



Development and operations

PIPELINES TO BRIDGE THE GAP

Who am I 😎 ?

CLOUD NATIVE DEVOPS ENGINEER (SOLUTION ARCHITECT @ F5)



RabbitMQ Hashicorp
OpenAPI
ELK Kafka
Redis Prometheus OpenShift
Spring Slack MQTT
Java Kubernetes Python
AWS Maven Ruby
Jenkins Azure Git
Postgres GitLab CircleCI
Ansible Grafana
Docker

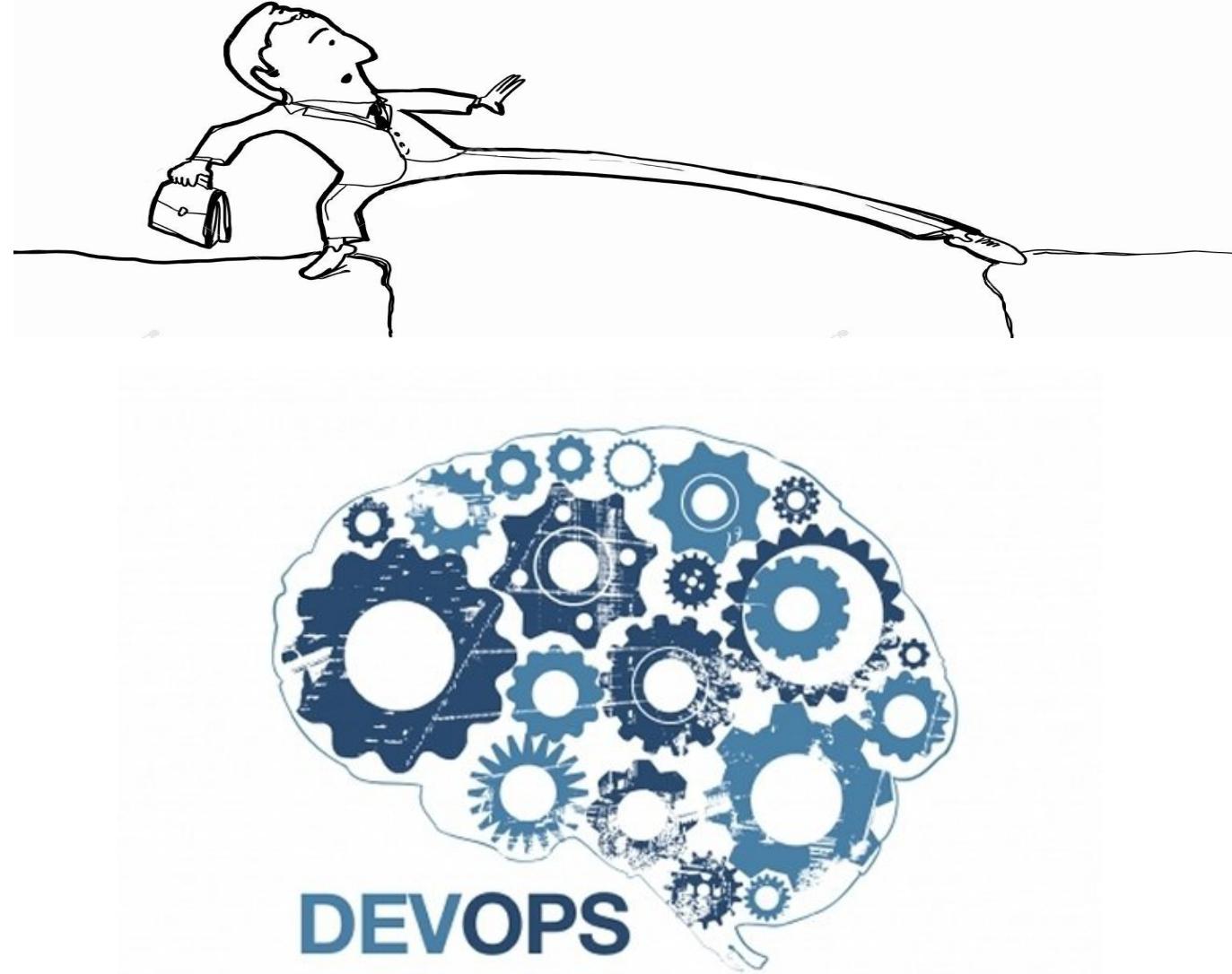
Engineer at
Startups & Corporates
Public Cloud &
On Premise
Architect, Develop,
Deploy & Test

