API Management & Deployment Patterns

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NGINX
Part of F5

API Management & Deployment Patterns

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Why APIs and Why Manage Them?

Why Develop APIs?

- Break down siloes and unlock data (within and among organizations)
- Increase collaboration amongst developers

Unlock data

- Primary interface for communication amongst microservices.

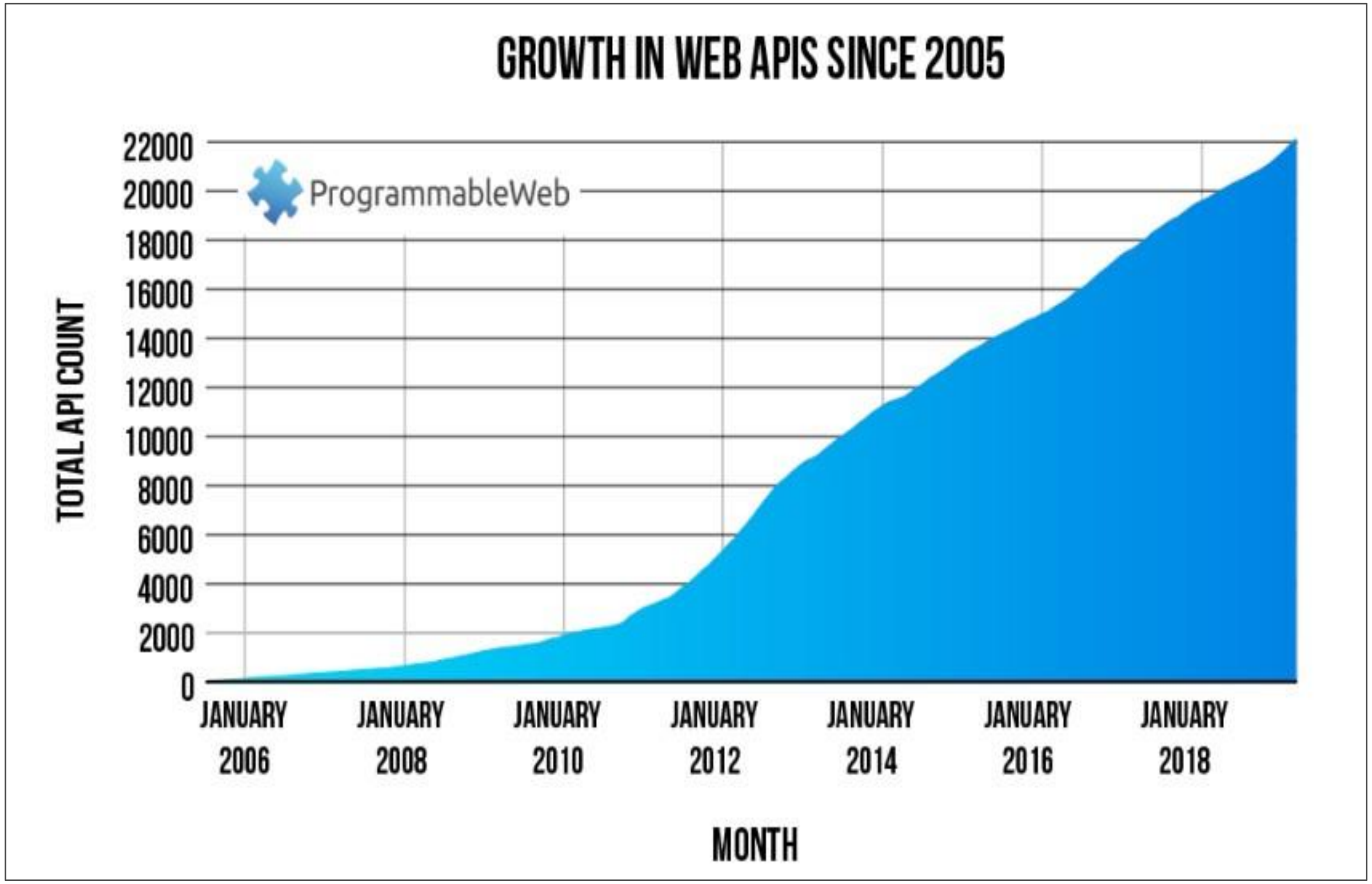
Create a foundation

- Generate revenue and build partnerships with third-party developers and ecosystem of suppliers, distributors, resellers, and even customers
- Expose APIs via Dev Portal
  - "Digital marketplace" for an enterprise

