Date: July 29, 2010
Attn:

Circuit(s) affected:
Level 3 Ticket: 4243347, 4243362
RFO Ticket: 4269226
Start Time: July 22, 2010 13:19 GMT
End Time: July 22, 2010 18:50 GMT
Impacted For: 5 hours 31 Minutes

Summary

On July 22, 2010, at 13:31 GMT the Level 3 Access NOC received a “Loss of Signal” alarm from a Digital Cross-Connect System (DACS) in the Dallas, TX office indicating an issue on a DS-3 circuit that traverses from Denver, CO to Houston, TX. Within several minutes, the Technical Support Center (TSC) began receiving reports from voice customers served out of the Denver, CO office indicating that they were unable to make or receive calls. The Voice NOC accessed the Voice Switch in the Denver office and discovered a standing impairment on the SS7 link from Denver to Kansas City coupled with the Loss of Signal on the Denver to Houston, TX SS7 link had isolated the Voice switch, which was causing incoming and outgoing calls to fail. The Access NOC technician accessed the packet switch component responsible for routing calls in both Houston and Kansas City and confirmed that all SS7 links were down. Diagnostic testing was initiated on the Voice Switch in the Denver, CO office, which indicated the switch was functioning properly and that the issue was within the network. The Access NOC technician discovered a discrepancy with the cross-connects in a multiplexer within the Dallas, TX office which had caused the Denver to Houston link to fail. The technicians deleted and rebuilt the connections on the DS-3 circuit and a field service technician was dispatched to the Dallas office to replace several DSX modules and some cabling. The DS-3 circuit restored at 18:50 GMT and the SS7 links were confirmed up. Several customers were contacted, and confirmed that call processing was restored.

The Transport NOC engaged the Vendor to further investigate the SS7 link between Denver and Kansas City and testing indicated incrementing “Unavailable Seconds-Path” and “Loss of Frame” alarms originating from the Vendor’s Network. The Vendor dispatched a field technician to the handoff point and he discovered that the coaxial cable to their DSX panel was too tight and show signs of stress. A new coaxial cable was run and once terminations were complete, the incrementing errors dissipated and the DS-3 circuit restored at 07:19 GMT on July 23rd.

Timeline

All times listed are in GMT unless otherwise specified.

July 22, 2010
13:19 - The Level 3 Access NOC received a “Loss of Signal” alarm from a DACS in the Dallas, TX office indicating an issue on the far-end of a DS-3 circuit that traverses between Denver, CO and Kansas City, MO.

13:50 - The Voice NOC identifies that the Denver Voice switch is experiencing a total SS7 isolation.

14:03 - A Tier III Support Engineer was engaged for additional support.
14:50 - The Technical Support Center (TSC) has received several reports indicating that customers served out of the Denver, CO office are not able to make or receive calls. A Tier III Engineer is engaged and field technicians are onsite investigating the switches at this time.

15:00 - The field service technicians onsite engaged the vendor for further troubleshooting assistance on the link between Denver and Kansas City.

15:45 - The Access NOC determined the DS-3 circuit that traverses between Denver and Houston caused the outage. An issue with a cross-connect in a multiplexer in the Dallas, TX office is being rebuilt at this time.

15:55 - The Access NOC advised that the cross-connect on the DS-3 circuit that traverses between Denver and Houston has been rebuilt. There is an active “Loss of Signal” alarm at the Dallas, TX end of the circuit. A field technician is dispatching to the Dallas, TX site to verify cables at this time. No estimated time of arrival has been provided.

16:33 - The Voice switch in Denver, CO remains isolated and customers in multiple locations routing through the Dallas Voice switch continue to be impacted. The reason for this outage is due to two separate links down, one link is from Denver to Kansas City, and the other link is from Denver to Houston.

17:34 - Troubleshooting continues on both links, and the vendor has being engaged on the DS-3 circuit that travels between Denver and Kansas City. Loop testing proved that the end points can be seen, and the issue is somewhere in between.

18:10 - The Voice NOC has escalated the issue to the Senior Director of Network Engineering. The Voice NOC continues to escalate the Denver to Kansas City DS-3 circuit issue with the Vendor. A Level 3 field technician is being dispatched to the site in Kansas City, MO office to assist the vendor with any troubleshooting.

Level 3 technicians are accessing each network element on the DS-3 circuit between Denver and Houston to further isolate the issue.

18:30 - The SS7 link from Denver to Houston has restored. The Voice NOC technicians rebuilt cross-connects on a multiplexer in the Dallas, TX office.

18:50 - The SS7 link from Denver to Houston dropped momentarily when a field technician onsite in Dallas, TX replaced modules and cables to ensure stability. The circuit has remained up and stable and several customers have confirmed that services have restored.

July 23, 2010

07:19 - After significant testing at Kansas City site, the Vendor’s field service technician at their site, discovered a coaxial cable connection to the DSX panel was too tight and showing signs of stress. The coaxial cable was replaced, which cleared the associated alarm and restored the DS-3 circuit between Denver and Kansas City, MO.

Corrective Actions

The Level 3 Voice NOC has reviewed the details surrounding the ticket management and have implemented the following changes to their process documentation:

1) SS7 Loss of Redundancy/Switch Simplex mode issues have been recategorized as a “Critical Issue”, which also requires and immediate internal escalation to Management.

2) Trouble ticket sub cases that are sent to Level 3 Gateway for investigation will mirror the Severity Level in the parent case, which in this particular instance will be “High”.
3) Handing the ticket off to the following shift will require direct communication with the technician assuming the case, an email depicting the current status will no longer be considered an acceptable handoff pertaining to SS7 Loss of Redundancy/Switch Simplex mode issues.

4) The Service Level Agreement (SLA) has been adjusted to match that of a 911 outage, which is two hours for an outage and four hours for an impairment.

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