


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 Infrastructure Components Incident #20003

Elevated error rates across multiple Google Cloud Platform services.

Incident began at **2020-03-26 16:14** and ended at **2020-03-27 05:55** (all times are **US/Pacific**).

DATE	TIME	DESCRIPTION
 Apr 01, 2020	17:15	

ISSUE SUMMARY

On Thursday 26 March, 2020 at 16:14 US/Pacific, Cloud IAM experienced elevated error rates which caused disruption across many services for a duration of 3.5 hours, and state data (resulting in continued disruption in administrative operations for a subset of services) for a duration of 14 hours. Google's commitment to user privacy and data security means that IAM is a common dependency across many GCP services. To our Cloud customers whose business was impacted during this disruption, we sincerely apologize – this is not the level of quality and reliability we strive to offer you, and we are taking immediate steps to improve the platform's performance and availability. We have conducted an internal investigation and are taking steps to improve the resiliency of our service.

ROOT CAUSE

Many Cloud services depend on a distributed Access Control List (ACL) in Identity and Access Management (IAM) for validating permissions, activating new APIs, or creating new cloud resources. These permissions are stored in a distributed database and are heavily cached. Two processes keep the database up-to-date; one real-time, and one batch. However, if the real-time pipeline fails too far behind, stale data is served which may cause impact operations in downstream services.

The trigger of the incident was a bulk update of group memberships that expanded to an unexpectedly high number of modified permissions, which generated a large backlog of queued mutations to be applied in real-time. The processing of the backlog was degraded by a latent issue with the cache servers, which led to them running out of memory: this in turn resulted in requests to IAM timing out. The problem was temporarily exacerbated in various regions by emergency rollouts performed to mitigate the high memory usage.

REMEDIATION AND PREVENTION

Once the scope of the issue became clear at 2020-03-26 16:35 US/Pacific, Google engineers quickly began looking for viable mitigations. At 17:05, an offsite job to build an updated cache was manually started. Additionally, at 17:34, cache servers were restarted with additional memory, along with a configuration change to allow temporarily serving stale data (a snapshot from before the problematic bulk update) while investigation continued; this mitigated the first impact window. A second window of impact began in other regions at 18:49. At 19:13, similar efforts to mitigate with additional memory began, which mitigated the second impact window by 19:42. Additional efforts to fix the stale data continued, and finally the latest offline backfill of IAM data was loaded into the cache servers. The remaining time was spent progressing through the backlog of changes, and live data was slowly re-enabled region-by-region to successfully mitigate the staleness globally at 2020-03-27 05:55.

Google is committed to quickly and continually improving our technology and operations to both prevent service disruptions, and to mitigate them quickly when they occur. In addition to ensuring that the cache servers can handle bulk updates of the kind which triggered this incident, efforts are underway to optimize the memory usage and protections on the cache servers, and allow emergency configuration changes without requiring restarts. To allow us to mitigate data staleness issues more quickly in future, we will also be sharding out the database batch processing to allow for parallelization and more frequent runs. We understand how important regional reliability is for our users and apologize for this incident.

DETAILED DESCRIPTION OF IMPACT

On Thursday 26 March, 2020 from 16:14 to Friday 27 March 2020, 06:20 US/Pacific, Cloud IAM experienced out of date (stale) data, which had varying degrees of impact as described in detail below. Additionally, multiple services experienced bursts of Cloud IAM errors. These spikes were clustered around 16:35 to 17:45, 18:45 to 19:00, and 19:20 to 19:40, however the precise timing for each Cloud region differed. Error rates reached up to 100% in the later two periods as mitigations propagated globally. As a result, many Cloud services experienced concurrent outages in multiple regions, and most regions experienced some impact. Even though error rates recovered after mitigations, Cloud IAM members from Google Groups [1] remained stale until the full incident had been resolved. The staleness varied in severity throughout the incident as new batch processes completed, with an approximate four hour delay at 16:14, up to a 9 hour delay at 21:13. Users directly granted IAM roles were not impacted by stale permissions.