Find new digital revenue stream

Internal APIs

External APIs



Source: https://www.programmableweb.com/news/research-shows-interest-providing-apis-still-high/research/2018/02/23

API as a Source of Revenue

50% of Salesforce's revenues come from APIs

90% of Expedia's revenues come from APIs

API Solutions

API SECURITY / GATEWAY / MANAGEMENT

API Gateway

- Lightweight
- Easily Distributed
- Easily Scaled
- Heavy Lifting…
- Request Processing

API Management

- Define Policy
- Pushing Configurations
- Access Policy Management and Consumption Visualization
- Developer Portal

API Security

- Allow Methods per URI
- JSON Parsing
- Parameter Enforcement
- Login Protection
- L7 DoS / BOT

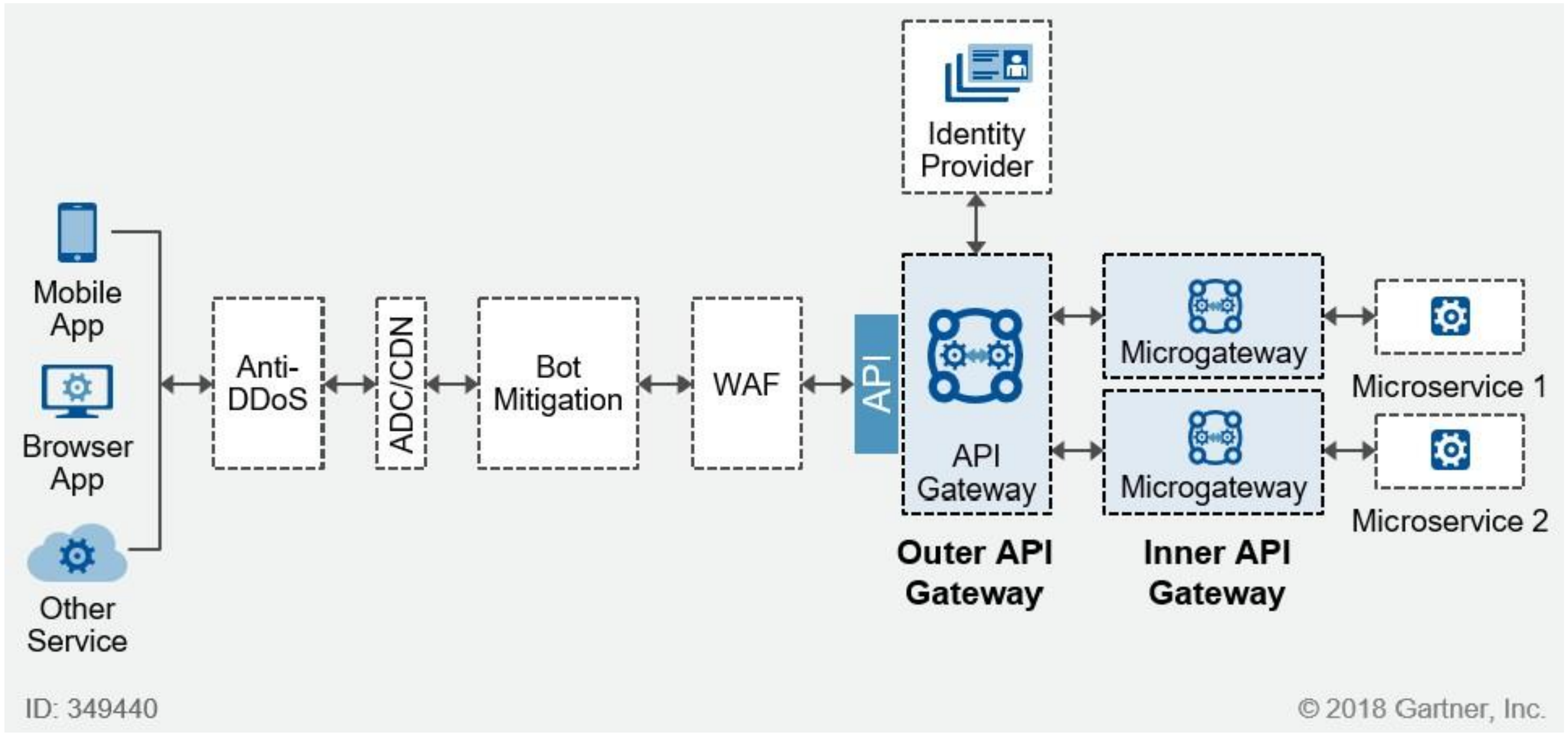
API Gateway Essential Functions

TLS termination	Client authentication, authorization	Fine-grained access control	Request routing
Rate limiting	Load balancing	Service discovery of backends	Request/ response manipulation

Characteristics to look out for…

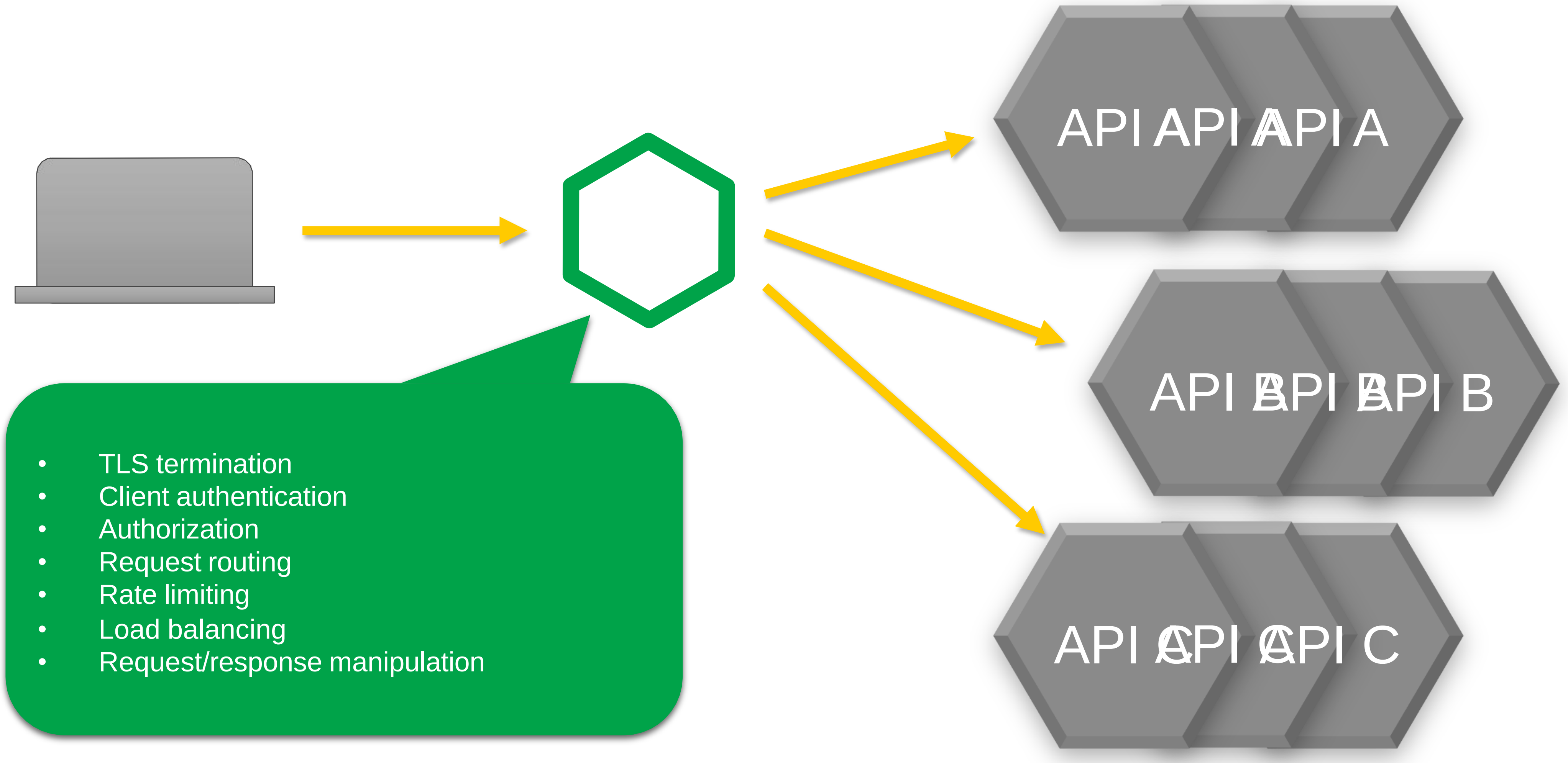
Protect	API Definition & Publication	Authentication & Authorization
Monitoring and Analytics	Onboarding and Documentation (Developer Portal)	Customizable Dashboards
Multi- Cloud Support	Alerting	Extract Insights (REST API + Logging)

