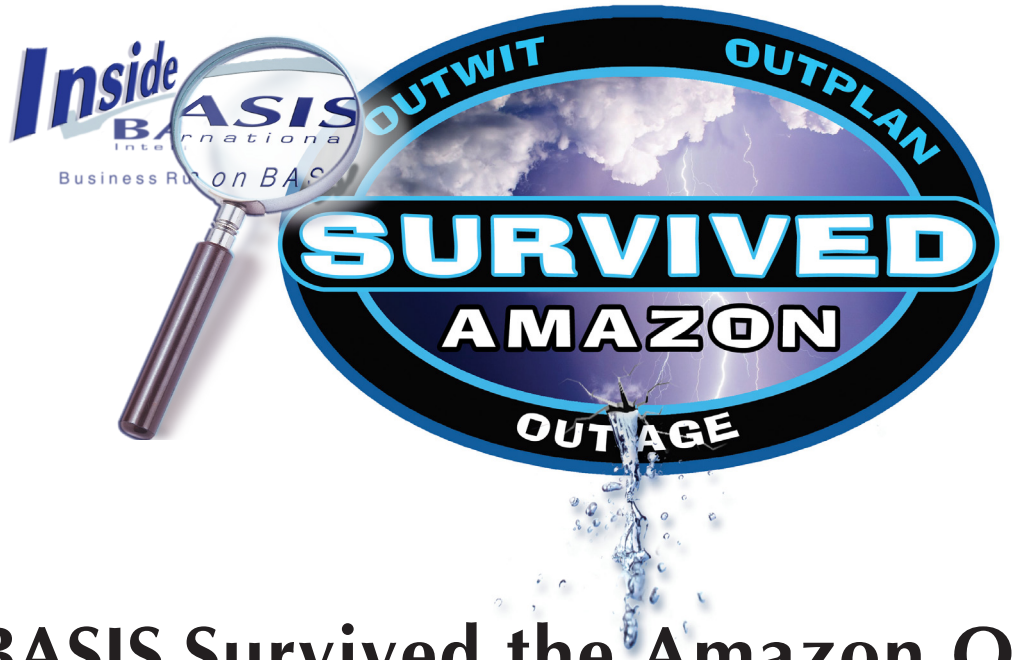

BASIS Survived the Amazon Outage

With all of the hype that is swirling around the cloud these days, one tends to forget that cloud deployments suffer from many of the same risks as the server rooms that we are familiar with, and that many of us have to manage each day. While it is true that with all of the backup power supplies and forty odd thousand servers in each facility, power outages are seldom and there is even less chance that another server is not available any time you need it. However, there is still that slight risk that something catastrophic can occur that will make the entire region come to a screeching halt!

As it turns out, this risk turned into a reality twice on the East Coast since BASIS moved their servers into the cloud. The first time, we had lulled ourselves into a false sense of security that often comes with your first cloud deployment, so we were offline for several hours like the majority of the Amazon customers in the region. Once the cloud came back online, BASIS implemented the necessary features to prevent such a calamity from happening again. Fortunately, it was not a difficult challenge to solve. With a small change to the configuration and a few cents more per hour, we enabled the Multi-AZ RDS system for www.basis.com and www.addonsoftware.com thinking that we would probably never need it, but we wanted to be safe.

Dr. Kevin W. King
President & CIO

A little more than a year later, the East Coast region failed again and numerous big name online businesses were down again; several companies suffered enough losses that they left Amazon entirely. Fortunately, neither BASIS nor AddonSoftware® suffered an outage at all. Even though our primary availability zone failed, the secondary zone took over automatically and without a hitch. This experience made us a firm believer of the benefits of the Multi-AZ service:

> "*In the event of planned database maintenance, DB Instance failure, or an Availability Zone failure, Amazon RDS will automatically failover to the up-to-date standby so that database operations can resume quickly without administrative intervention*." Amazon Web Services, amzn.to/RDVowj

In addition to keeping our websites up 100% of the time, we also want to keep our BUI demos and BUI-powered b-commerce® and product download pages functioning 24/7 as efficiently and as effectively as possible. To this end, we utilized a different feature that Amazon offers, Route 53 DNS Web Service (aws.amazon.com/route53). While this DNS works like almost any other DNS, it gives us some features that other DNS systems do not. First, it allows us to reduce the time-to-live (TTL) down to only 5 minutes from the usual minimum of 30 minutes. The result is that our failover from one server to another, or one region to another, will be less than 5 minutes of dead air, no matter how catastrophic the failure is. Another significant reason we use Route 53 DNS for www.poweredbybbj.com is to employ their lowest latency-based routing to provide geo-aware DNS service to our customers worldwide. Now Route 53 will silently direct customers to the lowest latency server in their region, in Europe they are routed to Ireland, US East Coast customers are routed to Virginia and US West Coast customers are routed to California or Oregon. Using the BASIS BBj® replication service to replicate the programs, configuration, and data to all of these machines means that we can deliver optimal performance around the world without adding to our process management overhead. We still just maintain the same single source machine and replication keeps all of the target machines up-to-date without any human intervention.

In order for BASIS to continue with Nico's "belt and braces" redundancy desire (aka "belt and suspenders" in my part of the world), we utilize the new scheduling feature in Enterprise Manager (EM) to pause the replication in the middle of the night, just long enough to run a traditional incremental backup to an Amazon storage bucket. Then we use another EM-scheduled task to rsync the production Amazon drive to another Amazon drive, giving BASIS two backups in addition to the replicated databases. Therefore, if a catastrophic failure ever occurs in one or more regions, we have replicated databases that we can fail

over onto, which are located on three different continents in less than five minutes. We still have the traditional midnight backups, should we ever need them, like our braces or suspenders. The combinations of configurations that are possible using the latest BBj toolset is almost endless. We are confident that one or more of these options will benefit all of your needs.

Finally, you might ask, "*How can anyone afford all of this hardware in all of these locations, even if the human maintenance cost does not increase?*" Well, Moore's law and market forces continue to drive costs down and technology up. The Amazon price of all of our replication servers have dropped to 1/6th of the on-demand servers, so we run replication servers in all of our high density customer regions for only 1-3 cents per hour and the storage price is calculated at pennies per GB per month. In order to keep our human costs low and our reliability high, we have put all of our replication, archive, test, build, and demo machines on spot instances, mostly controlled by Amazon Auto Scalers (aws.amazon.com/autoscaling). In response to trouble that might arise in any region, a new instance comes up in a different region and the removal of the DNS entry in Route 53 for the dying machine occurs automatically, so that BASIS customers do not experience a break in service and BASIS employees don't experience a break in their slumber.

While BASIS benefits from all of these cloud features, you might wonder how all of this benefits you, beyond having your language provider always accessible and online. Well, not only does having your language provider soaring high in the cloud give you a sense of comfort and security in that BASIS is prepared to handle calamities of any nature, it also gives you confidence that the language has built-in features and the capacity for you and your customers to move into the cloud infrastructure. Utilizing all of these features, we are able to add scalability, redundancy, and rapid recoverability for our AddonSoftware application in the cloud called AddonSoftware Cloud Service, or Addon Cloud for short. Utilizing Amazon's AutoScaler and Route 53 DNS along with BASIS' Data Replication and Scheduler, the Addon Cloud offering delivers geo-aware DNS for reduced latency, automatic server redundancy/replacement, and rapid recovery or failover functionality for any regional cloud interruptions. If you are looking for a robust affordable ERP solution, you would be hard pressed to find one that is more architecturally reliable and redundant than the Addon Cloud solution. ■

For more information, see *Are You Prepared for Cloud Failure?* at links.basis.com/12cloud