

SCENARIO 2: Upload Logs to MySQL Table VMLogs

◆ Objective:

Send daily log data to a MySQL database table.

💡 Architecture:

Linux VM → Cron Job → Python Script → MySQL Table (VMLogs)

🛠 Implementation:

- Provision a Linux VM from Azure.

Virtual machine

Computer name	poc-vm
Operating system	Linux (ubuntu 24.04)
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.14.0.1
Hibernation	Disabled
Host group	-
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-
Disk controller type	SCSI

Azure Spot

Azure Spot	-
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Networking

Public IP address	135.235.193.195 (Network interface poc-vm138_z1)
Public IP address (IPv6)	-
Private IP address	10.0.1.4
Private IP address (IPv6)	-
Virtual network/subnet	poc-vnet/default
DNS name	Configure

Size

Size	Standard B1s
vCPUs	1
RAM	1 GiB

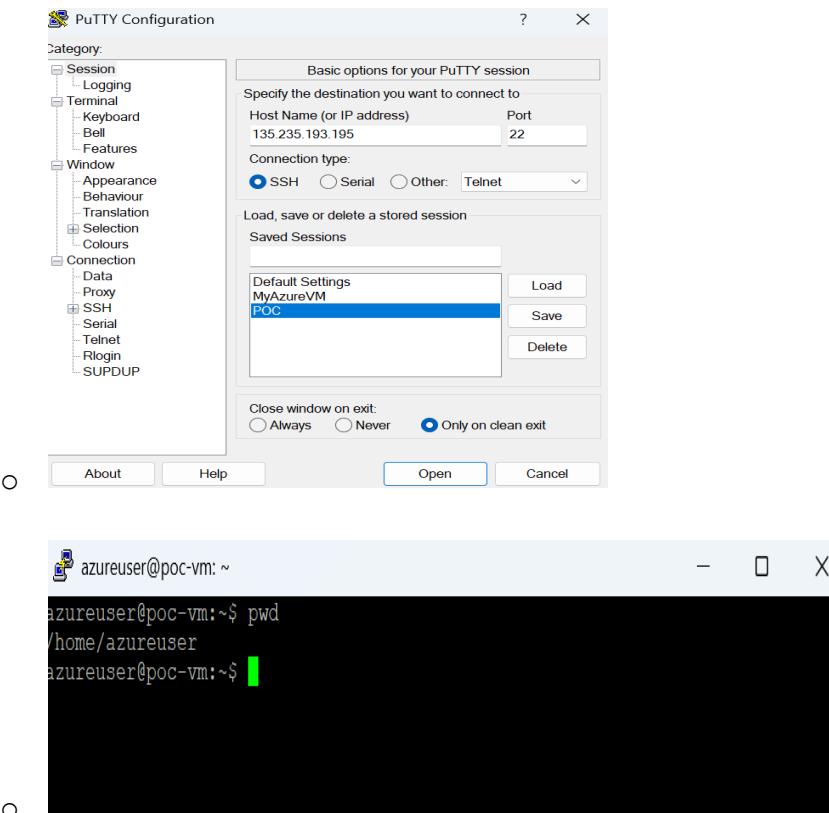
Source image details

Source image publisher	canonical
Source image offer	ubuntu-24_04-lts
Source image plan	server

- Allow Inbound and Outbound Rules

Inbound port rules (6)							
300	⚠ SSH	22	TCP	Any	Any	Allow	Delete
310	AllowAnyHTTPInbound	80	TCP	Any	Any	Allow	Delete
320	⚠ AllowAnyMS_SQLInbound	1433	TCP	Any	Any	Allow	Delete
65000	AllowVnetInBound ⓘ	Any	Any	VirtualNetwork	VirtualNetwork	Allow	Delete
65001	AllowAzureLoadBalancerInBound ⓘ	Any	Any	AzureLoadBalancer	Any	Allow	Delete
65500	DenyAllInBound ⓘ	Any	Any	Any	Any	Deny	Delete
Outbound port rules (4)							
330	⚠ AllowAnyMySQLOutbound	3306	TCP	Any	Any	Allow	Delete
65000	AllowVnetOutBound ⓘ	Any	Any	VirtualNetwork	VirtualNetwork	Allow	Delete
65001	AllowInternetOutBound ⓘ	Any	Any	Internet	Internet	Allow	Delete
65500	DenyAllOutBound ⓘ	Any	Any	Any	Any	Deny	Delete

