

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 OpenShift Source Code

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

1.13 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 | |

1.14 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).

1.15 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 |
| ipfailover | Install an IP failover group to a set of nodes |
| registry | Install the integrated Docker registry |

Security and Policy:

| | |
|-------------|-------------------------------|
| new-project | Create a new project |
| policy | Manage policy |
| groups | Manage groups |
| ca | Manage certificates and keys |
| certificate | Modify certificate resources. |

Node Management:

| | |
|--------------------|---|
| create-node-config | Create a configuration bundle for a node |
| manage-node | Manage nodes - list pods, evacuate, or mark ready |
| cordon | Mark node as unschedulable |
| uncordon | Mark node as schedulable |
| drain | Drain node in preparation for maintenance |
| taint | Update the taints on one or more nodes |
| pod-network | Manage pod network |

Maintenance:

| | |
|-------------|--|
| diagnostics | Diagnose common cluster problems |
| prune | Remove older versions of resources from the server |
| build-chain | Output the inputs and dependencies of your builds |
| migrate | Migrate data in the cluster |
| top | Show usage statistics of resources on the server |

| | |
|------------------------|--|
| verify-image-signature | Verify the image identity contained in the image signature |
|------------------------|--|

Configuration:

| | |
|------------------------------------|---|
| create-kubeconfig | Create a basic .kubeconfig file from client certs |
| create-api-client-config | Create a config file for connecting to the server as a user |
| create-bootstrap-project-template | Create a bootstrap project template |
| create-bootstrap-policy-file | Create the default bootstrap policy |
| create-login-template | Create a login template |
| create-provider-selection-template | Create a provider selection template |
| create-error-template | Create an error page template |

Other Commands:

| | |
|------------|--|
| completion | Output shell completion code for the specified shell (bash or zsh) |
| config | 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).

1.16 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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