SQL Server Best Practices

Install SQL Server like a boss

Andre Essing
Senior Consultant & Trainer

BASLE ▪ BERN ▪ BRUGG ▪ DÜSSELDORF ▪ FRANKFURT A.M. ▪ FREIBURG I.BR. ▪ GENEVA
HAMBURG ▪ COPENHAGEN ▪ LAUSANNE ▪ MUNICH ▪ STUTTGART ▪ VIENNA ▪ ZURICH

trivadis
makes IT easier.

About Me

ANDRE ESSING

Senior Consultant
Trainer

FRIEND OF redgate 2016

Microsoft CERTIFIED Solutions Expert
Data Platform

Microsoft CERTIFIED Trainer

Profile

DBA and Senior Consultant, Microsoft Certified Solutions Expert, Trainer and SQL Server Enthusiast

- Working in IT since 1998
- SQL Server since version 7.0
- Focus on SQL Server infrastructure and mission critical systems
- Microsoft Certified Trainer and MCSE: Data Platform
- Microsoft P-TSP Data Platform
- Friend of Redgate
- PASS Chapter Leader Bavaria and SQL Saturday Organizer

Contact

Web & Mail

www www.trivadis.com

Blog www.andreessing.de

E-Mail andre.essing@trivadis.com

Social

Twitter twitter.com/aessing

Xing xing.com/profile/Andre_Essing

LinkedIn linkedin.com/in/aessing

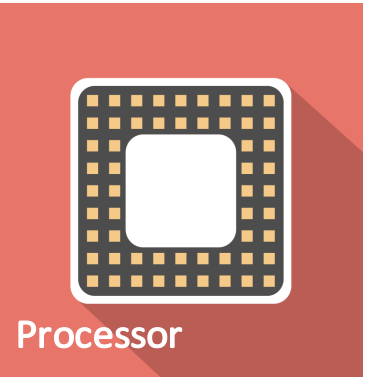
Publications

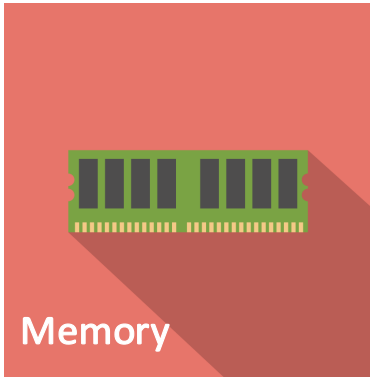
SlideShare slideshare.net/AndreEssing

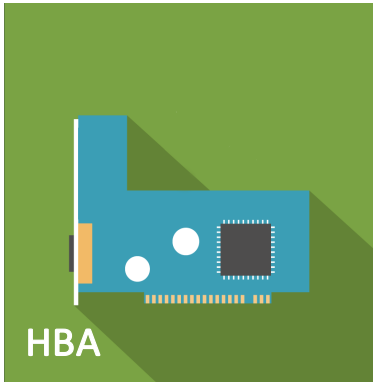
trivadis makes IT easier.

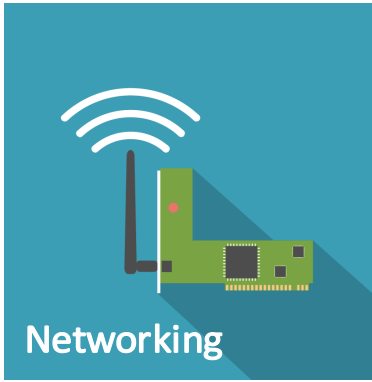
The Key for a Perfect System

- The key is to build a balanced system without bottlenecks
- The SQL Server software is only a small part of the whole system









- Plan your system before you build it

trivadis
makes IT easier.

Pre Deployment

trivadis
makes IT easier.

Hardware

- Disable Hyper-Threading
- 1 scheduler per logical core
- Disable all power savings
- SQL Server licenses are expensive

trivadis
makes IT easier.

Storage

- Which kind of storage?
- Read caching isn't necessary
- Prefer small disks
- Low latency is important
- Don't use thin provisioning
- Most times virtual disks are slower than physical

trivadis
makes IT easier.

