Empowering distributed teams: achieved global synchronization with Cirata's Gerrit MultiSite.

Background

A US based technology organization previously relied on Perforce for their source code management (SCM). However, after migrating to Git, the rapid growth of their development teams across multiple geographical locations created new challenges. To support this global expansion, the organization sought a robust Git MultiSite solution to enhance collaboration and streamline their development processes across all regions.

In addition to enhancing global accessibility for their development teams, the oragnization also had a requirement to implement a strong code review system to maintain consistent code quality over the long term. While single instance Gerrit was already part of their ecosystem, they were looking to enhance this service to be available and replicated across all sites.

Challenges

Challenges with globally distributed teams across multiple locations

- Coordination issues: Teams spread across different time zones encountered significant challenges in coordinating their efforts effectively.
- Total number of active developers at all sites was around 1500 at the point of implementation.

Developers experienced significant latency–induced delays

- Often referred to as 'waiting,' due to the large size and remote location of repositories, as well as the handling of Large File Storage (LFS) objects.
- This latency slowed down critical operations like cloning, fetching, and pushing code, leading to reduced productivity and extended development cycles.

Underperformance of SCM

- Version control bottlenecks: Slow performance in Source Control Management (SCM) led to delays during code check-ins, check-outs, branch merging, and conflict resolution.
- Remote interaction latency: When developers accessed Git repositories from distant locations, the delays increased significantly.
- Developer dissatisfaction: Developers were increasingly frustrated with the sluggish response times.

Need for a robust replacement for the decommissioned perforce instance

- The organization had undergone efforts to migrate their Perforce ecosystem to Git with the assistance of a 3rd party consultant.
- As a result of their growth and movement away from the singular Perforce instance, it was key for the replacement to be globally accessible.

Challenges *(continued)*

Need for robust code review platform

- Difficulty in maintaining high code standards across teams, could lead to potential bugs and technical debt due to insufficient or inconsistent code reviews.
- A lack of structured or integrated code review processes had slowed down development cycles and making it difficult to enforce best practices across a distributed team.
- Struggles with managing complex Git workflows, including branch management, merging, and conflict resolution, could lead to errors and slowdowns in the development process.

Obstacles to meeting production deadlines

- Development Process Delays: Various delays in the development process, whether from SCM inefficiencies, coordination difficulties, or other causes, began to affect production schedules.
- Complex Dependency Management: Managing dependencies between different teams or project components proved to be difficult, causing delays if any part of the project was not completed on time.
- Tool Effectiveness: The performance and usability of development tools had a direct impact on developer productivity.
- Disruptions to Workflow: Technical issues or slow systems frequently interrupted workflows, reducing the time developers could dedicate to actual coding tasks.

Solution

- **Global MultiSite deployment**
  The organization installed Cirata Git MultiSite and later expanded this setup to include Gerrit MultiSite across eight geographically distributed sites.
- **Unified development teams**
  This interconnected global infrastructure unified development teams, facilitating seamless collaboration across all locations.
- **Selective replication for flexibility**
  Gerrit MultiSite's selective replication groups enabled administrators to strategically position repository replicas as needed.
- **Enhanced system resilience**
  The implementation of Cirata's Gerrit MultiSite improved system resilience; even during downtime events at one site, all other sites remained fully operational, ensuring continuous productivity.
- **Integrated code review**
  Gerrit integrated a robust code review process directly into the development workflow, fostering thorough reviews and better collaboration before merging code.
- **Granular access control**
  Gerrit provided fine-grained access control, allowing teams to manage permissions and enforce policies with precision, ensuring only authorized changes were implemented.
- **Seamless Git integration**
  Gerrit worked seamlessly with Git, combining distributed version control with a structured review process to maintain code quality and long-term maintainability.

Results

- The distribution of Git repositories into 'replication groups' enabled administrators to strategically position repository replicas where they were most needed.
- The implementation of Gerrit MultiSite provided management granular control over the newly adopted code review process across all sites.
- This approach provided developers with near-local Git interaction speeds for all operations.
- The enhanced system resilience delivered by the Cirata MultiSite software solutions has significantly bolstered security against productivity loss during system downtime events.
- The anticipated 3-5% reduction in wait times resulted in an estimated cost saving equivalent to the average annual salary of 30-35 full-time software engineers.
- Initially deployed for a development team of 1,500 users, the system has steadily expanded over the past six years and now supports nearly 5,000 active developers.

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