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SPECIAL REPORT: SCM

Staying with the process



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When it comes to software development, software configuration management (SCM) serves as the eyes on the assembly line. It is the task of tracking and controlling changes throughout the software development lifecycle, and reproducing actions in order to simplify development.

Making development processes easier, however, isn't so simple these days, as systems being developed become more complex and the development process gets more complicated with larger, distributed teams.

Several main SCM providers are trying to rise to the occasion in easing these complications. Some companies have tried to open up SCM to non-coders, while others are focused on merge features, because easing complications around merging branches is seen as an important ability with more and more companies branching code.

Daniel Magid, Aldon's chief product strategist, said that its strength in tracking the software lifecycle lies in a strong repository. Aldon has what he called a two-part repository for SCM. The first part is a database repository that stores copies of the parts of the development life cycle being managed. It contains all build results and artifacts around application development.

"Developers can say, 'Show me everything related to the payroll application,' and they can see all the artifacts related to payroll, whether those things are all on one platform or they have some Windows parts, Unix parts or Linux parts," Magid said. "They can have all those things and say, 'I'm interested in seeing the current status of our payroll application,' and they can see everything regardless of where it might be stored."

The second part of the repository consists of the metadata associated with the software being managed. The metadata, which is both user-defined and information that Aldon keeps track of, is about how software is built and deployed.

Aldon puts a great deal of focus on automation, and Magid said the company has always tried to figure out how to automate the process of moving a devel-



Staying with the process

SCM systems morph to address latest trends in development

BY JEFF FEINMAN

opment project through the life cycle. This is done by having the developer identify the process rules about how each stage is managed; who has the permissions move something into a particular stage; and who can request and approve moves into a stage. Then the developer identifies how he or she wants software and applications deployed.

"We'll automatically deploy it, so all you need to do is say, 'Here's the package I want to move,' and the system will know where it needs to [be deployed to] and how to install it on those locations," Magid said. "The idea for us is to make it very simple to set up these processes, and then make it easy for the user to move things through the life-cycle process on a day-to-day basis."

CollabNet, meanwhile, continues to regularly update its Subversion version control system, trying to lessen issues around changes in software. A June 2008 release of Subversion incorporated merge-tracking features, so Subversion keeps track of what changes have been merged and where. CollabNet executives said this reduces costs involved in maintaining branches, which are versions of the same software that are developed independently.

In more-recent releases of Subversion (version 1.6.3 was due in early July), one of the main features CollabNet has focused on is tree-conflict handling, which executives described as looking at more complex types of conflicts that can happen during merging.

"A tree conflict happens at the directory level, not just the file level, and so now there's a way to flag that automatically and call for someone to do some interactive conflict resolution to address it before checking in," said Victoria Griggs, senior director of product marketing for CollabNet.

"For instance, let's take your typical scenario where me and you are both working on a file, and we make changes, and we need to figure out if we're going to keep your changes or mine.

"There's some more complex merge conflicts that can happen at the directory, so let's say I'm working on a file and you delete that file from our branch. So now when I go to check in that file again, it no longer exists. That's what we consider a tree conflict, and the system needs to flag that it's an issue."

CollabNet expects to be rolling out version 1.7 of Subversion towards the end of 2009. Two big areas that CollabNet will be working on for that release and future releases are additional tree-conflict management features and improvements to the communication layer.

In 1.7, Subversion will have a new HTTP protocol, which Griggs said will reduce the number of network turnarounds to make Subversion faster. This way, developers will see faster speeds when committing code to a Subversion repository over a wide area network.

"Subversion itself has been architected for distributed developers, so it expects that people are sitting around the world and checking code into a centralized repository," Griggs said. "Still, there're some areas to improve on performance with the underlying communication that we have with the central repository."

MEETING SCALABILITY

Perforce Software tries to focus on providing adequate scalability in its SCM system in order to keep up with customers' large, globally distributed teams. Growing demands might include concurrent usage, growth in the number of team projects, and changes in the size of the files being managed.

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SCM morphs to reflect latest trends

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“There are a couple of things we do to meet scalability needs,” said Charles McLouth, director of sales for Perforce. “One of those things is improvements to concurrency, where you’ve got more people doing more simultaneous operations. We’re also particularly proud of our streaming protocol and RPC [Remote procedure call] communications, and it really allows us to transmit content at amazing speeds.”

McLouth added that Perforce’s SCM release last year included enhancements that allowed the protocol to self-tune to the network it was on.

In recent releases, Perforce has tried to spread its SCM wings beyond coders. In an August 2008 release, Perforce rolled out visual differencing functionality, offering “image diffing” that lets users compare a changed image side-by-side with the Perforce Visual Client. The purpose of this was to make Perforce more attractive to game developers and other software makers.

