



Symantec Backup Exec Blueprints

Blueprint for SQL

Backup Exec Technical Services

Backup & Recovery Technical Education Services



Notice



This Backup Exec Blueprint presentation includes example diagrams that contain objects that represent applications and platforms from other companies such as Microsoft and VMware. These diagrams may or may not match or resemble actual implementations found in end user environments. Any likeness or similarity to actual end user environments is completely by coincidence.

The goal of the diagrams included in this blueprint presentation is not to recommend specific ways in which to implement applications and platforms from other companies such as Microsoft and VMware, but rather to illustrate Backup Exec best practices only.

For guidelines and best practices on installing and configuring applications and platforms from other companies, please refer to best practice documentation and other resources provided by those companies.

Backup Exec Blueprints: How to Use

Getting the most out of Backup Exec blueprints



- These **Blueprints** are designed to show customer challenges and how Backup Exec solves these challenges.
- Each **Blueprint** consists of:
 - **Pain Points:** What challenges a customer face
 - **Whiteboard:** Shows how Backup Exec solves the customer challenges
 - **Recommended Configuration:** Shows recommended installation
 - **Dos:** Gives detailed configurations suggested by Symantec
 - **Don'ts:** What configurations & pitfalls customers should avoid
 - **Advantages:** Summarizes the Backup Exec advantages
- Use these **Blueprints** to:
 - Understand the customer challenges and how Backup Exec solves them
 - Present the Backup Exec best practice solution





Pain Points

- **SQL Server is a Business Critical Application**
 - Companies need SQL to remain online and functional at all times
 - May exist on standalone physical servers or in a virtual infrastructure
- **Pitfalls of Manual SQL Backup Processes**
 - Not reliable; cannot ensure proper recovery of SQL
 - May require SQL to be taken offline before manual backup can be captured
 - Does not improve the availability of critical SQL systems
- **Different Editions of SQL Commonly Used by Same Company**
 - Backup processes should support protection of multiple SQL versions
- **SQL Server Used to Store Important Information**
 - Unavailability for significant period of time can be very costly, disruptive
 - SQL size and complexity impact database administration requirements

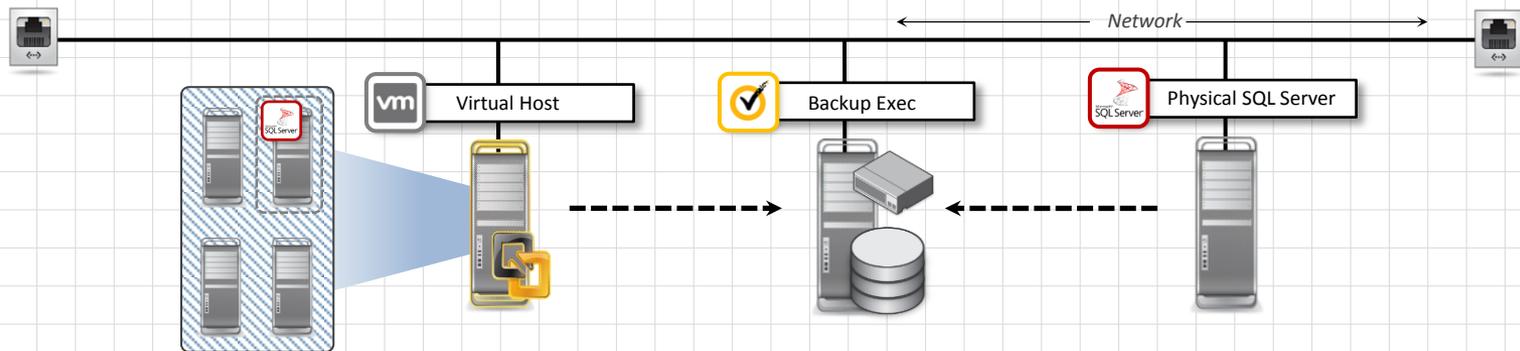


Backup Exec Advantages

Symantec Backup Exec Blueprints



- Support for Physical and Virtual SQL Server Implementations
- Restore SQL To Point When Data was last Committed to Database
- Flexible Backup Technology Allows for “Custom Fit” Solutions
 - Full or differential backups and restores of the file group
- Support for Multiple/Named SQL Instances On Same Server
- Support for SQL Server Database Mirror Configurations
- Support for SQL 2008 Database Compression
 - Reduces volume of data that SQL sends to Backup Exec



