BUILDING & CONFIGURING SQL SERVER

Recommended Practices

Tuning blog: http://www.sqlperformance.com/

E-mail ebooks@sqlsentry.com for free copies of our $10 e-books:

YOUR PRESENTER

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PLANNING

Before deploying SQL Server it is important to have a plan

Versions and Editions

Virtual or Physical

HADR

What is the use case

Cloud or On-Premises

Capacity Planning

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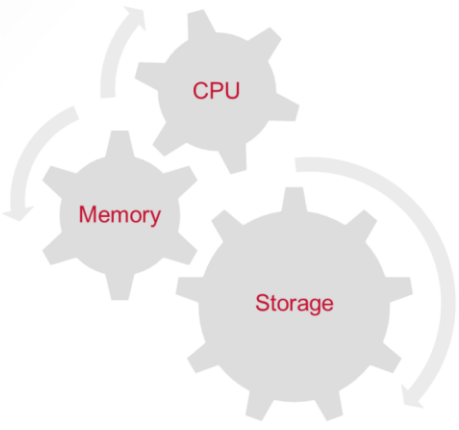
CAPACITY PLANNING

- Analyse History
- Project Use
- Scalability



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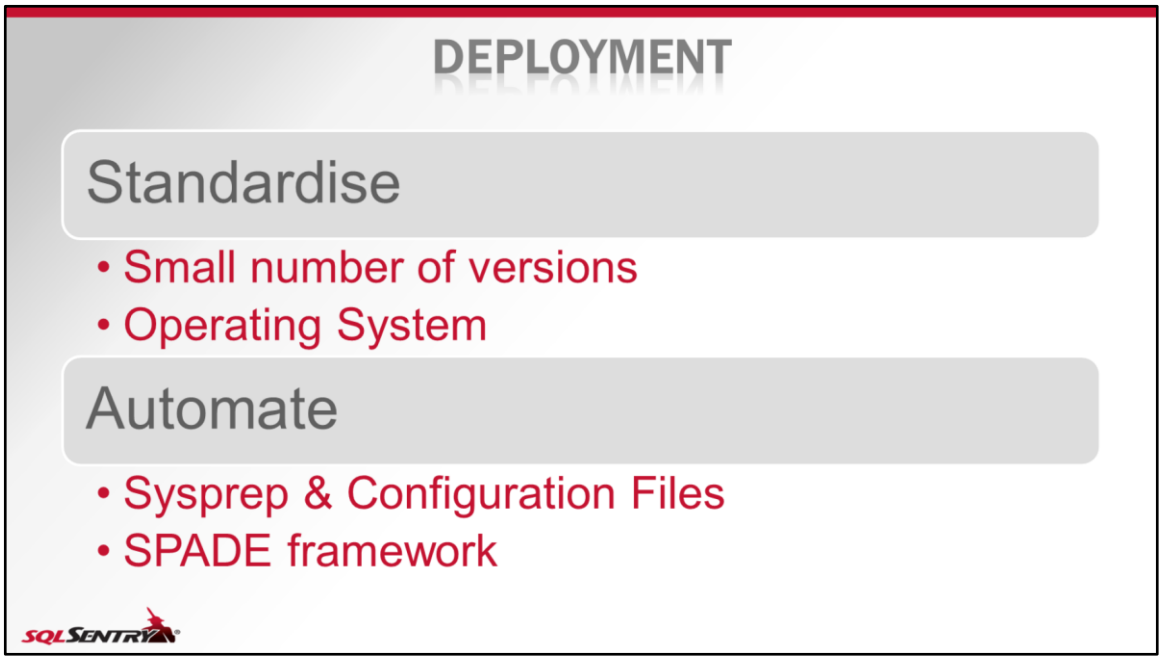
PRE-DEPLOYMENT

