

IBM Servers and Storage Demos

i5/OS Switch Disk Storage Architecture - Overview of Switch Disk Technology

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Welcome to Switch Disk Basics Overview. I'm Steve Dahl. Today we're going to talk about the evolution of Switch Disk technology on the System i. In a 3-part session, we will review the fundamental storage architecture that has led us to develop independent auxiliary storage pools. Then we'll review exactly what independent auxiliary storage pools are and how they can be implemented in a switch disk environment. Finally in part 3, we will review how we can take these switchable disks and employ them in a resilient high availability environment.

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So let's begin. The System i has long had something called Single Level Storage. In fact, before the System i was even an AS400, there was the concept called Single Level Storage. This says that all disk and all the memory for a given system or a non-partition is one single addressable space. This has been a very powerful way to build a system because it enables us to be very flexible and maintain a high degree of simplicity for administrators.

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When you set up your System i and you take the system defaults, what you will end up with is the entire addressable space. The single level store resides in something called the System Auxiliary Storage Pool, or the System ASP. That means that all of these addressed spaces are one big storage pool.

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Since the days of the AS400 we have also allowed the ability for administrators to create something called a User Auxiliary Storage Pool. The original user auxiliary storage pool was similar to the idea of being able to set up a set of disks and essentially put a little velvet rope around the disks, and say these disks have a special purpose. Most of the time that special purpose was for isolating transaction processing journal receivers and allowed the journal receivers to be placed on disks that were sometimes slower, less expensive, maybe older disks, and sometimes it was solely for the purpose of isolating that activity on to a given set of I/O processors.

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Disk technology has improved tremendously as has journal technology, to the point where user auxiliary storage pools are not nearly as important as they used to be. We still offer them, though now they're called Basic ASPs.

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We extend the concept of auxiliary storage pool, and we create something called the Independent Auxiliary Storage Pool. Now instead of a velvet rope, we've built a wall around these disks, which we define as an independent storage pool, and we tell the system that the only way for the system to access the data and the applications that are in the IASP is through a Vary On. We have to explicitly activate the Independent Auxiliary Storage Pool. This allows the user to isolate both applications and data from the rest of the system.

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There are several advantages of being able to use the ISAP concept. From an AVAILABILITY perspective, you can isolate workloads and particularly if you know you are going to be restarting the system, maybe for maintenance, you can isolate workloads that are not mission critical - maybe you can quiesce some subsystems but the applications can be taken off line by varying off the independent auxiliary storage pool. Then when you do your system restart at the end of your maintenance activities, your restart will go faster, because there is less disk to initialize on the restart sequence.

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There are other advantages of running independent auxiliary storage pools on a single system from a database design perspective. If you have database administrators who are familiar with UNIX space databases, particularly, you may find that they want to create separate instances of databases, and one can do this using independent auxiliary storage pools.

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Additionally, anyone can take advantage of IASP's in order to create test and development environments that allow you to use and reuse the same object names. Because the development test environment is in its own IASP, it can use the same library names, program names, table names, etc.

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So there are a lot of capabilities in terms of how to take advantage of the IASP on a single system. In part 2, we will talk about how we can take advantage of the IASP in a more powerful way to switch between servers.

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