



Dat kannse zwar  
so machen, aber  
dann isset...

Oder:

Kurzgeschichten rund um den  
SQL Server



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# Heute geht es um...

- SQL Server Installation
- Backup
- Always ON
- Index Maintenance
- Security



# Bevor es losgeht...

- Will so ein SQL Server erst einmal installiert werden
- 1. Fallstrick kann schon das Installationsmedium sein
- Schauen wir mal, was es gibt...








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- Was darf es denn nun sein?

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# Was ich dazu schon oft gehört hab

- "Das Enterprise Core Medium ist für die Installation auf Windows Server Core gedacht"
- "Enterprise Core ist limitiert auf 20 CPUs"
- Ich habe da mal in der Vergangenheit einen Test gemacht...





Object Explorer

Connect

- lictest\ISOMITCORE (SQL Server 13.0.5026.0 - lic
- Databases
- Security
- Server Objects
- Replication
- PolyBase
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent (Agent XPs disabled)
- XEvent Profiler

lictest\ISOHNECORE (SQL Server 13.0.5026.0 - lic

- Databases
- Security
- Server Objects
- Replication
- PolyBase
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent (Agent XPs disabled)
- XEvent Profiler

SQLQuery1.sql - lic... (lictest\nimda (53))

check.sql - lictest\... (lictest\nimda (53))

```
xp_readerrorlog 0,1
select SERVERPROPERTY ('Edition')
```

100 %

Results Messages

	LogDate	ProcessInfo	Text
1	2018-12-19 11:42:23.330	Server	Microsoft SQL Server 2016 (SP2) (KB4052908) - 13.0.5026.0 (X64) Mar 18 2018 09:11:49 Copyright (c) Microsoft Corporation Enterprise Edition: Core-based Licensing (64-bit) on Windows Server 2012 R2 Datacenter 6.0
2	2018-12-19 11:42:23.350	Server	UTC adjustment: 0:00
3	2018-12-19 11:42:23.350	Server	(c) Microsoft Corporation.
4	2018-12-19 11:42:23.350	Server	All rights reserved.
5	2018-12-19 11:42:23.350	Server	Server process ID is 2624.
6	2018-12-19 11:42:23.350	Server	System Manufacturer: 'Microsoft Corporation', System Model: 'Virtual Machine'.
7	2018-12-19 11:42:23.350	Server	Authentication mode is MIXED.
8	2018-12-19 11:42:23.350	Server	Logging SQL Server messages in file 'F:\IsoMitCore\MSSQL13.ISOMITCORE\MSSQL\Log\ERRORLOG'.
9	2018-12-19 11:42:23.350	Server	The service account is 'NT Service\MSSQL\$ISOMITCORE'. This is an informational message; no user action is required.
10	2018-12-19 11:42:23.350	Server	Registry startup parameters: -d F:\IsoMitCore\MSSQL13.ISOMITCORE\MSSQL\DATA\master.mdf -e F:\IsoMitCore\MSSQL13.ISOMITCORE\MSSQL\Log\ERRORLOG -f F:\IsoMitCore\MSSQL13.ISOMITCORE\MSSQL\DATA\master.mdf
11	2018-12-19 11:42:23.350	Server	Command Line Startup Parameters: -s "ISOMITCORE"
12	2018-12-19 11:42:23.380	Server	SQL Server detected 2 sockets with 16 cores per socket and 32 logical processors per socket, 64 total logical processors; using 64 logical processors based on SQL Server licensing. This is an informational message; no user action is required.
13	2018-12-19 11:42:23.380	Server	SQL Server is starting at normal priority base (=7). This is an informational message only. No user action is required.
14	2018-12-19 11:42:23.380	Server	Detected 262143 MB of RAM. This is an informational message; no user action is required.
15	2018-12-19 11:42:23.390	Server	Using conventional memory in the memory manager.
16	2018-12-19 11:42:24.940	Server	Default collation: SQL_Latin1_General_CP1_CI_AS (us_english 1033)
17	2018-12-19 11:42:24.940	Server	Automatic soft-NUMA was enabled because SQL Server has detected hardware NUMA nodes with greater than 8 physical cores.
18	2018-12-19 11:42:25.330	Server	Buffer pool extension is already disabled. No action is necessary.
19	2018-12-19 11:42:26.120	Server	InitializeExternalUserGroupSid failed. Implied authentication will be disabled.
20	2018-12-19 11:42:26.120	Server	Implied authentication manager initialization failed. Implied authentication will be disabled.
21	2018-12-19 11:42:26.630	Server	The maximum number of dedicated administrator connections for this instance is '1'
22	2018-12-19 11:42:26.650	Server	This instance of SQL Server last reported using a process ID of 9160 at 12/19/2018 11:37:19 AM (local) 12/19/2018 11:37:19 AM (UTC). This is an informational message only; no user action is required.
23	2018-12-19 11:42:26.720	Server	Node configuration: node 0: CPU mask: 0x0000000005555555:0 Active CPU mask: 0x0000000005555555:0. This message provides a description of the NUMA configuration for this computer. This is an informational message.
24	2018-12-19 11:42:26.720	Server	Node configuration: node 1: CPU mask: 0x000000000aaaaaaa:0 Active CPU mask: 0x000000000aaaaaaa:0. This message provides a description of the NUMA configuration for this computer. This is an informational message.
25	2018-12-19 11:42:26.720	Server	Node configuration: node 2: CPU mask: 0x5555555500000000:0 Active CPU mask: 0x5555555500000000:0. This message provides a description of the NUMA configuration for this computer. This is an informational message.
26	2018-12-19 11:42:26.720	Server	Node configuration: node 3: CPU mask: 0xaaaaaaaa00000000:0 Active CPU mask: 0xaaaaaaaa00000000:0. This message provides a description of the NUMA configuration for this computer. This is an informational message.

