File System *and* Database Backup

for

FlashDisk

using

CommVault Simpana Software

<u>Table of Contents</u>

Product Models Covered by This Document

This application note applies to the following product models:

- **All Winchester Systems FlashDisk Series Storage Systems**

For related information about subsystem configuration, check the User Manual that came with the storage system, or visit the Winchester Systems official website for more product solutions: http://www.winsys.com

<u>Why CommVault Simpana?</u>

To ensure highest data availability while streamlining backup and recovery tasks, FlashDisk storage systems provide comprehensive protection to ensure data availability for SAN and DAS configurations. Coupled with advanced hardware design, modular architecture, easy and intuitive management and exceptional price-performance ratio, FlashDisk provides a decisive competitive edge by making IT efficiency keep up with growing needs.

Although FlashDisk has already been equipped with data protection functions including snapshot, volume copy & mirror, synchronous and asynchronous remote replication, they are all based on a block-level volume protection mechanism. They support the highest levels of data availability and quick service recovery after storage accidents, but may not meet the customer requirement on file-level backup and recovery processes: simple protection for host drives, folders, and files. For such file-level protection requests, it is recommended for users to leverage the abilities of host-side backup software.

Winchester Systems is a technical partner of CommVault, a software maker who has developed Simpana, a modern and comprehensive suite of data management solutions to meet the backup and archival needs of enterprises. The result of the collaboration of two companies has resulted in a cost-effective host-based backup solution that maximizes data reduction and scales to meet the needs of demanding enterprise environments. With proper configuration and operation, users can build fast, reliable, and scalable storage systems.

System Topology

This section describes the proposed topology including storage systems, host servers, and client computers. Users can combine more than one of these elements, depending on their actual environment.
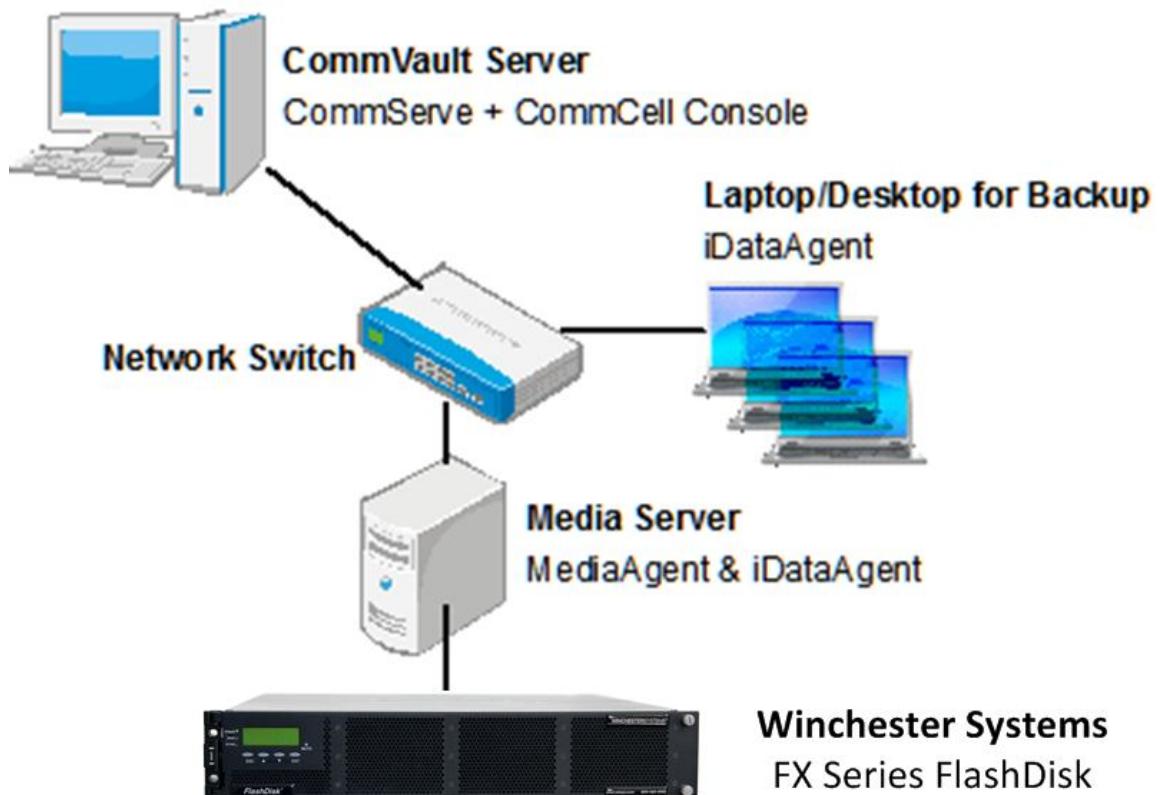

Figure 1: Integrated topology with FlashDisk storage system and CommVault Simpana software

Server Topology:

- CommVault Server: CommServe module (including CommServe Database Engine) and backup management GUI CommCell Console have been installed. The server is used to control all client computers, backup resources, and tasks.
- Media Server: The media server is connected to the storage system via direct connection or SAN network, and uses the capacity resource mapped from the storage system for the media and as a backup destination.
- Laptop/Desktop for backup: The CommVault server searches for computers (with agents installed) that can serve as the backup source in the same network environment as the server.

Storage System Topology:

The media server uses the capacity of the storage system also for applications (ex. Microsoft SQL Server database). Therefore, several storage volumes are required in the topology. One is used as the destination of backup tasks, and others are used for the media server mounted for the host file system, which is also used for installing database applications.

Redundant models of FlashDisk are chosen for maximum capacity utilization. The proposed topology contains two LVs (Logical Volumes). LVs are assigned to different controllers: For example, LV1 is assigned to controller slot A and LV2 is assigned to slot B. Then, partitions are created on each logical volume and are mapped to the media server. Several disk drives are prepared, which are discovered and mounted on the media server. Those disk drives are formatted and then assigned to different drive letters, becoming independent volumes inside the topology.

