Incident Report

Interxion Blade Failure

Report Date: 13th November 2014

Introduction:

The report below outlines the issues experienced at Interxion between 04:10 on Wednesday 12th November and 15:15 on Thursday 13th November.

Breakdown of the events:

At approximately 04:10 our Support team was made aware of a loss of wholesale leased line connectivity into our interxion.core.enta.net router. This was immediately escalated to our Systems engineers for investigation.

Initial investigations indicated an unusual failure condition on the line card serving both the wholesale leased line connectivity in question, as well as several other ports. The ports themselves remained in an up state; however they were no longer forwarding traffic. As the ports remained up, our monitoring and alerting system wasn't triggered. Traffic that could re-route did so across alternative paths. However, services and connections terminating into the failed line card remained directly affected.

After further remote investigation by our engineers failed to restore the line card back to normal working service, the issue was internally escalated in order to progress the case.

At 08:50, the decision was made to dispatch senior engineers to the Interxion POP with replacement hardware and equipment, with the aim of replacing the failed line card. At this time, traffic was still passing across alternative paths as expected and no further action could be taken until our engineers arrived on site.

Subsequently, our Support team began receiving reports of disruption and packet loss across different access technologies and services. This was immediately reported to our Systems engineers who, upon investigation, were able to quickly attribute the loss to congestion on the alternative paths. The reported packet loss was not present during initial investigations, as bandwidth utilisation was at a level such that the alternative links were able to cope with the increased demand. As the morning progressed and bandwidth demand increased however, the loss began to increase as more customers began their operations for the day. This congestion was the result of limitations of the hardware currently in place. Under normal circumstances the network capacity and resilience in place is sufficient to accommodate rerouted traffic in the event of multiple link failure, however the exceptional volume of traffic exceeded our expectations of the capabilities of the hardware currently deployed. Preparation work ahead of hardware upgrades across the network is currently under way to avoid this issue, as advised previously on http://noc.enta.net.

Whilst our engineers were en-route to Interxion, our engineers based in our Telford HQ began efforts to alleviate the packet loss by manually adjusting traffic flow, spreading bandwidth utilisation across multiple redundant paths and reducing the impact on any one link.

At 13:15 our engineers arrived on site at Interxion and began work immediately to replace the failed line card. We also took the opportunity to move several links to the neighbouring Interxion 2 core router to reduce the load. After installing and bringing the replacement line card into service, initial indications were that service had been restored successfully.

As our engineers reconnected the DSL feed to restore original paths, we immediately experienced disruption on the replacement line card. Traffic from the DSL network was not being forwarded through the new card, essentially causing a loss of service for DSL connections terminating into Interxion. This action was immediately reversed, causing Interxion DSL users to once again re-route across the alternative paths they'd been using previously.

The decision was made to swap the replacement card with second spare. Upon bringing this second card into service, the unusual behaviour of this router continued and we began seeing additional disruption on several other line cards in the core.

An emergency reboot took place at 15:00. After this reboot, the majority of services appeared to be restored; however there was still a small amount of packet loss remaining on DSL services. We also identified one of the remaining line cards (not originally affected by this incident) was in an error disabled state and required manual intervention to bring it back to normal service. Upon restarting this line card, directly connected customers were returned to service. This also resolved the packet loss being seen by DSL connections terminating into the core.

One core link remained down following its move to the Interxion 2 router however traffic was re-routing across alternative paths as expected. No further unusual behaviour or residual symptoms have since been detected. Engineers closely monitored the core router to ensure that it remained in a stable state before leaving site.

Upon investigating the one remaining down network link that had been moved to Interxion 2, a line card issue was identified on Thursday 13th November. This issue required a line card reset to take place on the Interxion 2 side of the link. As there were no live services on that particular line card, the decision was made to restart at 15:01 as this was not deemed service affecting. The line card reset caused the core router to stop forwarding packets unexpectedly. The necessary course of action was to immediately reload the router via out of band access. Normal service was resumed at approximately 15:15.

We apologise for the disruption caused by this incident.