Compute Capacity Management and Domain Affinity

In this lab you will look in some greater depth at the way compute capacity can be managed in a cloud environment. Ideally, there would be Capacity Planning tools to chart trends of usage and to predict when current resources will be exhausted. Cloudstack doesn’t come with such tools -- but third party tools can be used, or, in a simple environment such as this, you can do it by carefully watching the resource availability diagrams.

You will also add a new host with the objective of dedicating a new resource to a specific Account.

Brief Outline of Tasks:

1. Manage Available Compute Capacity
2. Create and use a host affinity group

There are sequence dependent tasks in the list below with recommended points at which to document changes to the availability data. Please take note and then create a document tying the deliverable heading (e.g. Part 1.a 2 screenshots) to your response for that deliverable.

For this lab you will need VMs cloudstackmgr1 and kvmhost1 running.

# 1. Manage Available Compute Capacity

Access your cloud system via the Web UI.

## Put kvmhost1 in maintenance mode

Maintenance mode is the term used for a state where an object (generally hardware, but also possible an object composed only of software) is available to make changes. Frequently this means removing users from the object and enabling a mode of access to administrators.

To do this via the Web UI do…

Infrastructure > Hosts > select kvmhost1

(make a note of kvmhost1's IP address -- you will need it to add it back in later)

The "Enable Maintenance Mode" icon is one of the several icons to the upper right side of the host details web page. Each icon is in a circle. The Maintenance Mode icon is a square with a "+" in it.

Press the "Enable Maintenance Mode" icon and say "OK" when prompted to migrate all running instances.

The "+" plus in the MaintMode icon will change to a "-" minus and the mouse-over value will now say "Cancel maintenance mode."

If you return to Infrastructure > Hosts you should see kvmhost1 has a "Resource state" of "Maintenance."

## Remove kvmhost1

Back in the details view of kvmhost1, press the "Remove host" icon -- a red trash can.

When this completes, you should find yourself back on the Infrastructure > Hosts page with only cloudstackmgr1 showing.

## Capacity

After deletion is complete, **capture** the current “System Capacity” settings from the dashboard. Circle the Memory and CPU capacity values. Go to Infrastructure > Hosts and push the “Metrics” slidebar. Get a **screen capture** of this. Circle the Memory Allocated and CPU Allocated values and note the relation to the dashboard.

Part1.a 2 screenshots

**Add kvmhost1 bac**k in to your host collection (probably 172.16.10.200). Recall that this can take a small handful of minutes to complete. If there are any errors, they should be in /var/log/cloudstack/management/management-server.log.

**View the Metrics** for both hosts. **Capture the CPU total and Memory total values** from the Hosts > Metrics view. **Capture the Dashboard CPU and Memory** values. Note that the dashboard shows the POOL of these values and the Metrics view shows what each host is contributing to the pool.

Part 1.b 2 screenshots

## Create a new user

To create a user, you first need to have an account (which contains multiple users) in a domain (which can contain multiple accounts).

Select “View Accounts”.  
Press “Add Account”.

You will note that a new account has to contain a first user.   
Create that user with the “**User**” role.

Login as that new user.

Because this is use has the “user” role, you will get a different looking dashboard and a different left Navigation list.

Create an instance (a VM) as that new user. As a “user” try to find out what hosting system it is allocated on -- I don’t think you will be able to.

## Login as admin

As the user admin, find which host this new VM was allocated on -- **in a screenshot**, show where you found this information. **Get another screenshot** of Host > Host Metrics and the Dashboard “System Capacity.”

Part 1.c 2 screenshots

Delete/expunge the VM. NOTE: regular users cannot expunge their own VMs, they can only delete, and then an admin must expunge.

Delete (maintenance mode, then remove) the host you just added.

# 2. Dedicated Host/Affinity Groups

Logged into the Dashboard as **admin** do the following...

Add a new domain to your infrastructure.

Add an account that resides in the new domain and make the first user in the domain the "Domain Admin".

Add a host to your zone/pod/cluster and **dedicate the host** to the newly created domain. To dedicate the host, click on "Dedicated" and select the newly created domain. You will NOT add an account. This will permit the host to be used by any account/user in the domain.

**Capture “System Capacity” and “Host Metrics”**. Note how the values have changed and not changed.

2.a 2 screenshots

Login using the user you created when you created your first new account (at "Create a New User" heading above). As that user create a VM instance.

Login as admin and, **in a screenshot**, show the host this VM is allocated on. Comment on why CloudStack allocated the VM to this host.

2.b 1 screenshot  
2.b comments

Login as a user in your new dedicated domain (with username, password, AND the domain name).   
Add an instance -- but at "7 Advanced mode" select the row under "Affinity groups" with your domain specified. This will ensure that your instance will be hosted on a dedicated host.

Login as **admin** and, **in a screenshot**, show the host this VM is allocated on. It should be on the one you just dedicated to the domain (kvmhost1).

2.c 1 screenshot

Login as a user that is not in the domain you just logged into (other than the admin account).   
Show that this user cannot find the VMs on the added host.  
Show that the affinity groups list is empty when attempting to create a VM as this user.

2.d screenshots

**Stop all VMs.**

**Deliverables:**

**The deliverables for this exercise are annotated screenshots and some comments/observations. They are numbered above as follows:**

**Part1.a 2 screenshots**

**Part 1.b 2 screenshots**

**Part 1.c 2 screenshots**

**2.a 2 screenshots**

**2.b 1 screenshot  
2.b comments**

**2.c 1 screenshot**

**2.d screenshot(s)**

**Capture these proofs (screenshots with your annotations) in a Word document. Your annotations should identify the element in question, with some additional wording of why it is significant. Upload your document to Canvas.**