Waiting Room:

Introduction to VCenter-Server

Source - VMware Docs

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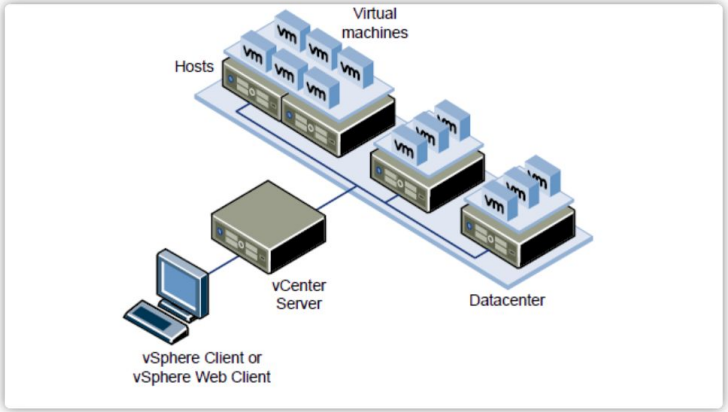
VCENTER 6 OVERVIEW

vCenter Server unifies resources from individual hosts so that those resources can be shared among virtual machines in the entire datacenter. It accomplishes this by managing the assignment of virtual machines to the hosts and the assignment of resources to the virtual machines within a given host based on the policies that the system administrator sets.

VSPHERE V6 COMPONENTS



The above diagram shows how vCenter fits in the vSphere stack. With vCenter installed, you have a central point of management. vCenter Server allows the use of advanced vSphere features such as vSphere Distributed Resource Scheduler (DRS), vSphere High Availability (HA), vSphere vMotion, and vSphere Storage vMotion.

The other component is the vSphere Web Client. The vSphere Web Client is the interface to vCenter Server and multi-host environments. It also provides console access to virtual machines. The vSphere Web Client lets you perform all administrative tasks by using an in-browser interface.

vCenter Server is an application that enables you to manage your vSphere infrastructure from a centralized location. It acts as a central administration point for ESXi hosts and their respective virtual machines.

vCenter Server can be installed on a supported version of Windows or you can use a preconfigured Linux version known as **vCenter Server Appliance**. vCenter Server is required for some advanced vSphere features, such as vSphere High Availability, vSphere Fault Tolerance, vSphere Distributed Resource Scheduler (DRS), VMware vSphere vMotion, and VMware vSphere Storage vMotion.

A single vCenter Server instance can support a maximum of **1,000** hosts, **10,000** powered-on virtual machines and **15,000** registered virtual machines.

A vCenter Server instance consist of the following components:

- **vSphere Client and vSphere Web Client** – both tools can be used to manage your vCenter Server. vSphere Web Client is the recommended way to manage an ESXi host when the host is managed by vCenter Server.
- **vCenter Server database** – stores the inventory items, security roles, resource pools, performance data, and other information. Oracle and Microsoft SQL Server are supported databases for vCenter Server.
- **vCenter Single Sign-On (SSO)** – allows authentication against multiple user repositories, such as Active Directory or Open LDAP.
- **Managed hosts** – ESXi hosts and their respective virtual machines.

Vcenter server and creating virtual machine

The vSphere Client is the primary method for system administrators and end users to interact with the virtual data center environment created by VMware vSphere. vSphere manages a collection of objects that make up the virtual data center, including hosts, clusters, virtual machines, data storage, and networking resources.

The vSphere Client is a Web browser-based application that you can use to manage, monitor, and administer the objects that make up your virtualized data center. You can use the vSphere Client to observe and modify the vSphere environment in the following ways.

- Viewing health, status, and performance information on vSphere objects
- Issuing management and administration commands to vSphere objects
- Creating, configuring, provisioning, or deleting vSphere objects

You can extend vSphere in different ways to create a solution for your unique IT infrastructure. You can extend the vSphere Client with additional GUI features to support these new capabilities, with which you can manage and monitor your unique vSphere environment.

UNDERSTANDING VSPHERE AVAILABILITY AND DISTRIBUTED RESOURCE SCHEDULER (DRS)

This lab shows how to use the VMware vSphere web client to enable and configure vSphere Availability and Dynamic Resource Scheduling (DRS). HA protects from down time by automating recovery in the event of a host failure. DRS ensures performance by balancing virtual machine workloads across hosts a cluster.

