Installing and configuring PostgreSQL on a Ubuntu virtual machine (VM) involves several steps.

Here's a step-by-step guide:

1. Update Package Index

First, update the package index with the following command:

sudo apt-get update

2. Install PostgreSQL

Install PostgreSQL with the following command:

```
sudo apt-get install postgresql postgresql-contrib
```

This will install the PostgreSQL server and additional utilities and libraries.

3. Verify Installation

Once the installation is complete, verify that PostgreSQL is installed and running with:

```
sudo service postgresql status
```

4.Switch to the PostgreSQL User

After the installation is complete, switch to the PostgreSQL user account with the following command:

bash

```
sudo -i -u postgres
```

5. Access the PostgreSQL Shell

After switching to the PostgreSQL user, you can access the PostgreSQL shell by running:

```
psql
```

6. **Create a New User and Database (Optional)**

If you want to create a new user and database, you can do so in the PostgreSQL shell. For example, to create a new user named myuser with a password, run:

```
CREATE USER myuser WITH PASSWORD 'mypassword';
```

Then, to create a new database called mydb and grant all privileges to the myuser, run:

```
CREATE DATABASE mydb;
GRANT ALL PRIVILEGES ON DATABASE mydb TO myuser;
```

7. **Exit the PostgreSQL Shell**

To exit the PostgreSQL shell, type:

```
\q
```

You have successfully installed PostgreSQL on your Ubuntu system.

To configure your Intel MQ (Message Queuing) with PostgreSQL, you'll need to follow these general steps:

1. **Install Intel MQ**

First, you'll need to install the Intel MQ package on your Ubuntu system. The installation process may vary depending on the specific Intel MQ version you're using. Or you can download the intelMQ machine that is provided in the DTM files from teams.

2. **Configure PostgreSQL to Accept Remote Connections**

By default, PostgreSQL is configured to accept connections only from the local machine. To allow remote connections, you'll need to modify the PostgreSQL configuration file **(postgresql.conf).**

- Open the **postgresql.conf** file (usually located in **/etc/postgresql/version/main/** where **version** is your PostgreSQL version).
- Find **the listen_addresses** parameter and change it to **listen_addresses = '*'.** This will allow PostgreSQL to listen on all available IP addresses.

3. **Configure PostgreSQL Authentication**

Next, you'll need to configure PostgreSQL to authenticate incoming connections from Intel MQ. This is done by modifying the **pg_hba.conf** file (usually located in the same directory as **postgresql.conf).**

- Open the **pg_hba.conf** file.
- Add a new line at the end of the file with the following format: **host database user address auth-method**
- Replace **database** with the name of the database you want to allow connections to (e.g**., mydb**).
- Replace user with the PostgreSQL user you want to allow connections for (e.g., **myuser)**
- Replace **address** with the IP address or subnet from which Intel MQ will be connecting (e.g., **192.168.1.0/24).**
- Set auth-method to the authentication method you want to use (e.g., **md5** for password-based authentication).

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((To open the pg_hba.conf file in PostgreSQL, follow these steps:

1. **Open the Terminal**

First, open the terminal on your Ubuntu system.

2. **Switch to the PostgreSQL User**

In the terminal, switch to the PostgreSQL user account by running the following command:

```
sudo -i -u postgres
```

This will prompt you for your user password. Enter the password, and you should now be operating as the postgres user.

3. **Navigate to the PostgreSQL Configuration Directory**

The **pg_hba.conf** file is typically located in the data directory of your PostgreSQL installation. To navigate to this directory, run the following command:

```
cd /etc/postgresql/[VERSION]/main
```

Replace **[VERSION]** with the version of PostgreSQL you have installed **(e.g., 10, 12, 14**). For example, if you have PostgreSQL 10 installed (based on your previous output), the command would be:

```
cd /etc/postgresql/10/main
```

4. **Open the pg_hba.conf File**

Now that you're in the correct directory, you can open the **pg_hba.conf** file using a text editor. A common editor installed on most Linux systems is nano. To open the file with nano, run:

```
nano pg_hba.conf
```

This will open the **pg_hba.conf** file in the nano text editor.

5. **Edit the File**

You can now make any necessary changes to the pg_hba.conf file. As explaoibne in the above steps . This file controls the authentication methods and client IP addresses that are allowed to connect to the PostgreSQL server.

Use the arrow keys to navigate, and follow the instructions at the bottom of the nano window to save and exit the file when you're done editing.

6. **Restart PostgreSQL Service**

After making changes to the pg_hba.conf file, you'll need to restart the PostgreSQL service for the changes to take effect. To do this, exit the postgres user account by typing exit in the terminal, and then run:

```
sudo systemctl restart postgresql
```

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4. **Configure Intel MQ**

The steps to configure Intel MQ will vary depending on the specific version and programming language/framework you're using. However, you'll generally need to provide the following PostgreSQL connection details to Intel MQ Manager:

- Hostname or IP address of the PostgreSQL server
- Port number (usually 5432)
- Database name (mydb)
- Username (mquser)
- Password (mypassword)

5. **Test the Connection**

After configuring both PostgreSQL and Intel MQ, test the connection by sending and receiving messages through the message queue. If everything is configured correctly, the messages should be stored in or retrieved from the PostgreSQL database.

Remember to replace the database name, username, password, and IP addresses with your actual values throughout these steps. Additionally, ensure that any necessary network and firewall settings are configured to allow connections between Intel MQ and PostgreSQL.