



Volume 2  
Issue 10

# the Availability Digest

--- achieving 100% uptime

October 2007

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

BCP tells you how to *recover* from the effects of downtime.  
CPA tells you how to *avoid* the effects of downtime.

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Complete articles may be found at  
<http://www.availabilitydigest.com/articles.htm>.

In this issue, we introduce a new NonStop blog that covers such topics as availability, platforms, and security. Written by Richard Buckle, the blog is NonStop oriented; but much of its content bears on high-availability systems of all kinds.

Hurricanes are a major threat to data centers in Florida and to the rest of "hurricane alley." Read how one bank uses an active/active configuration to shift its users out of harm's way.

Shouldn't a software utility be always up? One software utility is quite proud of its record of three 9s availability - it is down "only" about eight hours per year.

If you are planning a high-availability upgrade or are concerned about the availability of your current systems, give us a call to talk to us about our services focusing on continuous availability.

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## Case Studies

### Major Bank Uses Active/Active to Avoid Hurricanes

Headquartered in the Midwest, a major U.S. bank provides credit and debit card processing for its merchant customers. These services must be highly reliable and available. The services must survive any system failure, no matter the cause, with rapid failover time. This is because should these services fail, users will be denied the use of their credit or debit cards for the duration of the outage.

Therefore, the bank decided to go with highly reliable HP NonStop servers in a two-node active/active configuration to provide this service. One node is located in Florida, and the other is located in the Midwest.

This geographical separation ensures that no single environmental disaster, manmade disaster, or system failure will take down both nodes.

The bank uses the ease of node failover to its advantage to avoid potential disasters. For instance, whenever Florida is threatened by a hurricane, the bank will instruct all of its customer merchants assigned to the Florida node to switch over to the Midwest node until the hurricane threat has passed.

[--more--](#)

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## Never Again

### On-Demand Software Utility Hits Availability Bump

Salesforce.com is a software on-demand utility providing Customer Relationship Management software services to its customers. With data centers in many countries, it serves over 35,000 businesses worldwide. According to Gartner Group, it is one of two leaders in Sales Force Automation.

Salesforce.com is a utility. Its users depend upon critical customer and sales data held by the Salesforce.com data centers to run their daily businesses. As a utility, the Salesforce.com services are expected to be always available.

However, a year ago, Salesforce.com had several major outages over a period of a few months, outages that left their customers looking for other alternatives and that left the entire philosophy of software utilities in question. Salesforce.com has recovered from the effects of these outages on their customers, and their goal now is to provide three 9s of availability. But is three 9s good enough for a utility?

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## Best Practices

### On Blogs and Discussion Groups

An important part of your professional development and advancement is keeping up with where your industry is heading and with the technology pertinent to your industry. There are many avenues for doing this – books, magazines, newsletters, and conferences, to name a few.

But an often overlooked avenue is the many discussion groups and blogs that permeate the Internet. These afford an opportunity to not only learn about what is going on and to get answers to your questions but also to contribute to the needs of others through your own experience.

Our focus in the Availability Digest is on continuous availability, and we often visit blogs and discussion groups that pertain to high availability. This article contains a list of some of these that may be of value to you.

[--more--](#)

## Recommended Reading

### Multiple Processor Systems for Real-Time Applications

*Multiple Processor Systems for Real-Time Applications*, by Burt Liebowitz and John Carson, is a classic treatise on distributed systems. Written in the time when 64k was a massive amount of memory, it predicted tiered systems and clusters.

Not only is this book a joy to read to see how early technology morphed into today's powerful distributed systems, but more importantly it provides in-depth discussions of reliability theory and performance analysis with a focus on distributed systems. The material presented in these chapters is every bit as pertinent today as it was then and is a must-read for any serious distributed system architect.

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## The Geek Corner

### Failure State Diagrams – Repair Strategies

In an earlier article, [Calculating Availability – Repair Strategies](#) (November, 2006), we derived the relationships for the availability of an n-node single-spared system undergoing either sequential or parallel repair. These expressions were developed intuitively, but are they formally correct?

In our previous article, [Calculating Availability – Failure State Diagrams](#) (September, 2007), we introduced failure state diagrams as a method to formally derive availability relationships.

In this article, we use these failure state diagrams to formally derive the repair strategy relationships. We find that our intuitive relationships are indeed approximations, but they are valid so long as the nodal availability is high and so long as there is only a modest number of nodes in the system. This is, in fact, the case for the redundant systems in which we are interested.

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Managing Editor - Dr. Bill Highleyman [editor@availabilitydigest.com](mailto:editor@availabilitydigest.com).

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