

Logging and Monitoring with IBM Cloud Private

IBM



IBM Cloud

Agenda

Monitoring

Logging

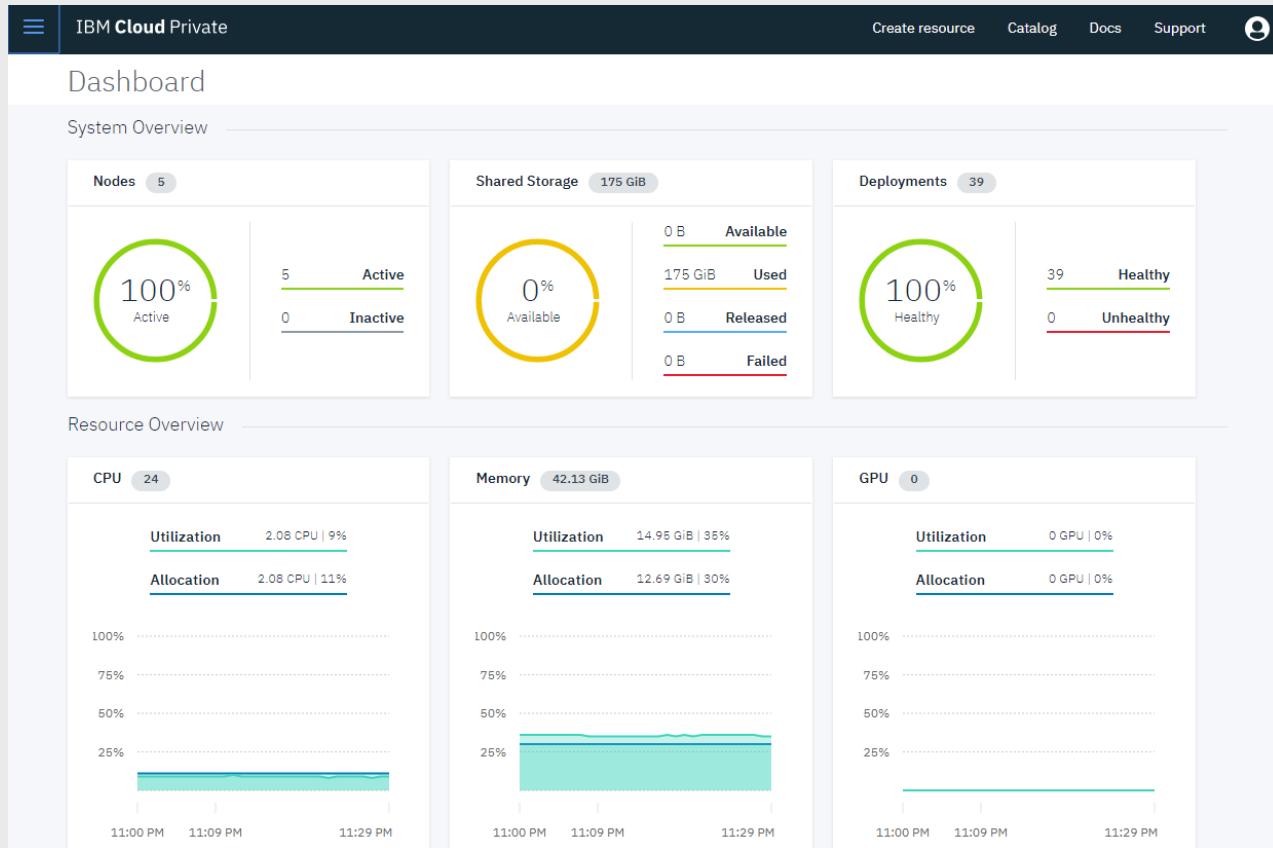
Debugging

CLI tools

Resources for next steps

Monitoring

Default dashboard in IBM Cloud Private



System Overview

1. Nodes
2. Shared Storage
3. Deployments

Resource Overview

1. CPU
2. Memory
3. GPU

Workload dashboard in IBM Cloud Private

The screenshot shows the 'Deployments' section of the IBM Cloud Private interface. At the top, there's a search bar labeled 'Search items' and a 'Create Deployment' button. Below is a table with columns: NAME, NAMESPACE, DESIRED, CURRENT, READY, AVAILABLE, CREATED, and ACTION. The table lists 13 deployment entries, each with a 'Launch' button and a more options menu. The 'NAMESPACE' column includes 'default', 'cheng1', 'jenkinstest', 'kube-system', and 'elk-lab'. The 'CURRENT' and 'READY' columns show values of 1 for most entries, except for 'kube-system' which has 1 in both. The 'AVAILABLE' column also shows 1 for most, except for 'kube-system' which is 2. The 'CREATED' column shows dates ranging from '1 day ago' to '7 days ago'. The bottom of the page features a decorative wavy pattern.

NAME	NAMESPACE	DESIRED	CURRENT	READY	AVAILABLE	CREATED	ACTION
jenkinstest-deployment	default	1	1	1	1	1 day ago	Launch ⋮
test1-jenkins	default	1	1	1	1	1 day ago	Launch ⋮
cheng1-daytrader-test-02	cheng1	1	1	1	1	1 day ago	Launch ⋮
cheng1-daytrader-test-01	cheng1	1	1	1	1	1 day ago	Launch ⋮
jenkinstest-deployment	jenkinstest	1	1	1	1	1 day ago	Launch ⋮
kubernetes-dashboard	kube-system	1	1	1	1	2 days ago	Launch ⋮
mc-jenkinstest-fb3eb2516f0befbe6fa82e57aea4c91a22a459-idc	default	1	1	1	1	2 days ago	Launch ⋮
mc-test-3ef65bce721ab9ab9586d6fb39587e8d2e225058-idc	default	1	1	1	1	2 days ago	Launch ⋮
mc-ibm-microclimate	default	1	1	1	1	3 days ago	Launch ⋮
mc-ibm-microclimate-devops	default	1	1	1	1	3 days ago	Launch ⋮
mc-jenkins	default	1	1	1	1	3 days ago	Launch ⋮
elk-lab-ibm-iplogging-client	elk-lab	1	1	1	1	7 days ago	Launch ⋮
elk-lab-ibm-iplogging-kibana	elk-lab	1	1	1	1	7 days ago	Launch ⋮

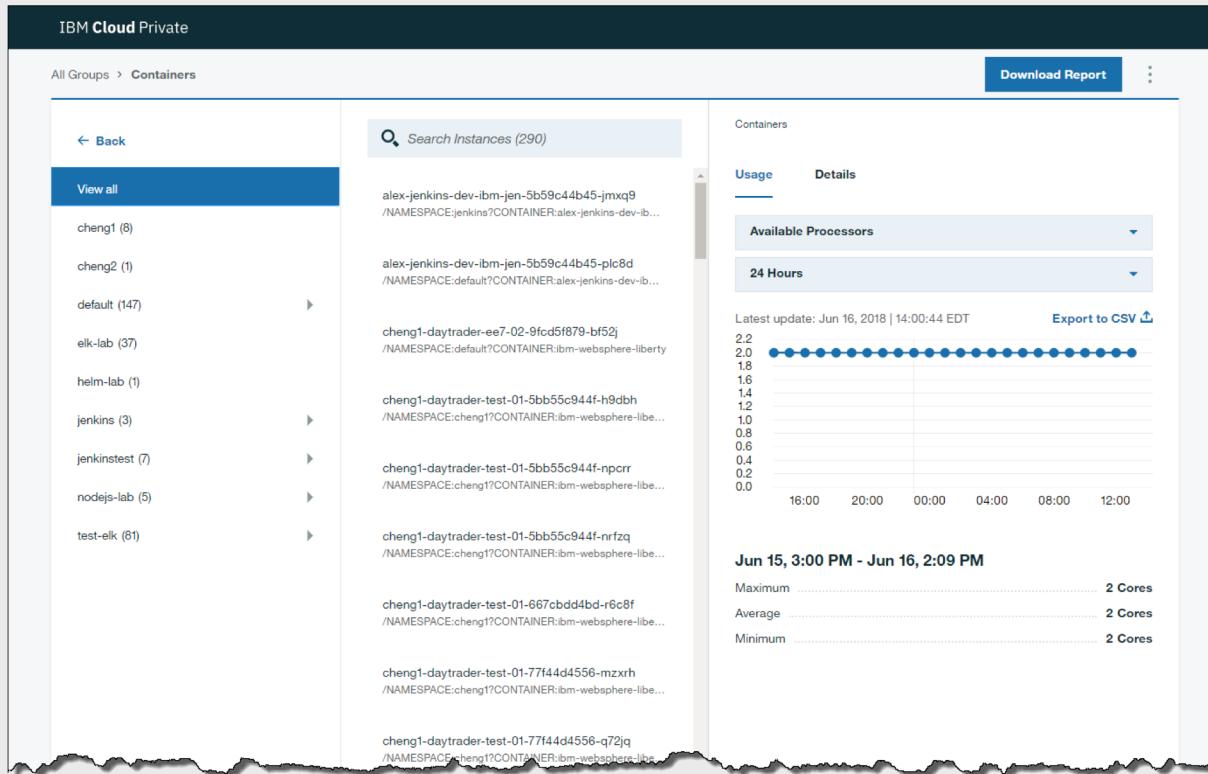
Workload – Deployments

Status of deployments is available to help understand current the number of instances as compared to the desired. Four states are reported:

- Desired
- Current
- Ready
- Available

Metering dashboard in IBM Cloud Private

IBM® Cloud Private metering service



The metering service is automatically installed as part of the IBM Cloud Private environment.

