

DataFrogs

Configurer SQL Server pour un
dépannage efficace

@conseilit



Microsoft®
SQL Server®

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Master

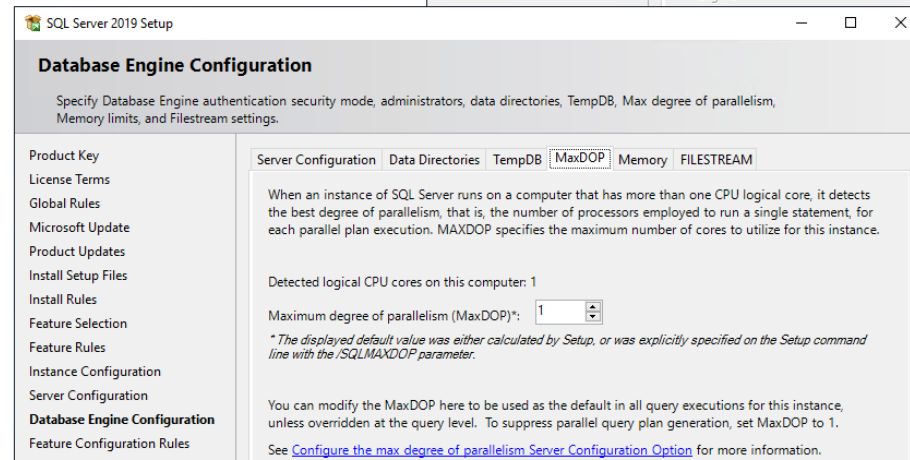
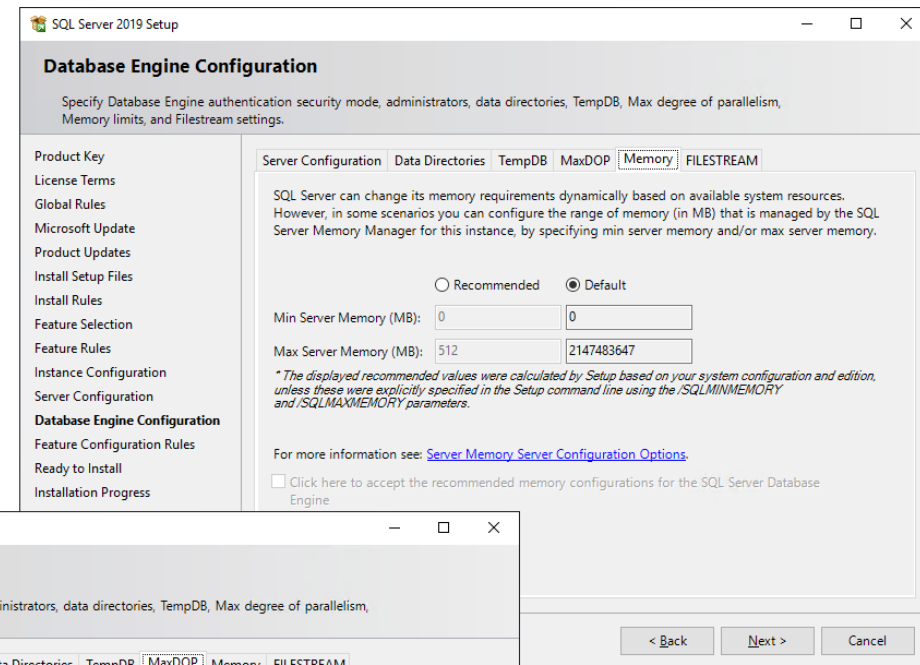
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Trainer

- Audit
- Conseil
 - Infrastructure / Architecture
 - Virtualisation / Cloud
 - Haute disponibilité
 - Performance / Optimisation
 - Dépannage / Migrations
- Formations
- Remote DBA



Installation SQL Server

- Configuration après une installation par défaut
 - Nombre et taille des fichiers base TempDB
 - Instant file initialisation
 - Max Server Memory
 - MaxDOP
- Paramétrage correct
- Mais insuffisant
 - En cas de problème ...



