

Kong API Gateway

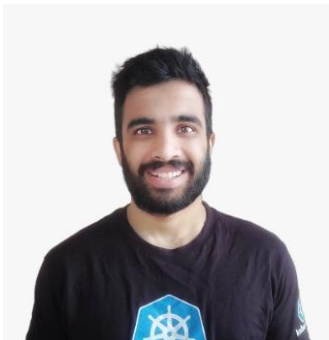
Chennai, May 6, 2023

Agenda

- API Gateway 101
- Introduction to Kong
- Kong terminologies
- Hands-on
 - Setup kong with docker compose
 - Create services, routes and consumers
 - Plugins
 - Key Auth
 - Rate limiting
 - Request/Response Transformer
 - Upstreams for load balancing
- Kong Deployment models

About Us

Avinash Upadhyaya



- Platform engineer @ platformatory.io
- Kong Champion
- Open source contributor to Cloud Native projects (k8s, ArgoCD, Tekton, Litmus, etc)
- Kong, Grafana, Docker meetups in Bengaluru

Lakshmi Narasimhan P

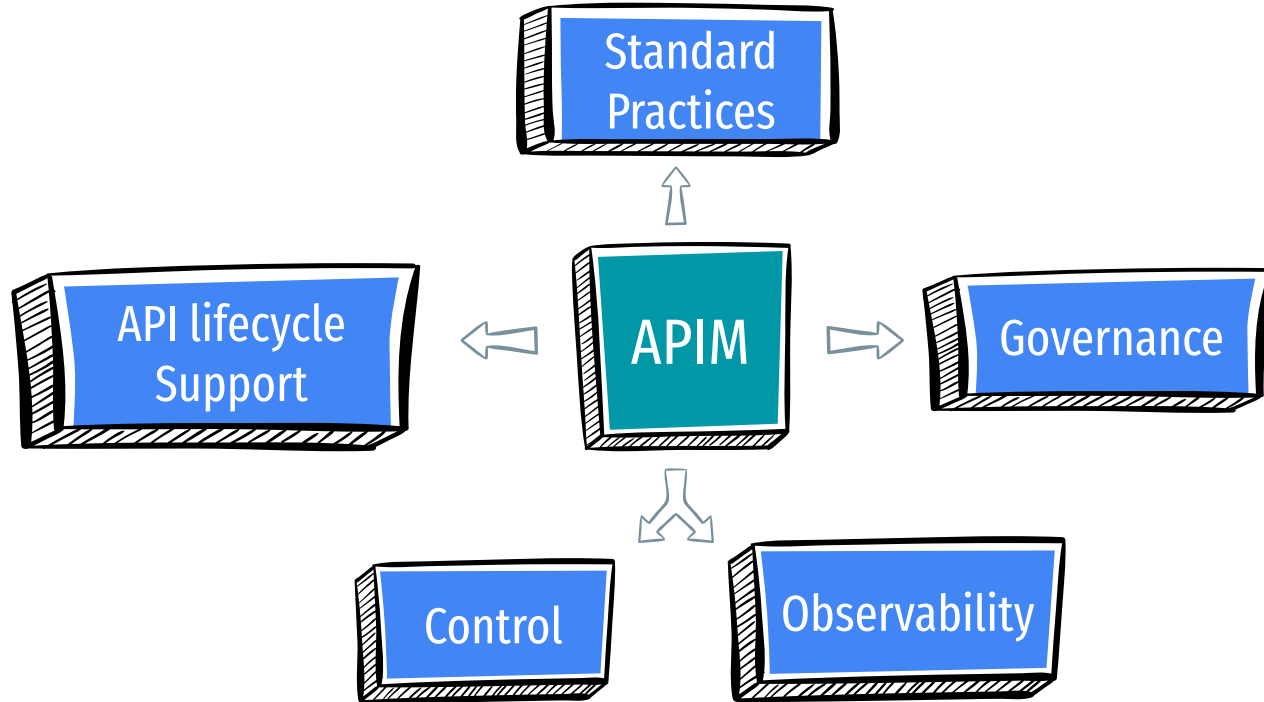


- Principal Engineer @ platformatory.io
- Kong Gateway Certified

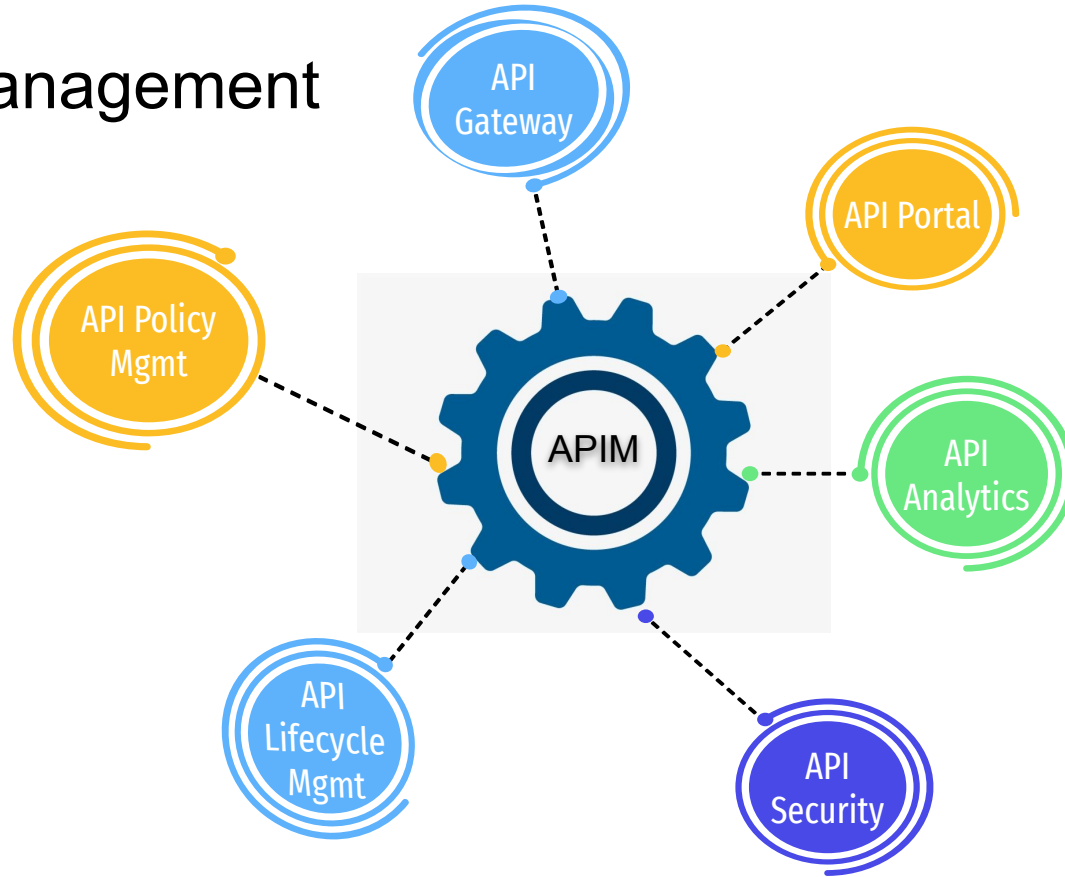
APIs: Driving Business Innovation

APIs are everywhere

API Management

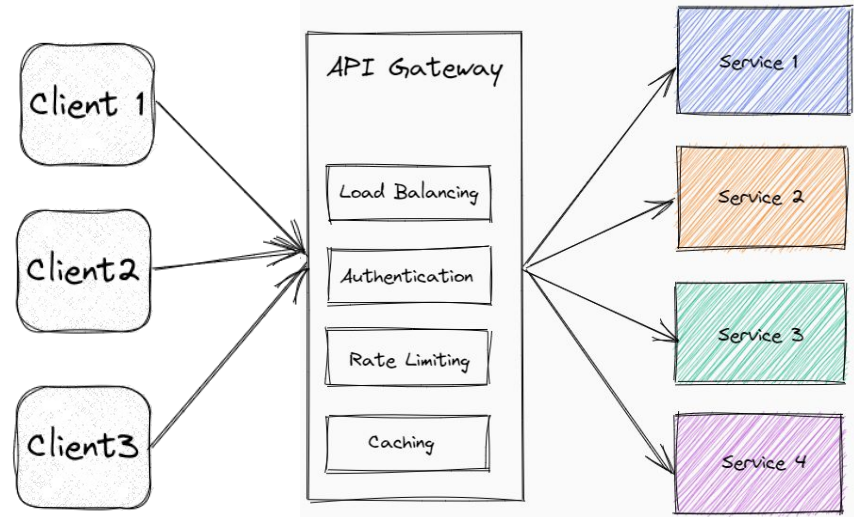


API Management



API Gateway

- Acts as an entry point for APIs
- Sits between one or more clients and one or more backend service
- Reverse proxy and load balancer
- Provides management functionality - authentication, routing, rate limiting, billing, monitoring, analytics, policies, alerts and security
- Common pattern in microservice based architectures