Use the metering service to view and download detailed usage metrics for applications and cluster.

Metering – export data to spread sheet

Use the metering service to view and download detailed usage metrics for applications and cluster.

<https://<masterNode>:8443/metering/secure/c2c/reporter>

A	B	C	D	E	F	G	H	I	J	K
1	Service Instance	IBM Cloud Private								
2	Export Time	1529172851320 ms								
3	Export Date	2018-06-16T18:14:11.325Z								
4										
5	ServiceInstanceGuid	ServiceName	Period	Status	GroupId	GroupName	Instances	Acores	Ccores	Ucores
6								max Cores	max Cores	sum ms
7	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	IBM Cloud Private		2018/4	FINAL			12			0
9										
10	ServiceInstanceGuid	ServiceName	Period	Status	GroupId	GroupName	Instances	Acores	Ccores	Memory
11								max Cores	max Cores	max MiB
12	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
13	IBM Cloud Private		2018/4	FINAL	DELMICPContainers	> Containers	12			0
14	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMdefault	> Containers > default	1			0
15	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMdefaultDELMldap	> Containers > default > ldap	1			0
16	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMnodejs-lab	> Containers > nodejs-lab	1			0
17	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMnodejs-labDELMNode.js_Sa	> Containers > nodejs-lab > Node.js S	1			0
18	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMtest-elk	> Containers > test-elk	10			0
19	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMtest-elkDELMinit	> Containers > test-elk > init	1			0
20	IBM Cloud Private		2018/4	FINAL	DELMICPContainersDELMtest-elkDELMnone	> Containers > test-elk > Logstash	9			0
21	IBM Cloud Private		2018/4	FINAL	init	init	1			0
22	IBM Cloud Private		2018/4	FINAL	ldap	ldap	1			0
23	IBM Cloud Private		2018/4	FINAL	Node.js_Sample_Application_1.2.0_perpetual_00000	Node.js Sample Application	1			0
24	IBM Cloud Private		2018/4	FINAL	none	Logstash	9			0
25										
26	ServiceInstanceGuid	ServiceName	Period	Status	GroupId	GroupName	Instances	Acores	Ccores	Ucores
27								max Cores	max Cores	sum ms
28	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
29	IBM Cloud Private		2018/4	FINAL	Node.js_Sample_Application_1.2.0_perpetual_00000	Node.js Sample Application		nodejs-sample-cli-ibm-no-7ccdf5846c-		0

Alerts

Alertmanager Alerts Silences Status

New Silence

Filter Group

Receiver: All Show Silenced

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

Add

`alername="HighCPUUsage"`

03:12:37, 2018-01-17 [+](#) Info [Source](#) [Silence](#)

`service="backend"` `job="kubernetes-service-endpoints"` `instance="169.53.48.103:9100"`

03:12:37, 2018-01-17 [+](#) Info [Source](#) [Silence](#)

`service="backend"` `job="kubernetes-service-endpoints"` `instance="169.53.48.99:9100"`

03:12:37, 2018-01-17 [+](#) Info [Source](#) [Silence](#)

`service="backend"` `job="kubernetes-service-endpoints"` `instance="169.53.48.102:9100"`

03:12:37, 2018-01-17 [+](#) Info [Source](#) [Silence](#)

`service="backend"` `job="kubernetes-service-endpoints"` `instance="169.45.189.41:9100"`

`alername="NodeMemoryUsage"`

03:12:37, 2018-01-17 [+](#) Info [Source](#) [Silence](#)

`severity="page"` `kubernetes_namespace="kube-system"` `kubernetes_name="monitoring-prometheus-nodeexporter"` `job="kubernetes-service-endpoints"`

`instance="169.53.48.103:9100"` `component="nodeexporter"` `app="monitoring-prometheus"`

IBM Cloud Private
Alertmanager

Alerts

The screenshot shows the Prometheus Alerts interface with two active alert definitions:

- HighCPUUsage (0 active)**

```
ALERT HighCPUUsage
IF ((sum(node_cpu{mode!="user|nice|system|irq|softirq|steal|idle|iowait"}) BY (instance, job)) - (sum(node_cpu{mode=="idle|iowait"}) BY (instance, job)) / (sum(node_cpu{mode=="user|nice|system|irq|softirq|steal|idle|iowait"}) BY (instance, job)) * 100 > 2
FOR 1m
LABELS {service="backend"}
ANNOTATIONS {description="High CPU usage observed for over 10 minutes on node", summary="High CPU Usage detected on node {$labels.instance}"}
```
- NodeMemoryUsage (0 active)**

```
ALERT NodeMemoryUsage
IF (((node_memory_MemTotal - node_memory_MemFree - node_memory_Cached) / (node_memory_MemTotal) * 100) > 25
FOR 1m
LABELS {severity="page"}
ANNOTATIONS {description="Memory usage is above 75%. Current memory usage is at: {{$value}}", summary="High memory usage detected on node {$labels.instance}"}
```

Configure Prometheus alerts to provide timely information.

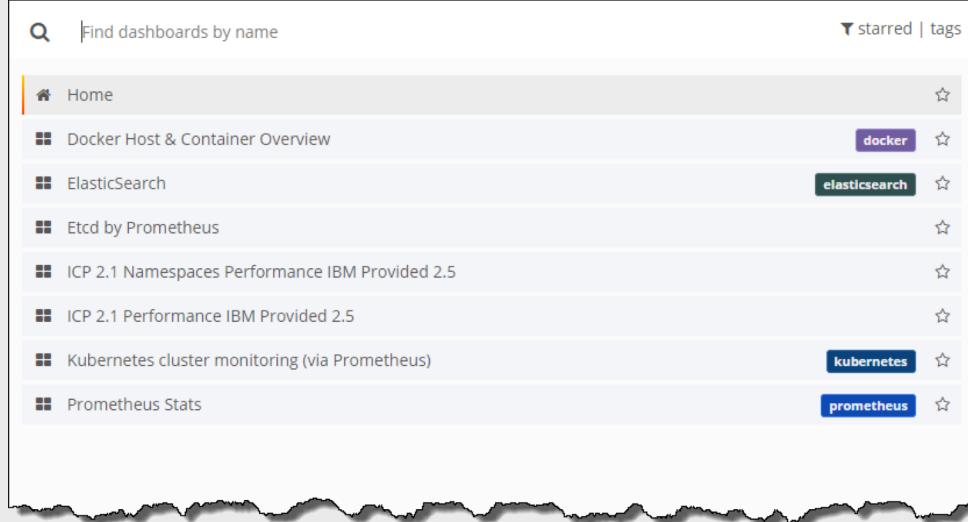
These alerts can be integrated with external alert service providers, such as Slack or PagerDuty for IBM Cloud Private.

The screenshot shows a Slack channel with the following messages:

- daveweilert** 5:37 PM added an integration to this channel: [incoming-webhook](#)
- AlertManager APP** 9:13 PM [FIRING:4] [NodeMemoryUsage](#) ([monitoring-prometheus](#) [nodeexporter](#) [kubernetes-service-endpoints](#) [monitoring-prometheus-nodeexporter](#) [kube-system](#) [page](#))
- [FIRING:4] [HighCPUUsage](#) ([kubernetes-service-endpoints](#) [backend](#))

A yellow box highlights the message: **Slack Alert**.