- Access VM using Putty



- **Install MySQL client and Python connector on the VM.**

```
sudo apt-get update
sudo apt-get install mssql-tools unixodbc-dev
sudo apt-get install mssql-tools
telnet server-mysql.database.windows.net 1433
sudo apt-get install -y python3-pip
sudo apt install pip3
sudo pip3 install pyodbc
sudo ACCEPT_EULA=Y apt-get install msodbcsql17
```

- **Python script reads from log file and inserts into table VMLogs.**
 - **upload_logs.py Script Details**

```
import pyodbc
import os
```

```

# Get connection details via environment variables for security
server = os.getenv('AZURE_SQL_SERVER') # e.g.,
'yourserver.database.windows.net'
database = os.getenv('AZURE_SQL_DB') # e.g., 'pocdb'
username = os.getenv('AZURE_SQL_USER') # e.g., 'sheetal'
password = os.getenv('AZURE_SQL_PASS')

conn_str = (
    'DRIVER={ODBC Driver 17 for SQL Server};'
    f'SERVER={server};DATABASE={database};UID={username};PWD={password};'
    'Encrypt=yes;TrustServerCertificate=no;Connection Timeout=30;'
)

conn = pyodbc.connect(conn_str)
cursor = conn.cursor()

# Read log file
log_file_path = '/home/azureuser/logfile.log'
with open(log_file_path, 'r') as f:
    for line in f:
        # Example: store each log line into a table called VMLogs
        cursor.execute("""
            INSERT INTO VMLogs (LogText)
            VALUES (?)
        """, line.strip())

conn.commit()
conn.close()
print("Logs uploaded successfully")

```

- Steps To run the Script

```

cd /home/azureuser/scripts

python3 -m venv venv

source venv/bin/activate

```

```
pip install pyodbc
```

```
python upload_logs.py
```

- **Set Variables**

```
export AZURE_SQL_SERVER="server-mysql.database.windows.net"  
export AZURE_SQL_DB="pocdb"  
export AZURE_SQL_USER="sheetal"  
export AZURE_SQL_PASS="Admin123"
```

- **Configure MySQL Server**
- **Create MySQL Server**

The screenshot shows the Azure portal interface for a SQL server named 'server-mysql'. The left sidebar contains navigation links like Overview, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, and Resource visualizer. The main content area displays the 'Essentials' section with the following details:

Resource group (move)	: POC-Analytics	Server admin	:	sheetal
Status	: Available	Networking	:	Show networking settings
Location	: Central India	Microsoft Entra admin	:	Not configured
Subscription (move)	: Azure subscription 1	Server name	:	server-mysql.database.windows.net
Subscription ID	: 2ea6768b-40fb-4dc6-b57a-1167dbca6206			
Tags (edit)	: Add tags			

Below this, there are sections for Notifications (0) and Features (6).

- **Add below settings**

The screenshot shows the 'Networking' settings for the 'server-mysql' SQL server. The left sidebar includes links for Firewall rules, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, Resource visualizer, Settings, Data management, Backups, Deleted databases, Failover groups, Import/Export history, and Security. The main area is titled 'Firewall rules' and contains a table of existing rules:

Rule name	Start IPv4 address	End IPv4 address
ClientIPAddress	135.235.193.195	135.235.193.195
Firewall	10.0.1.4	10.0.1.4
myip	192.168.1.40	192.168.1.40
query-editor-5696b7	103.77.153.227	103.77.153.227
query-editor-7ce433	103.215.114.63	103.215.114.63
query-editor-c40d0e	103.215.114.34	103.215.114.34

- **Create SQL Database**

The screenshot shows the Azure portal interface for the 'pocdb' database. The top navigation bar includes options like 'Improve slowest/worst queries', 'Find stale statistics', and 'Show me performance metrics for this SQL database'. Below the navigation is a search bar and a toolbar with actions like 'Copy', 'Restore', 'Export', 'Set server firewall', 'Delete', 'Connect with...', and 'Feedback'. The main content area is titled 'Overview' and contains sections for 'Essentials' and 'Getting started'. The 'Essentials' section displays various database properties such as Resource group (POC-Analytics), Status (Online), Location (Central India), Subscription (Azure subscription 1), Subscription ID (2ea6768b-40fb-4dc6-b57a-1167dbca6206), and Tags (Add tags). The 'Getting started' section includes links for Monitoring, Properties, Features, Notifications (0), Integrations, and Tutorials. A large button at the bottom right says 'Start working with your database'.

