

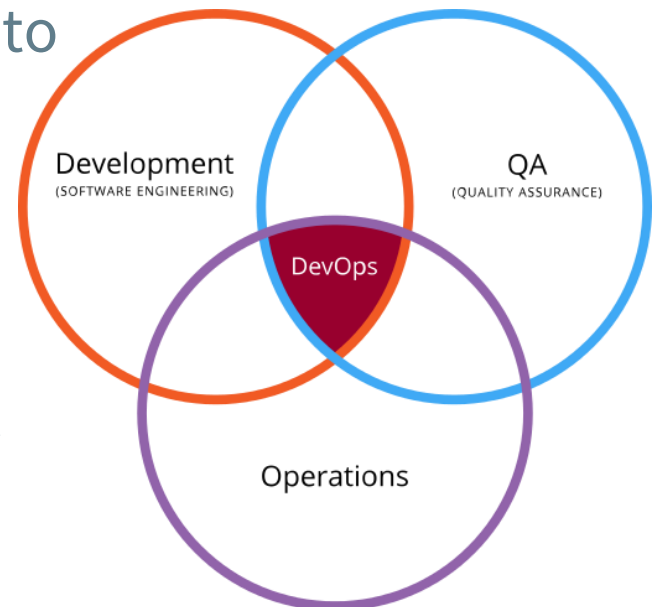
CITDD – Continuous Integration, Testing, Delivery & Deployment

DevOps

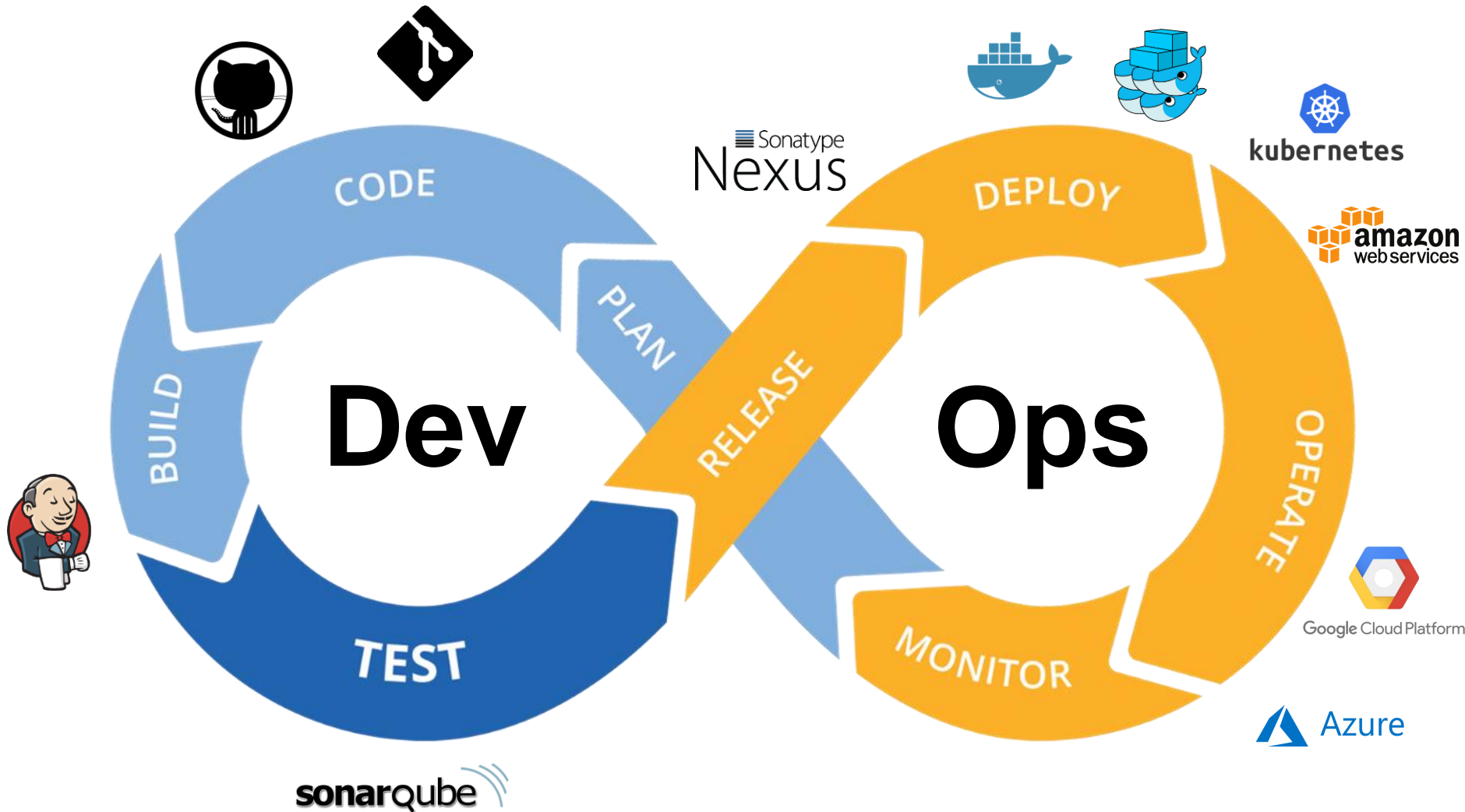
Any **authorized** person should be able to

- deploy **new/latest** version
- **restore** latest version from **SCM** and **backup**

