

基于kubernetes构建智能化监控告警系统

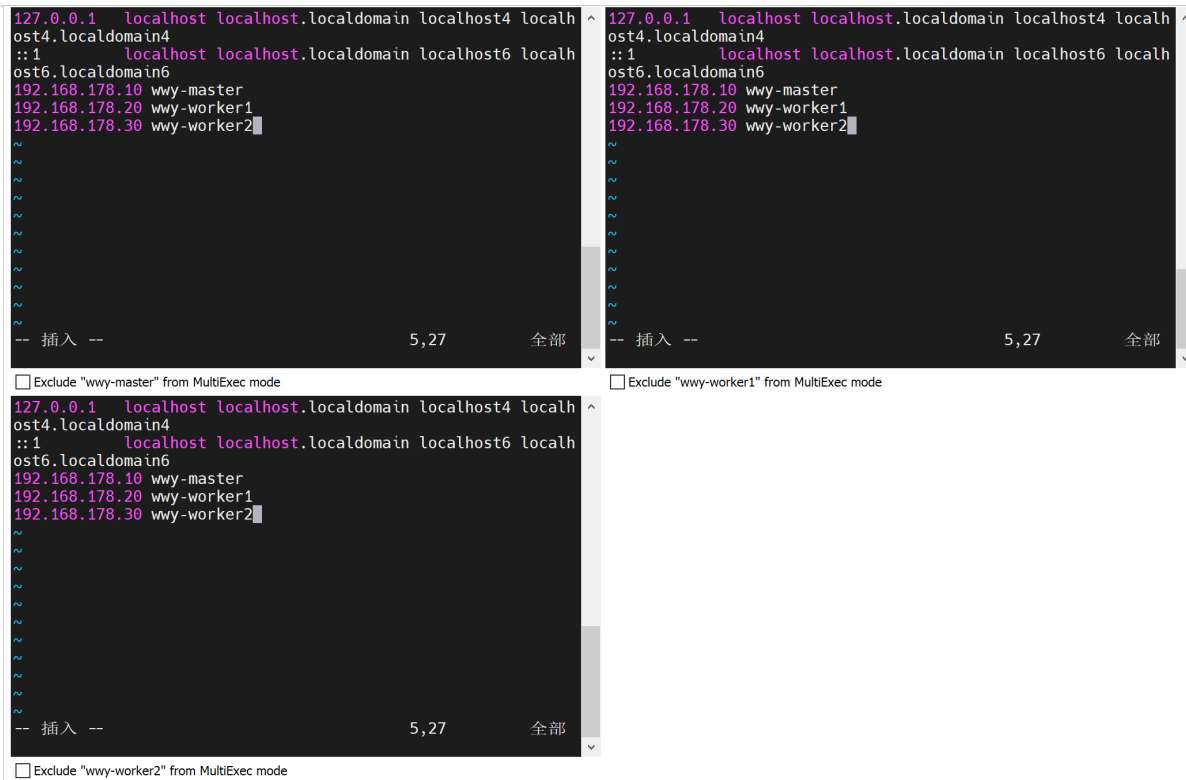
k8s集群规划

hostname	ip
wwy-master	192.168.178.10
wwy-worker1	192.168.178.20
wwy-worker2	192.168.178.30

基于sealos搭建k8s集群

准备基本环境

```
# 所有的主机都要配置主机名和域名映射
# 设置主机名
hostnamectl set-hostname wwy-master
vim /etc/hosts
```



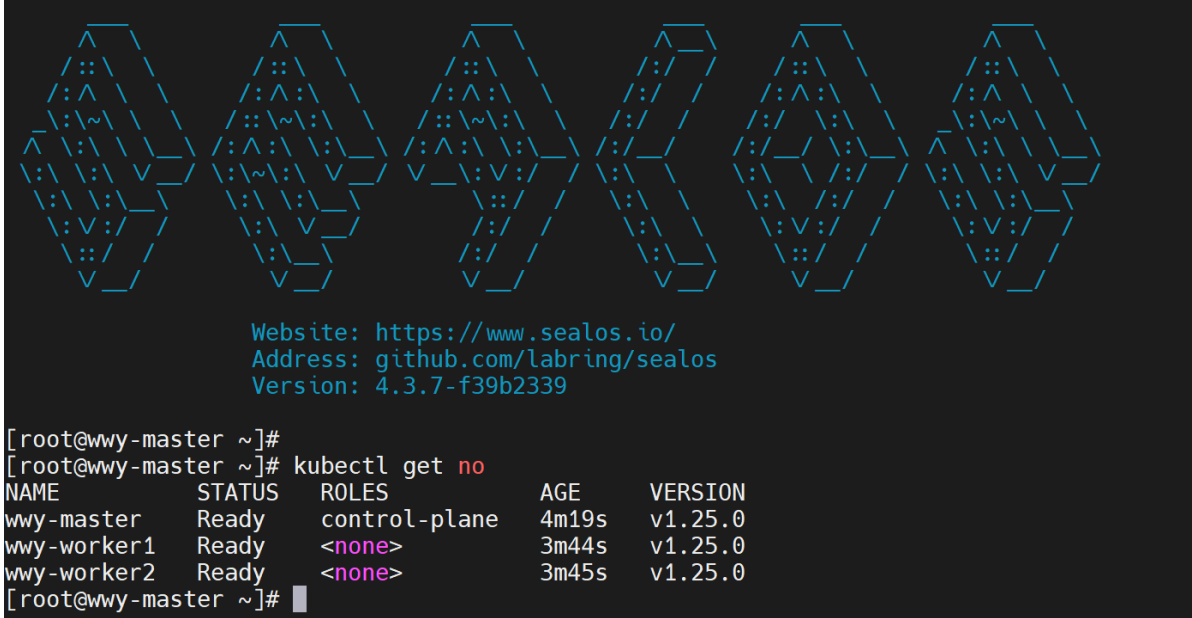
安装sealos

官方文档: <https://sealos.io/zh-Hans/docs/self-hosting/lifecycle-management/quick-start/deploy-kubernetes>
下载地址: <https://github.com/labring/sealos/releases>

