

1 OpenShift CheatSheet

CLOUD

- PDF Link: [cheatsheet-openshift-A4.pdf](#), Category: Cloud
- Blog URL: <https://cheatsheet.dennyzhang.com/cheatsheet-openshift-A4>
- Related posts: PKS CheatSheet, Kubectl CheatSheet, #denny-cheatsheets

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1.1 OpenShift FAQ

Name	Summary
Kubernetes versions for different OpenShift versions	openshift 3.9, openshift 3.10, openshift 3.11

1.2 OpenShift Key Components

Name	Command
Computing virtualization	RHV (Red Hat Virtualization), based on KVM
SDN networking	Based upon OVS
VM/Cluster lifecycle management	CloudForms ?
Node healing	Notification of failed components but no recovery
Container optimized OS	
Container Image Compliance Scan	CloudForms OpenSCAP, like Harbor Clair
Container runtime	dockerd, cri-o
Container image registry	OpenShift Container Registry (OCR), powered by Redhat Quay
Packages k8s cluster orchestrator	tectonic ?
Component Packaging	Ansible modules?
CSI for Persistent volume	GlusterFS, NFS, Local storage
Authorization	OpenShift Container Platform policy engine
Disater Recovery	Notification of failed components but no recovery
Control Plane	
Reference	Link: OpenShift Container Platform Cluster Limits
Reference	Link: OpenShift Key Components, Link: PKS Key Components

<https://raw.githubusercontent.com/dennyzhang/cheatsheet.dennyzhang.com/master/cheatsheet-openshift-A4/architectureoverview.png>

1.3 New Concepts From OpenShift

Name	Command
BuildConfig	
Source2Image(s2i)	
Templates	Like helm chart
Pipelines	Jenkins
Fine grained security policies OOTB	Like k8s psp
Security Context Constraints(SCC)	
Red Hat Container Catalog (RHCC)	
Route	Like k8s ingress
Metering and Chargeback	
Operator SDK	

1.4 OpenShift Solutions

Name	Command
OpenShift Online	Hosted by Red Hat in AWS public cloud
OpenShift Dedicated	Virtual private cloud, managed by Red Hat in any AWS region
OpenShift Container Platform OKD	Any on-premise, public, or private cloud infra with RedHat Enterprise Linux
Minishift	
Reference	Link: OpenShift plans and pricing

<https://raw.githubusercontent.com/dennyzhang/cheatsheet.dennyzhang.com/master/cheatsheet-openshift-A4/openshift-ansible-flow.png>

1.5 OpenShift Glossary

Name	Command
OKD	The Origin Community Distribution of Kubernetes that powers Red Hat OpenShift.
oc command line	OpenShift command line: <code>oc <action> <object_type> <object_name_or_id></code>
Project	Namespace in Kubernetes. Resources are aggregated by projects. <code>oc get project</code>
Build	Builds create a new image from source code, other images, Dockerfiles, etc. <code>oc get build</code>
Build Configuration	How to build source code and a base image into a new image. <code>oc get bc</code>
Route	Endpoint in Kubernetes. A route is an external DNS entry
Deployment Configuration	<code>oc get dc</code>
ImageStream	<code>oc get is</code>
ImageStreamTag	<code>oc get istag</code>
ImageStreamImage	<code>oc get isimage</code>
Template	<code>oc get template</code>
Template Instance	<code>oc get templateinstance</code>
Explain	Online manual <code>oc explain pod</code>
Red Hat Registry	By default, all images are pulled from registry.redhat.io.
OpenShift SaaS Version	https://openshift.io/
OpenShift online	https://cloud.openshift.com
Reference	Minishift CheatSheet Link: Minishift
Reference	OpenShift CheatSheet, Rancher CheatSheet, PKS CheatSheet

1.6 OpenShift Assumptions

Name	Summary
Single instance of K8S	One OpenShift One K8S. Use k8s namespace solely for multi-tenancy
No mixed versions	Versions must match between master and node hosts, excluding upgrade; Old oc can talk to new servers
Node roles	Master nodes, worker nodes, and etcd nodes.

