[Enterprise Storage]

Windows Storage Server 2003, Part 2

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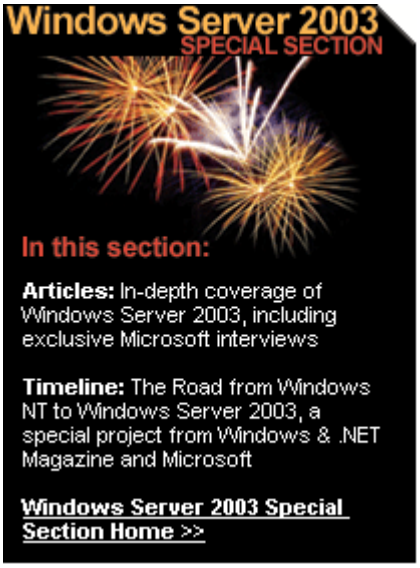

In my last commentary, I provided an overview of Windows Storage Server 2003. I also explained how Windows Storage Server was essentially an upgrade of Windows Powered Network Attached Storage (WPNAS) 2.0 and why Microsoft changed the name of the product line. In this commentary, I focus on two new and very important technologies included in Windows Storage Server--Volume Shadow Copy Service (VSS) and Virtual Disk Service (VDS).

VSS and VDS are storage infrastructure services with no UI that let storage hardware and software from various vendors interoperate in Windows. VSS and VDS work by calling providers, storage hardware, software, and applications from Microsoft and third-party vendors. You can configure VSS to use a third-party vendor hardware provider for hardware storage arrays. Hardware providers are available for download from vendor Web sites. Microsoft ships a software provider, VolSnap, in every copy of Windows Storage Server. VSS can work with VolSnap or a registered hardware provider. As an example, let's look at a backup application that initiates a snapshot request. The backup software calls VSS. VSS checks its available providers and executes them in the following order:

First, if a hardware provider exists, that provider executes first.

Second, if no hardware provider exists, VSS looks for a third-party software snapshot provider to execute.

Third, if no third-party software snapshot provider exists, VSS calls VolSnap.

Fourth, the backup application can instruct VSS to override the default snapshot provider execution order and call a specific snapshot provider.

VolSnap works by first creating a 300MB differential area and then recording the point-in-time snapshot. After the first snapshot completes, and before all block-level writes to the snapped volume occur, VolSnap reads the block of information to be changed, writes that block to the DIFF area, then writes the changed block to the appropriate block in the original file on the disk. The differential area can expand and contract as needed.

All VolSnap snapshots are read-only. If you use VolSnap, you can specify where the DIFF area is located, either on the same storage device as the original snapped volume, or you can relocate the area to another volume for improved performance.

The VSS infrastructure is both powerful and flexible and lets products from third-party vendors participate in a Windows Server 2003 environment. However, VSS snapshot providers vary in functionality and speed. For example, Shadow Copy Transport can

manipulate large amounts of data rapidly. And a hardware provider attached to a Storage Area Network (SAN) can perform snapshots at extreme speed. As I mentioned in "Windows Storage Server 2003, Part 1" in the June 9 issue of Storage UPDATE, Microsoft demonstrated VSS calling a hardware provider that created a snapshot from a 1.2TB database in less than 1 minute.

VDS is similar to VSS in that VDS provides a management interface for third-party hardware providers that support volume and disk management on third-party devices. For example, let's look at a situation in which you execute a VSS hardware-based snapshot on a SAN. Using VDS, you could change the snapshot LUN from read-only on the SAN to read-write, unmask the LUN to another server, or perform other volume and disk management operations. Although VDS executes on an attached SAN device, all of VDS's functionality initiates from Windows Storage Server 2003.

One example of how third-party NAS and SAN vendors might use VDS is a situation in which you want to convert your Microsoft Exchange Server 5.5 and Windows NT Server environment to Exchange Server 2003 on Windows 2003. The SAN vendor could supply a migration program that uses VDS to automatically configure the SAN with the appropriate-sized LUNs, migrate the data from the source to the target, then automatically configure the snapshot policies and initiate the first snapshot. Application programmers can take advantage of VSS and VDS to manage sophisticated storage scenarios, making the applications more turnkey for the average systems administrator.

CommVault Systems is the first vendor to release a shadow copy management application. CommVault's Shadow Explorer uses VSS- and VDS-supported hardware providers to create and manage snapshots. Shadow Explorer is only the beginning of a generation of third-party shadow copy management applications that will leverage Windows Storage Server for large enterprise storage configurations.

In my next commentary, I'll continue my examination of Windows Storage in "Windows Storage Server 2003, Part 3." I'll give you real-world examples about using Windows Storage Server to make a significant contribution to your enterprise storage infrastructure.

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