F5 NGINX

F5 SLEDFest 2022

Getting Started w/ an Enterprise Application Strategy

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NGINX
Part of F5

Agenda

Common Challenges with Modern Applications

Where does NGINX Plus Fit

Discovery with Instance Manager

Ingress Controller for K8S

Web App Firewall & L7 DoS

Service Mesh, Observability

Questions?

Common Challenges with Modern Applications

Customers consistently encounter similar challenges

INFRASTRUCTURE LOCK-IN

Limits ability to move apps to new environments

87% of customers are adopting multi-cloud

COMPLEX COMPLIANCE & POLICY REQUIREMENTS

Reduces speed to market and impacts customer experience

86% of all cyber-threats target applications and app identities*

TOOL SPRAWL

Increases operational complexity and cost

85% of new app workload instances are container-based

100% of customers lack visibility

Poor application visibility is a persistent and pervasive issue for all customers

TOP APPLICATION VISIBILITY GAPS

- Total number of applications
- Where those applications are hosted
- Whether those applications are secured and compliant
- End-to-end application-level SLAs (e.g., end-user availability, response times)

ROOT CAUSES OF VISIBILITY GAPS

- Heterogenous application portfolio
- Disparate tools and technologies
- Organizational siloes
- Insufficient integration and automation

The application data path is the pathway through which application traffic flows to reach an end-user

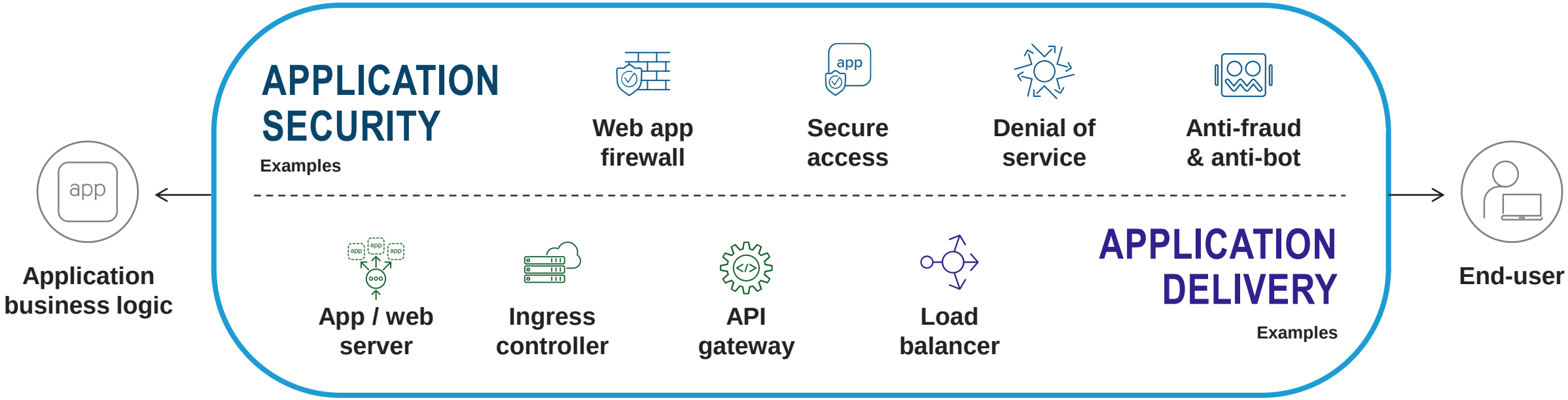
Application business logic

End-user

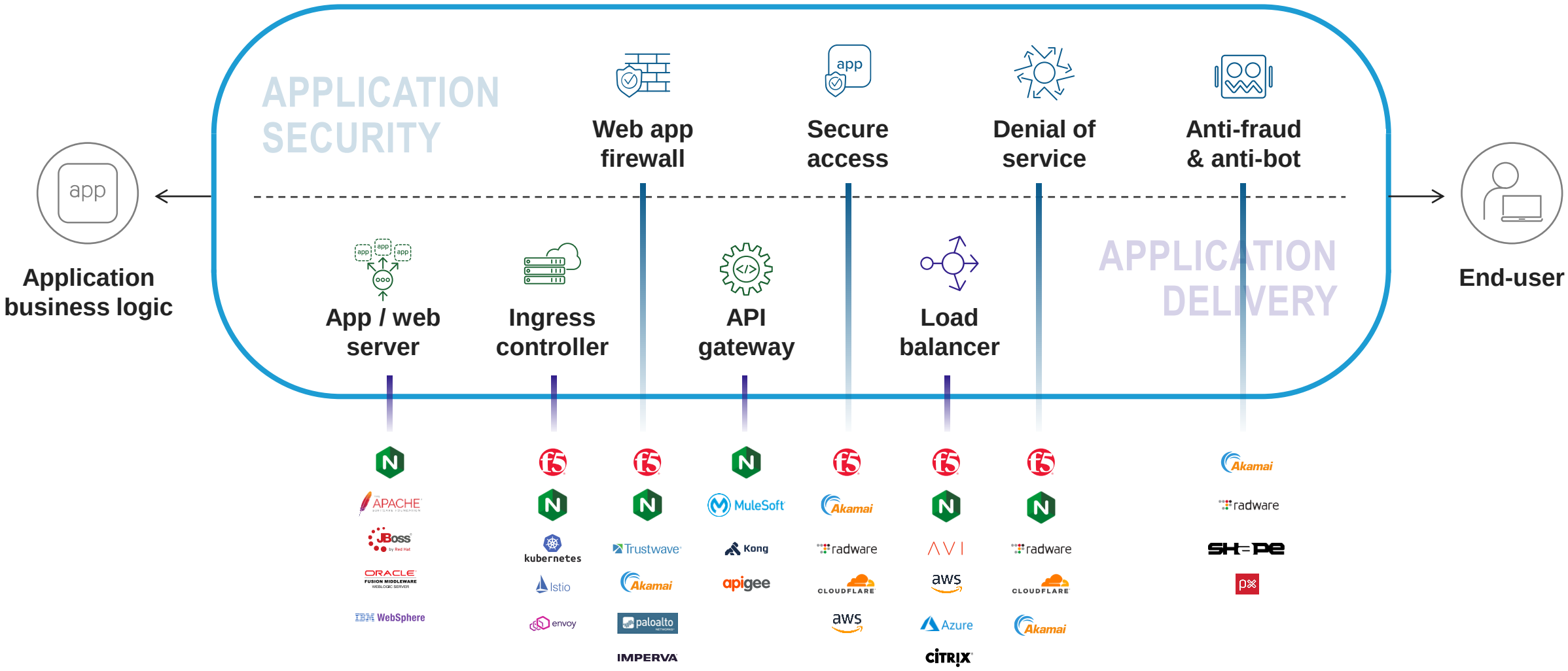
Application services sit along the application data path and ensure end-users have secure and reliable access

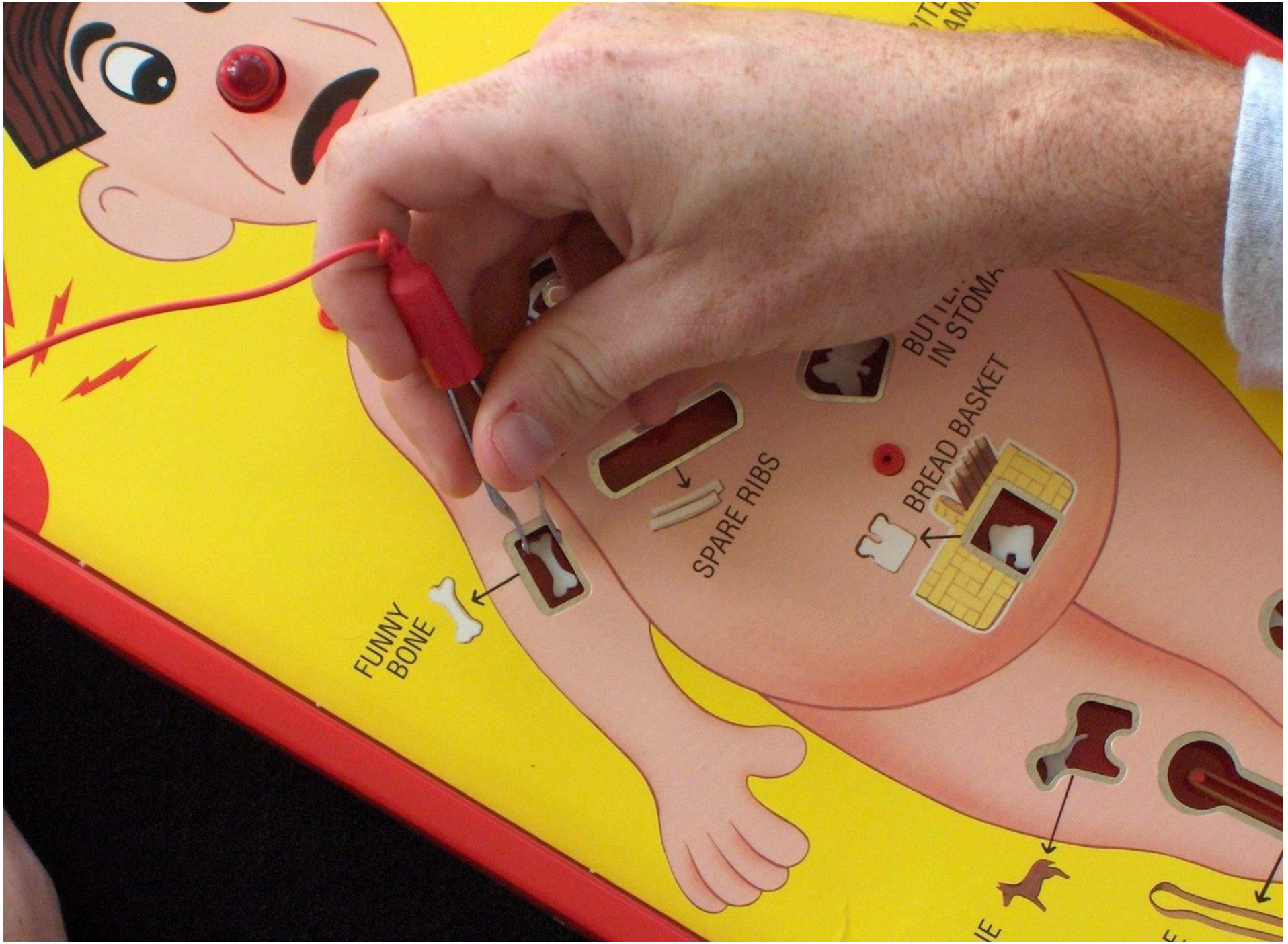
Application services include capabilities for application security and capabilities for application delivery

