

Cisco Achieves High Availability in Headquarters Campus LAN

Changes in the network design, power supplies, and operational processes produce 99.999% availability.

Cisco Systems® IT organization details the process it followed to bring high availability throughout its internal network, but especially in the LAN that serves the company's headquarters campus in San Jose, California. Improved availability reduces operational costs and significantly improves employee and business productivity.

Business Benefits

- Improved LAN availability in core areas to 99.999%.
- Separated physical and logical hierarchies in the network design.
- Placed all devices on appropriate backup power.
- Implemented numerous operational processes to improve change management, redundancy, recovery, and problem resolution.
- Separated production and test networks.
- Leveraged expertise of Cisco Advanced Services and the Cisco Technical Assistance Center.

Availability is typically measured by how many minutes each week the network is down or unavailable:

- 99.9% (“three nines”) = 10 minutes downtime every week
- 99.99% (“four nines”) = 1 minute downtime every week
- 99.999% (“five nines”) = 6 seconds downtime every week

Although 99.9% availability was historically adequate for most enterprise networks, this level is no longer acceptable. Cisco Systems® must achieve at least 99.99% LAN availability to function effectively as a company. However, Cisco wanted to achieve 99.999% (five nines) availability in the headquarters campus LAN because it serves so many critical core corporate functions. Many enterprises have networks or equipment designed to achieve 99.999% availability, yet very few companies have reported achieving that level in a large-scale, production network.

The Cisco headquarters LAN spans 50 buildings throughout the San Jose area and serves offices, data centers, laboratories, and manufacturing facilities. Cisco equipment used in the network includes 900 switches, 200 routers, 250 console servers, 800 Cisco Aironet®

wireless access points, and numerous content switching devices.

To achieve its availability goals, Cisco IT implemented incremental network upgrades. Multiple steps in each upgrade, described in detail in this document, addressed the network design, deployment of backup power supplies, and a variety of operational processes to improve configurations, monitoring, and problem management.

Despite its size and complexity, the San Jose network approached 99.999% availability in 2002. During the second calendar quarter of 2003, in areas where the network was completely backed by uninterruptible power supply (UPS) systems and generator power, the Cisco headquarters LAN achieved 99.999% availability.

Best Practice:

http://www.cisco.com/web/about/ciscoit/work/white_papers/high_availability_white_paper.html

For additional Cisco IT case studies on a variety of business solutions,
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Note:

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