

Outage Report

Services Affected

Core network and connectivity to/in our Sheffield hosting facility.

Customers Affected

Shared hosting and dedicated solution customers in our Sheffield hosting facility.

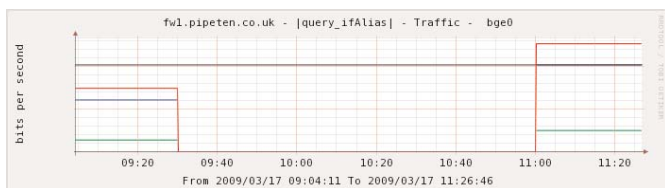
Event Details

Between 09:25 and 09:30 we lost connectivity across three of our fibre links with one of our connectivity providers which provided live traffic across two of the links and unused redundancy across the other. The loss of these fibres caused a BGP and OSPF routing conflict which resulted in a routing loop across our core routers as traffic tried to find a suitable outbound path. This routing loop caused the devices to overflow on memory, as a result they crashed and became entirely inaccessible. The Telewest copper link was unaffected by the outage but due to the core network hardware failures was not able to be used to route the traffic.

At 09:30 we were alerted to the issue by our monitoring system and engineers were dispatched to investigate. The upstream providers were notified as to a serious core network outage and they arrived on site within 10 minutes.

After restarting core network equipment and performing some configuration changes the network returned to being available between 10:50 and 11:00 across our Telewest copper link.

This is shown on our shared firewall transit graph and the resultant gap in traffic:

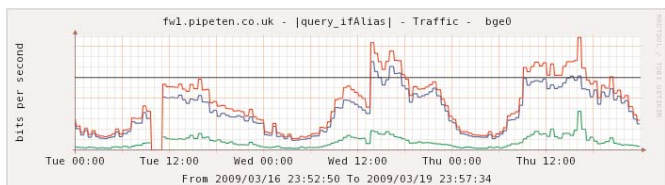


Shortly after the core network returned we began notifying clients at 11:00 that things should now be working correctly but we were then notified by clients that they or a percentage of their customers were still having problems reaching some servers.

In the following hours we received mixed reports from both connectivity providers and customers as to which devices, servers and remote networks were having issues connecting to our Sheffield facility which caused much confusion and prevented us from efficiently identifying where the issue lay. This was further impacted by the inability of our connectivity providers to handle outage reports and to dispatch suitably qualified engineers familiar with parts of the networks configuration.

During this time and moving into Wednesday the Telewest copper link was running at 80 to 100% of maximum and we took this opportunity to bring online an unused Telewest fibre which was present in the facility in addition to pulling in more technical resources to aid with the network evaluation from our connectivity providers, upstream providers and Pipe Ten's own resources. Due to the complexity of the issue at hand and being unable/unwilling to take the entire network offline for a further period of time this did not allow for a swift resolution.

At around 13:00 on Wednesday the downed fibers were restored and all affected services were returned to normal. In the period between 11:00 on Tuesday and 13:00 on Wednesday we estimated that between 25% to 50% of external networks were having issues connecting to 25% to 50% of servers located in our Sheffield facility, not all customers and networks were impacted during this period. This can be demonstrated by the shared firewall transit monitoring graph shown below (comparing Tuesday, Wednesday and Thursday):



In the following days after Wednesday we firstly dealt with ensuring connectivity would not be lost again until such a point the network and failings in it failing over could be fully addressed which included further liaison with our connectivity and facility providers.

On Saturday night and without informing Pipe Ten, our connectivity and facility providers brought a specialist in to look at the issue and to resolve the fail-over, or lack of. Unfortunately the specialist inadvertently managed to replicate the issue and thus crashed the routers knocking the entire facility offline for 28 minutes between 20:30 and 20:58 whilst the core equipment was restarted. This was bitter sweet because although the network went down again, it allowed for better identification of the issue through replication, however not being informed as to the impending investigation/maintenance was also a major failing.

As of writing, we are currently handling live traffic using three fibre links with our two connectivity suppliers and we are reviewing the number and quality of these providers.

Lessons Learned & Future Developments

Monitoring

In an outage situation it is critical that Pipe Ten be quickly alerted in order to diagnose and resolve any connectivity issues. Whilst external and internal monitoring is in place and was able to alert us to the outage within 60 seconds of connectivity being affected, it was only sufficient in alerting us to connectivity being up or down from the monitored locations. This led to us thinking things were back and working when they were not for all customers. We used our ability to test the network from different international locations but it was insufficient in swiftly and automatically identifying all the UK networks ability to communicate with us and as such we are planning to implement a distributed monitoring solution to address this failing.

Communication

We firmly believe that keeping customers informed of service outages, potential longevity and impact is just as important as fixing the issue itself. Had we been able to better communicate the situation first to our customers with dedicated solutions and then to our shared customers the impact on support volume and client confidence as to resolution would of been greatly reduced. As such we intend to address this with the following improvements:

- SMS notifications: A new system is being developed to facilitate the distribution of emergency notifications free of charge to UK mobile numbers and will be announced on <http://www.pipeten.info> shortly.
- Telephone Support: New non public direct engineer telephone number is being implemented to prevent shared customers flooding our phone lines and thus preventing us meeting our communication obligations to dedicated solution customers and this will be provided to only those customers.
- Email & Ticket resolution: Procedural changes are being discussed as to better handle support ticket volume in the event of an emergency situation in addition to a reallocation of roles in an outage event.
- Blog Posts: Changes to the way we handle individual comments in blog posts are being made so that we better inform everyone through the post itself, rather than individual replies to these comments.

Service Improvements & Modifications

- Review of connectivity providers: We are conducting a full network and provider review as the result of these outages and will be making further announcements in the coming days and weeks.
- Introducing an additional name server: We've been planning to implement a third nameserver on an external network for some time and this is now being pushed forward as a priority in the next week or two to minimise impact in the event of part of the network failing.

Conclusion

Since Saturday we have had many meetings with the CEO of the connectivity provider, their engineering team, their upstream providers, our other providers and other parties to work towards a long term 100% available service provision and it is for this reason that this document has been delayed.

Outages and failings to provide suitable service by both Pipe Ten to its customers and by our suppliers is untenable in what should be and is advertised as an always available 24/7 service. We appreciate that our failings to you our customers has a massive impact/cost and we are entirely committed to continue providing a stable, highly supported service as we have done since 2002.

We will be making further announcements in the coming days and weeks direct to dedicated solution customers and also via <http://www.pipeten.info>