Applications use several application services along the data path

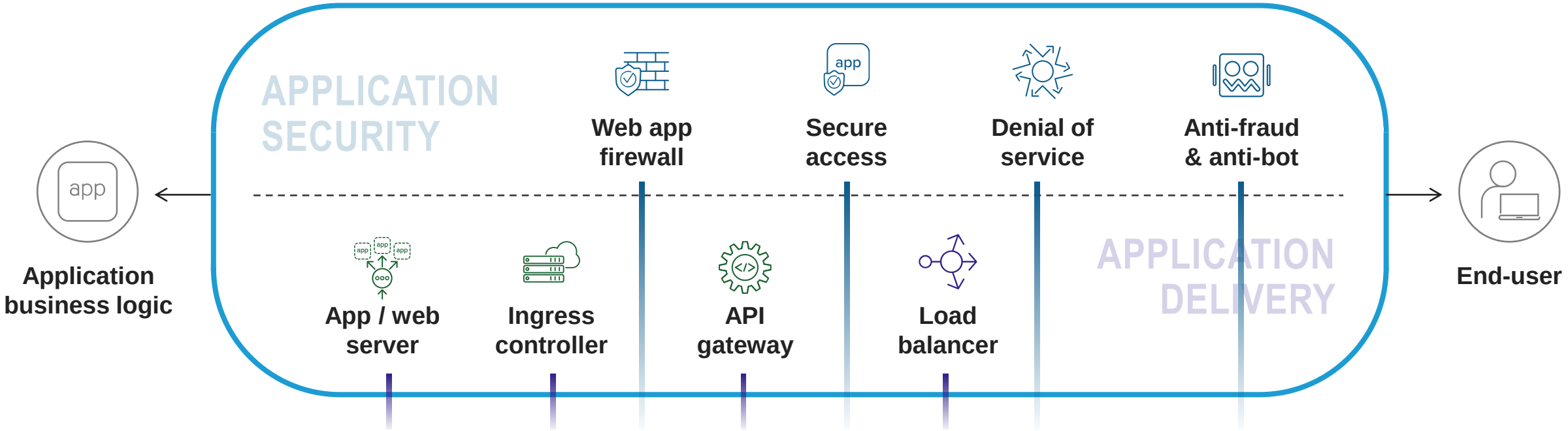


Often with each service provided by a different vendor





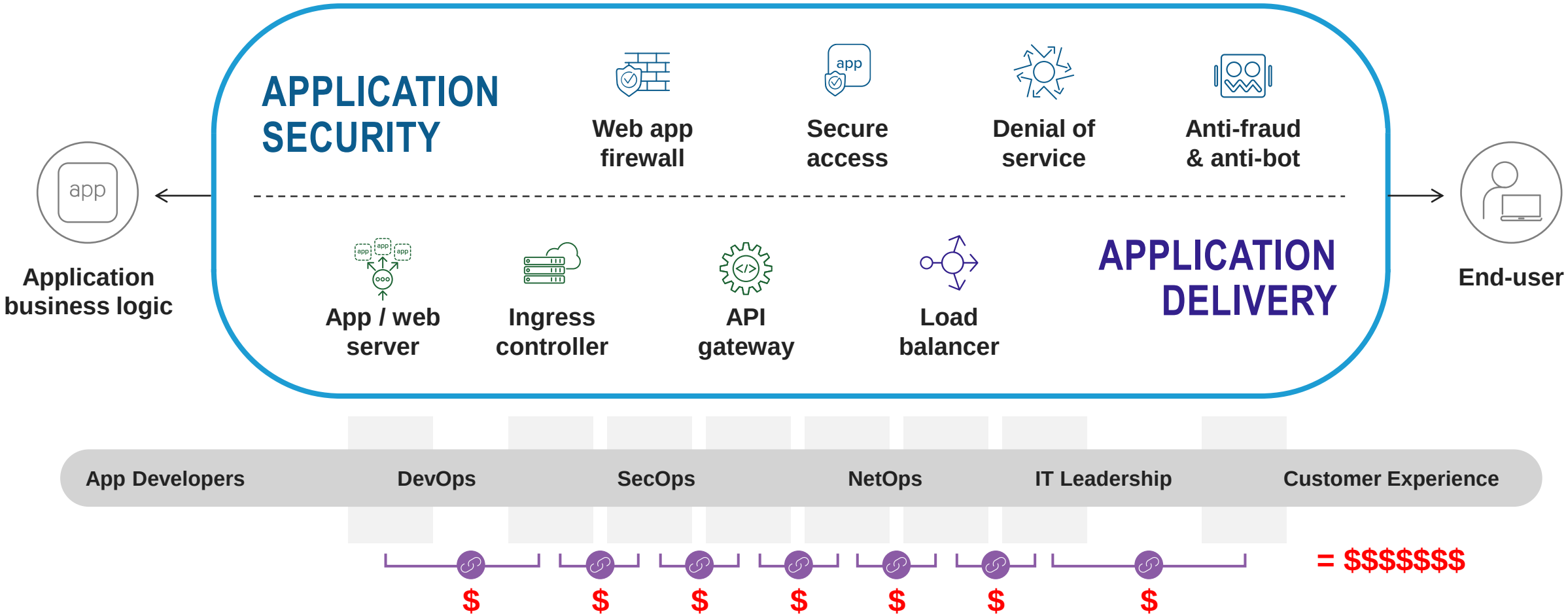
And a different set of vendors for each application architecture and infrastructure environment



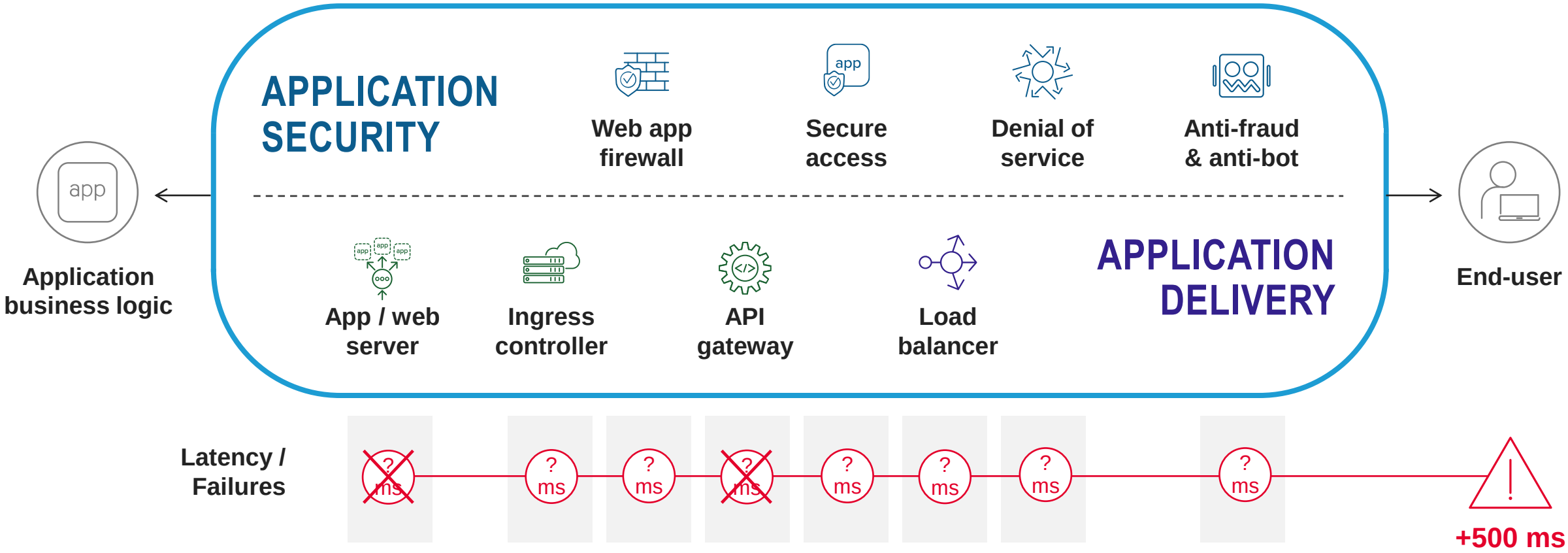
App architectures & infrastructure environments