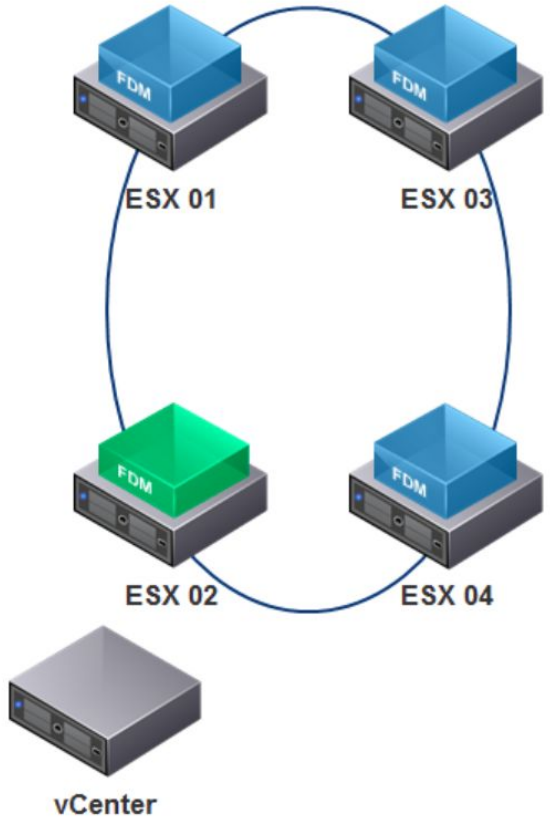
WHAT IS VSPHERE AVAILABILITY?

vSphere Availability provides high availability for virtual machines by pooling the virtual machines and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts.

When you create a vSphere Availability cluster, a single host is automatically elected as the master host. The master host communicates with vCenter Server and monitors the state of all protected virtual machines and of the slave hosts. Different types of host failures are possible, and the master host must detect and appropriately deal with the failure. The master host must distinguish between a failed host and one that is in a network partition or that has become network isolated. The master host uses network and datastore heartbeating to determine the type of failure. Also note that vSphere Availability is a host function which means there is not a dependency on vCenter in order to effectively fail over VMs to other hosts in the cluster.

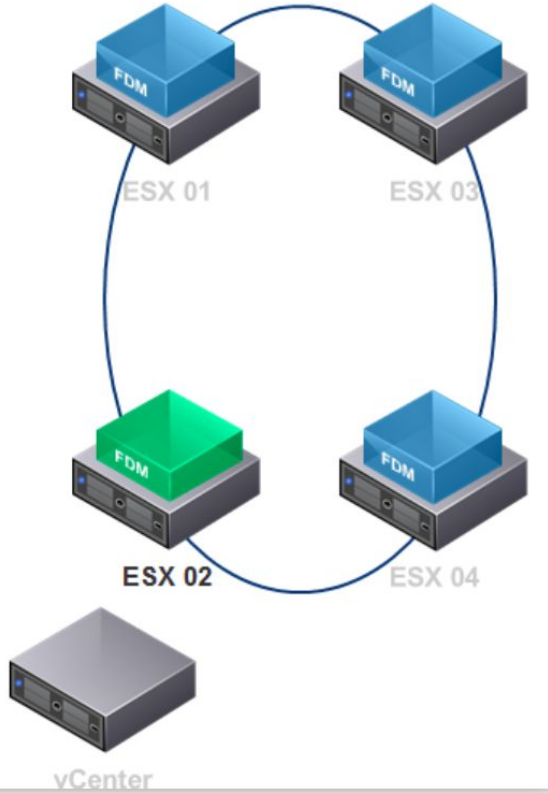
VSPHERE AVAILABILITY PRIMARY COMPONENTS

- **Every host runs an agent.**
  - Referred to as 'FDM' or Fault Domain Manager
  - One of the agents within the cluster is chosen to assume the role of the Master
    - There is only one Master per cluster during normal operations
  - All other agents assume the role of Slaves
- **There is no more Primary/Secondary concept with vSphere HA**



