IT/Dev CONNECTIONS

Azure VMs + Log Shipping + Automation

A Budget Conscious DR Solution (How To)

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Delivered by KNect365 TMT an Informa business

Agenda

- Basics of Log Shipping
- MSDB Metadata
- Azure Blob Storage
- SQL Server on an Azure VM
- Azure Automation
- Scenarios / Considerations
- Discussion

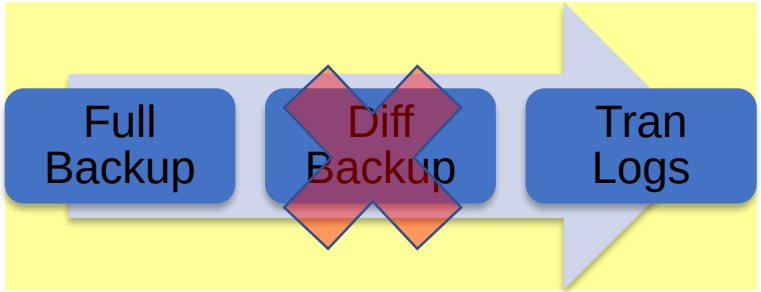
Log Shipping Concepts

- Primary Server (sends)
- Standby Server (receives)
- Backup Types Involved
  - Full Backup
  - Transaction Log Backup

Log Shipping Concepts

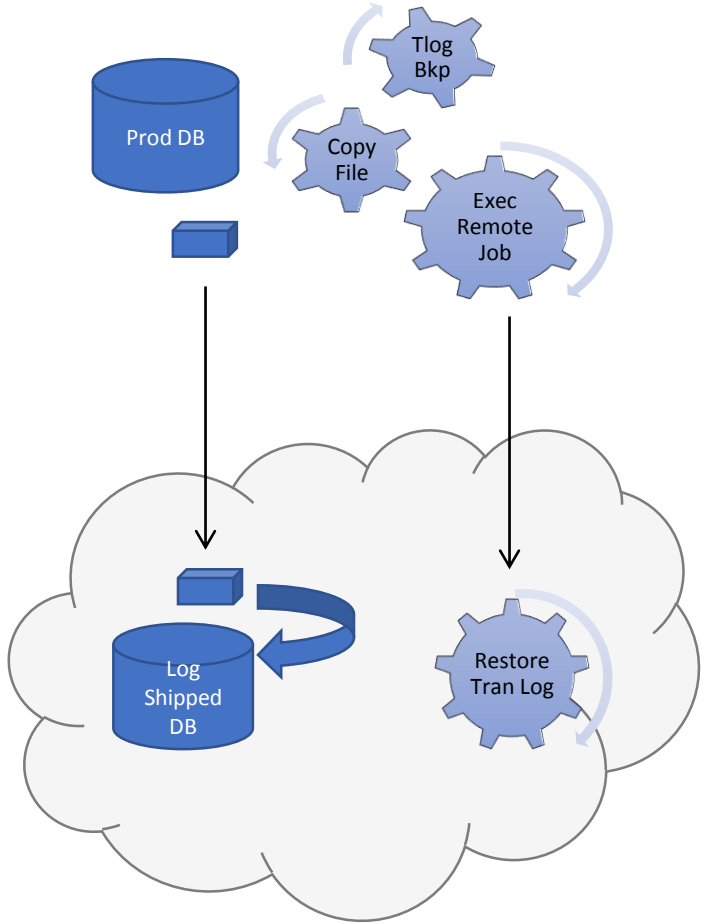
- Full Backup
  - Full copy of the entire database at the time of the backup
- Transaction Log Backup
  - Only possible when DB is in Full Recovery Mode
  - Must have already Completed a Full Backup
  - Chain together during restore of DB
  - All changes since any previous Full or Tran Log Backup
  - Clears out the transaction log and prevents it from growing excessively large

	Full Backup	Differential Backup	Transaction Log Backup
12am	30GB		
6am			40MB
7am			200MB
8am			200MB
9am			200MB
10am			200MB
11am			200MB
12pm		1GB	
1pm			200MB
2pm			200MB
3pm			200MB
4pm			
5pm			
6pm			



Manually Restore to 1:15pm, don't use differential as it is corrupt…

- Production Server
  - Transaction Log Backup Job
    - Task 1
      - Perform Transaction Log Backup
    - Task 2
      - Copy File (ie: local, UNC Path, Azure Blob Storage…)
- Standby Server
  - Restore Log(s)
    - Option A: Execute Task to Restore Log(s)
    - Option B
      - Reallocate VM
      - Restore Log(s) from Blog Storage
      - Deallocate VM

