Feature Article:

HA For The Real World Subtitled: (Where Would You Rather Be?)

Mike Warkentin

By Mike Warkentin

Let me ask you a quick question: When was the last time your iSeries failed? I mean really went down hard to the point where your end users could not run their day-to-day tasks. If you are like most shops, the answer is likely never. This is because the folks in Rochester have built the most reliable multiple computing platform in the world (average uptime of 99.984%). Let me ask you another question: Do you still have time to run your daily backups, or are your end users requesting more and more up-time. For most shops the answer is a resounding "more time please". In many cases the IT staff is lucky if they can get a 2 hour slot once a quarter on a Sunday morning—and only if the moon is full—to run backups.

So in the real world, we don't have to worry about **High Availability** because unplanned downtime is negligible. What we really need to worry about is the fact that 90% of all downtime in an iSeries shop is due to planned activities like backups, PTFs and OS upgrades—in other words, things that impact **Continuous Operations**. Oops, we forgot about one little item. The risk of terrorism is level orange which means we do have to worry about unplanned downtime after all. Today we need to focus on combining the minimal unplanned downtime of HA with the minimal planned downtime of CO to give us CA (no not the computer software vendor but) **Continuous Availability**. For those of you who are mathematically inclined, think of it like this:

HA + CO = CA

So HA in the real world is taking care of planned and unplanned downtime to provide Continuous Availability. This article should likely be titled "CA for the Real World" but a certain software vendor may not be too thrilled with this title, so I'll stick with "HA For the Real World" but subtitle it "Where Would You Rather Be?" If I can take care of all unplanned and planned downtime, then instead of being in the computer room for two hours on a Sunday morning I can be canoeing in Algonquin Park. Where would you rather be?

To get to CA we need to consider several factors, first and foremost is cost justifying the solution to management. This can be a tough job when faced with a computer that never dies. There are tools to assist in this task as well as some scary facts that may help the process, but most shops will likely only consider doing something when they have experienced the pain of unplanned downtime. To help with the cost-justification process, IBM has a great tool that is an Excel spreadsheet which can be downloaded from http://www-1.ibm.com/services/its/us/dtw10.html. After answering a number of questions related to your business, the spreadsheet will rate your level of availability and will tell you the approximate cost of your downtime.

Once you have cost justified CA, you have several choices as to how to accomplish the goal of Continuous Availability. It all depends on how continuous you want to get, and what problem you are trying to solve. If time for backups is the key issue, faster tape drives, concurrent or parallel saves, or the save while active command may just do the trick. If physical file reorgs are an issue, there are several third party tools that can assist with doing reorgs while your end users are still active – including a tool from the previous MOM speaker **Jim Sloan**. There is also a very little known IBM command called RCLSPACE which can be downloaded from PTF SF62621 (at V4R5) or SI01001 (at V5R1) which will also do a reorg while active.

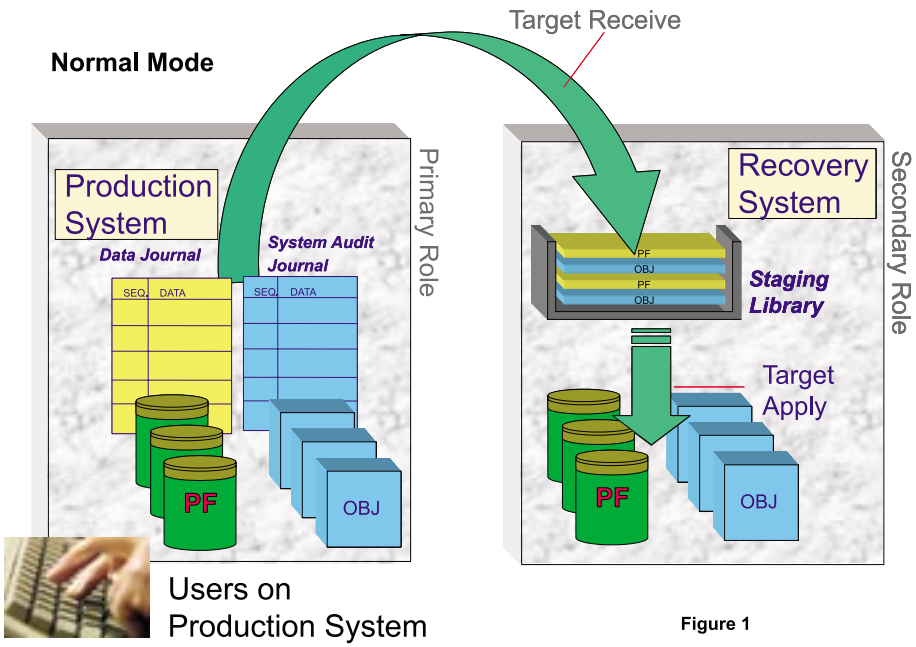

Figure 1

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If you want to protect your shop from physical hardware failures on the iSeries, you have several options. Switched disk or IASPs (Independent Auxiliary Storage Pools) will enable you to quickly switch a storage I/O tower containing either the IFS only (at V5R1) or libraries and other objects as well as the IFS (at V5R2) between two locally connected iSeries systems.