Backup Exec SQL Advantages

- Comprehensive backup support for physical or virtualized SQL servers
- Support for storing backups to disk or tape
- Granular recovery of SQL components, such as individual databases and transaction logs
- Backup and restore of SQL data over LAN or high-performance SAN transport modes



Whiteboards and Diagrams

White Boards: Microsoft SQL Server

Supported SQL Server versions



Start

Preface

How to Use

Pain Points

Whiteboards and Diagrams

Do...

Do Not...

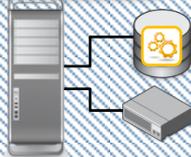
Notes and Best Practices

Final Thoughts

Backup Exec 3600 Appliance



Backup Exec Standard Software



SQL Server/Express 2014



SQL Server/Express 2012, SP1



SQL Server/Express 2008 R2 SP1, SP2



SQL Server/Express 2008 SP3

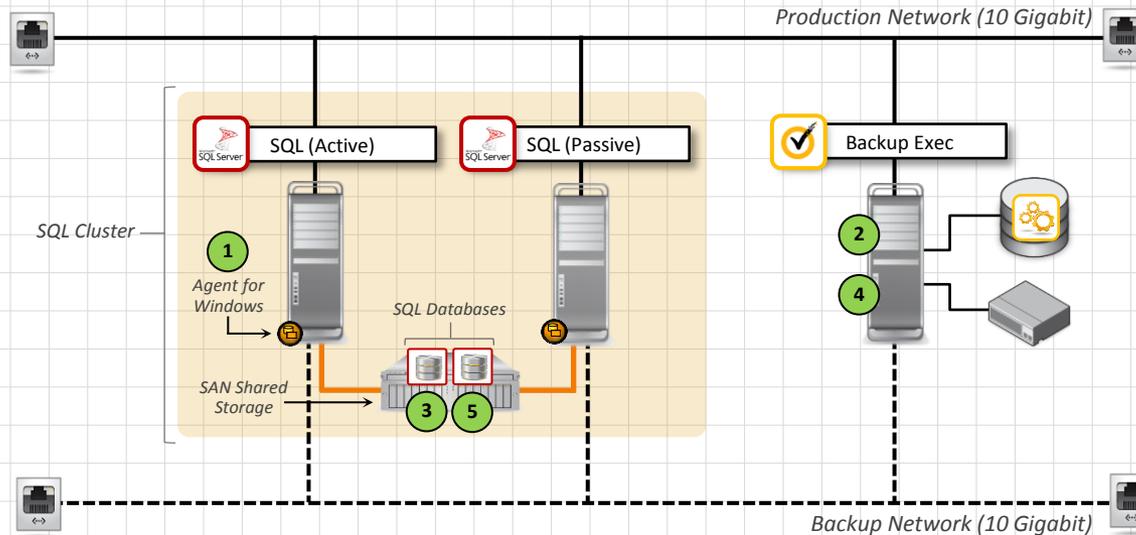


SQL Server/Express 2005 SP4

For the latest detailed list of platforms and applications supported by Backup Exec, refer to the Backup Exec Software Compatibility List: <http://www.symantec.com/business/support/index?page=content&id=TECH205797>.

