Connecting to Azure SQL Database

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

- Connect to SQL Server Database through Query Editor on Azure Portal
- Configure Firewall Rules
- Run SQL queries on Query Editor
- Connect to SQL Database through SQL Server Management Studio
- Add Virtual Network to SQL Server Firewall Rules
- Set Azure Active Directory Admin

Important:

This tutorial is Part 3, of a series of tutorials. And this one id dependent on Part 1.

- *Part 1: Create an Azure SQL Database*
- *Part 2: Connecting to Azure SQL Database*
- *Part 3: Enabling Geo Replication on Azure SQL Server Database*

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Step 01: Connect to SQL Server Database through Query Editor on Azure Portal

Under Resource Group "rg-NetworkServices" we have a SQL Server and a SQL Database.

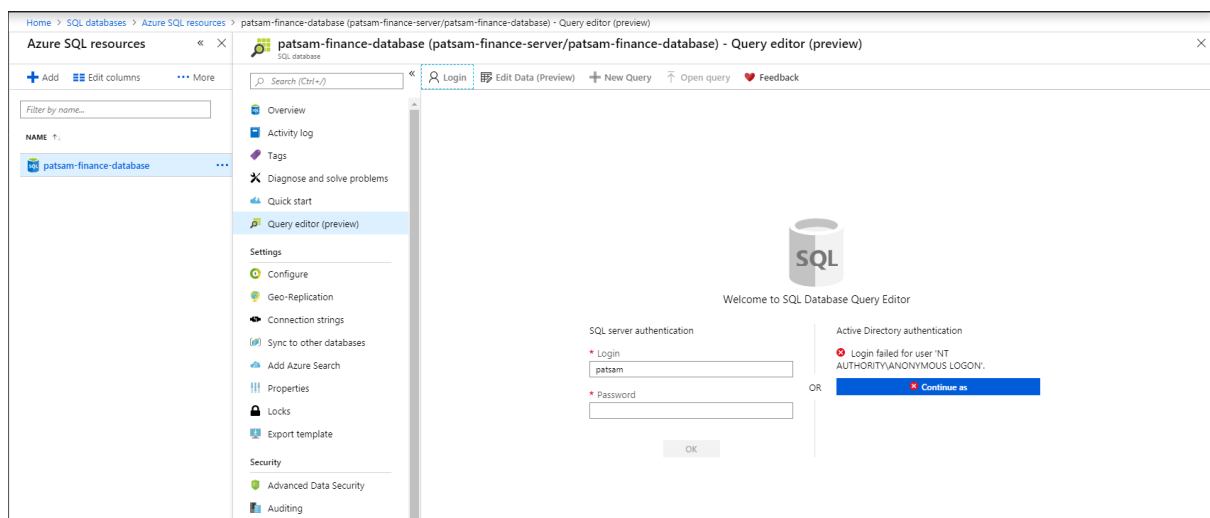(We will be using resources we created on our previous tutorial)
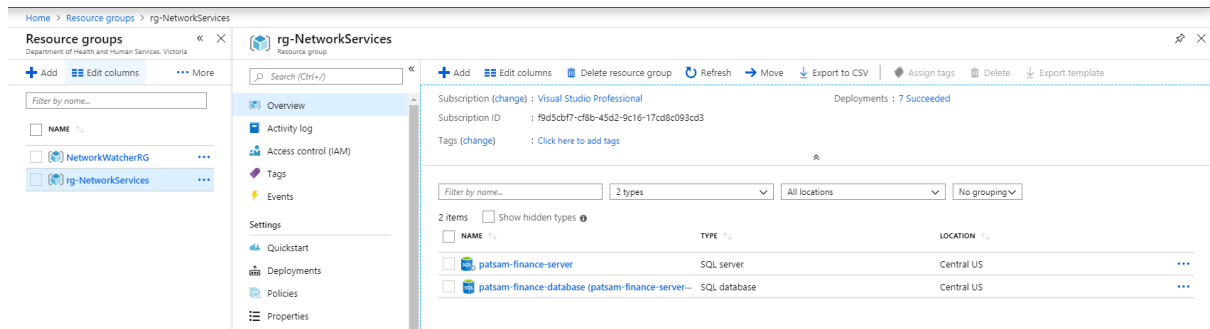
Click on the SQL Server Database we created: patsam-finance-database

Click on Query Editor tab.

There are 2 ways to connect to this Database:

- SQL Server Authentication
- Active Directory Authentication

First, we are going to login using SQL Server Authentication.

Login details:

- Username/Password (this will be the Administration Account details we provided when creating the SQL Server instance)

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Create SQL Database Server

Microsoft

Basics   Networking   Additional settings   Tags   Review + create

SQL database server is a logical container for managing databases and elastic pools. Complete the Basic tab, then go to Review + Create to provision with smart defaults, or visit each tab to customize. Learn more ☒

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription ℹ️ | Visual Studio Professional   ∨ |

       * Resource group ℹ️ | rg-NetworkServices   ∨ |

                              Create new

Server details

Enter required settings for this server, including providing a name and location.
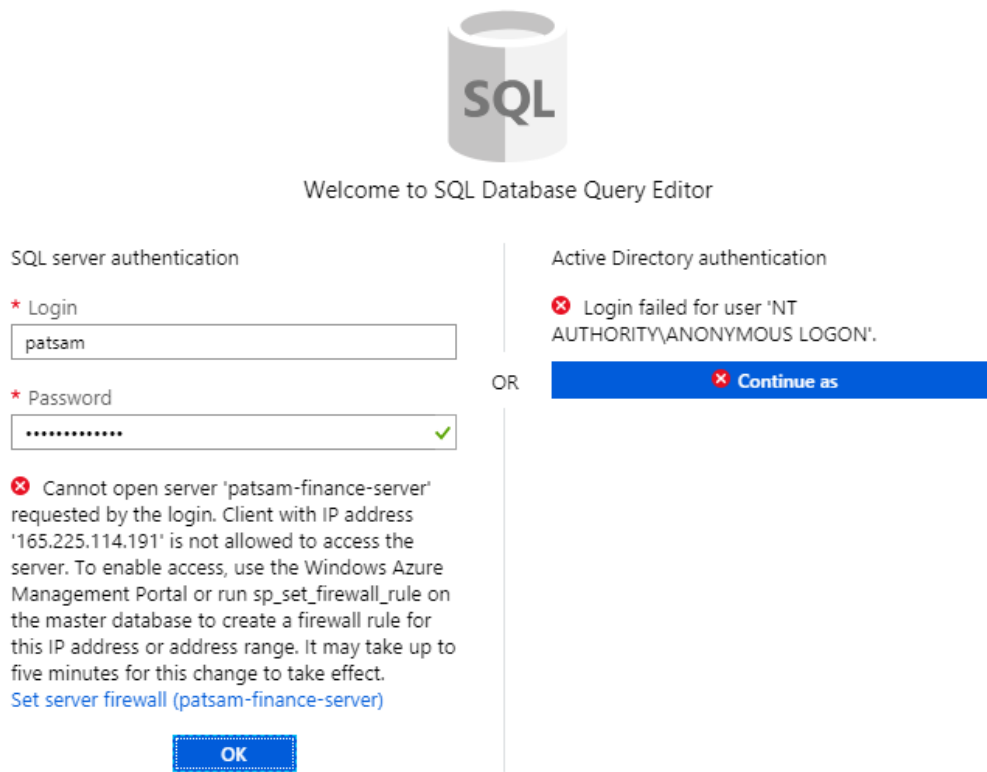
* Server name | patsam-finance-server   ✓ |

                                    .database.windows.net

* Location | (US) Central US   ∨ |

Administrator account

* Server admin login | patsam   ✓ |

* Password | ••••••••••••   ✓ |

* Confirm password | ••••••••••••   ✓ |

Review + create   Next : Networking >

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Enter the Username/Password and click OK.