- **Login with Username and password**

The screenshot shows the 'Query editor (preview)' page for the 'pocdb' database. The top navigation bar includes 'Login', 'New Query', 'Open query', 'Feedback', and 'Getting started'. The left sidebar lists navigation items: Overview, Activity log, Tags, Diagnose and solve problems, Query editor (preview) (which is selected and highlighted in grey), Mirror database in Fabric (preview), Resource visualizer, Settings, Compute + storage, Connection strings, Properties, Locks, and Data management. The main content area is titled 'Welcome to SQL Database Query Editor'. It shows two authentication methods: 'SQL server authentication' (Login: sheetal, Password: [redacted]) and 'Microsoft Entra authentication' (Continue as sheetalsarvade12@gmail.com...). A large 'OK' button is at the bottom right.

- **Create VMLogs Table to store the data from python script**

pocdb (server-mysql/pocdb) | Query editor (pre)

SQL database

Search Login New Query Open query

Overview Activity log Tags Diagnose and solve problems Query editor (preview) Mirror database in Fabric (preview) Resource visualizer Settings Compute + storage Connection strings Properties

pocdb (sheetalsarvade12@gmail.com)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

Tables

dbo.ProcessedData ...
dbo.Products ...
dbo.VMLogs ...

Id (PK, int, not null)
LogText (nvarchar, null)
InsertedOn (datetime, null)

- **Execute the Python Script**

```
azureuser@poc-vm:~/scripts$ python3 -m venv venv
source venv/bin/activate
pip install pyodbc
Requirement already satisfied: pyodbc in ./venv/lib/python3.12/site-packages
(5.2.0)
azureuser@poc-vm:~/scripts$ export AZURE_SQL_SERVER="server-mysql.database.windows.net"
export AZURE_SQL_DB="pocdb"
export AZURE_SQL_USER="sheetal"
export AZURE_SQL_PASS="Admin123"
azureuser@poc-vm:~/scripts$ python3 upload_logs.py
Logs uploaded successfully
azureuser@poc-vm:~/scripts$
```

- **Output Data into the sql table after script execution**

pocdb (server-mysql/pocdb) | Query editor (preview) ⋆ ⋮

SQL database

Search Login + New Query Open query Feedback Getting started

Overview Activity log Tags Diagnose and solve problems Query editor (preview) Mirror database in Fabric (preview) Resource visualizer Settings Compute + storage Connection strings Properties Locks Data management Replicas Sync to other databases Integrations

pocdb (sheetalsarvade12@gmail.com)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

Tables dbo.ProcessedData ... dbo.Products ... dbo.VMLogs ... Id (PK, int, not null) LogText (nvarchar, null) InsertedOn (datetime, null) Views ... Stored Procedures ...

Query 1 ×

Run Cancel query Save query Export query as Show only Editor

```
1 select * from [dbo].[VMLogs];  
2
```

Results Messages

4337	2025-08-31T02:38:25.255445+00:00 poc-vm sshd[13790]: ...	2025-09-01T08:39:39.5400000
4338	2025-08-31T02:38:25.255583+00:00 poc-vm sshd[13790]: ...	2025-09-01T08:39:39.5400000
4339	2025-08-31T02:38:27.972551+00:00 poc-vm sshd[13792]: ...	2025-09-01T08:39:39.5400000
4340	2025-08-31T02:38:28.650565+00:00 poc-vm sshd[13792]: ...	2025-09-01T08:39:39.5430000
4341	2025-08-31T02:38:28.650687+00:00 poc-vm sshd[13792]: ...	2025-09-01T08:39:39.5430000
4342	2025-08-31T02:38:29.577904+00:00 poc-vm sshd[13794]: ...	2025-09-01T08:39:39.5430000