

Pour la réalisation de cette fiche, j'ai repris le travail de la fiche 2 du cluster GKE pour WordPress pour ajouter la partie supervision par Prometheus et Grafana, cette fois-ci j'utilise directement ma machine locale sans passer par la machine Ansible pour la configuration.

Implementation

Sur ma machine locale (WSL ubuntu)

J'ai préparé l'environnement

```
# Mises à jour
sudo apt update && sudo apt upgrade -y

# Terraform
sudo apt-get install -y wget unzip
wget https://releases.hashicorp.com/terraform/1.9.8/terraform_1.9.8_linux_amd64.zip
unzip terraform_*.zip
sudo mv terraform /usr/local/bin/
terraform -version

# gcloud CLI
sudo apt-get install -y apt-transport-https ca-certificates gnupg
echo "deb [signed-by=/usr/share/keyrings/cloud.google.gpg] http://packages.cloud.google.com/apt
cloud-sdk main" | sudo tee -a /etc/apt/sources.list.d/google-cloud-sdk.list
curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo tee
/usr/share/keyrings/cloud.google.gpg
sudo apt-get update && sudo apt-get install -y google-cloud-sdk

# kubectl
sudo apt-get install -y kubectl

# Ansible (si tu veux l'utiliser pour les déploiements applicatifs)
sudo apt-get install -y ansible python3-pip
pip3 install kubernetes
```

J'ai créé un virtual environment

```
sudo apt install python3-pip -y

cd ~/projet_final/ansible
sudo apt update
sudo apt install python3-venv python3-pip -y
python3 -m venv venv
source venv/bin/activate
```

J'ai installé Ansible et les dépendances Kubernetes

```
(venv) amine@PRO:~/projet_final/ansible$ pip install --upgrade pip
(venv) amine@PRO:~/projet_final/ansible$ pip install ansible kubernetes openshift
```

J'ai configuré kubeconfig pour accéder au cluster GKE :

```
(venv) amine@PRO:~/projet_final/ansible$ gcloud container clusters get-credentials wordpress-cluster --zone us-central1-a --project cluster-kubernetes-wordpress
```

J'ai deployé wordpress

```
(venv) amine@PRO:~/projet_final/ansible$ ansible-playbook -i hosts.ini mysql.yml
(venv) amine@PRO:~/projet_final/ansible$ ansible-playbook -i hosts.ini wordpress.yml
```

Visualisation:

```
kubectl get svc -n wordpress
```

```
(venv) amine@PRO:~/projet_final/ansible$ kubectl get svc -n wordpress
NAME      TYPE          CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
mysql     ClusterIP     34.118.226.209   <none>           3306/TCP         6m18s
wordpress LoadBalancer 34.118.225.64    34.133.153.4     80:31247/TCP     5m5s
```

J'ai installé et configurer Prometheus et Grafana avec Ansible

```
prometheus_grafana.yml
```

```
---
- name: Installer Prometheus
  hosts: prometheus
  become: yes
  tasks:
    - name: Mettre à jour les paquets
      apt:
        update_cache: yes
        upgrade: dist

    - name: Installer Docker
      apt:
        name: docker.io
        state: present

    - name: Installer Docker Compose
      apt:
        name: docker-compose
        state: present

    - name: Créer dossier Prometheus
      file:
        path: /opt/prometheus
        state: directory

    - name: Copier fichier de configuration Prometheus
      copy:
        src: prometheus.yml
        dest: /opt/prometheus/prometheus.yml

    - name: Lancer Prometheus avec Docker
      community.docker.docker_container:
        name: prometheus
        image: prom/prometheus
        state: started
        restart_policy: always
        ports:
          - "9090:9090"
        volumes:
          - /opt/prometheus/prometheus.yml:/etc/prometheus/prometheus.yml
```

```

# - name: Lancer Prometheus avec Docker
#   shell: |
#     docker run -d --name prometheus \
#       -p 9090:9090 \
#       -v /opt/prometheus/prometheus.yml:/etc/prometheus/prometheus.yml \
#       prom/prometheus

- name: Installer Grafana
  hosts: grafana
  become: yes
  tasks:
    - name: Mettre à jour les paquets
      apt:
        update_cache: yes
        upgrade: dist

    - name: Installer Docker
      apt:
        name: docker.io
        state: present

    - name: Installer Docker Compose
      apt:
        name: docker-compose
        state: present

    - name: Lancer Grafana avec Docker
      shell: |
        docker run -d --name grafana \
          -p 3000:3000 \
          grafana/grafana

