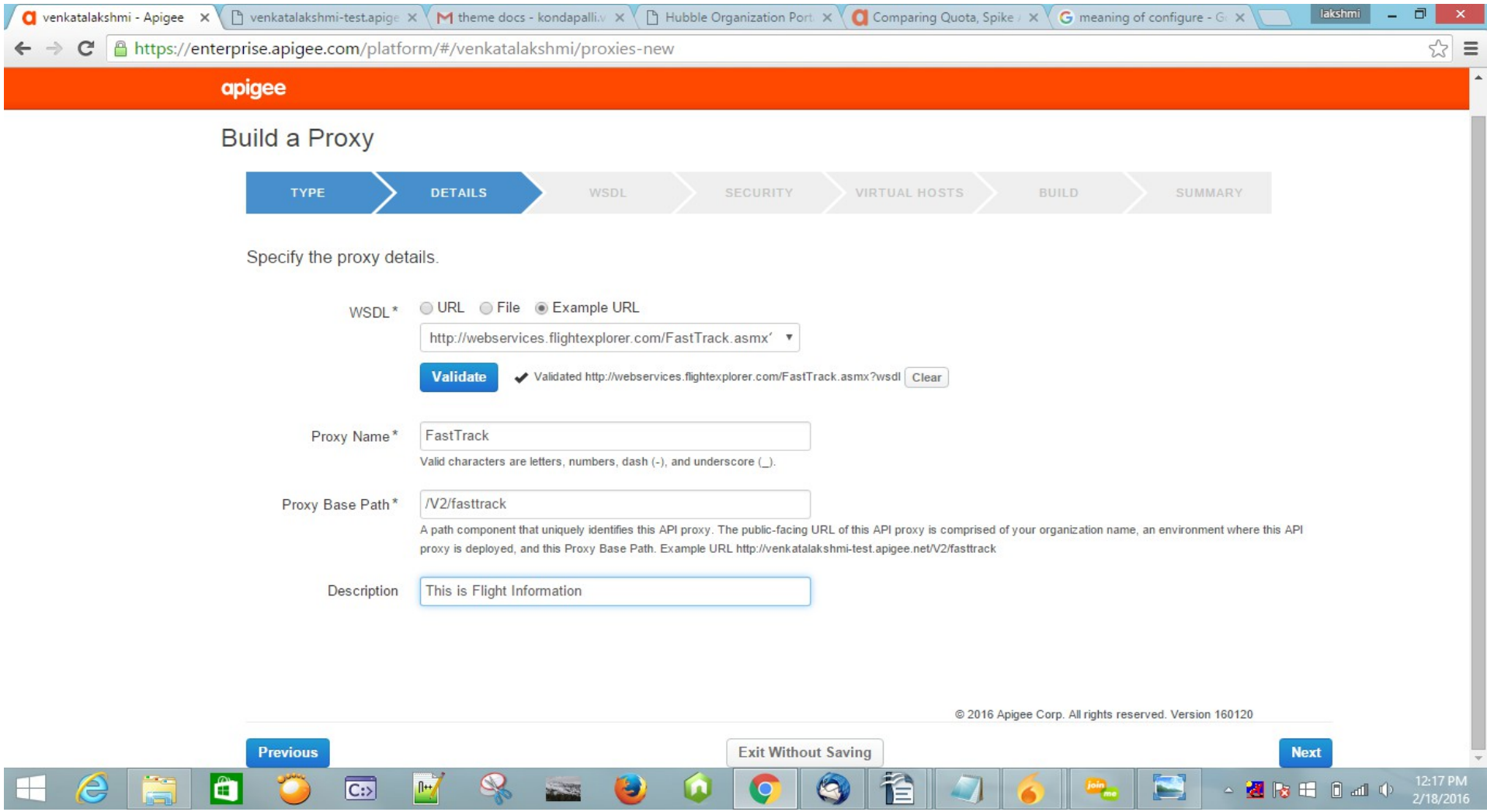
→ Next we have to Validate the URL.





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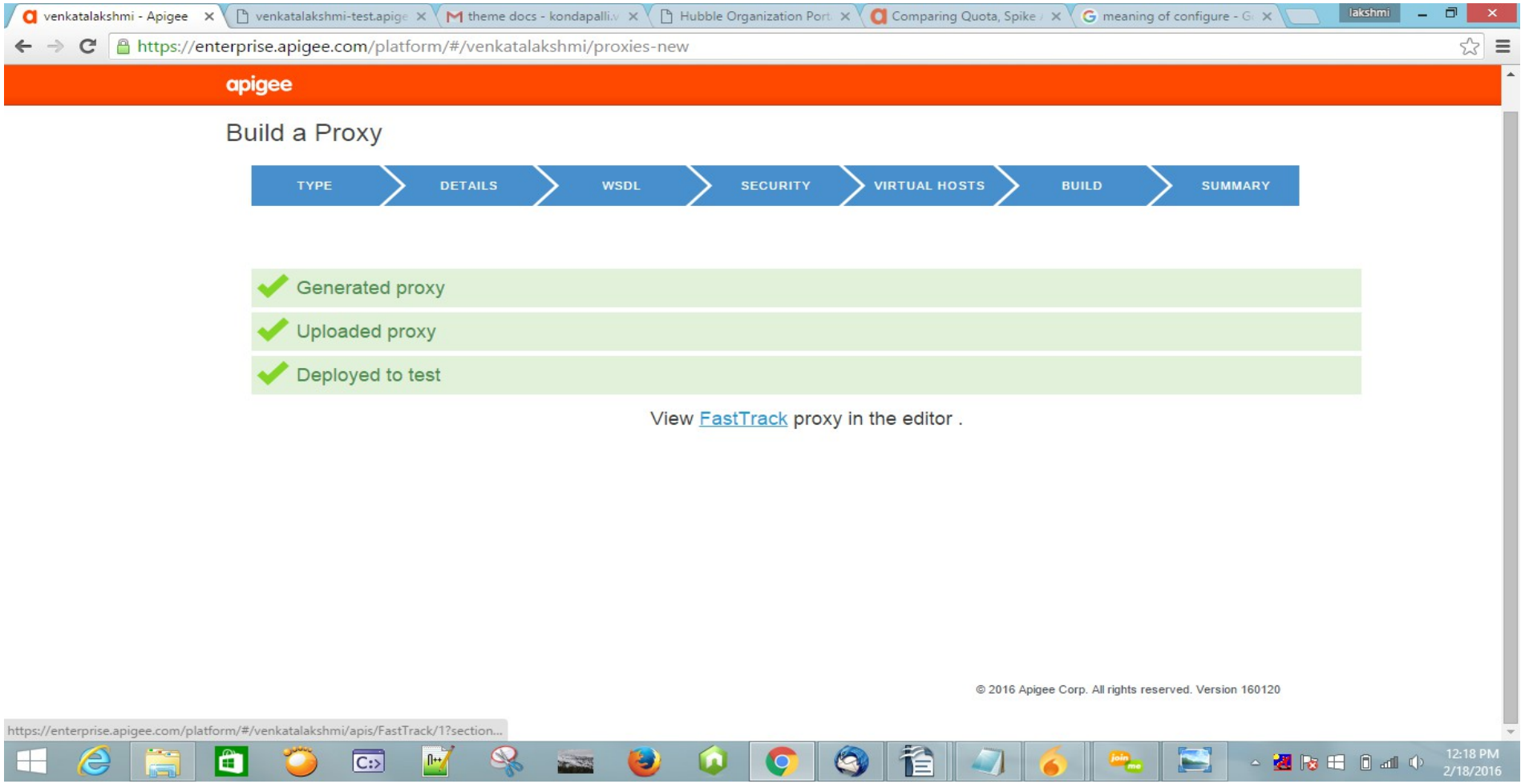
→ Now build and deploy the API proxy and we get the generated proxy,Uploaded proxy,Deployed to test.





