

第

6

节

Promethues-Operator基本功能展示

本课内容

- 展示Prometheus-Operator的基本功能
 - Prometheus内置浏览器
 - Alertmanager UI
 - Grafana UI

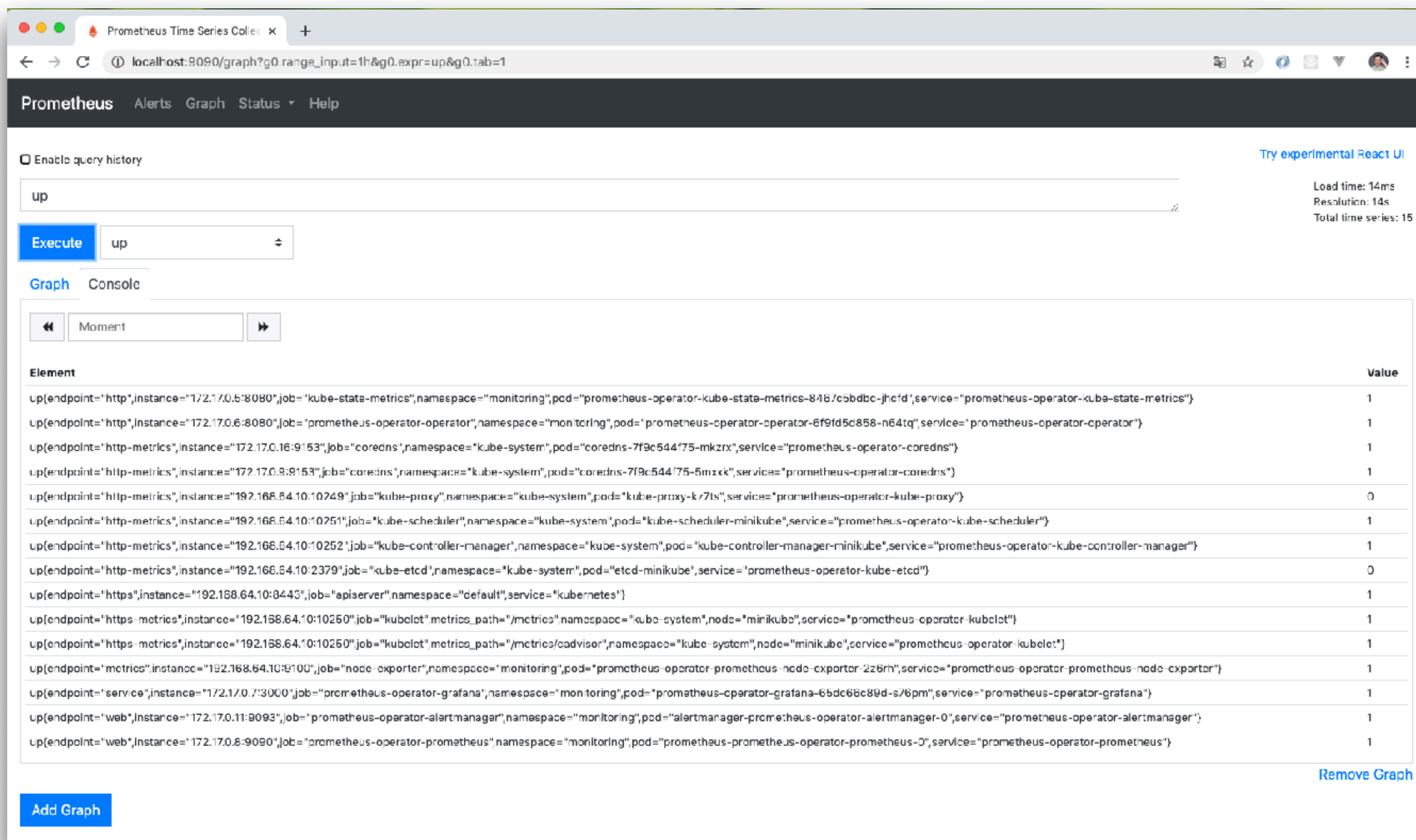


访问prometheus内置浏览器

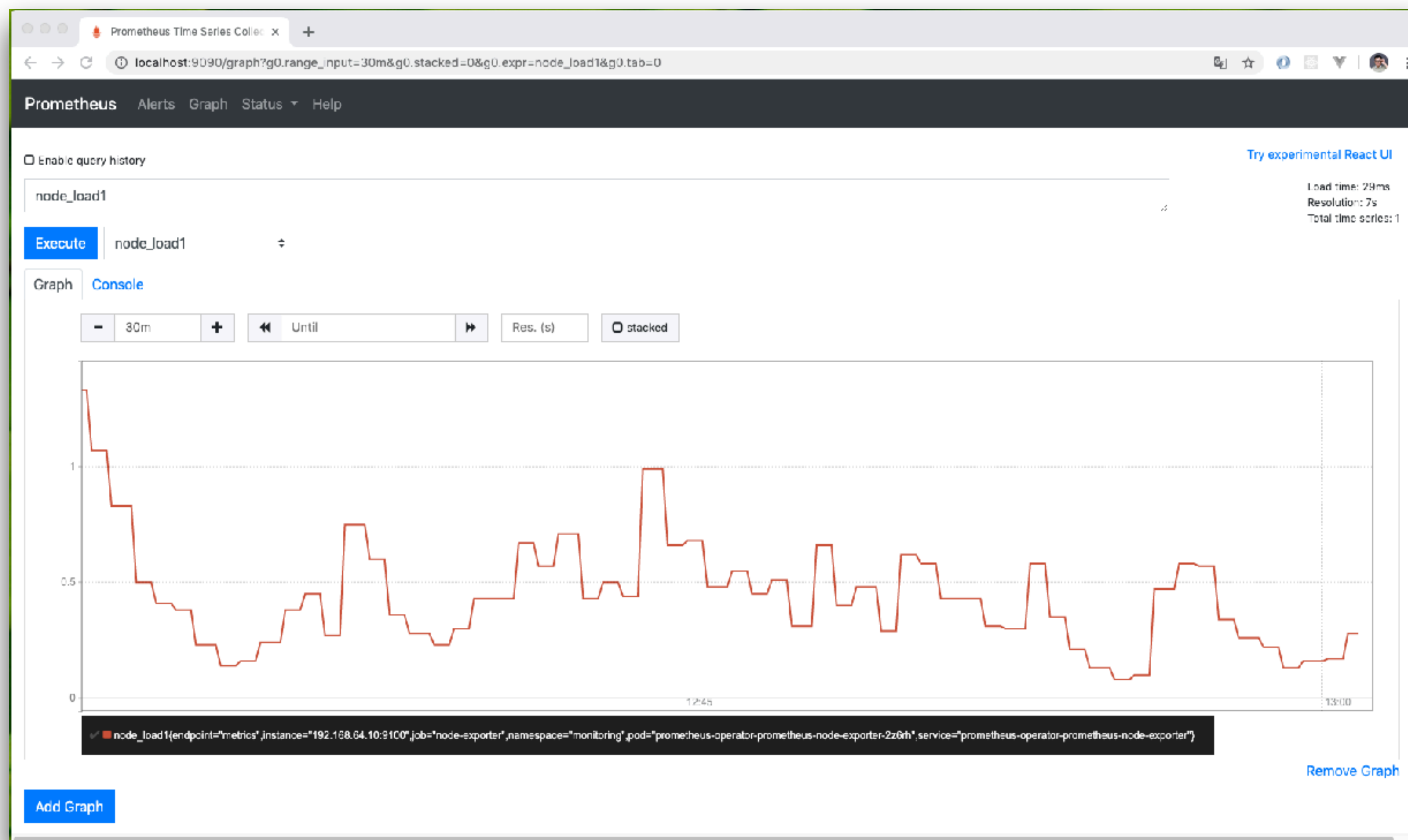
```
1. kubectl port-forward -n monitoring prometheus-prometheus-operator-prometheus- (kubectl)
→ ~ clear
→ ~ kubectl get po -n monitoring
NAME                                                    READY   STATUS    RESTARTS   AGE
alertmanager-prometheus-operator-alertmanager-0       2/2     Running   0           28m
prometheus-operator-grafana-65dc66c89d-s76pm           2/2     Running   0           28m
prometheus-operator-kube-state-metrics-8467c5bdbc-jhcf 1/1     Running   0           28m
prometheus-operator-operator-6f9fd5d858-n64tq         2/2     Running   0           28m
prometheus-operator-prometheus-node-exporter-2z6rh    1/1     Running   0           28m
prometheus-prometheus-operator-prometheus-0          3/3     Running   1           27m
→ ~ kubectl port-forward -n monitoring prometheus-prometheus-operator-prometheus-0 9090
Forwarding from 127.0.0.1:9090 -> 9090
Forwarding from [::1]:9090 -> 9090
█
```