1.7 OpenShift Maintainance

Name	Command
Install clusters	Run ansible playbooks to install OpenShift
Upgrade clusters	Support both in-place upgrade and blue-green deployments; Use ansible to upgrade clusters
Node problem healing	

1.8 OpenShift Cfg Files

Name	Summary
The default image stream and template files	<code>/usr/share/openshift/examples/</code> , <code>/etc/origin/examples/</code>
Data folder for master and worker nodes	<code>/var/lib</code>
Volumes and potential core dumps of the binary	<code>/var/lib/origin</code>
Cloud provider specific conf(AWS, Azure, etc)	<code>/etc/origin/cloudprovider</code>
Additional third party volume plug-ins	<code>/usr/libexec/kubernetes/kubelet-plugins</code> , <code>/etc/origin/kubelet-</code>
All certificates, conf files, admin.kubeconfig, etc	<code>/etc/origin/master</code>
Master node conf profile	<code>/etc/origin/master/admin.kubeconfig</code>
Used for node bootstrapping nodes other than master	<code>/etc/origin/master/bootstrap.kubeconfig</code>
Node conf profile	<code>/etc/origin/node/node.kubeconfig</code> , <code>/etc/origin/node/node-confi</code>

1.9 OC - Highlights

Name	Command
Get api requests verbose output with kubectl call	<code>oc --loglevel 999 get pod/dummy-deployment-6d6759c786-5kwth</code>
Start a pod and get a shell for debug	<code>oc debug dc/jorge</code>
Impersonate for oc command	<code>oc --as=jorge get pods, oc --as-group=developers get pods</code>
Use oc to do admin operations	<code>oc adm <sub-command></code>
Try experimental commands of oc	<code>oc ex <sub-command></code>
Explain OpenShift/Kubernetes concepts to me	<code>oc explain pod, oc explain replicaset</code>
Enable oc shell autocompletion	<code>echo "source <(oc completion zsh)" > ~/.zshrc, then reload terminal</code>
Reference	OpenShift CheatSheet, Kubectl CheatSheet

1.10 OC - Admin

Name	Command
Login/logout	<code>oc login, oc logout, oc whoami</code>
List route	<code>oc get route</code>
List all object types	<code>oc types, oc api-resources</code>
Start a local OpenShift all-in-one cluster	<code>oc cluster up</code>

1.11 OC - Developer

Name	Command
Create a project	<code>oc new-project <projectname> --description=<description> --display-name=<name></code>
Check status of current project	<code>oc status</code> Link: OC CLI Operations
Show oc cli profile	<code>oc config view</code> Link: Managing CLI Profiles
Get all resource	<code>oc get all</code>
Switch project	<code>oc project <projectname></code>
Create an application	<code>oc new-app https://github.com/sclorg/cakephp-ex</code>
Create a new build	<code>oc new-build https://github.com/sclorg/cakephp-ex</code>
Manually start a build with given conf	<code>oc start-build <buildconfig_name></code>
Stop a build that is in progress	<code>oc cancel-build <build_name></code>
Import an external image	<code>oc import-image <image_stream></code>
Tag an image	<code>oc tag <current_image> <image_stream></code>

