# 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/architecture$_{overview.p}$

## 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 Contraints(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 | Any on-premise, public, or private cloud infra with RedHat Enterprise Linux |
| OKD | |
| 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: `oc <action> <object_type> <object_name_or_id>` |
| Project | Namespace in Kubernetes. Resources are aggregated by projects. `oc get project` |
| Build | Builds create a new image from source code, other images, Dockerfiles, etc. `oc get build` |
| Build Configuration | How to build source code and a base image into a new image. `oc get bc` |
| Route | Endpoint in Kubernetes. A route is an external DNS entry |
| Deployment Configuration | `oc get dc` |
| ImageStream | `oc get is` |
| ImageStreamTag | `oc get istag` |
| ImageStreamImage | `oc get isimage` |
| Template | `oc get template` |
| Template Instance | `oc get templateinstance` |
| Explain | Online manual `oc explain pod` |
| 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 soly 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 | `/usr/share/openshift/examples/, /etc/origin/examples/` |
| Data folder for master and worker nodes | `/var/lib` |
| Volumes and potential core dumps of the binary | `/var/lib/origin` |
| Cloud provider specific conf(AWS, Azure, etc) | `/etc/origin/cloudprovider` |
| Additional third party volume plug-ins | `/usr/libexec/kubernetes/kubelet-plugins, /etc/origin/kubelet-` |
| All certificates, conf files, admin.kubeconfig, etc | `/etc/origin/master` |
| Master node conf profile | `/etc/origin/master/admin.kubeconfig` |
| Used for node bootstrapping nodes other than master | `/etc/origin/master/bootstrap.kubeconfig` |
| Node conf profile | `/etc/origin/node/node.kubeconfig, /etc/origin/node/node-config` |

## 1.9    OC - Highlights

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

## 1.10   OC - Admin

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

## 1.11   OC - Developer

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

## 1.12   OpenShift Source Code

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

## 1.13   OpenShift Opportunty

| Name | Command |
|---|---|
| Doesn't support multiple clusters | |
| OC command line could be a strengh 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 compat
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 co
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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