It will give bellow error:

Cannot open server 'patsam-finance-server' requested by the login. Client with IP address '165.225.114.191' is not allowed to access the server. To enable access, use the Windows Azure Management Portal or run sp_set_firewall_rule on the master database to create a firewall rule for this IP address or address range. It may take up to five minutes for this change to take effect.

*Set server firewall (patsam-finance-server)*

This is because by default Azure won't allow to access this Database to any external party. To overcome this issue, we need to add a new Firewall rule to allow accessing this Database.

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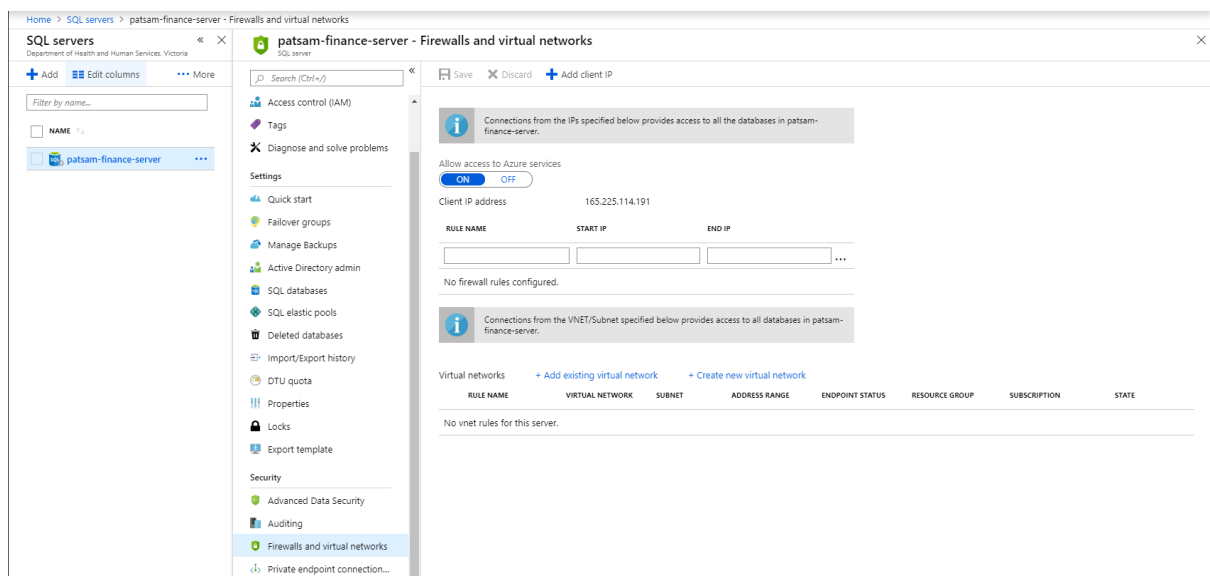
Step 02: Configure Firewall Rules

In the above error, specifically it says:

Client with IP address '165.225.114.191' is not allowed to access the server.

To add a Firewall rule, click on the SQL Server: patsam-finance-server
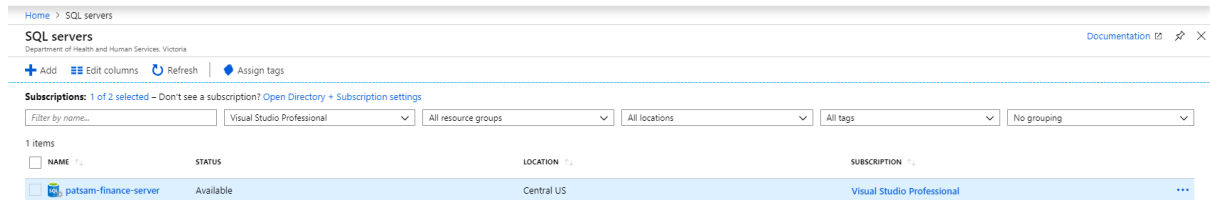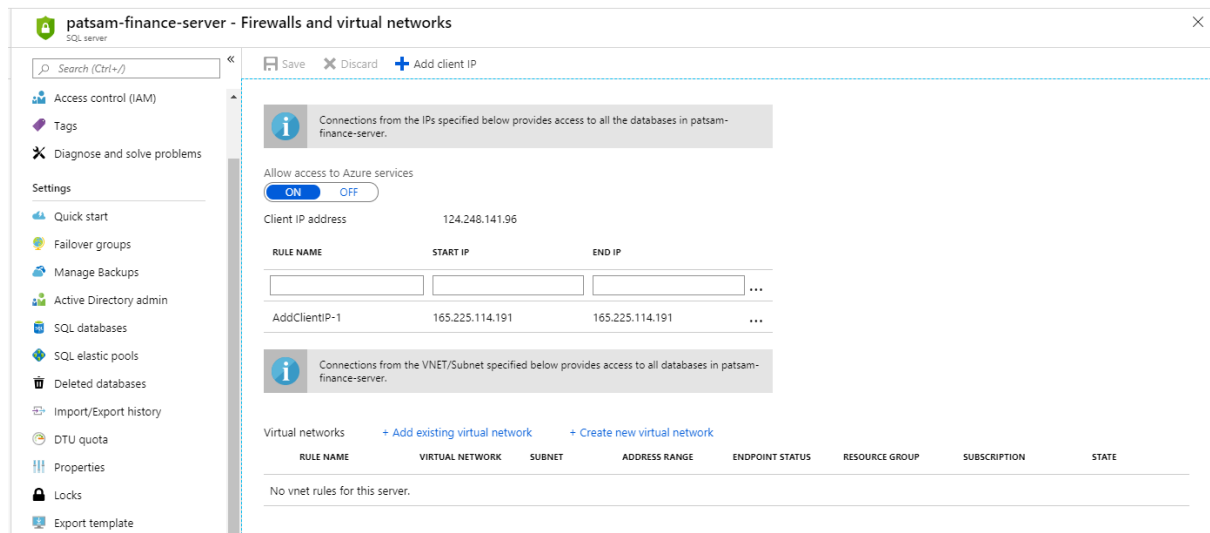

Go to Firewalls and Virtual Networks tab.

