

Key Words:

Microsoft VSS and Exchange & SQL Real-Time Backups

Exchange, SQL, Database, VSS, Volume Snapshot Manager, Volume Shadow Services, VCS, MSDE, XP, VISTA, Server 2003, Real-Time Data Protection.

Situation:

How does ShadowProtect interact with VSS to ensure the complete and accurate point in time backups of volumes when VSS aware applications reside on these volumes.

Technical Information:

What is VSS and what does it do?

VSS (Volume Shadow Services) is software built into Windows 2003 by Microsoft to resolve the issues associated with backing up open files. Utilising VSS correctly helps to ensure that Administrators do not have log users off of VSS enabled databases when backups occur.

VSS does not backup files as such rather the sectors the files reside on thus giving very accurate and small point in time real-time backups.

What applications are VSS enabled today?

Type **vssadmin list writers** at the command prompt to list all VSS enabled applications. Today, these Microsoft applications and databases include:

- **Server 2003**
- **Exchange 2003 & Exchange 2007**
- **SQL 2005 including MSDE**
- **FRS, NTDS, WINS, IIS and DHCP**
- **Windows XP**

- **Windows VISTA**

How does VSS work?

An external application (such as StorageCraft ShadowProtect) uses the correct and certified API calls (these are referred to as VSS Writers – see below) to VSS to “freeze” the relevant application. This means that during the process of creating the backup, VSS tells the application to commit all transactions to disk and then freeze the database to gather the list of sectors that need to be backed up. This freeze process allows for reads from the frozen sectors but blocks write to these sectors. Once the snapshot has been completed, the VSS Writer informs VSS that all data (sectors) have been protected and that VSS can now release or thaw the database. At this point if an application needs to write to a protected sector VSS makes a copy of the sector before allowing the write, therefore when the affected sector needs to be backed up the copied one is the sector that is stored in the backup. This entire process typically takes only several seconds, depending upon the size of the database and amount of changed sectors.

What are the currently certified VSS Writers

A VSS writer is an application that seamless and fully integrates in to VSS to instruct VSS to freeze and thaw the relevant VSS application or database (such as Exchange 2003 or SQL 2005). Type **Vssadmin list writers** to list VSS Writers. Today, only two applications are certified VSS Providers:

- StorageCraft Volume Snapshot Manager (as used in ShadowProtect)
- Microsoft VCS

Why is a certified VSS Provider important?

Often an application is referred to as VSS AWARE – this typically means that a work-around has been written to VSS as the application is not actually VSS certified. This can often lead to a corruption of the VSS database or backup image file and are hence using VSS AWARE applications are not recommended.

How does ShadowProtect use VSS?

StorageCraft ShadowProtect is a certified VSS Writer and enables any VSS application or database to be protected in real-time without taking the application or database off-line. StorageCraft ShadowProtect uses an automated ‘Set & Forget’

scheduling feature to help ensure that organisations can protect their data in real-time every 15-minutes throughout the day minimising data loss after a crash or corruption. As StorageCraft leverages the sector based capabilities of VSS, incremental changes / backups are often tiny compared to traditional file based backups therefore substantially reducing / eliminating backup windows in organisations of all sizes.

Related Knowledgebase articles

- [Single mailbox restore for Exchange 2003](#)
- [Circular Logging for Exchange](#)
- [Configuring an Exchange Server \(recommendations & Best Practices\)](#)
- [Protecting non VSS databases](#)