CASE STUDY

USING ARCAD FOR DEVOPS AND GIT – MAJOR CANADIAN FINANCIAL INSTITUTION ACCELERATES THEIR TIME-TO-MARKET ON IBM i, DELIVERING HIGHER-QUALITY FEATURES 3 TIMES FASTER

Context

Several mission-critical applications at the bank are developed in-house on the IBM i (aka iSeries, AS/400) platform, leveraging DB2 for i database technology. These applications consist of back-end components in RPG or COBOL, and Java web and mobile applications developed by a dedicated front-end team. The IBM i team consists of 60 developers dedicated to the enhancement and maintenance of the entire application suite.

Prior to the DevOps project, the IBM i team were using a Waterfall development method with a well-known IBM i 3rd party product for RPG and COBOL source code control. ◆

Challenge: accelerate software delivery

A strategic initiative to adopt agile and DevOps software development techniques was already underway at the bank, and the IBM i team were under pressure from users to deliver new features faster.

The DevOps for IBM i Project Leader commented "Before the move to DevOps, we worked in long development/test/ release cycles, and we struggled to release code in time for our large and diverse user base".
As part of the DevOps initiative, several "enterprise" tools had already been adopted as de facto standard, and were already in use by development teams on other platforms, including:
- **Git/Bitbucket –** source code management
- **Jenkins –** orchestration and continuous integration (CI)
- **Jira –** project management and ticketing
- **JFrog Artifactory -** artifact repository manager
- **IBM UrbanCode Deploy (UCD)**

To standardize on software tooling across platforms and benefit from efficiencies in software currency and centralized servers, the IBM i team needed to prove the viability of Git, Jenkins, Jira and UCD on IBM i. ◆

It became clear that none of the tools was viable on IBM i without an additional layer of technology, able to manage the highly specific characteristics of the platform. The IBM i team evaluated several tools and in early 2018 they selected and ran a Proof of Concept on the "DevOps for IBM i" suite from ARCAD Software. ◆

Proof of Concept

The IBM i team prepared a detailed set of Use Cases ahead of the Proof of Concept, to ensure ahead of time that the ARCAD solution was able to manage the entirety of their application portfolio.

After 3 days of on-site services and a short trial period, the team were able to validate ARCAD's DevOps for IBM i technology on **each of their 30 use** cases, including:
- Migration of source code and metadata from previous change management tool to Git/Bitbucket and ARCAD
- Dependency analysis inc. SQL, retro-fitting of changes
- Handling of pre- and post- programs/scripts
- Workflow control and notifications
- Multi-country deployment/rollback inc. multiple database conversion
- Dashboards and reporting
- Support for all IBM i component types inc. RPG, SQL, PF, LF, Tables, Views, Stored procedures, CL, COBOL, C, SQL RPGLE, printer files, display files, etc. ◆
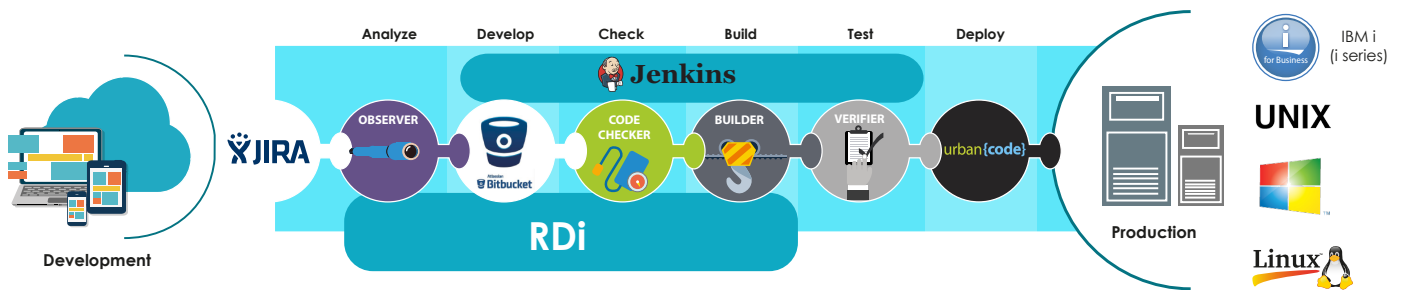
DevOps rollout on IBM i

In line with "best practice" advice from ARCAD Software, the IBM i team prepared a detailed plan for the migration of the source and objects from the previous traditional "change management" product to the new Git/Bitbucket implementation with ARCAD.