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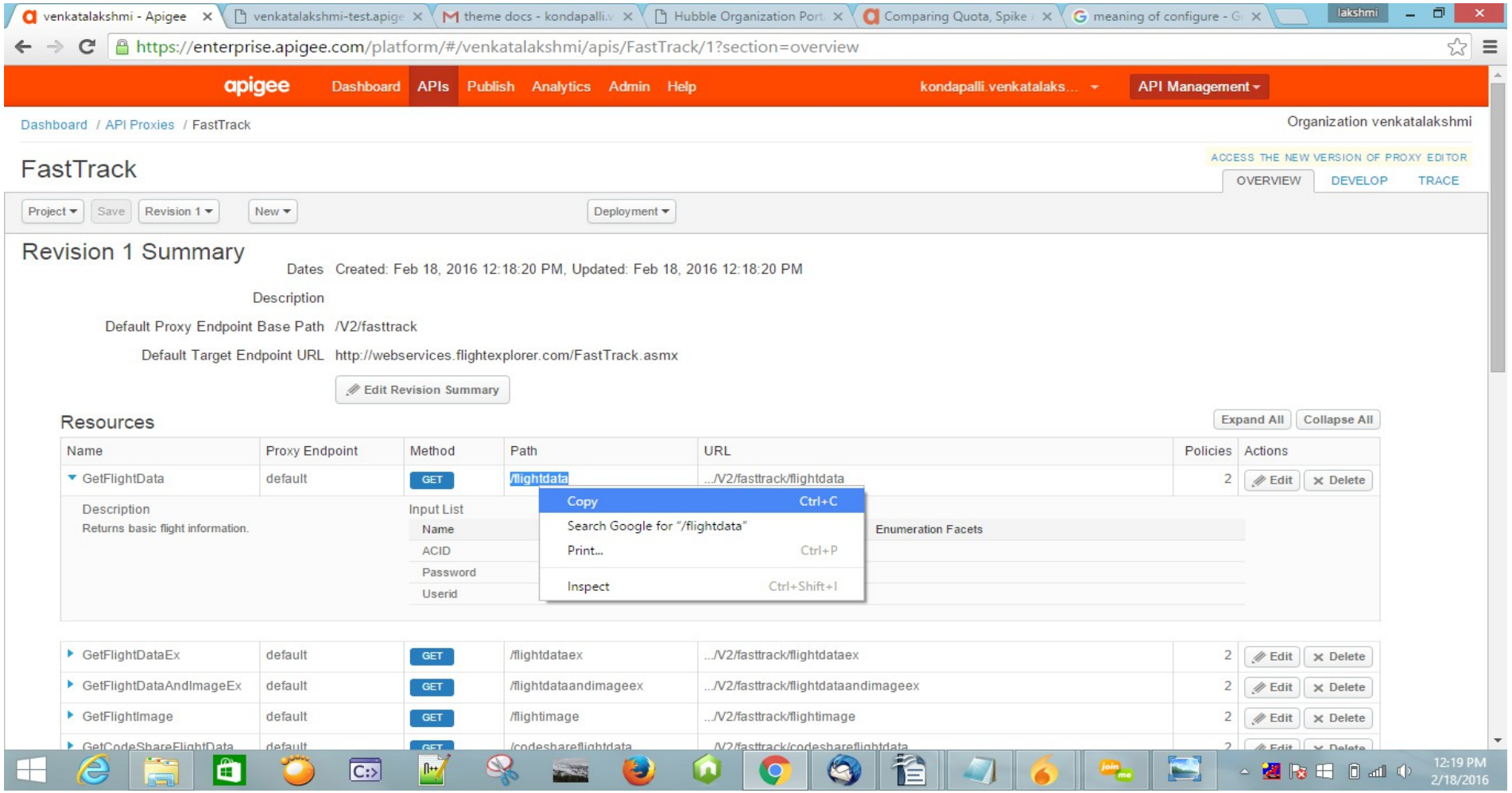
→ Next copy the path in proxy editor and pasted in URL which is in the Trace part and test it for successful response.