Example Diagram: Microsoft SQL

Physical SQL cluster configuration

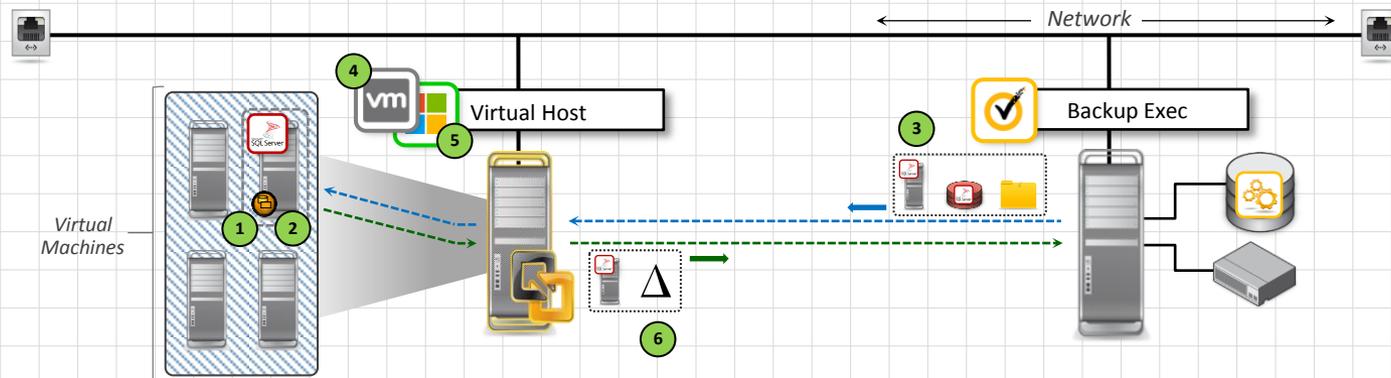


Microsoft SQL Protection High-level Best Practices

- 1 Install the Backup Exec Agent for Windows on all SQL servers/nodes
- 2 Ensure the Backup Exec logon account is given System Administrative privileges to the SQL instance
- 3 Protect SQL application components as well as SQL databases
- 4 Ensure all required Backup Exec logon account permissions are configured properly
- 5 SQL catalog and file locations should reside on separate disks/LUNs

