#### **SQL** server Database Tasks:

- 1.configure full and log backup jobs
- 2.configure rebuild jobs,
- 3.configure database mail alert
- 4.configure the mirroring.
- 5.enable the server trace.
- 6.performance issue.
- 7.Create the user.
- 8. SQL server service pack upgradation
- 9.Blocking on the server.
- 10.Long Running queries through mail alert
- 11. Configure the backup in SQL RDS.
- 12. Backup Move to s3 bucket.
- 13.SQL Server higher Migration.
- 14.RDS sql server Mail configuration
- 15.Database suspended mode.
- 16.Linked server creation.
- 17. Database added to the always on

## Configure full and log backup:

\_\_\_\_\_

We can configure the backups in two ways.

- 1. Script
- 2. Maintenance plan

By using https://ola.hallengren.com/sql-server-backup.html

We have to download the maitancesolution.sql after execute the server. Then follow below steps.

#### **SQL Server Backup**

DatabaseBackup is the SQL Server Maintenance Solution's stored procedure for backing up databases. DatabaseBackup is supported on SQL Server 2008, SQL Server 2008 R2, SQL Server 2012, SQL Server 2014, SQL Server 2016, SQL Server 2017, SQL Server 2019, and Azure SQL Database Managed Instance.

#### Download

Download MaintenanceSolution.sql. This script creates all the objects and jobs that you need. You can also download the objects as separate scripts. The SQL Server Maintenance Solution is available on GitHub.

#### License

The SQL Server Maintenance Solution is free.

**Parameters** 

# A. Backup all user databases, using checksums and compression; verify the backup; and delete old backup files

We can take all kinds backup using below script ,but we need to change the backup location and type of backup's (Full ,Diff or log)

EXECUTE dbo.DatabaseBackup

```
@Databases = 'USER_DATABASES',
```

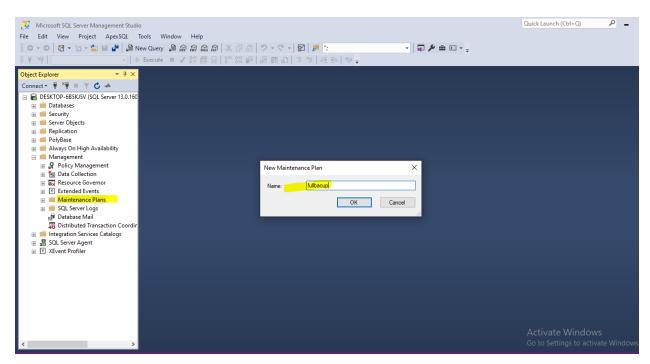
$$@Verify = 'Y',$$

$$@CheckSum = 'Y',$$

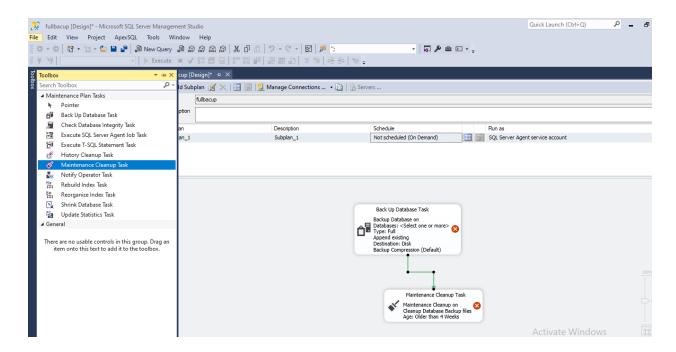
@CleanupTime = 24

# Maintenance plan:

Open ssms -Select Management then - select Maintenance plan mention name:



Select toolbar and drag bacup and maintenance backup clean options. Based on that backup fine clean up .



Go to Schedule  $\rightarrow$  Choose schedule Timings $\rightarrow$  Click Ok

Go to notification  $\rightarrow$  Click Email Choose group mail address  $\rightarrow$  click OK [ job fails or

#### configure rebuild jobs:

We can configure and rebuild jobs two ways .

- 1.script
- 2.Maintence plan

# **Script:**

```
Step 1 : Go to SQL server agent \rightarrow Right click \rightarrow New \rightarrow Job
```

Step 2 : Select General  $\rightarrow$  Enter the job Name  $\rightarrow$  click ok

# A. Rebuild or reorganize all indexes with fragmentation on all user databases

EXECUTE dbo.IndexOptimize

- @Databases = 'USER DATABASES',
- @FragmentationLow = NULL,
- @FragmentationMedium =