[1] https://cloud.google.com/iam/docs/overview#google_group

Cloud IAM

Experienced delays mapping IAM roles from changes in Google Groups membership for users and Service Accounts, which resulted in serving stale permissions globally from 2020-03-26 16:15 to 2020-03-27 05:55. Permissions assigned to individual non-service account users were not affected.

App Engine (GAE)

Experienced elevated rates of deployment failures and increased timeouts on serving for apps with access control [2] from 16:22 to 2020-03-27 05:48 in the following regions: asia-east2, asia-northeast1, asia-south1, europe-west1, europe-west2, europe-west3, australia-southeast1, northamerica-northeast1, us-central1, us-east1, us-east4, and us-west2. Public apps did not have HTTP serving affected.

[2] <https://cloud.google.com/appengine/docs/standard/python3/access-control>

AI Platform Predictions

Experienced elevated error rates from 16:50 to 19:54 in the following regions: europe-west1, asia-northeast1, us-east4. The average error rate was <1% with a peak of 2.2% during the impact window.

AI Platform Notebooks

Experienced elevated error rates and failure creating new instances from 16:34 to 19:17 in the following regions: asia-east1, us-west1, us-east1.

Cloud Asset Inventory

Experienced elevated error rates globally from 17:00 to 19:56. The average error rate during the first spike from 16:50 to 17:42 was 5%, and 40% during the second spike from 19:34 to 19:43, with a peak of 45%.

Cloud Composer

Experienced elevated error rates for various API calls in all regions, with the following regions seeing up to a 100% error rate: asia-east2, europe-west1, us-west3. This primarily impacted environment creation, updates, and upgrades, and existing healthy environments should have been unaffected.

Cloud Console

Experienced elevated error rates loading various pages globally from 16:40 to 20:00. 4.2% of page views experienced degraded performance, with a spike between 16:40 to 18:00, and 18:50 to 20:00. Some pages may have seen up to 100% degraded page views depending on the service requested.

Cloud Dataproc

Experienced elevated cluster operation error rates from 16:30 to 19:45 in the following regions: asia-east, asia-east2, asia-northeast1, asia-northeast2, asia-northeast3, asia-south1, asia-southwest1, australia-southeast1, europe-north1, europe-west1, europe-west2, europe-west3, europe-west4, europe-west6, northamerica-northeast1, southamerica-east1, us-central1, us-east1, us-east4, us-west1, us-west2. The average and peak error rates were <1% in all regions.

Cloud Dataflow

Experienced elevated error rates creating new jobs between 16:34 and 19:43 in the following regions: asia-east1, asia-northeast1, europe-west1, europe-west2, europe-west3, europe-west4, us-central1, us-east4, us-west1. The error rate varied by region over the course of the incident, averaging 70%, with peaks of up to 100%. Existing jobs may have seen temporarily increased latency.

Cloud Data Fusion

Experienced elevated error rates creating new pipelines from 17:00 to 2020-03-27 07:00 in the following regions: asia-east1, asia-east2, asia-northeast1, asia-northeast2, asia-northeast3, asia-south1, asia-southeast1, australia-southeast1, europe-north1, europe-west1, europe-west2, europe-west3, europe-west4, europe-west6, northamerica-northeast1, southamerica-east1, us-central1, us-east1, us-east4, us-west1, and us-west2. 100% of create operations failed during the impact window.

Cloud Dialogflow

Experienced elevated API errors from 16:36 to 17:43 and from 19:36 to 19:43 globally. The error rate averaged 2.6%, with peaks of up to 12% during the impact window.

Cloud Filestore

Experienced elevated errors on instance operations from 16:44 to 17:53 in asia-east1, asia-east2, us-west1, from 18:45 to 19:10 in asia-northeast1, australia-southeast1, southamerica-east1, and from 19:30 to 19:45 in europe-west4, asia-east2, europe-north1, australia-southeast1, us-east4, and us-west1. Globally, projects which had recently activated the Filestore service were unable to create instances.

