Introduction to Cisco Prime Network Registrar Virtual Appliance

The Cisco Prime Network Registrar virtual appliance aims at reducing the installation, configuration, and maintenance costs associated with running Cisco Prime Network Registrar on a local system. It also guarantees portability and thus reduces the risk in moving Cisco Prime Network Registrar from one machine to another.

You must get a license for Cisco Prime Network Registrar and download the virtual appliance from Cisco.com. Every Cisco Prime Network Registrar local cluster must be connected to a regional cluster which contains the licenses for the DHCP or DNS services provided by the local cluster. All licenses are loaded into the regional cluster, and local clusters are registered with the regional cluster at the time of their first installation. Cisco Prime Network Registrar will then be up and running, available to be configured.

This is different from just downloading a copy of Cisco Prime Network Registrar and installing it on a server or virtual machine provided by the customer, in that the operating system on which Cisco Prime Network Registrar runs is also provided in the virtual appliance.

The Cisco Prime Network Registrar virtual appliance is supported on VMware ESXi 6.x platforms, KVM Hypervisor, and OpenStack.

To know about the difference between vApp and a virtual appliance, see the *User's Guide to Deploying vApps and Virtual Appliances*.

How the Cisco Prime Network Registrar Virtual Appliance Works

The virtual appliance consists of a virtual machine, which contains a runnable guest OS (CentOS 7.7) and Cisco Prime Network Registrar installed on that OS. When the virtual appliance is installed, Cisco Prime Network Registrar is already installed and is started by the virtual machine power-up.

Invoking Cisco Prime Network Registrar on the Virtual Appliance

You can invoke the Cisco Prime Network Registrar application directly by using the URL **http://**_hostname_**:8080**. The secure **https** connection is also available via the URL **https://**_hostname_**:8443**.

Monitoring Disk Space Availability on VMware

To determine how much space is available to use for increasing the size of a virtual appliance's disk, do the following:

Step 1   In the vSphere Client window, select the host/server on which the virtual Cisco Prime Network Registrar appliance resides.

Step 2   Click **Storage Views** to see the list of the machines hosted by the server and the details about the space currently used by each machine.

Also, you can go to the Virtual Machines tab to view both the **Provisioned Space** and the **Used Space** by machine.

Step 3   Click **Summary**.

The **Resources** area of the Summary tab, displays the capacity of the disk and the CPU and memory used.

Step 4   Select the virtual machine and click the **Summary** tab.

The **Resources** area of the Summary tab displays the disk space details for the machine.

Monitoring Disk Space Availability in Use by the Virtual Appliance

To determine how much free space is left on the disk in use by the virtual appliance, as an aid to determine if you should increase the size of the virtual appliance's disk, do the following:

Step 1   Select the virtual machine in the vSphere Client window and either click the **Console** tab on the right pane or right-click the virtual machine name and choose **Open Console**.

Step 2   Log in as root and type **df -k**. The disk space details are displayed.

If the disk space on the disk mounted is not enough, then you should increase the size of the disk (see Increasing the Size of the Disk on VMware, on page 2).

Increasing the Size of the Disk on VMware

If you need a bigger disk, do the following:

Step 1   Stop the VM.

Step 2   Increase the size of the disk by changing the size in the Virtual Machine Properties window. To open the Virtual Machine Properties window, you have to select the VM using the VM name, right-click, and choose Edit Settings.

Step 3   Restart the VM.

During the boot process, the partition containing the filesystem will be extended to encompass the entire disk and the filesystem will be extended to fill the entire partition.

Increasing the Size of the Disk on a KVM Hypervisor

The initial disk size is 14 GB, with 6 GB allocated to a swap partition, leaving about 5.4 GB available in /dev/sda3, the partition in which Cisco Prime Network Registrar runs. This is certainly too small for all installations. Therefore, you may need to increase the size of the disk. There are two steps to this process.

• Make the disk backing file larger

• Repartition the disk and tell the filesystem to use all the available space in the partition

Increasing the size of the disk must be done when the VM is not running. You may do this before you install the VM, when the VM is certainly not running, or you may do this after you have brought up the VM and it has already run. If the VM is running, you must shut down the VM before you increase the size of the disk. Once the VM is not running, use the **truncate** and **virt-resize** commands to create a larger disk and copy the data onto the larger disk, as well as to change the partition table and resize the filesystem to use the additional space.

Following is an example of how you might use these commands to increase the size of the disk from the default size of 14 GB to 16 GB. In practice, you almost certainly would use a larger size than 16 GB. The new size of the disk is specified on the **truncate** command.

Example

```
root:tsegi$ truncate -s 16G @BUILDNAME-disk1.big.raw

root:tsegi$ virt-resize --expand /dev/sda3 @BUILDNAME-disk1.raw @BUILDNAME-disk1.big.raw

Examining @BUILDNAME-disk1.raw ...
 100%
[[                                                                        
                                                                       ]] --:--

**********

Summary of changes:

/dev/sda1: This partition will be left alone.

/dev/sda2: This partition will be left alone.

/dev/sda3: This partition will be resized from 7.5G to 9.5G.

**********
```

```
Setting up initial partition table on @BUILDNAME-disk1.big.raw ...

Copying /dev/sda1 ...
 100%
[[                                                                    ]] 00:00

Copying /dev/sda2 ...
 100%
[[                                                                    ]] 00:00

Copying /dev/sda3 ...
 100%
[[                                                                    ]] 00:00

Resize operation completed with no errors.  Before deleting the old disk, carefully check
that the resized disk boots and works correctly.
```

The operation in the above example took about 5 or 6 minutes on a moderately powerful machine. The time it will take on your machine will vary depending on a variety of factors.

The **truncate** command creates a new disk file of a specified size and the **virt-resize** command recreates the partitions of the input disk out the output disk, copies the data from the original disk file onto the new disk file, and enlarges the filesystem in the specified partition to encompass everything in the partition. After completing this operation, replace the disk of the VM with the new disk using the virtual machine manager.

Note Though once you have used the new disk, the data on the original disk is old and should not be used, it is still a working disk and could be saved as a backup. If you returned to using the original disk, all memory of the processing performed while the new, larger disk was operating will be lost, and serious conflicts between IP addresses granted to DHCP while the new disk was in use and the DHCP server's future activity when using the old disk will occur.

If you increase the size of the disk before the installation of the VM, you must rename the new disk file to be the same as the original disk file: @BUILDNAME-disk1.raw, as that is what the installonkvm script expects the name of the disk file to be.

Troubleshooting

If you experience any issues while working with the Cisco Prime Network Registrar virtual appliance, we recommend you to do the following:

Examine the log files in /var/nwreg2/{local | regional}/logs. Look particularly for errors in the log files as these signal exceptional conditions. If you are unable to resolve the problem and you have purchased Cisco support, then submit a case to Cisco Technical Assistance Center (TAC) regarding the problem.