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INSTALLING AND CONFIGURING SQL SERVER FOR MICROSOFT DYNAMICS NAV

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ABOUT ME

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OVERVIEW

- Some questions for you to answer.
- Install SQL 2014
- Configure SQL 2014
- Configure temp DB
- Configure model DB
- Configure E-mail
- Configure SQL Server Agent
- NAV 2009R2 installation info
- NAV 2013/2013R2/2015 installation info
- Create a DB using NAV
- Create/delete users/logins
- Detach/attach
- Backup/restore
- Maintenance plans
- Introduction to Policy Based Managment
- SSMS tricks
- Introduction to Extended Events
- Final

SOME QUESTIONS FOR YOU TO ANSWER

- Who is work for a partner, customer, freelance?
- Who is NAV developer?
- Who is an accidental (NAV-) DBA?
- Who has SQL Server with version x at:

	Portable	Partner servers	Customer servers
SQL2014			
SQL2012			
SQL2008 (R2)			
SQL2005			
SQL2000			
SQL older			

- What is your prime interest : install/configure SQL Server for portable / partner server / customer server

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Install SQL Server 2014

WHAT IS THE GOAL OF THE INSTALLATION?

	What will be done on the server?	Performance needed?	Security needed?	Backups needed?	Diskspace needed?
Customer Production Server	PRODUCTION!	Yes	Yes	Yes	Not really
Customer Test Server	Testing before putting objects in production	Depends	Less then Production	No	Depends
Customer performance testing Server	Performance testing before putting objects in production	Yes	Less then Production	No	Depends
Partner development/repository server	Development / testing	No	Yes	Yes	Yes
Portable as DBA/Expert	Development / testing / TSQL programming / DBA testing	Depends	Windows login is enough	Yes	Well ... Yes
Portable as user (functional consultants)	Testing / demo's	No	Windows login is enough	Yes	No

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BEFORE STARTING THE INSTALL

Question 1:

What is the first step to install SQL Server?

Answer 1:

Prepare your disks for SQL Server!

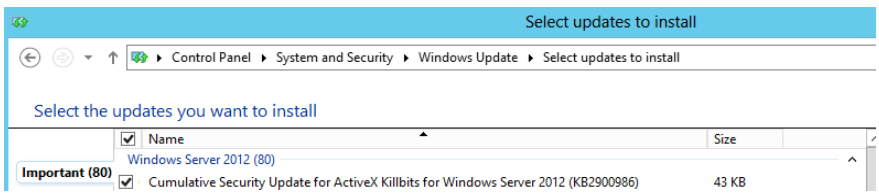
http://www.midnightdba.com/Jen/2014/04/decree-set-your-partition-offset-and-block-size-make-sql-server-faster/

BEFORE STARTING THE INSTALL

Question 2:

What is the second step to install SQL Server?

Answer 2:



Update your server!

BEFORE STARTING THE INSTALL

And step 3:

Use high performance power plan (standard is balanced. Also for servers…)

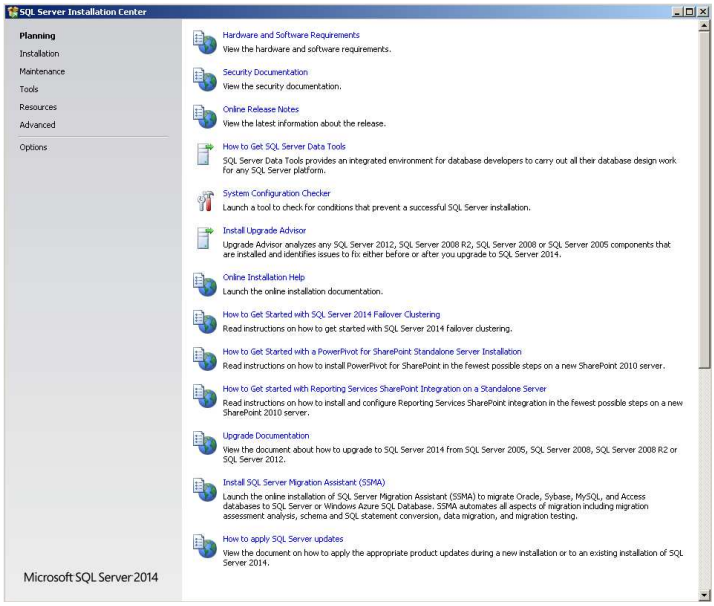
Check:

- Host : Bios
- Host : Windows power plan
- Guest : Bios
- Guest : Windows power plan

INSTALLING SQL SERVER 2014

1033_ENU_LP	13/04/2014 14:07	File folder	
redist	13/04/2014 14:08	File folder	
resources	13/04/2014 14:08	File folder	
StreamInsight	13/04/2014 14:08	File folder	
Tools	13/04/2014 14:08	File folder	
x64	13/04/2014 14:09	File folder	
autorun.inf	06/02/2014 21:56	Setup Information	1 KB
MediaInfo.xml	22/02/2014 00:32	XML Document	1 KB
setup.exe	21/02/2014 14:17	Application	70 KB
setup.exe.config	17/01/2014 10:27	XML Configuration File	1 KB
SqlSetupBootstrapper.dll	21/02/2014 14:20	Application extension	193 KB
sqmapi.dll	21/02/2014 14:20	Application extension	147 KB

Mouse rightclick => run as administrator



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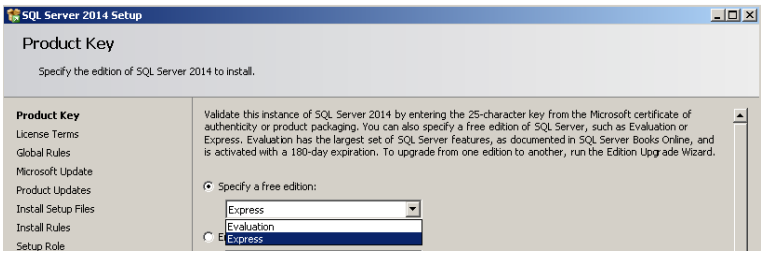
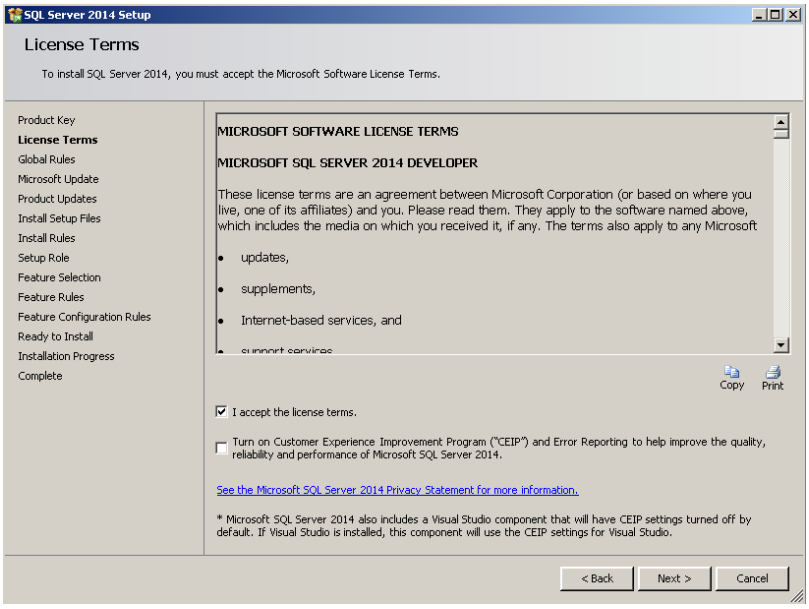
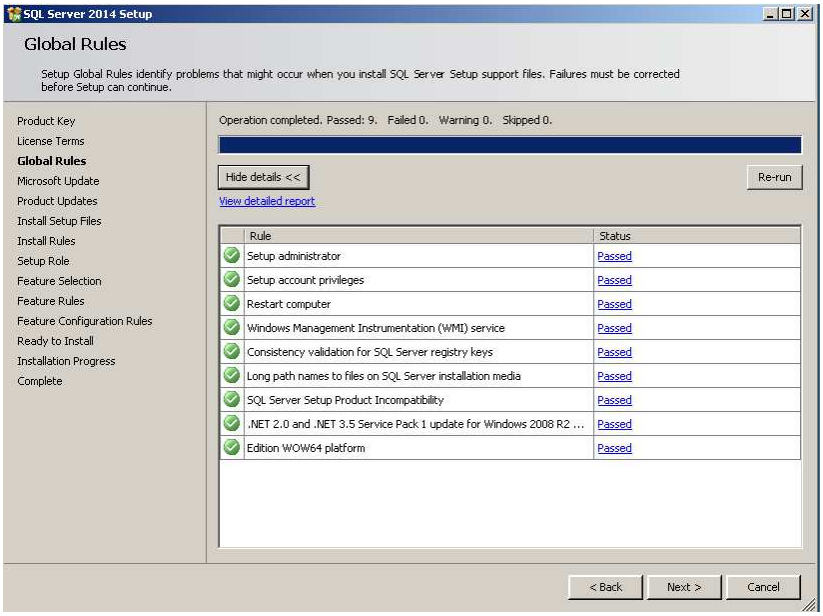


- If you download from MSDN, you have your product key inserted in the download.
- But you can still install as evaluation or express edition
- BTW: Development Edition = (Enterprise Edition - the €)





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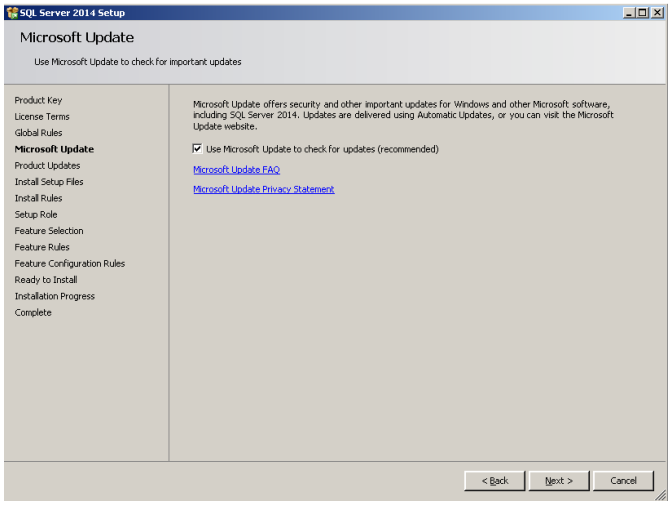

- Since SQL 2012 (I think). It checks for SQL Server service packs that have been released.

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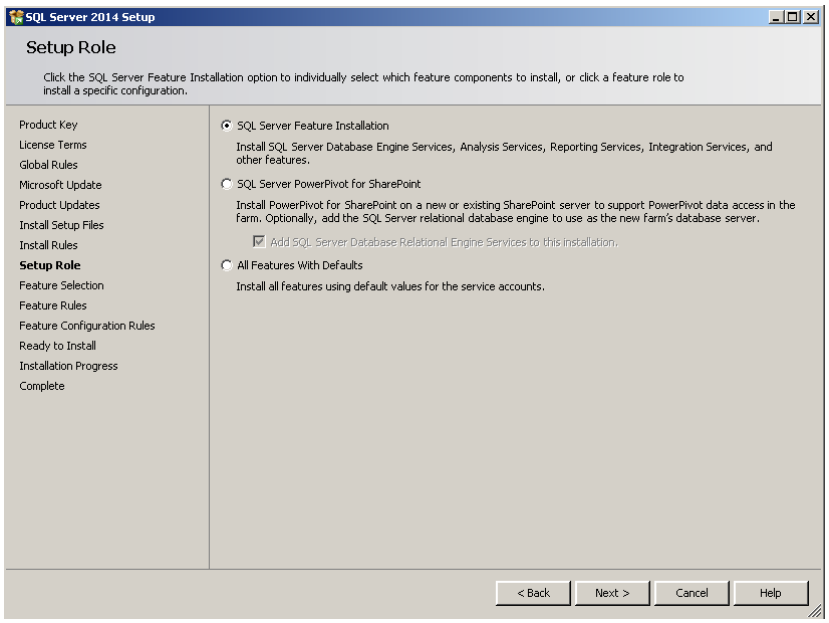

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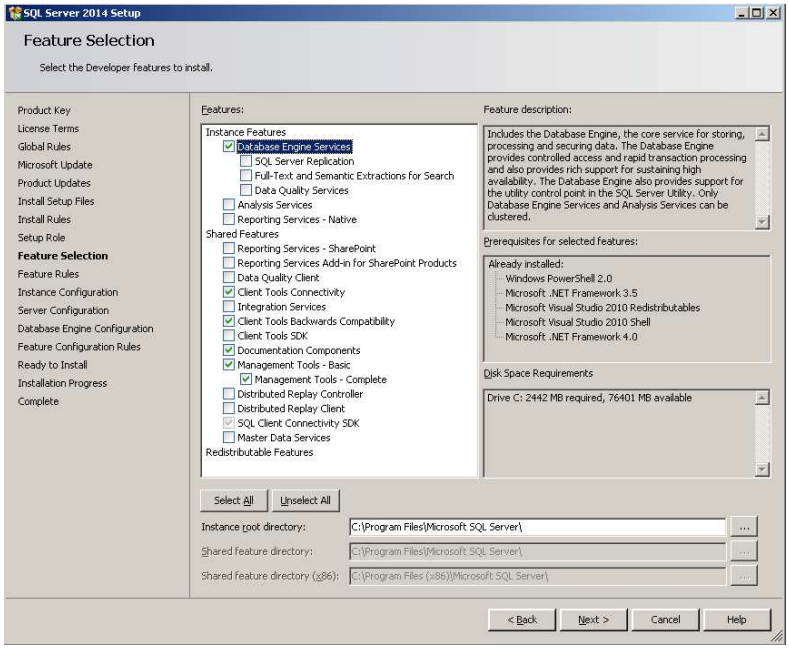

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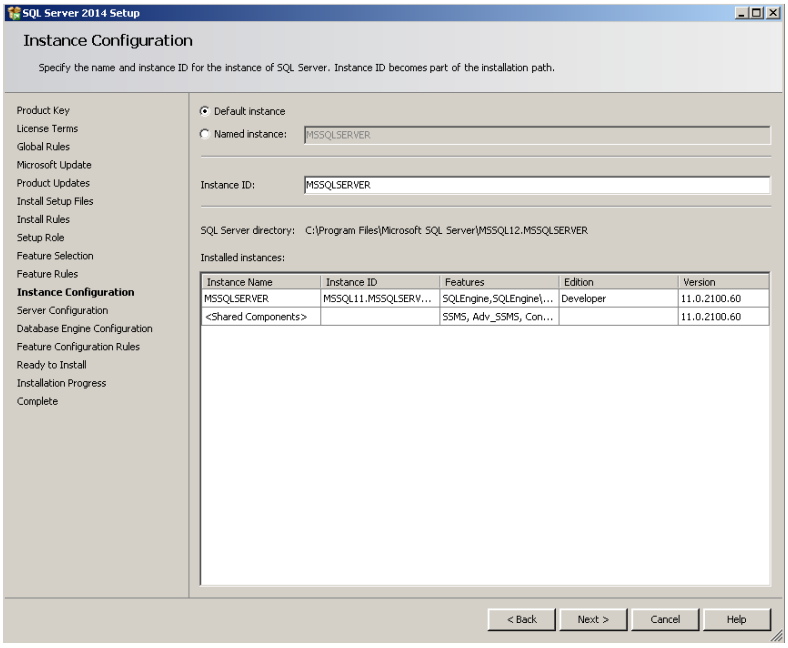
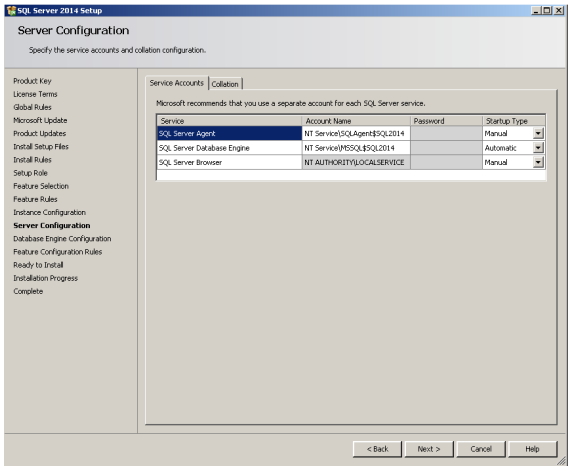
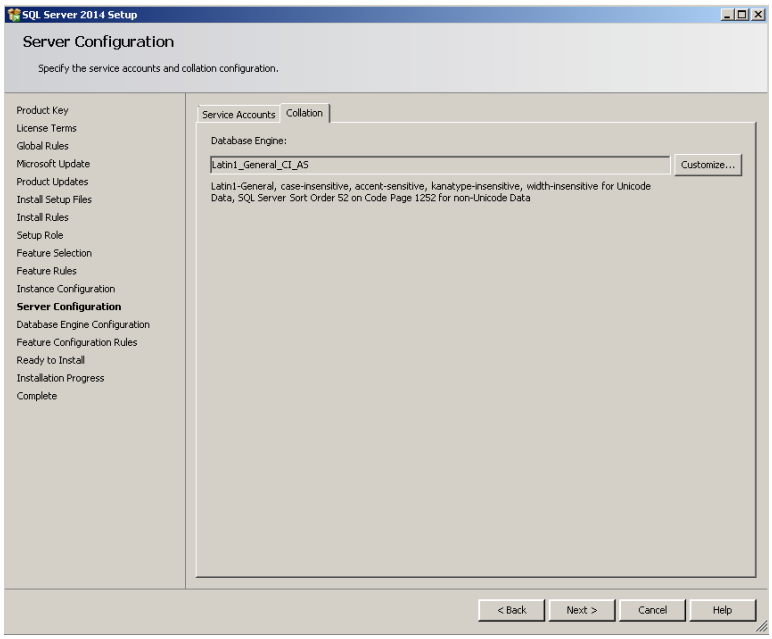
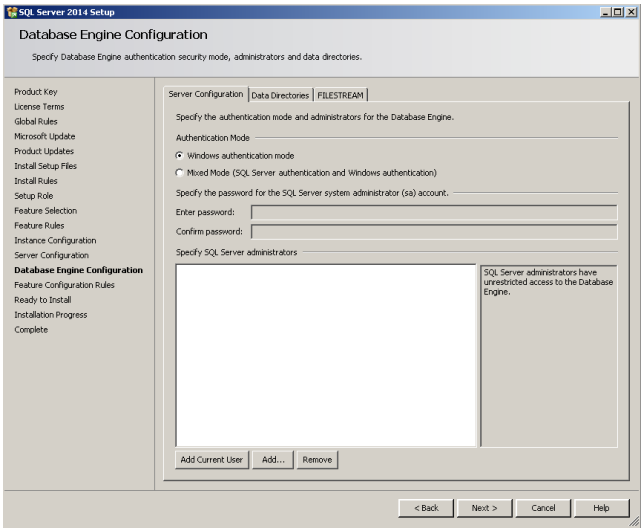


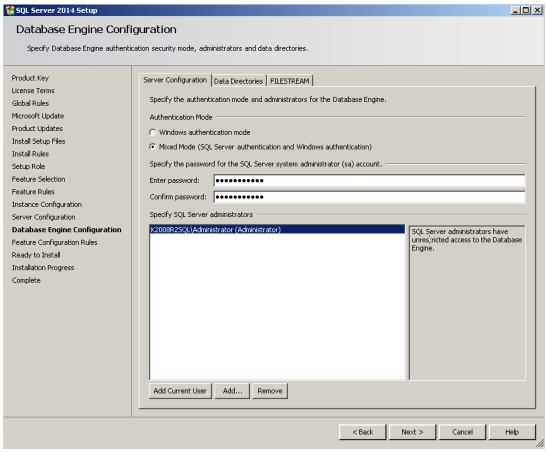
- This is the default.
- SQL Server browser:
  - Browsing a list of available servers
  - Connecting to the correct server instance
  - Connecting to dedicated administrator connection (DAC) endpoints
  - http://technet.microsoft.com/en-us/library/ms181087(v=SQL.105).aspx
- Best practices: every service has his domain-account with only permissions that are needed. So NO domain-admin permissions. Not even server admin permissions.





