Modern DevOps Practices on IBMi

> Overview

The What and Why of DevOps for IBMi

Enter content here explaining the need for DevOps for IBMi

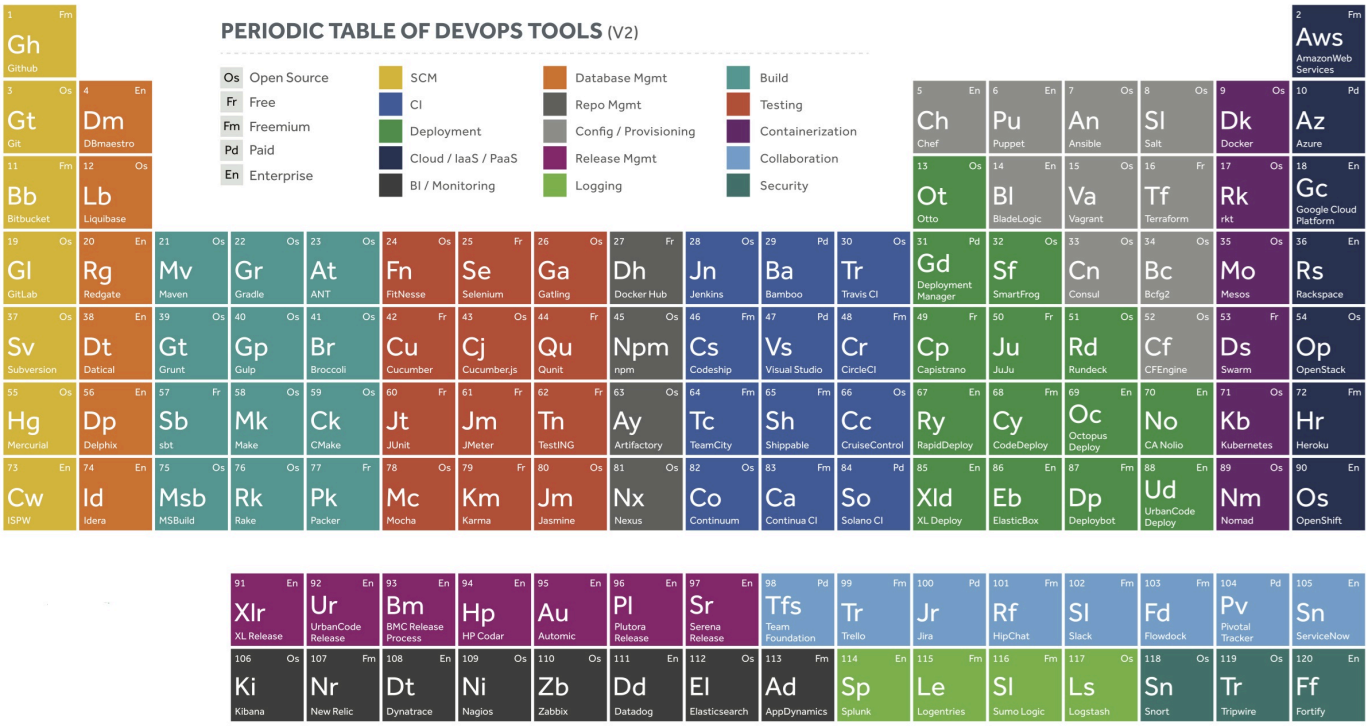
Integral parts of DevOps

- Source Control Management
- Pipeline
- Project Management
- Network Topology & Infrastucture
  - Network Connections
  - Security Concerns
- There is no "one size fits for all"

Major Difference between other servers and IBMi

Others	IBMi
Develop Locally and Deploy Globally	Develop & Deploy on the server itself
Database & Server are separate entities	Database & Server are one and the same
Middleware & Hypervisors are needed	Middleware & Hypervisors are integrated

DevOps Toolset



- DevOps experts don't know about IBMi and Vice-Versa

Source Control Management

GIT

Let's talk about GIT - the big daddy of Version Control System. Git is a version control software, used to keep track of changes to your source code.

But don't we have Turnover, Implementor, Aldon, and others already? How Git is different?

- Git is 100% free and open source
- Git is a distributed Version Control System
- Git empowers parallel development
- It enables Historical Comparison
- Disaster Recovery or time machine (!)
- Powerful integration with CI/CD tools.

Cloud based GIT tools

Github

- **Most popular** code hosting software
- Owned by Microsoft
- Has extra features like projects, milestone, pull request
- CICD is not available by default
- Proprietory

Gitlab

- **Open Source Alternative** to GitHub
- Can be installed on almost any server - except IBMi 😳
- Easier to manage projects
- Has built in CICD pipeline

BitBucket

- A native tool in Atlassian's Open Dev Ops Solution
- Can be integrated with **Jira & Confluence**

GitBucket

- An alternative to Gitlab offering **easy installation & intuitive UI**
- **Open Source**
- Can be **installed on IBMi** 😀
- Issues, Pull Requests and Wiki for repositories

A Vanilla GIT workflow for IBMers.

General Misconceptions about GIT

What it does	What it doesn't
Manages Source Code	Compiling
Keeps a history	Testing
Enables Branching	Project Management
	Planning
	Impact Analyisis
	Deployment

Develompment Models

Script Based	Archive Based	*Object Based*
No need to compile	Entire Project needs to be compiled	Only the changed objects need to be compiled
E.g., HTML, JS, PHP	E.g., Java	RPG, CL, C, VB
Build Process isn't compulsory	Build is compulsory	Build is required only for changed objects

Some concerns

- When you choose the local development model path,
  - There will be Multiple copies of the sources.
  - You need to compile from IFS
  - Source dates, Color coded comments, Modified Tag will be lost
  - Some audit information will be lost (like compiled from sourcefile etc.,)

Final Thoughts

- Git and GitHub are mostly different.
- Git is tool mostly for programmers.
- GitHub is a tool mostly for Project Managers and leads.
- GIT can be integrated with large number of tools.