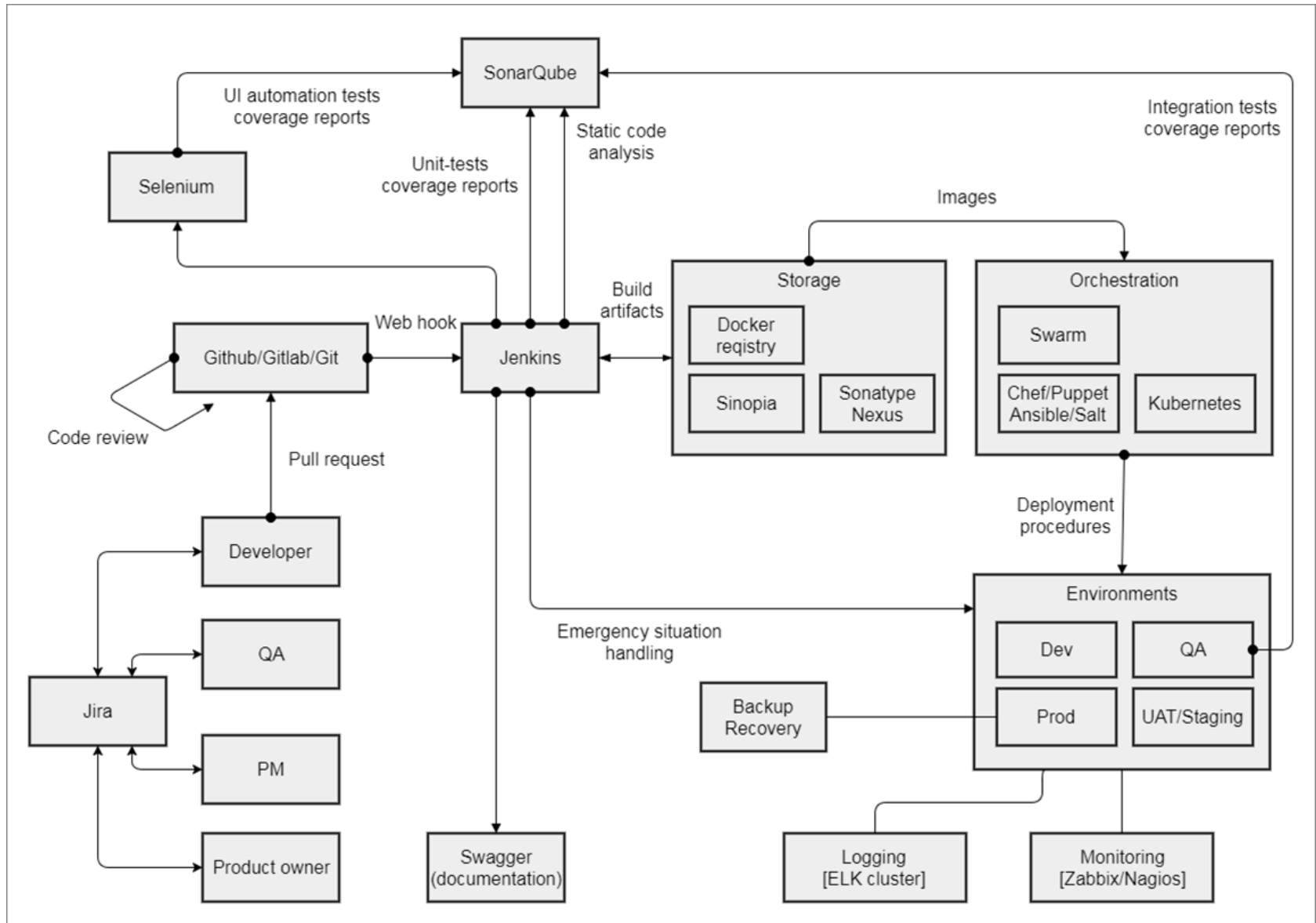
on **prod/staging/dev/qa** environment
in **one click**



Development pipeline



CITDD – Continuous Testing, Integration, Delivery & Deployment



Roles/Areas

◎ Source Control Management

- setup git/github/gitlab
- implement & maintain branching model
- integration with other tools

◎ Release Management

- setup & maintain continuous release mode (3m/6m/1h)
- patches,
- hotfixes,
- manage versions inside SCM

◎ Continuous Integration

- setup & maintain CI tool, like Jenkins
- integrate with SCM
- implement pull-request & push builds
- code review
- notifications

Roles/Areas

◎ Static Code Analysis

- setup & maintain tools, like SonarQube
- integration with CI tools
- notification & reporting

◎ Unit Tests, Integration Tests

- setup & maintain unit test runs as part of CI
- run integration tests, ui automation tests
- store code coverage for different type of tests

◎ Packaging

- setup & maintain artifacts packaging (jars, exe, docker images, html+js+css)
- setup & maintain persistent storage for artifacts, like Sonatype Nexus

Roles/Areas

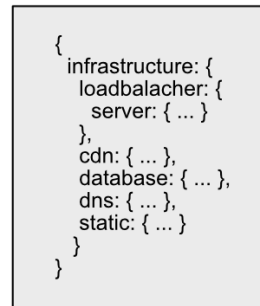
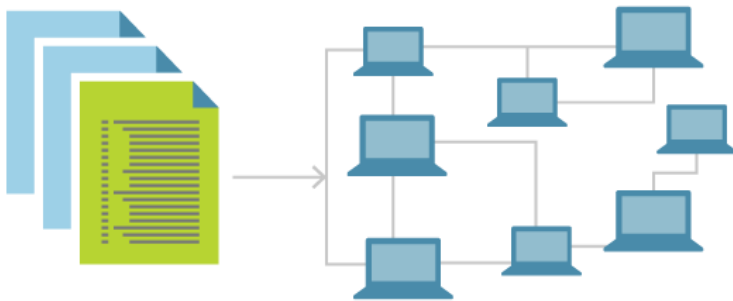
◎ Delivery & Deployment

- setup different type of environment – dev / qa / uat / tailoring / staging / production
- build fully automated setup & provisioning pipeline

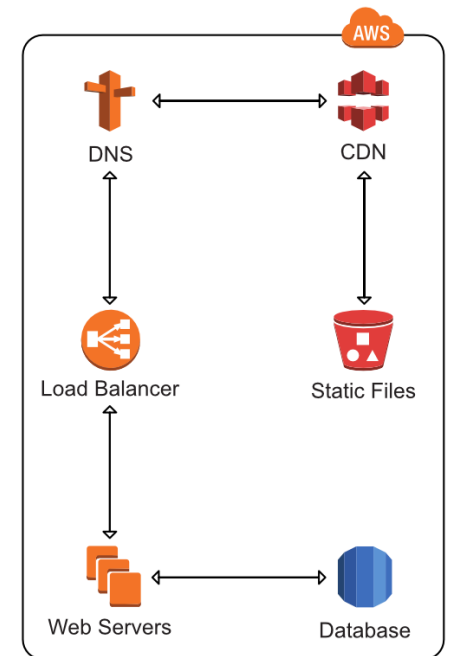
◎ Monitoring

- setup & maintain monitoring at two levels : application & infrastructure
- provide user-friendly mechanism to access all available statistics, issues & escalations