Grafana dashboards available in IBM Cloud Private

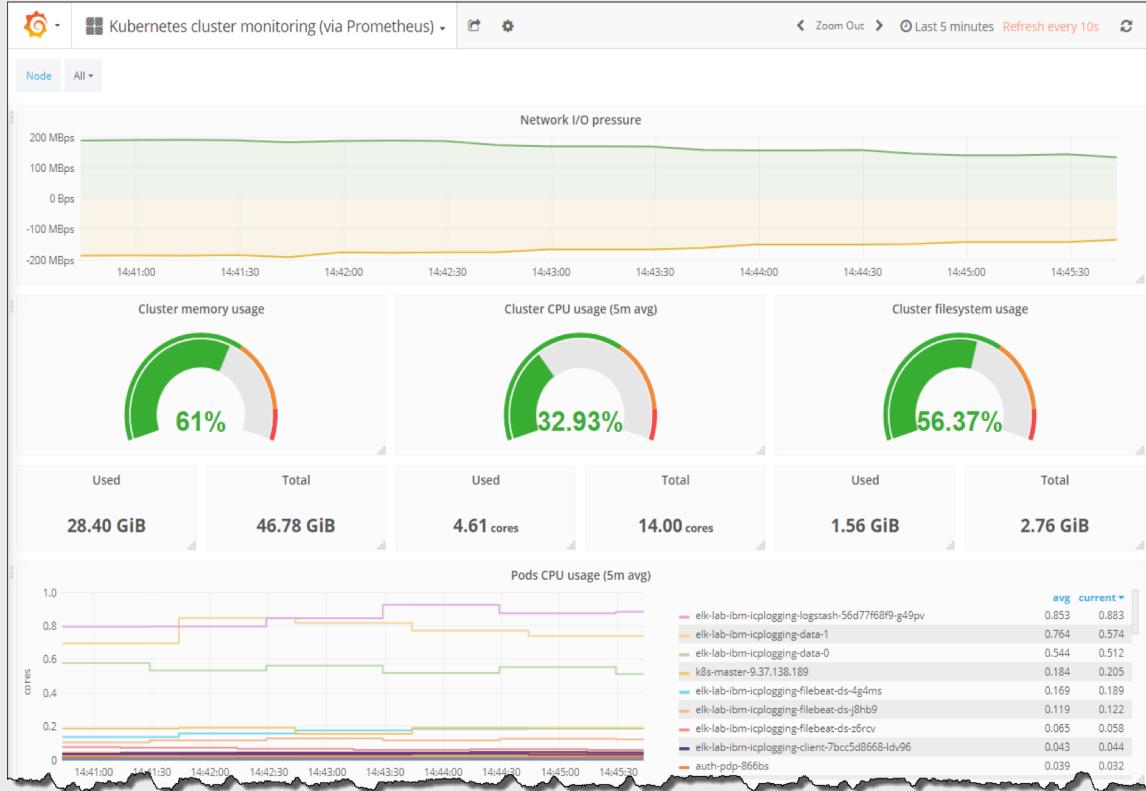


These seven dashboards enable viewing of information in the following categories:

1. Docker
2. ElasticSearch
3. etcd
4. Kubernetes
5. Prometheus
6. IBM Cloud Private

Note: IBM Cloud requires deploying Monitor service. The above screen is from IBM Cloud Private.

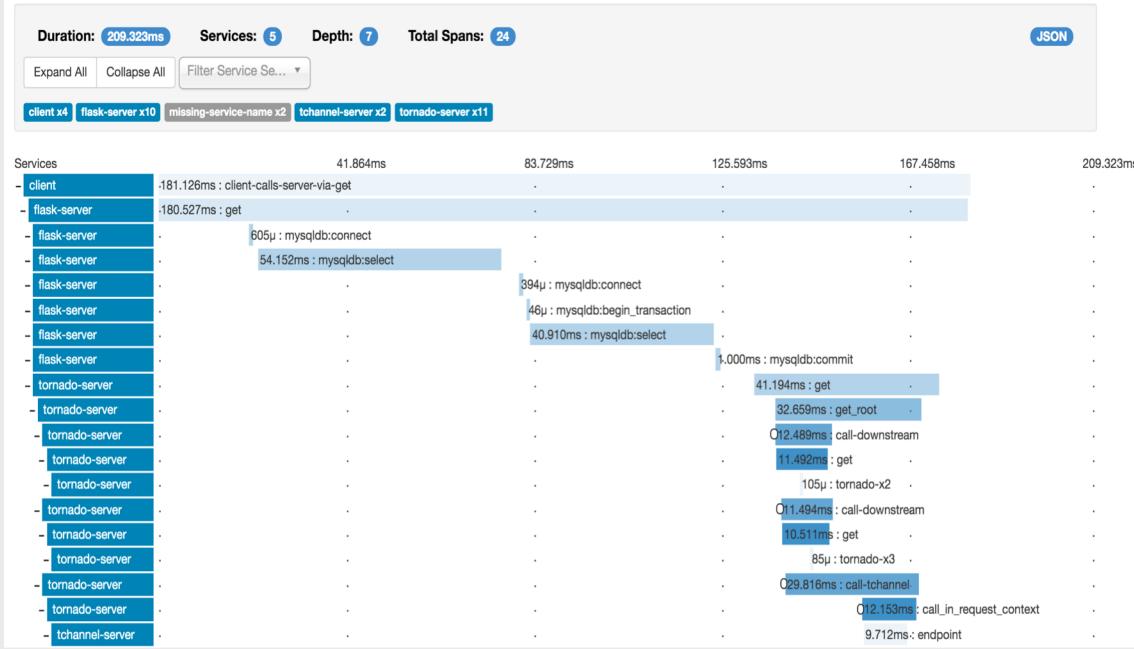
Grafana dashboard



View cloud private metrics using defined Grafana dashboards.

Dashboards can be filtered by time and provide rich inactive views and drill-down capabilities.

Zipkin – Application level tracing



Zipkin is a distributed tracing system.

It helps gather timing data needed to troubleshoot latency problems in microservice architectures. It manages both the collection and lookup of this data.

Zipkin is installed with Microservice Builder.

The “Catalog” Node.js container app is instrumented with Zipkin.

Zipkin – Use within Istio

The screenshot shows the Istio website's main page. At the top, there's a navigation bar with links for Docs, Blog, Help, Community, About, and a search icon. Below the navigation, there's a large section titled "In-Depth Telemetry and Reporting" with a sub-section about understanding dependencies between services. A purple arrow points from this section to a diagram on the right. The diagram illustrates a network of three nodes (black, blue, green) connected by arrows, with a vertical line representing a boundary or service boundary. Below this, there are two sections: "Want to learn more?" and "Ready to get started?". The "Want to learn more?" section has a "GET STARTED" button. The "Ready to get started?" section has a "DOWNLOAD" button. At the bottom, there are social media icons for users and developer documentation links.

Zipkin is a distributed tracing system.

The screenshot shows the Istio 0.7 documentation page for "Accessing the dashboard". It features a sidebar with links for Concepts, Setup, Tasks, and various management and tracing tools. The main content area is titled "Before you begin" and contains instructions for setting up Istio and Zipkin. It includes code snippets for running Kubernetes commands. Below this, there's a section for "Accessing the dashboard" which provides instructions for both Zipkin and Jaeger. Each section includes a code snippet for port-forwarding and a note to open a browser at a specific URL.

Command line monitoring

kubectl – view node and pods resources

View node resources

Command: kubectl top nodes

NAME	CPU(cores)	CPU%	MEMORY(bytes)	MEMORY%
69.53.48.103	279m	6%	3954Mi	49%
69.53.48.99	1120m	28%	9713Mi	60%
69.45.189.41	6246m	78%	10759Mi	67%
69.53.48.102	336m	8%	4828Mi	61%