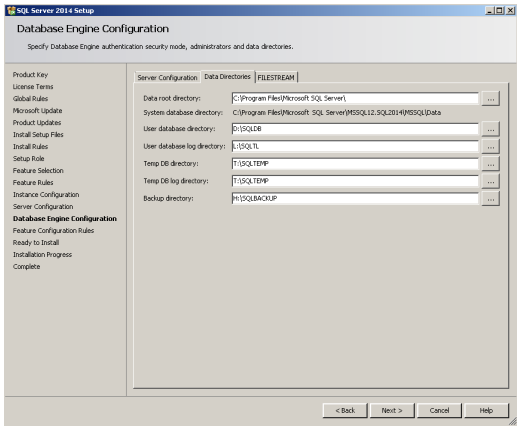


- Best practice : "Windows authentication mode" because it is more secure. SQL Server authentication passwords go over the wire(less) as plain text.



- Best practice bis: use mixed mode with a password like this "g1vdW85njMOLyXoczaGF" together with the name of the account (avoid "sa"). Write it on some paper and in a sealed envelop and in a safe. And only use it case of emergency. And when you use it, change it.

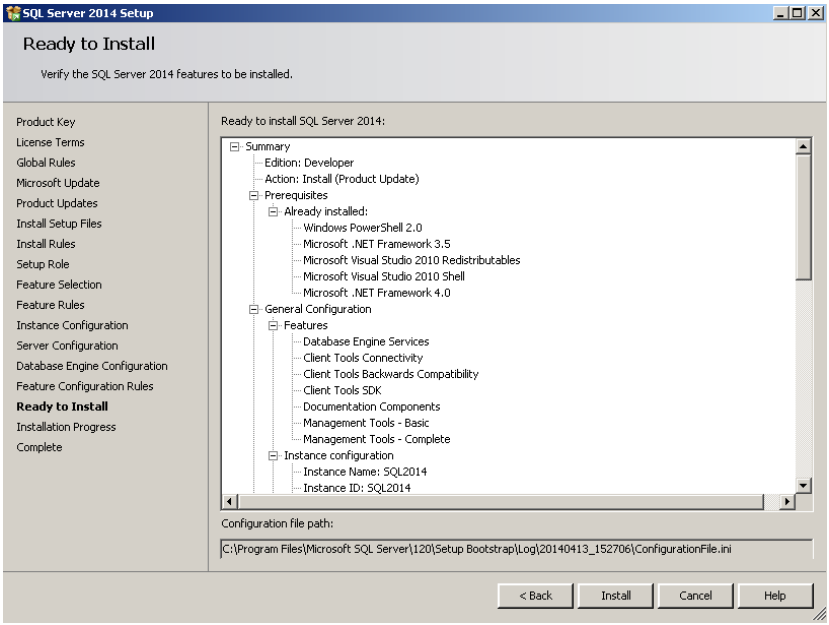
- Did I already tell you that paranoia is NOT a defect but a quality in a DBA?



Ideally!

But with virtualized on non-dedicated SAN-disks, it loses importance. But best create different disks to separate the files.

Best is that each database has its own TL-disk.



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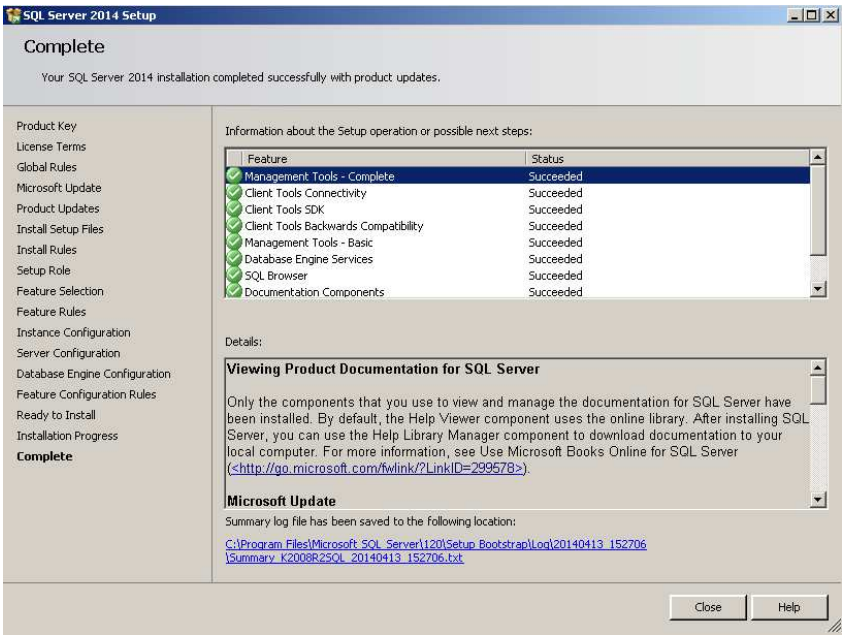

Configure SQL Server 2014

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Configure SQL Server 2014 Configuration Manager

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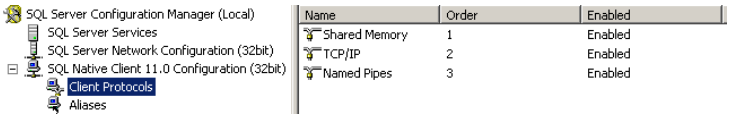
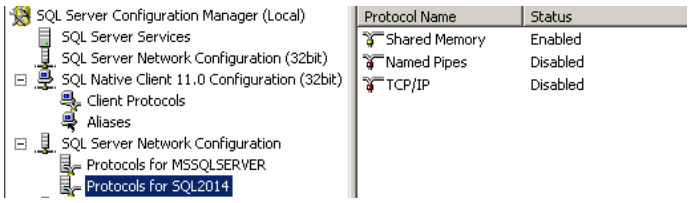
SQL Server (MSS...	Running	Automatic	NT Service\MSSQLSERVER	1084	SQL Server
SQL Server Browser	Stopped	Manual	NT AUTHORITY\LOCALSERVICE	0	
SQL Server Agent...	Running	Automatic	NT Service\SQLSERVERAGENT	1872	SQL Agent

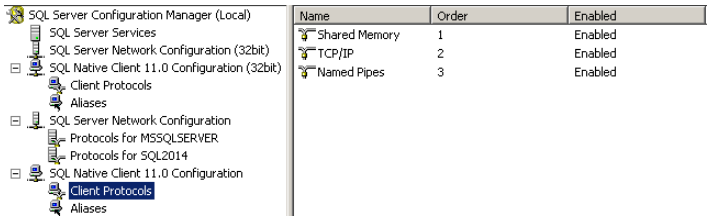
- Have a domain logon for both SQL Server and SQL Server Agent. Preferably different logons with only permissions/shares that are needed but nothing more.



- Shared Memory
  - Simplest
  - Fastest
  - BUT ONLY SAME COMPUTER!
- TCP/IP
  - Most popular protocol
  - fast
- Named Pipes
  - LAN only
  - Slower than TCP/IP on slow networks
  - Fast on same computer
  - Disable it



- TCP/IP is disabled by default??????



- Disable Named Pipes
- Aliases can be used to give your SQL server also another name. Can be useful when you change server, but some applications cannot be easily changed to point to the new server.

- After changing something in the Configuration Manager, you need to restart the SQL Server service.

Configure SQL Server 2014

SQL Server Properties

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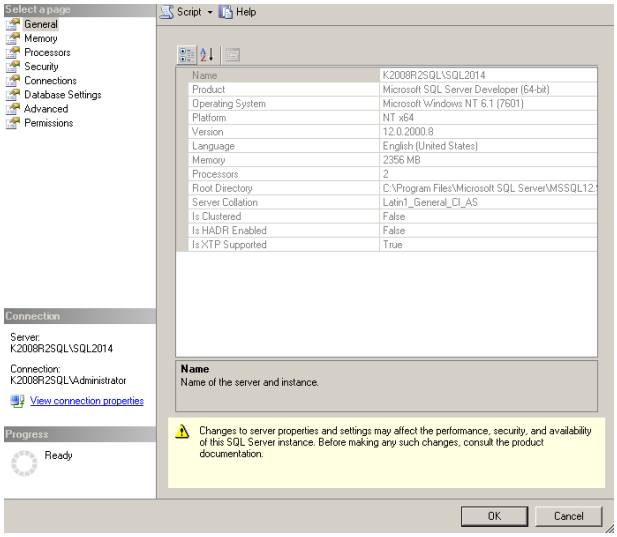
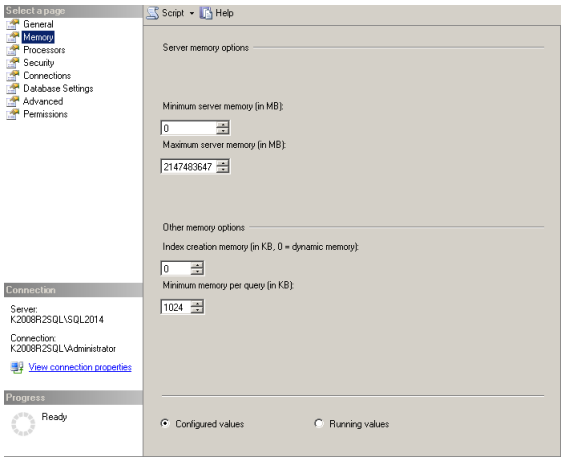
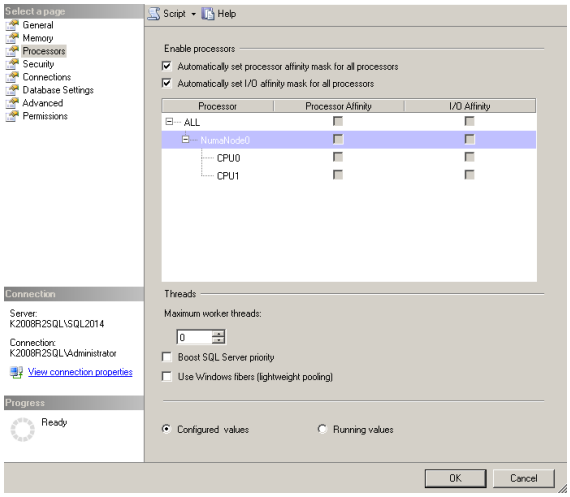


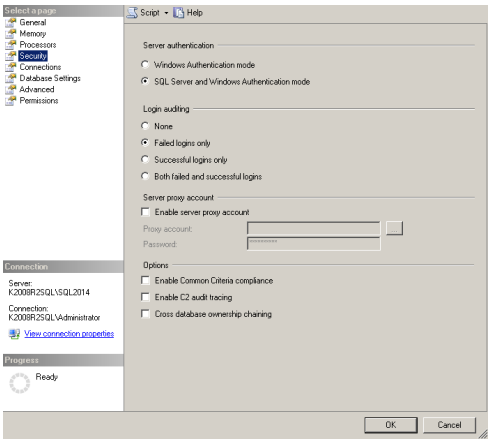
- XTP = eXtreme Transaction Processing = Hekaton = In-memory tables ≠ PIN-ning tables



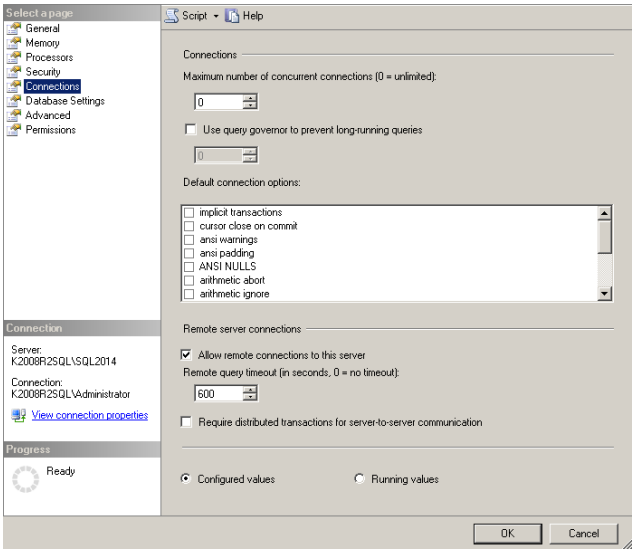
- Minimum/Maximum Server Memory
  - Physical Server with ONLY SQL Server: same values. Leave some memory for the system
  - VM: minimum < Maximum : give the host the possibility to take some memory



- Touch only if said so by Microsoft Support



- Best would be Windows Authentication only because SQL Server Authentication sends PW's unencrypted. But other systems (Unix,…) don't know Windows Authentication.



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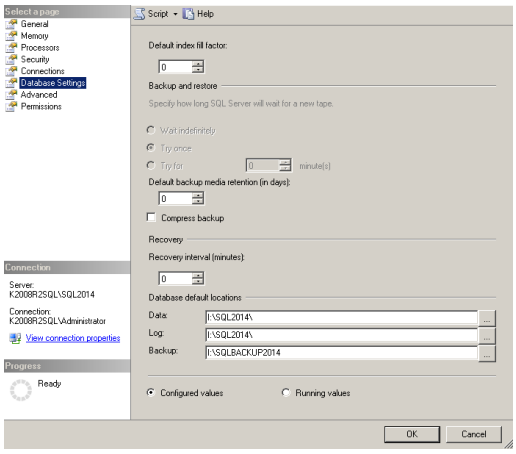

- Default Index Fill Factor (<> Leave % Free Space in Maintenance plan). Put to 90%.
- Compress Backup = Yes
- Database default locations: best different physical disks. Otherwise use different logical disks.

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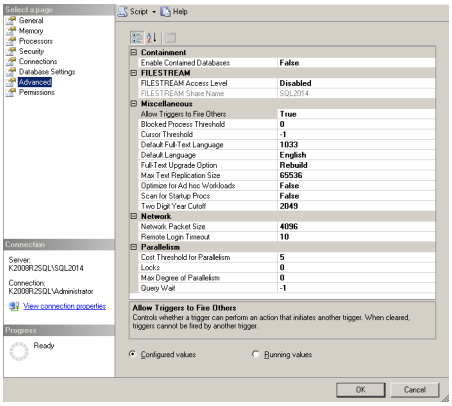
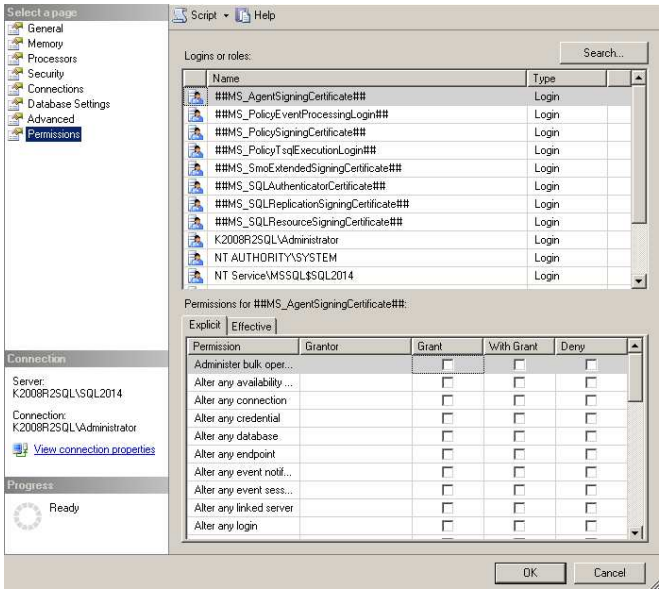


- Optimize for Ad hoc Workloads=Yes
- Cost Threshold for Parallelism = 50
- Max Degree of Parallelism = 2 for NAV2013+ (having enough cores!) and 1 for Pre NAV2013



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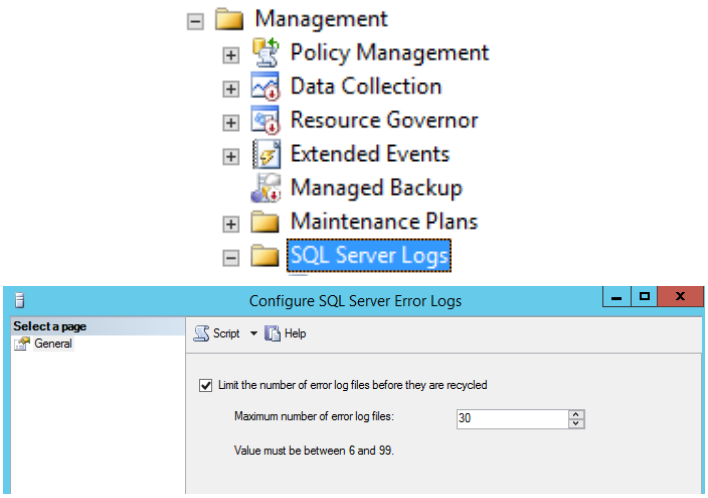

- And create a weekly job to cycle the errorlog: sp_cycle_agent_errorlog. This we will do later in the workshop.