(No column name)

1	Enterprise Edition: Core-based Licensing (64-bit)
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Query executed successfully.

lictest\ISOMITCORE (13.0 SP2) | lictest\nimda (53) | master | 00:00:00 | 68 rows

```
xp_readerrorlog 0,1  
select SERVERPROPERTY ('Edition')
```

100 %

Results Messages

	LogDate	ProcessInfo	Text
1	2018-12-19 11:42:24.840	Server	Microsoft SQL Server 2016 (SP2) (KB4052908) - 13.0.5026.0 (X64) Mar 18 2018 09:11:49 Copyright (c) Microsoft Corporation Enterprise Edition (64-bit) on Windows Server 2012 R2 Datacenter 6.3 <X64> (Build 9600: ) (Hypervisor)
2	2018-12-19 11:42:24.850	Server	UTC adjustment: 0:00
3	2018-12-19 11:42:24.860	Server	(c) Microsoft Corporation.
4	2018-12-19 11:42:24.860	Server	All rights reserved.
5	2018-12-19 11:42:24.860	Server	Server process ID is 372.
6	2018-12-19 11:42:24.860	Server	System Manufacturer: 'Microsoft Corporation', System Model: 'Virtual Machine'.
7	2018-12-19 11:42:24.860	Server	Authentication mode is MIXED.
8	2018-12-19 11:42:24.860	Server	Logging SQL Server messages in file 'F:\IsoOhneCore\MSSQL13.ISOOHNECORE\MSSQL\Log\ERRORLOG'.
9	2018-12-19 11:42:24.860	Server	The service account is 'NT Service\MSSQL\$ISOHNECORE'. This is an informational message; no user action is required.
10	2018-12-19 11:42:24.860	Server	Registry startup parameters: -d F:\IsoOhneCore\MSSQL13.ISOOHNECORE\MSSQL\DATA\master.mdf -e F:\IsoOhneCore\MSSQL13.ISOOHNECORE\MSSQL\Log\ERRORLOG -f F:\IsoOhneCore\MSSQL13.ISOOHNECORE\MSSQL\DATA\mastlog.ldf
11	2018-12-19 11:42:24.860	Server	Command Line Startup Parameters: -s "ISOHNECORE"
12	2018-12-19 11:42:24.900	Server	SQL Server detected 2 sockets with 16 cores per socket and 32 logical processors per socket, 64 total logical processors; using 40 logical processors based on SQL Server licensing. This is an informational message; no user action is required.
13	2018-12-19 11:42:24.900	Server	SQL Server is starting at normal priority base (=7). This is an informational message only. No user action is required.
14	2018-12-19 11:42:24.900	Server	Detected 262143 MB of RAM. This is an informational message; no user action is required.
15	2018-12-19 11:42:24.910	Server	Using conventional memory in the memory manager.
16	2018-12-19 11:42:26.420	Server	Default collation: SQL_Latin1_General_CP1_CI_AS (us_english 1033)
17	2018-12-19 11:42:26.420	Server	Automatic soft-NUMA was enabled because SQL Server has detected hardware NUMA nodes with greater than 8 physical cores.
18	2018-12-19 11:42:26.830	Server	Buffer pool extension is already disabled. No action is necessary.
19	2018-12-19 11:42:27.620	Server	InitializeExternalUserGroupSid failed. Implied authentication will be disabled.
20	2018-12-19 11:42:27.620	Server	Implied authentication manager initialization failed. Implied authentication will be disabled.
21	2018-12-19 11:42:28.080	Server	The maximum number of dedicated administrator connections for this instance is '1'.
22	2018-12-19 11:42:28.110	Server	This instance of SQL Server last reported using a process ID of 6356 at 12/19/2018 11:37:19 AM (local) 12/19/2018 11:37:19 AM (UTC). This is an informational message only; no user action is required.
23	2018-12-19 11:42:28.180	Server	Node configuration: node 0: CPU mask: 0x0000000055555555:0 Active CPU mask: 0x0000000055555555:0. This message provides a description of the NUMA configuration for this computer. This is an informational message only. No user action is required.
24	2018-12-19 11:42:28.180	Server	Node configuration: node 1: CPU mask: 0x00000000aaaaaaaa:0 Active CPU mask: 0x00000000aaaaaaaa:0. This message provides a description of the NUMA configuration for this computer. This is an informational message only. No user action is required.
25	2018-12-19 11:42:28.180	Server	Node configuration: node 2: CPU mask: 0x5555555500000000:0 Active CPU mask: 0x0000005500000000:0. This message provides a description of the NUMA configuration for this computer. This is an informational message only. No user action is required.
26	2018-12-19 11:42:28.180	Server	Node configuration: node 3: CPU mask: 0xaaaaaaaa00000000:0 Active CPU mask: 0x000000aa00000000:0. This message provides a description of the NUMA configuration for this computer. This is an informational message only. No user action is required.
27	2018-12-19 11:42:28.480	Server	Using dynamic lock allocation. Initial allocation of 2500 Lock blocks and 5000 Lock Owner blocks per node. This is an informational message only. No user action is required.
28	2018-12-19 11:42:28.480	Server	Trace authentication is enabled. This is an informational message only. No user action is required.

