

Google Cloud Status Dashboard

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Google Cloud Networking Incident #17002

Issue with Cloud Network Load Balancers connectivity

Incident began at **2017-08-29 13:56** and ended at **2017-08-30 20:18** (all times are **US/Pacific**).

	DATE	TIME	DESCRIPTION
✔	Sep 05, 2017	17:16	<p>Revised Tuesday 05 September 2017 to clarify the impact and timing.</p> <p>ISSUE SUMMARY</p> <p>For portions of Tuesday 29 August and Wednesday 30 August 2017, some Google Compute Engine instances which were live migrated from one server to another stopped receiving network traffic from Google Cloud Network Load Balancers and Internal Load balancers. On average, less than 1% of GCE instances were affected by this behavior over the duration of the incident, and at its peak, 2% of instances were affected. For the 2% of instances which were ultimately affected, the mean duration of the impact was 9 hours and the maximum duration was 30 hours and 22 minutes. We apologize for the impact this had on your services. We are particularly cognizant of the unusual duration of the incident. We have completed an extensive postmortem to learn from the issue and improve Google Cloud Platform.</p> <p>DETAILED DESCRIPTION OF IMPACT</p> <p>Any GCE instance that was live-migrated between 13:56 PDT on Tuesday 29 August 2017 and 08:32 on Wednesday 30 August 2017 became unreachable via Google Cloud Network or Internal Load Balancing until between 08:56 and 14:18 (for regions other than us-central1) or 20:16 (for us-central1) on Wednesday. See https://goo.gl/NjqQ31 for a visual representation of the cumulative number of instances live-migrated over time.</p> <p>Our internal investigation shows that, at peak, 2% of GCE instances were affected by the issue.</p> <p>Instances which were not live-migrated during this period were not affected. In addition, instances that do not use Network Load Balancing or Internal Load Balancing were not affected. Related capabilities such as Google Cloud HTTP(S) Load Balancing, TCP and SSL Proxy Load Balancing and direct connectivity on instance internal and external IP addresses were unaffected.</p> <p>ROOT CAUSE</p> <p>Live-migration transfers a running VM from one host machine to another host machine within the same zone. All VM properties and attributes remain unchanged, including internal and external IP addresses, instance metadata, block storage data and volumes, OS and application state, network settings, network connections, and so on.</p> <p>In this case, a change in the internal representation of networking information in VM instances caused inconsistency between two values, both of which were supposed to hold the external and internal virtual IP addresses of load balancers. When an affected instance was live-migrated, the instance was deprogrammed from the load balancer because of the inconsistency. This made it impossible for load balancers that used the instance as backend to look up the destination IP address of the instance following its migration, so traffic destined for that instance was not forwarded from the load balancer.</p> <p>REMEDIATION AND PREVENTION</p> <p>At 08:32 Google engineers rolled back the triggering change, at which point no new live-migration would cause the issue. At 08:56 they then started a process which fixed all mismatched network information; this process completed at 14:18 except for us-central1 which took until 20:18.</p> <p>In order to prevent the issue from recurring, Google engineers are enhancing the automated canary testing that simulates live-migration events, increasing detection of load balancing packets loss, and enforcing more restrictions on new configuration changes deployment for internal representation changes.</p>
✔	Aug 30, 2017	20:18	<p>The issue with Network Load Balancers has been resolved for all affected projects as of 20:18 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.</p>
✖	Aug 30, 2017	19:18	<p>The issue with Network Load Balancers should be resolved for all regions except for < 10% of affected Network Load Balancers in us-central1. The last few will be resolved in the upcoming hours. We will provide another status update by 21:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	16:54	<p>The issue with Network Load Balancers should be resolved for all regions except for < 10% of affected Network Load Balancers in us-central1. The last few will be resolved in the upcoming hours. We will provide another status update by 19:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	15:58	<p>The issue with Network Load Balancers should be resolved for all regions except us-central1, for which repairs are almost complete. We expect a full resolution in the next hour, and will provide another status update by 17:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	14:35	<p>The issue with Network Load Balancers should be resolved for all regions except us-central1, for which repairs are ongoing. We expect a full resolution in the next few hours, and will provide another status update by 16:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	13:36	<p>The issue with Network Load Balancers should be resolved for all regions are fixed except for us-central1, us-east1, and europe-west1. Those 3 are underway. We expect a full resolution in the next few hours. We will provide another status update by 16:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	12:00	<p>We have identified all possibly affected instances and are currently testing the fix for these instances. We will be deploying the fix once it has been verified. No additional action is required. Performing the workaround mentioned previously will not cause any adverse effects.</p> <p>Next update at 14:00 US/Pacific</p>