Configure SQL Server 2014 Local Security Policy

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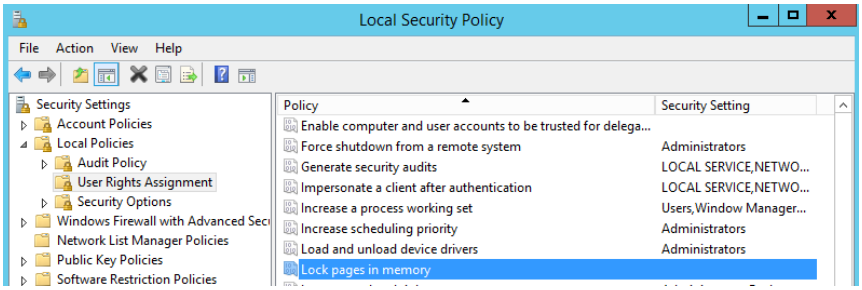
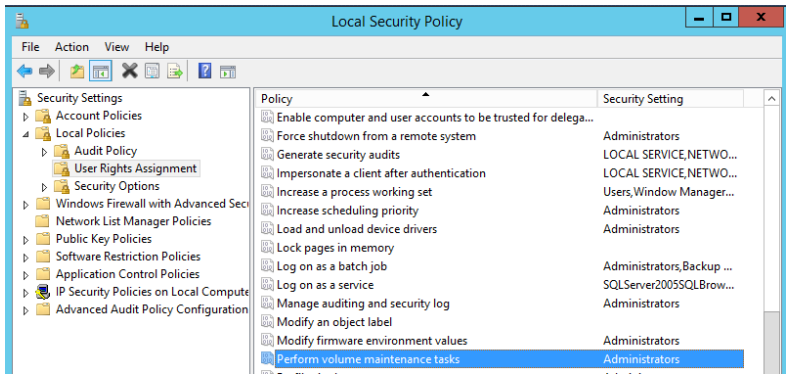


- Use the login used for the SQL Server service.
- Avoids that Windows swaps the buffer to disk.
- Does NOT avoid that VMWare swaps the buffer to disk!



- Use the login used for the SQL Server service.
- It makes the creation of the database faster, also restores. But NOT the creation of the transactionlog file.

Configure Temp DB

- What is the temp DB?
  - Used for temporary tables (NOT the NAV temporary tables. They remain in memory or are created on disk by the service tier [or classic client])
  - Used for sorting results if the memory allocated by SQL for a query is not enough. Having up-to-date statistics helps to avoid this!
  - Rebuild index. You can tell SQL to use the temp DB to sort the data. This can speed up the rebuild if the temp-DB files are on different physical disks than the ones from the DB who's tables/indexes are being rebuild.
  - Never backup or rebuild or defrag.

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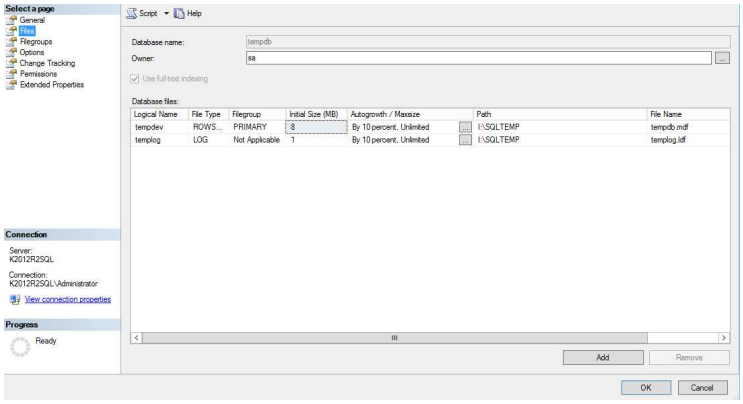
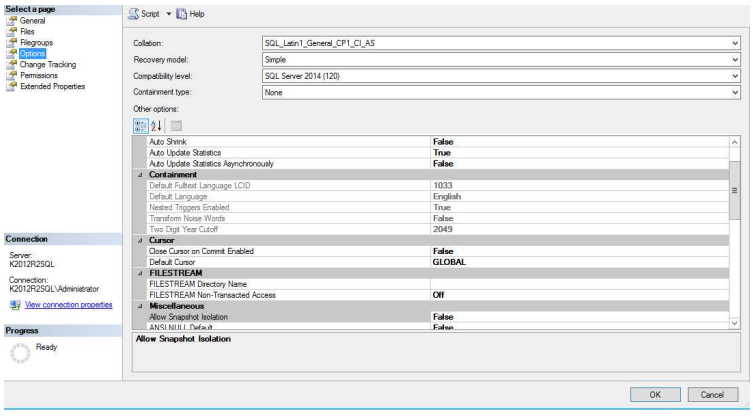


- Pregrow files
- Multiple DB-files if needed (NAV is not really a problem)
- Autogrowth : 50 MB



- Auto Update Statistics Asynchonously = False. If true, it will probably be done when it doesn't serve anymore.

Configure Model DB

- What is the model DB?
  - When you create a new DB (not from a backup), SQL server makes a copy from the model DB.
  - So configure the model DB like you would like any new DB.
  - Backup once a day.

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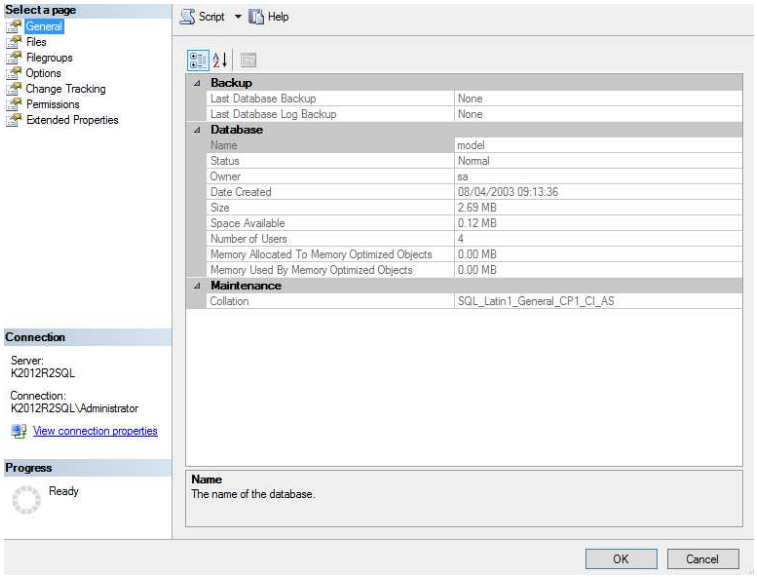
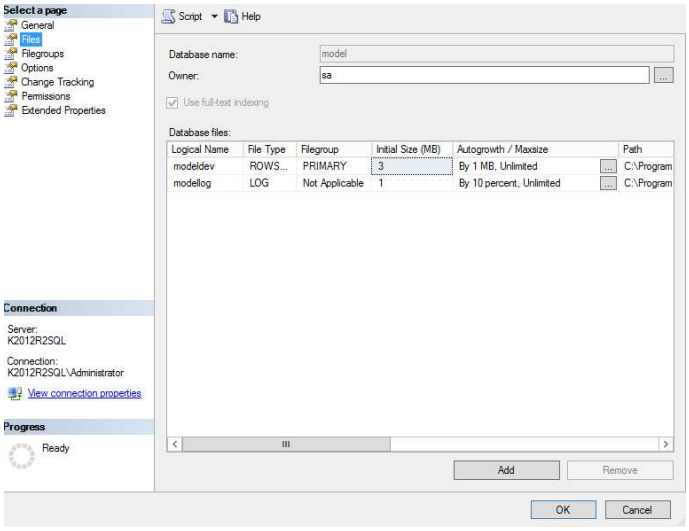
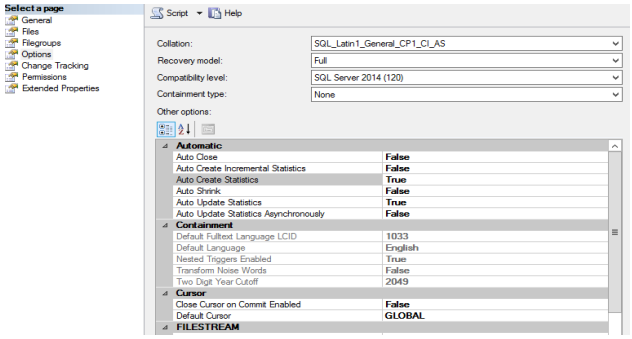




- 50 MB autogrowth



- Recovery Model: Simple. If you forget to change it, at least your transaction log does not explode. And if you try to do TL backups, you get errors to remind you.
- Compatibility level: most recent
- Automatic: depend on your needs
- Delayed Durability = Disabled. Enable only when you really need it.
- Page Verify = Checksum

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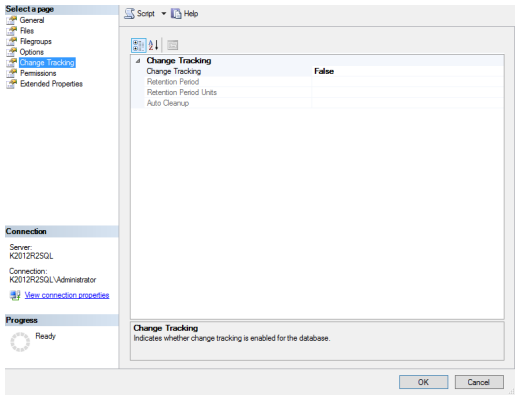

- CT = Change Tracking: tracks that a change is happened but not the data that was changed.
- CDC=Change Data Capture ; asynchronous process that reads the transactionlog file and changes are saved in other tables ; ENTERPRISE FEATURE
- More info : http://technet.microsoft.com/en-us/library/cc280519(v=SQL.105).aspx

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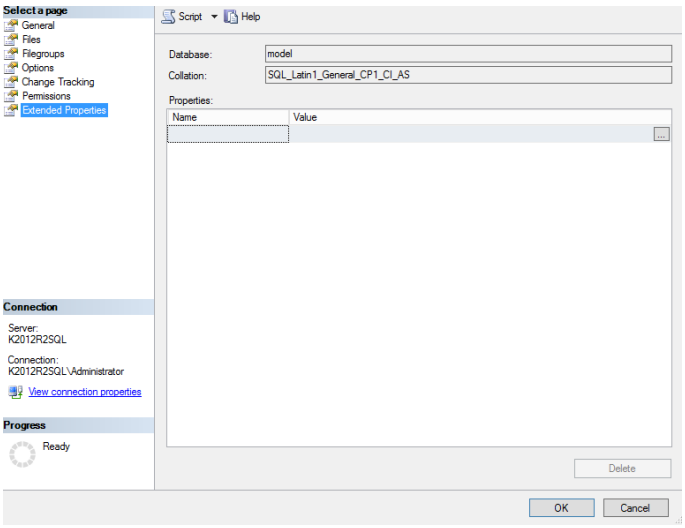

- All SQL objects have Extended Properties (+- NAV Documentation Section).

Configure msdb DB

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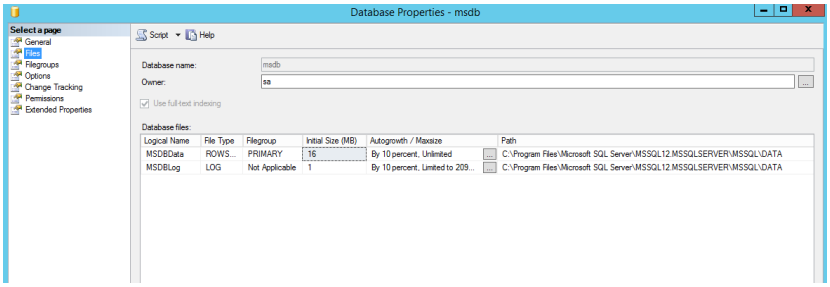
- What is the msdb DB?
  - Contains your SQL Server Agent jobs, Maintenance plans, Backup-restore-history.
  - Backup once a day.



- Guess what?
  - 50 MB autogrowth

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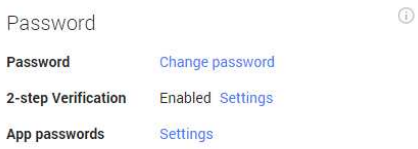
Configure and test Email

- Create an app-password for your google-account. You'll use it later with your email-account in SQL Server.
  - https://www.google.com/settings/security



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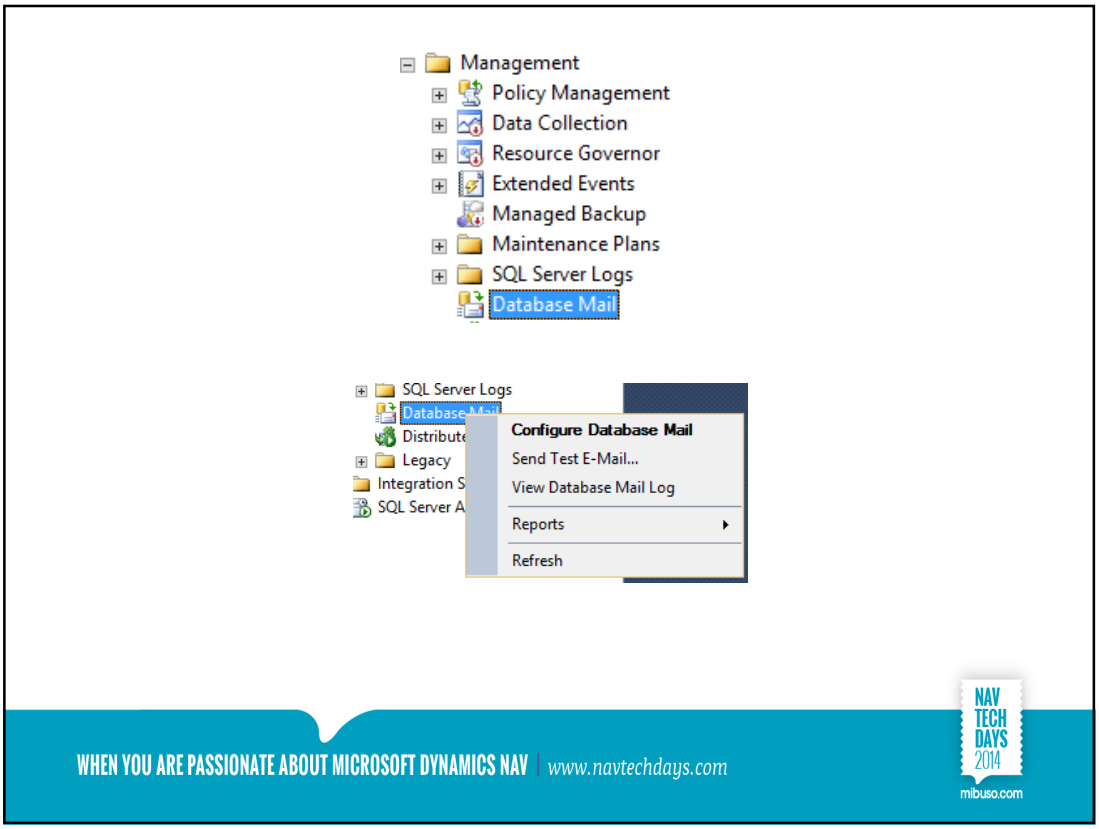
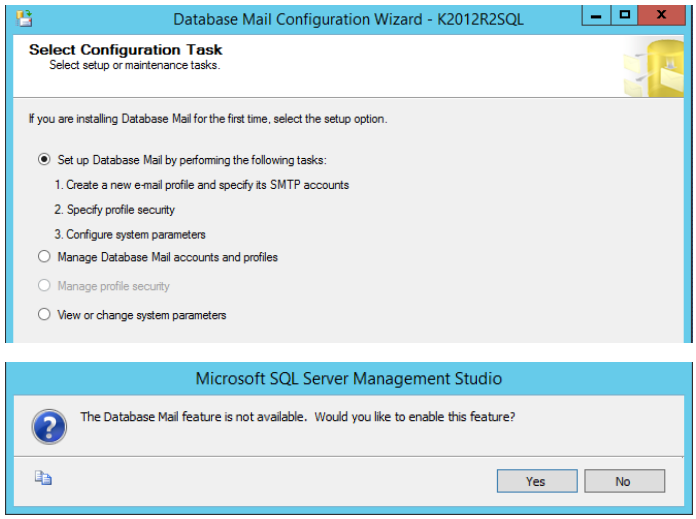
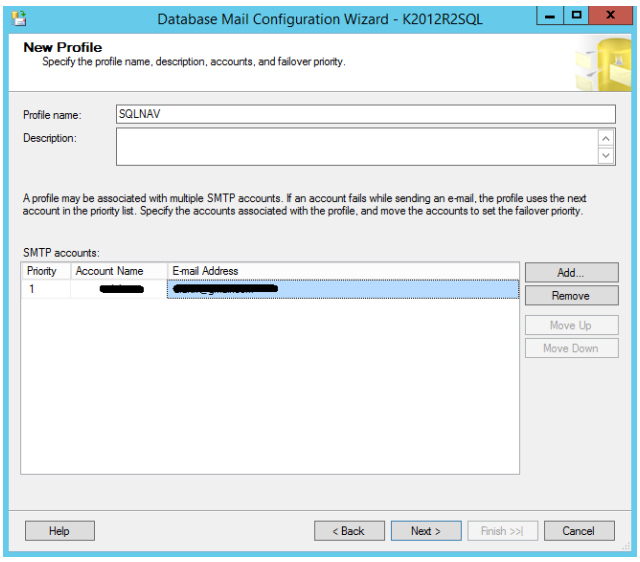

Management
Policy Management
Data Collection
Resource Governor
Extended Events
Managed Backup
Maintenance Plans
SQL Server Logs
Database Mail
SQL Server Logs
Database Mail
Distribute
Legacy
Integration S
SQL Server A
Configure Database Mail
Send Test E-Mail...
View Database Mail Log
Reports
Refresh


Database Mail Configuration Wizard - K2012R2SQL
Select Configuration Task
Select setup or maintenance tasks.
If you are installing Database Mail for the first time, select the setup option.
Set up Database Mail by performing the following tasks:
1. Create a new e-mail profile and specify its SMTP accounts
2. Specify profile security
3. Configure system parameters
Manage Database Mail accounts and profiles
Manage profile security
View or change system parameters
Microsoft SQL Server Management Studio
The Database Mail feature is not available. Would you like to enable this feature?
Yes
No



