

NETWORK INCIDENT REPORT – 06-08-2019

Summary

A human error causes an incorrect configuration change on all switches in the BIT network. As a result most of the services are unavailable for a considerable amount of time.

Details

- 16:21 An adjustment is made on the switches to add an extra VLAN on a number of switches. Adjustments like these are automatically rolled out over the switches using Ansible scripts. This adjustment is executed in two parts. The first script ensures that the VLAN is added to the interfaces. This change is successfully implemented without affecting the availability of the network.
- 16:47 The second script will add the VLAN to the BGP configuration of the switches. This change is done with the parameter "check" (dry run) turned on. The engineer performing the change does not notice that other unwanted changes will be rolled out on the switches.
- 16:55 The second change is being implemented. A large part of the network becomes unreachable as a consequence of executing the second script. It becomes clear straight away that there are problems with the network. It is not immediately clear to the engineers that the cause is the change on the switches.
- 16:59 The first customer contacts us by telephone to ask if there are any problems.
- 17:02 The incident is reported on www.bit.org.
- 17:05 The engineers' first suspicions about the cause of the problems are incorrect. The scope of the network failure becomes clear. This provides further information about the cause of the problems.
- 17:15 It turns out to be impossible to connect to the switches via the Out-Of-Band (OOB) facilities. The cause of this was a recent change in the office network after which this problem has gone unnoticed.
- 17:32 A login is made directly to individual switches. Checking the configuration it becomes clear that the forwarding tables of the switches don't accept MAC and IP addresses due to strict filters (blank whitelist). The script that was run at 16:55 modified these filters.
- 17:38 The process of replacing the last known correct configuration of the switches has begun. This rollback has to be performed in part per switch individually.
- 17:56 The rollbacks ensure that the switches on which the rollback was not performed yet, are again accessible via the network. The rollback for the remaining switches are pushed remotely.
- 18:12 The rollback on all switches has completed. As a result the network is fully operational again. Most services have been restored, with a few exceptions. Engineers check these services one by one and restore them where necessary.
- 18:19 The incident is reported as resolved on www.bit.org. Customers with whom this was agreed, are called back to report the incident has been resolved and to ask if their services are back online.
- 19:57 Webmail.bit.nl is back online.
- 20:30 The Windows shared hosting platform and the MS-SQL service are back online.

Conclusion

For a routine adjustment on all switches, a wrong parameter is given to the script that automatically rolls out the change. This wrong parameter causes overly strict filtering to be rolled out on the switches. During the check prior to the actual rollout, the application of the strict filtering has gone unnoticed.

A recent change in the office network has made it impossible to access the OOB facility. This problem has since gone unnoticed. This caused a delay in solving the disturbance.

Points of improvement

In order to minimize the chance of a recurrence of a similar disturbance and the impact thereof, a number of measures will be taken:

- OOB access will be included in continuous monitoring, which will immediately report unavailability of the facility.
- The possibility to configure the switches without BGP filtering will be investigated.
- The BGP script is adjusted to ensure:
 - the script can no longer be run with the wrong parameters;
 - the script limits BGP changes, during office hours, to additions;
 - a limited number of simultaneous changes to the configuration are accepted.

Contact

If you have any questions regarding this report, please contact our Customer Care department via 0318 648 688 or support@bit.nl.