安装kubernetes集群

k8s version: 1.25.0

官方文档: <https://sealos.io/zh-Hans/docs/self-hosting/lifecycle-management/quick-start/deploy-kubernetes>



node_exporter安装和配置

在所有节点安装node-exporter

```
[root@wwy-master ~]# kubectl create ns monitor-sa
namespace/monitor-sa created
```

```
#在所有节点导入node-exporter.tar.gz
```

```
[root@wwy-master ~]# ctr -n k8s.io images import node-exporter.tar.gz
```

```
[root@wwy-master ~]# kubectl apply -f node-export.yaml
daemonset.apps/node-exporter created
```

#查看是否部署成功

```
[root@wwy-master ~]# kubectl get pod -n monitor-sa -owide
```

```
[root@wwy-master ~]# kubectl get pod -n monitor-sa -owide
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
node-exporter-f2cts	1/1	Running	0	36s	192.168.178.30	wwy-worker2	<none>	<none>
node-exporter-gt7r4	1/1	Running	0	36s	192.168.178.10	wwy-master	<none>	<none>
node-exporter-npbcp	1/1	Running	0	36s	192.168.178.20	wwy-worker1	<none>	<none>

```
[root@wwy-master ~]#
```

#查看节点总内存使用情况

```
[root@wwy-master ~]# curl http://192.168.178.20:9100/metrics |grep  
node_memory_MemTotal_bytes
```

```
[root@wwy-master ~]# curl http://192.168.178.20:9100/metrics |grep node_memory_MemTotal_bytes  
% Total    % Received % Xferd  Average Speed   Time    Time     Time    Current  
           Dload  Upload   Total   Spent    Left     Speed  
0    0    0    0    0    0     0      0  0 --:--:-- --:--:-- --:--:--    0# HELP node_memory_MemTotal_bytes Memory information field MemTotal_bytes.  
# TYPE node_memory_MemTotal_bytes gauge  
node_memory_MemTotal_bytes 2.095648768e+09  
100 90284 100 90284 0 0 3189k 0 --:--:-- --:--:-- --:--:-- 3265k  
[root@wwy-master ~]#
```

[prometheus \(2\) 之对kubernetes的监控 - 大辉哥 - 博客园\(cnblogs.com\)](http://cnblogs.com)

prometheus server安装和配置

创建serviceaccount账号，对其做RBAC授权

```
[root@wwy-master ~]# kubectl create serviceaccount monitor -n monitor-sa  
serviceaccount/monitor created  
  
[root@wwy-master ~]# kubectl create clusterrolebinding monitor-  
clusterrolebinding -n monitor-sa --clusterrole=cluster-admin --  
serviceaccount=monitor-sa:monitor  
clusterrolebinding.rbac.authorization.k8s.io/monitor-clusterrolebinding created  
  
[root@wwy-master ~]# kubectl create clusterrolebinding monitor-  
clusterrolebinding-1 -n monitor-sa --clusterrole=cluster-admin --  
user=system:serviceaccount:monitor:monitor-sa  
clusterrolebinding.rbac.authorization.k8s.io/monitor-clusterrolebinding-1  
created
```

创建prometheus数据存储目录

```
在两个worker节点上创建数据存储目录  
[root@wwy-worker1 ~]# mkdir /data  
[root@wwy-worker1 ~]# chmod 777 /data/  
[root@wwy-worker2 ~]# mkdir /data  
[root@wwy-worker2 ~]# chmod 777 /data/
```

创建一个configmap用来存放prometheus配置信息

```
[root@wwy-master ~]# kubectl apply -f prometheus-cfg.yaml  
configmap/prometheus-config created  
[root@wwy-master ~]# kubectl get cm -n monitor-sa  


| NAME              | DATA | AGE |
|-------------------|------|-----|
| kube-root-ca.crt  | 1    | 23h |
| prometheus-config | 1    | 45s |


```

通过deployment部署prometheus

导入prometheus

```
[root@wwy-worker1 ~]# ctr -n=k8s.io images import prometheus-2-2-1.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking docker.io/prom/prometheus:v2.2.1
(sha256:9dd99da46165fcc573db2c8e4b65f9dc33914ed6a8cf6385cb8a73a0a0682926)...done
```

```
[root@wwy-worker2 ~]# ctr -n=k8s.io images import prometheus-2-2-1.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking docker.io/prom/prometheus:v2.2.1
(sha256:9dd99da46165fcc573db2c8e4b65f9dc33914ed6a8cf6385cb8a73a0a0682926)...done
```

部署prometheus

```
[root@wwy-master ~]# kubectl apply -f prometheus-deploy.yaml
deployment.apps/prometheus-server created
```

查看promethues的pod的状态

```
[root@wwy-master ~]# kubectl get pods -n monitor-sa
```

NAME	READY	STATUS	RESTARTS	AGE
node-exporter-f2cts	1/1	Running	0	23h
node-exporter-gt7r4	1/1	Running	0	23h
node-exporter-npbcp	1/1	Running	0	23h
prometheus-server-59964b7488-4dtw6	1/1	Running	0	10s
prometheus-server-59964b7488-qxn8c	1/1	Running	0	10s

给prometheus pod创建一个service

```
[root@wwy-master ~]# kubectl apply -f prometheus-svc.yaml
service/prometheus created
```

可以看到service在宿主机上映射的端口是32379

```
[root@wwy-master ~]# kubectl get svc -n monitor-sa
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
prometheus	NodePort	10.96.0.139	<none>	9090:32379/TCP	9s