Sauvegardes des bases de données



- Etape cruciale de tout PRA
 - Actualité : Cyber Attaques
 - Doit satisfaire au RPO et RTO
 - Attention à la localisation ...
- Plans de maintenance
 - Microsoft : fastidieux à mettre en place
 - Solution de maintenance Ola Hallengren
 - Backup
 - Test d'intégrité
 - Gestion des index

```
$defaultbackuplocation = (Get-DbDefaultPath -SqlInstance $instance).Backup
Install-DbMaintenanceSolution -SqlInstance $instance `
-Database $dbaDatabase `
-BackupLocation $defaultbackuplocation `
-CleanupTime $CleanupTime `
-InstallJobs `
-LogToTable `
-ReplaceExisting
```

Gestion des historiques

- Fichiers ERRORLOG
 - Accroître la rétention
 - Recyclage périodique
- Base MSDB
 - Historique des Jobs
 - Historique des sauvegardes
 - Planifier une purge

```
New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "Cycle Errorlog" -Force `
-Database master -StepId 1 -Subsystem "TransactSql" `
-Command "EXEC msdb.dbo.sp_cycle_errorlog" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure

New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "CommandLog Cleanup" -Force `
-Database master -StepId 2 -Subsystem "TransactSql" `
-Command "EXEC msdb.dbo.sp_start_job 'CommandLog Cleanup'" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure

New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "Output File Cleanup" -Force `
-Database master -StepId 3 -Subsystem "TransactSql" `
-Command "EXEC msdb.dbo.sp_start_job 'Output File Cleanup'" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure

New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "sp_delete_backuphistory" -Force `
-Database master -StepId 4 -Subsystem "TransactSql" `
-Command "EXEC msdb.dbo.sp_start_job 'sp_delete_backuphistory'" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure

New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "sp_purge_jobhistory" -Force `
-Database master -StepId 5 -Subsystem "TransactSql" `
-Command "EXEC msdb.dbo.sp_start_job 'sp_purge_jobhistory'" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure

New-DbaAgentJobStep -SqlInstance $Server -Job $job.name -StepName "DatabaseMail - Database Mail cleanup" -Force `
-Database master -StepId 6 -Subsystem "TransactSql" `
-Command "DECLARE @DeleteBeforeDate DateTime = (Select DATEADD(d,-30, GETDATE()))
EXEC msdb.dbo.sysmail_delete_mailitems_sp @sent_before = @DeleteBeforeDate
EXEC msdb.dbo.sysmail_delete_log_sp @logged_before = @DeleteBeforeDate" `
-OnSuccessAction GoToNextStep -OnFailAction QuitWithFailure
```

```
# increase history retention
Set-DbaErrorLogConfig -sqlinstance $Server -LogCount 99
Set-DbaAgentServer -sqlinstance $Server -MaximumHistoryRows 999999 -MaximumJobHistoryRows 999999
```

Session xEvent System_Health



- Session créée par défaut
- Evènements importants
 - Dont le Deadlock
- Mais
 - Rétention trop faible
 - Et beaucoup de bruit

```
Stop-DbaXESession -SqlInstance $Server -Session "system_health"

Invoke-DbaQuery -SqlInstance $Server -Database "master" -Query "
    ALTER EVENT SESSION [system_health] ON SERVER
    DROP TARGET package0.event_file;
GO
    ALTER EVENT SESSION [system_health] ON SERVER
    ADD TARGET package0.event_file
    (SET FILENAME=N'system_health.xel',
     max_file_size=(25),
     max_rollover_files=(20)
    );
GO
    ALTER EVENT SESSION [system_health] ON SERVER
    DROP EVENT sqlserver.security_error_ring_buffer_recorded;
"

Start-DbaXESession -SqlInstance $Server -Session "system_health"
```

