From latency to efficiency: Cirata's Gerrit MultiSite® powers distributed development network.

Background

In 2016, a multinational automotive parts manufacturing company had a requirement to improve performance and availability of their internal Gerrit environment. Cirata Gerrit MultiSite was chosen to replicate Gerrit data between an initial set of 8 locations, eventually expanding to a 10 node ecosystem containing over 8700 repositories served to 2200 developers.

Challenges

Latency and WAN networks

- Global reach across 7 countries results in varying network performance.
- Remote teams experience significant delays due to the potential high latency of WAN connections.
- Slow data transmission affects real-time collaboration and synchronization.

Server maintenance and downtime with single server

- Regular server maintenance interrupts workflow, leading to idle times.
- Unexpected downtime causes abrupt halts in productivity.
- Recovery from downtime involves additional time and resources, compounding the loss.
- Dependencies on a central server make the entire operation vulnerable to single points of failure.

High resource consumption by central server

- A single central server struggles under the load of thousands of developers.
- High resource consumption leads to performance bottlenecks.
- Overloading the server can cause slow response times and degraded user experience.
- Managing and scaling resources for the central server was becoming increasingly complex and costly.

Project Timeline

26th May 2016

Completion of pre-planning

Confirmation of network, RC form, delivery methodology options, hardware availability, Identify blockers

27th May 2016

Completion of planning

Assessing support needs (i.e. knowledge levels, conversion needed, scripting requirements), agreeing timescales (global and requirement specific), agreeing a final target delivery date (where possible), understanding repercussions of any delay, agreeing implementation review meeting schedule, documenting resources (who is doing the work, who covers in emergency, escalation paths, etc), agreeing of test criteria and roll back plans.

2nd June 2016

Initial deployment completed

Actual support of the move, ensuring that timescales agreed to are held to or accounted for, with revisions agreed by all parties, Supporting the roll out as per agreed delivery methodology

3rd June 2016

Completion of testing

Where needed, issue recommendations for testing (benchmarking, access, etc) and request that results are shared, Cirata will detail and deliver our standard post deployment stability and functional tests and incorporate any additional, customer specific tests as required.

3rd June 2016

Cut-over

Ensuring cut-over to the live environment completes, Complete TouchPoint call with SDM + named support contact

6th June 2016

Support handover

Handover to Early-Life / Support as part of Project completion, reviewing documentation with named support contact (Early Life), Confirm In-life Support escalation paths, Arrange post cut over TouchPoint call

Solution

Cirata's assistance with installation and configuration

- Cirata facilitated the deployment and setup of Cirata Gerrit MultiSite.
- Implemented a replicated, multi-primary Gerrit ecosystem to distribute the load and improve availability.
- Provided expertise and guidance to ensure smooth integration with the existing infrastructure.

Server load measurement and optimization

- Conducted thorough performance benchmarking before and after implementing replication.
- Verified that the server load remained within acceptable limits post-replication.
- Ensured optimal resource utilization, avoiding overloading and maintaining high performance.

Improved remote access performance

- Enabled remote users to access repositories with performance comparable to a local area network (LAN) connected Gerrit server.
- Significantly reduced latency issues, enhancing the user experience for remote teams.
- Facilitated seamless access to centralized resources from various global locations.

Downtime simulation and recovery

- Conducted simulated downtime tests to evaluate system resilience.
- Demonstrated that developers could seamlessly switch to another replica in the event of a single node failure.
- Proved that Cirata Gerrit MultiSite could automatically recover from outages without the need for administrator intervention.

Data governance and compliance

- Assisted in meeting data governance requirements for handling external partner code bases.
- Ensured compliance with data protection regulations and internal policies.
- Implemented robust security measures to safeguard sensitive code and data.

Results

Long-Term usage and reliability

- Successfully operating Cirata Gerrit MultiSite across global infrastructure for 8+ years.
- Demonstrated long-term reliability and stability of the MultiSite setup.

Enhanced access and performance

- Developers enjoy seamless access to code bases and the Gerrit UI from any site.
- Achieved LAN-like performance for all users, regardless of their geographic location.
- Enabled efficient collaboration and rapid development cycles by minimizing latency issues.

Support and upgrade assistance

- Cirata has provided continuous support and facilitated several upgrades to maintain system performance and security.
- The most recent upgrade involved the underlying Gerrit version, which included the transition of data from Percona to NoteDB.
- Ensured smooth and error-free upgrades, minimizing disruptions to development activities.

Resilience and downtime mitigation

- Experienced several hardware related outages over the years.
- The impact of these outages on productivity has been mitigated by automatically redirecting developers to the nearest available Gerrit node.
- Cirata Gerrit MultiSite's ability to handle node failures without significant downtime has proven crucial in maintaining productivity.