View pod resources

Command: kubectl top pods

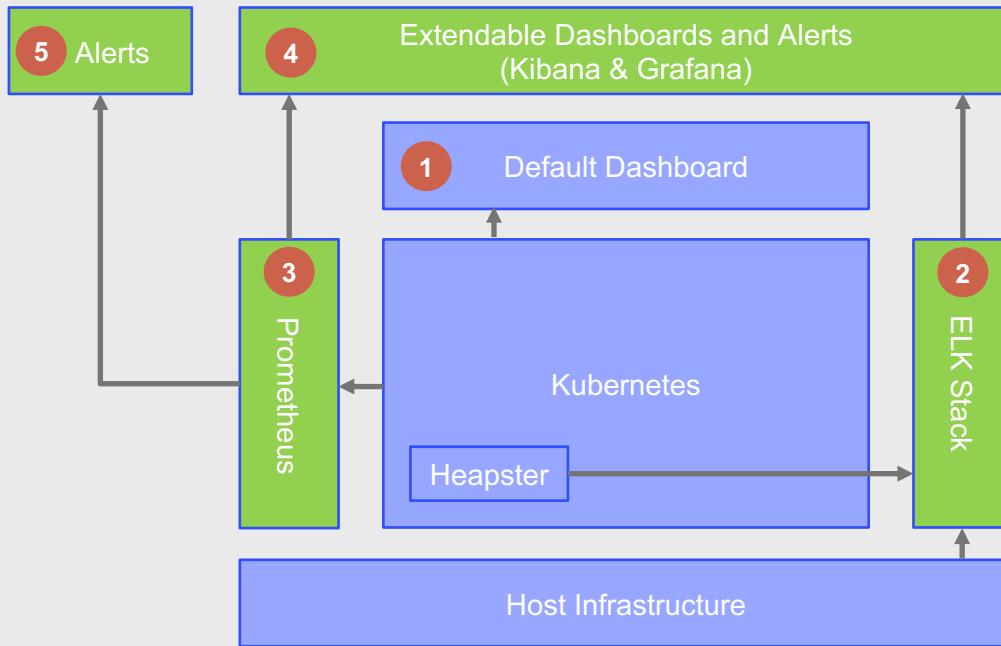
NAME	CPU(cores)	MEMORY(bytes)
liberty4all-5c84bcc9d7-zrxsd4	6m	121Mi
jenkins-master-5f788574c-m6xkl	0m	1287Mi
liberty4all-5c84bcc9d7-bn9bv	6m	113Mi
nodejs-sam-ibm-nodejs-sa-96bb4658c-njzzr	7m	51Mi
nodejs-sam-ibm-nodejs-sa-96bb4658c-pz2x4	10m	59Mi

Logging

Exposed logging in IBM Cloud Private



IBM Cloud Private example diagram



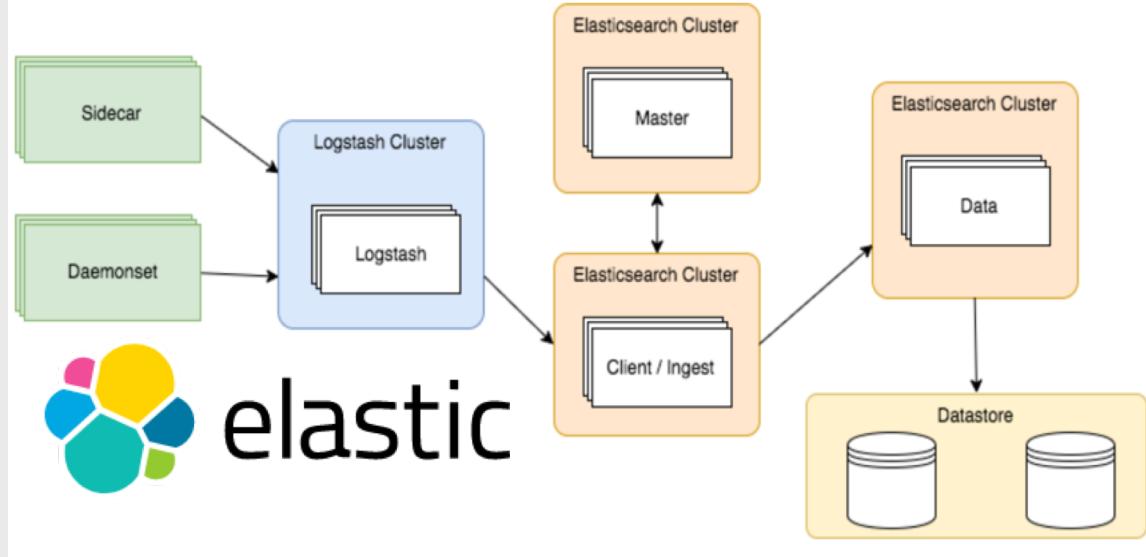
1. Dashboard show the status and metrics for the workloads and environment.
2. Elastic Stack collects logs from all the nodes (e.g. Master, Worker) and workloads.
3. Prometheus collects metrics.
4. Kibana and Grafana dashboards provide visibility of collected data.
5. Prometheus can be configured to send alerts to external sources. Example sources are email and webhooks.

Kubernetes logs

Location of log files: /var/log

Daemon	Node / Func	Filename	Description
API server	master	apiserver.log	Log for API calls
Scheduler	master	k8s-scheduler.log	Log for scheduler information for any containers scheduling events
Controller Manager	master	controller-manager.log	Log for controller events and issues
Kubelet	worker	kubelet.log	Log for any issues happening in any container
<network>	network	kube-proxy.log	Log for any network information

Elastic Stack is used



ELK stack is used to store collected logs.

Note: These services are deployed in the kube-system namespace.

Debugging

Kibana dashboard in IBM Cloud Private

https://<Master node ip>:8443/kibana

The screenshot shows the Kibana interface with a histogram visualization titled "Selected Fields" showing the count of events over time. Below the histogram is a list of log entries from January 10th, 2018, at 09:11:00. The logs are filtered by the field "log" containing "k8s-". The logs include details about kubelet updates, API server requests, and resource versions.

Time	_source
January 10th, 2018, 09:11:00.702	offset: 37,890,119 log: 2018-01-10 15:11:00.702 [INFO][121] int_dataplane.go:674: Applying dataplane updates kubernetes.pod: calico-node-and64-gp0z_kubernetes.container_name: calico-node-and64 input_type: log source: /var/log/containers/calico-node-and64-gp0z_kube-system_calico-node-and64-9723692b0d67f52f413dc58d335be04fb0d8df5abdff805820d583a22803d23f log type: kube-logs tags: k8s-*, beats_input_row_event kubernetes.container_id: 9723692b0b7f052f413dc58d335be4f0dbdf5abdff80582ad583a22803d23f @timestamp: January 10th, 2018, 09:11:00.702 stream: stdout
January 10th, 2018, 09:11:00.633	offset: 1,029,006,134 log: I0110 15:11:00.632429 [wрап.go:42] PATCH /api/v1/nodes/169.53.48.99/status: {(.124494ms) 200 [[Hyperkube/v1.8.3-icp+ (linux/amd64) kubernetes/5bf8fffc169.53.48.99:40496] kubernetes.pod: k8s-master-169.53.48.99 kubernetes.container_name: apiserver input_type: log source: /var/log/containers/k8s-master-169.53.48.99_kube-system_apiserver-7eb8e502fe410933145b6845c983d5d81b12a10a01828987fe0b783aa077b0251.log type: kube-logs tags: k8s-*, beats_input_row_event kubernetes.container_id: 7eb8e502fe410933145b6845c983d5d81b12a10a01828987fe0b783aa077b0251}
January 10th, 2018, 09:11:00.625	offset: 171,519 log: {"type": "response", "@timestamp": "2018-01-10T15:11:00Z", "tags": [], "pid": 1, "method": "get", "status": "200", "req": {"url": "/bundles/kibana.bundle.js?v=15405", "method": "get", "headers": [{"x-forwarded-for": "174.223.1.187, 10.1.252.192", "host": "169.53.48.99:8443", "connection": "close", "user-agent": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.13.2) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/63.0.3239.132 Safari/537.36", "accept": "*/*", "dnt": "1", "referer": "https://169.53.48.99:8443/kibana/app/kibana", "accept-encoding": "gzip, deflate, br", "accept-language": "en-US, en;q=0"}, {"x-forwarded-for": "174.223.1.187, 10.1.252.192", "host": "169.53.48.99:8443", "connection": "close", "user-agent": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.13.2) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/63.0.3239.132 Safari/537.36", "accept": "*/*", "dnt": "1", "referer": "https://169.53.48.99:8443/kibana/app/kibana", "accept-encoding": "gzip, deflate, br", "accept-language": "en-US, en;q=0"}], "code": 200}
January 10th, 2018, 09:11:00.620	offset: 1,029,005,884 log: I0110 15:11:00.620004 [wрап.go:42] GET /api/v1/nodes/169.53.48.99/resourceVersion=0 (1.18201ms) 200 [[Hyperkube/v1.8.3-icp+ (linux/amd64) kubernetes/5bf8fffc169.53.48.99:40496] kubernetes.pod: k8s-master-169.53.48.99 kubernetes.container_name: apiserver input_type: log source: /var/log/containers/k8s-master-169.53.48.99_kube-system_apiserver-7eb8e502fe410933145b6845c983d5d81b12a10a01828987fe0b783aa077b0251.log type: kube-logs tags: k8s-*, beats_input_row_event kubernetes.container_id: 7eb8e502fe410933145b6845c983d5d81b12a10a01828987fe0b783aa077b0251}
January 10th, 2018, 09:11:00.590	offset: 16,355,579 log: [0mGET /healthcheck [32e200 [0m0.35 ms - 1610m kubernetes.pod: helmrepo-5b9555c9c4-knppj kubernetes.container_name: helmrepo input_type: log source: /var/log/containers/helmrepo-5b9555c9c4-knppj_kube-system_helmrepo-7c3089fd1d0a26cf7b510e969ff724be36f9329_c0bd8040f36f9329_c0bd8040f36f9329.log type: kube-logs tags: k8s-*, beats_input_row_event kubernetes.container_id: 7c3089fd1d0a26cf7b510e969ff724be36f9329_c0bd8040f36f9329_c0bd8040f36f9329]

The sidebar menu includes links to Dashboard, Catalog, Workloads, Network Access, Configuration, Platform (Alerting and Logging), and a search bar for "IBM Cloud Private".