A SAN solution using IBM's advanced copy functions PPRC and FlashCopy on ESS (Shark) or EMC's SRDF and TimeFinder on Symmetrix will provide you with protection for a site failure by replicating disk changes at the block level to a remote recovery system, although the backup disk will be unavailable for reporting or backups until the recovery iSeries system is IPL'd.

Finally you can use one of the HA application aware software packages that make use of journaling and IBM's Cluster Resource Services to provide both protection from hardware failures and site failures and allow some work load balancing by allowing queries and non intrusive read only functions (such as backups) to occur on the recovery system.

The high availability solutions from IBM's High Availability Business Partners (HABPs) are an excellent method of handling both planned and unplanned outages, but remember even with these solutions you need to plan carefully and do your due diligence to pick the best solution for your shop. They all basically work the same way – scraping journal transactions from the source system and sending them across a communications pipe to a recovery system (although they also allow you to use remote journaling to have the operating system to the scraping and sending). On the recovery system, the transactions are staged in a library and then are applied to the backup system. **Figure 1** shows how this process works.

When you want to run backups, the process involves ending the Target Apply process (which can be automated from the source system and timed to occur just before your end of day batch routines for example), getting a lock on your target databases and objects, running the backup and then restarting the apply process. The advantage with this method is that your users are up and running 24/7 on the production system while backups are being performed on the recovery system. **Figure 2** shows this process.

If you do decide that an HA software solution is on your road to CA, your job is just beginning. You need to choose the solution obviously, and there will be planning and time involved. You will need to work with the HA vendor or consultant to analyze your applications. Which applications are critical, which can you live without in a disaster? Do you have the required hardware or an LPAR for a redundant system? Does your application use triggers, commitment control, or referential integrity? Do you still have old twinax devices or printers that would need to be switched? How many transactions do you perform per hour, and will you have a big enough pipe to handle the volume of transactions that will be mirrored? As you may begin to see – this is not a product like MS Word that you are going to run a simple wizard to install and then get running in 10 minutes. Continuous Availability is not a product but a process – and some might say a never-ending process.

Is it worth it? It depends. How much CA do you need to buy? What is the impact to your business of being down for an hour – at month-end, or at a critical period like Christmas if you are in sales? What does HA in the Real World mean to your business? Where do you want to be on the Victoria Day long weekend – in your computer room doing a complete system restore or a backup due to a disaster, or in a canoe on a lake in Algonquin Park with only a loon (and no I don't mean your manager) for company? I for one know where I'll be! TUG

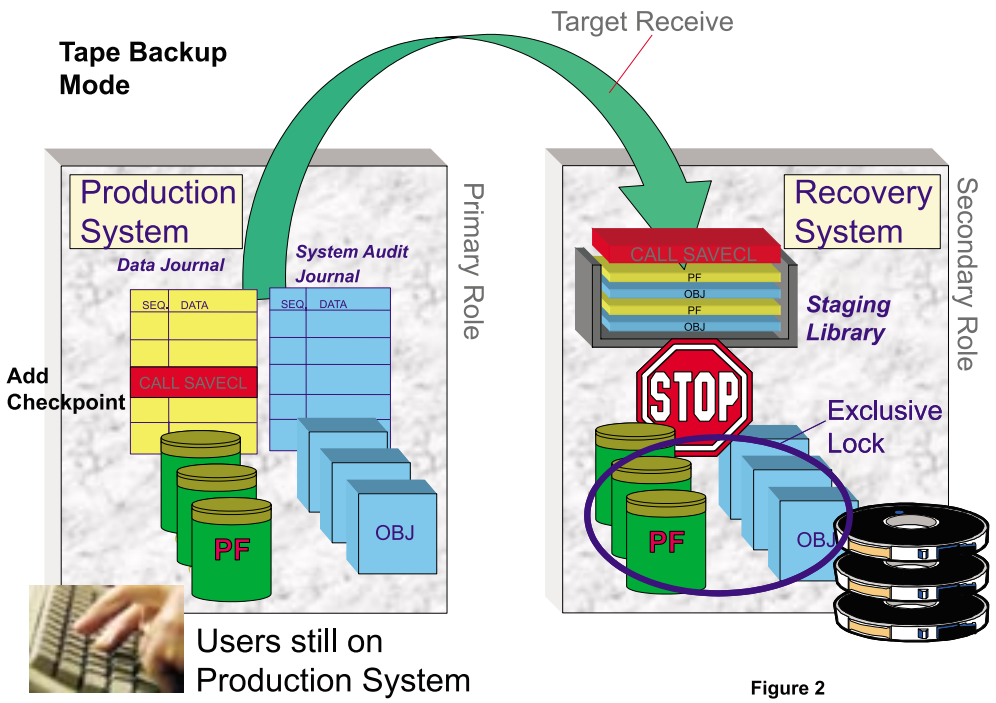

Figure 2

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[Note: **Mike Warkentin** is the matinee speaker at the next TUG Meeting of Members, Wednesday at 5:00PM, May 21, 2003. (See The Agenda on page 6.)]