'INDEX\_REORGANIZE,INDEX\_REBUILD\_ONLINE,INDEX\_REBUILD\_OFFLINE',

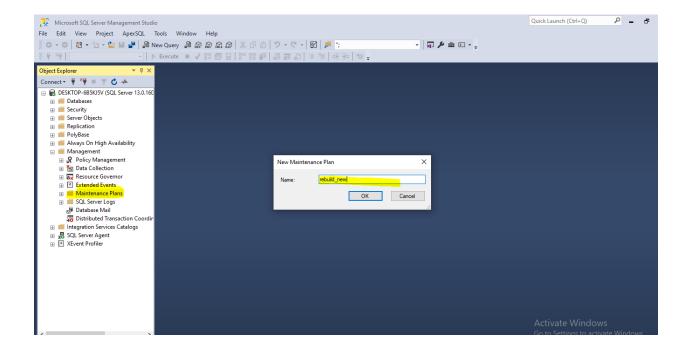
@FragmentationHigh =

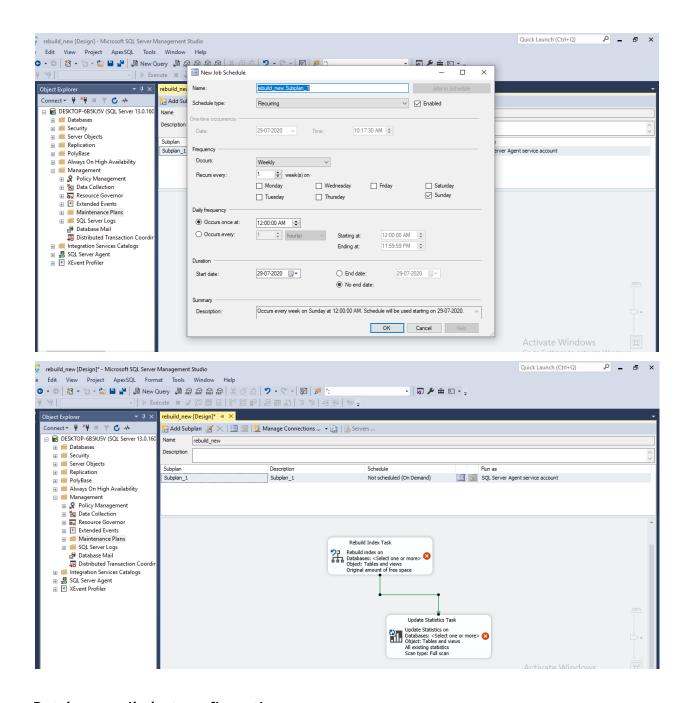
'INDEX\_REBUILD\_ONLINE,INDEX\_REBUILD\_OFFLINE',

- @FragmentationLevel1 = 5,
- @FragmentationLevel2 = 30

# Maintenance plan:

Open ssms -Select Management then - select Maintenance plan mention name:

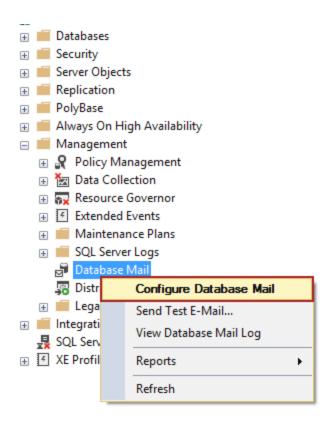


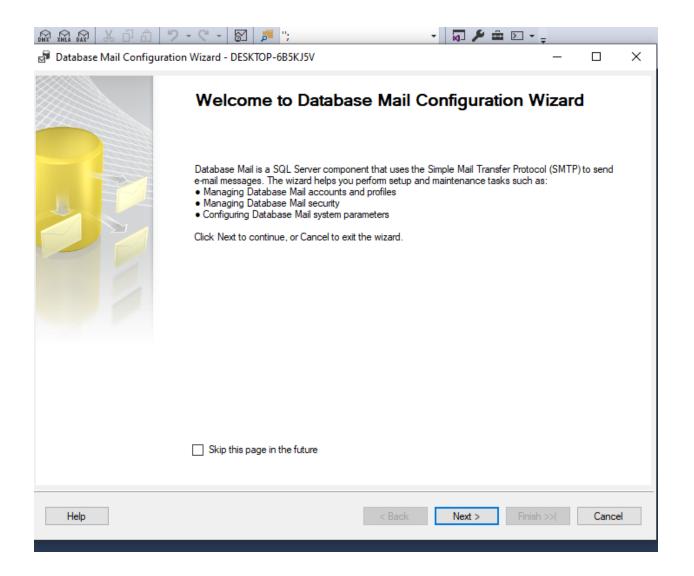


# Database mail alert configuration:

- create a Database Mail account,
- create a Database Mail profile,
- and configure those two to work together

# Open SSMS -management - Sql server Logs- Configure Database mail





Create new profile and account.

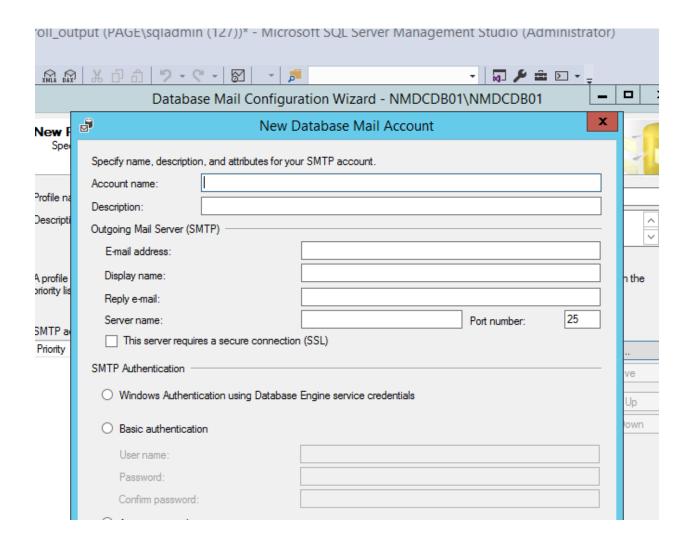
# Database Mail Configuration Wizard - NMDCDB01\NMDCDB01



#### **Manage Profiles and Accounts**

-	AL.
1	

Specify the task to perform.	
Select a management Task:	
Create a new account	
View, change, or delete an existing account	
Create a new profile	
View, change, or delete an existing profile. You can also manage accounts associated with the profile	



#### Add account name and SMTP, common DL.

Once configuration is complete, Let's just send an email to the specified recipient using the sp send dbmail stored procedure.

```
EXEC msdb.dbo.sp_send_dbmail
    @profile_name = 'Notifications',
    @recipients = 'Use a valid e-mail address',
    @body = 'The database mail configuration was completed successfully.',
    @subject = 'Automated Success Message';
GO
```

#### 1.configure the mirroring.

1.Before we can configure the mirroring ,We need to take full backup and log backup .

Backup database TestDB to disk ='E:\mirr\test.bak' with compression .status=10

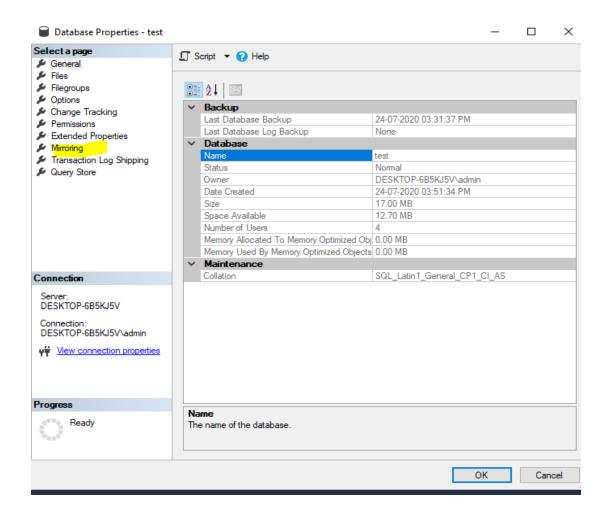
Backup log TestDB to disk ='E:\mirr\test.trn' with compression ,status=10