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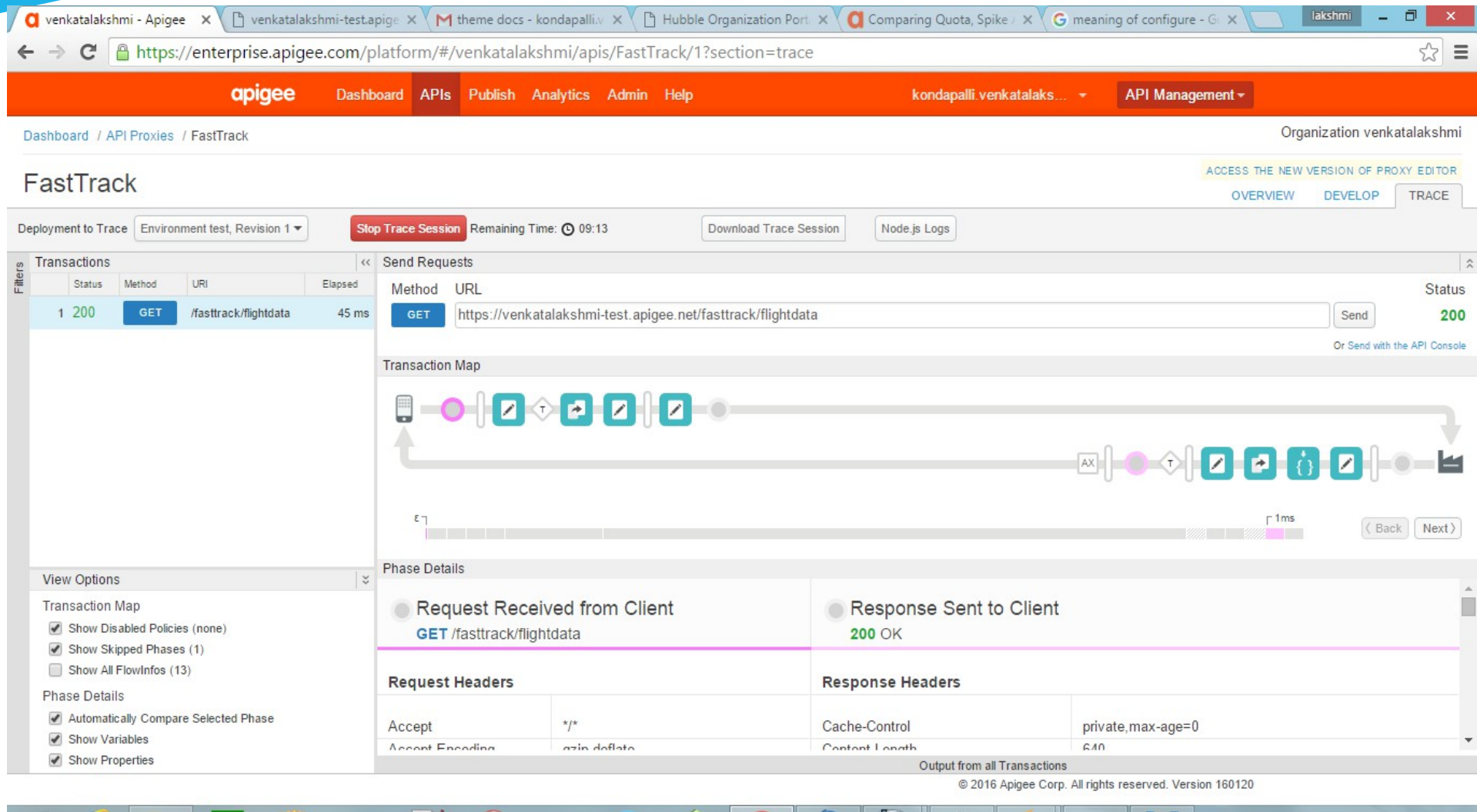


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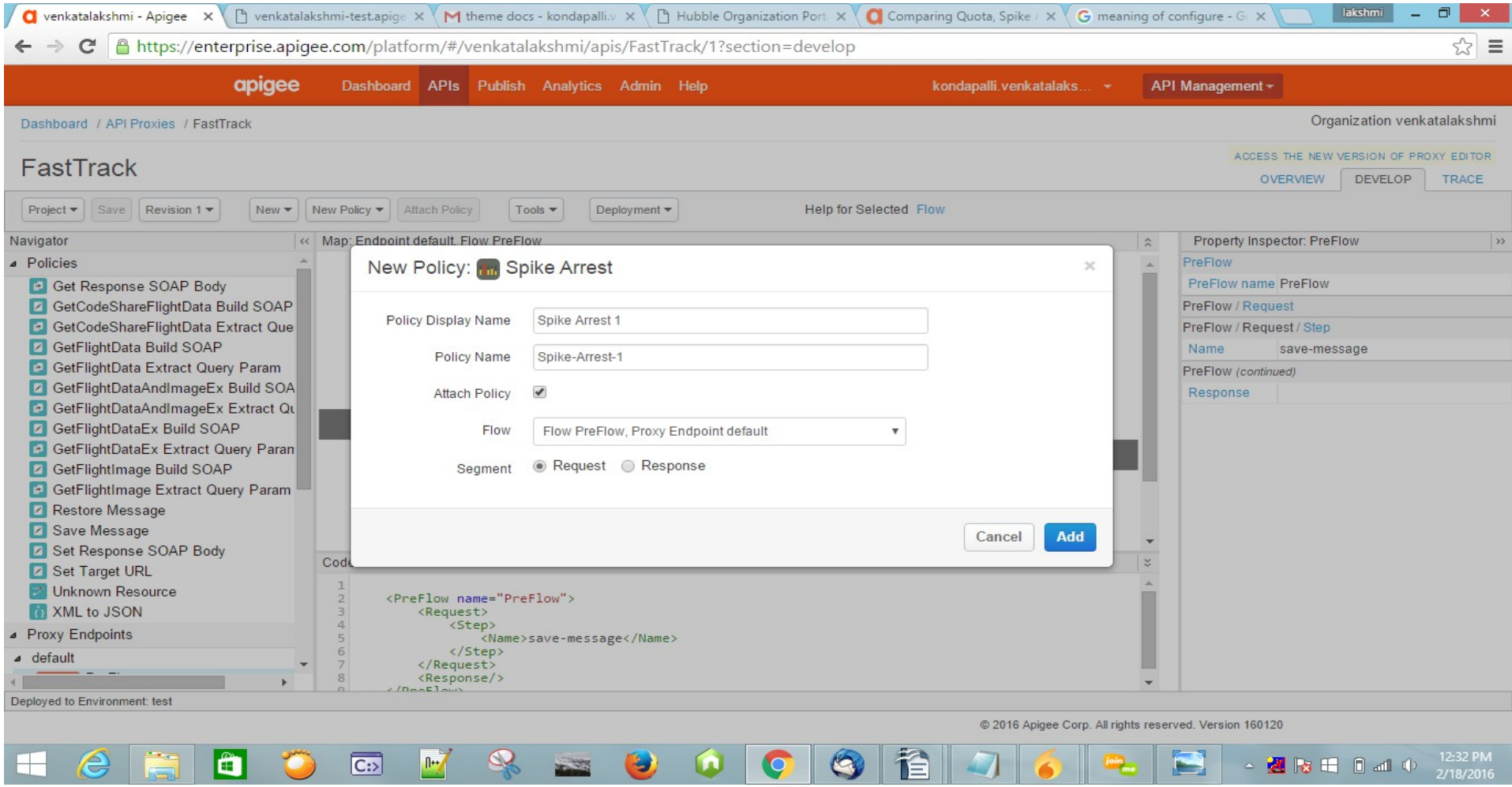
# → Now add the Spike Arrest policy to the API proxy.