Example Diagram: Microsoft SQL

Virtualized SQL server

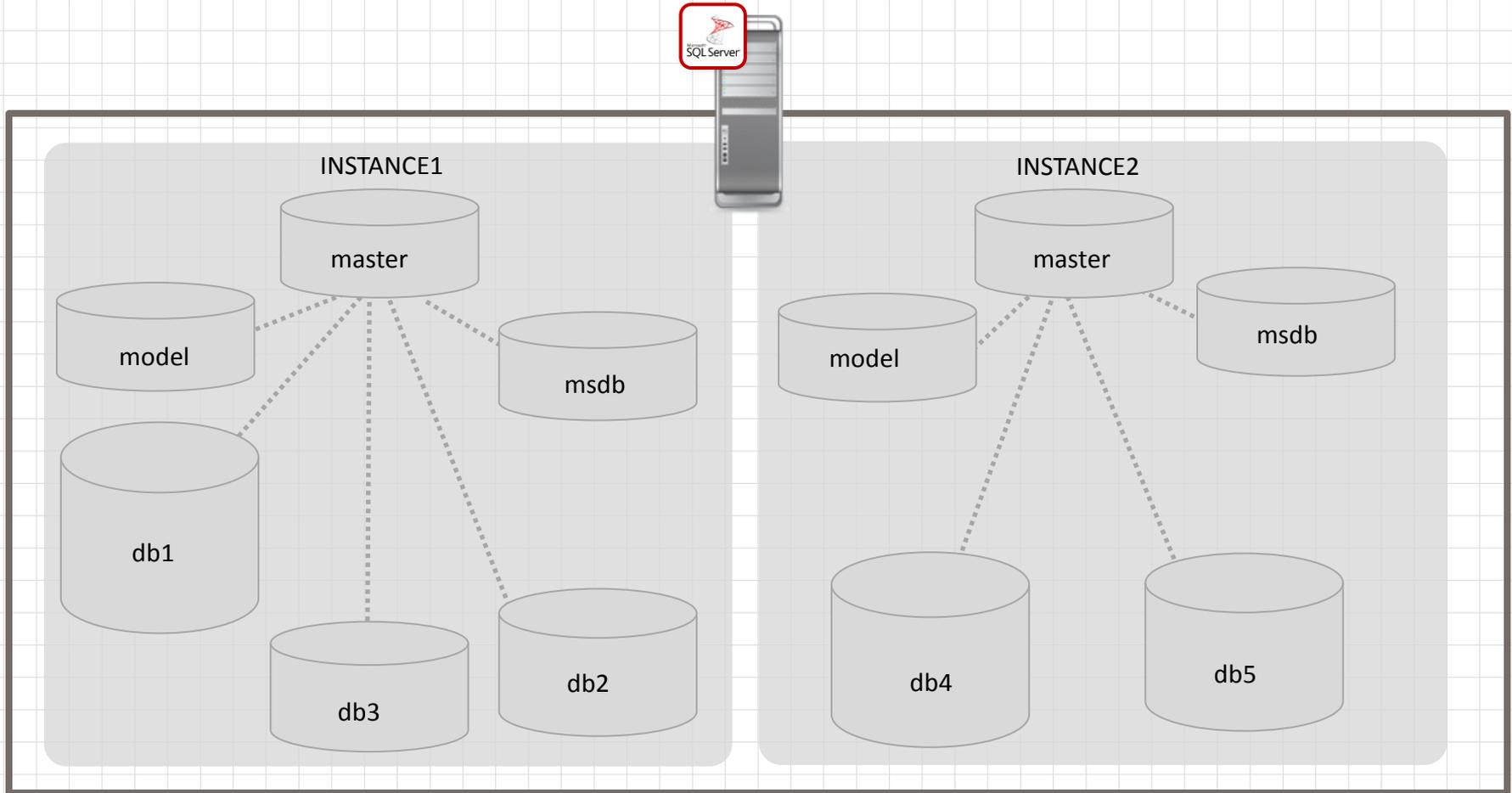


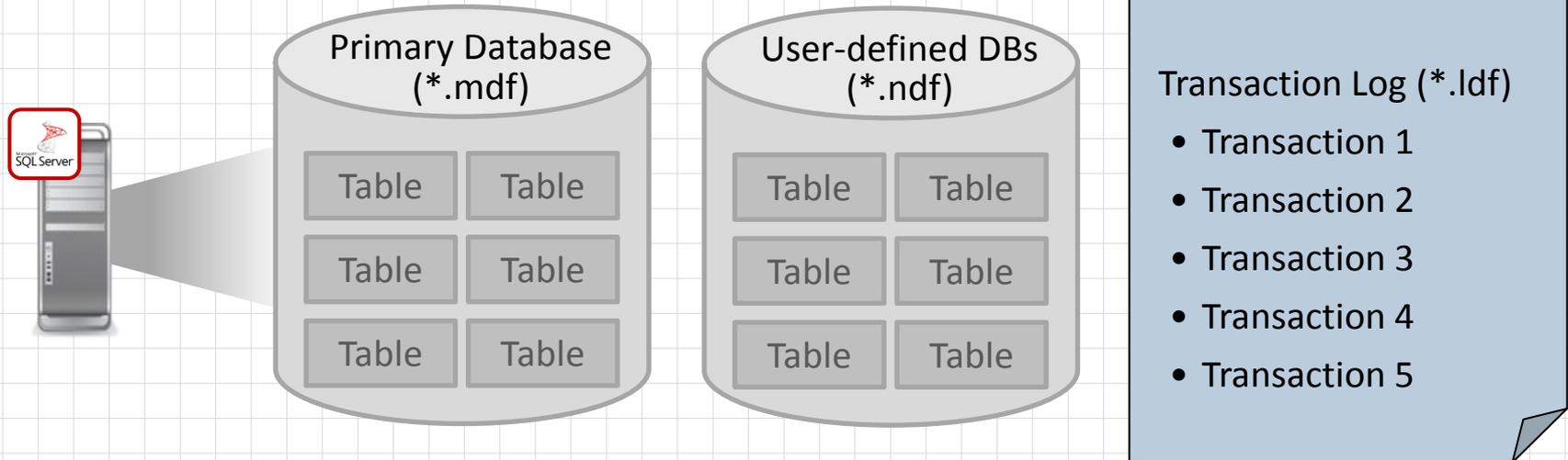
Microsoft SQL Virtual Machine Protection High-level Best Practices