<https://www.linkedin.com/in/bartvanbos/>

Agenda

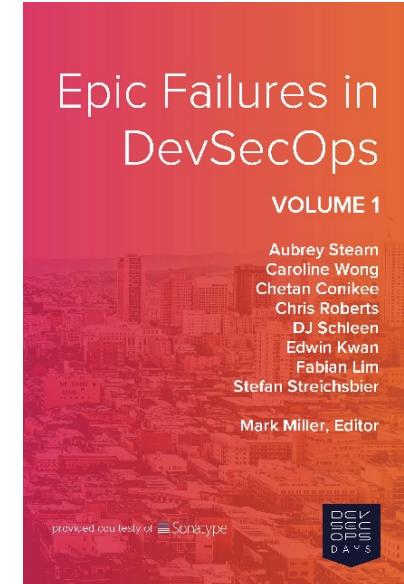
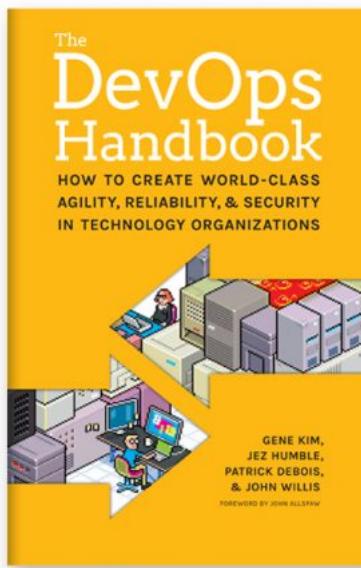
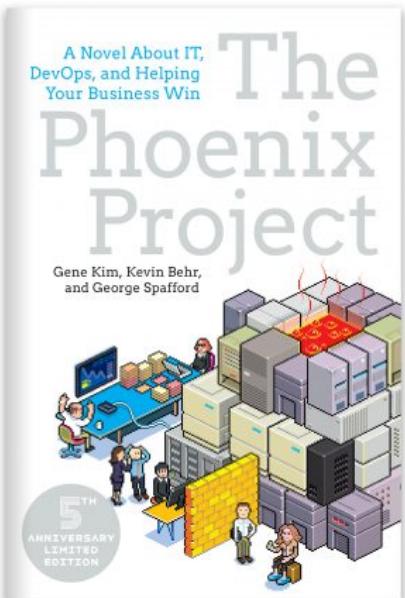
BRIEF SUMMARY

- Why:
 - DevOps Reasons
- What:
 - DevOps Drivers
- How:
 - CICD Pipelines
 - Infrastructure Automation



DevOps Readings

MY FAVORITE BOOKS ON DEVOPS / DEVSECOPS



The Three Ways

LESSONS LEARNED FROM LEAN MANUFACTURING



Principle of Flow

*Accelerate the delivery
of work from
DEV to OPS to your
customers*



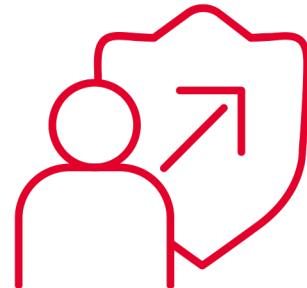
Principle of Feedback

*Enables you to create
ever safer system of work*



Continual Learning and Experimentation

*High-trust culture and
organizational improvement*

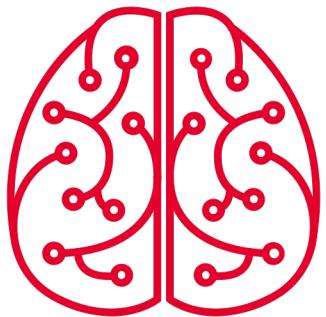


Value Streams

HOW DO YOU TREAT YOUR PIPELINES?

Do you have a
Pipeline Architect ?

Hiring an **Agile Coach**
is not enough !