CI/CD tools

CI/CD is a practice where developers regularly merge their code changes into a central repository, followed by automated building and testing (if required). There are various tools available for IBMi.

Merlin

- Acronym for IBM i Modernization Engine for Lifecycle Integration
- Proprietory
- **Full suite of Modern DevOps** practices

ARCAD

- Proprietory by Rocket Systems
- Can be integrated with GIT
- Comes with an integrated IDE called **RDi**

Jenkins

- **Free and Open Source**
- Can be integrated with GIT
- Can setup pipeline (or) workflows for deployment

Develop, Build & Deploy

Modern IDE

- VS Code
- RDi
- ILEditor
- Arcad

Running Test Cases

IBMiUnit

Dependency Management

Source Orbit

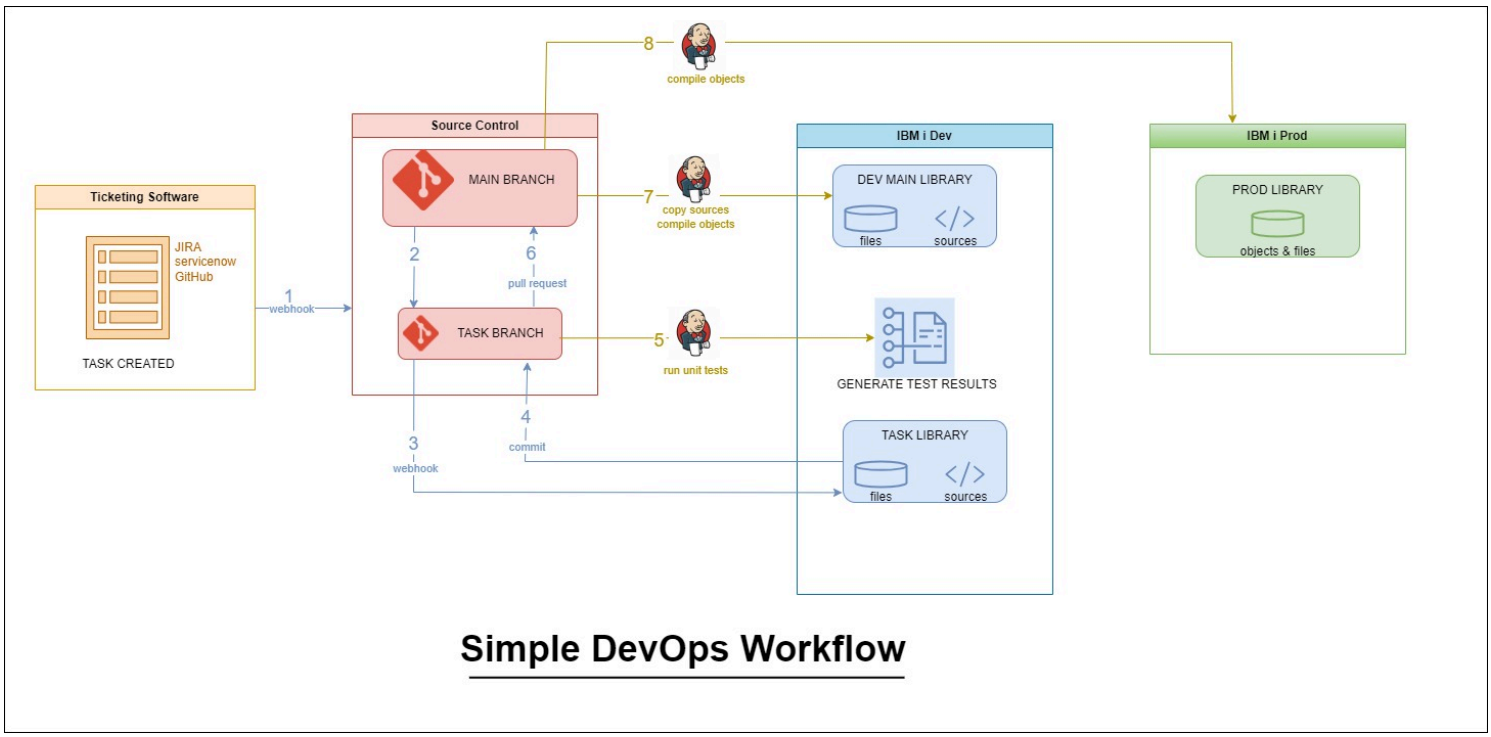
Deployment

Docker

ChRoot

A built in RPM command which will create our own `/QOpenSys` directory

Workflow



1. Create Issue Task
2. Use Webhooks to create task-branch for the task
3. Use webhooks to create a task-lib for the task in IBMi Dev
4. Commit the changes to the task-branch
5. Trigger the Unit Test Cases (via CI/CD software)
6. Create a PR to merge the code to the main branch
7. Trigger the copy sources & compile objects actions in the Dev Main Library
8. Trigger the compile objects action in the Prod library in Prod System

Points to note

- Testing is more important for DevOps
- Build the sandbox, test it, update/migrate tools, then test again.
- Have a fallback plan during migration of PROD.