Azure SQL Server Database Failover Groups

In this tutorial I'm going to show how to:

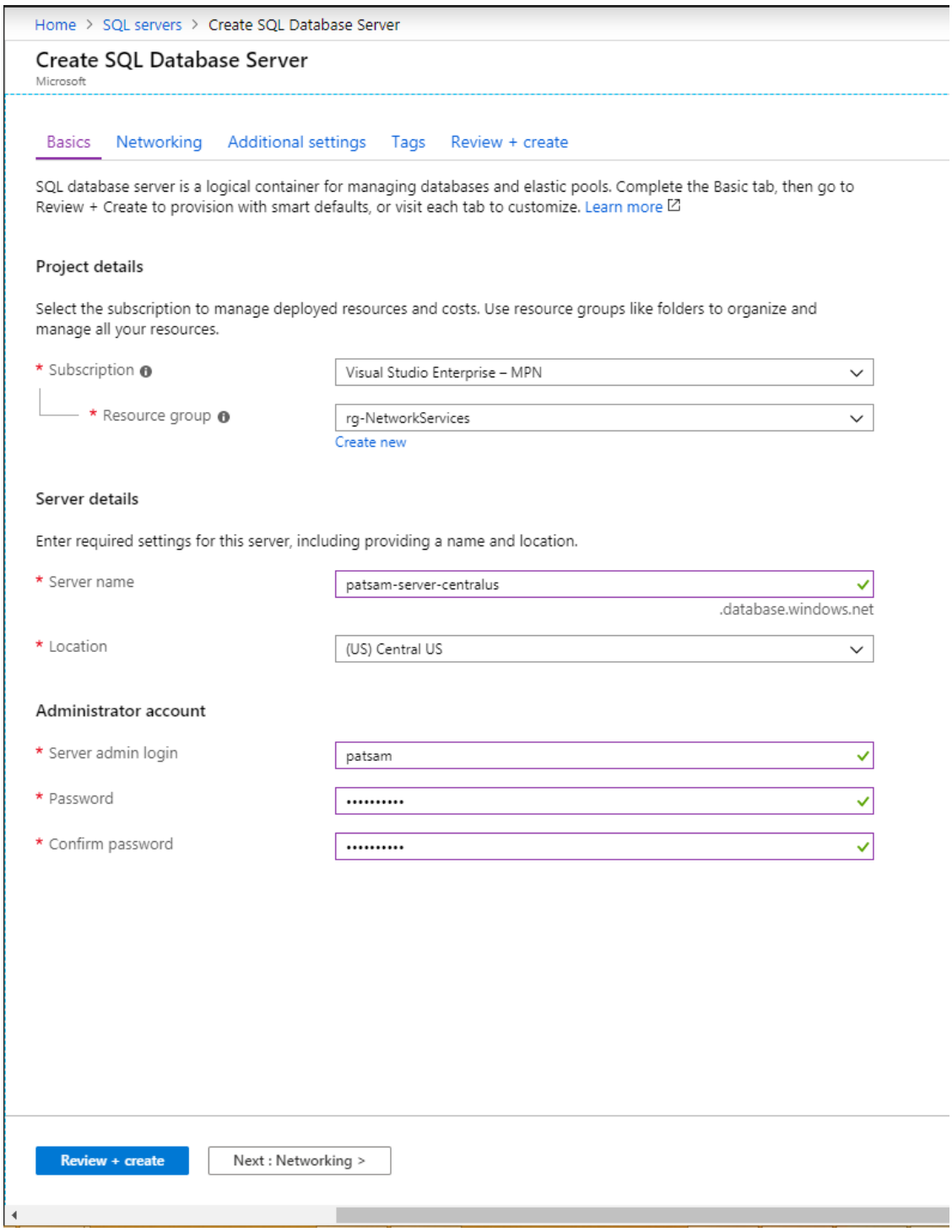
- Create a Failover Group
- Testing Failover End Points through SQL Server Management
- Testing Failover End Points through Command Prompt
- Make a Failover

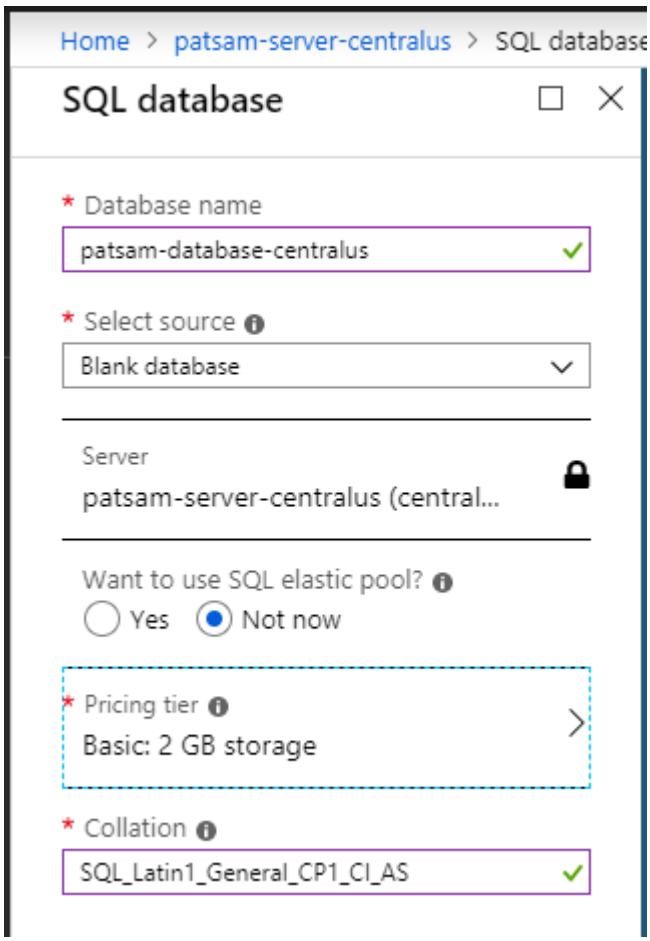
Step 01: Create Failover Group

For this exercise we need 2 SQL Server/Database instances.

Create the first SQL Server/Database in Central US region.

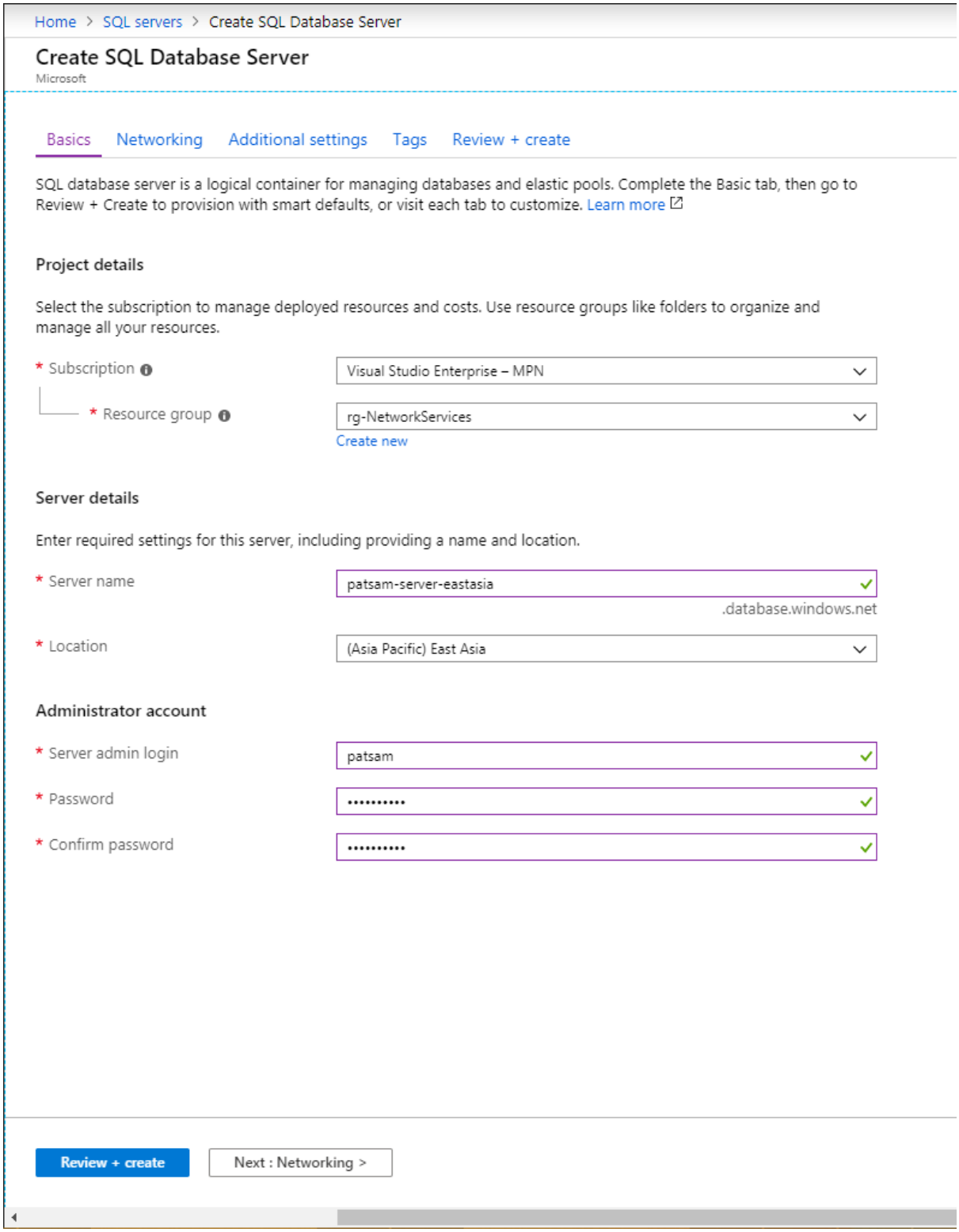
- Resource group: rg-NetworkServices
- Azure SQL Server: patsam-server-centralus
- Azure SQL Database: patsam-database-centralus