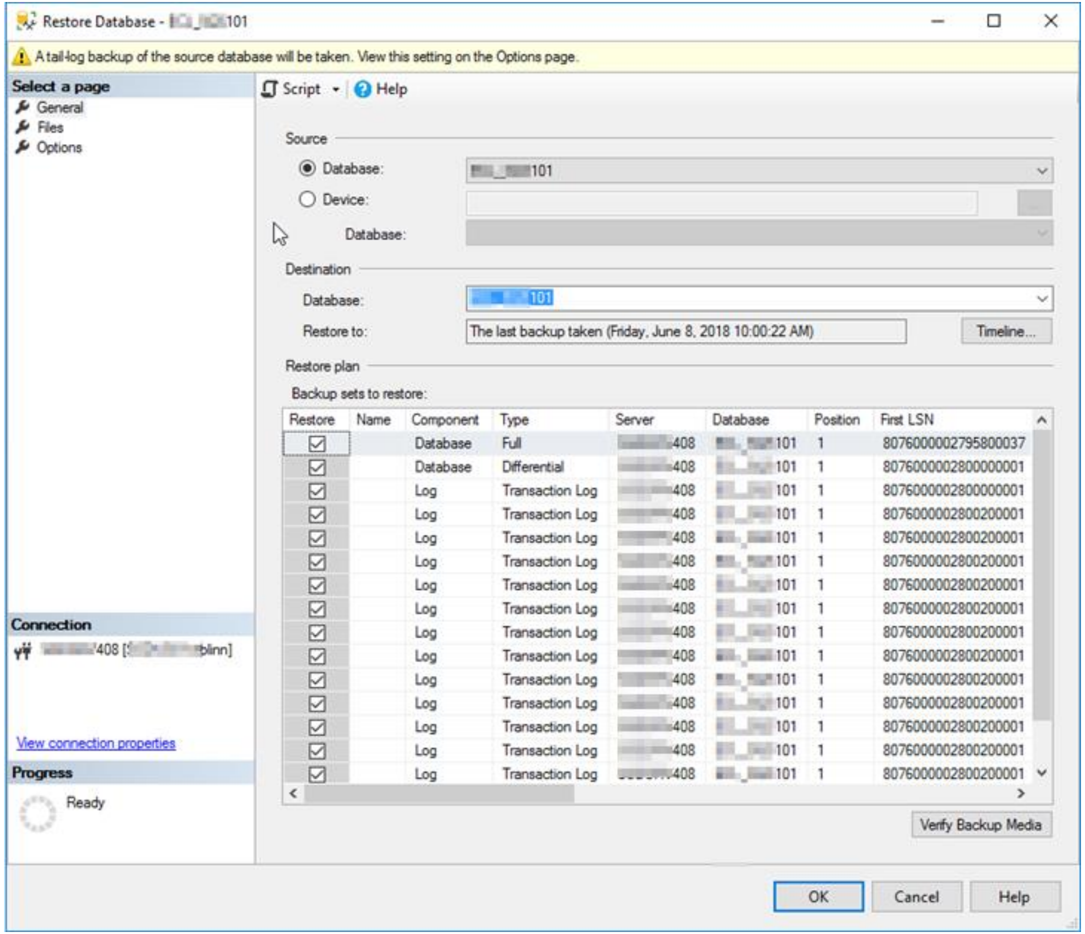


MSDB

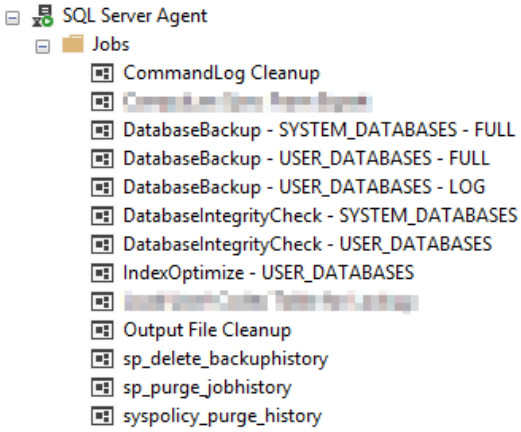
System Database
- Database ID 4

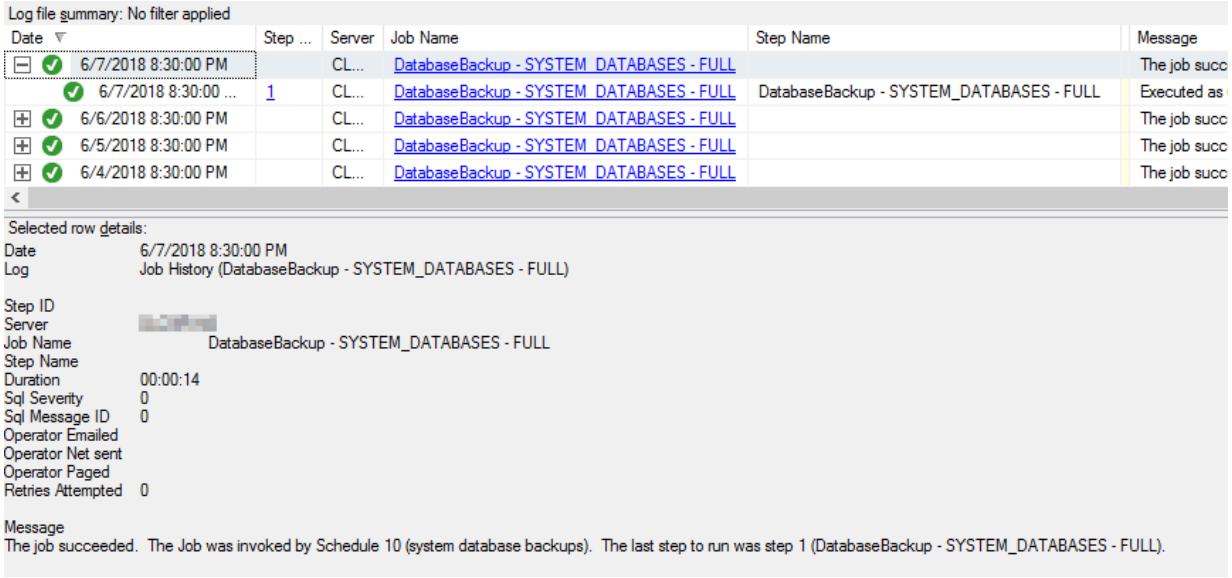
Supports:
- SQL Agent
- DBMail
- Backup/Restore History
- Operators and Alerts

