

# The AccuRev Advantage over IBM Rational ClearCase

## Overview

This document compares the core capabilities of AccuRev to those of IBM Rational ClearCase, with a focus on the fundamental technical advantages and corresponding business value that validate why AccuRev is the best choice for highly parallel and geographically distributed development teams that require an optimal productivity-to-cost ratio.

## Executive Summary

AccuRev is the only software configuration management (SCM) system that provides architecturally enabled collaborative software process optimization. By designing the SCM architecture to specifically address the process requirements of today's global application development organizations, AccuRev users realize a substantial total cost of ownership (TCO) advantage that has compelled large global companies like Citibank, SanDisk, T-Mobile, SunGard, Sony, Lockheed Martin, and American Airlines to choose AccuRev over industry-leading legacy tool solutions, including IBM Rational ClearCase. Growing at more than 90 percent annually over the past three years, AccuRev is the first and only company to develop a native TCP/IP SCM architecture that enables and integrates any development process model (Agile, Waterfall, RUP, etc.) with your software assets. Through this unique design, AccuRev users dynamically manage and adapt their application development processes to their changing business needs at a fraction of the cost, time and complexity that is associated with ClearCase.

## Summary Comparison

Requirement	AccuRev	IBM Rational
Global Distributed Development Support	<ul style="list-style-type: none"> <li>TCP/IP architecture: client/server data exchange for efficient, low-chatter WAN performance, requires no changes to process model</li> <li>Hot backups, repository is never locked allowing 24/7 developer uptime</li> <li>Atomic transactions for optimal data integrity</li> </ul>	<ul style="list-style-type: none"> <li>Legacy, LAN-based architecture requires MultiSite or CCRC, high-chatter, high-overhead NFS-based WAN performance, site-specific branches force extra merging operations</li> <li>VOBs must be locked for daily backup, inhibiting optimal 24/7 developer productivity</li> <li>No atomic transaction support</li> </ul>
Process Model Optimization	<ul style="list-style-type: none"> <li>StreamBrowser integration of process and software assets for dynamic graphical control and comprehensive view of any process model</li> <li>Native stream model is faster and easier to use</li> </ul>	<ul style="list-style-type: none"> <li>Base ClearCase enables flexible process models but with no global graphical view or control, UCM enables graphical view and control but with static and defined process model</li> <li>UCM is a "bolt-on" which is slow &amp; constricting</li> </ul>
Total Cost of Ownership	<ul style="list-style-type: none"> <li>Dramatically lower license costs</li> <li>Average of one (1) part-time administrator required per 250 developers</li> <li>Modest hardware requirements</li> <li>Installs in minutes</li> <li>Days to train users</li> </ul>	<ul style="list-style-type: none"> <li>Significantly higher license costs</li> <li>Average of one (1) full-time administrator required per 50-60 developers</li> <li>Hardware intensive</li> <li>Installs in hours to days</li> <li>Weeks to train users</li> </ul>

### ***Why the SCM Architecture Matters***

ClearCase's architecture was developed in the early '90s to address the prevalent development problems and version control shortcomings at that time, when the majority of application development teams were working serially over LANs. Understandably, support for highly parallel and efficient "follow-the-sun" development was not a core SCM design requirement. Today, distributed parallel development is the rule. As such, legacy architectures no longer provide a cost-effective solution for teams that need to adhere to this model. Since organizations must still deliver high-quality code on schedule, this architectural shortcoming must be compensated for with people, hardware, custom scripting, and add-on products at a considerable financial, performance, and productivity cost. To solve this problem, the SCM architecture must be redesigned to specifically support flexible, highly parallel application development over the WAN. This is the fundamental reason why AccuRev is able to uniquely provide significant cost and productivity advantages over ClearCase.

## **Comparison of AccuRev and ClearCase**

### ***Global Distributed Development Support***

This section covers the architecture, key functional areas, and replication comparisons between AccuRev and ClearCase, underscoring why AccuRev is the optimal solution for "follow-the-sun" development over a wide area network (WAN).

### ***Network Architecture***

AccuRev's TCP/IP-based client/server architecture was built specifically to perform at optimal levels in both LAN and WAN environments. By comparison, ClearCase's less secure NFS implementation was designed for a LAN-based environment. As a result, in order to use ClearCase in a WAN environment development teams require either (i) MultiSite licenses, with a high-bandwidth network connection and additional hardware and administrative costs, or (ii) the ClearCase Remote Client (CCRC) solution with limited product functionality and a different interface.

### ***Backups***

Because of AccuRev's append-only data model, all backups are hot. There is never a need to lock developers out of the AccuRev database. This enables development teams to realize a true 24/7 development model without interruptions or developer downtime for scheduled database backup procedures. With ClearCase, the database must be locked for write operations to take complete backups, effectively shutting down development for up to hours each day.