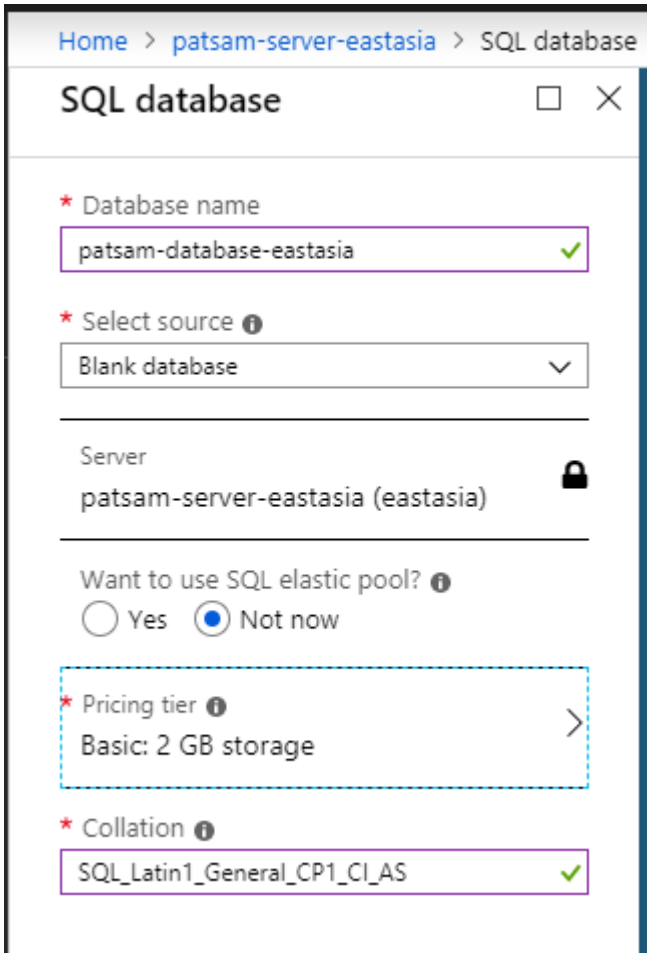



Home > patsam-server-centralus > SQL database
SQL database
* Database name
patsam-database-centralus
* Select source
Blank database
Server
patsam-server-centralus (central...
Want to use SQL elastic pool?
Yes
Not now
* Pricing tier
Basic: 2 GB storage
* Collation
SQL_Latin1_General_CP1_CI_AS

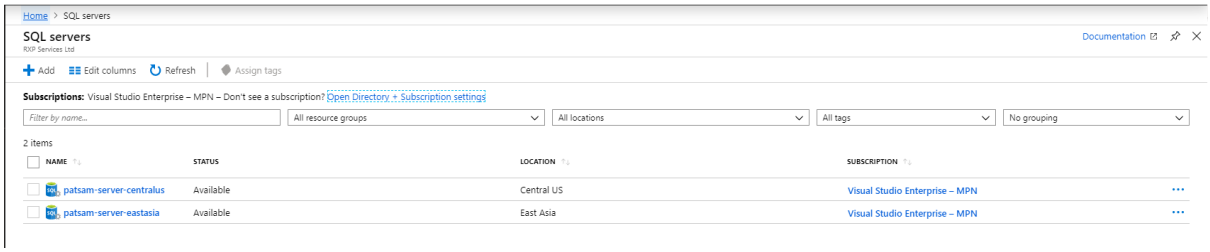
Create the second SQL Server/Database in East Asia region.

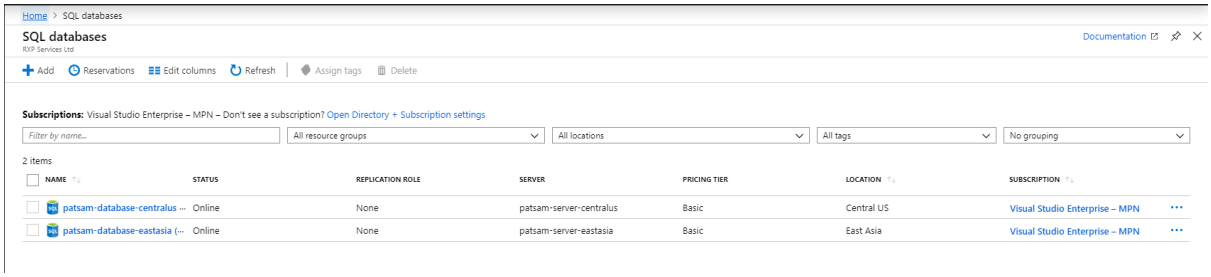
- Resource group: rg-NetworkServices
- Azure SQL Server: patsam-server-eastasia
- Azure SQL Database: patsam-database- eastasia





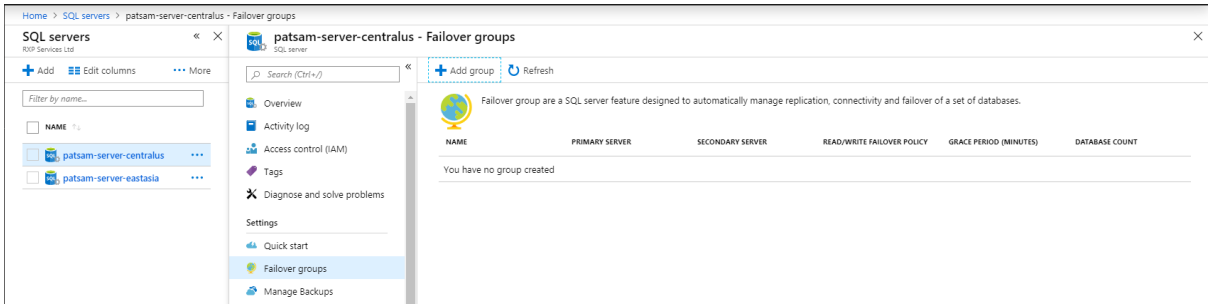
Now we can see the 2 SQL Server/SQL database instances we created.





Next go to one of the SQL Servers and create a Failover Group. I selected “patsam-server-centralus”.

