Openshift 4 Health Check Report

Red Hat Consulting

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Chapter 1. Commons

1.1. Versions

```
Client Version: 4.10.18
Server Version: 4.10.18
Kubernetes Version: v1.23.5+3afdacb
```

1.2. Components status

```
NAME                STATUS    MESSAGE                           ERROR
etcd-1              Healthy   {"health":"true","reason":""}
etcd-0              Healthy   {"health":"true","reason":""}
scheduler           Healthy   ok
controller-manager  Healthy   ok
```

1.3. Cluster Status Conditions

1.4. Cluster Abnormal Events

```
NAMESPACE SEEN TYPE REASON
ocapp-test Warning FailedCreate replicaset/my-app2-5f5c8df97d
ocapp-test Warning FailedCreate replicaset/my-app3-7796c8c7bb
```

1.5. Cluster API Server Status

1.6. Cluster Console Status

Chapter 2. nodes

2.1. Cluster Failing Nodes

2.2. Cluster Node Conditions

2.2.1. master Nodes

crc-5nvrm-master-0

```
MemoryPressure False KubeletHasSufficientMemory
DiskPressure False KubeletHasNoDiskPressure
PIDPressure False KubeletHasSufficientPID
```

2.2.2. worker Nodes

2.2.3. infra Nodes

2.3. Nodes Capacity

NODE	TYPE	OS	CPU	MEM	STORAGE	PODS
crc-5nvrm-master-0	master	CoreOS	4	31970284Ki	15377152Ki	250

Chapter 3. Machines

3.1. Machine Info

```
NAMESPACE              NAME                PHASE      TYPE    REGION   ZONE    AGE
openshift-machine-api  crc-5nvrm-master-0  Running                            41d
```

3.2. Machinesets Info

```
NAMESPACE              NAME                DESIRED    CURRENT    READY    AVAILABLE    AGE
openshift-machine-api  crc-5nvrm-worker-0  0          0                                41d
```

3.3. Machine Configs

3.4. Machine Configs

3.5. Machine Auto Scalers

3.6. Cluster Auto Scalers

3.7. Machine Health Checks

```
NAMESPACE              NAME                             MAXUNHEALTHY    EXPECTEDMACHINES    CURRENTHEALTHY
openshift-machine-api  machine-api-termination-handler  100%            0                   0
```

Chapter 4. etcd

4.1. etcd pods info

```
NAME                     READY  STATUS    RESTARTS  AGE
etcd-crc-5nvrm-master-0  4/4    Running   16        41d
```

4.2. Members in the cluster

ID	STATUS	NAME	PEER ADDRS	CLIENT ADDRS	IS LEARNER
6ef9bb7ffab9d73b	started	crc-5nvrm-master-0	https://192.168.126.11:2380	https://192.168.126.11:2379	false

4.3. Endpoints status

ENDPOINT	ID	VERSION	DB SIZE	IS LEADER	IS LEARNER	RAFT TERM	RAFT INDEX	RAFT APPLIED INDEX	ERRORS
https://192.168.126.11:2379	6ef9bb7ffab9d73b	3.5.3	86 MB	true	false	12	1881087	1881087	

4.4. Endpoints Health

ENDPOINT	HEALTH	TOOK	ERROR
https://192.168.126.11:2379	true	13.107493ms	

Chapter 5. pods

5.1. Failing pods

```
NAMESPACE    NAME           READY  STATUS  RESTARTS  AGE
ocapp-test   my-app2-1-build  0/1    Error   0         13d
ocapp-test   my-app3-1-build  0/1    Error   0         13d
```

5.2. Constanstly restarted pods

```
openshift-machine-api               machine-api-controllers-576c6d7795-vjzr5     7/7  Running  48  41d
openshift-kube-controller-manager   kube-controller-manager-crc-5nvrm-master-0   4/4  Running  24  41d
openshift-kube-apiserver            kube-apiserver-crc-5nvrm-master-0            5/5  Running  16  5d16h
openshift-etcd                      etcd-crc-5nvrm-master-0                      4/4  Running  16  41d
openshift-kube-scheduler            openshift-kube-scheduler-crc-5nvrm-master-0  3/3  Running  15  41d
openshift-cluster-machine-approver  machine-approver-697c6c67f-pl7qf            2/2  Running  15  (19h
ago)  40d
openshift-sdn                       sdn-controller-6fx72                        2/2  Running  9   41d
openshift-operator-lifecycle-manager packageserver-68868bbf8c-jpxgm            1/1  Running  9   41d
openshift-machine-api               machine-api-operator-5869dbb6f9-65zc2       2/2  Running  9   41d
openshift-sdn                       sdn-552c8                                   2/2  Running  8   41d
```

5.3. Long running pods

```
openshift-marketplace               redhat-operators-6t7vs                      1/1  Running  0  143m
openshift-service-ca                service-ca-7567987bc8-7wl9j                 1/1  Running  5  41d
openshift-sdn                       sdn-controller-6fx72                        2/2  Running  9  41d
openshift-sdn                       sdn-552c8                                   2/2  Running  8  41d
openshift-operator-lifecycle-manager packageserver-68868bbf8c-jpxgm            1/1  Running  9  41d
openshift-oauth-apiserver           apiserver-65b8444f69-zfxrz                  1/1  Running  4  41d
openshift-network-diagnostics       network-check-target-85xvd                  1/1  Running  4  41d
openshift-network-diagnostics       network-check-source-695cdb7747-cf742       1/1  Running  4  41d
openshift-multus                    network-metrics-daemon-5gfkl                2/2  Running  8  41d
openshift-multus                    multus-bzhmc                                1/1  Running  4  41d
```

5.4. Pod Disruption Budget

```
NAMESPACE                            NAME           MIN  AVAILABLE  MAX  UNAVAILABLE  ALLOWED
DISRUPTIONS   AGE
openshift-image-registry             image-registry  0    N/A        1    41d
openshift-operator-lifecycle-manager packageserver-pdb  N/A  1       1    41d
```

5.5. Pods in default namespace

5.6. Pods per node

```
88 crc-5nvrm-master-0
```

Chapter 6. performance

6.1. Nodes memory utilization

```
NAME               CPU(cores)  CPU%  MEMORY(bytes)  MEMORY%
crc-5nvrm-master-0  2158m      56%   10591Mi        72%
```

6.2. Nodes CPU utilization

```
NAME               CPU(cores)  CPU%  MEMORY(bytes)  MEMORY%
crc-5nvrm-master-0  2158m      56%   10591Mi        72%
```

6.3. Pods memory utilization

```
NAMESPACE                              NAME                                          CPU(cores)
MEMORY(bytes)
openshift-kube-apiserver               kube-apiserver-crc-5nvrm-master-0             272m        1748Mi
openshift-etcd                         etcd-crc-5nvrm-master-0                       190m        1209Mi
openshift-monitoring                   prometheus-k8s-0                              121m        1095Mi
openshift-kube-controller-manager      kube-controller-manager-crc-5nvrm-master-0    20m         447Mi
openshift-apiserver                    apiserver-6c7d78dfc4-v28gn                    47m         246Mi
openshift-machine-api                  machine-api-controllers-576c6d7795-vjzr5      1m          176Mi
openshift-operator-lifecycle-manager   packageserver-68868bbf8c-jpxgm               70m         156Mi
openshift-authentication-operator      authentication-operator-6ddbbdbf46-9rsc7      58m         153Mi
openshift-marketplace                  certified-operators-fztjt                     7m          148Mi
openshift-controller-manager           controller-manager-tdftp                      5m          147Mi
openshift-monitoring                   thanos-querier-647cd76596-tx86p               43m         141Mi
openshift-operator-lifecycle-manager   olm-operator-67fcdb489c-96kxh                 3m          138Mi
openshift-marketplace                  community-operators-6lvjd                     15m         136Mi
openshift-service-ca                   service-ca-7567987bc8-7wl9j                    4m          132Mi
openshift-ingress-operator             ingress-operator-7899578f6-b5ljs              2m          132Mi
openshift-monitoring                   prometheus-operator-76f79c8d85-xn57s          5m          130Mi
openshift-kube-scheduler               openshift-kube-scheduler-crc-5nvrm-master-0   4m          125Mi
openshift-kube-apiserver-operator      kube-apiserver-operator-5f76847f99-8svn8      11m         123Mi
openshift-network-operator             network-operator-7d77dffff9-qfzzx             5m          120Mi
openshift-monitoring                   grafana-5487f6d9cf-vxp6k                      8m          112Mi
```

6.4. Pods CPU utilization

```
NAMESPACE                                NAME                                        CPU(cores)
MEMORY(bytes)
openshift-kube-apiserver                 kube-apiserver-crc-5nvrm-master-0           272m        1748Mi
openshift-etcd                           etcd-crc-5nvrm-master-0                     190m        1209Mi
openshift-monitoring                     prometheus-k8s-0                            121m        1095Mi
openshift-operator-lifecycle-manager     packageserver-68868bbf8c-jpxgm             70m         156Mi
openshift-authentication-operator        authentication-operator-6ddbbdbf46-9rsc7    58m         153Mi
openshift-apiserver                      apiserver-6c7d78dfc4-v28gn                  47m         246Mi
openshift-monitoring                     thanos-querier-647cd76596-tx86p             43m         141Mi
openshift-oauth-apiserver                apiserver-65b8444f69-zfxrz                  37m         76Mi
openshift-kube-controller-manager        kube-controller-manager-crc-5nvrm-master-0  20m         447Mi
openshift-multus                         multus-bzhmc                                16m         6Mi
openshift-marketplace                    community-operators-6lvjd                   15m         136Mi
openshift-monitoring                     prometheus-adapter-6dbdddc76b-bdr2v         14m         56Mi
openshift-kube-apiserver-operator        kube-apiserver-operator-5f76847f99-8svn8    11m         123Mi
openshift-etcd-operator                  etcd-operator-6d6ff5499d-cd588              10m         74Mi
openshift-marketplace                    redhat-operators-6t7vs                      10m         67Mi
openshift-cluster-samples-operator       cluster-samples-operator-b6fc87b94-w65rt    9m          80Mi
openshift-apiserver-operator             openshift-apiserver-operator-6756c64b88-kh9qj  9m       110Mi
openshift-monitoring                     grafana-5487f6d9cf-vxp6k                    8m          112Mi
openshift-console-operator               console-operator-c74b55d67-9mskj            8m          71Mi
openshift-marketplace                    redhat-marketplace-bhgkk                    7m          90Mi
```

Chapter 7. security

7.1. Pending CSRs

7.2. Cluster Identities

```
NAME               IDP NAME    IDP USER NAME   USER NAME   USER UID
developer:developer   developer   developer       developer   ca077f0b-2f5e-4304-9c32-8046d4ede025
developer:kubeadmin   developer   kubeadmin       kubeadmin   8facc26a-4157-4d65-be96-ee5b50ff2b0d
```

7.3. Identities grants

7.3.1. Identities who can create users

```
Users:   kubeadmin
         system:admin
         system:serviceaccount:openshift-apiserver-operator:openshift-apiserver-operator
         system:serviceaccount:openshift-apiserver:openshift-apiserver-sa
         system:serviceaccount:openshift-authentication-operator:authentication-operator
         system:serviceaccount:openshift-authentication:oauth-openshift
         system:serviceaccount:openshift-cluster-storage-operator:cluster-storage-operator
         system:serviceaccount:openshift-cluster-storage-operator:csi-snapshot-controller-operator
         system:serviceaccount:openshift-cluster-version:default
         system:serviceaccount:openshift-config-operator:openshift-config-operator
         system:serviceaccount:openshift-controller-manager-operator:openshift-controller-manager-operator
         system:serviceaccount:openshift-etcd-operator:etcd-operator
         system:serviceaccount:openshift-etcd:installer-sa
         system:serviceaccount:openshift-kube-apiserver-operator:kube-apiserver-operator
         system:serviceaccount:openshift-kube-apiserver:installer-sa
         system:serviceaccount:openshift-kube-apiserver:localhost-recovery-client
         system:serviceaccount:openshift-kube-controller-manager-operator:kube-controller-manager-operator
         system:serviceaccount:openshift-kube-controller-manager:installer-sa
         system:serviceaccount:openshift-kube-controller-manager:localhost-recovery-client
         system:serviceaccount:openshift-kube-scheduler-operator:openshift-kube-scheduler-operator
         system:serviceaccount:openshift-kube-scheduler:installer-sa
         system:serviceaccount:openshift-kube-scheduler:localhost-recovery-client
         system:serviceaccount:openshift-kube-storage-version-migrator-operator:kube-storage-version-
migrator-operator
         system:serviceaccount:openshift-machine-config-operator:default
         system:serviceaccount:openshift-network-operator:default
         system:serviceaccount:openshift-oauth-apiserver:oauth-apiserver-sa
         system:serviceaccount:openshift-operator-lifecycle-manager:olm-operator-serviceaccount
         system:serviceaccount:openshift-service-ca-operator:service-ca-operator
```

7.3.2. Identities who can delete users

```
Users:  kubeadmin
        system:admin
        system:serviceaccount:kube-system:generic-garbage-collector
        system:serviceaccount:kube-system:namespace-controller
        system:serviceaccount:openshift-apiserver-operator:openshift-apiserver-operator
        system:serviceaccount:openshift-apiserver:openshift-apiserver-sa
        system:serviceaccount:openshift-authentication-operator:authentication-operator
        system:serviceaccount:openshift-authentication:oauth-openshift
        system:serviceaccount:openshift-cluster-storage-operator:cluster-storage-operator
        system:serviceaccount:openshift-cluster-storage-operator:csi-snapshot-controller-operator
        system:serviceaccount:openshift-cluster-version:default
        system:serviceaccount:openshift-config-operator:openshift-config-operator
        system:serviceaccount:openshift-controller-manager-operator:openshift-controller-manager-operator
        system:serviceaccount:openshift-etcd-operator:etcd-operator
        system:serviceaccount:openshift-etcd:installer-sa
        system:serviceaccount:openshift-kube-apiserver-operator:kube-apiserver-operator
        system:serviceaccount:openshift-kube-apiserver:installer-sa
        system:serviceaccount:openshift-kube-apiserver:localhost-recovery-client
        system:serviceaccount:openshift-kube-controller-manager-operator:kube-controller-manager-operator
        system:serviceaccount:openshift-kube-controller-manager:installer-sa
        system:serviceaccount:openshift-kube-controller-manager:localhost-recovery-client
        system:serviceaccount:openshift-kube-scheduler-operator:openshift-kube-scheduler-operator
        system:serviceaccount:openshift-kube-scheduler:installer-sa
        system:serviceaccount:openshift-kube-scheduler:localhost-recovery-client
        system:serviceaccount:openshift-kube-storage-version-migrator-operator:kube-storage-version-
migrator-operator
        system:serviceaccount:openshift-machine-config-operator:default
        system:serviceaccount:openshift-network-operator:default
        system:serviceaccount:openshift-oauth-apiserver:oauth-apiserver-sa
        system:serviceaccount:openshift-operator-lifecycle-manager:olm-operator-serviceaccount
        system:serviceaccount:openshift-service-ca-operator:service-ca-operator
```

7.4. Rolebindings

default

```
NAME                            ROLE
machine-config-controller-events  ClusterRole/machine-config-controller-events
machine-config-daemon-events     ClusterRole/machine-config-daemon-events
prometheus-k8s                   Role/prometheus-k8s
system:deployers                 ClusterRole/system:deployer
system:image-builders            ClusterRole/system:image-builder
system:image-pullers             ClusterRole/system:image-puller
```

deleteme

```
NAME                    ROLE
admin                   ClusterRole/admin
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

kube-node-lease

```
NAME                    ROLE
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

kube-public

```
NAME                               ROLE
system:controller:bootstrap-signer  Role/system:controller:bootstrap-signer
system:deployers                    ClusterRole/system:deployer
system:image-builders               ClusterRole/system:image-builder
system:image-pullers                ClusterRole/system:image-puller
```

kube-system

```
NAME                                                        ROLE
authentication-reader-for-authenticated-users              Role/extension-apiserver-authentication-
reader                                                     reader
cloud-controller-manager:apiserver-authentication-reader   Role/extension-apiserver-authentication-
reader                                                     reader
console                                                     Role/extension-apiserver-authentication-
reader                                                     reader
console-operator                                            Role/extension-apiserver-authentication-
reader                                                     reader
insights-operator-auth                                      Role/extension-apiserver-authentication-
reader                                                     reader
network-diagnostics                                         Role/extension-apiserver-authentication-
reader                                                     reader
packageserver-service-auth-reader                           Role/extension-apiserver-authentication-
reader                                                     reader
prometheus-k8s                                              Role/prometheus-k8s
resource-metrics-auth-reader                                Role/extension-apiserver-authentication-
reader                                                     reader
system::extension-apiserver-authentication-reader           Role/extension-apiserver-authentication-
reader                                                     reader
system::leader-locking-kube-controller-manager             Role/system::leader-locking-kube-
controller-manager                                         controller-manager
system::leader-locking-kube-scheduler                      Role/system::leader-locking-kube-scheduler
system:controller:bootstrap-signer                         Role/system:controller:bootstrap-signer
system:controller:cloud-provider                           Role/system:controller:cloud-provider
system:controller:token-cleaner                            Role/system:controller:token-cleaner
system:deployers                                           ClusterRole/system:deployer
system:image-builders                                      ClusterRole/system:image-builder
system:image-pullers                                       ClusterRole/system:image-puller
system:openshift:controller:kube-apiserver-check-endpoints  Role/extension-apiserver-authentication-
reader                                                     reader
system:openshift:leader-election-lock-kube-controller-manager  Role/system:openshift:leader-election-lock-
kube-controller-manager                                    kube-controller-manager
system:openshift:leader-locking-kube-controller-manager     Role/system::leader-locking-kube-
controller-manager                                         controller-manager
system:openshift:leader-locking-kube-scheduler             Role/system::leader-locking-kube-scheduler
system:openshift:leader-locking-openshift-controller-manager  Role/system:openshift:leader-locking-
openshift-controller-manager                               openshift-controller-manager
```

ocapp-test

```
NAME                 ROLE
admin                ClusterRole/admin
system:deployers     ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift

```
NAME                                  ROLE
cluster-samples-operator-openshift-edit  ClusterRole/edit
shared-resource-viewers               Role/shared-resource-viewer
system:deployers                      ClusterRole/system:deployer
system:image-builders                 ClusterRole/system:image-builder
system:image-pullers                  ClusterRole/system:image-puller
```

openshift-apiserver

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-apiserver-operator

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-authentication

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-authentication-operator

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-cloud-controller-manager

```
NAME                            ROLE
cloud-controller-manager        Role/cloud-controller-manager
cluster-cloud-controller-manager  ClusterRole/admin
system:deployers                ClusterRole/system:deployer
system:image-builders           ClusterRole/system:image-builder
system:image-pullers            ClusterRole/system:image-puller
```

openshift-cloud-controller-manager-operator

```
NAME                           ROLE
cluster-cloud-controller-manager  Role/cluster-cloud-controller-manager
system:deployers               ClusterRole/system:deployer
system:image-builders          ClusterRole/system:image-builder
system:image-pullers           ClusterRole/system:image-puller
```

openshift-cloud-credential-operator

```
NAME                      ROLE
cloud-credential-operator  Role/cloud-credential-operator-role
prometheus-k8s            Role/prometheus-k8s
system:deployers          ClusterRole/system:deployer
system:image-builders     ClusterRole/system:image-builder
system:image-pullers      ClusterRole/system:image-puller
```

openshift-cloud-network-config-controller

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-cluster-csi-drivers

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-cluster-machine-approver

```
NAME                   ROLE
machine-approver       Role/machine-approver
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-cluster-node-tuning-operator

```
NAME                 ROLE
prometheus-k8s       Role/prometheus-k8s
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-cluster-samples-operator