Add the IP Address which we need to give access to the Firewall Rules.
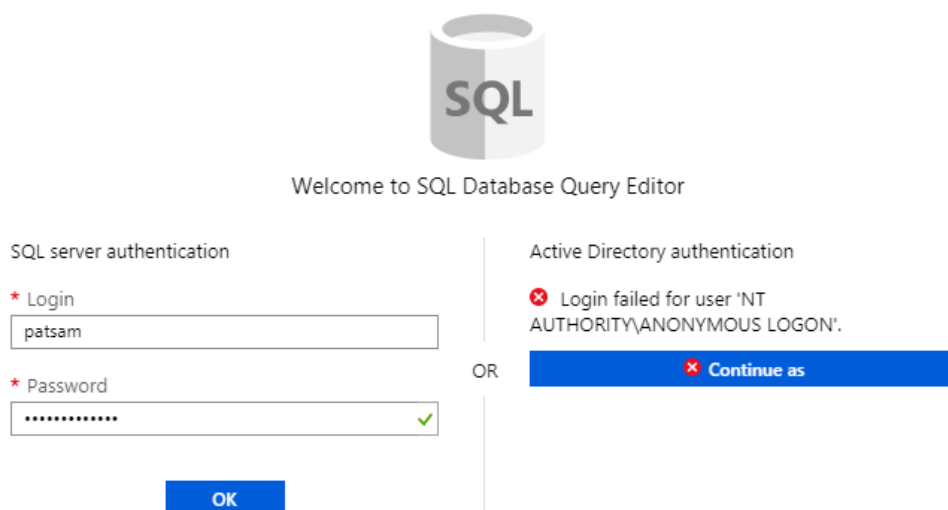
- Rule Name: AddClientIP-1
- Start IP: 165.225.114.191
- End IP: 165.225.114.191

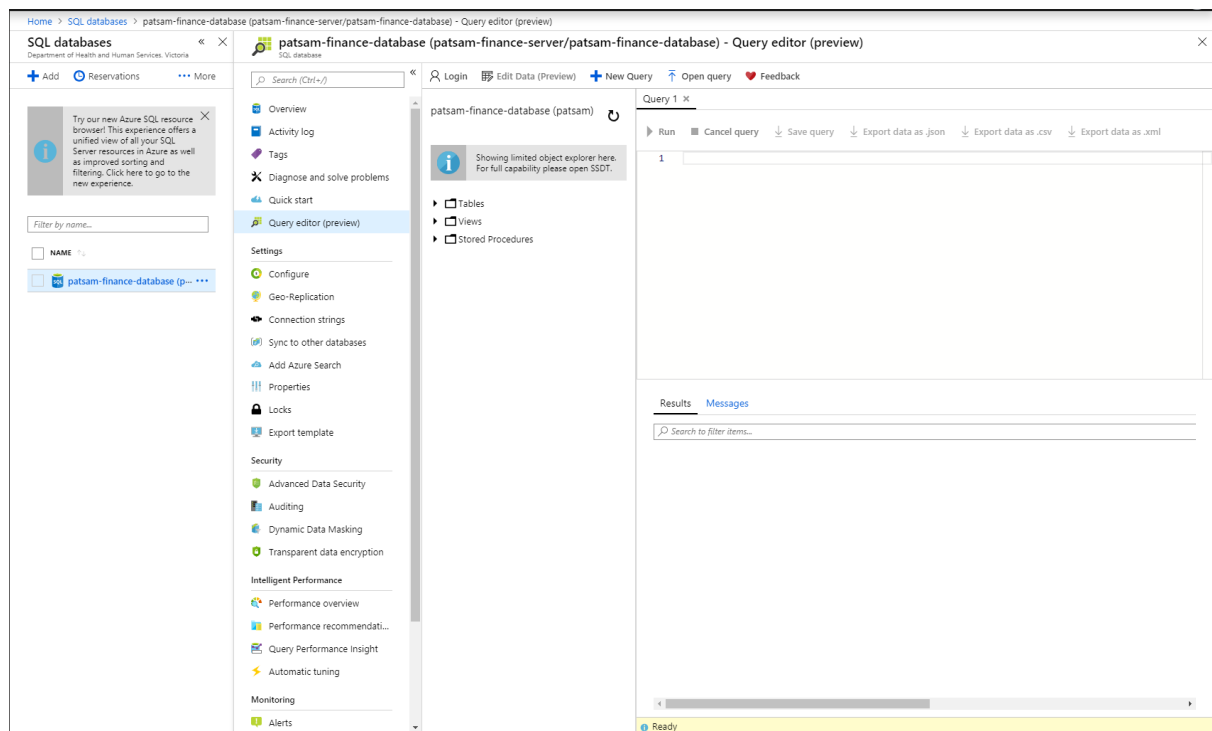Click Save button.

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Now go back to SQL Database and try to connect database through SQL Query Editor.

Enter Username/Password and click OK.

This time we can connect to SQL Query Editor successfully.

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SQL databases
Department of Health and Human Services. Victoria

+ Add   ⊙ Reservations   ••• More

Try our new Azure SQL resource browser! This experience offers a unified view of all your SQL Server resources in Azure as well as improved sorting and filtering. Click here to go to the new experience.

Filter by name...

☐ NAME

☐ 🗄 patsam-finance-database (p-•• •••

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patsam-finance-database (patsam-finance-server/patsam-finance-database) - Query editor (preview)
SQL database

⊗ Login   ⊞ Edit Data (Preview)   + New Query   ⬆ Open query   ❤ Feedback

Search (Ctrl+/)

patsam-finance-database (patsam)   ↻

ℹ Showing limited object explorer here. For full capability please open SSDT.

▸ ☐ Tables
▸ ☐ Views
▸ ☐ Stored Procedures

- 📄 Overview
- 📋 Activity log
- 🏷 Tags
- 🔧 Diagnose and solve problems
- ⚡ Quick start
- 🔑 Query editor (preview)

Settings
- ⚙ Configure
- 📍 Geo-Replication
- 🔌 Connection strings
- 📲 Sync to other databases
- ☁ Add Azure Search
- ⚏ Properties
- 🔒 Locks
- 📤 Export template

Security
- 🛡 Advanced Data Security
- 🔲 Auditing
- 🔳 Dynamic Data Masking
- 🛡 Transparent data encryption

Intelligent Performance
- 📊 Performance overview
- 📈 Performance recommendati...
- 📉 Query Performance Insight
- ⚡ Automatic tuning

Monitoring
- 🔔 Alerts

Query 1 ✕

▸ Run   ◼ Cancel query   ⬇ Save query   ⬇ Export data as .json   ⬇ Export data as .csv   ⬇ Export data as .xml

1 │

Results   Messages

Search to filter items...

ℹ Ready

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Step 03: Run SQL queries on SQL Query Editor

So now we are connected to SQL Query Editor, we can view the Tables, Views and Stored Procedures.

