



From SVN delays to seamless collaboration: Cirata transforms Juniper's development

Background

Juniper Networks was operating large development teams in 3 geographical locations; Sunnyvale, CA, Quincy, WA, and Bengaluru, India.

Juniper Networks, Inc. is an American multinational corporation headquartered in Sunnyvale, California. The company develops and markets networking products, including routers, switches, network management software, network security products, and software-defined networking technology.

Challenges

1. Geographically distributed teams struggling with Subversion Access

- **Coordination challenges:** teams in different cities were faced with latency problems when checking out development workspaces and committing code changes to a single instance of Subversion (SVN).

2. Slow SCM (Source Control Management) performance

- **Version control delays:** Juniper discovered that delays in workspace creation and code commits translated directly into wasted development time and higher costs.
- **Non-local access delays:** developers accessing SVN data from geographically distant servers faced exponentially increasing delays, particularly when dealing with large workspaces.

3. Load balancing issues

- **Load balancing:** Juniper needed to distribute developer and branch management workloads across multiple servers to ensure high availability. Effective load balancing over the three sites was complex and time consuming.

4. Access management

- **Dependency management:** dependencies between teams or project components caused delays when one part of the project was not ready, which impacted overall productivity.
- **Tool efficiency:** inefficiencies in development tools were slowing down workflows.
- **Access restrictions:** engineers frequently moved between projects, making it challenging to ensure repository access was limited to only the necessary staff.
- **Multiple authentication methods:** Juniper needed to accommodate different authentication methods across business units.

5. Selective access to repositories

- **Legal and contractual compliance:** Juniper had specific legal and contractual obligations requiring selective access to certain intellectual property, depending on team location or individual worker agreements. They were early adopters of selective access controls in SVN.

6. Long maintenance and disaster recovery events

- **Downtime impact:** prolonged maintenance or disaster recovery times, sometimes lasting 1-2 days, significantly impacted developer productivity.
- **Data loss risk:** extended recovery times increased the risk of data loss, which posed a major threat to projects.
- **Recovery point objective:** Juniper tasked its DevOps team to improve SVN system uptime from "four nines" (99.99%) to "five nines" (99.999%) reliability.

7. Data center relocation

- **Data center moves:** Due to a fluid development workflow, Juniper needed the ability to physically relocate servers or entire data centers with little to no interruption to development teams.

Solution

Cirata implemented its **Subversion MultiSite Plus** solution across seven Subversion servers at three globally distributed data centers. This setup allowed seamless collaboration among Juniper's development teams worldwide.

Key benefits included:

- **Low latency access:** with repository replicas positioned strategically, developers enjoyed near-local performance, reducing delays in checkout and commit operations.
- **Load balancing:** Cirata's solution enabled efficient load balancing, ensuring that even during outages, other servers remained operational, maintaining developer productivity.
- **Access control with Cirata ACP:** consistent and precise access management ensured that repository replicas followed the same access rules across all nodes.
- **Selective replication:** MultiSite Plus's selective replication groups allowed administrators to control which repositories were available at specific locations, ensuring compliance with legal requirements and reducing unnecessary data distribution.
- **Flexible authentication:** Juniper opted for multiple authentication methods, easily integrated with Cirata ACP.
- **Historical access data:** by collecting access data with Flume, Juniper could generate reports on repository usage, allowing inactive users to be removed from access lists, enhancing security and performance.

During the data center relocations, Cirata and Juniper collaborated on a plan that ensured continuous SVN availability, even while servers were physically moved. The remaining servers kept the system operational, and the relocated servers caught up seamlessly upon reconnection.

Results

- **Improved developer efficiency:** the team of over 3000 developers experienced a 1-4% reduction in wait times, resulting in estimated cost savings equivalent to the annual salaries of 70 full-time software engineers.
- **Centralized administration:** Juniper consolidated smaller repositories under Cirata MSP, improving administrative oversight and security, including consistent authentication and access records.
- **High availability:** Juniper achieved its target of "five nines" reliability, reducing downtime and ensuring high availability even during disaster recovery or maintenance events.

Product Feedback

Juniper Networks praised the product for:

- **Resilience during downtime:** developers were able to continue working while administrators resolved issues, minimizing impact on productivity.
- **Reduced downtime for maintenance:** routine maintenance could be performed without affecting all development teams, a key benefit for Juniper's global operations.
- **Flexible infrastructure:** the ability to add and remove nodes based on changing data access needs was particularly valuable.

"We really needed some way to ensure that all of our sites were up and running all of the time. We needed to be 24-by-7 globally with the same LANspeed performance and access at all three locations. Cirata's (formerly WANdisco) active/active WAN clustering for Subversion was the only solution we found."

— Angela Thomas, Development Tools Manager, Juniper Networks