Traditional	APACHE	f5	IMPERVA		Akamai CLOUDFLARE	f5	Akamai radware	Akamai radware
3-Tier	JBoss by Red Hat, ORACLE FUSION MIDDLEWARE WEBLOGIC SERVER	kubernetes, Istio	Trustwave, Akamai	MuleSoft, apigee	f5 radware	CITRIX AVI	f5 CLOUDFLARE	p
Microservices	NGINX, IBM WebSphere	NGINX, envoy	paloalto, NGINX	Kong, NGINX, vmware	aws	aws, NGINX, Azure	NGINX	SHAPE

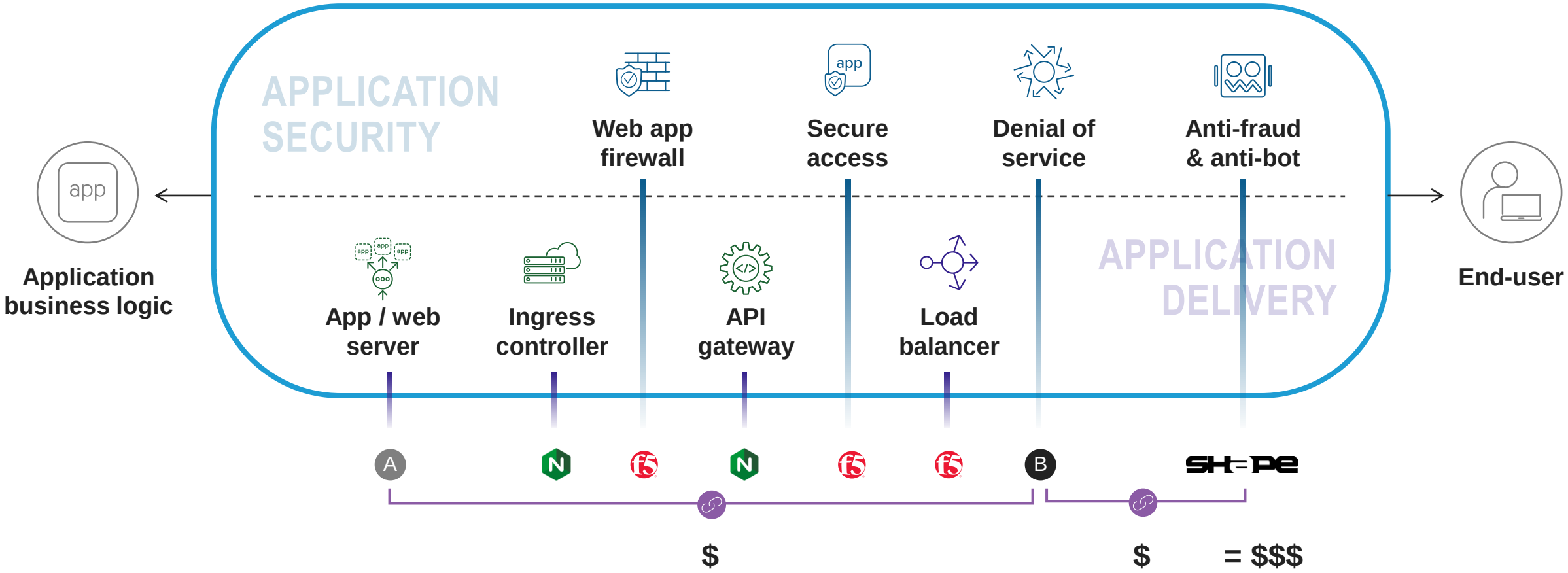
Making end-to-end automation and orchestration expensive, having to stitch everything together



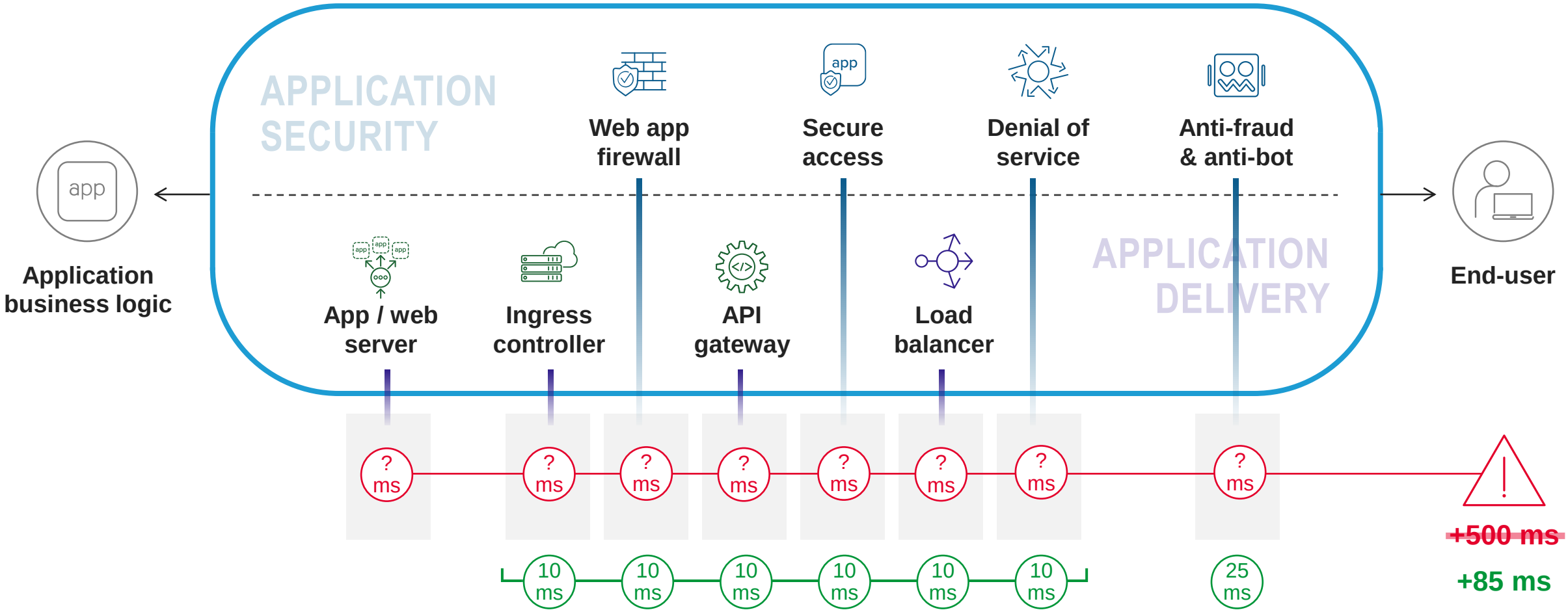
Leaving application owners and operators unable to easily trouble-shoot issues



The F5 portfolio of best-in-class application services substantially reduces complexity and cost