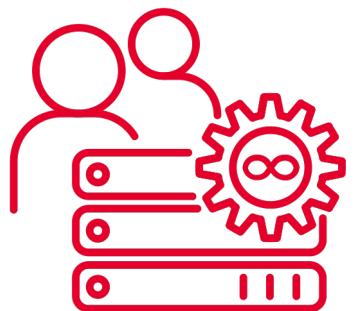


Theory of Constraints

OPTIMIZE YOUR BOTTLENECKS

SW development process has been
the main target of **optimization**

Next step is to **automate**
your **infrastructure provisioning**

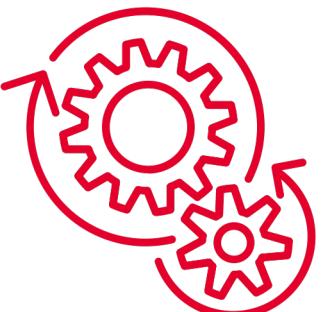


Agile flavors

TWO DIFFERENT APPROACHES

SW development teams adopt
SCRUM methodologies

Operational teams adopt
KANBAN methodologies



Move to the cloud

INFRASTRUCTURE AS A MANAGED SERVICE

SW Development teams

embrace public cloud

Operational teams

fear public cloud

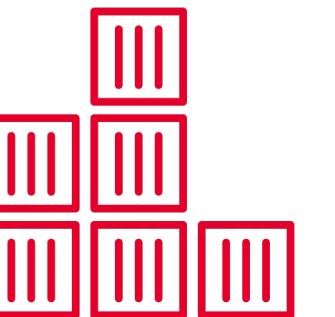


Microservices

THE RISE OF CONTAINERS

Smaller but
more frequent deploys

Infrastructure automation !



**Enough theory and
market trends** 😎

Let's get practical !

CI/CD Pipelines

PIPELINE ORCHESTRATION – ON PREMISE AND AS A SERVICE



Jenkins



GitLab



AWS CodePipeline



Bamboo



Concourse



Azure Pipelines



Drone



CODESHIP
by CloudBees



Cloud Build

CI/CD Pipeline

A PRACTICAL EXAMPLE

Pipeline 1 - CI Development



Pipeline 2 - CD Deployment



CI/CD Pipeline

TOOLING ECOSYSTEM

- **Development**
- SW Config Management (SCM)
- Code Scan
- Build
- Unit Test
- Packaging
- Auto Deploy and Provisioning
- Testing
- Release Management
- Signoff and Deploy in PROD



Visual Studio Code

CI/CD Pipeline

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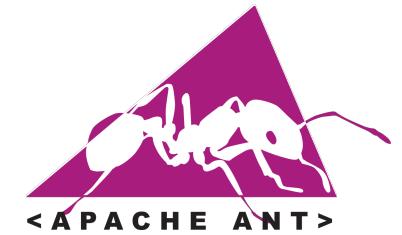
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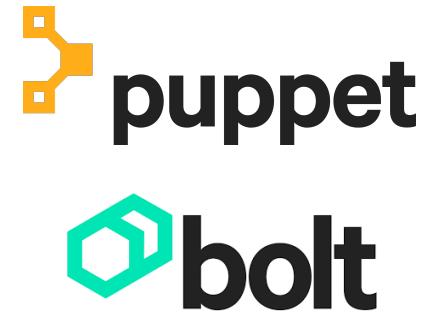
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Different types

- Performance
- Integration
- User Acceptance
- Security Testing



CI/CD Pipeline

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ARA Tools (**A**pplication **R**elease **A**utomation)

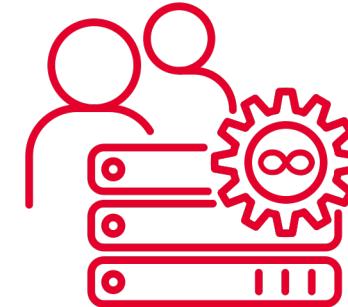


CI/CD Pipeline

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What about
infrastructure changes ?



The final chapter

Infrastructure

Automation !