2. Restore in the secondary server with no recovery mode.

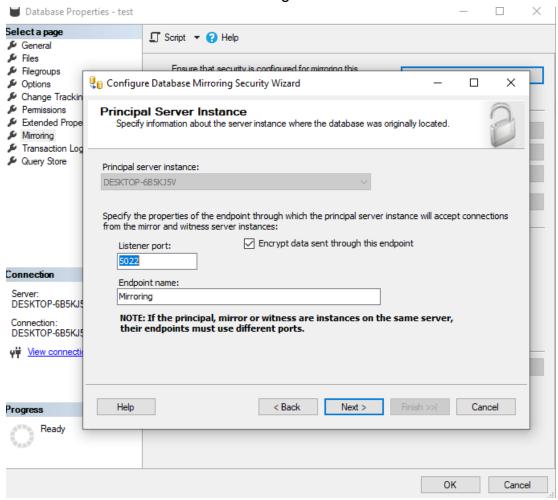
RESTORE DATABASE TestDB FROM DISK = 'D:\ TestDB\_Full.bak' WITH MOVE 'TestDB' TO

'D:\Data\TestDB.mdf', MOVE 'TestDB Log' TO 'D:\Data\TestDB Log.ldf'

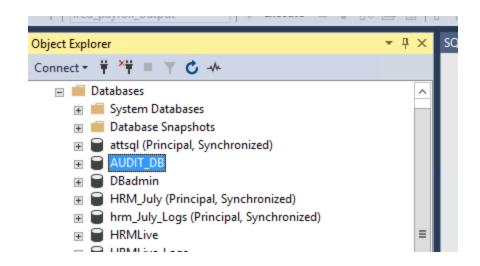
3. Database right click -Properties--mirroring option



## Add two servers and check the mirroring.



#### Check mirroring for two servers



#### performance issue:

Before we can capture top 10 queries ,which queries are causing issue we need to check ,what was the workload of that queries and need to check reads ,and writes .

```
Query:
SELECT TOP 10
creation time
, last execution time
, total_logical_reads AS [LogicalReads] , total_logical_writes AS
[LogicalWrites], execution_count
, total_logical_reads+total_logical_writes AS [AggIO] ,
(total_logical_reads+total_logical_writes)/(execution_count+0.0) AS [AvgIO],
st.TEXT
, DB_NAME(st.dbid) AS database_name
, st.objectid AS OBJECT_ID
FROM sys.dm_exec_query stats qs
CROSS APPLY sys.dm exec sql text(sql handle) st
WHERE total_logical_reads+total_logical_writes > 0
AND sql handle IS NOT NULL
ORDER BY [AggIO] DESC
```

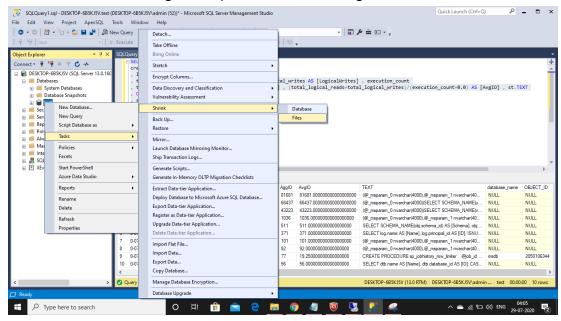
Which table get more cpu ,then capture it,

- -> need to check index on particular table ,if indexes are not we can create the indexes.
- ->every week we need to run a Rebuild job .

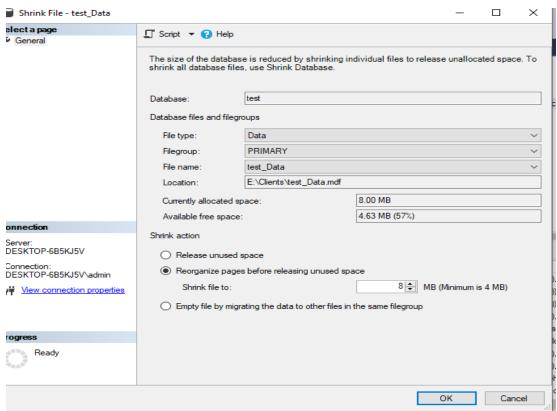
Shrink Datafile and Log File:

1. We can shrink the log file in peak hours ,there is no issue .

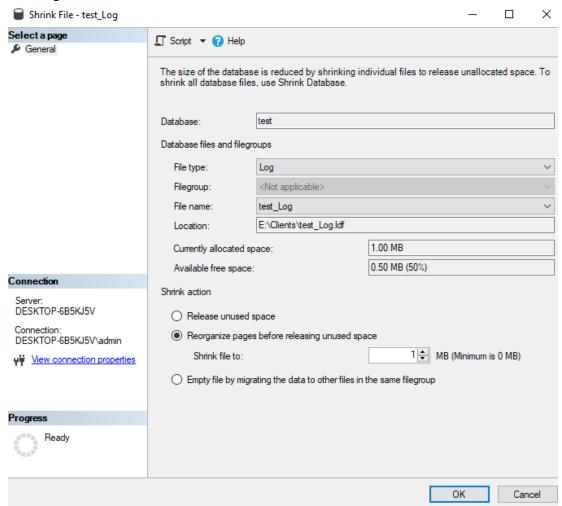
Before we can take log backup then the shrink log file.