IaC – Infrastructure-as-Code, IaaS - Infrastructure-as-a-Service



Tool

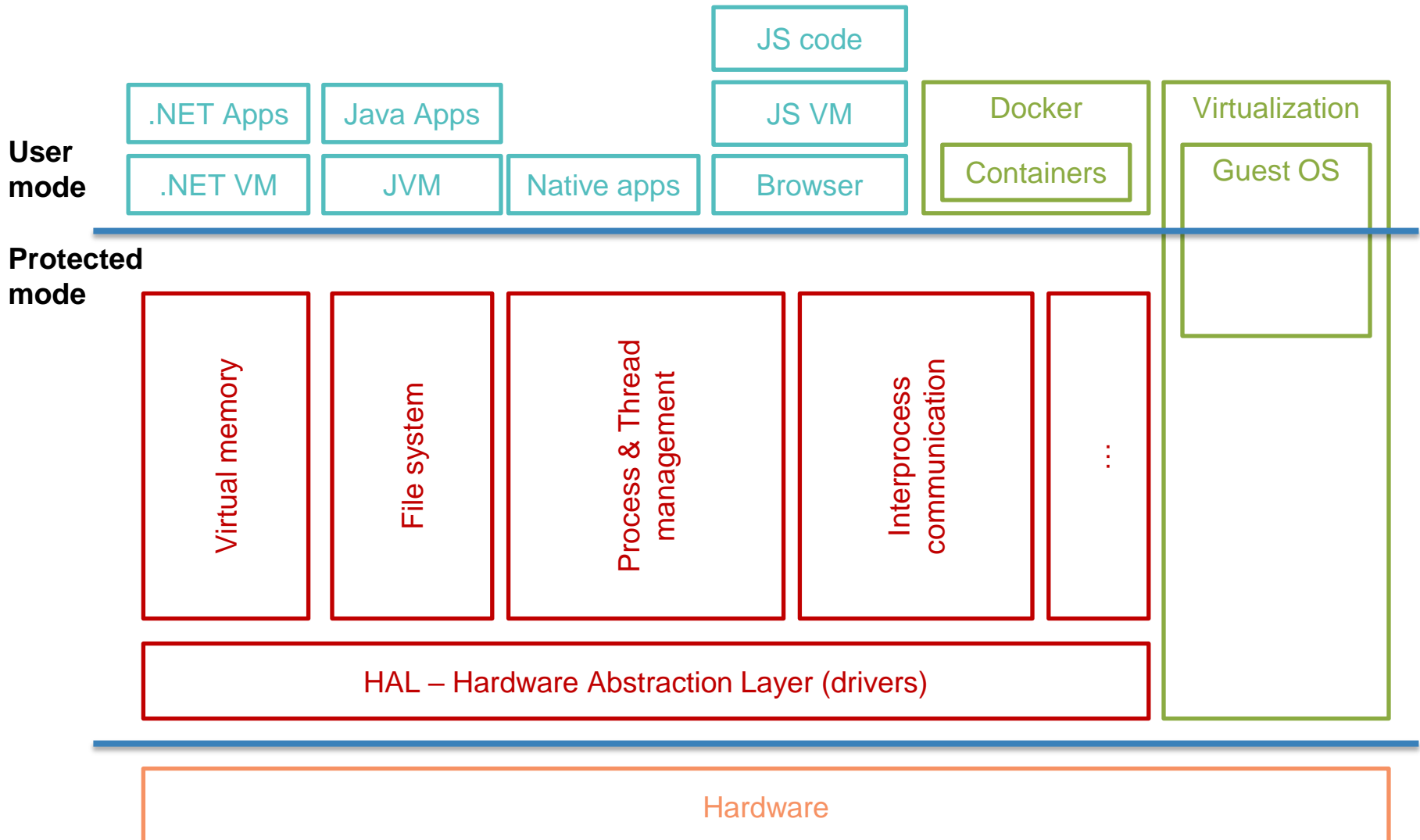


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```

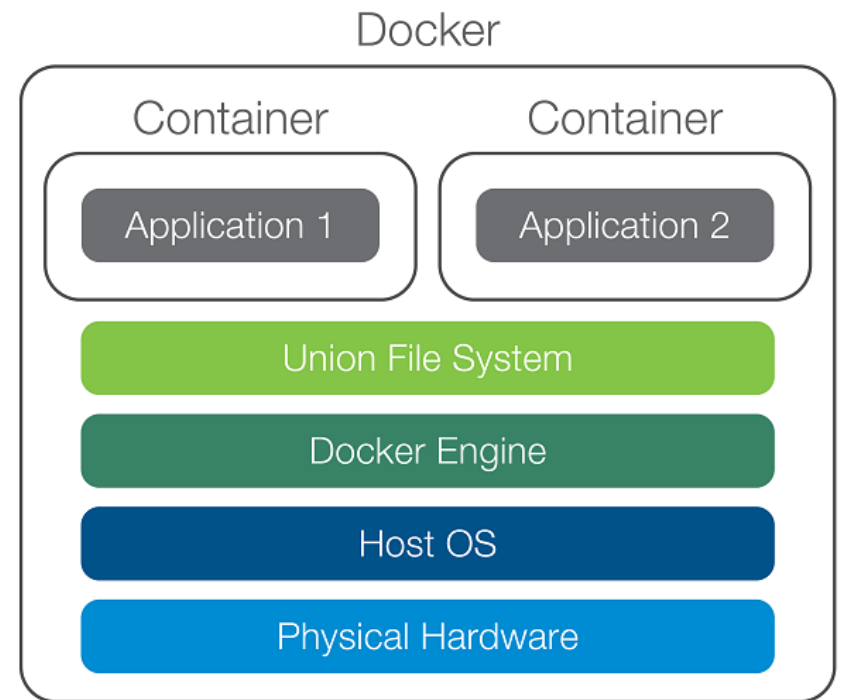
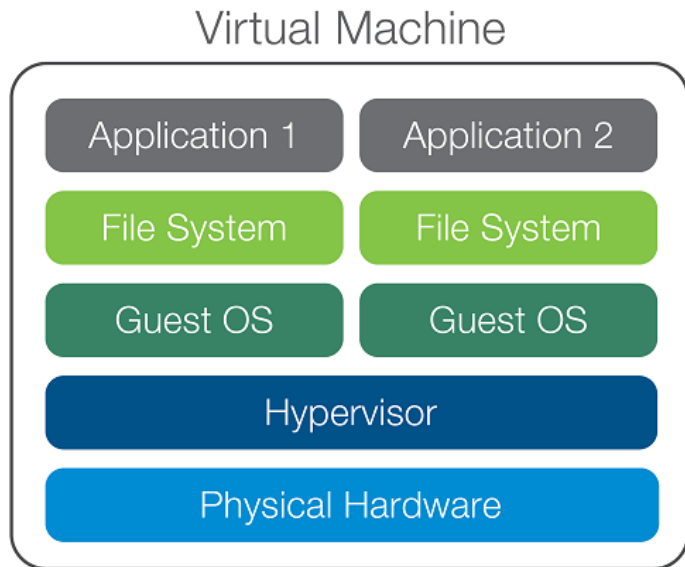
Virtualization, Containerization & Application servers