```

```
(venv) amine@PRO:~/projet_final/ansible$ ansible-playbook -i hosts.ini prometheus_grafana.yml
```

Fichier de configuration de prometheus

Prometheus.yml

```

global:
  scrape_interval: 15s
  evaluation_interval: 15s

scrape_configs:
  - job_name: "prometheus"
    static_configs:
      - targets: ["localhost:9090"]

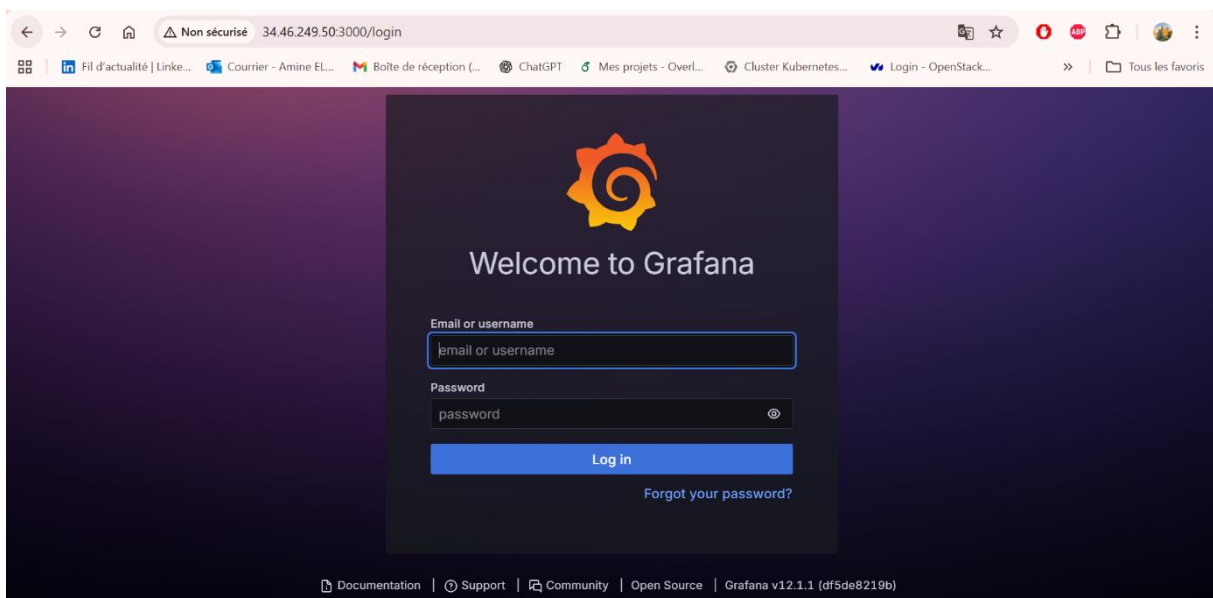
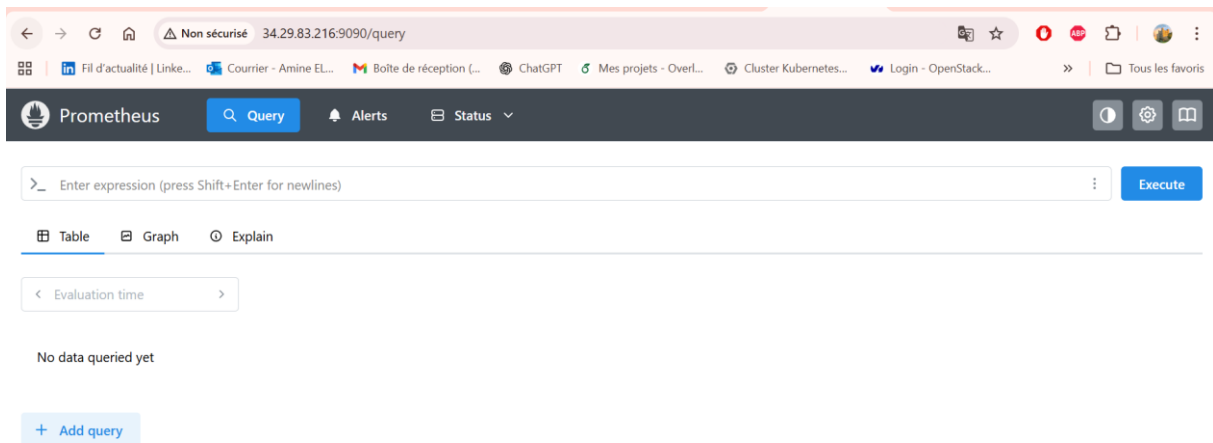
  - job_name: "Ansible-VM"
    static_configs:
      - targets: ["35.202.10.246:9100"]

  - job_name: "node-exporter"
    static_configs:
      - targets: ["34.170.176.41:9100"]

  - job_name: "kube-state-metrics"
    static_configs:
      - targets: ["34.173.62.47:8080"]