#### For Datafile shrink



# For Logshirnk:



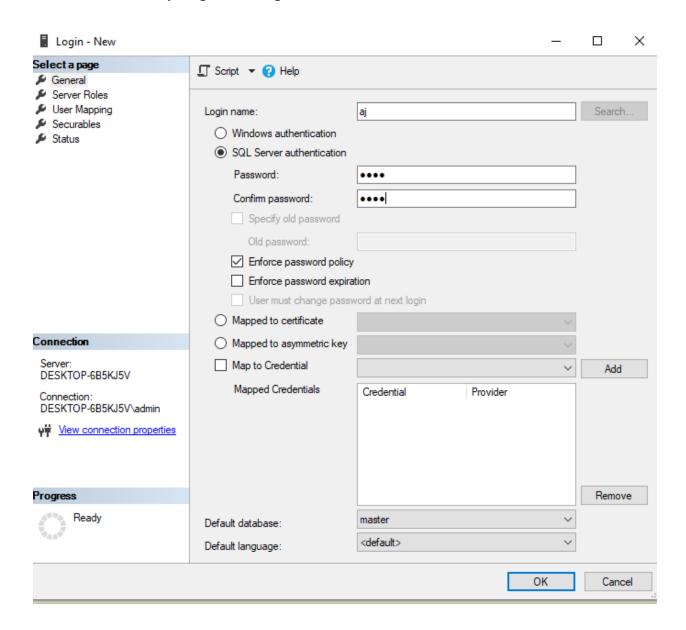
Script:
USE [test]
GO
DBCC SHRINKFILE (N'test\_Log' , 1)
GO

#### Create the user in server:

Authentications are two types.

- 1. Windows Authentication
- 2.Mixed Authentication

Go to ssms- security -login-new login- mention name



#### **SQL** server Migration:

- 1. Take the full backup from production
- 2. Restore the full backup with no recovery option in the new server.
- 3.take all login from production use revlogin script.
- 4.Execute the new server.
- 5. Take linked servers and execute the new server.
- 6. Take all login scripts and execute the new server.
- 7. Take all log backups and restore to a new server.
- 8. Finally stop the application and take log backup and restore.
- 9. Check database size and tables size .
- 10. Finally Check application.

In sql server migration we need to face orphan users .

Exec sp\_change\_user\_login 'Report'

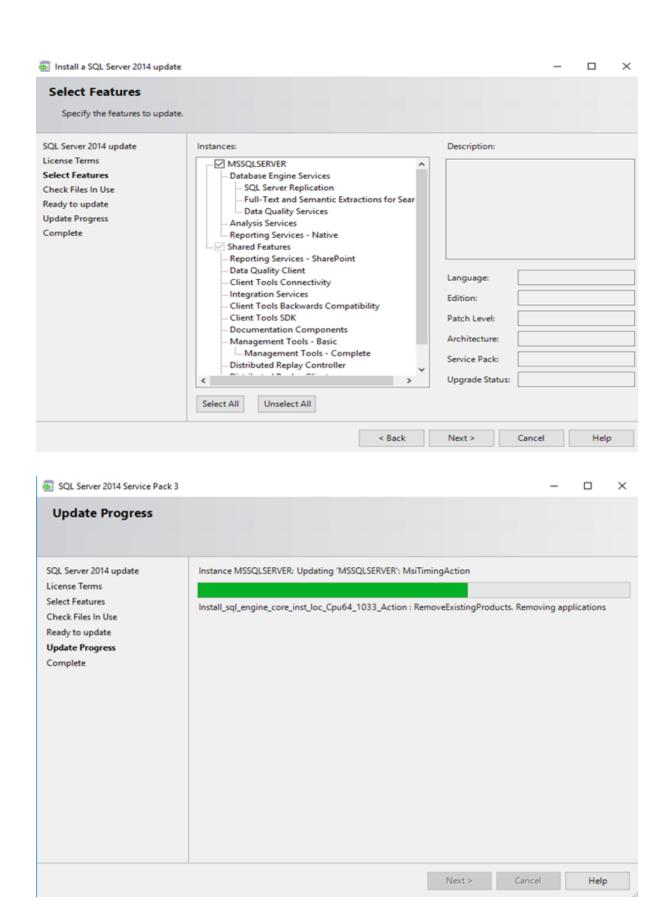
Exec sp\_change\_user\_login' 'Auto\_fix', 'ajay';

#### **SQL** server Patching:

1.Download the package from Microsoft portal.

https://docs.microsoft.com/en-us/sql/database-engine/install-windows/latest-updates-for-microsoft-sql-server?view=sql-server-ver15

- 2.Before start the activity take user and system database backups
- 3.Sp3 with CU right click.



#### 5.Check the version

6. Finally check application

#### **Blocking on SPID:**

We can check blocking by using dmv command Select \* from sys.sysprocesses where blocked <> 0

Or else

**Sp\_whoisactive** (we can check running threads and also blocking ,workload of the query also)

Once we get the blocking ,we can inform the client ,if it is select we can kill the session once got approval from the client end.