Sécurité - Login failed



- Errorlog ?
 - Déjà pas mal de choses
 - Pas facile à lire avec du TSQL
- Audit
 - Créés à dessein
 - Traçage accès aux ressources
- xEvent
 - Complété par d'autres xEvents

```
$tSQL = "
CREATE SERVER AUDIT [SecurityAudit]
TO FILE
( FILEPATH = N'$(($Server.ErrorLogPath))'
,MAXSIZE = 500 MB
,MAX_ROLLOVER_FILES = 20
,RESERVE_DISK_SPACE = OFF
) WITH (QUEUE_DELAY = 1000, ON_FAILURE = CONTINUE);

ALTER SERVER AUDIT [SecurityAudit]
WITH (STATE = ON);
"
Invoke-DbaQuery -SqlInstance $Server -Database master -Query $tSQL

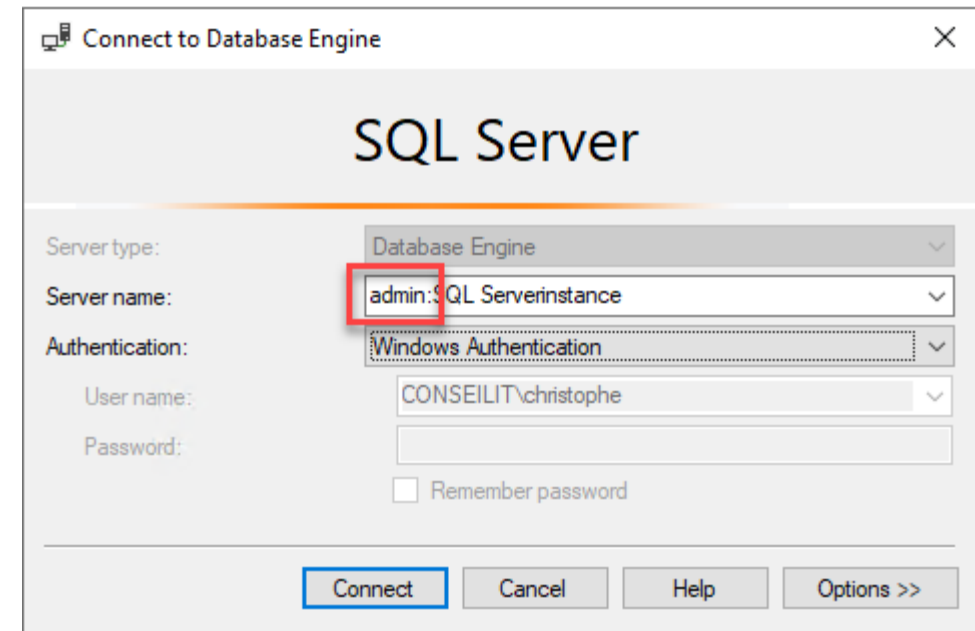
$tSQL = "
CREATE SERVER AUDIT SPECIFICATION [SecurityAuditSpecifications]
FOR SERVER AUDIT [SecurityAudit]
ADD (FAILED_LOGIN_GROUP),
ADD (FAILED_DATABASE_AUTHENTICATION_GROUP),
ADD (LOGIN_CHANGE_PASSWORD_GROUP),
ADD (USER_CHANGE_PASSWORD_GROUP);

ALTER SERVER AUDIT SPECIFICATION [SecurityAuditSpecifications]
WITH (STATE = ON);
"
Invoke-DbaQuery -SqlInstance $Server -Database master -Query $tSQL
```

DAC / Remote DAC



- Permettre l'accès à SQL Server en cas de problème ...
 - 100% CPU : Login timeout
 - Logon trigger
- Ouvert par défaut en accès local
- Mais il manque l'accès distant
 - Eviter la connexion RDP !