访问prometheus服务，点击页面的Status->Targets，如下图，说明我们配置的服务发现可以正常采集数据

Targets				
<input type="checkbox"/> Only unhealthy jobs				
kubernetes-apiserver (1/1 up) show less				
Endpoint	State	Labels	Last Scrape	Error
https://192.168.178.10:6443/metrics	UP	instance="192.168.178.10:6443"	3.61s ago	
kubernetes-node (3/3 up) show less				
Endpoint	State	Labels	Last Scrape	Error
http://192.168.178.10:9100/metrics	UP	beta_kubernetes_io_arch="amd64" beta_kubernetes_io_os="linux" instance="wwy-master" kubernetes_io_arch="amd64" kubernetes_io_hostname="wwy-master" kubernetes_io_os="linux" node_kubernetes_io_exclude_from_external_load_balancers="" node_role_kubernetes_io_control_plane=""	11.456s ago	
http://192.168.178.20:9100/metrics	UP	beta_kubernetes_io_arch="amd64" beta_kubernetes_io_os="linux" instance="wwy-worker1" kubernetes_io_arch="amd64" kubernetes_io_hostname="wwy-worker1" kubernetes_io_os="linux" node_kubernetes_io_exclude_from_external_load_balancers="" node_role_kubernetes_io_control_plane=""	8.589s ago	
http://192.168.178.30:9100/metrics	UP	beta_kubernetes_io_arch="amd64" beta_kubernetes_io_os="linux" instance="wwy-worker2" kubernetes_io_arch="amd64" kubernetes_io_hostname="wwy-worker2" kubernetes_io_os="linux" node_kubernetes_io_exclude_from_external_load_balancers="" node_role_kubernetes_io_control_plane=""	6.535s ago	
kubernetes-node-cadvisor (3/3 up) show less				
Endpoint	State	Labels	Last Scrape	Error
https://kubernetes.default.svc:443/api/v1/nodes/wwy-master/proxy/metrics/cadvisor	UP	beta_kubernetes_io_arch="amd64" beta_kubernetes_io_os="linux" instance="wwy-master" kubernetes_io_arch="amd64" kubernetes_io_hostname="wwy-master" kubernetes_io_os="linux" node_kubernetes_io_exclude_from_external_load_balancers="" node_role_kubernetes_io_control_plane=""	1.12s ago	
https://kubernetes.default.svc:443/api/v1/nodes/wwy-worker1/proxy/metrics/cadvisor	UP	beta_kubernetes_io_arch="amd64" beta_kubernetes_io_os="linux" instance="wwy-worker1" kubernetes_io_arch="amd64" kubernetes_io_hostname="wwy-worker1" kubernetes_io_os="linux" node_kubernetes_io_exclude_from_external_load_balancers="" node_role_kubernetes_io_control_plane=""	6.543s ago	

prometheus热加载

Grafana的安装和配置

导入并安装Grafana

```
[root@wwy-worker1 ~]# ctr -n=k8s.io images import heapster-grafana-amd64_v5_0_4.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking k8s.gcr.io/heapster-grafana-amd64:v5.0.4
 sha256:1703015b12590c4c0a34d82e8c69c4e87a6f2303107034c720624e7cd74380da) ...done

[root@wwy-worker2 ~]# ctr -n=k8s.io images import heapster-grafana-amd64_v5_0_4.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking k8s.gcr.io/heapster-grafana-amd64:v5.0.4
 sha256:1703015b12590c4c0a34d82e8c69c4e87a6f2303107034c720624e7cd74380da) ...done

[root@wwy-master ~]# kubectl apply -f grafana.yaml
deployment.apps/monitoring-grafana created
service/monitoring-grafana created

检查Grafana的pod的运行状态
[root@wwy-master ~]# kubectl get pod -n kube-system -l task=monitoring
NAME                                READY    STATUS    RESTARTS   AGE
monitoring-grafana-d47cdf886-fc58h  1/1      Running   0           16s
```