```
NAME                     ROLE
cluster-samples-operator Role/cluster-samples-operator
prometheus-k8s           Role/prometheus-k8s
system:deployers         ClusterRole/system:deployer
system:image-builders    ClusterRole/system:image-builder
system:image-pullers     ClusterRole/system:image-puller
```

openshift-cluster-storage-operator

```
NAME                                    ROLE
csi-snapshot-controller-leaderelection  Role/csi-snapshot-controller-leaderelection
prometheus                              Role/prometheus
system:deployers                        ClusterRole/system:deployer
system:image-builders                   ClusterRole/system:image-builder
system:image-pullers                    ClusterRole/system:image-puller
```

openshift-cluster-version

```
NAME                 ROLE
prometheus-k8s       Role/prometheus-k8s
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-config

```
NAME                                                  ROLE
cluster-cloud-controller-manager                      Role/cluster-cloud-controller-manager
cluster-samples-operator-openshift-config-secret-reader Role/coreos-pull-secret-reader
console-operator                                      Role/console-operator
ingress-operator                                      Role/ingress-operator
insights-operator                                     Role/insights-operator
machine-api-controllers                               Role/machine-api-controllers
system:deployers                                      ClusterRole/system:deployer
system:image-builders                                 ClusterRole/system:image-builder
system:image-pullers                                  ClusterRole/system:image-puller
```

openshift-config-managed

```
NAME                                    ROLE
cluster-cloud-controller-manager        Role/cluster-cloud-controller-manager
console-configmap-reader                Role/console-configmap-reader
console-operator                        Role/console-operator
console-public                          Role/console-public
insights-operator-etc-pki-entitlement   Role/insights-operator-etc-pki-entitlement
machine-api-controllers                 Role/machine-api-controllers
machine-approver                        Role/machine-approver
openshift-network-public-role-binding   Role/openshift-network-public-role
system:deployers                        ClusterRole/system:deployer
system:image-builders                   ClusterRole/system:image-builder
system:image-pullers                    ClusterRole/system:image-puller
system:openshift:oauth-servercert-trust Role/system:openshift:oauth-servercert-trust
```

openshift-config-operator

```
NAME                  ROLE
prometheus-k8s        Role/prometheus-k8s
system:deployers      ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-console

```
NAME                  ROLE
console-operator      Role/console-operator
prometheus-k8s        Role/prometheus-k8s
system:deployers      ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-console-operator

```
NAME                  ROLE
console-operator      Role/console-operator
prometheus-k8s        Role/prometheus-k8s
system:deployers      ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-console-user-settings

```
NAME                                                            ROLE
console-user-settings-admin                                     Role/console-user-settings-admin
system:deployers                                                ClusterRole/system:deployer
system:image-builders                                           ClusterRole/system:image-builder
system:image-pullers                                            ClusterRole/system:image-puller
user-settings-8facc26a-4157-4d65-be96-ee5b50ff2b0d-rolebinding  Role/user-settings-8facc26a-4157-4d65-
be96-ee5b50ff2b0d-role
user-settings-ca077f0b-2f5e-4304-9c32-8046d4ede025-rolebinding  Role/user-settings-ca077f0b-2f5e-4304-
9c32-8046d4ede025-role
```

openshift-controller-manager

```
NAME                                                            ROLE
prometheus-k8s                                                  Role/prometheus-k8s
system:deployers                                                ClusterRole/system:deployer
system:image-builders                                          ClusterRole/system:image-builder
system:image-pullers                                           ClusterRole/system:image-puller
system:openshift:leader-locking-openshift-controller-manager   Role/system:openshift:leader-locking-
openshift-controller-manager
```

openshift-controller-manager-operator

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-dns

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-dns-operator

```
NAME                   ROLE
dns-operator           Role/dns-operator
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-etcd

```
NAME                 ROLE
prometheus-k8s       Role/prometheus-k8s
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-etcd-operator

```
NAME                 ROLE
prometheus-k8s       Role/prometheus-k8s
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-host-network

```
NAME                 ROLE
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-image-registry

```
NAME                          ROLE
cluster-image-registry-operator Role/cluster-image-registry-operator
node-ca                       Role/node-ca
prometheus-k8s                Role/prometheus-k8s
system:deployers              ClusterRole/system:deployer
system:image-builders         ClusterRole/system:image-builder
system:image-pullers          ClusterRole/system:image-puller
```

openshift-infra

```
NAME                                                        ROLE
system:deployers                                            ClusterRole/system:deployer
system:image-builders                                       ClusterRole/system:image-builder
system:image-pullers                                        ClusterRole/system:image-puller
system:openshift:sa-creating-openshift-controller-manager   Role/system:openshift:sa-creating-openshift-
controller-manager
```

openshift-ingress

```
NAME                 ROLE
prometheus-k8s       Role/prometheus-k8s
system:deployers     ClusterRole/system:deployer
system:image-builders ClusterRole/system:image-builder
system:image-pullers  ClusterRole/system:image-puller
```

openshift-ingress-canary

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-ingress-operator

```
NAME                   ROLE
ingress-operator       Role/ingress-operator
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-insights

```
NAME                                  ROLE
insights-operator                     Role/insights-operator
insights-operator-obfuscation-secret  Role/insights-operator-obfuscation-secret
prometheus-k8s                        Role/prometheus-k8s
system:deployers                      ClusterRole/system:deployer
system:image-builders                 ClusterRole/system:image-builder
system:image-pullers                  ClusterRole/system:image-puller
```

openshift-kni-infra

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-kube-apiserver

```
NAME                                       ROLE
prometheus-k8s                             Role/prometheus-k8s
system:deployers                           ClusterRole/system:deployer
system:image-builders                      ClusterRole/system:image-builder
system:image-pullers                       ClusterRole/system:image-puller
system:openshift:controller:check-endpoints ClusterRole/system:openshift:controller:check-endpoints
```

openshift-kube-apiserver-operator

```
NAME                ROLE
prometheus-k8s      Role/prometheus-k8s
system:deployers    ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-kube-controller-manager

```
NAME                                                          ROLE
prometheus-k8s                                                Role/prometheus-k8s
system:deployers                                             ClusterRole/system:deployer
system:image-builders                                       ClusterRole/system:image-builder
system:image-pullers                                        ClusterRole/system:image-puller
system:openshift:leader-election-lock-cluster-policy-controller  Role/system:openshift:leader-election-
lock-cluster-policy-controller
```

openshift-kube-controller-manager-operator

```
NAME                ROLE
prometheus-k8s      Role/prometheus-k8s
system:deployers    ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-kube-scheduler

```
NAME                               ROLE
prometheus-k8s                     Role/prometheus-k8s
system:deployers                   ClusterRole/system:deployer
system:image-builders              ClusterRole/system:image-builder
system:image-pullers               ClusterRole/system:image-puller
system:openshift:sa-listing-configmaps  Role/system:openshift:sa-listing-configmaps
```

openshift-kube-scheduler-operator

```
NAME                ROLE
prometheus-k8s      Role/prometheus-k8s
system:deployers    ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-kube-storage-version-migrator-operator

```
NAME                ROLE
system:deployers    ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-machine-api

```
NAME                                        ROLE
cluster-autoscaler                          Role/cluster-autoscaler
cluster-autoscaler-operator                 Role/cluster-autoscaler-operator
cluster-baremetal-operator                  Role/cluster-baremetal-operator
machine-api-controllers                     Role/machine-api-controllers
machine-api-operator                        Role/machine-api-operator
prometheus-k8s-cluster-autoscaler-operator  Role/prometheus-k8s-cluster-autoscaler-operator
prometheus-k8s-cluster-baremetal-operator   Role/prometheus-k8s-cluster-baremetal-operator
prometheus-k8s-machine-api-operator         Role/prometheus-k8s-machine-api-operator
system:deployers                            ClusterRole/system:deployer
system:image-builders                       ClusterRole/system:image-builder
system:image-pullers                        ClusterRole/system:image-puller
```

openshift-machine-config-operator

```
NAME                             ROLE
machine-config-controller-events ClusterRole/machine-config-controller-events
machine-config-daemon-events     ClusterRole/machine-config-daemon-events
prometheus-k8s                   Role/prometheus-k8s
system:deployers                 ClusterRole/system:deployer
system:image-builders            ClusterRole/system:image-builder
system:image-pullers             ClusterRole/system:image-puller
```

openshift-marketplace

```
NAME                          ROLE
marketplace-operator          Role/marketplace-operator
openshift-marketplace-metrics Role/openshift-marketplace-metrics
system:deployers              ClusterRole/system:deployer
system:image-builders         ClusterRole/system:image-builder
system:image-pullers          ClusterRole/system:image-puller
```

openshift-monitoring

```
NAME                          ROLE
alertmanager-prometheusk8s    Role/monitoring-alertmanager-edit
cluster-monitoring-operator   ClusterRole/cluster-monitoring-operator-namespaced
insights-operator-alertmanager Role/monitoring-alertmanager-edit
prometheus-k8s                Role/prometheus-k8s
prometheus-k8s-config         Role/prometheus-k8s-config
system:deployers              ClusterRole/system:deployer
system:image-builders         ClusterRole/system:image-builder
system:image-pullers          ClusterRole/system:image-puller
```

openshift-multus

```
NAME                    ROLE
multus-whereabouts      Role/whereabouts-cni
prometheus-k8s          Role/prometheus-k8s
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

openshift-network-diagnostics

```
NAME                    ROLE
network-diagnostics     Role/network-diagnostics
prometheus-k8s          Role/prometheus-k8s
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

openshift-network-operator

```
NAME                    ROLE
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

openshift-node

```
NAME                      ROLE
system:deployers          ClusterRole/system:deployer
system:image-builders     ClusterRole/system:image-builder
system:image-pullers      ClusterRole/system:image-puller
system:node-config-reader Role/system:node-config-reader
```

openshift-oauth-apiserver

```
NAME                    ROLE
prometheus-k8s          Role/prometheus-k8s
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

openshift-openstack-infra

```
NAME                    ROLE
system:deployers        ClusterRole/system:deployer
system:image-builders   ClusterRole/system:image-builder
system:image-pullers    ClusterRole/system:image-puller
```

openshift-operator-lifecycle-manager

```
NAME                                ROLE
collect-profiles                    Role/collect-profiles
operator-lifecycle-manager-metrics  Role/operator-lifecycle-manager-metrics
packageserver                       Role/packageserver
packageserver-service-cert          Role/packageserver-service-cert
system:deployers                    ClusterRole/system:deployer
system:image-builders               ClusterRole/system:image-builder
system:image-pullers                ClusterRole/system:image-puller
```

openshift-operators

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-ovirt-infra

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-sdn

```
NAME                                         ROLE
openshift-sdn-controller-leaderelection      Role/openshift-sdn-controller-leaderelection
prometheus-k8s                               Role/prometheus-k8s
system:deployers                             ClusterRole/system:deployer
system:image-builders                        ClusterRole/system:image-builder
system:image-pullers                         ClusterRole/system:image-puller
```

openshift-service-ca

```
NAME                                    ROLE
system:deployers                        ClusterRole/system:deployer
system:image-builders                   ClusterRole/system:image-builder
system:image-pullers                    ClusterRole/system:image-puller
system:openshift:controller:service-ca  Role/system:openshift:controller:service-ca
```

openshift-service-ca-operator

```
NAME                   ROLE
prometheus-k8s         Role/prometheus-k8s
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

openshift-user-workload-monitoring

```
NAME                        ROLE
cluster-monitoring-operator ClusterRole/cluster-monitoring-operator-namespaced
prometheus-k8s              Role/prometheus-k8s
system:deployers            ClusterRole/system:deployer
system:image-builders       ClusterRole/system:image-builder
system:image-pullers        ClusterRole/system:image-puller
```

openshift-vsphere-infra

```
NAME                   ROLE
system:deployers       ClusterRole/system:deployer
system:image-builders  ClusterRole/system:image-builder
system:image-pullers   ClusterRole/system:image-puller
```

7.5. Cluster Rolebindings

```
system:openshift:controller:template-instance-controller:admin           admin
system:openshift:controller:template-instance-finalizer-controller:admin admin
alertmanager-main                                                        alertmanager-main
basic-users                                                              basic-user
cloud-controller-manager                                                 cloud-controller-manager
cloud-credential-operator-rolebinding                                    cloud-credential-operator-role
cloud-node-manager                                                       cloud-node-manager
cluster-admin                                                            cluster-admin
cluster-admins                                                           cluster-admin
cluster-storage-operator-role                                            cluster-admin
cluster-version-operator                                                 cluster-admin
csi-snapshot-controller-operator-role                                    cluster-admin
default-account-cluster-network-operator                                 cluster-admin
default-account-openshift-machine-config-operator                        cluster-admin
kubeadmin                                                                cluster-admin
system:openshift:oauth-apiserver                                         cluster-admin
system:openshift:openshift-apiserver                                     cluster-admin
system:openshift:openshift-authentication                                cluster-admin
system:openshift:operator:authentication                                 cluster-admin
system:openshift:operator:cluster-kube-scheduler-operator                cluster-admin
system:openshift:operator:etcd-operator                                  cluster-admin
system:openshift:operator:kube-apiserver-operator                        cluster-admin
system:openshift:operator:kube-apiserver-recovery                        cluster-admin
system:openshift:operator:kube-controller-manager-operator               cluster-admin
system:openshift:operator:kube-controller-manager-recovery               cluster-admin
system:openshift:operator:kube-scheduler-recovery                        cluster-admin
```

system:openshift:operator:kube-storage-version-migrator-operator	cluster-admin
system:openshift:operator:openshift-apiserver-operator	cluster-admin
system:openshift:operator:openshift-config-operator	cluster-admin
system:openshift:operator:openshift-controller-manager-operator	cluster-admin
system:openshift:operator:openshift-etcd-installer	cluster-admin
system:openshift:operator:openshift-kube-apiserver-installer	cluster-admin
system:openshift:operator:openshift-kube-controller-manager-installer	cluster-admin
system:openshift:operator:openshift-kube-scheduler-installer	cluster-admin
system:openshift:operator:service-ca-operator	cluster-admin
cluster-autoscaler	cluster-autoscaler
cluster-autoscaler-operator	cluster-autoscaler-operator
cluster-baremetal-operator	cluster-baremetal-operator
default-account-cluster-image-registry-operator	cluster-image-registry-operator
cluster-monitoring-operator	cluster-monitoring-operator
prometheus-adapter-view	cluster-monitoring-view
telemeter-client-view	cluster-monitoring-view
cluster-node-tuning-operator	cluster-node-tuning-operator
cluster-node-tuning:tuned	cluster-node-tuning:tuned
cluster-readers	cluster-reader
insights-operator-gather-reader	cluster-reader
cluster-samples-operator	cluster-samples-operator
cluster-samples-operator-imageconfig-reader	cluster-samples-operator-imageconfig-reader
cluster-samples-operator-proxy-reader	cluster-samples-operator-proxy-reader
cluster-status-binding	cluster-status
console	console
console-extensions-reader	console-extensions-reader
console-operator	console-operator
dns-monitoring	dns-monitoring
grafana	grafana
helm-chartrepos-view	helm-chartrepos-viewer
insights-operator	insights-operator
insights-operator-gather	insights-operator-gather
kube-apiserver	kube-apiserver
kube-state-metrics	kube-state-metrics
machine-api-controllers	machine-api-controllers
machine-api-operator	machine-api-operator
machine-api-operator-ext-remediation	machine-api-operator-ext-remediation
machine-config-controller	machine-config-controller
machine-config-daemon	machine-config-daemon
machine-config-server	machine-config-server
marketplace-operator	marketplace-operator
metrics-daemon-sa-rolebinding	metrics-daemon-role
multus	multus
multus-admission-controller-webhook	multus-admission-controller-webhook
network-diagnostics	network-diagnostics
node-exporter	node-exporter
openshift-csi-snapshot-controller-role	openshift-csi-snapshot-controller-runner
openshift-dns	openshift-dns
openshift-dns-operator	openshift-dns-operator
openshift-ingress-operator	openshift-ingress-operator
openshift-ingress-router	openshift-ingress-router
openshift-sdn	openshift-sdn

```
openshift-sdn-controller                                              openshift-sdn-controller
openshift-state-metrics                                               openshift-state-metrics
prometheus-adapter                                                    prometheus-adapter
prometheus-k8s                                                        prometheus-k8s
prometheus-k8s-scheduler-resources                                    prometheus-k8s-scheduler-
resources
prometheus-operator                                                   prometheus-operator
registry-monitoring                                                   registry-monitoring
NAME                                                                  ROLE
router-monitoring                                                     router-monitoring
self-access-reviewers                                                 self-access-reviewer
self-provisioners                                                     self-provisioner
console-auth-delegator                                                system:auth-delegator
console-operator-auth-delegator                                       system:auth-delegator
insights-operator-auth                                                system:auth-delegator
packageserver-service-system:auth-delegator                          system:auth-delegator
resource-metrics:system:auth-delegator                               system:auth-delegator
system:openshift:controller:kube-apiserver-check-endpoints-auth-delegator  system:auth-delegator
system:basic-user                                                     system:basic-user
system:build-strategy-docker-binding                                  system:build-strategy-docker
system:build-strategy-jenkinspipeline-binding                         system:build-strategy-
jenkinspipeline
system:build-strategy-source-binding                                  system:build-strategy-source
system-bootstrap-node-renewal
system:certificates.k8s.io:certificatesigningrequests:selfnodeclient
system:controller:attachdetach-controller                            system:controller:attachdetach-
controller
system:controller:certificate-controller                             system:controller:certificate-
controller
system:controller:clusterrole-aggregation-controller                 system:controller:clusterrole-
aggregation-controller
system:controller:cronjob-controller                                 system:controller:cronjob-
controller
system:controller:daemon-set-controller                              system:controller:daemon-set-
controller
system:controller:deployment-controller                              system:controller:deployment-
controller
system:controller:disruption-controller                              system:controller:disruption-
controller
system:controller:endpoint-controller                                system:controller:endpoint-
controller
system:controller:endpointslice-controller
system:controller:endpointslice-controller
system:controller:endpointslicemirroring-controller
system:controller:endpointslicemirroring-controller
system:controller:ephemeral-volume-controller                        system:controller:ephemeral-
volume-controller
system:controller:expand-controller                                  system:controller:expand-
controller
system:controller:generic-garbage-collector                          system:controller:generic-
garbage-collector
system:controller:horizontal-pod-autoscaler                          system:controller:horizontal-
pod-autoscaler
system:controller:job-controller                                     system:controller:job-
controller
system:controller:namespace-controller                               system:controller:namespace-
controller
```

```
system:controller:node-controller                               system:controller:node-
controller
olm-operator-binding-openshift-operator-lifecycle-manager       system:controller:operator-
lifecycle-manager
system:controller:persistent-volume-binder                      system:controller:persistent-
volume-binder
system:controller:pod-garbage-collector                         system:controller:pod-garbage-
collector
system:controller:pvc-protection-controller                     system:controller:pvc-
protection-controller
system:controller:pv-protection-controller                      system:controller:pv-
protection-controller
system:controller:replicaset-controller                         system:controller:replicaset-
controller
system:controller:replication-controller                        system:controller:replication-
controller
system:controller:resourcequota-controller
system:controller:resourcequota-controller
system:controller:root-ca-cert-publisher                        system:controller:root-ca-cert-
publisher
system:controller:route-controller                              system:controller:route-
controller
system:controller:service-account-controller                    system:controller:service-
account-controller
system:controller:service-ca-cert-publisher                     system:controller:service-ca-
cert-publisher
system:controller:service-controller                            system:controller:service-
controller
system:controller:statefulset-controller                        system:controller:statefulset-
controller
system:controller:ttl-after-finished-controller                 system:controller:ttl-after-
finished-controller
system:controller:ttl-controller                                system:controller:ttl-
controller
system:deployer                                                 system:deployer
system:discovery                                                system:discovery
system:image-builder                                            system:image-builder
openshift-image-registry-pruner                                 system:image-pruner
system:image-puller                                             system:image-puller
system:kube-controller-manager                                  system:kube-controller-manager
system:kube-dns                                                 system:kube-dns
system:kube-scheduler                                           system:kube-scheduler
system:openshift:operator:kube-scheduler:public-2               system:kube-scheduler
system:masters                                                  system:master
system:monitoring                                               system:monitoring
system:node                                                     system:node
system:node-admins                                              system:node-admin
system:node-admin                                               system:node-admin
system-bootstrap-node-bootstrapper                              system:node-bootstrapper
system:node-bootstrapper                                        system:node-bootstrapper
system:node-proxiers                                            system:node-proxier
system:node-proxier                                             system:node-proxier
system:oauth-token-deleters                                     system:oauth-token-deleter
system:openshift:controller:build-config-change-controller
system:openshift:controller:build-config-change-controller
system:openshift:controller:build-controller
system:openshift:controller:build-controller
```