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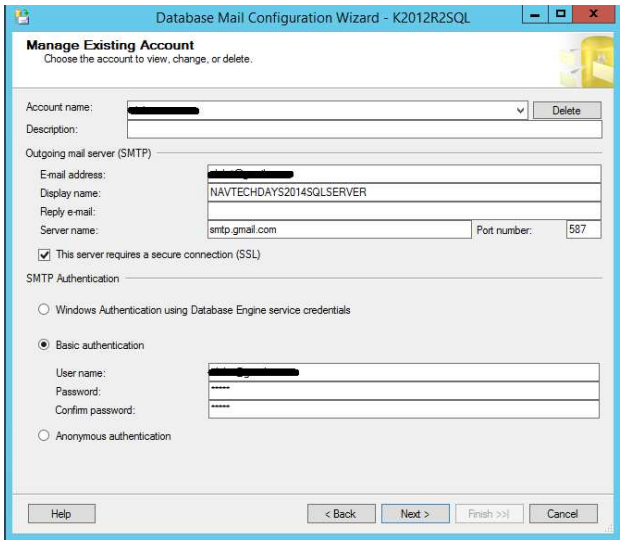

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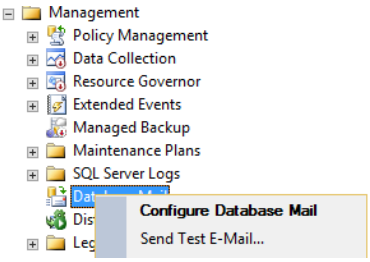
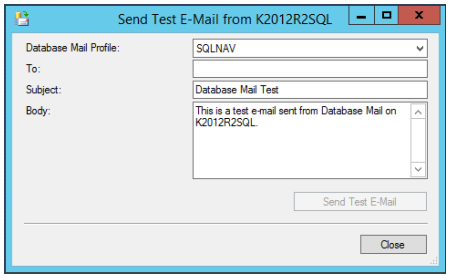
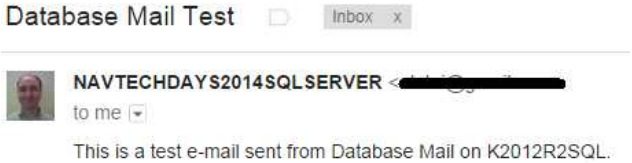
- Test Email





- And if all works fine



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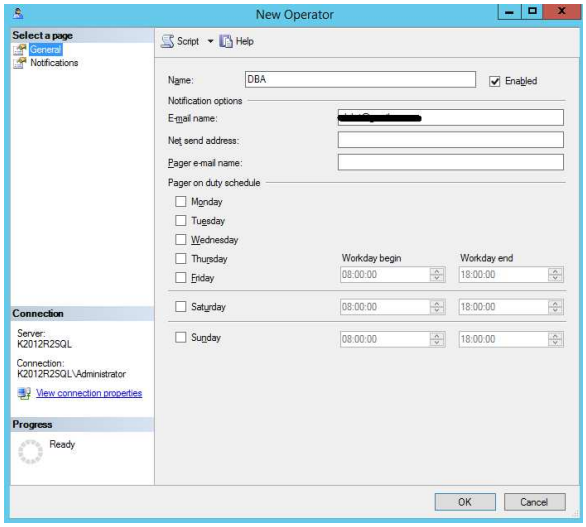
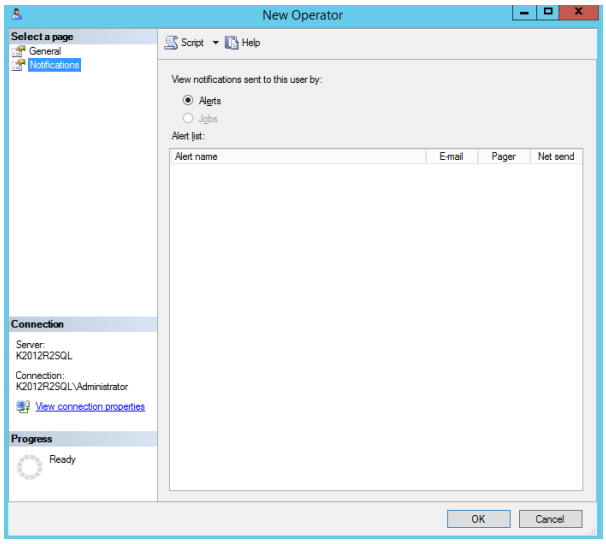
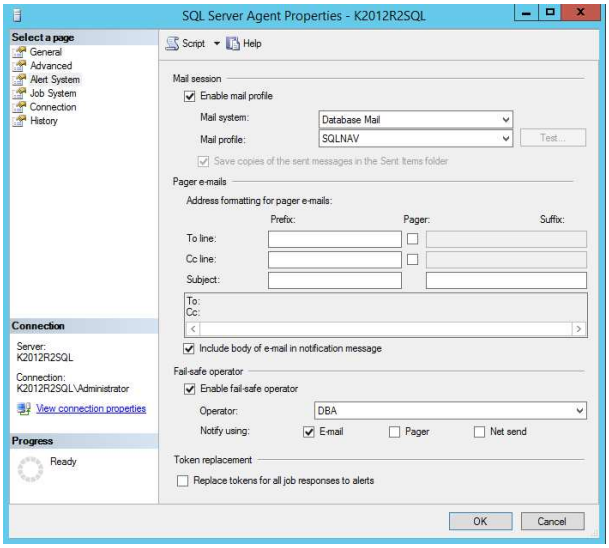


- Create an Operator (can be an email-group)



- No alerts or jobs yet that are using this account



- SQL Server Agent Properties

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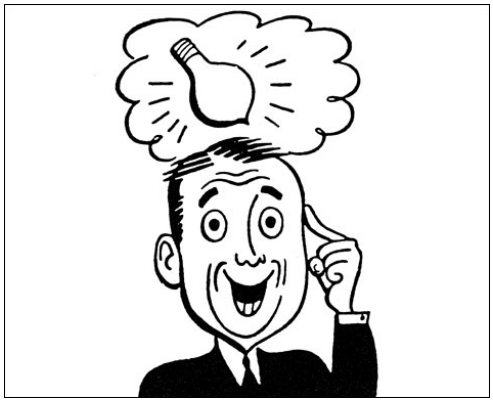

- I need to restart SQL Server Agent. Otherwise email doesn't work!

Configure SQL Server Agent

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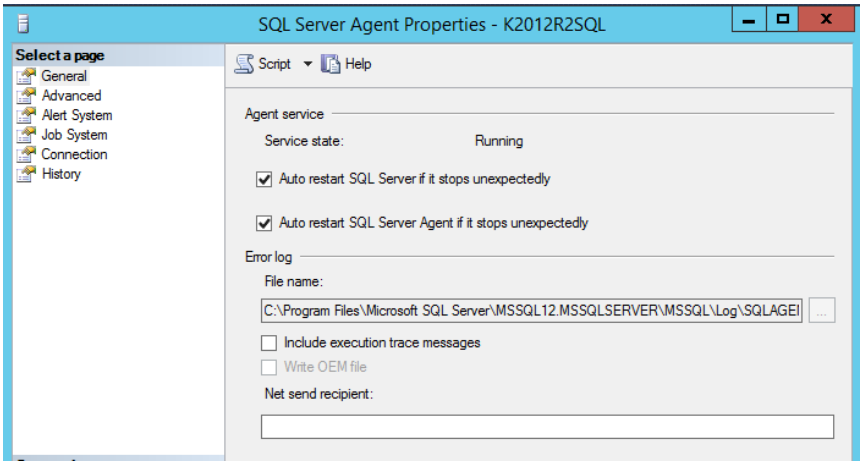

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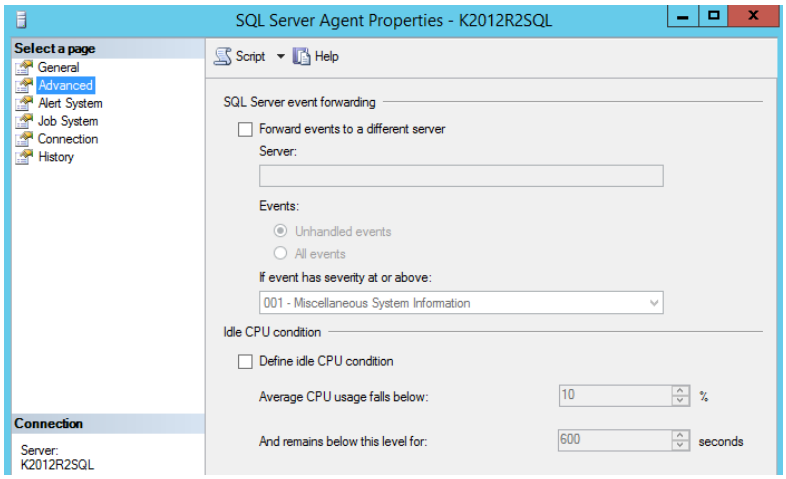

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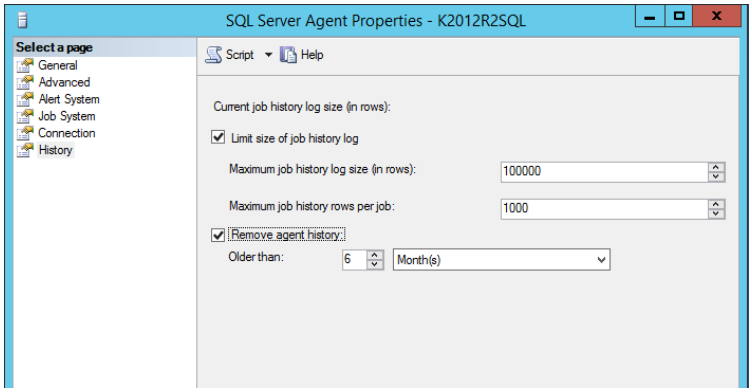
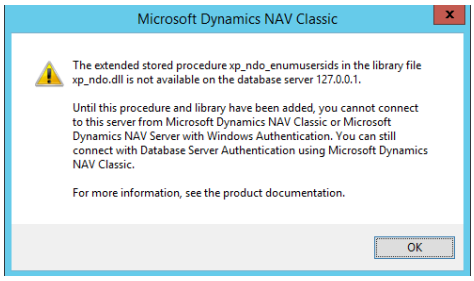


- We can have a job that runs once a day
- We can have a job that runs every minute
- Not cleaning means that msdb DB will grow a lot and get slower.

- Some SQL Server alerts
  - Error 823,824, 825
  - Severities 19-25 are … well … severe
- CREATE_CRITICAL_ALERTS.sql

NAV 2009R2 Installation info



- Classic message when using Windows login
  - ….\SQLDatabase\PFiles\Microsoft Dynamics NAV\60\Database\xp_ndo_x64.dll
  - rename to xp_ndo.dll
  - Put it in "C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL\Binn"
  - ADD_XP_NDO_DLL.sql
- Extended stored procedure = a stored procedure NOT programmed in TSQL.

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NAV 2015 Installation info

- NAV Server does not start. Eventlog =>

```
Server instance: DynamicsNAV80
The NAV application could not be mounted for database 'NAV_80_00_37874_CU00_W1' on database server 'localhost' due to the following error: Cannot establish a connection to the SQL Server/Database.

This could be caused by one of the following reasons:

* The SQL server is not started.
* The database does not exist.
* Proper permissions have not been given to the NAV Server Account.

Try again later or contact your system administrator.
```

- SQL server started?
  - Ok!
- Database exists?
  - Ok!
- Proper permissions?

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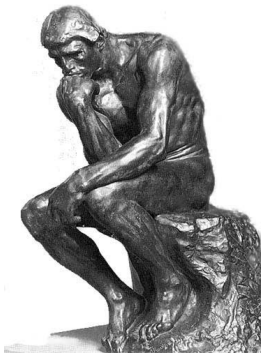
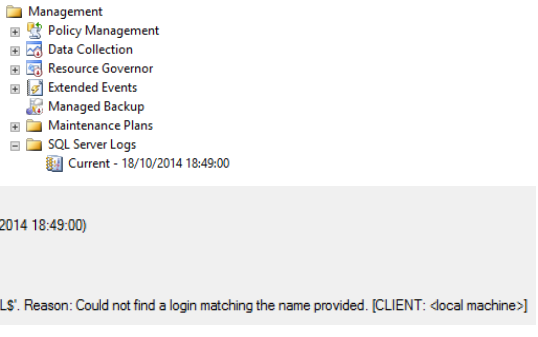
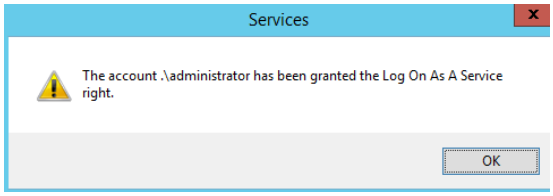


- NAV server is using "Network Service".
- Is NAV reaching my SQL Server or not?
- Does that user have permissions to login into SQL Server?
- Does that user have permissions to use that database?
- How to check that?



- NAV server is reaching SQL Server but SQL Server :

- Create a domain login for NAV and use that.
  - Trick without creating a domain user : Create a local user on all computers with SAME name and SAME password.
- Using the login in the service, you will get this message:



- No. Administrator is NOT a good account! But you need to give the account administrator rights on the computer (for a local account and different servers). But use another accountname and a strong password.

Create a NAV DB

NAV 2009R2

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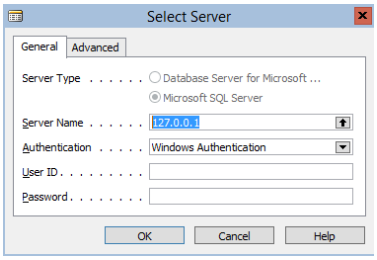

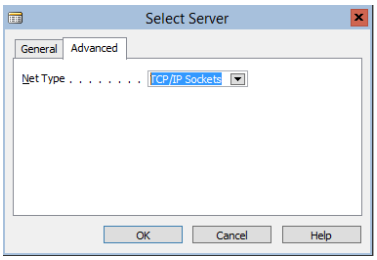

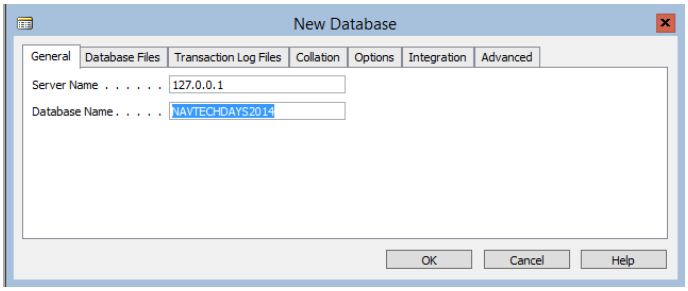

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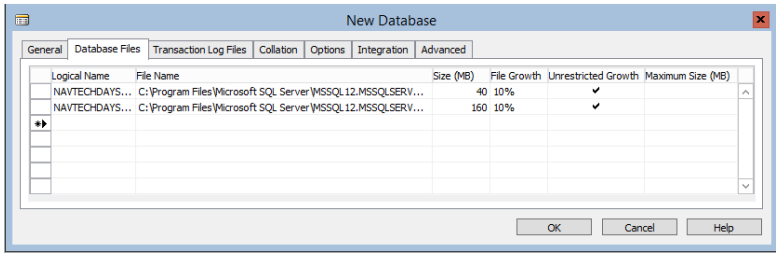
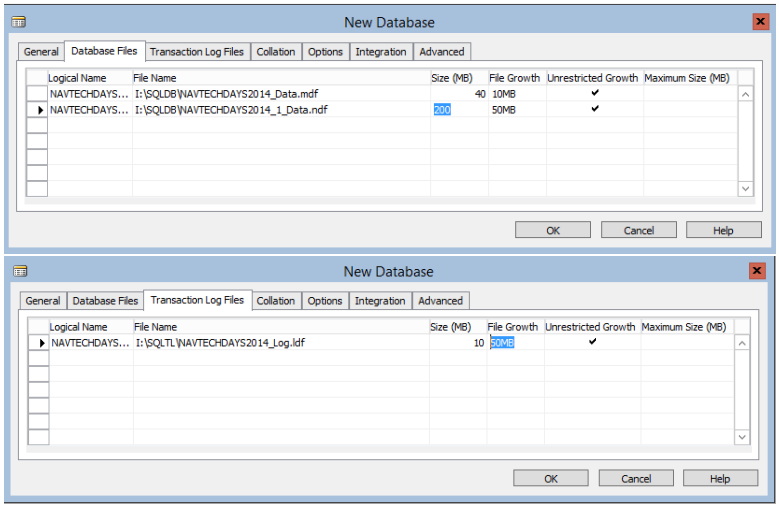
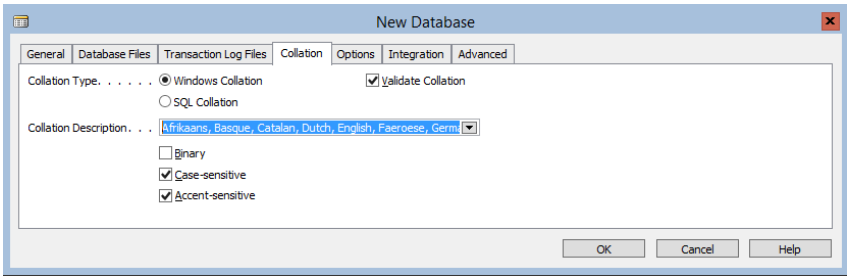


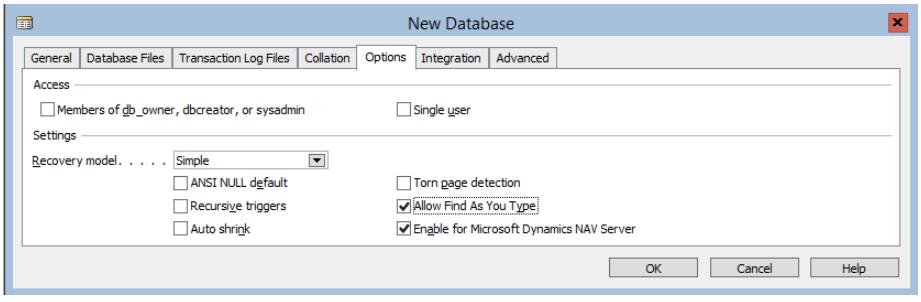
- Didn't we put some other default subdirectories in SQL Server?
  - NAV does not take the defaults from SQL Server.