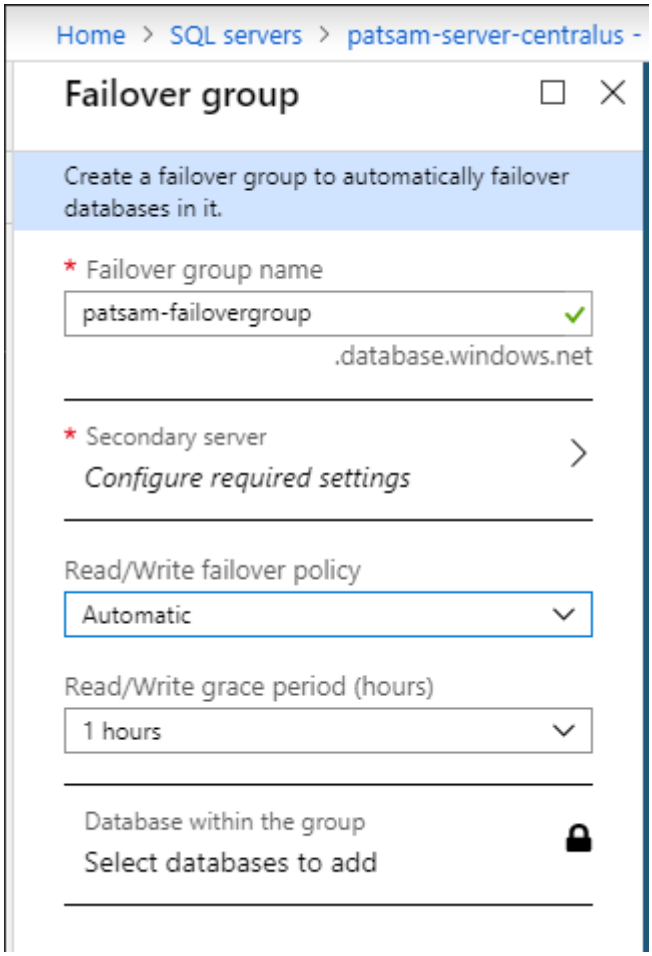
SQL Server → Failover Groups

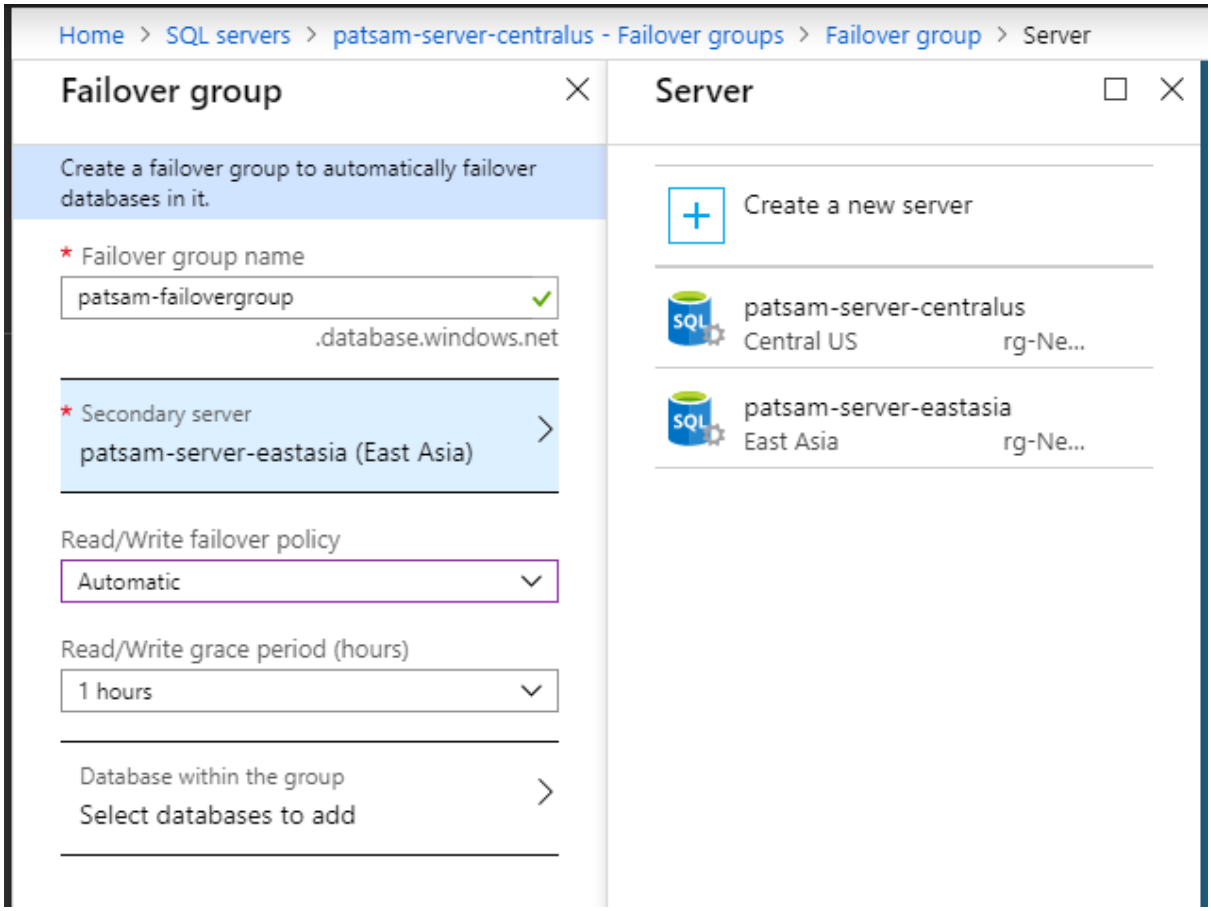


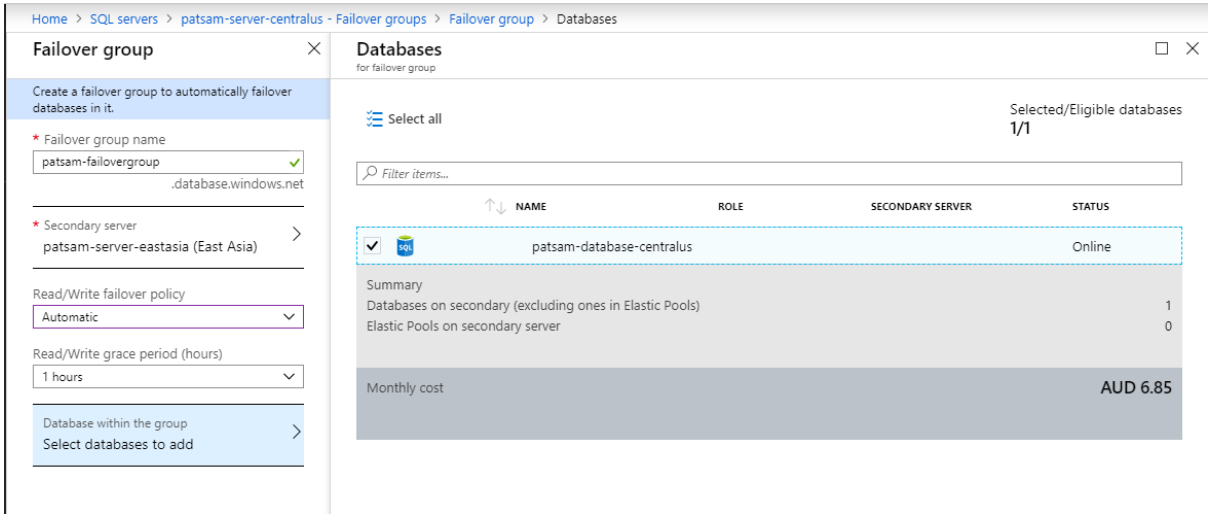
Click + Add Group

- Failover group: patsam-failovergroup
- Secondary server: Click Configure Required Settings and add the other SQL Server we created in East Asia region
- Failover policy: Automatic
- Grace period: 1 hour
- Selected database: Database on Central US

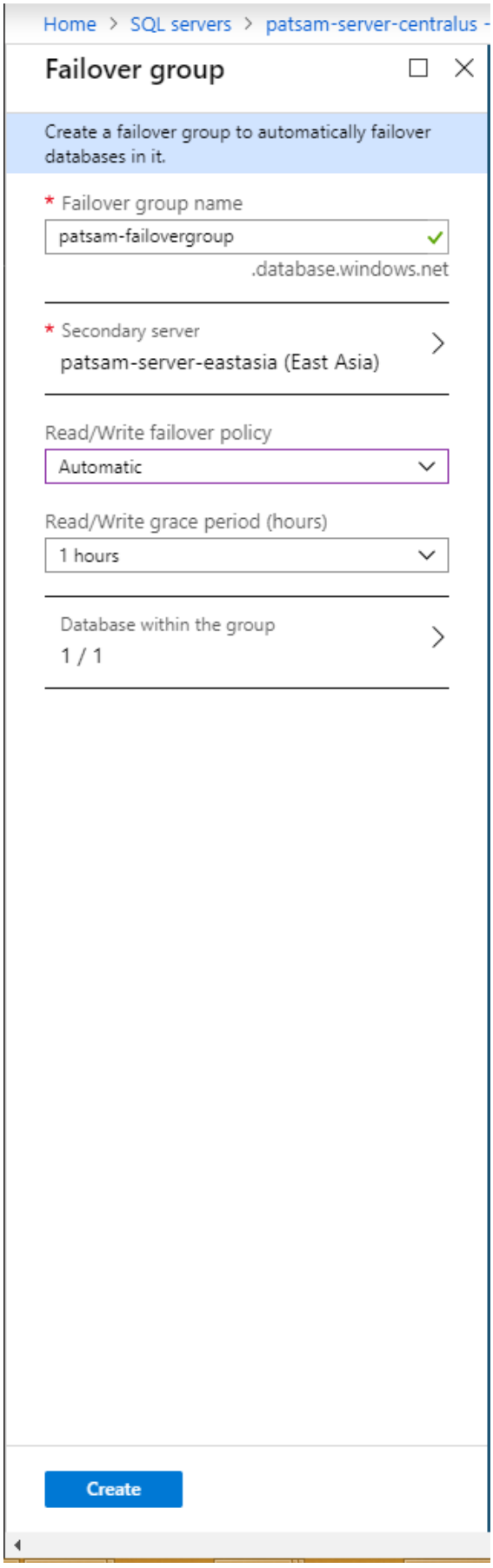
** Grace Period: If in case primary server goes down then it will wait for Grace Period time we have selected before initiating the Failover.