```
system:openshift:controller:kube-apiserver-check-endpoints-crd-reader
system:openshift:controller:check-endpoints-crd-reader
system:openshift:controller:kube-apiserver-check-endpoints-node-reader
system:openshift:controller:check-endpoints-node-reader
system:openshift:controller:cluster-csr-approver-controller
system:openshift:controller:cluster-csr-approver-controller
system:openshift:controller:cluster-quota-reconciliation-controller
system:openshift:controller:cluster-quota-reconciliation-controller
system:openshift:controller:default-rolebindings-controller
system:openshift:controller:default-rolebindings-controller
system:openshift:controller:deployer-controller
system:openshift:controller:deployer-controller
system:openshift:controller:deploymentconfig-controller
system:openshift:controller:deploymentconfig-controller
system:openshift:controller:horizontal-pod-autoscaler
system:openshift:controller:horizontal-pod-autoscaler
system:openshift:controller:image-import-controller
system:openshift:controller:image-import-controller
system:openshift:controller:image-trigger-controller
system:openshift:controller:image-trigger-controller
system:openshift:controller:machine-approver
system:openshift:controller:machine-approver
system:openshift:controller:namespace-security-allocation-controller
system:openshift:controller:namespace-security-allocation-controller
system:openshift:controller:origin-namespace-controller
system:openshift:controller:origin-namespace-controller
system:openshift:controller:pv-recycler-controller                    system:openshift:controller:pv-
recycler-controller
system:openshift:controller:resourcequota-controller
system:openshift:controller:resourcequota-controller
system:openshift:controller:serviceaccount-controller
system:openshift:controller:serviceaccount-controller
system:openshift:controller:serviceaccount-pull-secrets-controller
system:openshift:controller:serviceaccount-pull-secrets-controller
system:openshift:controller:service-ca
system:openshift:controller:service-ca
system:openshift:controller:service-ingress-ip-controller
system:openshift:controller:service-ingress-ip-controller
system:openshift:controller:service-serving-cert-controller
system:openshift:controller:service-serving-cert-controller
system:openshift:controller:template-instance-controller
system:openshift:controller:template-instance-controller
system:openshift:controller:template-instance-finalizer-controller
system:openshift:controller:template-instance-finalizer-controller
system:openshift:controller:template-service-broker
system:openshift:controller:template-service-broker
system:openshift:controller:unidling-controller
system:openshift:controller:unidling-controller
system:openshift:discovery                                            system:openshift:discovery
system:openshift:kube-controller-manager:gce-cloud-provider           system:openshift:kube-
controller-manager:gce-cloud-provider
system:openshift:openshift-controller-manager                         system:openshift:openshift-
controller-manager
system:openshift:openshift-controller-manager:ingress-to-route-controller  system:openshift:openshift-
controller-manager:ingress-to-route-controller
system:openshift:openshift-controller-manager:update-buildconfig-status  system:openshift:openshift-
controller-manager:update-buildconfig-status
```

```
system:openshift:operator:cloud-controller-manager
system:openshift:operator:cloud-controller-manager
system:openshift:public-info-viewer                        system:openshift:public-info-
viewer                                                      viewer
system:openshift:tokenreview-openshift-controller-manager  system:openshift:tokenreview-
openshift-controller-manager                               openshift-controller-manager
system:openshift:useroauthaccesstoken-manager
system:openshift:useroauthaccesstoken-manager
system:public-info-viewer                                  system:public-info-viewer
registry-registry-role                                     system:registry
system:scope-impersonation                                 system:scope-impersonation
system:sdn-readers                                         system:sdn-reader
system:service-account-issuer-discovery                    system:service-account-issuer-
discovery                                                   discovery
system:volume-scheduler                                    system:volume-scheduler
system:webhooks                                            system:webhook
telemeter-client                                           telemeter-client
thanos-querier                                             thanos-querier
multus-whereabouts                                         whereabouts-cni
```

7.6. Kubeadmin Secret

7.7. Identity Providers

```
[
  {
    "htpasswd": {
      "fileData": {
        "name": "htpass-secret"
      }
    },
    "mappingMethod": "claim",
    "name": "developer",
    "type": "HTPasswd"
  }
]
```

7.8. Cluster Authentications

```
{
  "include.release.openshift.io/ibm-cloud-managed": "true",
  "include.release.openshift.io/self-managed-high-availability": "true",
  "include.release.openshift.io/single-node-developer": "true",
  "release.openshift.io/create-only": "true"
}
{
  "kubeConfig": {
    "name": "webhook-authentication-integrated-oauth"
  }
}
{
  "integratedOAuthMetadata": {
    "name": "oauth-openshift"
  }
}
```

7.9. Kubelet Configurations

```
{
    "apiVersion": "v1",
    "items": [],
    "kind": "List",
    "metadata": {
        "resourceVersion": "",
        "selfLink": ""
    }
}
```

7.10. Cluster Subscriptions

7.11. WebHook Configurations

```
{
  "admissionReviewVersions": [
    "v1"
  ],
  "clientConfig": {
    "service": {
      "name": "machine-api-operator-webhook",
      "namespace": "openshift-machine-api",
      "path": "/validate-machine-openshift-io-v1beta1-machine",
      "port": 443
    }
  },
  "failurePolicy": "Ignore",
  "matchPolicy": "Equivalent",
```

```
      "name": "validation.machine.machine.openshift.io",
      "namespaceSelector": {},
      "objectSelector": {},
      "rules": [
        {
          "apiGroups": [
            "machine.openshift.io"
          ],
          "apiVersions": [
            "v1beta1"
          ],
          "operations": [
            "CREATE",
            "UPDATE"
          ],
          "resources": [
            "machines"
          ],
          "scope": "*"
        }
      ],
      "sideEffects": "None",
      "timeoutSeconds": 10
    }
    {
      "admissionReviewVersions": [
        "v1"
      ],
      "clientConfig": {
        "service": {
          "name": "machine-api-operator-webhook",
          "namespace": "openshift-machine-api",
          "path": "/validate-machine-openshift-io-v1beta1-machineset",
          "port": 443
        }
      },
      "failurePolicy": "Ignore",
      "matchPolicy": "Equivalent",
      "name": "validation.machineset.machine.openshift.io",
      "namespaceSelector": {},
      "objectSelector": {},
      "rules": [
        {
          "apiGroups": [
            "machine.openshift.io"
          ],
          "apiVersions": [
            "v1beta1"
          ],
          "operations": [
            "CREATE",
            "UPDATE"
          ],
          "resources": [
            "machinesets"
          ],
          "scope": "*"
```

```
      }
    ],
    "sideEffects": "None",
    "timeoutSeconds": 10
}
{
    "admissionReviewVersions": [
      "v1"
    ],
    "clientConfig": {
      "service": {
        "name": "multus-admission-controller",
        "namespace": "openshift-multus",
        "path": "/validate",
        "port": 443
      }
    },
    "failurePolicy": "Fail",
    "matchPolicy": "Equivalent",
    "name": "multus-validating-config.k8s.io",
    "namespaceSelector": {},
    "objectSelector": {},
    "rules": [
      {
        "apiGroups": [
          "k8s.cni.cncf.io"
        ],
        "apiVersions": [
          "v1"
        ],
        "operations": [
          "CREATE",
          "UPDATE"
        ],
        "resources": [
          "network-attachment-definitions"
        ],
        "scope": "*"
      }
    ],
    "sideEffects": "NoneOnDryRun",
    "timeoutSeconds": 30
}
{
    "admissionReviewVersions": [
      "v1"
    ],
    "clientConfig": {
      "service": {
        "name": "prometheus-operator",
        "namespace": "openshift-monitoring",
        "path": "/admission-prometheusrules/validate",
        "port": 8080
      }
    },
    "failurePolicy": "Ignore",
    "matchPolicy": "Equivalent",
```

```
    "name": "prometheusrules.openshift.io",
    "namespaceSelector": {},
    "objectSelector": {},
    "rules": [
      {
        "apiGroups": [
          "monitoring.coreos.com"
        ],
        "apiVersions": [
          "v1"
        ],
        "operations": [
          "CREATE",
          "UPDATE"
        ],
        "resources": [
          "prometheusrules"
        ],
        "scope": "Namespaced"
      }
    ],
    "sideEffects": "None",
    "timeoutSeconds": 5
}
```

7.12. Mutating WebHook Configurations

```
{
  "admissionReviewVersions": [
    "v1"
  ],
  "clientConfig": {
    "service": {
      "name": "machine-api-operator-webhook",
      "namespace": "openshift-machine-api",
      "path": "/mutate-machine-openshift-io-v1beta1-machine",
      "port": 443
    }
  },
  "failurePolicy": "Ignore",
  "matchPolicy": "Equivalent",
  "name": "default.machine.machine.openshift.io",
  "namespaceSelector": {},
  "objectSelector": {},
  "reinvocationPolicy": "Never",
  "rules": [
    {
      "apiGroups": [
        "machine.openshift.io"
      ],
      "apiVersions": [
        "v1beta1"
      ],
      "operations": [
```

```
          "CREATE"
        ],
        "resources": [
          "machines"
        ],
        "scope": "*"
      }
    ],
    "sideEffects": "None",
    "timeoutSeconds": 10
  }
  {
    "admissionReviewVersions": [
      "v1"
    ],
    "clientConfig": {
      "service": {
        "name": "machine-api-operator-webhook",
        "namespace": "openshift-machine-api",
        "path": "/mutate-machine-openshift-io-v1beta1-machineset",
        "port": 443
      }
    },
    "failurePolicy": "Ignore",
    "matchPolicy": "Equivalent",
    "name": "default.machineset.machine.openshift.io",
    "namespaceSelector": {},
    "objectSelector": {},
    "reinvocationPolicy": "Never",
    "rules": [
      {
        "apiGroups": [
          "machine.openshift.io"
        ],
        "apiVersions": [
          "v1beta1"
        ],
        "operations": [
          "CREATE"
        ],
        "resources": [
          "machinesets"
        ],
        "scope": "*"
      }
    ],
    "sideEffects": "None",
    "timeoutSeconds": 10
  }
```

7.13. API Versions

7.13.1. Verification of API files permissions

```
/etc/kubernetes/static-pod-resources/kube-apiserver-pod.yaml: [OK]
/etc/kubernetes/static-pod-resources/kube-controller-manager-pod.yaml: [OK]
/etc/kubernetes/static-pod-resources/kube-scheduler-pod.yaml: [OK]
/etc/kubernetes/manifests/etcd-pod.yaml: [OK]
```

Chapter 8. storage

8.1. Failed Persistent Volumes

8.2. Pending Persistent Volumes

8.3. Released Persistent Volumes

8.4. Lost Persistent Volumes Claims

8.5. Pending Persistent Volumes Claims

8.6. Storage Classes

8.7. Quotas

```
NAMESPACE              NAME                          AGE    REQUEST
LIMIT
openshift-host-network   host-network-namespace-quotas   41d   count/daemonsets.apps: 0/0,
count/deployments.apps: 0/0, pods: 0/0   limits.cpu: 0/0, limits.memory: 0/0
```

8.8. Volume Snapshots

8.9. CSI Drivers

8.10. CSI Nodes

```
NAME                DRIVERS  AGE
crc-5nvrm-master-0  0        41d
```

8.11. Feature Gates

8.12. Horizontal Pod AutoScalers

Chapter 9. logging

9.1. Logging Resources

Chapter 10. Monitoring

10.1. Prometheus Status

```
prometheus-adapter-6dbdddc76b-bdr2v          1/1     Running   0        19h
prometheus-k8s-0                             6/6     Running   0        19h
prometheus-operator-76f79c8d85-xn57s         2/2     Running   0        19h
```

10.2. Prometheus Rules

10.2.1. openshift-cloud-credential-operator cloud-credential-operator-alerts

```
"CloudCredentialOperatorTargetNamespaceMissing"
"One ore more CredentialsRequest CRs are asking to save credentials to a non-existent namespace."
"cco_credentials_requests_conditions{condition=\"MissingTargetNamespace\"} > 0"
{"severity":"warning"}
"CloudCredentialOperatorProvisioningFailed"
"One or more CredentialsRequest CRs are unable to be processed."
"cco_credentials_requests_conditions{condition=\"CredentialsProvisionFailure\"} > 0"
{"severity":"warning"}
"CloudCredentialOperatorDeprovisioningFailed"
"One or more CredentialsRequest CRs are unable to be deleted."
"cco_credentials_requests_conditions{condition=\"CredentialsDeprovisionFailure\"} > 0"
{"severity":"warning"}
"CloudCredentialOperatorInsufficientCloudCreds"
"Problem with the available platform credentials."
"cco_credentials_requests_conditions{condition=\"InsufficientCloudCreds\"} > 0"
{"severity":"warning"}
"CloudCredentialOperatorStaleCredentials"
"One or more CredentialsRequest CRs are stale and should be deleted."
"cco_credentials_requests_conditions{condition=\"StaleCredentials\"} > 0"
{"severity":"warning"}
```

10.2.2. openshift-cluster-machine-approver machineapprover-rules

```
"MachineApproverMaxPendingCSRsReached"
"max pending CSRs threshold reached."
"mapi_current_pending_csr > mapi_max_pending_csr\n"
{"severity":"warning"}
```

10.2.3. openshift-cluster-node-tuning-operator node-tuning-operator

```
"NTOPodsNotReady"
"Pod {{ $labels.pod }} is not ready."
"kube_pod_status_ready{namespace='openshift-cluster-node-tuning-operator', condition='true'} == 0\n"
{"severity":"warning"}
"NTODegraded"
"The Node Tuning Operator is degraded."
"nto_degraded_info == 1"
{"severity":"warning"}
null
null
"count(nto_profile_calculated_total{profile!~\"openshift-node\",profile!~\"openshift-control-
plane\",profile!~\"openshift\"})"
null
```

10.2.4. openshift-cluster-samples-operator samples-operator-alerts

```
"SamplesRetriesMissingOnImagestreamImportFailing"
null
"sum(openshift_samples_failed_imagestream_import_info) >
sum(openshift_samples_retry_imagestream_import_total) -
sum(openshift_samples_retry_imagestream_import_total offset 30m)"
{"severity":"warning"}
"SamplesImagestreamImportFailing"
null
"sum(openshift_samples_retry_imagestream_import_total) -
sum(openshift_samples_retry_imagestream_import_total offset 30m) >
sum(openshift_samples_failed_imagestream_import_info)"
{"severity":"warning"}
"SamplesDegraded"
null
"openshift_samples_degraded_info == 1"
{"severity":"warning"}
"SamplesInvalidConfig"
null
"openshift_samples_invalidconfig_info == 1"
{"severity":"warning"}
"SamplesMissingSecret"
null
"openshift_samples_invalidsecret_info{reason=\"missing_secret\"} == 1"
{"severity":"warning"}
"SamplesMissingTBRCredential"
null
"openshift_samples_invalidsecret_info{reason=\"missing_tbr_credential\"} == 1"
{"severity":"warning"}
"SamplesTBRInaccessibleOnBoot"
null
"openshift_samples_tbr_inaccessible_info == 1"
{"severity":"info"}
```

10.2.5. openshift-cluster-version cluster-version-operator

```
"ClusterVersionOperatorDown"
"Cluster version operator has disappeared from Prometheus target discovery."
"absent(up{job=\"cluster-version-operator\"} == 1)\n"
{"severity":"critical"}
"CannotRetrieveUpdates"
"Cluster version operator has not retrieved updates in {{ $value | humanizeDuration }}."
"(time()-cluster_version_operator_update_retrieval_timestamp_seconds) >= 3600 and ignoring(condition,
name, reason) cluster_operator_conditions{name=\"version\", condition=\"RetrievedUpdates\",
endpoint=\"metrics\", reason!=\"NoChannel\"}\n"
{"severity":"warning"}
"UpdateAvailable"
"Your upstream update recommendation service recommends you update your cluster."
"sum by (channel,upstream) (cluster_version_available_updates) > 0\n"
{"severity":"info"}
"ClusterNotUpgradeable"
"One or more cluster operators have been blocking minor version cluster upgrades for at least an hour."
"max by (name, condition, endpoint) (cluster_operator_conditions{name=\"version\",
condition=\"Upgradeable\", endpoint=\"metrics\"} == 0)\n"
{"severity":"info"}
"ClusterOperatorDown"
"Cluster operator has not been available for 10 minutes."
"cluster_operator_up{job=\"cluster-version-operator\"} == 0\n"
{"severity":"critical"}
"ClusterOperatorDegraded"
"Cluster operator has been degraded for 30 minutes."
"(\n  cluster_operator_conditions{job=\"cluster-version-operator\", condition=\"Degraded\"}\n  or on
(name)\n  group by (name) (cluster_operator_up{job=\"cluster-version-operator\"})\n) == 1\n"
{"severity":"warning"}
"ClusterOperatorFlapping"
"Cluster operator up status is changing often."
"changes(cluster_operator_up{job=\"cluster-version-operator\"}[2m]) > 2\n"
{"severity":"warning"}
```

10.2.6. openshift-dns-operator dns

```
"CoreDNSPanicking"
"CoreDNS panic"
"increase(coredns_panics_total[10m]) > 0"
{"severity":"warning"}
"CoreDNSHealthCheckSlow"
"CoreDNS health checks"
"histogram_quantile(.95, sum(rate(coredns_health_request_duration_seconds_bucket[5m])) by (instance, le))
> 10"
{"severity":"warning"}
"CoreDNSErrorsHigh"
"CoreDNS serverfail"
"(sum by(namespace) (rate(coredns_dns_responses_total{rcode=\"SERVFAIL\"}[5m]))\n  /\nsum by(namespace)
(rate(coredns_dns_responses_total[5m])))\n> 0.01\n"
{"severity":"warning"}
```

10.2.7. openshift-etcd-operator etcd-prometheus-rules

