Google Cloud Issue Summary

Google Voice - 2021-02-16

All dates/times relative to US/Pacific

On 2021-02-15 and 2021-02-16 from 23:58 to 04:20, Google Voice users experienced an issue in which some new inbound or outbound Voice over Internet Protocol (VoIP) calls failed to connect, for a total duration of 4 hours 22 minutes. Peak impact occurred at approximately 03:00, at which time mitigation efforts began to reduce failure rates. We understand that this issue has impacted our valued customers and users, and we apologize to those who were affected.

ROOT CAUSE

Google Voice uses the Session Initiation Protocol (SIP) to control voice calls over Internet Protocol. During normal operation, Google Voice client devices aim to maintain continuous SIP connection to Google Voice services. When a connection breaks, the client immediately attempts to restore connectivity. All Google Voice SIP traffic is encrypted using Transport Layer Security (TLS). The TLS certificates and certificate configurations used by Google Voice frontend systems are rotated regularly.

Due to an issue with updating certificate configurations, the active certificate in Google Voice frontend systems inadvertently expired at 2021-02-15 23:51:00, triggering the issue. During the impact period, any clients attempting to establish or reestablish an SIP connection were unable to do so. These clients were unable to initiate or receive VoIP calls during the impact period. Client devices with an SIP connection that was established before the incident and not interrupted during the incident were unaffected.

REMEDIATION AND PREVENTION

Google Engineers were automatically alerted to the issue with Google Voice at 00:01. After investigating, the engineering team determined that certificate configuration was the root cause. The team generated updated certificates and configuration information and began an emergency rollout of this data to frontend systems. The rollout began at 02:19 and concluded at 04:20. The mitigation eliminated most user visible impact before 04:20. SIP clients can retry failed requests, and any retried request handled by an updated frontend task succeeded, restoring functionality to that client.

To guard against the issue recurring and to reduce the impact of similar events, we are taking the following actions:

- Configure additional proactive alerting for upcoming certificate expiration events.
- Configure additional reactive alerting for TLS errors in Google Voice frontend systems.
- Improve automated tooling for certificate rotation and configuration updates.
- Utilize more flexible infrastructure for rapid deployment of configuration changes.
- Update resource allocation systems to more efficiently provision emergency resources during incidents.
- Develop training and practice scenarios for emergency rollouts of Google Voice frontend systems and configurations.

Google is committed to quickly and continually improving our technology and operations to prevent service disruptions. We appreciate your patience and apologize again for any impact to your organization. We thank you for your business.

Sincerely,

The Google Workspace Team