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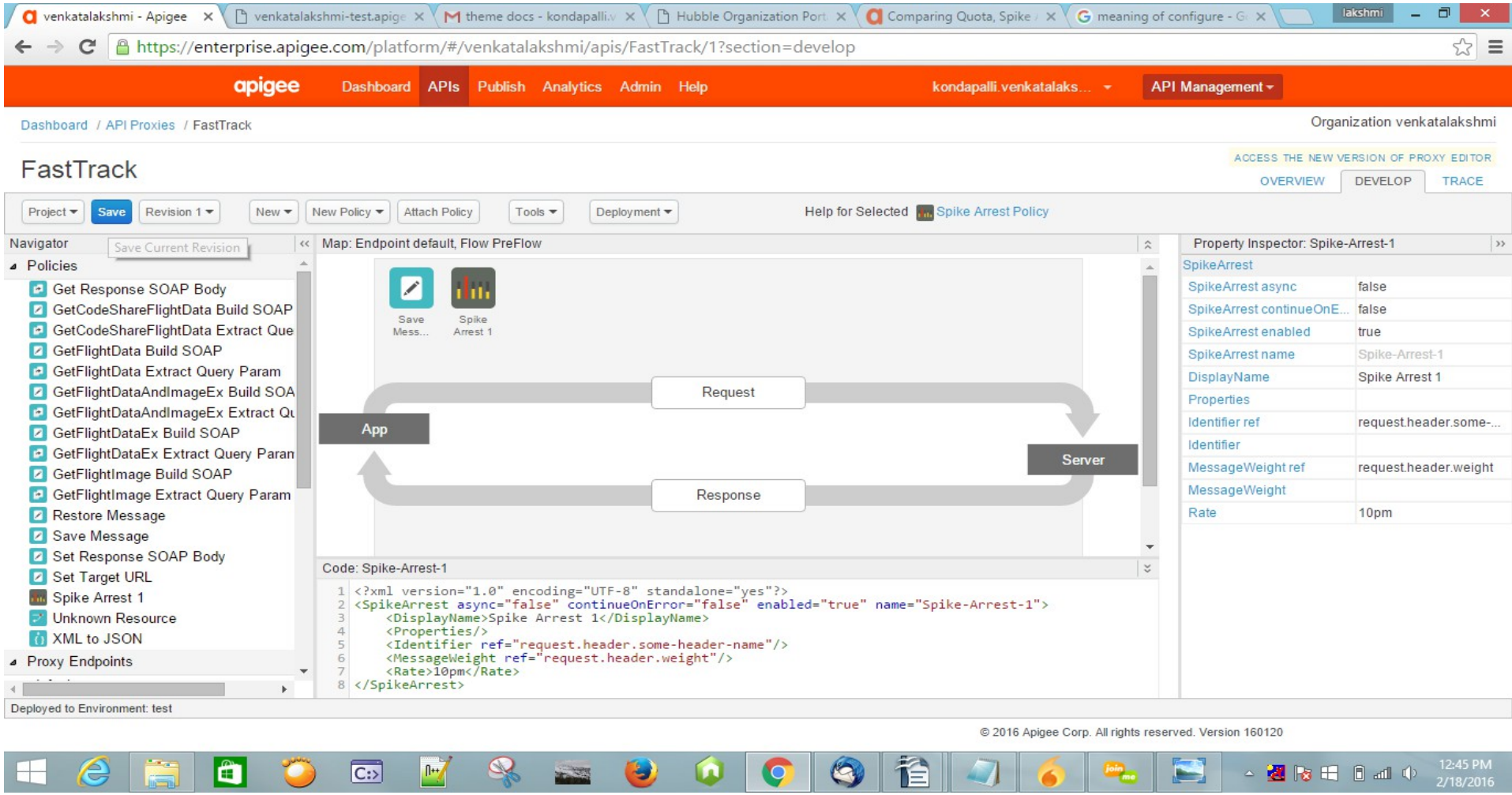
→ Now give the rate limit in code like 10pm and check the response.