OS High-level structure

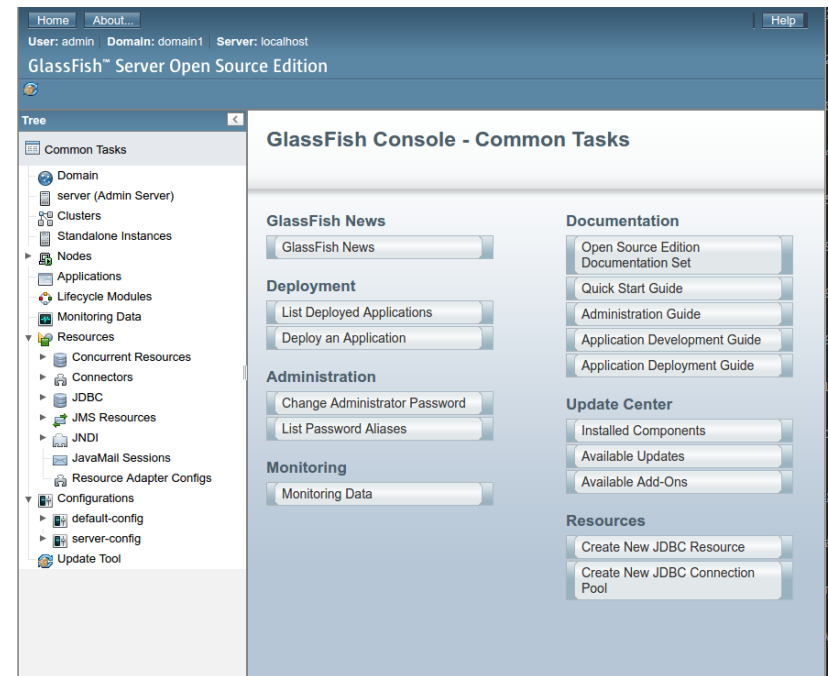
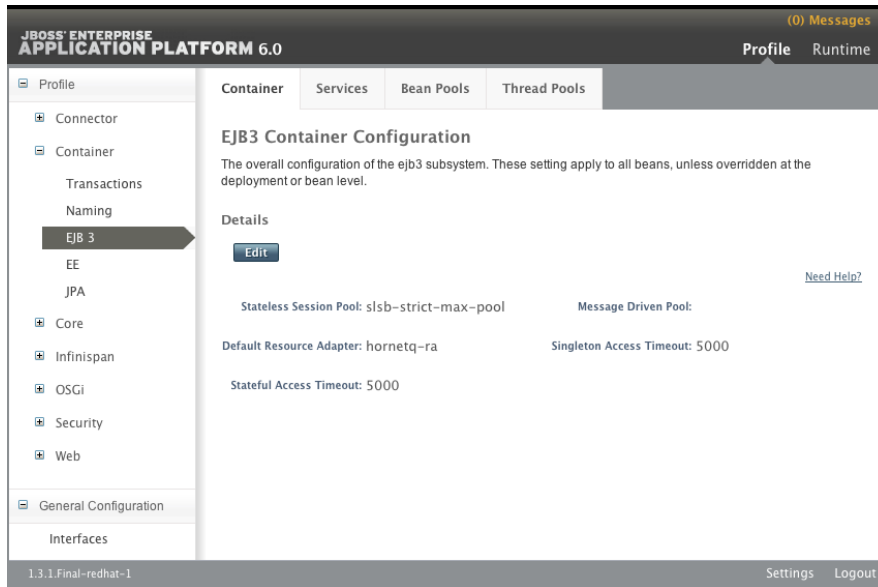