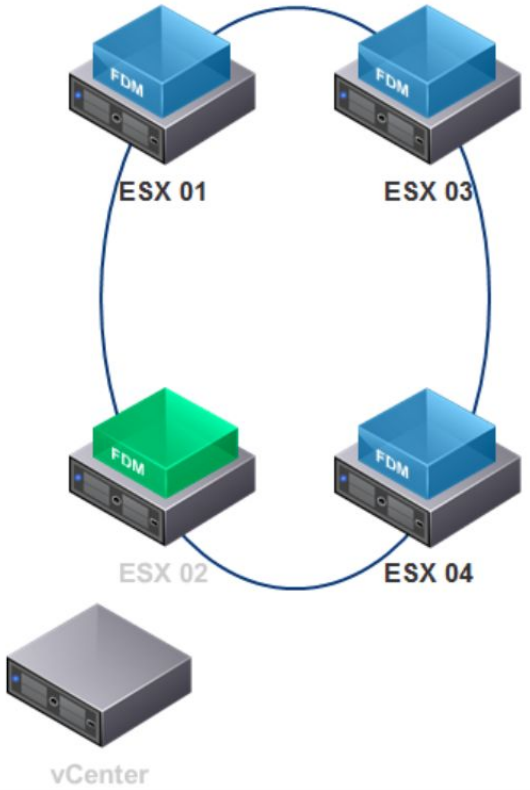
THE MASTER ROLE

- **An FDM master monitors:**
  - ESX hosts and Virtual Machine availability.
  - All Slave hosts. Upon a Slave host failure, protected VMs on that host will be restarted.
  - The power state of all the protected VMs. Upon failure of a protected VM, the Master will restart it.
- **An FDM master manages:**
  - The list of hosts that are members of the cluster, updating this list as hosts are added or removed from the cluster.
  - The list of protected VMs. The Master updates this list after each user-initiated power on or power off.