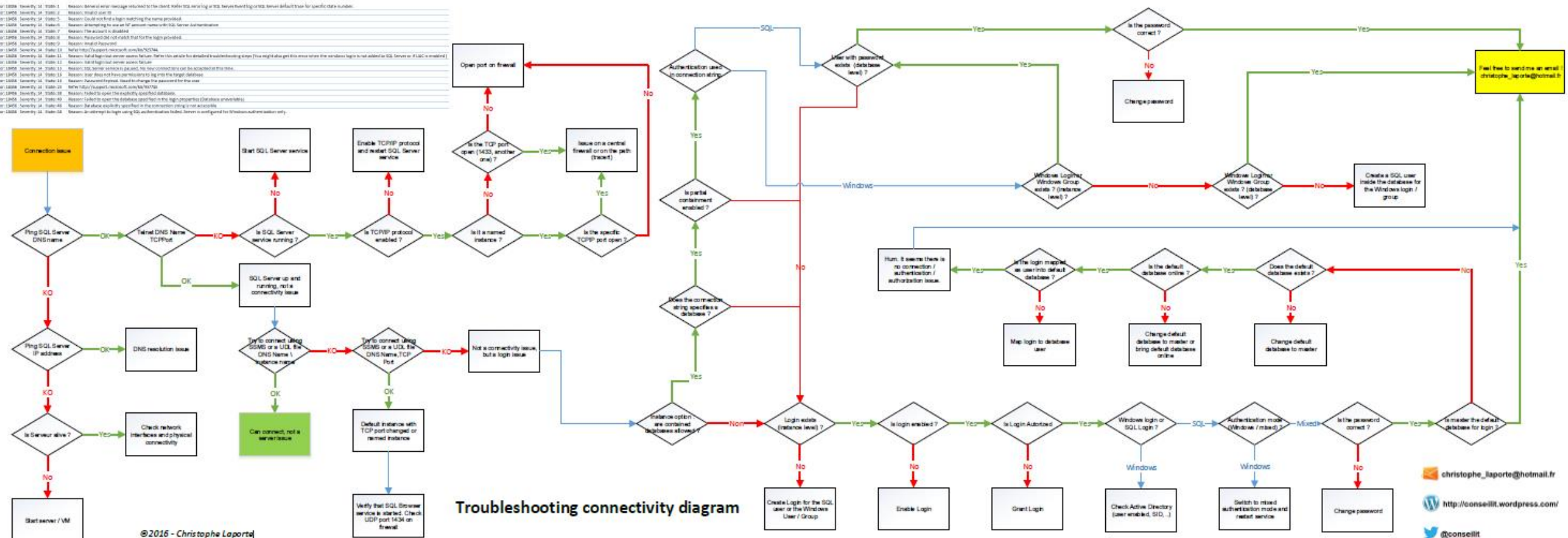


```
Set-DbaSpConfigure -SqlInstance $Server -name RemoteDacConnectionsEnabled -value 1
```


Connexion à SQL Server

- Troubleshooting connectivity diagram à [télécharger](#)