Mind you when creating SQL Database, we created sample "AdventureWorksLT" Database.
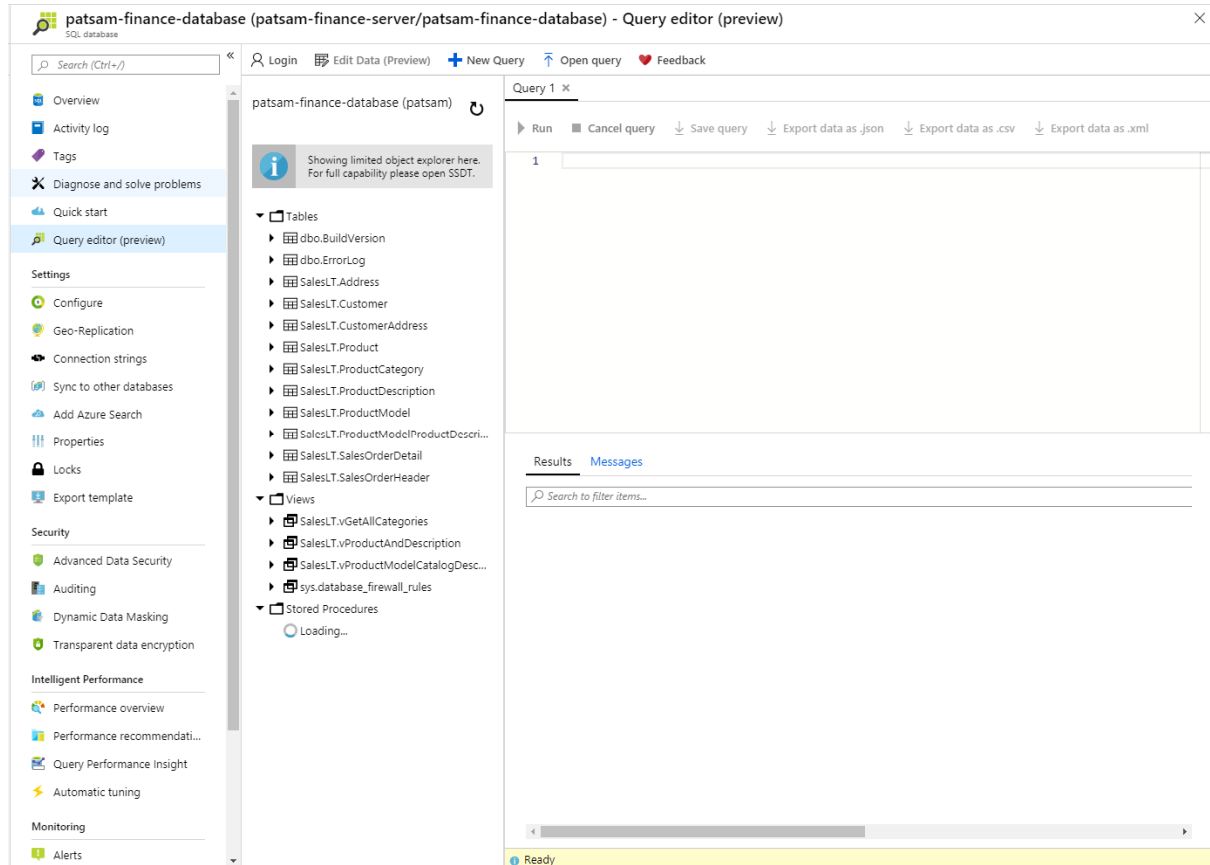
Now we can run queries on SQL Query Editor.

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Run bellow SQL query. We can see the results.

*Select * From SalesLT.Customer*

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Step 04: Connect to SQL Database through SQL Server Management Studio

Click on the SQL Server: patsam-finance-server
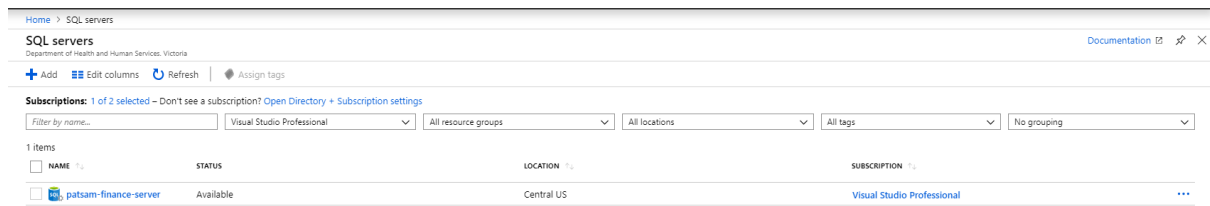
Get Server Name copied: patsam-finance-server.database.windows.net

This gives us the fully qualified server name.
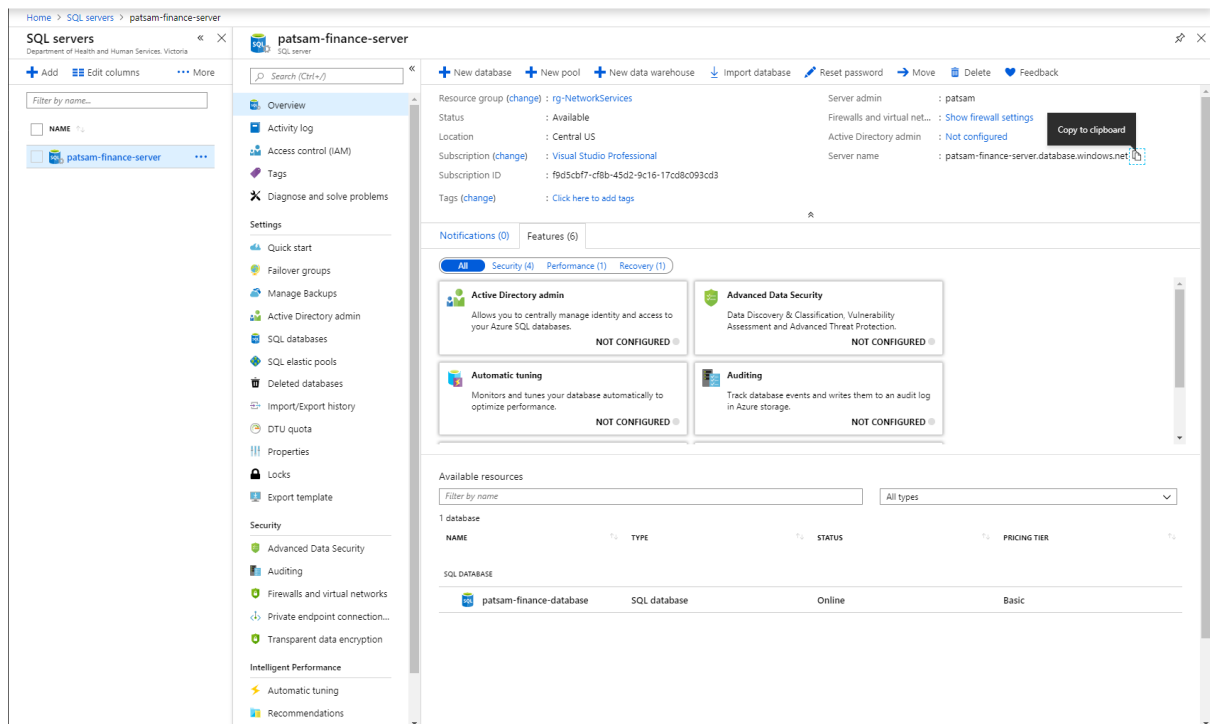
Open SQL Server Management Studio and enter bellow details.