AccuRev's fully integrated issue tracking product, AccuWork, shares the same architecture and database as AccuRev. Thus, backups for both products are seamless and consistent. In contrast, IBM's products do not share architectures or databases. This means that they do not support synchronized backups from one database, which can cause problems especially when trying to back up UCM projects. This is not an issue with AccuRev. In addition, AccuRev supports integrations with ClearQuest and other leading defect-tracking solutions (e.g., Mercury Quality Center, Serena TeamTrack) and uses AccuWork to mirror customer-specified fields. As a result, these fields get backed up into the common AccuRev database.

### ***Atomic Transactions***

AccuRev's TimeSafe® architecture and operations are based on atomic transactions to ensure the integrity of your repository. The scope of the atomic transaction involves all elements being processed, so they complete or fail in their entirety. This provides data integrity with all check-ins, builds, promotions, and updates, and it eliminates broken builds due to incomplete check-ins, saving time and increasing team productivity.

In contrast, ClearCase's architecture does not support atomic transactions. While UCM does support the grouping of elements involved in an activity, operations can still fail in mid-operation. When such failures happen, a ClearCase administrator is required to undo the operation. As a result, customers may be exposed to incomplete check-ins, inconsistent baselines, broken builds, or builds that work but were created from a set of sources that have never been tested together and cannot be reproduced.

### ***Native WAN and LAN Support/Performance***

AccuRev uses a transaction-oriented protocol designed to provide maximum efficiency and performance over the network. In contrast, ClearCase's reliance on chatty, multiple-per-element RPC calls results in much slower performance and heavier network traffic. Although the CCRC used for WAN access does not rely on RPC calls, it does rely on a separate "in between" Apache server, making it difficult to administer. In addition, it does not include all of the functionality of native ClearCase clients and therefore cannot be relied upon as a complete ClearCase solution. For example, CCRC does not support all UCM operations, such as creating a project, and it does not support the command line interface to allow process customization. ClearCase customers must remember what functionality is available in the LAN-based client and what functions are available in CCRC. Over a WAN or on a LAN, AccuRev supports all of the same process operations through a consistent interface. Also, the performance of CCRC is far below that provided by AccuRev over the WAN.

Because of AccuRev's native-stream implementation, many operations are completed orders of magnitude faster than with ClearCase. For example, if a project has tens of thousands of files that need to be labeled, only one (1) write operation, taking a few seconds, is required in AccuRev as opposed to tens of thousands of read and write operations in ClearCase, taking considerably more time (often hours) and disk space.

### ***Third-Party Interoperability Requirements***

AccuRev does not require any third-party interoperability software to communicate between heterogeneous platforms (Windows, Linux, and UNIX). In contrast, ClearCase requires an additional layer for communicating in heterogeneous environments. ClearCase customers require solutions like NFS/SAMBA/TAS to provide the communication capability across platforms, resulting in additional administration, support, and performance issues.

### ***User Interface***

AccuRev has the same user interface across Windows, Linux, or UNIX, providing customers with a simple and consistent user experience. Additionally, AccuRev is integrated with the leading IDEs, including Eclipse, Visual Studio, and IntelliJ IDEA, enabling the developer to remain in a familiar environment while executing AccuRev commands.

ClearCase has a separate user interface for Windows, UNIX, CCRC, and the Eclipse integration, putting greater burden on its users to learn and remember the capabilities of each.

### ***Replication***

While AccuRev's native WAN performance meets the needs of most distributed teams, organizations with large remote teams typically take advantage of AccuReplica, AccuRev's replication product designed to enhance global operational efficiencies. With AccuReplica, all development teams, regardless of their locations, transparently use the same development process in AccuRev. This process is automatically enforced, without the need for scripting. There is also no need for per-site processes or per-site branches. And since AccuRev administration occurs on the master SCM server only, there is no need for duplicating administrative resources for each location or time zone. AccuReplica's setup is as easy as installing the server, pointing it to the master, and issuing a single command to replicate a repository. Replication works transparently, with the result that all developers appear to be working at the same site. Remote developers can get file status information as rapidly as if

they were working locally. Additionally, developers' client machines using AccuReplica servers can still issue all AccuRev commands in the usual way.

IBM's replication solution, MultiSite, requires each remote location to have a local replica of the repository that can be synchronized on a regular basis. This batch replication does not provide the most current project status to all team members. MultiSite administration and sufficient hardware is required for all replicas, adding further to total costs. Because replicas at remote sites can do their own branching and have their own processes, there is neither the consistency nor the development transparency that exists with AccuReplica. For example, triggers may not be consistent across MultiSite implementations because triggers are not replicated.

### ***Process Model Optimization***

While base ClearCase does not dictate any particular process model, the expertise and effort required to implement, enforce, and modify parallel process models is typically extensive and manual in nature. UCM was later retrofitted on top of base ClearCase to abstract development teams from this complexity and to make the adoption of a standard process model easier. The problem is that UCM requires teams to follow a defined process. UCM is great in concept, with its visual representation and limited need for scripting, but in practice its implementation is too limited for practical use since it is tied to the base ClearCase architecture. AccuRev is considered to be "UCM implemented correctly," from the ground up, enabling development teams to easily implement any process model without constraint or complexity.

