Xen Roll: Users Guide

Version 5.4 Edition

Xen Roll: Users Guide :
Version 5.4 Edition
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Preface

The Xen Roll installs and configures the VMs on Rocks Clusters.

A physical frontend can configure VMs on client nodes (*VM container* appliances). A VM container is a physical machine that houses and runs VMs.

The Xen Roll also supports building virtual clusters. The frontend can be installed as a *VM server* appliance and the client nodes can be installed as VM containers. Then a virtual frontend can be installed on the VM server while virtual compute nodes can be installed on the VM containers. All network traffic is encapsulated within a unique VLAN, that is, each virtual cluster has its own VLAN.

Please visit the xen site[1] to learn more about their release and the individual software components.

Notes

1. http://xen.org

Chapter 1. Overview

Table 1-1. Summary

Name	xen
Version	5.4
Maintained By	Rocks Group
Architecture	i386, x86_64
Compatible with Rocks®	5.4

Table 1-2. Roll Compatibility

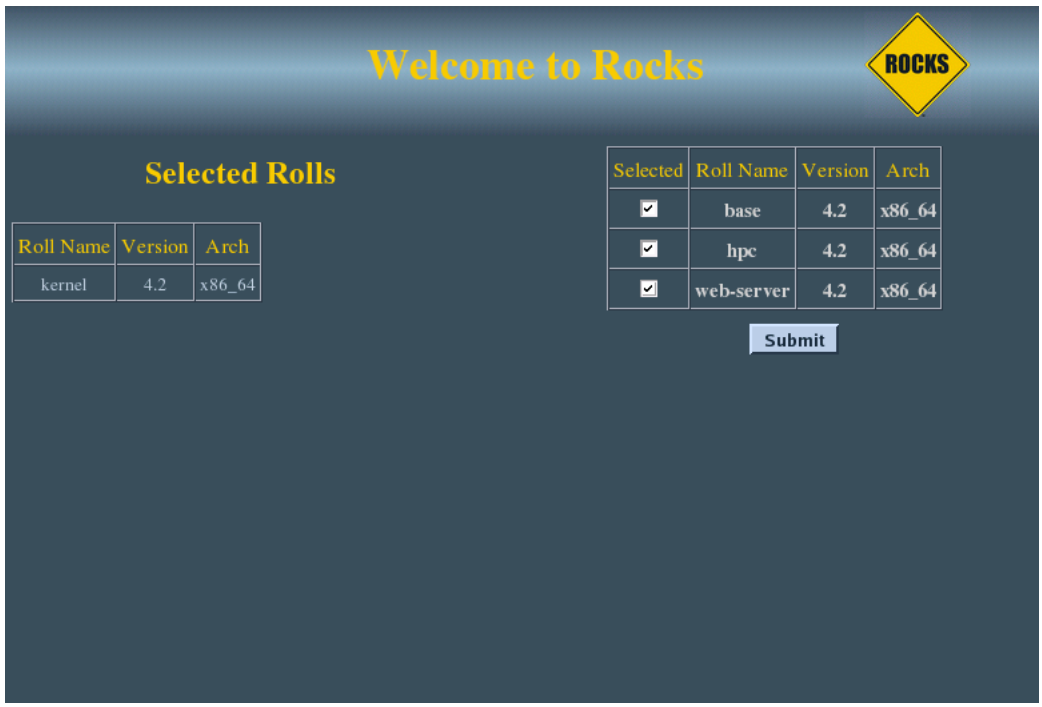
Roll	Requires [a]	Optional [b]	Conflicts
alpha		X	
area51		X	
base	X		
bio		X	
condor		X	
ganglia		X	
grid		X	
hpc		X	
java		X	
kernel	X		
os (disk 1)	X		
os (disk 2)	X		
os (disk 3)		X	
os (disk 4)		X	
os (disk 5)		X	
os (disk 6)		X	
os (disk 7)		X	
pbs		X	
service-pack		X	
sge		X	
viz		X	
web-server		X	
xen		X	

Roll	Requires [a]	Optional [b]	Conflicts
Notes: a. You may also substitute your own OS CDs for the Rocks® OS Roll CDs. In this case you must use all the CDs from your distribution and not use any of the Rocks® OS Roll CDs. b. Only Rolls that have been verified as compatible with this Roll are listed. Other Rolls will likely work, but have not been tested by the maintainer of this Roll.			

Chapter 2. Installing

2.1. On a New Server

The xen Roll should be installed during the initial installation of your server (or cluster). This procedure is documented in section 1.2 of the Rocks® usersguide. You should select the xen Roll from the list of available rolls when you see a screen that is similar to the one below.



Chapter 3. Using the Xen Roll

3.1. Installing a VM Server

A VM Server is machine that can house virtual frontend appliances. It is required to build a VM Server if you wish to build virtual clusters.

Building a VM Server is just like building a traditional frontend, except that you *must supply the Xen Roll during the frontend installation*. Follow the procedure Install and Configure Your Frontend[1] and be sure to supply the Xen Roll.

After you build the VM Server, you'll need to install VM Containers (see the next section).

