

Postini Incident Report

Service Disruption - October 13, 2009

Prepared for Postini Services Customers

Dear Postini Customer,

The following is the incident report for the issues with mail delivery and Administration Console access that some Postini customers experienced on October 13, 2009. We understand that this service disruption has affected our valued customers and their users, and we sincerely apologize for the impact.

Issue Summary

Beginning at approximately 10:25 PM PDT, Monday October 12 | 5:25 GMT, Tuesday October 13, affected customers experienced severe mail delays and disruption. Also, during this time, affected customers had intermittent access to the Administration Console, Message Center, and Search Console. The root cause of the delivery problem was an unintended side effect of a filter update, compounded by database issues that further slowed message processing.

Incoming messages may have been deferred; no messages were bounced from recipients or deleted. In some cases, sending servers may have stopped resending messages after a deferral and returned delivery failure notifications to senders. (Typically, servers are set up to retry sending for up to five days.)

During the incident, timely status information about the incident was not consistently available to customers. We posted information on the Support Portal and from the @GoogleAtWork Twitter account; however, customers often experienced problems accessing the portal due to load issues, and updates were not included on the Postini Help forum. Also, the Postini status traffic lights intermittently showed a "green light" instead of indicating the delivery delay. Customers calling in to report cases experienced very long wait times.

Actions and Root Cause Analysis

At approximately 11:30 PM PDT, Monday October 12 | 6:30 GMT, Tuesday October 13, monitoring systems detected severe mail flow issues and automatically directed mail flow to the secondary data center. Upon receiving the error alerts, the Engineering team immediately began analyzing the issue and initiated a series of actions to help alleviate the symptoms. Message processing continued to perform poorly in the secondary data center.

Mail traffic was then directed across both the primary and secondary data centers to maximize processing resources. During this time, Engineering temporarily disabled the Administration Console and other web interfaces to reduce impact to the processing infrastructure. Engineering performed a set of extensive diagnostics and tests and determined the cause to be the result of a combination of the following conditions:

- A new filter update appears to have inadvertently impacted the mail processing systems.
- Unusual malformed types of messages triggered protracted scanning behavior, and its interaction with filter update affected mail delivery.
- A power-related hardware failure with database storage servers reduced input/output rates. The latency in database access reduced our overall processing capacity.

The combination of these conditions resulted in high failure rates for mail processing and the deferral of new connections from sending mail servers.

To fix the database issue, Engineering worked with the hardware vendor to replace the faulty hardware component. At 11:00 PM PDT, October 13 | 6:00 GMT, October 14, database disk input/output throughput returned to normal.

At 12:30 AM PDT | 7:30 GMT Wednesday October 14, the filter update was revoked, and mail processing returned to full capability. As a precautionary measure, Engineering continued to process a portion of traffic through both the primary and secondary data centers. Mail processing was restored to the primary data center at 1:39 AM PDT | 8:39 GMT. Although mail processing was at normal speed and capacity, some users may have seen delayed messages continue to arrive in their inboxes. These potential delays occur when the initial or subsequent delivery attempt is deferred and the sending server waits up to 24 hours before resending the same message.

Corrective and Preventative Actions

The Engineering and Support teams conducted an internal review and analysis, and determined the following actions to help address the underlying causes of the issue and help prevent recurrence:

- Implement standard procedures for reverting filter updates as a mitigation measure and to help speed time to resolution.
- Perform an in-depth analysis of the filter update to help ensure this class of error is not propagated.
- Investigate the unusual malformed messages to quickly identify the message pattern and thoroughly understand any impacts.
- Enable monitoring for notifications of the class of power failure that may affect the database storage system.
- Determine whether the database storage servers can be configured to maintain the throughput level during reduced power situations.
- To improve communications during incidents, we will:
 - Post timely status updates to the Postini Help forum for better visibility.
 - Accelerate the work to monitor and communicate the Postini services status on the [Apps Status Dashboard](#). The dashboard offers a single location for the latest service status and options for RSS feeds. This will replace the traffic lights system and provide more accurate and in-depth information.
 - Moving forward, update the phone status message more quickly to inform customers during an incident.
 - Expand phone support capacity to handle spikes in call volume. This capacity is expected to be available within the next several weeks.
 - Update the maintenance pages with up-to-date information that are displayed when the Administration Console is unavailable.

Over the next several weeks, we are committed to implementing these improvements to the Postini message security service. We understand that system issues are inconvenient and frustrating for customers. One of Google's core values is to focus on the user, and we are committed to continually and quickly improving our technology and operational processes to help prevent and respond to any service disruptions.

We appreciate your patience and again apologize for the impact to your organization. Thank you for your business and continued support.

Sincerely,

The Postini Services Team