<http://localhost:9090>

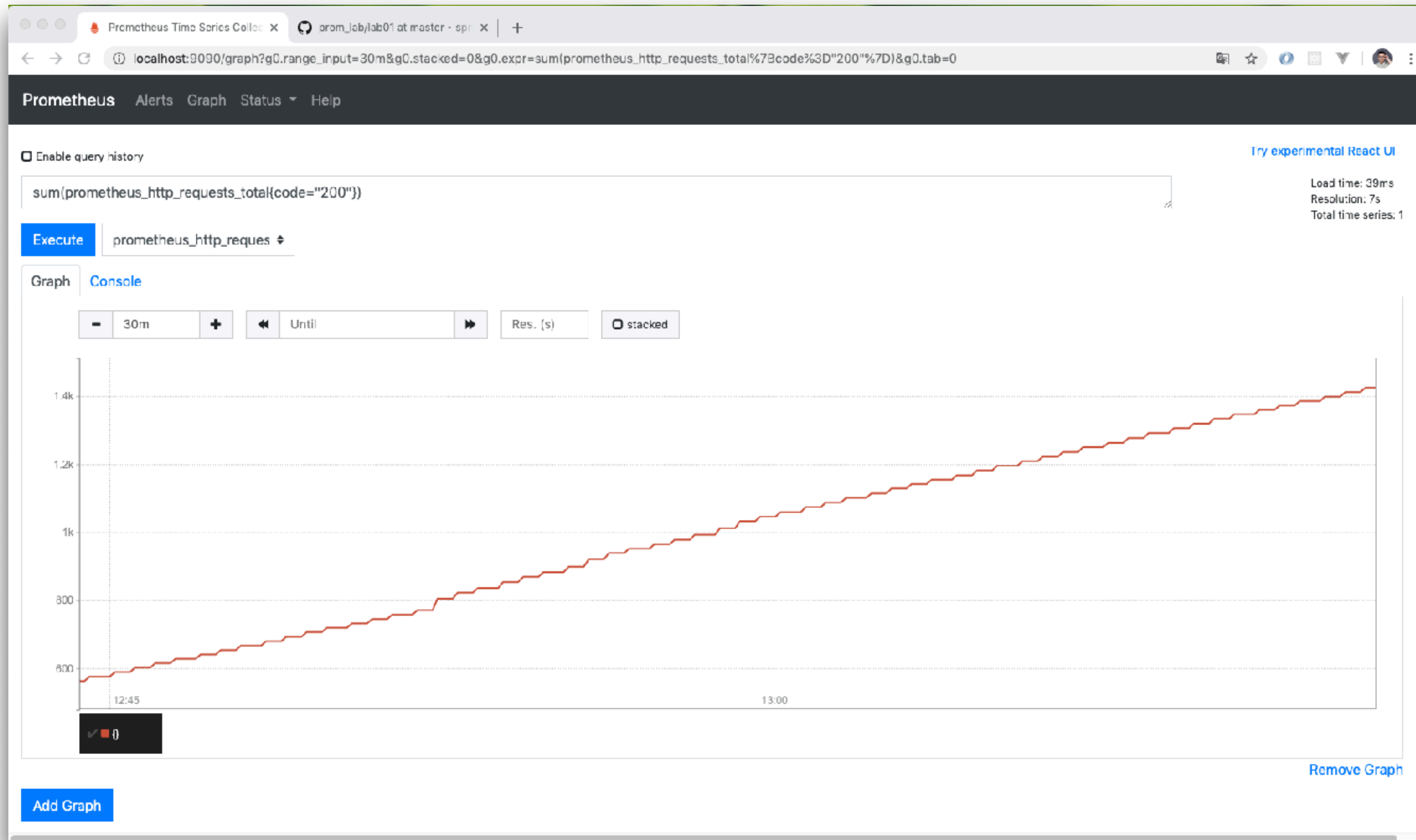
up指标



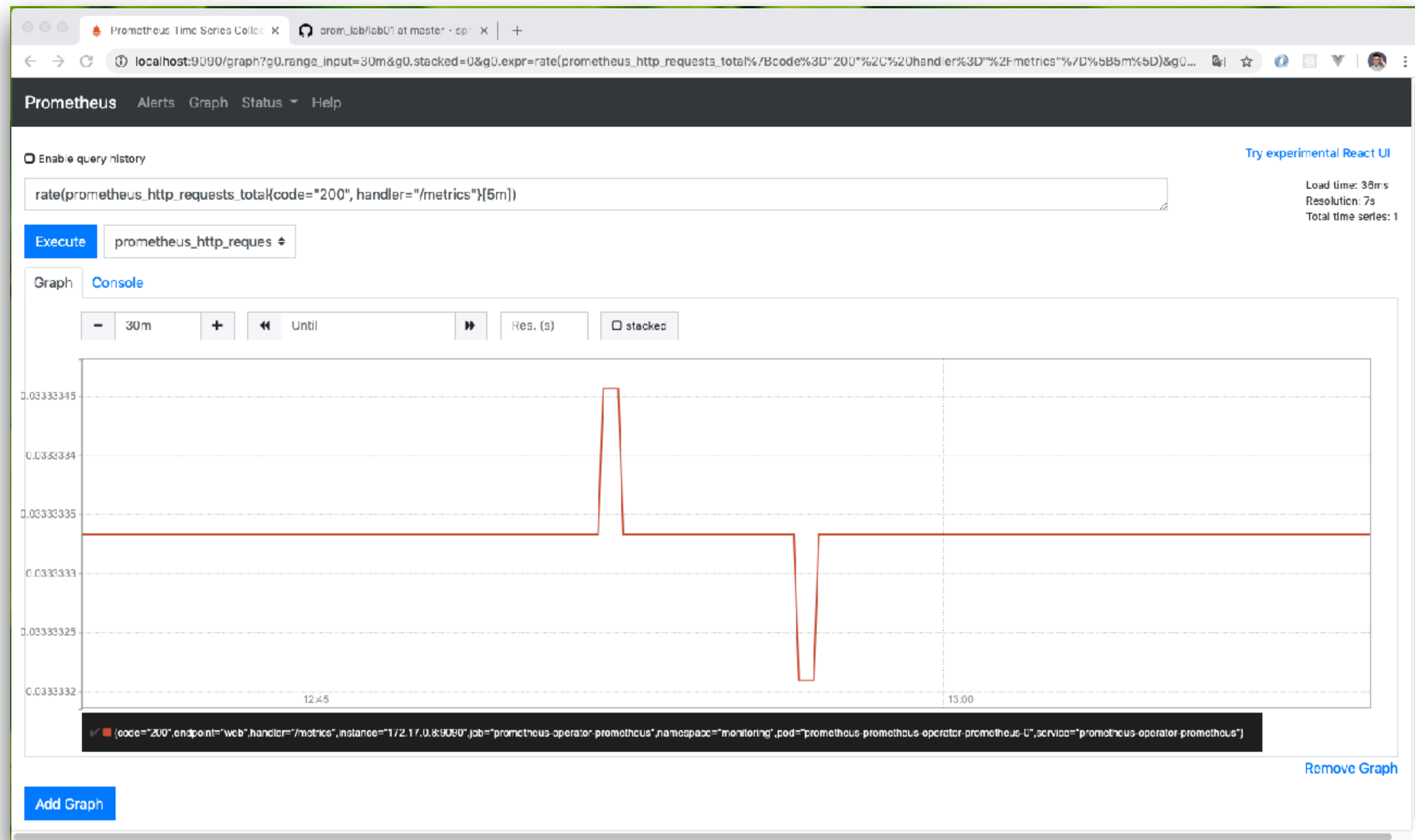
node_load1指标



查询对promethues web总的成功请求数



查询对promethues metrics端点的成功请求率



告警信息

Prometheus Time Series Collec X

localhost:9090/alerts

Prometheus

Alerts

Graph

Status

Help

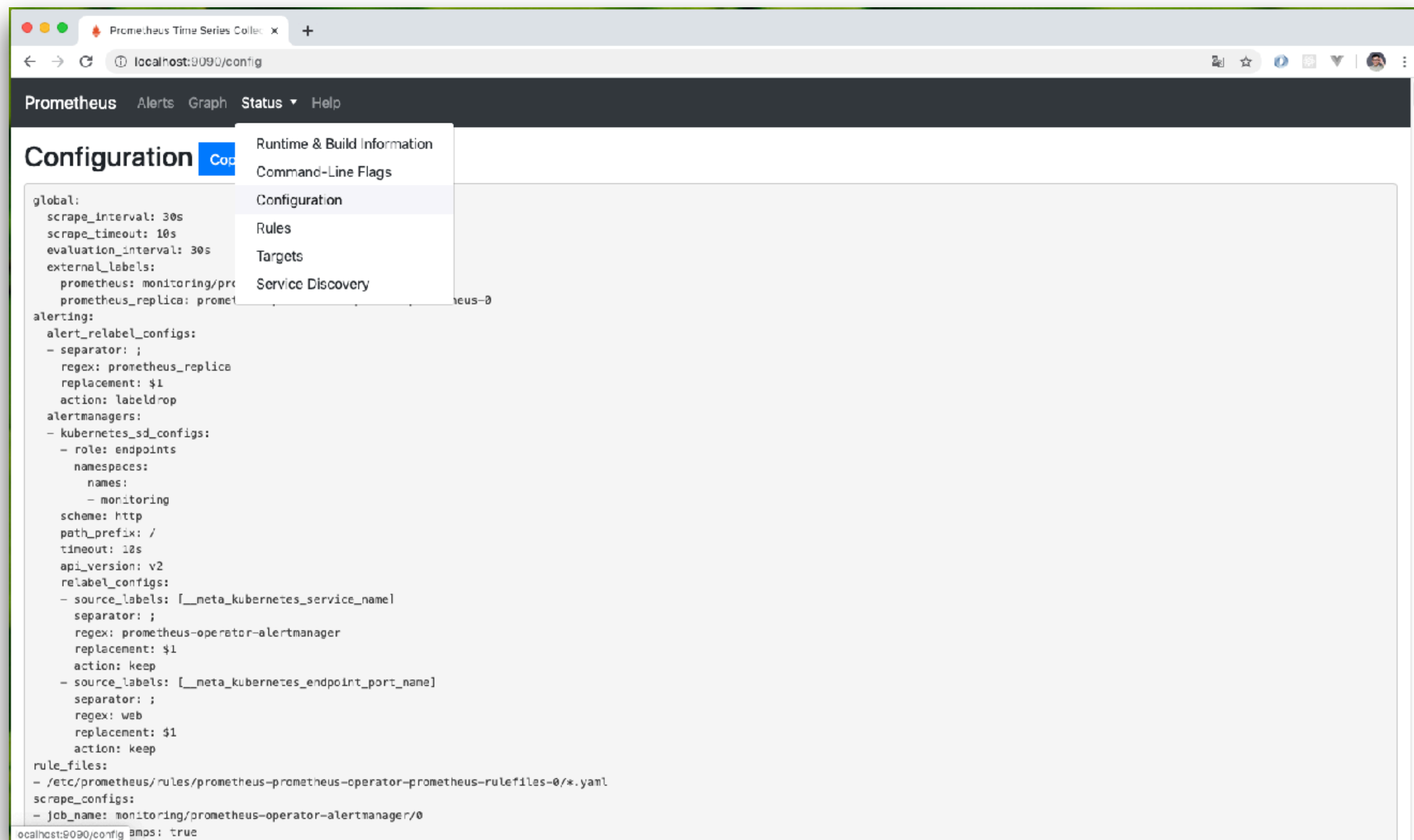
Alerts

Inactive (95) Pending (0) Firing (5)

☐ Show annotations

/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-alertmanager.rules.yaml > alertmanager.rules
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-etcd.yaml > etcd
etcdInsufficientMembers (1 active)
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-general.rules.yaml > general.rules
TargetDown (2 active)
Watchdog (1 active)