Cloud Firestore & Cloud Datastore

Experienced elevated error rates and increased request latency between 16:41 and 20:14. From 16:41 to 17:45 only europe-west1 and asia-east2 were impacted. On average, the availability of Firestore was 99.75% with a low of 97.3% at 19:38. Datastore had an average <0.1% of errors, with a peak error rate of 1% at 19:40. From 18:45 to 19:06 the following regions were impacted: asia-east2, asia-northeast1, asia-northeast2, asia-northeast3, asia-south1, australia-southeast1, europe-west1, europe-west2, europe-west4, europe-west5, europe-west6, northamerica-northeast1, southamerica-east1, us-central1, us-east4, us-west2, us-west3, and us-west4. Finally, from 19:27 to 20:15 all regions were impacted.

Cloud Functions

Experienced elevated rates of deployment failures and increased timeouts when serving functions with access control [3] from 16:22 to 20-03-27 05:48 in the following regions: asia-east2, europe-west1, europe-west2, europe-west3, asia-northeast1, europe-north1, and us-east4. Public services did not have HTTP serving affected.

[3] <https://cloud.google.com/functions/docs/concepts/iam>

Cloud Healthcare API

Experienced elevated error rates in the 'us' multi-region from 16:47 to 17:40, with a 12% average error rate, and a peak error rate of 25%.

Cloud KMS

Experienced elevated error rates from 16:30 to 17:46 in the following regions: asia, asia-east1, asia-east2, europe, europe-west1, us-west1, southamerica-east1, europe-west2, europe-north1, europe-west4, and us-east4. The average error rate during the impact window was 26%, with a peak of 36%.

Cloud Memorystore

Experienced failed instance operations from 16:44 to 17:53 in asia-east1, asia-east2, us-west1, from 18:45 to 19:10 in asia-northeast1, australia-southeast1, southamerica-east1, and from 19:30 to 19:45 in europe-west4, asia-east2, europe-north1, australia-southeast1, us-east4, us-west1. Globally, projects which had recently activated the Memorystore service were unable to create instances until 2020-03-27 06:00.

Cloud Monitoring

Experienced elevated error rates for the Dashboards and Accounts API endpoints from 16:35 to 19:42 in the following regions: asia-west1, asia-east1, europe-west1, us-central1, us-west1. Rates fluctuated by region throughout the duration of the incident, with an average of 15% for the Accounts API, and 30% for the Dashboards API, and a peak of 26% and 80% respectively. The asia-east1 region had the most significant impact.

Cloud Pub/Sub

Experienced elevated error rates in all regions from 16:30 to 19:46, with the most significant in europe-west1, asia-east1, asia-east2, and us-central1. Average error rates during each impact window was 30%, with a peak of 59% at 19:36. Operations had the following average error rates: Publish: 3.7%, StreamingPull: 1.9%, Pull: 1.4%.

Cloud Scheduler

Experienced elevated error rates in all regions from 16:42 to 17:42, and 18:47 to 19:42 with the most significant in asia-east2, europe-west1, and us-central1. The error rates varied across regions during the impact window with peaks of up to 100%.

Cloud Storage (GCS)

Experienced elevated error rates and timeouts for various API calls from 16:34 to 17:32 and 19:15 to 19:41. Per-region availability dropped as low as 91.4% for asia-east2, 98.55% for europe-west1, 99.04% for us-west1, 98.15% for the 'eu' multiregion, and 98.45% for the 'asia' multi-region. Additionally, errors in the Firebase Console were seen specifically for first-time Cloud Storage for Firebase users trying to create a project from 17:35 to 2020-03-27 08:18.

Cloud SQL

Experienced errors creating new instances globally from 2020-03-26 16:22 to 2020-03-27 06:05.