1.12 All openshift resources: oc api-resources

NAME	SHORTNAMES	APIGROUP	NAMESPACED	KIND
bindings			true	Binding
componentstatuses	cs		false	ComponentStatus
configmaps	cm		true	ConfigMap
endpoints	ep		true	Endpoints
events	ev		true	Event
limitranges	limits		true	LimitRange
namespaces	ns		false	Namespace
nodes	no		false	Node
persistentvolumeclaims	pvc		true	PersistentVolumeClaim
persistentvolumes	pv		false	PersistentVolume
Pods	po		true	Pod
podtemplates	true		PodTemplate	
replicationcontrollers	rc		true	ReplicationController
resourcequotas	quota		true	ResourceQuota
secrets	true		Secret	
serviceaccounts	sa		true	ServiceAccount
services	svc		true	Service
mutatingwebhookconfigurations		admissionregistration.k8s.io	false	MutatingWebhookConfiguration
validatingwebhookconfigurations		admissionregistration.k8s.io	false	ValidatingWebhookConfiguration
customresourcedefinitions	crd,crds	apiextensions.k8s.io	false	CustomResourceDefinition
apiservices		apiregistration.k8s.io	false	APIService
controllerrevisions		apps	true	ControllerRevision
daemonsets	ds	apps	true	DaemonSet
deployments	deploy	apps	true	Deployment
replicasets	rs	apps	true	ReplicaSet
statefulsets	sts	apps	true	StatefulSet
deploymentconfigs	dc	apps.openshift.io	true	DeploymentConfig
tokenreviews		authentication.k8s.io	false	TokenReview
localsubjectaccessreviews		authorization.k8s.io	true	LocalSubjectAccessReview
selfsubjectaccessreviews		authorization.k8s.io	false	SelfSubjectAccessReview
selfsubjectrulesreviews		authorization.k8s.io	false	SelfSubjectRulesReview
subjectaccessreviews		authorization.k8s.io	false	SubjectAccessReview
clusterrolebindings		authorization.openshift.io	false	ClusterRoleBinding
clusterroles		authorization.openshift.io	false	ClusterRole
localresourceaccessreviews		authorization.openshift.io	true	LocalResourceAccessReview
localsubjectaccessreviews		authorization.openshift.io	true	LocalSubjectAccessReview
resourceaccessreviews		authorization.openshift.io	false	ResourceAccessReview
rolebindingrestrictions		authorization.openshift.io	true	RoleBindingRestriction
rolebindings		authorization.openshift.io	true	RoleBinding
roles		authorization.openshift.io	true	Role
selfsubjectrulesreviews		authorization.openshift.io	true	SelfSubjectRulesReview
subjectaccessreviews		authorization.openshift.io	false	SubjectAccessReview
subjectrulesreviews		authorization.openshift.io	true	SubjectRulesReview
horizontalpodautoscalers	hpa	autoscaling	true	HorizontalPodAutoscaler
cronjobs	cj	batch	true	CronJob
jobs	batch	true	Job	
buildconfigs	bc	build.openshift.io	true	BuildConfig
builds		build.openshift.io	true	Build
certificatesigningrequests	csr	certificates.k8s.io	false	CertificateSigningRequest
events	ev	events.k8s.io	true	Event
daemonsets	ds	extensions	true	DaemonSet
deployments	deploy	extensions	true	Deployment
ingresses	ing	extensions	true	Ingress
networkpolicies	netpol	extensions	true	NetworkPolicy
podsecuritypolicies	psp	extensions	false	PodSecurityPolicy
replicasets	rs	extensions	true	ReplicaSet
images		image.openshift.io	false	Image
imagesignatures		image.openshift.io	false	ImageSignature
imagestreamimages	isimage	image.openshift.io	true	ImageStreamImage
imagestreamimports		image.openshift.io	true	ImageStreamImport
imagestreammappings		image.openshift.io	true	ImageStreamMapping
imagestreams	is	image.openshift.io	true	ImageStream

1.13 OpenShift Source Code

Name	Command
Openshift Ansible Deployment	GitHub: openshift-ansible/playbooks

1.14 OpenShift Opportunity

Name	Command
Doesn't support multiple clusters	
OC command line could be a strength or a weakness	
Lack of SDN solution	
Time-consuming for administrators' operations	

1.15 OpenShift CLI Help All

```
/User/zdenny > oc --help
OpenShift Client
```

This client helps you develop, build, deploy, and run your applications on any OpenShift or Kubernetes compatible platform. It also includes the administrative commands for managing a cluster under the 'adm' subcommand.

Usage:
oc [flags]

Basic Commands:

types	An introduction to concepts and types
login	Log in to a server
new-project	Request a new project
new-app	Create a new application
status	Show an overview of the current project
project	Switch to another project
projects	Display existing projects
explain	Documentation of resources
cluster	Start and stop OpenShift cluster

Build and Deploy Commands:

rollout	Manage a Kubernetes deployment or OpenShift deployment config
rollback	Revert part of an application back to a previous deployment
new-build	Create a new build configuration
start-build	Start a new build
cancel-build	Cancel running, pending, or new builds
import-image	Imports images from a Docker registry
tag	Tag existing images into image streams

Application Management Commands:

get	Display one or many resources
describe	Show details of a specific resource or group of resources
edit	Edit a resource on the server
set	Commands that help set specific features on objects
label	Update the labels on a resource
annotate	Update the annotations on a resource
expose	Expose a replicated application as a service or route
delete	Delete one or more resources
scale	Change the number of pods in a deployment
autoscale	Autoscale a deployment config, deployment, replication controller, or replica set
secrets	Manage secrets
serviceaccounts	Manage service accounts in your project