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kube-apiserver-error.yaml > kube-apiserver-error
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-absent.yaml > kubernetes-absent
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-apps.yaml > kubernetes-apps
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-resources.yaml > kubernetes-resources
KubeCPUOvercommit (1 active)
KubeMemOvercommit (1 active)
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-storage.yaml > kubernetes-storage
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-system-apiserver.yaml > kubernetes-system-apiserver
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-system-controller-manager.yaml > kubernetes-system-controller-manager
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-system-kubelet.yaml > kubernetes-system-kubelet
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-system-scheduler.yaml > kubernetes-system-scheduler
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-kubernetes-system.yaml > kubernetes-system
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-node-exporter.yaml > node-exporter
/etc/prometheus/rules/prometheus-prometheus-operator-prometheus-rulefiles-0/monitoring-prometheus-operator-node-network.yaml > node-network

配置信息Configuration



告警(alert)和聚合(record)规则Rules

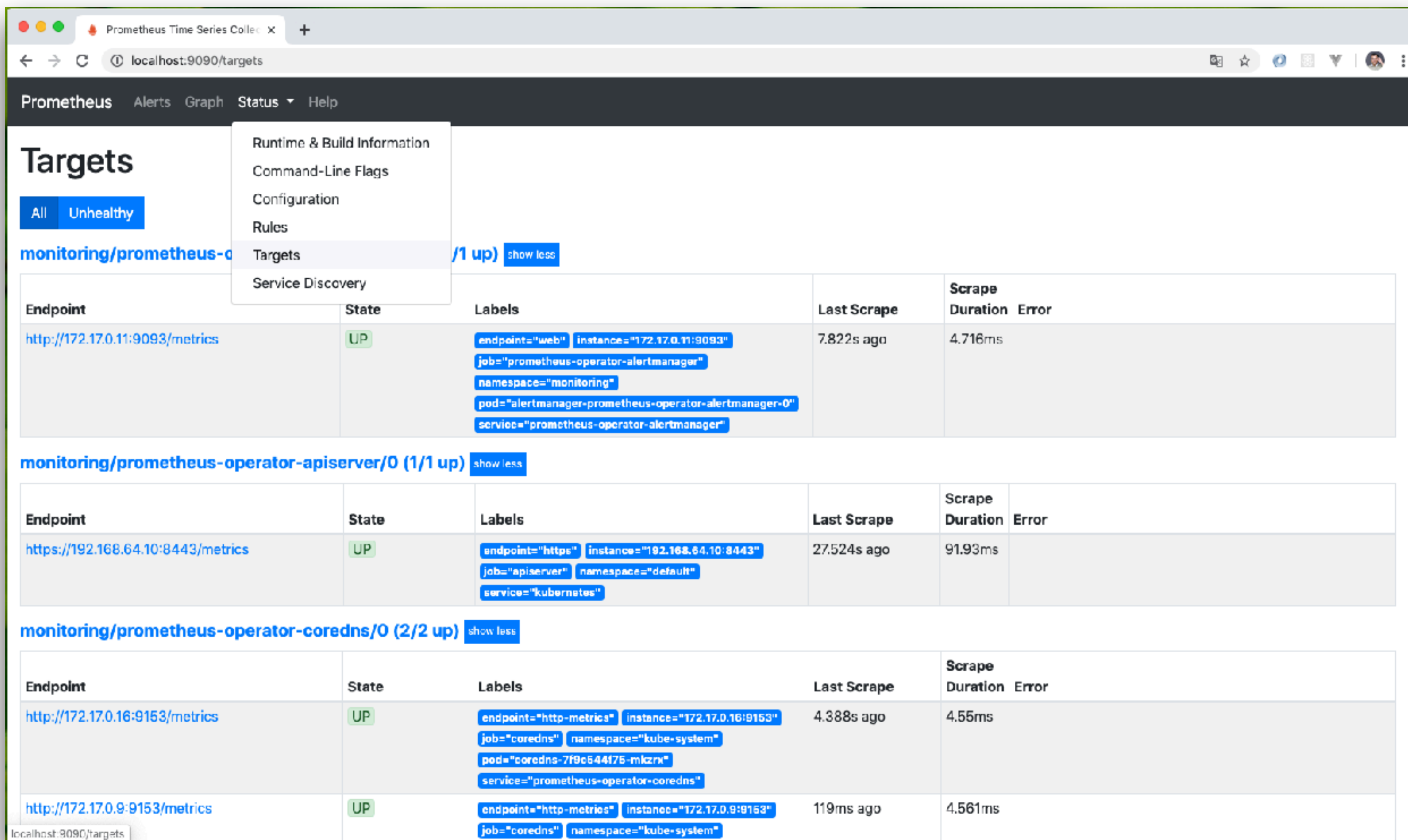
Rules

- Runtime & Build Information
- Command-Line Flags
- Configuration
- Rules
- Targets
- Service Discovery

