

Getting Started with OpenShift Container Platform on Oracle Compute Cloud@Customer or Oracle Private Cloud Appliance

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Getting Started with OpenShift Container Platform on Oracle's Compute Cloud@Customer or Oracle's Private Cloud Appliance

Learn about deploying the Red Hat OpenShift Container Platform on Oracle's Compute Cloud@Customer or Oracle's Private Cloud Appliance.

Red Hat OpenShift Container Platform is a cloud-based Kubernetes container platform. Red Hat, in partnership with Oracle supports running cluster workloads on the Compute Cloud@Customer and Private Cloud Appliance platforms. For an overview of OpenShift Container Platform and Kubernetes, see the Red Hat documentation at [OpenShift Container Platform overview](#) and [Kubernetes overview](#).

Cluster infrastructure consists of several compute instances running Red Hat Enterprise Linux CoreOS (RHCOS), along with the networking, load balancing and routing required to move network traffic in and out of the cluster. See [Understanding OpenShift Container Platform](#) for details about the Red Hat software stack and cluster management.

To ensure a seamless experience, Oracle and Red Hat have rigorously tested and validated automated OpenShift cluster deployments. Customers can confidently install, migrate, and run OpenShift workloads, knowing they are fully supported by Red Hat and Oracle.

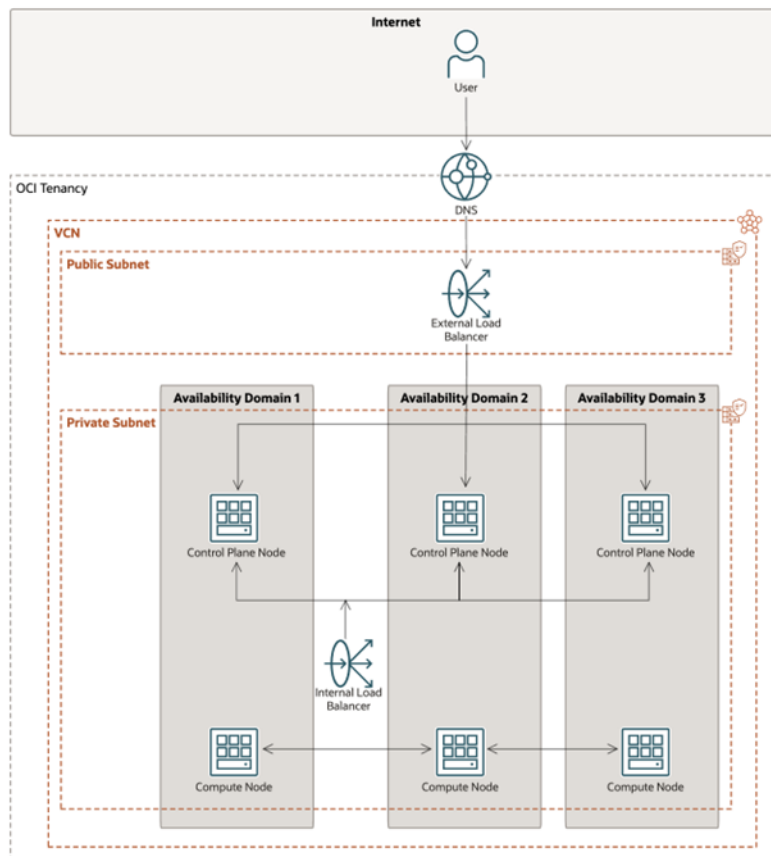
Prerequisites:

- Oracle Cloud Account: You'll need an active Oracle Cloud account with the necessary permissions.
- Oracle Compute Cloud@Customer Infrastructure or Oracle Private Cloud Appliance: Ensure your on-premises infrastructure is compatible with Oracle Compute Cloud@Customer requirements or Private Cloud Appliance. This may include network connectivity, storage, and compute resources.
- OpenShift Subscription: Obtain a valid OpenShift subscription from Red Hat. Current Licensing is BYOL.
- Oracle offers installation guides for both Compute Cloud@Customer and Private Cloud Appliance. OpenShift Assisted Installer can be used for connected environments or OpenShift Agent Based installation guide can be used for disconnected environments.

Cluster Architecture in Compute Cloud@Customer

OpenShift Container Platform clusters use Compute Cloud@Customer DNS Resolution, Virtual Cloud Network (VCN), load balancers, and compute nodes as follows:

1. Network traffic is resolved with Compute Cloud@Customer or Private Cloud Appliance DNS.
2. Traffic is routed to the VCN assigned to the cluster compute nodes.
3. Within the VCN's public subnet, an external Load Balancer routes traffic to the control plane (master) nodes of the cluster, which sit within a private subnet.
4. The cluster's control plane nodes use an internal Load Balancer to communicate with the compute nodes of the cluster.



Installation Options

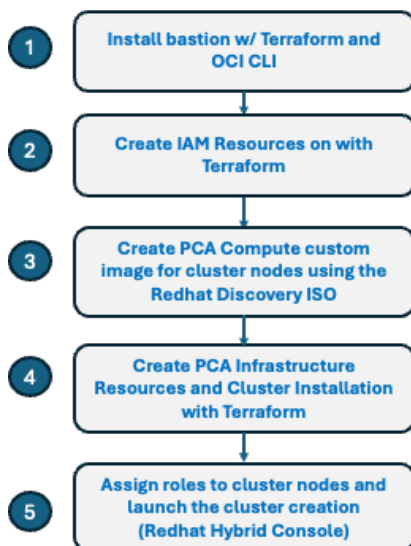
Oracle offers an automated path for provisioning the cluster infrastructure that uses the Red Hat Assisted Installer. We recommend this method for most users.

