Five C (CI/CD)

Continuous

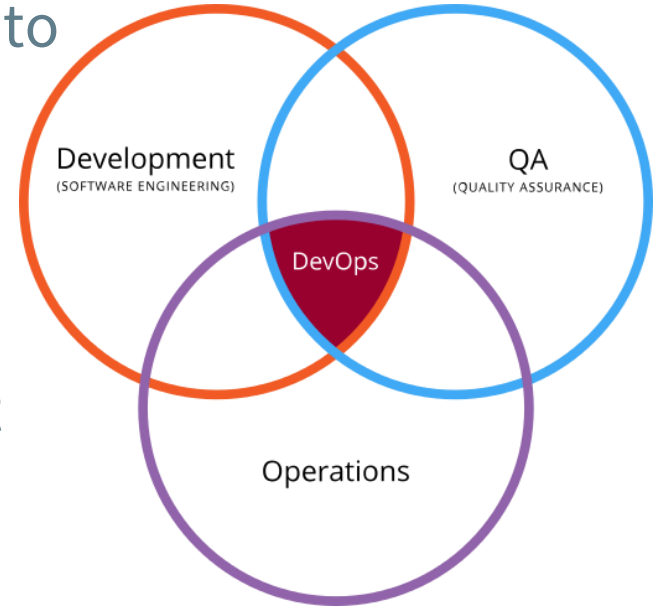
- Interaction
- Testing
- Delivery
- Deployment
- Operation

CITDDO – Continuous Integration, Testing, Delivery, Deployment & Operation

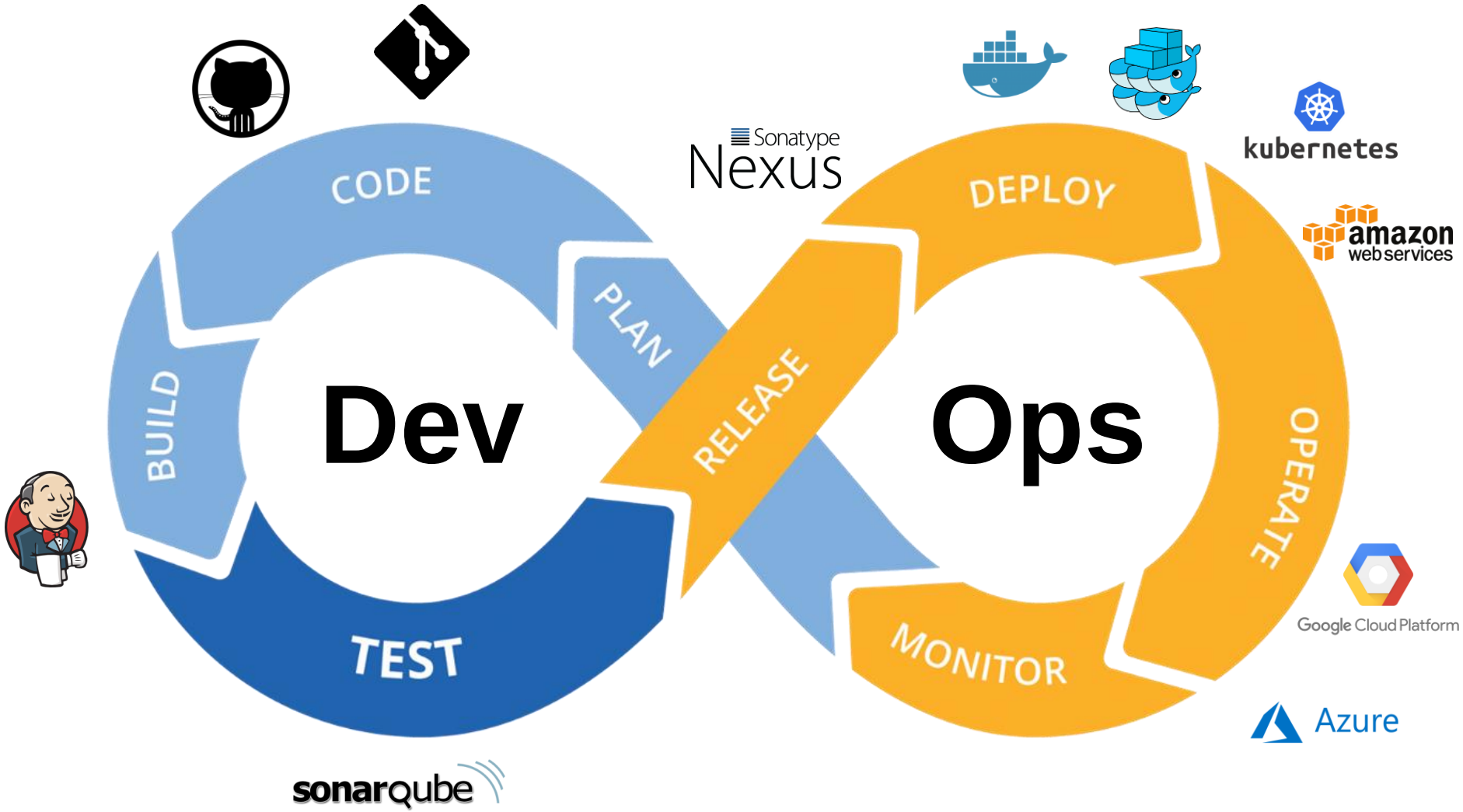
Any **authorized** person should be able to