```
"etcdMembersDown"
"etcd cluster members are down."
"max without (endpoint) (\n  sum without (instance) (up{job=~\".*etcd.*\"} == bool 0)\nor\n  count without
(To) (\n    sum without (instance) (rate(etcd_network_peer_sent_failures_total{job=~\".*etcd.*\"}[120s]))
> 0.01\n  )\n)\n> 0\n"
{"severity":"critical"}
"etcdNoLeader"
"etcd cluster has no leader."
"etcd_server_has_leader{job=~\".*etcd.*\"} == 0\n"
{"severity":"critical"}
"etcdGRPCRequestsSlow"
"etcd grpc requests are slow"
"histogram_quantile(0.99, sum(rate(grpc_server_handling_seconds_bucket{job=~\".*etcd.*\",
grpc_method!=\"Defragment\", grpc_type=\"unary\"}[5m])) without(grpc_type))\n> 0.15\n"
{"severity":"critical"}
"etcdMemberCommunicationSlow"
"etcd cluster member communication is slow."
"histogram_quantile(0.99,
rate(etcd_network_peer_round_trip_time_seconds_bucket{job=~\".*etcd.*\"}[5m]))\n> 0.15\n"
{"severity":"warning"}
"etcdHighNumberOfFailedProposals"
"etcd cluster has high number of proposal failures."
"rate(etcd_server_proposals_failed_total{job=~\".*etcd.*\"}[15m]) > 5\n"
{"severity":"warning"}
"etcdHighFsyncDurations"
"etcd cluster 99th percentile fsync durations are too high."
"histogram_quantile(0.99, rate(etcd_disk_wal_fsync_duration_seconds_bucket{job=~\".*etcd.*\"}[5m]))\n>
0.5\n"
{"severity":"warning"}
"etcdHighFsyncDurations"
null
"histogram_quantile(0.99, rate(etcd_disk_wal_fsync_duration_seconds_bucket{job=~\".*etcd.*\"}[5m]))\n>
1\n"
{"severity":"critical"}
"etcdHighCommitDurations"
"etcd cluster 99th percentile commit durations are too high."
"histogram_quantile(0.99,
rate(etcd_disk_backend_commit_duration_seconds_bucket{job=~\".*etcd.*\"}[5m]))\n> 0.25\n"
{"severity":"warning"}
"etcdBackendQuotaLowSpace"
"etcd cluster database size exceeds the defined quota."
"(etcd_mvcc_db_total_size_in_bytes/etcd_server_quota_backend_bytes)*100 > 95\n"
{"severity":"critical"}
"etcdExcessiveDatabaseGrowth"
"etcd cluster database size increased by 50 percent over the past four hours."
"increase(((etcd_mvcc_db_total_size_in_bytes/etcd_server_quota_backend_bytes)*100)[240m:1m]) > 50\n"
{"severity":"warning"}
"etcdHighNumberOfFailedGRPCRequests"
"etcd cluster has high number of failed grpc requests."
"100 * sum(rate(grpc_server_handled_total{job=\"etcd\",
grpc_code=~\"Unknown|FailedPrecondition|ResourceExhausted|Internal|Unavailable|DataLoss|DeadlineExceeded\"
}[5m])) without (grpc_type, grpc_code)\n  /\nsum(rate(grpc_server_handled_total{job=\"etcd\"}[5m]))
without (grpc_type, grpc_code)\n  > 2 and on
()(sum(cluster_infrastructure_provider{type!~\"ipi|BareMetal\"} == bool 1))\n"
```

```
{"severity":"warning"}
"etcdHighNumberOfFailedGRPCRequests"
"etcd cluster has high number of failed grpc requests."
"100 * sum(rate(grpc_server_handled_total{job=\"etcd\",
grpc_code=~\"Unknown|FailedPrecondition|ResourceExhausted|Internal|Unavailable|DataLoss|DeadlineExceeded\"
}[5m])) without (grpc_type, grpc_code)\n  /\nsum(rate(grpc_server_handled_total{job=\"etcd\"}[5m]))
without (grpc_type, grpc_code)\n  > 5 and on
()(sum(cluster_infrastructure_provider{type!~\"ipi|BareMetal\"} == bool 1))\n"
{"severity":"critical"}
"etcdHighNumberOfLeaderChanges"
"etcd cluster has high number of leader changes."
"increase((max without (instance) (etcd_server_leader_changes_seen_total{job=~\".*etcd.*\"}) or
0*absent(etcd_server_leader_changes_seen_total{job=~\".*etcd.*\"}))[15m:1m]) >= 5\n"
{"severity":"warning"}
"etcdInsufficientMembers"
"etcd is reporting that a majority of instances are unavailable."
"sum(up{job=\"etcd\"} == bool 1 and etcd_server_has_leader{job=\"etcd\"} == bool 1) without (instance,pod)
< ((count(up{job=\"etcd\"})) without (instance,pod) + 1) / 2)"
{"severity":"critical"}
```

10.2.8. openshift-image-registry image-registry-operator-alerts

```
"ImageRegistryStorageReconfigured"
null
"increase(image_registry_operator_storage_reconfigured_total[30m]) > 0"
{"severity":"warning"}
```

10.2.9. openshift-ingress-operator ingress-operator

```
"HAProxyReloadFail"
"HAProxy reload failure"
"template_router_reload_failure == 1"
{"severity":"warning"}
"HAProxyDown"
"HAProxy is down"
"haproxy_up == 0"
{"severity":"critical"}
"IngressControllerDegraded"
"IngressController is degraded"
"ingress_controller_conditions{condition=\"Degraded\"} == 1"
{"severity":"warning"}
"IngressControllerUnavailable"
"IngressController is unavailable"
"ingress_controller_conditions{condition=\"Available\"} == 0"
{"severity":"warning"}
```

10.2.10. openshift-insights insights-prometheus-rules

```
"InsightsDisabled"
"Insights operator is disabled."
"cluster_operator_conditions{name=\"insights\", condition=\"Disabled\"} == 1\n"
{"severity":"info"}
"SimpleContentAccessNotAvailable"
"Simple content access certificates are not available."
"max_over_time(cluster_operator_conditions{name=\"insights\", condition=\"SCANotAvailable\",
reason=\"NotFound\"}[5m]) == 1\n"
{"severity":"info"}
```

10.2.11. openshift-kube-apiserver-operator kube-apiserver-operator

```
"TechPreviewNoUpgrade"
"Cluster has enabled tech preview features that will prevent upgrades."
"cluster_feature_set{name!=\"\", namespace=\"openshift-kube-apiserver-operator\"} == 0\n"
{"severity":"warning"}
```

10.2.12. openshift-kube-apiserver api-usage

```
"APIRemovedInNextReleaseInUse"
"Deprecated API that will be removed in the next version is being used."
"group(apiserver_requested_deprecated_apis{removed_release=\"1.24\"}) by (group,version,resource) and (sum
by(group,version,resource) (rate(apiserver_request_total{system_client!=\"kube-controller-
manager\",system_client!=\"cluster-policy-controller\"}[4h]))) > 0\n"
{"namespace":"openshift-kube-apiserver","severity":"info"}
"APIRemovedInNextEUSReleaseInUse"
"Deprecated API that will be removed in the next EUS version is being used."
"group(apiserver_requested_deprecated_apis{removed_release=~\"1\\\\.2[45]\"}) by (group,version,resource)
and (sum by(group,version,resource) (rate(apiserver_request_total{system_client!=\"kube-controller-
manager\",system_client!=\"cluster-policy-controller\"}[4h]))) > 0\n"
{"namespace":"openshift-kube-apiserver","severity":"info"}
```

10.2.13. openshift-kube-apiserver audit-errors

```
"AuditLogError"
"An API Server instance was unable to write audit logs. This could be\ntriggered by the node running out
of space, or a malicious actor\ntampering with the audit logs."
"sum by (apiserver,instance)(rate(apiserver_audit_error_total{apiserver=~\".+-apiserver\"}[5m])) / sum by
(apiserver,instance) (rate(apiserver_audit_event_total{apiserver=~\".+-apiserver\"}[5m])) > 0\n"
{"namespace":"openshift-kube-apiserver","severity":"warning"}
```

10.2.14. openshift-kube-apiserver cpu-utilization

```
"HighOverallControlPlaneCPU"
"CPU utilization across all three control plane nodes is higher than two control plane nodes can sustain;
a single control plane node outage may cause a cascading failure; increase available CPU."
"sum(\n  100 - (avg by (instance) (rate(node_cpu_seconds_total{mode=\"idle\"}[1m])) * 100)\n  AND on
(instance) label_replace( kube_node_role{role=\"master\"}, \"instance\", \"$1\", \"node\", \"(.+)\"
)\n)\n/\ncount(kube_node_role{role=\"master\"})\n> 60\n"
{"namespace":"openshift-kube-apiserver","severity":"warning"}
"ExtremelyHighIndividualControlPlaneCPU"
"CPU utilization on a single control plane node is very high, more CPU pressure is likely to cause a
failover; increase available CPU."
"100 - (avg by (instance) (rate(node_cpu_seconds_total{mode=\"idle\"}[1m])) * 100) > 90 AND on (instance)
label_replace( kube_node_role{role=\"master\"}, \"instance\", \"$1\", \"node\", \"(.+)\" )\n"
{"namespace":"openshift-kube-apiserver","severity":"warning"}
"ExtremelyHighIndividualControlPlaneCPU"
"Sustained high CPU utilization on a single control plane node, more CPU pressure is likely to cause a
failover; increase available CPU."
"100 - (avg by (instance) (rate(node_cpu_seconds_total{mode=\"idle\"}[1m])) * 100) > 90 AND on (instance)
label_replace( kube_node_role{role=\"master\"}, \"instance\", \"$1\", \"node\", \"(.+)\" )\n"
{"namespace":"openshift-kube-apiserver","severity":"critical"}
```

10.2.15. openshift-kube-apiserver kube-apiserver-requests

```
null
null
"max_over_time(sum(apiserver_current_inflight_requests{apiserver=~\"openshift-apiserver|kube-apiserver\"})
by (apiserver,requestKind)[2m:])\n"
null
```

10.2.16. openshift-kube-apiserver kube-apiserver-slos-basic

```
"KubeAPIErrorBudgetBurn"
"The API server is burning too much error budget."
"sum(apiserver_request:burnrate1h) > (14.40 * 0.01000)\nand\nsum(apiserver_request:burnrate5m) > (14.40 *
0.01000)\n"
{"long":"1h","namespace":"openshift-kube-apiserver","severity":"critical","short":"5m"}
"KubeAPIErrorBudgetBurn"
"The API server is burning too much error budget."
"sum(apiserver_request:burnrate6h) > (6.00 * 0.01000)\nand\nsum(apiserver_request:burnrate30m) > (6.00 *
0.01000)\n"
{"long":"6h","namespace":"openshift-kube-apiserver","severity":"critical","short":"30m"}
null
null
"# error\nlabel_replace(\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",code=~\"5..\"}[5m]))\n/
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[5m])))\n, \"type\",
\"error\", \"_none_\", \"\")\nor\n# resource-scoped latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"resource\"}[5m]))\n  -\n
(sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pr
oxy|log|exec\",scope=\"resource\",le=\"1\"}[5m])) or vector(0))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[5m])))\n, \"type\", \"slow-resource\", \"_none_\", \"\")\nor\n# namespace-scoped
```

```
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"namespace\"}[5m])))\n  -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pro
xy|log|exec\",scope=\"namespace\",le=\"5\"}[5m])))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[5m])))\n, \"type\", \"slow-namespace\", \"_none_\", \"\")\nor\n# cluster-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\"}[
5m])))\n   -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\",
le=\"30\"}[5m])))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[5m])))\n, \"type\", \"slow-
cluster\", \"_none_\", \"\")\n"
{"verb":"read"}
null
null
"# error\nlabel_replace(\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",code=~\"5..\"}[30m])))\n/
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[30m])))\n, \"type\",
\"error\", \"_none_\", \"\")\nor\n# resource-scoped latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"resource\"}[30m])))\n  -\n
(sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pr
oxy|log|exec\",scope=\"resource\",le=\"1\"}[30m])) or vector(0))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[30m])))\n, \"type\", \"slow-resource\", \"_none_\", \"\")\nor\n# namespace-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"namespace\"}[30m])))\n  -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pro
xy|log|exec\",scope=\"namespace\",le=\"5\"}[30m])))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[30m])))\n, \"type\", \"slow-namespace\", \"_none_\", \"\")\nor\n# cluster-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\"}[
30m])))\n   -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\",
le=\"30\"}[30m])))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[30m])))\n, \"type\", \"slow-
cluster\", \"_none_\", \"\")\n"
{"verb":"read"}
null
null
"# error\nlabel_replace(\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",code=~\"5..\"}[1h])))\n/
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[1h])))\n, \"type\",
\"error\", \"_none_\", \"\")\nor\n# resource-scoped latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"resource\"}[1h])))\n  -\n
(sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pr
oxy|log|exec\",scope=\"resource\",le=\"1\"}[1h])) or vector(0))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[1h])))\n, \"type\", \"slow-resource\", \"_none_\", \"\")\nor\n# namespace-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"namespace\"}[1h])))\n  -
```

```
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pro
xy|log|exec\",scope=\"namespace\",le=\"5\"}[1h]))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[1h])))\n, \"type\", \"slow-namespace\", \"_none_\", \"\")\nor\n# cluster-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\"}[
1h]))\n    -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\",
le=\"30\"}[1h]))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[1h])))\n, \"type\", \"slow-
cluster\", \"_none_\", \"\")\n"
{"verb":"read"}
null
null
"# error\nlabel_replace(\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",code=~\"5..\"}[6h]))\n/
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[6h])))\n, \"type\",
\"error\", \"_none_\", \"\")\nor\n# resource-scoped latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"resource\"}[6h]))\n  -\n
(sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pr
oxy|log|exec\",scope=\"resource\",le=\"1\"}[6h])) or vector(0))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[6h])))\n, \"type\", \"slow-resource\", \"_none_\", \"\")\nor\n# namespace-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"prox
y|log|exec\",scope=\"namespace\"}[6h]))\n  -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"pro
xy|log|exec\",scope=\"namespace\",le=\"5\"}[6h]))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\",subresource!~\"proxy|log|exec
\"}[6h])))\n, \"type\", \"slow-namespace\", \"_none_\", \"\")\nor\n# cluster-scoped
latency\nlabel_replace(\n  (\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\"}[
6h]))\n    -
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\",scope=\"cluster\",
le=\"30\"}[6h]))\n  ) /
scalar(sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[6h])))\n, \"type\", \"slow-
cluster\", \"_none_\", \"\")\n"
{"verb":"read"}
null
null
"(\n  (\n    # too slow\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[1h]))
\n    -\n
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",le=\"
1\"}[1h]))\n  )\n  +\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",code=~\"5..\"}[1h]))\n)
\n/\nsum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[1h]))\n"
{"verb":"write"}
null
null
"(\n  (\n    # too slow\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[30m])
)\n    -\n
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",le=\"
1\"}[30m]))\n  )\n  +\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",code=~\"5..\"}[30m]))\n
```

```
)\n/\nsum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[30m]))\n"
{"verb":"write"}
null
null
"(\n  (\n    # too slow\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[5m]))
\n    -\n
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",le=\"
1\"}[5m]))\n  )\n  +\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",code=~\"5..\"}[5m]))\n)
\n/\nsum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[5m]))\n"
{"verb":"write"}
null
null
"(\n  (\n    # too slow\n
sum(rate(apiserver_request_duration_seconds_count{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[6h]))
\n    -\n
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",le=\"
1\"}[6h]))\n  )\n  +\n
sum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\",code=~\"5..\"}[6h]))\n)
\n/\nsum(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[6h]))\n"
{"verb":"write"}
null
null
"sum by (code,resource) (rate(apiserver_request_total{job=\"apiserver\",verb=~\"LIST|GET\"}[5m]))\n"
{"verb":"read"}
null
null
"sum by (code,resource)
(rate(apiserver_request_total{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[5m]))\n"
{"verb":"write"}
null
null
"histogram_quantile(0.99, sum by (le, resource)
(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"LIST|GET\"}[5m]))) > 0\n"
{"quantile":"0.99","verb":"read"}
null
null
"histogram_quantile(0.99, sum by (le, resource)
(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",verb=~\"POST|PUT|PATCH|DELETE\"}[5m])))
> 0\n"
{"quantile":"0.99","verb":"write"}
null
null
"histogram_quantile(0.99,
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",subresource!=\"log\",verb!~\"LIST|WAT
CH|WATCHLIST|DELETECOLLECTION|PROXY|CONNECT\"}[5m])) without(instance, pod))\n"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.9,
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",subresource!=\"log\",verb!~\"LIST|WAT
CH|WATCHLIST|DELETECOLLECTION|PROXY|CONNECT\"}[5m])) without(instance, pod))\n"
{"quantile":"0.9"}
null
null
"histogram_quantile(0.5,
```

```
sum(rate(apiserver_request_duration_seconds_bucket{job=\"apiserver\",subresource!=\"log\",verb!~\"LIST|WAT
CH|WATCHLIST|DELETECOLLECTION|PROXY|CONNECT\"}[5m])) without(instance, pod))\n"
{"quantile":"0.5"}
```

10.2.17. openshift-kube-controller-manager-operator kube-controller-manager-operator

```
"KubeControllerManagerDown"
"Target disappeared from Prometheus target discovery."
"absent(up{job=\"kube-controller-manager\"} == 1)\n"
{"namespace":"openshift-kube-controller-manager","severity":"critical"}
"PodDisruptionBudgetAtLimit"
"The pod disruption budget is preventing further disruption to pods."
"max by(namespace, poddisruptionbudget) (kube_poddisruptionbudget_status_current_healthy ==
kube_poddisruptionbudget_status_desired_healthy)\n"
{"severity":"warning"}
"PodDisruptionBudgetLimit"
"The pod disruption budget registers insufficient amount of pods."
"max by (namespace, poddisruptionbudget) (kube_poddisruptionbudget_status_current_healthy <
kube_poddisruptionbudget_status_desired_healthy)\n"
{"severity":"critical"}
```

10.2.18. openshift-kube-scheduler-operator kube-scheduler-operator

```
"KubeSchedulerDown"
"Target disappeared from Prometheus target discovery."
"absent(up{job=\"scheduler\"} == 1)\n"
{"namespace":"openshift-kube-scheduler","severity":"critical"}
"SchedulerLegacyPolicySet"
"Legacy scheduler policy API in use by the scheduler."
"cluster_legacy_scheduler_policy > 0\n"
{"severity":"warning"}
```

10.2.19. openshift-machine-api machine-api-operator-prometheus-rules

```
"MachineWithoutValidNode"
"machine {{ $labels.name }} does not have valid node reference"
"(mapi_machine_created_timestamp_seconds unless on(node) kube_node_info) > 0\n"
{"severity":"warning"}
"MachineWithNoRunningPhase"
"machine {{ $labels.name }} is in phase: {{ $labels.phase }}"
"(mapi_machine_created_timestamp_seconds{phase!~\"Running|Deleting\"}) > 0\n"
{"severity":"warning"}
"MachineNotYetDeleted"
"machine {{ $labels.name }} has been in Deleting phase for more than 6 hours"
"sum by (name, namespace) (avg_over_time(mapi_machine_created_timestamp_seconds{phase=\"Deleting\"}[15m]))
> 0\n"
{"severity":"warning"}
"MachineAPIOperatorMetricsCollectionFailing"
"machine api operator metrics collection is failing."
"mapi_mao_collector_up == 0\n"
{"severity":"critical"}
"MachineHealthCheckUnterminatedShortCircuit"
"machine health check {{ $labels.name }} has been disabled by short circuit for more than 30 minutes"
"mapi_machinehealthcheck_short_circuit == 1\n"
{"severity":"warning"}
```

10.2.20. openshift-machine-config-operator machine-config-daemon

```
"MCDRebootError"
null
"mcd_reboot_err > 0\n"
{"severity":"critical"}
"MCDDrainError"
null
"mcd_drain_err > 0\n"
{"severity":"warning"}
"MCDPivotError"
null
"mcd_pivot_err > 0\n"
{"severity":"warning"}
"KubeletHealthState"
null
"mcd_kubelet_state > 2\n"
{"severity":"warning"}
"SystemMemoryExceedsReservation"
null
"sum by (node) (container_memory_rss{id=\"/system.slice\"}) > ((sum by (node)
(kube_node_status_capacity{resource=\"memory\"} - kube_node_status_allocatable{resource=\"memory\"})) *
0.95)\n"
{"severity":"warning"}
"MasterNodesHighMemoryUsage"
null
"((sum(node_memory_MemTotal_bytes AND on (instance) label_replace( kube_node_role{role=\"master\"},
\"instance\", \"$1\", \"node\", \"(.+)\" )) - sum(node_memory_MemFree_bytes + node_memory_Buffers_bytes +
node_memory_Cached_bytes AND on (instance) label_replace( kube_node_role{role=\"master\"}, \"instance\",
\"$1\", \"node\", \"(.+)\" ))) / sum(node_memory_MemTotal_bytes AND on (instance) label_replace(
kube_node_role{role=\"master\"}, \"instance\", \"$1\", \"node\", \"(.+)\" )) * 100) > 90\n"
{"severity":"warning"}
```

10.2.21. openshift-marketplace marketplace-alert-rules