monitoring-grafana-d47cdf886-mstz7 1/1 Running 0 16s

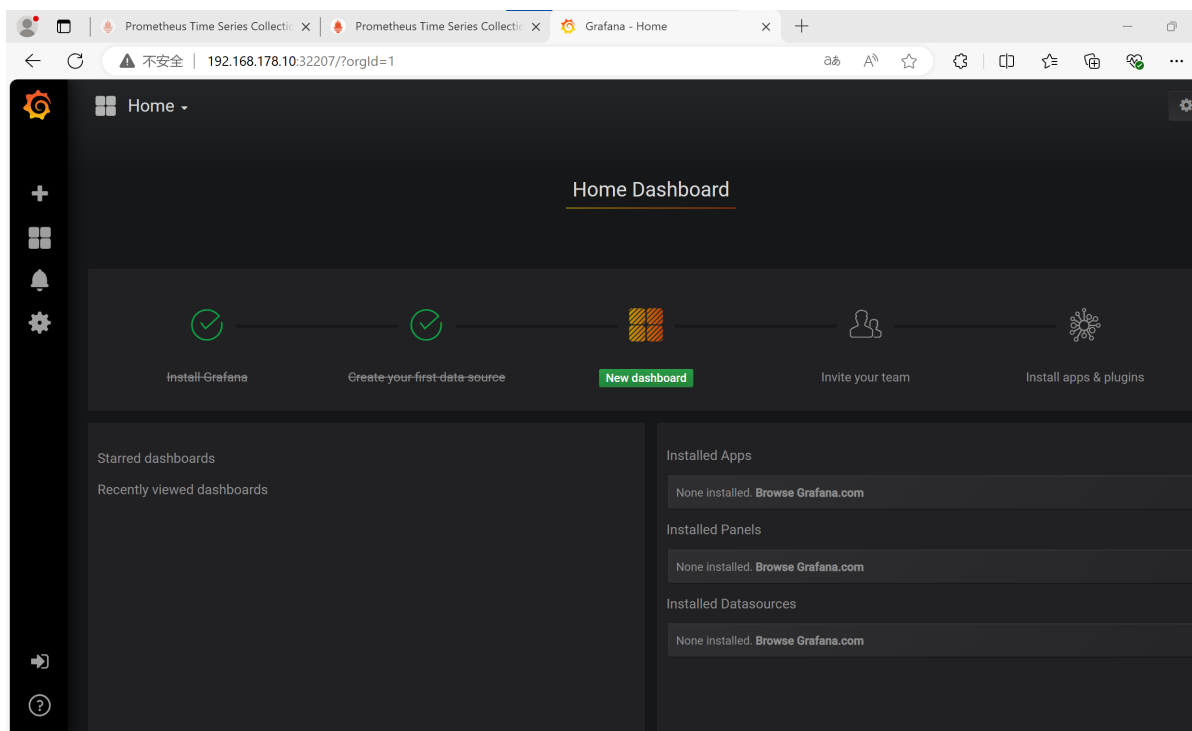
Grafana接入prometheus数据源

可以看到grafana的访问端口为32207

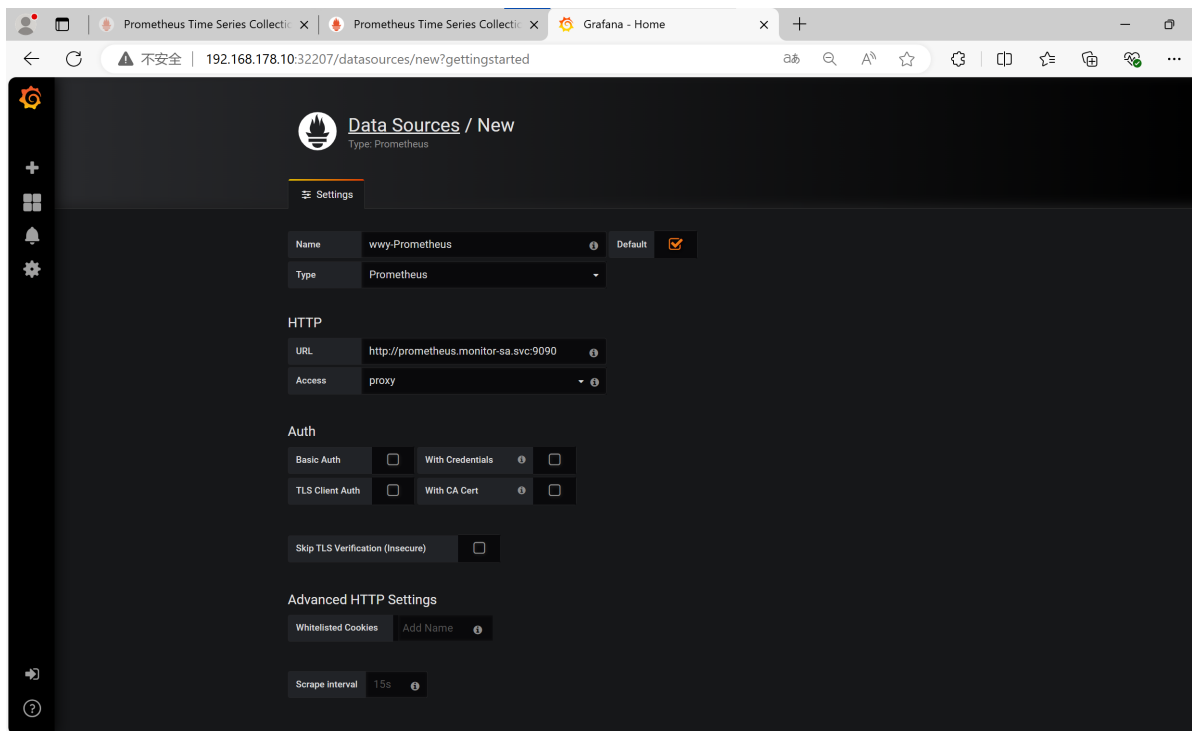
```
[root@wwy-master ~]# kubectl get svc -n kube-system
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)
AGE				
kube-dns	ClusterIP	10.96.0.10	<none>	53/UDP, 53/TCP, 9153/TCP 23h
monitoring-grafana	NodePort	10.96.3.125	<none>	80:32207/TCP 3m24s

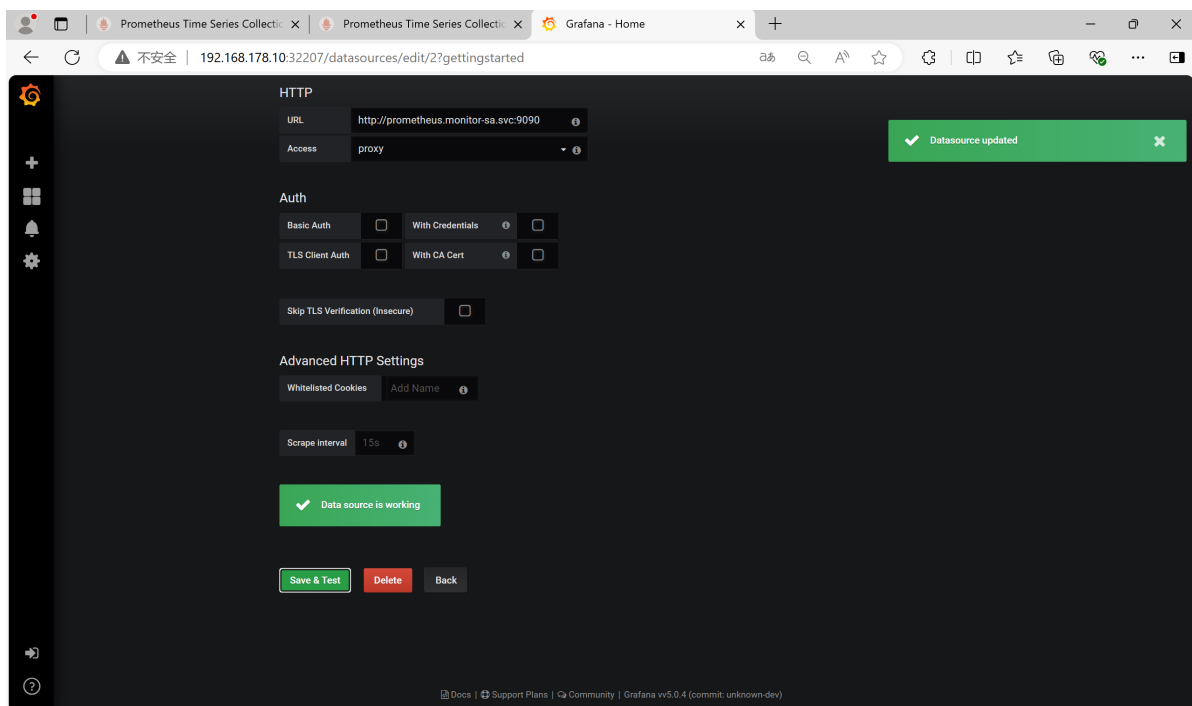
访问grafana服务界面



填写prometheus数据源配置信息

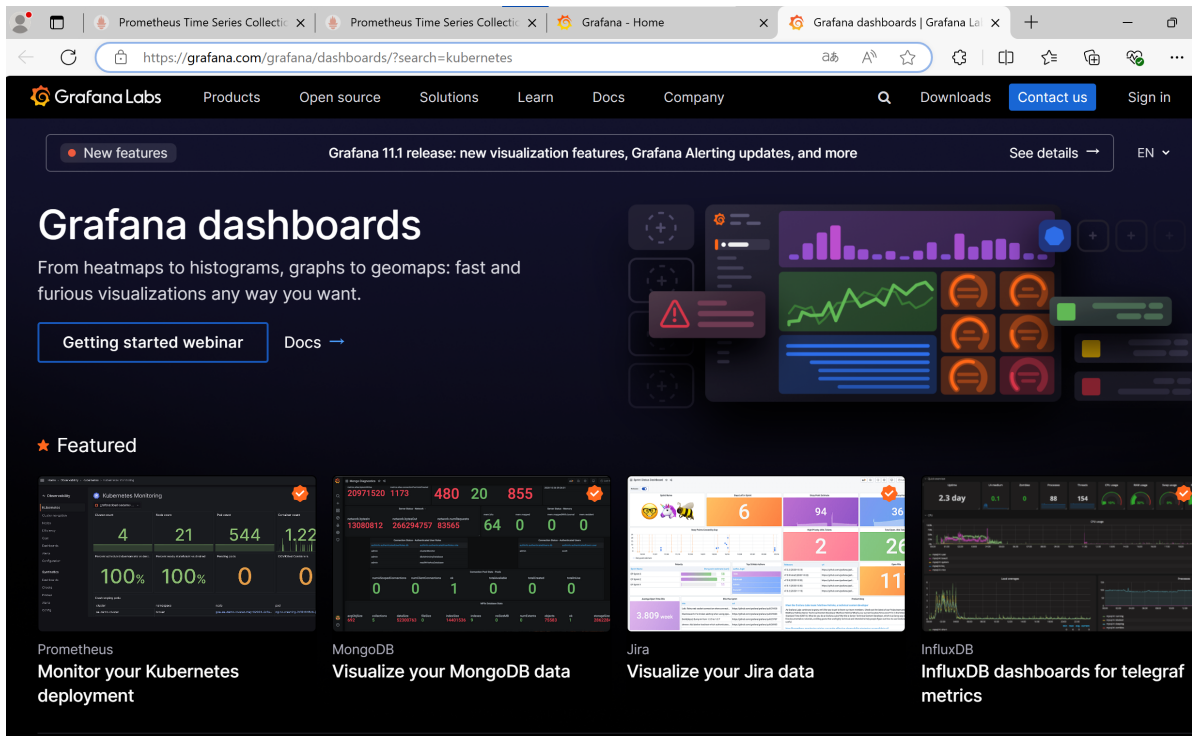


测试prometheus数据源连通性



在以下网站选择Grafana dashboard模板并导入

[Grafana dashboards](#) | [Grafana Labs](#)



安装kube-state-metrics组件

创建sa，并对sa授权