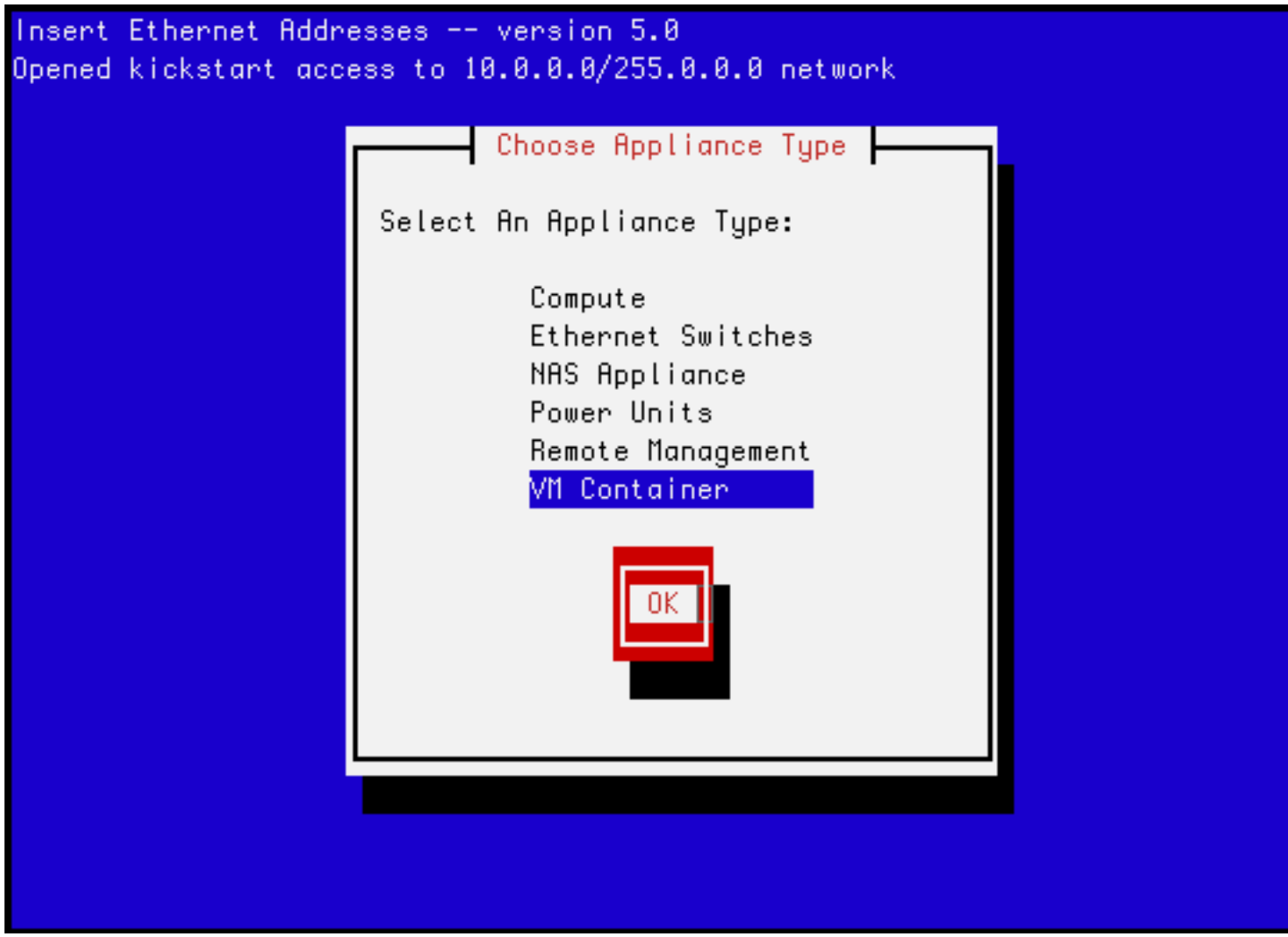
3.2. Installing VM Containers

You will need to install a physical machine that will act as the "container" for your VMs. This method is very similar to the method for installing compute nodes.

On the frontend, execute:

```
# insert-ethers
```

You will see a screen that looks like:



Select the 'VM Container' appliance, then hit 'OK'.

Now PXE boot the physical machine that will be your VM container. Just like a compute node, the VM container will be recognized by insert-ethers and installed. The default name of the node will be `vm-container-X-Y`.

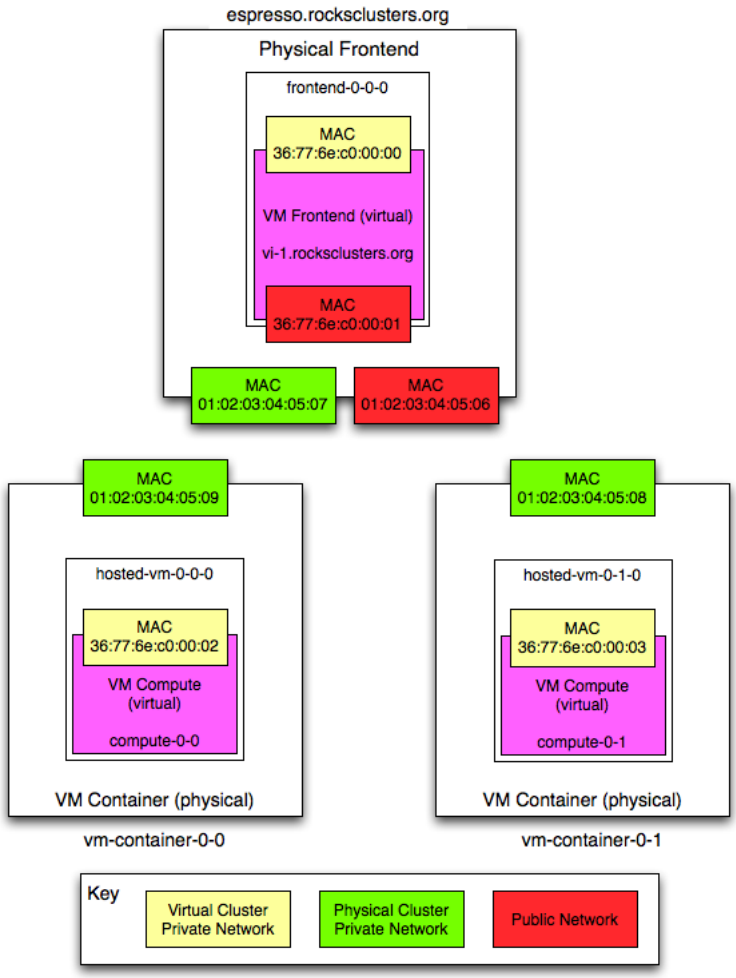
You can install as many VM containers as you like.

3.3. Installing Virtual Clusters

3.3.1. Provisioning a Virtual Cluster

After you install a VM Server and at least one VM Container, you are ready to provision a virtual cluster.

We'll use the following illustration as a guide to help keep track of the names of the physical machines and the virtual machines.



In the above picture, "espresso.rocksclusters.org" is a physical machine. Also, "vm-container-0-0" and "vm-container-0-1" are physical machines that were kickstarted by "espresso". The machine "frontend-0-0-0" is a virtual machine that is hosted by "espresso". The machines "hosted-vm-0-0-0" and "hosted-vm-0-1-0" are VMs that are associated with "frontend-0-0-0" (they are all in the same VLAN).

Depending on your perspective, the virtual machines have different names. Dom0 is a physical machine that hosts (multiple) virtual systems. DomU are guests and generally refer to names by usual convention. The equivalence is:

Table 3-1.

Host	Dom0 Name (physical)	DomU Name (virtual)
37:77:6e:c0:00:00	frontend-0-0-0	vi-1.rocksclusters.org
37:77:6e:c0:00:01	hosted-vm-0-0-0	compute-0-0
37:77:6e:c0:00:02	hosted-vm-0-1-0	compute-0-1

An important point is that the only common thing between the physical side and the virtual side is the MAC address (in yellow). We will use the MAC address of a virtual machine to control it (e.g., to initially power it on).

The names in the virtual cluster look like the names in a traditional cluster -- the frontend is named "vi-1.rocksclusters.org" and its compute nodes are named "compute-0-0" and "compute-0-1". If you login to "vi-1.rocksclusters.org", you would be hard pressed to tell the difference between this virtual cluster and a traditional physical cluster.

You must select your own IP address for your virtual frontend. The IP address "137.110.119.118" is managed by UCSD and should not be used by you.

They are only used here to show you a concrete example.

First, we'll add a virtual cluster to the VM Server's database. In this example, we'll add a frontend with the IP of "137.110.119.118" and we'll associate 2 compute nodes with it:

```
# rocks add cluster ip="137.110.119.118" num-computes=2
```

The above command will take some time and then output something similar to:

```
created frontend VM named: frontend-0-0-0
 created compute VM named: hosted-vm-0-0-0
 created compute VM named: hosted-vm-0-1-0
```

The command adds entries to the database for the above nodes and establishes a VLAN that will be used for the private network (eth0 inside the VM).