McLouth pointed out that coders on game development projects are usually part of a bigger team that may include writers, designers, animators and sound technicians. As such, Perforce attempts to make sure that all contributors on a project can use the same SCM.

“Perforce needs to provide interfaces for different applications for each of these specialists,” McLouth said. “Whether they’re managing graphics with Photoshop, documents in Word, or some sort of design file, providing these multimedia interfaces and the ability to manage any type of digital asset is critical to Perforce’s success.”

Perforce will look to expand its reach in future releases of its SCM software. However, it is also delivering code-focused features. McLouth said there is a native interface for Java developers coming down the line, although he didn’t get into specifics.

While Perforce is a company looking to open SCM to non-developers, other companies, like UK-based PureCM, provide version control and software configuration management products for traditional developers.

PureCM’s SCM software offers a feature called merge path, which Mike Shepherd,

a technical consultant with PureCM, described as automating the merging between two different code branches.

Another feature called workspace rebasing lets developers move a workspace from one code line to a different or newer one.

Shepherd said the company’s biggest advantage on the SCM market is its ability to support multiple codebases, and methods involving developers working in parallel PureCM can create “streams,” which is a code line that can spawn other code lines based off of the original line.

“We generally try to be more lightweight than other tools,” Shepherd said. “We have a lower amount of general platform requirements; we don’t require a SQL database and that sort of thing, so it’s generally easy to maintain.” Down the line, Shepherd said the company is heading towards more of an ALM 2.0 style, with third-party integrations available for the SCM system.

“We’re going to be having our own kind of ‘mini-ALM’ tool in the not-too-distant future, looking to try to blur the distinction between SCM and ALM [application life-cycle management],” Shepherd said. He didn’t offer further specifics and said that is still in development.

IMPROVEMENTS IN REPORTING

With Seapine Software, a SQL back end for storing artifacts serves as a differentiator for Surround SCM, company executives said. Paula Rome, a senior product manager with Seapine, said the SQL back end is beneficial particularly for reports, as SQL allows developers to use third-party reporting information through querying.

The most recent version of Surround SCM brought an integration with PostgreSQL. In a future release, Seapine will also be adding the ability to use the Oracle database to store artifacts.

Rome also talked about Surround’s platform support: Both Mac OS and Windows users can use the same server without a difference in clients getting in the way.

“We don’t believe that source code control or management is only for C++

and Java files,” she said. “In order to ship a real-world product, you’ve got a lot of other artifacts that need the change management capabilities.”

Rome noted that Seapine would update its API for SCM as well as add additional reporting capabilities down the road. Seapine will allow users to configure reports without necessarily having to know how to write SQL statements. Reports will be customizable with Cascading Style Sheets, which can help cater reports to a company’s business document style.

The new API will let developers use Surround’s configuration management capabilities in their “programming language of choice,” according to Rome. There will also be new ways for how a developer can design and customize the client. This will all help with third-party integration.

“With the API and client customization, we’re going to be able to have much greater integration with third parties,” she said. “People have been using Surround as their build management tool already, but we’re going to be really doing some interesting things, because that API is going to be able to expose so much more.”

Serena Software’s Dimensions CM focuses on compliance, change and release management, and productivity, according to Serena executives. It lets development teams work with a single code repository. Serena added a location-aware cache to reduce latency problems that can affect how well global teams work together, as well as a relational database management system.

Dimensions CM can monitor deployments throughout production, and can deploy to Linux, Unix and Windows. The software also automates build processes within continuous integration practices, and it can maintain build dependencies among components to try and lessen the number of broken builds.

Charts have been added to Dimensions CM’s reporting, and reports may now include histograms, pie charts and other charts, said Ash Owen, Serena’s director of product marketing. Reports can be attached as files into e-mails, or be shared through Web content portals so

stakeholders can view metrics and reports on their application development projects.

Serena also emphasized Dimensions CM’s ability to integrate with Serena’s other life-cycle tools. “We can plug-and-play quite nicely with our tools and other preferred QA or requirements management tools,” Owen said. But product integration is not yet complete.

Owen added that Serena would like to eventually integrate Dimensions CM with its Agile On Demand agile project manager. Serena will try to increase interoperability with different non-Serena IDEs. Additionally, there will be greater integration with Serena’s Business Mashups.

In today’s changing work environment, it is very important for software companies to continue innovating their SCM systems and cater their offerings to the changing needs of their users. Whether it is Perforce’s upcoming native interface for Java, Seapine’s improved API, or any of the other features that will be polished off in the near future, SCM makers are innovating to keep up with the latest trends in development. ■