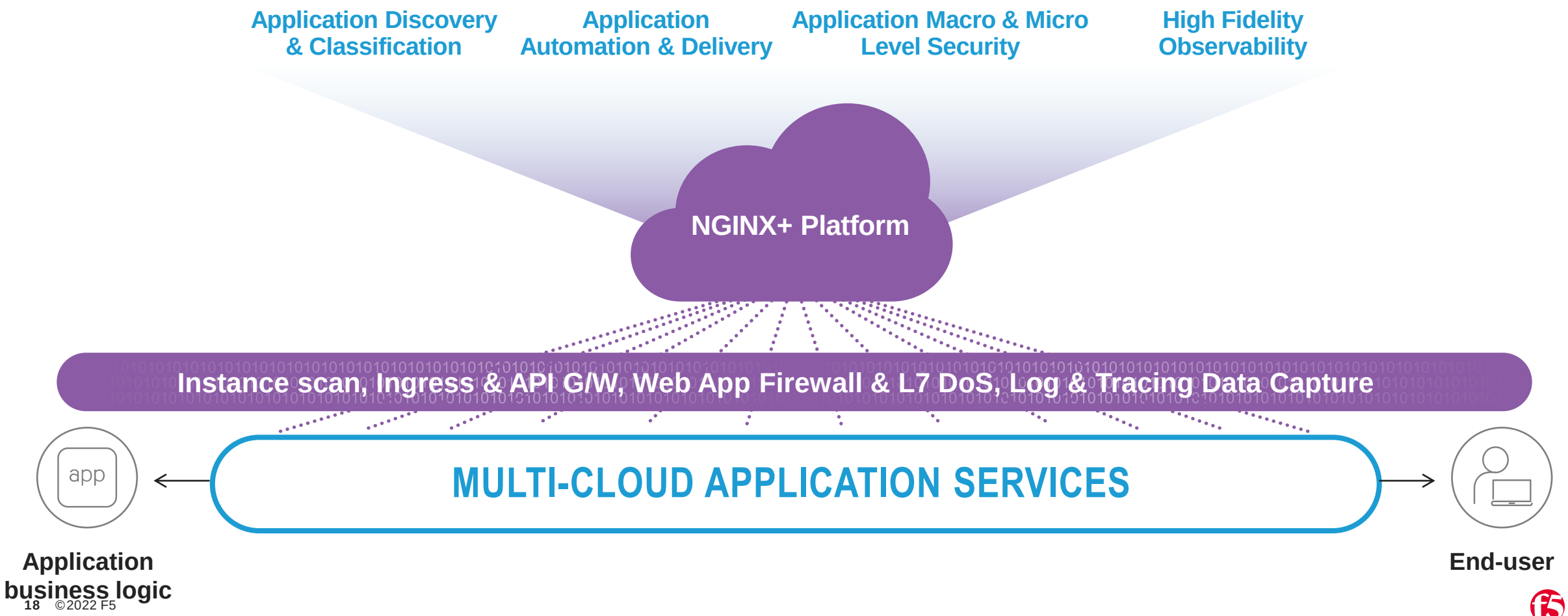


… and improves mean time to resolution



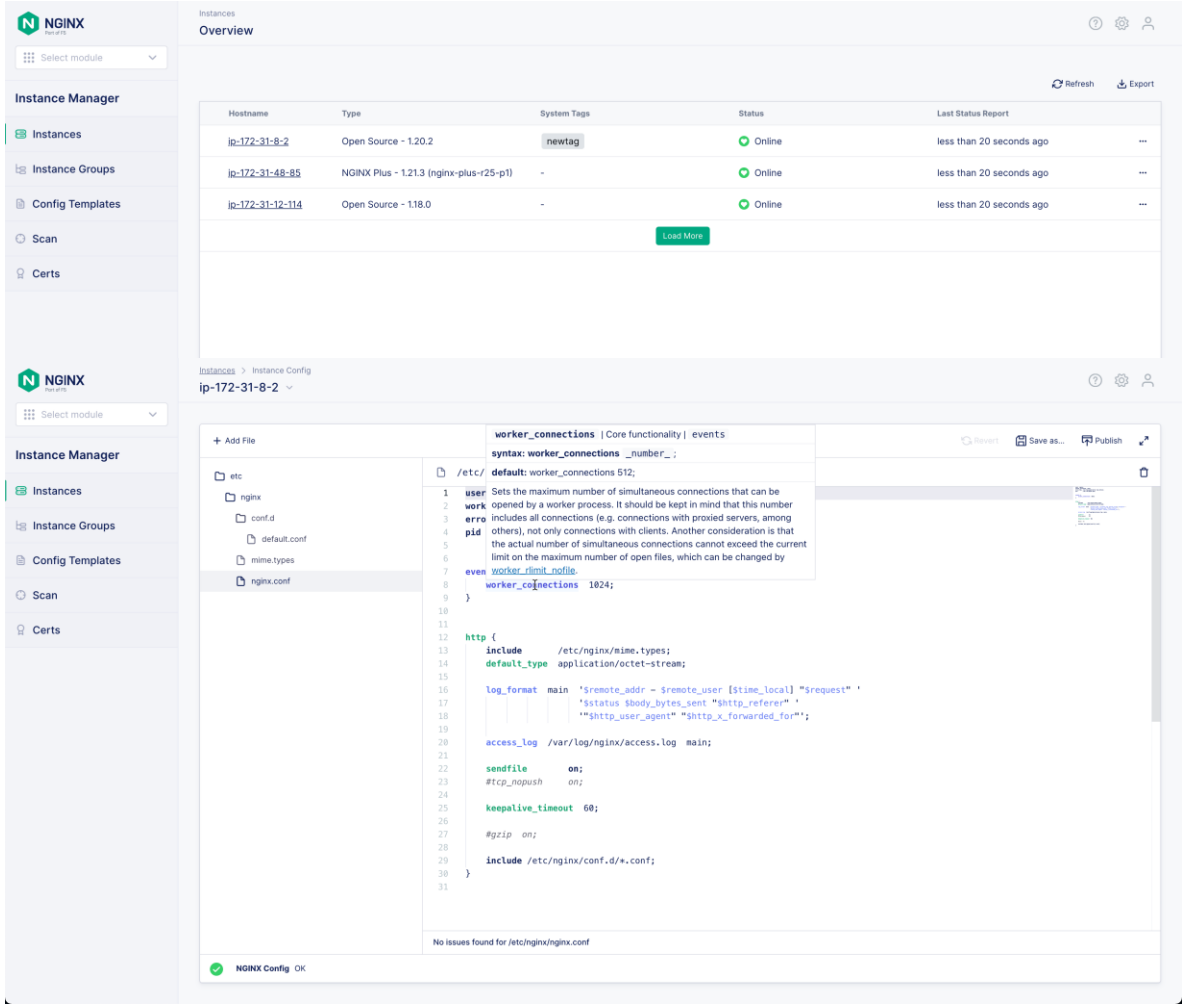
Where does NGINX Plus Fit?

NGINX Plus can Help



NGINX Instance Manager

OVERVIEW



Find and Secure instances

- Scan utilizing stealth ports and tagging
- CVE vulnerability and outdated version information
- Lightweight UI for inventory management
- Certificate Management

Configuration Management

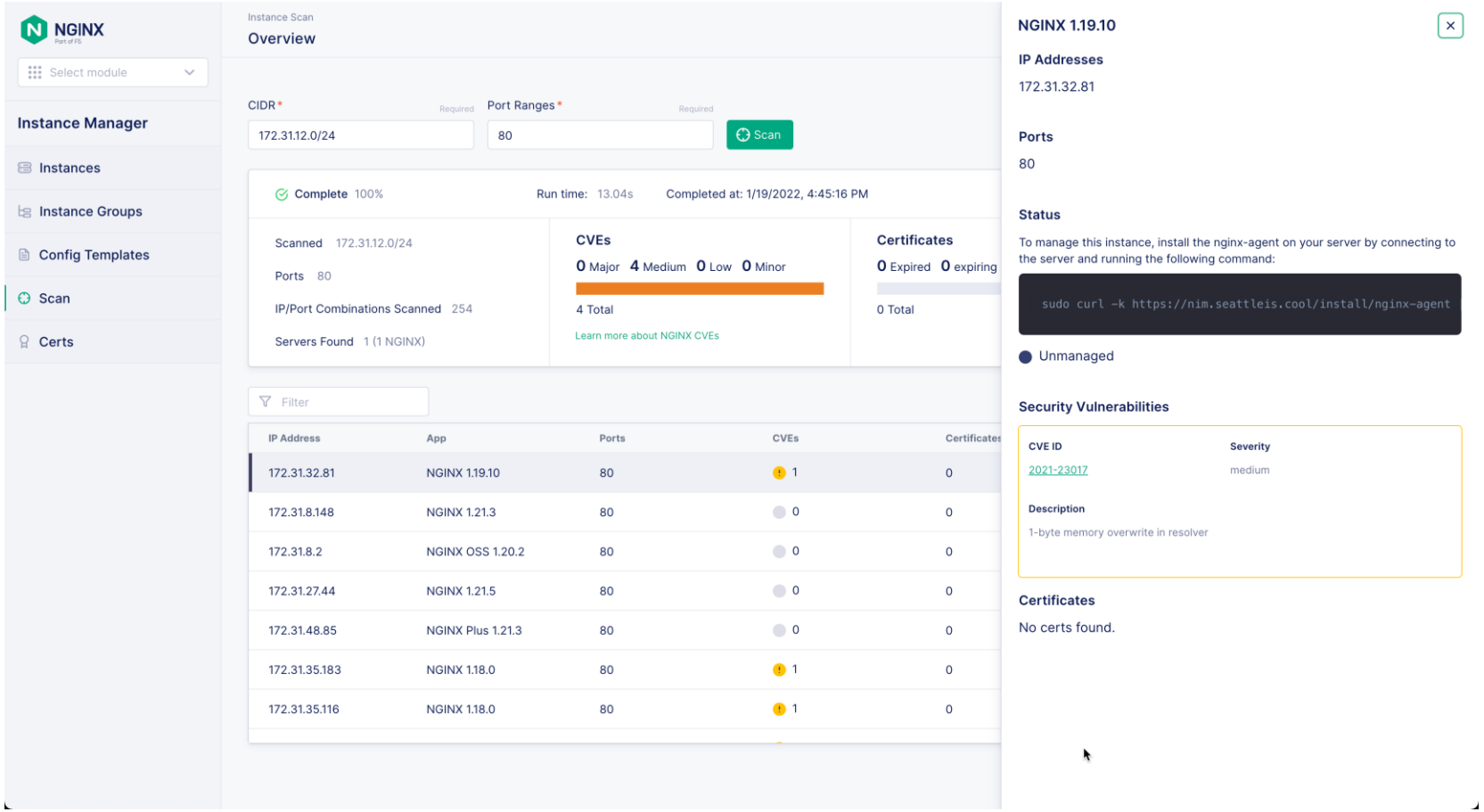
- Reads existing conf files
- Add and remove conf files
- Works with your existing configurations, tools and processes.
- Centralized Validation
- Tagging for role-based access (RBAC)
- Recommendations based on best practices