The file system in the media server uses the D: drive for storing data and the E: drive for storing database including data and log files. The media server can leverage the high performance and reliability provided by the FlashDisk system to protect their files and database to serve host applications. The F: drive is partitioned as the destination of backup copies for CommVault Simpana.
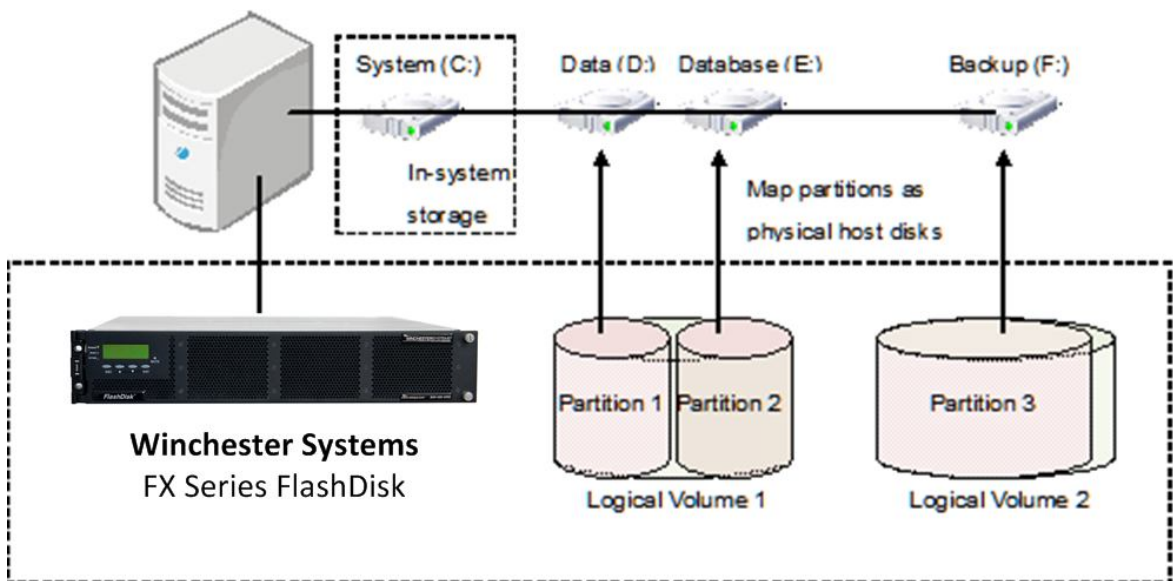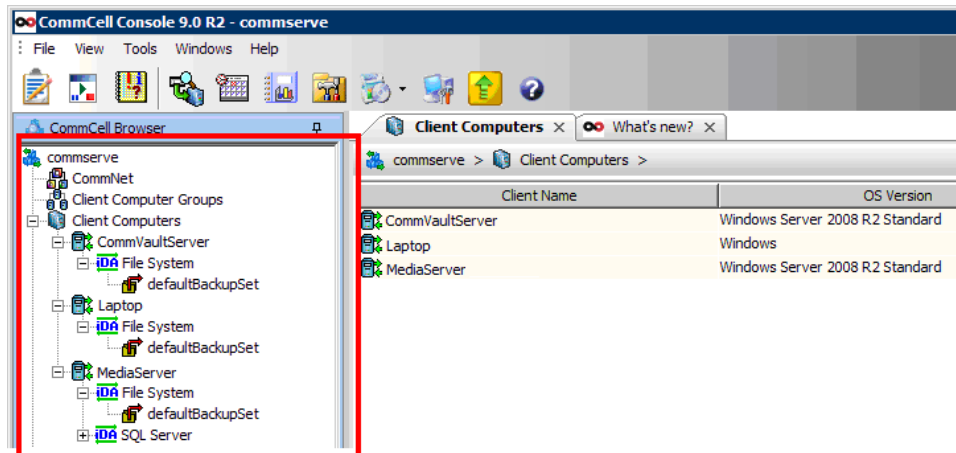

Figure 2: Proposed configuration of FlashDisk storage system

Backing up File System Database via FlashDisk and CommVault Simpana

Note: The procedure described here follows the system topology shown in the previous section.

Step 1: Preparing the Environment

1. Connect the server, storage system, backup computer, and disk drives to form a system topology, of which an example is shown in the previous section.
2. Install the CommVault Simpana software suite and/or its modules to the CommVault server, media server, and backup computers. For more details about the Simpana software and its installation procedures, refer to the CommVault website *http://www.commvault.com*.
3. Power up all devices, including the FlashDisk subsystem.
4. Launch the CommCell Console in the CommVault server.
5. Check the Client Computers in CommCell Browser panel. In this topology, several exist: CommVault Server (CommServe installed), Media Server (MediaAgent has been installed) and laptops or desktops for backup (iDataAgent has been installed).
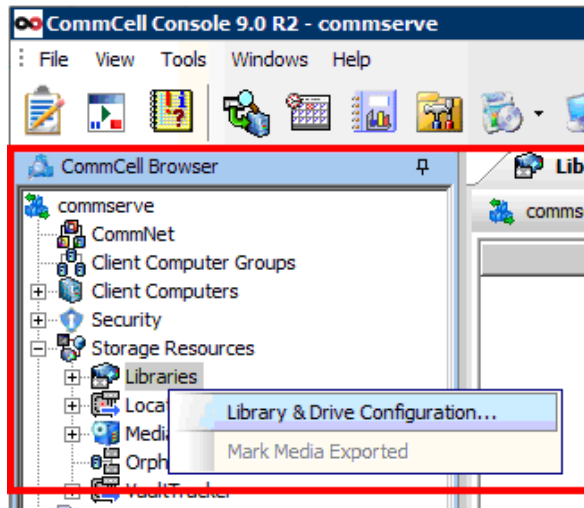

6. Check the MediaAgents node below the Storage Resource corner to see if all settings have been properly configured and all software modules have been installed. If the software modules are not found in the console despite already being installed, check if the related services are running in the Service Control Manager.
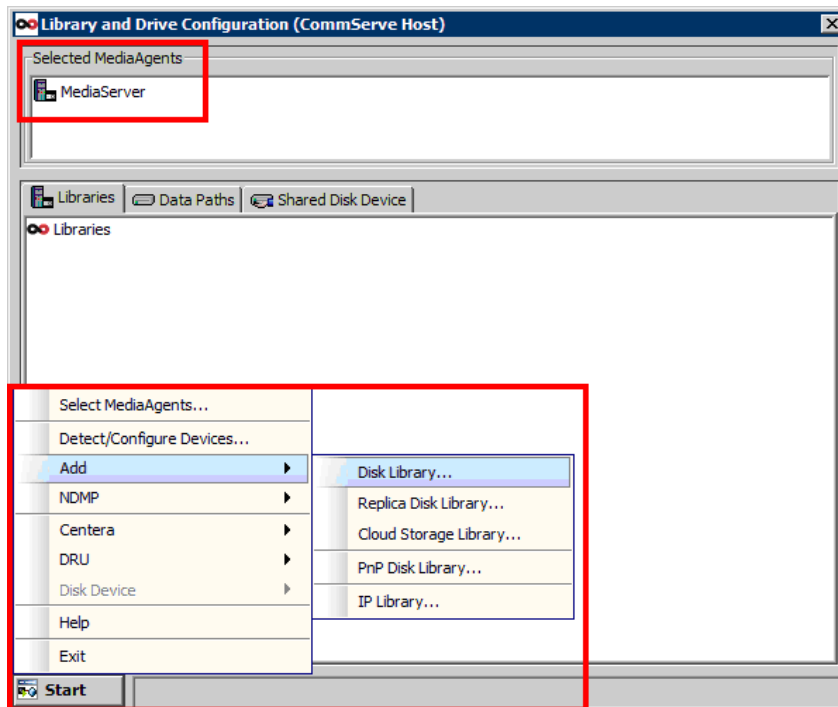
Step 2: Configuring New Disk Libraries