Oracle also supports the use of Red Hat's Agent-based Installer for users who want to set up the cluster manually or using other automation tools, or for those working in a disconnected environment.

Assisted Installer

Red Hat's Assisted Installer provides a simple web interface in the Red Hat Hybrid Cloud Console to perform cluster installation. The Assisted Installer requires an internet connection.

At a high level, the workflow starts in the Red Hat Hybrid Cloud Console, where you create the discovery ISO image. The workflow then moves to the OCI Console for infrastructure provisioning, which includes creating a custom Red Hat ISO image for compute nodes, and using a bastion host instance with OCI CLI and Terraform installed to run needed scripts and create the infrastructure resources required for the cluster. Lastly, the final cluster configuration and installation is performed in the Red Hat Hybrid Cloud Console:



- **Currently C3/PCA does not support: Developer Services, Resource Manager**
- **The current procedure includes manual steps to set up running terraform scripts within target the compartment**
- **(1) Install an Instance bastion server within Target Compartment & Install OCI CLI and Terraform**
 - A preloaded custom image will be available w/ both
- **(2) Run Script-1 : Create IAM Resources – Dynamic Groups and Policies to allow instances to manage resources**
- **(3) Create Discovery ISO on Red Hat OpenShift Portal: Download customize Discovery ISO to PCA for Automated Install in Script-2**
- **(4) Run Script-2: Create Infra Resources (VCN, LB's, IGW, NAT, Etc) and Launch typical 3 x 3 Cluster (3 CP Nodes / 3 Worker Nodes)**
 - Topology is shown on next page
- **(5) Assign Roles / Cluster Creation: Assign roles, upload manifests & create cluster via Red Hat Assisted Installer Portal**
- **(6) Launch OpenShift Console & Advanced Cluster Manager**

Agent-based Installer

Red Hat's Agent-based Installer is recommended for advanced users who want maximum flexibility and requires users to create OCI resources manually in the OCI Console or to use their own automation tools. This method typically takes longer to complete than the Assisted Installer. Due to the disconnected environment, the number of steps increase. In figure-1 below, a general overview of the Agent-based Installation is provided.

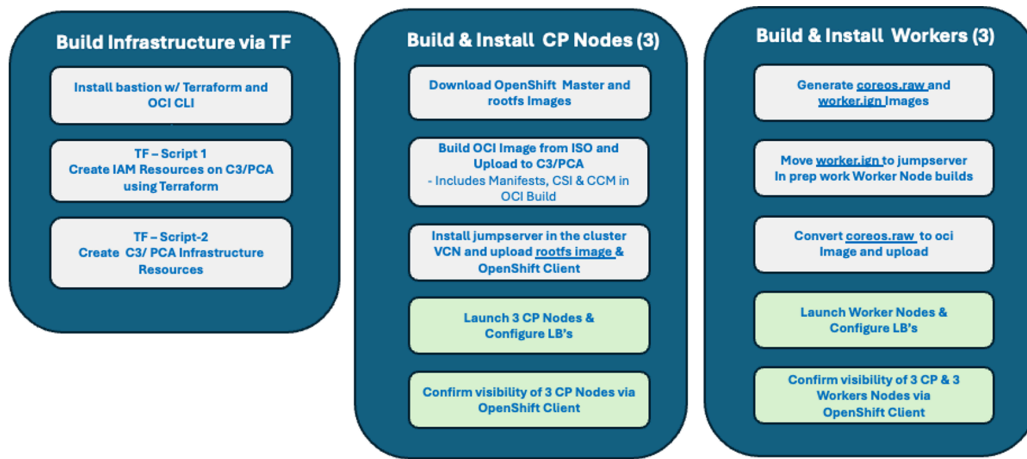


Figure-1

Supported Shapes

Red Hat Enterprise Linux (RHEL) is supported on all virtual machine (VM) shapes and shapes listed in the following table. For maximum flexibility of using the Terraform Scripts on Compute Cloud@Customer or Private Cloud Appliance, the two shapes are required and is included as reference in the installation documents below.

Shape Type	Supported Shape
C3 Virtual Machines	VM.Standard.E5.Flex
PCA Virtual Machines	VM.PCAStandard1.Flex

Documentation

Deploying an OpenShift Container Platform cluster on Compute Cloud@Customer or Private Cloud Appliance combines actions performed in the Red Hat Hybrid Cloud Console and actions performed in the Oracle's Compute Cloud@Customer or Private Cloud Appliance Console. This documentation details the tasks that you perform on each of the above consoles, and provides an overview of the complete end-to-end installation workflow involved. This documentation is intended to be used together with the Red Hat documentation in the following locations:

Compute Cloud@Customer Installation Documents:

- **Assisted Installer:**
[https://www.oracle.com/a/otn/docs/private cloud appliance assisted installer.pdf?source=:em:nl:mt:::PCATP](https://www.oracle.com/a/otn/docs/private%20cloud%20appliance%20assisted%20installer.pdf?source=:em:nl:mt:::PCATP)
- **Agent Based Installer:**

https://www.oracle.com/a/otn/docs/private_cloud_appliance_agent_based_installation.pdf?source=:em:nl:mt:::PCATP

Private Cloud Appliance Installation Documents:

- **Assisted Installer:**
https://www.oracle.com/a/otn/docs/private_cloud_appliance_assisted_installer.pdf?source=:em:nl:mt:::PCATP
- **Agent Based Installer:**
https://www.oracle.com/a/otn/docs/private_cloud_appliance_agent_based_installation.pdf?source=:em:nl:mt:::PCATP

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