

Comparison: Perforce and Microsoft Visual SourceSafe

Perforce
& VSS

Overview

This document compares Perforce version 2008.2 with Microsoft Visual SourceSafe (VSS) 2005, and contrasts their significant differences. This comparison focuses on qualitative aspects such as system architecture, performance, and usability.

Executive Summary

Attribute	Perforce	VSS
Platform Dependencies	Self-contained client/server architecture. Response times are an order of magnitude faster for most operations. Multiplatform.	Works over network shares, thereby slowing response times. Limited to Microsoft platforms only.
Scalability and Performance	The Perforce repository easily scales to the multi-terabyte range.	Microsoft recommends that VSS databases not exceed 4 to 6 GB, for performance and stability reasons.
Atomic Transactions	Natively supported as changelists, enabling users to track file versions associated with a feature addition or issue resolution.	Doesn't have an atomic change mechanism, and cannot group changes to related files.
Branching and Merging	Perforce branching automatically tracks the history of all branching operations.	Limited support for branching and related operations. Branching relationships aren't maintained. Future merge and integration activities have no baseline to support conflict identification.
Distributed Development	The Perforce Proxy offers a caching solution for remote users, with minimal administrative overhead and no extra cost.	Does not offer a distributed development solution.
Integrations with Related Tools	Many available tools are designed specifically to work with Perforce, including defect tracking tools.	Only available for IDEs that support the SCC interface.
Support	Provided by Perforce SCM experts and relied upon by over 300,000 users.	Available through OEM, online, or pay-per-incident.

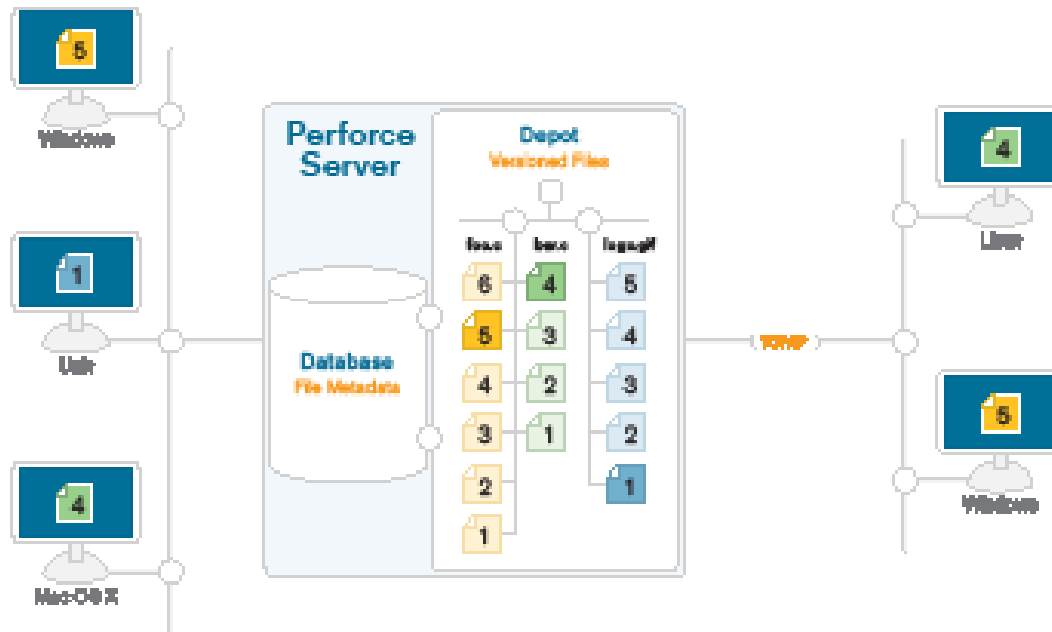


Figure 1: The Perforce client-server SCM system supports all major platforms.

Platform Dependencies

VSS is supported on Microsoft platforms. The VSS architecture uses the client/server model. By default, clients enforce cooperation with one another through locks set on files within the database. Local files residing on the client are integral to VSS's ability to determine status, map storage, and control processing. These files are highly susceptible to accidental modification or deletion.