```
[root@wwy-master ~]# kubectl apply -f kube-state-metrics-rbac.yaml
serviceaccount/kube-state-metrics created
clusterrole.rbac.authorization.k8s.io/kube-state-metrics created
clusterrolebinding.rbac.authorization.k8s.io/kube-state-metrics created
```

导入并安装kube-state-metrics组件

```
[root@wwy-worker1 ~]# ctr -n=k8s.io images import kube-state-metrics_1_9_0.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking quay.io/coreos/kube-state-metrics:v1.9.0
 sha256:bf40aa1452dcefe34680c595995af1f4a72b7a480b3597fe863a3a5c4e8dde42) ...done

[root@wwy-worker2 ~]# ctr -n=k8s.io images import kube-state-metrics_1_9_0.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking quay.io/coreos/kube-state-metrics:v1.9.0
 sha256:bf40aa1452dcefe34680c595995af1f4a72b7a480b3597fe863a3a5c4e8dde42) ...done
```


创建kube-state-metrics的deploy

```
[root@wwy-master ~]# kubectl apply -f kube-state-metrics-deploy.yaml
deployment.apps/kube-state-metrics created

[root@wwy-master ~]# kubectl get pod -n kube-system -l app=kube-state-metrics
NAME                                READY   STATUS             RESTARTS   AGE
kube-state-metrics-7594ddfc96-pclf6 0/1     ContainerCreating   0          5m33s
kube-state-metrics-7594ddfc96-tg7zc 0/1     ContainerCreating   0          5m33s
Events:
  Type            Reason              Age             From
  Message
  ----            -
  Normal          Scheduled           10m            default-scheduler
  Successfully assigned kube-system/kube-state-metrics-7594ddfc96-pclf6 to wwy-worker2
  Warning         FailedCreatePodSandBox 10m            kubelet
  Failed to create pod sandbox: rpc error: code = Unknown desc = failed to setup network for sandbox "c5371edf5a1f1fb569b2d733138ae0bf7a53231f7dfcc9007ce802c073e18bef": plugin type="calico" failed (add): error getting ClusterInformation: connection is unauthorized: Unauthorized
  Normal          SandboxChanged      14s (x46 over 10m) kubelet
  Pod sandbox changed, it will be killed and re-created.

[root@wwy-master ~]# kubectl get pod -n kube-system -l app=kube-state-metrics
NAME                                READY   STATUS    RESTARTS   AGE
kube-state-metrics-7594ddfc96-89bqw 1/1     Running   1 (18h ago) 20h
kube-state-metrics-7594ddfc96-t4whx 1/1     Running   0          20h
```

```
[root@wwy-master ~]# kubectl get pod -n kube-system -l app=kube-state-metrics
NAME                                READY   STATUS    RESTARTS   AGE
kube-state-metrics-7594ddfc96-89bqw 1/1     Running   1 (18h ago) 20h
kube-state-metrics-7594ddfc96-t4whx 1/1     Running   0          20h
[root@wwy-master ~]#
```

部署kube-state-metrics-svc

