



Root Cause Analysis

Incident name:	incapdns.net DNSKEY record expiry
Incident time:	March 10 th 2021 00:00 UTC
Impact:	DNS resolution failures
Status:	Resolved
Technical Contact:	Imperva Global Support

Incident Overview

On March 10th, 2021 00:00 UTC, an expired cryptographic signature (RRSIG) of a DNSKEY record for the `incapdns.net` domain resulted in DNS resolution failures for specific DNS providers validating DNSSEC. For context, `incapdns.net` allocates a unique hostname (e.g., `mysite.incapdns.net`) for every website visitor, making sure each visitor is served by the closest Imperva data center.

As an intermediate mitigation step, DNSSEC was temporarily disabled to restore DNS resolution for impacted customers.

A subset of the impacted customers continued to report DNS resolution challenges due to DNS provider caching. In certain instances, some DNS providers cached Imperva DNS records abnormally longer than the specified time-to-live (TTL). Imperva proactively engaged with Internet Service Providers across the globe to flush their DNS caches for the specific record.

Ultimately, DNSSEC was re-enabled for all customers by updating and testing the DNSKEY record.

By re-enabling DNSSEC with an updated record, all customer issues related to resolution failures were resolved. No additional work was required to flush DNS caches across Internet Service Providers.

Incident Timeline (UTC) - March 10th, 2021

Time (UTC)	Summary
00:00	RRSIG of <code>incapdns.net</code> DNSKEY expired
00:33	Initial DNS resolution failures reported; investigation began
02:14	Temporarily disabled DNSSEC to restore DNS resolution
11:07	Initiated the validation process with updated DNSKEY (includes provisioning, testing, and production rollout)
12:40	DNSSEC re-enabled; Status update resolution: https://status.imperva.com/incidents/3hpgnz9lg447

Imperva Global Support

US +1 855 574 9831 ■ IL +972 3 978 6970 ■ SG +65 3158 4244 ■ JP +81 3 4510 8992
AU +61 2 8294 5141 ■ GB +44 808 164 9269 ■ IN +000 800 100 7025

Root Cause

- An expired cryptographic signature (RRSIG) of a DNSKEY record expired on March 10th, 00:00 UTC, causing DNS resolution failures for incapdns.net.
-

Mitigation

- Disabled DNSSEC on incapdns.net domain
 - Uploaded an updated DNSKEY record
 - Re-enabled DNSSEC
-

Preventative Measures

- Enhance existing monitoring, alerting and process for maintaining DNSKEY records
- Automate key rotation practice to remove reliance on manual rotation
- Perform an end to end review of existing DNSSEC monitoring

Imperva Global Support

US +1 855 574 9831 ■ **IL** +972 3 978 6970 ■ **SG** +65 3158 4244 ■ **JP** +81 3 4510 8992
AU +61 2 8294 5141 ■ **GB** +44 808 164 9269 ■ **IN** +000 800 100 7025