Perforce supports a wide range of platforms, including Windows, Linux, Mac OS X, Unix, and Solaris. The Perforce architecture is also a client/server model, but Perforce maintains client processing and state information on a central server as part of the metadata (see Figure 1). Additionally, the latest versions of all files are maintained on the server. In the event of any failure on the client (for example, hardware failure), all the files managed by Perforce can easily be recovered from the server.

Scalability and Performance

The client/server architecture of Perforce performs consistently faster than VSS for equivalent operations. Perforce operations involving metadata (check-out, branching) are two to five times faster than the equivalent VSS operations. Perforce operations involving the transfer of file contents (get, check-in) are seven to ten times faster than the equivalent VSS operations.

Data Integrity

VSS is targeted toward individual developers or small teams with lightweight SCM needs. VSS limitations due to performance and stability reasons include:

- Repositories limited to no more than 8,000 files per project
- Maximum allowable workspaces (imposed by the ss.ini file) is 10
- Databases should be no larger than 6 GB
- Individual file sizes should be no more than 2 GB

The possibility of client and network failures leaving the database in a corrupt state is a risk inherent in the VSS design. A tool is provided for detecting, and when possible, correcting detected errors in the database. Microsoft recommends running this tool at least weekly, during which time the database isn't available to users.

By contrast, Perforce easily scales to support large organizations with 10,000+ users and does not impose limits on the size of the database, projects, or teams. Perforce supports single instances of very large depots, or repositories, with no degradation of performance. Perforce installations containing terabytes of source code are not uncommon.

All Perforce metadata is safely archived by taking a snapshot of the database and storing it offline. Perforce configurations using standard backup processes can create high-availability systems that provide 24/7 user access.

Atomic Transactions

VSS does not provide an atomic change mechanism and cannot group changes to related files. Relationships between files at check-in are lost unless artificial methods such as check-in time or common comments are used. If some of the files involved in a depot submission are rejected, the codebase is left in an inconsistent state. VSS label technology allows only one label per file version.

Perforce organizes the changes made to multiple files into units of work called "changelists." Typically, changelists represent features or bug fixes that are implemented by modifying multiple files. Because changelists are atomic, they ensure the integrity of each check-in, and

avoid the corruption introduced by partial file submissions. Perforce guarantees that whenever a changelist is submitted, the state of the entire system before and after the changelist varies only by the set of changes (adds, deletes, and edits) involved in the given changelist. Perforce allows the same version of a file to be associated with multiple labels. Perforce also allows deleted file revisions to be included in labels.

Branching and Merging

VSS has limited support for branching and related operations. In VSS, branch relationships aren't maintained and future merge and integration activities have no baseline to support conflict identification.

VSS does not have integration tracking and its automated merge technology works only if there are no conflicts. VSS supports only two merge types: a visual two-pane merge and a manual merge.

The Perforce Inter-File Branching™ model is capable of branching thousands of files rapidly while retaining a complete branch and merge history. Instead of manually tracking all changes across branches, users can rely upon Perforce to merge file changes across multiple branches automatically and with fewer conflicts to resolve. A built-in graphical tool, Revision Graph, displays the detailed branching history of each file for easy visualization of code propagation. (see Figure 2).

Perforce's Inter-File Branching enables users to work simultaneously in parallel development or release projects, easily and without restriction. Users can quickly and easily branch to develop customer variants, create prototypes and patches, isolate individual tasks, and more.