Viewing of collected logs from nodes and workloads.

Basic capabilities include:

- Selection of time period
- Selection of captured data
- Search by value
- Visualize over time

kubectl – Viewing information

```
kubectl -n kube-system get pods -o wide | grep -v Running
```

```
kubectl -n kube-system describe pod/<pod_name> [any pod shown in an error state from above]
```

```
kubectl -n kube-system logs pod/<pod_name>  
--container <container_name> [any pod shown in an error state from above]  
[once for each container within the pod]
```

ubuntu logs for kubelet

```
journalctl -r -u kubelet
```

kubectl – view pod information

Command: kubectl describe pod <pod-name>

```
~ $ kubectl describe pod jenkins-master-5f788574c-m6xkl
Name:           jenkins-master-5f788574c-m6xkl
Namespace:      default
Node:          169.53.48.102/169.53.48.102
Start Time:    Wed, 10 Jan 2018 10:21:47 -0600
Labels:         app=jenkins-master
Annotations:   kubernetes.io/created-by={"kind":"SerializedReference","apiVersion":"v1","reference":{"kind":"ReplicaSet","namespace":"default","uid":"5ad432bb-f622-11e7-81f7-06d4cd9..."},kubernetes.io/psp=default
Status:        Running
IP:            10.1.188.210
Created By:   ReplicaSet/jenkins-master-5f788574c
Controlled By: ReplicaSet/jenkins-master-5f788574c
Containers:
  jenkins-master:
    Container ID:   docker://1fd27103834a335ac2c9e13e028b67f86d56d209c8c8004998b30a8c1c7818bc
    Image:          jenkins/jenkins:lts
    Image ID:       docker-pullable://jenkins/jenkins@sha256:4ee807fc56c48bcf7b4f7273d24b11970615b2458bb090671f5020c7451e9114
    Ports:          8080/TCP, 50000/TCP
    State:         Running
    Started:      Wed, 10 Jan 2018 10:22:21 -0600
    Ready:         True
    Restart Count: 0
    Environment:   <none>
    Mounts:
      /var/jenkins_home from jenkins-home (rw)
      /var/run/secrets/kubernetes.io/serviceaccount from default-token-ggzt6 (ro)
  Conditions:
    Type      Status
    Initialized  True
    Ready      True
    PodScheduled  True
  Volumes:
    jenkins-home:
      Type:     PersistentVolumeClaim (a reference to a PersistentVolumeClaim in the same namespace)
      ClaimName: jenkins-master-pvc
      ReadOnly:  false
    default-token-ggzt6:
      Type:     Secret (a volume populated by a Secret)
      SecretName: default-token-ggzt6
      Optional:  false
      QoS Class: BestEffort
      Node-Selectors: <none>
      Tolerations: node.alpha.kubernetes.io/notReady:NoExecute for 300s
                    node.alpha.kubernetes.io/unreachable:NoExecute for 300s
  Events:    <none>
```

kubectl – view pod and container logs

Command: kubectl logs <pod-name> --container <container-name>

```
~ $ kubectl logs jenkins-master-5f788574c-m6xkl
Running from: /usr/share/jenkins/jenkins.war
webroot: EnvVars.masterEnvVars.get("JENKINS_HOME")
Jan 10, 2018 4:22:21 PM Main deleteWinstoneTempContents
WARNING: Failed to delete the temporary Winstone file /tmp/winstone/jenkins.war
Jan 10, 2018 4:22:22 PM org.eclipse.jetty.util.log.Log initialized
INFO: Logging initialized @502ms to org.eclipse.jetty.util.log.JavaUtilLog
Jan 10, 2018 4:22:22 PM winstone.Logger logInternal
INFO: Beginning extraction from war file
Jan 10, 2018 4:22:30 PM org.eclipse.jetty.server.handler.ContextHandler setContextPath
WARNING: Empty contextPath
Jan 10, 2018 4:22:30 PM org.eclipse.jetty.server.Server doStart
INFO: jetty-9.4.2-z-SNAPSHOT
Jan 10, 2018 4:22:31 PM org.eclipse.jetty.webapp.StandardDescriptorProcessor visitServlet
INFO: NO JSF Support for /, did not find org.eclipse.jetty.jsp.JettyJspServlet
Jan 10, 2018 4:22:31 PM org.eclipse.jetty.server.session.DefaultSessionIdManager doStart
INFO: DefaultSessionIdManager workerName=node0
Jan 10, 2018 4:22:31 PM org.eclipse.jetty.server.session.DefaultSessionIdManager doStart
INFO: No SessionScavenger set, using defaults
Jan 10, 2018 4:22:31 PM org.eclipse.jetty.server.session.HouseKeeper startScavenging
INFO: Scavenging every 60000ms
Jenkins home directory: /var/jenkins_home found at: EnvVars.masterEnvVars.get("JENKINS_HOME")
Jan 10, 2018 4:22:32 PM org.eclipse.jetty.server.handler.ContextHandler doStart
INFO: Started w@493dfb8ef/,file:///var/jenkins_home/war/,AVAILABLE}{var/jenkins_home/war}
Jan 10, 2018 4:22:32 PM org.eclipse.jetty.server.AbstractConnector doStart
INFO: Started ServerConnector@90b1b2e[HTTP/1.1,[http/1.1]{0.0.0.0:8080}]
Jan 10, 2018 4:22:32 PM org.eclipse.jetty.server.Server doStart
INFO: Started @10521ms
Jan 10, 2018 4:22:32 PM winstone.Logger logInternal
INFO: Winstone Servlet Engine v4.0 running: controlPort=disabled
Jan 10, 2018 4:22:32 PM jenkins.InitReactorRunner$1 onAttained
INFO: Started initialization
Jan 10, 2018 4:22:32 PM jenkins.InitReactorRunner$1 onAttained
INFO: Listed all plugins
Jan 10, 2018 4:22:34 PM jenkins.InitReactorRunner$1 onAttained
INFO: Prepared all plugins
Jan 10, 2018 4:22:34 PM jenkins.InitReactorRunner$1 onAttained
INFO: Started all plugins
Jan 10, 2018 4:22:34 PM jenkins.InitReactorRunner$1 onAttained
INFO: Augmented all extensions
Jan 10, 2018 4:22:35 PM jenkins.InitReactorRunner$1 onAttained
INFO: Loaded all jobs
Jan 10, 2018 4:22:35 PM hudson.model.AsyncPeriodicWork$1 run
INFO: Started Download metadata
Jan 10, 2018 4:22:36 PM jenkins.util.groovy.GroovyHookScript execute
INFO: Executing /var/jenkins_home/init.groovy.d/tcp-slave-agent-port.groovy
Jan 10, 2018 4:22:36 PM jenkins.slaves.DeprecatedAgentProtocolMonitor initializerCheck
WARNING: This Jenkins instance uses deprecated Remoting protocols: CLI-connect,CLI2-connect,JNLP-connect,JNLP2-connectIt may impact stability of the instance. If newer protocol versions are supported by all system components (agents, CLI and other clients), it is highly recommended to disable the deprecated protocols.
Jan 10, 2018 4:22:36 PM jenkins.InitReactorRunner$1 onAttained
```

