Post Incident Review Report
For
Office 365

Report Date: December 19, 2013

Report By: ICC

Incident Information

Important Note	This is a preliminary Post Incident Report (PIR) that is being delivered prior to full incident resolution to provide early insight into details of the issue. The information in this PIR are preliminary and subject to change. A final PIR will be provided in 5 business days from full event resolution and will supersede this document upon publication.
Incident ID	EX3944
Incident Title	Intermittent access issues to Exchange Online
Service(s) Impacted	Exchange Online / Outlook / Exchange Active Sync

Summary

On December 17, 2013, at 4:52 PM UTC, Microsoft identified an issue in which some customers served from the Americas region experienced intermittent access to the Exchange Online service, specifically with Outlook, Exchange Web Services (EWS), and Exchange Active Sync (EAS). Investigation determined that a network event caused some front-end client access servers to enter into a non-responsive state. Engineers redistributed network load to improve client health and implemented a permanent fix to restore service. The issue was resolved on December 17, 2013, at 8:40 PM UTC.

Timeline of events (UTC)

4:52 PM: Incident began.

5:29 PM: Engineers received multiple alerts for several network forests; they suspected a potential networking issue.

6:06 PM: Engineers determined that multiple load balancers across several data centers in the Americas caused the Outlook client, EWS, and EAS to become non-responsive. Microsoft Network engineers continued analysis by looking at network traffic and logs.

6:30 PM – Engineers discovered issues with the load balancers and a scenario in which engineers could improve service resiliency. A code update was developed in preventing a recurrence of the event.

6:45 PM – In an effort to mitigate impact, Engineers redistributed network load to improve service health across resources worldwide. Although the switch to backup resources took place quickly, recovery may have take longer, depending on cached sessions.

7:39 PM – 8:24 PM: Redistributing the server load made some improvements. Engineers begin slowly rolling out the patch to the Exchange environment.

8:25 PM: Some customers began to report that they were no longer able to reproduce the issue. Shortly afterward, a few customers reported that the issue had resolved.

8:40 PM: Incident declared resolved. Engineers continue to closely monitor service health for the next 24-hours.

Customer Impact

Some customers experienced intermittent access to Exchange Online when using Outlook, Exchange Web Services (EWS), and Exchange Active Sync (EAS).

Incident Start Date and Time

December 17, 2013, at 4:52 PM UTC

Date and Time Service was Restored

December 17, 2013, at 8:40 PM UTC

Root Cause

A major network fiber cut which occurred on circuits between two data centers affected Exchange authentication traffic. While the network recovered by design through re-convergence, the network event caused a storm of Exchange Online authentication requests to be resubmitted. This in turn caused a cascading failure across a subset of Client Access front-end servers distributed across multiple data centers. As a result of the Exchange Online client disconnects and subsequent reconnects, a bottleneck resulted in 503 service unavailable errors. In addition, a scenario was exposed from the bottleneck causing the Client Access front-end servers to repeatedly crash, further perpetuating the failure scenario until load was fully redistributed across the environment and a code update was deployed.

Next Steps

Issue	Finding/Action	Team Owner	Status
Some customers experienced intermittent access to Exchange Online when using Outlook, Exchange Web Services (EWS), or Exchange Active Sync (EAS).	**Finding(s):** A scenario was exposed from the bottleneck causing 503 service unavailable errors. **Action(s):** Deploy patch to the Exchange environment to improve service resiliency.	Microsoft Exchange Online Service Engineering	Complete
A scenario was exposed from the bottleneck causing 503 service unavailable errors.	**Action(s):** Include latest incident scenario into future test cases.	Microsoft Exchange Online Service Engineering	January 2014