

## Minding the Gaps

In order to run a stable yet functional environment, network operations require certain tools. To achieve efficiency, four primary areas need to be addressed:

### 1) **Monitoring**

Optimized for: Awareness of reachability and operational status of resources.

A primary monitoring solution should be configured to ensure that switches, routers, servers and critical links are operational and reachable. Monitoring scarce resources like disk space and CPU on servers, as well as utilization on WAN links, would be a secondary task.

### 2) **Troubleshooting**

Optimized for: Troubleshooting layer 1-3 problems throughout the network.

When packets are lost or delayed in the network, there is a layer 1-3 fault that occurs. Having a solution that aggregates, correlates, and analyzes this information can automate root-cause analysis and allow for proactive troubleshooting. With the right information brought to bear, optimization techniques can ensure that packets make it to their destination in the most efficient and lowest cost manner.

### 3) **Sniffing/Packet Analysis**

Optimized for: Troubleshooting layer 4-7 problems for specific conversations.

Being able to capture packets and determine layer 4-7 problems is a must: determining packet content issues, like an incorrect codec or TCP port for a session, is necessary to speed understanding of what is happening.

### 4) **Documenting**

Optimized for: Network understanding and comprehension.

Without proper documentation, the network can only be understood through tribal knowledge of the environment. A network map, along with an internal network knowledgebase and design architecture documentation like a wiki, ensures smart design decisions.

If any one of these areas is absent, operations suffer from a lack of understanding of problems. As a result, resolution times will increase and users' trust of the environment falls.