Error 18456	Severity 16	State 1	Reason: Invalid user name specified.
Error 18456	Severity 16	State 2	Reason: Invalid user name specified.
Error 18456	Severity 16	State 3	Reason: Invalid user name specified.
Error 18456	Severity 16	State 4	Reason: Invalid user name specified.
Error 18456	Severity 16	State 5	Reason: Invalid user name specified.
Error 18456	Severity 16	State 6	Reason: Invalid user name specified.
Error 18456	Severity 16	State 7	Reason: Invalid user name specified.
Error 18456	Severity 16	State 8	Reason: Invalid user name specified.
Error 18456	Severity 16	State 9	Reason: Invalid user name specified.
Error 18456	Severity 16	State 10	Reason: Invalid user name specified.
Error 18456	Severity 16	State 11	Reason: Invalid user name specified.
Error 18456	Severity 16	State 12	Reason: Invalid user name specified.
Error 18456	Severity 16	State 13	Reason: Invalid user name specified.
Error 18456	Severity 16	State 14	Reason: Invalid user name specified.
Error 18456	Severity 16	State 15	Reason: Invalid user name specified.
Error 18456	Severity 16	State 16	Reason: Invalid user name specified.
Error 18456	Severity 16	State 17	Reason: Invalid user name specified.
Error 18456	Severity 16	State 18	Reason: Invalid user name specified.
Error 18456	Severity 16	State 19	Reason: Invalid user name specified.
Error 18456	Severity 16	State 20	Reason: Invalid user name specified.
Error 18456	Severity 16	State 21	Reason: Invalid user name specified.
Error 18456	Severity 16	State 22	Reason: Invalid user name specified.
Error 18456	Severity 16	State 23	Reason: Invalid user name specified.
Error 18456	Severity 16	State 24	Reason: Invalid user name specified.
Error 18456	Severity 16	State 25	Reason: Invalid user name specified.
Error 18456	Severity 16	State 26	Reason: Invalid user name specified.
Error 18456	Severity 16	State 27	Reason: Invalid user name specified.
Error 18456	Severity 16	State 28	Reason: Invalid user name specified.
Error 18456	Severity 16	State 29	Reason: Invalid user name specified.
Error 18456	Severity 16	State 30	Reason: Invalid user name specified.
Error 18456	Severity 16	State 31	Reason: Invalid user name specified.
Error 18456	Severity 16	State 32	Reason: Invalid user name specified.
Error 18456	Severity 16	State 33	Reason: Invalid user name specified.
Error 18456	Severity 16	State 34	Reason: Invalid user name specified.
Error 18456	Severity 16	State 35	Reason: Invalid user name specified.
Error 18456	Severity 16	State 36	Reason: Invalid user name specified.
Error 18456	Severity 16	State 37	Reason: Invalid user name specified.
Error 18456	Severity 16	State 38	Reason: Invalid user name specified.
Error 18456	Severity 16	State 39	Reason: Invalid user name specified.
Error 18456	Severity 16	State 40	Reason: Invalid user name specified.
Error 18456	Severity 16	State 41	Reason: Invalid user name specified.
Error 18456	Severity 16	State 42	Reason: Invalid user name specified.
Error 18456	Severity 16	State 43	Reason: Invalid user name specified.
Error 18456	Severity 16	State 44	Reason: Invalid user name specified.
Error 18456	Severity 16	State 45	Reason: Invalid user name specified.
Error 18456	Severity 16	State 46	Reason: Invalid user name specified.
Error 18456	Severity 16	State 47	Reason: Invalid user name specified.
Error 18456	Severity 16	State 48	Reason: Invalid user name specified.
Error 18456	Severity 16	State 49	Reason: Invalid user name specified.
Error 18456	Severity 16	State 50	Reason: Invalid user name specified.



Performance & verrouillage

- Procédure stockée sp_WhoIsActive

```
sp_whoisactive @show_sleeping_spids =1,  
@get_task_info=2,  
@get_additional_info =1,  
@get_full_inner_text = 1,  
@get_outer_command = 1,  
@get_locks = 1,  
@find_block_leaders = 1,  
@get_plans = 1
```

```
# Install sp_whoisactive stored procedure by Adam Machanic  
# Feedback: mailto:adam@dataeducation.com  
# Updates: http://whoisactive.com  
# Blog: http://dataeducation.com  
Install-DbaWhoIsActive -SqlInstance $Server -Database $dbaDatabase
```

	dd hh:mm:ss.mss	session_id	sql_text	login_name	wait_info	CPU	tempdb_allocations	tempdb_current	blocking_session_id	reads	writes
1	04 20:47:19.827	54	<?query -- sp_server_diagnostics --?>	NT AUTHORITY\SYSTEM	(805ms)SP_SERVER_DIAGNOSTICS_SLEEP	239,181	0	0	NULL	20	0
2	01 19:51:16.904	262			NULL	138,835,930	5,056	5,056	NULL	2,798,091,876	4,560
3	00 00:00:00.033	214			NULL	107,650	0	0	NULL	31,553,287	556
4	00 00:00:00.020	183			NULL	2,883,619	0	0	NULL	397,328,034	220,774
5	00 00:00:00.016	224			NULL	1,534,881	131,136	67,536	NULL	104,417,013	67,201
6	00 00:00:00.016	246			NULL	1,652,866	122,408	62,824	NULL	90,575,926	63,044
7	00 00:00:00.016	249			NULL	110,812	0	0	NULL	44,203,610	2,726