kubectl – view events

Command: kubectl get events --all-namespaces

NAMESPACE	LASTSEEN	FIRSTSEEN	COUNT	NAME	KIND	SUBOBJECT	TYPE	REASON	SOURCE	MESSAGE
kube-system	4m	9d	2741	live-crawler-amd64-254xh	Pod	spec.containers{live-crawler}	Normal	Pulled	kubelet, 169.53.48.99	Container image "ibmcom/live-crawler:20171128" already present on machine
kube-system	19m	9d	62980	live-crawler-amd64-254xh	Pod	spec.containers{live-crawler}	Warning	BackOff	kubelet, 169.53.48.99	Back-off restarting failed container
kube-system	9m	9d	63025	live-crawler-amd64-254xh	Pod	spec.containers{live-crawler}	Warning	FailedSync	kubelet, 169.53.48.99	Error syncing pod
kube-system	4m	9d	63163	live-crawler-amd64-2trq8	Pod	spec.containers{live-crawler}	Warning	BackOff	kubelet, 169.53.48.103	Back-off restarting failed container
kube-system	9m	9d	63140	live-crawler-amd64-2trq8	Pod	spec.containers{live-crawler}	Warning	FailedSync	kubelet, 169.53.48.103	Error syncing pod
kube-system	4m	9d	63056	live-crawler-amd64-6vm64	Pod	spec.containers{live-crawler}	Warning	BackOff	kubelet, 169.53.48.102	Back-off restarting failed container
kube-system	14m	9d	63093	live-crawler-amd64-6vm64	Pod	spec.containers{live-crawler}	Warning	FailedSync	kubelet, 169.53.48.102	Error syncing pod
kube-system	14m	9d	62670	live-crawler-amd64-k0z1z	Pod	spec.containers{live-crawler}	Warning	BackOff	kubelet, 169.45.189.41	Back-off restarting failed container
kube-system	4m	9d	62716	live-crawler-amd64-k0z1z	Pod	spec.containers{live-crawler}	Warning	FailedSync	kubelet, 169.45.189.41	Error syncing pod
kube-system	49m	9d	1873	reg-crawler-697b5d7f5f-jgs5q	Pod	spec.containers{reg-crawler}	Normal	Pulled	kubelet, 169.45.189.41	Container image "ibmcom/reg-crawler:20171122" already present on machine
kube-system	14m	7d	43025	reg-crawler-697b5d7f5f-jgs5q	Pod	spec.containers{reg-crawler}	Warning	BackOff	kubelet, 169.45.189.41	Back-off restarting failed container
kube-system	4m	7d	43068	reg-crawler-697b5d7f5f-jgs5q	Pod	spec.containers{reg-crawler}	Warning	FailedSync	kubelet, 169.45.189.41	Error syncing pod
kube-system	54m	1	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Scheduled	default-scheduler	Successfully assigned repod-checking to 169.45.189.41
kube-system	54m	1	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "reg-crawler-pv"
kube-system	54m	1	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "default-token-n5mtp"
kube-system	54m	2	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Killing	kubelet, 169.45.189.41	Killing container with id docker://liberty4all:Need to kill Pod
kube-system	54m	54m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulling	kubelet, 169.45.189.41	pulling image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	54m	54m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulled	kubelet, 169.45.189.41	Successfully pulled image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	54m	54m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Created	kubelet, 169.45.189.41	Created container
kube-system	54m	54m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Started	kubelet, 169.45.189.41	Started container
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Scheduled	default-scheduler	Successfully assigned repod-checking to 169.45.189.41
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "reg-crawler-pv"
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "default-token-n5mtp"
kube-system	49m	49m	2	repod-checking	Pod	spec.containers{liberty4all}	Normal	Killing	kubelet, 169.45.189.41	Killing container with id docker://liberty4all:Need to kill Pod
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulling	kubelet, 169.45.189.41	pulling image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulled	kubelet, 169.45.189.41	Successfully pulled image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Created	kubelet, 169.45.189.41	Created container
kube-system	49m	49m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Started	kubelet, 169.45.189.41	Started container
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Scheduled	default-scheduler	Successfully assigned repod-checking to 169.45.189.41
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "reg-crawler-pv"
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "default-token-n5mtp"
kube-system	43m	43m	2	repod-checking	Pod	spec.containers{liberty4all}	Normal	Killing	kubelet, 169.45.189.41	Killing container with id docker://liberty4all:Need to kill Pod
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulling	kubelet, 169.45.189.41	pulling image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulled	kubelet, 169.45.189.41	Successfully pulled image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Created	kubelet, 169.45.189.41	Created container
kube-system	43m	43m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Started	kubelet, 169.45.189.41	Started container
kube-system	38m	38m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Scheduled	default-scheduler	Successfully assigned repod-checking to 169.45.189.41
kube-system	38m	38m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "reg-crawler-pv"
kube-system	38m	38m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	SuccessfulMountVolume	kubelet, 169.45.189.41	MountVolume.SetUp succeeded for volume "default-token-n5mtp"
kube-system	38m	38m	2	repod-checking	Pod	spec.containers{liberty4all}	Normal	Killing	kubelet, 169.45.189.41	Killing container with id docker://liberty4all:Need to kill Pod
kube-system	38m	38m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulling	kubelet, 169.45.189.41	pulling image "mycluster.ipc:8500/default/liberty4all:latest"
kube-system	38m	38m	1	repod-checking	Pod	spec.containers{liberty4all}	Normal	Pulled	kubelet, 169.45.189.41	Successfully pulled image "mycluster.ipc:8500/default/liberty4all:latest"

kubectl – exec command into running container

Command: kubectl exec -it <pod-name> /bin/sh

```
~ $kubectl exec -it jenkins-master-5f788574c-m6xkl /bin/sh
$ hostname
jenkins-master-5f788574c-m6xkl
$ ls -la
total 72
drwxr-xr-x  1 root root 4096 Jan 10 16:22 .
drwxr-xr-x  1 root root 4096 Jan 10 16:22 ..
-rwxr-xr-x  1 root root    0 Jan 10 16:22 .dockerenv
drwxr-xr-x  1 root root 4096 Dec 14 02:11 bin
drwxr-xr-x  2 root root 4096 Nov 19 15:25 boot
drwxr-xr-x  5 root root 360 Jan 10 16:22 dev
lrwxrwxrwx  1 root root   33 Dec 12 15:14 docker-java-home -> /usr/lib/jvm/java-8-openjdk-amd64
drwxr-xr-x  1 root root 4096 Jan 10 16:22 etc
drwxr-xr-x  2 root root 4096 Nov 19 15:25 home
drwxr-xr-x  1 root root 4096 Dec 10 00:00 lib
drwxr-xr-x  2 root root 4096 Dec 10 00:00 lib64
drwxr-xr-x  2 root root 4096 Dec 10 00:00 media
drwxr-xr-x  2 root root 4096 Dec 10 00:00 mnt
drwxr-xr-x  2 root root 4096 Dec 10 00:00 opt
dr-xr-xr-x 222 root root    0 Jan 10 16:22 proc
drwx----- 2 root root 4096 Dec 10 00:00 root
drwxr-xr-x  1 root root 4096 Jan 10 16:22 run
drwxr-xr-x  1 root root 4096 Dec 12 07:54 sbin
drwxr-xr-x  2 root root 4096 Dec 10 00:00 srv
dr-xr-xr-x 13 root root    0 Jan 10 16:21 sys
drwxrwxrwt  1 root root 4096 Jan 10 16:22 tmp
drwxr-xr-x  1 root root 4096 Dec 10 00:00 usr
drwxr-xr-x  1 root root 4096 Dec 14 02:10 var
$ ps -ef
UID      PID  PPID  C STIME TTY          TIME CMD
jenkins     1      0  0 Jan10 ?        00:00:20 /bin/tini -- /usr/local/bin/jenkins.sh
jenkins     7      1  0 Jan10 ?        00:11:50 java -Duser.home=/var/jenkins_home -jar /usr/share/jenkins/jenkins.war
jenkins   2227     0  0 18:20 pts/0    00:00:00 /bin/sh
jenkins   2235   2227  0 18:21 pts/0    00:00:00 ps -ef
```

kubectl – Cheat Sheet

The screenshot shows the Kubernetes Reference Documentation website. The top navigation bar includes links for Documentation, Blog, Partners, Community, Case Studies, and v1.9. Below the navigation is a search bar. The main content area has a sidebar titled "Reference Documentation" with sections like Standardized Glossary, Using the API, API Reference, Federation API, and kubectl CLI. The "kubectl Cheat Sheet" page is the active section, indicated by a blue underline. It features a "Kubectl Autocomplete" section with a code snippet for setting up bash and zsh completion:

```
$ source <(kubectl completion bash) # setup autocomplete in bash, bash-completion package
$ source <(kubectl completion zsh) # setup autocomplete in zsh
```

Below this is a "Kubectl Context and Configuration" section with a note about kubeconfig and a code snippet for viewing merged config settings:

```
$ kubectl config view # Show Merged kubeconfig settings.
# use multiple kubeconfig files at the same time and view merged config
$ KUBECONFIG=~/kube/config:~/kube/kubconfig2 kubectl config view
```

<https://kubernetes.io/docs/reference/kubectl/cheatsheet/>

“kubectl” - is a command line interface for issuing commands to Kubernetes clusters.