DevOps friendly

- API First Focus
- Metrics natively and externally available via Clickhouse

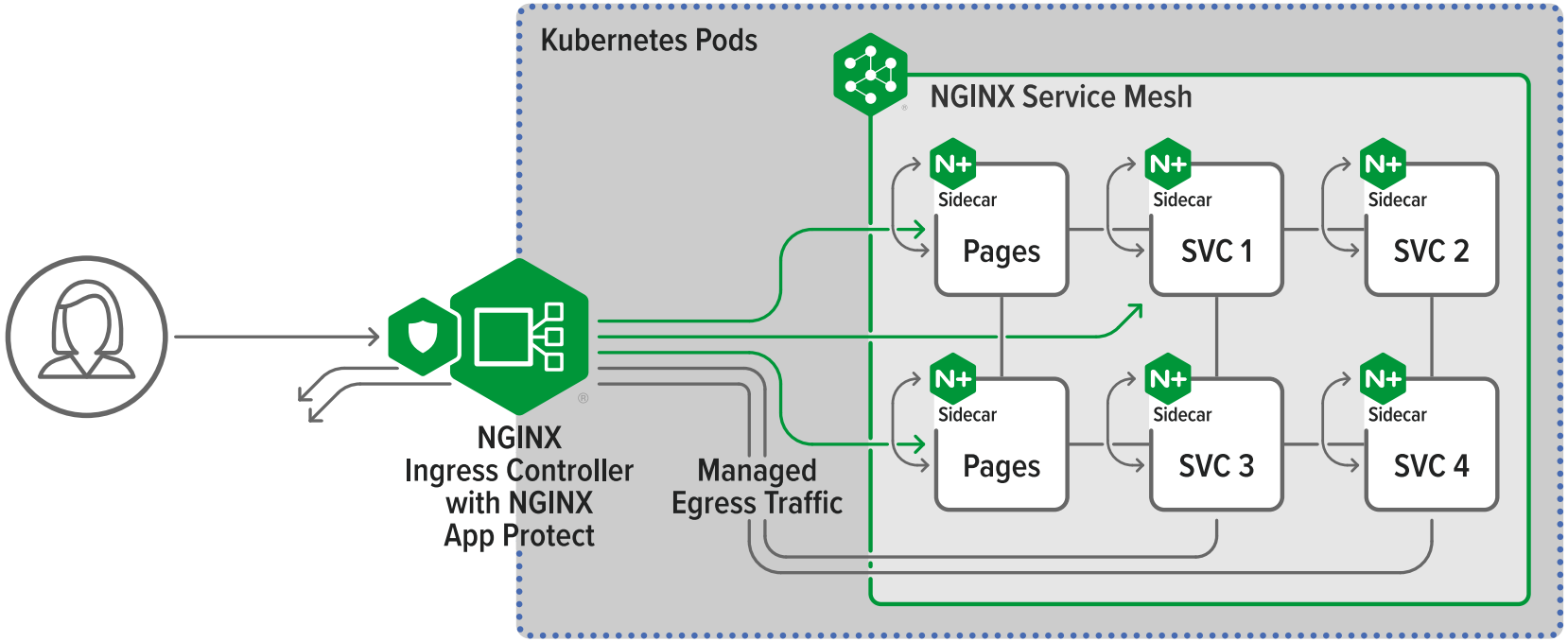
Instance Discovery and Scanning

- Nmap Scanning technology
- Identifies HTTP server type
- CVE list
- Run on demand or through API



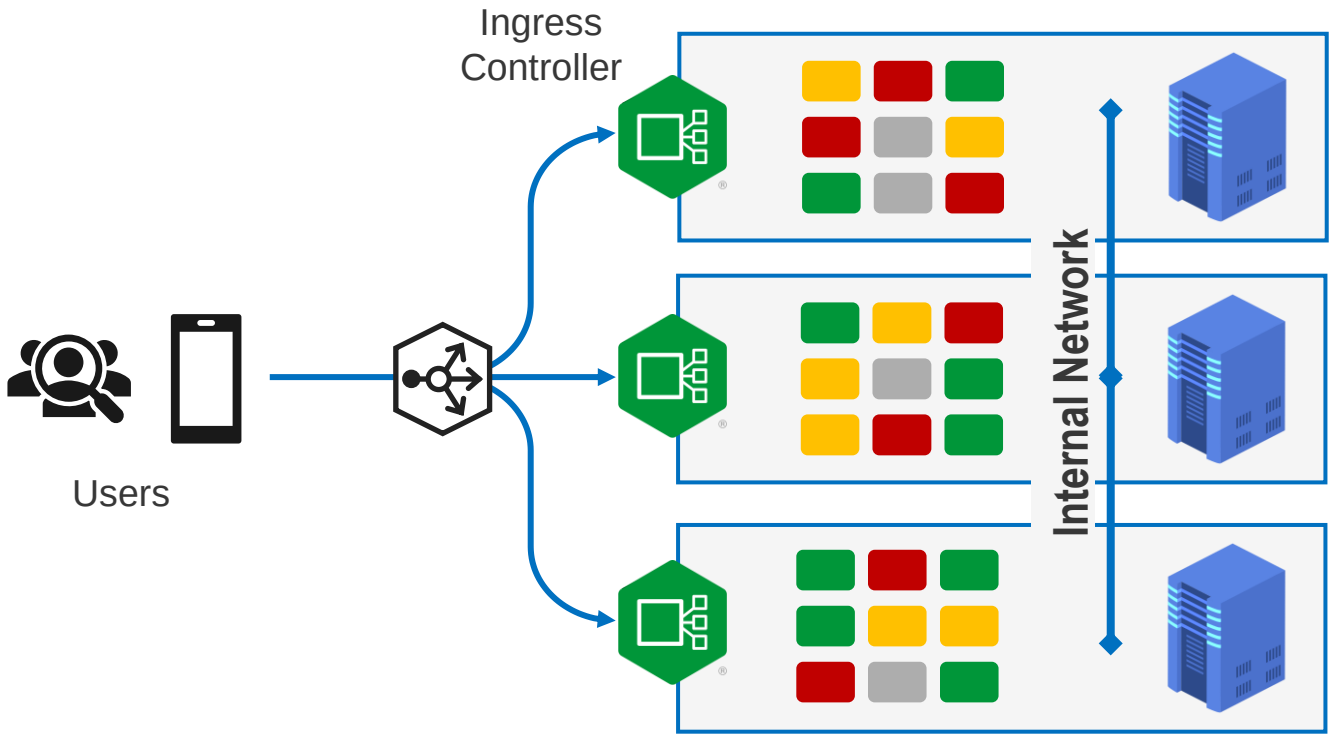
Production-Grade Kubernetes with NGINX

- Part 1: Ingress Controller
- Part 2: Built-In Security
- Part 3: Service Mesh



The Ingress Controller

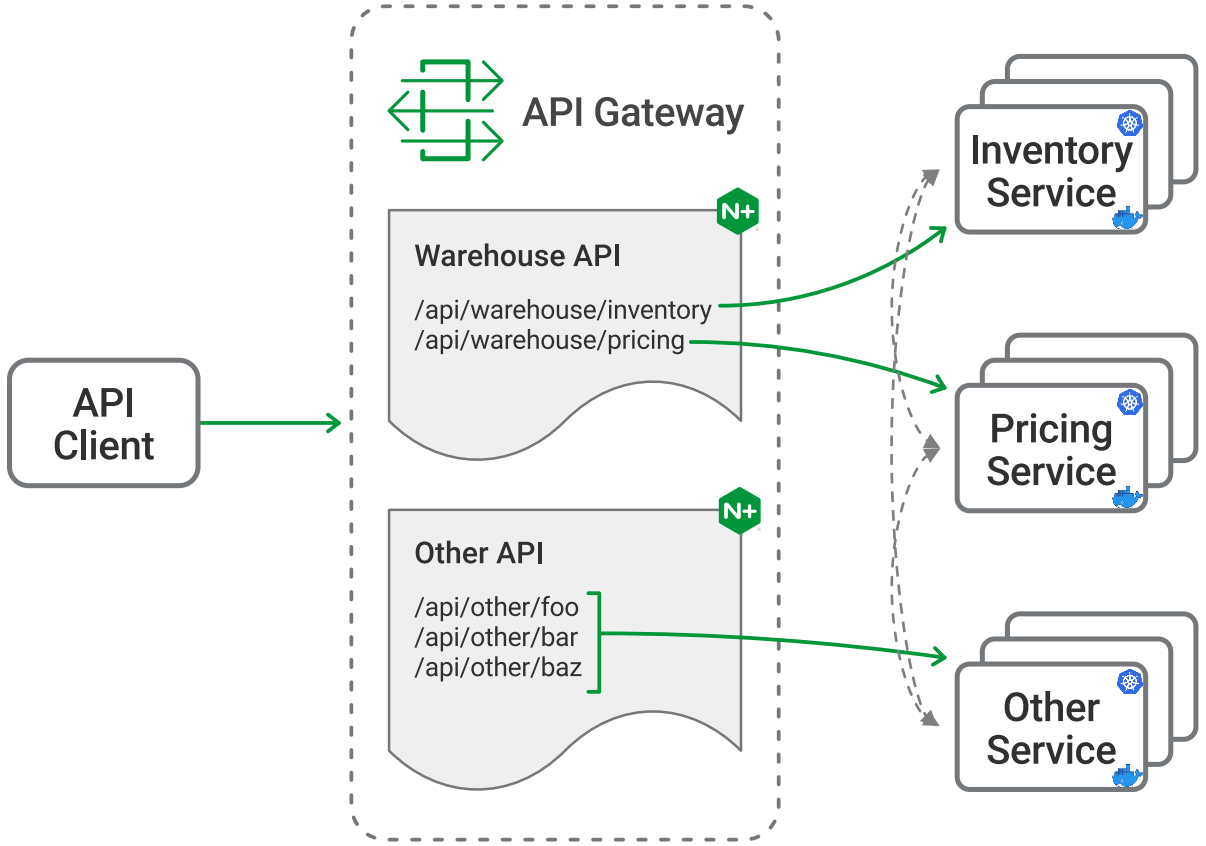
A specialized load balancer for Kubernetes environments:



- Accepts traffic from outside the Kubernetes platform, and load-balances it to pods (containers) running inside the platform
- Configured using the Kubernetes API, with objects called ‘Ingress Resources’
- Monitors the pods running in Kubernetes, and automatically updates the load balancing rules if, for example, pods are added or removed from a service

API Gateway

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



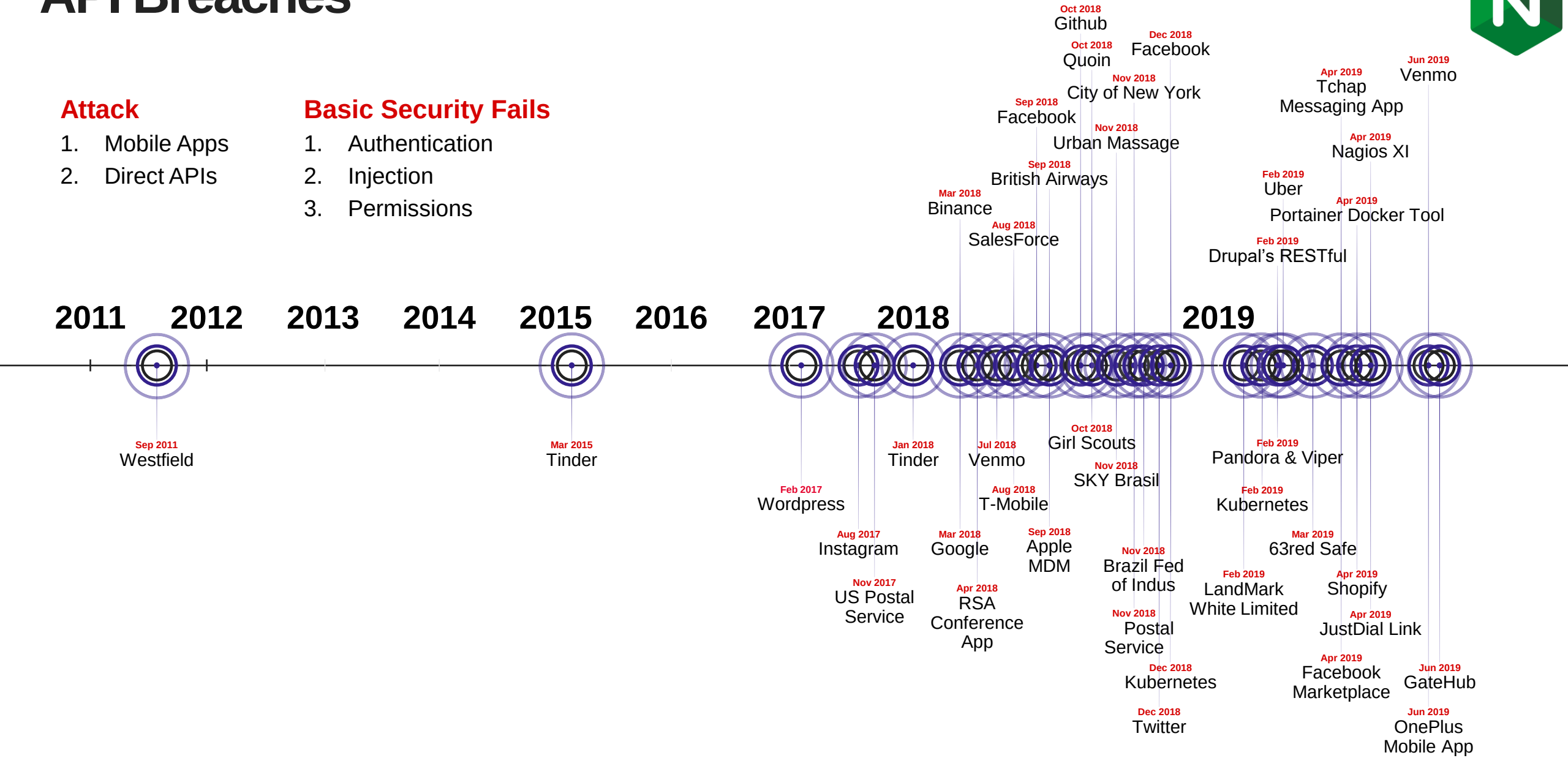
API Breaches

Attack

1. Mobile Apps
2. Direct APIs

Basic Security Fails

1. Authentication
2. Injection
3. Permissions



API Security + Application Protection

API1. Broken Object Level Authorization
API2. Broken User Authentication
API3. Excessive Data Exposure
API4. Lack of Resources & Rate Limiting
API5. Broken Function Level Authorization
API6. Mass Assignment
API7. Security Misconfiguration
API8. Injection
API9. Improper Assets Management
API10. Insufficient Logging & Monitoring