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

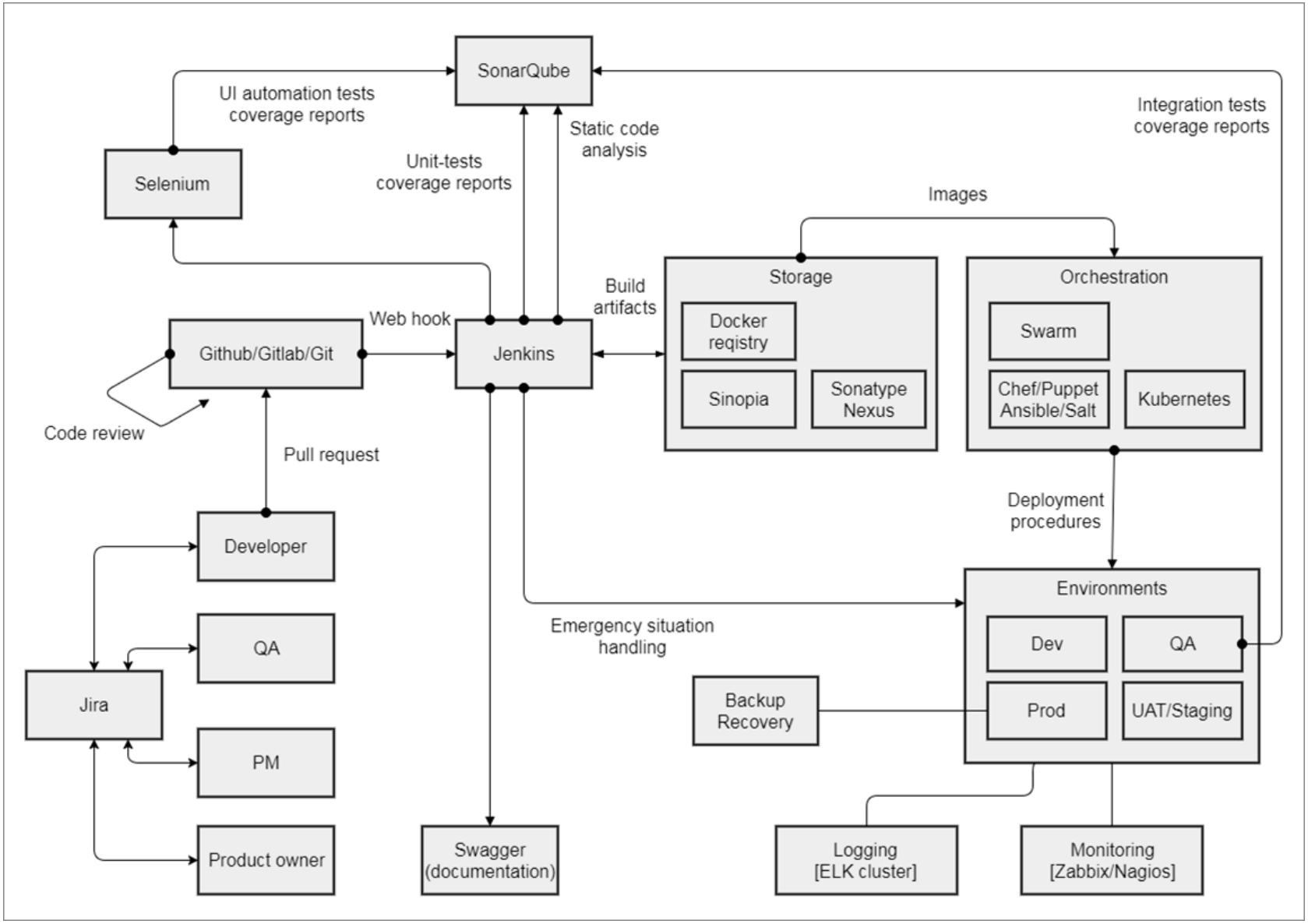
on **prod/staging/dev/qa** environment in **one click**