- Server Name: patsam-finance-server.database.windows.net (fully qualified Server name)
- Authentication: SQL Server Authentication
- Username/password (this will be the Administration Account details we provided when creating the SQL Server instance)

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Click Connect button.
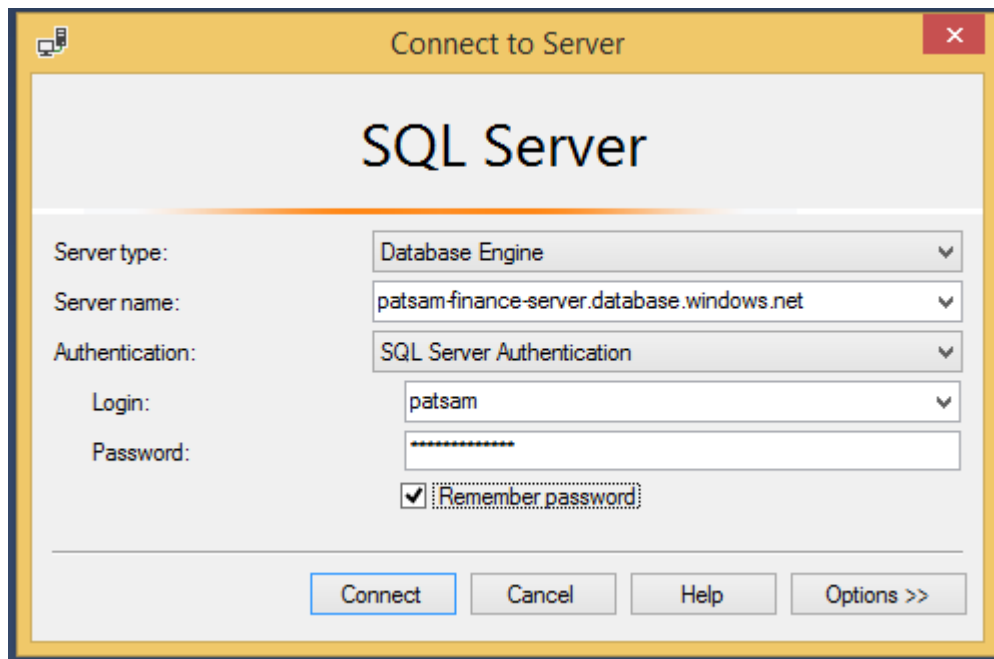
You might get bellow error.
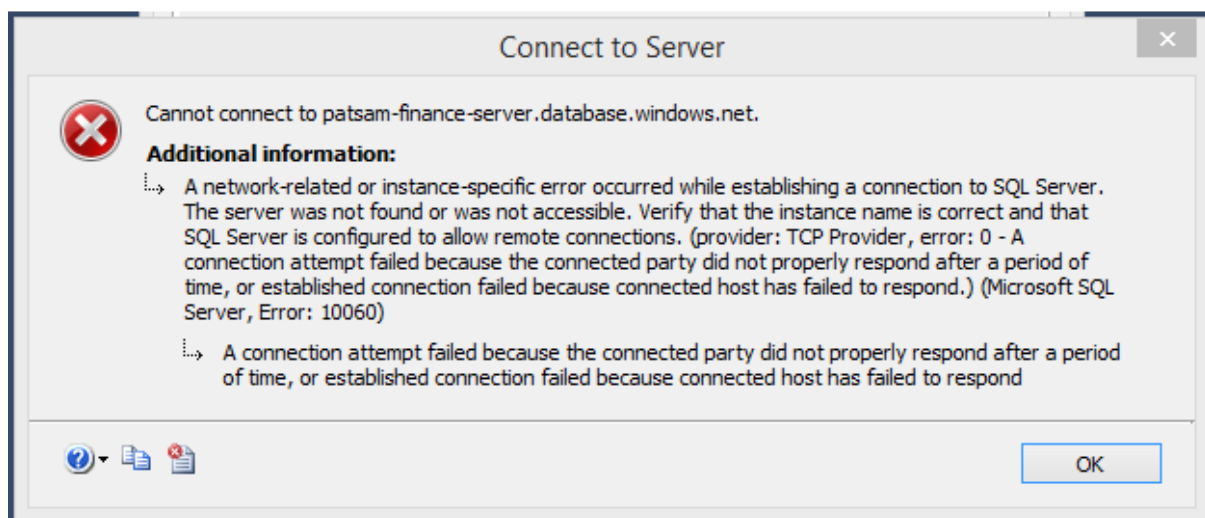
There might be few reasons you might be getting this error. Bellow articles might help you to get it sorted:

https://blogs.msdn.microsoft.com/sqlcloud/2017/07/29/azure-learning-1-connectivity-errors-from-external-network-to-azure-database/

https://blog.sqlauthority.com/2018/02/14/sql-server-unable-connect-sql-server-azure-virtual-machine-ssms-premise-machine/

In my case, company Firewall rules weren't allowing me to connect. So, when I tried connecting from outside it did allow me to connect.

So, when connecting from outside, I might have to create another Firewall rule to allow connecting to my SQL Database.

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Add a new Firewall rule with the new Client IP: 1.152.104.187

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After adding the new Firewall rule, click Connect again on SQL Server Management Studio.

This time we could connect to SQL Database successfully.
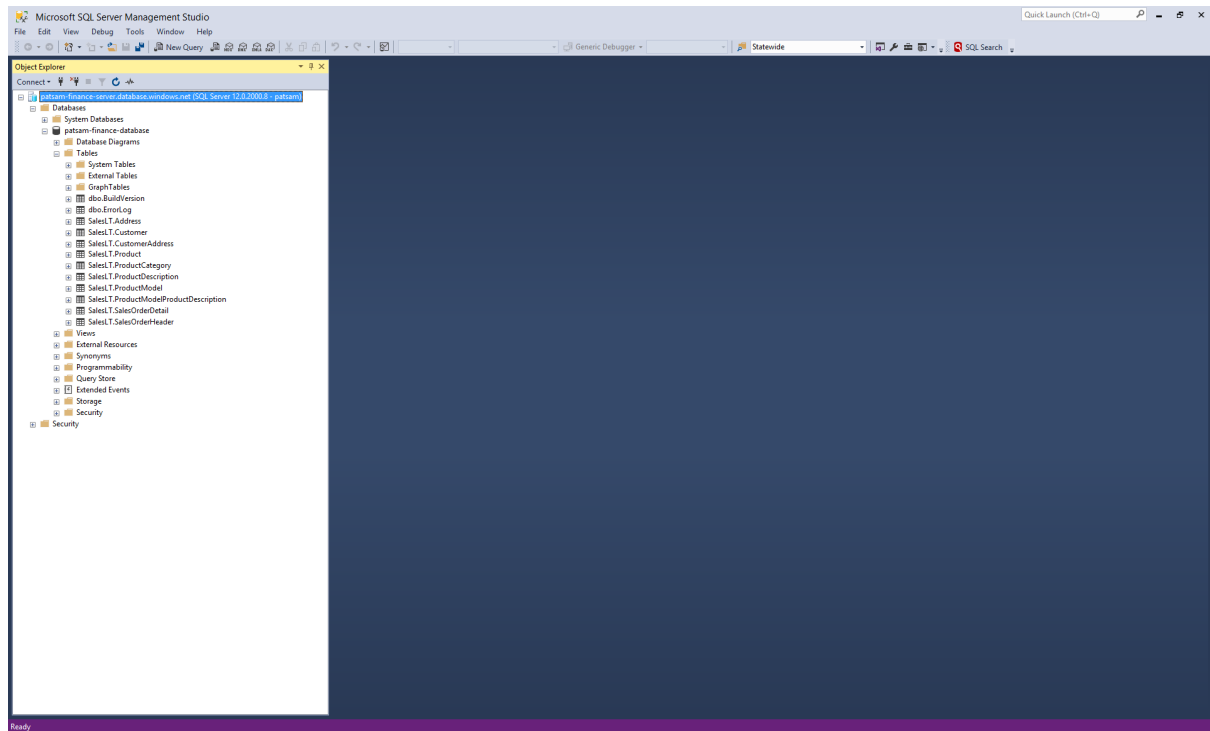
Run bellow query.