```
[root@wwy-master ~]# kubectl apply -f kube-state-metrics-svc.yaml
service/kube-state-metrics created
[root@wwy-master ~]# kubectl get svc -n kube-system
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)
AGE				
kube-dns	ClusterIP	10.96.0.10	<none>	53/UDP, 53/TCP, 9153/TCP 2d19h
kube-state-metrics	ClusterIP	10.96.0.244	<none>	8080/TCP 16s
monitoring-grafana	NodePort	10.96.3.125	<none>	80:32207/TCP 43h

部署Alertmanager报警报警系统

注册一个新的QQ邮箱并开启IMAP/SMTP服务和POP3/SMTP服务



创建alertmanager-configmap文件

```
[root@wwy-master ~]# kubectl apply -f alertmanager-cm.yaml
configmap/alertmanager created
```

创建prometheus和告警规则配置文件

把alertmanager.tar.gz镜像包上传的k8s的各个工作节点，手动解压：

```
[root@wwy-worker1 ~]# ctr -n=k8s.io images import alertmanager.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking docker.io/prom/alertmanager:v0.14.0
(sh256:fa5192990c11d1e69489b4c624af2dfb905b0ce73ef82b8aae930c71e5d28bc4)...done
```

```
[root@wwy-worker2 ~]# ctr -n=k8s.io images import alertmanager.tar.gz
WARN[0000] DEPRECATION: The `configs` property of
`[plugins."io.containerd.grpc.v1.cri".registry]` is deprecated since containerd
v1.5 and will be removed in containerd v2.0. Use `config_path` instead.
unpacking docker.io/prom/alertmanager:v0.14.0
(sh256:fa5192990c11d1e69489b4c624af2dfb905b0ce73ef82b8aae930c71e5d28bc4)...done
```

创建一个etcd-certs

```
[root@wwy-master etcd]# kubectl -n monitor-sa create secret generic etcd-certs --
from-file=/etc/kubernetes/pki/etcd/server.key --from-
file=/etc/kubernetes/pki/etcd/server.crt --from-
file=/etc/kubernetes/pki/etcd/ca.crt
secret/etcd-certs created
```

部署prometheus-alertmanager-cfg.yaml和prometheus-alertmanager-

deploy.yaml

```
[root@wwy-master ~]# kubectl apply -f prometheus-alertmanager-cfg.yaml
configmap/prometheus-config configured
```

```
[root@wwy-master ~]# kubectl apply -f prometheus-alertmanager-deploy.yaml
deployment.apps/prometheus-server configured
```

```
[root@wwy-master ~]# kubectl get pod -n monitor-sa -owide
```

NAME	READY	STATUS	RESTARTS	AGE
IP	NOMINATED	NODE	READINESS	GATES
node-exporter-f2cts	1/1	Running	1 (20h ago)	2d20h
192.168.178.30	wwy-worker2	<none>	<none>	
node-exporter-gt7r4	1/1	Running	1 (20h ago)	2d20h
192.168.178.10	wwy-master	<none>	<none>	
node-exporter-npbcp	1/1	Running	1 (20h ago)	2d20h
192.168.178.20	wwy-worker1	<none>	<none>	
prometheus-server-59964b7488-4dtw6	0/1	Terminating	1	45h
100.87.224.14	wwy-worker1	<none>	<none>	
prometheus-server-59964b7488-qxn8c	1/1	Terminating	1 (20h ago)	45h
100.82.124.8	wwy-worker2	<none>	<none>	
prometheus-server-cf567d975-fx1zx	2/2	Running	0	35s
100.87.224.17	wwy-worker1	<none>	<none>	
prometheus-server-cf567d975-lbk2w	2/2	Running	0	35s
100.82.124.13	wwy-worker2	<none>	<none>	

```
[root@wwy-master ~]# kubectl apply -f alertmanager-cm.yaml
configmap/alertmanager created
[root@wwy-master ~]# vim alertmanager-cm.yaml
[root@wwy-master ~]# kubectl delete -f prometheus-alertmanager-deploy.yaml
deployment.apps "prometheus-server" deleted
[root@wwy-master ~]# kubectl apply -f prometheus-alertmanager-deploy.yaml
deployment.apps/prometheus-server created
[root@wwy-master ~]# kubectl get pod -n monitor-sa -o wide
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
node-exporter-f2cts	1/1	Running	1 (20h ago)	2d20h	192.168.178.30	wwy-worker2	<none>	<none>
node-exporter-gt7r4	1/1	Running	1 (20h ago)	2d20h	192.168.178.10	wwy-master	<none>	<none>
node-exporter-nbpcp	1/1	Running	1 (20h ago)	2d20h	192.168.178.20	wwy-worker1	<none>	<none>
prometheus-server-59964b7488-4dtw6	0/1	Terminating	1	45h	100.87.224.14	wwy-worker1	<none>	<none>
prometheus-server-59964b7488-qxn8c	1/1	Terminating	1 (20h ago)	45h	100.82.124.8	wwy-worker2	<none>	<none>
prometheus-server-cf567d975-fxlzx	2/2	Running	0	35s	100.87.224.17	wwy-worker1	<none>	<none>
prometheus-server-cf567d975-ldk2w	2/2	Running	0	35s	100.82.124.13	wwy-worker2	<none>	<none>

```
[root@wwy-master ~]#
```

在k8s的控制节点创建alertmanager-svc.yaml文件

```
[root@wwy-master ~]# kubectl apply -f alertmanager-svc.yaml
service/alertmanager created
```