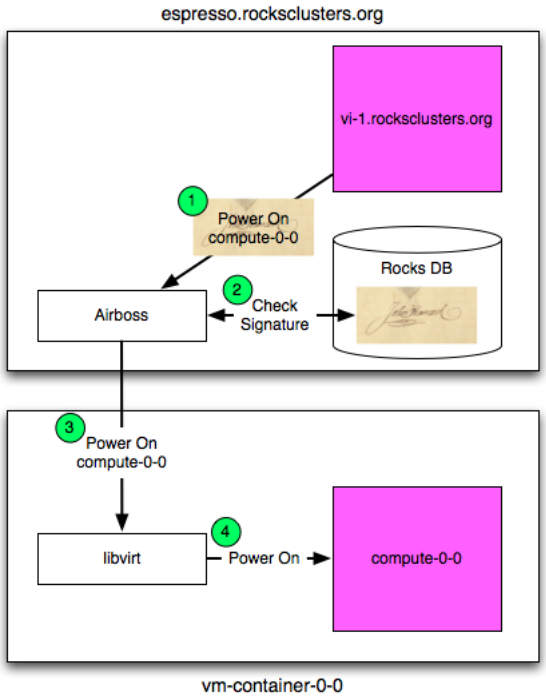
Info about all the defined clusters on the VM Server (including the physical cluster) can be obtained with the command: `rocks list cluster`:

```
# rocks list cluster
FRONTEND                    CLIENT NODES     TYPE
espresso.rocksclusters.org: ---------------- physical
:                           vm-container-0-0 physical
:                           vm-container-0-1 physical
frontend-0-0-0-public:      ---------------- VM
:                           hosted-vm-0-0-0  VM
:                           hosted-vm-0-1-0  VM
```

3.3.2. The Airboss

In Rocks, we've developed a service known as the "Airboss" that resides on the physical frontend (in Dom0) and it allows non-root users to control their VMs. The motivation for this service is that libvirt (a virtualization API written by RedHat that can control several different virtualization implementations) assumes "root" access to control and monitor VMs.

The Airboss in Rocks is a small service that uses digitally signed messages to give non-root users access to their virtual cluster (and only their virtual cluster). The Airboss relies upon public/private key pairs to validate messages. The administrator of the physical hosting cluster must issue a single command to associate a public key with a particular virtual cluster. At that point, the full process of booting and installing a virtual cluster can be controlled by the (authorized) non-root user.



In the above picture, a user that is logged in to vi-1.rocksclusters.org wants to power on compute-0-0 (one of the VMs associated with the virtual cluster). The user executes the "power on" command. The command creates a "power on" message, signs it with a private key, then sends it to the Airboss that is running on espresso.rocksclusters.org. The Airboss verifies the message signature. If the signature is valid, then the Airboss instructs libvirt on vm-container-0-0 to start ("power on") compute-0-0.

3.3.3. Creating an RSA Key Pair

Before we can install a VM, we must create an RSA key pair. These keys will be used to authenticate Airboss commands. To create a key pair, execute:

```
# rocks create keys key=private.key
```

The above command will ask for a pass phrase for the private key. If you would like a "passphraseless" private key, execute:

```
# rocks create keys key=private.key passphrase=no
```

The above command will place your private key into the file private.key and it will output the public key for your private key:

```
# rocks create keys key=private.key
Generating RSA private key, 1024 bit long modulus
............++++++
.......++++++
e is 65537 (0x10001)
Enter pass phrase for private.key:
Verifying - Enter pass phrase for private.key:
Enter pass phrase for private.key:
writing RSA key
-----BEGIN PUBLIC KEY-----
MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDMoCPmR/Kev64znRBxvtsniXIF
dyQMxR/bBFKNDmvmzPuPUim5jmD3TLilnH75/KidtJCwlb+Lhr5Cs6/9sRzX6rX2
ExVUZsgo4A+O+XMk8KeowO/c2rPc+YdXaBir3Aesm/MCfCZaidZae8QLmVKW7Va5
qErl9gyhhR7uDX+hgwIDAQAB
-----END PUBLIC KEY-----
```

Now save the public key to file, that is, copy the above public key:

```
-----BEGIN PUBLIC KEY-----
MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDMoCPmR/Kev64znRBxvtsniXIF
dyQMxR/bBFKNDmvmzPuPUim5jmD3TLilnH75/KidtJCwlb+Lhr5Cs6/9sRzX6rX2
ExVUZsgo4A+O+XMk8KeowO/c2rPc+YdXaBir3Aesm/MCfCZaidZae8QLmVKW7Va5
qErl9gyhhR7uDX+hgwIDAQAB
-----END PUBLIC KEY-----
```

And save your public key into a file (e.g., $HOME/public.key).

We now want to associate your public key with the virtual cluster you provisioned. This will allow you to use your private key to send authenticated commands to control your cluster. To associate your public key with your virtual cluster, execute:

```
# rocks add host key frontend-0-0-0 key=public.key
```

We can see the relationship by executing:

```
# rocks list host key
HOST            ID PUBLIC KEY
frontend-0-0-0: 7  -----BEGIN PUBLIC KEY-----
:                  MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDMoCPmR/Kev64znRBxvtsniXIF
:                  dyQMxR/bBFKNDmvmzPuPUim5jmD3TLilnH75/KidtJCwlb+Lhr5Cs6/9sRzX6rX2
:                  ExVUZsgo4A+O+XMk8KeowO/c2rPc+YdXaBir3Aesm/MCfCZaidZae8QLmVKW7Va5
:                  qErl9gyhhR7uDX+hgwIDAQAB
:                  -----END PUBLIC KEY-----
:                  ----------------------------------------------------------------
```

We see that the public key is associated with "frontend-0-0-0" (the name of the VM in Dom0).

3.3.4. Installing a VM Frontend

Now, we'll want to install the virtual frontend. First, login to the physical frontend (e.g., espresso). To start the VM frontend install, we'll need to power on and install the VM frontend:

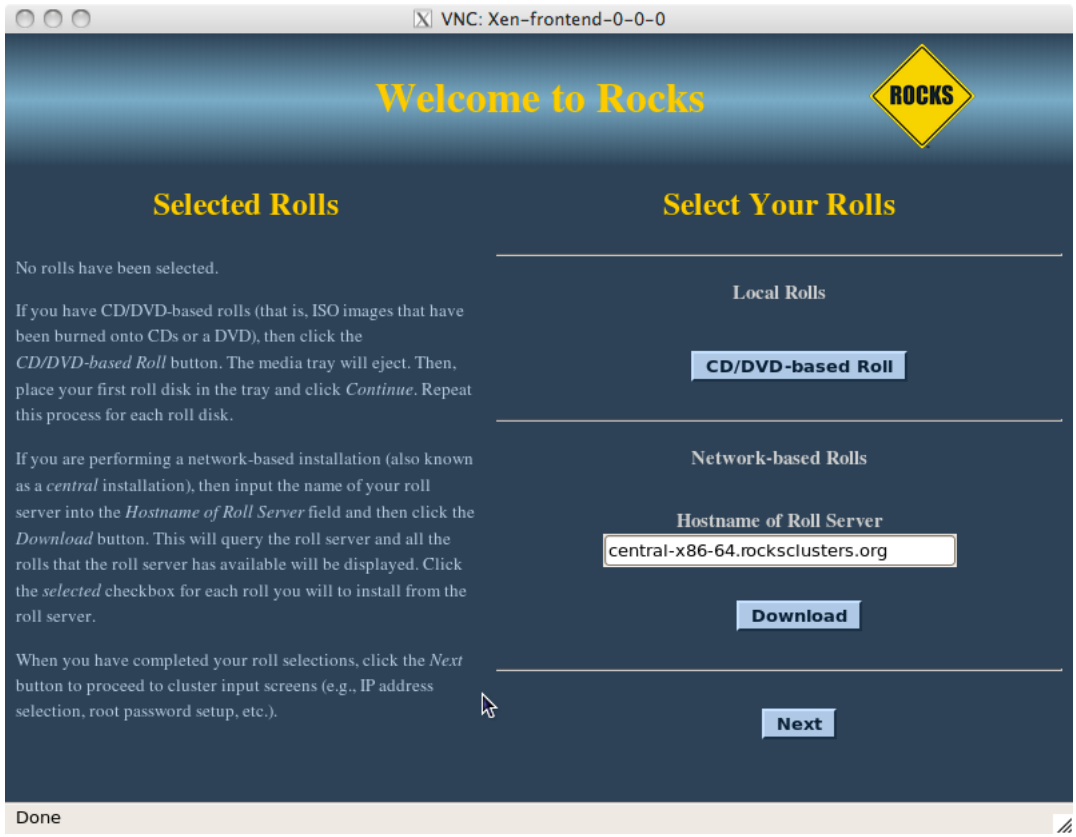
```
# rocks set host power frontend-0-0-0 action=install key=private.key
```

