

Service Disruption Report

Date: 10th Sept 2016 09:30 and 20th Sept 12:49

Service Affected: Network Services terminating in our Ball Green Data Centres



Incident

At around 9:30 on the morning of 10th September 2016, M247 network monitoring detected a loss in reachability to a number of network services located in M247's Manchester datacentres. Engineers immediately began investigating the incident and it was identified to be a result of instability of a major backbone router known as 'core-dc1'.

A similar incident reoccurred at 12:49 on 20th September.

The instability issues exhibited by 'core-dc1' were identified as being related to memory problems - specially believed to be either memory hardware errors or memory exhaustion. 'core-dc1' had been the subject of a planned IOS software update overnight the previous day. Prior to the software update, 'core-dc1' had been running continuously without issue for over 4 years and no hardware changes were made as part of the software update. Therefore, it was determined that the most likely cause of the memory issues was exhaustion as a result of a potential bug in the new IOS software version rather than hardware problems. Having been unable to determine the precise cause of the memory exhaustion, the decision was taken to 'roll-back' to the software version in place prior to the update maintenance on Friday night.

Engineers rolled back the IOS software version on 'core-dc1' and the device became stable again shortly after 10.30am on 10th Sept, suggesting an issue with the new software loaded on Friday night.

The 'core-dc1' router remained stable until M247 monitoring detected problems again at approximately 12:49 on 20th September, similarly relating to memory issues. The decision was taken to perform an emergency memory hardware swap and upgrade whilst the router was experiencing difficulties, in order to reduce the need for more customer impact going forwards. This device has remained stable since.

We are continuing to monitor very closely, but are confident these issues are now resolved.

Customer Effects

For of the majority of customers affected by this incident, intermittent instability in the form of packet-loss and route flapping will have been experienced whilst the network was in an unstable state. A number of customers will have experienced a full outage during this time. Customers on the legacy BG1/BG2 segment of the network (currently being decommissioned) were particularly badly affected but a small number of customers on the new 'xs' infrastructure would also have seen the same issues. We have identified the reasons why these customers were affected more severely and corrective action has been put in progress, which will be completed by week ending 23rd Sept.

Avoiding Future Recurrence

M247 perform extensive testing of new Cisco IOS versions in a staging environment prior to rolling them into live production. On this occasion, the memory problems with this software version were not identified from our staging testing. We are making changes to our pre-production software testing process.

We have identified two issues that resulted in a wider impact being experienced by the problems on 'core-dc1' than should have been the case. Corrective action will be complete by 23rd September in order to dramatically reduce any impact in future resulting in a recurrence of the issues with core-dc1, and its counterpart core-dc2.

The majority of customers previously on the legacy BG1/BG2 segment of the network have already been migrated to the new 'xs' infrastructure over the past few weeks and the remainder are due to be completed by the end of October.

M247 would like to apologise for the disruption customers experienced during this issue.