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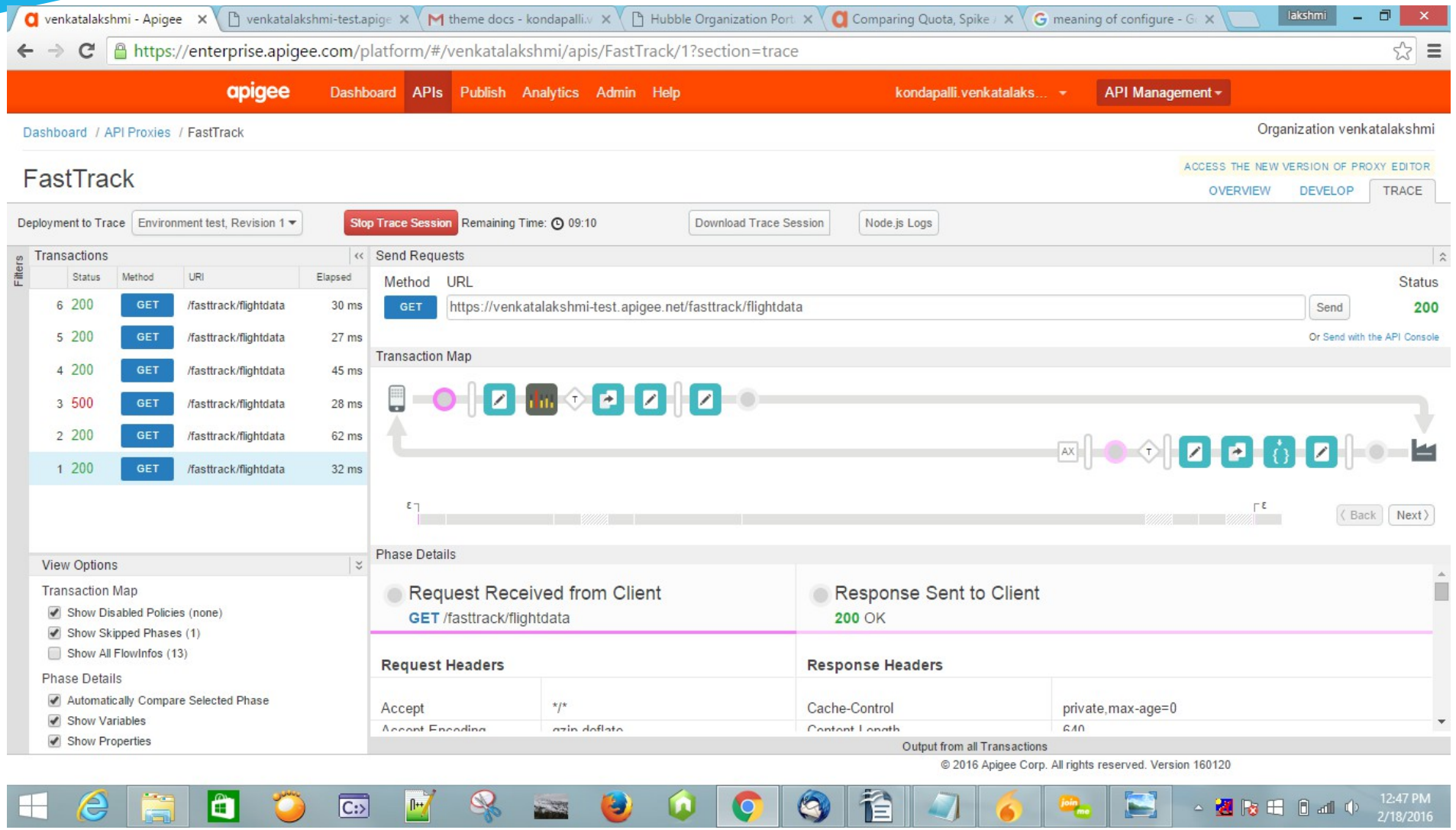


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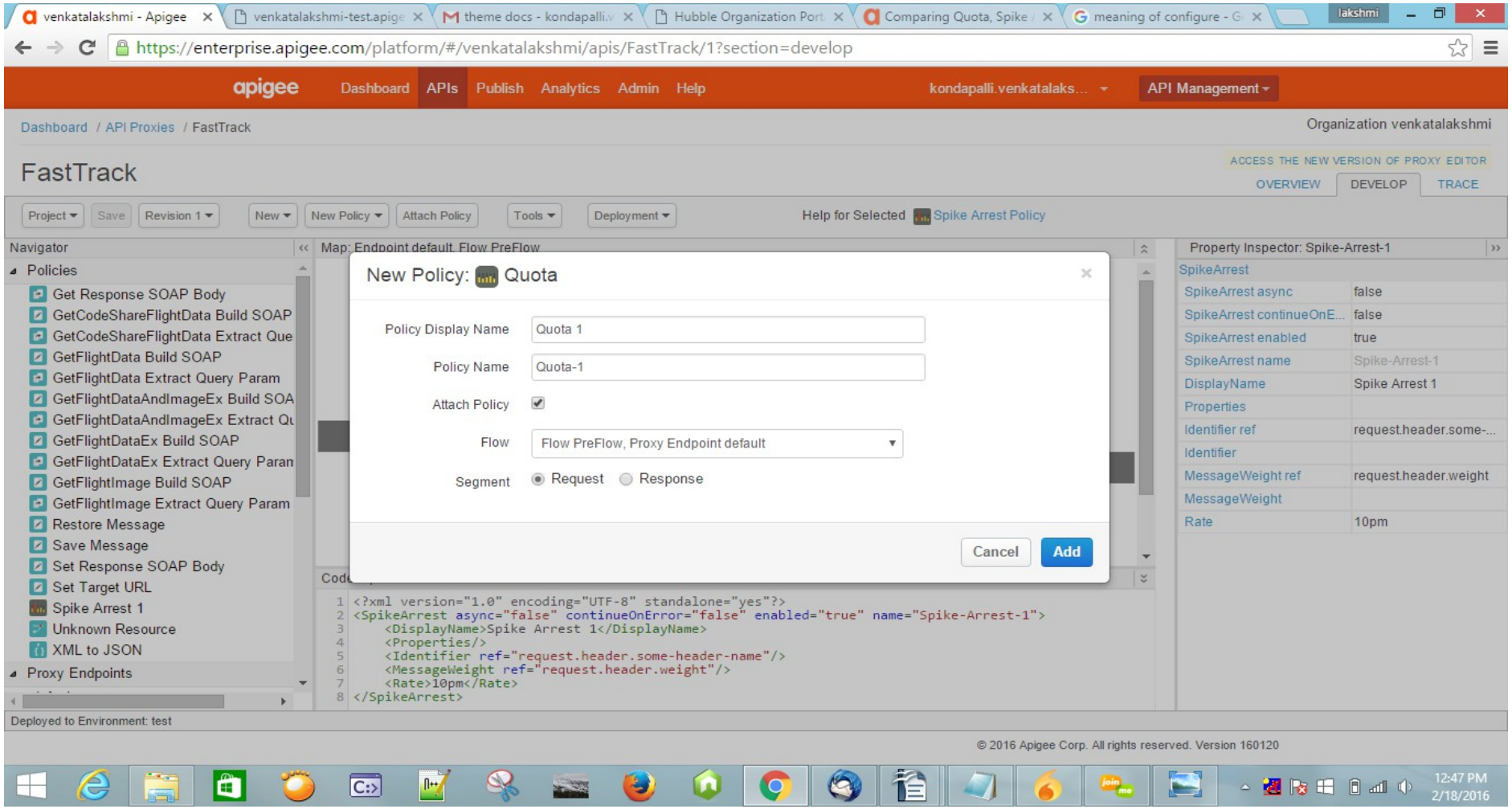
→ Also add the Quota policy to the API proxy and check the response.