Development pipeline



CITDDO – Continuous Testing, Integration, Delivery, Deployment & Operation



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

Continuous Integration

Continuous Testing

Continuous Delivery

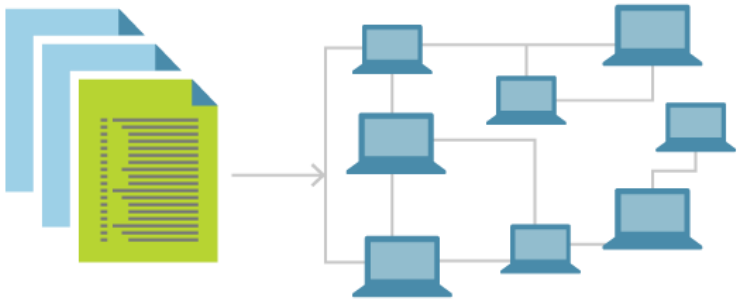
Continuous Deployment

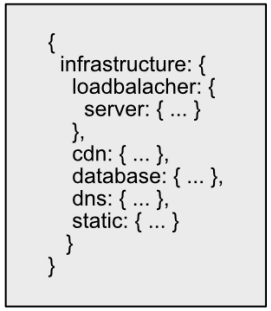
Continuous Operation

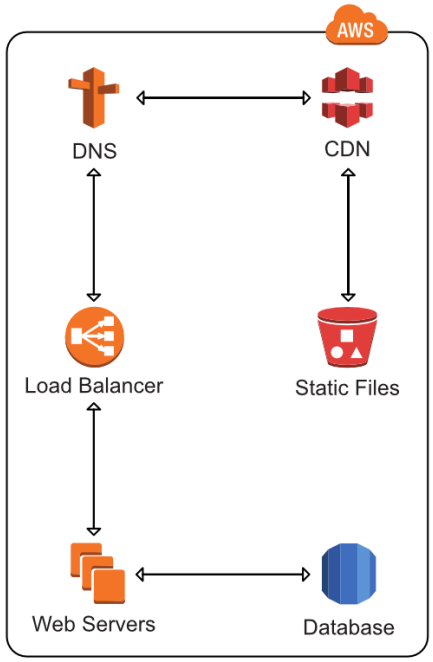
Roles/Areas

- Delivery & Deployment
  - setup different type of environment – DEV/ QA / UAT / Tailoring / Staging / PROD
  - 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








```
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        "hardwareProfile": {
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        "storageProfile": {
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            "offer": "docker-subscription-for-azure",
            "sku": "dse-subem1y-000001",
            "version": "latest"
          },
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            "osType": "Linux",