- PC and partnerserver:



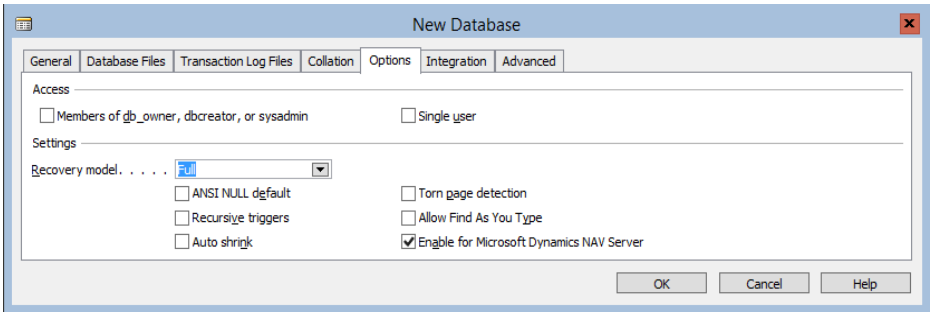


- PC and partnerserver:

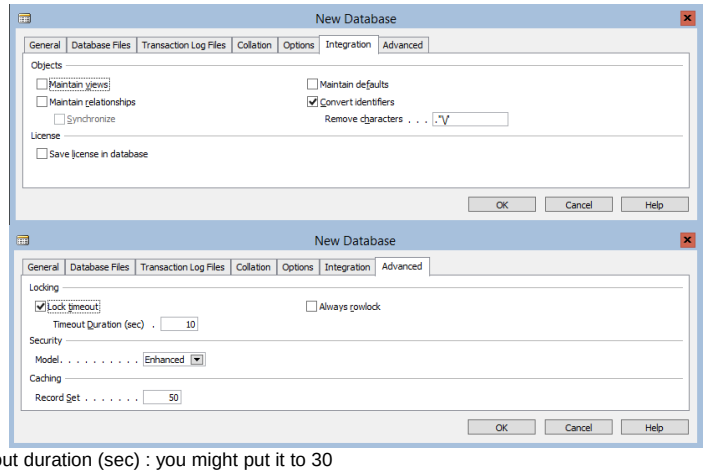


- Torn page detection : was good for SQL 2000 but should disappear now. It always should be Checksum!

- For customer PROD server

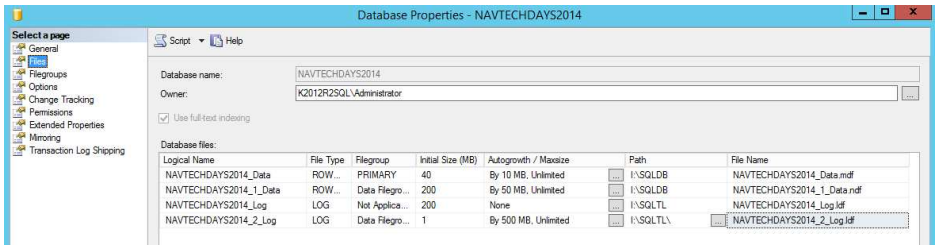


- Recovery models: see later
- Allow Find as You Type = FALSE



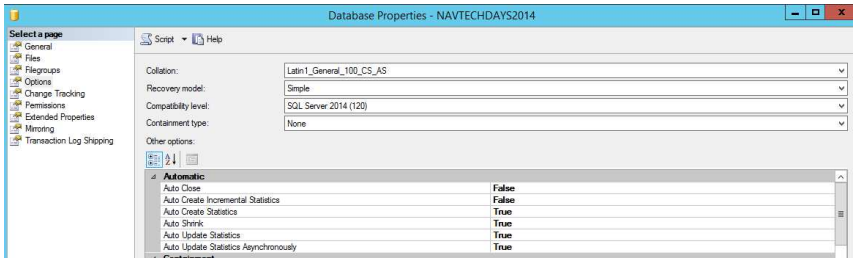
- Lock timeout duration (sec) : you might put it to 30
- Always Rowlock : Less locking, more memory for locks. Can be slower. Can be faster. Can be the same.
- Security Model : Simple. No need to Synchronize

- SQL Server DB properties for Customer Production DB

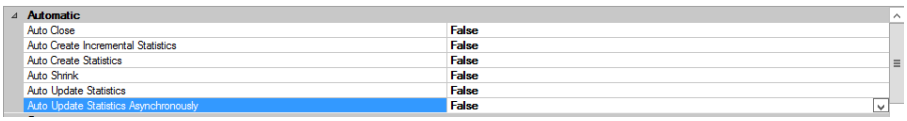


- 2 Logfiles?
  - Main log file is fixed, unmovable, does not change, defragged,…
  - Second log file (=overflow log) serves in case the logfile must grow. Can be shrinked afterwards after you discovered why it grew and fixed the problem.

- SQL Server DB properties for partner server (or portable) DB

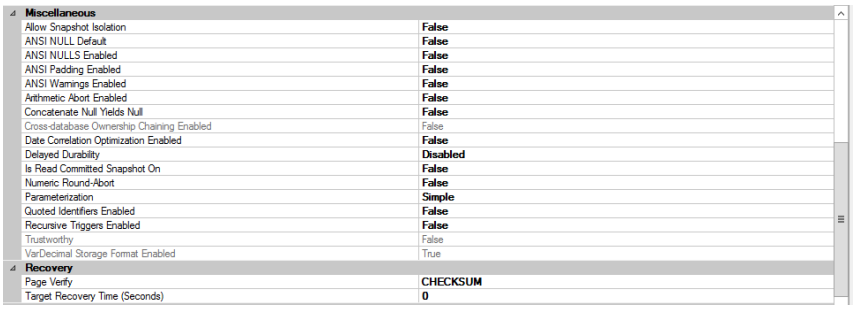


- Customer Production:



  - You need a good maintenance plan

- For all servers



Miscellaneous	
Allow Snapshot Isolation	**False**
ANSI NULL Default	**False**
ANSI NULLS Enabled	**False**
ANSI Padding Enabled	**False**
ANSI Warnings Enabled	**False**
Arithmetic Abort Enabled	**False**
Concatenate Null Yields Null	**False**
Cross-database Ownership Chaining Enabled	False
Date Correlation Optimization Enabled	**False**
Delayed Durability	**Disabled**
Is Read Committed Snapshot On	**False**
Numeric Round-Abort	**False**
Parameterization	**Simple**
Quoted Identifiers Enabled	**False**
Recursive Triggers Enabled	**False**
Trustworthy	False
VarDecimal Storage Format Enabled	True
Recovery	
Page Verify	**CHECKSUM**
Target Recovery Time (Seconds)	**0**

- Delayed Durability
  - SQL2014 Standard Edition
  - Like COMMIT cache in native DB

Create a NAV DB

NAV 2015

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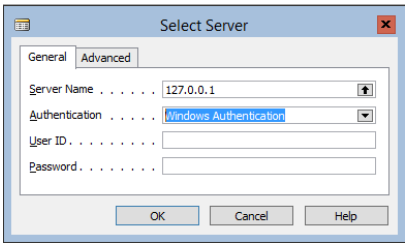
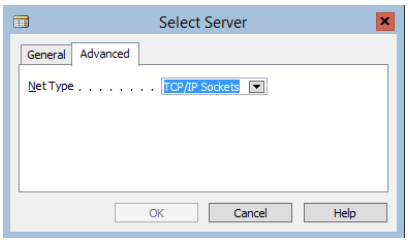
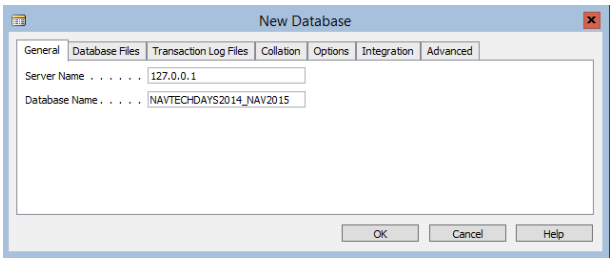
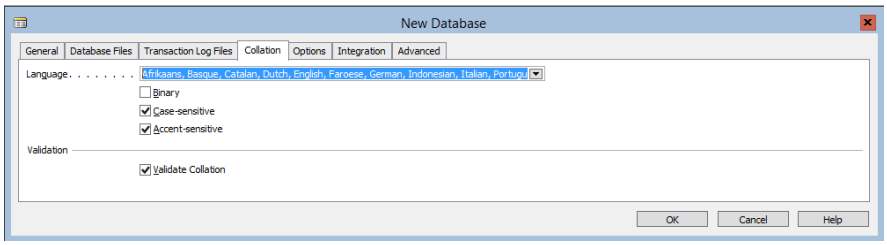




- And for the rest: only the differences between NAV2009R2 and NAV2015





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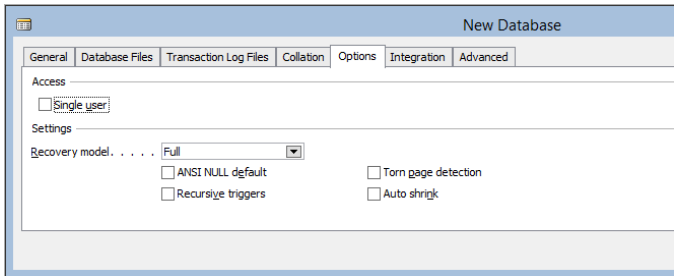

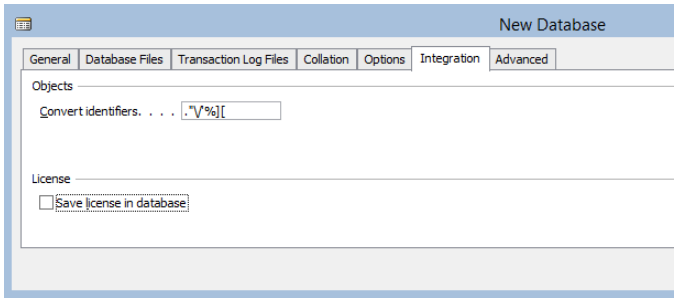

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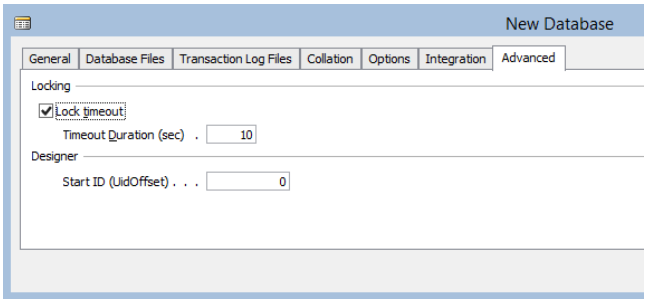

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Create/Delete Logins/Users

- What is the difference between a Login and a User?
  - Login grants you entry in SQL Server. Info saved in master DB.
  - User grants you entry in a DB. Info saved in the DB.

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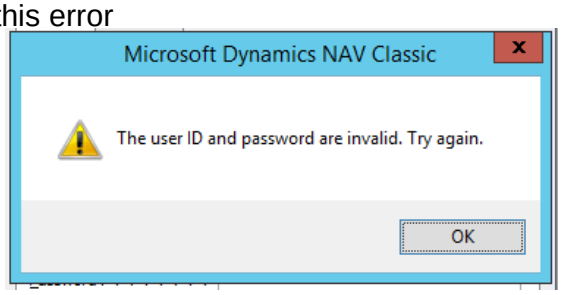
- Let's get to work(shop)!
  - Create a user …\NAVTD1 in windows
  - Run a program as another user: "RUNAS /user:…\NAVTD1 finsql.exe" (go first to the NAV-subdir)
  - Get a list of databases (if you can...)
  - Create login …\NAVTD1 in SQL and add the login as user to database NAVTECHDAYS2014 in SQL
  - Dbowner is needed for developer and people that must import tables.
    - BUT… a dbowner CAN DELETE THE DB! Using or not using NAV to delete the DB!
  - Normal users:
    - Public is enough!

- If you have this error



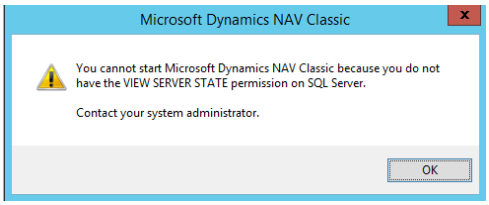
you have a NAV security problem, not a SQL problem.

- Clean out the NAV security tables
  - Clean_NAV_security_tables.sql

- Let's create (and fix) a common problem with SQL security
  - Create Windows/Database login "...\NAVTD2" in NAV2009R2. You can do that if the LOGIN exists. NAV will create the login as a USER in SQL.
  - Delete Windows user in NAV2009R2. It does delete the USER in SQL.
  - Recreate the user in NAV. (It also creates a schema for that user in that DB)
  - DELETE THE LOGIN USING SSMS! (but the login as user in the NAV2009R2 will NOT be deleted!)
  - Now we recreate the login in SQL with the same name. We add it to DB NAV2009R2. SCRIPT the creation, but do not run it from the GUI!!!!!!!
  - Now we run the script step by step.
    - "CREATE USER […\NAVTD2] FOR LOGIN […\NAVTD2]" gives error:
      Msg 15023, Level 16, State 1, Line 1
      User, group, or role '…\NAVTD2' already exists in the current database.
    - Because the user already exists in the DB! But if we check the properties of the login, it is all ok.
  - Problem created … and … fixed.

- Another problem. Worse this time.
  - Delete the LOGIN "...\NAVTD2" from SQL (but NOT the user from the database)
  - Delete the user from Windows
  - Recreate user "...\NAVTD2" in Windows (it will have another SID!)
  - Recreate LOGIN in SQL and add it as a user to the DB. You get the same error. BUT the properties for the DB will NOT be ok.
- How to fix it?
  - Delete schema in the DB
  - Delete user in the DB
  - Recreate user in the DB
  - In NAV, the user is already there. Are you sure? It has become SID now, because the user "...\NAVTD2" has another SID.
  - And you have big problems because in no way you can insert the user anymore.
  - Run the Windows users security form in NAV. Add column SID and add the Windows user. Its SID will appear. Copy it and go to SQL. Edit top 200 rows and insert the row there or use table => right click => Script table as => Insert to. Change the SID to your SID and run it. Back to NAV : add a Role to the user
  - Done!

- Another regularly occuring problem:



- Fix:

USE master

GRANT VIEW SERVER STATE to […\NAVTD1]

OR

USE master

GRANT VIEW SERVER STATE to public

- Create a login for a NON-NAV user
  - Preferably a Windows user. SQL user passwords are in clear over the wire(less)
  - Public server role!
  - Try to give permission on the object(s) that needs to be read or written. Otherwise:
    - db_datareader if only reads are needed
    - db_datawriter if also writes are needed
    - NO dbowner!

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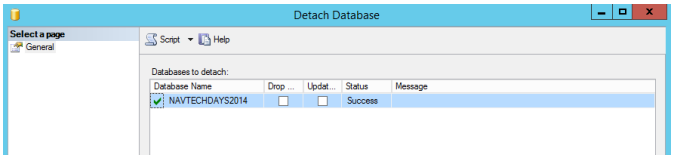
Attach/Detach databases

- Rightclick your database => tasks => detach



- It removes the database from SQL Server but does NOT delete the files

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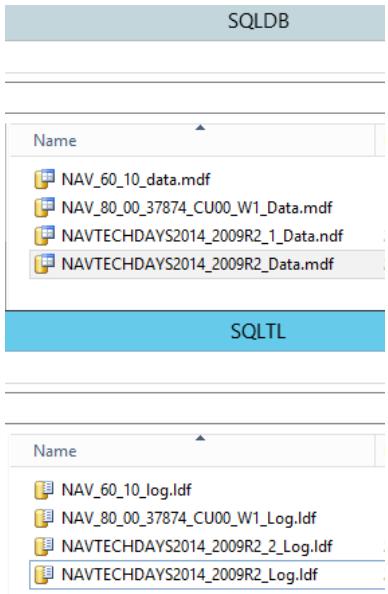
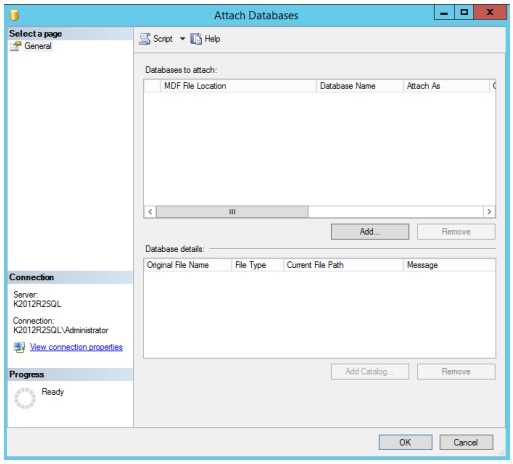
- Rename the files to NAVTECHDAYS2014_2009R2_...



- Rightclick on Databases => tasks => Attach



- Add => select the renamed database
- IMPORTANT : check the permissions of the files. SQL server user must have access to them!

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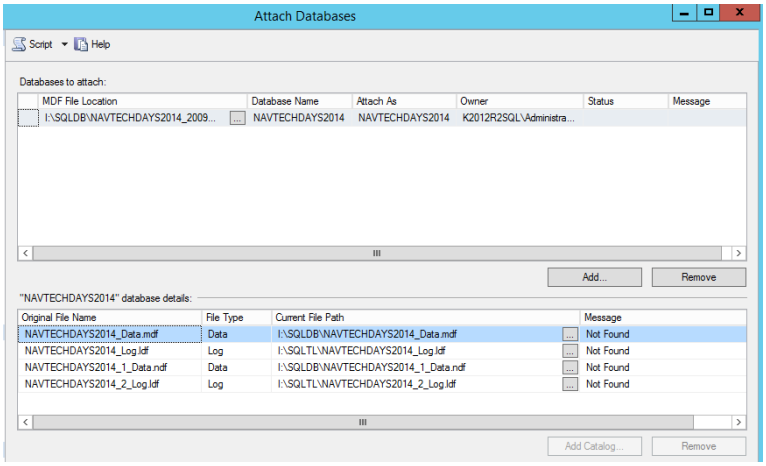
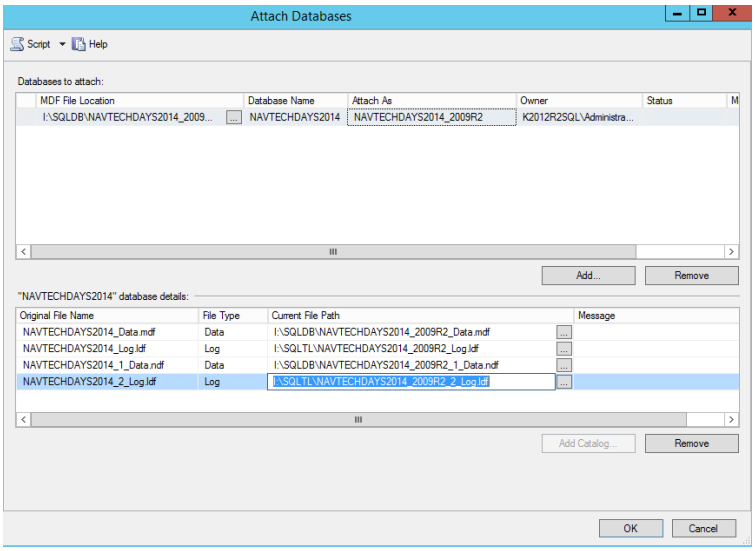


- Change the name of the database.
- Change the current file path.



