The Oracle Linux OCI KVM Image makes it easier to deploy virtual machines that use native OCI (Oracle Cloud Infrastructure) resources. Rather than having to map those resources, such as block storage and virtual network interfaces, into virtual machines manually, the image presents tools that automates the entire process.

I. Prerequisites

To use this image, it must be deployed on an OCI Compute Instance.

- Import the image into the appropriate Compartment
  - The image format is QCOW2
  - The image mode is Native
- Launch an OCI Compute Instance using the image
  - Currently only the BM.Standard1.36 and the BM.Standard2.52 shapes are fully supported
  - VM shapes will be added in a future release

A familiarity with managing virtual machine guests using libvirt, in partiucular virsh and virt-install, is useful.

II. Preparing to Create a New Virtual Machine

Prior to creating a new virtual machine, take note of what resources are required. In particular: the number of CPUs, amount of memory, size of root disk, and subnet. Each guest requires a dedicated OCI Block Storage device and OCI VNIC. Create and attach these resources as necessary.

III. Installing a Virtual Machine

- Allocate block storage

  See https://cloud.oracle.com/en_US/infrastructure/storage for details

- Allocate a VNIC

  See https://cloud.oracle.com/infrastructure/compute and https://cloud.oracle.com/en_US/networking for details

- Choose a VNIC and storage device (Optional)

  By default, oci-kvm(1) will choose a block storage device and a VNIC and assign both to a virtual machine automatically. This is good for cases where there is only one VNIC and one block storage device available. It is also good for cases where there may be multiple VNICs or block storage devices but they are functionally identical, such as when all block storage devices are the same size or all VNICs are on the same subnet. If a specific VNIC or block storage device is desired, choose one now.

  Choosing a Block Storage Device

  - Run 'oci-iscsi-config --show' to show details for all attached storage
  - Choose a device and note the 'Attached device' field
  - Add '/dev/' in front of the device name to get the device path (e.g. /dev/sdb)

  Choosing a VNIC

  - Inspect the VNIC configuration for the instance
  - Choose an appropriate VNIC and note the private IP address

- Install the VM

  oci-kvm(1) directly understands only a few options: -D/--domain, -d/--disk, -n/--net, and -V. The -D/--domain option is required, and specifies the name of guest being created. If a particular block storage device is desired, specify -d/--disk along with the path to the device. If a particular VNIC is desired, specify -n/--net along with the private IP address of the desired VNIC. Every argument that appears after the -V option is provided directly to virt-install(1).

A typical invocation looks like:

```
       oci-kvm create -D my_guest -V --vcpus 4 --memory
8192 --boot cdrom,hd --location /mnt/OracleLinux-R7-U4-
Server-x86_64-dvd.iso --nographics --console
pty,target_type=serial --console pty,target_type=virtio
--noautoconsole --os-variant=rhel7 --extra-args
"console=tty0 console=ttyS0,115200n8 serial"
```

This examples creates an Oracle Linux 7.4 guest, configured to use a serial console for console output. It is also possible to use other options, such as VNC for console output. If a graphical option is used, it will be necessary to appropriately configure the OCI Security List for the subnet this image is attached to.

IV. Removing a Virtual Machine

Prior to removing a virtual machine, it must first be stopped. To stop a running virtual machine, issue:

```
    virsh destroy <guest>
```

Once the VM has stopped, it can be permanently destroyed by issuing:

```
    oci-kvm destroy -D <guest>
```

Invoking this command will undefine the virtual machine in libvirt as well as clean up any host resources that were created for it. The OCI resources that were allocated to the virtual machine are made available for re-use by new VMs.

V. Notes

- There are certain combinations of arguments to virt-install(1) that do not create a virtual machine but terminate successfully. In these cases, oci-kvm will allocate virtual networking resources for the guest but not free them when oci-kvm exits. If this happens, the resources can be reclaimed by doing the following:

    - Run 'sudo oci-network-config -s'
    - Locate the row containing the IP address assigned to the guest via the ADDR column
    - Find the VLTAG in the same row
    - Run 'sudo ip link delete vlanX', where X is the number from the VLTAG column

- Providing the '--network' option to virt-install(1) by including it after the -V flag in oci-kvm(1) and may result in aberrant behavior

- 'sudo oci-network-config --create-vnic ...' is currently not fully supported
    - If used, use 'sudo oci-network-config -d -e <IP> <VNIC_OCID>' to make the newly create vNIC available for oci-kvm to use.