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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 Compute Engine Incident #15056

Google Compute Engine Persistent Disk issue in europe-west1-b

Incident began at **2015-08-13 09:25** and ended at **2015-08-16 09:35** (all times are **US/Pacific**).

DATE	TIME	DESCRIPTION
 Aug 18, 2015	02:18	<p>SUMMARY:</p> <p>From Thursday 13 August 2015 to Monday 17 August 2015, errors occurred on a small proportion of Google Compute Engine persistent disks in the europe-west1-b zone. The affected disks sporadically returned I/O errors to their attached GCE instances, and also typically returned errors for management operations such as snapshot creation. In a very small fraction of cases (less than 0.000001% of PD space in europe-west1-b), there was permanent data loss.</p> <p>Google takes availability very seriously, and the durability of storage is our highest priority. We apologise to all our customers who were affected by this exceptional incident. We have conducted a thorough analysis of the issue, in which we identified several contributory factors across the full range of our hardware and software technology stack, and we are working to improve these to maximise the reliability of GCE's whole storage layer.</p> <p>DETAILED DESCRIPTION OF IMPACT:</p> <p>From 09:19 PDT on Thursday 13 August 2015, to Monday 17 August 2015, some Standard Persistent Disks in the europe-west1-b zone began to return sporadic I/O errors to their connected GCE instances. In total, approximately 5% of the Standard Persistent Disks in the zone experienced at least one I/O read or write failure during the course of the incident. Some management operations on the affected disks also failed, such as disk snapshot creation.</p> <p>From the start of the incident, the number of affected disks progressively declined as Google engineers carried out data recovery operations. By Monday 17 August, only a very small number of disks remained affected, totalling less than 0.000001% of the space of allocated persistent disks in europe-west1-b. In these cases, full recovery is not possible.</p> <p>The issue only affected Standard Persistent Disks that existed when the incident began at 09:19 PDT. There was no effect on Standard Persistent Disks created after 09:19. SSD Persistent Disks, disk snapshots, and Local SSDs were not affected by the incident. In particular, it was possible at all times to recreate new Persistent Disks from existing snapshots.</p> <p>ROOT CAUSE:</p> <p>At 09:19 PDT on Thursday 13 August 2015, four successive lightning strikes on the local utilities grid that powers our European datacenter caused a brief loss of power to storage systems which host disk capacity for GCE instances in the europe-west1-b zone. Although automatic auxiliary systems restored power quickly, and the storage systems are designed with battery backup, some recently written data was located on storage systems which were more susceptible to power failure from extended or repeated battery drain. In almost all cases the data was successfully committed to stable storage, although manual intervention was required in order to restore the systems to their normal serving state. However, in a very few cases, recent writes were unrecoverable, leading to permanent data loss on the Persistent Disk.</p> <p>This outage is wholly Google's responsibility. However, we would like to take this opportunity to highlight an important reminder for our customers: GCE instances and Persistent Disks within a zone exist in a single Google datacenter and are therefore unavoidably vulnerable to datacenter-scale disasters. Customers who need maximum availability should be prepared to switch their operations to another GCE zone. For maximum durability we recommend GCE snapshots and Google Cloud Storage as resilient, geographically replicated repositories for your data.</p> <p>REMEDIATION AND PREVENTION:</p> <p>Google has an ongoing program of upgrading to storage hardware that is less susceptible to the power failure mode that triggered this incident. Most Persistent Disk storage is already running on this hardware. Since the incident began, Google engineers have conducted a wide-ranging review across all layers of the datacenter technology stack, from electrical distribution systems through computing hardware to the software controlling the GCE persistent disk layer. Several opportunities have been identified to increase physical and procedural resilience, including:</p> <p>Continue to upgrade our hardware to improve cache data retention during transient power loss. Implement multiple orthogonal schemes to increase Persistent Disk data durability for greater resilience. Improve response procedures for system engineers during possible future incidents.</p>
 Aug 16, 2015	09:35	<p>At present, less than 0.05% of PD's are experiencing read failures in europe-west1-b. Neither restoring Persistent Disks from snapshots nor creating new Persistent Disks have been affected. If your PD is one of those 0.05% currently affected, you may restore it from a snapshot and continue using it at full availability.</p> <p>Given the low rate of read failures, this will be the final update for this incident. Instead, the Cloud Support team will be reaching out to affected customers within 3 business days. Please also feel free to proactively contact support for more information.</p> <p>We will conduct an internal investigation of this issue and make appropriate improvements to our systems to prevent or minimize future recurrence. We will provide a more detailed analysis of this incident once we have completed our internal investigation.</p>
 Aug 14, 2015	16:53	<p>At present, less than 0.05% of PD's are experiencing read failures in europe-west1-b. Neither restoring Persistent Disks from snapshots nor creating new Persistent Disks have been affected. If your PD is one of those 0.05% currently affected, you may restore it from a snapshot and continue using it at full availability.</p> <p>Given the low rate of read failures, we will be decreasing the velocity of updates. We will provide another status update on 17 August by 16:00 US/Pacific with current details. In addition, the Cloud Support team will be reaching out to affected customers within 3 business days. Please also feel free to proactively reach to Cloud Support for more information.</p>
 Aug 14, 2015	13:52	<p>We are still working on restoring the full service for every Google Compute Engine Persistent Disk in europe-west1-b. In terms of impact, less than 0.1% of Google Compute Engine Persistent Disks in that zone have been experiencing read failures on some of the blocks. Current data indicates than no more than 1% of PDs could be affected going forward.</p> <p>Neither restoring Persistent Disks from snapshots nor creating new Persistent Disks have been affected. If your PD is one of those 0.1% currently affected, you may restore it from a snapshot and continue using it at full availability.</p> <p>We will provide another status update by 16:00 US/Pacific with current details.</p>
 Aug 14, 2015	11:04	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by 16:00 US/Pacific with current details.</p>
 Aug 14, 2015	08:19	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by 11:00 US/Pacific with current details.</p>
 Aug 14, 2015	02:59	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by 08:00 US/Pacific with current details.</p>
 Aug 13, 2015	22:56	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by Aug 14 03:00 US/Pacific with current details.</p>
 Aug 13, 2015	18:57	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by 23:00 US/Pacific with current details.</p>
 Aug 13, 2015	15:06	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. We will provide another status update by 19:00 US/Pacific with current details.</p>
 Aug 13, 2015	13:00	<p>We are still working on restoring the service of Google Compute Engine Persistent Disks in europe-west1-b. Current data indicates that less than 1% of PDs in europe-west1-b are susceptible to degraded performance because of this issue. The service has been partially recovered.</p> <p>Meanwhile, affected customers can restore from snapshots as a workaround solution.</p> <p>We will provide another status update by 15:00 US/Pacific with current details.</p>
 Aug 13, 2015	12:00	<p>We are still actively working on mitigating the issue with Google Compute Engine Persistent Disks in europe-west1-b beginning at Thursday, 2015-08-13 09:25 US/Pacific.</p> <p>For everyone who is affected, we apologize for the impact to your systems. We will provide another status update by 13:00 US/Pacific with current details.</p>
 Aug 13, 2015	11:14	<p>We are experiencing an issue with Google Compute Engine Persistent Disks in europe-west1-b beginning at Thursday, 2015-08-13 09:25 US/Pacific. Customers who have machines running in this zone may see read errors.</p> <p>For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 12:00 US/Pacific with current details.</p>

