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Google Cloud Status Dashboard

This page provides status information on the services that are part of Google Cloud Platform. Check back here to view the current status of the services listed below. If you are experiencing an issue not listed here, please contact Support. Learn more about what's posted on the dashboard in this FAQ. For additional information on these services, please visit cloud.google.com.

Google Cloud Networking Incident #18012

The issue with Google Cloud Global Loadbalancers returning 502s has been fully resolved.

Incident began at **2018-07-17 12:17** and ended at **2018-07-17 12:55** (all times are **US/Pacific**).

DATE	TIME	DESCRIPTION
✅ Jul 18, 2018	17:26	**ISSUE SUMMARY** On Tuesday, 17 July 2018, customers using Google Cloud App Engine, Google HTTP(S) Load Balancer, or TCP/SSL Proxy Load Balancers experienced elevated error rates ranging between 33% and 87% for a duration of 32 minutes. Customers observed errors consisting of either 502 return codes, or connection resets. We apologize to our customers whose services or businesses were impacted during this incident, and we are taking immediate steps to improve the platform's performance and availability. We will be providing customers with a SLA credit for the affected timeframe that impacted the Google Cloud HTTP(S) Load Balancer, TCP/SSL Proxy Load Balancer and Google App Engine products. **DETAILED DESCRIPTION OF IMPACT** On Tuesday, 17 July 2018, from 12:17 to 12:49 PDT, Google Cloud HTTP(S) Load Balancers returned 502s for some requests they received. The proportion of 502 return codes varied from 33% to 87% during the period. Automated monitoring alerted Google's engineering team to the event at 12:19, and at 12:44 the team had identified the probable root cause and deployed a fix. At 12:49 the fix became effective and the rate of 502s rapidly returned to a normal level. Services experienced degraded latency for several minutes longer as traffic returned and caches warmed. Serving fully recovered by 12:55. Connections to Cloud TCP/SSL Proxy Load Balancers would have been reset after connections to backends failed. Cloud services depending upon Cloud HTTP Load Balancing, such as Google App Engine application serving, Google Cloud Functions, Stackdriver's web UI, Dialogflow and the Cloud Support Portal/API, were affected for the duration of the incident. Cloud CDN cache hits dropped 70% due to decreased references to Cloud CDN URLs from services behind Cloud HTTP(S) Load balancers and an inability to validate stale cache entries or insert new content on cache misses. Services running on Google Kubernetes Engine and using the Ingress resource would have served 502 return codes as mentioned above. Google Cloud Storage traffic served via Cloud Load Balancers was also impacted. Other Google Cloud Platform services were not impacted. For example, applications and services that use direct VM access, or Network Load Balancing, were not affected. **ROOT CAUSE** Google's Global Load Balancers are based on a two-tiered architecture of Google Front Ends (GFE). The first tier of GFEs answer requests as close to the user as possible to maximize performance during connection setup. These GFEs route requests to a second layer of GFEs located close to the service which the request makes use of. This type of architecture allows clients to have low latency connections anywhere in the world, while taking advantage of Google's global network to serve requests to backends, regardless of in which region they are located. The GFE development team was in the process of adding features to GFE to improve security and performance. These features had been introduced into the second layer GFE code base but not yet put into service. One of the features contained a bug which would cause the GFE to restart; this bug had not been detected in either of testing and initial rollout. At the beginning of the event, a configuration change in the production environment triggered the bug intermittently, which caused affected GFEs to repeatedly restart. Since restarts are not instantaneous, the available second layer GFE capacity was reduced. While some requests were correctly answered, other requests were interrupted (leading to connection resets) or denied due to a temporary lack of capacity while the GFEs were coming back online. **REMEDIATION AND PREVENTION** Google engineers were alerted to the issue within 3 minutes and began immediately investigating. At 12:44 PDT, the team discovered the root cause, the configuration change was promptly reverted, and the affected GFEs ceased their restarts. As all GFEs returned to service, traffic resumed its normal levels and behavior. In addition to fixing the underlying cause, we will be implementing changes to both prevent and reduce the impact of this type of failure in several ways: 1. We are adding additional safeguards to disable features not yet in service. 2. We plan to increase hardening of the GFE testing stack to reduce the risk of having a latent bug in production binaries that may cause a task to restart. 3. We will also be pursuing additional isolation between different shards of GFE pools in order to reduce the scope of failures. 4. Finally, to speed diagnosis in the future, we plan to create a consolidated dashboard of all configuration changes for GFE pools, allowing engineers to more easily and quickly observe, correlate, and identify problematic changes to the system. We would again like to apologize for the impact that this incident had on our customers and their businesses. We take any incident that affects the availability and reliability of our customers extremely seriously, particularly incidents which span regions. We are conducting a thorough investigation of the incident and will be making the changes which result from that investigation our very top priority in GCP engineering.
✅ Jul 17, 2018	13:19	The issue with Google Cloud Global Load balancers returning 502s has been resolved for all affected users as of 13:05 US/Pacific. We will conduct an internal investigation of this issue and make appropriate improvements to our systems to help prevent or minimize future recurrence. We will provide a more detailed analysis of this incident once we have completed our internal investigation.
❌ Jul 17, 2018	12:53	The issue with Google Cloud Load balancers returning 502s should be resolved for majority of users and we expect a full resolution in the near future. We will provide another status update by Tuesday, 2018-07-17 13:30 US/Pacific with current details.
❌ Jul 17, 2018	12:34	We are investigating a problem with Google Cloud Global Loadbalancers returning 502s for many services including AppEngine, Stackdriver, Dialogflow, as well as customer Global Load Balancers. We will provide another update by Tuesday, 2018-07-17 13:00 US/Pacific
❌ Jul 17, 2018	12:34	We are investigating a problem with Google Cloud Global Loadbalancers returning 502s