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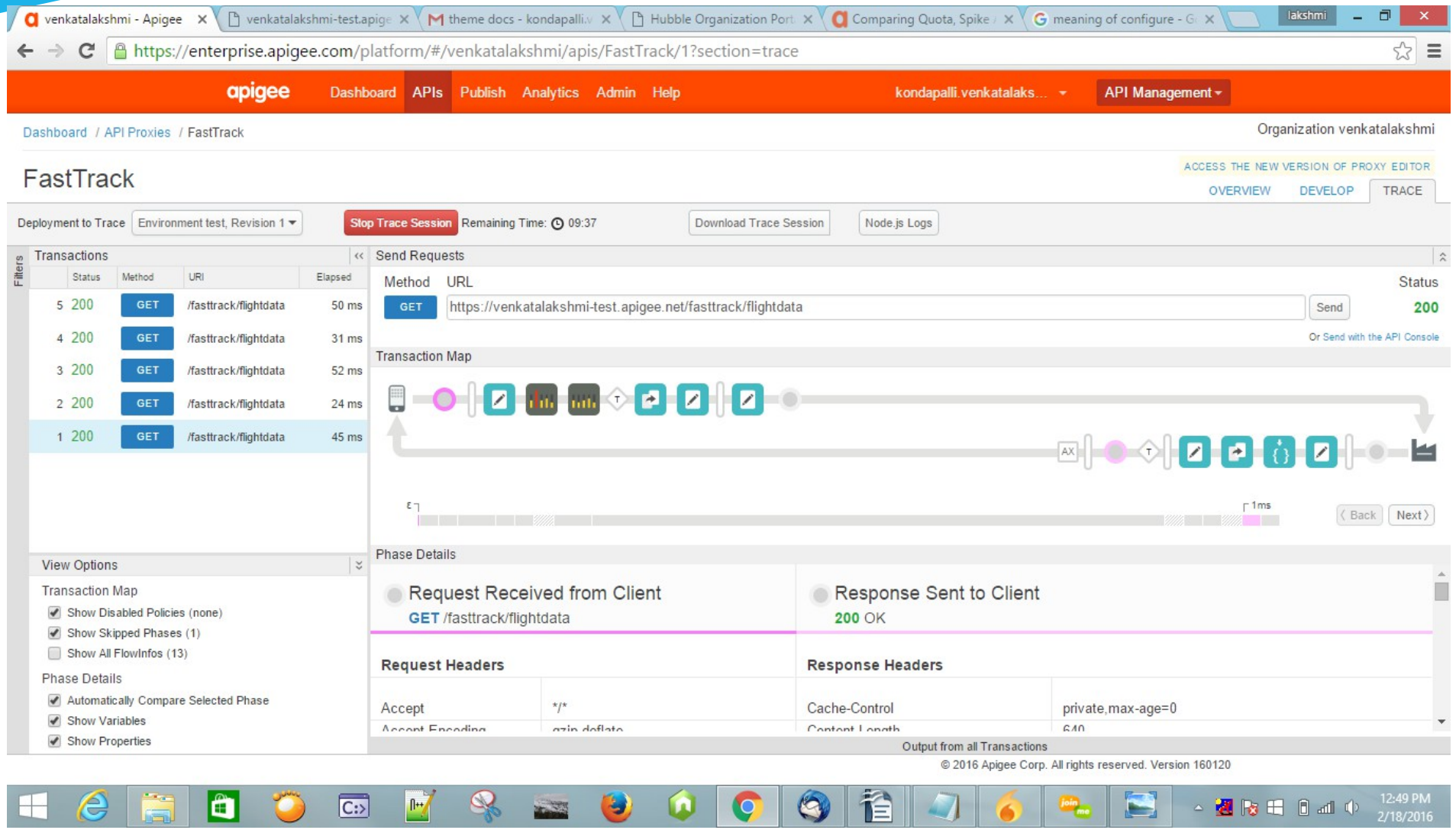


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# Different Policies in Apigee

→ **Spike Arrest**: Spike Arrest policy protects against traffic spikes.

→ **Quota Policy**: Quota policy to configure the number of request messages that an API proxy allows over a period of time, such as a minute, hour, day, week, or month.

→ **Response Cache**: Caches data from a backend resource, reducing the number of requests to the resource.