Cloud Spanner

Cloud Spanner instances experienced failures when managing or accessing databases from 17:03 to 20:40 in the following regions: regional-us-west1, regional-asia-east1, regional-asia-east2, regional-europe-west1, regional-asia-east2, eur3. The average error rate was 2.6% for all regions, with a peak of 33.3% in asia-east2.

Cloud Tasks

Experienced elevated error rates on new task creations in asia-east2, asia-northeast1, asia-northeast2, asia-northeast3, asia-south1, australia-southeast1, europe-west2, europe-west3, europe-west6, northamerica-northeast1, southamerica-east1, us-central1, us-east4, us-west2. Delivery of existing tasks were unaffected, but downstream services may have experienced other issues as documented.

Compute Engine (GCE)

Experienced elevated error rates on API operations, and elevated latency for disk snapshot creation from 19:35 to 19:43 in all regions. The average and peak error rate was 40% throughout the impact window.

Container Registry

Experienced elevated error rates on the Container Analysis API. Additionally, there was increased latency on Container Scanning and Continuous Analysis requests which took up to 1 hour. Continuous Analysis was also delayed.

Cloud Run

Experienced elevated rates of deployment failures and increased timeouts serving deployed services with access control [4] from 16:22 to 2020-03-27 05:48 in the following regions: asia-east1, asia-northeast1, europe-north1, europe-west1, europe-west4, us-east4, us-west1. Public services did not have HTTP serving affected. Newly created Cloud projects (with new IAM permissions) weren't able to complete service deployments because of stale IAM reads on the service account's permissions.

[4] <https://cloud.google.com/run/docs/securing/managing-access>

Data Catalog

Experienced elevated error rates on read & write APIs in the following regions: 'us' multi-region, 'eu' multi-region, asia-east1, asia-east2, asia-south1, asia-southeast1, australia-southeast1, europe-west1, europe-west4, us-central1, us-west1, and us-west2. The exact error rate percentages varied by API method and region, but ranged from 0% to 8%. Errors began at 16:30, saw an initial recovery at 17:50, and were fully resolved by 19:42.

Firebase ML Kit

Experienced elevated errors from 16:45 to 17:45 globally. The average error rate was 10% globally, with a peak of 14% globally. However, users located near the Pacific Northwest and Western Europe saw the most impact.

Google BigQuery

Experienced significantly elevated error rates across many API methods in all regions. The asia-east1 and asia-east2 regions were the most impacted with 100% of metadata dataset insertion operations failing. The following regions experienced multiple customers with error rates above 10%: asia-east1, asia-east2, asia-northeast1, australia-southeast1, 'eu' multi-region, europe-north1, europe-west2, europe-west3, us-east4, and us-west2. The first round of errors occurred between 16:42 and 17:42. The second round of errors occurred between 18:45 and 19:45 and experienced slightly higher average error rates than the first. The exact impact windows differed slightly between APIs.

Kubernetes Engine (GKE)

Experienced elevated errors on GKE API from 16:35 - 17:40 and 19:35 - 19:40 in the following regions: asia-east1, asia-east2, us-west1, and europe-west1. This mainly affected cluster operations including creation, listing, upgrades and nodes changes. Existing healthy clusters remained unaffected.

Secret Manager

Experienced elevated error rates from 16:44 to 17:43 on secrets stored globally, however the most impacted regions were in europe-west1, asia-east1, and us-west1, with an additional spike between 19:35 to 19:42. The average error rate was <1%, with a peak of 4.2%.










SLA CREDITS

If you believe your paid application experienced an SLA violation as a result of this incident, please populate the SLA credit request: https://support.google.com/cloud/contact/cloud_platform

A full list of all Google Cloud Platform Service Level Agreements can be found at <https://cloud.google.com/terms/sla/>.

