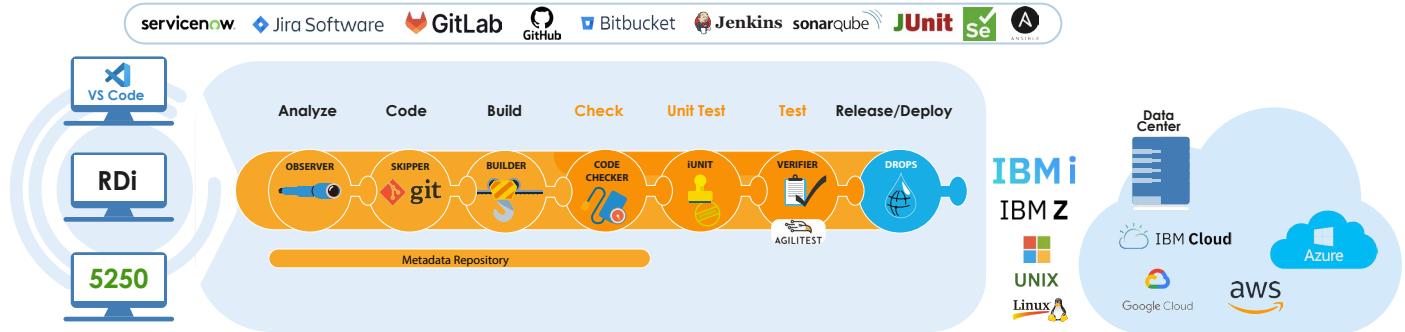


ARCAD for DevOps

Enterprise DevOps toolchain for IBM i



Business issue

DevOps adoption has grown with and evolved to meet the new priorities of security and cloud. According to the Puppet 2024 report, 80% of organizations are already actively practicing DevOps. However there is a widening performance gap between those "stuck" in the experimentation stage and those who have been able to achieve scale. The question is no longer whether organizations should adopt DevOps - but how to get DevOps right and scale it across the enterprise.

At the same time, surveys show that in 2023, the number of companies embracing cloud services reached 94%, with security being the primary driver. The convergence of DevOps and cloud has intensified the need for enterprise-wide DevOps tooling and requires a progressive cultural shift in teams.

A "holy grail" for DevOps leaders today is to standardize on open source enterprise tools for all their technology platforms, across Linux, Unix and Windows and the "heritage" systems IBM i and mainframe z/OS.

The main drive behind this cross-platform enterprise tooling is to manage consistency between each component in the system. Today's business-critical core applications combine "back-end" software on IBM i with middleware, microservices, web and mobile applications developed on open/distributed platforms. Dependencies between these components mean that the risk from "siloed" development is high.

If application components are deployed asynchronously, inconsistencies can go undetected until they reach production, incurring a heavy cost in application downtime. IDC studies have shown that:

- Software-related downtime in production is 10x more costly than infrastructure failure
- 70% of incidents in production are due to release management errors (and only 30% due to faulty code)

Challenges faced with "raw" Git, Jenkins and Jira on IBM i

Dependencies between diverse application components must be carefully managed to protect release integrity and prevent compatibility defects from reaching production.

Having a common source code repository and cross-platform DevOps toolchain can help keep these inter-application dependencies under control. The main tools dominating the industry today are **Git** for version control, **Jenkins** for orchestration of test and delivery, and **Jira** for issue tracking and project management.

However **these generic tools alone are ineffective on IBM i without a technology layer to handle the specifics of the platform**. This means that organizations building "home-grown", loosely coupled toolchains based on Git and Jenkins run a significant business risk, due to:

- Complexity in branching and concurrent development
- Handling of IBM i objects without source
- Lack of a "project view"
- Fragile tool integrations
- Incompatibility with 5250 green screen development

These challenges of using open source tools "raw" have held back their adoption on IBM i.