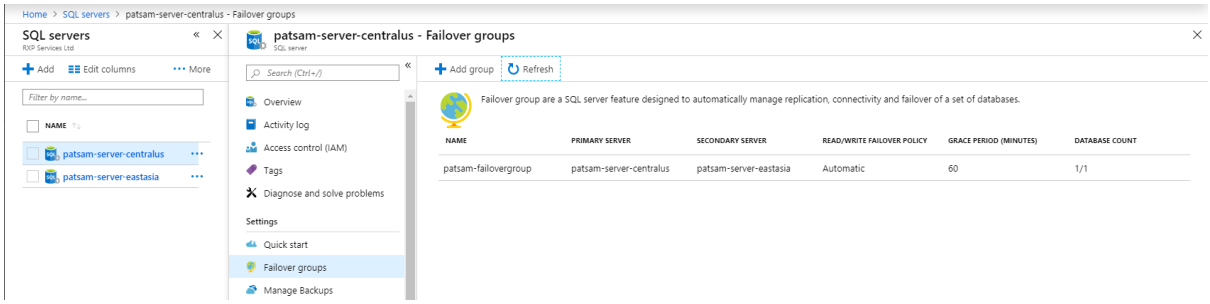

Home > SQL servers > patsam-server-centralus - Failover groups > Failover group > Server
Failover group
Create a failover group to automatically failover databases in it.
* Failover group name
patsam-failovergroup
.database.windows.net
* Secondary server
patsam-server-eastasia (East Asia)
Read/Write failover policy
Automatic
Read/Write grace period (hours)
1 hours
Database within the group
Select databases to add
Server
Create a new server
patsam-server-centralus
Central US
rg-Ne...
patsam-server-eastasia
East Asia
rg-Ne...


Home > SQL servers > patsam-server-centralus - Failover groups > Failover group > Databases
Failover group
Create a failover group to automatically failover databases in it.
* Failover group name
patsam-failovergroup
.database.windows.net
* Secondary server
patsam-server-eastasia (East Asia)
Read/Write failover policy
Automatic
Read/Write grace period (hours)
1 hours
Database within the group
Select databases to add
Databases
for failover group
Select all
Selected/Eligible databases
1/1
Filter items...
NAME
ROLE
SECONDARY SERVER
STATUS
patsam-database-centralus
Online
Summary
Databases on secondary (excluding ones in Elastic Pools)
1
Elastic Pools on secondary server
0
Monthly cost
AUD 6.85

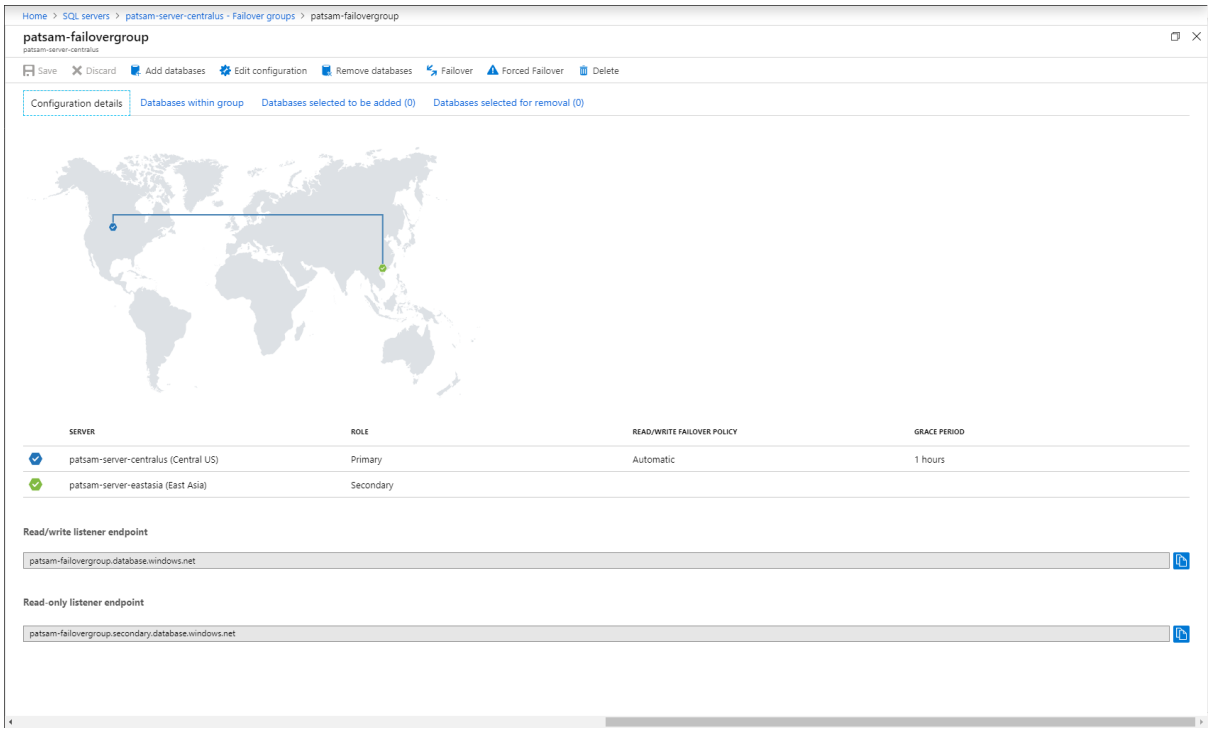
Click Create.



We can see the newly created Failover Group.



Click on it and go inside it.



We can see 2 server roles:

- Primary: patsam-server-centralus (Central US)
- Secondary: patsam-server-eastasia (East Asia)

It has 2 end points:

- Read/Write endpoint: patsam-failovergroup.database.windows.net
- Read only endpoint: patsam-failovergroup.secondary.database.windows.net

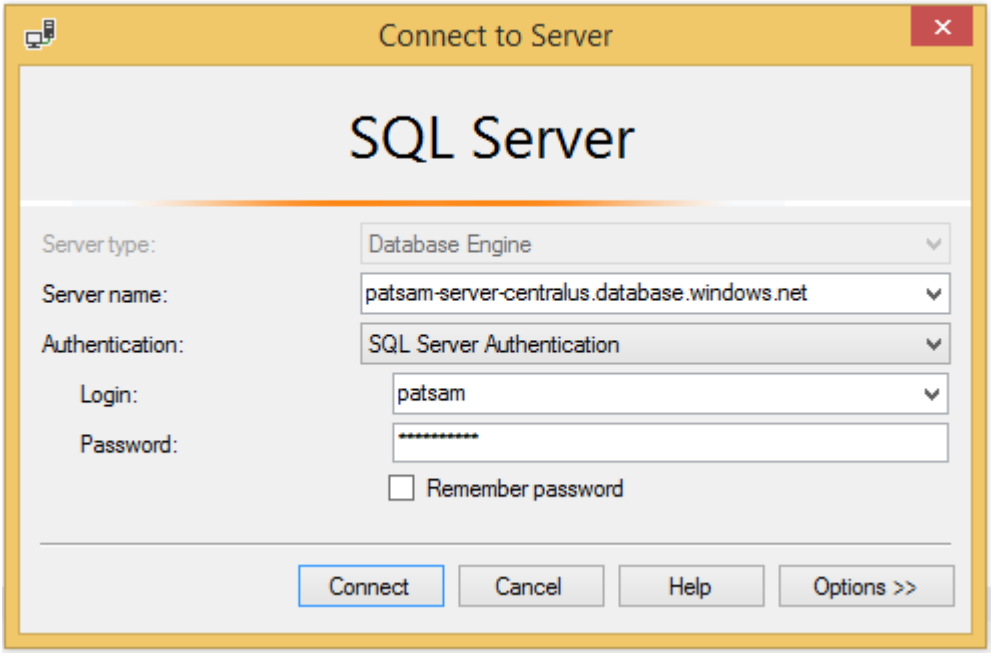
We will be using these endpoints to connect to the Database.

Step 02: Testing Failover End Points through SQL Server Management

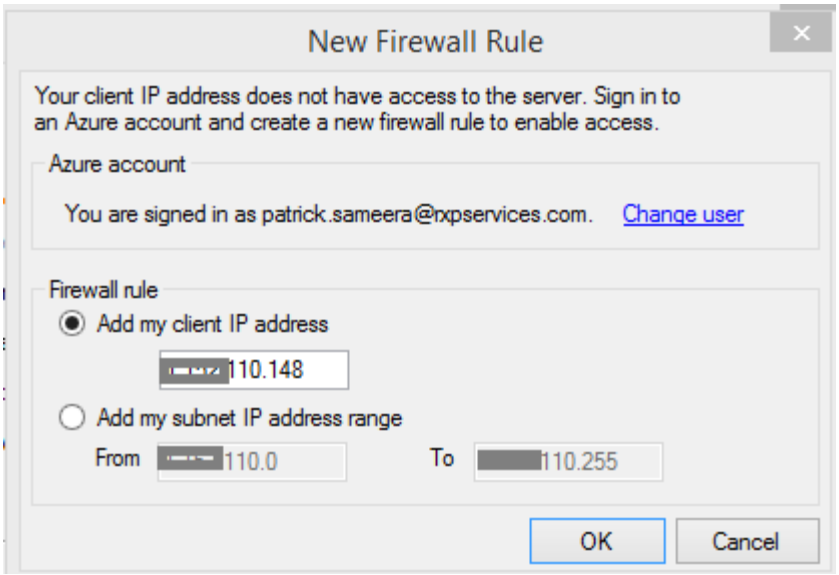
As the first step, try to connect to each Database on each Server separately and make sure we have access to those Databases.