Docker containerization



Application servers

🎯 **SaaS** is new name for **Application server** term



Clouds



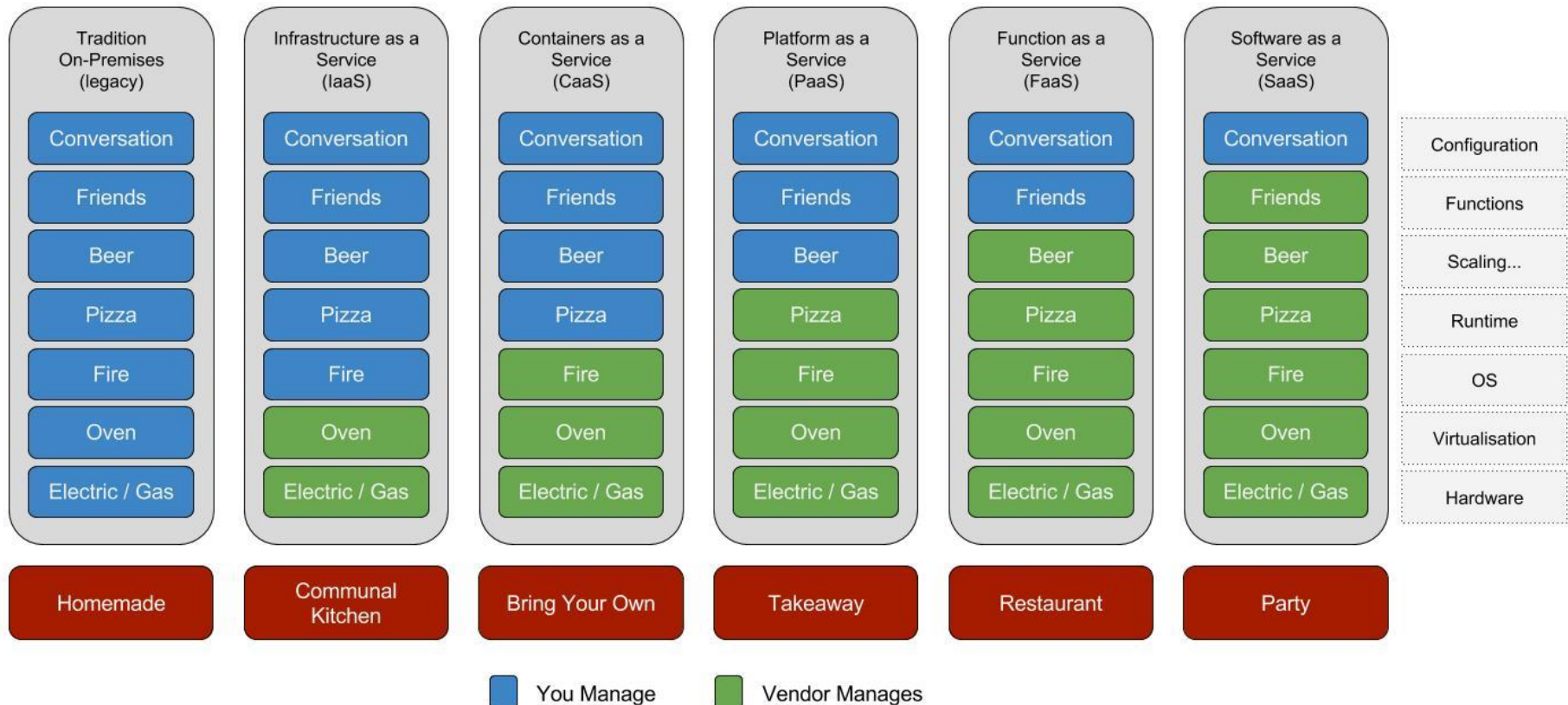
Clouds

Cloud is just
someone else's
computer

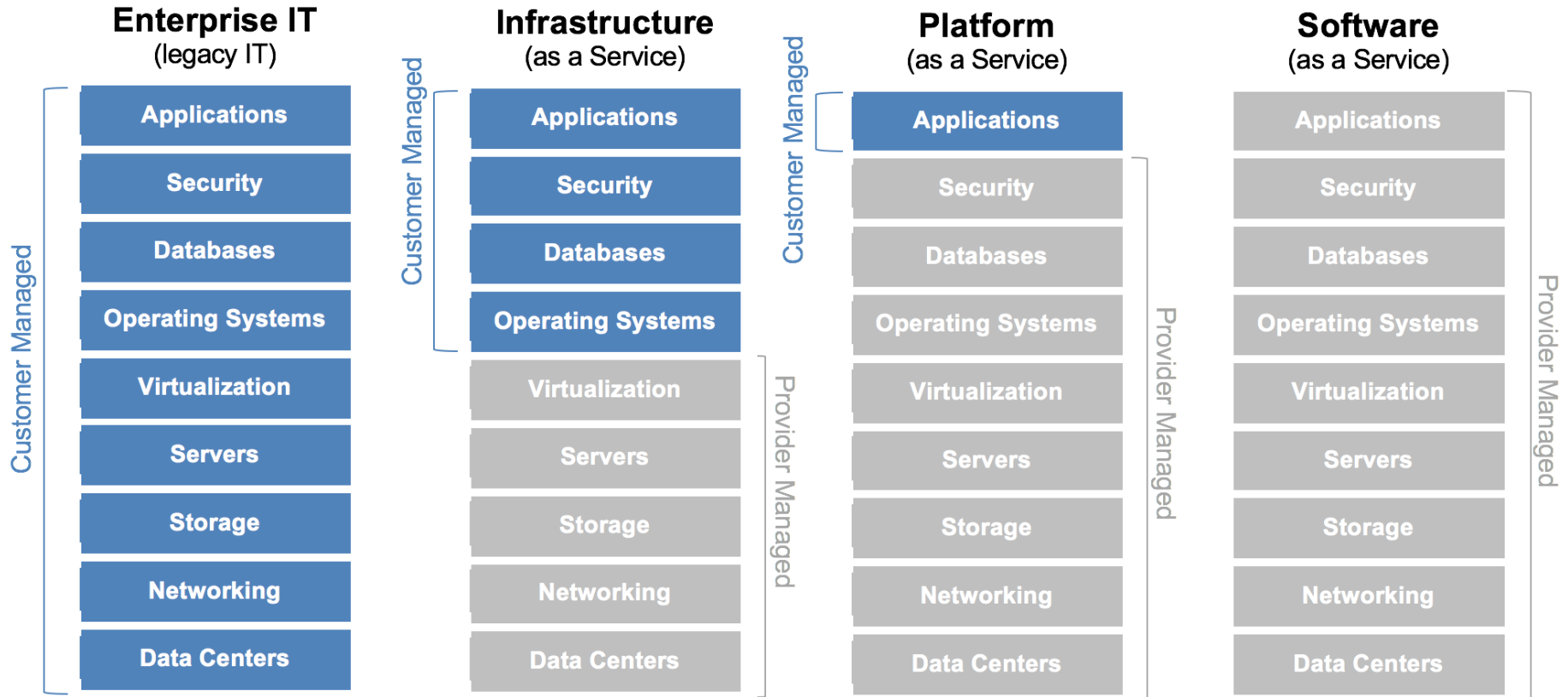


Pizza as a Service 2.0

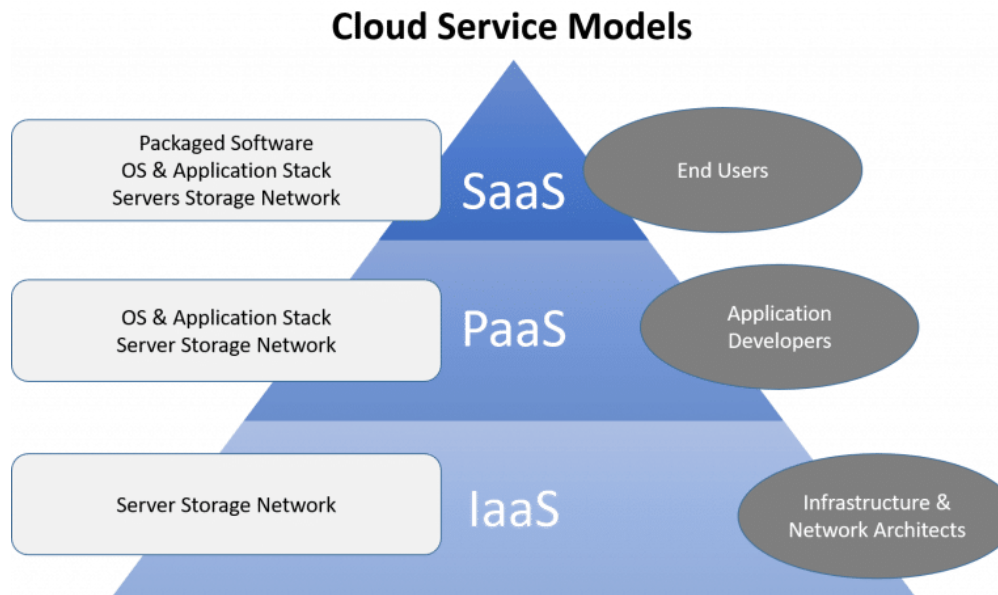
<http://www.paulkerrison.co.uk>



Clouds





Providers







Amazon Web Services





Compute

-  **EC2**
Virtual Servers in the Cloud
-  **Lambda** **PREVIEW**
Run Code in Response to Events




Storage & Content Delivery

-  **S3**
Scalable Storage in the Cloud
-  **Storage Gateway**
Integrates On-Premises IT Environments with Cloud Storage
-  **Glacier**
Archive Storage in the Cloud
-  **CloudFront**
Global Content Delivery Network







Database

-  **RDS**
MySQL, Postgres, Oracle, SQL Server, and Amazon Aurora
-  **DynamoDB**
Predictable and Scalable NoSQL Data Store
-  **ElastiCache**
In-Memory Cache
-  **Redshift**
Managed Petabyte-Scale Data Warehouse Service





Networking

-  **VPC**
Isolated Cloud Resources
-  **Direct Connect**
Dedicated Network Connection to AWS
-  **Route 53**
Scalable DNS and Domain Name Registration




Administration & Security

-  **Directory Service**
Managed Directories in the Cloud
-  **Identity & Access Management**
Access Control and Key Management
-  **Trusted Advisor**
AWS Cloud Optimization Expert
-  **CloudTrail**
User Activity and Change Tracking
-  **Config** **PREVIEW**
Resource Configurations and Inventory
-  **CloudWatch**
Resource and Application Monitoring







Deployment & Management

-  **Elastic Beanstalk**
AWS Application Container
-  **OpsWorks**
DevOps Application Management Service
