

Supercharging Backups and Restores (For Fun and Profit!)

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About Bob Pusateri



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Specialties / Focus Areas / Passions:

- Performance Tuning & Troubleshooting
- Very Large Databases
- SQL Server Storage Engine



Solutions Architect



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Why Tune? – Backups Don't Block!

- Backups **do** consume I/O
- Backups grow relative to DB size
- Backups change how the T-Log behaves
- What about Restores?



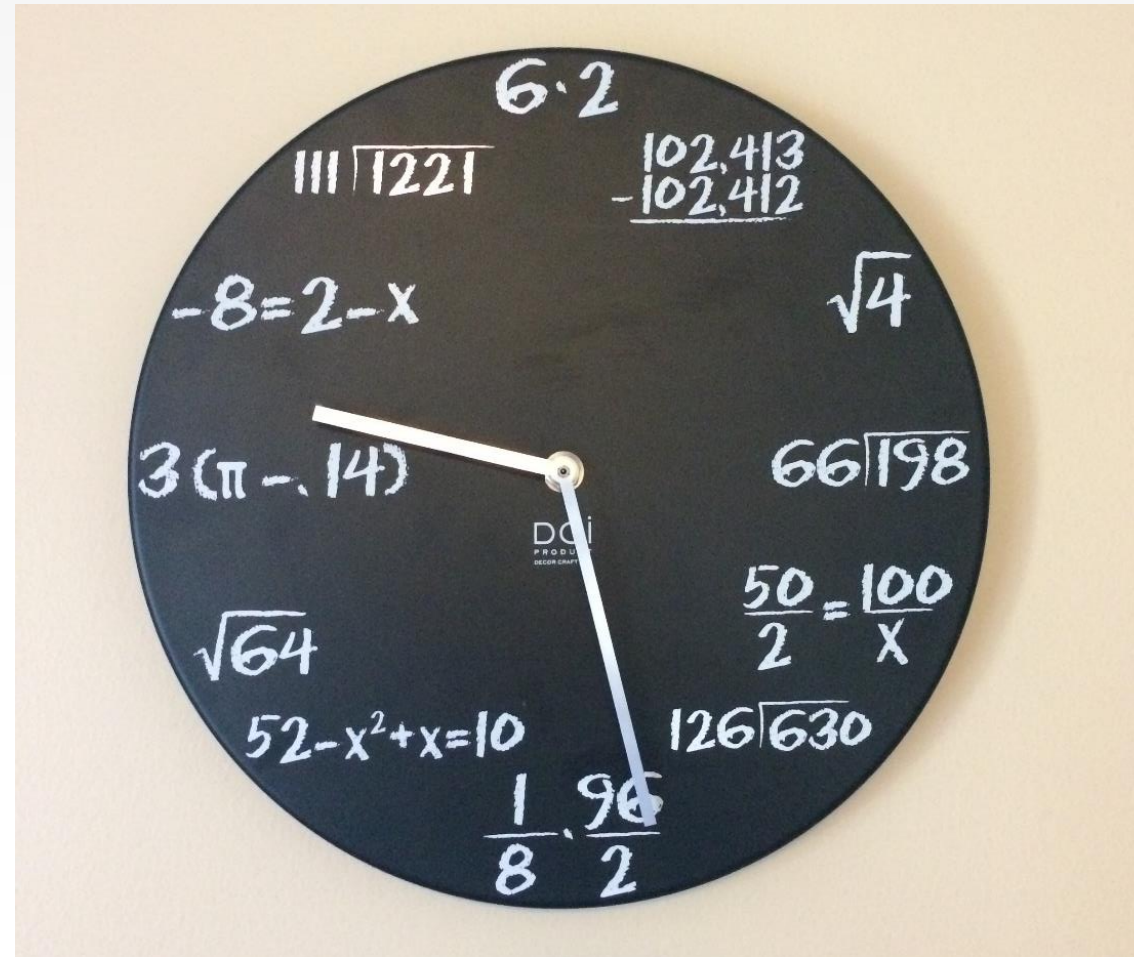
Faster Still is Better!



