/* This document contains the TSQL needed to configure Classic Mirroring using certificates for encrypted mirroring connections*/
We will need 2 servers with the same version of SQL Server on **Principal** and **Mirror**.
We will also create 2 Logins and 2 users. PRINCIPAL_LOGIN and PRINCIPAL_USER ; MIRROR_LOGIN and MIRROR_USER
Based on these logins, we will create a certificate. For testing purposes, we will use a database called **mirrordbtest**. Please replace this with the user database that you want to mirror.

Note: Before starting, please take a full and log backup from **Principal** to restore on **Mirror** with option **RESTORE WITH NORECOVERY**.
https://docs.microsoft.com/en-us/sql/database-engine/database-mirroring/prepare-a-mirror-database-for-mirroring-sql-server?view=sql-server-ver15#CombinedProcedure

Create a directory to store the certificates on each server. In this example script below, we used **C:\Certs** to simplify the script across all servers. All 2 certificates will be stored here.
We are using port 5022 for the mirroring endpoint so please open the firewall/Network Security Group for port 5022.*/

```
--============================================================--
--============================================================--
/*Create the master key, certificate from the master key, and encrypt the mirroring endpoint on the Principal * Please use a secure password /
--create a master key on Principal
USE master;
CREATE MASTER KEY ENCRYPTION BY PASSWORD = 'PassWOrd123!';
GO
--create a certificate from the master key
USE master;
CREATE CERTIFICATE PrincipalCert
  WITH SUBJECT = 'Principal Certificate';
GO
--CREATE the mirroring endpoint
CREATE ENDPOINT Mirroring
  STATE = STARTED
  AS TCP (
    LISTENER_PORT=5022
    , LISTENER_IP = ALL
  )
  FOR DATABASE_MIRRORING (
    AUTHENTICATION = CERTIFICATE PrincipalCert
    , ENCRYPTION = REQUIRED ALGORITHM AES
    , ROLE = ALL
  );
GO
```

```
--Backup the certificate and transfer it to the mirror server
BACKUP CERTIFICATE PrincipalCert TO FILE = 'C:\certs\PrincipalCert';
GO

/*Create the master key, certificate from the master key, and encrypt the mirroring endpoint
on the Mirror*/

--create a master key on Mirror
USE master;
CREATE MASTER KEY ENCRYPTION BY PASSWORD = 'PassWOrd123!';
GO

--create a certificate from the master key
USE master;
CREATE CERTIFICATE MirrorCert
  WITH SUBJECT = 'Mirror Certificate';
GO

--CREATE the mirroring endpoint
CREATE ENDPOINT Mirroring
  STATE = STARTED
  AS TCP (
    LISTENER_PORT=5022
    , LISTENER_IP = ALL
  )
  FOR DATABASE_MIRRORING (
    AUTHENTICATION = CERTIFICATE MirrorCert
    , ENCRYPTION = REQUIRED ALGORITHM AES
    , ROLE = ALL
  );
GO

--Backup the cert and transfer it to the Principal server
BACKUP CERTIFICATE MIrrorCert TO FILE = 'C:\certs\MirrorCert';
GO

--============================================================--
/*After all 2 servers have generated the certificates, place all 2 certificates on each server in the
C:\certs directory*/
--============================================================--
```

```
/*This portion of the script is to create the logins, users, and set CONNECT ON ENDPOINT permissions on the Principal for Mirror*/
--On the Principal, create a login for the mirror server
USE master;
CREATE LOGIN Mirror_Login WITH PASSWORD = 'PassWord123!';
GO
--create a user from the login
CREATE USER Mirror_User FOR LOGIN Mirror_Login;
GO
--create a certificate that the login uses for authentication
CREATE CERTIFICATE MirrorCert
  AUTHORIZATION Mirror_User
  FROM FILE = 'C:\certs\MirrorCert'
GO
--grant connect for login
GRANT CONNECT ON ENDPOINT::Mirroring TO [Mirror_login];
GO

--============================================================--
--============================================================--

/*This portion of the script is to create the logins, users, and set CONNECT ON ENDPOINT permissions on the Mirror for Principal*/

--On the Mirror, create a login for the Principal server
USE master;
CREATE LOGIN Principal_Login WITH PASSWORD = 'PassWord123!';
GO
--create a user from the login
CREATE USER Principal_User FOR LOGIN Principal_Login;
GO
--create a certificate that the login uses for authentication
CREATE CERTIFICATE Principalcert
  AUTHORIZATION Principal_User
  FROM FILE = 'C:\certs\PrincipalCert'
GO
--grant connect for login
GRANT CONNECT ON ENDPOINT::Mirroring TO [Principal_Login];
GO

--============================================================--
--============================================================--
```

