



## **NRSC Bulletin No. 2009-1 Hardware Sparing January 2009**

### ***Background***

In order to address the Federal Communications Commission's (FCC's) concern regarding the number of outage reports that referenced sparing Best Practices, the Network Reliability Steering Committee (NRSC) created the Hardware Sparing Study Team in June 2006. The purpose of this special study was to investigate industry wide events that were believed to be related to the management of spare hardware.

### ***Methodology of the Hardware Sparing Study Team***

Five service providers participated in this special study. As part of their efforts, the service providers categorized events that referenced sparing Best Practices and completed a comprehensive data analysis; which included studying the direct and root cause categories referenced in the FCC Network Outage Reporting System (NORS).

### ***Hardware Sparing Study Team Findings and Guidance***

Based on the underlying problem descriptions available, the team was unable to correlate the FCC's suspected sparing problems to any pervasive sparing management practices. The team's findings included the following:

- There is a need to ensure service providers are referencing the most up-to-date Network Reliability and Interoperability Council (NRIC) Best Practices found at:
  - <http://www.bell-labs.com/USA/NRICbestpractices/>
- Sparing Best Practices are referenced as event duration mitigating scenarios; however, there is no evidence of sparing availability as a significant factor in reportable events.
- Reportable outages categorized as hardware failure (45% direct cause; 80% root cause) are generally not attributable to sparing problems. This is primarily true given the time required to troubleshoot and replace failed hardware, in addition to, the level of inherent redundancy in communications networks.

As a result of these findings, the NRSC Hardware Sparing Study Team recommended adding the following new sparing cause codes to NORS to identify when a lack of spares is the true cause of a reportable event:

- Spare not available
- Spare on hand – Failed
- Spare on hand – Manufacturer Discontinued

### ***Conclusion***

As a result of the NRSC Hardware Sparing Study Team's findings and recommendations, the FCC included the specific sparing cause codes listed above in NORS. The addition of these codes will further assist in identifying trends when a lack of sparing is the true cause of an FCC reportable event.