Rule	State	Error	Last Evaluation	Evaluation Time
alertmanager.rules			2.499s ago	860.7us
Rule				
<pre>alert: AlertmanagerConfigInconsistent expr: count_values by(service) ("config_hash", alertmanager_config_hash(job="prometheus-operator-alertmanager",namespace="monitoring")) / on(service) group left() label replace(max by(name, job, namespace, controller) (prometheus_operator_spec_replicas(controller="alertmanager",job="prometheus-operator-operator",namespace="monitoring")), "service", "\$1", "name", "(.*)") != 1 for: 5m labels: severity: critical annotations: message: The configuration of the instances of the Alertmanager cluster `{{ \$labels.service }}` are out of sync.</pre>	OK		2.499s ago	587.2us
<pre>alert: AlertmanagerFailedReload expr: alertmanager_config_last_reload_successful{job="prometheus-operator-alertmanager",namespace="monitoring"} == 0 for: 10m labels: severity: warning annotations: message: Reloading Alertmanager's configuration has failed for ({{ \$labels.namespace }}/{{ \$labels.pod}}).</pre>	OK		2.499s ago	109.9us
<pre>alert: AlertmanagerMembersInconsistent expr: alertmanager_cluster_members{job="prometheus-operator-alertmanager",namespace="monitoring"} != on(service) group_left() count by(service) (alertmanager_cluster_members{job="prometheus-operator- alertmanager",namespace="monitoring"}) for: 5m labels:</pre>	OK		2.499s ago	149.8us

localhost:9090/rules critical

监控目标Targets



The screenshot shows the Prometheus web interface at `localhost:9090/targets`. The page displays a list of targets under the 'Targets' section. A dropdown menu is open, showing options like 'Runtime & Build Information', 'Command-Line Flags', 'Configuration', 'Rules', 'Targets', and 'Service Discovery'. The 'Targets' option is selected.

The targets are listed in a table with columns: Endpoint, State, Labels, Last Scrape, and Scrape Duration. The table is divided into three sections based on the job name.

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
monitoring/prometheus-operator-alertmanager/0 (1/1 up) show less					
http://172.17.0.11:9093/metrics	UP	<code>endpoint="web"</code> <code>instance="172.17.0.11:9093"</code> <code>job="prometheus-operator-alertmanager"</code> <code>namespace="monitoring"</code> <code>pod="alertmanager-prometheus-operator-alertmanager-0"</code> <code>service="prometheus-operator-alertmanager"</code>	7.822s ago	4.716ms	
monitoring/prometheus-operator-apiserver/0 (1/1 up) show less					
https://192.168.64.10:8443/metrics	UP	<code>endpoint="https"</code> <code>instance="192.168.64.10:8443"</code> <code>job="apiserver"</code> <code>namespace="default"</code> <code>service="kubernetes"</code>	27.524s ago	91.93ms	
monitoring/prometheus-operator-coredns/0 (2/2 up) show less					
http://172.17.0.16:9153/metrics	UP	<code>endpoint="http-metrics"</code> <code>instance="172.17.0.16:9153"</code> <code>job="coredns"</code> <code>namespace="kube-system"</code> <code>pod="coredns-7f9c544f75-mkzrw"</code> <code>service="prometheus-operator-coredns"</code>	4.388s ago	4.55ms	
http://172.17.0.9:9153/metrics	UP	<code>endpoint="http-metrics"</code> <code>instance="172.17.0.9:9153"</code> <code>job="coredns"</code> <code>namespace="kube-system"</code>	119ms ago	4.561ms	

访问Alertmanager UI

```
1. kubectl port-forward -n monitoring 9093 (kubectl)
× kubectl (kubectl) ❸1 × kubectl (kubectl) ❸2
Last login: Sun Feb  9 17:04:19 on ttys001
→ ~ kubectl get po -n monitoring
NAME                                                    READY   STATUS    RESTARTS   AGE
alertmanager-prometheus-operator-alertmanager-0       2/2     Running   0           59m
prometheus-operator-grafana-65dc66c89d-s76pm           2/2     Running   0           60m
prometheus-operator-kube-state-metrics-8467c5bdbc-jhcf 1/1     Running   0           60m
prometheus-operator-operator-6f9fd5d858-n64tq          2/2     Running   0           60m
prometheus-operator-prometheus-node-exporter-2z6rh     1/1     Running   0           60m
prometheus-prometheus-operator-prometheus-0           3/3     Running   1           59m
→ ~ kubectl port-forward -n monitoring alertmanager-prometheus-operator-alertmanager-0 9093
Forwarding from 127.0.0.1:9093 -> 9093
Forwarding from [::1]:9093 -> 9093
█
```

<http://localhost:9093>

告警信息

The screenshot displays the Alertmanager web interface in a browser window. The browser's address bar shows the URL `localhost:9093/#/alerts`. The interface has a top navigation bar with links for `Alertmanager`, `Alerts`, `Silences`, `Status`, and `Help`, along with a `New Silence` button. Below the navigation bar, there is a filter section with tabs for `Filter` and `Group`. The `Filter` tab is active, showing a search input field with a placeholder text "Custom matcher, e.g. `env='production'`". To the right of the search field are buttons for `Receiver: All`, `Silenced`, and `Inhibited`. Below the search field, there is a button labeled `Expand all groups`. The main content area displays a list of alert groups. The first group is labeled `Not grouped` and contains 1 alert. The alert details show the time `12:22:45, 2020-02-09 (UTC)` and three links: `+ Info`, `Source`, and `Silence`. Below the alert details, there are three filter tags: `alertname='Watchdog'`, `prometheus='monitoring/prometheus-operator-prometheus'`, and `severity='none'`. The second group is labeled `Not grouped` and contains 2 alerts. The third group is labeled `job='kube-etcd'` and contains 2 alerts. The fourth group is labeled `job='kube-proxy'` and contains 1 alert.