1. Install Agent for Windows to SQL virtual machine (enables granular recovery of SQL/databases)
2. Perform additional agent-based, log-level backup to periodically truncate SQL transaction logs
3. Recover what you need: full SQL virtual machine, granular SQL databases, granular files/folders
4. For VMware infrastructures, leverage server-side deduplication
5. For Hyper-V infrastructures, leverage client-side deduplication (via Agent for Windows on Hyper-V host)
6. Leverage full, differential, and incremental virtual machine backups to help manage backup windows

Whiteboards: Microsoft SQL

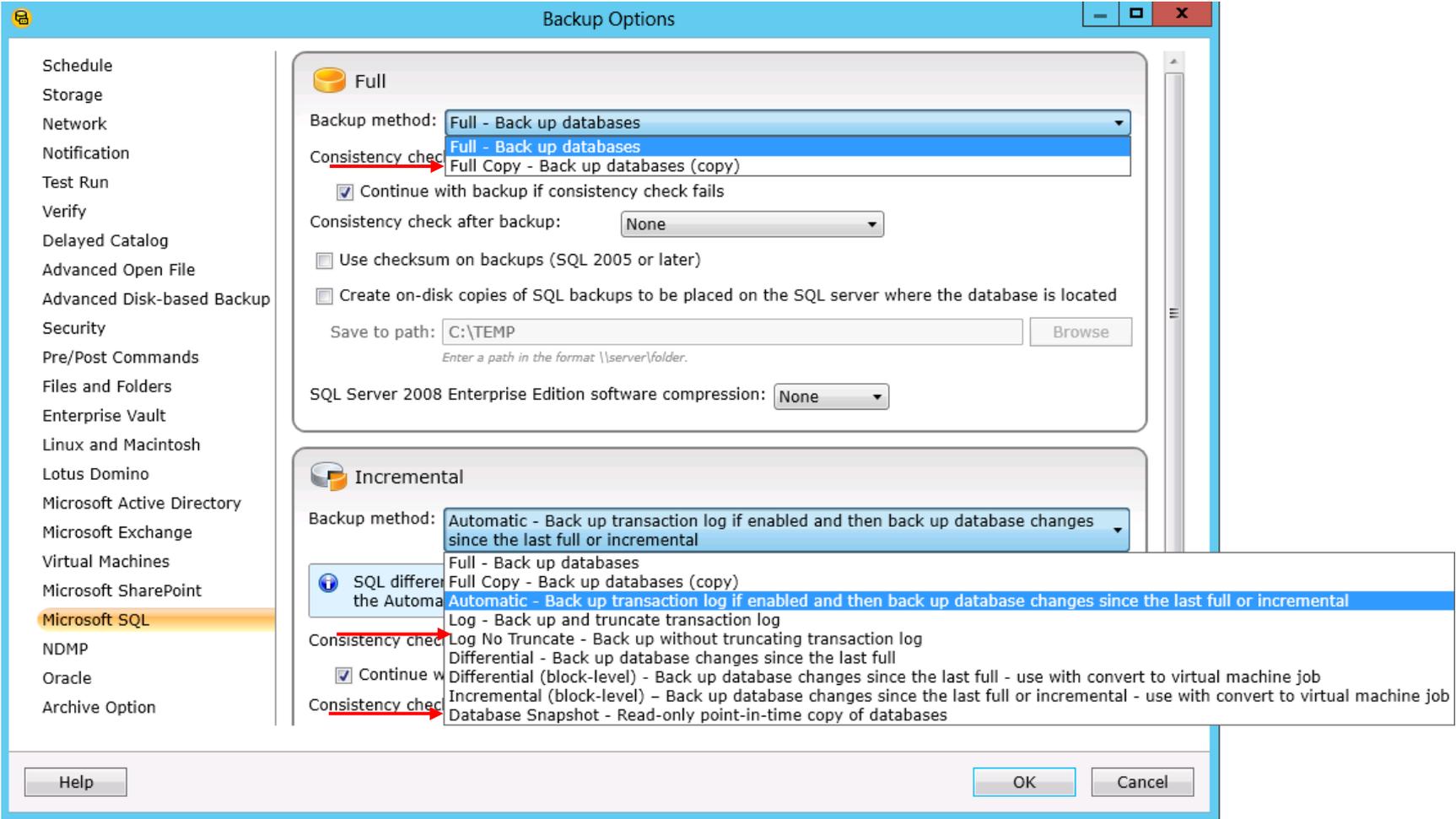
SQL components





Whiteboards: Microsoft SQL

SQL backup methods



Backup Options

Schedule
Storage
Network
Notification
Test Run
Verify
Delayed Catalog
Advanced Open File
Advanced Disk-based Backup
Security
Pre/Post Commands
Files and Folders
Enterprise Vault
Linux and Macintosh
Lotus Domino
Microsoft Active Directory
Microsoft Exchange
Virtual Machines
Microsoft SharePoint
Microsoft SQL
NDMP
Oracle
Archive Option

Full

Backup method: Full - Back up databases
Consistency check: Full - Back up databases
Full Copy - Back up databases (copy)
 Continue with backup if consistency check fails
Consistency check after backup: None
 Use checksum on backups (SQL 2005 or later)
 Create on-disk copies of SQL backups to be placed on the SQL server where the database is located
Save to path: C:\TEMP
SQL Server 2008 Enterprise Edition software compression: None

Incremental

Backup method: Automatic - Back up transaction log if enabled and then back up database changes since the last full or incremental
Full - Back up databases
Full Copy - Back up databases (copy)
Automatic - Back up transaction log if enabled and then back up database changes since the last full or incremental
Log - Back up and truncate transaction log
Consistency check: Log No Truncate - Back up without truncating transaction log
Differential - Back up database changes since the last full