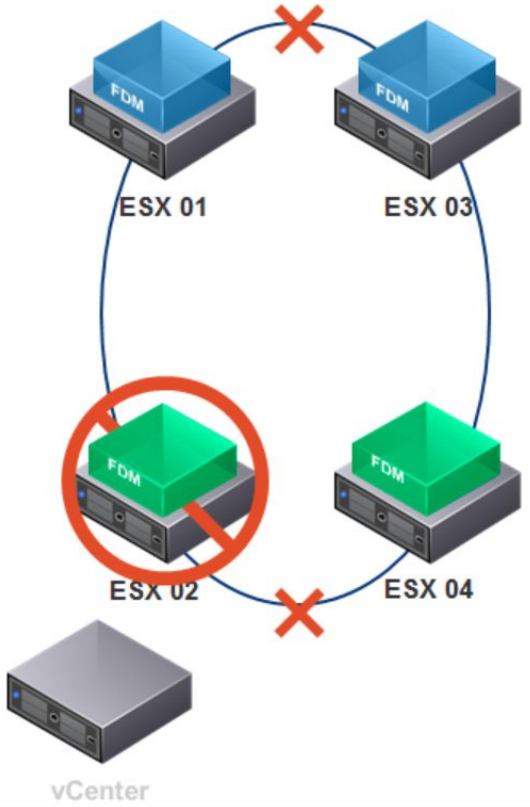
THE SLAVE ROLE

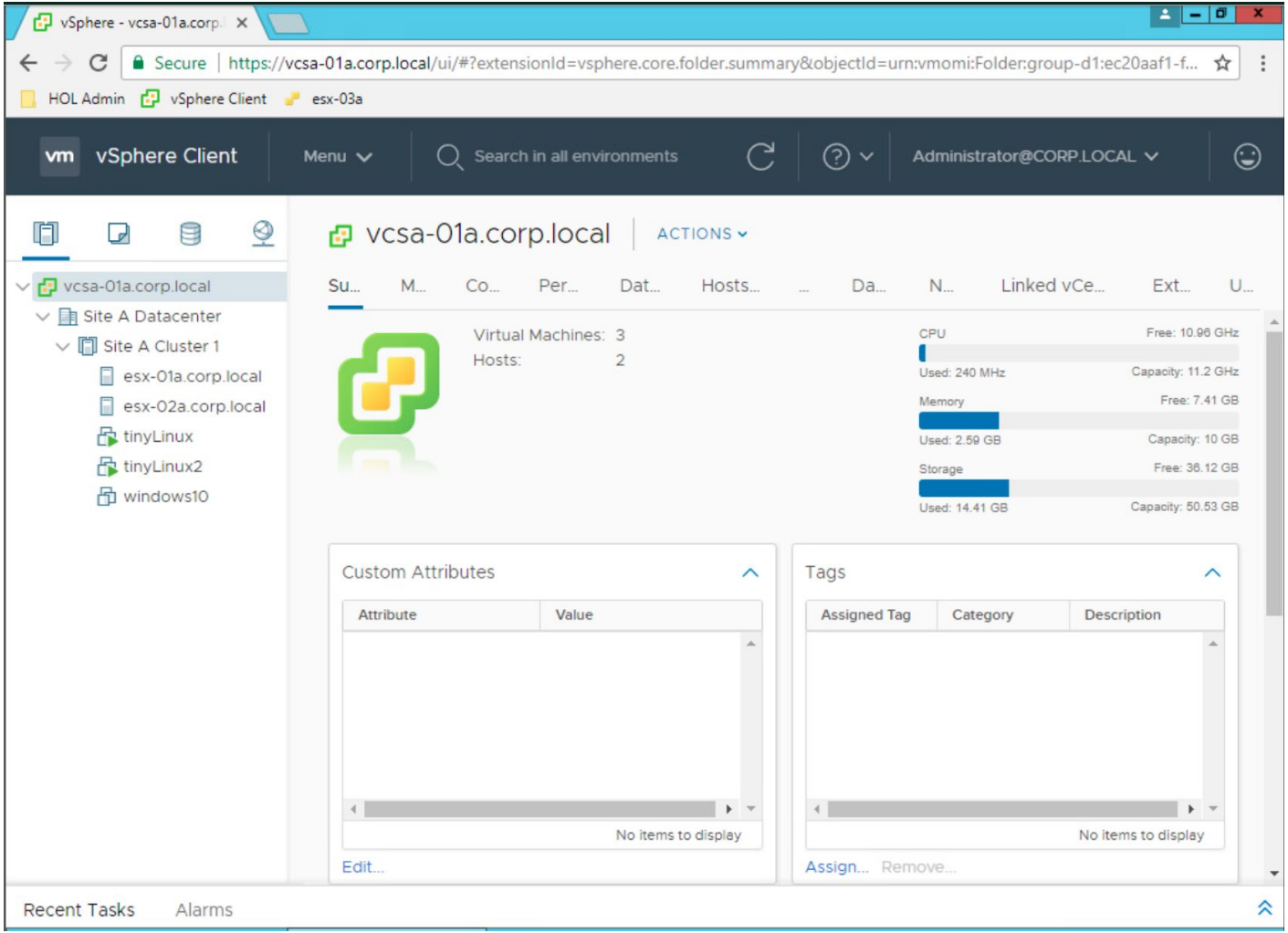
- A Slave monitors the runtime state of its locally running VMs and forwards any significant state changes to the Master.
- It implements vSphere HA features that do not require central coordination, most notably VM Health Monitoring.
- It monitors the health of the Master. If the Master should fail, it participates in the election process for a new master.
- Maintains list of powered on VMs.



THE MASTER ELECTION PROCESS

- **The Master is determined through a election process.**
- **A election occurs when:**
  - vSphere HA is enabled.
  - A master host fails, is shutdown, or is placed in maintenance mode.
  - A management network partition occurs.