```
[root@wwy-master ~]# kubectl get svc -n monitor-sa
```

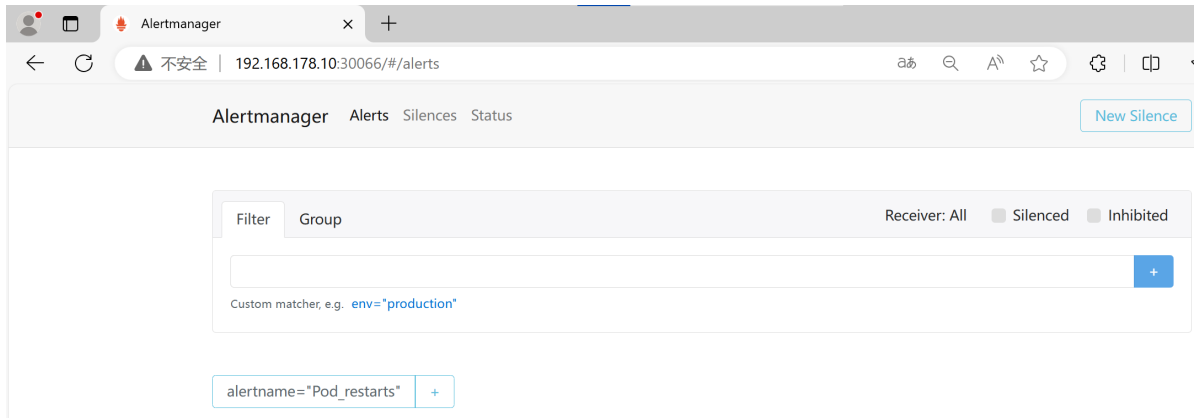
NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
alertmanager	NodePort	10.96.1.200	<none>	9093:30066/TCP	31s
prometheus	NodePort	10.96.0.139	<none>	9090:32379/TCP	45h

查看service在物理机映射的端口,可以看到alertmanager的service在物理机映射的端口是30066,访问<http://192.168.178.10:30066/#/alerts>

```
[root@wwy-master ~]# kubectl get svc -n monitor-sa
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
alertmanager	NodePort	10.96.1.200	<none>	9093:30066/TCP	31s
prometheus	NodePort	10.96.0.139	<none>	9090:32379/TCP	45h

```
[root@wwy-master ~]#
```



访问prometheus

AlertmanagerPrometheus Time Series Collecti

192.168.178.20:32379/targets

PrometheusAlertsGraphStatusHelp

Targets

☐ Only unhealthy jobs

kubernetes-apiserver (1/1 up)show less

Endpoint	State	Labels	Last Scrape	Error
https://192.168.178.10:6443/metrics	UP	instance="192.168.178.10:6443"	13.519s ago	

kubernetes-etcd (1/1 up)show less

Endpoint	State	Labels	Last Scrape	Error
https://192.168.178.10:2379/metrics	UP	instance="192.168.178.10:2379"	3.847s ago	

kubernetes-node (3/3 up)show less

Endpoint	State	Labels	Last Scrape	Error
http://192.168.178.10:9100/metrics	UP	beta_kubernetes_io_arch="amd64"beta_kubernetes_io_os="linux"instance="wwy-master"kubernetes_io_arch="amd64"kubernetes_io_hostname="wwy-master"node_kubernetes_io_os="linux"node_kubernetes_io_exclude_from_external_load_balancers=""node_role_kubernetes_io_control_plane=""	6.333s ago	
http://192.168.178.20:9100/metrics	UP	beta_kubernetes_io_arch="amd64"beta_kubernetes_io_os="linux"instance="wwy-worker1"kubernetes_io_arch="amd64"kubernetes_io_hostname="wwy-worker1"	3.486s ago	

点击alerts

AlertmanagerPrometheus Time Series Collecti

192.168.178.20:32379/alerts

PrometheusAlertsGraphStatusHelp

Alerts

☐ Show annotations

Pod_restarts (38 active)

Pod_terminated (2 active)

Pod_waiting (6 active)

kubernetes-etcd (1 active)

Endpoint_ready (0 active)

Etcd_db_total_size (0 active)

Etcd_failed (0 active)

Etcd_leader (0 active)

Etcd_leader_changes (0 active)

HttpRequestsAvg (0 active)

InstanceDown (0 active)

TCP会话 (0 active)

apiserver的cpu使用率大于80% (0 active)

apiserver的cpu使用率大于90% (0 active)

点击pod_restarts

Alertmanager Prometheus Time Series Collect

Alerts

Show annotations

Pod_restarts (38 active)

```
alert: Pod_restarts
expr: kube_pod_container_status_restarts_total(namespace=~"kube-system|default|monitor-sa")
  > 0
for: 2s
labels:
  severity: warning
annotations:
  description: 在{{ $labels.namespace }}名称空间下发现{{ $labels.pod }}这个pod下的容器{{ $labels.container }}被重启, 这个监控指标是由{{ $labels.instance }}采集的
  threshold: "0"
  value: '{{ $value }}'
```

Labels	State	Active Since	Value
alertname="Pod_restarts" app="kube-state-metrics" container="node-exporter" instance="100.87.224.9:8080" job="kubernetes-service-endpoints" kubernetes_name="kube-state-metrics" kubernetes_namespace="kube-system" namespace="monitor-sa" pod="node-exporter-gt/r4" severity="warning"	FIRING	2024-07-30 08:36:46.43154113 +0000 UTC	1
alertname="Pod_restarts" app="kube-state-metrics" container="prometheus" instance="100.87.224.9:8080" job="kubernetes-service-endpoints" kubernetes_name="kube-state-metrics" kubernetes_namespace="kube-system" namespace="monitor-sa" pod="prometheus-server-59964b7488-4dtw6" severity="warning"	FIRING	2024-07-30 08:36:46.43154113 +0000 UTC	1
alertname="Pod_restarts" app="kube-state-metrics" container="etcd" instance="100.87.224.9:8080" job="kubernetes-service-endpoints" kubernetes_name="kube-state-metrics" kubernetes_namespace="kube-system" namespace="kube-system" pod="etcd-wwy-master" severity="warning"	FIRING	2024-07-30 08:36:46.43154113 +0000 UTC	1
alertname="Pod_restarts" app="kube-state-metrics" container="kube-proxy" instance="100.87.224.9:8080" job="kubernetes-service-endpoints"	FIRING	2024-07-30	1