In this step, users will add the storage resources that are mapped from the storage system to the management scope of Simpana. There are several volumes configured for this practice (drive letter D: to F:), but only one disk drive F: will be used as the destination of backup copies.
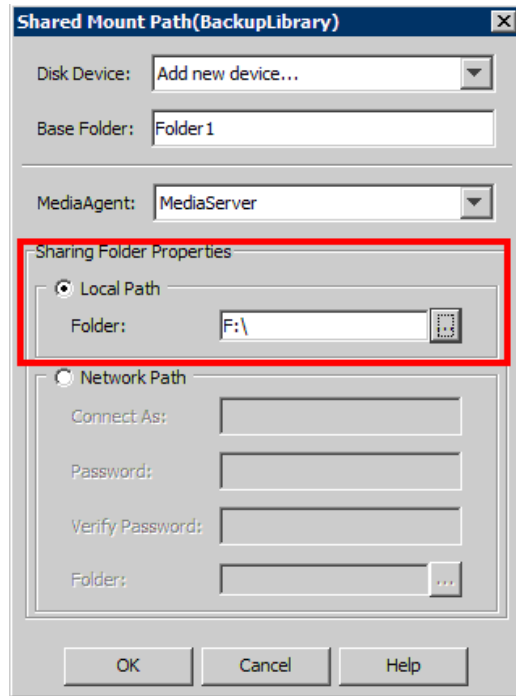
1. Right-click on the *Storage Resources > Libraries* node in the CommCell Browser bar and select *Library & Drive Configuration* from the context menu.

2. The Library & Drive Configuration screen will appear. Confirm that the MediaServer appears at the top as the selected MediaAgent, and click the Start button and select *Add > Disk Library*.

3. Users may add a Disk Library by giving it an alias name and specifying the Disk Device and Base Folder. Select the path (in this case, disk drive F:) and click *OK*.
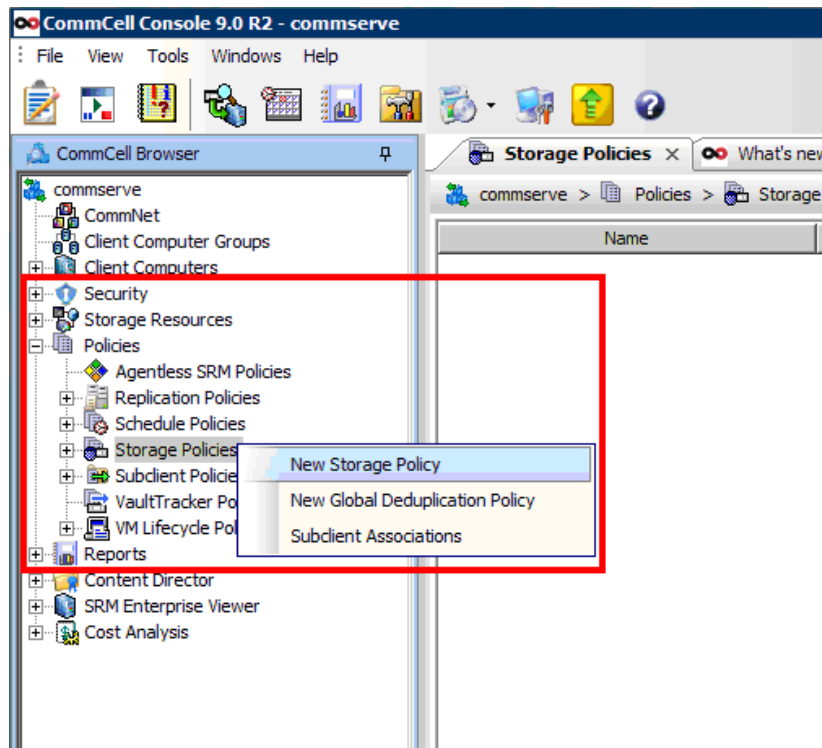

In the proposed topology, there should be only one library from "Partition 3" as the backup destination. Because "Partition 3" has been mapped to the host and mounted to the disk drive F:, the disk path is used as the backup target mounted as a Simpana disk library.
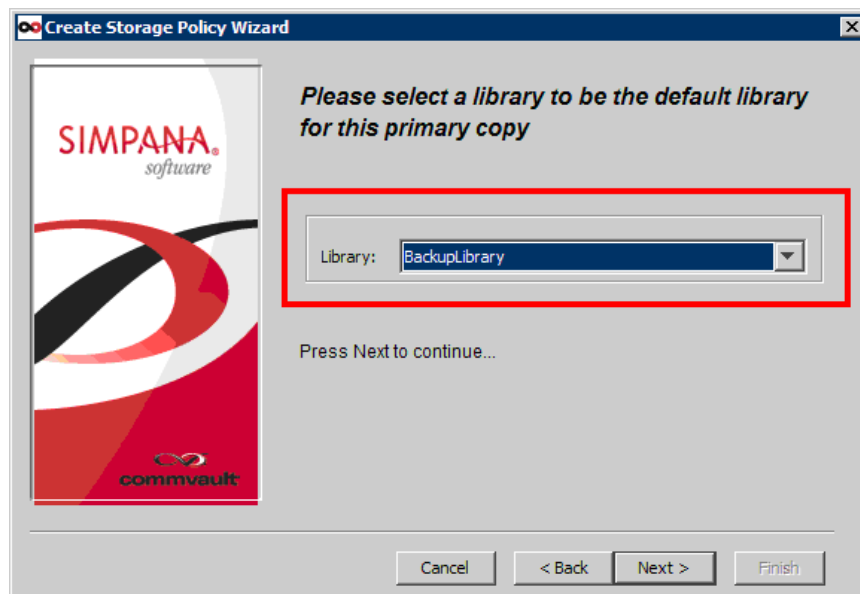
Step 3: Creating the Storage Policy