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Virtual Machines: 3
Hosts: 2
CPU
Free: 10.96 GHz
Used: 240 MHz
Capacity: 11.2 GHz
Memory
Free: 7.41 GB
Used: 2.59 GB
Capacity: 10 GB
Storage
Free: 36.12 GB
Used: 14.41 GB
Capacity: 50.53 GB
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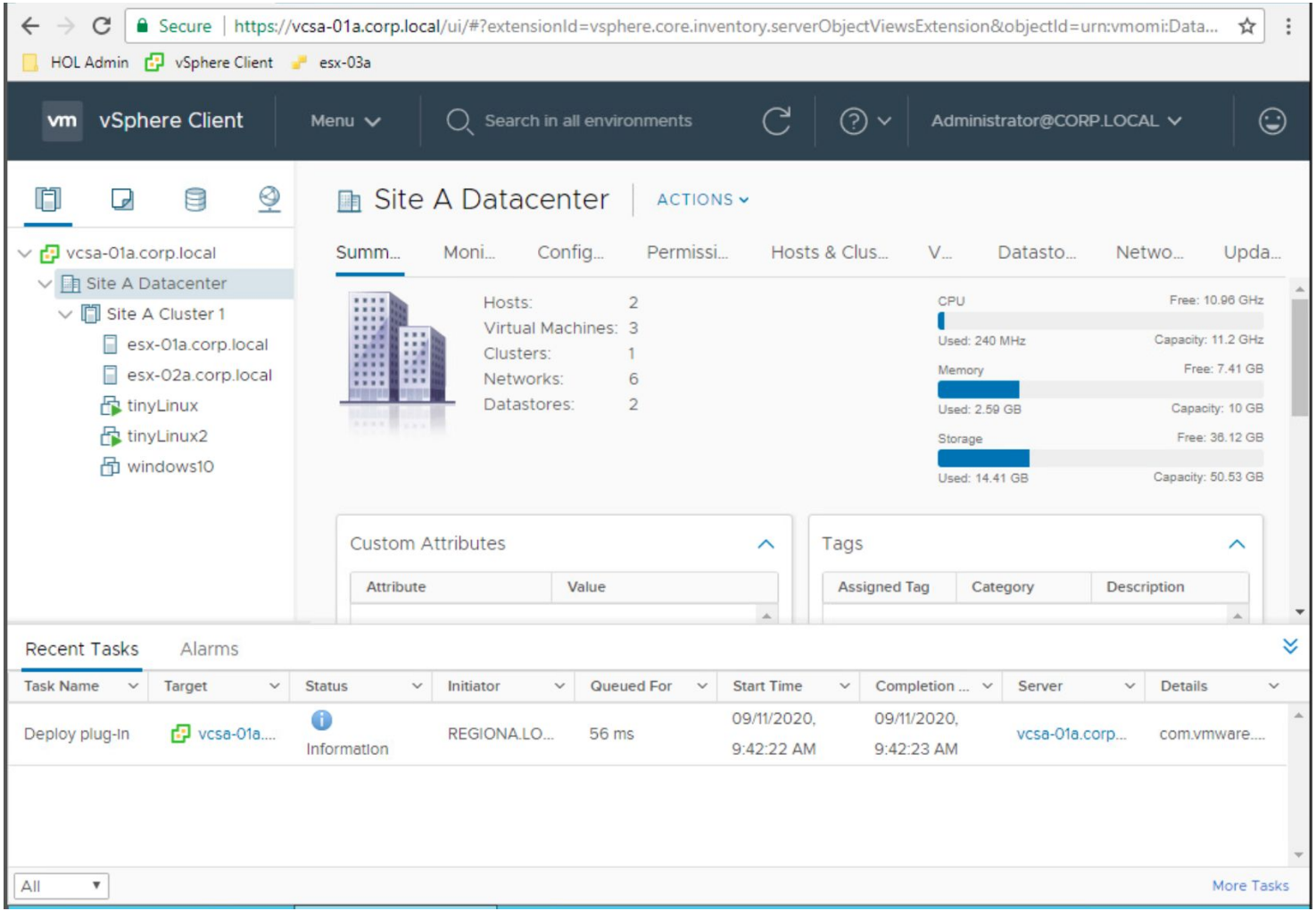
Recent Tasks
Alarms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Networks: 6
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Used: 2.59 GB
Capacity: 10 GB
Storage
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Custom Attributes
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Category
Description
Recent Tasks
Alarms
Task Name
Target
Status
Initiator
