PROCEDURAL OUTAGE REDUCTION

Addressing the Human Part

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Authors:

P.J. Aduskevicz (AT&T)
Kathleen Atwater Peterson (Nortel Networks)
Jay Bennett (Telcordia)
Rick Canaday (AT&T)
Tom Chillemi (Bell Atlantic)
Norm Fischman (Bell Atlantic)
Anita Flintall (Nortel Networks)
Bill Klein (ATIS)
Anil Macwan (Lucent)
Spilios Makris (Telcordia)
Clyde Miller (Nortel Networks)
Denny Miller (Nortel Networks)
Eve Perris (Telcordia)
Karl Rauscher (Lucent)
Scott Taylor (BellSouth)
Whitey Thayer (FCC)
Erwin Van Allen (Southwestern Bell)
Sandy Wallace (Sprint)
Ken Walling (Pacific Bell)

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ABSTRACT

While it is impossible to apply one counter measure that will prevent procedural errors, we have found that some standardization in the design of the environment reduces the possibility of failure. The concept of human-centric design for telecommunications products and documentation has potential for reducing the impact and/or frequency of procedural errors. This design approach is presently being implemented on new network elements. For the existing network, universal applications of Good ("Best") Practices provide a valuable solution for reversing the rising trend of outages attributed to procedural errors. Although as an industry we are moving in the right direction, our efforts need to be more aggressive. Best practices, generic requirements and existing legislation should be embraced and implemented to minimize procedural errors and improve network reliability.

EXECUTIVE SUMMARY

Background

Starting with the third quarter of 1992, the Federal Communication Commission (FCC) required reporting of large service outages by telecommunications service providers. Reporting requirements are specified in Part 63.100 of the FCC's Rules (see Appendix D). In an effort to monitor reliability of the nation's telecommunications network, the Alliance for Telecommunications Industry Solutions /Network Reliability Steering Committee (ATIS/NRSC) has performed various statistical analyses of these FCC-reportable service outages. The results of these analyses are published in quarterly and annual reports.

The analyses focus, not only on total numbers of incidents and their impacts across the network, but also delve deeper into various areas of the network. The analyses are performed separately for different failure locations such as local switches and facilities. In particular, the analyses of FCC-reportable facility outages identified an increasing trend in facility incidents. The NRSC established a Facilities Solution Team to investigate how this trend could be reversed. The team's findings were published in reports in February 1996 and November 1997.

Earlier in 1997, the NRSC analyzed the root causes of FCC-reportable service outages (any outage greater than 30,000 lines and lasting for 30 or more minutes). Initial exploratory investigations indicated an increasing trend in outages caused by procedural errors. The NRSC classifies an outage as having a procedural error root cause if the source of the outage was a problem with documentation, training, supervision, maintenance, or some kind of human error. It should be made clear that cable damage is not considered a procedural error root cause category and is in the Facilities Solution Team analysis. The special nature of cable damage problems required the establishment of a separate root cause category. These problems were addressed in an earlier Facilities Solution Team Report. While cable damage is often the result of human error, cable damage is not included in the procedural errors addressed in this report.

A subsequent study performed in early 1998 confirmed the increasing trend in Procedural Error FCC-reportable service outages. The NRSC formed a Procedural Error Team to investigate this trend and provide recommendations for its reduction.

Status of Outages Attributed to Procedural Errors

This section presents major findings from "FCC-Reportable Service Outages (3Q92-4Q98) with Procedural Errors as Root Cause." The complete text of this document is provided in Appendix A.

A procedural error is the root cause for 33% of reported service outages. The frequency of procedural error outages has increased about 3% per quarter since July 1992, while outages from other root causes (Non-Procedural Error outages) demonstrate a decreasing—but not statistically significant—trend over the same time period. Figure 1 presents a plot of the