

WHITE PAPER

# The role of diversity and redundancy in enterprise business

Learn more about how to ensure continuity.

Multiple service providers may not ensure network availability.

**To support business continuity, many organizations eagerly avoid putting all their eggs in one basket.**

Understanding the critical role of last-mile connectivity and always-available Internet access, savvy firms utilize redundant wide-area network (WAN) and Internet connections from multiple service providers to ensure network availability in addition to load balancing. Despite the good intentions, their Internet connectivity risks may still be in a single basket. That is because Internet service providers (ISPs) and competitive local exchange carriers (CLECs) may operate using leased network infrastructure from the same incumbent local exchange carrier (ILEC).

**The cost of downtime**

Enterprise planning for business continuity and disaster recovery are closely linked. As the names imply, the goal of business continuity is to prevent interruptions to operations, while disaster recovery is aimed at restoring operations following an ordinary or catastrophic disruption. Redundant facilities-based Internet connections are an essential support for both.

Research finds that network failures are surprisingly common and costly. More than half of businesses reported experiencing a downtime event in the past five years that lasted more than 8 hours, according to a 2016 survey<sup>1</sup> by Zetta. Companies reported the leading causes of incidents to be hardware failure, natural disasters, power outages, human error and software failure. Catastrophic outages aren't the only issue in need of preparation; network availability can be compromised by congestion, degraded performance and security breaches.

**Calling on cable**

In larger U.S. cities businesses may have a choice among several Internet access and network service providers. The menu typically includes the ILECs, CLECs, ISPs and the cable company.

Cable's infrastructure is physically separate from the telephone company networks at the local, last mile, metro and regional levels, enabling genuine network redundancy and diversity.

Cable operators have built extensive hybrid fiber and coax networks to deliver video, Internet and telephone services. By leveraging this vast infrastructure footprint, cable operators are able to provide communications services to business of all sizes. Highlighting the widespread adoption of cable provider solutions, researchers estimate annual business service revenue for U.S. cable operators now exceeds \$10 billion.<sup>2</sup>

## Consider the broad reach and high availability of fiber networks built by cable operators when vetting providers.

Cable operator networks include high-capacity metro fiber rings, plus fiber access networks with deep reach into commercial areas, retail districts and residential neighborhoods. These high-availability networks are carefully engineered and implemented to be diverse and sustainable. For example, maintaining two entrances to the customer premises, or two circuits from the premises to a manhole cover or pole, can make alternate paths available in the event of a failure. Using diversely-routed circuits through diverse hubs improves the network reliability even more.

Additionally, by owning and operating their networks and construction teams, cable operators may more quickly provision and better monitor services than CLECs or ISPs that merely resell ILEC capacity. Through the broad reach of their networks, cable operators can also serve a wide range of locations, from office parks and business centers to small office, branch office, retail, medical and municipal buildings.

### The SLA way

To enhance the resiliency and redundancy of their network connections—and to hedge against the cost of losses from connectivity interruptions—many businesses enter into a service-level agreement (SLA) with their network providers and ISPs. These agreements set performance benchmarks for service reliability and, should an unplanned outage occur, responsiveness for repair and restoration.

Performance characteristics for an SLA may include total uptime for the connection, as well as measured bandwidth and latency between defined IP access points. The availability of essential IP infrastructure, such as domain name servers (DNS) and dynamic host configuration protocol (DHCP) servers, may also be specified. Should a problem arise, response and repair times are defined in the SLA, along with penalties and compensation for noncompliance.

### Providing a path

Today's IT departments are tasked with processing, analyzing and providing continuous access to essential business data. Compounding the challenge, IT professionals project that the average amount of data managed within their organization is expected to increase by 76 percent<sup>3</sup> within the next 18 months. Not surprisingly, data storage and backup solutions are at the heart of most business continuity and disaster recovery plans, providing a pathway to get back up to speed following an outage involving data loss.

Some service providers integrate cloud storage and backup offerings with access solutions. For example, Spectrum Enterprise offers facilities-based Internet access and network services with a diverse path from the ILEC, as well as cloud services for businesses of all sizes in collaboration with Navisite,<sup>®</sup> a part of Charter Communications.

## The appeal of IP phone service grows on a diverse and sustainable fiber network.

### Find your voice

With high reliability, easy scalability, and low cost, voice over IP (VoIP) and unified communications (UC) phone systems now dominate business voice services. Businesses that use these voice technologies will benefit from the same robust networks that ensure reliable Internet connectivity. Running on the Spectrum Enterprise's diverse and sustainable fiber network, IP phone service takes on even more appeal.

The technology that underpins VoIP and UC, Session Initiation Protocol (SIP) trunking, offers enhanced business continuity and disaster recovery capabilities. SIP trunking can be configured to automatically route calls to another telephone number or trunk group during a connection failure and, following restoration, return call traffic to the primary destination. Similarly, SIP trunking overflow solutions automatically reroute inbound calls to a designated phone.

### Calling on cable

Last-mile diversity and Internet access redundancy are essential to ensuring business continuity in today's networked economy. When selecting service providers:

- Choose reliable and diverse network solutions that can be efficiently configured to support your business continuity needs.
- Carefully investigate the network infrastructure of prospective providers to ensure they use different facilities, reducing risk from a single point of failure.
- Find out if they can rapidly scale capacity to deliver extra bandwidth when it is needed most.
- Consider a provider that can deliver cloud-based backup, storage, alternate site support and SIP Trunking.

<sup>1</sup> "State of Disaster Recovery 2016," <https://www.zetta.net/resource/state-disaster-recovery-2016>, 2017 Zetta, Inc.

<sup>2</sup> "US Cable Nears \$10B in Business Service Revenues," Light Reading, December 2, 2014"

<sup>3</sup> IDG, Enterprise Big Data Study, 2014

Source: Michael Harris, Kinetic Strategies, for Spectrum Enterprise, "Ensuring Business Continuity With Last-Mile Diversity and Redundancy," <https://enterprise.spectrum.com/resource-center/white-papers/ensuring-business-continuity-last-mile-diversity-redundancy.html>, 2016, Charter Communications