Alertmanager Alerts Silences Status Help [New Silence](#)

Filter Group Receiver: All ☐ Silenced ☐ Inhibited

+ [Silence](#)

Custom matcher, e.g. `env='production'`

+ Expand all groups

- Not grouped 1 alert

12:22:45, 2020-02-09 (UTC) [+ Info](#) [Source](#) [Silence](#)

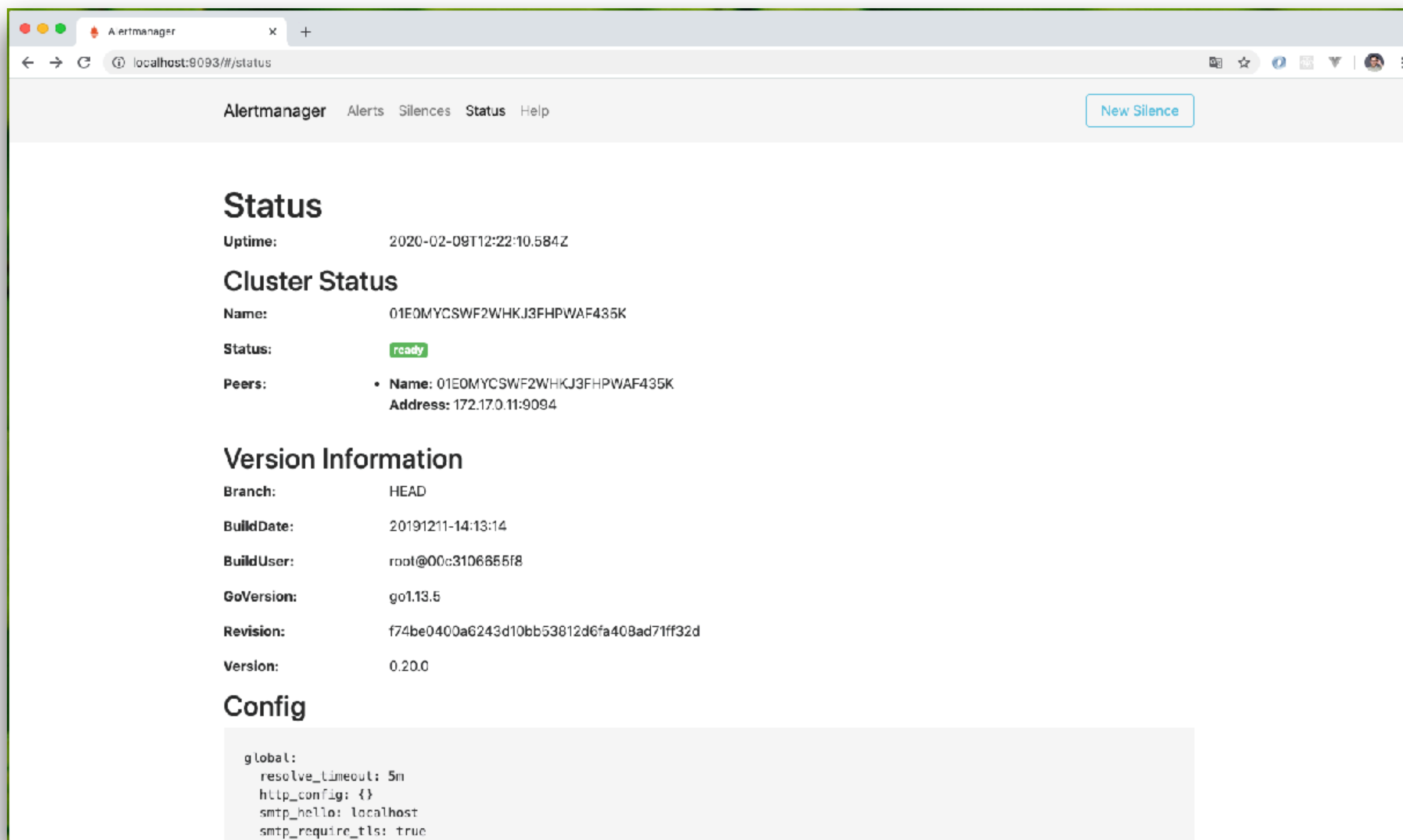
`alertname='Watchdog'` `prometheus='monitoring/prometheus-operator-prometheus'` `severity='none'`

+ Not grouped 2 alerts

+ `job='kube-etcd'` 2 alerts

+ `job='kube-proxy'` 1 alert

状态和配置



The screenshot shows the Alertmanager web interface in a browser. The browser's address bar shows 'localhost:9093/#/status'. The page has a navigation bar with 'Alertmanager', 'Alerts', 'Silences', 'Status', and 'Help'. A 'New Silence' button is in the top right. The main content area is titled 'Status' and contains three sections: 'Uptime', 'Cluster Status', and 'Version Information'. The 'Uptime' section shows '2020-02-09T12:22:10.584Z'. The 'Cluster Status' section shows the cluster name '01E0MYCSWF2WHKJ3FHPWAF435K', a 'ready' status, and a single peer with the same name and address '172.17.0.11:9094'. The 'Version Information' section lists details like 'Branch: HEAD', 'BuildDate: 20191211-14:13:14', 'BuildUser: root@00c3106855f8', 'GoVersion: go1.13.5', 'Revision: f74be0400a6243d10bb53812d6fa408ad71ff32d', and 'Version: 0.20.0'. At the bottom, a 'Config' section displays the configuration in a code block.

Alertmanager Alerts Silences Status Help [New Silence](#)

Status

Uptime: 2020-02-09T12:22:10.584Z

Cluster Status

Name: 01E0MYCSWF2WHKJ3FHPWAF435K

Status: ready

Peers:

- Name: 01E0MYCSWF2WHKJ3FHPWAF435K
Address: 172.17.0.11:9094

Version Information

Branch: HEAD

BuildDate: 20191211-14:13:14

BuildUser: root@00c3106855f8

GoVersion: go1.13.5

Revision: f74be0400a6243d10bb53812d6fa408ad71ff32d

Version: 0.20.0

Config

```
global:
  resolve_timeout: 5m
  http_config: {}
  smtp_hello: localhost
  smtp_require_tls: true
```

