



國立陽明交通大學資訊工程學系資訊中心

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HW2-2 - Metrics

2026 NAP
lichen

Goal

The primary objective of this lab is to establish a comprehensive monitoring ecosystem using the Cloud Native stack.

- Implement automated metric collection and storage using **Prometheus**
- Configure intelligent alerting thresholds with **Alertmanager**
- Construct high-fidelity observability dashboards through **Grafana**
- Gain hands-on experience with CRDs (Custom Resource Definitions) and Operator-based deployments in a Kubernetes environment

Grading

- Metrics
 - Prometheus 50%
 - Alertmanager 25%
 - Grafana 25%
- Deadline
 - 2026-06-22 23:59:59

Prerequisite

- Install jq and yq on your router

Prometheus - Install

- Install prometheus using CRD (15%)
 - Prometheus Operator
 - Name: prometheus
 - Replicas: 2
 - Namespace: monitoring
 - ServiceName: prometheus-prometheus
 - nodeport: 9090:30090

Prometheus - Target

- Monitor Target(15%)
 - kube-state-metrics
 - NodeExporter
 - Use service monitor to monitor Traefik

Prometheus - Rule

- Prometheus Rule test(20%)
 - `Traefik 404 5m > 100`
 - `alertname:Traefik404TooHigh`

Alertmanager - Install

- Install Alertmanager via CRD (10%)
 - Name: alertmanager
 - Replicas: 3
 - Namespace: monitoring
 - ServiceName: alertmanager-alertmanager
 - nodeport: 9093:30093

Alertmanager - Config

- Config Alertmanager (15%)
 - group_wait: 1m
 - group_interval: 1s
 - repeat_interval: 1m
 - webhook_config
 - `http://172.16.1.254:8000`

Grafana - Install

- Install grafana (10%)
 - Name: grafana
 - Replicas: 1
 - Namespace: monitoring
 - ServiceName: grafana
 - nodeport: 3000:30030
 - ANONYMOUS_ENABLED
 - ANONYMOUS_ORG_ROLE=Admin

Grafana - Config

- Config and Install dashboard (15%)
 - connect prometheus datasource
 - Mixin dashboard form kube-prometheus
 - traefik dashboard
 - <https://grafana.com/grafana/dashboards/17347-traefik-official-kubernetes-dashboard/>

Good Luck!