Restore Wizard

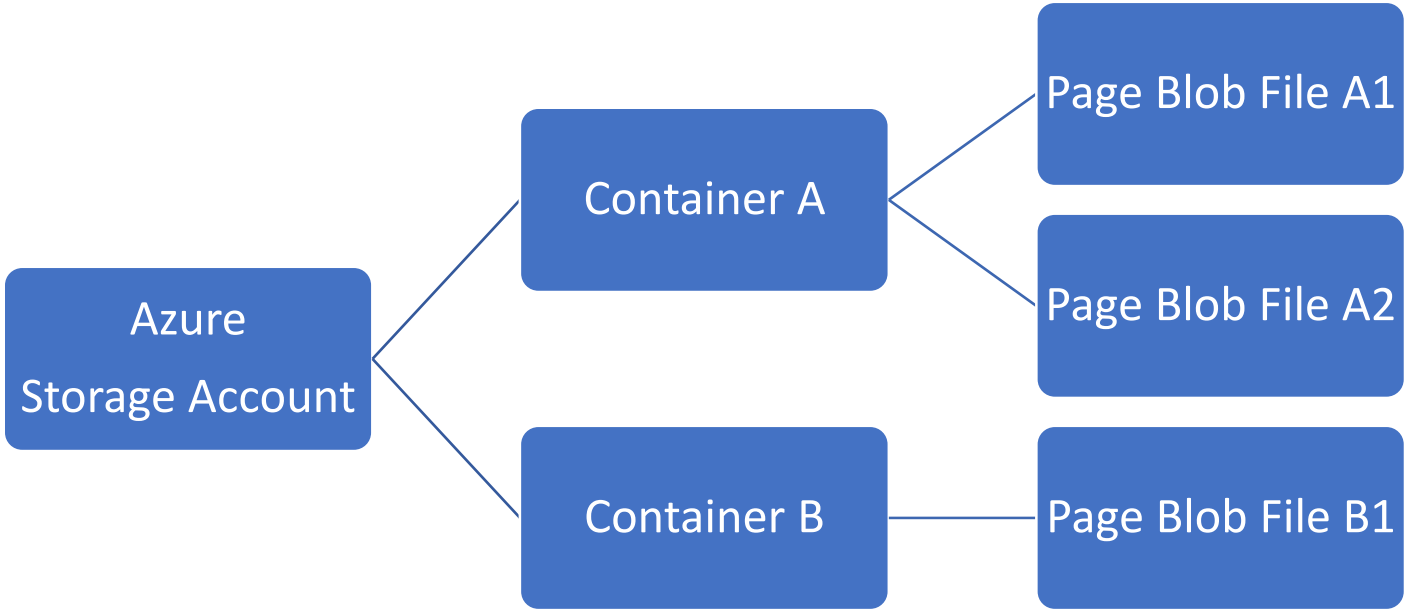


SQL Agent


SQL Server Agent
Jobs
CommandLog Cleanup
DatabaseBackup - SYSTEM_DATABASES - FULL
DatabaseBackup - USER_DATABASES - FULL
DatabaseBackup - USER_DATABASES - LOG
DatabaseIntegrityCheck - SYSTEM_DATABASES
DatabaseIntegrityCheck - USER_DATABASES
IndexOptimize - USER_DATABASES
Output File Cleanup
sp_delete_backuphistory
sp_purge_jobhistory
syspolicy_purge_history


Log file summary: No filter applied
Date
Step ...
Server
Job Name
Step Name
Message
6/7/2018 8:30:00 PM
CL...
DatabaseBackup - SYSTEM_DATABASES - FULL
The job succ
6/7/2018 8:30:00 ...
1
CL...
DatabaseBackup - SYSTEM_DATABASES - FULL
DatabaseBackup - SYSTEM_DATABASES - FULL
Executed as
6/6/2018 8:30:00 PM
CL...
DatabaseBackup - SYSTEM_DATABASES - FULL
The job succ
6/5/2018 8:30:00 PM
CL...
DatabaseBackup - SYSTEM_DATABASES - FULL
The job succ
6/4/2018 8:30:00 PM
CL...
DatabaseBackup - SYSTEM_DATABASES - FULL
The job succ
Selected row details:
Date 6/7/2018 8:30:00 PM
Log Job History (DatabaseBackup - SYSTEM_DATABASES - FULL)
Step ID
Server
Job Name DatabaseBackup - SYSTEM_DATABASES - FULL
Step Name
Duration 00:00:14
Sql Severity 0
Sql Message ID 0
Operator Emailed
Operator Net sent
Operator Paged
Retries Attempted 0
Message
The job succeeded. The Job was invoked by Schedule 10 (system database backups). The last step to run was step 1 (DatabaseBackup - SYSTEM_DATABASES - FULL).

Azure Blob Storage Hierarchy



Azure Blob Storage Considerations

- Resource Group
- Location of Data Center
- Page Blob for Backups
- Restoring (Page Size) specification
- Container