- Hit OK

- And if it is really ok

Backup/Restore

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BEFORE STARTING:

Open the script CREATE_SOME_BACKUPS.sql.

Create the necessary subdirs.

Run script CREATE_SOME_BACKUPS.sql and let it run. We will use the backups later to restore them. They should work on all versions and editions.

KINDS OF BACKUP

- Company : NAV only (and not all builds of NAV2013R2 have it).
- full : NAV and SQL (SQL backups data and indexes ; NAV ONLY backups data)
- differential : all changes since last FULL backup
- transaction log : all changes since last TL backup (or first full backup)
- tail-log backup : is a transaction log backup but done when you database has become corrupt and maybe offline BUT your transactionlog-file is intact! (http://www.sqlskills.com/blogs/paul/disaster-recovery-101-backing-up-the-tail-of-the-log/)
- partial backup : This allows you to backup the PRIMARY filegroup, all Read-Write filegroups and any optionally specified files.
- file backup or filegroup backup : if you have a BBBBBIIIIIGGGGG database, you can divide it in different database files in different filegroups and backup only 1 of them.
- mirror backup : with only 1 command, you make the backup in different locations
- copy-only backup : a backup that will NOT be considered for restoring the backups. Started with SQL2005 BUT the toggle was NOT in the GUI!

WHY BACKUP?

We have perfect SAN snapshot, we have perfect VMWare backups.

We have the perfect hardware that will never fail.

You still have a problem: you have developers that sometimes do something they shouldn't…..

BTW: "perfect" doesn't exist.

A FEW THINGS TO KNOW ABOUT BACKUPS

- Restore backups ONLY from versions that are older (up to 3 versions : so SQL 2000 can be restored in SQL2005, SQL2008, SQL2008R2 but NOT IN SQL 2012 or SQL 2014. If you want to do it, restore in SQL2008R2 and back it up and then restore it in SQL 2014)
- Compressed backups, cannot be restored in SQL Server Express
- Backup of a database with Enterprise-Edition features (eg. a compressed table) cannot be restored in a standard edition or express edition server.
- Compressed backups are faster to do than NON-compressed backups. Invest some extra CPU-cycles to save disk IO and space (and network IO).
- Dedupe does NOT beat compressed backups because of reduced network IO.

RECOVERY MODELS OF SQL SERVER

- Simple : Everything is written in transaction-log before the COMMIT is confirmed. But once the data is in the DB, space will be re-used. You still need transactionlog space for the currently onging transactions!
- Full : Everything is written in transaction-log before the COMMIT is confirmed. Space will be re-used ONLY when a transactionlog backup has been done.
- Bulk-Logged : this is used for bulk operations like bulk-insert (NOT the NAV bulk-insert!), indexrebuild.

BACKUP MYTH BUSTING 1/2

- Backuping locks the database. SQL backup does not NOT place any locks. You can see DB-performance degradation because of disk IO to read data and disk IO for writing (you should place your backups on other disks or have a dedicated network for it).
- If you have a lot of data in the transactionlog, you can do a full/diff backup to clear it.
- Switching from full to bulk-logged breaks the transaction chain
- Bulk-logging makes the transactionlog backup smaller.
- Full/diff backup does not backup transactions created during the backup.
- Backups test checksums : NO. Only using the WITH CHECKSUM option.
- Backups messes up the buffer pool, flushing hot pages out of memory.
- A transactionlog backup always clears the log.
- I should shrink the database before FULL backup to make the backup smaller.

BACKUP MYTH BUSTING 2/2

- The best way to recover from a disaster is always a restore.
- Master, msdb, model DB don't need to be backed up.
- You should always plan a good backup strategy for a production server. => …
  - Actually, you should plan a good restore/recovery strategy.
- No transaction log backups for me because my SQL server is too busy.
- No need for transaction log backups, I have a full backup every day.
- I can save multiple backups in the same backup-file. Backup with compression and backup with NO-compression CANNOT be saved in the same file.
- After a backup without errors, I have a valid backup, so I can delete the previous ones.
- Nothing is better than a SQL server backup. =>
  - Actually, this is NOT a myth!

TRANSACTION LOG MYTH BUSTING

- Multiple transactionlogfiles will increase performance
- Simple recovery model does never grow my transaction log
- BLOBS,TRUNCATE TABLE, DROP TABLE are not logged in the transactionlog backup.
- Once I put my DB in Full Recovery Model, I can start making transactionlog backups.

EXERCISE : RESTORE DATABASE BACKUPS

You'll have some errors if you don't have SQL2014 Develop/Enterprise Edition.

Let's restore the dabases in subdir "TO_COMPRESS_OR_NOT_TO_COMPRESS"

Backups have been done with SQL Server 2012 Developer Edition.

Lets hope someone has another Version/Edition…

The idea is to get you some errors.

RECOVERY/RESTORE STRATEGIES

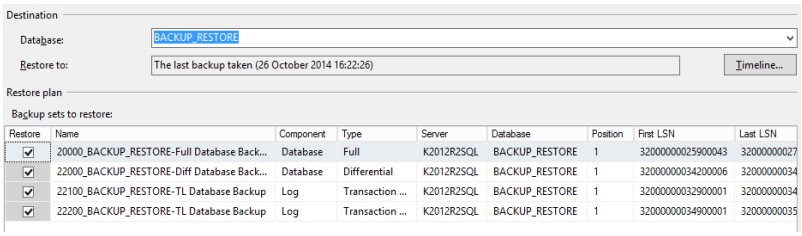
- No need. Test environment and we can always rebuild it.
- I can lose a few days of data
- I can lose a day of data
- I can lose a few hours of data
- I can lose an hour of data
- I can lose a few minutes of data
- I CANNOT lose a second of data
- I CANNOT lose a second of data and I cannot lose a second of system stop => 1M € range!

BACKUP STRATEGIES

- Never
- 1 full a day
  - I use this on my portable!
- 1 full a week and 1 diff a day
  - For partners with lots of databases.
- 1 full a day and 1 diff every few hours
  - Customer production with DBA that has very basic knowledge of SQL Server.
- 1 full a day and 1 diff every few hours and every 5 minutes a TL backup.
  - Very active customer production database and connected .

RESTORE THE BACKUPS WE CREATED BEFORE

- Database=>Tasks=>Restore



- Not all backups are in the restore

RESTORE NOTES

- Open the script "RESTORE_BACKUP_RESTORE.sql". This contains the restore commands for ALL the backups we did before.
  - We do NOT have a restore log-command in the script. I just tried it out with only RESTORE DATABASE and it also works for transaction logs.
  - Restoring COPY-ONLY backups create some problems with DIFF backups.
  - COPY-ONLY backups are shown in the GUI!
  - Even if I mix all backups, in does NOT destroy my complete restore process. It just gives an error.
  - IMPORTANT : If you miss a TL backup and do NOT have a FULL or DIFF backup to cover it, you can't restore any further.
  - In the end, you can just launch the RESTORE DATABASE without backupfile to put the backup back online
  - During the restore process, your database has "(Restoring…) in the name.
- Give it a try restoring the database in different ways

INITIALIZING TRANSACTIONLOG BACKUPS

Let's use SIMPLE_2_FULL_WITH_TRANSACTIONLOG_BACKUPS.sql

INITIALIZING TRANSACTIONLOG BACKUPS: WHAT DID WE LEARN?

Putting your DB in FULL recovery model does NOT mean it is in FULL recovery model. It remains in SIMPLE recovery model UNTIL the NEXT FULL/DIFF backup!

WHAT BACKUPS/RESTORES HAVE BEEN DONE?

This script gives info about all the backups and restores that have been done.

SHOW_BACKUP_RESTORE_HISTORY.sql

Maintenance

MAINTENANCE USING…

- No maintenance
  - PRO: Easier than this….
  - CONTRO: Do I really need to explain this?
- Maintenance plan wizard
  - PRO: Easy and fast, point and click
  - CONTRO: limited control
- Maintenance plan designer
  - PRO: Still easy, point and click, Some more control
  - CONTRO: still limited control
- SQL Server Agent
  - PRO: full control
  - CONTRO: not so easy
- Windows Scheduler using powershell or sqlcmd.exe
  - PRO: works also with Express Edition
  - CONTRO: complicated. Create .tsql files and run them using sqlcmd.exe or using powershell or using command files

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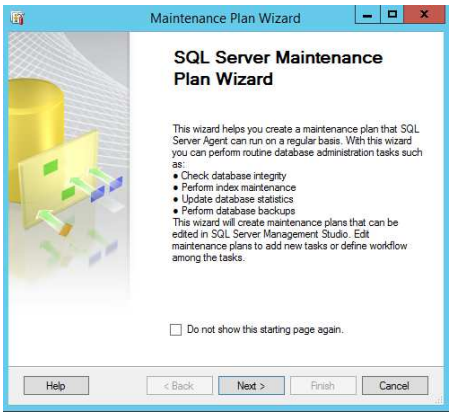
Maintenance

Using the wizard



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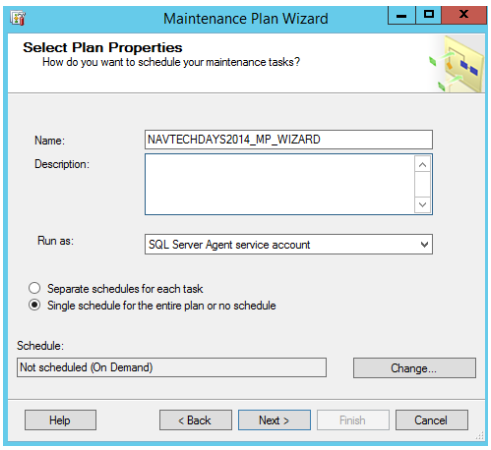
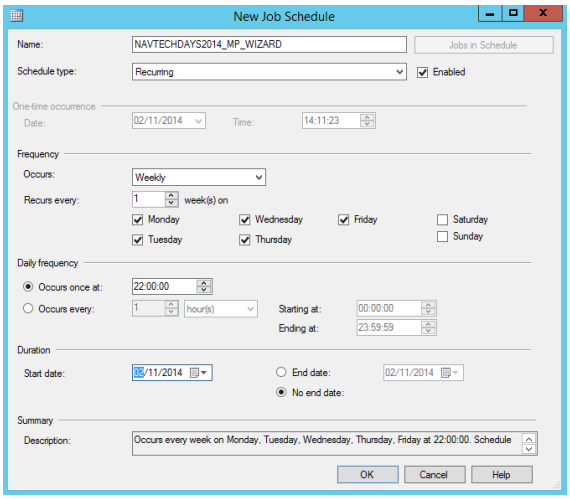
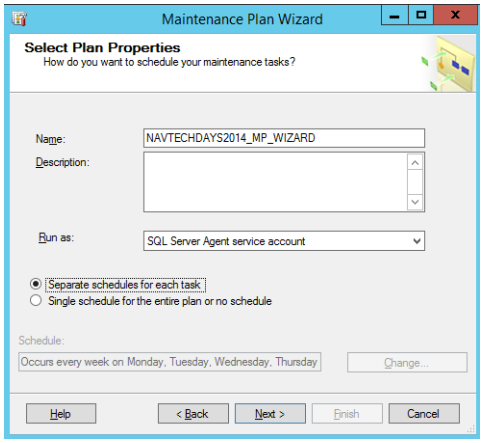
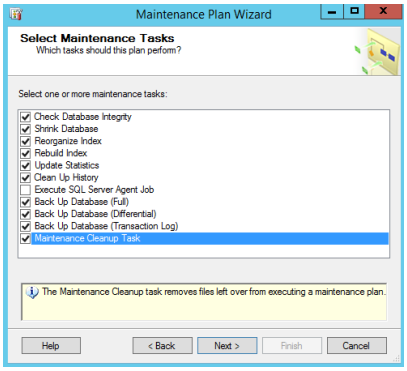

Maintenance Plan Wizard
Select Plan Properties
How do you want to schedule your maintenance tasks?
Name:
NAVTECHDAYS2014_MP_WIZARD
Description:
Run as:
SQL Server Agent service account
Separate schedules for each task
Single schedule for the entire plan or no schedule
Schedule:
Not scheduled (On Demand)
Change...
Help
< Back
Next >
Finish
Cancel

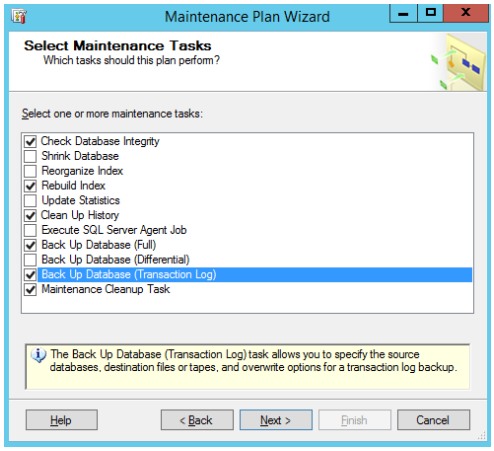

New Job Schedule
Name:
NAVTECHDAYS2014_MP_WIZARD
Jobs in Schedule
Schedule type:
Recurring
Enabled
One-time occurrence
Date:
02/11/2014
Time:
14:11:23
Frequency
Occurs:
Weekly
Recurs every:
1
week(s) on
Monday
Wednesday
Friday
Saturday
Tuesday
Thursday
Sunday
Daily frequency
Occurs once at:
22:00:00
Occurs every:
1
hour(s)
Starting at:
00:00:00
Ending at:
23:59:59
Duration
Start date:
02/11/2014
End date:
02/11/2014
No end date:
Summary
Description:
Occurs every week on Monday, Tuesday, Wednesday, Thursday, Friday at 22:00:00. Schedule
OK
Cancel
Help



WHAT IS BAD IN THIS PLAN?



- SHRINK. Never shrink a DB.
- Reorganize index (bad and not bad) => use rebuild
- Update statistics (depends) => rebuild recreates them with 100% sampling
- Differential backup=> put in other maintenance plan
- Transaction log backup => put in other maintenance plan (Can be useful just after the rebuild to clean the transactionlog)



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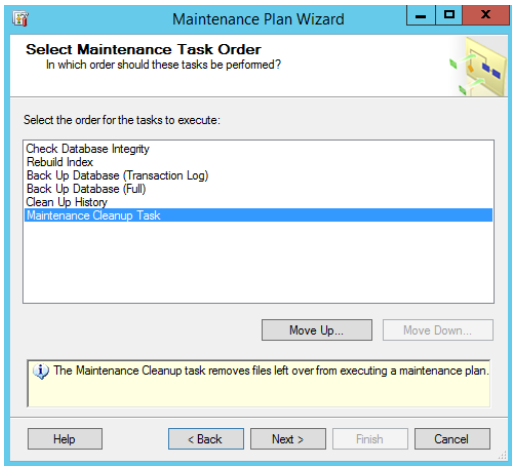

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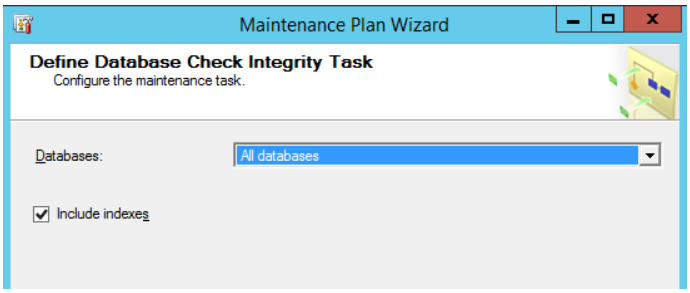
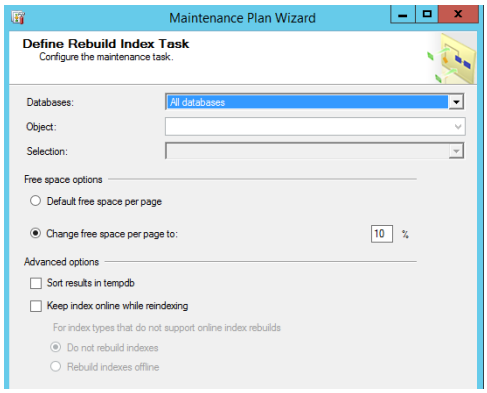
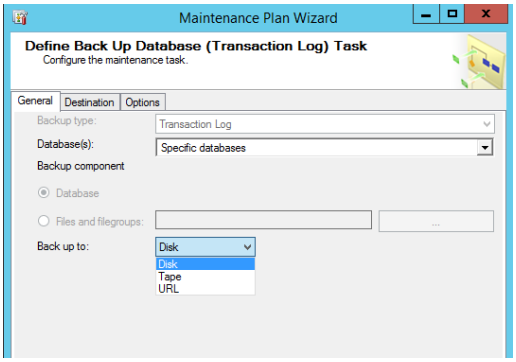


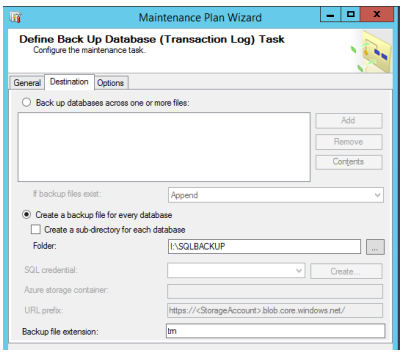
- Include master, msdb, model!
- Exclude indexes if you are going to rebuild the indexes.