The action of "install" ensures that the VM will be put into install mode, then it will be powered on.

Then, to connect to the VM's console, execute:

```
# rocks open host console frontend-0-0-0 key=private.key
```

Soon you will see the familiar frontend installation screen:



In the "Hostname of Roll Server" field, insert the FQDN of your VM Server (the name of the physical machine that is hosting the VM frontend). Then click "Download".

From here, you want to follow the standard procedure for bringing up a frontend[2] starting at Step 8.

After the VM frontend installs, it will reboot. After it reboots, login and then we'll begin installing VM compute nodes.

3.3.5. Installing VM Compute Nodes

Login to the VM frontend (the virtual machine named "vi-1.rocksclusters.org" in the example picture at the top of

this page), and execute:

```
# insert-ethers
```

Select "Compute" as the appliance type.

In another terminal session on vi-1.rocksclusters.org, we'll need to set up the environment to send commands to the Airboss on the physical frontend. We'll do this by putting the RSA private key that we created in section Creating an RSA Key Pair (e.g., private.key) on vi-1.rocksclusters.org.

Prior to sending commands to the Airboss, we need to establish a ssh tunnel between the virtual frontend (e.g., vi-1) and the physical frontend (e.g., espresso, where the Airboss runs). This tunnel is used to securely pass Airboss messages. On the virtual frontend (e.g., vi-1), execute:

```
# ssh -L 8677:localhost:8677 espresso.rocksclusters.org
```

Now we can securely send messages to the Airboss.

Now, we're ready to install compute nodes. But, there's a problem - when we first login to vi-1.rocksclusters.org, the only machine we know about is ourself (i.e., vi-1.rocksclusters.org). There are no other nodes in the virtual frontend's database. But the physical machine knows about the MAC addresses of the virtual compute nodes (e.g., hosted-vm-0-0-0 and hosted-vm-0-1-0) that are associated with this virtual cluster. The good news is, we can ask the Airboss on the physical frontend for a list of MAC addresses that are assigned to our virtual cluster:

```
# rocks list host macs vi-1.rocksclusters.org key=private.key
```

Which outputs:

```
MACS IN CLUSTER
36:77:6e:c0:00:02
36:77:6e:c0:00:00
36:77:6e:c0:00:03
```

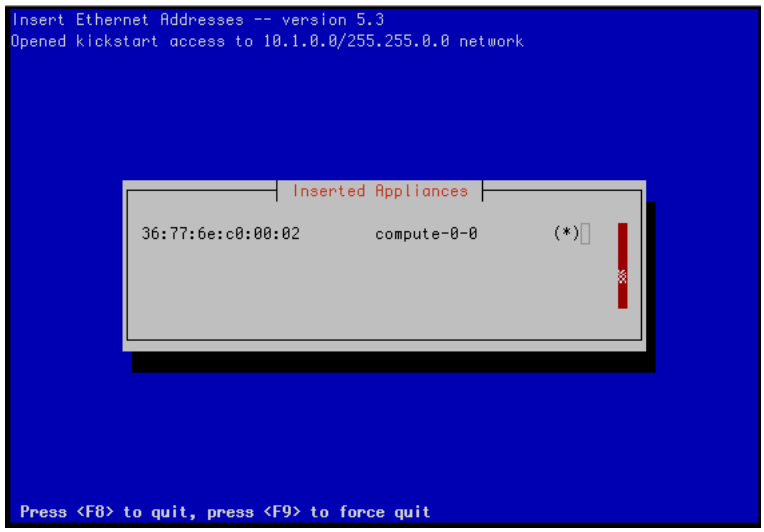
The MAC address 36:77:6e:c0:00:00 is ourself (the VM frontend) and the other two MACs (36:77:6e:c0:00:02 and 36:77:6e:c0:00:03) are the VM compute nodes that are associated with our VM frontend.

We can use the MAC address of the VM compute nodes to power up and install our compute nodes:

```
# rocks set host power 36:77:6e:c0:00:02 key=private.key action=install
```


The action of "install" ensures that the VM will be put into install mode, then it will be powered on.

Soon, you should see insert-ethers discover the VM compute node:



After the virtual compute node is discovered by insert-ethers, we can open a console to the node by executing:

```
# rocks open host console compute-0-0 key=private.key
```

Lastly, to power off a virtual compute node (e.g., compute-0-0), execute:

```
# rocks set host power compute-0-0 key=private.key action=off
```

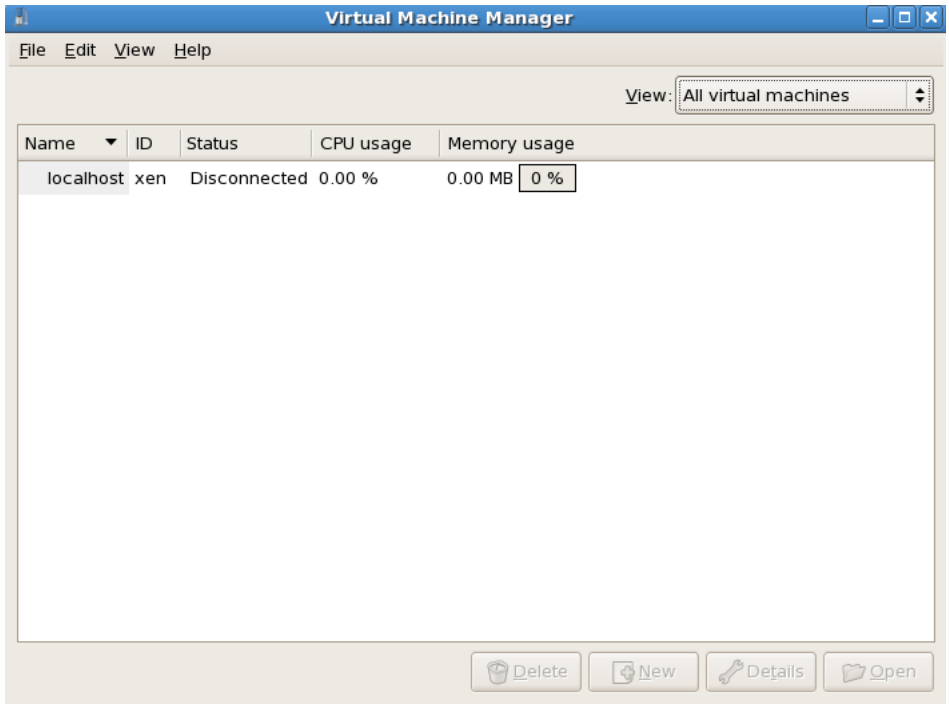
3.3.6. Using RedHat's Virt-Manager (Root Users Only)

Virt-manager is a program produced by RedHat that is a desktop user interface for managing virtual machines. This section describes how to use some of virt-manager's features to control and monitor VMs on a Rocks cluster.