访问Grafana UI

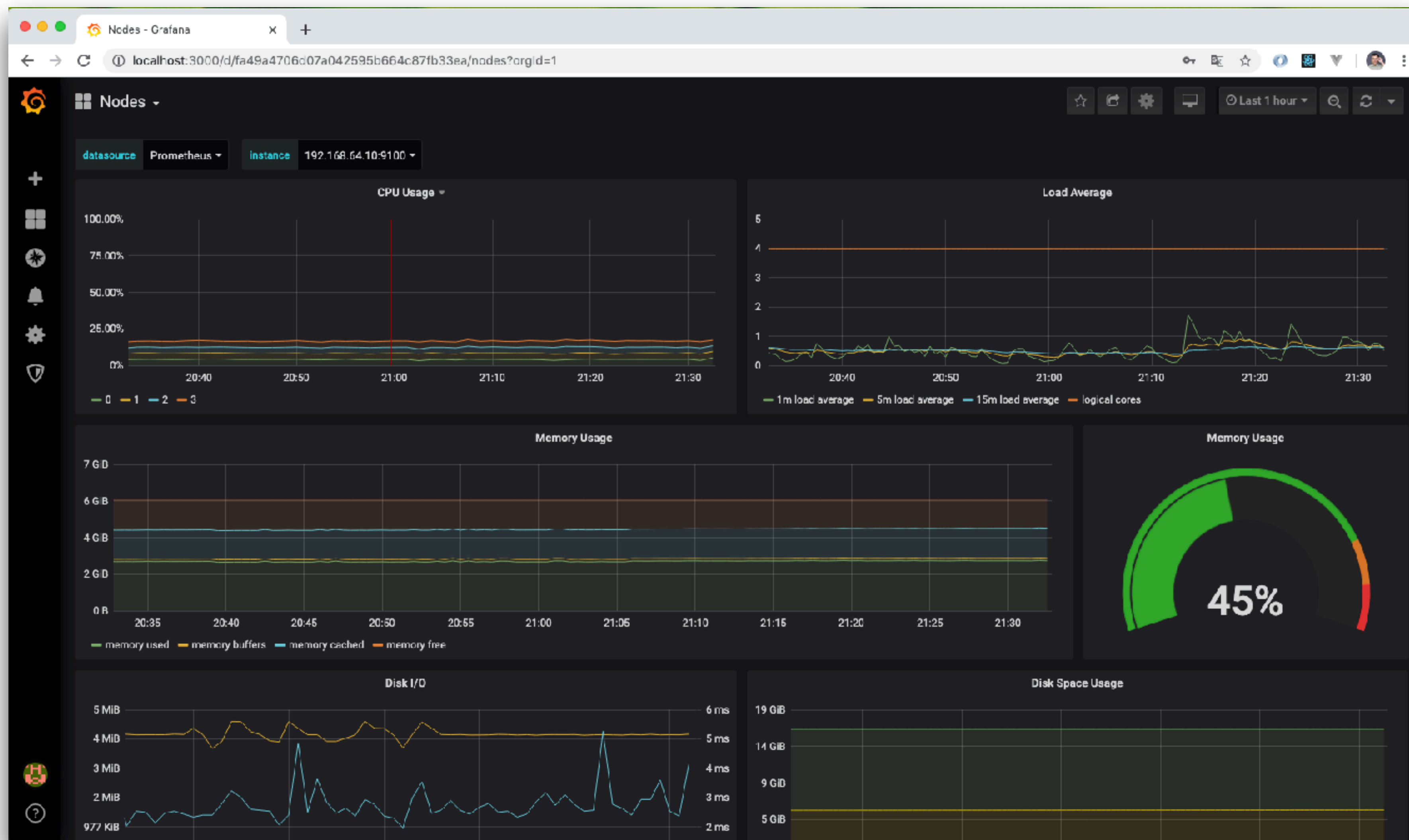
```
1. kubectl port-forward -n monitoring 3000 (kubectl)
× kubectl (kubectl)  %1 × kubectl (kubectl)  %2 × kubectl (kubectl)  %3
Last login: Sun Feb  9 21:21:47 on ttys003
→ ~ kubectl get po -n monitoring
NAME                                                    READY   STATUS    RESTARTS   AGE
alertmanager-prometheus-operator-alertmanager-0       2/2     Running   0           67m
prometheus-operator-grafana-65dc66c89d-s76pm           2/2     Running   0           67m
prometheus-operator-kube-state-metrics-8467c5bdbc-jhcf 1/1     Running   0           67m
prometheus-operator-operator-6f9fd5d858-n64tq          2/2     Running   0           67m
prometheus-operator-prometheus-node-exporter-2z6rh     1/1     Running   0           67m
prometheus-prometheus-operator-prometheus-0           3/3     Running   1           67m
→ ~ kubectl port-forward -n monitoring prometheus-operator-grafana-65dc66c89d-s76pm 3000
Forwarding from 127.0.0.1:3000 -> 3000
Forwarding from [::1]:3000 -> 3000
█
```