(No column name)
Enterprise Edition (64-bit)

# Es geht nur um die Lizenzen

- Enterprise Medium ist für die Kunden aus einem "alten Software Assurance (SA)" Umfeld mit Server/CAL Lizenzierung
  - Hier haben wir nur max 20 physical Cores im Einsatz
- Das "richtige" Medium ist Enterprise Core
  - Hier haben wir die volle CPU Lizenzierung / Nutzung





# Mein 1. Backup-Szenario

- 2 physische Server mit identischen Instanzen
  - Auf Server 1 gab es die produktive Datenbank
  - Auf Server 2 “eine Art” Failover Datenbank
- 
- DEMO



# Mein 1. Backup-Szenario

- Problem: Transaktionslogs können vollaufen
- Workaround: DEV 0 beraubte die Option der Point in Time Recovery
- Interimslösung:
  - Zeitstempel in Log Backups einbauen
  - weg von der Option WITH INIT
- Return Time Objective und Vorgehen hinterfragt
- Lösung: Maintenance Solution von Ola Hallengren



# Mein AlwaysOn AG Erlebnis...

- AlwaysOn Availability Groups sind heutzutage eine charmante Lösung, um Hochverfügbarkeit zu gewährleisten
- Mein Setup schaut wie folgt aus:
  - 2 virtuelle Nodes Windows Server 2012R2 mit SQL2016
    - 1 NIC öffentlicher Netzwerktraffic
    - 1 NIC Clusterkommunikation
    - 1 File Share Witness, bereitgestellt über File Server





# Mein AlwaysOn AG Erlebnis...

- Wartungswochenende
  - Komplettes SAN soll offline gehen
- Dadurch auch sämtliche ESX Hosts und meine VMs down
- Wiederanlauf
- ... und der Dirk machte große Augen

Demo



# Mein AlwaysOn AG Erlebnis...

- Ergebnis: im Vorfeld Infrastruktur testen
- Niedergeschriebenen Notfallplan parat haben, um wieder an den Start zu kommen
- Alternative: Disk Witness?
  - In virtualisierten Umgebungen schwierig, da ein RAW Device Mapping notwendig
  - VMFS als shared Disk geht, aber nur bei CIB (Cluster in a Box -> VMs also nur auf einem Host)



