

the *Availability Digest*™

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--- achieving 100% uptime

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The digest of current topics on Continuous Availability. More than Business Continuity Planning.

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CA tells you how to *avoid* the effects of downtime.

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Achieving High Availability

We often think of high availability as equaling five nines. After all, it represents a downtime of only five minutes per year. However, one company with which we are familiar is striving for seven nines of availability.

We discuss nines of availability in "Can Applications Achieve Seven Nines of Availability?" In that article, we explore the hardware and software ramifications of what can be described as almost continuous availability. Seven nines of availability means that our application is down for an average of only three seconds per year. We also look at external influences that can impose downtime on these highly available systems.

This article is an example of what 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

Case Studies

Can Applications Achieve Seven Nines of Availability?

A company with which I am familiar is advertising that their product has seven nines of availability. Is this possible? We are used to measuring the availability of applications in the three- to five-nines range. Seven nines means that the application will be down for no more than an average of three seconds per year.

The answer is that it depends upon what you are evaluating. If it is just a software application, then seven nines is quite possible. But if we are evaluating the availability of an application, we must really take into account the hardware upon which it is running. A typical hardware server has an availability of three or four nines. An application running on such a system, no matter how reliable the software is, will have only three or four nines of availability.

However, this can be improved via redundant servers. In an active/active system, both servers are processing transactions. Their databases are kept synchronized via bidirectional replication. Should one server fail, all transactions are simply sent to the surviving server. An active/active system can have an availability of seven nines.

[--more--](#)

Best Practices

Data Deduplication in the Cloud

Several years ago, February 2011 to be exact, I wrote an extensive article on data deduplication. This was long before the advent of cloud computing that now encompasses so much of our IT activities. Is data deduplication applicable to the cloud? Absolutely!

So what is data deduplication? In simple terms, data deduplication is a method in which a specific block of data in a large database is stored only once. If it appears again, only a pointer to the first occurrence of the block is stored. Since pointers are very small compared to the data blocks, significant reductions in the amount of data stored can be achieved.

Deduplication is a powerful tool for handling the growing amounts of data with which an organization must contend. It is especially important to apply deduplication to data stored in a cloud, as more and more use is made of the advantages that cloud storage provides. In a cloud, there is almost no limit to the extent of processing resources that can be brought to bear to process large data sets. When the processing is complete, these resources can be released to work on other needs.

[--more--](#)

Openness Was Not Always Ensured

An open system is able to interoperate easily with other open systems at both the application and the data level. The attribute of *openness* in systems was not always ensured or even accepted. This was brought to my attention when I came across a paper I had written years ago titled “Can the Computer Industry Truly Support Openness?”

The paper made several assertions that seem surprising in today’s technology. It noted that computer hardware vendors were reluctant to open up their systems for true interoperability with the products of competitors. After all, open standards would make it easy for IT managers to switch products since any product that complied with the standard could be substituted for another such product.

However, openness abounds in today’s software technology. Java is the open standard for programming languages. SQL is the open standard for databases. And x86 is the open standard for system architectures. As we move into the future, I anticipate that all software applications will be implemented with these open standards. Hardware systems will comply with them as well. Thus, any application will be able to run on any hardware. We will have achieved the ultimate in operational flexibility.

[--more--](#)

Availability Topics

What is Reliability?

In an Availability Digest article published in June 2010 under this same title, we discussed what is really meant by reliability. In reviewing that article, it became clear that the content is just as important today as it was then. We are therefore reprinting a modified form of the article to emphasize attributes that contribute to what we perceive as reliability.

In this article, we suggest a simple method to *quantify* system reliability, eliminating any ambiguity or suggestion of marketing intent. Our result is a table that compares different highly reliable technologies for IT systems.

It must be noted that the cost of a system is not just a matter of acquisition cost or of operating cost. It is also a matter of downtime cost. With downtime costs varying from thousands of dollars per hour to hundreds of thousands of dollars per hour and more, the difference between recovery times measured in milliseconds, seconds, or minutes may well justify a more expensive system.

[--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.

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Managing Editor - Dr. Bill Highleyman editor@availabilitydigest.com.

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