#### 10 .Long Running queries through mail alert

```
Step 1 : Go to SQL server agent \rightarrow Right click \rightarrow New \rightarrow Job
Step 2 : Select General \rightarrow Enter the job Name \rightarrow click ok
Step 3 : Select Steps \rightarrow Click New \rightarrow enter step name \rightarrow Select T,SQL queries \rightarrow
Select Database → Use Below Script → Click Ok
Query:
DECLARE @xml NVARCHAR(max)
DECLARE @body NVARCHAR(max)
-- specify long running query duration threshold
DECLARE @longrunningthreshold INT
SET @longrunningthreshold = 10
       -- step 1: collect long running query details.
WITH cte
AS (
       SELECT [Session_id] = spid
              ,[Sessioin_start_time] = (
                     SELECT start_time
                     FROM sys.dm_exec_requests
                     WHERE spid = session_id
              ,[Session_status] = Ltrim(Rtrim([status]))
              ,[Session_Duration] = Datediff(s, (
                            SELECT start_time
                            FROM sys.dm_exec_requests
                            WHERE spid = session_id
                            ), Getdate())
              ,[Session_query] = Substring(st.TEXT, (qs.stmt_start / 2) + 1, (
                                   CASE qs.stmt_end
                                          WHEN - 1
                                                 THEN Datalength(st.TEXT)
```

```
ELSE qs.stmt_end
                                      END - qs.stmt_start
                                ) / 2
                         ) + 1)
             ,[Complete_Query]= (st.TEXT)
             ,[program_name]= qs.program_name
             ,[hostname] = qs.hostname
             ,[isblocked] = qs.blocked
      FROM sys.sysprocesses qs
      CROSS APPLY sys.dm_exec_sql_text(sql_handle) st
WHERE qs.lastwaittype<>'BROKER_RECEIVE_WAITFOR'
AND qs.cmd NOT LIKE '%BACKUP%'
AND qs.cmd NOT LIKE '%INDEX%'
AND qs.cmd NOT LIKE '%RESTORE%'
AND qs.cmd NOT LIKE '%DBCC%'
AND qs.program_name NOT LIKE '%SQLAgent - TSQL JobStep%'
AND gs.program_name NOT LIKE '%Microsoft® Windows® Operating System%'
AND qs.hostname NOT LIKE '%RPT01%'
      )
-- step 2: generate html table
SELECT @xml = Cast((
                   SELECT session_id AS 'td'
                          ,session_duration AS 'td'
                          ,session_status AS 'td'
                          ,[session_query] AS 'td'
                          ,[Complete_Query] AS 'td'
                          ,[program_name] AS 'td'
                          ,[hostname] AS 'td'
                          ,[isblocked] AS 'td'
```

```
FROM cte
                 WHERE session_duration >= @longrunningthreshold
                 FOR XML path('tr')
                      ,elements
                 ) AS NVARCHAR(max))
-- step 3: do rest of html formatting
SET @body = '
<html>
<body><bold>Long Running Queries (longer than 10 sec)</bold>
 Session_id 
 Duration(sec) 
 Status 
 CurrentQuery 
 CompleteQuery 
 ProgramName 
 Hostname 
 isblocked 
'
SET @body = @body + @xml + '</body></html>'
-- step 4: send email if a long running query is found.
IF (@xml IS NOT NULL)
BEGIN
     EXEC msdb.dbo.sp_send_dbmail @profile_name = 'PROD12-DB01'
           ,@body = @body
           ,@body_format = 'html'
           ,@recipients
'cas-dev@coditas.com;dba@powerupcloud.com;cas.alerts@powerupcloud.com'
           ,@subject = 'ALERT: Long Running Queries on PROD12-DB01';
END
Step 4 : Go to Schedule → Choose schedule Timings → Click Ok
Step 5 : Go to notification \rightarrow Click Email Choose group mail address \rightarrow click OK [ job
fails or success notification ]
```

# Sql with rds backup and restoration:

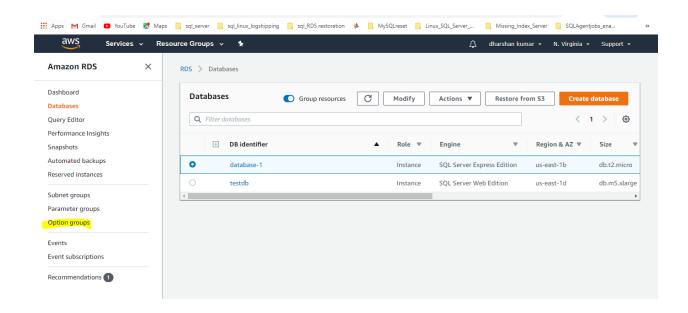
Prerequisite:

- 1.SQL server with Rds
- 2.S3 bucket.

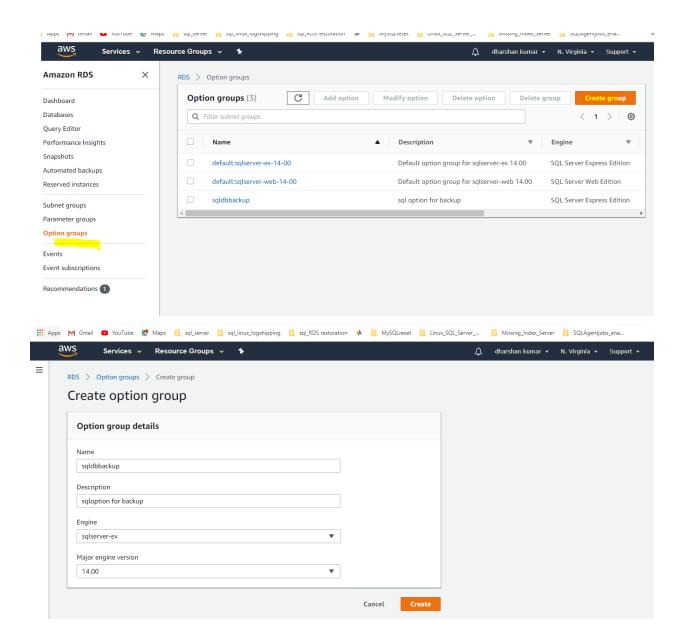
#### Point of view:

-----

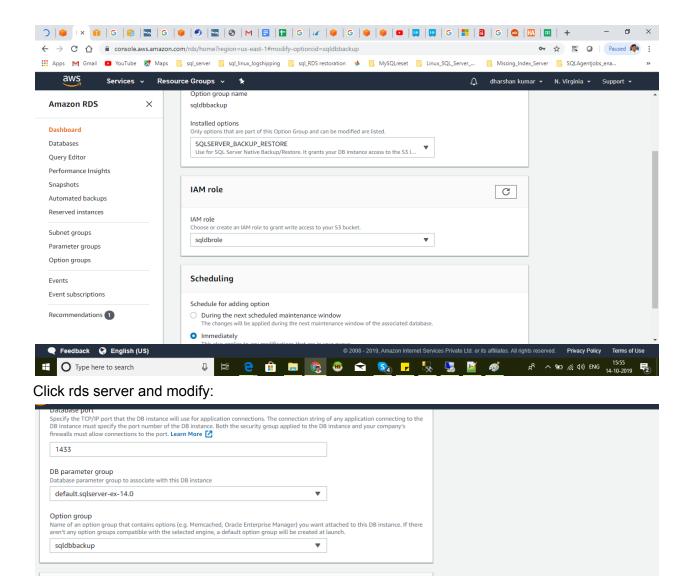
Open the Amazon RDS console, and then choose Option Groups in the navigation pane. Choose Create Group, and enter the name, description, engine, and engine version of your server. Then, choose Create.



#### Create option group:



Select the option group that you created, and then choose Add Option. Choose "SQLSERVER\_BACKUP\_RESTORE". It's a best practice to create a new IAM role and then choose Add Option, so that your IAM role has the required privileges. Choose your S3 bucket, or create a new S3 bucket. Then, choose Apply Immediately and Add Option.