For G Suite, please request an SLA credit through one of the Support channels: <https://support.google.com/a/answer/104721>

G Suite Service Level Agreement can be found at <https://suite.google.com/int/en/terms/sla.html>

 Mar 27, 2020	06:54	The issue with Google Cloud Infrastructure components has been resolved for all affected projects as of Friday, 2020-03-27 06:32 US/Pacific. We will publish an analysis of this incident once we have completed our internal investigation. We thank you for your patience while we've worked on resolving the issue.
 Mar 27, 2020	05:58	Description: The engineering team has tested a fix, which is being gradually rolled out to the affected services. Current data indicates that the issue has been resolved for the majority of users and we expect full resolution within the next hour (by 2020-03-27 07:00 US/Pacific). The estimate is tentative and is subject to change. We will provide an update by Friday, 2020-03-27 07:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigTable, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 27, 2020	03:44	Description: The engineering team has tested a fix, which is being gradually rolled out to the affected services. We expect full resolution within the next two hours (by 2020-03-27 06:00 US/Pacific). The estimate is tentative and is subject to change. We will provide an update by Friday, 2020-03-27 06:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 27, 2020	01:38	Description: The engineering team has tested a fix, which is being gradually rolled out to the affected services. We expect full resolution within the next three hours (by 2020-03-27 05:00 US/Pacific). The estimate is tentative and is subject to change. We will provide an update by Friday, 2020-03-27 05:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 26, 2020	23:55	Description: Mitigation work is still underway by our engineering team for a full resolution. The mitigation is expected to complete within the next few hours. We will provide an update by Friday, 2020-03-27 02:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 26, 2020	22:58	Description: Mitigation work is still underway by our engineering team for a full resolution. We will provide an update by Friday, 2020-03-27 00:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 26, 2020	22:01	Description: We believe the issue with Google Cloud infrastructure components is partially resolved. Restoration of IAM modifications to real-time is underway and Cloud IAM latency has decreased. We will provide an update by Thursday, 2020-03-26 23:00 US/Pacific with current details. Diagnosis: Affected customers may experience delayed IAM modifications that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Filestore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion, and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 26, 2020	20:36	Description: We believe the issue with Google Cloud infrastructure components is partially resolved. The mitigations have been rolled out globally, and the errors should have subsided for all affected users as of 2020-03-26 20:15. There remains a backlog of Cloud IAM modifications, which may still have increased latency before taking effect. We are currently working through the backlog to restore IAM applications to real-time. We will provide an update by Thursday, 2020-03-26 22:00 US/Pacific with current details. Diagnosis: Affected customers may experience elevated error rates that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, Data Catalog, Data Fusion and Cloud Console. Workaround: Retry failed requests with exponential backoff.
 Mar 26, 2020	19:05	Description: We believe the issue with Google Cloud infrastructure components is partially resolved. The following services have recovered at this time: App Engine, Cloud Functions, Cloud Run, BigQuery, Dataflow, Dialogflow, Cloud Console, Memorystore, Cloud Storage, Cloud Spanner, Cloud KMS, and Cloud Pub/Sub. New service accounts are failing to propagate which is manifesting as errors in downstream services. Services that may still be seeing impact include: Cloud SQL - New instance creation failing Cloud Composer - New Composer environments are failing to be created Cloud IAM - Significantly increased latency for changes to take effect We will provide an update by Thursday, 2020-03-26 21:00 US/Pacific with current details. Diagnosis: Affected customers may experience elevated error rates that surface across multiple Google Cloud Platform services. Currently known products that are impacted are: Dataflow, BigQuery, Dialogflow, Kubernetes Engine, Cloud Firestore, App Engine, Cloud Functions, Cloud Monitoring, Cloud Memorystore, Cloud Spanner, Cloud Storage, Cloud Composer, Cloud Dataproc, Cloud KMS, Cloud Container Registry, Compute Engine, Cloud IAM, Cloud SQL, Firebase Storage, Cloud Healthcare API, Cloud AI, Firebase Machine Learning, and Cloud Console. Workaround: None at this time.