Rational® software

Improve operational efficiencies and speed applications into production.

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Introduction

Competitive pressures, increased marketplace demands and the constant need to reduce expenses have only intensified the demands put on companies to develop and deploy their software applications as quickly, efficiently and cost-effectively as possible. Adding to this pressure is a host of regulatory requirements and indus-try mandates that are forcing companies to assess how they develop, modify and track their applications from development to production.

This paper identifies the key barriers companies must cross as they attempt to streamline their software delivery processes. It discusses how to bridge the gap between development and operations. It then outlines how IBM Rational® ClearCase®, IBM Rational ClearQuest®, IBM Rational Build Forge® and IBM Tivoli® Provisioning Manager software offer an integrated solution to help com-panies unify development and deployment to improve operational efficiencies, reduce risk, gain lifecycle traceability and, most important, deliver applications into production faster.

Challenges of software delivery today

Organizations are faced with the seemingly never-ending cycle of building, test-ing, deploying and rebuilding their business-critical applications. However, development and deployment teams have traditionally been set up as separate organizations with disconnected tools and processes. As a result, moving applica-tions from development to deployment and back again remains largely a manual process that is highly time consuming, labor intensive and prone to errors.

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The division between these inherently connected processes not only adversely affects the quality and reliability of the products being delivered, as well as the time and effort required to deliver them, it can create serious coordination problems between development and deployment teams. When development and deployment activities are managed separately, it is nearly impossible to see a complete view across the entire project. And traceability between development, testing, deployment and other project assets is difficult, at best.
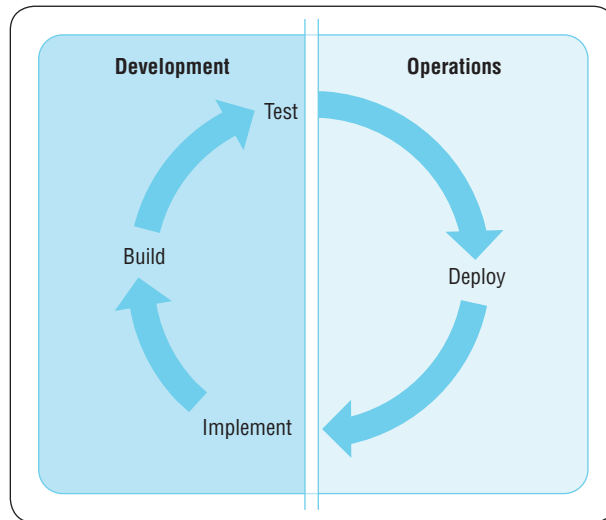
Development | Operations

Test

Build

Deploy

Implement

Figure 1: The software delivery lifecycle

Bridging the gap between development and operations
To address these challenges, organizations need to unify development and deployment activities. Tools that can integrate and automate lifecycle processes, from requirements definition through deployment, can reduce cycle times for faster delivery. Process automation also improves reliability and repeatability, so that nothing falls through the cracks, reducing overall project risk.

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Integrated tools and processes enable better cross-functional communication and coordination and help prevent missteps. They can also provide reliable, integrated information for better visibility and insight into projects. And by linking all requirements, code, defect, build, test and deployment assets, you gain lifecycle traceability to help ensure that the correct version of an application is deployed and that an application performs as it was designed.

A best-in-class solution

By bringing together Rational ClearCase, Rational ClearQuest, Rational Build Forge and Tivoli Provisioning Manager, IBM offers a unified, enterprise-scale solution that can help automate and accelerate software delivery.

Rational ClearCase is designed to manage and control software assets across the lifecycle. With features such as version control, automated workspace management, baseline management, build and release management, and parallel development support, the Rational ClearCase application provides development teams with instant, controlled access to the information they need to effectively create, update, build, deliver, reuse and maintain software assets.

Rational ClearQuest is designed to automate and enforce development processes. It helps organizations track changes throughout a project, improve project visibility with real-time status and reporting, and create repeatable, enforceable processes that span the application lifecycle from requirements definition through production.

Rational Build Forge provides an open and flexible process automation framework to centrally plan, schedule and execute software build activities. Advanced features such as parallel execution, distributed heterogeneous build agents, audit trails, dynamic server management, integration adaptors, IDE self-service plug-ins and a comprehensive bill of materials help teams to accelerate software delivery with higher quality.

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Tivoli Provisioning Manager is designed to automate the provisioning, configuration and maintenance of a variety of technologies, including servers, operating systems, middleware, applications and storage devices.