Refresh

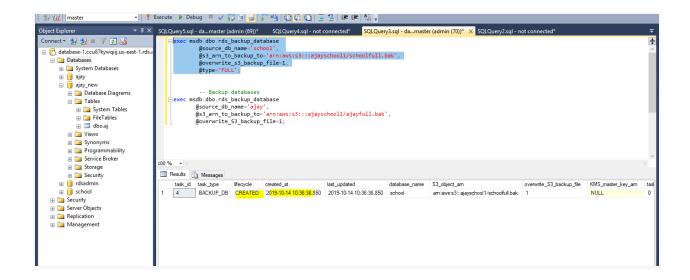
# After completing the all steps use the backup command with RDS:

Choose a directory in which you want to allow authorized domain users to authenticate with this SQL Server instance using Authentication.

Microsoft SOL Server Windows Authentication

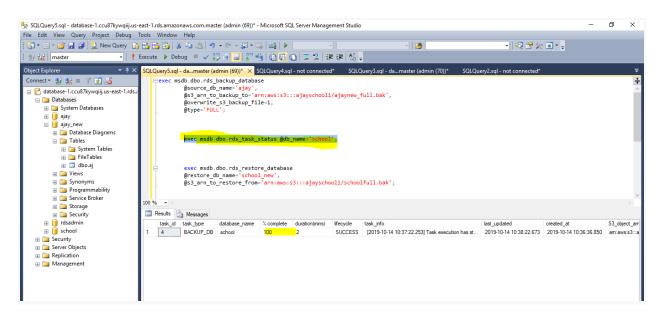
None
Create a new directory

```
exec msdb.dbo.rds_backup_database
    @source_db_name='ajay',
    @s3_arn_to_backup_to='arn:aws:s3:::ajayschool1/ajayfull.bak',
    @overwrite_s3_backup_file=1,
    @type='FULL';
```



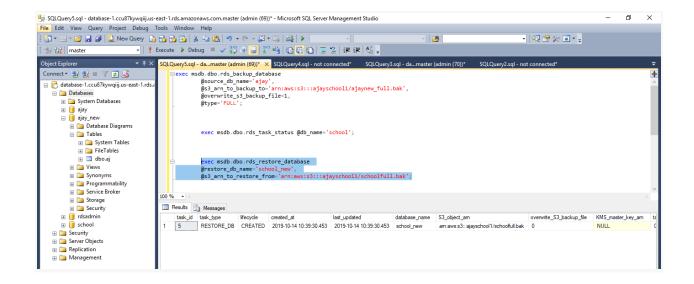
Check backup completed or not:

exec msdb.dbo.rds task status @db name='school';



Restore RDS backup with sql:

```
exec msdb.dbo.rds_restore_database
     @restore_db_name='school_new',
     @s3_arn_to_restore_from='arn:aws:s3:::ajayschool1/schoolfull.bak';
```

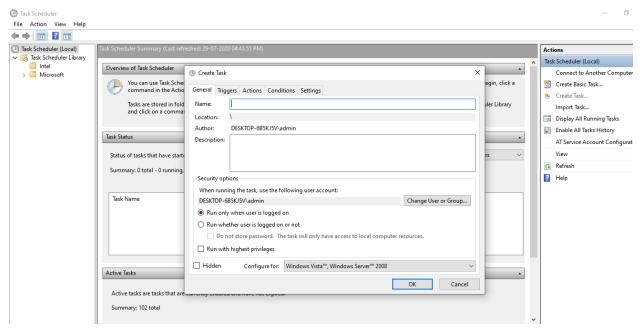


SQL RDS FUll and Diff backup commands:

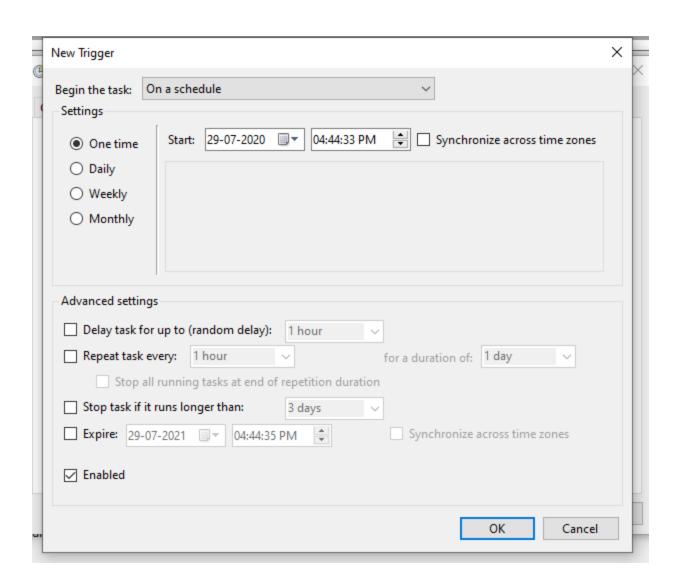
# Differential backup DECLARE @time Varchar(255), @name VARCHAR(255) SELECT @time = Replace(convert(varchar, getdate(), 127),':','.') SELECT @name = 'arn:aws:s3:::distro-rds-backup/diff/distro-plx-db-SMSOne' + '\_' +@time+'.dif' EXEC msdb.dbo.rds\_backup\_database @source\_db\_name = 'distro-plx-db-SMSOne', @s3\_arn\_to\_backup\_to = @name, @overwrite\_S3\_backup\_file = 1, @type = 'DIFFERENTIAL';

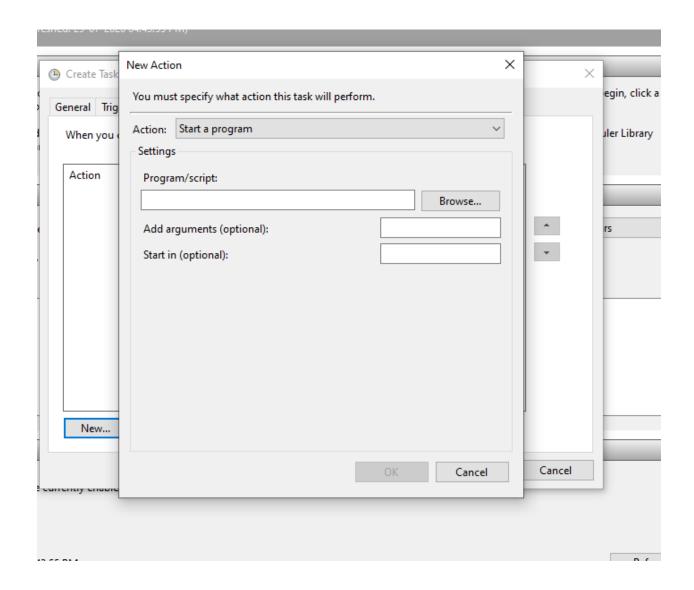
#### Backup Move to s3 bucket.