            "name": "dockerDTR",
            "createOption": "FromImage",
            "vhd": {
              "uri": "http://dockerdtr20152361.blob.core.windows.net/vhds/dockerDTR.vhd"
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            "caching": "ReadWrite"
          },
          "dataDisks": []
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```
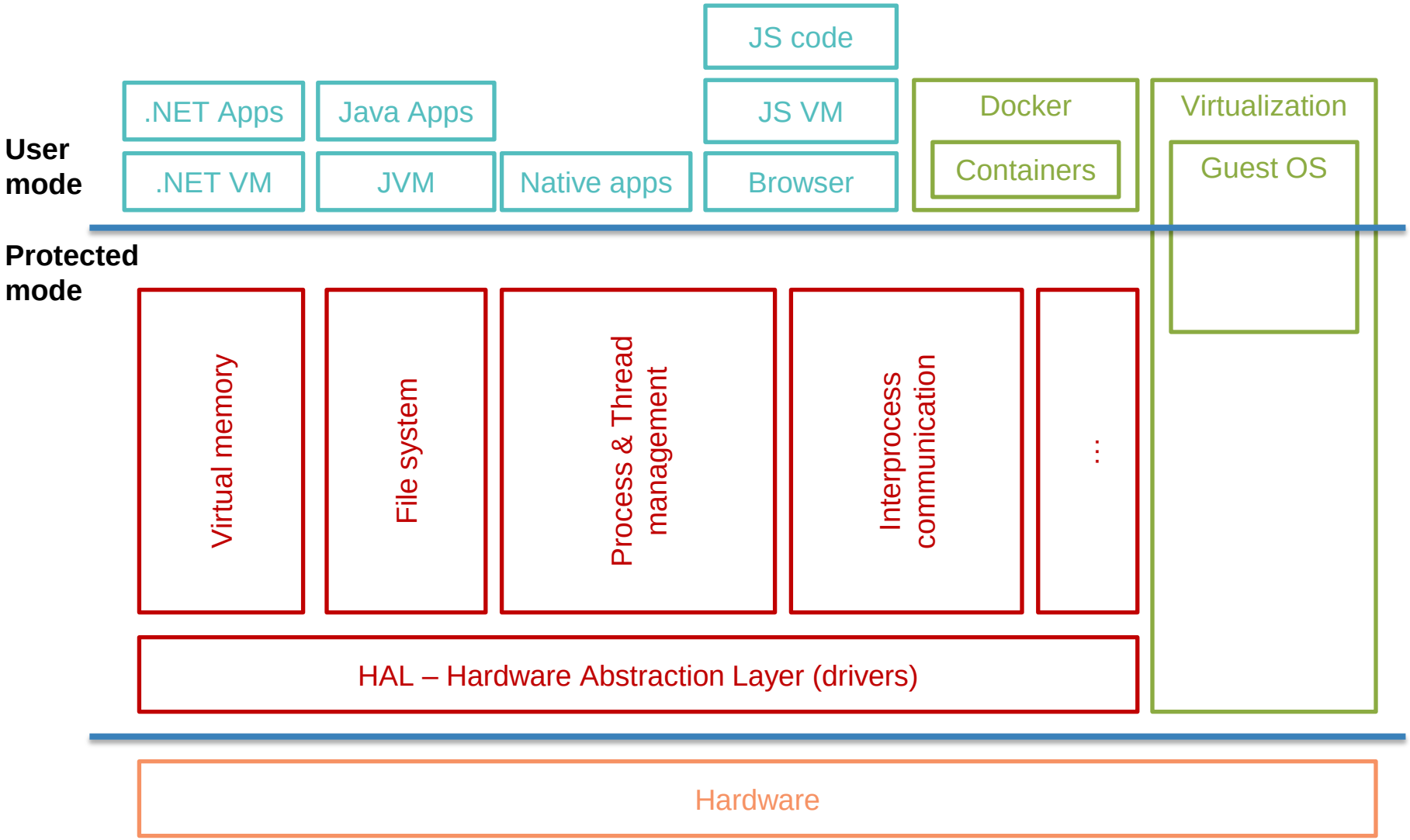
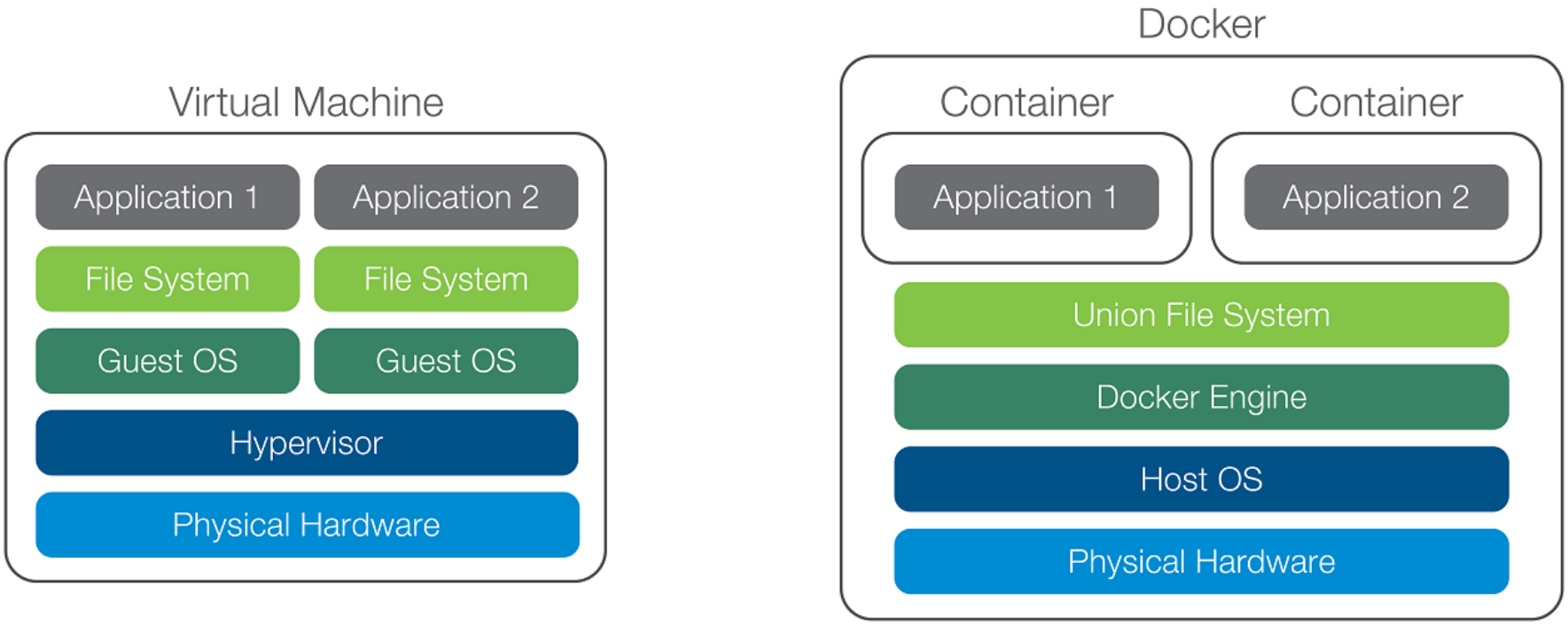

Virtualization, Containerization & Application servers

OS High-level structure

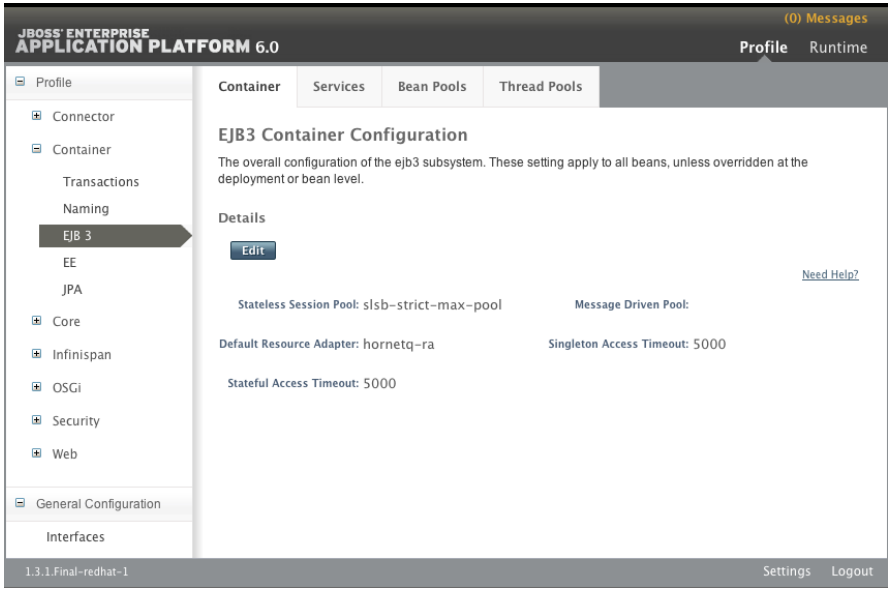


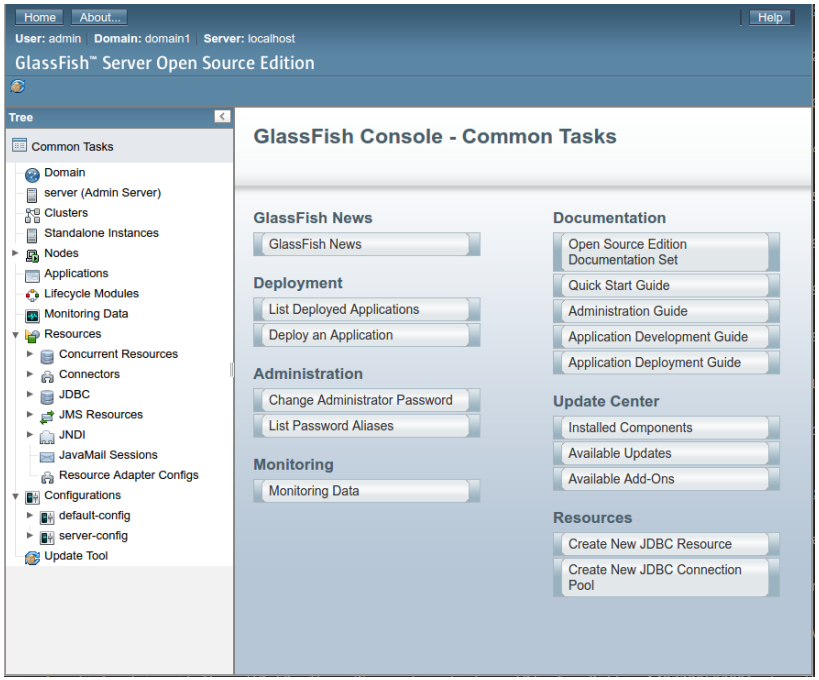
Docker containerization



Application servers

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

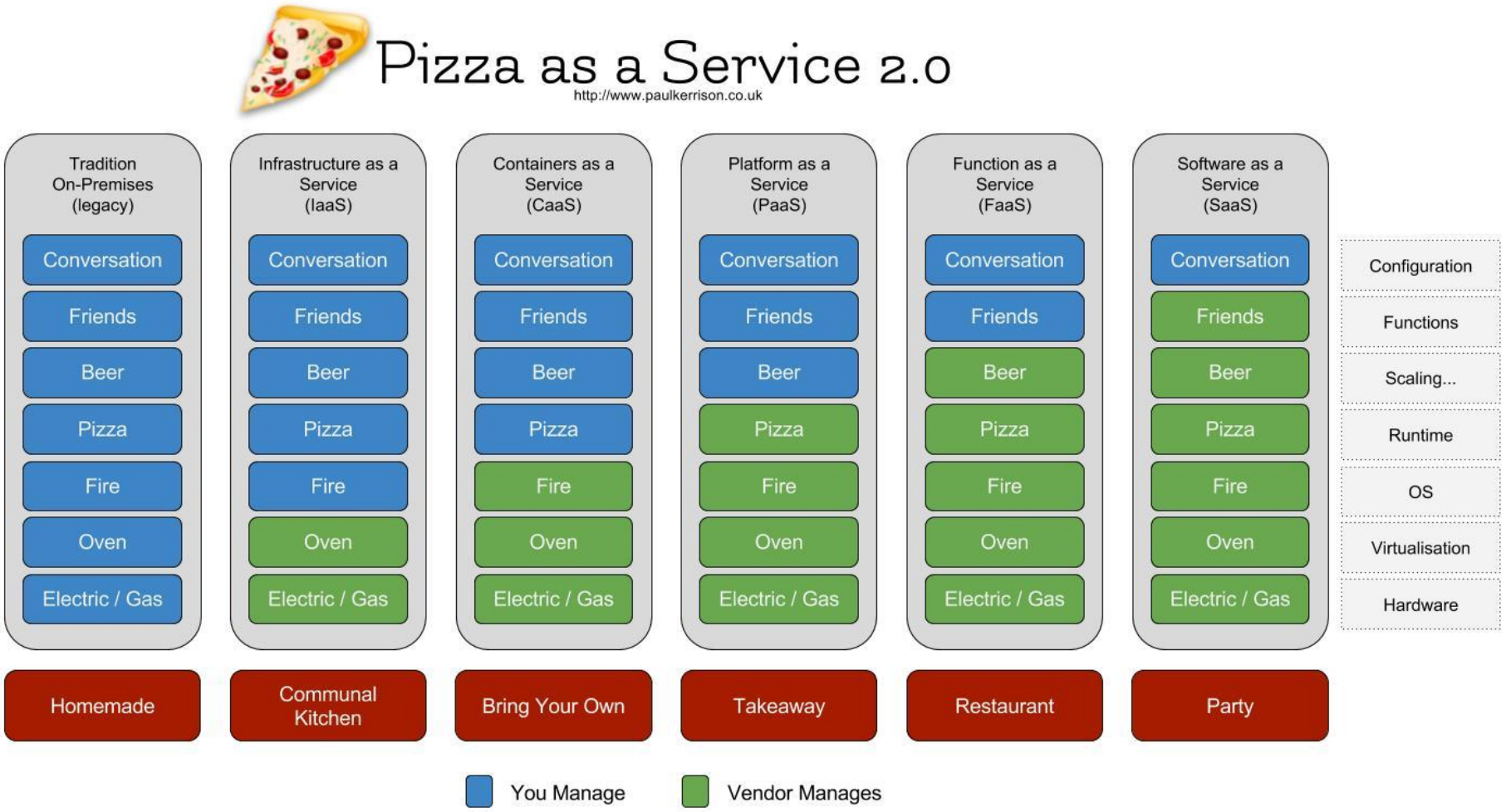




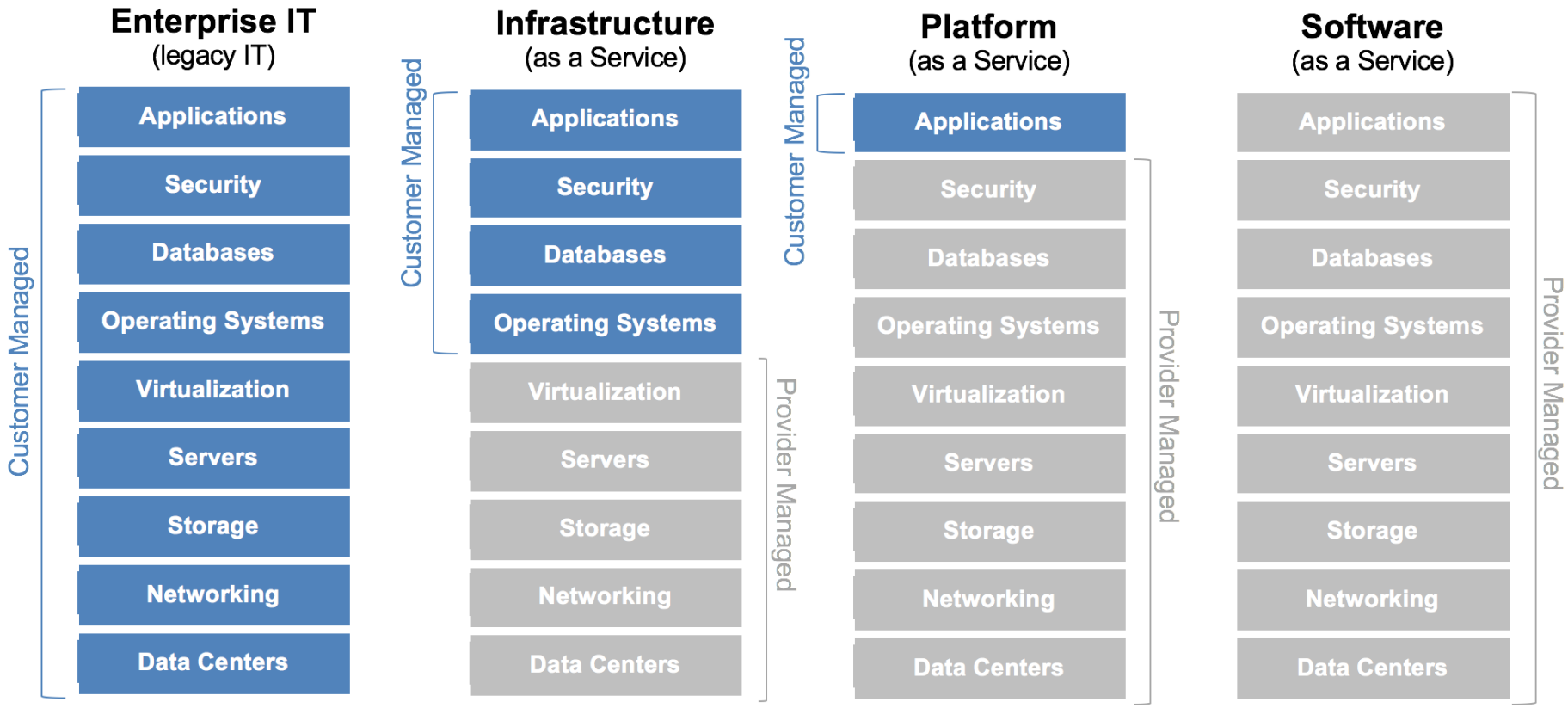
Clouds

Clouds

Cloud is just someone else's computer



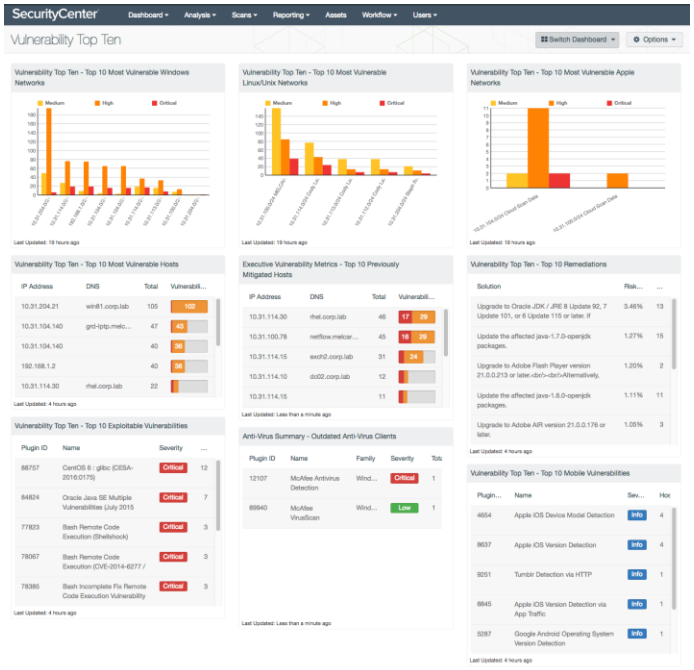
Clouds


Enterprise IT
(legacy IT)
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Customer Managed
Infrastructure
