the Availability Digest™
--- 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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How Dependent Are We On GPS?

We use GPS to navigate in our automobiles. As a private pilot, I use GPS to fly a direct route from my departure point to my destination (avoiding restricted air space, of course). If I lost GPS, it would be an inconvenience; but I could still drive and fly.

However, GPS is much more important to our society than that. GPS timing and positioning is used by telecom networks, power grids, the finance sector, computer networks, radar weather, and seismic monitoring. The loss of GPS could bring major sectors of our social order to a halt.

Could GPS experience a failure? The answer is yes, in many ways, from malicious attacks to solar flares. The threats to GPS are explored in our article in this issue entitled "What If GPS Fails?"

This article is an example 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, come talk to us. We also provide consulting services and seminars on high- and continuous availability. We'd be glad to help you.

Dr. Bill Highleyman, Managing Editor

Case Studies

Lloyds Banking Group Outage – A Correction

In our February, 2014, and April, 2015, issue of the *Availability Digest*, we described an outage suffered by the Lloyds Banking Group. A subscriber to the *Digest* has pointed out that we were in error. We correct that error in this article.

The outage was caused by the simultaneous failure of multiple CPUs in a NonStop system due to a firmware bug. This is a failure mode that simply is not considered by most NonStop system users. The outage lasted over four hours and was compounded by Lloyds' inability to switch traffic to an alternate system.

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Never Again

What If GPS Fails?

As a private pilot, I am a huge user of GPS. GPS allows me to fly a direct route from my point of departure to my destination. As most of you probably do, I also use GPS to find my way on the ground in my car.

I shudder to think what would happen if our GPS system should fail. Some consequences would simply be an inconvenience, such as GPS navigation for automobiles. A GPS failure could affect financial markets, resulting in monetary losses. Even worse, a GPS failure could compromise public safety by preventing police, fire, and ambulance services from reaching their intended destinations. Certainly, the military would be compromised, as war planes would be unable to find their destinations and as GPS-guided munitions would not be able to find their targets.

Several threats to GPS include local interference, atmospheric interference, malicious attacks, system issues, and human errors. An alternative that can be used as a backup for GPS is eLORAN. The Department of Homeland Security is upgrading the old ground-based LORAN system (which dates back to World War II) to eLORAN by installing solid-state electronics and improved transmission systems.

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Recommended Reading

The High Availability Design Spectrum – Part 2

[Editor's Note: In his book "High Availability IT Services," Dr. Terry Critchley lists twenty-three areas that can have an impact on the availability of IT business services. In this multipart series, and with his permission, we publish his observations. In Part 1 of this series, we reviewed his first four reflections - his Parts A through D. In Part 2, we examine his next nine considerations – his parts E through M.]

Dr. Terry Critchley: Most of the documentation on HA/DR I have come across majors on hardware, mainly redundant or fault tolerant, and, to some extent, software. My thesis is that the spectrum of activity needed to design, implement and maintain a high availability business IT system and recover from failures small and large (DR) is much, much greater. Below, I have listed 23 areas (A to W) which can have an impact on the availability of business services which are IT-based. I am sure it will be evident that these areas can have a significant impact on the availability and non-availability of any service or system.

Remember, focusing on availability and focusing on avoidance of non-availability are not the same thing, if you think about it.

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The Geek Corner

The Fallacy of Classic Availability Theory

In this paper, the Availability Digest points out a fallacy in classic availability theory. We have grown accustomed to the terms MTBF and MTR. MTBF, the Mean Time Between Failures, is the average time between failures of a system. MTR, the Mean Time to Repair, is the average time it takes to repair a system. In classic availability theory, MTBF and MTR are *random variables.* In other words, the event (the failure of the system or the repair of the system) is independent of what has happened in the past and will have no impact on future occurrences. MTBF and MTR are considered memoryless, and we think that is incorrect because availability in the real world is time-based. Memory exists.

As an alternative to MTBF and MTR, we introduce the concept of MTTF – Mean Time to Failure. This is the expected time to the next system failure. Unlike MTBF and MTR, MTTF is a function of time. As time goes on, MTTF becomes shorter; and the likelihood of a system failure draws nearer.

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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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