Infrastructure Configuration

- Drivers & Firmware
- Correct multi-pathing configuration
- Storage setup

Testing & Validation

- Soak Testing
- Stress Testing



SPADE - http://sqlspade.codeplex.com/

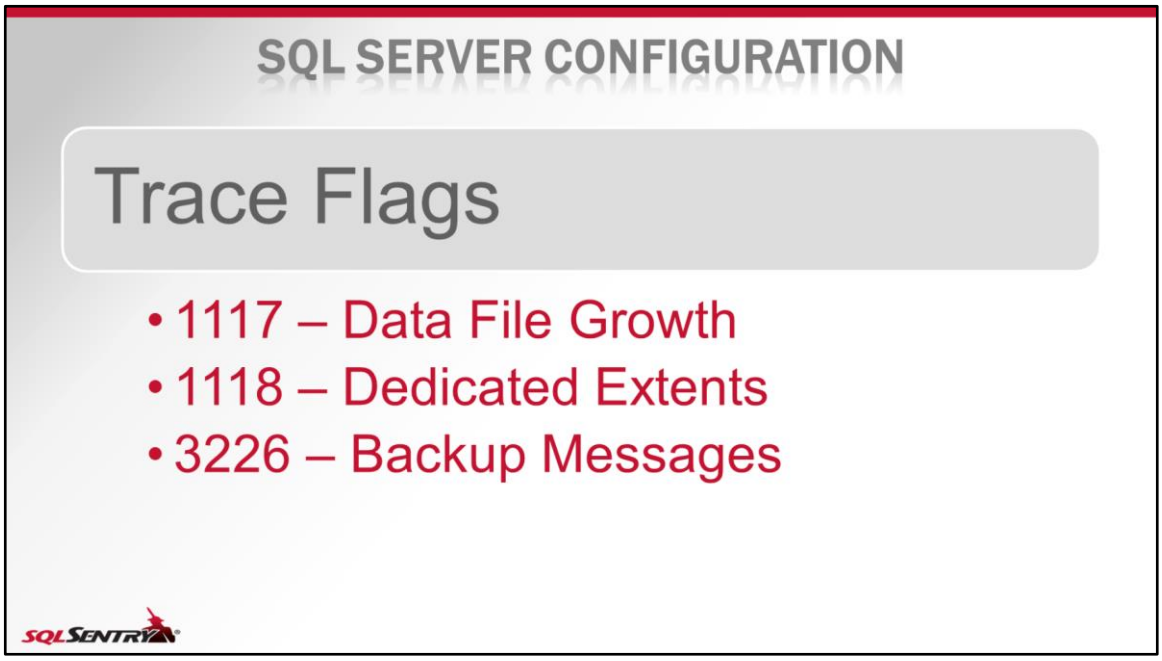
SERVICE ACCOUNTS

Compartmentalise

- Use different accounts for each service

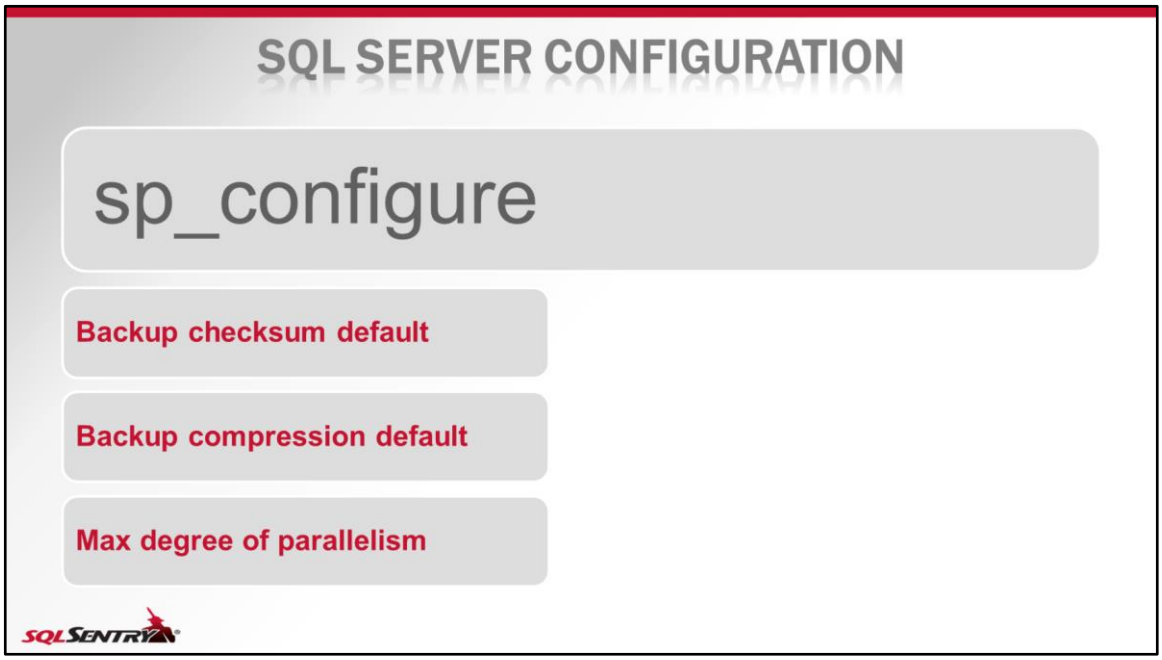
Domain accounts where possible

- Manage Service Accounts (MSA)
- Group Managed Service Accounts (gMSA)