A Storage Policy is required to configure backup settings and leverage the new Disk Library from the FlashDisk storage system as the backup destination.
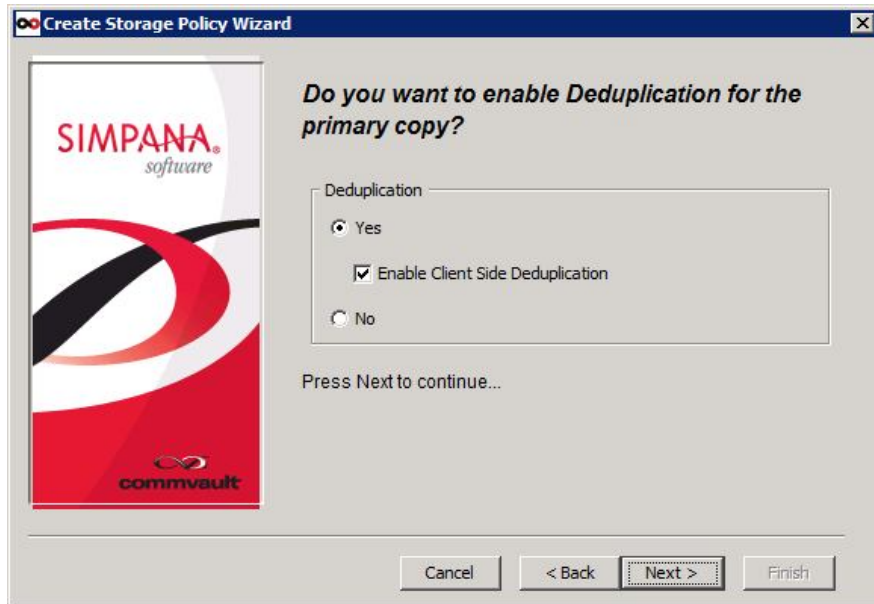
1. Right-click on the *Policies > Storage Policies* node in the CommCell Browser bar and select *New Storage Policy* from the context menu.

2. The Storage Policy Wizard will appear. Select BackupLibrary (the library created in the previous step) from the drop-down menu and click *Next*.

3. Users will be guided to select the policy type (for protection and archiving), backup name, default library and media agent for this backup copy. Users can also specify the amount of data stream for backup and the aging rule for the copy.

4. Users may enable the deduplication feature. Deduplication optimizes storage capacity utilization but consumes more processing time during backup processes.
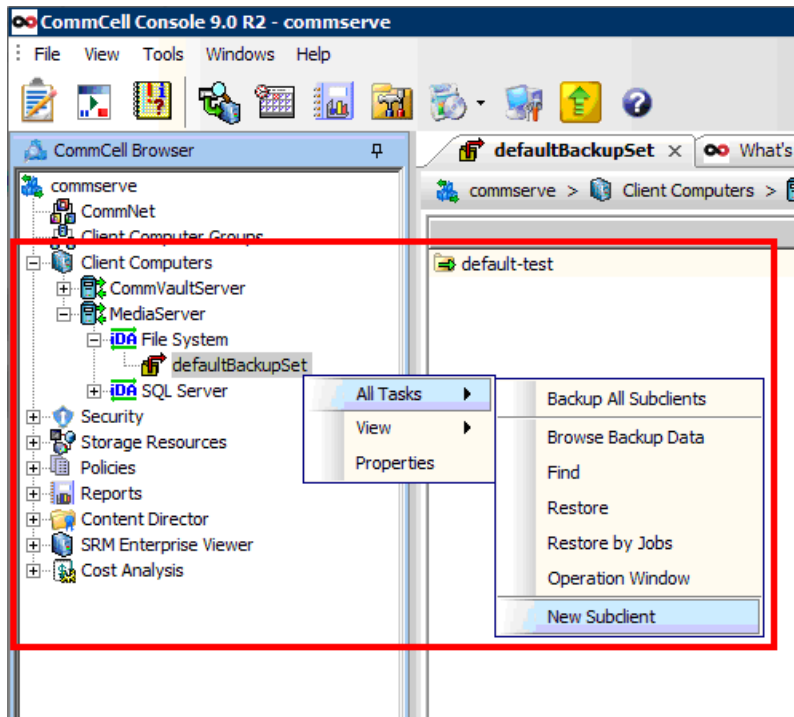

5. After reviewing the settings of the newly created policy, users will have a storage policy to engage the backup operation, with FlashDisk as the backup target library.
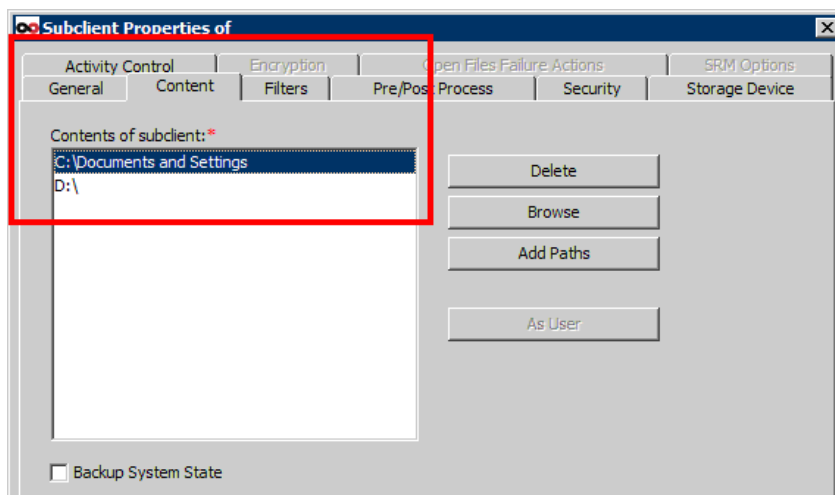
Step 4: Adding a Sub-client for the File System Backup

In the proposed topology, two data volumes exist in the media server. One is used for file storage (disk drive D:) and the other for database (disk drive E:). In this step the backup source for storing the whole file system will be configured by leveraging the resource and policy that has been created in previous steps.

1. Right-click on the *Client Computers > Media Server > File System > defaultBackupSet* node in the CommCell Browser bar and select *All Tasks > New Subclient* from the context menu.
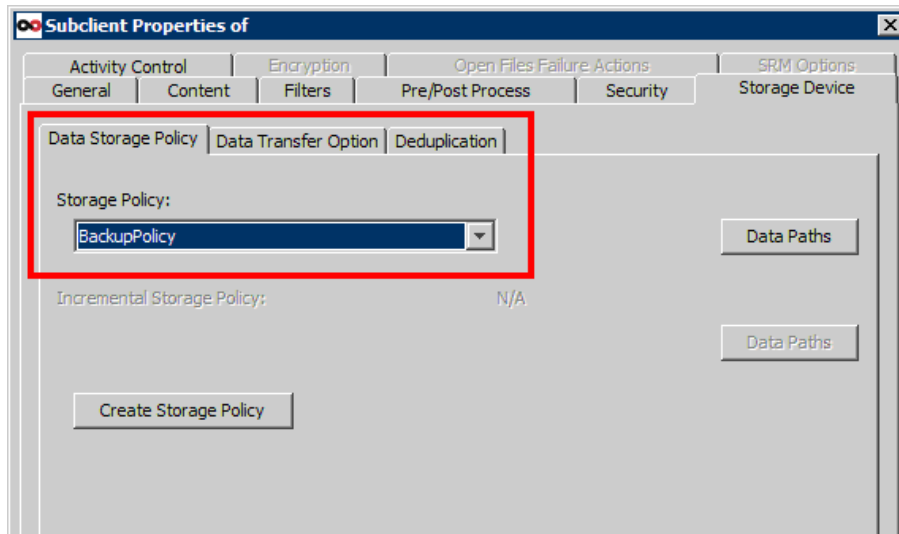