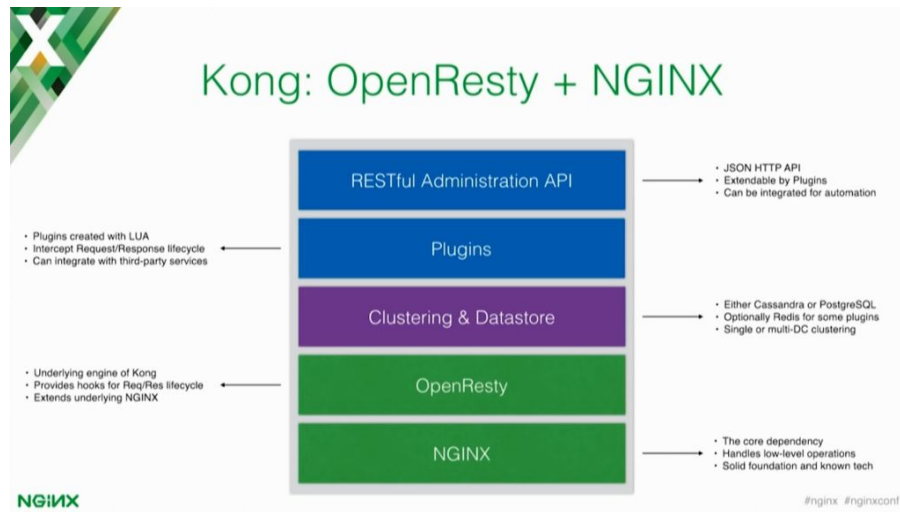
Why API Gateway

- **Reduced Complexity**
 - Single point of entry that can be scaled
 - Reduced code redundancy for common features like auth, rate limiting, caching, etc
 - Decouple APIM logic from business logic
- **Improved Performance**
 - Cache request and response
 - Reduce load on backend services by filtering requests
- **Security**
 - Authentication and Authorization
 - Filter requests through policies such as IP restriction and other API security principles