AccuRev Streams are implemented natively, and form the product's architectural foundation. While AccuRev streams are analogous to a combination of branches and process workflow (typically in a separate tool in legacy systems), streams are far more flexible and powerful, enabling unencumbered branching, merging, and process change operations. Streams, not files, are first-class objects in AccuRev. Streams understand their process-based relationships to other streams and include built-in inheritance, whereas branches do neither.

Although ClearCase UCM shows high-level stream information with a project explorer view, users cannot perform actions on the streams from this explorer (as they can in AccuRev). In short, ClearCase customers are locked into a defined process with UCM. They do not have the flexibility that is available in the AccuRev StreamBrowser to easily modify elements and move them to different streams. There are restrictions in the UCM components that do not allow elements to be moved from one component to another. These restrictions and inflexibility contribute to what amounts to a static process model.

Customer and market dynamics require that development teams have the capability to change their processes dynamically, without data loss or a major disruption in team productivity. AccuRev provides such flexibility while maintaining all data consistencies.

***“The AccuRev stream hierarchy can be reconfigured in just seconds to reflect any change in project scheduling while maintaining full reproducibility, data consistency, and traceability. This is an extremely powerful feature that lets us do things not even imagined in traditional systems.”*** - SCM Manager for one of Europe's fastest-growing telecom software companies



## Total Cost of Ownership

### Developer Productivity Costs

Because of AccuRev's efficient, high-performing architecture, developer tasks take less time to complete than with ClearCase's slower heavyweight architecture. When comparing typical developer tasks such as checkpointing work, branching/merging, working with remote sites, and performing other miscellaneous actions, AccuRev allows development teams to complete these operations much more quickly and efficiently.

These efficiencies add up quickly. Even with a conservative 10% developer productivity gain, which is not uncommon, an application development team of 100 developers can realize savings of at least \$1.3 million per year in developer time (This return does not include the license or administration cost savings illustrated below).

### License Costs

Comparison of license costs between AccuRev and ClearCase

# of Licenses	AccuRev List Price	ClearCase List Price*	Savings with AccuRev
1	\$1,495	\$4,125	<b>\$2,630</b>
100	\$149,500	\$247,500	<b>\$98,000 (40%)</b>
500	\$747,500	\$1,237,500	<b>\$490,000 (40%)</b>

\*Assumes a floating license ratio of 60 licenses per 100 users

If a company is using ClearCase for geographically distributed development, it requires either ClearCase MultiSite or the ClearCase Remote Client. Since AccuRev works natively over the WAN additional products are typically not required. Teams desiring performance optimization for larger remote teams have the option to use AccuReplica. AccuReplica is priced at \$495 per user, compared to \$1,500 per license for ClearCase MultiSite. For teams larger than 20 users, the AccuReplica price is capped at \$9,995 per server. This represents a considerable license cost savings over ClearCase MultiSite, which increases substantially as a company increases its MultiSite license count.

Comparison of license costs between AccuRev/AccuReplica and ClearCase MultiSite (one replicated site)

# of Licenses	AccuRev/AccuReplica List Price	ClearCase/MultiSite List Price*	Savings with AccuRev/AccuReplica
1	\$1,990	\$4,950	<b>\$2,960</b>
100	\$159,495	\$297,000	<b>\$137,505 (46%)</b>
500	\$757,495	\$1,485,000	<b>\$727,505 (49%)</b>

\*Assuming a floating license ratio of 60 licenses per 100 users

### Administrative costs

AccuRev recommends one part-time administrator for every 250 users.

Although IBM does not make specific public recommendations on the ratio of administrators to users, research has shown that ClearCase sites typically have one full-time administrator for anywhere from 10 to 75 users. Many sites, especially those with MultiSite, are closer to the 10 to 20 users per full-time administrator range. Thus, one full-time ClearCase administrator for every 60 ClearCase users is a conservative estimate. Administrative requirements represent an enormous ongoing cost to supporting ClearCase when a company considers the all-in costs of a full-time employee.

### **Hardware**

AccuRev requires a fraction of the server hardware that ClearCase requires for an efficient high-performance implementation. On average, AccuRev server hardware costs are 40% of those required with ClearCase. When compared to MultiSite implementations, this gap widens dramatically, with AccuRev providing up to 80% savings on server and managed storage hardware.

### **Training**

AccuRev's Certified Engineer (ACE) training is one to two days in duration versus a week or more for ClearCase administration training (depending on level of training required and products deployed). End-user training for AccuRev is four hours in its entirety, versus more than two days for ClearCase fundamentals.

### **Installation**

AccuRev has a very efficient, streamlined installation process that is easy to use and completes in just minutes. Typically, an enterprise installation can be done in less than one hour on Windows, Linux, or UNIX servers.

In contrast, ClearCase installations require expertise and significant upfront planning for all server processes (VOB Server, View Server, Registry Server, and License Server). There are numerous constraints that must be factored into the install procedure (for example, not allowing two releases to coexist on the same machine). The actual installation process generally takes several hours or days to complete.

### **Summary**

AccuRev's growing number of large global enterprise customers validates the compelling need for a high-performance and cost-effective next-generation configuration management solution with the flexibility and power to meet aggressive profitability objectives, customer requirements, and compliance mandates.

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