```

Affichage :



Déploiement de tous les services :

```
ansible-playbook -i hosts.ini playbook_principale.yml
```

L'IP publique de node-exporter

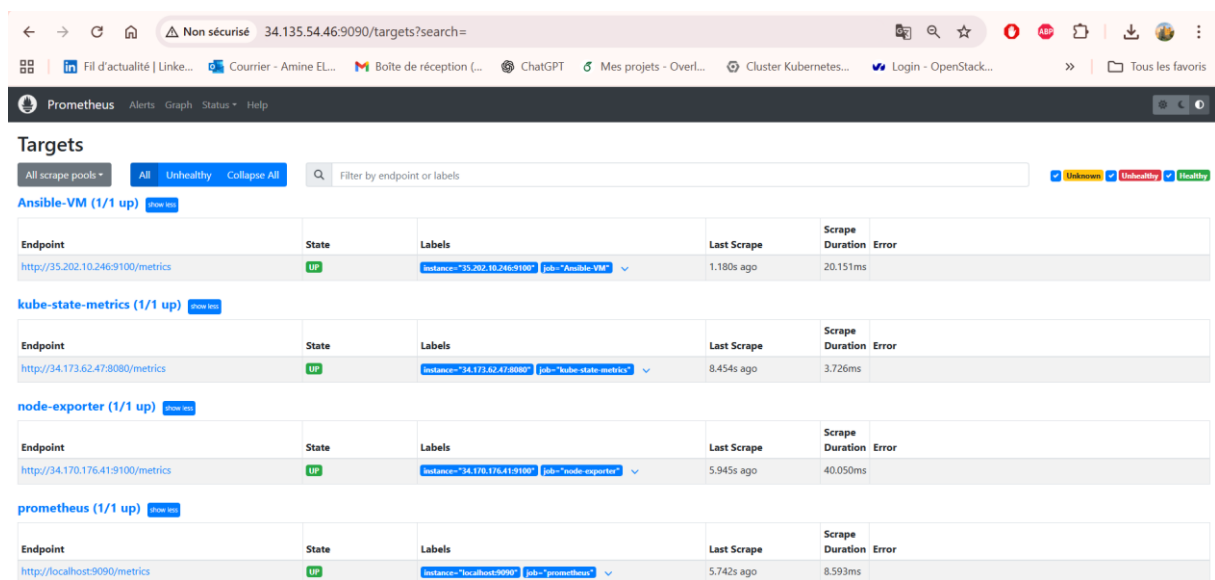
```
(venv) amine@PRO:~/projet_final/ansible$ kubectl get svc -n monitoring
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
kube-state-metrics  LoadBalancer  34.118.233.111 34.173.62.47   8080:30292/TCP   23m
mysql-exporter       LoadBalancer  34.118.226.102 34.9.99.189    9104:32338/TCP   23m
node-exporter        LoadBalancer  34.118.235.23  34.170.176.41  9100:31167/TCP   40m
```

```
(venv) amine@PRO:~/projet_final/ansible$ kubectl get svc -n monitoring
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
kube-state-metrics  LoadBalancer  34.118.233.111 34.173.62.47   8080:30292/TCP   23m
mysql-exporter       LoadBalancer  34.118.226.102 34.9.99.189    9104:32338/TCP   23m
node-exporter        LoadBalancer  34.118.235.23  34.170.176.41  9100:31167/TCP   40m
```

```
amine@PRO:~$ kubectl get svc -n wordpress
NAME                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
mysql                ClusterIP           34.118.226.209  <none>           3306/TCP         25h
mysql-exporter       LoadBalancer       34.118.228.216  35.232.11.195   9104:32249/TCP   7h2m
wordpress           LoadBalancer       34.118.225.64   34.133.153.4     80:31247/TCP     24h
wordpress-exporter   LoadBalancer       34.118.234.186  34.29.199.250   9100:30762/TCP   10m
```

```
amine@PRO:~$ kubectl get svc -n wordpress
NAME                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
mysql                ClusterIP           34.118.226.209  <none>           3306/TCP         25h
mysql-exporter       LoadBalancer       34.118.228.216  35.232.11.195   9104:32249/TCP   7h2m
wordpress           LoadBalancer       34.118.225.64   34.133.153.4     80:31247/TCP     24h
wordpress-exporter   LoadBalancer       34.118.234.186  34.29.199.250   9100:30762/TCP   10m
```