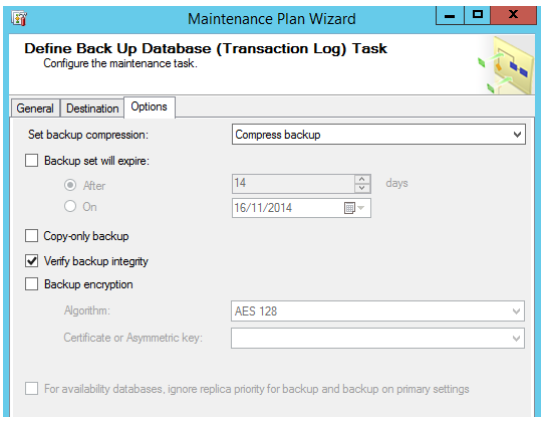
- Change free space per page to 10% = 90% fill factor!
- "Sort results in tempdb". Can speed up if they have different physical disks. TempDB must be big enought to contain the data.
- "Keep index online while reindexing": Enterprise Edition!



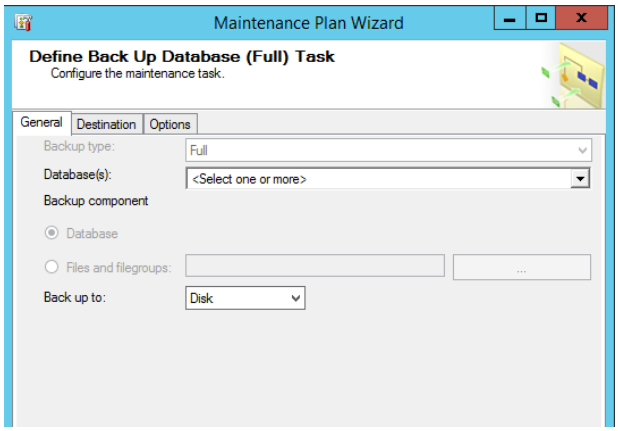
WHERE DO YOU WRITE YOUR BACKUP?



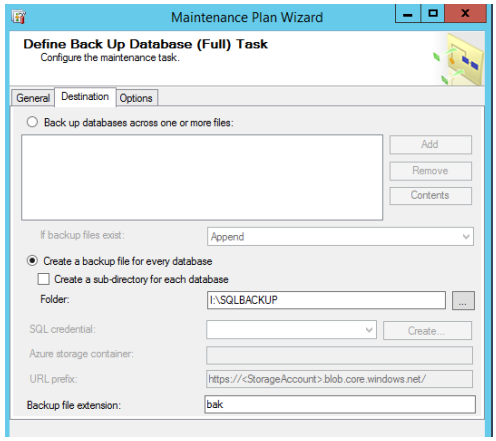
- Preferably another logical disk
- Preferably another physical disk
- Preferably another server
- Preferably another room
- Preferably another building
- Preferably another city
- Preferably another continent
- Preferably another planet (future feature!)

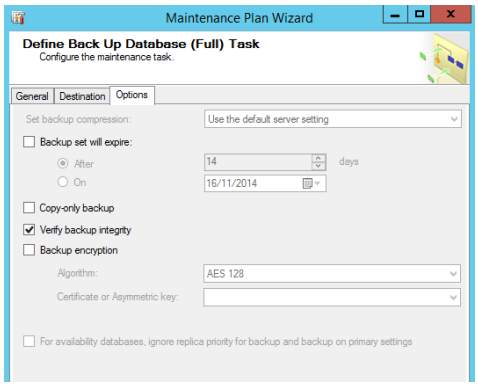


- Verify checks if what is written in the file is the same as what was in the DB. It does NOT substitute an integrity check or "Database Integrity"="Checksum"!



- Why Full backup directly after the transaction log backup? Faster restore : previous TL backup will be big, it ONLY serves to avoid re-inializing the TL backup. For restore, I will use the FULL backup and all TL backups AFTER it.





- BTW: Maintenance Plan Wizard has some bugs: I should be able to change the compression!

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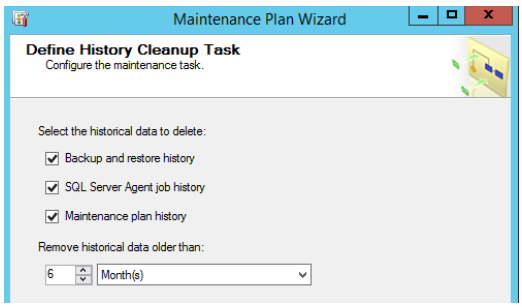
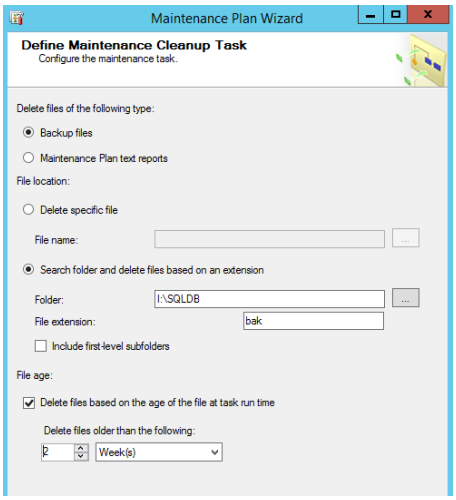
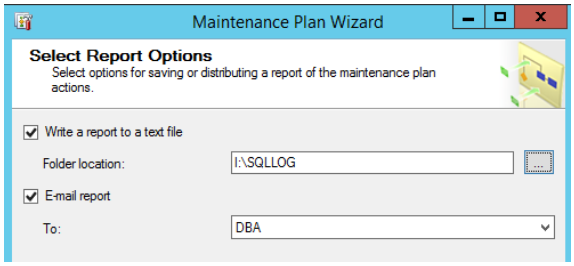
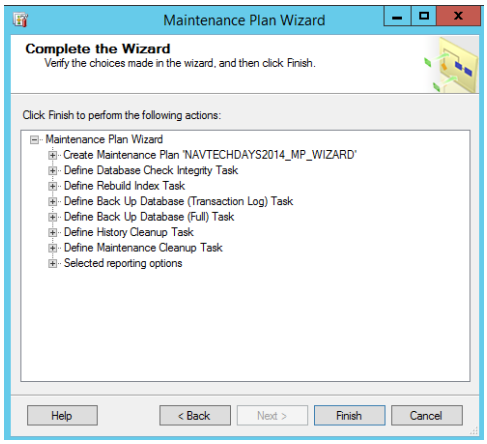


- Keep your msdb-DB small. Too many data in it and your backups/maintenance plans go slower. Msdb is also badly indexed.



- And my .trn backups????? => You can't : you need to use the Maintenance Plan editor.
- BTW: file extensions : work only for log and bak and trn.





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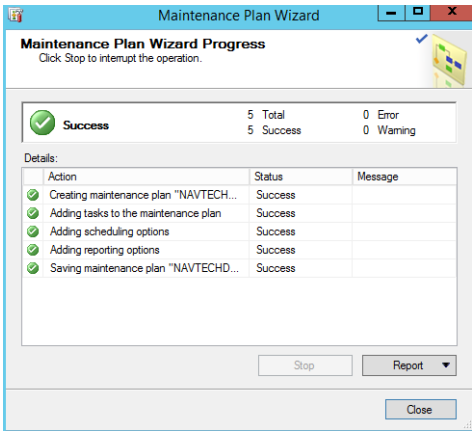

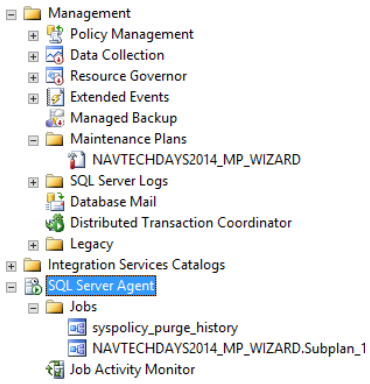

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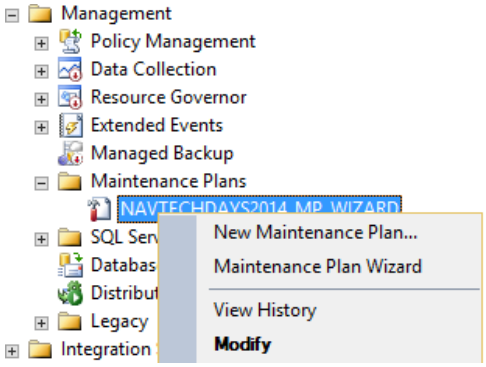
Maintenance

Using the plan designer

- We need to add a task to clean up the old TL-backups!



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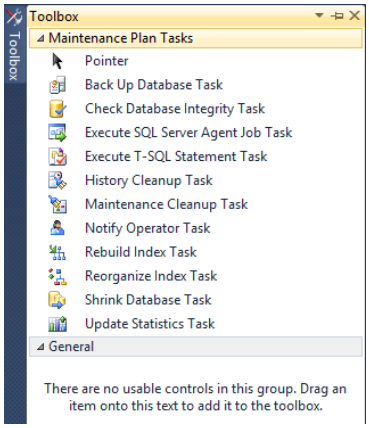
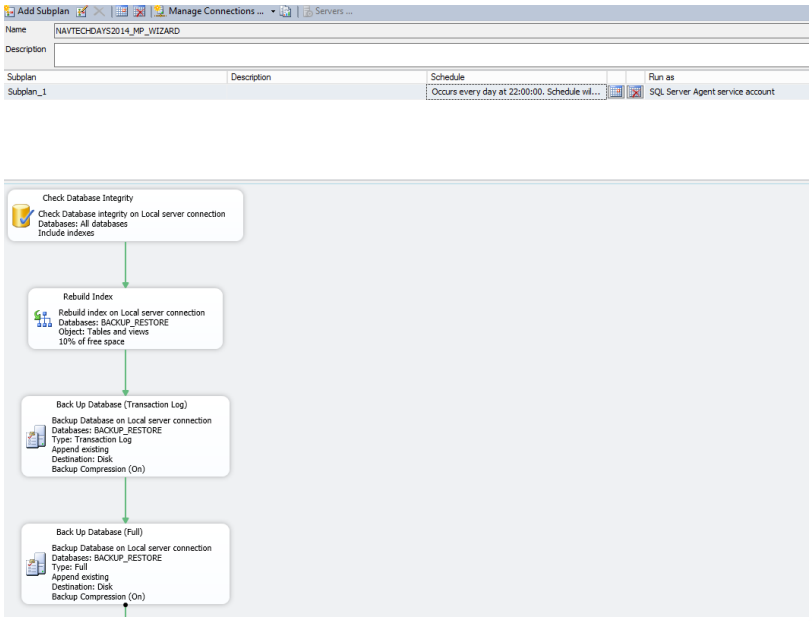
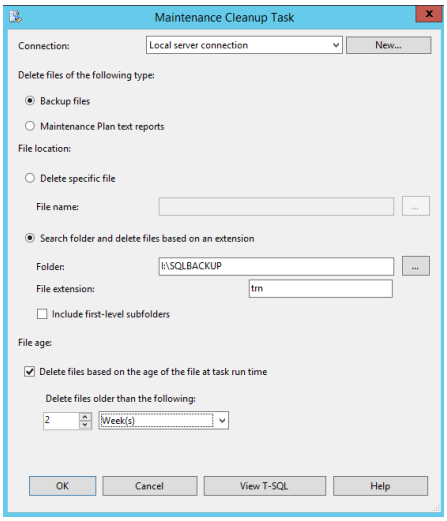
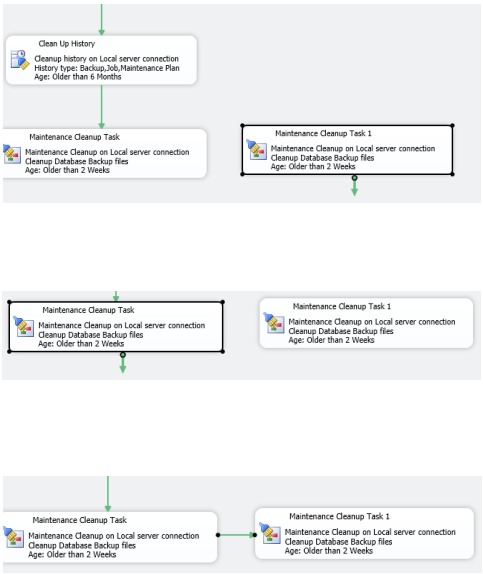
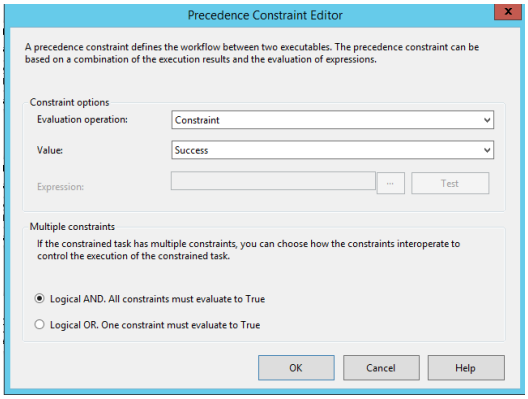


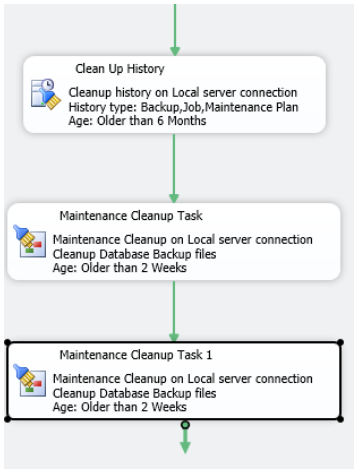
- Execute T-SQL Statement Task does not exist in the Wizard!




Maintenance Cleanup Task
Connection:
Local server connection
New...
Delete files of the following type:
Backup files
Maintenance Plan text reports
File location:
Delete specific file
File name:
Search folder and delete files based on an extension
Folder:
I:\SQLBACKUP
File extension:
trn
Include first-level subfolders
File age:
Delete files based on the age of the file at task run time
Delete files older than the following:
2
Week(s)
OK
Cancel
View T-SQL
Help


Clean Up History
Cleanup history on Local server connection
History type: Backup,Job,Maintenance Plan
Age: Older than 6 Months
Maintenance Cleanup Task
Maintenance Cleanup on Local server connection
Cleanup Database Backup files
Age: Older than 2 Weeks
Maintenance Cleanup Task 1
Maintenance Cleanup on Local server connection
Cleanup Database Backup files
Age: Older than 2 Weeks





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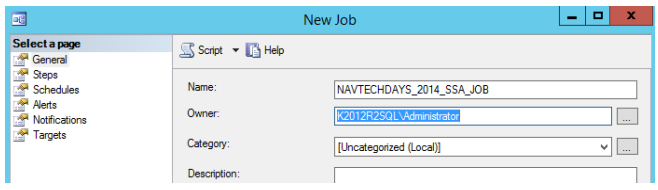
Maintenance

Using SQL Server Agent Jobs



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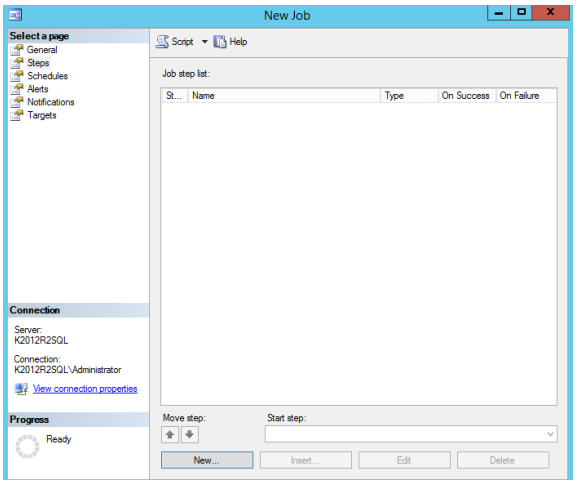

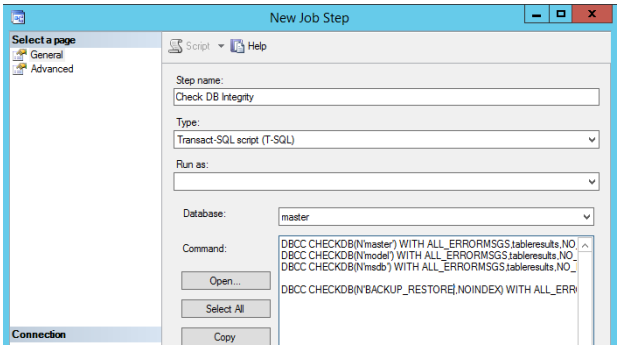

- I don't know about you, but I am already tired of it …
- Open file "NAVTECHDAYS2014_MAINTENANCE.sql" and run it. It will create the maintenance plan.

THE MAINTENANCE JOB

- Open the maintenance job to change parameters.
- Run the maintenance job to see if it works or has errors.
- With errors? How to fix them? See history of the job.
- SQL Server Agent does not seem to delete the files. Why? Because it has no permissions in that subdir!

TRANSACTIONLOG BACKUP JOB

- Easiest is to have 1 file per day with all TL-backups of that day in it.
- Open file "NAVTECHDAYS2014_TLBACKUP.sql"

SCHEDULES

- Each schedule has its ID
- You can reuse a schedule if you want, but I recomend not to do it

10'S OR 100'S OF DB'S OF A PARTNER

- No need for super performance, but you need diskspace
- No need for TL backups : 1 backup each evening should be enough (an extra backup at midday?)
- Compress table/indexes
- Shrink (!) your databases (autoshrink may be valid in this case)
- 1 full backup a week
- 1 diff backup a day

JOBS FOR 10'S OR 100'S OF DB'S

- BETTER FOREACHDB.sql : creates stored procedure in master
- BACKUP_FULL_ALL_DATABASES_.sql
- BACKUP_DIFF_ALL_DATABASES_.sql
- dba_indexDefrag_sp.sql
- RUN_dba_indexDefrag_sp.sql
- REBUILD INDEXES WITH COMPRESSION.sql

BUT now we CAN have a problem. If a backup fails, we don't know. The script goes on with the other databases like it should.

=> solution : PBM

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Introduction to Policy Based Management

WHAT IS PBM?