- Key (connection string parameters)

Azure Blob Storage Type & Pricing

Open in Explorer | Move | Delete | Refresh

Resource group (change)
itdevconn2018rg

Status
Primary: Available, Secondary: Available

Location
South Central US, North Central US

Performance/Access tier
Standard/Hot

Replication
Read-access geo-redundant storage (RA-GRS)

Account kind
StorageV2 (general purpose v2)

$.075/GB PER MONTH!

300 GB Transaction Logs x .075/month = $22.50/month

Make with the demos!

Creating an Azure VM with SQL Server

- Resource Group
- HDD and SSD (pricing)
- Let’s discuss BYOL vs not BYOL
  - Not BYOL is priced “per minute” – logic behind deallocating.
  - Two prices to consider: SQL License & Compute

Azure VM with SQL Server Cost

Example:

$350/month

1 hour day x 30 days

$0.486/hour

30 hours at $0.486/hour = ~$15/month

Make with the demos!

Azure Automation

- Starting & Stopping Azure VM
- Tools
  - AZCopy
  - Command Prompt
  - Powershell
- Other tools would work just fine (pick what you're comfortable with)
  - SSIS
  - .Net
  - Anything that can plug into Azure APIs

Scenarios

- Virus on Network
- Crypto Attack
- Get data from 1 hour ago to fix an oops
- Plan “G”
- Natural Disaster (maybe even Regional)
- Not much budget at all for DR

Considerations

- Logins
- Jobs
- Linked Servers
- Apps on the box
- Upgrades SQL Box (patching)
- Stuff hiding in master
- Network Shares
- Windows Scheduled Tasks
- Windows Auth Users?
- Service Accounts
- Trace Flags
- Temp DB
- Configurations
- Ramp Up Disk & CPU etc…

PRACTICE!

Discussion & Questions

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