Affichage des jobs scraper sur Prometheus :



Visualisation de quelques métriques sur Grafana :



Le fichier JSON de la configuration du Dashboards Grafana :

```
{
  "annotations": {
    "list": [
      {
        "builtIn": 1,
        "datasource": {
          "type": "grafana",
          "uid": "-- Grafana --"
        },
        "enable": true,
        "hide": true,
        "iconColor": "rgba(0, 211, 255, 1)",
        "name": "Annotations & Alerts",
        "type": "dashboard"
      }
    ]
  },
  "editable": true,
  "fiscalYearStartMonth": 0,
  "graphTooltip": 0,
  "id": 3,
  "links": [],
  "panels": [
    {
      "datasource": {
        "type": "prometheus",
        "uid": "bexjngtel21a8a"
      },
      "fieldConfig": {
        "defaults": {
          "color": {
            "mode": "palette-classic"
          },
          "custom": {
            "axisBorderShow": false,
            "axisCenteredZero": false,
            "axisColorMode": "text",
            "axisLabel": "",
            "axisPlacement": "auto",
            "barAlignment": 0,
            "barWidthFactor": 0.6,
            "drawStyle": "line",
            "fillOpacity": 0,
            "gradientMode": "none",
            "hideFrom": {
              "legend": false,
              "tooltip": false,
              "viz": false
            },
            "insertNulls": false,
            "lineInterpolation": "linear",
            "lineWidth": 1,
            "pointSize": 5,
            "scaleDistribution": {
              "type": "linear"
            },
            "showPoints": "auto",
            "spanNulls": false,
            "stacking": {
              "group": "A",
              "mode": "none"
            },
            "thresholdsStyle": {
              "mode": "off"
            }
          }
        }
      }
    }
  ]
}
```

```

    },
    "mappings": [],
    "thresholds": {
      "mode": "absolute",
      "steps": [
        {
          "color": "green",
          "value": 0
        },
        {
          "color": "red",
          "value": 80
        }
      ]
    }
  },
  "overrides": []
},
"gridPos": {
  "h": 8,
  "w": 12,
  "x": 0,
  "y": 0
},
"id": 5,
"options": {
  "legend": {
    "calcs": [],
    "displayMode": "list",
    "placement": "bottom",
    "showLegend": true
  },
  "tooltip": {
    "hideZeros": false,
    "mode": "single",
    "sort": "none"
  }
},
"pluginVersion": "12.1.1",
"targets": [
  {
    "editorMode": "code",
    "expr": "rate(node_network_receive_bytes_total{job=\"Ansible-VM\",
device!=\"lo\"}[1m])\\r\\n",
    "legendFormat": "__auto",
    "range": true,
    "refId": "A"
  }
],
"title": "Network",
"type": "timeseries"
},
{
  "datasource": {
    "type": "prometheus",
    "uid": "bexjngtel21a8a"
  },
  "fieldConfig": {
    "defaults": {
      "color": {
        "mode": "palette-classic"
      },
      "custom": {
        "axisBorderShow": false,
        "axisCenteredZero": false,
        "axisColorMode": "text",
        "axisLabel": "",
        "axisPlacement": "auto",
        "barAlignment": 0,
        "barWidthFactor": 0.6,