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→ **JSON To XML**: This policy converts messages from the JavaScript Object Notation (JSON) format to extensible markup language (XML), giving you several options for controlling how messages are converted.

→ **XML To JSON:** This policy converts messages from the extensible markup language (XML) format to JavaScript Object Notation (JSON), giving you several options for controlling how messages are converted.


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→ **Assign message policy**: Creates or modifies HTTP request or response messages during an API proxy flow.

→ **Extract variables**:Extract content from a variable. Often the source variable contains a request or response messages, including headers, URI paths, JSON/XML payloads, form parameters, and query parameters.

→ **Access entity**:Retrieves entity profiles you specify from the Apigee Edge data store.


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→ **Key value map**:Provides policy-based access to a key/value map store available in Apigee Edge. Key/value pairs can be stored, retrieved, and deleted from named existing maps by configuring KeyValue Map Operations policies that specify PUT, GET, or DELETE operations.

→ **XML threat protection:**Address XML vulnerabilities and minimize attacks on your API. Optionally, detect XML payload attacks based on configured limits.

→ **JSON threat protection**:Minimizes the risk posed by content-level attacks by enabling you to specify limits on various JSON structures, such as arrays and strings.


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→ **Regular expression protection**:Extracts information from a message (for example, URI Path, Query Param, Header, Form Param, Variable, XML Payload, or JSON Payload) and evaluates that content against predefined regular expressions.

→ **Verify API key**:The Verify API Key policy lets you enforce verification of API keys at runtime, letting only apps with approved API keys access your APIs.

→ **Access Control**:The Access Control policy lets you allow or deny access to your APIs by specific IP addresses.

→ **Service Call out**:The Service Call Out policy lets you call to an external service from your API proxy flow.


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# What is API BAAS?

- Edge Developer Services includes a backend-as-a-service (BaaS) solution that provides developers with access to a flexible data store.
- It is used to integrate valuable features into your app, including social graphs, user management, data storage, push notifications, performance monitoring.
- Using API BaaS, you can set up your own cloud-based data platform in minutes instead of months – no server-side coding or back-end development needed.


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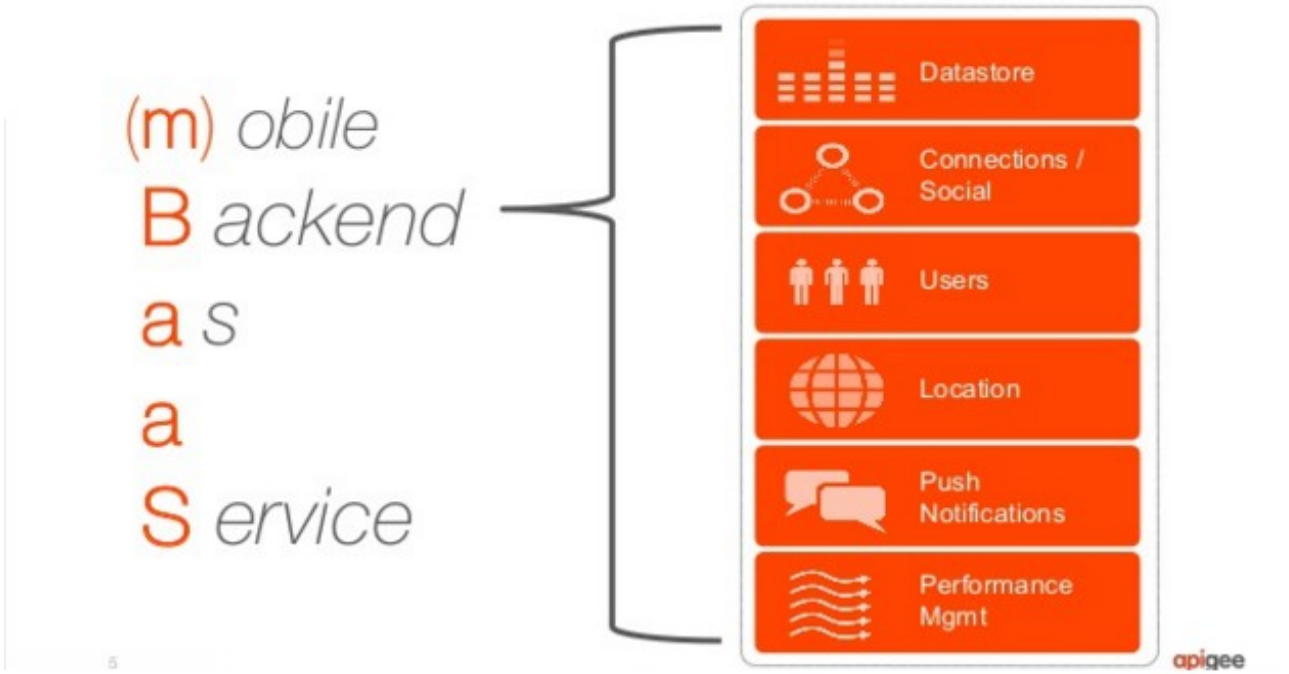
# API BAAS





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# API BAAS Features

- Data storage & management
- Social
- User Management
- Geolocation
- Push notifications
- Configuration management
- Error & performance monitoring