2. The Subclient properties window will open. After naming the subclient, go to the *Content* tab and select the contents: the whole drive or just folders.
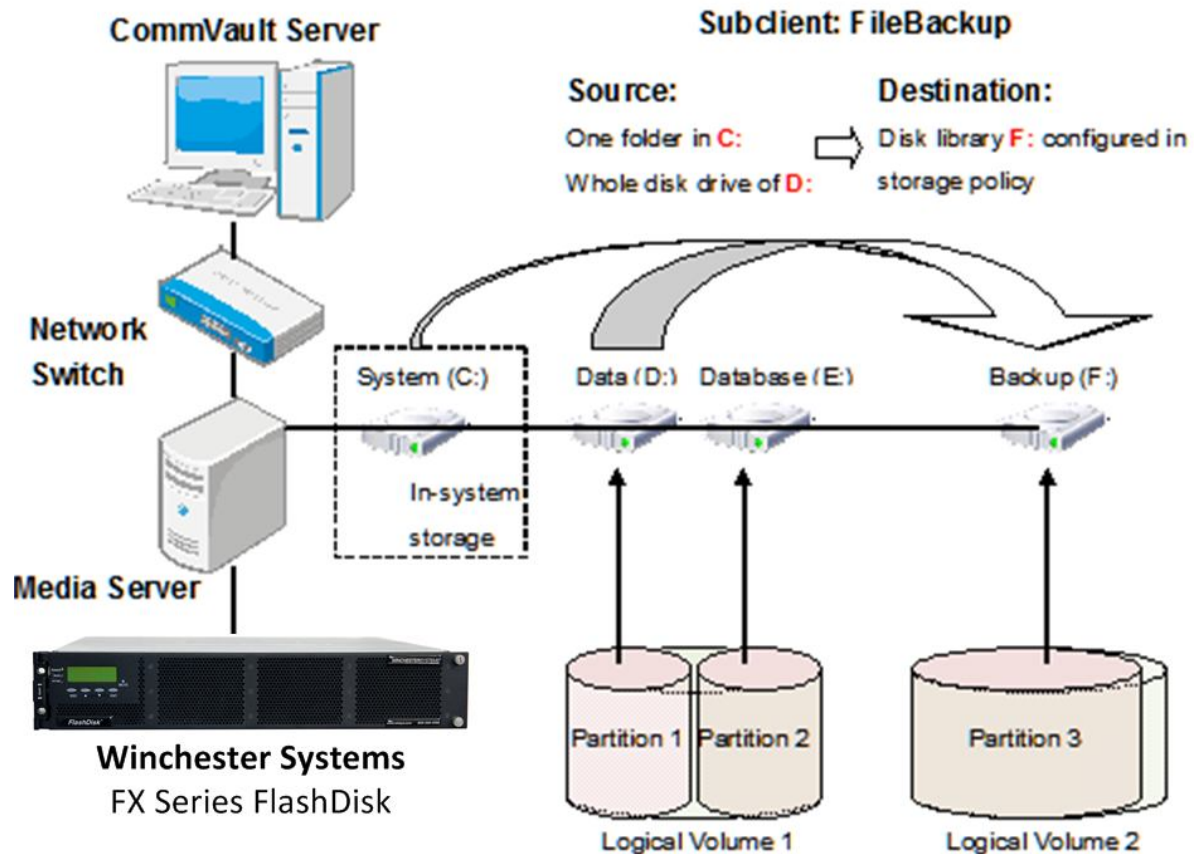
3. Go to the *Storage Device* tab, select *Data Storage Policy*, and choose the newly created backup policy from the drop-down menu. Users may also create a new policy for this subclient using the *Create Storage Policy* button.
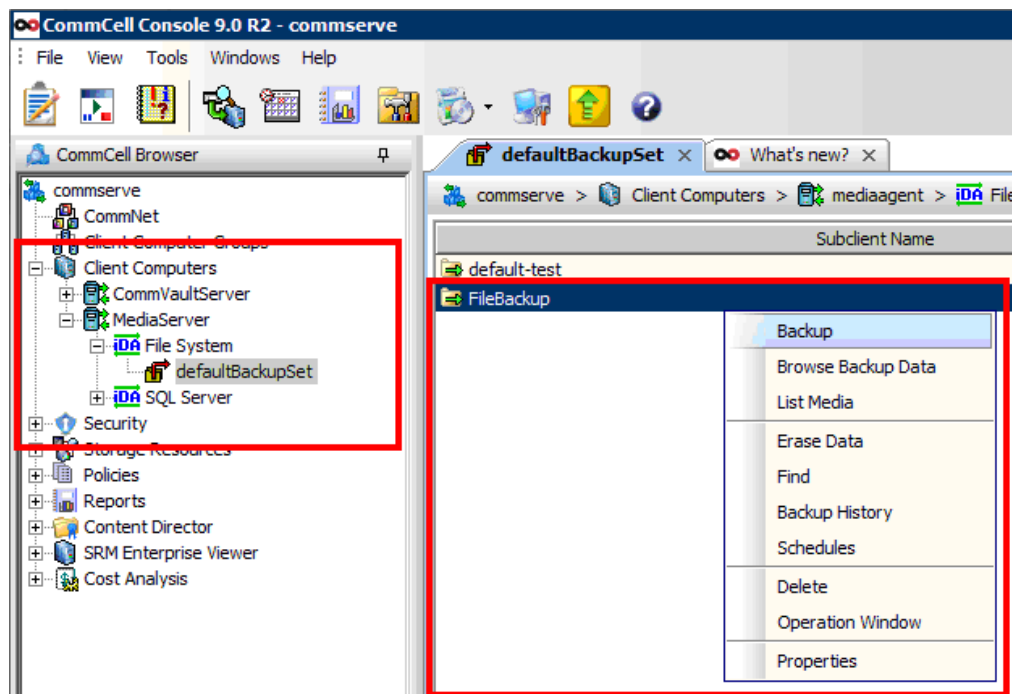