 Continue with backup if consistency check fails
Consistency check: Differential (block-level) - Back up database changes since the last full - use with convert to virtual machine job
Incremental (block-level) - Back up database changes since the last full or incremental - use with convert to virtual machine job
Database Snapshot - Read-only point-in-time copy of databases

Help OK Cancel

→ New in Backup Exec 2014



Do...

Symantec Backup Exec Blueprints

- Back up the entire Microsoft SQL Server
- Include the following in the backup job:
 - Full SQL database backups
 - Windows System State
 - System drive backups of the hard drive or drives where Microsoft SQL resides
 - System drive backups of the hard drive or drives where the Microsoft SQL databases reside
- Exclude all database files from anti-virus scans
- Run transaction log backups if the database is configured for the full recovery model to prevent unlimited log file growth. Backup Exec generates a success with exception job warning after 10 non-log backups in a row
- With the simple recovery model, copies of the transactions are not stored in the log file, which prevents transaction log backups from being run

- Use database, differential, and log backups to maximize your backup window
- Combine these backup methods with backup strategies that address the following issues:
 - How much data loss can you accept if a failure happens between the time of the last backup and the time the loss occurred?
 - How many transactions are processed each day?
 - What are your users' expectations when a recovery is required? For example, do they expect a full recovery to the point at the time when the data loss occurred?
 - Use only the SQL Agent to perform SQL full, differential, and log backups. If you use a third-party application, Backup Exec fails the differential and log backup jobs until you make a new full backup with the SQL Agent
- Use snapshot technology with the backup jobs that use deduplication devices