Performance & verrouillage



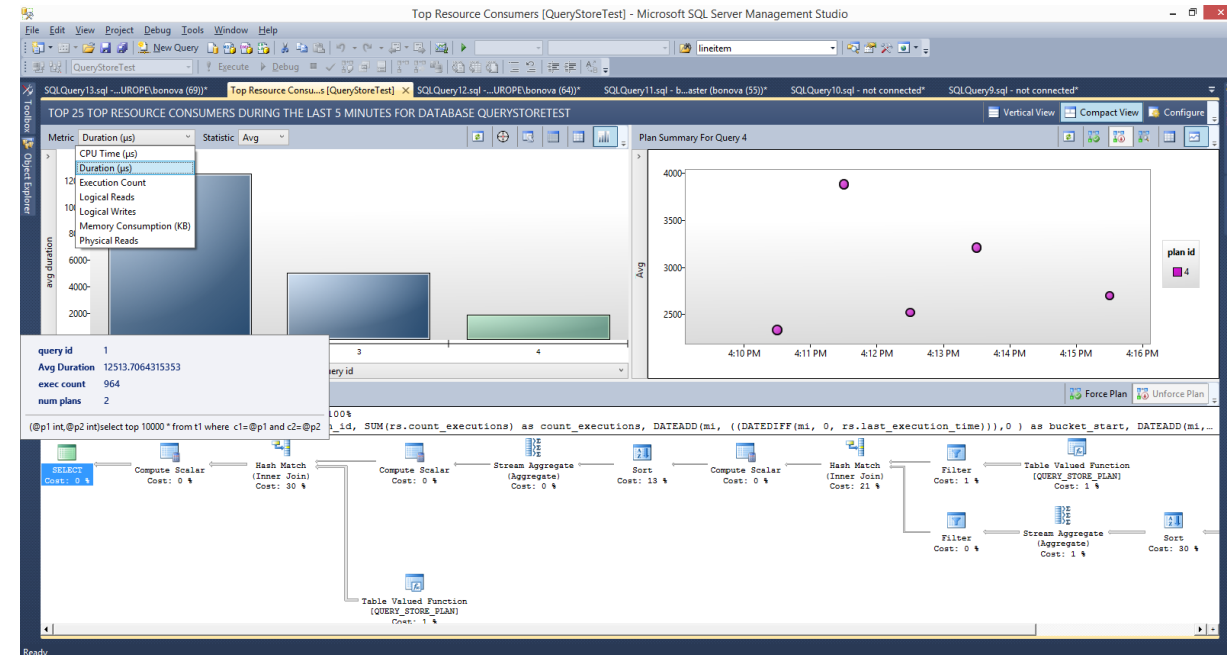
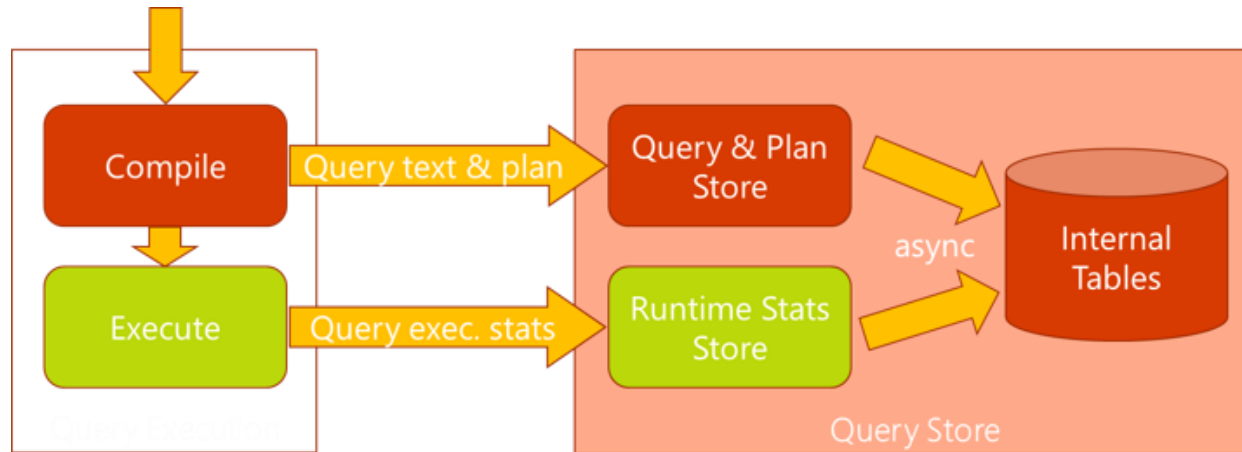
- Blocked Process Report
 - Identification des requêtes impliquées
- Locks
 - Lock Timeout
 - Lock waits
- Long running queries
 - RPC Completed
 - Batch Completed
- DeadLocks
 - System_health

```
Invoke-DbaQuery -SqlInstance $Server -Database "master" -Query "  
    CREATE EVENT SESSION [PerformanceIssues] ON SERVER  
    ADD EVENT sqlserver.blocked_process_report(  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
    ADD EVENT sqlserver.lock_timeout_greater_than_0(SET collect_database_name=(0)  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
    ADD EVENT sqlserver.locks_lock_waits(  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
        WHERE ([increment]>=(1000) AND [count]<=(100))),  
    ADD EVENT sqlserver.rpc_completed(SET collect_statement=(1)  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
        WHERE ([package0].[greater_than_equal_uint64]([duration],(250000)))),  
    ADD EVENT sqlserver.sql_batch_completed(  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
        WHERE ([package0].[greater_than_equal_uint64]([duration],(250000)))),  
    ADD EVENT sqlserver.xml_deadlock_report(  
        | ACTION(sqlserver.client_app_name,sqlserver.client_hostname,sqlserver.database_id,sqlserver  
    ADD TARGET package0.event_file(SET filename=N'PerformanceIssues',max_file_size=(50),max_rollov  
    WITH (MAX_MEMORY=4096 KB,EVENT_RETENTION_MODE=ALLOW_SINGLE_EVENT_LOSS,MAX_DISPATCH_LATENCY=30  
    "  
Start-DbaXESession -SqlInstance $Server -Session "PerformanceIssues"
```