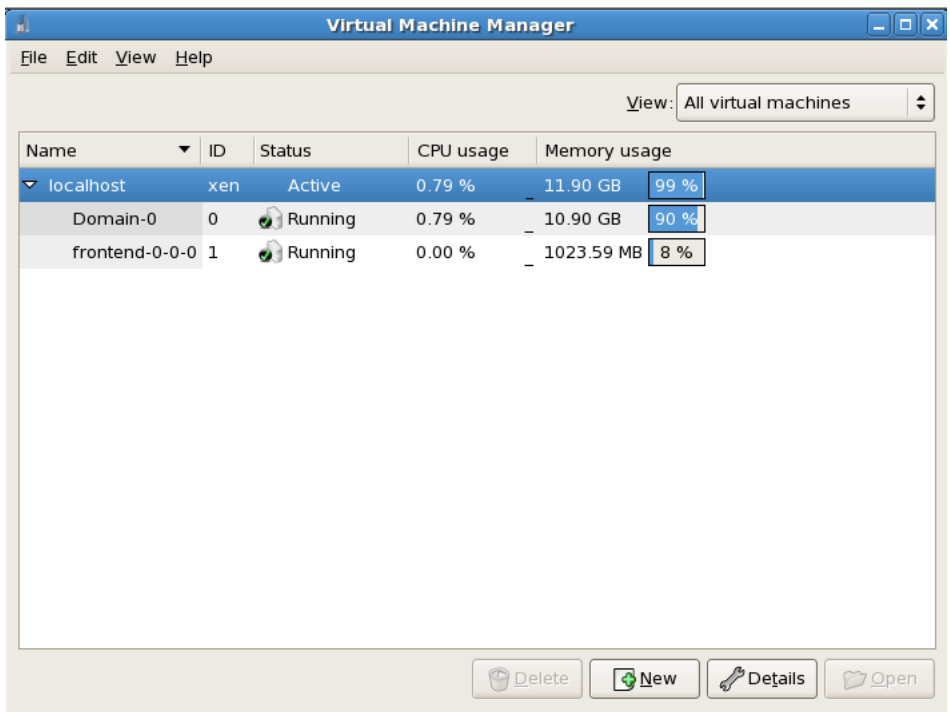
To interact with the VM frontend's console, on the physical frontend, you need to start "virt-manager":

```
# virt-manager
```

This will display a screen similar to:



Double click on the "localhost" entry and then you'll see:

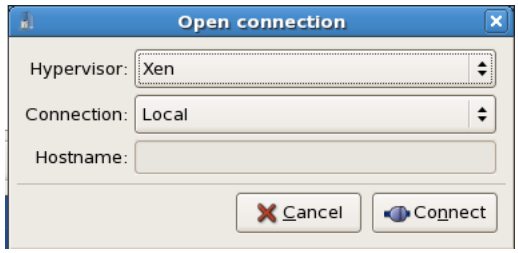


To bring the up the console for the VM frontend, double click on "frontend-0-0-0".

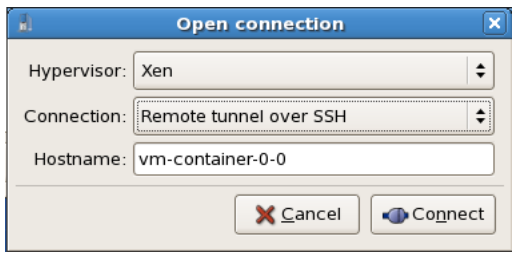
Now we'll describe how to connect to the console for the virtual compute node "compute-0-0". In the example configuration described at the top of this page, the VM "compute-0-0" is hosted on the physical machine named

"vm-container-0-0" so we'll need to tell "virt-manager" to open a connection to "vm-container-0-0".

Inside "virt-manager", click on "File" then "Open connection...". This brings up a window that looks like:

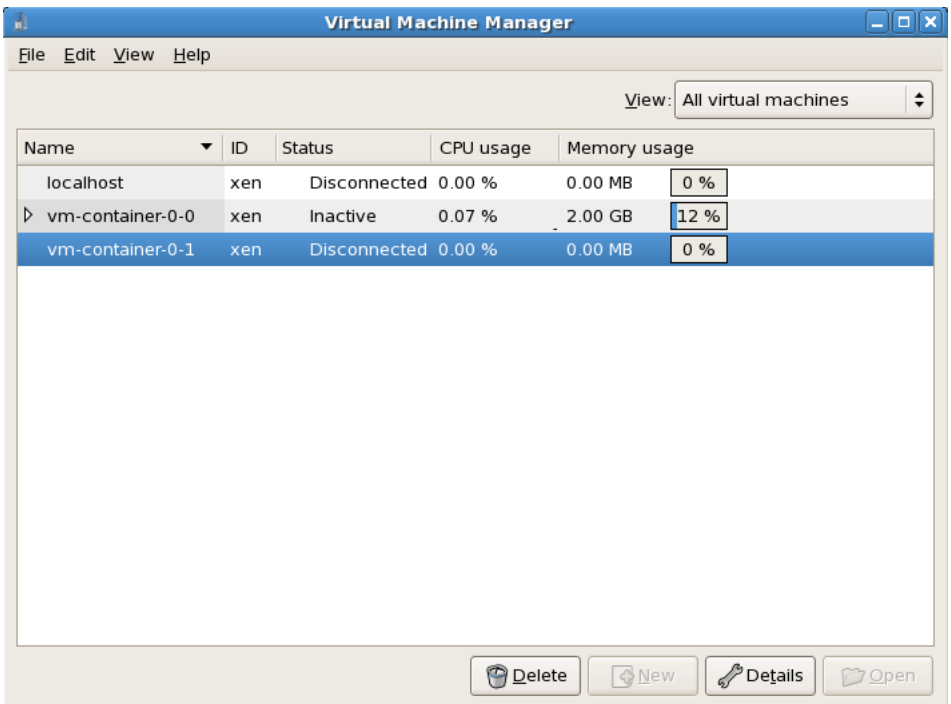


Now change the "Connection:" field to "Remote tunnel over SSH" and enter "vm-container-0-0" for the "Hostname:" field:

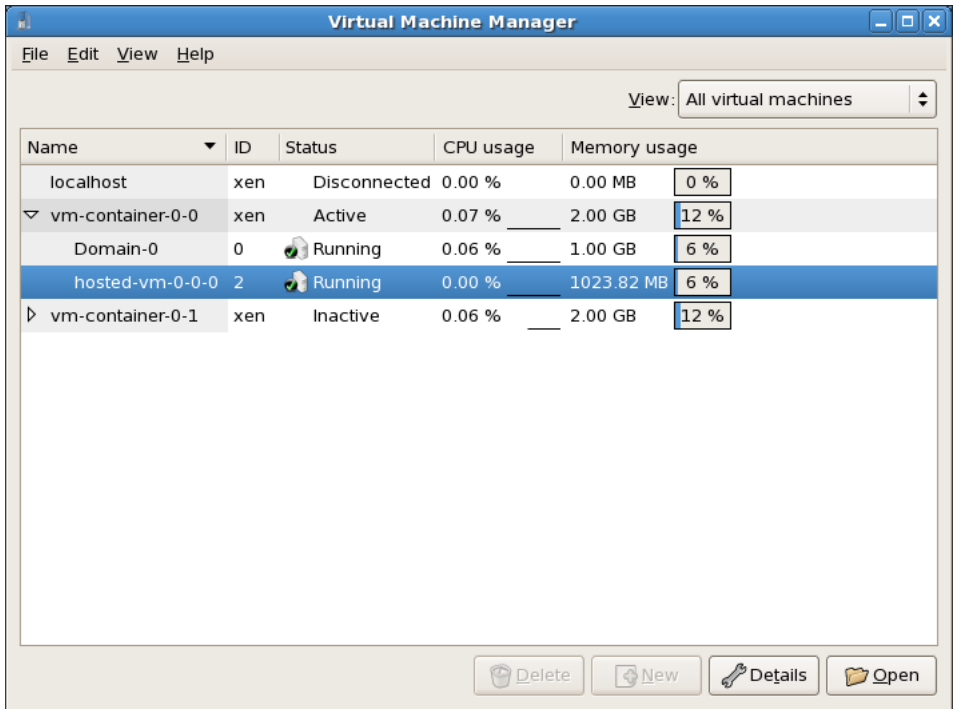


Then click "Connect".

In the "virt-manager" window, you should see something similar to:

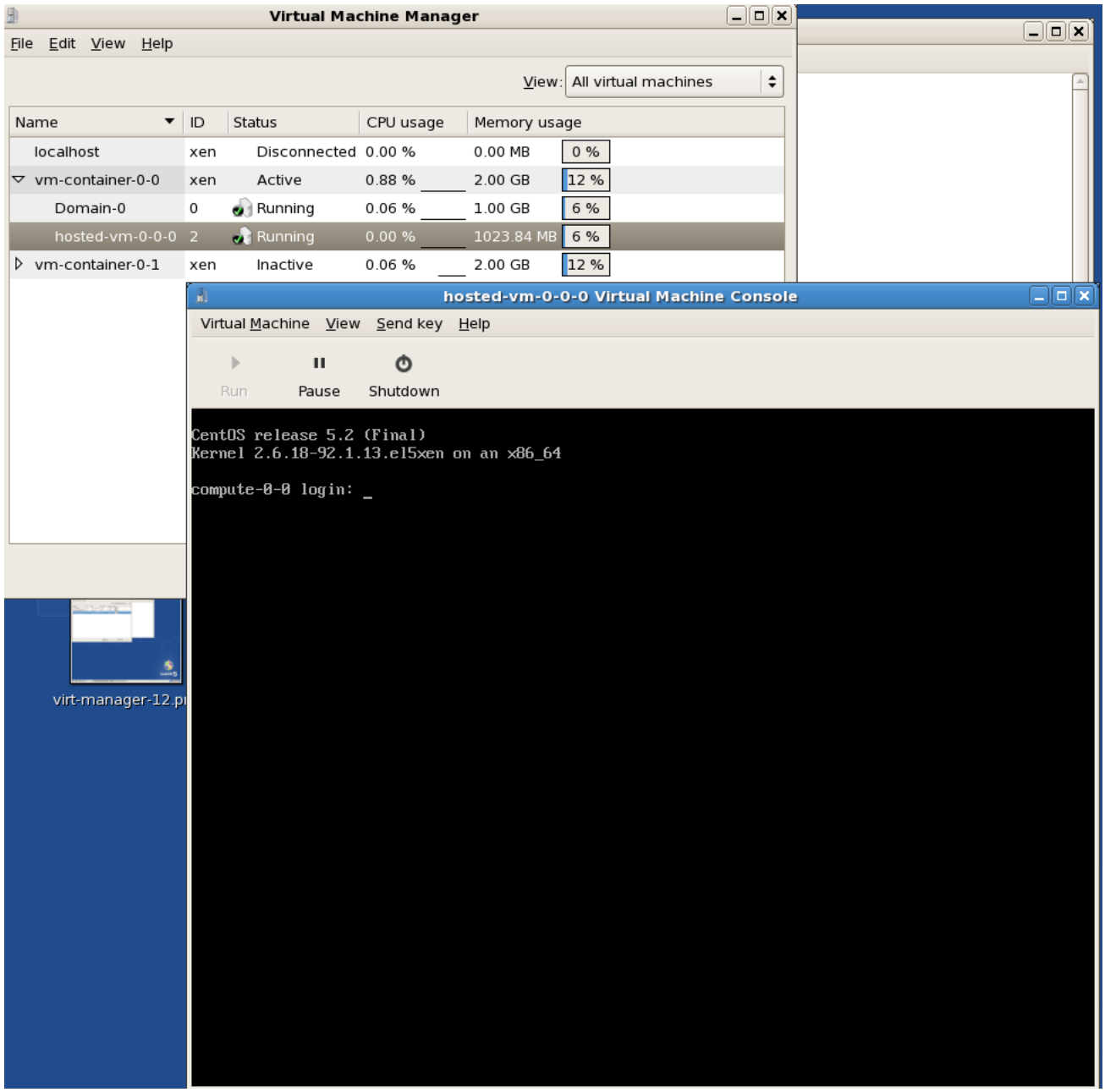


Double click on "vm-container-0-0" and then you'll see:



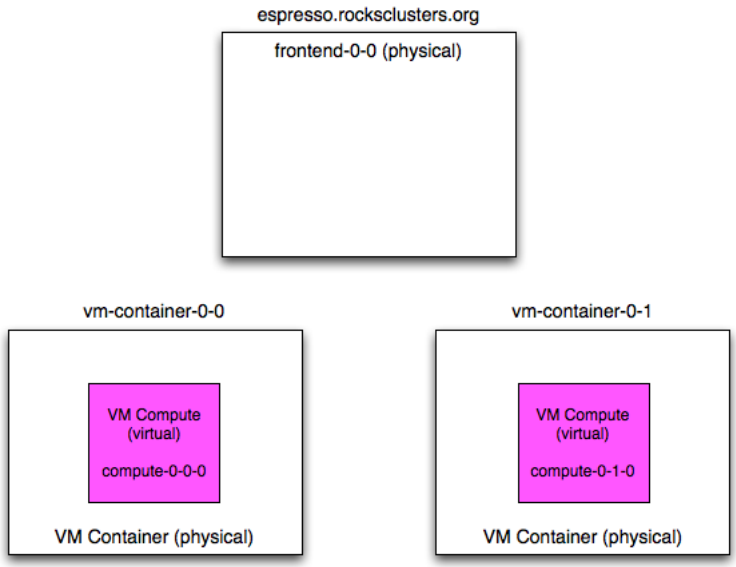
Now to connect to the compute node's console, double click on "hosted-vm-0-0-0". Recall that from the perspective of the physical frontend (the VM Server), "hosted-vm-0-0-0" is the name for the VM "compute-0-0" (again, see the figure at the top of this page).