-  **CloudFormation**
Templated AWS Resource Creation
-  **CodeDeploy**
Automated Deployments




Analytics

-  **EMR**
Managed Hadoop Framework
-  **Kinesis**
Real-time Processing of Streaming Big Data
-  **Data Pipeline**
Orchestration for Data-Driven Workflows



Application Services

-  **SQS**
Message Queue Service
-  **SWF**
Workflow Service for Coordinating Application Components
-  **AppStream**
Low Latency Application Streaming
-  **Elastic Transcoder**
Easy-to-use Scalable Media Transcoding
-  **SES**
Email Sending Service
-  **CloudSearch**
Managed Search Service

Mobile Services

-  **Cognito**
User Identity and App Data Synchronization
-  **Mobile Analytics**
Understand App Usage Data at Scale
-  **SNS**
Push Notification Service

Enterprise Applications

-  **WorkSpaces**
Desktops in the Cloud
-  **Zocalo**
Secure Enterprise Storage and Sharing Service

Microsoft Azure



COMPUTE	Virtual Machines	Websites	Cloud Services	
DATA MANAGEMENT	SQL Database	Storage Blobs	Storage Tables	Import / Export
	File Service			
NETWORKING	Virtual Network	Traffic Manager	ExpressRoute	
DEVELOPER & IT SERVICES	Visual Studio Online	Azure SDK	Azure Tools for Visual Studio	Automation
	API Management			
IDENTITY & ACCESS	Active Directory	Multi-Factor Authentication		
MOBILE	Mobile Services	Notification Hubs		
BACKUP	Site Recovery	Backup		
MESSAGING & INTEGRATION	Storage Queues	Service Bus Queues	Service Bus Relay	Service Bus Topics
	BizTalk Hybrid Connections	BizTalk Services		
COMPUTE ASSISTANCE	Scheduler			
PERFORMANCE	Cache	Content Delivery Network		
BIG COMPUTE & BIG DATA	HDInsight	High Performance Computing (HPC)		
MEDIA	Media Services			
COMMERCE	Store & Marketplace			