API Gateway & API Security Architecture



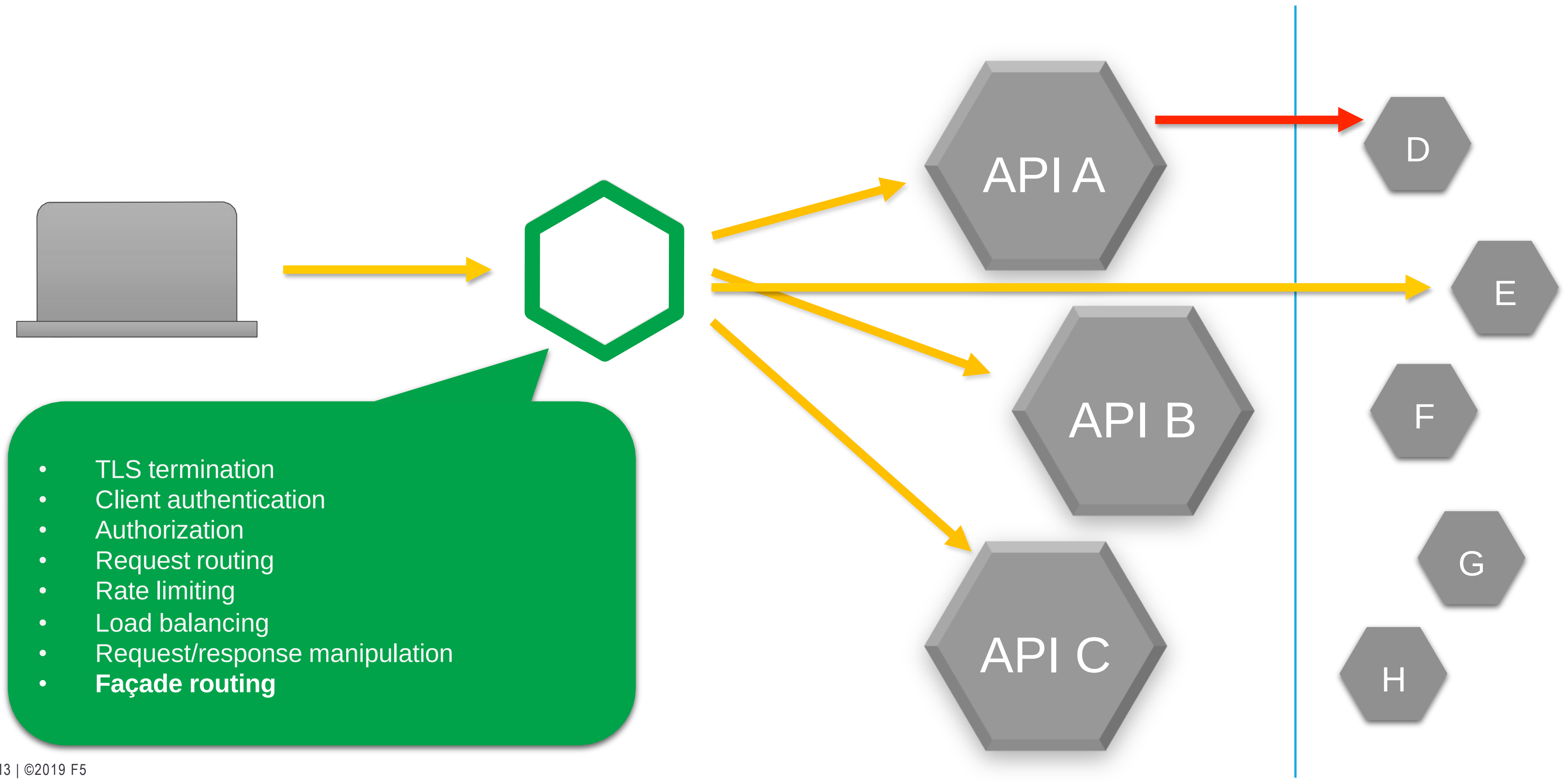
API Gateway Deployment Patterns

Edge Gateway



- TLS termination
- Client authentication
- Authorization
- Request routing
- Rate limiting
- Load balancing
- Request/response manipulation