(as a Service)
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Customer Managed
Provider Managed
Platform
(as a Service)
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Customer Managed
Provider Managed
Software
(as a Service)
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Provider Managed

Monitoring

Monitoring

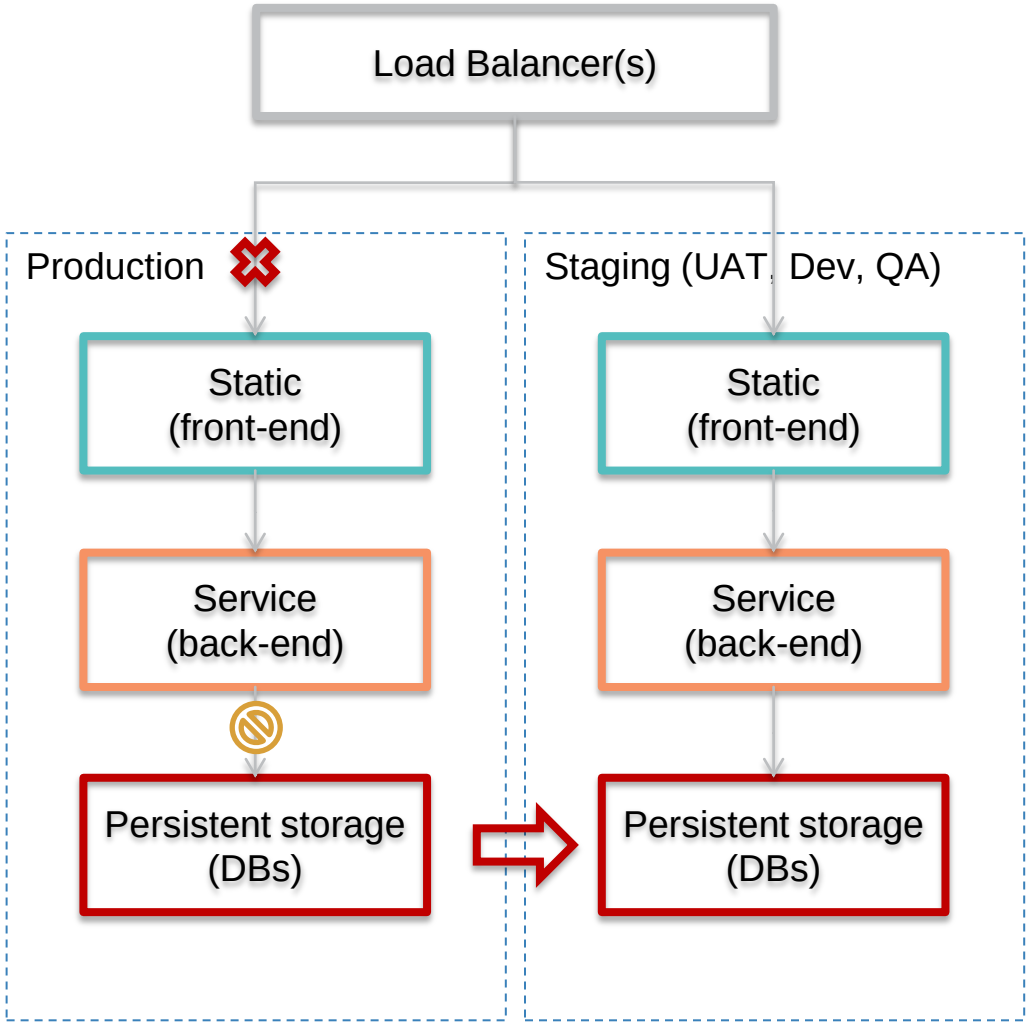
- Hardware
- Host OS
- Guest OS
- Application health check & statistics
- Logs
- Network activity
- etc



Deployment

A/B, Canary,
Blue/Green

Blue/Green deployment



Allocate new cluster

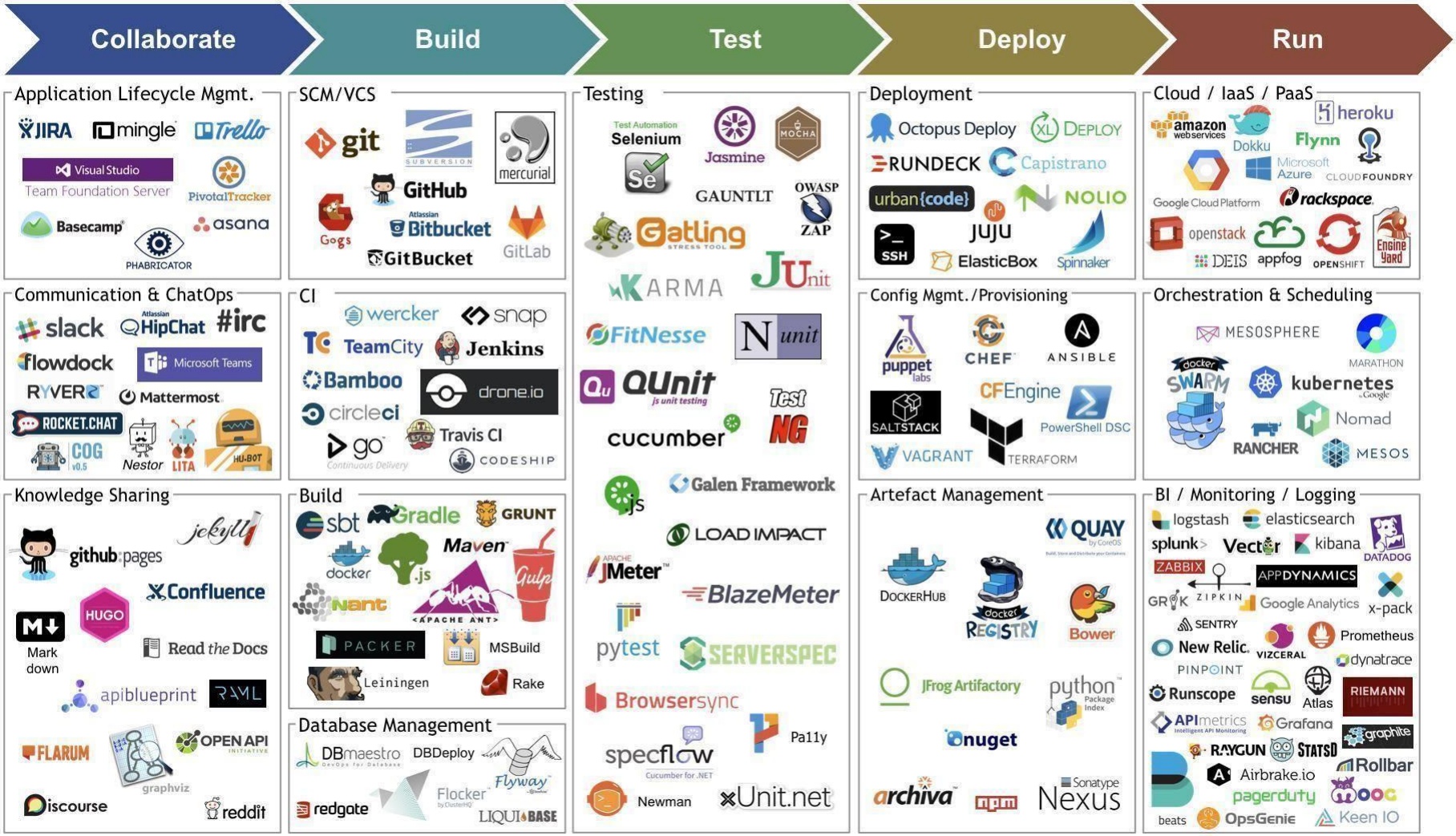
Deploy new version, perform status checks

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 switched back

Toolset


Collaborate
Build
Test
Deploy
Run
Application Lifecycle Mgmt.
JIRA
mingle
Trello
Visual Studio Team Foundation Server
PivotalTracker
Basecamp
asana
PHABRICATOR
SCM/VCS
git
SUBVERSION
mercurial
GitHub
Bitbucket
Gogs
GitBucket
GitLab
Testing
Test Automation
Selenium
Jasmine
MOCHA
GAUNTLT