Google Cloud Platform

Compute



Compute Engine



App Engine

Storage



Cloud Data Storage



Cloud SQL



Cloud Storage

Networking



Load Balancing



Interconnect



DNS

Big Data



Big Query



Data Flow



Cloud Pub/Sub

Services



Cloud DNS



Cloud Endpoint



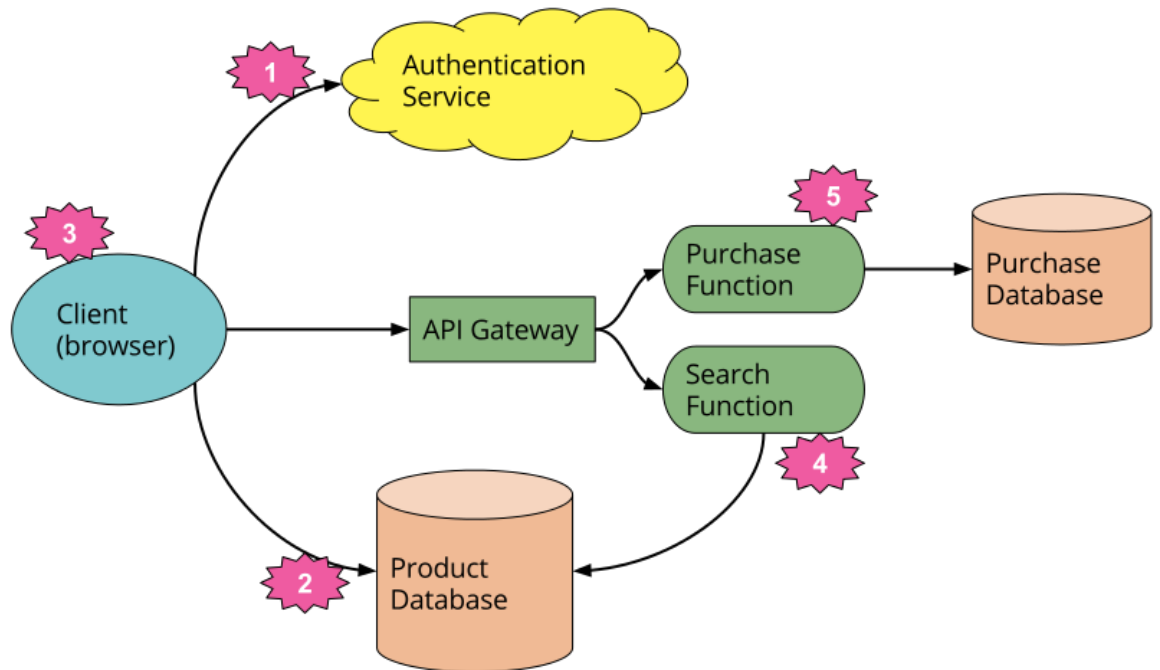
Cloud Translate



Prediction

Serverless



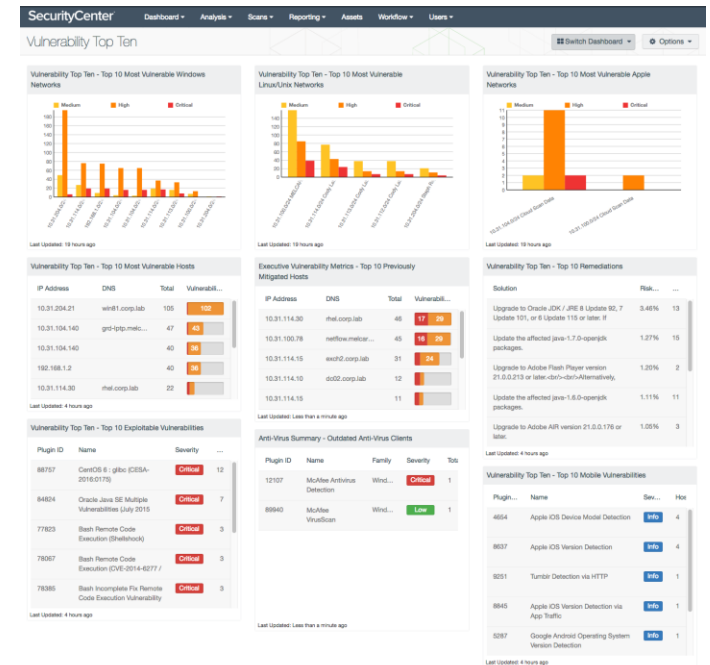


Monitoring



Monitoring

- Hardware
- Host OS
- Guest OS
- Application health check & statistics
- Logs
- Network activity
- etc