- 1117 Causes all database data files to grow at the same time in the event of an auto-growth taking place
- 1118 Results in dedicated extents being used by default, this can reduce contention on the GAM. SGAM and PFS pages in databases
    - Both are global affecting system and user databases
    - Behaviour of these is on by default in SQL Server 2016
- 3226 Stops backup information being logged for successful backups, this can reduce log traffic and noise if you have a lot of databases and/or frequent backups.

- https://technet.microsoft.com/en-us/library/ms188396.aspx

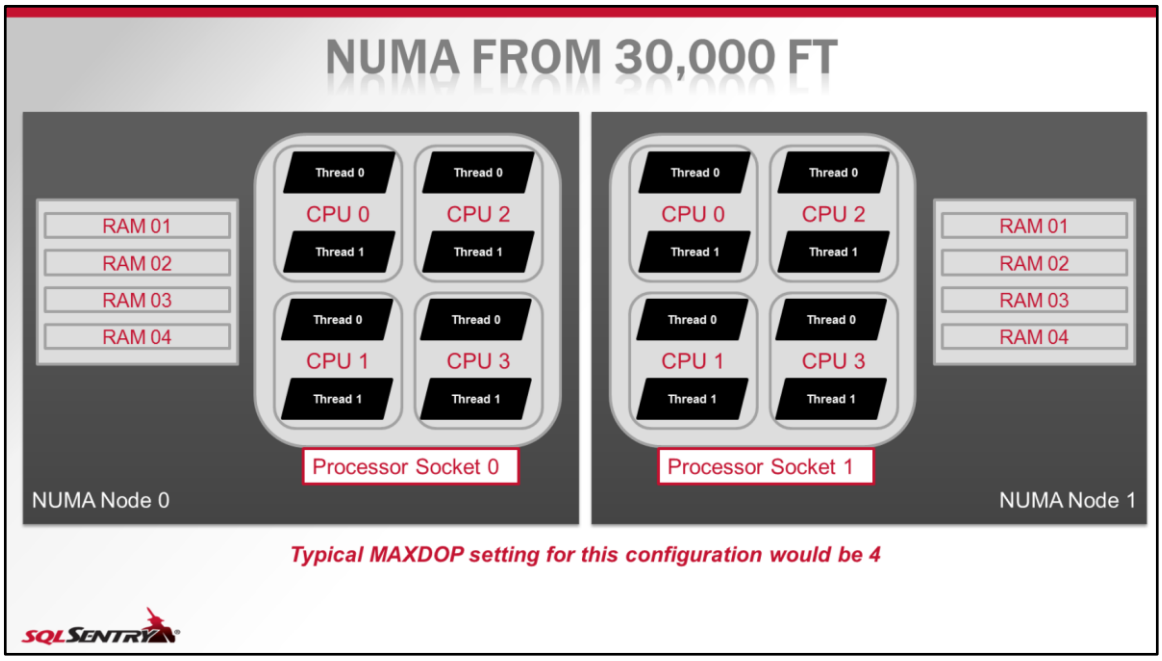



```
exec sp_configure 'show advanced', 1;
go

reconfigure;
go

exec sp_configure 'Max Server mem', [ Check out Jonathan Kehayias' blog for a good
way to estimate a starting value. https://www.sqlskills.com/blogs/jonathan/how-
much-memory-does-my-sql-server-actually-need/];
exec sp_configure 'Optimize for ad hoc', 1;
exec sp_configure 'Max Degree of paralellism', [Phsyical Number of Cores in a NUMA
node];
exec sp_configure 'backup checksum', 1;
exec sp_configure 'backup compression', 1;
exec sp_configure 'remote admin connections',1;
exec sp_configure 'show advanced', 0;

reconfigure;
Go
```