OWASP ZAP
Gatling
KARMA
JUnit
FitNesse
N unit
QUnit
Test NG
cucumber
Galen Framework
LOAD IMPACT
JMeter
BlazeMeter
pytest
SERVERSPEC
Browsersync
Pa11y
specflow
Newman
Unit.net
Deployment
Octopus Deploy
DEPLOY
RUNDECK
Capistrano
urban{code}
NOLIO
SSH
JUJU
ElasticBox
Spinnaker
Cloud / IaaS / PaaS
amazon web services
Dokku
heroku
Flynn
Microsoft Azure
CLOUDFOUNDRY
Google Cloud Platform
rackspace
openstack
DEIS
appfog
OPENSHIFT
Engine Yard
Communication & ChatOps
slack
HipChat
#irc
flowdock
Microsoft Teams
RYVER
Mattermost
ROCKET.CHAT
COG
Nestor
LITA
HU-BOT
CI
wercker
snap
TeamCity
Jenkins
Bamboo
drone.io
circleci
Travis CI
go
CODESHIP
Config Mgmt./Provisioning
puppet labs
CHEF
ANSIBLE
CFEngine
SALTSTACK
PowerShell DSC
VAGRANT
TERRAFORM
Orchestration & Scheduling
MESOSPHERE
MARATHON
docker SWARM
kubernetes
Nomad
RANCHER
MESOS
Knowledge Sharing
github pages
jekyll
Confluence
HUGO
Mark down
Read the Docs
apiblueprint
RAML
FLARUM
graphviz
OPEN API INITIATIVE
Discourse
reddit
Build
sbt
Gradle
GRUNT
docker
.js
Maven
