

## Down with Downtime!

Richard Parent – Senior Network Consultant  
Electro Standards Laboratories

### The High Cost of Network Downtime

Several years ago a study was undertaken by Infonetics regarding the cost of network downtime. The study reported that for every hour the data network is inoperable, a Fortune 1000 company would lose approximately \$30,000 in productivity. The study also indicated that companies experience from 10 to 25 network outages per year. (ref: DATA COMMUNICATIONS Magazine 1990). If we extend the numbers as stated, they relate to loss of productivity from \$300,000 to \$750,000 per year. The revenue loss is based on an average outage of less than one hour per month over the course of a year. Regardless of company size or use of its network, downtime is a costly matter.

### Networks are Integral to Business

In today's hi-tech world, Local Area Networks (LANs) and Wide Area Networks (WANs) are growing in complexity and importance. When our networks are down, we are as in the dark as if the electricity were turned off. We cannot check purchase prices on the Internet; nor can we place the on-line order. E-mails requesting our product information are left unopened and sales are delayed or lost. Electronic transfer of funds is not possible. Downtime is more than inconvenient; it is crippling!

### Cause of Dreaded Downtime

Many reasons exist that can cause network downtime. A new improperly configured PC can cause downtime. A PC with the configuration inadvertently changed can make the network inaccessible to a single user. A defective component can render an entire network unusable.

### Five Nines of Reliability

The network administrator's mission is to provide users access to all network resources 100% of the time. However, a more realistic goal is the "five nines of reliability," which equates to providing 99.999% uptime, or conversely, a total downtime for a year of five minutes.

To achieve this high level we must begin with the design and implementation of the network infrastructure. The selection of an expert Network Integrator, such as Electro Standards, is a key decision. The

Network Integrator assists with the selection of all necessary products and services as well as handling the network installation, monitoring, and maintenance.

### Redundancy Improves Reliability

We can approach our goal or 99.999% uptime by building redundancy into the network. Installing a UPS for major network resources; implementing disk mirroring on file servers; performing daily tape backups and confirming that they are valid backups are all ways to improve uptime percentages. The ability to "hot swap" components, replacing components without taking the entire network off line, aids in increasing uptime. An additional wiring connection to key network resources provides a redundant path if or when the primary is damaged. Spare components on hand to recover from a defect again increases network uptime.

### Redundancy for Fiber Networks

Fiber optic A/B switches, designed by Electro Standards, operate as either A/B switches or as fallback switches for redundancy. In the fallback mode, the switch monitors its environment for SD (signal detect) to determine its switch position. If the primary link is lost, the unit sends an alarm notification message; when the fiber link is restored, an acknowledgment message is also sent. The switch will maintain connection from the Common port to port A while SD is present on port "A". If SD is absent or lost the unit automatically switches to the fiber link connected to port "B". Once SD has been restored and is sensed at port "A", the switch automatically returns to the "A" position. This type of fallback switch provides network reliability, helping to achieve our 99.999% uptime goal.

### Final System Checks

After carefully implementing our physical network, we can check other possible trouble spots such as methods of access, quality of service (QoS), software applications and individual user's requirements. By carefully addressing each issue with our Network Integrator, we can knock down the dreaded downtime monster and keep it down!

Electro Standards Laboratories offers Network Engineering Services. For more information, call ESL at 401-943-1164 or contact us via our E-mail, [eslab@ElectroStandards.com](mailto:eslab@ElectroStandards.com)