Kong API Gateway

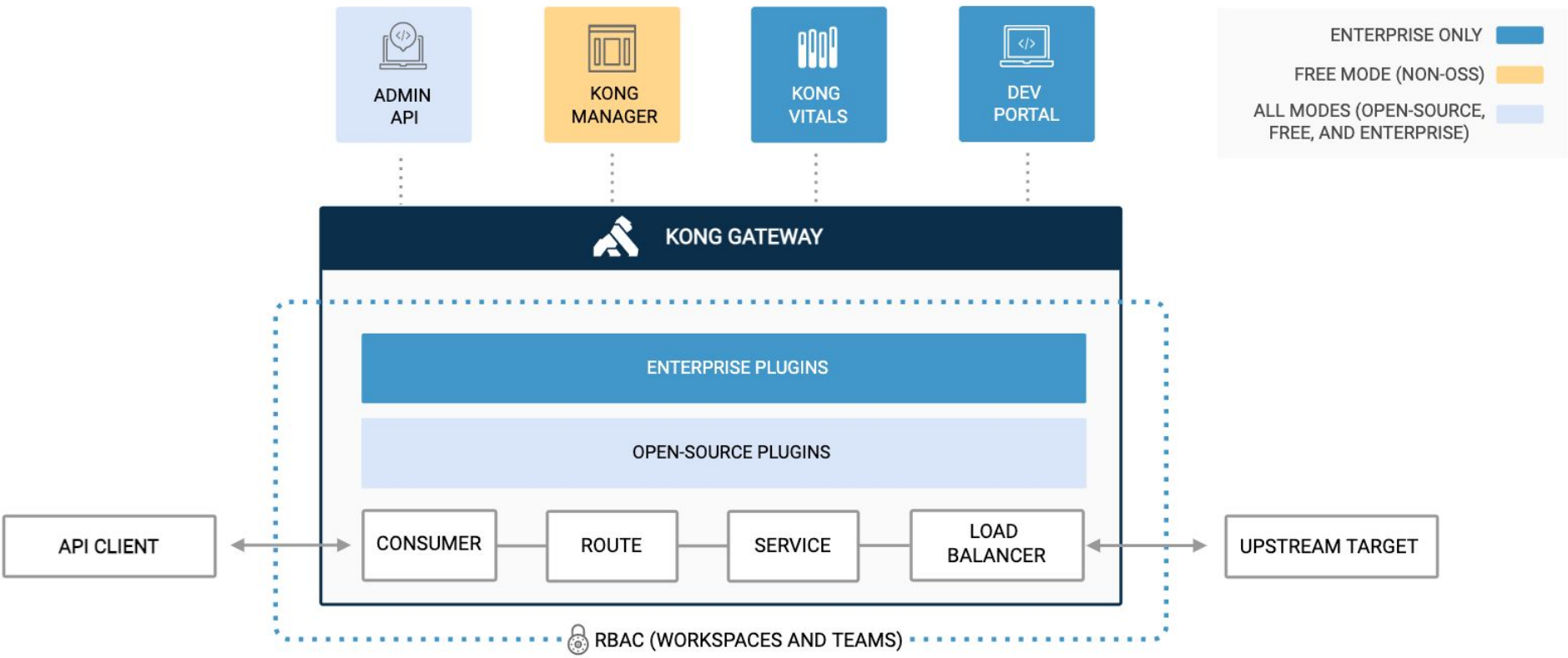


- Open source API Gateway
- Blazing fast API Gateway
 - Written in Lua
 - Sub-ms latency
- Flexible deployment options (Cloud Native)
 - Baremetal
 - VM
 - k8s
- Supports various protocols, including HTTP, TCP, UDP, gRPC and WebSockets
- Can be easily extended through plugins
 - Polyglot extensibility - Plugins in Lua, Golang, Python, Javascript
- Integrated Service Mesh with Kuma



Choosing an API Platform

1. Architecture Support
2. Deployment & Topology model
3. Programming model (including DevOps)
4. Developer Platform & Operations
5. Scale & Cost Economics



Kong Terminology

Service - Upstream APIs and microservices that an API Gateway manages

Upstream - Target service that a Gateway routes requests to. An upstream object represents a virtual hostname and can be used to load balance over multiple services

Route - Defines rules to match client requests to upstream services. Entry Points to upstream services

Plugin - Allows to extend API Gateway functionality with advanced features.

Kong Terminology

Consumer - Client making a request to the API Gateway. Can be a developer or a machine using the API

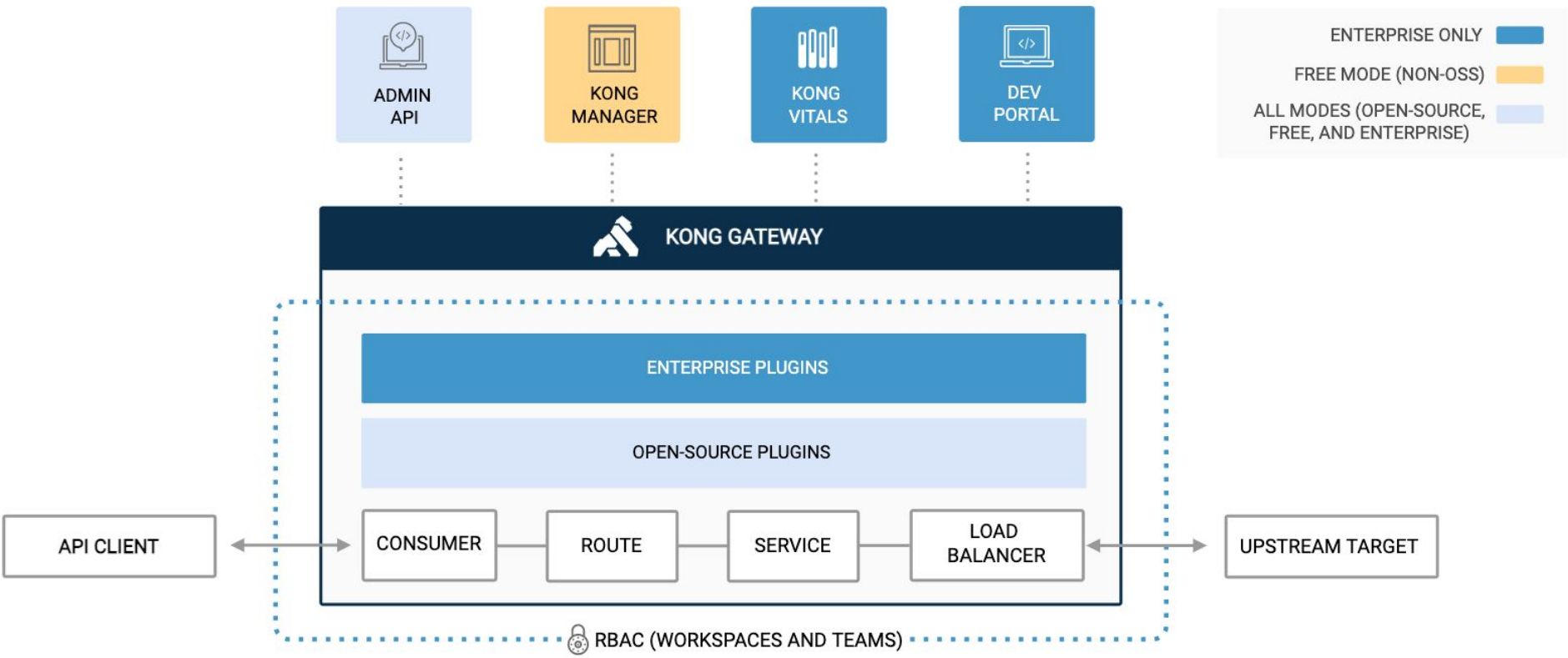
Admin API - Used to manage the Kong Gateway configuration