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Completion ...
Server
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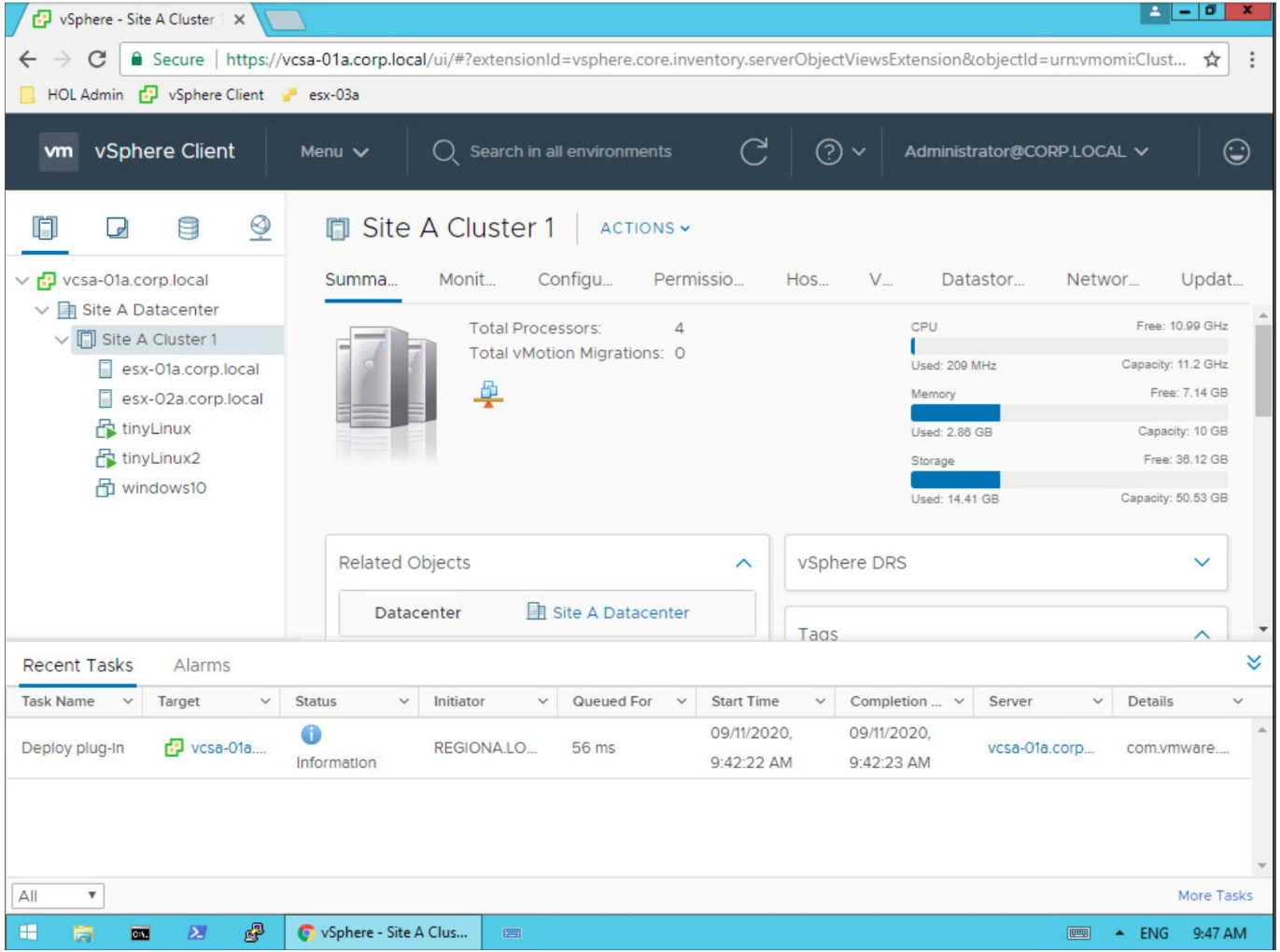
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Site A Cluster 1
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Total vMotion Migrations: 0
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Capacity: 11.2 GHz
Memory
Free: 7.14 GB
Used: 2.86 GB
Capacity: 10 GB
Storage
Free: 36.12 GB
Used: 14.41 GB
Capacity: 50.53 GB
Related Objects
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Site A Datacenter
vSphere DRS
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Recent Tasks
Alarms
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Target