Command Line Interface (CLI) tools

- bx** – manage IBM Cloud Private with the use of ICP plugins (for example, **bx pr**)
- docker** – used to interact with docker
- kubectl** – used to run commands against Kubernetes clusters
- calicoctl** – primary tool to view, manipulate, and create Calico objects
- systemctl** – systemd is an init system used in Linux distributions to bootstrap the user space and to manage system processes after booting
- journalctl** – system utility used to query and display messages from the journal

Command Line Interface (CLI) tools to monitor Linux

top – Linux process monitoring

vmstat – Virtual memory statistics

lsof – List open file

tcpdump – Network packet analyzer

netstat – Network statistics

htop – Linux process monitoring

monitorix – Sys and ntwk monitoring

iotop – Monitor Linux disk i/o

iostat – Input / Output statistics

iptraf – Real time IP LAN monitoring

psacct – Monitor user activity

monit – Linux process & svc monitoring

nethogs – Monitor per process network

nmon – Monitor Linux performance

<https://www.tecmint.com/command-line-tools-to-monitor-linux-performance/>

IBM Cloud CLI (bx) and IBM Cloud Private (pr) plugin

The screenshot shows a table with one row. The columns are 'Version', 'Updated', and 'Downloads'. The 'Version' column contains '0.6.4'. The 'Updated' column contains '2017-12-19'. The 'Downloads' column contains links for 'macOS/checksum', 'linux64/checksum', 'win64/checksum', 'linux32/checksum', and 'win32/checksum'.

Version	Updated	Downloads
0.6.4	2017-12-19	macOS/checksum linux64/checksum win64/checksum linux32/checksum win32/checksum

IBM Cloud CLI must be downloaded and installed.

Along with this CLI the IBM Cloud Private plugin must also be downloaded and installed.

https://console.bluemix.net/docs/cli/reference/bluemix_cli/all_versions.html#ibm-cloud-cli-installer-all-versions

IBM Cloud Private plugin

Cloud Private
menu option



The page has sections for 'What is it?', 'Install CLI and plug-ins', and 'Use the IBM Cloud Private CLI'. On the right, there are five 'DOWNLOAD FOR' buttons: Mac OS X, Linux (32-bit), Linux (64-bit), Windows (32-bit), and Windows (64-bit).

1. Download required plugin

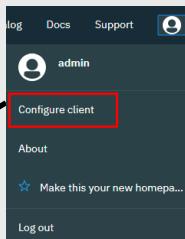
2. Install downloaded plugin:

→ `bx plugin install <filename>`

kubectl – authentication and context

Using kubectl CLI requires proper authentication and context. Two methods to accomplish this are by using the (1) ICP browser option Configure client, or (2) use bx pr login.

(1) ICP browser option ‘Configure client’



Configure kubectl

Before you run commands in the kubectl command line interface for this cluster, you must configure the client.

Prerequisites:
Install the kubectl CLI: kubectl

To configure the CLI, paste the displayed configuration commands into your terminal window and run them.:

```
kubectl config set-cluster mycluster.icp --server=https://  
kubectl config set-context mycluster.icp-context --cluster=mycluster.icp  
kubectl config set-credentials admin --token=  
kubectl config set-context mycluster.icp-context --user=admin --namespace=campbell  
kubectl config use-context mycluster.icp-context
```

~ \$kubectl
kubectl controls the Kubernetes cluster manager.
Find more information at https://github.com/kubernetes/kubectl.

Basic Commands (Beginner):
create Create a new resource by filename or static
expose Take a replication controller, service, deployment or pod and expose it as a new Kubernetes Service
run Run a particular image on the cluster
run-container Run a container image on the cluster
set Set specific features on objects

Basic Commands (Intermediate):
get Get information about many resources
explain Documentation of resources
edit Edit a resource on the server
delete Delete resources by filename, stdin, resources and names, or by resources and label selector

Deploy Commands:
rollout Manage the rollout of a resource
relabelnodes Relabel nodes in a cluster for a given ReplicationController
rollingupdate Perform a rolling update of the given ReplicationController
scale Scale a Deployment, ReplicaSet, ReplicationController, or Job
resize Set a new size for a Deployment, ReplicaSet, Replication Controller, or Job
autoscale Auto-scale a Deployment, ReplicaSet, or ReplicationController

Cluster Management Commands:
certificate Modify certificate resources.

https://www.ibm.com/support/knowledgecenter/en/SSBS6K_2.1.0/manage_cluster/cfc_cli.html

(2) bx pr login --help

```
bx pr login --help  
  ~ $ bx pr login --help  
    Login - Log user in.  
  
Usage:  
  bx pr login [<API-ENDPOINT>] [<--username>] [<--password>]  
  
  WARNING: Providing your password as a command line option is not recommended.  
           Your password might be visible to others and might be recorded in your shell history.  
  
  EXAMPLE:  
  bx pr login  
    To interactively provide your user name and password, omit the user name and password options.  
    bx pr login <username> <password>  
    Specify your username and password as arguments.  
    bx pr login <username> <password>  
    Use quotation marks ("") around passwords that have spaces.  
    bx pr login "myusername" "mypassword"  
    If your password contains quotation mark characters (""), use backslash characters (\) to escape them.  
  
OPTIONS:  
  --skip-ssl-validation      Bypass SSL validation of HTTP requests. This option is not recommended.  
  
  API endpoint (for example: api.ng.bluemix.net)  
  --value  
  Username  
  Password  
  --skip-ssl-validation
```

```
bx pr login -a https://<icpserver>:8443
```

```
~ $bx pr login -a https://<icpserver>:8443 -u admin -p <password> --skip-ssl-validation  
Login method invokedAPI endpoint: https://icpcoc001:8443  
Authenticating...  
OK
```

```
Select an account:  
1. ICP Account (id-icp-account)  
Enter a number> 1  
Targeted account: ICP Account (id-icp-account)
```

```
bx pr clusters
```

```
~ $bx pr clusters  
OK  
Name ID State Created Masters Workers Datacenter  
mycluster 00000000000000000000000000000001 deployed 2018-01-17T13:03:52+0000 1 3 default
```

```
bx pr cluster-config <cluster-name>
```

```
~ $bx pr cluster-config mycluster  
Cluster "mycluster" set.  
Context "mycluster-context" modified.  
User "mycluster-user" set.  
Context "mycluster-context" modified.  
Switched to context "mycluster-context".  
  
OK  
Cluster mycluster configured successfully.
```

Resources

Resources (1 of 3)



IBM Cloud Private Knowledge Center

https://www.ibm.com/support/knowledgecenter/en/SSBS6K_2.1.0.3/



Stack Overflow

<https://stackoverflow.com/questions/tagged/ibm-cloud-private>



Slack at IBM

<https://ibm-cloud-tech.slack.com/>

Over 35 'private-cloud' channels available

Resources (2 of 3)



Grafana Labs Getting Started

http://docs.grafana.org/guides/getting_started/



Kibana 5 Introduction YouTube videos

<https://www.youtube.com/watch?v=mMhnGjp8oOI&t=437s>



IBM developerWorks Recipes

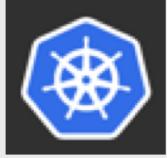
<https://developer.ibm.com/recipes/>



Medium articles

<https://medium.com/ibm-cloud>

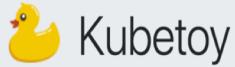
Resources (3 of 3)



Kubernetes Documentation

<https://kubernetes.io/docs/home>

IBM Cloud Private - Center of Competency (CoC) provided assets



Kubetoy An easy to use and deploy app that helps test and understand Kubernetes

<https://github.com/IBM-ICP-CoC/KubeToy>



Visual parsed Kubernetes (VpK) definitions

<https://github.com/IBM-ICP-CoC/VpK>

IBM Knowledge Center - Cloud Private

The screenshot shows the IBM Knowledge Center - Cloud Private documentation homepage. The top navigation bar includes the IBM logo, 'IBM Knowledge Center', a 'Marketplace' button, and a search icon. The main header is 'IBM® Cloud Private v2.1.0.3 documentation'. Below the header, there's a breadcrumb trail: 'Home > IBM Cloud Private 2.1.0.3 >'. On the left, there's a sidebar with 'Table of contents' and 'Change version' options. The main content area features three columns: 'Getting started' (with sections for Overview, System requirements, Release notes, and Accessibility features for IBM Cloud Private), 'Common tasks' (with sections for Installing IBM Cloud Private, Managing workloads, Managing charts and apps, Managing images, and Managing your platform), and 'Troubleshooting and support' (with sections for Troubleshooting, IBM Cloud Technology Slack channel, Technical community, View Stack Overflow questions with the ibm-cloud-private tag, Uninstalling, Upgrading and reverting, Accessing your cluster, and Managing your cluster with the IBM® Cloud Private). A 'Feedback' button is located at the bottom right of the troubleshooting section. A search bar is also present at the top right.