```
"CommunityOperatorsCatalogError"
"Community-operators not ready for 10 minutes"
"catalogsource_ready{name=\"community-operators\",exported_namespace=\"openshift-marketplace\"} == 0"
{"severity":"warning"}
"CertifiedOperatorsCatalogError"
"Certified-operators not ready for more than 10 minutes"
"catalogsource_ready{name=\"certified-operators\",exported_namespace=\"openshift-marketplace\"} == 0"
{"severity":"warning"}
"RedhatOperatorsCatalogError"
"Redhat-operators not ready for more than 10 minutes"
"catalogsource_ready{name=\"redhat-operators\",exported_namespace=\"openshift-marketplace\"} == 0"
{"severity":"warning"}
"RedhatMarketplaceCatalogError"
"Redhat-marketplace not ready for more than 10 minutes"
"catalogsource_ready{name=\"redhat-marketplace\",exported_namespace=\"openshift-marketplace\"} == 0"
{"severity":"warning"}
```

10.2.22. openshift-monitoring alertmanager-main-rules

```
"AlertmanagerFailedReload"
"Reloading an Alertmanager configuration has failed."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for
details.\nmax_over_time(alertmanager_config_last_reload_successful{job=\"alertmanager-
main\",namespace=\"openshift-monitoring\"}[5m]) == 0\n"
{"severity":"critical"}
"AlertmanagerMembersInconsistent"
"A member of an Alertmanager cluster has not found all other cluster members."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for details.\n
max_over_time(alertmanager_cluster_members{job=\"alertmanager-main\",namespace=\"openshift-
monitoring\"}[5m])\n< on (namespace,service) group_left\n  count by (namespace,service)
(max_over_time(alertmanager_cluster_members{job=\"alertmanager-main\",namespace=\"openshift-
monitoring\"}[5m]))\n"
{"severity":"warning"}
"AlertmanagerFailedToSendAlerts"
"An Alertmanager instance failed to send notifications."
"(\n  rate(alertmanager_notifications_failed_total{job=\"alertmanager-main\",namespace=\"openshift-
monitoring\"}[5m])\n/\n  rate(alertmanager_notifications_total{job=\"alertmanager-
main\",namespace=\"openshift-monitoring\"}[5m])\n)\n> 0.01\n"
{"severity":"warning"}
"AlertmanagerClusterFailedToSendAlerts"
"All Alertmanager instances in a cluster failed to send notifications to a critical integration."
"min by (namespace,service, integration) (\n
rate(alertmanager_notifications_failed_total{job=\"alertmanager-main\",namespace=\"openshift-monitoring\",
integration=~`.*`}[5m])\n/\n  rate(alertmanager_notifications_total{job=\"alertmanager-
main\",namespace=\"openshift-monitoring\", integration=~`.*`}[5m])\n)\n> 0.01\n"
{"severity":"warning"}
"AlertmanagerConfigInconsistent"
"Alertmanager instances within the same cluster have different configurations."
"count by (namespace,service) (\n  count_values by (namespace,service) (\"config_hash\",
alertmanager_config_hash{job=\"alertmanager-main\",namespace=\"openshift-monitoring\"})\n)\n!= 1\n"
{"severity":"warning"}
"AlertmanagerClusterDown"
"Half or more of the Alertmanager instances within the same cluster are down."
"(\n  count by (namespace,service) (\n    avg_over_time(up{job=\"alertmanager-
main\",namespace=\"openshift-monitoring\"}[5m]) < 0.5\n  )\n/\n  count by (namespace,service) (\n
up{job=\"alertmanager-main\",namespace=\"openshift-monitoring\"}\n  )\n)\n>= 0.5\n"
{"severity":"warning"}
```

10.2.23. openshift-monitoring cluster-monitoring-operator-prometheus-rules

```
"TargetDown"
"Some targets were not reachable from the monitoring server for an extended period of time."
"100 * (count(up == 0 unless on (node) max by (node) (kube_node_spec_unschedulable == 1)) BY (job,
namespace, service) /\n  count(up unless on (node) max by (node) (kube_node_spec_unschedulable == 1)) BY
(job, namespace, service)) > 10\n"
{"severity":"warning"}
null
```

"sum(rate(container_cpu_usage_seconds_total{container=\"\",pod!=\"\"}[5m])) BY (pod, namespace)"
null
null
null
"sum(container_fs_usage_bytes{pod!=\"\"}) BY (pod, namespace)"
null
null
null
"sum(container_memory_usage_bytes{container!=\"\"}) BY (namespace)"
null
null
null
"sum(rate(container_cpu_usage_seconds_total{container!=\"POD\",container!=\"\"}[5m])) BY (namespace)"
null
null
null
"sum(container_memory_usage_bytes{container=\"\",pod!=\"\"}) BY (cluster) / sum(machine_memory_bytes) BY (cluster)"
null
null
null
"sum(container_spec_cpu_shares{container=\"\",pod!=\"\"}) / 1000 / sum(machine_cpu_cores)"
null
null
null
"sum(rate(container_cpu_usage_seconds_total{container=\"\",pod!=\"\"}[5m])) / sum(machine_cpu_cores)"
null
null
null
"max without(endpoint, instance, job, pod, service) (kube_node_labels and on(node) kube_node_role{role=\"master\"})"
{"label_node_role_kubernetes_io":"master","label_node_role_kubernetes_io_master":"true"}
null
null
"max without(endpoint, instance, job, pod, service) (kube_node_labels and on(node) kube_node_role{role=\"infra\"})"
{"label_node_role_kubernetes_io_infra":"true"}
null
null
"max without(endpoint, instance, job, pod, service) (cluster:master_nodes and on(node) cluster:infra_nodes)"
{"label_node_role_kubernetes_io_infra":"true","label_node_role_kubernetes_io_master":"true"}
null
null
"cluster:master_infra_nodes or on (node) cluster:master_nodes or on (node) cluster:infra_nodes or on (node) max without(endpoint, instance, job, pod, service) (kube_node_labels)"
null
null
null
"kube_node_labels and on(node) (sum(label_replace(node_cpu_info, \"node\", \"$1\", \"instance\", \"(.*)\")) by (node, package, core) == 2)"
{"label_node_hyperthread_enabled":"true"}
null
null
"count(sum(virt_platform) by (instance, type, system_manufacturer, system_product_name, baseboard_manufacturer, baseboard_product_name)) by (type, system_manufacturer, system_product_name,

```
baseboard_manufacturer, baseboard_product_name)"
null
null
null
"sum by(label_beta_kubernetes_io_instance_type, label_node_role_kubernetes_io, label_kubernetes_io_arch,
label_node_openshift_io_os_id) (\n  (\n    cluster:master_nodes\n    * on(node) group_left() max
by(node)\n    (\n      kube_node_status_capacity{resource=\"cpu\",unit=\"core\"}\n    )\n  )\n  or
on(node) (\n    max without(endpoint, instance, job, pod, service)\n    (\n      kube_node_labels\n    ) *
on(node) group_left() max by(node)\n      (\n
kube_node_status_capacity{resource=\"cpu\",unit=\"core\"}\n    )\n  )\n)\n"
null
null
null
"clamp_max(\n  label_replace(\n    sum by(instance, package, core) (\n
node_cpu_info{core!=\"\",package!=\"\"}\n      or\n      # Assume core = cpu and package = 0 for platforms
that don't expose core/package labels.\n
label_replace(label_join(node_cpu_info{core=\"\",package=\"\"}, \"core\", \"\", \"cpu\"), \"package\",
\"0\", \"package\", \"\")\n    ) > 1,\n    \"label_node_hyperthread_enabled\",\n    \"true\",\n
\"instance\",\n    \"(.*)\"\n  ) or on (instance, package)\n  label_replace(\n    sum by(instance,
package, core) (\n      label_replace(node_cpu_info{core!=\"\",package!=\"\"}\n      or\n      # Assume
core = cpu and package = 0 for platforms that don't expose core/package labels.\n
label_join(node_cpu_info{core=\"\",package=\"\"}, \"core\", \"\", \"cpu\"), \"package\", \"0\",
\"package\", \"\")\n    ) <= 1,\n    \"label_node_hyperthread_enabled\",\n    \"false\",\n
\"instance\",\n    \"(.*)\"\n  ),\n  1\n)\n"
null
null
null
"topk by(node) (1, cluster:nodes_roles) * on (node)\n  group_right(
label_beta_kubernetes_io_instance_type, label_node_role_kubernetes_io, label_node_openshift_io_os_id,
label_kubernetes_io_arch,\n            label_node_role_kubernetes_io_master,
label_node_role_kubernetes_io_infra)\nlabel_replace( cluster:cpu_core_hyperthreading, \"node\", \"$1\",
\"instance\", \"(.*)\" )\n"
null
null
null
"count(cluster:cpu_core_node_labels) by (label_beta_kubernetes_io_instance_type,
label_node_hyperthread_enabled)"
null
null
null
"sum by(label_beta_kubernetes_io_instance_type, label_node_role_kubernetes_io)\n(\n  (\n
cluster:master_nodes\n    * on(node) group_left() max by(node)\n      (\n
kube_node_status_capacity{resource=\"memory\",unit=\"byte\"}\n    )\n  )\n  or on(node)\n  (\n    max
without(endpoint, instance, job, pod, service)\n    (\n      kube_node_labels\n    )\n    * on(node)
group_left() max by(node)\n    (\n      kube_node_status_capacity{resource=\"memory\",unit=\"byte\"}\n
)\n  )\n)\n"
null
null
null
"sum(1 - rate(node_cpu_seconds_total{mode=\"idle\"}[2m]) * on(namespace, pod) group_left(node)
node_namespace_pod:kube_pod_info:{pod=~\"node-exporter.+\"})"
null
null
null
"sum(node_memory_MemTotal_bytes{job=\"node-exporter\"} - node_memory_MemAvailable_bytes{job=\"node-
exporter\"})"
null
```

```
null
null
"sum(rate(container_cpu_usage_seconds_total{namespace!~\"openshift-.+\",pod!=\"\",container=\"\"}[5m]))"
null
null
null
"cluster:cpu_usage_cores:sum - workload:cpu_usage_cores:sum"
null
null
null
"sum(container_memory_working_set_bytes{namespace!~\"openshift-.+\",pod!=\"\",container=\"\"})"
null
null
null
"cluster:memory_usage_bytes:sum - workload:memory_usage_bytes:sum"
null
null
null
"sum(cluster:master_nodes or on(node) kube_node_labels ) BY (label_beta_kubernetes_io_instance_type,
label_node_role_kubernetes_io, label_kubernetes_io_arch, label_node_openshift_io_os_id)"
null
null
null
"sum by(provisioner) (\n  topk by (namespace, persistentvolumeclaim) (\n    1,
kube_persistentvolumeclaim_resource_requests_storage_bytes\n  ) * on(namespace, persistentvolumeclaim)
group_right()\n  topk by(namespace, persistentvolumeclaim) (\n    1, kube_persistentvolumeclaim_info *
on(storageclass) group_left(provisioner) topk by(storageclass) (1, max by(storageclass, provisioner)
(kube_storageclass_info))\n  )\n)\n"
null
null
null
"(sum(node_role_os_version_machine:cpu_capacity_cores:sum{label_node_role_kubernetes_io_master=\"\",label_
node_role_kubernetes_io_infra=\"\"} or absent(__does_not_exist__)*0)) +
((sum(node_role_os_version_machine:cpu_capacity_cores:sum{label_node_role_kubernetes_io_master=\"true\"}
or absent(__does_not_exist__)*0) * ((max(cluster_master_schedulable == 1)*0+1) or
(absent(cluster_master_schedulable == 1)*0))))"
null
null
null
"min_over_time(workload:capacity_physical_cpu_cores:sum[5m:15s])"
null
null
null
"max_over_time(workload:capacity_physical_cpu_cores:sum[5m:15s])"
null
null
null
"sum  by (provisioner) (\n  topk by (namespace, persistentvolumeclaim) (\n    1,
kubelet_volume_stats_used_bytes\n  ) * on (namespace,persistentvolumeclaim) group_right()\n  topk by
(namespace, persistentvolumeclaim) (\n    1, kube_persistentvolumeclaim_info * on(storageclass)
group_left(provisioner) topk by(storageclass) (1, max by(storageclass, provisioner)
(kube_storageclass_info))\n  )\n)\n"
null
null
null
"sum by (instance) (apiserver_storage_objects)"
null
```

```
null
null
"topk(500, max by(resource) (apiserver_storage_objects))"
null
null
null
"count(count (kube_pod_restart_policy{type!=\"Always\",namespace!~\"openshift-.+\"}) by (namespace,pod))"
null
null
null
"sum(max(kubelet_containers_per_pod_count_sum) by (instance))"
null
null
null
"count(cluster:cpu_core_node_labels) by (label_kubernetes_io_arch, label_node_hyperthread_enabled,
label_node_openshift_io_os_id,label_node_role_kubernetes_io_master,label_node_role_kubernetes_io_infra)"
null
null
null
"count(max(cluster:cpu_core_node_labels) by (node, package, label_beta_kubernetes_io_instance_type,
label_node_hyperthread_enabled, label_node_role_kubernetes_io) ) by (
label_beta_kubernetes_io_instance_type, label_node_hyperthread_enabled, label_node_role_kubernetes_io)"
null
null
null
"count (max(cluster:cpu_core_node_labels) by (node, package, label_kubernetes_io_arch,
label_node_hyperthread_enabled,
label_node_openshift_io_os_id,label_node_role_kubernetes_io_master,label_node_role_kubernetes_io_infra) )
by (label_kubernetes_io_arch, label_node_hyperthread_enabled,
label_node_openshift_io_os_id,label_node_role_kubernetes_io_master,label_node_role_kubernetes_io_infra)"
null
null
null
"max(alertmanager_integrations{namespace=\"openshift-monitoring\"})"
null
null
null
"sum by(plugin_name, volume_mode)(pv_collector_total_pv_count)"
null
null
null
"sum by(version)(vsphere_vcenter_info)"
null
null
null
"sum by(version)(vsphere_esxi_version_total)"
null
null
null
"sum by(hw_version)(vsphere_node_hw_version_total)"
null
null
null
"sum(\n  min by (node) (kube_node_status_condition{condition=\"Ready\",status=\"true\"})\n    and\n  max
by (node) (kube_node_role{role=\"master\"})\n) == bool sum(kube_node_role{role=\"master\"})\n"
null
"ClusterMonitoringOperatorReconciliationErrors"
```

```
"Cluster Monitoring Operator is experiencing unexpected reconciliation errors."
"max_over_time(cluster_monitoring_operator_last_reconciliation_successful[5m]) == 0"
{"severity":"warning"}
"AlertmanagerReceiversNotConfigured"
"Receivers (notification integrations) are not configured on Alertmanager"
"cluster:alertmanager_integrations:max == 0"
{"namespace":"openshift-monitoring","severity":"warning"}
"KubeDeploymentReplicasMismatch"
"Deployment has not matched the expected number of replicas"
"(((\n  kube_deployment_spec_replicas{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
metrics\"}\n     >\n  kube_deployment_status_replicas_available{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n) and (\n
changes(kube_deployment_status_replicas_updated{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}[5m])\n    ==\n  0\n)) * on() group_left cluster:control_plane:all_nodes_ready) > 0\n"
{"severity":"warning"}
"MultipleContainersOOMKilled"
"Containers are being killed due to OOM"
"sum(max by(namespace, container, pod) (increase(kube_pod_container_status_restarts_total[12m])) and max
by(namespace, container, pod) (kube_pod_container_status_last_terminated_reason{reason=\"OOMKilled\"}) ==
1) > 5"
{"namespace":"kube-system","severity":"info"}
null
null
"avg_over_time((((count((max by (node) (up{job=\"kubelet\",metrics_path=\"/metrics\"} == 1) and max by
(node) (kube_node_status_condition{condition=\"Ready\",status=\"true\"} == 1) and min by (node)
(kube_node_spec_unschedulable == 0))) / scalar(count(min by (node) (kube_node_spec_unschedulable ==
0))))))[5m:1s])"
null
null
null
"avg_over_time((count(max by (node) (kube_node_status_condition{condition=\"Ready\",status=\"true\"} ==
1)) / scalar(count(max by (node)
(kube_node_status_condition{condition=\"Ready\",status=\"true\"}))))[5m:1s])"
null
null
null
"(max without (condition,container,endpoint,instance,job,service)
(((kube_pod_status_ready{condition=\"false\"} == 1)*0 or (kube_pod_status_ready{condition=\"true\"} == 1))
* on(pod,namespace) group_left() group by (pod,namespace)
(kube_pod_status_phase{phase=~\"Running|Unknown|Pending\"} == 1)))"
null
null
null
"avg(kube_running_pod_ready{namespace=~\"openshift-.*\"})"
null
null
null
"avg(kube_running_pod_ready{namespace!~\"openshift-.*\"})"
null
null
null
"sum_over_time(workload:capacity_physical_cpu_cores:sum[30s:1s]) +
((cluster:usage:workload:capacity_physical_cpu_core_seconds offset 25s) or
(absent(cluster:usage:workload:capacity_physical_cpu_core_seconds offset 25s)*0))"
null
null
null
```

```
"sum by (code) (rate(haproxy_server_http_responses_total[5m]) > 0)"
null
null
null
"sum (rate(haproxy_frontend_bytes_in_total[5m]))"
null
null
null
"sum (rate(haproxy_frontend_bytes_out_total[5m]))"
null
null
null
"sum (haproxy_frontend_current_sessions)"
null
null
null
"sum(max without(service,endpoint,container,pod,job,namespace)
(increase(haproxy_server_http_responses_total{code!~\"2xx|1xx|4xx|3xx\",exported_namespace!~\"openshift-
.*\"}[5m]) > 0)) / sum (max without(service,endpoint,container,pod,job,namespace)
(increase(haproxy_server_http_responses_total{exported_namespace!~\"openshift-.*\"}[5m]))) or
absent(__does_not_exist__)*0"
null
null
null
"sum (max without(service,endpoint,container,pod,job,namespace)
(irate(haproxy_server_http_responses_total{exported_namespace!~\"openshift-.*\"}[5m]))) or
absent(__does_not_exist__)*0"
null
null
null
"sum(max without(service,endpoint,container,pod,job,namespace)
(increase(haproxy_server_http_responses_total{code!~\"2xx|1xx|4xx|3xx\",exported_namespace=~\"openshift-
.*\"}[5m]) > 0)) / sum (max without(service,endpoint,container,pod,job,namespace)
(increase(haproxy_server_http_responses_total{exported_namespace=~\"openshift-.*\"}[5m]))) or
absent(__does_not_exist__)*0"
null
null
null
"sum (max without(service,endpoint,container,pod,job,namespace)
(irate(haproxy_server_http_responses_total{exported_namespace=~\"openshift-.*\"}[5m]))) or
absent(__does_not_exist__)*0"
null
null
null
"sum(ingress_controller_aws_nlb_active) or vector(0)"
null
null
null
"sum by (strategy) (openshift_build_status_phase_total)"
null
null
null
"sum by (job,namespace) (max without(instance) (prometheus_tsdb_head_series{namespace=~\"openshift-
monitoring|openshift-user-workload-monitoring\"}))"
null
null
null
```

