GleSYS

Falkenberg 2021-04-22

INCIDENT REPORT REGARDING OUR RECURSIVE DNS CLUSTER OUTAGE

This document contains the background, remediation actions, root cause analysis and upcoming improvements regarding the GleSYS Resolver Cluster.

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BACKGROUND

As a part of our offering we provide a recursive DNS service. It's a key service when providing network services to assure that domain names can be resolved to clients within the GleSYS Network. It's commonly used, (but not mandatory) by customers connected to our network service.

Our cluster is built with a total of 10 nodes, located at different sites and they all use anycast IP addressing to provide a broad form of redundancy. The service is built in this way to be resilient to different types of outages. It also provides us with the possibility to make maintenance on different parts of the cluster without any noticeable effects on the service.

RFO

During maintenance we upgraded the cluster with a new software version of Exabgp. The new version introduced a new behavior when announcing health checks. This caused a buffer to become full and block access to the application after x numbers of checks, causing Exabgp to stop announcing IP addresses on the affected node. Since our monitoring system was not set up to identify a problem like this, we were not notified.

It took about 6 hours for the buffer to become full, and it happened to all the upgraded nodes, without our knowledge.

When the last node hit the buffer limit, the recursive DNS cluster service went down.

The actual reason for this outage is that our monitoring system was misconfigured and we were not able to identify the problem and alert us in time to mitigate and prevent all nodes from reaching the buffer limit..

SEQUENCE OF EVENTS (CEST)

2021-04-21 10:34
First node in the cluster was upgraded and put into service.

2021-04-21 16:32
Last node was upgraded and put back into service, all systems reported ok and were serving DNS queries as expected.

2021-04-21 22:33
The first entry in our logs where we could see that the DNS cluster was unreachable.

2021-04-21 22:45
On-call technician start to troubleshoot after receiving an automated alarm.

2021-04-21 22:55
DNS Cluster expert joins troubleshooting.

2021-04-21 22:59
Service restored after restarting Exabgp service.

2021-04-21 23:10
Initiative for initial report on status.glesys.com were started, but was first posted later due to uncertainty about the status of the problem.

2021-04-21 23:23
Issue posted at Statuspage with status Identified.

2021-04-21 23:36
Statuspage was updated with status Monitoring.

2021-04-22 00:00
Permanent solution to Exabgp implemented.

2021-04-22 00:45
RFO identified and solution implemented together with new monitoring policy.

2021-04-22 07:14
Statuspage was updated to Resolved.

2021-04-22 14:00
Incident report published.

CONCLUSIONS SO FAR

GleSYS recursive DNS service should be one of the most resilient services we provide and we have put a great amount of effort into keeping incidents like this from happening. Making sure it does not happen again is a top priority.

During this incident we did not follow protocol in terms of notifying affected customers. Both when it comes to the time to first announcement on Statuspage, but also where we did not notify via mail. This has proven to be a problem as serious as the incident itself, causing our customers a lot of extra work and headaches. This is something we need to improve a lot going forward.

We have taken the following actions:

- Updated the way we handle health checks together with Exabgp.
- Updated and verified the monitoring system to be able to alert us in time if something similar happens again.

We will take the following actions:

- Create a better process where we verify and test our monitoring system.
- Create a better process when incidents occur to ensure that we can reach our customers with accurate information.

We would like to profusely apologise for your problems and extra work caused by the disruption. And finally, we are grateful for the support and the patience many of you have shown us.

If you as a customer have any questions or comments regarding this incident, feel free to contact us at support@glesys.se.

Sincerely,

Stefan de Vries, Head of Operations
GleSYS AB

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