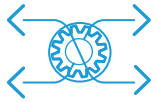
Security with NGINX App Protect

Advanced WAF security

Layer 7 DoS mitigation

Credential protection

API security



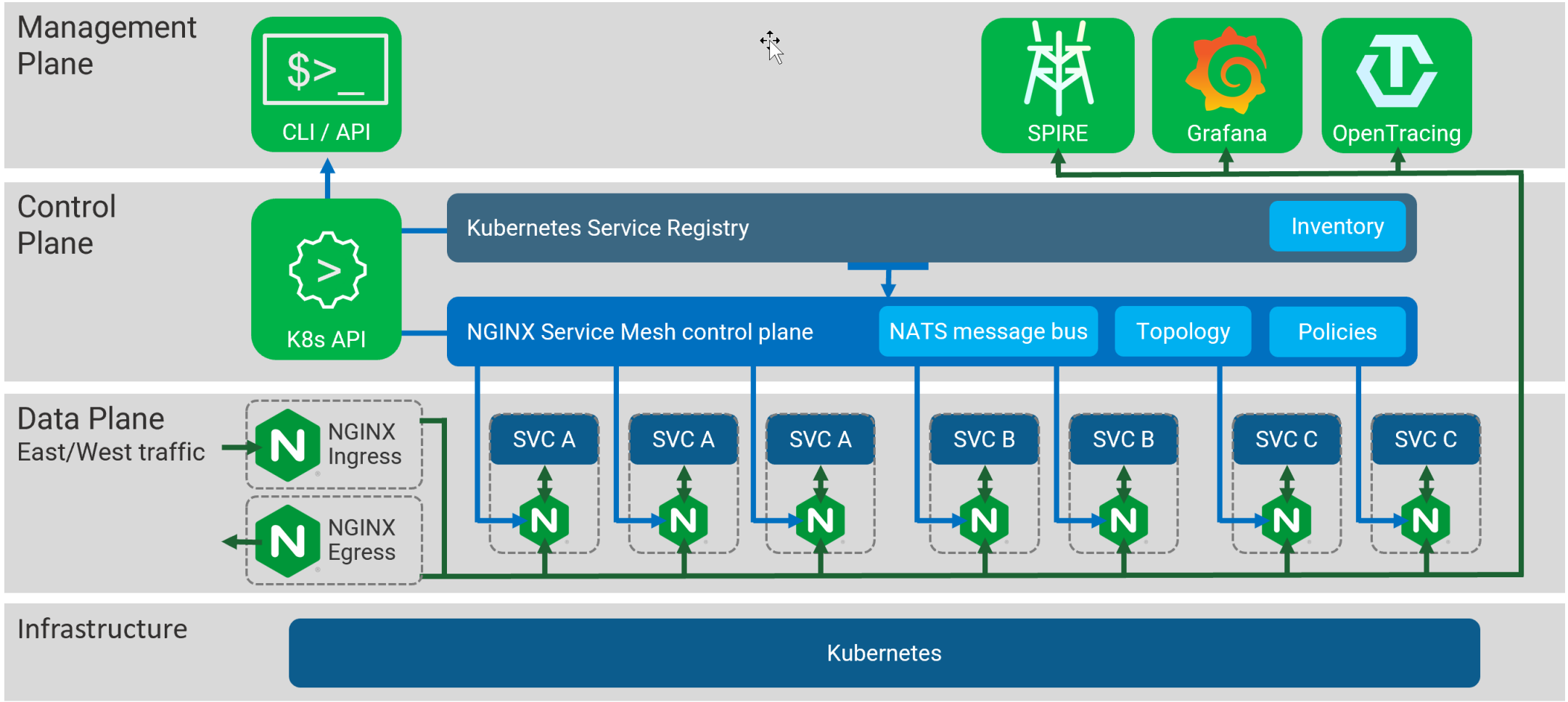
DevOps and Security Automation

NGINX+ & WAF

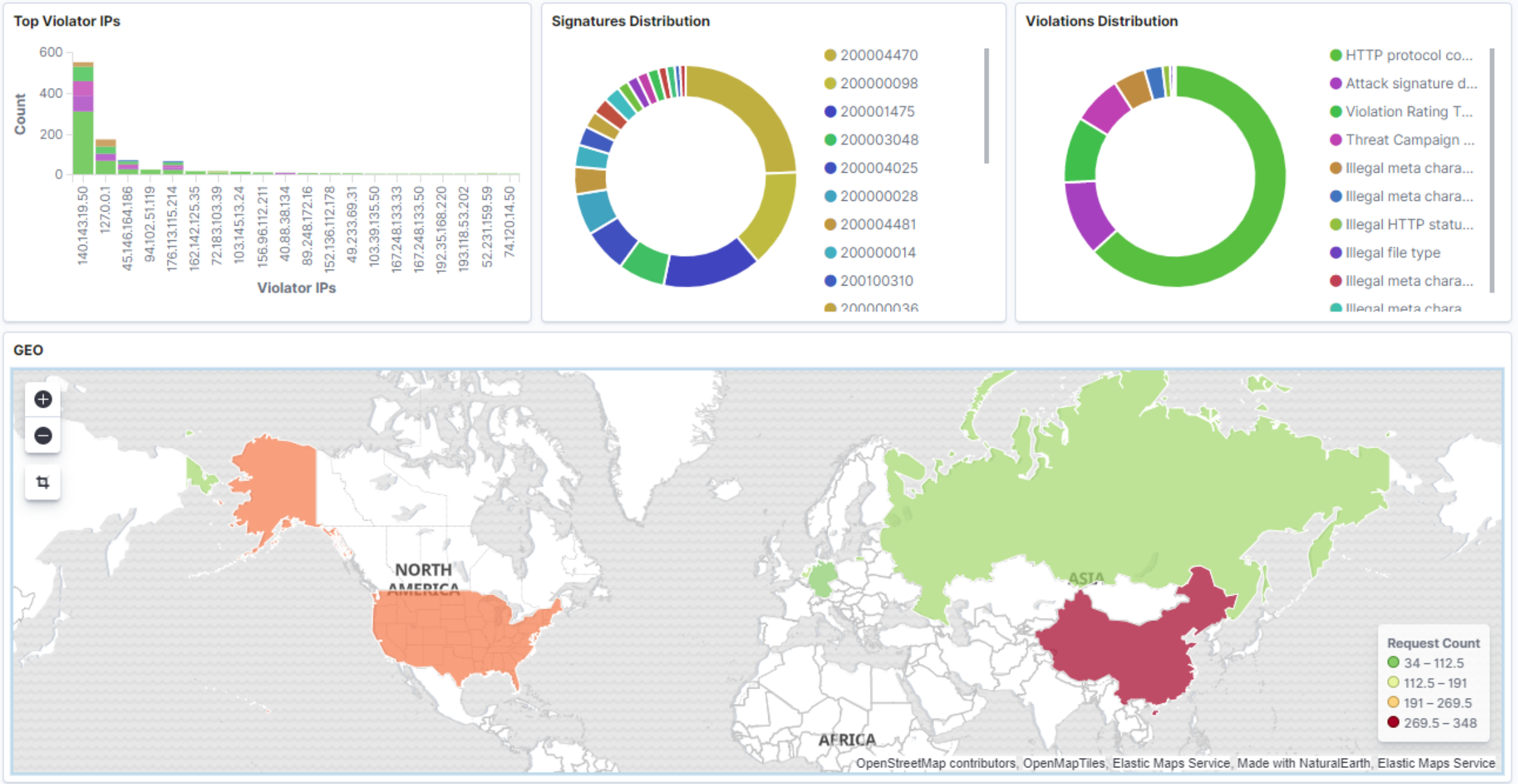
```
http {
    include       /etc/nginx/mime.types;
    default_type  application/octet-stream;
    sendfile        on;
    keepalive_timeout  65;

    app_protect_enable on; # This is how you enable NGINX App Prote
    app_protect_policy_file "/etc/nginx/NginxDefaultPolicy.json";
    app_protect_security_log "/etc/app_protect/conf/log_default.jso

    server {
        listen       80;
        server_name  localhost;
        proxy_http_version 1.1;

        location / {
            client_max_body_size 0;
            default_type text/html;
            proxy_pass http://172.29.38.211:80$request_uri;
        }
    }
```

```
{
    "policy": {
        "name": "signature_modification_entitytype",
        "template": { "name": "POLICY_TEMPLATE_NGINX_BASE" },
        "enforcementMode": "blocking",
        "signature-sets": [
            {
                "name": "All Signatures",
                "block": true,
                "alarm": true
            }
        ]
    },
    "modifications": [
        {
            "entityChanges": {
                "enabled": false
            },
            "entity": {
                "signatureId": 200001834
            },
            "entityType": "signature",
            "action": "add-or-update"
        }
    ]
}
```