```
"sum by(job,namespace) (max without(instance)
(rate(prometheus_tsdb_head_samples_appended_total{namespace=~\"openshift-monitoring|openshift-user-
workload-monitoring\"}[2m])))"
null
null
null
"sum by (namespace) (max without(instance) (container_memory_working_set_bytes{namespace=~\"openshift-
monitoring|openshift-user-workload-monitoring\", container=\"\"}))"
null
null
null
"topk(3, sum by(namespace, job)(sum_over_time(scrape_series_added[1h])))"
null
null
null
"topk(3, max by(namespace, job) (topk by(namespace,job) (1, scrape_samples_post_metric_relabeling)))"
null
null
null
"sum by(exported_service) (rate(haproxy_server_http_responses_total{exported_namespace=\"openshift-
monitoring\", exported_service=~\"alertmanager-main|grafana|prometheus-k8s\"}[5m]))"
null
null
null
"max by (cluster, namespace, workload, pod) (label_replace(label_replace(kube_pod_owner{job=\"kube-state-
metrics\", owner_kind=\"ReplicationController\"},\"replicationcontroller\", \"$1\", \"owner_name\",
\"(.*)\") * on(replicationcontroller, namespace) group_left(owner_name) topk by(replicationcontroller,
namespace) (1, max by (replicationcontroller, namespace, owner_name)
(kube_replicationcontroller_owner{job=\"kube-state-metrics\"})),\"workload\", \"$1\", \"owner_name\",
\"(.*)\"))"
{"workload_type":"deploymentconfig"}
null
null
"sum by (instance) (etcd_mvcc_db_total_size_in_bytes{job=\"etcd\"})"
null
null
null
"histogram_quantile(0.99, sum by (instance, le)
(rate(etcd_disk_wal_fsync_duration_seconds_bucket{job=\"etcd\"}[5m])))"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.99, sum by (instance, le)
(rate(etcd_network_peer_round_trip_time_seconds_bucket{job=\"etcd\"}[5m])))"
{"quantile":"0.99"}
null
null
"sum by (instance) (etcd_mvcc_db_total_size_in_use_in_bytes{job=\"etcd\"})"
null
null
null
"histogram_quantile(0.99, sum by (instance, le)
(rate(etcd_disk_backend_commit_duration_seconds_bucket{job=\"etcd\"}[5m])))"
{"quantile":"0.99"}
null
null
"sum(rate(apiserver_request_total{job=\"apiserver\"}[10m])) BY (code)"
```

```
null
"Watchdog"
"An alert that should always be firing to certify that Alertmanager is working properly."
"vector(1)"
{"namespace":"openshift-monitoring","severity":"none"}
"NodeNetworkInterfaceFlapping"
"Network interface is often changing its status"
"changes(node_network_up{job=\"node-exporter\",device!~\"veth.+\"}[2m]) > 2\n"
{"severity":"warning"}
null
null
"sum(rate(node_cpu_seconds_total{mode!=\"idle\",mode!=\"iowait\",mode!=\"steal\"}[3m])) BY (instance)"
null
null
null
"sum(rate(node_network_receive_bytes_total[3m])) BY (instance)"
null
null
null
"sum(rate(node_network_transmit_bytes_total[3m])) BY (instance)"
null
null
null
"sum(rate(node_cpu_seconds_total{mode!=\"idle\",mode!=\"iowait\",mode!=\"steal\"}[5m]))"
null
null
null
"cluster:node_cpu_seconds_total:rate5m / count(sum(node_cpu_seconds_total) BY (instance, cpu))"
null
null
null
"count without(instance, pod, node) (up == 1)"
null
null
null
"count without(instance, pod, node) (up == 0)"
null
```

10.2.24. openshift-monitoring kube-state-metrics-rules

```
"KubeStateMetricsListErrors"
"kube-state-metrics is experiencing errors in list operations."
"(sum(rate(kube_state_metrics_list_total{job=\"kube-state-metrics\",result=\"error\"}[5m]))\n
/\nsum(rate(kube_state_metrics_list_total{job=\"kube-state-metrics\"}[5m])))\n> 0.01\n"
{"severity":"warning"}
"KubeStateMetricsWatchErrors"
"kube-state-metrics is experiencing errors in watch operations."
"(sum(rate(kube_state_metrics_watch_total{job=\"kube-state-metrics\",result=\"error\"}[5m]))\n
/\nsum(rate(kube_state_metrics_watch_total{job=\"kube-state-metrics\"}[5m])))\n> 0.01\n"
{"severity":"warning"}
```

10.2.25. openshift-monitoring kubernetes-monitoring-rules

```
"KubePodCrashLooping"
"Pod is crash looping."
"max_over_time(kube_pod_container_status_waiting_reason{reason=\"CrashLoopBackOff\",
namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\"}[5m]) >= 1\n"
{"severity":"warning"}
"KubePodNotReady"
"Pod has been in a non-ready state for more than 15 minutes."
"sum by (namespace, pod) (\n  max by(namespace, pod) (\n    kube_pod_status_phase{namespace=~\"(openshift-
.*|kube-.*|default)\",job=\"kube-state-metrics\", phase=~\"Pending|Unknown\"}\n  ) * on(namespace, pod)
group_left(owner_kind) topk by(namespace, pod) (\n    1, max by(namespace, pod, owner_kind)
(kube_pod_owner{owner_kind!=\"Job\"})\n  )\n) > 0\n"
{"severity":"warning"}
"KubeDeploymentGenerationMismatch"
"Deployment generation mismatch due to possible roll-back"
"kube_deployment_status_observed_generation{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}\n  !=\nkube_deployment_metadata_generation{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n"
{"severity":"warning"}
"KubeStatefulSetReplicasMismatch"
"Deployment has not matched the expected number of replicas."
"(\n  kube_statefulset_status_replicas_ready{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}\n    !=\n kube_statefulset_status_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n) and (\n
changes(kube_statefulset_status_replicas_updated{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}[10m])\n    ==\n  0\n)\n"
{"severity":"warning"}
"KubeStatefulSetGenerationMismatch"
"StatefulSet generation mismatch due to possible roll-back"
"kube_statefulset_status_observed_generation{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}\n  !=\nkube_statefulset_metadata_generation{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n"
{"severity":"warning"}
"KubeStatefulSetUpdateNotRolledOut"
"StatefulSet update has not been rolled out."
"(\n  max without (revision) (\n    kube_statefulset_status_current_revision{namespace=~\"(openshift-
.*|kube-.*|default)\",job=\"kube-state-metrics\"}\n      unless\n
kube_statefulset_status_update_revision{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
metrics\"}\n  )\n    *\n  (\n    kube_statefulset_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n      !=\n
kube_statefulset_status_replicas_updated{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
metrics\"}\n  )\n)  and (\n  changes(kube_statefulset_status_replicas_updated{namespace=~\"(openshift-
.*|kube-.*|default)\",job=\"kube-state-metrics\"}[5m])\n    ==\n  0\n)\n"
{"severity":"warning"}
"KubeDaemonSetRolloutStuck"
"DaemonSet rollout is stuck."
"(\n  (\n    kube_daemonset_status_current_number_scheduled{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n      !=\n
kube_daemonset_status_desired_number_scheduled{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}\n  ) or (\n    kube_daemonset_status_number_misscheduled{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n      !=\n    0\n  ) or (\n
kube_daemonset_updated_number_scheduled{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
metrics\"}\n      !=\n    kube_daemonset_status_desired_number_scheduled{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n  ) or (\n
kube_daemonset_status_number_available{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
```

```
metrics\"}\n      !=\n    kube_daemonset_status_desired_number_scheduled{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n   )\n) and (\n
changes(kube_daemonset_updated_number_scheduled{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}[5m])\n    ==\n  0\n)\n"
{"severity":"warning"}
"KubeContainerWaiting"
"Pod container waiting longer than 1 hour"
"sum by (namespace, pod, container) (kube_pod_container_status_waiting_reason{namespace=~\"(openshift-
.*|kube-.*|default)\",job=\"kube-state-metrics\"}) > 0\n"
{"severity":"warning"}
"KubeDaemonSetNotScheduled"
"DaemonSet pods are not scheduled."
"kube_daemonset_status_desired_number_scheduled{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\"}\n  -\nkube_daemonset_status_current_number_scheduled{namespace=~\"(openshift-.*|kube
-.*|default)\",job=\"kube-state-metrics\"} > 0\n"
{"severity":"warning"}
"KubeDaemonSetMisScheduled"
"DaemonSet pods are misscheduled."
"kube_daemonset_status_number_misscheduled{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-
metrics\"} > 0\n"
{"severity":"warning"}
"KubeJobCompletion"
"Job did not complete in time"
"kube_job_spec_completions{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\"} -
kube_job_status_succeeded{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\"}  >
0\n"
{"severity":"warning"}
"KubeJobFailed"
"Job failed to complete."
"kube_job_failed{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\"}  > 0\n"
{"severity":"warning"}
"KubeHpaReplicasMismatch"
"HPA has not matched descired number of replicas."
"(kube_horizontalpodautoscaler_status_desired_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n
!=\nkube_horizontalpodautoscaler_status_current_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"})\n
and\n(kube_horizontalpodautoscaler_status_current_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n
>\nkube_horizontalpodautoscaler_spec_min_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"})\n
and\n(kube_horizontalpodautoscaler_status_current_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n
<\nkube_horizontalpodautoscaler_spec_max_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"})\n
and\nchanges(kube_horizontalpodautoscaler_status_current_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}[15m]) == 0\n"
{"severity":"warning"}
"KubeHpaMaxedOut"
"HPA is running at max replicas"
"kube_horizontalpodautoscaler_status_current_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n
==\nkube_horizontalpodautoscaler_spec_max_replicas{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"}\n"
{"severity":"warning"}
"KubeCPUOvercommit"
"Cluster has overcommitted CPU resource requests."
```

```
"sum(namespace_cpu:kube_pod_container_resource_requests:sum{}) -
(sum(kube_node_status_allocatable{resource=\"cpu\"}) -
max(kube_node_status_allocatable{resource=\"cpu\"})) >
0\nand\n(sum(kube_node_status_allocatable{resource=\"cpu\"}) -
max(kube_node_status_allocatable{resource=\"cpu\"})) > 0\n"
{"namespace":"kube-system","severity":"warning"}
"KubeMemoryOvercommit"
"Cluster has overcommitted memory resource requests."
"sum(namespace_memory:kube_pod_container_resource_requests:sum{}) -
(sum(kube_node_status_allocatable{resource=\"memory\"}) -
max(kube_node_status_allocatable{resource=\"memory\"})) >
0\nand\n(sum(kube_node_status_allocatable{resource=\"memory\"}) -
max(kube_node_status_allocatable{resource=\"memory\"})) > 0\n"
{"namespace":"kube-system","severity":"warning"}
"KubeCPUQuotaOvercommit"
"Cluster has overcommitted CPU resource requests."
"sum(min without(resource) (kube_resourcequota{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\", type=\"hard\", resource=~\"(cpu|requests.cpu)\"}))\n
/\nsum(kube_node_status_allocatable{resource=\"cpu\", job=\"kube-state-metrics\"})\n  > 1.5\n"
{"severity":"warning"}
"KubeMemoryQuotaOvercommit"
"Cluster has overcommitted memory resource requests."
"sum(min without(resource) (kube_resourcequota{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-
state-metrics\", type=\"hard\", resource=~\"(memory|requests.memory)\"}))\n
/\nsum(kube_node_status_allocatable{resource=\"memory\", job=\"kube-state-metrics\"})\n  > 1.5\n"
{"severity":"warning"}
"KubeQuotaAlmostFull"
"Namespace quota is going to be full."
"kube_resourcequota{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\",
type=\"used\"}\n  / ignoring(instance, job, type)\n(kube_resourcequota{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\", type=\"hard\"} > 0)\n  > 0.9 < 1\n"
{"severity":"info"}
"KubeQuotaFullyUsed"
"Namespace quota is fully used."
"kube_resourcequota{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\",
type=\"used\"}\n  / ignoring(instance, job, type)\n(kube_resourcequota{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\", type=\"hard\"} > 0)\n  == 1\n"
{"severity":"info"}
"KubeQuotaExceeded"
"Namespace quota has exceeded the limits."
"kube_resourcequota{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kube-state-metrics\",
type=\"used\"}\n  / ignoring(instance, job, type)\n(kube_resourcequota{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\", type=\"hard\"} > 0)\n  > 1\n"
{"severity":"warning"}
"KubePersistentVolumeFillingUp"
"PersistentVolume is filling up."
"(\n  kubelet_volume_stats_available_bytes{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kubelet\",
metrics_path=\"/metrics\"}\n    /\n  kubelet_volume_stats_capacity_bytes{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kubelet\", metrics_path=\"/metrics\"}\n) <
0.03\nand\nkubelet_volume_stats_used_bytes{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kubelet\",
metrics_path=\"/metrics\"} > 0\nunless on(namespace,
persistentvolumeclaim)\nkube_persistentvolumeclaim_access_mode{namespace=~\"(openshift-.*|kube-
.*|default)\", access_mode=\"ReadOnlyMany\"} == 1\nunless on(namespace,
persistentvolumeclaim)\nkube_persistentvolumeclaim_labels{namespace=~\"(openshift-.*|kube-
.*|default)\",label_alerts_k8s_io_kube_persistent_volume_filling_up=\"disabled\"} == 1\n"
{"severity":"critical"}
"KubePersistentVolumeFillingUp"
```

```
"PersistentVolume is filling up."
"(\n  kubelet_volume_stats_available_bytes{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kubelet\",
metrics_path=\"/metrics\"}\n    /\n  kubelet_volume_stats_capacity_bytes{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kubelet\", metrics_path=\"/metrics\"}\n) <
0.15\nand\nkubelet_volume_stats_used_bytes{namespace=~\"(openshift-.*|kube-.*|default)\",job=\"kubelet\",
metrics_path=\"/metrics\"} >
0\nand\npredict_linear(kubelet_volume_stats_available_bytes{namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kubelet\", metrics_path=\"/metrics\"}[6h], 4 * 24 * 3600) < 0\nunless on(namespace,
persistentvolumeclaim)\nkube_persistentvolumeclaim_access_mode{namespace=~\"(openshift-.*|kube-
.*|default)\", access_mode=\"ReadOnlyMany\"} == 1\nunless on(namespace,
persistentvolumeclaim)\nkube_persistentvolumeclaim_labels{namespace=~\"(openshift-.*|kube-
.*|default)\",label_alerts_k8s_io_kube_persistent_volume_filling_up=\"disabled\"} == 1\n"
{"severity":"warning"}
"KubePersistentVolumeErrors"
"PersistentVolume is having issues with provisioning."
"kube_persistentvolume_status_phase{phase=~\"Failed|Pending\",namespace=~\"(openshift-.*|kube-
.*|default)\",job=\"kube-state-metrics\"} > 0\n"
{"severity":"warning"}
"KubeClientErrors"
"Kubernetes API server client is experiencing errors."
"(sum(rate(rest_client_requests_total{code=~\"5..\"}[5m])) by (instance, job, namespace)\n
/\nsum(rate(rest_client_requests_total[5m])) by (instance, job, namespace))\n> 0.01\n"
{"severity":"warning"}
"KubeAggregatedAPIErrors"
"Kubernetes aggregated API has reported errors."
"sum by(name, namespace)(increase(aggregator_unavailable_apiservice_total[10m])) > 4\n"
{"severity":"warning"}
"KubeAggregatedAPIDown"
"Kubernetes aggregated API is down."
"(1 - max by(name, namespace)(avg_over_time(aggregator_unavailable_apiservice[10m]))) * 100 < 85\n"
{"severity":"warning"}
"KubeAPIDown"
"Target disappeared from Prometheus target discovery."
"absent(up{job=\"apiserver\"} == 1)\n"
{"severity":"critical"}
"KubeAPITerminatedRequests"
"The kubernetes apiserver has terminated {{ $value | humanizePercentage }} of its incoming requests."
"sum(rate(apiserver_request_terminations_total{job=\"apiserver\"}[10m]))  / (
sum(rate(apiserver_request_total{job=\"apiserver\"}[10m])) +
sum(rate(apiserver_request_terminations_total{job=\"apiserver\"}[10m])) ) > 0.20\n"
{"severity":"warning"}
"KubeNodeNotReady"
"Node is not ready."
"kube_node_status_condition{job=\"kube-state-metrics\",condition=\"Ready\",status=\"true\"} == 0\n"
{"severity":"warning"}
"KubeNodeUnreachable"
"Node is unreachable."
"(kube_node_spec_taint{job=\"kube-state-
metrics\",key=\"node.kubernetes.io/unreachable\",effect=\"NoSchedule\"} unless ignoring(key,value)
kube_node_spec_taint{job=\"kube-state-
metrics\",key=~\"ToBeDeletedByClusterAutoscaler|cloud.google.com/impending-node-termination|aws-node-
termination-handler/spot-itn\"}) == 1\n"
{"severity":"warning"}
"KubeletTooManyPods"
"Kubelet is running at capacity."
"count by(node) (\n  (kube_pod_status_phase{job=\"kube-state-metrics\",phase=\"Running\"} == 1) *
on(instance,pod,namespace,cluster) group_left(node) topk by(instance,pod,namespace,cluster) (1,
```

kube_pod_info{job=\"kube-state-metrics\"})\n)\n/\nmax by(node) (\n kube_node_status_capacity{job=\"kube-state-metrics\",resource=\"pods\"} != 1\n) > 0.95\n"
{"severity":"info"}
"KubeNodeReadinessFlapping"
"Node readiness status is flapping."
"sum(changes(kube_node_status_condition{status=\"true\",condition=\"Ready\"}[15m])) by (node) > 2\n"
{"severity":"warning"}
"KubeletPlegDurationHigh"
"Kubelet Pod Lifecycle Event Generator is taking too long to relist."
"node_quantile:kubelet_pleg_relist_duration_seconds:histogram_quantile{quantile=\"0.99\"} >= 10\n"
{"severity":"warning"}
"KubeletPodStartUpLatencyHigh"
"Kubelet Pod startup latency is too high."
"histogram_quantile(0.99, sum(rate(kubelet_pod_worker_duration_seconds_bucket{job=\"kubelet\",
metrics_path=\"/metrics\"}[5m])) by (instance, le)) * on(instance) group_left(node)
kubelet_node_name{job=\"kubelet\", metrics_path=\"/metrics\"} > 60\n"
{"severity":"warning"}
"KubeletClientCertificateRenewalErrors"
"Kubelet has failed to renew its client certificate."
"increase(kubelet_certificate_manager_client_expiration_renew_errors[5m]) > 0\n"
{"severity":"warning"}
"KubeletServerCertificateRenewalErrors"
"Kubelet has failed to renew its server certificate."
"increase(kubelet_server_expiration_renew_errors[5m]) > 0\n"
{"severity":"warning"}
"KubeletDown"
"Target disappeared from Prometheus target discovery."
"absent(up{job=\"kubelet\", metrics_path=\"/metrics\"} == 1)\n"
{"namespace":"kube-system","severity":"critical"}
null
null
"sum by (cluster, namespace, pod, container) (\n irate(container_cpu_usage_seconds_total{job=\"kubelet\",
metrics_path=\"/metrics/cadvisor\", image!=\"\"}[5m])\n) * on (cluster, namespace, pod) group_left(node)
topk by (cluster, namespace, pod) (\n 1, max by(cluster, namespace, pod, node)
(kube_pod_info{node!=\"\"})\n)\n"
null
null
null
"container_memory_working_set_bytes{job=\"kubelet\", metrics_path=\"/metrics/cadvisor\", image!=\"\"}\n*
on (namespace, pod) group_left(node) topk by(namespace, pod) (1,\n max by(namespace, pod, node)
(kube_pod_info{node!=\"\"})\n)\n"
null
null
null
"container_memory_rss{job=\"kubelet\", metrics_path=\"/metrics/cadvisor\", image!=\"\"}\n* on (namespace,
pod) group_left(node) topk by(namespace, pod) (1,\n max by(namespace, pod, node)
(kube_pod_info{node!=\"\"})\n)\n"
null
null
null
"container_memory_cache{job=\"kubelet\", metrics_path=\"/metrics/cadvisor\", image!=\"\"}\n* on
(namespace, pod) group_left(node) topk by(namespace, pod) (1,\n max by(namespace, pod, node)
(kube_pod_info{node!=\"\"})\n)\n"
null
null
null
"container_memory_swap{job=\"kubelet\", metrics_path=\"/metrics/cadvisor\", image!=\"\"}\n* on (namespace,