Filesystem

- Check partition alignment
  http://msdn.microsoft.com/en-us/library/dd758814.aspx
- Format volumes the right way
- Disable file indexing and defrag
- Disk layout is important
- Consider a remote backup location
- Use mountpoints

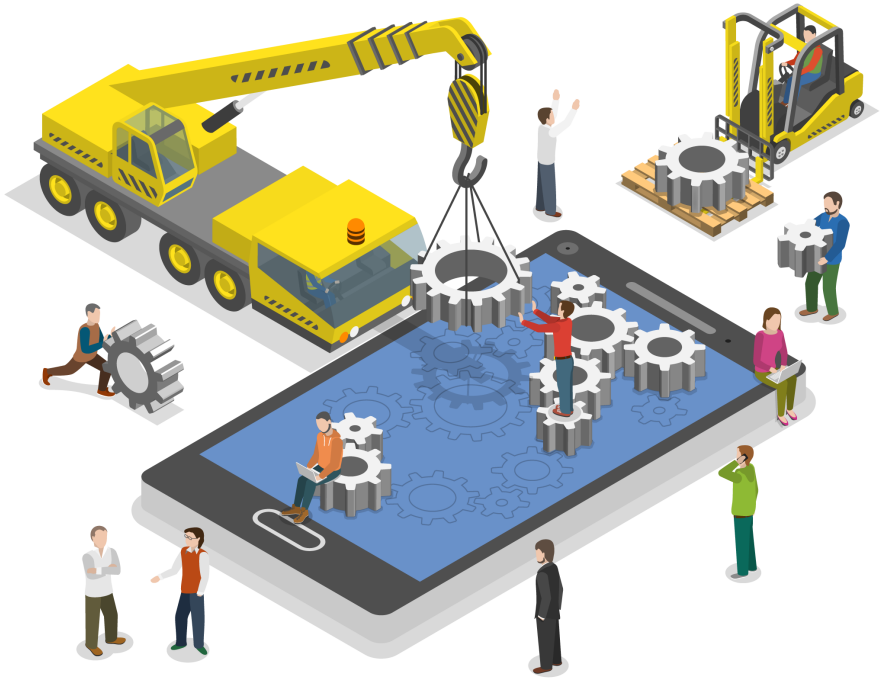
trivadis
makes IT easier.

Operating System

- Configure for high performance
- Use service accounts
- Local Security Policy
  - Lock Pages In Memory
  - Perform Volume Maintenance Tasks
- Antivirus software & exclusions
  https://support.microsoft.com/en-us/kb/309422
- Windows Firewall & User Access Control

trivadis makes IT easier.

Setup



trivadis
makes IT easier.

Installation

- Only install components you really need
- Choose the correct collation
- Install using a configuration file
- Don‘t forget to install updates
- BUILTIN\Administrators isn’t a good idea
- SQL Server is not a workstation

trivadis makes IT easier.

Post Setup Configuration

trivadis
makes IT easier.

Networking

- Same port for all instances
- Dedicated IP per instance
- Use DNS alias for easy access
- Set SPNs to use Kerberos authentication
- Don’t use SQL Logins

trivadis makes IT easier.

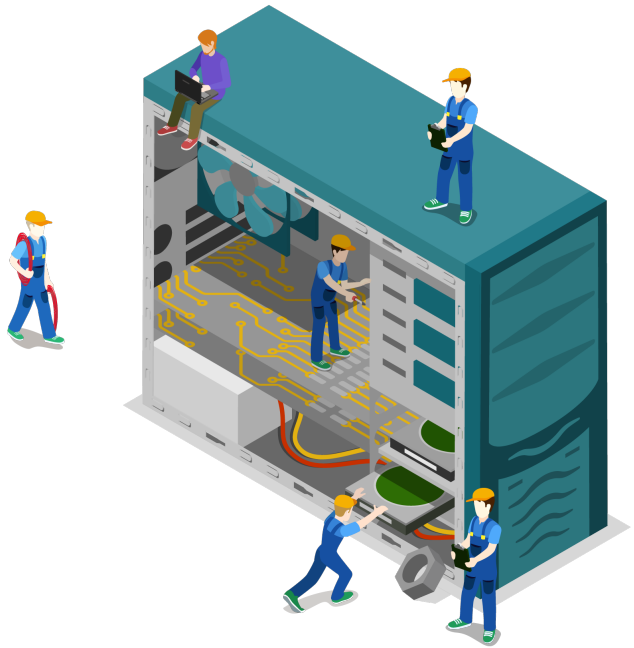
Trace Flags

- Trace Flag 1117
  - Equally grows all data files
  - Replaced in 2016 by filegroup option (AUTOGROW_ALL_FILES - sys.filegroups)
  - Recommended for all filegroups and databases
- Trace Flag 1118
  - Force use of unified extents for objects
  - Replaced in 2016 by database option (MIXED_PAGE_ALLOCATION - sys.databases)
  - Default in SQL Server 2016

trivadis
makes IT easier.