*Select * From SalesLT.Customer*
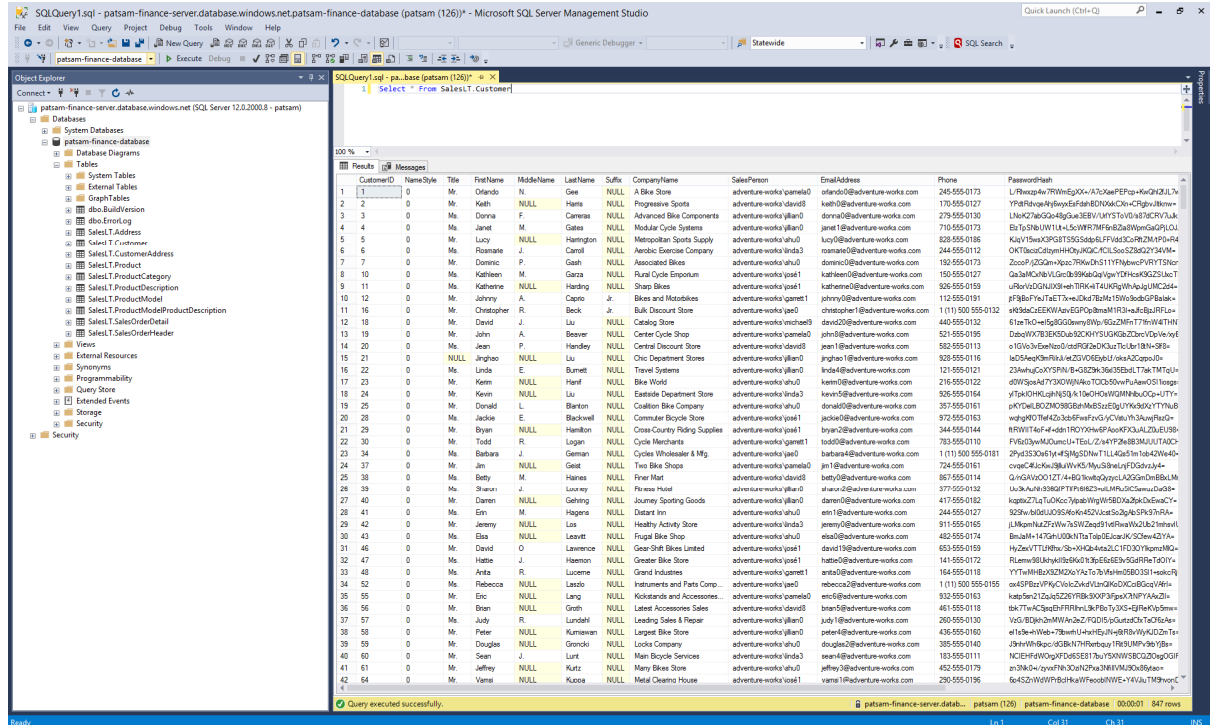
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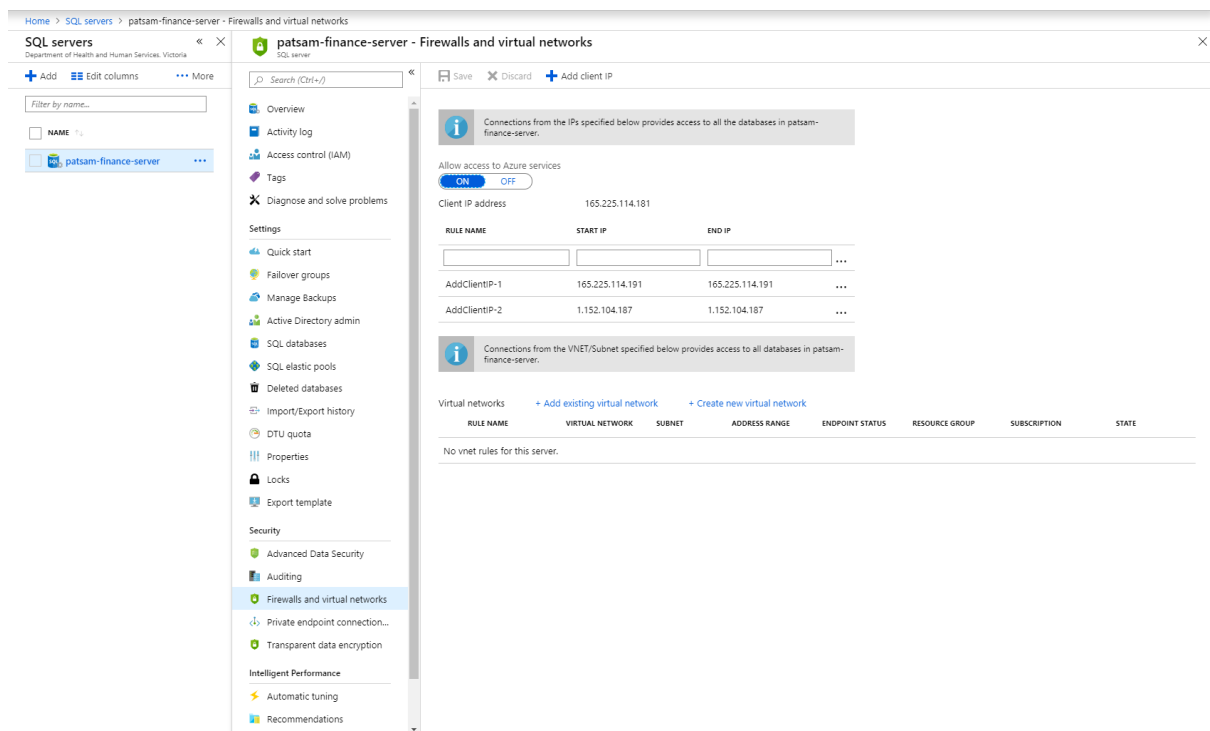**Step 05: Add Virtual Network to SQL Server Firewall Rules**

We can configure a Virtual Network in SQL Server Firewall Rules to allow accessing this SQL Database.