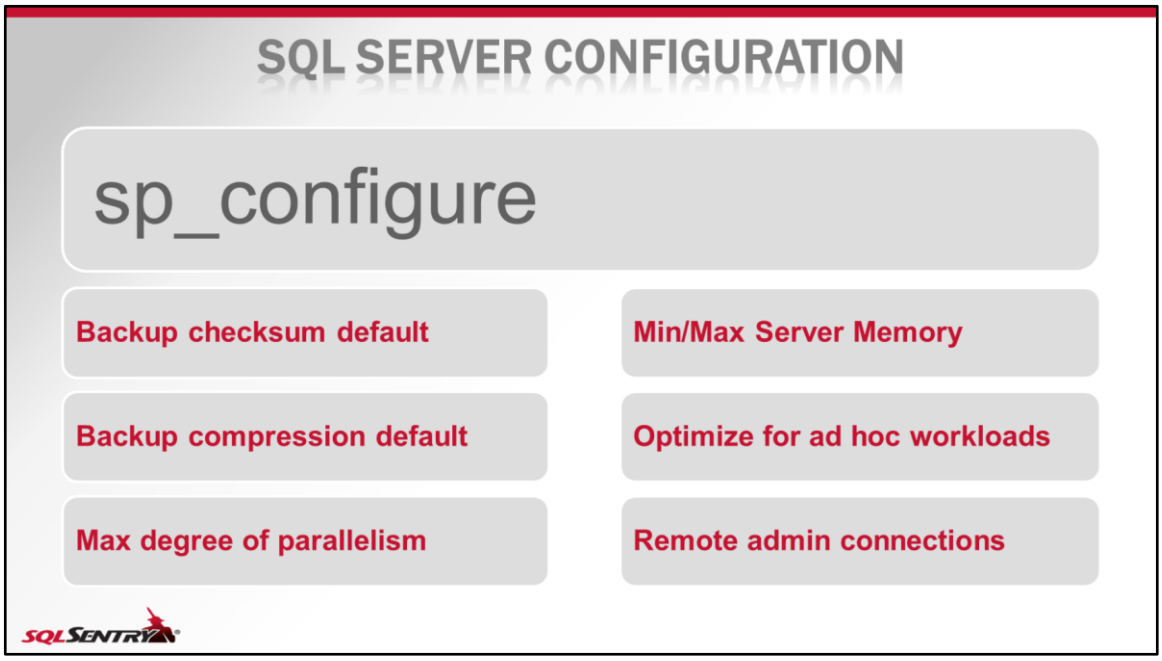
At a very high level NUMA nodes normally equate to a physical CPU socket on the server motherboard with its associated bank of memory modules. The objective of setting MAXDOP is to constrain a query to a single NUMA node in order to try and prevent synchronization of threads between the sockets as this is more expensive than within the same socket.

Good articles on NUMA are;

- https://blogs.msdn.microsoft.com/psssql/2011/11/11/sql-server-clarifying-the-numa-configuration-information/
- https://technet.microsoft.com/en-us/library/ms180954(v=sql.105).aspx

MAXDOP settings;

- MAXDOP Calculator - http://blogs.msdn.com/b/sqlsakthi/p/maxdop-calculator-sqlserver.aspx
- https://support.microsoft.com/en-us/kb/2806535

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exec sp_configure 'backup compression', 1;
exec sp_configure 'remote admin connections',1;
exec sp_configure 'show advanced', 0;

reconfigure;
Go
```

For xp_cmdshell, it is off by default, it is strongly advised that it is not used unless you have no other option in which case make sure it is secured. A good resource that discusses this can be found at http://blogs.msdn.com/b/sqlsecurity/archive/2008/01/10/xp-cmdshell.aspx.

SQL SERVER CONFIGURATION

Security

- Avoid using SQL Authentication
- Disable and Rename SA
- Proxies for Agent Jobs
- Perform Volume Maintenance Tasks

LOCK PAGES IN MEMORY

Tier 1 Systems

- On
- Cannot afford downtime/impact

Tier 2 systems

- Off
- Identify issue & RCA

TEMPDB

- Multiple Files
- Dedicated storage
- Separate data and log files

DATABASE CONFIGURATION

- Instant File Initialization
- Multiple files
- Separate Data and Log
- Checksum page verification
- Appropriate Database Owner

MAINTENANCE OPERATIONS

- DBCC CHECKDB
- Backups
- Re-indexing & Statistics Maintenance
- Log Rotation
- Monitor dbo.suspect_pages in MSDB

MONITORING & ALERTING

- Monitor key performance counters
- Generate baselines
- Configure SQL Agent Alerts
- Policy Based Management

QUESTIONS

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THANK YOU!

- Slides will be available at http://blogs.sqlsentry.com/author/johnmartin
- E-mail ebooks@sqlsentry.com for free copies of our e-books:
  - Just tell them where you met me
- My contact info for other questions:
  - Email: Jmartin@SQLSentry.com
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