Infrastructure change types

TWO TYPES OF APPROACHES

Infrastructure as code stored in source control

- Single Source of Truth
- Approach 1 : Configuration using **Imperative API's**
 - A **sequence** of (dependent) commands to reach a certain result
 - Requires in depth domain knowledge of the infra product
- Approach 2 : Configuration using **Declarative API's**
 - A declaration of your desired end-state in one command
 - Actual to **desired state** convergence, like Kubernetes/OpenShift

Infra changes - Imperative

EXAMPLE: ANSIBLE TO CONFIGURE YOUR NETWORK AND SECURITY

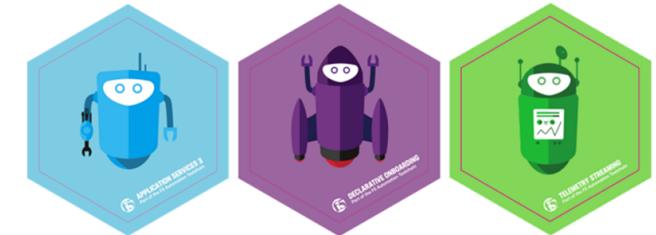


<https://galaxy.ansible.com/f5devcentral>

Infra changes - Declarative

F5 AUTOMATION & ORCHESTRATION TOOLCHAIN

F5 AUTOMATION TOOLCHAIN



F5 Automation Toolchain

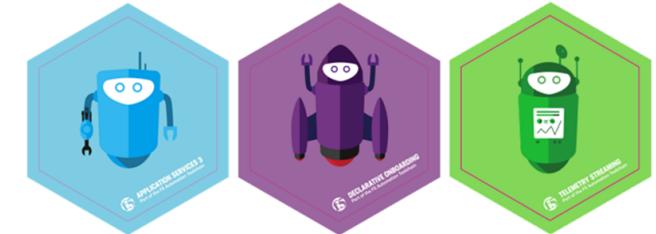
- DO : Declarative Onboarding
- AS3 : Application Services 3
- TS : Telemetry Streaming



<https://github.com/F5Networks/f5-appsvcs-extension>

Infrastructure change approach

TWO TYPES OF INFRASTRUCTURE CHANGES



TYPE 1 : One-off changes offered in **Service Catalogue**

Only once during the lifecycle of an app

- Database or queue provisioning
- Virtual IP exposure with SSL termination + cookie persistency

TYPE 2 : Continuous changes in your **CI/CD Pipelines**

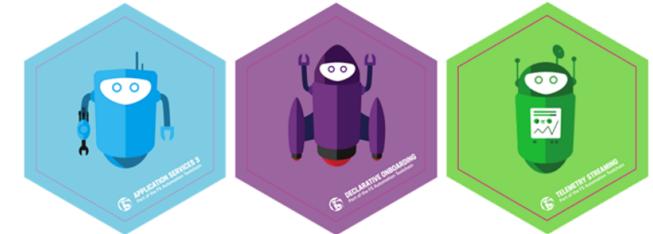
Continuously evolving with the lifecycle of an app

- REST API protection on new endpoints
- Bot protection on new web pages

Infrastructure Pipeline

INFRASTRUCTURE AS CODE AND SERVICE CATALOGUE

F5 AUTOMATION TOOLCHAIN



(One off) Service Catalog: Pipeline 3 - Infrastructure

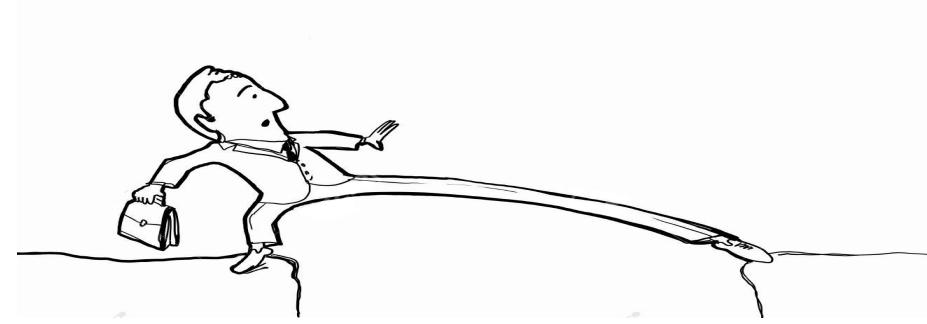


(Continuous) Pipeline 2 - CD Deployment



Summary

AUTOMATE SMART - NO ONE PIPELINE TO RULE THEM ALL



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