Instance

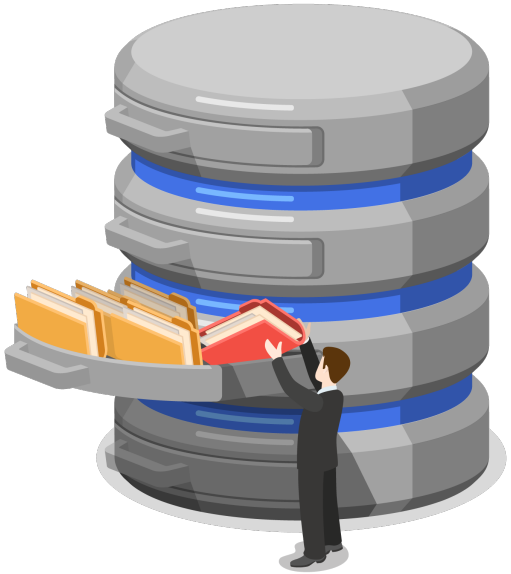
- Configure memory limits
- Optimize for ad hoc workloads
- Max Degree of Parallelism
  - Not higher than cores per socket
  - Some apps need a value of 1
- Cost Threshold for Parallelism
  - 40 for OLTP workloads
  - 25 for DWH and mixed workloads



trivadis makes IT easier.

Database defaults

- Default fill factor
  - Our best practice is 80%
  - It is just for new objects
- Keep an eye on fragmentation
- Compress Backups
- Checksum default



trivadis makes IT easier.

TempDB

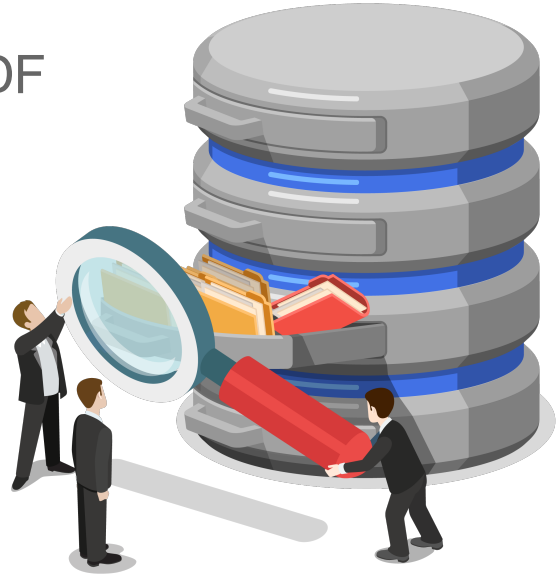
- Split into multiple files
- Size depends on usage
- Size and growth of the files
  - Start with 2-4GB per data file and 4-8GB log
  - Grow 256MB-1GB for data and 1GB for log
- Monitor TempDB usage
- Don’t forget trace flag 1117 and 1118

trivadis
makes IT easier.

Databases – Physical design

- The physical design matters
- When possible, primary filegroup only for MDF
- Use multiple files per filegroup
- Set size and growth of files
- Estimate the size for the next year(s)
- Keep an eye on VLFs

```
DBCC LOGINFO;
```



trivadis makes IT easier.

Databases – Options

- Don’t assign DB_Owner role or DBO
- Always use Full Recovery Model
  - There could be some exceptions
- Never enable Auto_Close or Auto_Shrink
- Enable Auto_Create_Statistics
- Enable Auto_Update_Statistics

trivadis
makes IT easier.

Maintenance

- There are more tasks than just backup
- Never shrink automatically
- Don’t forget to clean the mess of SQL Server
- Don’t use maintenance plans
- Use scripts
  - Trivadis Toolbox (http://www.trivadis.com/)
  - Ola Hallengren (https://ola.hallengren.com/)

trivadis
makes IT easier.

Questions and Answers…

Andre Essing
Senior Consultant & Trainer

+49 89 992759598
andre.essing@trivadis.com