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**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.

**Remembering Jim Gray**

I first met Jim Gray at Tandem Computers. Jim was a major contributor to the database technology that powers today's active/active systems. To me personally, he was a great friend and a wonderful mentor.

While at Tandem Computers in the 1980s, Jim developed many of the concepts that now position the NonStop database as one of the most powerful, scalable, and efficient databases in the marketplace. He then moved to Microsoft, where he made major advancements in the field of massive databases.

Sadly, Jim was lost at sea eighteen months ago when his sailboat, *Tenacious*, disappeared without a trace. His disappearance triggered what was probably the largest search-and-rescue mission in history, albeit ultimately unsuccessful.

In this issue, we remember Jim Gray, the technologist and mentor, and describe the massive efforts that were launched to try to find him.

Dr. Bill Highleyman, Managing Editor

# Never Again

## How Many 9s in Amazon?

Amazon is arguably the world's largest online retailer. It operates a massive computing and storage infrastructure that it has opened up to other businesses via its Amazon Web Services (AWS) offering.

AWS offers about a dozen services, including Simple Storage Service (S3) and the Elastic Compute Cloud (EC2). S3 allows users to lease storage, and it provides URL access to each object in storage. EC2 lets users request virtual machines on which to run their applications. Users can add or delete server capacity upon demand. These services attracted many companies to have their critical applications and their web sites hosted on the Amazon systems.

However, systems can fail; and a failure of such critical infrastructure can take down thousands of businesses. This is just what happened last February, 2008, when Amazon's EC2 and S3 services went down for hours. Interestingly, Amazon suffered a similar fate four months later when it lost its U.S. and U.K. retail stores for several hours.

Most customers do not provide a backup to utility-computing services such as Amazon's AWS services. This decision may be a widespread fallacy that must be corrected over time.

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# Best Practices

## Rules of Availability – Part 3

There are many ways in use today to achieve high availabilities. Predominant among these techniques are lockstepped processors, checkpointed or persistent processes, clusters, and active/active systems. All use some form of redundancy to recover quickly from faults, and all are subject to a common set of principles.

We conclude in this article a review of our sixty-four "Rules of Availability," as published in our series of books entitled *Breaking the Availability Barrier*. We chose those rules that are particularly applicable as *best practices* to achieve continuous availability with redundant systems, with a focus on active/active systems.

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# Availability Topics

## Jim Gray – In Memoriam

Jim Gray has been a computing legend since the 1970s. His most visible contributions have been in the fields of transaction processing and massive databases. Jim's work in this field is what now powers network applications

from ATMs to Internet shopping to enterprise mission-critical applications. He was the recipient of the prestigious Turing award in 1998 for “seminal contributions to database and transaction processing research.”

Jim Gray was lost at sea eighteen months ago. On Sunday, January 28, 2007, he set sail in his forty-foot sailboat, *Tenacious*, enroute. to the Farallon Islands, a wildlife refuge just 27 miles off the shore of Northern California, to spread the ashes of his mother. By nightfall, Jim had vanished without a trace. His disappearance triggered one of the most massive search-and-rescue efforts in history.

This article is not about the search for his whereabouts, though it certainly covers that. Rather, it is about Jim Gray, the scientist.

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# Product Reviews

## GRIDSCALE – A Virtualized Distributed Database

GRIDSCALE, from xkoto, Inc., is a scalable grid of database servers. It virtualizes a group of database servers so that they appear to be a single, consistent database server to the applications they serve. The failure of any one database server is transparent to the users of the database.

GRIDSCALE brings virtualization for its supported databases (DB2 and SQL Server) to the final tier of today’s popular three-tier architecture. Entire data centers now can be virtualized pools of servers providing their respective functions with active/active load sharing and instant failover capabilities. As with the presentation and application tiers, the database tier is readily scalable by adding database servers to the database pool.

Furthermore, the database tier can be recovered just as quickly as can the presentation and application tiers by simply removing a failed database server from the pool. The database servers may be geographically dispersed for disaster tolerance.

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