Basically, any Virtual Machine existing in the Virtual Network can connect to this SQL Server and the SQL Database.

Click on the SQL Server: patsam-finance-server
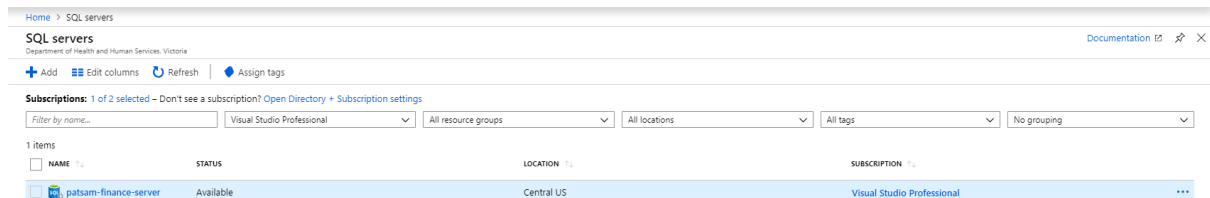
Click on Firewall and Virtual Networks tab.

Click on Add Existing Virtual Network button.

Provide bellow details and click Enable.

- Name: AddVirtualNetwork-1
- Virtual network: the virtual network we have created

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Create/Update
virtual network rule

✕

* Name ⓘ

AddVirtualNetwork-1 ✓

provide vnet rule name

* Subscription ⓘ

Visual Studio Professional (f9d5cbf7-cf8b-45d2-9c16-17cd8c093cd ⌄

* Virtual network ⓘ

vn-Finance ⌄

* Subnet name / Address prefix ⓘ

sn-WebServers / 99.0.1.0/24 ⌄

ⓘ Selected subnet does not have service endpoint enabled for Microsoft.Sql. Enabling access may take up to 15 minutes to complete.

VIRTUAL NETWORK	SERVICE ENDPOINT STATUS
vn-Finance/sn-WebServers	Not Enabled

☐ Ignore Missing Microsoft.Sql Service Endpoint ⓘ

Enable

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It will create a new rule that allows Virtual Machines on Virtual Network "vn-Finance" to allow accessing SQL Database.

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Step 06: Adding Active Directory Admin

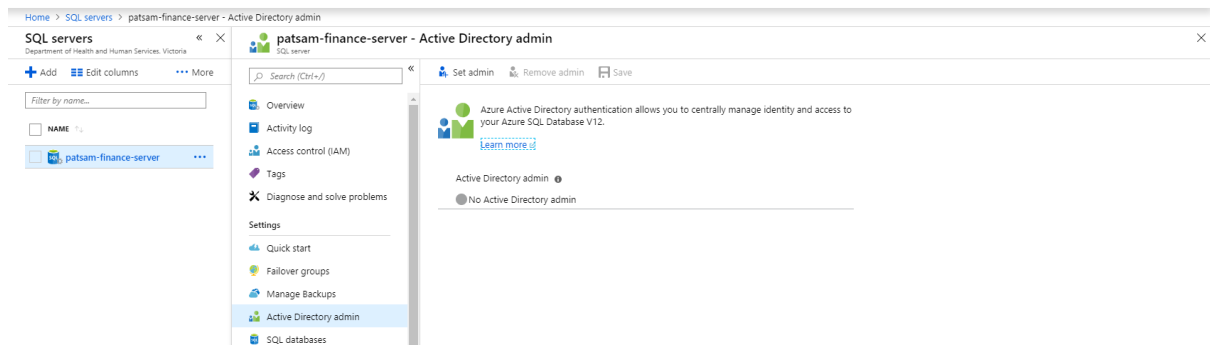Now we are going to connect to SQL Query Editor using Active Directory Authentication.

This will allows centrally manage identity and access to SQL Database.

Go to the SQL Server: patsam-finance-server
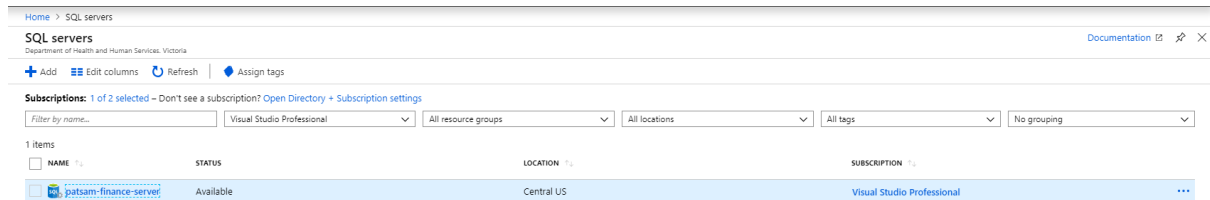
Click on Active Directory Admin tab.

Click on Set Admin button.

Type the Username and select the user.