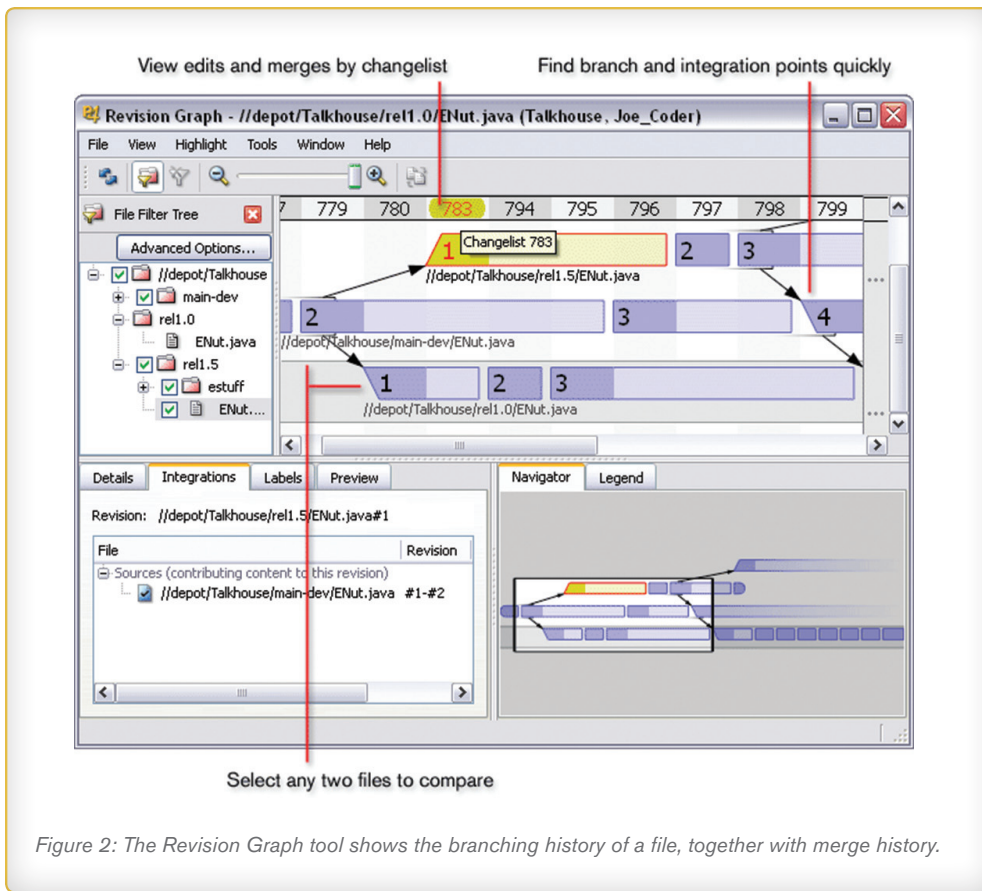


Figure 2: The Revision Graph tool shows the branching history of a file, together with merge history.

Distributed Development

VSS does not offer a distributed development solution, providing no efficiencies for groups of users at remote locations.

Perforce's distributed architecture is supported by the Perforce Proxy at remote locations. The Perforce Proxy caches and serves files to users at remote locations, thereby reducing traffic across slower WAN links. All users, local or remote, connect to the same central depot and hence look at the exact same project files.

Distributed development with Perforce doesn't require any additional process overheads or additional cost. Any number of proxies can be deployed, are invisible to end users, and require minimal administrative attention.

Integrations with Related Tools

VSS can only be used from within IDEs that use the Microsoft SCC interface. VSS provides built-in tools for difference, merge, and comparison, but third-party tools aren't encouraged.

Perforce has a mature multiplatform GUI, and many IDE plug-ins. Perforce also integrates with popular software development tools. Major categories include the following:

- IDEs
- Web and graphical tools
- Software build tools
- Microsoft Office
- API tools
- Merge and diff tools

System Administration and Support

Recovering deleted files is difficult in VSS. Only the latest version of a deleted file is available for recovery, and recovery of a deleted “shared” file is problematic.

Perforce tracks and maintains deleted files and their version history, and enables easy retrieval of any previously deleted version.

Support for VSS is provided either by the OEM vendor, online, or as pay-per-incident. There is no support for the trial version.

Expert and responsive technical support is a hallmark of Perforce and full technical support is included during an evaluation. Perforce believes that when you buy an SCM system, you're not only putting your faith in the software, but also in the technical support you expect to receive.

Additional Resources

Evaluating Perforce

More than 300,000 users at 5,000 companies rely on Perforce for software configuration management. Perforce encourages prospective customers to judge for themselves during a typical 45-day trial evaluation. And because the quality of a technical support organization is better experienced than described, get started by visiting: www.perforce.com/vss

Scheduling a Demo of Perforce

To learn more about Perforce, schedule an interactive demo tailored to your requirements. Visit: www.perforce.com/vssdemo

Migrating to Perforce

For more information on related software including conversion utilities for migrating from VSS to Perforce, please visit: www.perforce.com/perforce/loadsupp.html#conv

Perforce Consulting Services has experience assisting customers with migrations from various SCM systems. For more information, please visit: www.perforce.com/consulting

Additional SCM comparisons available at <http://www.perforce.com/comparisons>



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