DevOps
Enhancing collaboration of Development and Operations
Agenda

- Delivery challenges
- Typical root causes
- Agile Software development and DevOps
- DevOps principles
- IBM concepts and solutions for DevOps

- Q&A
Collaborative Development & Operations
Delivery challenges
Typical root causes
Typical question within complex IT-Organisations

• We are using agile development practices. Why does it still take months to release new applications?

• Why is there so much rework to do for every new release?

• Virtualization and Cloud are part of our infrastructure. Why does it still take so much time to provide a proper test environment?

• Why do we still have significant quality issues despite our testing guidelines and processes?
Reasons for issues

- Staging and Testing require time and resources
- Approx. 1/3 to 2/3 of time is spent for setup and configuration
- Often different processes are used
- No consistent Configuration Management throughout different environments
- Knowledge kept within few individuals
DevOps at Facebook

- Source code converted from “Javascript” to C++
- 1 billion users
- Roll-out frequency
  - Minor updates – daily except week-ends
  - Major update – every tuesday
- Roll-out takes 30 min
- Close collaboration between Dev & Ops
- Cascading Roll-out:
  - Automated tests
  - Internal roll-out
  - Roll-out for a small, randomly selected user group
- Operations continue during roll-out

DevOps at IBM: Rational Jazz ALM Platform

Weekly Integration builds, deployments every 4 weeks on jazz.net

~250 Developers, 75 Testers, >400 practitioners in total

~25 Teams in 19 locations

~200 Builds per day

Milestones

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Feedback and participation are encouraged.
Collaborative Development & Operations

Agile development and DevOps

DevOps principles
DevOps is ...

- DevOps = Collaborative Development and Operations

- DevOps is a set of principles and values that facilitate collaboration across disciplines to...

  1. Enable rapid evolution of deployed business services
  2. Reduce risk, decrease cost, and improve quality across the portfolio
Agile Development and DevOps
DevOps Principles & Values

• Collaborate across disciplines

• Develop and test against a production-like system

• Deploy frequently using repeatable and reliable processes

• Continuously validate operational quality characteristics
Collaboration between Development & Operation

- “Shift-Left” – shifting operational concerns and processes earlier in the development lifecycle

- Collaborate on the creation of reusable test environment patterns

- Common tools for planning, tracking, and reporting application and infrastructure changes

IMPACT

Predictable and accelerated software delivery optimized around a production-like delivery pipe

Takes minutes / hours to deliver changes versus weeks/months
How do we make this happen?

- Automate *everything*
- Version *everything*
- Test *everything*
- Track and Plan *everything*
- Instrument and Audit *everything*
- Dashboard *everything*
DevOps Focus – Delivery Pipeline

- Complete Automation based on results of the previous steps
  - Sourcecode
  - „Infrastructure as Code“
  - Patterns
  - Platform Configuration
  - Build Definitions
  - Packaging

Change & Configuration Management
Benefits

- Faster implementation of business requirements
  - Shorter test cycles
  - Keep up with the dynamic of agile development

- Higher software quality

- Cleaner transition from development to production
  - repeatable
  - automated
  - auditable
Collaborative Development & Operations

IBM SolutionsConnect 2013
Turning Opportunities into Outcomes

IBM Concepts and Solutions
DevOps – Related Themes and Tasks

- Plan and Measure
- Release and Deploy
- Develop and Test
- Monitor and Optimize
DevOps – Modular & Integrated Solutions

Rational Focal Point
Rational Requirements Composer

uDeploy
uRelease

IBM SmartCloud
PureSystems

IBM SolutionsConnect 2013
Convergence and Integration Plans

Converge Overlapping Function

IBM UrbanCode Deploy
- Extensions
  - IBM SmartCloud Continuous Delivery extensions
  - Rational Automation Framework actions
- Chef
- uDeploy

IBM UrbanCode Release
- uRelease

Integration Themes
- Continuous Delivery to Cloud
- Continuous Testing with Virtualized Services
- DevOps for Mobile
- Application Lifecycle Management Integrations
Continuous Delivery with Cloud

IBM UrbanCode Deploy
  Application
  Environment Template

Build

Artifact Library

SmartCloud Orchestrator

IBM Pure Application System

IBM SolutionsConnect 2013
Continuous testing with virtualized services

Automating deployment and testing to production-like environments

Rational Team Concert → Jenkins

IBM UrbanCode Deploy
- RTW plugin
- RTVS plugin

Deploy

Test

Rational Test Workbench

Dev → QA

Application changes being tested

Databases
Mainframe applications
Third-party Services

virtualized services

Rational Test Virtualization Server
Multi-tier mobile apps present specific challenges to DevOps

Client Tier Devices
- Mobile-specific challenges:
  - Lots of device targets
  - Provisioning rules and artifacts
  - Curated App Stores
  - Dependent upon backend service versions

Middle Tier Server

Back-end Data & Services

The Mobile-specific challenge in DevOps is mainly:
1. Dealing with the **specific issues in the Mobile Client tier**
2. And subsequently **coordinating separate pipelines** for each tier:
   - **Mobile Client**
   - **Middleware**
   - **Back-end data and services**
Application Lifecycle Integrations

Initial tools being integrated across the application lifecycle to provide a continuous delivery experience.
Application Lifecycle Integration – Monitoring & Log Analytics

IBM UrbanCode Deploy
- IBM Log Analytics plugin
- Application Performance Management plugin

SIT
- App components and configurations
- APM agent
- APM agent

Deploy and config

Application Dashboard
Continuous Build and Test for System Z

Continuous build and test of distributed systems

Note: This Program is licensed only for development and test of applications that run on IBM z/OS. The Program may not be used to run production workloads of any kind, nor more robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.
UrbanCode Convergence Roadmap

Phase 1

- Seamless **cloud** provisioning and application deployment as an integrated process
- Test environment provisioning with **virtualized services**
- **Lifecycle integrations** for Build Forge, test automation, Chef, and RTC

Phase 2

- **DevOps for Mobile** tool chain integrations
- **Lifecycle integrations** with Rational Automation Framework, Monitoring, Rational Asset Management

Phase 3

- Delivery pipeline visualization and automation
- Reporting and dashboarding
- Environment discovery and drift detection
- **Lifecycle integrations** with SmartCloud Control Desk and Continuous Integration for Z
- End-to-end business release planning with Focal Point and uRelease
Thank you!