#### Go to Task scheduler -create new Task



New trigger:





#### Add paths

```
aws s3 cp --recursive D:\ Database_backup s3:// uat-dbbackup-jan17/

$UPLOADDATE=(Get-Date).AddDays(0).ToString('dd-MM-yyyy')

$BACKUPPATH='C:\VLTrader\Sent'

$BACKUPTYPE='FULL'

$Objects = Get-ChildItem $BACKUPPATH -Recurse | where-object { ($_.Name -like '*_FULL_*') -and ($_.CreationTime -ge

$((Get-Date).AddDays((-1)).ToString('MM-dd-yyyy'))) }

Foreach ($Object in $Objects){
    aws s3 cp $Object.fullname

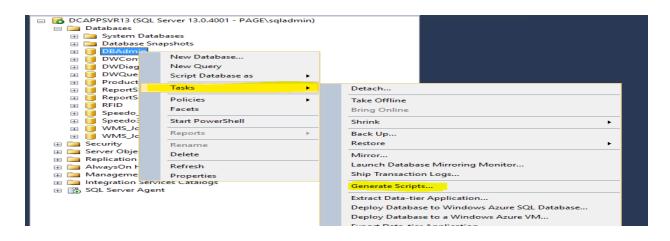
$3:/corp-vltrader-server-logs/vl-trader-logs-18-dec-2019/Sent/$BACKUPTYPE/$UPLOADDATE/$Object
}
```

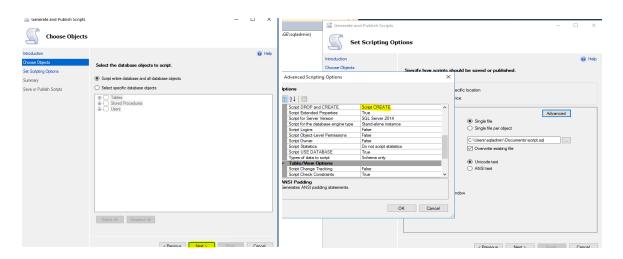
# Step1:

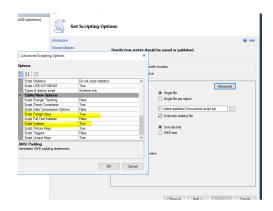
1.Generate scripts for source (Database) server

Right click  $\rightarrow$  Task $\rightarrow$  Click next  $\rightarrow$  Choose advanced option  $\rightarrow$  choose script create, script indexes true, script forinkey true  $\rightarrow$  click Okay

#### Please refer below screenshot







# Step 2:

Export generate script file in destination server

And execute generate script file in destination server

#### Step 3:

Drop foreign keys in destination (Database) server.

#### Step 4:

Export data in source database to destination database

#### Step 5:

Once its import export completed then execute create generate script result in destination database

And also compare the data in both databases servers.

# RDS SQL Server DB mail Configuration:

- 1.Create SQL server user with same credentials (Ec2 Instance and RDS Instance same )
- 2.Create linked server RDS to EC2 Machine

#### Link:

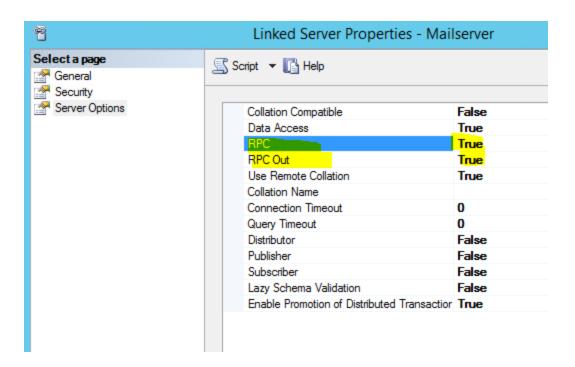
https://aws.amazon.com/blogs/database/powering-up-database-mail-on-amazon-rds-for-sql-server-how-under-armour-runs-database-mail-on-amazon-rds-for-sql-server/

2.1 once created the linked server changed the below settings

Link:

https://aws.amazon.com/blogs/database/powering-up-database-mail-on-amazon-rds-for-sql-server-how-under-armour-runs-database-mail-on-amazon-rds-for-sql-server/

Link: http://www.bradleyschacht.com/server-servername-is-not-configured-for-rpc/



- 3. Configure the mail profile respective ec2 machine
- 3.1: Allow global Profile Changed the below settings
- 4.tiggred the mail alerts using below script from RDS SQL server

EXEC [Mailserver].[msdb].[dbo].sp\_send\_dbmail
@recipients = 'mprasad@20cube.com',
@body = 'This email is from RDS',
@subject = 'This email is from RDS';

#### Refer the below link:

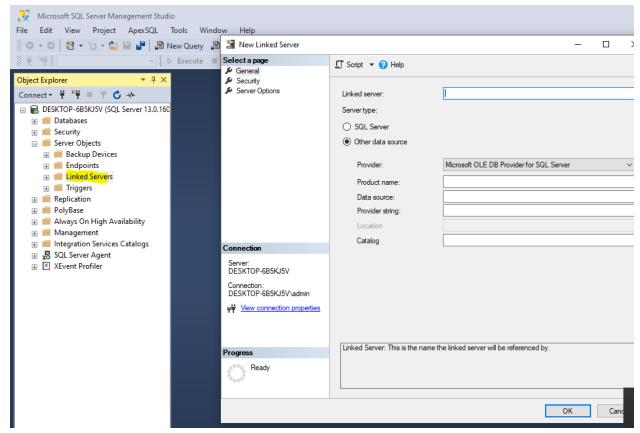
https://aws.amazon.com/blogs/database/powering-up-database-mail-on-amazon-rds-for-sql-server-how-under-armour-runs-database-mail-on-amazon-rds-for-sql-server/