Bring Your Own Tool (BYOT)

ARCAD solutions come with plug-ins and extensions to manage your RPG, COBOL and CL updates from the same enterprise DevOps toolchain used on Java, .NET development outside the IBM i. With ARCAD, you share a common source code repository and tools across your organization. Automate phase by phase at your own pace. It's easy to customize a workflow and adapt as you grow!



SOLUTION: DevSecOps

ARCAD for DevOps integrates enterprise tools such as **Git, Jenkins and Jira** with **ARCAD's own advanced IBM i technology layer** to automate a complete end-to-end DevOps cycle for IBM i. Developers are shielded from the complexity of open source tooling with an IBM i-friendly environment. Inter-application dependencies are managed automatically, optimizing development cost and efficiency and minimizing the risk of downtime.



Phased approach to DevOps on IBM i: modules can be implemented step-by-step

Each ARCAD module integrates with and updates the ARCAD metadata repository. Application knowledge is shared between modules to offer unique functionality and enhanced performance right across the DevOps cycle:

- **ARCAD Discover** delivers an instant, graphical view of the architecture and business logic in existing IBM i applications. Drill-down navigation tools assist both business analysts and developers understand legacy source code. Business rules are exposed for easy conversion to Web services.
- **ARCAD Observer** automates **IBM i application analysis** and impact analysis down to the source line and field level, improving accuracy and productivity in software development.
- **ARCAD Skipper/Git** provides IBM i developers with a familiar, **easy-to-use project view** layered over Git as central source repository. Skipper simplifies the use of Git for both 5250 and RDi developers, giving simultaneous access to Git's powerful concurrent versioning features and source compare and merge. Collaborative Git hosting tools like GitHub, BitBucket and GitLab are all supported.
- **ARCAD Builder** 100% automates the **application build** process on IBM i, using dependency knowledge to optimize the build. Only those components that are impacted by a source change are recompiled. For Continuous Integration, an IBM i build can be orchestrated by Jenkins.
- **DROPS** offers one single console for Application Release Orchestration and synchronized deployment across all target platforms, IBM i, Windows, Linux, supporting both on-premise, hybrid and multi-cloud environments Azure, AWS, GCP and IBM Cloud. DROPS integrates with orchestration tools such as Jenkins, Azure Pipelines along with issue tracking/workflow solutions like Jira, ServiceNow.
- **Jenkins** - ARCAD's native Jenkins plug-ins enable **100% automation of downstream operations** on IBM i such as build, unit test, regression test and deploy, all orchestrated by Jenkins.
- **Jira** - ARCAD's add-ons for Jira guarantee bi-directional **synchronization of Jira issues** with ongoing development on IBM i. IBM i application issues and projects are tracked «in sync» with distributed systems.
- **ARCAD CodeChecker** automates **code quality and security checking** for all variants of RPG. 100+ code quality and vulnerability rules are provided out of the box and local rules can be added easily.
- **ARCAD iUnit** helps IBM i developers easily create **unit tests for programs and procedures** as they develop. Automated unit testing isolates defects at the earliest possible stage.
- **ARCAD Verifier** automates the **regression testing** process on IBM i. Defects are detected deep in the database, for interactive and batch, and Webservices too. Test campaigns generated by ARCAD Verifier can be orchestrated by Jenkins for continuous testing on IBM i.
- **ARCAD Dashboards** deliver a real-time view of application health and value flow across the DevOps cycle. Both IBM i application intelligence and Value Stream Management (VSM) dashboards are provided out-of-the-box and configurable for audit compliance requirements.

Benefits

- Integrated and modular solution -> progressive DevOps adoption
- Complete end-to-end DevTestOps cycle
- Open choice of IDE: RDi, VS Code, 5250
- Cloud ready: deploy to the data center, hybrid and multi-cloud

Gains

- Reduced IT complexity
- Reduced cost of development
- Reduced development timescales
- Reduced downtime risk