Edge Gateway



- TLS termination
- Client authentication
- Authorization
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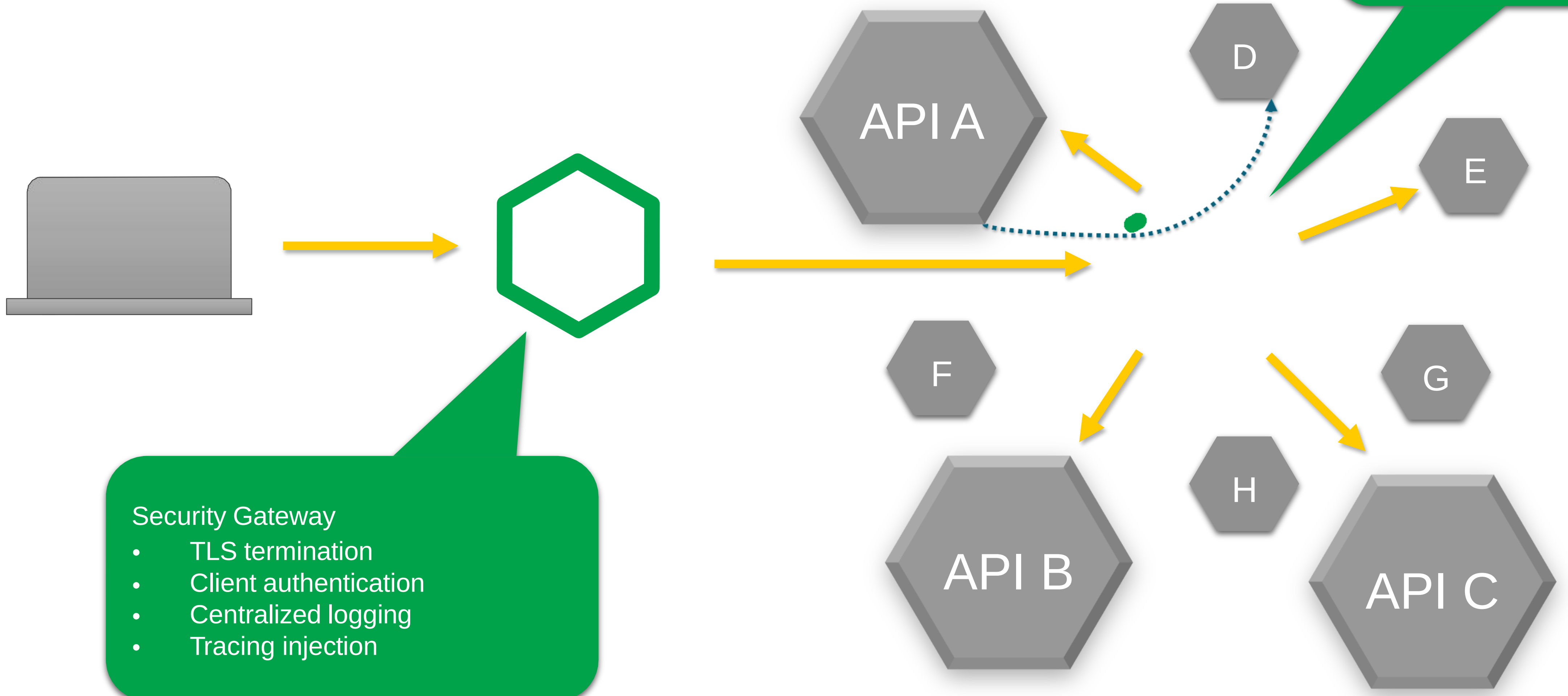
- Rate limiting
- Load balancing
- Request/response manipulation
- **Façade routing**