<http://localhost:3000>

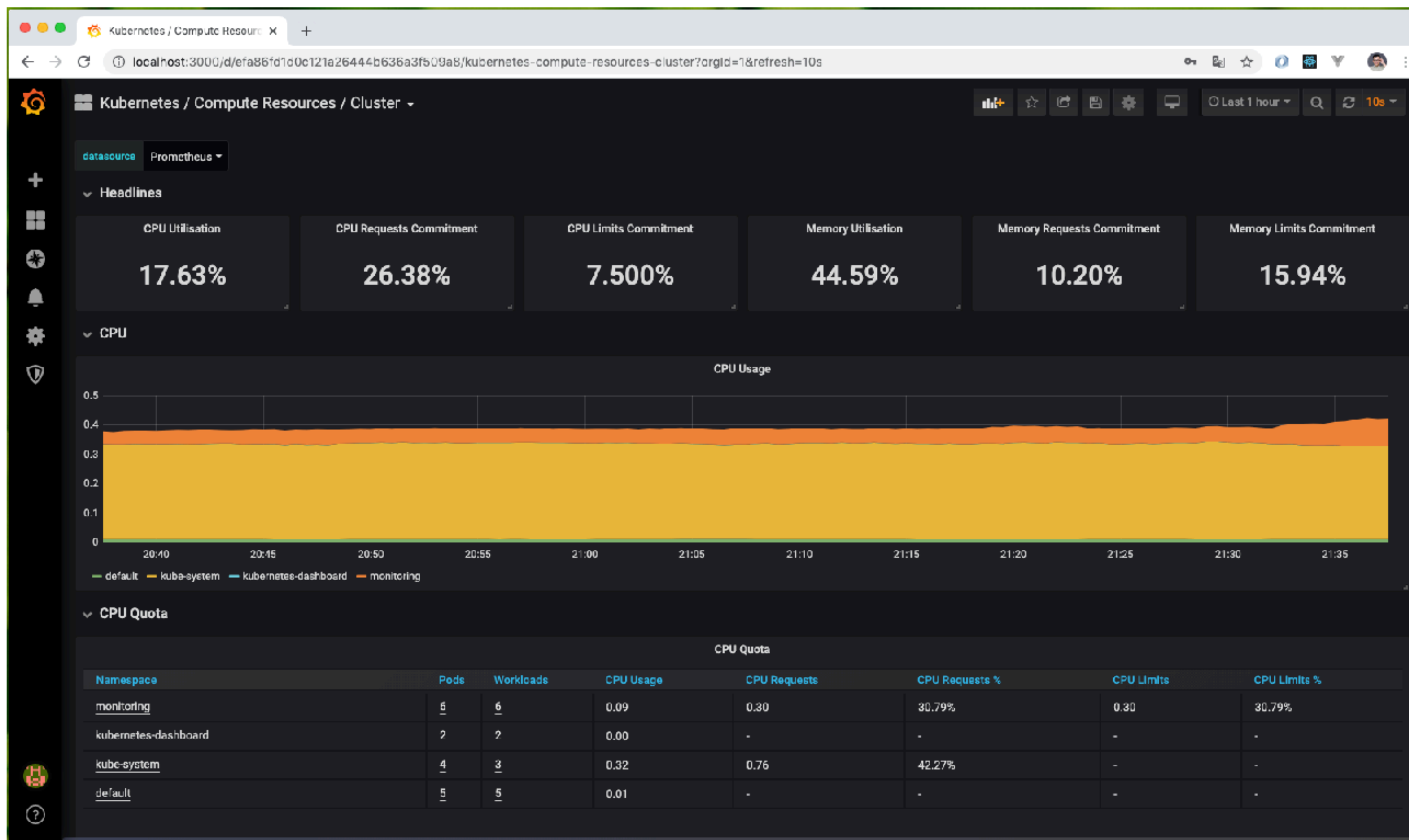
user: admin

pass: prom-operator

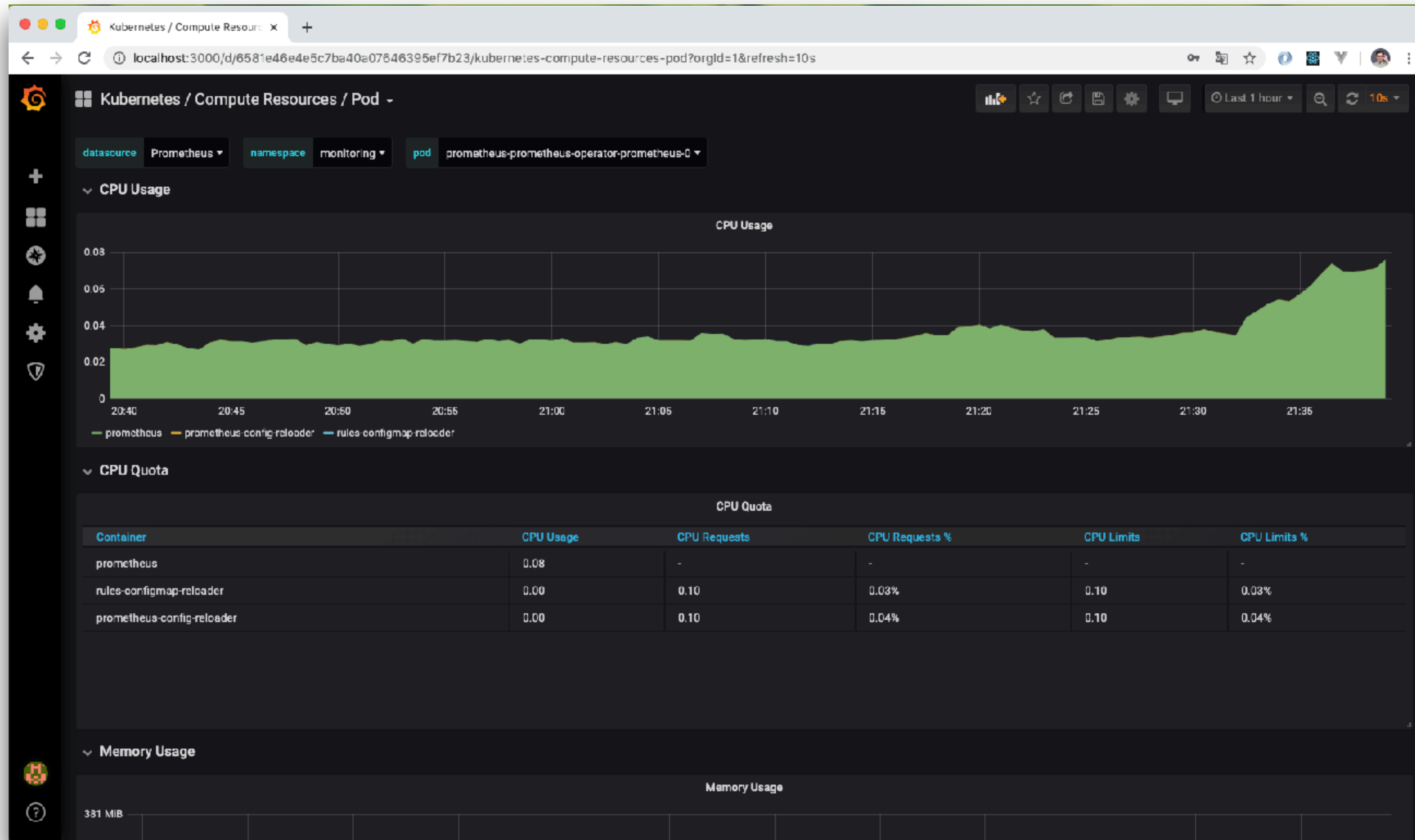
Nodes节点监控



K8s/Compute Resources/Cluster监控



K8s/Compute Resources/Pod监控



本课小结



- 展示Prometheus-Operator的基本功能
 - Prometheus内置浏览器 ~ 快速查询和调试，查看告警和基本配置信息
 - Alertmanager UI ~ 查询过滤告警，查看基本告警配置
 - Grafana UI ~ 内置支持各种针对k8s平台的企业级监控dashboard