Gulp
Nant
APACHE ANT
PACKER
MSBuild
Leiningen
Rake
Artefact Management
QUAY
DOCKERHUB
docker REGISTRY
Bower
JFrog Artifactory
python Package Index
nuget
archiva
npm
Sonatype Nexus
BI / Monitoring / Logging
logstash
elasticsearch
splunk>
Vector
kibana
DATADOG
ZABBIX
APPDYNAMICS
GROK
ZIPKIN
Google Analytics
x-pack
SENTRY
New Relic
VIZCERAL
Prometheus
PINPOINT
dynatrace
Runscope
sensu
Atlas
RIEMANN
APImetrics
Grafana
graphite
RAYGUN
STATSD
Rollbar
Airbrake.io
pagerduty
beats
OpsGenie
Keen IO
Database Management
DBmaestro
DBDeploy
Flyway
Flocker
redgate
LIQUIBASE

Toolset


Service Providers
rackspace
DEIS
Google Cloud Platform
amazon web services
IBM
SOFTLAYER
openstack
Yandex
OPENSHIFT
Microsoft Azure
DigitalOcean
CLOUD FOUNDRY
linode
Quay.io
Baidu 百度
Baremetal Industries
clever cloud
stackato
Google
domino
StackDock
Gilliam
tutum
ORCHARD
Flynn
VOXOZ
Operating Systems
redhat
docker
CoreOS
ubuntu
debian
fedora
CentOS
Configuration Management
puppet labs
Chef
Jenkins
Capistrano
DotCi
Packer
ANSIBLE
SALTSTACK
