



NRSC BULLETIN No. 2006-1

February 2006

The ATIS Network Reliability Steering Committee (NRSC) recently completed a study of the DS3 Simplex conditions reported to the Federal Communications Commission (FCC). The objective of the study was to address the FCC's concern regarding what it believed to be a large number of reports filed based on the FCC's DS3 Simplex reporting threshold.

The NRSC examined DS3 Simplex conditions from January 2005 through September 2005 by utilizing data provided by the participant service providers. During this interval, there were 894 DS3 Simplex conditions¹ with 2.2% of these escalating to a duplex failure². As a result, the study group recommended one new Best Practice, and that all Service Providers and Network Operators review pertinent Best Practices for application in their operations. These Best Practices address:

- The tracking & reporting of network outages
- Human procedures, training and Methods of Procedures (MOPs)
- Cable damage or cable cuts
- Equipment spares
- Maintaining redundancy
- Disaster recovery

*The NRSC has identified the following **new Best Practice** specific to DS3 Simplex conditions:*

7- P- 0782 DS3 Simplex Conditions

- **Network Operators and Service Providers should detect DS3 simplex events and restore the duplex protective path in a timely manner by executing appropriate incident response and escalation processes. Restoration of simplex events should be coordinated with the restoration of customer affecting outages. Incident response and escalation processes should prioritize and assign higher priority to those events with the greatest risk of customer impact.**
- **Reference/Comments: DS3 Simplex events should be resolved within 7200 minutes (i.e. 5 days). DS3 Simplex events exceeding this time limit become FCC reportable events.**

As a result of its review, **the NRSC urges all Service Providers and Network Operators to review** the following Best Practices for application in their operations:

Tracking & Reporting Outages Best Practices

- **7 - 7- 0548 Post Mortem Review: Network Operators and Service Providers should have an internal post mortem process to complete root cause analysis of major network events with follow-up implementation of corrective and preventive actions to minimize the probability of recurrence. Network Operators and Service Providers**

¹ These events were identified by the six Service Providers participating in this NRSC DS3 Simplex study.

² This percentage excludes those events caused by the 2005 hurricanes.

should engage Equipment Suppliers and other involved parties, as appropriate, to assist in the analysis and implementation of corrective measures.

- 7-7-0583 Network Operators, Service Providers and Equipment Suppliers should adopt an industry uniform method of reporting and tracking significant service outages (e.g., TL-9000 standard outage template).

Human Procedures/Training/MOPs BPs

- 7-7-0588 Network Operators, Service Providers and Equipment Suppliers should provide awareness training that stresses the services impact of network failure, the risks of various levels of threatening conditions and the roles components play in the overall architecture. Training should be provided for personnel involved in the direct operation, maintenance, provisioning, security and support of network elements.
- 7-7-0589 Network Operators, Service Providers, and Equipment Suppliers should establish a minimum set of work experience and training courses which must be completed before personnel may be assigned to perform maintenance activities on production network elements, especially when new technology is introduced in the network.

Cable Damage/Cuts Best Practices

- 7-7-0710 Network Operators should use 'dig carefully' concepts and utilize guidance from industry sources for the protection of underground facilities when excavation is to take place within the specified tolerance zone.
- 7-7-0719 Network Operators should use 'dig carefully' concepts and utilize guidance from industry sources when installing underground facilities.
- 7-7-0741 Network Operators and Service Providers should review, and adopt as appropriate, best practices aimed at reducing damage to underground facilities that are maintained by the Common Ground Alliance (www.commongroundalliance.com).

Equipment Spares Best Practices

- 7-7-5080 Network Operators should identify and track critical network equipment, location of spares, and sources of spares to ensure the long term continuity and availability of communication service.
- 7-7-5083 Network Operators, Service Providers and Equipment Suppliers should maintain the availability of spares for critical network systems.

Maintaining Redundancy Best Practices

- 7-7-0731 Network Operators should provide physical diversity on critical inter-office routes when justified by a risk or value analysis.
- 7-7-5079 Network Operators and Service Providers should, where feasible, provide both physical and logical diversity of critical facilities links (e.g., nodal, network

element). Particular attention should be paid to telecom hotels and other concentration points.

Disaster Recovery Best Practices

- **7- 7- 5237 Network Operators, Service Providers and Equipment Suppliers should verify the integrity of system spares and replenish utilized spares, as appropriate, as part of a disaster response at a facility.**
- **7- 6- 5249 Network Operators should consider geographic separation of network redundancy during restoration, and address losses of redundancy and geographic separation following restoration.**
- **7- 7- 5252 Network Operators should evaluate the priority on re-establishing diversity of facility entry points (e.g., copper or fiber conduit, network interfaces for entrance facilities) during the restoration process.**

A complete copy of the DS3 Simplex Events Study Group Report may be found at <http://www.atis.org/nrsc/grouprpt.asp> . All industry Best Practices may be found at www.nric.org.