# Was man bei Online IDX Rebuilds im Hinterkopf behalten sollte

- Online Index Rebuild ist ein Enterprise Feature
- Daten bleiben beim REBUILD online
- DEMO



# Was man bei Online IDX Rebuilds im Hinterkopf behalten sollte

- Man sollte genau wissen, was eine eingesetzte Lösung macht
- Transaktionslog-Bedarf im Enterprise Umfeld erhöht



Ich wusste es nicht besser: CheckDB  
REPAIR\_ALLOW\_DATA\_LOSS

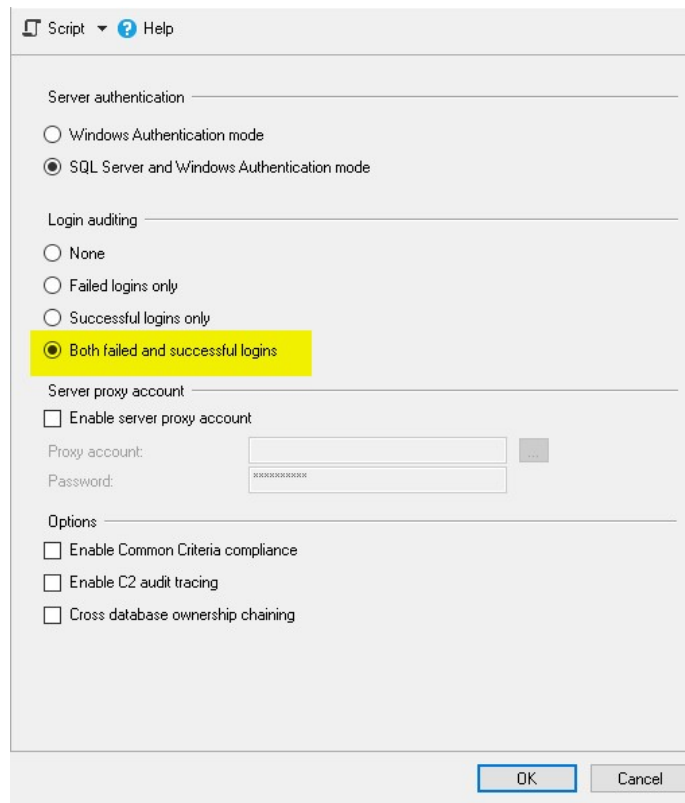
# Logins am Server überwachen...



- Frage aus einem Forum
- Tipp war: „Wenn der Weg bis zum Server funktioniert, dann protokollier mal: SSMS->Security-Login Auditing -> Both failed and successful logins“



# Logins am Server überwachen...



Script Help

Server authentication

- ☐ Windows Authentication mode
- ☒ SQL Server and Windows Authentication mode

Login auditing

- ☐ None
- ☐ Failed logins only
- ☐ Successful logins only
- ☒ Both failed and successful logins

Server proxy account

☐ Enable server proxy account

Proxy account:

Password:

Options

- ☐ Enable Common Criteria compliance
- ☐ Enable C2 audit tracing
- ☐ Cross database ownership chaining

OK Cancel

# Logins am Server überwachen...

- Folgende Probleme sehe ich hier
  - Unmengen an Infos im SQL Server Error Log
  - Die Infos wandern auch ins Windows Application Log
  - Die Einstellung wird erst mit Neustart der Instanz wirksam!
- Demo



# Logins am Server überwachen...

- Mit den dbatools hat man schnell eine XE Session am Start
  - Funktioniert „on the fly“
  - Man kann schnell filtern
- Man automatisiert sp\_who2 oder noch besser sp\_whoisactive
- SQL Server Audit



# Das war es von mir...wobei...

Noch ein paar kleine Anekdoten, welche ich aufgeschnappt habe

- „Um eine konsistente Sicherung zu haben müssen die Dienste angehalten werden“
- „Unser Installer erwartet folgendes sa Kennwort: .....“
- „SQL Service Konten MÜSSEN lokale Admin-Rechte haben“





Vielen dank für Eure Aufmerksamkeit

Session Feedback Day 1  
(not optional!)

<http://bit.ly/DataGrillen2019Day1>





Event Feedback  
(not optional!)

<http://bit.ly/DataGrillen2019Event>