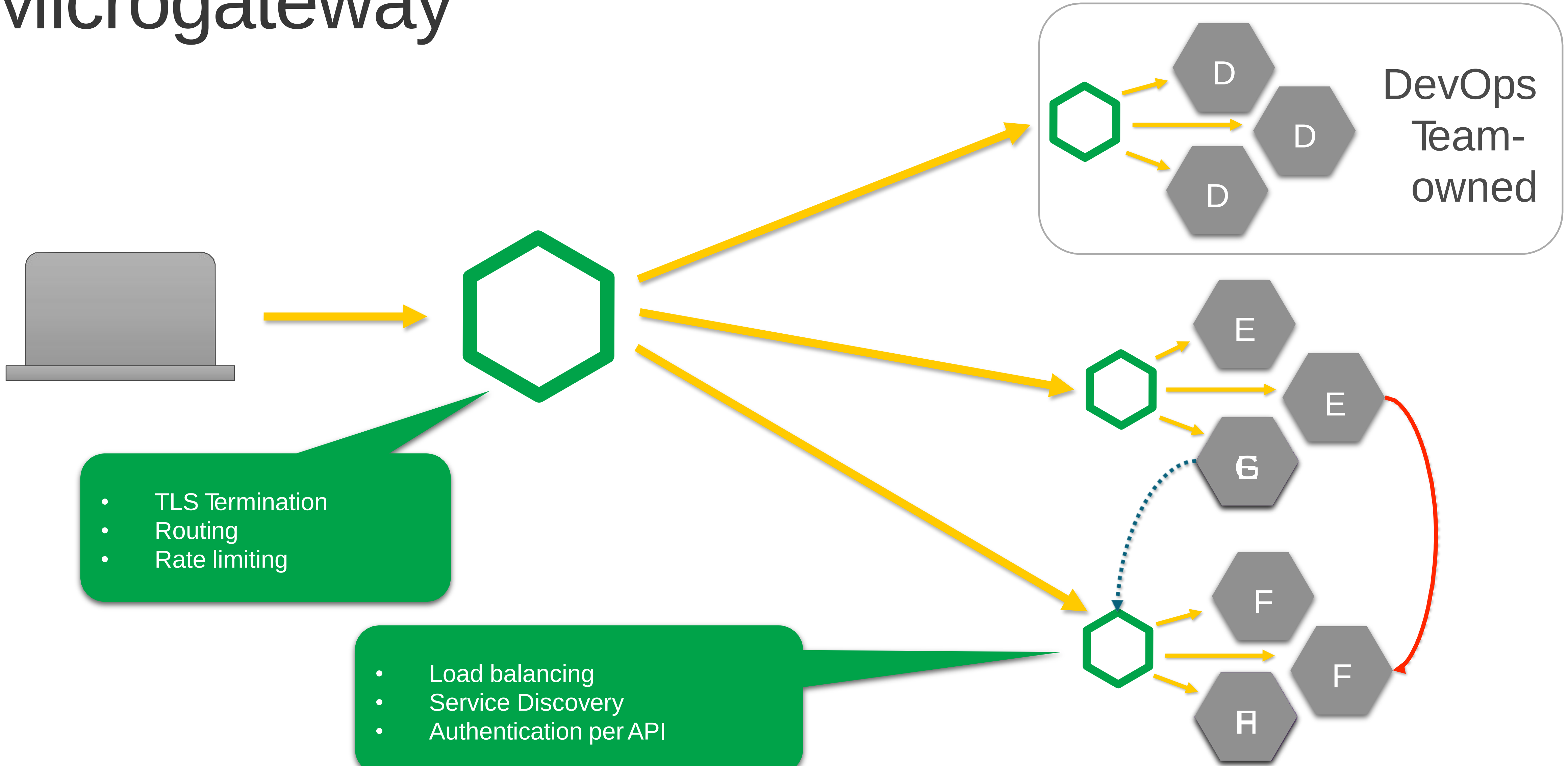
Two-Tier Gateway



Routing Gateway
- Authorization
- Service discovery
- Load balancing

Security Gateway
- TLS termination
- Client authentication
- Centralized logging
- Tracing injection

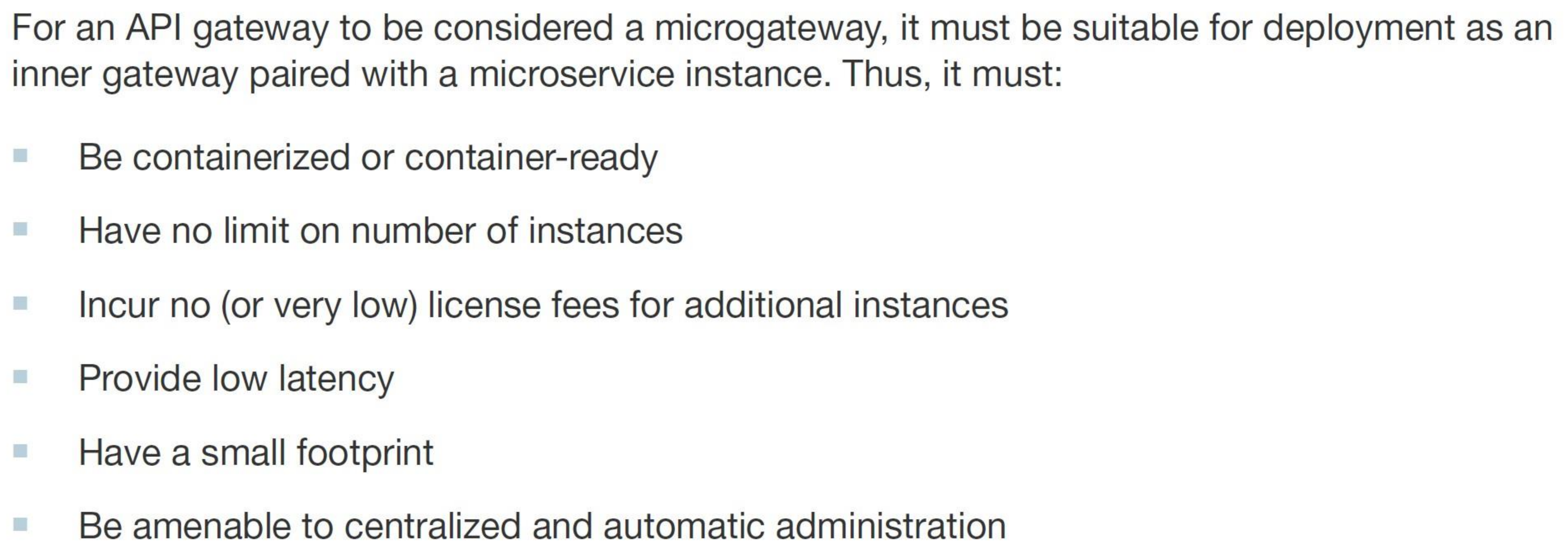
Microgateway



- TLS Termination
- Routing
- Rate limiting

- Load balancing
- Service Discovery
- Authentication per API

Microgateway Characteristics


For an API gateway to be considered a microgateway, it must be suitable for deployment as an inner gateway paired with a microservice instance. Thus, it must:

- Be containerized or container-ready
- Have no limit on number of instances
- Incur no (or very low) license fees for additional instances
- Provide low latency
- Have a small footprint
- Be amenable to centralized and automatic administration