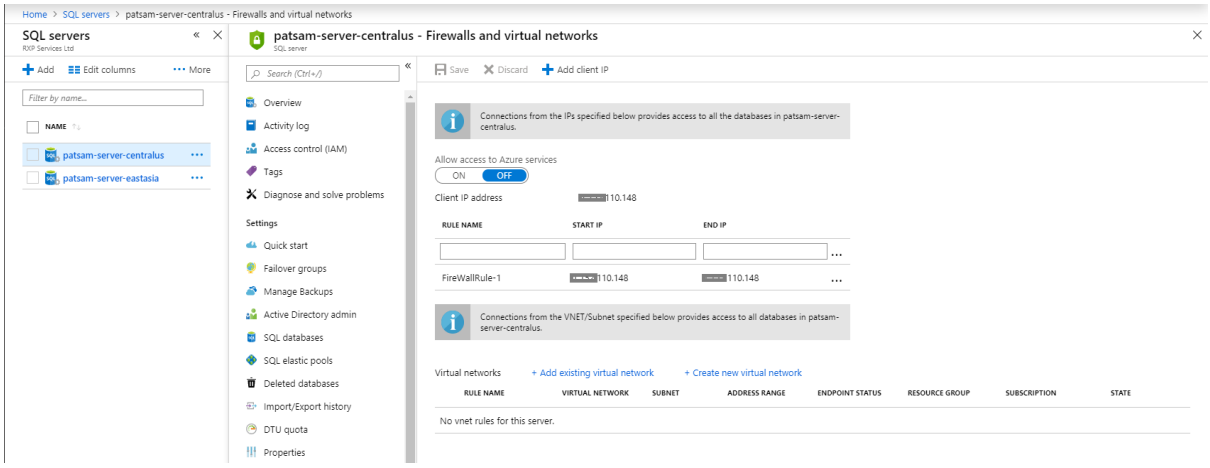
First try to connect to patsam-server-centralus Server.

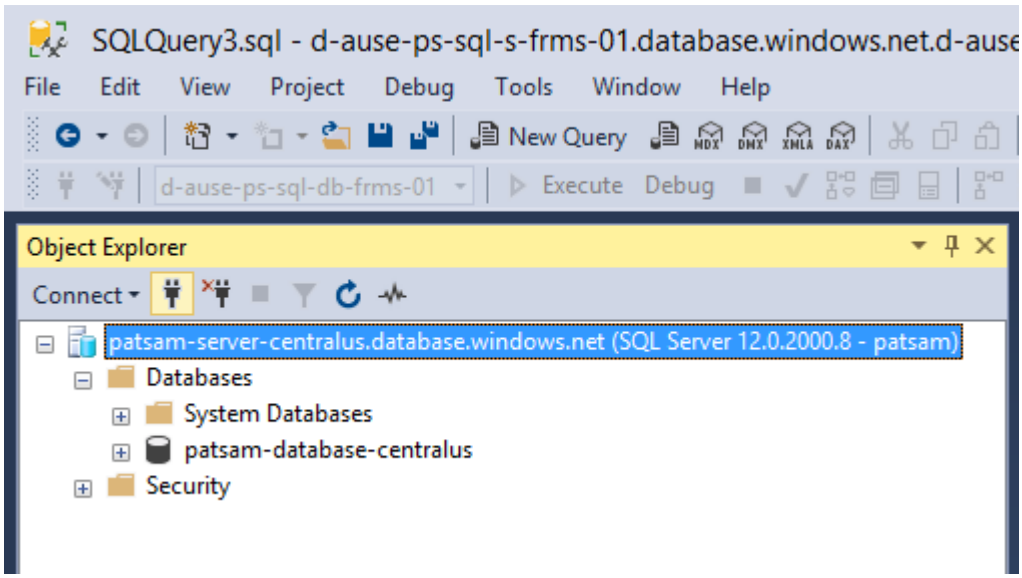
- Server name: patsam-server-centralus.database.windows.net



If you been asked to add a New Firewall Rule, make sure you add a one.

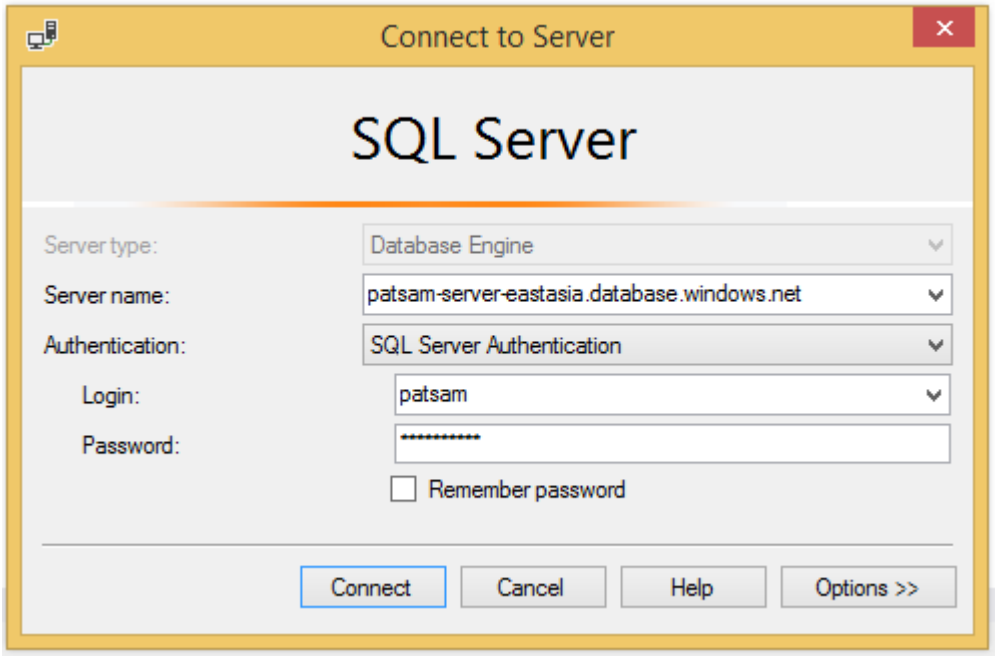


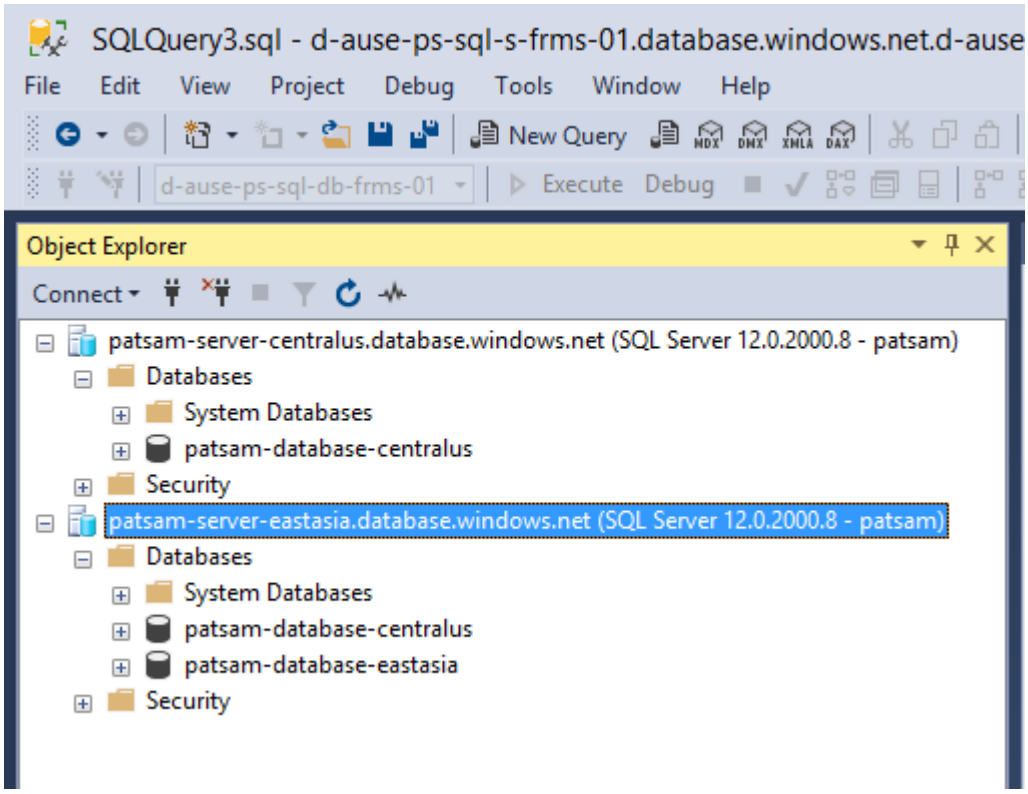




Same way try to connect to patsam-server-eastasia Server.