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Start Time
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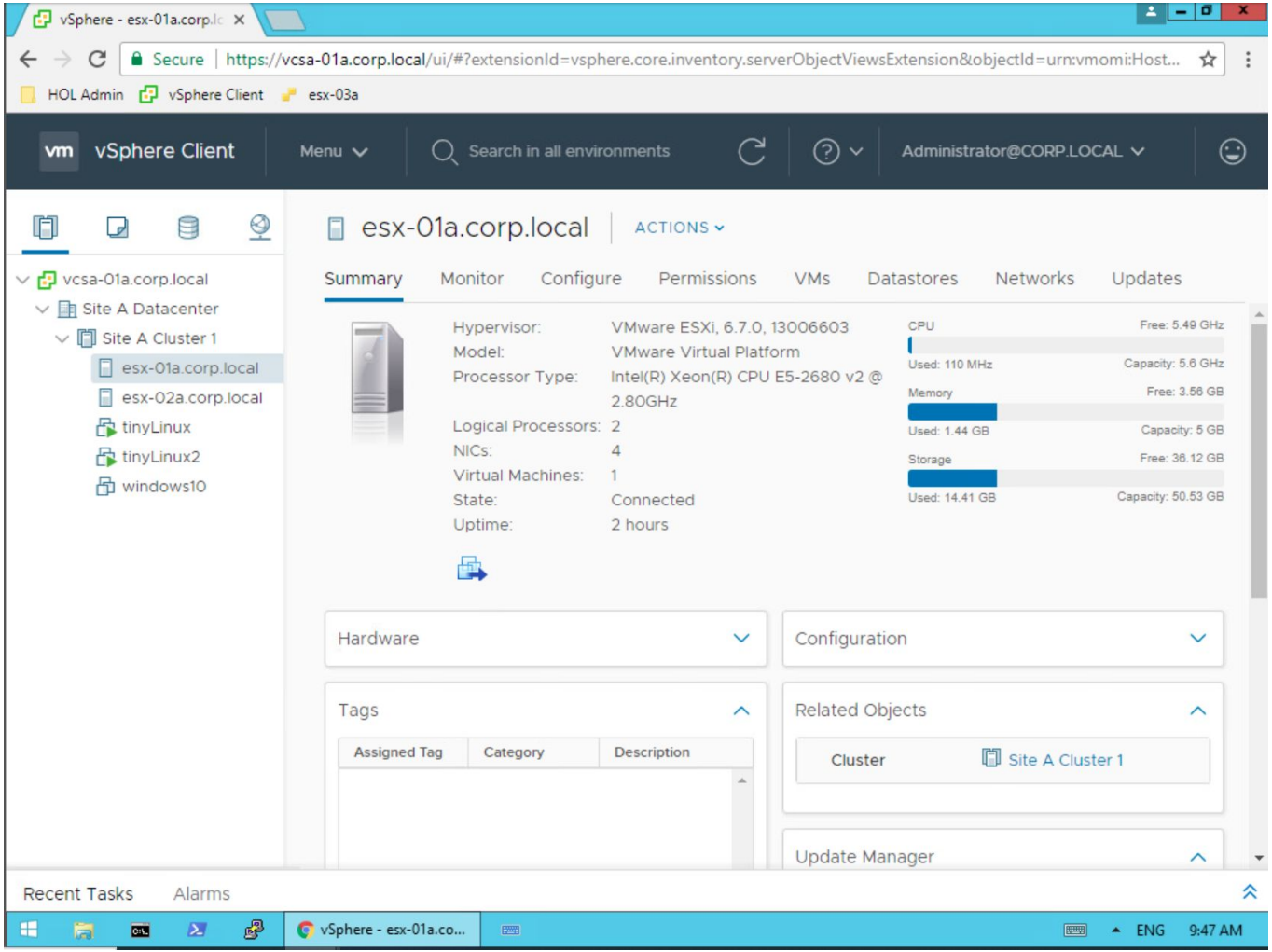
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ACTIONS
Summary
Monitor
Configure
Permissions
VMs
Datastores
Networks
Updates
Hypervisor: VMware ESXi, 6.7.0, 13006603
Model: VMware Virtual Platform
Processor Type: Intel(R) Xeon(R) CPU E5-2680 v2 @ 2.80GHz
Logical Processors: 2
NICs: 4
Virtual Machines: 1
State: Connected
Uptime: 2 hours
CPU
Free: 5.49 GHz
Used: 110 MHz
Capacity: 5.6 GHz
Memory
Free: 3.56 GB
Used: 1.44 GB
Capacity: 5 GB
Storage
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Capacity: 50.53 GB