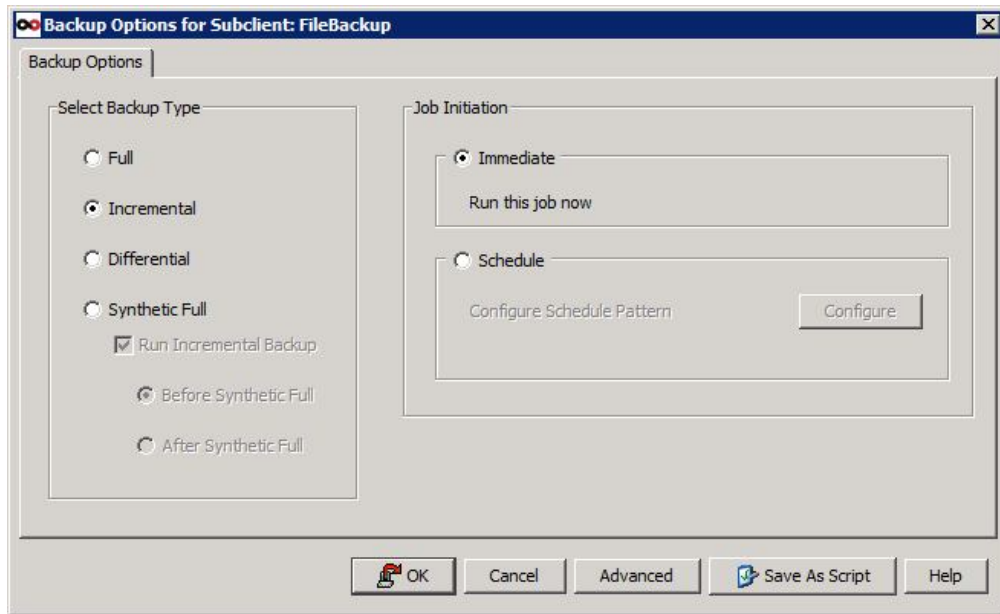4. The diagram below shows the current system topology.

Step 5: Starting the Backup Job

One of the partitions in the FlashDisk has been added as a disk library, which became the storage resource of the CommVault Simpana. The library policy and related settings (such as the Deduplication function) has also been created. In the previous step, a subclient for the host's file system has been created and the disk drive/folder to be backed up was chosen. In this step, the newly created subclient starts the backup job.
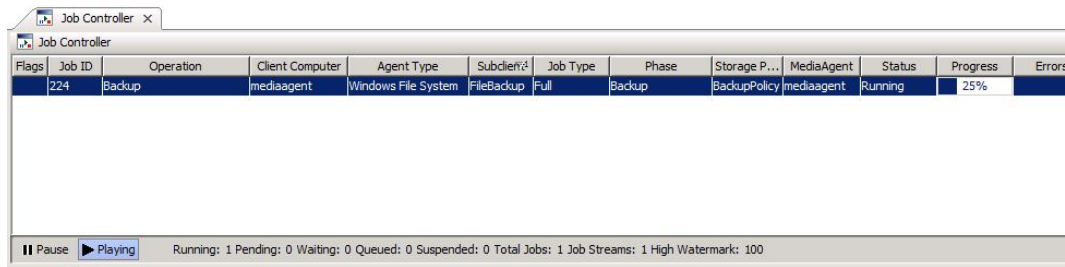
1. Select the *Client Computers > Media Server > File System > defaultBackupSet* node in the CommCell Browser bar. In the subclient list that appears, select the newly created subclient (FileBackup in this case), right-click and select *Backup* from the context menu.

2. Select the backup type (full or incremental backup) and backup schedule (start immediately or at specific time), and click *OK*.

3. The new backup job will appear in the Job Controller section. The current backup status and progress also appear here.
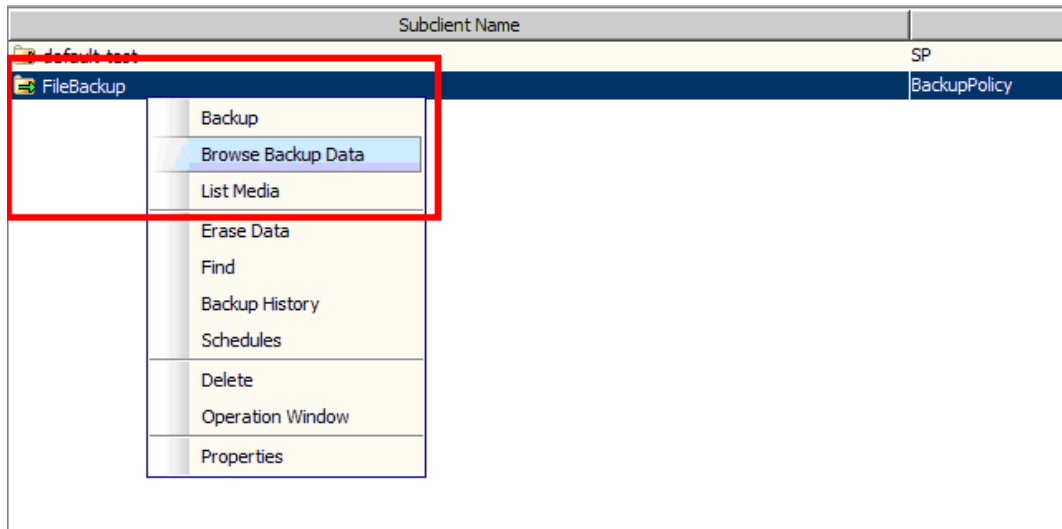

A file system backup job to the disk drive (D:) has been created. Media Server folders will also be backup up to the disk library (F:) which also contains the Media Server. In the proposed topology, users can also make a backup copy from any client computer (such as a laptop) to the disk library in the Media Server by applying the same storage policy. All they have to do is to create another subclient in the file system node of the computer and select the same backup policy which specifies the same disk library as the backup destination.

In short, data inside all client computers (which already contains agents) can be backed up to the same centralized backup management system that exists in the same subnet, while sharing the storage system mounted in the media server. System administrators can easily manage all backup tasks in the enterprises they belong.
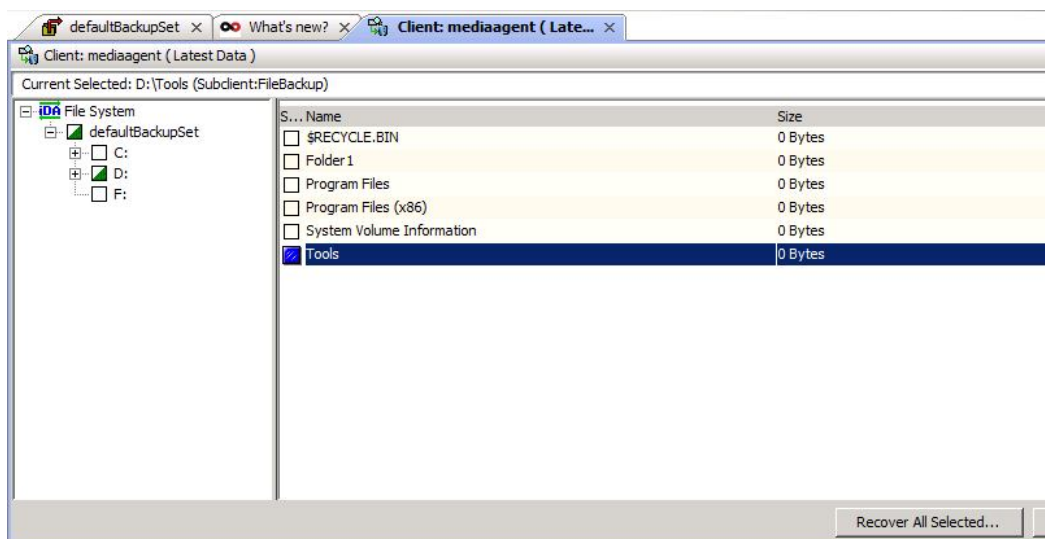
Browsing the Backup Archive and Restoring Data from it

