

the Availability Digest™

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--- achieving 100% uptime

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The digest of topics on Continuous Availability. More than Business Continuity Planning.
BCP tells you how to *recover* from the effects of downtime.
CA tells you how to *avoid* the effects of downtime.

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Writing

The articles you read in the Availability Digest result from years of experience in researching and writing a variety of technical documents and marketing content. It's what we do best, and we provide our services to others who value high-quality content created by IT specialists. [Ask us](#) about

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Dr. Bill To Speak at the NonStop Boot Camp – Twice

I will be making two presentations at the NonStop Technical Boot Camp, to be held from November 12-15 at the Hyatt Regency, San Francisco Airport. The first talk, "Fat Fingers Ahead," will take place at 9:30 AM on Monday, November 13th. It is a humorous presentation that offers details of system outages caused by IT personnel.

Consider attending the second presentation at 1 PM on Wednesday, November 15th. "RAS – The Pillars of Mission-Critical Systems" is a joint paper with co-authors Bruce Holenstein and Paul Holenstein of Gravic, Inc. The paper deals with the importance of Reliability, Availability, and Scalability (RAS) in critical applications that must always be ready to service users with data that is correct and that can scale to meet the offered workload.

Our stories in this issue are examples of the stories we write for the Digest and for others. If you have an article, a case study, or a white paper that you would like written, we encourage you to contact us. We also provide consulting services and seminars on high- and continuous availability.

Dr. Bill Highleyman, Managing Editor

Never Again

Don't Let Your Network Crash

There is nothing that can ruin your day more than to have your network crash. Imagine being without the Internet for hours at a time. Most of us would be unable to accomplish much during that period.

Fortunately, our networks are quite robust. The TCP/IP protocol now in common use guarantees the proper error-free delivery of messages. And our networks have many paths so that messages can be routed around failed network segments and still reach their recipients.

However, networks have not always been so robust. In 1990, a software bug propagated through the ATT network and took down the entire ATT system for hours. A decade earlier, a similar bug collapsed the ARPANET. The ARPANET was one of the earliest networks and through its failure history paved the way for today's ultra-reliable networks.

The Advanced Research Projects Agency Network (ARPANET) was an early packet-switching network. The ARPANET established its first computer-to-computer link on October 29, 1969.

As the ARPANET project progressed, protocols for internetworking were developed so that multiple separate networks could be joined into a network of networks. In 1982, the Internet Protocol Suite (TCP/IP) was introduced as the standard networking protocol on the ARPANET. These technologies became the technical foundation for the Internet.

The ARPANET was decommissioned in 1990.

[--more--](#)

Best Practices

Magnetic Tape Makes a Comeback

When I started using computers at Bell Telephone Laboratories in the early 1960s, computers didn't have hard disks. The only means for storage was magnetic tape. Back then, magnetic tape didn't come in small, convenient cartridges. It came in big reels that were handled by even bigger tape drives.

Tape is the oldest computer storage media still in use. It was introduced in 1951 in Univac computers. With the advent of high-capacity hard disks and innovations such as cloud storage, tape sales began to fall in 2008. But in 2012, they started rising again. With so much data being created by mobile devices and sensors, there grew a need for an economic and efficient way to archive all of this data. Magnetic tape fills that need. Today, a single magnetic tape cartridge can hold 185 terabytes of data. A recent study indicated that 77% of all companies use tape for backup and archival.

[--more--](#)

Availability Topics

Eliminate Those Single Points of Failure

In order for a system to be continuously available, every component must be redundant. There can be no single point of failure, and the failure of any component must be transparent to the users of the system.

This often is accomplished by replicating servers and databases. In some architectures, each server has its own database; and the servers are kept synchronized by bidirectional data replication. Whenever a server makes a change to its database, the change is immediately replicated to the databases of the other servers to keep them synchronized.

In other architectures, servers have access to multiple database arrays. When a server makes a database update, it updates all of the databases in the database array.

Oftentimes, even subcomponents of the servers and databases may be replicated to improve their reliability. For instance, it is common to find dual power supplies in a server or database so that the power supply does not become a single point of failure for one of these devices.

Not to be forgotten is the network interconnecting all of these devices. It must also provide two or more independent paths between each server and database so that there is no single point of failure in the network.

[--more--](#)

Recommended Reading

Hyperconverged Infrastructure

HPE has recently released a Dummies book, *Hyperconverged Infrastructure for Dummies*. The book describes hyperconvergence and HPE's hyperconverged infrastructure product, SimpliVity. The technology combines compute, storage, networking, and data services into a single physical system. The software that enables hyperconvergence runs on standard x86 systems. Its distributed architecture lets you cluster multiple systems within and between sites, and the systems can be managed through a single interface.

To understand hyperconvergence, we discuss in this article the concepts of virtualization, the software-defined data center, and cloud computing.

[--more--](#)

Tweets

@availabilitydig – The Twitter Feed of Outages

A challenge every issue for the Availability Digest is to determine which of the many availability topics out there win coveted status as Digest articles. We always regret not focusing our attention on the topics we bypass.

Now with our Twitter presence, we don't have to feel guilty. This article highlights some of the @availabilitydig tweets that made headlines in recent days.

[--more--](#)

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