- Policy-Based Management is a system for managing one or more instances of SQL Server. When SQL Server policy administrators use Policy-Based Management, they use SQL Server Management Studio to create policies to manage entities on the server, such as the instance of SQL Server, databases, or other SQL Server objects. (http://msdn.microsoft.com/en-us/library/bb510667.aspx)
- Whitepaper : http://technet.microsoft.com/en-us/library/dd938891(v=SQL.100).aspx
- Facets = properties
- Conditions = condition on a certain facet/property or even on some TSQL select or windows check
- Policy = what condition you want to check? On which databases? On which servers?

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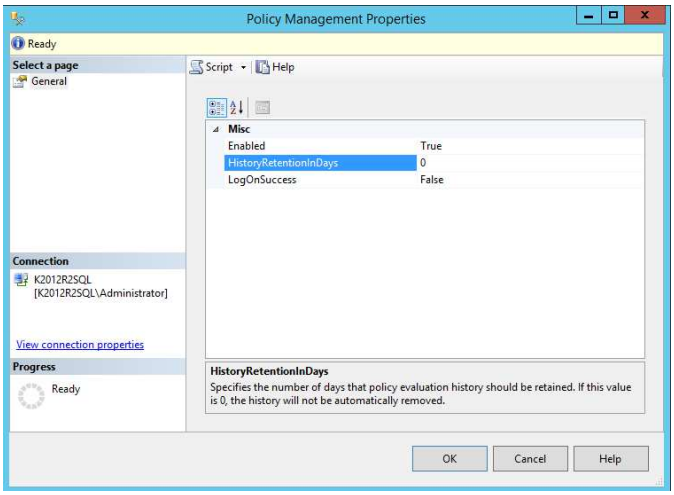
SOME POLICIES

- All databases must have a recent backup
- All databases must be in simple recovery model
- There must be enough diskspace available
- The databases may NOT contain too much unused space
- The transactionlog may NOT contain too much unused space
- The owner of the databases must be sa
- Only sa, …., …. must be defined as admin in SQL Server
- There must be enough beer available in the refrigerator



- 3 months should be ok

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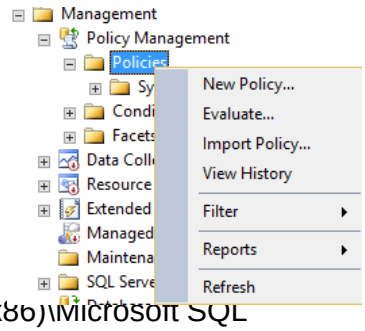
- Import default policies



- C:\Program Files (x86)\Microsoft SQL Server\120\Tools\Policies\DatabaseEngine\1033
  - Last Successful Backup Date.xml
  - Also on USB-stick

IF YOU HAVE MULTIPLE SQL SERVERS

- Combine PBM with CMS (Central Management Server)
- CMS : one ~~ring~~ server to control them all.

SMS Tricks

VARIA

- Create yourself a tools DB in which you put all your views, stored procedures, data, …….
- Other scripts : create a library of the ones that might be useful to you
- add "-NOSPLASH" to the shortcut

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OBJECT EXPLORER

- Tools=>Options
- Menu's
- Registered Servers
- Color code in connection string for registered servers
- Tables/Views => FILTER them
- View => template explorer
- Switch active window : (SHIFT+)CTRL+TAB or (SHIFT+)CTRL+F6
- scripting multiple objects : F7 => select them and script them

EDITOR

- Copy block of code : alt+mouse or shift+alt+cursor keys (CTRL+C,CTRL+X,DEL)
- Split your editor like in word (splitter control at right upper corner, Windows=>split/remove split)
- FIND:CTRL+F
- Incremental find:CTRL+I : find as you type
- Close editor window : CTRL+F4

TSQL

- Change database context : CTRL+U
- hide results : CTRL+R
- always use ; at the end of a command. Generated TSQL does not have that! Some commands NEED the previous command to end with a ; like the Common table expression "WITH …".
- Change output to table, to flatfile, ….
- F5 to run a query or run selected code
- refresh intellisense cache: CTRL+SHIFT+R
- select a table, view, stored procedure and hit alt+F1 to get some info
- doubleclick on the error to take you to the offending code
- (un)indenting code : TAB,SHIFT+TAB
- (un)commenting : CTRL+K THEN CTRL+C ; CTRL+K THEN CTRL+U

MORE TIPS/TRICKS

- http://blogs.msdn.com/b/billramo/archive/2009/05/15/dat315-session-review-for-ssms-tips-tricks-session.aspx
- http://sqlblog.com/blogs/aaron_bertrand/archive/2010/01/04/quick-poll-what-is-your-favorite-management-studio-tip-or-trick.aspx
- http://www.mssqltips.com/sqlservertip/2413/sql-server-management-studio-keyboard-shortcuts-part-1-of-2/
- http://www.mssqltips.com/sqlservertip/2415/ssms-keyboard-shortcuts-part-2-of-2/
- https://www.simple-talk.com/sql/sql-training/ssms-the-query-window-keyboard-shortcuts/
- http://www.sqlservercentral.com/articles/Management+Studio+(SSMS)/75321/
- http://blog.sqlauthority.com/2012/07/07/sql-server-ctrlshift-shortcut-to-select-code-between-two-parenthesis/
- http://www.brentozar.com/archive/2012/11/sql-server-management-studio-more-than-meets-the-eye/

Introduction to Extended Events

Who knows how to use SQL Server Profiler?

Bad news. It is deprecated. Meaning: in a few versions, it will disappear.

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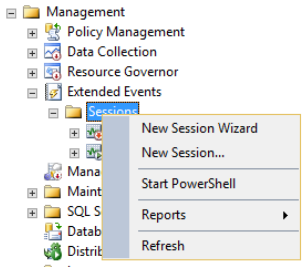
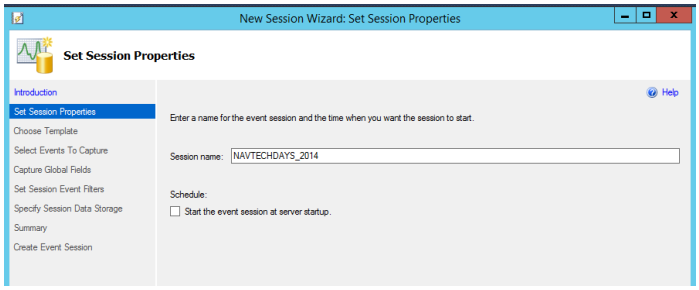
WHAT ARE EXTENDED EVENTS?

- Exist since SQL 2008
  - …but only using TSQL commands
- SQL 2012 : finally a GUI
- Lightweight (performance) monitoring system <> SQL Server Profiler
- Inside SSMS





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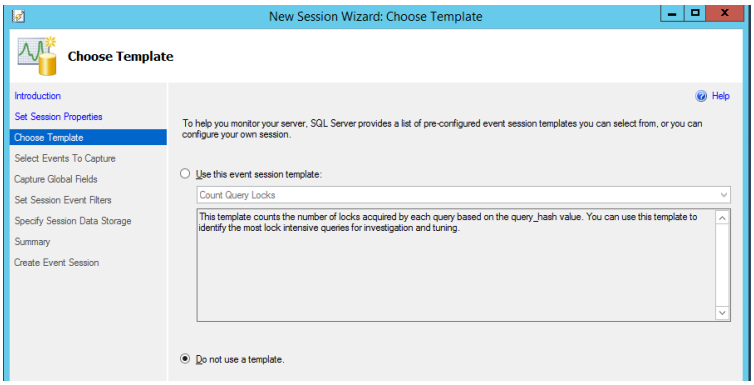
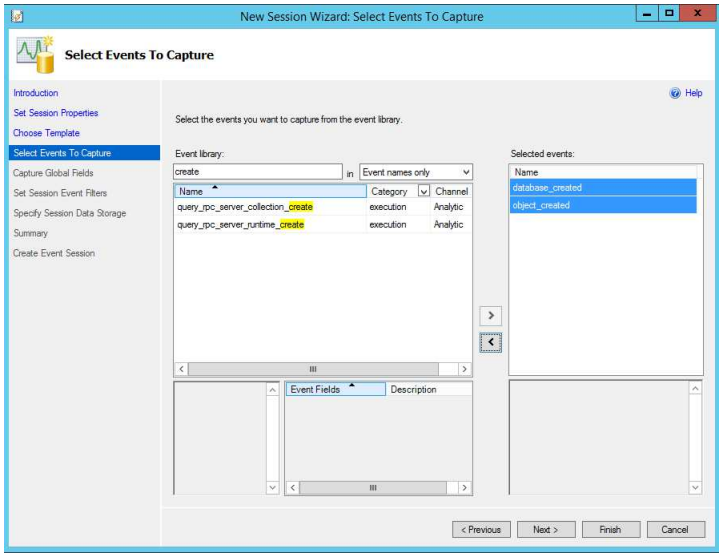
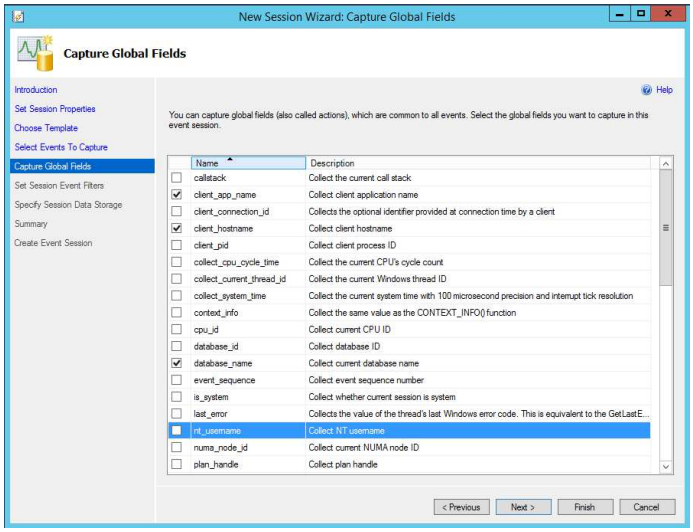


- Lets check out who creates databases, tables, indexes and when.





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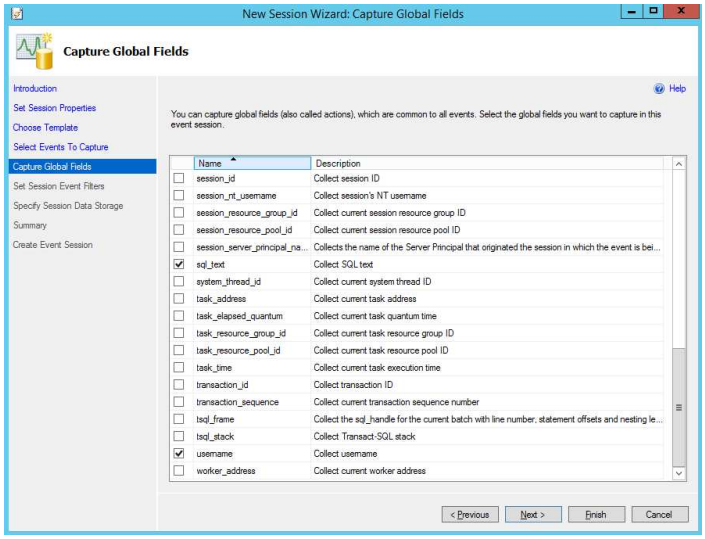

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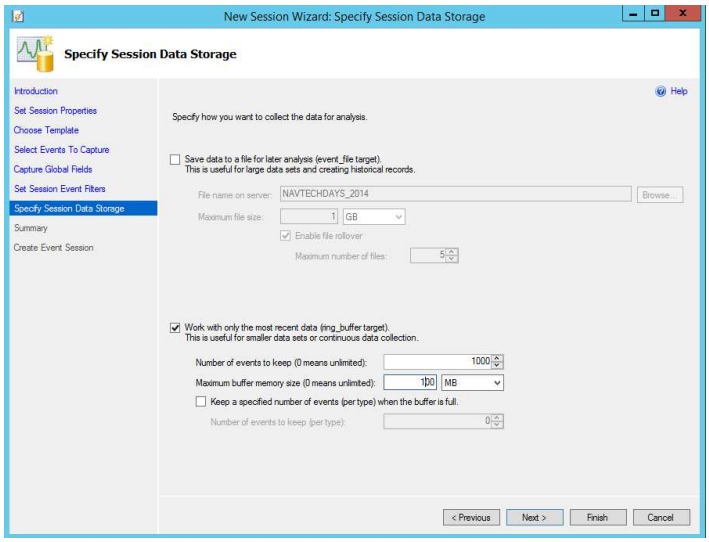

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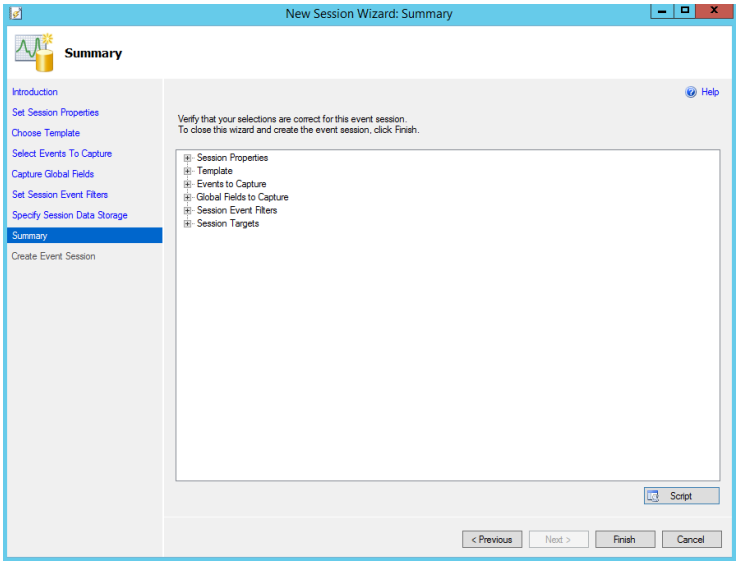

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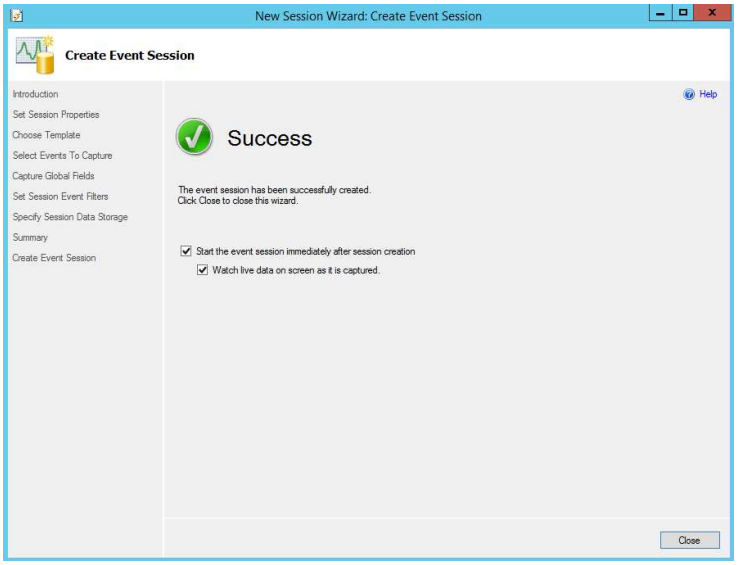
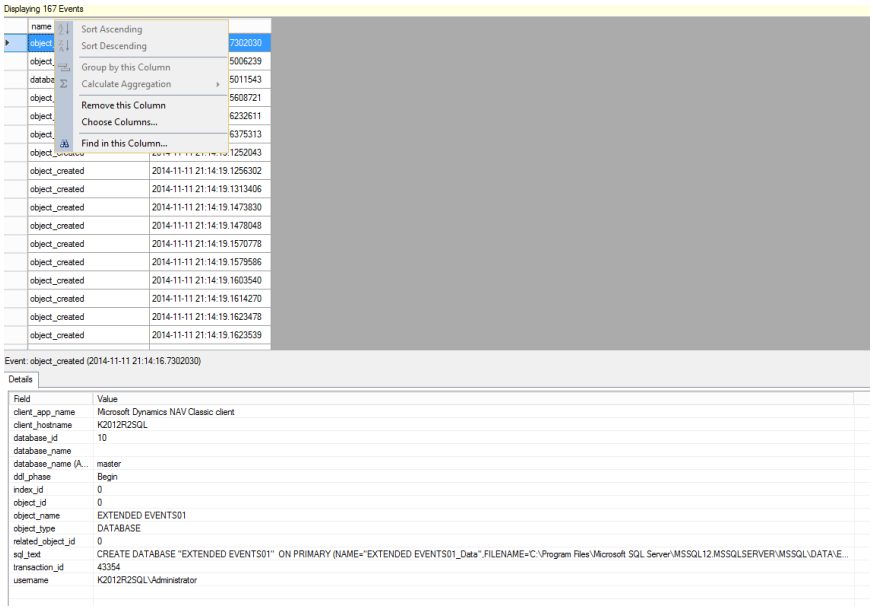


- Start the event and create a NAV DB



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Final

SOME WEBSITES/BLOGS

Bob Beachemin : http://www.sqlskills.com/blogs/bobb/

Brent Ozar : http://www.brentozar.com/

Erin Stellato : http://www.sqlskills.com/blogs/erin/

Kalen Delaney : http://sqlblog.com/blogs/kalen_delaney/

Kevin Kline : http://kevinekline.com/

Kimberly Tripp : http://www.sqlskills.com/blogs/kimberly/

Ola Hallengren : http://ola.hallengren.com/

Paul Randal : http://www.sqlskills.com/blogs/paul/

Sean and Jen : http://www.midnightdba.com/

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SOME MORE WEBSITES/BLOGS

http://itknowledgeexchange.techtarget.com/sql-server/

http://sqlperform.com/

http://www.idera.com/

http://www.quest.com/toad-for-sql-server/

http://www.red-gate.com/

http://www.sql-server-performance.com/

http://www.sqlservercentral.com/

http://www.sqlservercentral.com/blogs/

http://www.sqlservercentral.com/Articles/Editorial

http://www.ssmstoolspack.com/

http://www.stryk.info/english/index.html

SOME PARTICOLAR WEBPAGES

http://www.brentozar.com/archive/2014/06/sql-server-setup-checklist-free-ebook-download/

http://www.mssqltips.com/sqlservertutorial/1/sql-server-backup-options-and-commands/

http://www.red-gate.com/community/books/accidental-dba

http://www.red-gate.com/community/books/sql-server-backup-and-restore

http://www.sqlskills.com/blogs/paul/commonsqlservermyths.pdf

Any Questions?
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