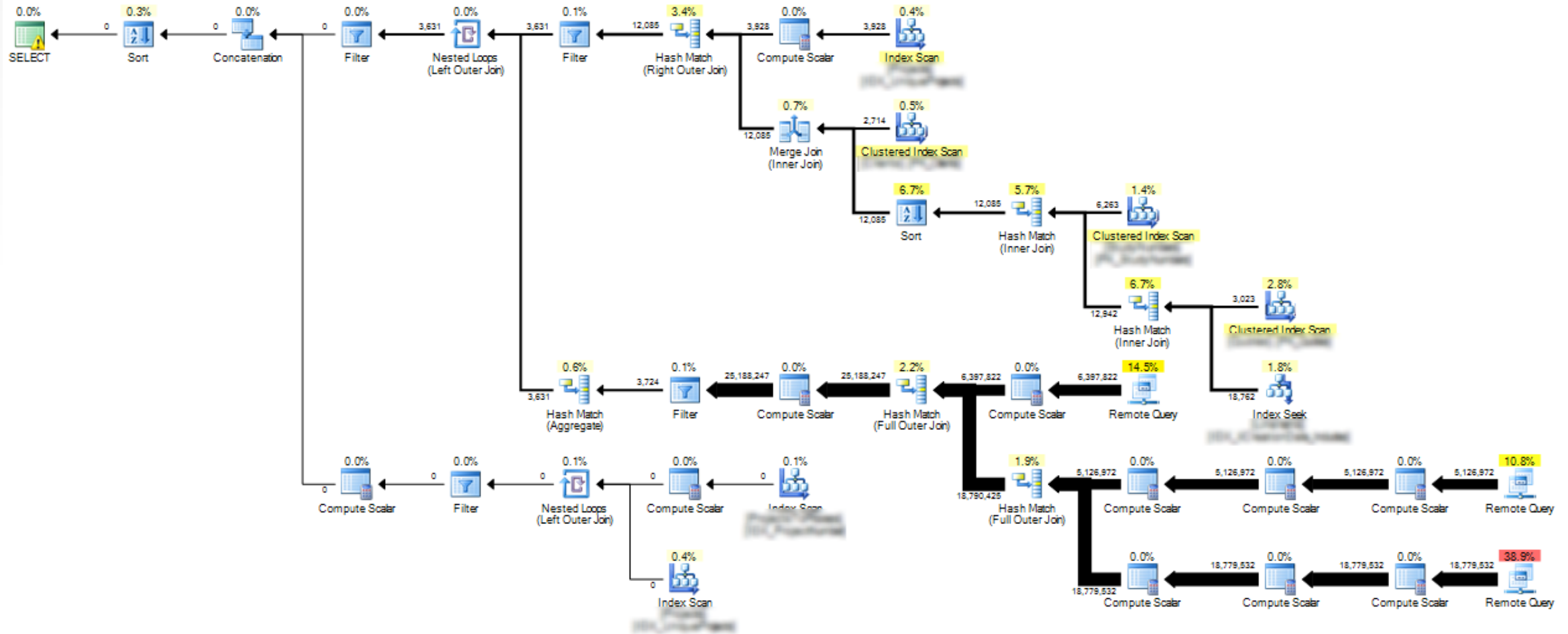
**IT'S NOT A BACKUP UNTIL
IT'S ON SEPARATE STORAGE!**



Timing



Execution Plans



Backup Execution Plans

- Checkpoint
- Copy Pages
- Copy Log



Restore Execution Plans

- File Initialization
- Data Copy
- Roll forward (redo)
- Roll back (undo)

