

# Service Disruption Report



**Date:** 9<sup>th</sup> Sept 2016 23:00

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

## Overview

At 23:00 BST on the 9th of September 2016, M247 engineers began conducting planned routine maintenance on one of two Core routers in Manchester, known as 'Core1'. The vast majority of customer services are fed from a downstream aggregation layer, with which is in-turn fed resiliently from both Core1 and Core2. A small number of customer services are directly connected to Core1.

## Incident

The planned maintenance was a standard Cisco IOS software update, requiring a reboot of the device. Customers with services directly dependent on Core1 were sent standard advanced notice of the works on 16/8/2016. Customers with services not directly fed from Core1 were not issued with the advanced notice, as the network architecture should not have caused any impact.

Three slightly separate unplanned and unexpected issues resulted in a number of customers experiencing varying levels of disruption:

- As is standard practice, at 11pm, engineers began by manually re-routing traffic around the Core1 device. A miscalculation was made when selecting alternative traffic paths, which inadvertently resulted in congestion on a backbone network link. This was not identified until after the end of the maintenance window. As a result of this congestion, a number of additional customers will have experienced packet-loss and poor performance to certain network destinations traversing this path.
- Although the network architecture provides full resiliency to customer services not directly connected to Core1 (ie, the majority of customer services), we are aware that a number of customers experienced an un-planned outage during this maintenance window as a result of a separate routing configuration error that did not become apparent until Core1 was taken down for the upgrade. Particularly badly affected was the legacy BG1/BG2 segment of the network. An extensive migration project is currently underway as part of our BG1/BG2 decommissioning works, which is due to be completed within the next month.
- The outage duration experienced by customers directly connected to Core1 extended beyond the originally notified time of 02:00, to approximately 02:45. This extension was a result of un-anticipated issues experienced by the on-site engineer during the IOS software update caused by what is believed to be a fault in an ancillary piece of hardware.

## Avoiding Future Recurrence

The M247 technical management team have conducted an extensive investigation into this issue, and have made two primary recommendations as a result of the findings, both of which will be fully adopted by the company:

- M247 will put a greater emphasis on issuing 'at risk' notices, expanding the notification criteria for identifying recipients to receive advanced notification of maintenance activities in order to allow customers to make any necessary contingency arrangements they may wish to.
- Adjustments will be made to the company's engineering change-control process in order to place an increased emphasis on monitoring of the impact temporary changes made to the wider network during maintenance activities (eg, re-routing traffic around the device subject to maintenance activity)

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