```

```

        "drawStyle": "line",
        "fillOpacity": 0,
        "gradientMode": "none",
        "hideFrom": {
            "legend": false,
            "tooltip": false,
            "viz": false
        },
        "insertNulls": false,
        "lineInterpolation": "linear",
        "lineWidth": 1,
        "pointSize": 5,
        "scaleDistribution": {
            "type": "linear"
        },
        "showPoints": "auto",
        "spanNulls": false,
        "stacking": {
            "group": "A",
            "mode": "none"
        },
        "thresholdsStyle": {
            "mode": "off"
        }
    },
    "mappings": [],
    "thresholds": {
        "mode": "absolute",
        "steps": [
            {
                "color": "green",
                "value": 0
            },
            {
                "color": "red",
                "value": 80
            }
        ]
    }
},
"overrides": []
},
"gridPos": {
    "h": 8,
    "w": 12,
    "x": 12,
    "y": 0
},
"id": 4,
"options": {
    "legend": {
        "calcs": [],
        "displayMode": "list",
        "placement": "bottom",
        "showLegend": true
    },
    "tooltip": {
        "hideZeros": false,
        "mode": "single",
        "sort": "none"
    }
},
"pluginVersion": "12.1.1",
"targets": [
    {
        "editorMode": "code",
        "expr": "node_filesystem_size_bytes{job=\"Ansible-VM\", mountpoint=\"/\"} - node_filesystem_avail_bytes{job=\"Ansible-VM\", mountpoint=\"/\"}\r\n",
        "legendFormat": "__auto",
        "range": true,

```



```

        "refId": "A"
      }
    ],
    "title": "Disk",
    "type": "timeseries"
  },
  {
    "datasource": {
      "type": "prometheus",
      "uid": "bexjngtel21a8a"
    },
    "fieldConfig": {
      "defaults": {
        "color": {
          "mode": "palette-classic"
        },
        "custom": {
          "axisBorderShow": false,
          "axisCenteredZero": false,
          "axisColorMode": "text",
          "axisLabel": "",
          "axisPlacement": "auto",
          "barAlignment": 0,
          "barWidthFactor": 0.6,
          "drawStyle": "line",
          "fillOpacity": 0,
          "gradientMode": "none",
          "hideFrom": {
            "legend": false,
            "tooltip": false,
            "viz": false
          },
          "insertNulls": false,
          "lineInterpolation": "linear",
          "lineWidth": 1,
          "pointSize": 5,
          "scaleDistribution": {
            "type": "linear"
          },
          "showPoints": "auto",
          "spanNulls": false,
          "stacking": {
            "group": "A",
            "mode": "none"
          },
          "thresholdsStyle": {
            "mode": "off"
          }
        },
        "mappings": [],
        "thresholds": {
          "mode": "absolute",
          "steps": [
            {
              "color": "green",
              "value": 0
            },
            {
              "color": "red",
              "value": 80
            }
          ]
        }
      },
      "overrides": []
    },
    "gridPos": {
      "h": 8,
      "w": 12,
      "x": 0,