- Run regular database consistency checks
 - Either before or after a SQL backup
 - After a SQL restore
- Specify the following SQL options for the consistency check:
 - Consistency check before backup - Physical check only
 - Continue with backup if consistency check fails
 - Consistency check after restore - **Physical check only**
- Ensure that you specify the **Use checksums on backup** option for the backup job if you want to use the **Run verify only and do not restore data** restore option.
 - Using this option, and the **Run verify only and do not restore data** option, ensures that during a restore of the SQL database you restore from a verified SQL backup

- Run periodic test restore jobs and ensure that they are included in your disaster preparation plan
- Restore the backup set that was created after the baseline deduplication backup set to ensure recovery from a deduplication device after a disaster



Do not...

- When using mixed-mode authentication, do not apply the credentials that you use to make SQL backup and restore selections to an actual SQL instance
 - The credentials that you use to make SQL backup and restore selections must be applied to the Windows computer where SQL is installed. Apply the SQL credentials to the SQL server
- Do not use SQL native compression if you are planning to use Backup Exec Deduplication technology



Additional Notes and Best Practices

- The Backup Exec server must have access to the SQL installation
- Backup Exec must have access rights to read both of the following SQL registry keys:
 - *HKEY_LOCAL_MACHINE\Software\Microsoft\Microsoft SQL Server*
 - *HKEY_LOCAL_MACHINE\Software\Microsoft\mssqlserver*
- The Backup Exec Logon Account must be a member of the local computer's Administration group on the Windows server that the SQL instance is installed on
- The Agent for Windows must be installed on any remote SQL Server that you want to back up
- The Backup Exec Logon Account must be granted the System Administrator role on the SQL instance

- Protect the entire SQL Server (SDR)
- When you upgrade, run new full database backups
- Run consistency checks before backups
- Back up your system databases regularly
- Run one backup at a time
- Back up transaction logs on databases configured for the full recovery model

- Full Backup
 - Backs up the entire database including all system tables
 - System databases can only be backed up with the full method
- Differential Backup
 - It backs up only the changes made to the database since the last full backup
 - It is smaller and faster than a full backup
 - Run log backups between the differential backups
 - Consider using when relatively small amount of data changes between full backups, or if the same data changes often
- Full Copy-only (SQL 2005 and later)
 - Similar to full backup, except that it does not affect future differential or log backups

- **Small Environment**

- Daily full database backup + Daily transaction log backups

- **Mid-sized Environment**

- Weekly full database backup + Daily transaction log backups + Daily differential backups

- **Large Environment**

- Weekly full database backup + transaction log backups as necessary + Daily differential backups

- Use weekly full database backups, daily differential database backups, and transaction log backups as necessary
- Use the checksum feature to check database integrity
- Perform test restores periodically
- Use the Copy Only option for unscheduled backup operations
- Use encryption to ensure data security
- **Note:** Do not use SQL native compression if you are planning to use Backup Exec Deduplication technology

- Schedule backup jobs when database activity is low
- Avoid full database backups during peak hours or when database activity on the server is high
- Consider D2D2T (disk to disk to tape) backup strategies for optimal backup and restore performance
- Use tape-based devices for long term retention
- Do not store backups to the same disk that holds database files or log files

- Backup Exec 2010 R3 SP3 and Backup Exec 2012 SP2 support all the flavors of Microsoft SQL 2012
- Backup Exec doesn't support the following features in Microsoft SQL 2012 :
 - Availability Groups
- The method to backup a Microsoft SQL 2012 server is the same as backing up the previous versions of Microsoft SQL

- SQL Server 2014 Enterprise Edition has a feature called “Memory-Optimized Tables” that is not supported
 - Databases that are configured as Memory-Optimized Tables are not supported

Thank You!

Backup Exec Product Management