When the backup job has been completed, users can browse the backup data to verify the result, and to recover corrupted source data from the backup archive.

1. Select the newly created subclient (FileBackup in this case), right-click and select *Browse Backup Data* from the context menu.

2. The contents of the backup archive will appear in a new tab. Check (select) the data that needs to be recovered.
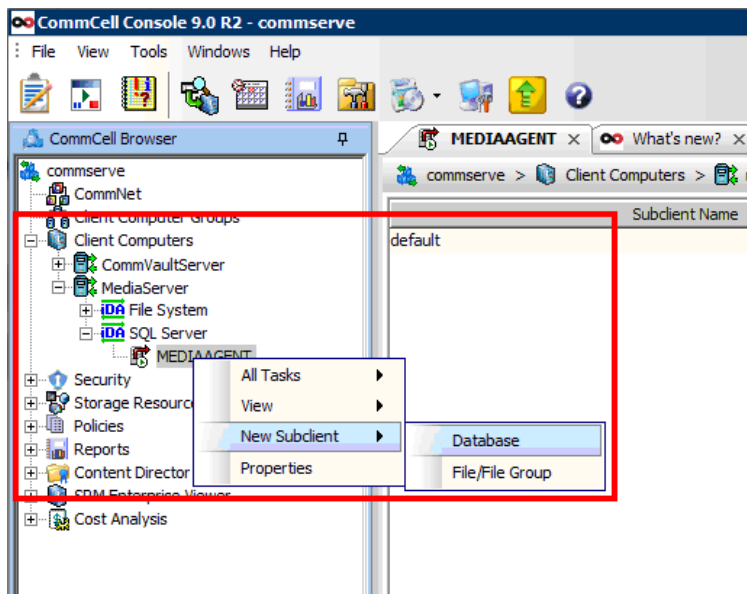
Backing up Data in a Database Server

If data for backup is the database in a database server (ex. Microsoft SQL Server), the backup source configuration is different (but similar). In this step, the database will be backed up by leveraging the same resource and policy that have been created previously.

Some database configurations separate the data storage and transaction log storage in different media. For such cases, Simpana allows users to specify different storage policies between the main data and the transaction log. Users can have two different policies and assign different disk libraries as their backup destination. Of course, using the same media and sharing the data and log backup storage works too.
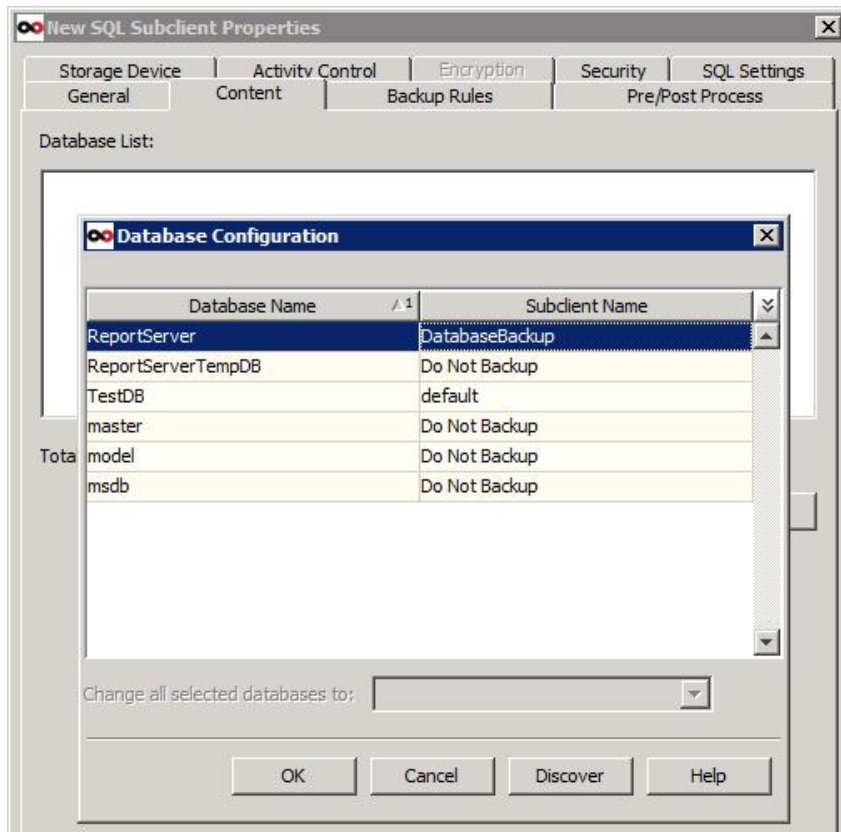
If the database server is Oracle or MySQL, after configuring database in Simpana, the node for those databases and the discovered database servers will be listed in the CommCell Console browser.