```
pod) group_left(node) topk by(namespace, pod) (1,\n  max by(namespace, pod, node)
(kube_pod_info{node!=\"\"})\n)\n"
null
null
null
"kube_pod_container_resource_requests{resource=\"memory\",job=\"kube-state-metrics\"}  * on (namespace,
pod, cluster)\ngroup_left() max by (namespace, pod, cluster) (\n
(kube_pod_status_phase{phase=~\"Pending|Running\"} == 1)\n)\n"
null
null
null
"sum by (namespace, cluster) (\n    sum by (namespace, pod, cluster) (\n        max by (namespace, pod,
container, cluster) (\n          kube_pod_container_resource_requests{resource=\"memory\",job=\"kube-
state-metrics\"}\n        ) * on(namespace, pod, cluster) group_left() max by (namespace, pod, cluster)
(\n          kube_pod_status_phase{phase=~\"Pending|Running\"} == 1\n        )\n    )\n)\n"
null
null
null
"kube_pod_container_resource_requests{resource=\"cpu\",job=\"kube-state-metrics\"}  * on (namespace, pod,
cluster)\ngroup_left() max by (namespace, pod, cluster) (\n
(kube_pod_status_phase{phase=~\"Pending|Running\"} == 1)\n)\n"
null
null
null
"sum by (namespace, cluster) (\n    sum by (namespace, pod, cluster) (\n        max by (namespace, pod,
container, cluster) (\n          kube_pod_container_resource_requests{resource=\"cpu\",job=\"kube-state-
metrics\"}\n        ) * on(namespace, pod, cluster) group_left() max by (namespace, pod, cluster) (\n
kube_pod_status_phase{phase=~\"Pending|Running\"} == 1\n        )\n    )\n)\n"
null
null
null
"kube_pod_container_resource_limits{resource=\"memory\",job=\"kube-state-metrics\"}  * on (namespace, pod,
cluster)\ngroup_left() max by (namespace, pod, cluster) (\n
(kube_pod_status_phase{phase=~\"Pending|Running\"} == 1)\n)\n"
null
null
null
"sum by (namespace, cluster) (\n    sum by (namespace, pod, cluster) (\n        max by (namespace, pod,
container, cluster) (\n          kube_pod_container_resource_limits{resource=\"memory\",job=\"kube-state-
metrics\"}\n        ) * on(namespace, pod, cluster) group_left() max by (namespace, pod, cluster) (\n
kube_pod_status_phase{phase=~\"Pending|Running\"} == 1\n        )\n    )\n)\n"
null
null
null
"kube_pod_container_resource_limits{resource=\"cpu\",job=\"kube-state-metrics\"}  * on (namespace, pod,
cluster)\ngroup_left() max by (namespace, pod, cluster) (\n
(kube_pod_status_phase{phase=~\"Pending|Running\"} == 1)\n )\n"
null
null
null
"sum by (namespace, cluster) (\n    sum by (namespace, pod, cluster) (\n        max by (namespace, pod,
container, cluster) (\n          kube_pod_container_resource_limits{resource=\"cpu\",job=\"kube-state-
metrics\"}\n        ) * on(namespace, pod, cluster) group_left() max by (namespace, pod, cluster) (\n
kube_pod_status_phase{phase=~\"Pending|Running\"} == 1\n        )\n    )\n)\n"
null
null
null
```

"max by (cluster, namespace, workload, pod) (\n label_replace(\n   label_replace(\n
kube_pod_owner{job=\"kube-state-metrics\", owner_kind=\"ReplicaSet\"},\n   \"replicaset\", \"$1\",
\"owner_name\", \"(.*)\"\n   ) * on(replicaset, namespace) group_left(owner_name) topk by(replicaset,
namespace) (\n   1, max by (replicaset, namespace, owner_name) (\n
kube_replicaset_owner{job=\"kube-state-metrics\"}\n   )\n   ),\n   \"workload\", \"$1\",
\"owner_name\", \"(.*)\"\n)\n)\n"
{"workload_type":"deployment"}
null
null
"max by (cluster, namespace, workload, pod) (\n label_replace(\n   kube_pod_owner{job=\"kube-state-
metrics\", owner_kind=\"DaemonSet\"},\n   \"workload\", \"$1\", \"owner_name\", \"(.*)\"\n)\n)\n"
{"workload_type":"daemonset"}
null
null
"max by (cluster, namespace, workload, pod) (\n label_replace(\n   kube_pod_owner{job=\"kube-state-
metrics\", owner_kind=\"StatefulSet\"},\n   \"workload\", \"$1\", \"owner_name\", \"(.*)\"\n)\n)\n"
{"workload_type":"statefulset"}
null
null
"histogram_quantile(0.99,
sum(rate(scheduler_e2e_scheduling_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.99,
sum(rate(scheduler_scheduling_algorithm_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.99, sum(rate(scheduler_binding_duration_seconds_bucket{job=\"scheduler\"}[5m]))
without(instance, pod))\n"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.9,
sum(rate(scheduler_e2e_scheduling_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.9"}
null
null
"histogram_quantile(0.9,
sum(rate(scheduler_scheduling_algorithm_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.9"}
null
null
"histogram_quantile(0.9, sum(rate(scheduler_binding_duration_seconds_bucket{job=\"scheduler\"}[5m]))
without(instance, pod))\n"
{"quantile":"0.9"}
null
null
"histogram_quantile(0.5,
sum(rate(scheduler_e2e_scheduling_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.5"}

```
null
null
"histogram_quantile(0.5,
sum(rate(scheduler_scheduling_algorithm_duration_seconds_bucket{job=\"scheduler\"}[5m])) without(instance,
pod))\n"
{"quantile":"0.5"}
null
null
"histogram_quantile(0.5, sum(rate(scheduler_binding_duration_seconds_bucket{job=\"scheduler\"}[5m]))
without(instance, pod))\n"
{"quantile":"0.5"}
null
null
"topk by(namespace, pod) (1,\n  max by (node, namespace, pod) (\n
label_replace(kube_pod_info{job=\"kube-state-metrics\",node!=\"\"}, \"pod\", \"$1\", \"pod\",
\"(.*)\")\n))\n"
null
null
null
"sum(\n  node_memory_MemAvailable_bytes{job=\"node-exporter\"} or\n   (\n
node_memory_Buffers_bytes{job=\"node-exporter\"} +\n     node_memory_Cached_bytes{job=\"node-exporter\"}
+\n     node_memory_MemFree_bytes{job=\"node-exporter\"} +\n     node_memory_Slab_bytes{job=\"node-
exporter\"}\n   )\n) by (cluster)\n"
null
null
null
"histogram_quantile(0.99, sum(rate(kubelet_pleg_relist_duration_seconds_bucket[5m])) by (instance, le) *
on(instance) group_left(node) kubelet_node_name{job=\"kubelet\", metrics_path=\"/metrics\"})\n"
{"quantile":"0.99"}
null
null
"histogram_quantile(0.9, sum(rate(kubelet_pleg_relist_duration_seconds_bucket[5m])) by (instance, le) *
on(instance) group_left(node) kubelet_node_name{job=\"kubelet\", metrics_path=\"/metrics\"})\n"
{"quantile":"0.9"}
null
null
"histogram_quantile(0.5, sum(rate(kubelet_pleg_relist_duration_seconds_bucket[5m])) by (instance, le) *
on(instance) group_left(node) kubelet_node_name{job=\"kubelet\", metrics_path=\"/metrics\"})\n"
{"quantile":"0.5"}
```

10.2.26. openshift-monitoring node-exporter-rules

```
"NodeFilesystemSpaceFillingUp"
"Filesystem is predicted to run out of space within the next 24 hours."
"(\n  node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"} /
node_filesystem_size_bytes{job=\"node-exporter\",fstype!=\"\"} * 100 < 15\nand\n
predict_linear(node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"}[6h], 24*60*60) < 0\nand\n
node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} == 0\n)\n"
{"severity":"warning"}
"NodeFilesystemSpaceFillingUp"
"Filesystem is predicted to run out of space within the next 4 hours."
"(\n  node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"} /
node_filesystem_size_bytes{job=\"node-exporter\",fstype!=\"\"} * 100 < 10\nand\n
predict_linear(node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"}[6h], 4*60*60) < 0\nand\n
node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} == 0\n)\n"
```

{"severity":"critical"}
"NodeFilesystemAlmostOutOfSpace"
"Filesystem has less than 5% space left."
"(\n node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"} /
node_filesystem_size_bytes{job=\"node-exporter\",fstype!=\"\"} * 100 < 5\nand\n
node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} == 0\n)\n"
{"severity":"warning"}
"NodeFilesystemAlmostOutOfSpace"
"Filesystem has less than 3% space left."
"(\n node_filesystem_avail_bytes{job=\"node-exporter\",fstype!=\"\"} /
node_filesystem_size_bytes{job=\"node-exporter\",fstype!=\"\"} * 100 < 3\nand\n
node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} == 0\n)\n"
{"severity":"critical"}
"NodeFilesystemFilesFillingUp"
"Filesystem is predicted to run out of inodes within the next 24 hours."
"(\n node_filesystem_files_free{job=\"node-exporter\",fstype!=\"\"} / node_filesystem_files{job=\"node-
exporter\",fstype!=\"\"} * 100 < 40\nand\n predict_linear(node_filesystem_files_free{job=\"node-
exporter\",fstype!=\"\"}[6h], 24*60*60) < 0\nand\n node_filesystem_readonly{job=\"node-
exporter\",fstype!=\"\"} == 0\n)\n"
{"severity":"warning"}
"NodeFilesystemFilesFillingUp"
"Filesystem is predicted to run out of inodes within the next 4 hours."
"(\n node_filesystem_files_free{job=\"node-exporter\",fstype!=\"\"} / node_filesystem_files{job=\"node-
exporter\",fstype!=\"\"} * 100 < 20\nand\n predict_linear(node_filesystem_files_free{job=\"node-
exporter\",fstype!=\"\"}[6h], 4*60*60) < 0\nand\n node_filesystem_readonly{job=\"node-
exporter\",fstype!=\"\"} == 0\n)\n"
{"severity":"critical"}
"NodeFilesystemAlmostOutOfFiles"
"Filesystem has less than 5% inodes left."
"(\n node_filesystem_files_free{job=\"node-exporter\",fstype!=\"\"} / node_filesystem_files{job=\"node-
exporter\",fstype!=\"\"} * 100 < 5\nand\n node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} ==
0\n)\n"
{"severity":"warning"}
"NodeFilesystemAlmostOutOfFiles"
"Filesystem has less than 3% inodes left."
"(\n node_filesystem_files_free{job=\"node-exporter\",fstype!=\"\"} / node_filesystem_files{job=\"node-
exporter\",fstype!=\"\"} * 100 < 3\nand\n node_filesystem_readonly{job=\"node-exporter\",fstype!=\"\"} ==
0\n)\n"
{"severity":"critical"}
"NodeNetworkReceiveErrs"
"Network interface is reporting many receive errors."
"rate(node_network_receive_errs_total[2m]) / rate(node_network_receive_packets_total[2m]) > 0.01\n"
{"severity":"warning"}
"NodeNetworkTransmitErrs"
"Network interface is reporting many transmit errors."
"rate(node_network_transmit_errs_total[2m]) / rate(node_network_transmit_packets_total[2m]) > 0.01\n"
{"severity":"warning"}
"NodeHighNumberConntrackEntriesUsed"
"Number of conntrack are getting close to the limit."
"(node_nf_conntrack_entries / node_nf_conntrack_entries_limit) > 0.75\n"
{"severity":"warning"}
"NodeTextFileCollectorScrapeError"
"Node Exporter text file collector failed to scrape."
"node_textfile_scrape_error{job=\"node-exporter\"} == 1\n"
{"severity":"warning"}
"NodeClockSkewDetected"
"Clock skew detected."

```
"(\n  node_timex_offset_seconds > 0.05\nand\n  deriv(node_timex_offset_seconds[5m]) >= 0\n)\nor\n(\n
node_timex_offset_seconds < -0.05\nand\n  deriv(node_timex_offset_seconds[5m]) <= 0\n)\n"
{"severity":"warning"}
"NodeClockNotSynchronising"
"Clock not synchronising."
"min_over_time(node_timex_sync_status[5m]) == 0\nand\nnode_timex_maxerror_seconds >= 16\n"
{"severity":"warning"}
"NodeRAIDDegraded"
"RAID Array is degraded"
"node_md_disks_required - ignoring (state) (node_md_disks{state=\"active\"}) > 0\n"
{"severity":"critical"}
"NodeRAIDDiskFailure"
"Failed device in RAID array"
"node_md_disks{state=\"failed\"} > 0\n"
{"severity":"warning"}
"NodeFileDescriptorLimit"
"Kernel is predicted to exhaust file descriptors limit soon."
"(\n  node_filefd_allocated{job=\"node-exporter\"} * 100 / node_filefd_maximum{job=\"node-exporter\"} >
70\n)\n"
{"severity":"warning"}
"NodeFileDescriptorLimit"
"Kernel is predicted to exhaust file descriptors limit soon."
"(\n  node_filefd_allocated{job=\"node-exporter\"} * 100 / node_filefd_maximum{job=\"node-exporter\"} >
90\n)\n"
{"severity":"critical"}
null
null
"count without (cpu, mode) (\n  node_cpu_seconds_total{job=\"node-exporter\",mode=\"idle\"}\n)\n"
null
null
null
"1 - avg without (cpu) (\n  sum without (mode) (rate(node_cpu_seconds_total{job=\"node-exporter\",
mode=~\"idle|iowait|steal\"}[1m]))\n)\n"
null
null
null
"(\n  node_load1{job=\"node-exporter\"}\n/\n  instance:node_num_cpu:sum{job=\"node-exporter\"}\n)\n"
null
null
null
"1 - (\n  (\n    node_memory_MemAvailable_bytes{job=\"node-exporter\"}\n    or\n    (\n
node_memory_Buffers_bytes{job=\"node-exporter\"}\n      +\n      node_memory_Cached_bytes{job=\"node-
exporter\"}\n      +\n      node_memory_MemFree_bytes{job=\"node-exporter\"}\n      +\n
node_memory_Slab_bytes{job=\"node-exporter\"}\n    )\n  )\n/\n  node_memory_MemTotal_bytes{job=\"node-
exporter\"}\n)\n"
null
null
null
"rate(node_vmstat_pgmajfault{job=\"node-exporter\"}[1m])\n"
null
null
null
"rate(node_disk_io_time_seconds_total{job=\"node-exporter\",
device=~\"mmcblk.p.+|nvme.+|sd.+|vd.+|xvd.+|dm-.+|dasd.+\"}[1m])\n"
null
null
null
```

```
"rate(node_disk_io_time_weighted_seconds_total{job=\"node-exporter\",
device=~\"mmcblk.p.+|nvme.+|sd.+|vd.+|xvd.+|dm-.+|dasd.+\"}[1m])\n"
null
null
null
"sum without (device) (\n  rate(node_network_receive_bytes_total{job=\"node-exporter\",
device!=\"lo\"}[1m])\n)\n"
null
null
null
"sum without (device) (\n  rate(node_network_transmit_bytes_total{job=\"node-exporter\",
device!=\"lo\"}[1m])\n)\n"
null
null
null
"sum without (device) (\n  rate(node_network_receive_drop_total{job=\"node-exporter\",
device!=\"lo\"}[1m])\n)\n"
null
null
null
"sum without (device) (\n  rate(node_network_transmit_drop_total{job=\"node-exporter\",
device!=\"lo\"}[1m])\n)\n"
null
```

10.2.27. openshift-monitoring prometheus-k8s-prometheus-rules

```
"PrometheusBadConfig"
"Failed Prometheus configuration reload."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for
details.\nmax_over_time(prometheus_config_last_reload_successful{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) == 0\n"
{"severity":"warning"}
"PrometheusNotificationQueueRunningFull"
"Prometheus alert notification queue predicted to run full in less than 30m."
"# Without min_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for details.\n(\n
predict_linear(prometheus_notifications_queue_length{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m], 60 * 30)\n>\n  min_over_time(prometheus_notifications_queue_capacity{job=~\"prometheus-
k8s|prometheus-user-workload\"}[5m])\n)\n"
{"severity":"warning"}
"PrometheusErrorSendingAlertsToSomeAlertmanagers"
"Prometheus has encountered more than 1% errors sending alerts to a specific Alertmanager."
"(\n  rate(prometheus_notifications_errors_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m])\n/\n  rate(prometheus_notifications_sent_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m])\n)\n* 100\n> 1\n"
{"severity":"warning"}
"PrometheusNotConnectedToAlertmanagers"
"Prometheus is not connected to any Alertmanagers."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for
details.\nmax_over_time(prometheus_notifications_alertmanagers_discovered{job=~\"prometheus-
k8s|prometheus-user-workload\"}[5m]) < 1\n"
{"severity":"warning"}
"PrometheusTSDBReloadsFailing"
```

"Prometheus has issues reloading blocks from disk."
"increase(prometheus_tsdb_reloads_failures_total{job=~\"prometheus-k8s|prometheus-user-workload\"}[3h]) >
0\n"
{"severity":"warning"}
"PrometheusTSDBCompactionsFailing"
"Prometheus has issues compacting blocks."
"increase(prometheus_tsdb_compactions_failed_total{job=~\"prometheus-k8s|prometheus-user-workload\"}[3h])
> 0\n"
{"severity":"warning"}
"PrometheusNotIngestingSamples"
"Prometheus is not ingesting samples."
"(\n rate(prometheus_tsdb_head_samples_appended_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) <= 0\nand\n (\n   sum without(scrape_job)
(prometheus_target_metadata_cache_entries{job=~\"prometheus-k8s|prometheus-user-workload\"}) > 0\n or\n
sum without(rule_group) (prometheus_rule_group_rules{job=~\"prometheus-k8s|prometheus-user-workload\"}) >
0\n)\n)\n"
{"severity":"warning"}
"PrometheusDuplicateTimestamps"
"Prometheus is dropping samples with duplicate timestamps."
"rate(prometheus_target_scrapes_sample_duplicate_timestamp_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusOutOfOrderTimestamps"
"Prometheus drops samples with out-of-order timestamps."
"rate(prometheus_target_scrapes_sample_out_of_order_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusRemoteStorageFailures"
"Prometheus fails to send samples to remote storage."
"(\n (rate(prometheus_remote_storage_failed_samples_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) or rate(prometheus_remote_storage_samples_failed_total{job=~\"prometheus-k8s|prometheus-
user-workload\"}[5m]))\n/\n (\n
(rate(prometheus_remote_storage_failed_samples_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) or rate(prometheus_remote_storage_samples_failed_total{job=~\"prometheus-k8s|prometheus-
user-workload\"}[5m]))\n +\n
(rate(prometheus_remote_storage_succeeded_samples_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) or rate(prometheus_remote_storage_samples_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]))\n)\n)\n* 100\n> 1\n"
{"severity":"warning"}
"PrometheusRemoteWriteBehind"
"Prometheus remote write is behind."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for details.\n(\n
max_over_time(prometheus_remote_storage_highest_timestamp_in_seconds{job=~\"prometheus-k8s|prometheus-
user-workload\"}[5m])\n- ignoring(remote_name, url) group_right\n
max_over_time(prometheus_remote_storage_queue_highest_sent_timestamp_seconds{job=~\"prometheus-
k8s|prometheus-user-workload\"}[5m])\n)\n> 120\n"
{"severity":"info"}
"PrometheusRemoteWriteDesiredShards"
"Prometheus remote write desired shards calculation wants to run more than configured max shards."
"# Without max_over_time, failed scrapes could create false negatives, see\n#
https://www.robustperception.io/alerting-on-gauges-in-prometheus-2-0 for details.\n(\n
max_over_time(prometheus_remote_storage_shards_desired{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m])\n>\n max_over_time(prometheus_remote_storage_shards_max{job=~\"prometheus-
k8s|prometheus-user-workload\"}[5m])\n)\n"
{"severity":"warning"}
"PrometheusRuleFailures"

"Prometheus is failing rule evaluations."
"increase(prometheus_rule_evaluation_failures_total{job=~\"prometheus-k8s|prometheus-user-workload\"}[5m])
> 0\n"
{"severity":"warning"}
"PrometheusMissingRuleEvaluations"
"Prometheus is missing rule evaluations due to slow rule group evaluation."
"increase(prometheus_rule_group_iterations_missed_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusTargetLimitHit"
"Prometheus has dropped targets because some scrape configs have exceeded the targets limit."
"increase(prometheus_target_scrape_pool_exceeded_target_limit_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusLabelLimitHit"
"Prometheus has dropped targets because some scrape configs have exceeded the labels limit."
"increase(prometheus_target_scrape_pool_exceeded_label_limits_total{job=~\"prometheus-k8s|prometheus-user-
workload\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusTargetSyncFailure"
"Prometheus has failed to sync targets."
"increase(prometheus_target_sync_failed_total{job=~\"prometheus-k8s|prometheus-user-workload\"}[30m]) >
0\n"
{"severity":"critical"}

10.2.28. openshift-monitoring prometheus-k8s-thanos-sidecar-rules

"ThanosSidecarBucketOperationsFailed"
"Thanos Sidecar bucket operations are failing"
"sum by (namespace, job, instance)
(rate(thanos_objstore_bucket_operation_failures_total{job=~\"prometheus-(k8s|user-workload)-thanos-
sidecar\"}[5m])) > 0\n"
{"severity":"warning"}
"ThanosSidecarNoConnectionToStartedPrometheus"
"Thanos Sidecar cannot access Prometheus, even though Prometheus seems healthy and has reloaded WAL."
"thanos_sidecar_prometheus_up{job=~\"prometheus-(k8s|user-workload)-thanos-sidecar\"} == 0\nAND on
(namespace, pod)\nprometheus_tsdb_data_replay_duration_seconds != 0\n"
{"severity":"warning"}

10.2.29. openshift-monitoring prometheus-operator-rules