You should now see the console for compute-0-0:



3.4. Physical Frontend with Virtual Compute Nodes

In this scenario, the frontend is a physical machine (not a VM) and the compute nodes are virtual machines.



In the above picture, "frontend-0-0" is a physical machine (with the public name of "espresso.rocksclusters.org". The physical machine "frontend-0-0" controls two VM compute nodes named "compute-0-0-0" and "compute-0-1-0". This means that "compute-0-0-0" and "compute-0-1-0" are configured by "frontend-0-0". This is opposed to the "virtual cluster scenario" (Installing Virtual Clusters), where the virtual frontend ("frontend-0-0-0") configured the VM compute nodes, and the physical machine that housed "frontend-0-0-0" only started and stopped the virtual compute nodes.

3.4.1. Adding, Installing and Booting VMs with a Physical Frontend

In the common case, you will execute three Rocks commands over the lifetime of your VMs: add (to add VM info to the database), start (to boot or install a VM) and stop (to shutdown an installed VM).

To add a VM to the system, you need to associate a VM with a physical machine (i.e., a VM container) and you need to assign an appliance type to the VM. Here's an example:

```
# rocks add host vm vm-container-0-0 membership="Compute"
```

The above command will output a message similar to:

```
added VM compute-0-0-0 on physical node vm-container-0-0
```

This tells us that, in the database, the compute VM named "compute-0-0-0" has been assigned to the physical machine "vm-container-0-0".

The next step is to install the VM.

VMs are installed with the `start`. Here's how to install the VM that was added above:

```
# rocks start host vm compute-0-0-0
```

After running the command above, you may see the following message:

```
libvir: Xen Daemon error : POST operation failed: (xend.err "Error creating domain: Disk isn't accessible")
```

This is not a problem. The above means the file that will be used for the VMs disk space was not present when the VM was started. The "rocks start host vm" command eventually creates it and starts the VM. That is, while you may see the error message above, the VM is actually running and installing.

The above command will start the standard Rocks installation process for the VM named "compute-0-0-0". After the installation process initializes the network inside the VM, you can monitor the installation just like a physical machine installation by executing:

```
# rocks-console compute-0-0-0
```

After the installation completes, the VM will reboot. After the VM boots, you can interact with the VM just like any other physical machine.

Notes

1. /roll-documentation/base/5.4/install-frontend.html
2. /roll-documentation/base/5.4/install-frontend.html

Chapter 4. Command Reference

4.1. add

4.1.1. add cluster

rocks add cluster
{ip} {num-computes} [container-hosts=*string*] [cpus-per-compute=*string*] [disk-per-compute=*string*] [disk-per-frontend=*string*] [ip=*string*] [mem-per-compute=*string*] [num-computes=*string*] [vlan=*string*]

Add a VM-based cluster to an existing physical cluster.

arguments

ip

The IP address for the virtual frontend.

num-computes

The number of compute nodes VMs to associate with the frontend.

parameters

[container-hosts=*string*]

A list of VM container hosts that will be used to hold the VM compute nodes. This must be a space-separated list (e.g., container-hosts="vm-container-0-0 vm-container-0-1"). The default is to allocate the compute nodes in a round robin fashion across all the VM containers.

[cpus-per-compute=*string*]

The number of CPUs to allocate to each VM compute node. The default is 1.

[disk-per-compute=*string*]

The size of the disk (in gigabytes) to allocate to each VM compute node. The default is 36.

[disk-per-frontend=*string*]

The size of the disk (in gigabytes) to allocate to the VM frontend node. The default is 36.

[ip=*string*]

Can be used in place of the ip argument.

[mem-per-compute=*string*]

The amount of memory (in megabytes) to allocate to each VM compute node. The default is 1024.

[num-computes=*string*]

Can be used in place of the num-computes argument.

[vlan=*string*]

The VLAN ID to assign to this cluster. All network communication between the nodes of the virtual cluster will be encapsulated within this VLAN. The default is the next free VLAN ID.

examples

rocks add cluster vm.cluster.org 1.2.3.4 2

Create one frontend VM and assign it the name 'vm.cluster.org' with the IP address '1.2.3.4' and create 2 compute node VMs.

4.1.2. add host vm

rocks add host vm {host...} {membership} [cpus=*string*] [disk=*string*] [disk-size=*string*] [ip=*string*] [mac=*string*] [mem=*string*] [membership=*string*] [name=*string*] [num-macs=*string*] [slice=*string*] [subnet=*string*] [sync-config=*bool*] [vlan=*string*]

Add a VM specification to the database.

arguments

host

One or more physical host names.

membership

The membership to assign to the VM.

parameters

[cpus=*string*]

The number of CPUs to assign to this VM. The default is: 1.

[disk=*string*]

A disk specification for this VM. The default is:
file:/<largest-partition-on-physical-node>/xen/disks/<vm-name>.hda,hda,w

[disksize=*string*]

The amount of disk space in gigabytes to assign to the disk specification. The default is: 36.

[ip=*string*]

The IP address to assign to the VM. If no IP address is provided, then one will be automatically assigned.

[mac=*string*]

A MAC address to assign to this VM. If no MAC address is specified, the next free MAC address will be selected.

[mem=*string*]

The amount of memory in megabytes to assign to this VM. The default is: 1024.

[membership=*string*]

Can be used in place of the membership argument.

[name=*string*]

The name to assign to the VM (e.g., 'compute-0-0-0').

[num-macs=*string*]

The number of MAC addresses to automatically assign to this VM. The default is 1.

[slice=*string*]

The 'slice' id on the physical node. Each VM on a physical node has a unique slice number The default is the next available free slice number.

[subnet=*string*]

The subnet to associate to this VM. The default is: private.

[sync-config=*bool*]

Decides if 'rocks sync config' should be run after the VM is added. The default is: yes.

[vlan=*string*]

The vlan ID to set for each interface. If you supply multiple MACs (e.g., 'num-macs' > 1), you can specify multiple vlan IDs by a comma separated list (e.g., vlan="3,4,5"). To not specify a vlan for a MAC, use the keyword 'none'. For example, if you want to specify a vlan ID for interface 1 and 3, but not interface 2, type: vlan="3,none,5". The default is to not assign a vlan ID.

examples

rocks add host vm

Create a default VM.

rocks add host vm mem=4096

Create a VM and allocate 4 GB of memory to it.

4.2. create

4.2.1. create host vm

rocks create host vm {host...}

Create a VM slice on a physical node. This command will configure a VM and install it. This can be used for the initial setup of a VM or to reconfigure an existing VM.

arguments

host

A list of one or more VM host names.

examples

rocks create host vm compute-0-0-0

Create VM host compute-0-0-0.

4.3. dump

4.3.1. dump host vm

rocks dump host vm [host...]