Big Data
OpenCore
syncsort
hadoop
Service Discovery
NETFLIX Eureka
etcd
SkyDNS
Dev Tools
Fig
VAGRANT
heroku
Shippable
runnable
NODECHECKER
wercker
drone.io
docker
Official Repositories
mongoDB
MySQL
PostgreSQL
Ruby
WordPress
Java
debian
CentOS
ubuntu
RAILS
redis
NGINX
node
Orchestration
MESOS
Shipper
CONSUL
VNS3
Marathon
fleet
ATOMIC
System Integrators
OpDemand
Wiredcraft
MomentumSI
InfoSiftr
Flux7
SHADOWSOFT
Dev9
relevance lab
IZURI

Example

> apt-get update
> apt-get install vim
> sudo /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/project-talan/talan-core/latest/install.sh)"
> tln install docker
> docker run -d -p 80:80 nginx
> docker exec -it 4b646af9bd1e bash
> cd /usr/share/nginx/html
> vim index.html
> <img src="https://www.dropbox.com/s/2cbyoyat0e8pclo/193cffd6-2029-49e3-a67d-c4ad0983a784-original.png">

SonarQube

static code analysis, unit tests, code coverage, integration with Jenkins and Github

Jenkins

start build on approved pull request, pull request pre-checks

Sonatype Nexus

...