Rational ClearCase, Rational ClearQuest, Rational Build Forge and Tivoli Provisioning Manager work together to provide a single, proven solution that enables organizations to rapidly deliver diverse applications across even the most complex global environments.

When code changes are implemented and the build is completed, Rational ClearCase creates a deployment unit for the bill of materials to be deployed. For even faster delivery, Rational ClearCase integrates with Rational Build Forge to automate the build and release management process. Rational Build Forge continuously monitors the Rational ClearCase source repository, and it executes builds automatically either when a change occurs or on a scheduled basis. Rational Build Forge can also automate checking in build results to Rational ClearCase if the build is successful. And executing build processes across server pools helps to further accelerate the build process. Together, Rational ClearCase and Rational Build Forge help enable complete visibility and documentation of the code-build cycle.

Rational ClearQuest allows you to create and enforce a repeatable process for building and deploying applications. Build records track when a build starts and when it ends. They also track build logs and other build information. Rational Build Forge can also directly populate build records in Rational ClearQuest.

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Deployment records track deployments through test environments and into production. Build records and deployment records can be associated with each other and with other Rational ClearQuest records. Additionally, you can establish approval gates before deploying into test or production environments. Electronic signatures verify the identities of individuals performing specific actions. Through documenting all transactions across the software lifecycle, you can trace the origin and detail of all activities, and verify authorizations and sign-offs.

Tivoli Provisioning Manager deploys the approved build files directly from Rational ClearCase and updates the deployment record in Rational ClearQuest. This allows you to associate deployment information with requirements, code changes, build information and test information, extending traceability across the full delivery lifecycle. And with Rational ClearQuest reporting and metrics, you gain an integrated, consolidated, real-time view across the project to help you make better decisions, faster, and effectively manage tasks and schedules.
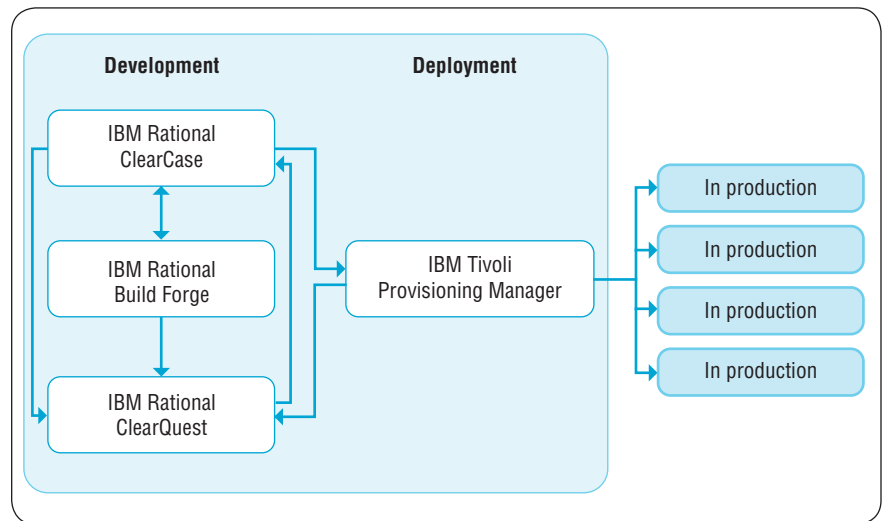
Figure 2: An integrated solution to automate software delivery

Reaping the rewards

With Rational ClearCase, Rational ClearQuest, Rational Build Forge and Tivoli Provisioning Manager, traditionally disconnected development and deployment processes can be unified to deliver long-term benefits, including:

- *Improved operational efficiencies and reduced risk.*
- *Rapid delivery of software applications into production.*
- *Better visibility and control.*
- *End-to-end lifecycle traceability.*

Conclusion

Organizations are continually looking for ways to decrease the amount of time and money required to develop and deploy their applications. At the same time, they are determined to ensure that the quality of those applications is not diminished in any way.

Together, Rational ClearCase, Rational ClearQuest, Rational Build Forge and Tivoli Provisioning Manager provide an integrated solution that unifies development and deployment activities, enabling organizations to improve operational efficiencies, streamline and speed software delivery, effectively govern end-to-end software processes and extend traceability across the full software lifecycle.

For more information

To learn more about how IBM Rational ClearCase, IBM Rational ClearQuest and IBM Rational Build Forge software can help manage and control the software lifecycle, visit:

ibm.com/software/rational/offerings/scm.html

To learn more about IBM Tivoli Provisioning Manager software, visit:

ibm.com/software/tivoli/products/prov-mgr

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