

# SARA Service Incident Report, network outage june 30st 2016

## Description

All the core network routers and firewalls are redundant in hardware and must guarantee a continuous access to the internet. As part of our regular tests, we reloaded the primary and secondary core network routers on thursday june 30st 2016 with success. We proceeded to test the firewalls and we faced a series of unexpected hardware and configuration problems with the core network routers and two of our four firewall systems, causing the connection of SARA services to internal and external networks to drop out. After one day of extensive troubleshooting network connectivity was restored at Friday July 1, 16:30.

## Impact

During a period of 26 hours SARA did not have a connection to the outside world. The services kept running but data transfers were not possible and jobs needing an external network connection suffered from this issue.

## Timeline

|  |                                |
|--|--------------------------------|
| Planned redundancy test  | Thursday june 30st 13:00-14:00 |
| First sign of problems   | Thursday june 30st 14:30       |
| Start troubleshooting together with engineers of the vendors of the routers and firewalls. | Thursday june 30st 14:30.      |
| Network connection to internal services restored   | Friday july 1st 0:10           |
| All network connectivity restored  | Friday july 1st, 16:30         |

## Followup Actions

Faulty hardware has been replaced. The occurrence of two combined hardware issues has intensified and prolonged the impact of the issue and this was not possible to foresee. Nevertheless, we find it necessary to review the interdependencies of services again and to

improve our incident management procedures. We also want to review the frequency of our failover tests.

## Summary

Faulty hardware in one of our external firewalls forced a fail over to the standby firewall. This has exposed a routing issue in one of the core routers. This combined problem has led to a downtime of 26 hours: from Thursday June 30, 14:30 to Friday July 1, 16:30.

Although the information below is not confirmed yet by our vendors, we note that we suffered from two hardware issues on June 30st 2016.

1. A disk failure in a redundant firewall cluster, caused us to fail over to the standby firewall, while the standby firewall was not fully in sync, due to this hardware issue. Later debugging with the vendor confirmed that this is a hardware failure.
2. The forwarding table (in hardware) in one of the two routers was not in sync with the routing table (in software), for reasons that are unknown. In normal operations, the network operating system should ensure proper synchronisation. The vendor was not able to identify this as a known issue but this will be investigated further.

Both issues caused the fact that both internal and external network connectivity was lost.