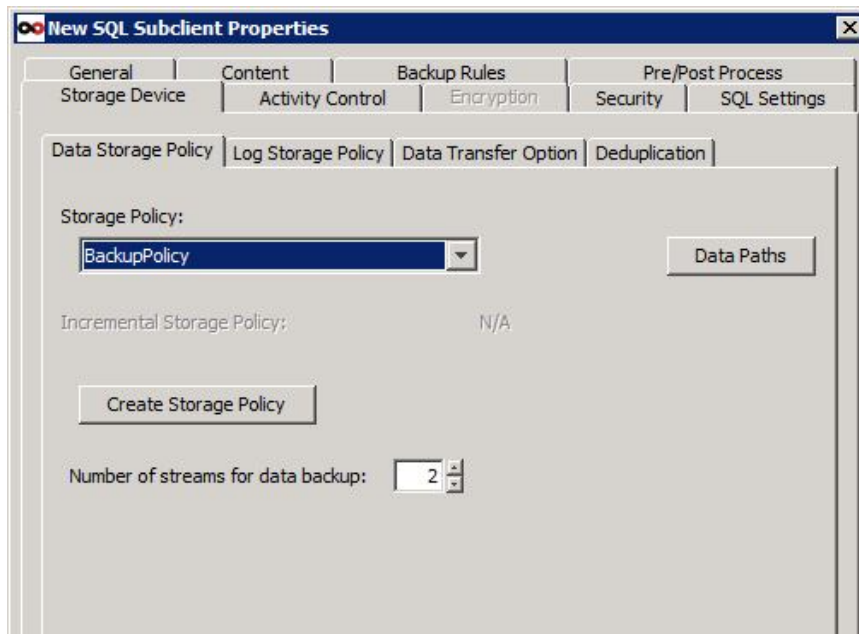### *Step 1: Adding a New Subclient*

1. Select the *Client Computers > Media Server > SQL Server > MediaAgent* node in the CommCell Browser bar (where the database server resides). Right-click and select *New Subclient > Database* from the context menu.
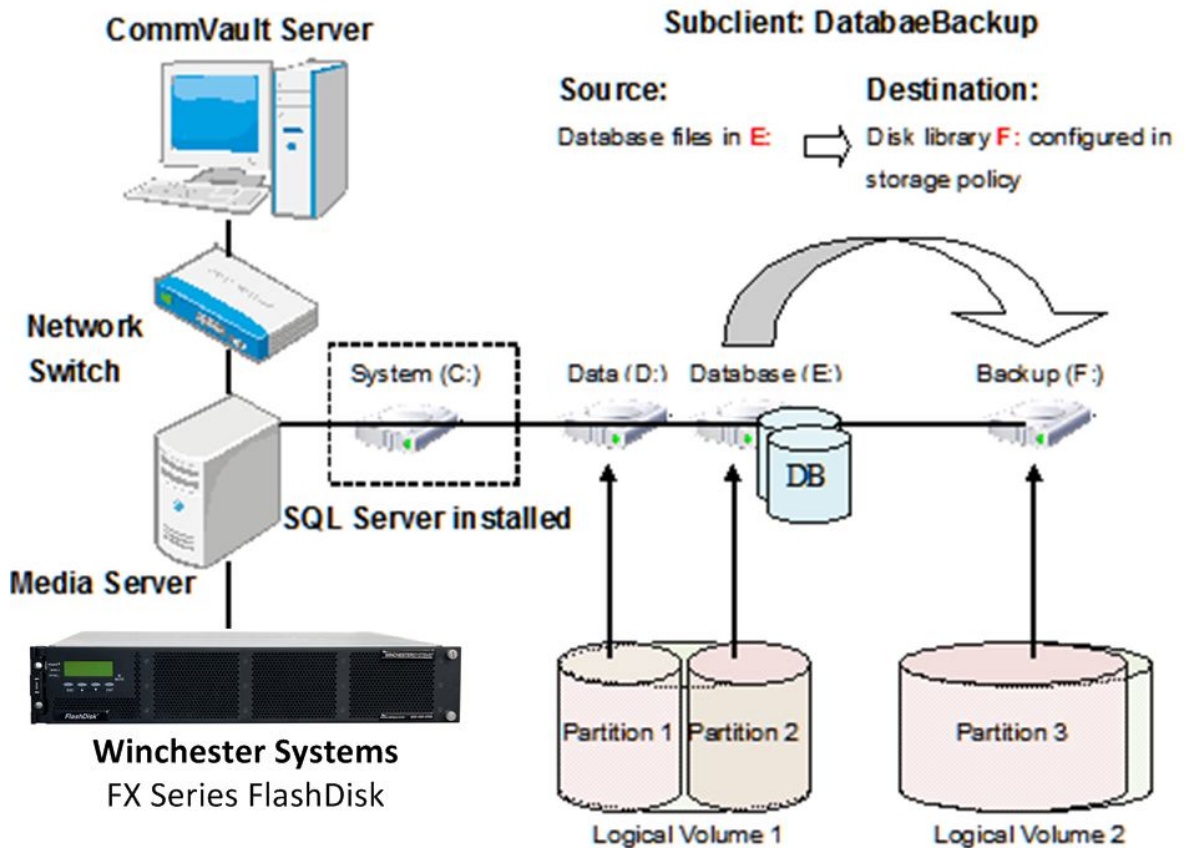

2. After specifying the name of the new subclient, select the Content tab. All the databases in the database server will be listed. Select the subclient name that was created behind the databases that need to be backed up.
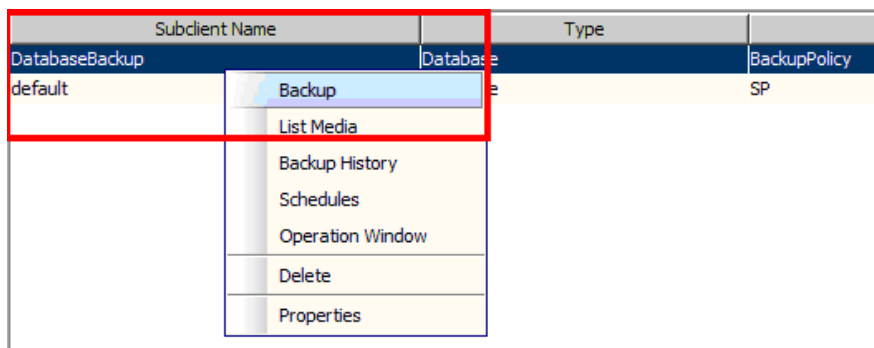
3. Specify the Storage Policy for this subclient.

4. The diagram below shows the system topology. The database server's main program is installed in drive C: of the Media Server, but the database files are stored to drive E:.

Step 2: Starting the Backup Job

1. Right-click the subclient and select *Backup* from the context menu.

2. A new backup job will appear in the Job Controller section, which can be used to check the current status and progress. For details, refer to the previous section.

A database backup in which database files are located in disk drive (E:) in the Media Server, and the disk library resides in the Media Server (F:). If the user environment has several servers installed in different database servers, related agents with dedicated database options can be installed, and everything will be backed up to the same Media Server for centralized backup management.

<u>Conclusion</u>

The capabilities of the backup software Simpana from CommVault match the reliability, simplicity, and scalability of Winchester Systems FlashDisk storage systems well. CommVault and Winchester Systems together provide maximum optimization (deduplication and compression) of backup data in order to achieve minimal disk usage and lower bandwidth that are crucial for data replication. System administrators can take backups more frequently without drastically increasing storage capacity or backup time, achieving better Recovery Point Objective (RPO) capabilities. At the same time, high performance and reliability of FlashDisk storage systems allow administrators to deploy applications and disk-based backup solutions while meeting stringent Recovery Time Objective (RTO) requirements.

A backup solution built on CommVault and Winchester Systems FlashDisk offers capabilities that help customers effectively deal with robust protection requirements and unmitigated data growth in enterprises.