Kong Manager - GUI for managing the Kong Gateway

Kong Vitals - Monitor Kong health and performance. Enterprise only

Dev Portal - Allows developers to locate, access, and consume services. Enterprise only

Datastore - Stores Kong configuration. Typically Postgres, can be DBless

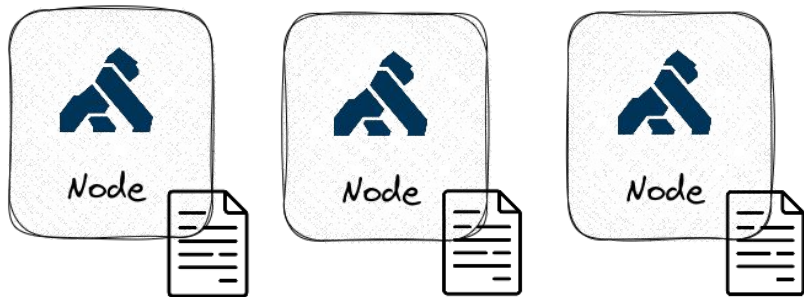


Hands-On

Kong Deployment models

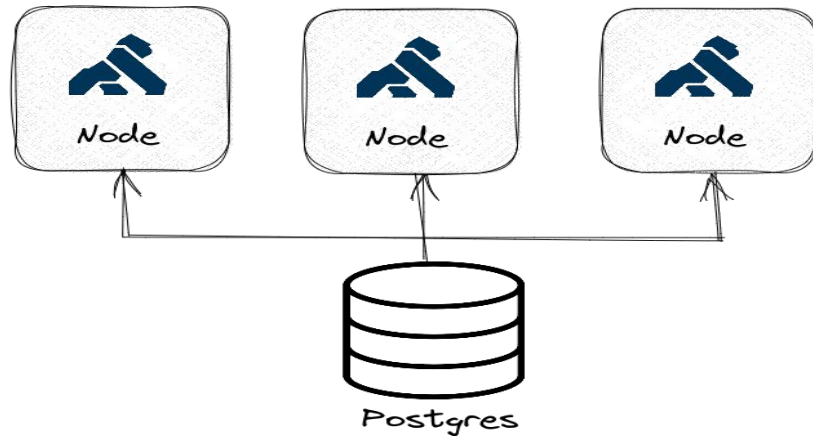
DB Less

Source of truth is a declarative YAML that includes all Kong configuration and is parsed in-memory when Kong starts



With Database

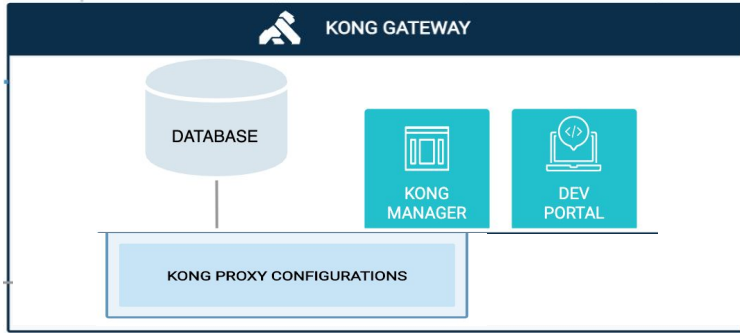
Source of truth is the shared Postgres database



