Task 1 – Project Description

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Group: *Tole*
Educational Program: *SITE, IS*

Project name - TOLE

Secure Payment Processing System on Microsoft Azure

Project Legend

My project is called **Tole** (which means *"Pay"* in Kazakh). It represents a **payment processing backend system**.

The purpose of **Tole** is to demonstrate how a secure and reliable payment service can be deployed in a **cloud environment**. For this project, I use **Microsoft Azure** as the infrastructure platform and **Ubuntu Linux** as the operating system.

Main Target

The main goal of the project is to design and deploy a **cloud-based payment processing system** that demonstrates:

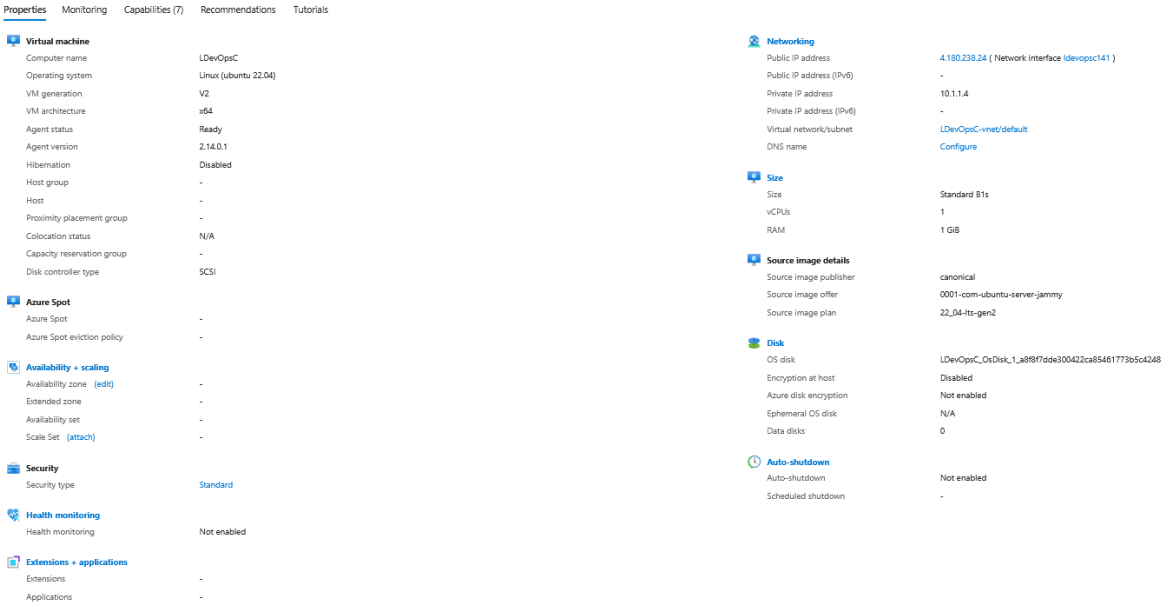
- Secure handling of user and transaction data.
- Automated deployment and configuration using DevOps.
- Cloud architecture on Azure infrastructure.
- Monitoring, logging, and configuration management.

2. Architecture of the Project

- **API Server**
    - **Django app serving REST API**
    - **Runs under Gunicorn runtime**
- **Database**
    - **MySQL installed on the same VM**
    - **Stores user and transaction data**
- **Monitoring**
    - **Prometheus + Grafana**
    - **Exposes metrics and dashboards**
- **Configuration & Automation**
    - **Cloud-init scripts to configure services**
    - **Config files in `/etc/<service_name>/`**

3. Preparing Machines

- **Choice: Azure Virtual Machine**
- **VM Specs:**



Properties | Monitoring | Capabilities (7) | Recommendations | Tutorials

Virtual machine

Computer name	LDevOpsC
Operating system	Linux (ubuntu 22.04)
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	-
Azure Spot eviction policy	-

Availability + scaling

Availability zone (edit)	-
Extended zone	-
Availability set	-
Scale Set (attach)	-

Security

Security type	Standard

Health monitoring

Health monitoring	Not enabled

Extensions + applications

Extensions	-
Applications	-

Networking

Public IP address	4.180.238.24 (Network interface ldevopsc141)
Public IP address (IPv6)	-
Private IP address	10.1.1.4
Private IP address (IPv6)	-
Virtual network/subnet	LDevOpsC-vnet/default
DNS name	Configure

Size

Size	Standard B1s
vCPUs	1
RAM	1 GiB

Source image details

Source image publisher	canonical
Source image offer	0001-com-ubuntu-server-jammy
Source image plan	22_04-lts-gen2

Disk

OS disk	LDevOpsC_OsDisk_1_a8f8f7dde300422ca85461773b5c4248
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A
Data disks	0

Auto-shutdown

Auto-shutdown	Not enabled
Scheduled shutdown	-

Why Ubuntu LTS?

- **Stable, widely supported in Azure**
- **Large community, compatible with DevOps tools**
- **Secure & regularly updated**

VM Specs:

- **Standard B1s (1 vCPU, 1GB RAM) for testing**
- **OS: Ubuntu 22.04 LTS**

4. Data & Config Storage

- **User Data:**
  - **Stored in MySQL DB (`/var/lib/mysql/data/`)**
- **Service Data:**
  - **API logs → `/var/log/tole/`**
  - **Grafana dashboards → `/var/lib/grafana/`**
  - **Prometheus data → `/var/lib/prometheus/`**
- **Configuration Files:**
  - **API (Django) → `/etc/tole/api-config.yaml`**
  - **MySQL → `/etc/mysql/mysql.conf`**
  - **Prometheus → `/etc/prometheus/prometheus.yml`**
  - **Grafana → `/etc/grafana/grafana.ini`**
- **Format:**
  - **YAML/JSON for app configs**
  - **INI/CONF for services (Grafana, MySQL)**
- **Temporary Directories:**
  - **`/tmp/tole-setup/` → for deployment scripts**
  - **Cleared after automation completes**