```
"PrometheusOperatorListErrors"
"Errors while performing list operations in controller."
"(sum by (controller,namespace) (rate(prometheus_operator_list_operations_failed_total{job=\"prometheus-
operator\", namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[10m])) / sum by
(controller,namespace) (rate(prometheus_operator_list_operations_total{job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[10m]))) > 0.4\n"
{"severity":"warning"}
"PrometheusOperatorWatchErrors"
"Errors while performing watch operations in controller."
"(sum by (controller,namespace) (rate(prometheus_operator_watch_operations_failed_total{job=\"prometheus-
operator\", namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[10m])) / sum by
(controller,namespace) (rate(prometheus_operator_watch_operations_total{job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[10m]))) > 0.4\n"
{"severity":"warning"}
"PrometheusOperatorSyncFailed"
"Last controller reconciliation failed"
"min_over_time(prometheus_operator_syncs{status=\"failed\",job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]) > 0\n"
{"severity":"warning"}
"PrometheusOperatorReconcileErrors"
"Errors while reconciling controller."
"(sum by (controller,namespace) (rate(prometheus_operator_reconcile_errors_total{job=\"prometheus-
operator\", namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]))) / (sum by
(controller,namespace) (rate(prometheus_operator_reconcile_operations_total{job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]))) > 0.1\n"
{"severity":"warning"}
"PrometheusOperatorNodeLookupErrors"
"Errors while reconciling Prometheus."
"rate(prometheus_operator_node_address_lookup_errors_total{job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]) > 0.1\n"
{"severity":"warning"}
"PrometheusOperatorNotReady"
"Prometheus operator not ready"
"min by(namespace, controller) (max_over_time(prometheus_operator_ready{job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]) == 0)\n"
{"severity":"warning"}
"PrometheusOperatorRejectedResources"
"Resources rejected by Prometheus operator"
"min_over_time(prometheus_operator_managed_resources{state=\"rejected\",job=\"prometheus-operator\",
namespace=~\"openshift-monitoring|openshift-user-workload-monitoring\"}[5m]) > 0\n"
{"severity":"warning"}
"ConfigReloaderSidecarErrors"
"config-reloader sidecar has not had a successful reload for 10m"
"max_over_time(reloader_last_reload_successful{namespace=~\".+\"}[5m]) == 0\n"
{"severity":"warning"}
```

10.2.30. openshift-monitoring telemetry

```
null
null
"count({__name__=~\"cluster:usage:.*|count:up0|count:up1|cluster_version|cluster_version_available_updates
|cluster_operator_up|cluster_operator_conditions|cluster_version_payload|cluster_installer|cluster_infrast
ructure_provider|cluster_feature_set|instance:etcd_object_counts:sum|ALERTS|code:apiserver_request_total:r
ate:sum|cluster:capacity_cpu_cores:sum|cluster:capacity_memory_bytes:sum|cluster:cpu_usage_cores:sum|clust
er:memory_usage_bytes:sum|openshift:cpu_usage_cores:sum|openshift:memory_usage_bytes:sum|workload:cpu_usag
e_cores:sum|workload:memory_usage_bytes:sum|cluster:virt_platform_nodes:sum|cluster:node_instance_type_cou
nt:sum|cnv:vmi_status_running:count|cluster:vmi_request_cpu_cores:sum|node_role_os_version_machine:cpu_cap
acity_cores:sum|node_role_os_version_machine:cpu_capacity_sockets:sum|subscription_sync_total|olm_resoluti
on_duration_seconds|csv_succeeded|csv_abnormal|cluster:kube_persistentvolumeclaim_resource_requests_storag
e_bytes:provisioner:sum|cluster:kubelet_volume_stats_used_bytes:provisioner:sum|ceph_cluster_total_bytes|c
eph_cluster_total_used_raw_bytes|ceph_health_status|job:ceph_osd_metadata:count|job:kube_pv:count|job:ceph
_pools_iops:total|job:ceph_pools_iops_bytes:total|job:ceph_versions_running:count|job:noobaa_total_unhealt
hy_buckets:sum|job:noobaa_bucket_count:sum|job:noobaa_total_object_count:sum|noobaa_accounts_num|noobaa_to
tal_usage|console_url|cluster:network_attachment_definition_instances:max|cluster:network_attachment_defin
ition_enabled_instance_up:max|cluster:ingress_controller_aws_nlb_active:sum|insightsclient_request_send_to
tal|cam_app_workload_migrations|cluster:apiserver_current_inflight_requests:sum:max_over_time:2m|cluster:a
lertmanager_integrations:max|cluster:telemetry_selected_series:count|openshift:prometheus_tsdb_head_series
:sum|openshift:prometheus_tsdb_head_samples_appended_total:sum|monitoring:container_memory_working_set_byt
es:sum|namespace_job:scrape_series_added:topk3_sum1h|namespace_job:scrape_samples_post_metric_relabeling:t
opk3|monitoring:haproxy_server_http_responses_total:sum|rhmi_status|cluster_legacy_scheduler_policy|cluste
r_master_schedulable|che_workspace_status|che_workspace_started_total|che_workspace_failure_total|che_work
space_start_time_seconds_sum|che_workspace_start_time_seconds_count|cco_credentials_mode|cluster:kube_pers
istentvolume_plugin_type_counts:sum|visual_web_terminal_sessions_total|acm_managed_cluster_info|cluster:vs
phere_vcenter_info:sum|cluster:vsphere_esxi_version_total:sum|cluster:vsphere_node_hw_version_total:sum|op
enshift:build_by_strategy:sum|rhods_aggregate_availability|rhods_total_users|instance:etcd_disk_wal_fsync_
duration_seconds:histogram_quantile|instance:etcd_mvcc_db_total_size_in_bytes:sum|instance:etcd_network_pe
er_round_trip_time_seconds:histogram_quantile|instance:etcd_mvcc_db_total_size_in_use_in_bytes:sum|instanc
e:etcd_disk_backend_commit_duration_seconds:histogram_quantile|jaeger_operator_instances_storage_types|jae
ger_operator_instances_strategies|jaeger_operator_instances_agent_strategies|appsvcs:cores_by_product:sum|
nto_custom_profiles:count|openshift_csi_share_configmap|openshift_csi_share_secret|openshift_csi_share_mou
nt_failures_total|openshift_csi_share_mount_requests_total\",alertstate=~\"firing|\",quantile=~\"0.99|0.99
|0.99|\"})"
null
```

10.2.31. openshift-monitoring thanos-querier

```
"ThanosQueryHttpRequestQueryErrorRateHigh"
"Thanos Query is failing to handle requests."
"(\n  sum by (namespace, job) (rate(http_requests_total{code=~\"5..\", job=\"thanos-querier\",
handler=\"query\"}[5m]))\n/\n  sum by (namespace, job) (rate(http_requests_total{job=\"thanos-querier\",
handler=\"query\"}[5m]))\n) * 100 > 5\n"
{"severity":"warning"}
"ThanosQueryHttpRequestQueryRangeErrorRateHigh"
"Thanos Query is failing to handle requests."
"(\n  sum by (namespace, job) (rate(http_requests_total{code=~\"5..\", job=\"thanos-querier\",
handler=\"query_range\"}[5m]))\n/\n  sum by (namespace, job) (rate(http_requests_total{job=\"thanos-
querier\", handler=\"query_range\"}[5m]))\n) * 100 > 5\n"
{"severity":"warning"}
"ThanosQueryGrpcServerErrorRate"
"Thanos Query is failing to handle requests."
"(\n  sum by (namespace, job)
(rate(grpc_server_handled_total{grpc_code=~\"Unknown|ResourceExhausted|Internal|Unavailable|DataLoss|Deadl
ineExceeded\", job=\"thanos-querier\"}[5m]))\n/\n  sum by (namespace, job)
(rate(grpc_server_started_total{job=\"thanos-querier\"}[5m]))\n* 100 > 5\n)\n"
{"severity":"warning"}
"ThanosQueryGrpcClientErrorRate"
"Thanos Query is failing to send requests."
"(\n  sum by (namespace, job) (rate(grpc_client_handled_total{grpc_code!=\"OK\", job=\"thanos-
querier\"}[5m]))\n/\n  sum by (namespace, job) (rate(grpc_client_started_total{job=\"thanos-
querier\"}[5m]))\n) * 100 > 5\n"
{"severity":"warning"}
"ThanosQueryHighDNSFailures"
"Thanos Query is having high number of DNS failures."
"(\n  sum by (namespace, job) (rate(thanos_query_store_apis_dns_failures_total{job=\"thanos-
querier\"}[5m]))\n/\n  sum by (namespace, job)
(rate(thanos_query_store_apis_dns_lookups_total{job=\"thanos-querier\"}[5m]))\n) * 100 > 1\n"
{"severity":"warning"}
```

10.2.32. openshift-multus prometheus-k8s-rules

```
null
null
"max  (network_attachment_definition_enabled_instance_up) by (networks)\n"
null
null
null
"max  (network_attachment_definition_instances) by (networks)\n"
null
```

10.2.33. openshift-operator-lifecycle-manager olm-alert-rules

```
"CsvAbnormalFailedOver2Min"
"CSV failed for over 2 minutes"
"csv_abnormal{phase=~\"^Failed$\"}"
{"namespace":"{{ $labels.namespace }}","severity":"warning"}
"CsvAbnormalOver30Min"
"CSV abnormal for over 30 minutes"
"csv_abnormal{phase=~\"(^Replacing$|^Pending$|^Deleting$|^Unknown$)\"}"
{"namespace":"{{ $labels.namespace }}","severity":"warning"}
"InstallPlanStepAppliedWithWarnings"
"API returned a warning when modifying an operator"
"sum(increase(installplan_warnings_total[5m])) > 0"
{"severity":"warning"}
```

10.2.34. openshift-sdn networking-rules

```
"NodeWithoutSDNController"
"All control plane nodes should be running a sdn controller pod, {{ $labels.node }} is not."
"count(kube_node_role{role=\"master\"} == 1) != count(kube_pod_info{namespace=\"openshift-sdn\",
pod=~\"sdn-controller.*\"})\n"
{"severity":"warning"}
"NodeWithoutSDNPod"
"All nodes should be running an sdn pod, {{ $labels.node }} is not."
"(kube_node_info unless on(node) topk by (node) (1, kube_pod_info{namespace=\"openshift-sdn\",
pod=~\"sdn-[^-]*\"})) > 0\n"
{"severity":"warning"}
"NodeProxyApplySlow"
"SDN pod {{ $labels.pod }} on node {{ $labels.node }} is taking too long, on average, to apply kubernetes
service rules to iptables."
"histogram_quantile(.95, kubeproxy_sync_proxy_rules_duration_seconds_bucket)\n* on(namespace, pod)
group_right topk by (namespace, pod) (1, kube_pod_info{namespace=\"openshift-sdn\",  pod=~\"sdn-[^-]*\"})
> 15\n"
{"severity":"warning"}
"ClusterProxyApplySlow"
"The cluster is taking too long, on average, to apply kubernetes service rules to iptables."
"histogram_quantile(0.95, sum(rate(kubeproxy_sync_proxy_rules_duration_seconds_bucket[5m])) by (le)) >
10\n"
{"severity":"warning"}
"NodeProxyApplyStale"
"SDN pod {{ $labels.pod }} on node {{ $labels.node }} has stale kubernetes service rules in iptables."
"(kubeproxy_sync_proxy_rules_last_queued_timestamp_seconds -
kubeproxy_sync_proxy_rules_last_timestamp_seconds)\n* on(namespace, pod) group_right() topk by (namespace,
pod) (1, kube_pod_info{namespace=\"openshift-sdn\",pod=~\"sdn-[^-]*\"})\n> 30\n"
{"severity":"warning"}
"SDNPodNotReady"
"SDN pod {{ $labels.pod }} on node {{ $labels.node }} is not ready."
"kube_pod_status_ready{namespace='openshift-sdn', condition='true'} == 0\n"
{"severity":"warning"}
```

10.3. Prometheus Context

```
{"fsGroup":65534,"runAsNonRoot":true,"runAsUser":65534}
"15d"
{"requests":{"cpu":"70m","memory":"1Gi"}}
```

10.4. Service Monitors

```
NAMESPACE                                     NAME
openshift-apiserver-operator                  openshift-apiserver-operator
openshift-apiserver                           openshift-apiserver
openshift-apiserver                           openshift-apiserver-operator-check-endpoints
openshift-authentication-operator             authentication-operator
openshift-authentication                      oauth-openshift
openshift-cloud-credential-operator           cloud-credential-operator
openshift-cluster-machine-approver            cluster-machine-approver
openshift-cluster-node-tuning-operator        node-tuning-operator
openshift-cluster-samples-operator            cluster-samples-operator
openshift-cluster-storage-operator            cluster-storage-operator
openshift-cluster-version                     cluster-version-operator
openshift-config-operator                     config-operator
openshift-console-operator                    console-operator
openshift-console                             console
openshift-controller-manager-operator         openshift-controller-manager-operator
openshift-controller-manager                  openshift-controller-manager
openshift-dns-operator                        dns-operator
openshift-dns                                 dns-default
openshift-etcd-operator                       etcd-operator
openshift-image-registry                      image-registry
openshift-image-registry                      image-registry-operator
openshift-ingress-operator                    ingress-operator
openshift-ingress                             router-default
openshift-insights                            insights-operator
openshift-kube-apiserver-operator             kube-apiserver-operator
openshift-kube-apiserver                      kube-apiserver
openshift-kube-controller-manager-operator    kube-controller-manager-operator
openshift-kube-controller-manager             kube-controller-manager
openshift-kube-scheduler-operator             kube-scheduler-operator
openshift-kube-scheduler                      kube-scheduler
openshift-machine-api                         cluster-autoscaler-operator
openshift-machine-api                         machine-api-controllers
openshift-machine-api                         machine-api-operator
openshift-machine-config-operator             machine-config-daemon
openshift-marketplace                         marketplace-operator
openshift-monitoring                          alertmanager-main
openshift-monitoring                          cluster-monitoring-operator
openshift-monitoring                          etcd
openshift-monitoring                          grafana
openshift-monitoring                          kube-state-metrics
openshift-monitoring                          kubelet
openshift-monitoring                          node-exporter
openshift-monitoring                          openshift-state-metrics
openshift-monitoring                          prometheus-adapter
openshift-monitoring                          prometheus-k8s
openshift-monitoring                          prometheus-operator
```

```
openshift-monitoring                    telemeter-client
openshift-monitoring                    thanos-querier
openshift-monitoring                    thanos-sidecar
openshift-multus                        monitor-multus-admission-controller
openshift-multus                        monitor-network
openshift-network-diagnostics           network-check-source
openshift-oauth-apiserver               openshift-oauth-apiserver
openshift-operator-lifecycle-manager    catalog-operator
openshift-operator-lifecycle-manager    olm-operator
openshift-sdn                           monitor-sdn
openshift-sdn                           monitor-sdn-controller
openshift-service-ca-operator           service-ca-operator
```

10.5. Pod Monitors

10.6. Alert Managers

```
NAMESPACE               NAME    VERSION   REPLICAS   AGE
openshift-monitoring    main    0.23.0    1          19h
```

10.7. Monitoring Agents & Dashboards

Agent	Status
cluster-monitoring-operator	OK
kube-state-metrics	OK
openshift-state-metrics	OK
node-exporter	OK
thanos-querier	OK
grafana	OK
telemeter-client	OK

Chapter 11. operators

11.1. Degraded Cluster Operators

11.2. Unavailable Cluster Operators

11.3. Cluster Services Versions

```
NAMESPACE                              NAME            DISPLAY         VERSION   REPLACES   PHASE
openshift-operator-lifecycle-manager   packageserver   Package Server  0.19.0               Succeeded
```

11.4. Operator Groups

```
NAMESPACE                              NAME                        AGE
openshift-monitoring                   openshift-cluster-monitoring  41d
openshift-operator-lifecycle-manager   olm-operators                 41d
openshift-operators                    global-operators              41d
```

11.5. Operator Sources

Chapter 12. Service Mesh

12.1. Service Mesh ControlPlane

12.2. Service Mesh Members

12.3. Service Mesh Member Rolls

Chapter 13. Applications

13.1. Non-Ready Deployments

```
NAMESPACE    NAME     READY   UP-TO-DATE   AVAILABLE   AGE
ocapp-test   my-app2  0/1     0            0           13d
ocapp-test   my-app3  0/1     0            0           13d
```

13.2. Unavailable Deployments

```
NAMESPACE    NAME     READY   UP-TO-DATE   AVAILABLE   AGE
ocapp-test   my-app2  0/1     0            0           13d
ocapp-test   my-app3  0/1     0            0           13d
```

13.3. Failed Builds

13.4. Inactive projects