Kong Deployment models

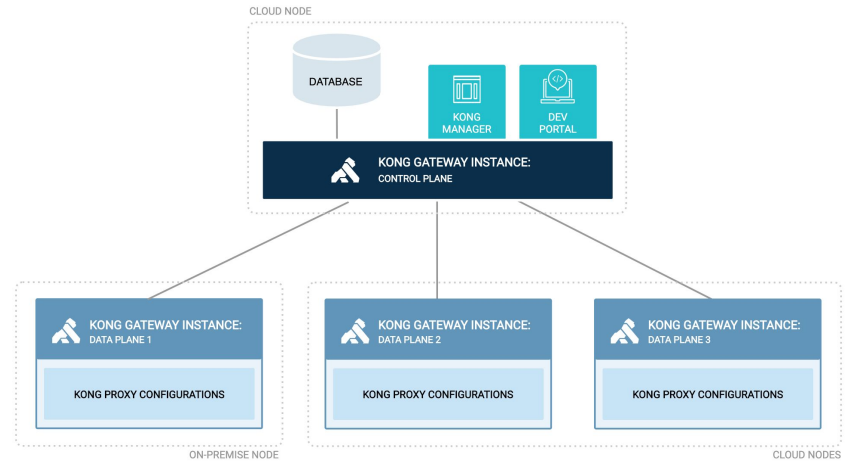
Traditional

Configuration and proxy components are in the same Kong node

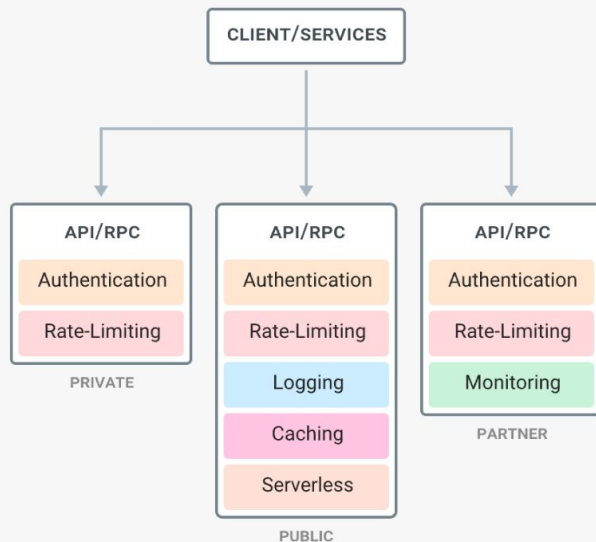


Hybrid

Separate configuration from proxy as Control Plane and Data Plane



The Redundant Old Way



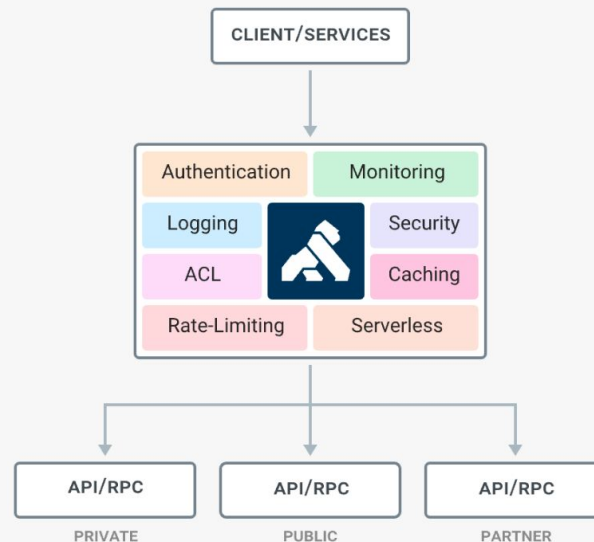
✗ Common functionality is duplicated across multiple services

✗ Systems tend to be monolithic and hard to maintain

✗ Difficult to expand without impacting other services

✗ Productivity is inefficient because of system constraints

The Kong Way



✓ Kong orchestrates common functionality

✓ Build efficient distributed architectures ready to scale

✓ Expand functionality from one place with a simple command

✓ Focus on your product and let Kong do the REST

Thank you