

Post-mortem: CrankWheel authentication outage

November 28 2018

Summary

The CrankWheel service was inaccessible to a large majority of users for a period of roughly 2 hours on November 28th, 2018.

The root cause was quickly identified as an outage with our 3rd party authentication provider, Auth0.

The outage prevented users from logging in. It also prevented users from screen sharing, because validity of user authentication is checked at each screen share. It did not prevent Instant Demos lead capture from happening, but agents were not be able to respond to Instant Demos requests live.

When the outage had lasted one hour, work started on a backup plan intended to restore service within no more than 12 hours. Fortunately, our 3rd party provider was able to restore service much more quickly than that.

Service has been stable since the incident, and we are taking steps to ensure a similar problem cannot reoccur, see below.

Full timeline

All times are in UTC.

November 28th, 2018:

- 15:13 Our authentication provider identified an issue with elevated error rates and response times. There was no reported impact on the CrankWheel service at this point.
- 16:35 Per our authentication provider, "The issue has been identified and a fix is being implemented."
- 16:46 We received the first report of inability to log in or perform screen sharing sessions from a CrankWheel user, followed by several more reports during the next half hour.
- 16:56 Our 3rd party provider posts that "Response times are slowly normalizing and errors are going down" and that a fix is being worked on.

- 17:02 Our team completed a root cause analysis and started notifying affected customers of the cause and the status of our 3rd party provider. An urgent ticket was raised with our 3rd party provider requesting a timeline for their fix.
- 17:58 Our team started work on a contingency plan that we expected would allow us to restore service in no more than 12 hours independent of our 3rd party provider, through an emergency update of our service. We notified affected customers of this plan.
- 18:40 Our testing indicated that authentication and screen sharing were working again. We also heard confirmation from a few customers in the next several minutes.
- 19:11 Our provider confirmed that their fix seemed to be working and they would continue to monitor. We called off our plans for an emergency update before start of business the day after, but continued to prepare the necessary product changes in case they turn out to be needed.
- 20:52 An initial root cause analysis was published by our 3rd party provider, confirming that the worst period of the problem was from 16:30 to 18:35, or a period of 2 hours and 5 minutes. We believe this is also the period during which the CrankWheel service was affected.
- 23:30 Active monitoring ongoing. Everything quiet.

November 29th:

- 07:00 Everything still quiet, active monitoring ongoing.
- 09:00 As everything remains quiet, we started work on this post-mortem. We continue to monitor and remain on high alert to customer support tickets.

Mitigating actions

Short Term

Fortunately, our authentication provider is back up and running and claims to have achieved stable operations. However, we are continuing the work we started yesterday to ensure that we have a contingency plan in place. This work will bring the full recovery time in case of another outage down to less than 3 hours. It won't be pretty, but it would work.

One learning from the incident is that a specific uptime monitor for authentication attempts would have alerted us to the problems perhaps 10-15 minutes earlier. We will put automated monitoring in place for authentication as quickly as possible. Until we do, we will actively monitor manually.

Medium Term

In the slightly longer medium term, we will fully implement our own passwordless authentication and remove our dependence on the 3rd party provider. We will take a bit of time to do this so that we can migrate your accounts in a graceful manner where all your settings such as your photo and phone conferencing information will be preserved. We expect to roll this out mid-January.

We will also audit our dependence on other 3rd party services with an eye to allowing the CrankWheel service to survive any 3rd party outage apart from a full outage of our hosting provider, Amazon Web Services, where we already employ hot database fail-over, image backups and elastic IP addresses to allow quick recovery of our service in case of a full datacenter outage.