They selected the largest RPG application and tested the new tools first on a controlled release with limited functional changes.

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"**The migration to the new DevOps toolchain of our RPG application - comprising over 30K components – took 8 months from start to end, including the customization of our new tools, building of custom Jenkins pipelines, and the training of our 60 IBM i developers in new agile and DevOps techniques**", explained the DevOps for IBM i project leader.

The bank's architecture team managed the tools, servers and connectivity and also trained the IBM i developers in Git/Jenkins/Jira and guided them throughout the project.

Immediate Value

The IBM i team summarized the gains from the new DevOps for IBM i solutions: **"With ARCAD, we now deliver new releases 3 times faster when compared with our previous toolset.**

End-to-end CI/CD pipeline for IBM i

"All the tools were new to our team, and so was the optimized DevOps methodology from ARCAD. First we trained a small group of key developers who then extended the training to rapidly ramp up the rest of the development team. We achieved top-level management backing for our DevOps initiative which helped rollout the training and adoption of ARCAD as rapidly as possible."

The ARCAD solutions provided the seamless integration of each of the enterprise tools Git, Jenkins, Jira and UCD with the IBM i platform, including the Rational Developer for i (RDi) development environment.

"ARCAD automates the recompilation of dependent IBM i artifacts and packages up the release making the whole process easier to manage. The greatest help is that now our developers can work on their own feature branches and develop in parallel, giving us more agility and speeding up our delivery cycles". ◆

We have succeeded in meeting our DevOps targets on-time and on-budget and our developers are comfortable with ARCAD's modern tooling. We have already moved from quarterly releases to monthly and we plan to accelerate further with ever smaller and more frequent releases".

"The feedback from end-users is very positive. They have seen quality improvements and they are asking for more and more automation".

"ARCAD support is world class, the team react rapidly to our Support requests and when required R&D have always delivered modifications in the timeframe requested. But what impresses us the most is that ARCAD solutions come with all the advanced IBM i logic needed to deploy open source tooling at scale. ARCAD's experience in large scale deployments means that the overall solution is secure and reliable even in our demanding workloads, which benefits my team on a daily basis". ◆

Concurrent Development on IBM i

The IBM i team use a standard out-of-the-box GitFlow model for version branching, and many feature branches are created for each release. Builds are performed daily and code committed on any given day is included in the build. The ARCAD for DevOps pipeline including the open source tools is used to transfer between five main environments: DEV, UNIT-TEST, SIT, UAT and PROD, plus several support environments.
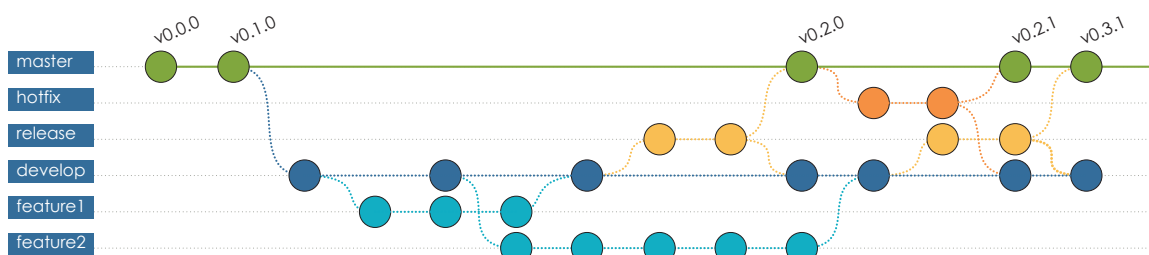
Next Steps

The IBM i team are now looking to add test automation into their IBM i application delivery pipeline, and will be evaluating the ARCAD-Verifier regression testing solution to reduce testing costs, safeguard application reliability in production and detect errors at the earliest possible phase in the cycle. ◆

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