



## 2021-04-20 - US-1 Full Service Disruption

### Summary Root Cause Analysis (RCA)

On April 20th, 2021, our US-1 Production and Preview environments had a full service disruption. This outage was due purely to performance degradation on our internal platform systems, was not the result of any third party service, and did not result in any data leakage. After investigation, we are confident that the disruption was not caused by, and did not result in a security compromise.

Details on a per-service basis are below. All times in UTC.

| <b>Service</b>  | <b>Start</b> | <b>End</b> |
|---|--------------|------------|
| US-1 Production   | 15:27        | 19:47      |
| US-1 Preview  | 15:27        | 20:04      |
| All Regions - Degraded Management Dashboard & APIv2 performance | 15:27        | 18:18      |
| All Regions - Management Dashboard & APIv2 disruption           | 18:18        | 20:04      |
| Support Center  | 15:27        | 19:47      |
| Status.auth0.com  | 15:48        | 16:50      |
| US-1 User Import/Export   | 15:27        | 23:25      |
| US-1 Search v3  | 15:27        | 23:25      |

This disruption had multiple compounding factors; we will provide more information in a subsequent more detailed RCA, which we expect to provide by April 29th, 2021 or sooner. Our early assessment is that the primary cause was one of our scans of larger than average collections resulted in long run times and database locks. The long run times caused a cascading failure by preventing other queries from completing, leading to retries from the calling services. These retries further increased load and prevented the system from recovering.

Our incident response team declared a service disruption at 15:30 and focused on reducing the load on the database. The team took a variety of actions before we started to see improvement. These actions will be included in our forthcoming detailed RCA.



Starting at 19:36, we began to see improvements and receive reports of some successful logins, though latency was still high. Core user authentication services were fully functioning at 19:47 for our Production environment, and at 20:04 for our Preview environment. We continued to monitor the situation and gradually returned non-critical services to service. We treated the incident as resolved when all services were running again at 23:25.

Separately, our status page was unavailable from 15:48 to 16:50. The high amount of traffic resulted in us being rate limited by our provider and caused users to receive errors attempting to reach it.

## Mitigation Actions

We understand the severity of this incident and how frustrating it was for our customers. We recognize that our service can be critical to many of our customers' operations and we deeply apologize for the impact it had on you and your users.

The service is currently stable. We have already taken the following actions to mitigate issues that were experienced during the service disruption.

- Implemented an initial fix for the most concerning query
- Increased database capacity
- Collaborated with the licensor of our database software to obtain their detailed analysis of performance during this event. (This software runs in an Auth0 environment - data is not processed by the database licensor.)
- Implemented additional monitoring of system performance

We continue to investigate further actions we can take to prevent a recurrence of this or similar disruptions. Our detailed RCA will include a more exhaustive list of these actions, including:

- Work with the licensor of our database software to identify performance and resilience optimization measures
- Identify and address other potentially high-impacting queries
- Accelerate planned roadmap activities to improve database performance
- Ensure our status page remains resilient to high traffic during service disruptions
- Increase the level of detail and provide more transparency in our incident status postings

We expect to provide our detailed RCA for this incident by 5:00pm PDT (24:00 UTC) on April 29th, 2021, or sooner.