



The hard costs of network outages

And how to get ahead of them

No room for downtime

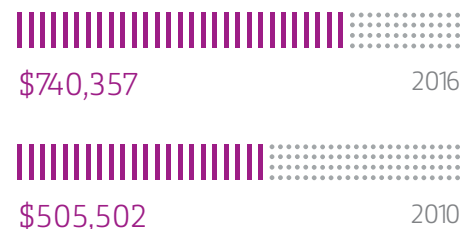
Network downtime is never welcome. But there was a time not so long ago when businesses could sustain up to 24 hours of it. Today, businesses depend so much on their mission-critical applications that any downtime is unacceptable. They simply can't afford it.

Doing the math

A report by Emerson Network Power found that the average cost of a data center outage has steadily grown from \$505,502 in 2010 to \$740,357 in 2016—a net change of 38 percent.¹ The effects can be dramatic and far reaching: lost revenue opportunities, organizational productivity declines, delays in processing financial transactions, damages to equipment and other assets, cost to detect and remediate systems and core business processes, legal and regulatory impact and loss of reputation in the marketplace.

Downtime costs businesses serious money. For example, Internet Retailer Amazon estimates that the 20-minute outage they experienced in March 2016 cost the online retailer \$3.75 million. Your business may not be an industry giant like Amazon, but consider this: Aberdeen estimates that, on average, network outages cost enterprise businesses \$260,000 per hour.³

↑38%



Yearly average cost of a data center outage.

4 ways to maximize uptime

In today's mission-critical business environment, no one is immune. Network managers at mid- to large-sized enterprises need to get serious about doing everything they can to reduce network downtime to zero. Their jobs depend on it.

1 Get smarter with network design

Fortunately, there are proactive measures network managers can take to ensure uptimes are approaching 100 percent. Most companies already have some form of redundancy in place with their network connections. The most common are active-passive setups in which the main connections are standard MPLS T1 connections with a local broadband connection from the LEC (e.g. Verizon FIOS, AT&T U-verse), a cable company, DSL or 4G LTE provider. In this active-passive setup, the broadband connection would only be used in the event of a network failure in the MPLS connection.

Active-passive setups do protect businesses from outages, but network managers can now choose from many different active-active setups to achieve near zero downtime for mission-critical services. Traditionally, there were three basic kinds of active-active architectures in which the network manager could add bandwidth and keep the system up and running. The three are:

Round robin. In this type of setup, bit one goes down connection #1 and bit two goes down connection #2. Network managers can divide the traffic equally among the two access connections.

Bandwidth weighted queuing. This form sets up a defined ratio for the two different network connections. For example, a company might have a 10 Mbps connection handling two-thirds of the traffic, while a 5 Mbps connection would manage one-third of the traffic. The overall goal with this form of bandwidth management is to alleviate congestion.

Static mapping. Network managers can statically map the traffic, pinpointing one connection for voice and the second active connection for video. This offers more control and sets specific bandwidth limits for the pipes being managed.

All three of these hybrid WAN methods will deliver maximum uptime, but they lack the analytics and automation features today's network managers would value.

2 Set up internal SLAs

Business leaders look to the IT team to deliver 100 percent uptime, and the IT team should have service-level agreements (SLA) in place that are realistic and achievable to help them manage to that expectation. The challenge many businesses face when dealing with multiple service providers is that it often results in finger-pointing between the providers on who is to blame for outages and performance issues.

Creating and reporting on an internal SLA means managing the SLAs from all the internally supported and vendor-supplied elements of the infrastructure: the LAN/WAN networking equipment, the cloud service providers, infrastructure as a service providers and even the security service providers. By managing all of these SLAs and rolling them into one view with drill-down capabilities, the IT team creates a single source of truth and establishes clear accountability if and when an outage does take place.

If a 100 percent network uptime SLA is required, an active-passive or active-active network design will suffice. But for SLAs guaranteeing consistent applications performance, a “smart” active-active network with the ability to flexibly prioritize and manage application traffic is the best option.

3 Eliminate single points of failure

For sensitive locations, additional precautions can be taken to dive deeper into the active-active paths to ensure there are no common chokepoints (e.g. power supply, building entrance, physical path and carrier network elements). This can further reduce the likelihood that the primary and backup circuits will fail simultaneously.

With the right amount of diligence and monitoring expertise, this can be achieved in-house. A trusted partner can also offer a sophisticated diversity solution that delivers guaranteed uptime that meets stringent SLAs. And when combined with SD-WAN, you'll achieve a highly hardened option for mission-critical applications that demand more.

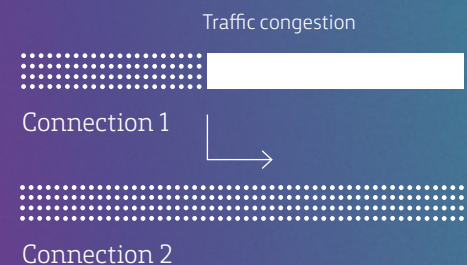
SD-WAN offers more

SD-WAN is constantly monitoring jitter, latency and packet loss to determine the optimum routes for each application based on predefined performance policies. For example, a company might have a T1 MPLS connection as its primary active connection and a 20 Mbps broadband connection for the second active connection. Voice traffic is always routed over the best performing connection, typically the MPLS T1.

When the T1 performance drops because of congestion, the high-priority voice traffic will be automatically redirected to the secondary connection to maintain the desired performance metrics. The decision is no longer binary-based on the circuit being up or down; it is now based on the performance of the paths available to the application.

The goal: better application performance, increased network flexibility and 100 percent uptime.

Voice traffic flow example



4 Find the right partner

While businesses often work with multiple providers for network, equipment, cloud services and last-mile access, this can be complex and inefficient. By consolidating services with a single Managed Service Provider (MSP), you can establish a strong partnership with a vendor that has a holistic perspective of the necessary requirements for uptime, while negotiating the best terms on all the different aspects of the network.

With access for example, some MSPs will offer 100 percent uptime if the business uses diverse access methods. With network gear, the MSP will work with the major network and security providers to negotiate the best solution and most updated technology for each specific location, whether it's branch office, warehouse or data center. Instead of managing the network piecemeal, the MSP will design a network architecture that delivers the full ecosystem: network infrastructure, voice, security and last-mile access.

Instead of a hodgepodge of vendors and consultants, an MSP becomes the one company that's managing the network, looking out for the best pricing and performance and working with the highest-quality network technology, all in a focused effort to guarantee 100 percent uptime.

Managing the three-legged stool

Making outages a thing of the past is a tall order. So think of the process as a three-legged stool, with each one providing the foundation for the enterprise to thrive.

By rethinking network design to near 100 percent uptime, consolidating SLAs into one version of the truth that everyone in the business can depend on and finding the right MSP, you'll spend less time on managing the nuts and bolts and more time on what really matters: growing the business by serving the needs of customers.

1. Emerson Network Power, Ponemon, *Cost of a Data Center Outage*. 2016.
2. *2016 Top 500: The World's Most Trusted E-commerce Resource*. Internet Retailer. 2015.
3. *Improve Networks to Avoid Downtime Disasters*. Aberdeen Group. 2016.

About Windstream Enterprise

Windstream Enterprise collaborates with businesses across the U.S. to drive digital transformation by delivering solutions that solve today's most complex networking and communication challenges.

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