- Server name: patsam-server-eastasia.database.windows.net

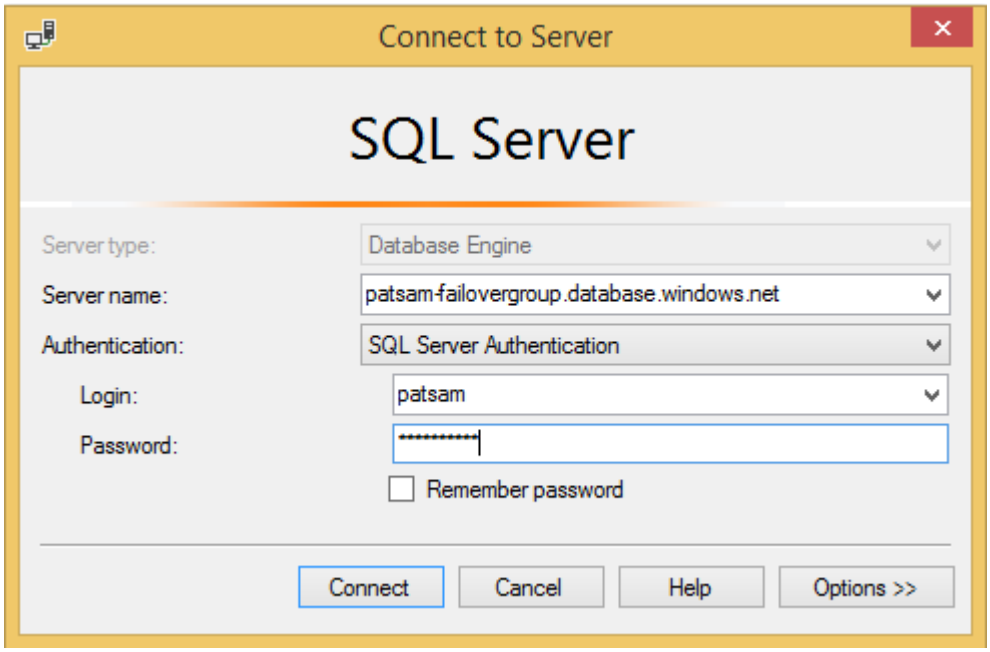




Once we make sure we can connect to each Database, next we need to try connecting to them through Failover Group end points.

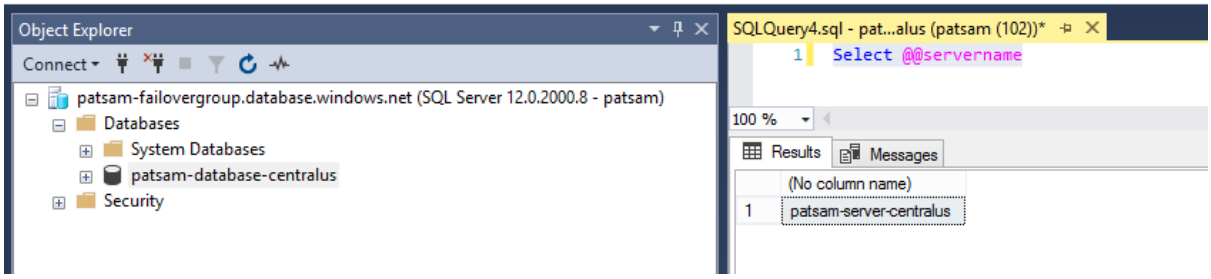
First try to connect through the Read/Write endpoint.

- patsam-failovergroup.database.windows.net



Once you connect to it, run bellow SQL Query to find out the Server Name.

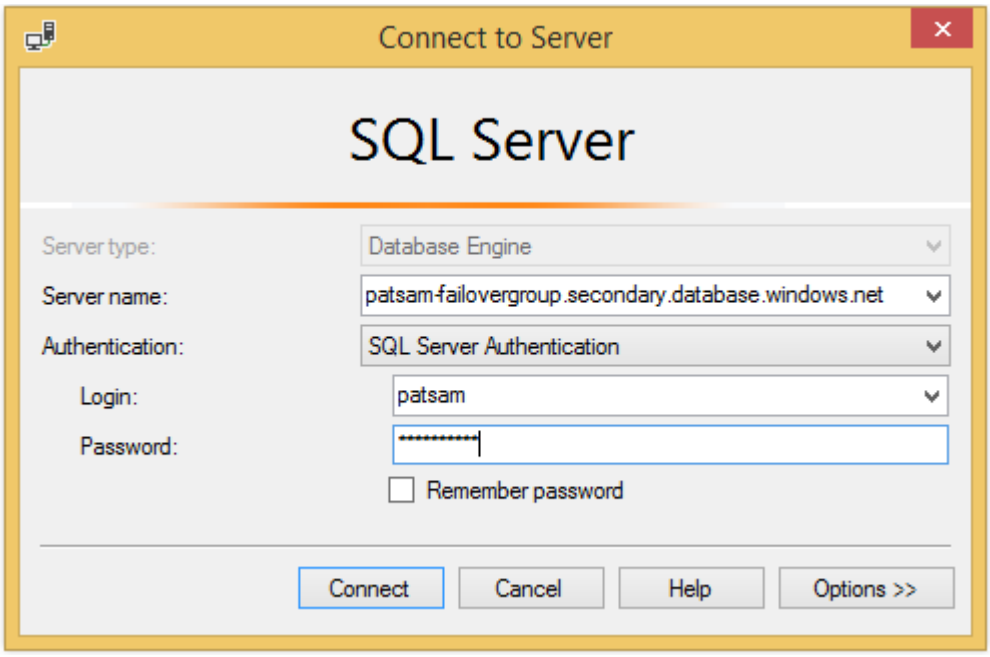
```
Select @@servername
```



It gives the result as “patsam-server-centralus”. Which is correct. Because it is the Primary Database.

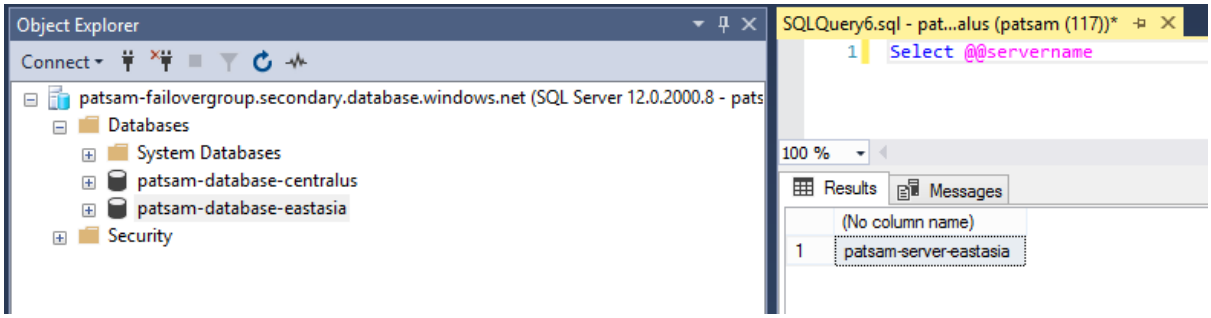
As the second step try to connect through the Read-only endpoint.

- patsam-failovergroup.secondary.database.windows.net



Once you connect to it run bellow SQL Query to find out the Server Name.

```
Select @@servername
```



It gives the result as “patsam-server-eastasia”. Which is correct. Because it is the Secondary Database.

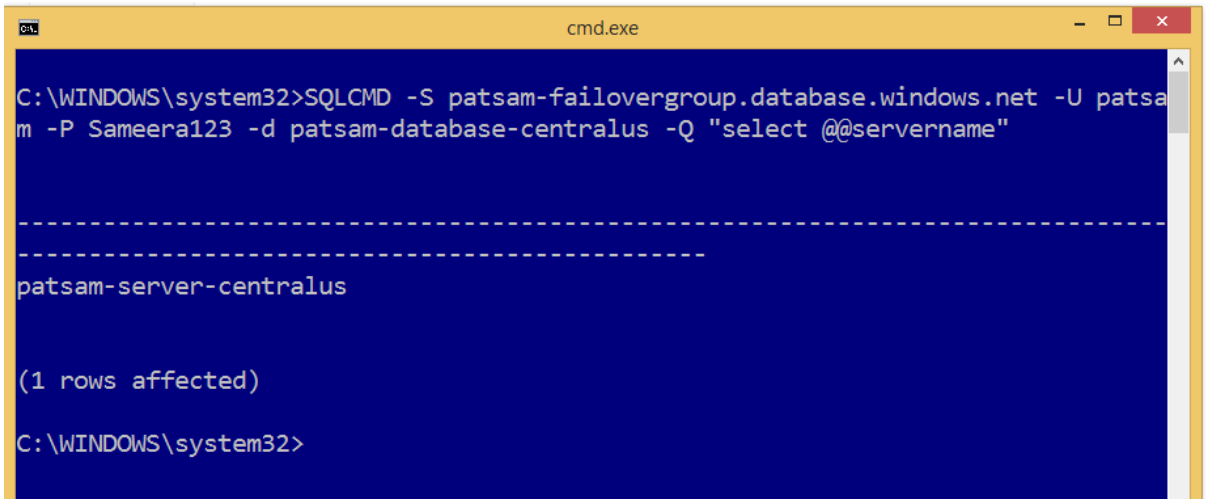
Step 03: Testing Failover End Points through Command Prompt

First through the Read/Write endpoint.

