**Lab Exercise 23- Monitoring PostgreSQL with Prometheus and Grafana**

**Objective**

* Set up **Prometheus** to collect PostgreSQL metrics
* Install and configure **PostgreSQL Exporter**
* Visualize performance metrics in **Grafana**
* Monitor queries, connections, locks, cache, and more

**Prerequisites**

* PostgreSQL server running
* Prometheus and Grafana installed (on same or separate systems)
* Basic Linux knowledge (for setup)
* PostgreSQL superuser credentials

**Tools Overview**

| **Tool** | **Purpose** |
| --- | --- |
| Prometheus | Time-series metrics collection |
| pg\_exporter | PostgreSQL metrics exporter for Prometheus |
| Grafana | Dashboard visualization |

**1. Set Up PostgreSQL Exporter**

**Step 1: Create Monitoring User in PostgreSQL**

CREATE USER pgexporter WITH PASSWORD 'securepassword';

GRANT CONNECT ON DATABASE yourdb TO pgexporter;

GRANT USAGE ON SCHEMA public TO pgexporter;

GRANT SELECT ON ALL TABLES IN SCHEMA public TO pgexporter;

ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT SELECT ON TABLES TO pgexporter;

Also, allow access to metrics:

GRANT pg\_monitor TO pgexporter;

**Step 2: Download PostgreSQL Exporter**

From GitHub:

wget https://github.com/prometheus-community/postgres\_exporter/releases/latest/download/postgres\_exporter

chmod +x postgres\_exporter

Create an environment file:

echo "DATA\_SOURCE\_NAME=postgresql://pgexporter:securepassword@localhost:5432/yourdb?sslmode=disable" > .env

Run exporter:

./postgres\_exporter --web.listen-address=":9187" --web.telemetry-path="/metrics"

**2. Configure Prometheus**

**Step 1: Edit prometheus.yml**

Add this under scrape\_configs:

- job\_name: 'postgres'

static\_configs:

- targets: ['localhost:9187']

**Step 2: Restart Prometheus**

systemctl restart prometheus

Or:

./prometheus --config.file=prometheus.yml

**3. Visualize in Grafana**

**Step 1: Access Grafana**

Go to:  
http://localhost:3000  
(Default user: admin, password: admin)

**Step 2: Add Prometheus as a Data Source**

* Settings > Data Sources > Add Prometheus
* URL: http://localhost:9090
* Click **Save & Test**

**Step 3: Import PostgreSQL Dashboard**

* Click "+" > **Import Dashboard**
* Use Dashboard ID: 9628 or 455 (official PostgreSQL dashboards)
* Select your Prometheus data source
* Click **Import**

**4. Key Metrics to Monitor**

| **Metric** | **Description** |
| --- | --- |
| pg\_stat\_activity\_count | Number of active sessions |
| pg\_stat\_database\_xact\_commit | Transaction commits |
| pg\_stat\_database\_blocks\_hit | Cache hits |
| pg\_locks | Current locks |
| pg\_stat\_bgwriter\_buffers\_alloc | Background buffer allocations |
| pg\_stat\_user\_tables\_seq\_scan | Sequential scans |