

TLL-RDBMS Virtual Machine Setup and Runbook

William K.

University of Vienna, Department of Computer Science

a09726537@unet.univie.ac.at

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1. VM Specifications

- OS: Ubuntu 22.04 LTS (recommended)
- CPUs: 2+
- RAM: 8 GB or more
- Disk: 20 GB minimum
- GPU: Optional (recommended for GAN training)

2. Initial Setup

```
sudo apt update && sudo apt upgrade -y
sudo apt install -y python3 python3-pip python3-venv git curl wget unzip
```

Listing 1: System Update and Tools

3. PostgreSQL Installation

```
sudo apt install postgresql postgresql-contrib -y
sudo systemctl start postgresql
sudo systemctl enable postgresql

# Create user and DB
sudo -u postgres createuser tll_user
sudo -u postgres createdb tll_db -O tll_user
```

Listing 2: PostgreSQL Installation and Setup

4. SQL Server (Optional via Docker)

```
sudo apt install docker.io docker-compose -y
sudo systemctl enable docker
sudo systemctl start docker

# Run SQL Server container
sudo docker run -e 'ACCEPT_EULA=Y' -e 'SA_PASSWORD=YourP@ssword123' \
  -p 1433:1433 --name sqlserver \
  -d mcr.microsoft.com/mssql/server:2022-latest
```

Listing 3: SQL Server via Docker

5. Clone and Setup Project

```
git clone https://github.com/a09726537/tll-rdbms.git
cd tll-rdbms

python3 -m venv venv
source venv/bin/activate
pip install -r requirements.txt
```

Listing 4: Clone Repository and Install Requirements

6. Run AI-DAC System

```
# Launch backend
python tll_flask_api.py

# In new terminal
streamlit run tll_streamlit_ui.py
```

Listing 5: Launch Flask API and UI

7. Run GAN Sample Injection

```
cd scripts/
python inject_gan_samples.py
```

Listing 6: Inject GAN Samples

8. Preprocess Dataset

```
cd scripts/  
python load_unsw.py
```

Listing 7: Preprocess UNSW-NB15 Logs

9. Reproducibility Checklist

- All components versioned and checksum validated
- Dataset access and injection scripts in `scripts/`
- Execution logs stored in `logs/`, SHAP cache in `explainer/`

10. Firewall Configuration (Optional)

```
sudo ufw allow 5432/tcp  
sudo ufw allow 5000/tcp  
sudo ufw allow 8501/tcp  
sudo ufw enable
```

Listing 8: Enable UFW Firewall

11. Contact

For feedback or collaboration, contact the author:

William K.

University of Vienna, Computer Science Department

Email: a09726537@unet.univie.ac.at