```

```

        "y": 8
    },
    "id": 1,
    "options": {
        "legend": {
            "calcs": [],
            "displayMode": "list",
            "placement": "bottom",
            "showLegend": true
        },
        "tooltip": {
            "hideZeros": false,
            "mode": "single",
            "sort": "none"
        }
    },
    "pluginVersion": "12.1.1",
    "targets": [
        {
            "datasource": {
                "type": "prometheus",
                "uid": "bexjngtel21a8a"
            },
            "editorMode": "code",
            "expr": "",
            "legendFormat": "__auto",
            "range": true,
            "refId": "A"
        },
        {
            "datasource": {
                "type": "prometheus",
                "uid": "bexjngtel21a8a"
            },
            "editorMode": "code",
            "expr": "100 - (avg by(instance) (rate(node_cpu_seconds_total{job=\"Ansible-VM\", mode=\"idle\"}[1m])) * 100)\\r\\n",
            "hide": false,
            "instant": false,
            "legendFormat": "__auto",
            "range": true,
            "refId": "B"
        }
    ],
    "title": "CPU",
    "type": "timeseries"
},
{
    "datasource": {
        "type": "prometheus",
        "uid": "bexjngtel21a8a"
    },
    "fieldConfig": {
        "defaults": {
            "color": {
                "mode": "palette-classic"
            },
            "custom": {
                "axisBorderShow": false,
                "axisCenteredZero": false,
                "axisColorMode": "text",
                "axisLabel": "",
                "axisPlacement": "auto",
                "barAlignment": 0,
                "barWidthFactor": 0.6,
                "drawStyle": "line",
                "fillOpacity": 0,
                "gradientMode": "none",
                "hideFrom": {
                    "legend": false,

```

```

        "tooltip": false,
        "viz": false
    },
    "insertNulls": false,
    "lineInterpolation": "linear",
    "lineWidth": 1,
    "pointSize": 5,
    "scaleDistribution": {
        "type": "linear"
    },
    "showPoints": "auto",
    "spanNulls": false,
    "stacking": {
        "group": "A",
        "mode": "none"
    },
    "thresholdsStyle": {
        "mode": "off"
    }
},
"mappings": [],
"thresholds": {
    "mode": "absolute",
    "steps": [
        {
            "color": "green",
            "value": 0
        },
        {
            "color": "red",
            "value": 80
        }
    ]
}
},
"overrides": []
},
"gridPos": {
    "h": 8,
    "w": 12,
    "x": 12,
    "y": 8
},
"id": 3,
"options": {
    "legend": {
        "calcs": [],
        "displayMode": "list",
        "placement": "bottom",
        "showLegend": true
    },
    "tooltip": {
        "hideZeros": false,
        "mode": "single",
        "sort": "none"
    }
},
"pluginVersion": "12.1.1",
"targets": [
    {
        "editorMode": "code",
        "expr": "(node_memory_MemTotal_bytes{job=\"Ansible-VM\"}) - node_memory_MemAvailable_bytes{job=\"Ansible-VM\"}) / 1024 / 1024",
        "legendFormat": "__auto",
        "range": true,
        "refId": "A"
    }
],
"title": "Mémoire",
"type": "timeseries"

```

```

    },
    {
      "datasource": {
        "type": "prometheus",
        "uid": "bexjngtel21a8a"
      },
      "fieldConfig": {
        "defaults": {
          "color": {
            "mode": "thresholds"
          },
          "mappings": [],
          "thresholds": {
            "mode": "absolute",
            "steps": [
              {
                "color": "green",
                "value": 0
              },
              {
                "color": "red",
                "value": 80
              }
            ]
          }
        },
        "overrides": []
      },
      "gridPos": {
        "h": 8,
        "w": 12,
        "x": 0,
        "y": 16
      },
      "id": 2,
      "options": {
        "minVizHeight": 75,
        "minVizWidth": 75,
        "orientation": "auto",
        "reduceOptions": {
          "calcs": [
            "lastNotNull"
          ],
          "fields": "",
          "values": false
        },
        "showThresholdLabels": false,
        "showThresholdMarkers": true,
        "sizing": "auto"
      },
      "pluginVersion": "12.1.1",
      "targets": [
        {
          "editorMode": "code",
          "expr": "100 - (avg by(instance) (rate(node_cpu_seconds_total{job=\"Ansible-VM\", mode=\"idle\"}[1m])) * 100)",
          "legendFormat": "__auto",
          "range": true,
          "refId": "A"
        }
      ],
      "title": "CPU",
      "type": "gauge"
    }
  ],
  "preload": false,
  "schemaVersion": 41,
  "tags": [],
  "templating": {
    "list": []
  }
}

```

```
  },
  "time": {
    "from": "2025-09-10T08:00:24.084Z",
    "to": "2025-09-10T10:30:43.580Z"
  },
  "timepicker": {},
  "timezone": "browser",
  "title": "VM",
  "uid": "23498d20-5e45-4803-947f-871270e937bd",
  "version": 10
}
```