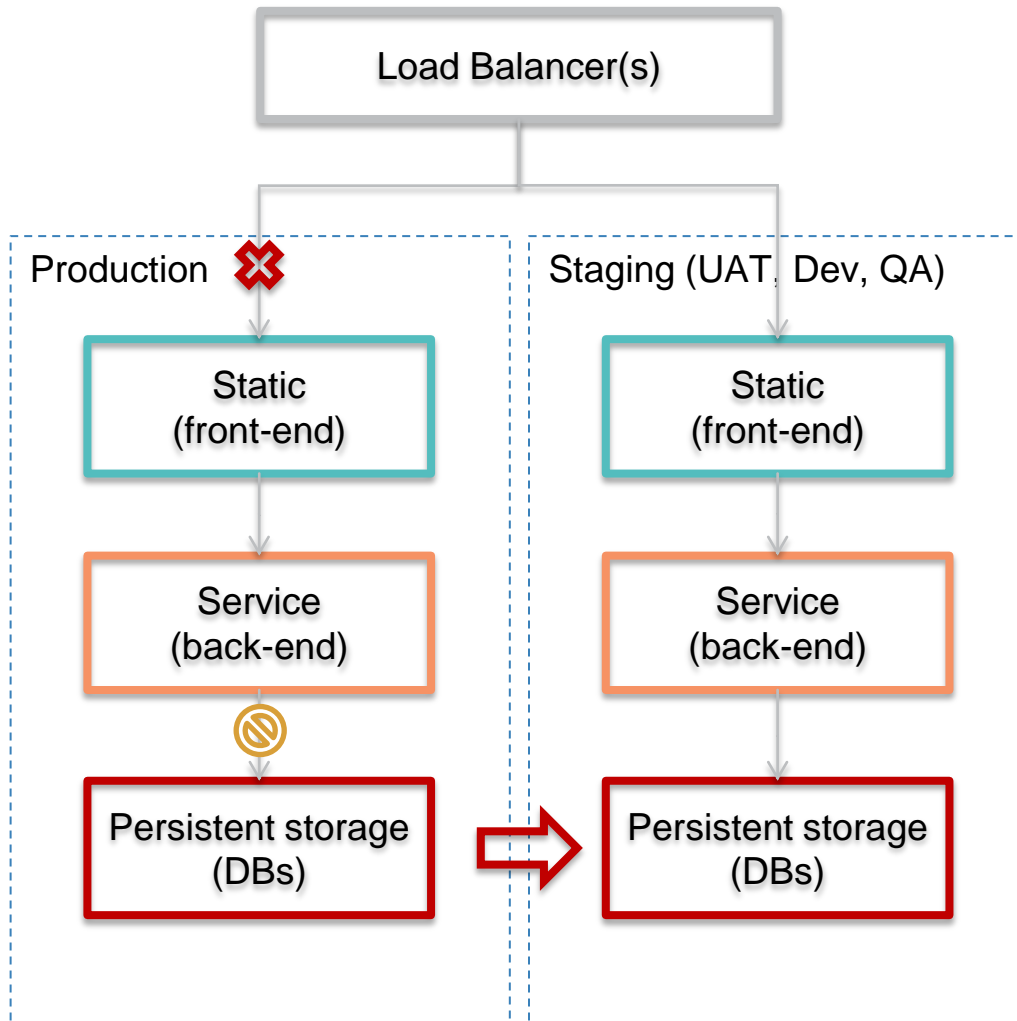


Deployment

A/B, Canary,
Blue/Green



Blue/Green deployment



Allocate new cluster

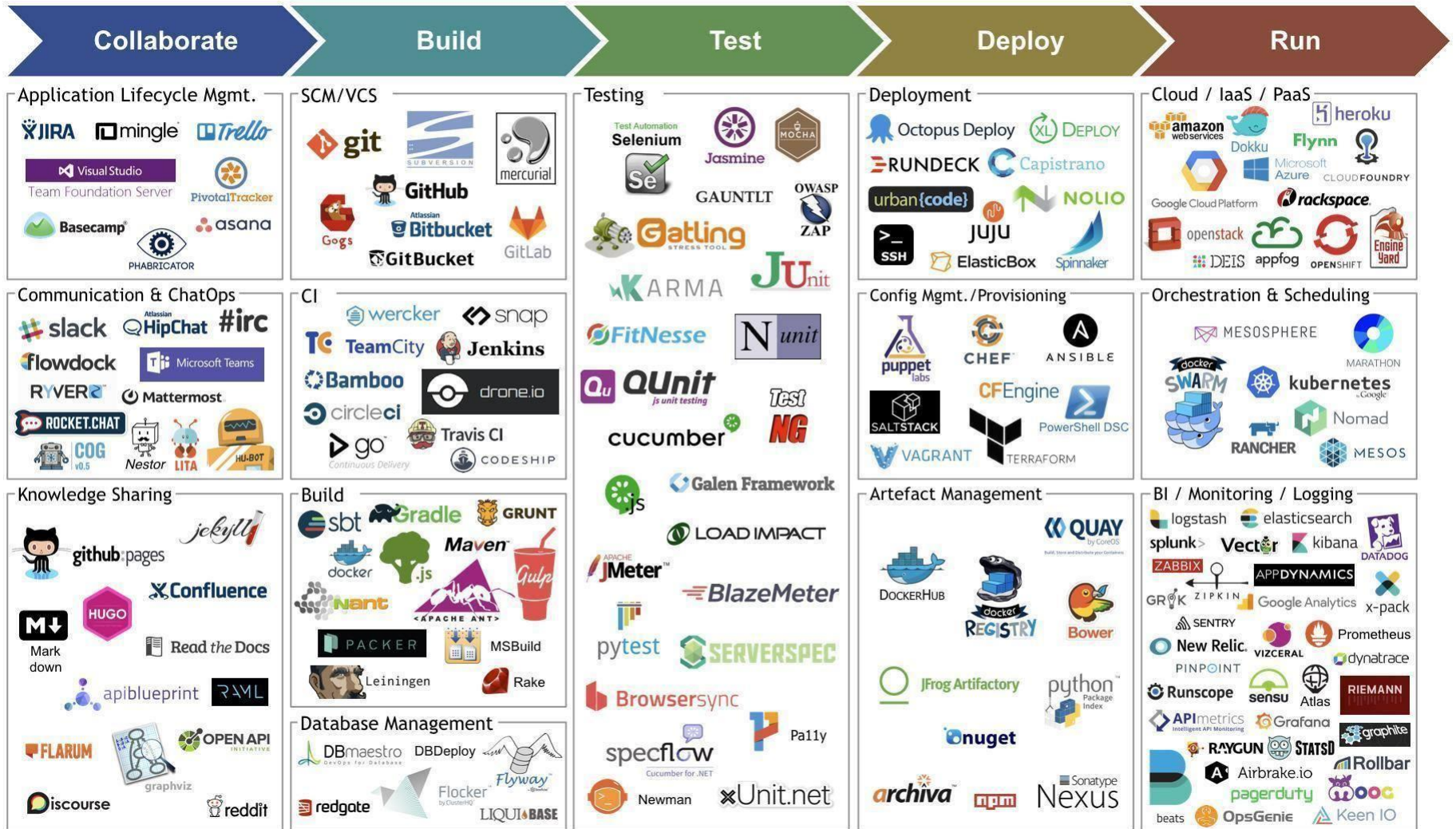
Deploy new version, perform status checks

Switch Persistent layer into read-only mode, initiate DBs copying, apply migrations

Switch Load Balancer to the Staging environment. Staging is Production now

If any of malfunctions appear, Load Balancer should be switched back

Toolset



Toolset

Service Providers



Dev Tools



Official Repositories



Operating Systems



Configuration Management



Big Data



Service Discovery



Orchestration



System Integrators

