

Noteworthy post-mortems

Tomasz Nowak (my slides)



<https://github.com/danluu/post-mortems>



Allegro, 31.08.2018
<https://shorturl.at/dMY01>

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- ▶ “we plan to introduce a mechanism which will be able to tell backend services to generate simplified, cacheable responses”
- ▶ “the traffic which brought us down, was in large part bots rather than human users”



CloudFlare, 03.03.2013
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- ▶ “many of the routers crashed in such a way that they did not reboot automatically and we were not able to access the routers’ management ports. Even though some data centers came back online initially, they fell back over again because all the traffic across our entire network hit them and overloaded their resources.”



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- ▶ “ask them to physically access the routers and perform a hard reboot”



CloudFlare, 21.06.2022

<https://shorturl.at/aELM1>

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- ▶ Fix was “delayed as network engineers walked over each other's changes, reverting the previous reverts, causing the problem to re-appear sporadically.”



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- ▶ Dips in power usage in the range of tens of megawatts.



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<https://shorturl.at/tDZ02>

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- ▶ It looped the code, which disabled network communication, as all communication goes through one socket thread.



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- ▶ The same system later automatically generated a new correct configuration and began sending it, issue resolved.



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- ▶ Server failed health check, automatic reboot. Clients got errors.



OWASA water treatment plant, 10.02.2017

<https://shorturl.at/ptvW9>

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- ▶ “The water main break may have been the result of the pipe bending because of pressure and settling.”
- ▶ “The break leaked about 1.2 million gallons of water, causing pressure in the system to plummet. As a result, customers were ordered not to use or drink their water because low flow can allow bacteria to grow in pipes.”



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- ▶ Easy one minute fix, just rollback deployment.



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- ▶ A bug appeared, AWS load balancing filled up event queue, clients also did a lot of requests for new instances. Events fell behind.
- ▶ Another bug appeared and some "Multi Availability Zones" didn't change the main databases from the faulty datacenter to the backup ones. It triggered a failsafe, required manual intervention.



ARPANET, 27.10.1980

<https://shorturl.at/eBFM3>

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- ▶ Incorrect sequence numbers caused packets to be sent in a loop and router buffers began to fill.



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- ▶ One IMP flipped some bits in routing data.
- ▶ There were checksum, but they were only checked periodically for software efficiency.
- ▶ Incorrect sequence numbers caused packets to be sent in a loop and router buffers began to fill.
- ▶ Full buffers caused loss of keepalive packets and nodes took themselves off the network.



FirstEnergy / General Electric, 14.08.2003

<https://shorturl.at/mxzRY>

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- ▶ Blackout, 55 million people affected for 2h-4 days, including NYC.



JaneStreet, REDACTED
<https://example.com>

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EVE Online, 5.12.2007

<https://shorturl.at/cehoU>

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- ▶ It passed tests, as Windows recovers when it's on the first partition of the boot drive (and fails to recover otherwise), the testing env was always the same.



GitHub, 21.10.2018

<https://shorturl.at/hioBN>

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- ▶ 24 hours of degradation.



Knight Capital, 1.08.2012

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- ▶ No kill switch, 20 minutes of looking at what is wrong, they reverted to old code, now 8 out of 8 servers were "bad".
- ▶ 45 minutes running, long on 80 stocks, 3.5 billion dollars, short 3.15 billion dollars.



Microsoft, 29.02.2012

<https://shorturl.at/rBTY7>

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- ▶ Outage that lasted for most of a day.



Linux, 7.01.2012
<https://shorturl.at/gxyC5>

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- ▶ Not done through `hrtimer base.offset`, thus `TIMER_ABSTIME` `CLOCK_REALTIME` timers got expired one second early, including timers set for less than one second.
- ▶ This caused applications that used `sleep` for less than one second in a loop to spinwait without sleeping, causing high load on many systems. This caused a large number of web services to go down in 2012.



European Space Agency, 4.06.1996

<https://shorturl.at/adlm7>

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- ▶ This led to a cascade of problems, culminating in destruction of the entire flight.



Valve, 14.01.2015

<https://shorturl.at/beauG7>

```
▶ STEAMROOT="$(cd "$0%/*"&& echo $PWD)"  
# Scary!  
rm -rf "$STEAMROOT/*"
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`rm -rf "$STEAMROOT/*"`
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- ▶ After this blew up on social media, there were widespread reports that this was reported to Valve months earlier. But Valve doesn't triage most bugs, resulting in an extremely long time-to-mitigate, despite having multiple bug reports on this issue.

Thanks!

Tomasz Nowak



<https://github.com/danluu/post-mortems>