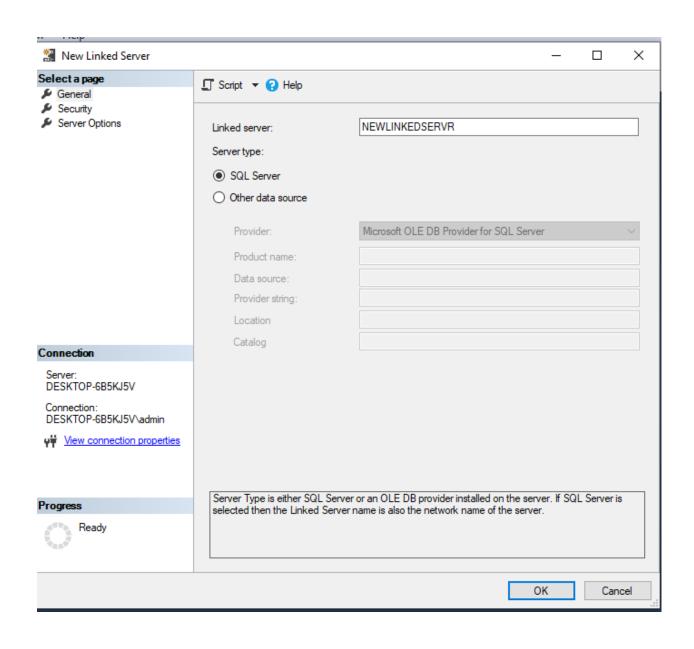
#### Database suspended mode:

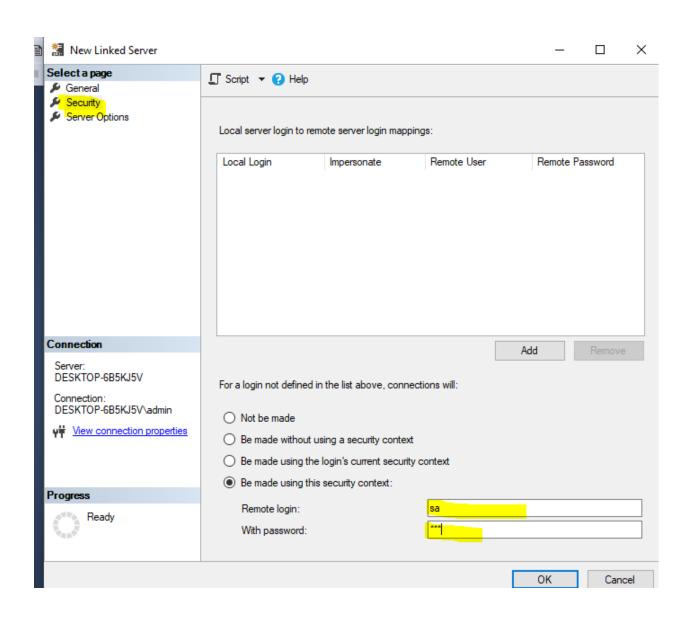
EXEC sp\_resetstatus 'db\_name';
ALTER DATABASE db\_name SET EMERGENCY
DBCC CHECKDB ('database\_name')
ALTER DATABASE database\_name SET SINGLE\_USER WITH ROLLBACK
IMMEDIATE
ALTER DATABASE database\_name SET MULTI\_USER

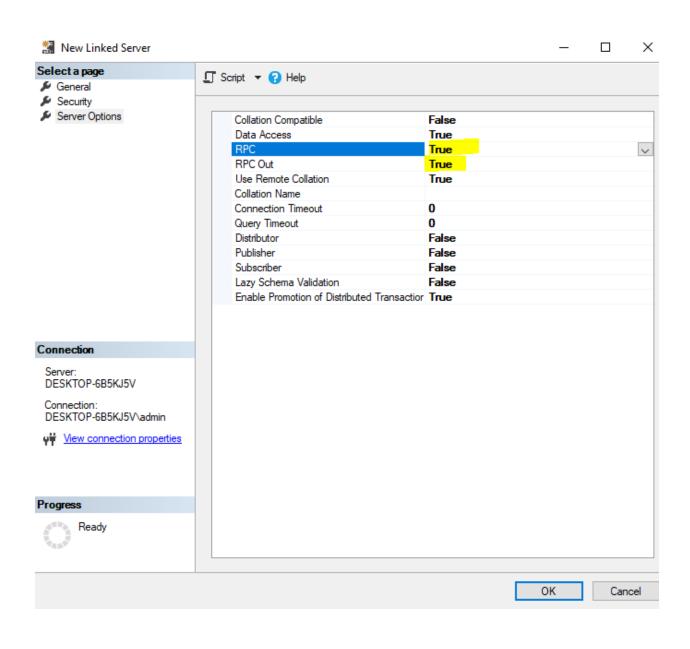
#### Linked server creation:

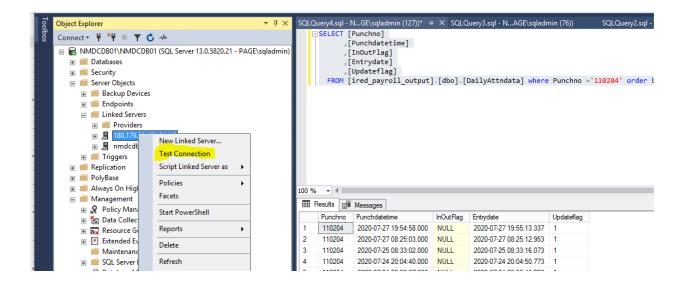
# SSMS -server Objects -Linked server -new Linked server.

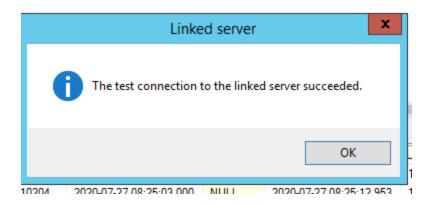












# Database added to the always on

- 1.Take the full and Log backup Primary server and restore to secondary with no recovery mode via share location
- 2.Go to the availability group.
- 3. Right availability group add database in alwayson.