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Add admin

Active Directory admin

＋ Invite

Select ⓘ

| patrick.sameera | ✓ |

PS   **Patrick Sameera (Guest)**
     patrick.sameera@▊▊▊▊▊▊▊

PS   **Patrick Sameera (▊▊▊▊)**
     Patrick.Sameera@▊▊▊▊▊▊▊

Selected 🔒
None

Select

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Once user been selected click Select.
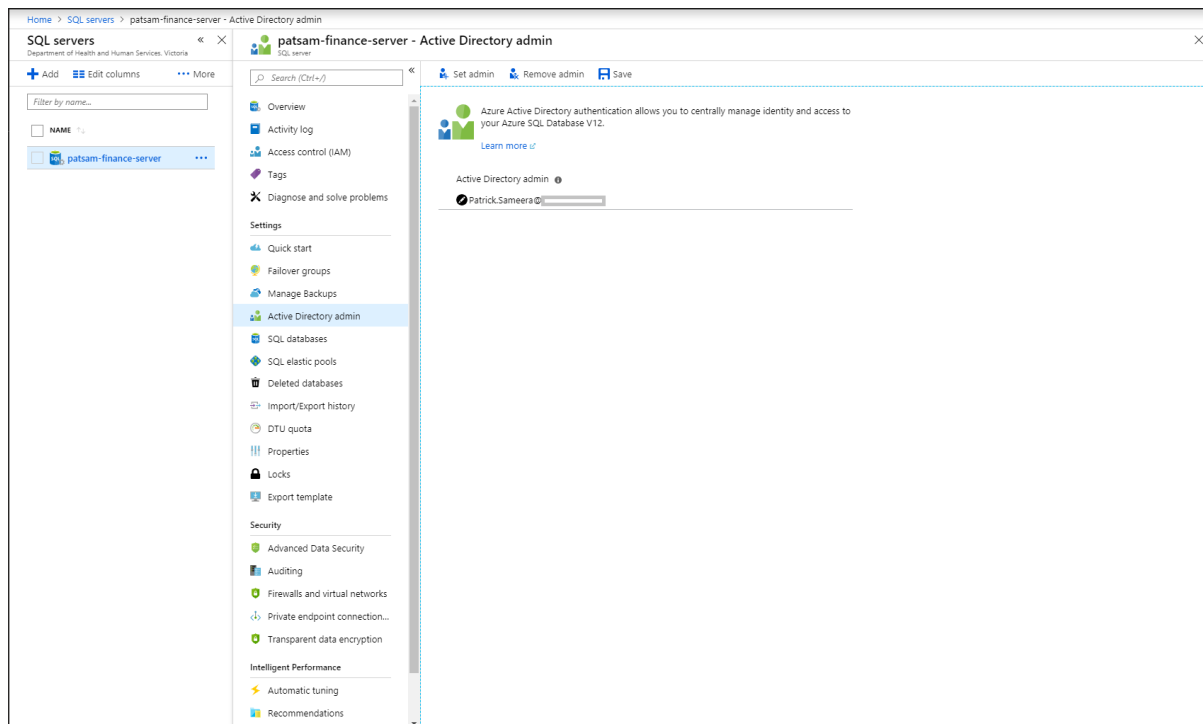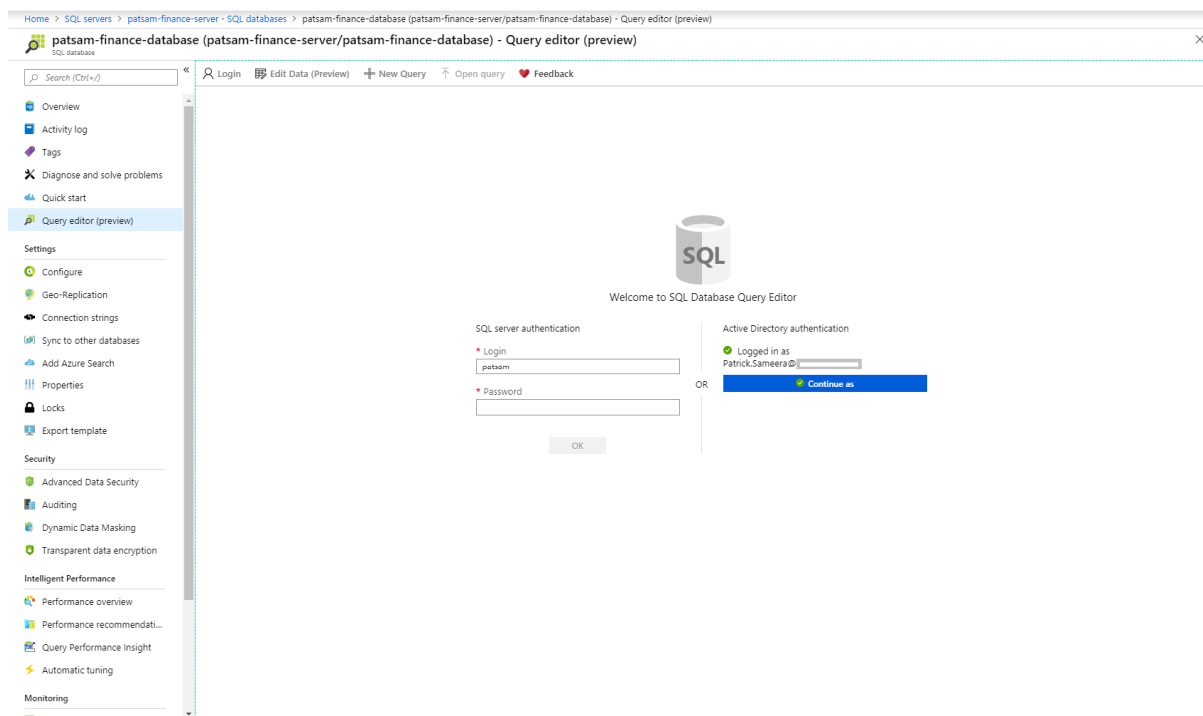

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Click Save.

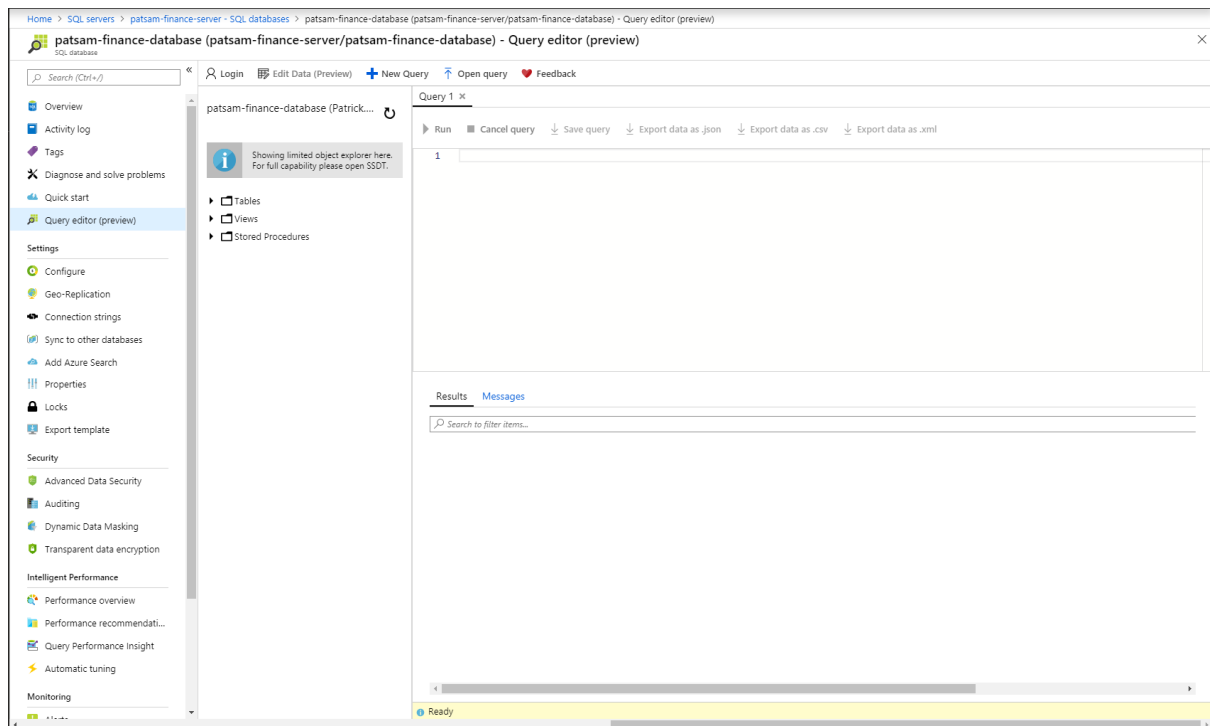Now go inside the Database and go the Query Editor.

We can see now Active Directory Authentication is green and enabled.

Click on Continue As button.

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We can go in to Query Editor.

Same way now we can connect through SQL Server Management using Active Directory Authntication.

- Server Name: patsam-finance-server.database.windows.net (fully qualified Server name)
- Authentication: Active Directory - Integrated

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