Troubleshooting and Debugging Commands:

logs	Print the logs for a resource
------	-------------------------------

rsh	Start a shell session in a pod
rsync	Copy files between local filesystem and a pod
port-forward	Forward one or more local ports to a pod
debug	Launch a new instance of a pod for debugging
exec	Execute a command in a container
proxy	Run a proxy to the Kubernetes API server
attach	Attach to a running container
run	Run a particular image on the cluster
cp	Copy files and directories to and from containers.
wait	Experimental: Wait for one condition on one or many resources

Advanced Commands:

adm	Tools for managing a cluster
create	Create a resource from a file or from stdin.
replace	Replace a resource by filename or stdin
apply	Apply a configuration to a resource by filename or stdin
patch	Update field(s) of a resource using strategic merge patch
process	Process a template into list of resources
export	Export resources so they can be used elsewhere
extract	Extract secrets or config maps to disk
idle	Idle scalable resources
observe	Observe changes to resources and react to them (experimental)
policy	Manage authorization policy
auth	Inspect authorization
convert	Convert config files between different API versions
import	Commands that import applications
image	Useful commands for managing images
registry	Commands for working with the registry
api-versions	Print the supported API versions on the server, in the form of "group/version"
api-resources	Print the supported API resources on the server

Settings Commands:

logout	End the current server session
config	Change configuration files for the client
whoami	Return information about the current session
completion	Output shell completion code for the specified shell (bash or zsh)

Other Commands:

ex	Experimental commands under active development
help	Help about any command
plugin	Runs a command-line plugin
version	Display client and server versions

Use "oc <command> --help" for more information about a given command.

Use "oc options" for a list of global command-line options (applies to all commands).

1.16 OpenShift CLI Help Admin

```
/User/zdenny > oc adm
Administrative Commands
```

Commands for managing a cluster are exposed here. Many administrative actions involve interaction with the oc client as well.

Usage:

```
oc adm [flags]
```

Component Installation:

```
router                                Install a router
```

<code>ipfailover</code>	Install an IP failover group to a set of nodes
<code>registry</code>	Install the integrated Docker registry
Security and Policy:	
<code>new-project</code>	Create a new project
<code>policy</code>	Manage policy
<code>groups</code>	Manage groups
<code>ca</code>	Manage certificates and keys
<code>certificate</code>	Modify certificate resources.
Node Management:	
<code>create-node-config</code>	Create a configuration bundle for a node
<code>manage-node</code>	Manage nodes - list pods, evacuate, or mark ready
<code>cordon</code>	Mark node as unschedulable
<code>uncordon</code>	Mark node as schedulable
<code>drain</code>	Drain node in preparation for maintenance
<code>taint</code>	Update the taints on one or more nodes
<code>pod-network</code>	Manage pod network
Maintenance:	
<code>diagnostics</code>	Diagnose common cluster problems
<code>prune</code>	Remove older versions of resources from the server
<code>build-chain</code>	Output the inputs and dependencies of your builds
<code>migrate</code>	Migrate data in the cluster
<code>top</code>	Show usage statistics of resources on the server
<code>verify-image-signature</code>	Verify the image identity contained in the image signature
Configuration:	
<code>create-kubeconfig</code>	Create a basic <code>.kubeconfig</code> file from client certs
<code>create-api-client-config</code>	Create a config file for connecting to the server as a user
<code>create-bootstrap-project-template</code>	Create a bootstrap project template
<code>create-bootstrap-policy-file</code>	Create the default bootstrap policy
<code>create-login-template</code>	Create a login template
<code>create-provider-selection-template</code>	Create a provider selection template
<code>create-error-template</code>	Create an error page template
Other Commands:	
<code>completion</code>	Output shell completion code for the specified shell (bash or zsh)
<code>config</code>	Change configuration files for the client

Use `"oc adm <command> --help"` for more information about a given command.

Use `"oc adm options"` for a list of global command-line options (applies to all commands).

1.17 More Resources

<https://www.okd.io/>

https://access.redhat.com/documentation/en-us/openshift_container_platform/3.11/

https://access.redhat.com/documentation/en-us/openshift_container_platform/3.11/html/cli_reference/

`cli-reference-basic-cli-operations`

<https://docs.okd.io/latest/minishift/getting-started/quickstart.html>

<https://www.openshift.com/>

<https://docs.openshift.com/online/architecture/index.html>

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