- patsam-failovergroup.database.windows.net

Run bellow command on Command Prompt.

SQLCMD -S patsam-failovergroup.database.windows.net -U patsam -P Sameera123 -d patsam-database-centralus -Q "select @@servername"

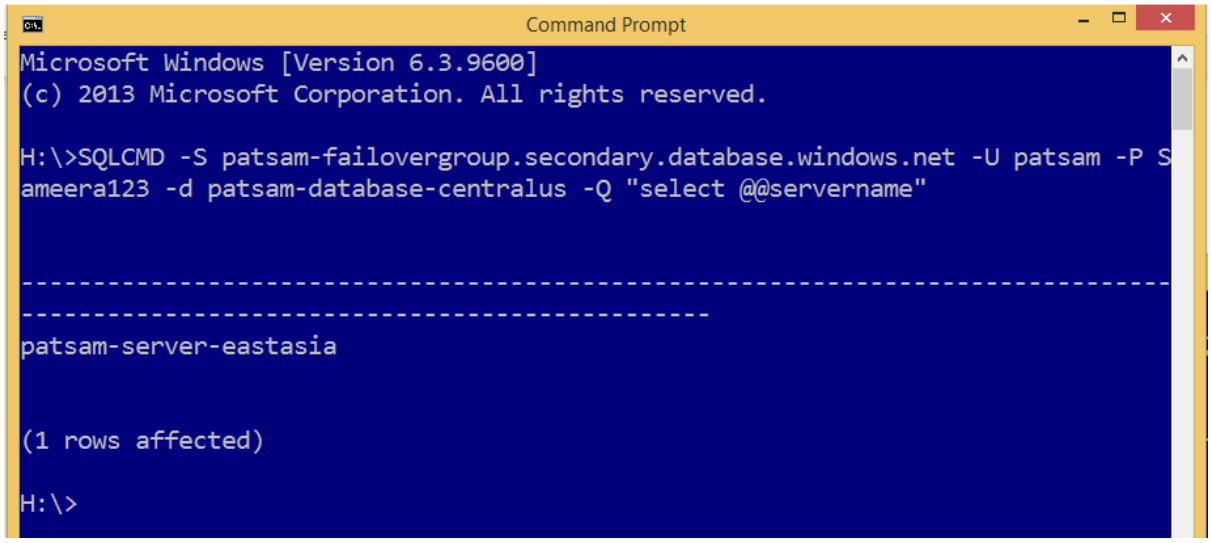


Next try to connect through the Read-only endpoint.

- patsam-failovergroup.secondary.database.windows.net

Run bellow command on Command Prompt.

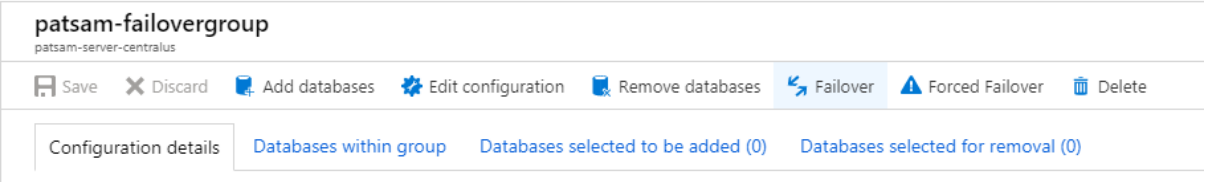
SQLCMD -S patsam-failovergroup.secondary.database.windows.net -U patsam -P Sameera123 -d patsam-database-centralus -Q "select @@servername"



Step 04: Make a Failover

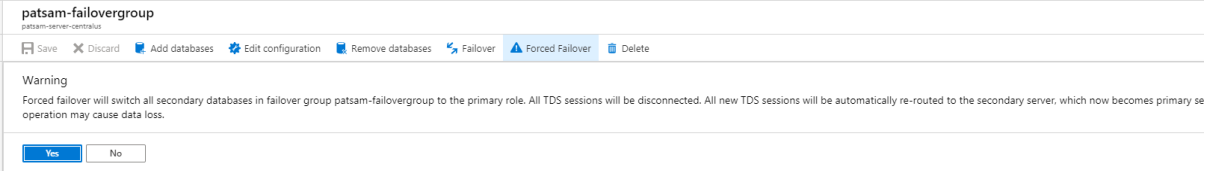
There are 2 ways to do Failover.

- Failover
- Forced Failover

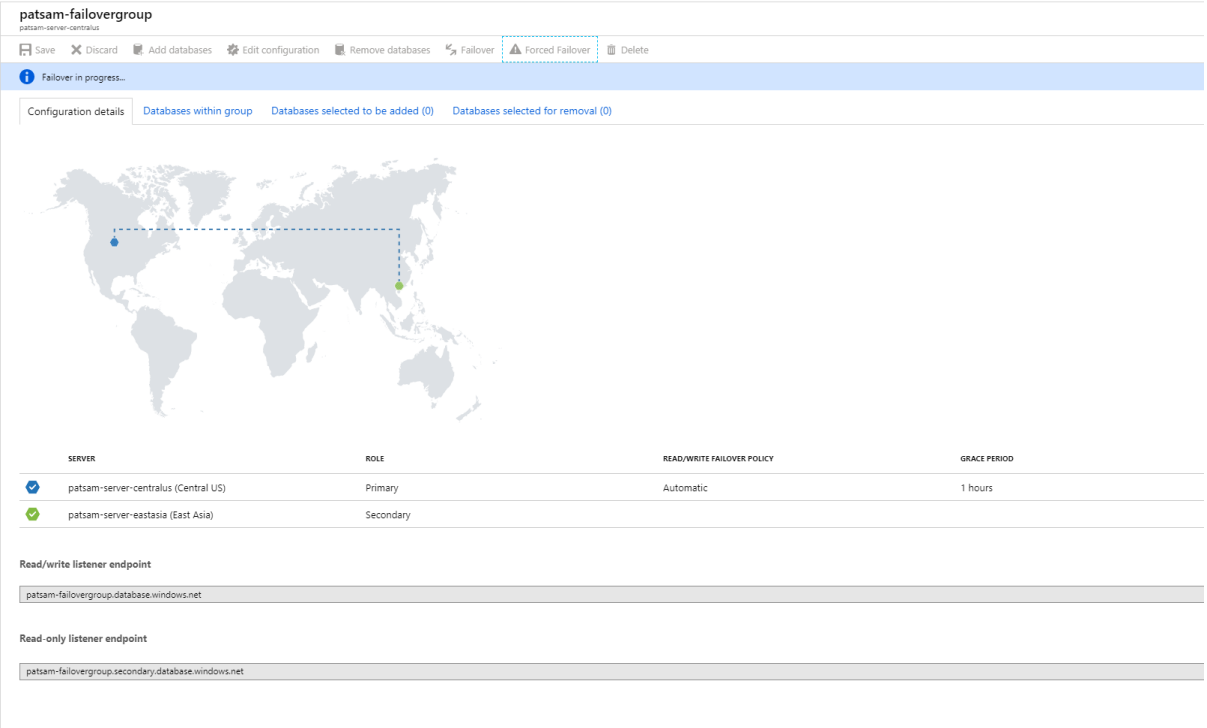


In my case I'm going to do "Forced Failover" because it going to Failover right away.

Click on Forced Failover.



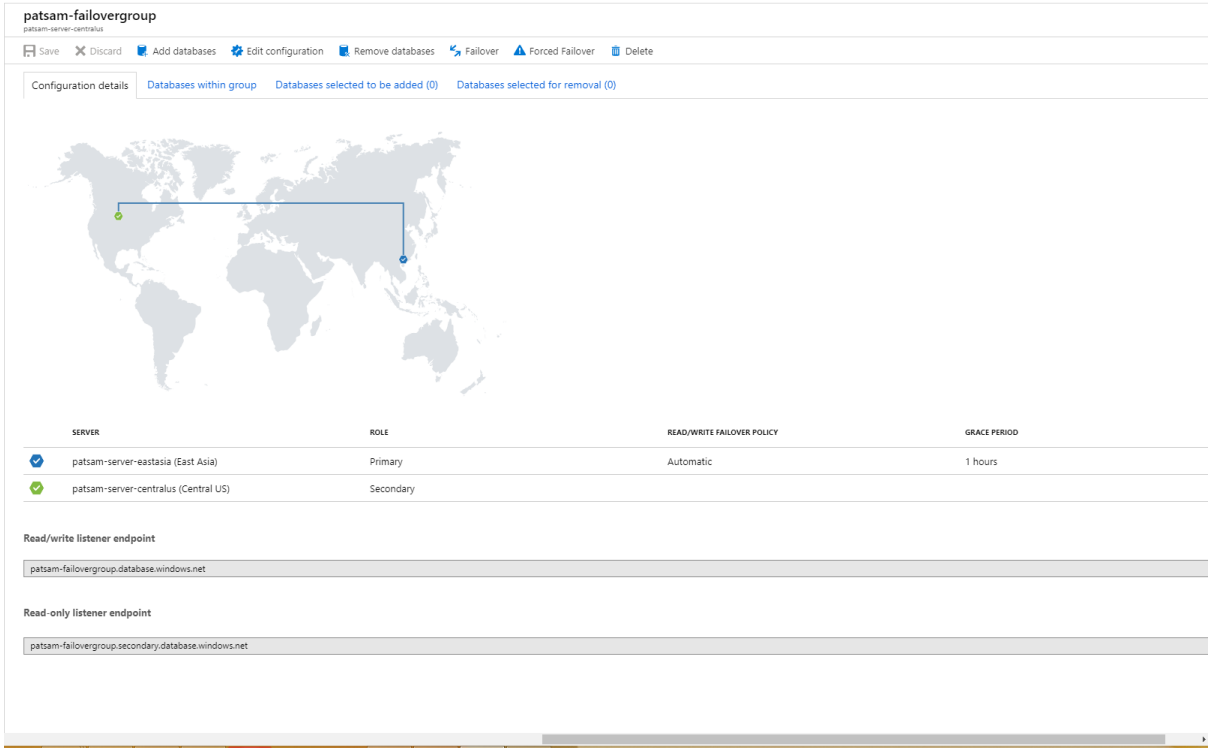
When it's doing the Failover, it will display on the map with a dotted line.