✖	Aug 30, 2017	11:02	<p>We wanted to send another update with better formatting. We will provide more another update on resolving effected instances by 12 PDT.</p> <p>Affected customers can also mitigate their affected instances with the following procedure (which causes Network Load Balancer to be reprogrammed) using gcloud tool or via the Compute Engine API.</p> <p>NB: No modification to the existing load balancer configurations is necessary, but a temporary TargetPool needs to be created.</p> <p>Create a new TargetPool. Add the affected VMs in a region to the new TargetPool. Wait for the VMs to start working in their existing load balancer configuration. Delete the new TargetPool. DO NOT delete the existing load balancer config, including the old target pool. It is not necessary to create a new ForwardingRule.</p> <p>Example:</p> <pre>1) gcloud compute target-pools create dummy-pool --project=<your_project> --region=<region> 2) gcloud compute target-pools add-instances dummy-pool --instances=<instance1,instance2,...> --project=<your_project> --region=<region> --instances-zone=<zone> 3) (Wait) 4) gcloud compute target-pools delete dummy-pool --project=<your_project> --region=<region></pre>
✖	Aug 30, 2017	10:30	<p>Our first mitigation has completed at this point and no new instances should be effected. We are slowly going through an fixing affected customers. Affected customers can also mitigate their affected instances with the following procedure (which causes Network Load Balancer to be reprogrammed) using gcloud tool or via the Compute Engine API.</p> <p>NB: No modification to the existing load balancer configurations is necessary, but a temporary TargetPool needs to be created.</p> <p>Create a new TargetPool. Add the affected VMs in a region to the new TargetPool. Wait for the VMs to start working in their existing load balancer configuration. Delete the new TargetPool. DO NOT delete the existing load balancer config, including the old target pool. It is not necessary to create a new ForwardingRule.</p> <p>Example: gcloud compute target-pools create dummy-pool --project= --region= gcloud compute target-pools add-instances dummy-pool --instances= --project= --region= --instances-zone= (Wait) gcloud compute target-pools delete dummy-pool --project= --region=</p>
✖	Aug 30, 2017	09:30	<p>We are experiencing an issue with a subset of Network Load Balance. The configuration change to mitigate this issue has been rolled out and we are working on further measures to completely resolve the issue. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 10:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	09:00	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. The configuration change to mitigate this issue has been rolled out and we are working on further measures to completly resolve the issue. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 09:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	08:30	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. We have identified the event that triggers this issue and are rolling back a configuration change to mitigate this issue. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 09:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	08:00	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Mitigation work is still in progress. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 08:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	07:30	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Mitigation work is still in progress. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 08:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	07:00	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Our previous actions did not resolve the issue. We are pursuing alternative solutions. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 07:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	06:30	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Mitigation work is currently underway by our Engineering Team. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 07:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	06:00	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Our Engineering Team has determined the infrastructure component responsible for the issue and mitigation work is currently underway. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 06:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	05:30	<p>We are experiencing an issue with a subset of Network Load Balancer in regions us-east1, us-central1, europe-west1, asia-northeast1 and asia-east1 not being able to connect to backends. Our Engineering Team has reduced the scope of possible root causes and is still investigating. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 06:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	05:00	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. The investigation is still ongoing. For everyone who is affected, we apologize for any inconvenience you may be experiencing. IP will provide an update by 05:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	04:30	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. The investigation is still ongoing. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 05:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	04:00	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. We have ruled out several possible failure scenarios. The investigation is still ongoing. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 04:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	03:30	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 04:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	03:00	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 03:30 US/Pacific with current details.</p>
✖	Aug 30, 2017	02:30	<p>We are experiencing an intermittent issue with Network Load Balancer connectivity to their backends. For everyone who is affected, we apologize for any inconvenience you may be experiencing. We will provide an update by 03:00 US/Pacific with current details.</p>
✖	Aug 30, 2017	01:50	<p>We are investigating an issue with network load balancer connectivity. We will provide more information by 02:30 US/Pacific.</p>
✖	Aug 30, 2017	01:20	<p>We are investigating an issue with network connectivity. We will provide more information by 01:50 US/Pacific.</p>
✖	Aug 30, 2017	00:52	<p>We are investigating an issue with network connectivity. We will provide more information by 01:20 US/Pacific.</p>