Dump host VM information as Rocks commands.

arguments

[host]

Zero, one or more host names. If no host names are supplied, information for all hosts will be listed.

examples

$ rocks dump host vm compute-0-0-0

Dump VM info for compute-0-0-0.

$ rocks dump host vm

Dump VM info for all configured virtual machines.

related commands

add host vm

4.4. list

4.4.1. list cluster

rocks list cluster [cluster...] [status=*bool*]

Lists a cluster, that is, for each frontend, all nodes that are associated with that frontend are listed.

arguments

[cluster]

Zero, one or more frontend names. If no frontend names are supplied, information for all clusters will be listed.

parameters

[status=*bool*]

If true, then for each VM-based cluster node, output the VM's status (e.g., 'active', 'paused', etc.).

examples

$ rocks list cluster frontend-0-0

List the cluster associated with the frontend named 'frontend-0-0'.

$ rocks list cluster

List all clusters.

4.4.2. list host vm

rocks list host vm [host...] [showdisks=*bool*] [status=*bool*]

Lists the VM configuration for hosts.

arguments

[host]

Zero, one or more host names. If no host names are supplied, information for all hosts will be listed.

parameters

[showdisks=*bool*]

If true, then output VM disk configuration. The default is 'false'.

[status=*bool*]

If true, then output each VM's status (e.g., 'active', 'paused', etc.).

examples

$ rocks list host vm compute-0-0

List the VM configuration for compute-0-0.

$ rocks list host vm compute-0-0 compute-0-1

List the VM configuration for compute-0-0 and compute-0-1.

4.5. move

4.5.1. move host vm

rocks move host vm {host} {physhost} {file}

Move a VM from its current physical node to another.

arguments

host

The name of the VM host to move.

physhost

The name of the physical host in which to move the VM.

file

The name of the file that stores the running VM's state.

examples

rocks move host vm compute-0-0-0 vm-container-1-0

Move VM host compute-0-0-0 to physical host vm-container-1-0.

4.6. pause

4.6.1. pause host vm

rocks pause host vm {host...}

Pauses a VM slice on a physical node.

arguments

host

A list of one or more VM host names.

examples

rocks pause host vm compute-0-0-0

Pause VM host compute-0-0-0.

4.7. remove

4.7.1. remove cluster

rocks remove cluster [cluster...]

Remove a virtual cluster.

arguments

[cluster]

One or more virtual frontend names.

examples

rocks rmeove cluster frontend-0-0-0

Remove the cluster associated with the frontend named 'frontend-0-0'.

4.7.2. remove host vm

rocks remove host vm {host...}

Remove the configuration info in the database for the supplied hosts.

arguments

host

A list of one or more VM host names.

examples

rocks remove host vm compute-0-0-0

Remove the configuration info in the database for compute-0-0-0.

4.8. report

4.8.1. report host vm

rocks report host vm {host}

Outputs a configuration file used by rocks-pygrub in order to boot a VM.

arguments

host

One VM host name (e.g., compute-0-0-0).

examples

$ rocks report host vm compute-0-0-0

Create the VM configuration file for host compute-0-0-0

$ rocks report host vm compute-0-0-0

Create the VM configuration file for host compute-0-0-0.

4.8.2. report host xen bridge

rocks report host xen bridge

Generates the Xen networking bridge configuration script for a host.

examples

$ rocks report host xen bridge

4.8.3. report vm nextmac

rocks report vm nextmac

Outputs the next free MAC address that can be used for a VM.

examples

$ rocks report vm nextmac

4.9. restore

4.9.1. restore host vm

rocks restore host vm {host...} {file}

Restore a VM on a physical node. This command restores a previously saved VM.

arguments

host

A list of one or more VM host names.

file

The file name the saved VM state is stored in. If you don't supply this parameter, then the default file name is: /<largest-partition-on-physical-host>/xen/disks/<vm-name%gt;.saved. For example, on a physical node with the default partitioning, the file that contains the state for VM compute-0-0-0 is: /state/partition1/xen/disks/compute-0-0-0.saved

examples

rocks restore host vm compute-0-0-0

Restore VM host compute-0-0-0.

4.10. resume

4.10.1. resume host vm

rocks resume host vm {host...}

Resume a paused VM slice on a physical node.

arguments

host

A list of one or more VM host names.

examples

rocks resume host vm compute-0-0-0

Resume paused VM host compute-0-0-0.

4.11. save

4.11.1. save host vm

rocks save host vm {host...} {file}

Save a VM on a physical node. This command saves a currently running VM, then halts the VM. This saved state can be used to restart the VM with the command 'rocks restore host vm'.

arguments

host

A list of one or more VM host names.

file

The file name the saved VM state will be stored in. If you don't supply this parameter, then the default file name will be: /<largest-partition-on-physical-host>/xen/disks/<vm-name>.saved. For example, on a physical node with the default partitioning, the saved file for VM compute-0-0-0 will be named: /state/partition1/xen/disks/compute-0-0-0.saved

examples

rocks save host vm compute-0-0-0

Save VM host compute-0-0-0.

4.12. set

4.12.1. set host vm

rocks set host vm
{host} [disk=*string*] [disksize=*string*] [mem=*string*] [physnode=*string*] [slice=*string*] [virt-type=*string*]

Change the VM configuration for a specific VM.

arguments

host

One or more VM host names.

parameters

[disk=*string*]

A VM disk specification. More than one disk can be supplied. Each disk specification must separated by a space.

[disksize=*string*]

The size of the VM disk in gigabytes.

[mem=*string*]

The amount of memory in megabytes to assign to this VM.

[physnode=*string*]

The physical machine this VM should run on.

[slice=*string*]

The slice ID for this VM.

[virt-type=*string*]

Set the virtualization type for this VM. This can be 'para' or 'hardware'.

examples

rocks set host vm compute-0-0-0 mem=4096

Change the memory allocation for VM compute-0-0-0 to 4 GB.

4.13. start

4.13.1. start host vm

rocks start host vm {host...}

Boots a VM slice on a physical node.

arguments

host

A list of one or more VM host names.

examples

rocks start host vm compute-0-0-0

Start VM host compute-0-0-0.

rocks start host vm compute-0-0-0

Start VM host compute-0-0-0.

4.13.2. start service airboss

rocks start service airboss [foreground=*boolean*]

Starts the VM Control service. This service validates commands from remote hosts and, if the command is accepted, the command is parsed and applied to VMs that are managed by this host.

parameters

[foreground=*boolean*]

If set to to 'yes', this service will stay in the foreground. Default is 'no'.

4.14. stop

4.14.1. stop host vm

rocks stop host vm {host...}

Destroy a VM slice on a physical node.

arguments

host

A list of one or more VM host names.

examples

rocks stop host vm compute-0-0-0

Stop VM host compute-0-0-0. This is equivalent to a 'hard power off', (i.e., pulling the power cord from a node).

4.14.2. stop service airboss

rocks stop service airboss

4.15. sync

4.15.1. sync host network xen

rocks sync host network xen

Reconfigure and restart the network for the named hosts.

examples

rocks sync host network compute-0-0

Reconfigure and restart the network on compute-0-0.

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B.1. xen

```
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 -- Keir Fraser (on behalf of the Xen team)

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