Once it completes notice Primary/Secondary roles gets swapped.

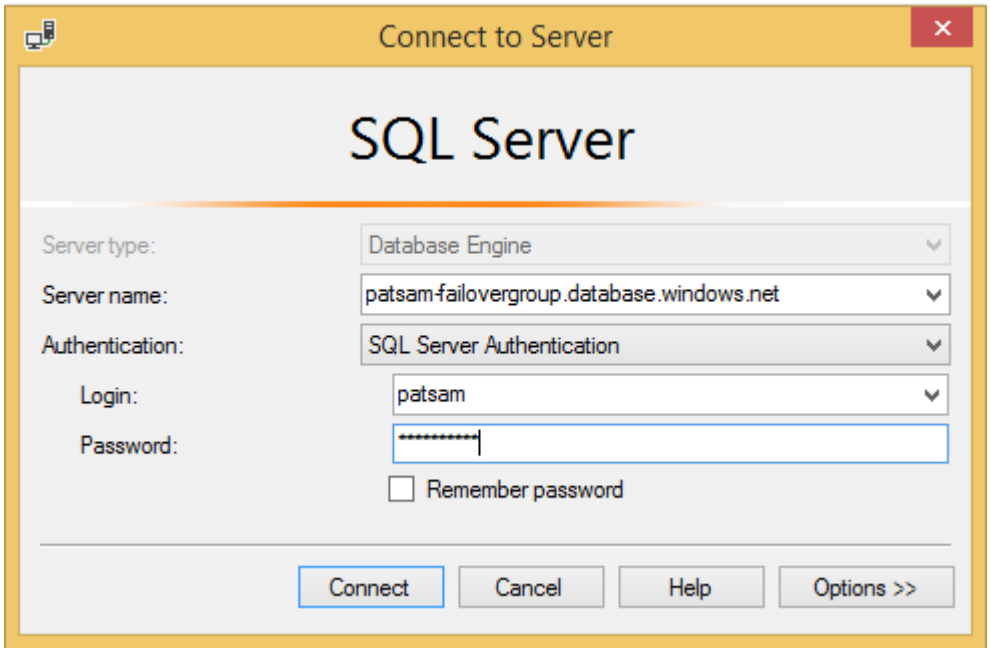
- Read/Write endpoint: patsam-server-eastasia
- Read-only endpoint: patsam-server-centralus

SERVER	ROLE
patsam-server-eastasia (East Asia)	Primary
patsam-server-centralus (Central US)	Secondary



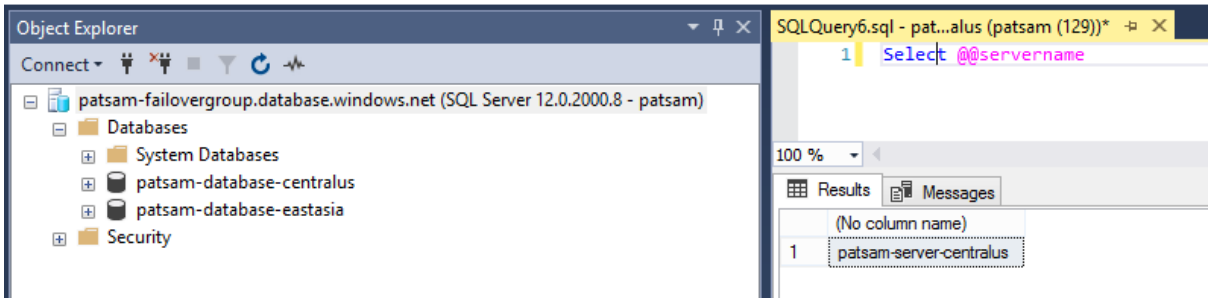
Now again try to connect through the Read/Write endpoint.

- patsam-failovergroup.database.windows.net



Once you connect to it run bellow SQL Query to find out the Server Name.

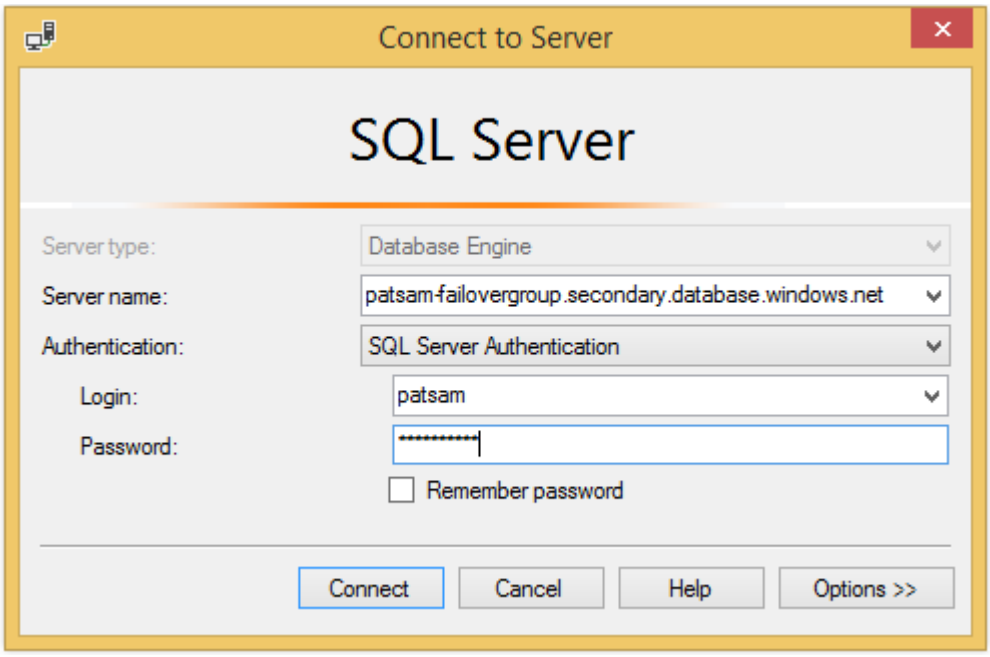
```
Select @@servername
```



It gives the result as “patsam-server-centralus”. Which is correct. Because it is the Primary Database now after the Failover.

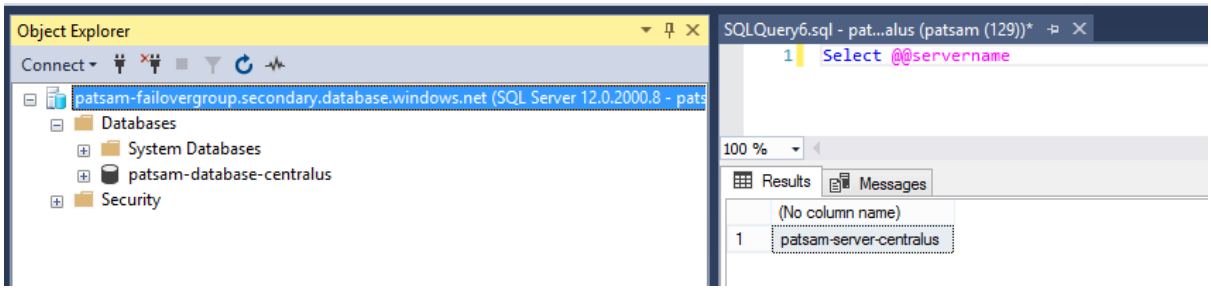
Next try to connect through the Read-only endpoint.

- patsam-failovergroup.secondary.database.windows.net



Once you connect to it run bellow SQL Query to find out the Server Name.

```
Select @@servername
```



It gives the result as “patsam-server-centralus”. Which is correct. Because it is the Secondary Database now after the Failover.