IBM Knowledge Center

Home > IBM Cloud Private 2.1.0.3 >

IBM® Cloud Private v2.1.0.3 documentation

Table of contents Change version

Welcome to the IBM Cloud Private documentation, where you can find information about how to install, maintain, and use IBM Cloud Private.

Getting started

- Overview
- System requirements
- Release notes
- Accessibility features for IBM Cloud Private

Common tasks

- Installing IBM Cloud Private
- Managing workloads
- Managing charts and apps
- Managing images
- Managing your platform

Troubleshooting and support

- Troubleshooting
- IBM Cloud Technology Slack channel
- Technical community
- View Stack Overflow questions with the ibm-cloud-private tag
- Uninstalling
- Upgrading and reverting
- Accessing your cluster
- Managing your cluster with the IBM® Cloud Private

Feedback

https://www.ibm.com/support/knowledgecenter/SSBS6K_2.1.0.3/kc_welcome_containers.html

Stack Overflow



Secure | <https://stackoverflow.com/questions/tagged/ibm-cloud-private>

Questions Developer Jobs Tags Users [ibm-cloud-private]

Tagged Questions newest frequent votes active unanswered

70 questions tagged ibm-cloud-private about »

Ask Question

FEATURED ON META

Spring 2018 Community Moderator Election

HOT META POSTS

Tidy doesn't fix indentation of <option> and <select> tags

How to deal with answer coming from the original asker providing my solution?

No reviews for me but Answer is near deletion

Favorite Tags edit

Add a favorite tag

Boost your brand

Introducing our new self-service advertising platform.

Get started

Heart Digital

Information Technology

We have great benefits!

- Transportation benefits
- Corporate discounts with a variety of vendors
- Company cafe that will satisfy the most discerning NYC foodies
- On-site wellness center with resting rooms and pharmacut concierge

IBM Cloud best practices [closed]

Is there any article going over the best practices for IBM Cloud Private? Specifically, I am interested in whether it is best practice to modify the existing deployments that come with installation. ...

asked Apr 11 at 23:26 by biscuit 122 10

-3 votes 0 answers 27 views

I want to upload custom helm charts on ibm Cloud Private internal repository but I am not able to do so

I followed this official ICP link but I not able to get final command that uploads charts to ICP working (command: tx pr load-helm-chart --archive {clustername}). Here is my output: CLI output ...

repository local helm ibm-cloud-private

asked Apr 10 at 14:48 by niranjan 1 1

0 votes 3 answers 48 views

Error loading the CAM PPA while Installing Cloud Automation Manager offline

Trying to register the Cloud Automation Manager offline PPA image into IBM Cloud Private with the command: tx pr load-helm-chart --archive ibm-cam-prod-1.2.0.tgz fails with following error: ...

ibm-cloud-private cloud-automation-manager

asked Apr 3 at 14:28 by Gian Filippo Maniscalco 26 3

1 vote 2 answers 69 views

Two pods force deploy to different ICP workers

There is a cluster Kubernetes and IBM Cloud Private with two workers. I have one deployment which creates two pods. How can I force deployment to install its pods on two different workers? In this ...

kubernetes ibm-cloud-private

asked Mar 22 at 9:36 by Risha 15 4

1 vote 3 answers 120 views

Where is the documentation to accomplish an orderly shutdown of IBM Cloud Private?

IBM Cloud Private-CE (Community Edition) 2.1.0.2 is up and running on my repurposed 32-gigabyte laptop. VMware ESXi 6.5 (vSphere Hypervisor) is the bare metal hypervisor. The environment is up and ...

ibm-cloud-private

asked Mar 21 at 14:04 by Chris Clark 1 1

0 votes 2 answers 65 views

IBM ICP Deployment error , ErrorInPull, ImgErrorbackoff

we have 5 node ICP cluster in local env., and we are getting ImagepullError and ImagePullBackoff errors while deploying resources. we found Image-manager service is terminating frequently. what do ...

<https://stackoverflow.com/questions/tagged/ibm-cloud-private>

Grafana training

Several free or no-cost resources for Kibana training are available.



Grafana Labs Getting Started

http://docs.grafana.org/guides/getting_started/

Grafana Screencasts Episode 1 - Building Graphite Queries

<https://youtu.be/mgcJPReI3CU>

Grafana Screencasts Episode 2 - Templated Graphite Queries

<https://youtu.be/FhNUrueWwOk>

Grafana Screencasts Episode 7 - Beginners guide to building dashboards

<https://youtu.be/sKNZMtoSHN4>

Kibana training

Several free or no-cost resources for Kibana training are available.



Kibana 5 Introduction

<https://www.youtube.com/watch?v=mMhnGjp8oOI&t=437s>

Visual transcript of above Kibana 5 Introduction video

<https://www.timroes.de/2016/10/23/kibana5-introduction/>

Kibana Aggregations Explained

<https://www.youtube.com/watch?v=j-eCKDhj-Os&t=43s>

Understanding the categories and types of log aggregations can have a major impact in using Kibana visualizations.

Bucket Aggregations

- Histogram
- Date Histogram
- Range
- Date Range
- IPv4 Range
- Filters
- Geohash
- Terms
- Significant Terms

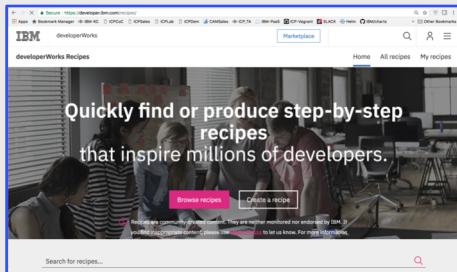
Metric Aggregations

- Count
- Sum
- Average
- Median
- Min
- Max
- Unique Count
- Standard Deviation
- Percentiles
- Percentile Ranks

developerWorks Recipes



<https://developer.ibm.com/recipes/>



Collect & detect problems in IBM Cloud Private using Netcool Operations Insight

How to configure Netcool Operations Insight to receive alerts and events from Logstash and Prometheus within IBM Cloud Private

Explore the new features in Cloud Automation Manager version 2.1.0.2

Building PCI Compliant Application Infrastructure on IBM Cloud

Architectures For Building Application Solutions for Financial Industry

IBM developerWorks Recipes contains over 75 articles regarding IBM Cloud Private

A screenshot of a recipe page titled "Setting up system alerts in an IBM Cloud Private environment". The page includes a summary, contents, overview, ingredients, and detailed steps. The "Overview" section indicates an intermediate skill level and describes using the integrated Prometheus tool. The "Ingredients" section lists several configuration steps.

<https://developer.ibm.com/recipes/tutorials/setting-up-system-alerts-in-an-ibm-cloud-private-environment/>

Kubernetes documentation

A screenshot of the Kubernetes Documentation website. At the top, there's a navigation bar with links for Documentation, Blog, Partners, Community, Case Studies, and v1.10. A search bar is also present. Below the navigation, the title "Kubernetes Documentation" is centered. A brief description of what Kubernetes is follows, along with links to "Download Current Release" and "Supported Doc Versions". A large blue banner features three buttons: "USERS", "CONTRIBUTORS", and "BROWSE DOCS". Below this is a dark grey bar with the text "I AM...". Underneath, another dark grey bar says "APPLICATION DEVELOPER". At the bottom, there are three boxes: "Foundational" (with a right-pointing arrow icon), "Intermediate" (with a building icon), and "Advanced Topics" (with a pencil icon).

Kubernetes Documentation

Kubernetes is an open source system for managing [containerized applications](#) across multiple hosts, providing basic mechanisms for deployment, maintenance, and scaling of applications. The open source project is hosted by the Cloud Native Computing Foundation ([CNCF](#)).

[Download Current Release](#) [Supported Doc Versions](#)

USERS CONTRIBUTORS BROWSE DOCS

I AM...

APPLICATION DEVELOPER

Foundational Intermediate Advanced Topics

<https://kubernetes.io/docs/home/?path=users&persona=app-developer&level=foundational>