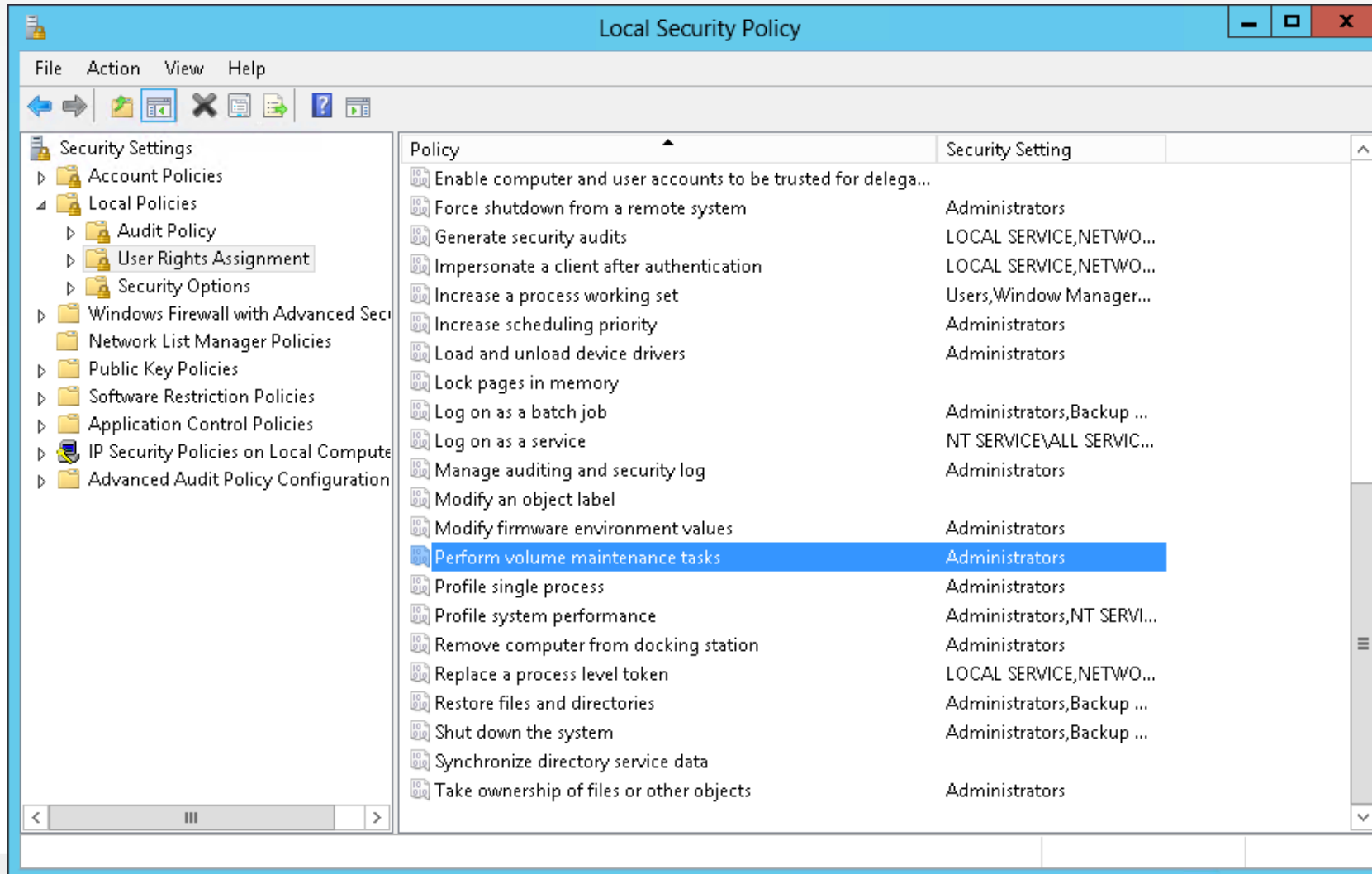


File Initialization

- “Zeroing out” Data & Log Files
- Can be made “instant” (Data Files Only)

[illegible]

File Initialization



File Initialization

SQL Server 2016 CTP3.0 Setup

Server Configuration

Specify the service accounts and collation configuration.

Global Rules
Product Updates
Install Setup Files
Install Rules
Installation Type
Product Key
License Terms
Setup Role
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Analysis Services Configuration
Reporting Services Configuration
Feature Configuration Rules
Ready to Install
Installation Progress
Complete

Service Accounts Collation

Microsoft recommends that you use a separate account for each SQL Server service.

Service	Account Name	Password	Startup Type
SQL Server Agent	NT Service\SQLA...		Manual ▼
SQL Server Database Engine	NT Service\MSSQ...		Automatic ▼
SQL Server Analysis Services	NT Service\MSOL...		Automatic ▼
SQL Server Reporting Services	NT Service\Repor...		Automatic ▼
SQL Server Launchpad	NT Service\MSSQ...		Automatic
SQL Full-text Filter Daemon Launcher	NT Service\MSSQ...		Manual
SQL Server Browser	NT AUTHORITY\...		Automatic ▼

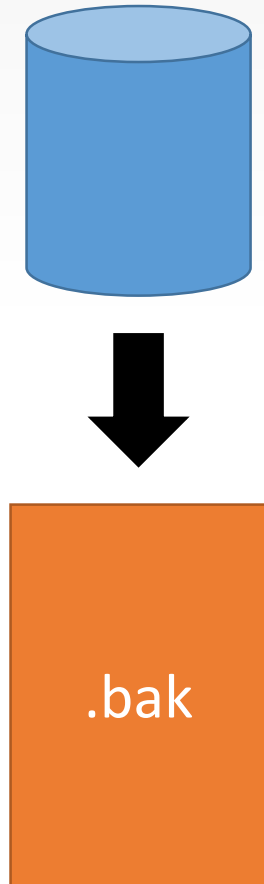
☐ Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service

This privilege enables instant file initialization by avoiding zeroing of data pages. This may lead to information disclosure as it could allow deleted content to be accessed by an unauthorized principal. [Click here for details.](#)

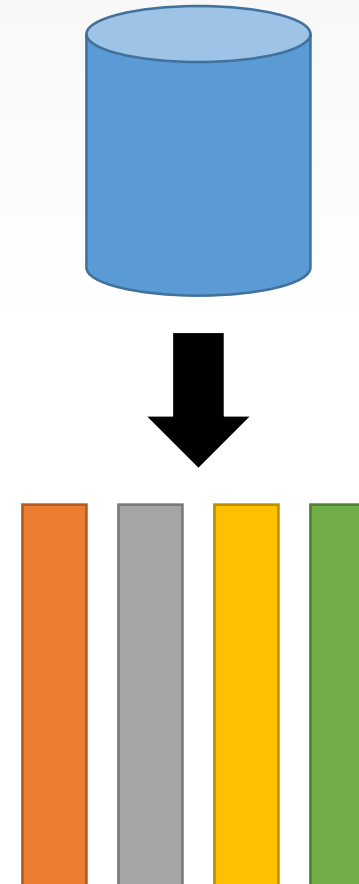
< Back Next > Cancel Help

Striping

Not Striped



Striped



Demos



Review

- Traceflags
 - 1806 – **Ignore** Instant File Initialization (even if it's enabled)
 - 3004 – Capture information about file zeroing
 - 3042 – Bypass pre-allocation and grow files incrementally
 - 3213 – Output backup buffer configuration
 - 3604 – Output to screen (“Messages” tab)
 - 3605 – Output to SQL Server error log



Questions?



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Thanks for attending!