/*In this section, we will configure mirroring for the database on each server. */

--At Mirror, set Principal server as partner. We are using principal IP because there is no domain DNS

```
ALTER DATABASE mirrordbtest
   SET PARTNER = 'TCP://Principal_IP:5022';  .
GO
```

--At Principal, set Mirror server as partner. We are using Mirror IP because there is no domain DNS.

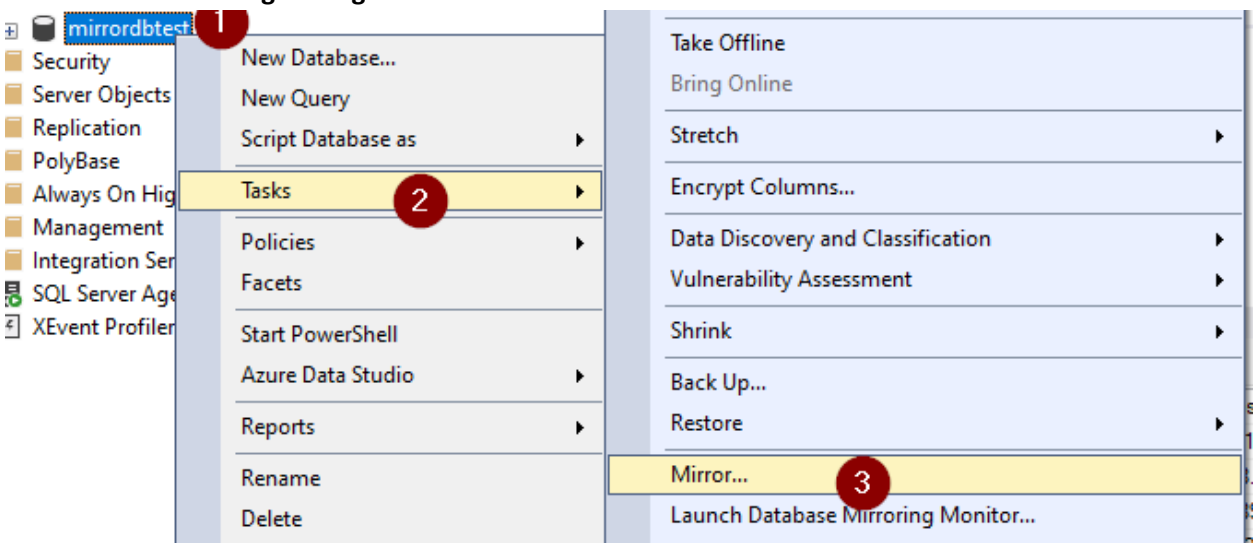
```
ALTER DATABASE mirrordbtest
   SET PARTNER = 'TCP://Mirror_IP:5022';
GO
```

-- Turn off transaction safety since Principal and mirror servers are far away to each other:

```
ALTER DATABASE mirrordbtest SET PARTNER SAFETY OFF
go
```

Note: *Turning off transaction safety shifts the session into asynchronous operating mode, which maximizes performance*
https://docs.microsoft.com/en-us/sql/database-engine/database-mirroring/change-transaction-safety-in-a-database-mirroring-session-transact-sql?view=sql-server-ver15

****Check the mirroring setting at the database level:**



More information: Setting Up Database Mirroring
https://docs.microsoft.com/en-us/sql/database-engine/database-mirroring/setting-up-database-mirroring-sql-server?view=sql-server-ver15