NGINX Service Mesh



NGINX+ API & WAF Visibility



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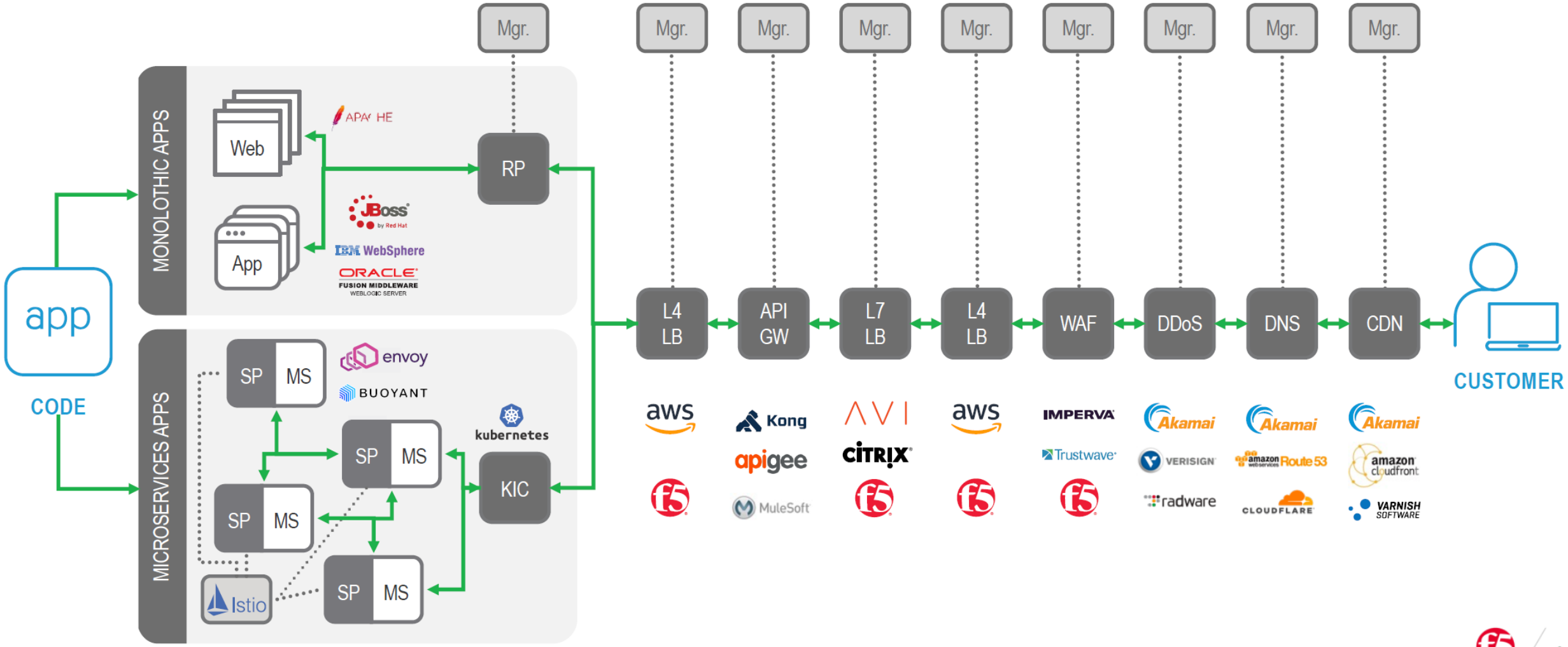
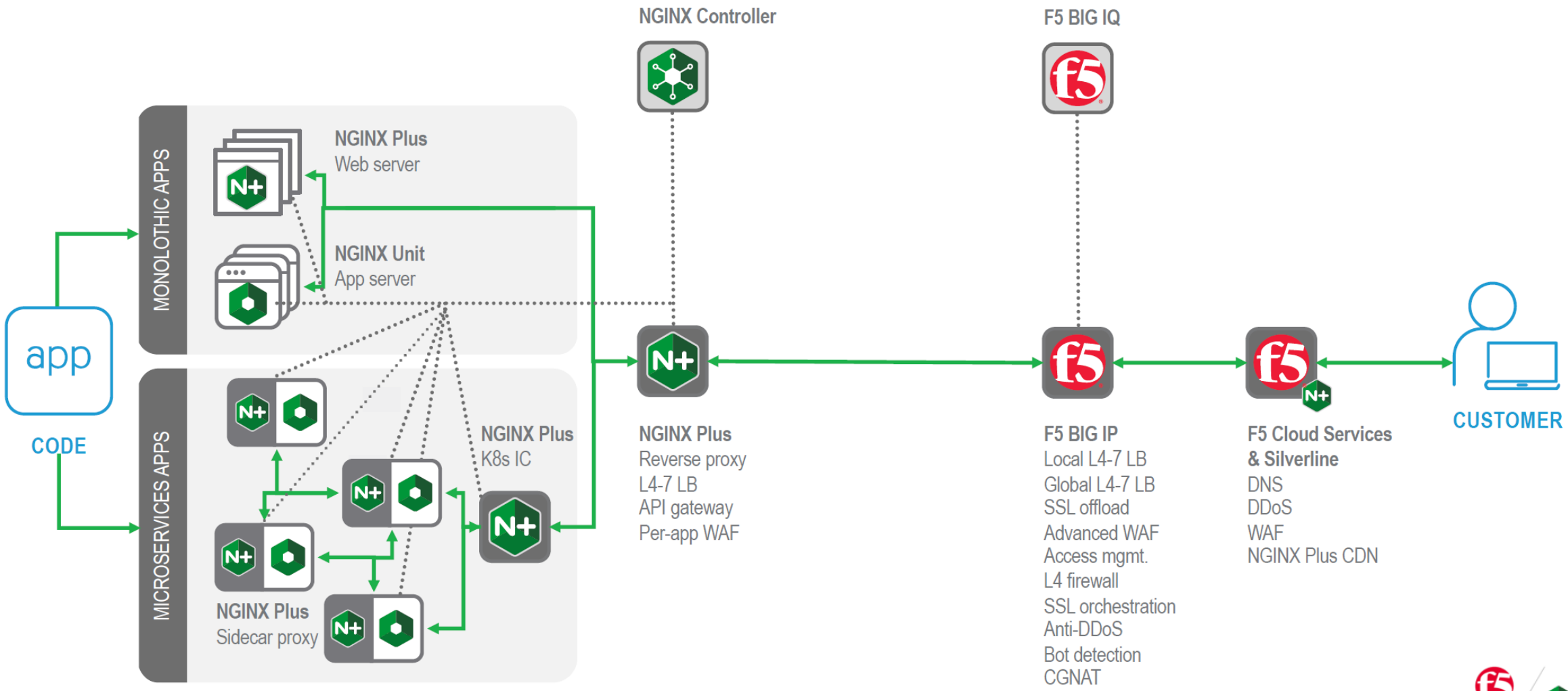
Lastly.....couple Use Cases

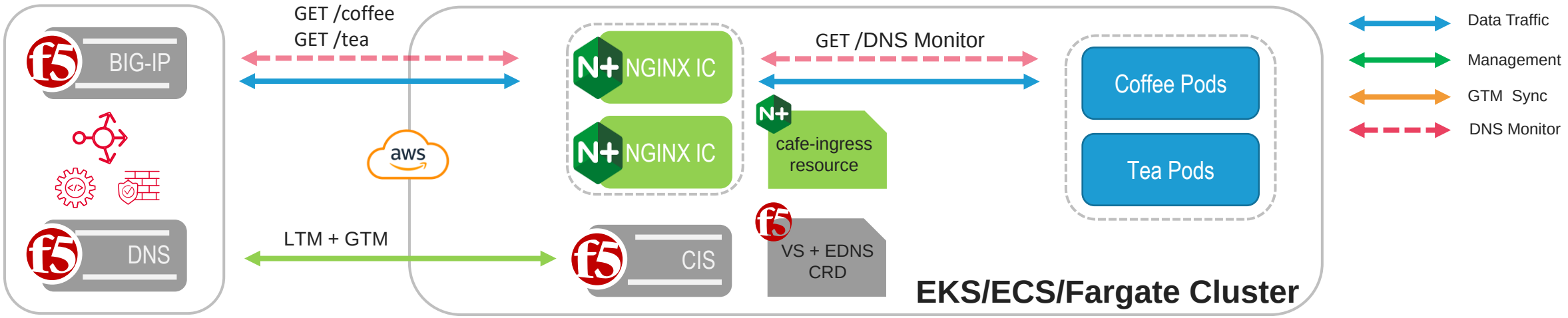
NGINX+ – Today, a Patchwork of Tools



NGINX+ & BIG-IP! 13 Tools Down to 3



Multi-Cluster Multi-Site with IngressLink



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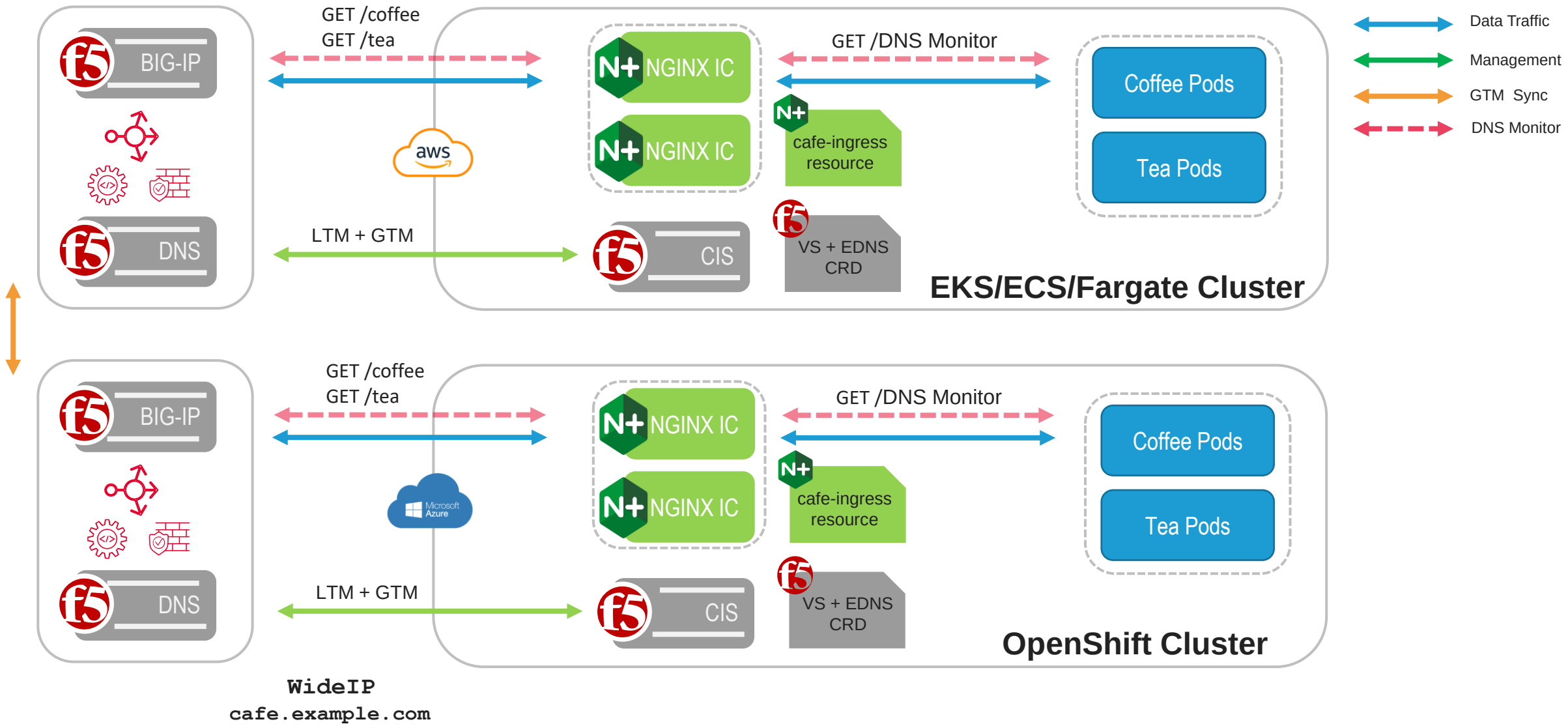

WideIP
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OUR VALUE PROPOSITION

F5 powers applications from development through their entire life cycle, so you can deliver **differentiated**, **high-performing**, and **secure digital experiences**.

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Happy Hour

Following the event, join us at the **Warhorse Whiskey Bar** for Happy Hour!
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