Gartner: Selecting the Right API Gateway to Protect Your APIs and Microservices

Deployment Patterns Recap…

Edge Gateway	+ Monoliths with centralized governance
	- Frequent changes, DevOps team-owned microservices
Two-Tier Gateway	+ Flexibility, independent scaling of functions
	- Distributed control
Micro-Gateway	+ DevOps teams, high-frequency updates
	- Hard to achieve consistency, authorization minefield

Adapt to your environment

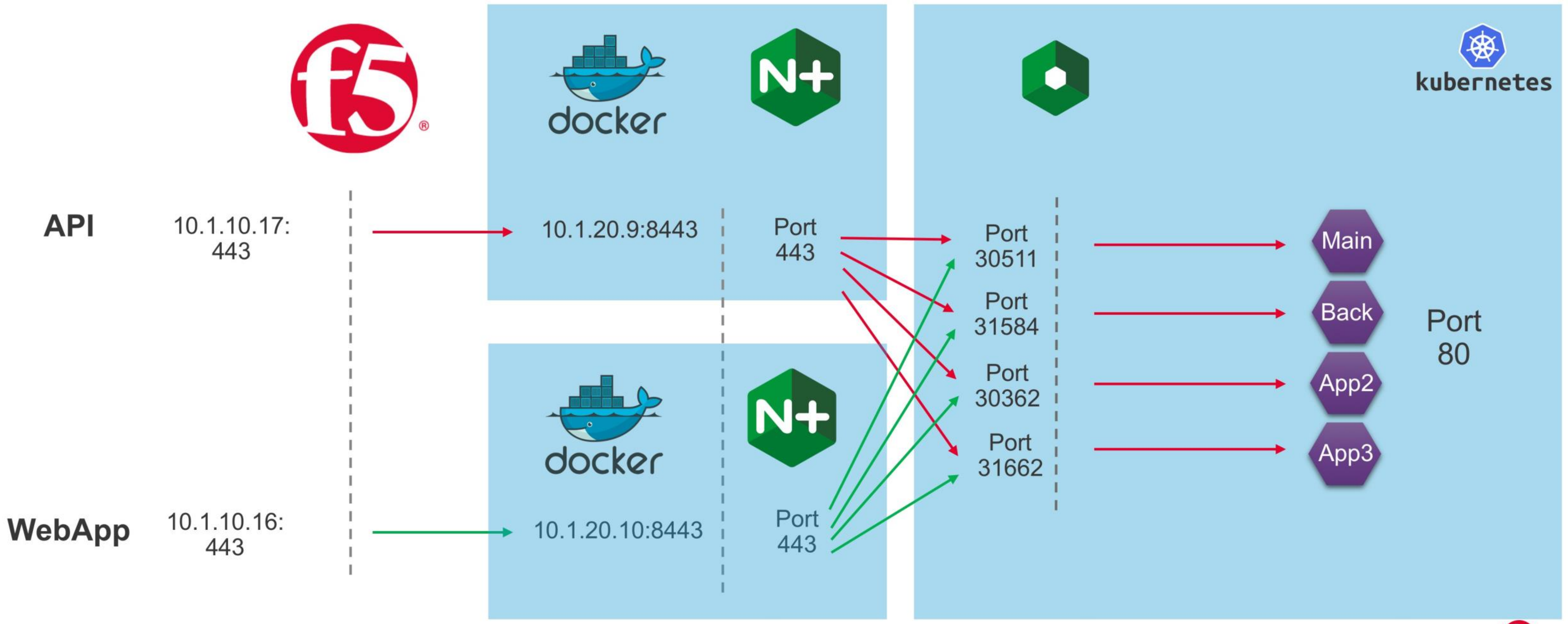
- TLS termination
- Client authentication
- Fine-grained access control
- Request routing
- Rate limiting
- Load balancing
- Service discovery of backends
- Request/ response manipulation

Conway’s Law

“organizations which design systems …are constrained to produce designs which are copies of the communication structures of these organizations.”

DEMO

Architecture network diagram



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Alone We are smart, together We are brilliant

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THANK YOU !

Quote by Steve Anderson