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Can We Depend Upon the Internet for Continuous Availability?

Our mission-critical systems are depending more and more upon the Internet. This dependence ranges from small online stores to corporate email systems. But is the Internet up to this responsibility?

The Internet has been likened to “a porcelain cup on the roof of a car zipping across a pot-holed goat track.” In this issue, we look at “The Fragile Internet” and express our doubts that the Internet alone can be trusted to always be there for us. There have been too many cases of the Internet going down over a wide area for hours and even days to give us much comfort.

This raises the issue of cloud computing, which depends heavily on the Internet. The poor cloud reliability experienced to date only adds to the fragility of the Internet. Is 40 hours of annual downtime good enough for your mission-critical applications? We will explore “The Fragile Cloud” in our next issue. If any of you have had cloud experiences – good or bad – please let us know so that we can include them in our fragile cloud article.

Dr. Bill Highleyman, Managing Editor

Case Studies

U.S. Bank Critiques Active/Active

U.S. Bank manages its ATM network with a two-node, HP NonStop active/active system running ACI's BASE24. Having successfully gone through this implementation, the bank offers advice and encouragement for others looking for continuous availability in their mission-critical systems:

- Make sure that the application owners are involved early in the process. They can be a major help in identifying potential data collisions and crafting the strategy to resolve them.
- Learn the difference between active/active architectures.
- Conduct a file categorization to determine the proper ways to replicate each file.
- Develop a strategy for out-of-sync detection, and test the resynchronization strategy.
- Review the network architecture with a goal of maximizing the effectiveness of that architecture.
- Determine the strategy to handle data collisions.
- Implement the project incrementally, one function at a time so far as possible.

The bank's bottom line:

> "Active/active implementation can seem like a daunting task, but this should not discourage you from pursuing such a solution because the benefits are tremendous."

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Best Practices

Backup Is More Than Backing Up

So you think that your corporate data is safe? Your company's data is its lifeblood. Lose it without the chance of recovery, and your company will likely go out of business.

But protecting your data is more than just backing it up periodically. This was graphically illustrated by the misfortune that befell JournalSpace. As described in our Never Again article Why Back Up?, published in our last issue (April 2009) of the *Availability Digest*, we discussed how JournalSpace was put out of business because of the failure to back up its database. After five years of rapid growth, the popular blogging host lost its entire database due to the nefarious actions of a disgruntled IT manager.

This story elicited several responses from our readers. They pointed out the additional problems of backing up a database if backup procedures are not documented and tested and if backup activities are not audited. If your company's survival depends upon its data (as many do), proper backup/restore procedures are a matter of corporate life or death.

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Availability Topics

The Fragile Internet

As cloud computing looms overhead, the Internet will become ever more important to corporate well-being. It is already the lifeblood of hundreds of thousands of small online stores hosted by a variety of software-as-a-service providers. The importance of email services reaches into the largest enterprises.

The availability of Internet services is of paramount importance to these companies, and its importance only grows with time. If the Internet is down, so are the operations of many companies, large and small. The Internet's mesh architecture is designed to provide the extreme availability demanded by these users. After all, a fault anywhere in the Internet is automatically routed around; and service continues uninterrupted.

But is the Internet really all that reliable? Can you bet your company on the continuous availability of the Internet? Unfortunately, experience says "no." As Om Malik, a well-known technology writer, said, "Our Internet infrastructure … is as fragile as a fine porcelain cup on the roof of a car zipping across a pot-holed goat track."

We review here real-life outages that expose the frailty of the Internet and discuss some of the protective measures that companies should consider to protect themselves from similar experiences.

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Product Reviews

Master/Slave Replication with Continuent's Tungsten

The Tungsten replication engine from Continuent, Inc., provides asynchronous master/slave heterogeneous replication between MySQL, PostgreSQL, and Oracle databases running on Linux or Windows platforms. In addition, SQL Server and DB2 databases are supported as slave databases.

In a master/slave configuration, one master database replicates its updates to one or more slave databases. The master database is available to all applications, and all updates are made to the master database. The slave systems are available for read-only applications such as queries, reports, and backups.

Uses for master/slave replication include read scaling, data locality, data warehousing, partitioned active/active, zero-downtime migration, high availability, and disaster tolerance.

Tungsten is open-source and is also available in an enterprise edition supported by Continuent. The enterprise edition is required for Oracle support and for several other Tungsten features.

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