Performance & verrouillage

DEMO

- Query Store
 - SQL Server 2016+
 - Enregistre et compare les plans d'exécution
 - Spécifique à chaque base



Surveillance SQL et Agent SQL



- Database Mail
 - Email account
 - Email profile
- SQL Server Agent
 - Operators
 - Alerts
 - 19-25
 - 823,824,825,829
832,855,856
 - Jobs en échec

```
$AlertSeverityList = 19..25
foreach ($item in $AlertSeverityList) {
    $alert = New-Object ('Microsoft.SqlServer.Management.Smo.Agent.Alert') ($server.JobServer, "Alert on Error Gravity $item ")
    $alert.Severity = $item
    $alert.IncludeEventDescription = 'NotifyEmail'
    $alert.DelayBetweenResponses = $DelayBetweenResponses
    $alert.Create()
    $alert.AddNotification($operator.Name, [Microsoft.SqlServer.Management.Smo.Agent.NotifyMethods]::NotifyEmail)
    $alert.Alter()
}

$ErrorMessageList = 823,824,825,829,832,855,856
foreach ($item in $ErrorMessageList) {
    $alert = New-Object ('Microsoft.SqlServer.Management.Smo.Agent.Alert') ($server.JobServer, "Alert on Error Number $item ")
    $alert.MessageID = $item
    $alert.IncludeEventDescription = 'NotifyEmail'
    $alert.DelayBetweenResponses = $DelayBetweenResponses
    $alert.Create()
    $alert.AddNotification($operator.Name, [Microsoft.SqlServer.Management.Smo.Agent.NotifyMethods]::NotifyEmail)
    $alert.Alter()
}
```

```
# adding email notification on job failure
$jobs = $Server | Get-DbaAgentJob | Where-Object {$_.Category -match "Database Maintenance" }
$jobs | Set-DbaAgentJob -EmailLevel OnFailure -EmailOperator DBATeam | Out-Null
$jobs | Select-Object Name,EmailLevel,OperatorToEmail | format-table -autosize
```




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Conclusion

Q & A