如果配置正确，就可以在邮箱看到发送到邮箱的报警信息

MOI! QQ邮箱 mail.qq.com

搜索

wwy @qq.com

写信

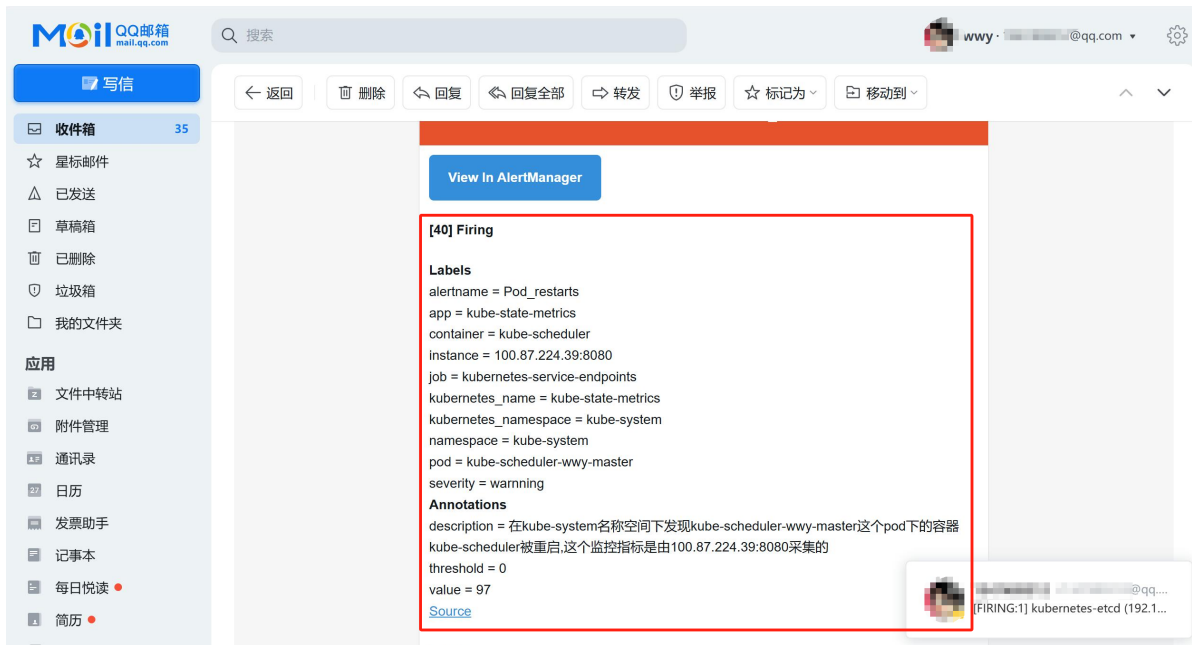
收件箱 33

星标邮件 已发送 草稿箱 已删除 垃圾箱 我的文件夹 应用 文件中转站 附件管理 通讯录 日历 发票助手 记事本 每日悦读 简历 贺卡

收件箱 33

今天(33封)

wwy	[FIRING:40] Pod_restarts (kube-state-metrics kubernetes-service-endpoints kube...	刚刚	☆
wwy	[RESOLVED] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kub...	2分钟前	☆
wwy	[RESOLVED] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kub...	2分钟前	☆
wwy	[FIRING:6] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kube-state...	3分钟前	☆
wwy	[FIRING:6] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kube-...	3分钟前	☆
wwy	[FIRING:1] kubernetes-etcd (192.168.178.10:2379 kubernetes-etcd warning) 1 al...	4分钟前	☆
wwy	[FIRING:40] Pod_restarts (kube-state-metrics kubernetes-service-endpoints kube...	4分钟前	☆
wwy	[FIRING:1] kubernetes-etcd (192.168.178.10:2379 kubernetes-etcd warning) 1 al...	4分钟前	☆
wwy	[FIRING:4] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kube-...	4分钟前	☆
wwy	[FIRING:4] Pod_waiting (kube-state-metrics kubernetes-service-endpoints kube-...	4分钟前	☆
wwy	[FIRING:40] Pod_restarts (kube-state-metrics kubernetes-service-endpoints kube...	5分钟前	☆
wwy	[RESOLVED] 物理节点cpu使用率 (ccritical) 2 alerts for alertname=物理节点cpu使用率 ...	7分钟前	☆
wwy	[FIRING:1] 物理节点cpu使用率 (ccritical) 2 alerts for alertname=物理节点cpu使用率 Vi...	8分钟前	☆



更新配置文件

为了每次修改配置文件可以热加载prometheus，也就是不停止prometheus，
就可以使配置生效，想要使配置生效可用如下热加载命令：

```
[root@wwy-master ~]# kubectl get pod -n monitor-sa -owide
```

NAME	READY	STATUS	RESTARTS	AGE	IP
node-exporter-f2cts	1/1	Running	2 (11m ago)	2d21h	
192.168.178.30 wwy-worker2	<none>	<none>			
node-exporter-gt7r4	1/1	Running	1 (21h ago)	2d21h	
192.168.178.10 wwy-master	<none>	<none>			
node-exporter-npbcp	1/1	Running	2 (22m ago)	2d21h	
192.168.178.20 wwy-worker1	<none>	<none>			
prometheus-server-cf567d975-kx1kp	2/2	Running	0	24m	
100.87.224.22 wwy-worker1	<none>	<none>			
prometheus-server-cf567d975-nck7w	2/2	Running	0	25m	
100.87.224.20 wwy-worker1	<none>	<none>			

```
[root@wwy-master ~]# curl -X POST http://100.87.224.22:9090/-/reload
```

暴力更新配置文件

```
kubectl delete -f alertmanager-cm.yaml
kubectl apply -f alertmanager-cm.yaml
kubectl delete -f prometheus-alertmanager-cfg.yaml
kubectl apply -f prometheus-alertmanager-cfg.yaml
kubectl delete -f prometheus-alertmanager-deploy.yaml
kubectl apply -f prometheus-alertmanager-deploy.yaml
```

遇到的问题

```
error: Internal error occurred: error executing command in container: failed to
exec in container: failed to start exec
"f6ac37a3cc41aa95d646d4ea547efa275a50c4eefc1a3ba8d41b3778597f4a65": OCI runtime
exec failed: exec failed: unable to start container process: exec: "/bin/bash":
stat /bin/bash: no such file or directory: unknown
```

这个问题发生在尝试在 Docker 容器中执行命令时。错误的核心是 `exec: "/bin/bash": stat /bin/bash: no such file or directory`，这意味着 Docker 容器内没有找到 `/bin/bash` 这个文件或目录，改成`/bin/sh`即可进入容器

刚开始promethues和alertmanager运行正常，但邮箱却收不到告警信息，后来把邮箱服务器换成QQ邮箱后即可正常收到报警信息