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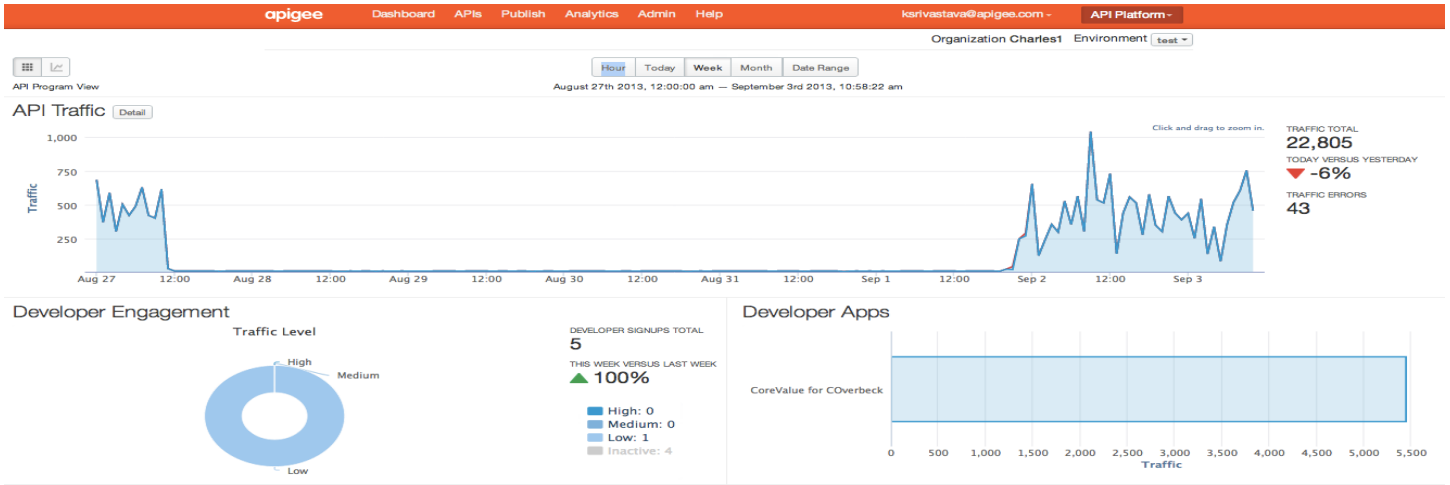
# What is API INSIGHTS?

- Apigee Insights provides features for descriptive and predictive analytics.
- Insights is backed by a Hadoop data store and implemented to manage very large amounts of sequential data.
- Using Insights, you can perform journey analytics to graphically describe sequential paths of customer events.

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# API Insight Features

- Data Management
- Data set import and browsing
- Journey Analytics
- Graphical view of customer event paths
- Query builder to discover event paths
- Predictive Analytics


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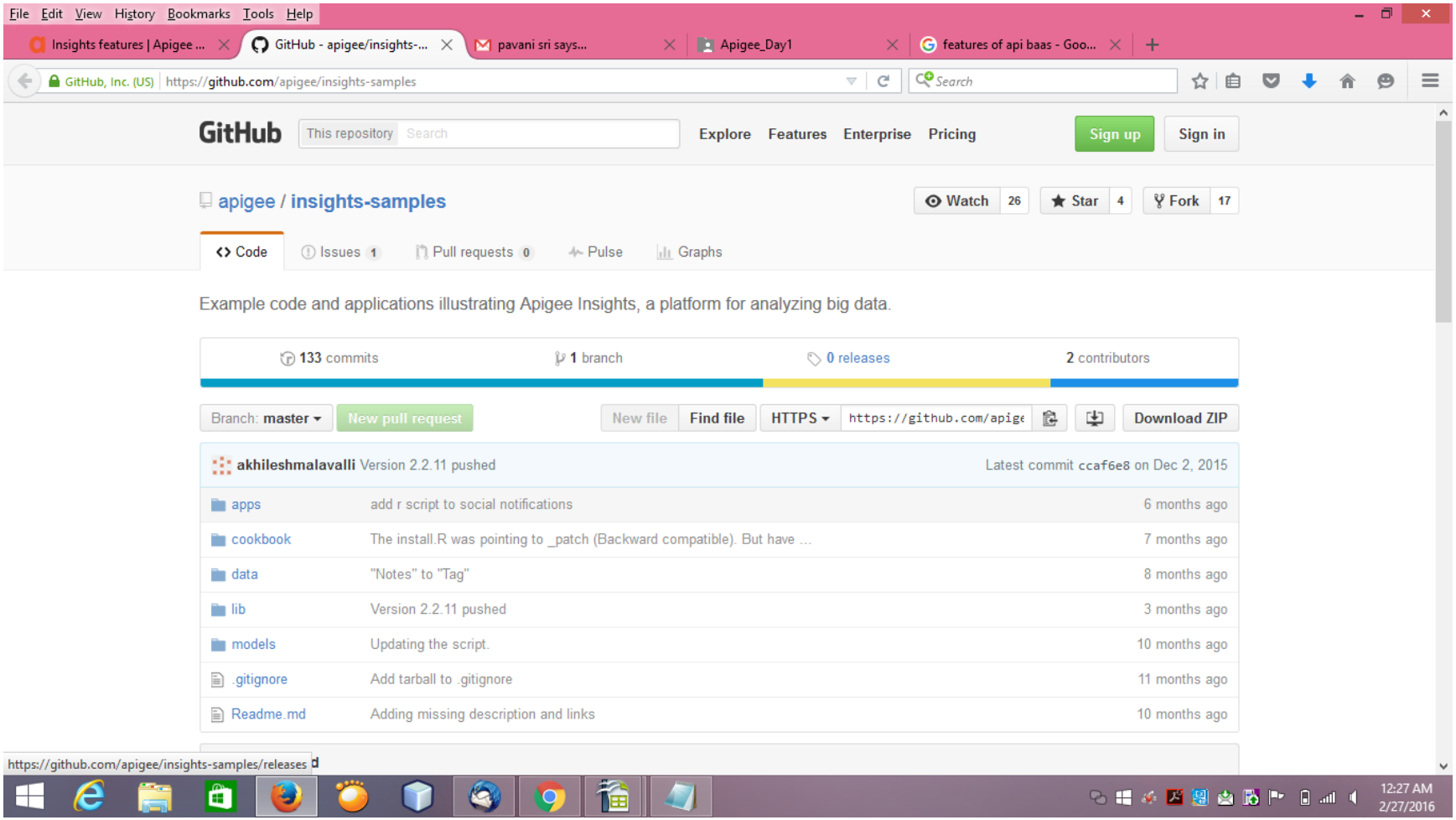
# Insights sample code is provided in the samples GitHub repository.





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# Thank You

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