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Facebook Suffers Self-Inflicted Outage

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On Tuesday morning, January 27, 2015, at 6:10 AM GMT (10:10 PM PST), Facebook went down for almost an hour. The outage also took down its photo-sharing site, Instagram. The outage affected 1.35 billion Facebook users and 300 million Instagram users worldwide.



The Facebook Outage

The Facebook outage was effectively global, affecting users in the U.S., the U.K., Europe, Asia, Australia, and New Zealand. This was its worst outage in four years.

During the outage, some visitors were greeted with the message “Sorry, something went wrong.” For others, the Facebook page simply would not load. During the hour-long outage, humans around the globe were forced to interact with each other in person.

The Facebook outage affected not only Facebook and Instagram but also other web sites that are linked to Facebook’s sign-on system. Impacted web sites included the dating site Tinder and the chat sites Hipchat and AIM (AOL’s instant messaging site).

Though Facebook posted on its developer website that its outage lasted an hour, many users reported that the site was loading slowly or not offering full functionality.

The Twitter-verse sprang into action with complaints about Facebook’s outages. The hashtag #facebookdown topped the trend on the Twitter site.

Initially, there was speculation that Facebook had been taken down by a DDoS attack. The hacker group Lizard Squad tweeted “Facebook, Instagram, Tinder, AIM, Hipchat #offline #LizardSquad.” The Lizard Squad is believed to have been behind the outages of Sony’s PlayStation Network and Microsoft’s Xbox over Christmas.

However, Facebook quickly announced that the outage was not due to hackers. It was due to its own maintenance errors. Facebook issued a statement saying that:

“This was not the result of a third-party attack but instead occurred after we introduced a change that affected our configuration systems.”

Déjà Vue?

The fact that Facebook attributed this outage to “a change that affected our configuration systems” is interestingly reminiscent of one of its most serious outages. This was an outage on September 23, 2010

that lasted for two-and-a-half hours. The outage was caused by an automated system that verified configuration values.

According to a Facebook blog posting, Facebook attributed the outage to an unfortunate handling of a new error condition. The intent of the automated system was to check for configuration values that were invalid in the cache and replace them with updated values from the persistent store. This worked well for cache errors, but did not catch errors in the persistent store.

On the day of the outage, Facebook administrators made an invalid change to a persistent copy of a configuration value in the persistent store. Every client saw the invalid value and attempted to fix it. However, the fix involved making a query to a database cluster, and the database cluster was quickly overwhelmed by thousands of queries per second.

To make matters worse, every time a client got an “invalid configuration error” from the database, it deleted the corresponding cache key. Consequently, even after the original problem had been fixed, the stream of queries continued. As long as the databases failed to service some requests, even more requests were being made. The system had entered a feedback loop that did not allow the databases to recover.

The fix turned out to be simple. The Facebook web site was simply taken down and rebooted. Once the databases had recovered and the root cause had been fixed, people were slowly allowed to come back onto the site.

Other Facebook Outages

Facebook has had its share of outages over the years:

- January 23, 2015: A 50 minute outage, the subject of this article.
- August 1, 2014: An outage due to a server error that affected sites that used its login system, lasting one hour and forty minutes.
- June 19, 2014: A thirty-one minutes outage due to an undisclosed problem.
- October 13, 2013: An problem during network maintenance that lasted more than four hours and prevented users from posting updates, causing problems for over 3,500 web sites.
- September 23, 2010: A two-and-a-half hour disruption described above.
- July 31, 2007: Site purposely taken offline to fix a bug.

The Huffington Post has published a more inclusive list of Facebook outages and selected tweets complaining of outages, many of them quite short in time.¹

Summary

According to one security expert,

“Perhaps one of the most extraordinary aspects of this 40-minute outage is the panic it appeared to have caused amongst its users. Other social media were almost immediately full of users openly wondering how they would manage without access to Facebook. It is almost as if social media has become a part of our critical infrastructure, but hopefully people will realize that it is just a social network.”

¹ Facebook Down, *Huffington Post*: <http://www.huffingtonpost.com/news/facebook-down/>.

It is amazing how much social media has taken over our lives. However, as important as Facebook may be to the well-being of many of us, it is only fair to point out that, according to the downtime statistics, Facebook has achieved an availability in excess of four 9s for most of the years of its existence. This is an admirable record for a major web site.

Acknowledgements

Information for this article was taken from the following sources:

Facebook outage: It was us, not hackers, says Facebook, *ZDNet*; January 27, 2015.

Facebook, Instagram briefly go down: Twitter freaks out, *CNN*; January 27, 2015.

Facebook goes down, denies cyberattack, *CNBC*; January 27, 2015.

Facebook Suffers Self-Inflicted Outage, *NPR*; January 27, 2015.

Is Facebook down? A history of outages, *The Guardian*; January 27, 2015.

Facebook, Instagram Suffer Widespread Outage Overnight; Tinder, Hipchat also go down, *Huffington Post*; January 27, 2015.

Facebook Down, *Huffington Post*; undated.

More Details on Today's Outage, *Facebook*; September 23, 2010.