

# **DNSSEC SIGNATURES EXPIRATION ON TWO SECOND-LEVEL DOMAINS 22.06.2025 Incident report**

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## DNSSEC signatures expiration on two second-level domains 22.06.2025 [Incident report]

### 1. Executive summary

An operational error caused DNSSEC signatures of the "restena.lu" and "lu-cix.lu" zones to progressively expire between 15.06.2025 and 22.06.2025. Consequently, services relying on those domain names might have gradually become unavailable to users behind validating DNS resolver, once the cache of those resolvers expired. This particularly affected Restena mail service on 22.06.2025 between 06:33 CEST and 18:50 CEST. At that time, both zones were properly re-signed and their DNSSEC signatures updated, solving the issue.

Other Restena services, the .LU registry infrastructure, the .LU zone and any other .LU domain name were not affected by this problem.

### 2. Description of incident

On **30.05.2025**, preparatory work for a software upgrade caused our DNSSEC-signing software to be incorrectly linked to an older version of a software library, not able to sign some recently introduced DNS record types.

On **15.06.2025 at 11:58 CEST**, when the DNSSEC-signing software was restarted for operational purpose, it stopped signing "restena.lu" and "lu-cix.lu", the only two zones containing those recently introduced DNS record types. As signature refresh only happens every two hours, this issue did not manifest while proper functioning was assessed after the software restart.

DNSSEC-signatures on both zones having a minimum lifetime of five days, they started to expire in a scattered manner from **20.06.2025**, with an operational impact depending on the usage of the associated DNS record that went first unnoticed.

On **22.06.2025 at 06:33 CEST**, DNSSEC-signature expiration started to affect the proper functioning of our e-mail service. Other Restena services like our network backbone, hosting, eduroam and the .LU infrastructure do not rely on working DNS resolution of the "restena.lu" or the "lu-cix.lu" domains for their core services and were not affected.

On **22.06.2025 at 18:50 CEST**, problematic DNS record types were removed from "restena.lu" and "lu-cix.lu" as an emergency measure and both zones were successfully re-signed, solving the underlying issue. At that time, 360/1369 (26.3%) signatures were expired on "restena.lu" and 102/305 (33.4%) on "lu-cix.lu".

On **24.06.2025**, the root cause of the issue was identified, the DNSSEC-signing software was linked to the correct version of the offending software library, and all DNS record types were re-introduced in "restena.lu" and "lu-cix.lu", restoring complete service.

### 3. Aftermath

While the .LU zone is closely monitored for DNSSEC-signature expiration, this was not the case for other domains used in the Restena infrastructure. Because of this incident, DNSSEC-signature expiration monitoring was added for those domains.