Containers - DevOps Journey from Development to Enterprise-grade Production Deployment

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Global Portfolio of Environments I manage

CDI Geographical Landscape

Prod & Pre Prod (~110 Servers)

DEMO

Dev & Test

~120 Servers
Share the experience

• I work as a Chief Infrastructure & Middleware Architect responsible for global system portfolio
• I am responsible for the management of large analytical solution on Cloud spread across 6 geos managing nearly peta byte of data every month.
• Complexity is every geo connects to 100s of data sources acquiring data and performing analytics
• We recently had an incident, where one of the middleware SSL certificate expired inside container stopping complete traffic. No clue what is happening.
OOPS!

It works on my machine! Not sure why failing in production!
Packaging

jar, war, ear, rar etc etc packages
code but what about
configurations ?

Code configuration ?

Runtime configuration ?
Containers

- Containers or Operating-system-level virtualization in the world of Information Technology is a standardized unit of software.
- A container image is a lightweight, stand-alone, executable package of a piece of software that includes everything needed to run it: code, runtime, system tools, system libraries, settings.
- Containerized software will always run the same, regardless of the environment.
- Has proved to avoid “OOPS ! It worked on my machine”
- Code + Runtime + Compact OS + Configurations
- Containers enables developers to easily pack, ship, and run any application as a lightweight, portable, self-sufficient container, which can run virtually anywhere.
What is Container?

CONTAINER
- Tomcat
- Java
- Debian

CONTAINER
- PHP
- MySQL
- Ubuntu

CONTAINER
- Static Binary
- Alpine

Kernel
Container Vs VM

CONTAINER

App A
Bins/Libs
Docker
Host OS
Infrastructure

VM

App A
Bins/Libs
Guest OS
Hypervisor
Infrastructure

App B
Bins/Libs
Guest OS

App C
Bins/Libs
Know your Customer!
What is DevOps?

Collaborative Development

Continuous Testing

Continuous Release and Deployment

Continuous Monitoring
Tools alone will not bring dev ops!

- Dev Ops ready code
- Integrated Security
- Process
- Platform
- Awareness of End to End integrated Dev Ops across teams. (Larger picture)

“GOVERNANCE”
“TEAM”
A lack of continuous delivery impacts the entire business

CHALLENGES

Costly, error prone manual and duplicative processes delay innovation and impact competitiveness

Slow deployment to development and test environments leave teams waiting and unproductive

Risk of instability due to managing multiple configurations and versions
Secure Dev Ops Simplified—All Releases

1. Release Planning
   - Development + Unit Test
   - Test Team – Test Case Preparation
   - Infra + Ops Team Infra preparation

2. Source Control
   - UC B

3. Build
   - UC B

4. Deploy to Pilot / UAT
   - Defect

5. Project Plan + Kanban
   (Detailed Project Plan, Dependencies, Resource Locking, Risk management)

6. TEST
   - Functional Test
   - Security Test
   - Performance Test
   - Defect

7. Deploy to Prod 01 / Prod 02
   - Defect

8. Dry Run / Smoke Test
   - Defect

9. Switch Over
   - Deploy to Prod 02 / Prod 01

01 / Prod 02

PASS

FAIL
Best Practices

- Security and governance
- Monitoring
- Storage
- Networking
- Container life cycle management
- Container orchestration

Source: https://www.gartner.com/smarterwithgartner/6-best-practices-for-creating-a-container-platform-strategy/
Q&A
Stay Connected and continue coding!

Code & instructions
https://github.com/IBMDevConnect
https://github.com/IBM
https://github.com/IBM-Cloud
https://ibm-cloud.github.io/#/!
http://ibm.github.io
https://github.com/watson-developer-cloud
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