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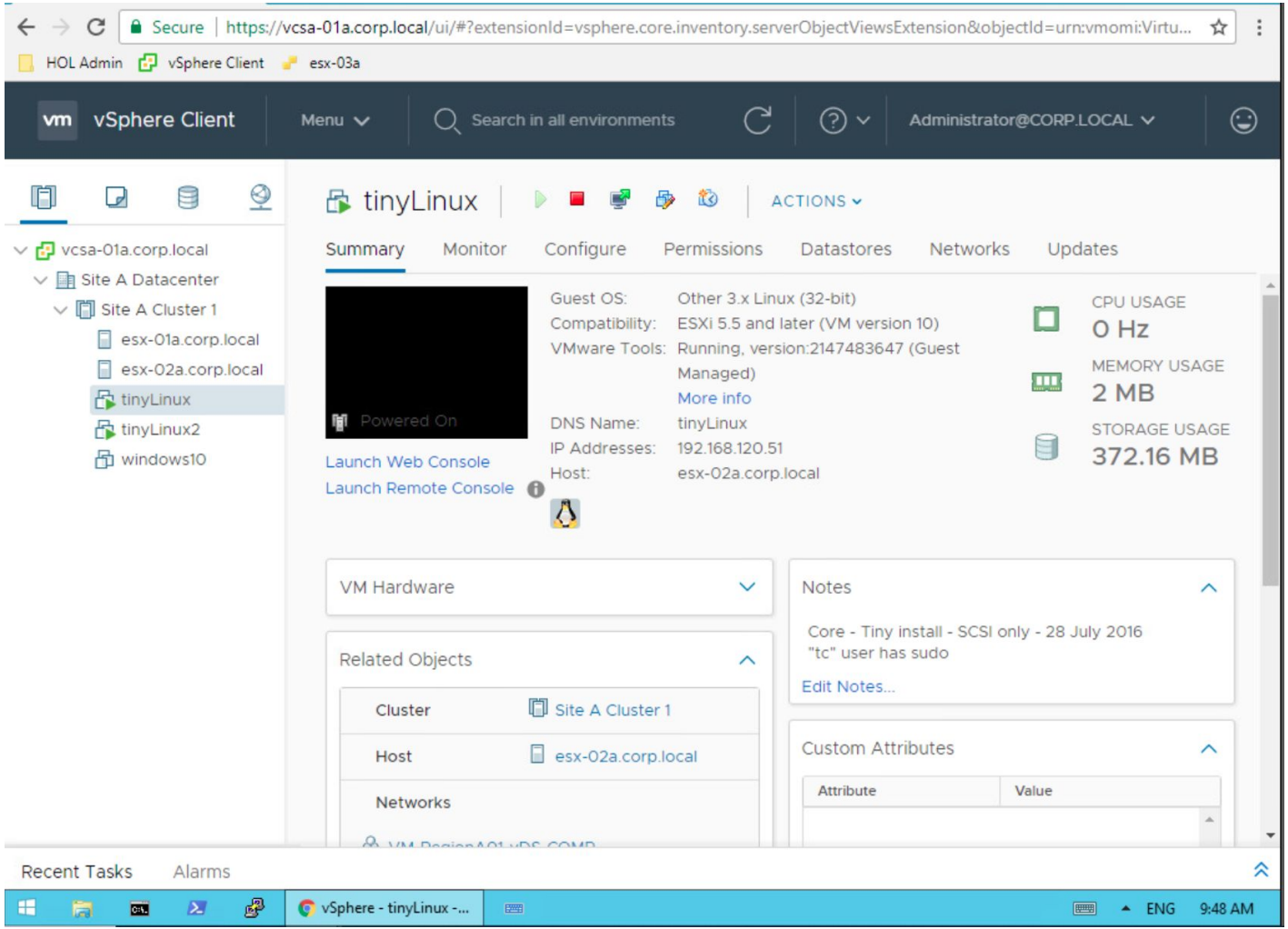
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tinyLinux
ACTIONS
Summary
Monitor
Configure
Permissions
Datastores
Networks
Updates
Powered On
Launch Web Console
Launch Remote Console
Guest OS: Other 3.x Linux (32-bit)
Compatibility: ESXi 5.5 and later (VM version 10)
VMware Tools: Running, version:2147483647 (Guest Managed)
More info
DNS Name: tinyLinux
IP Addresses: 192.168.120.51
Host: esx-02a.corp.local
CPU USAGE
0 Hz
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2 MB
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VM Hardware
Notes
Core - Tiny install - SCSI only - 28 July 2016
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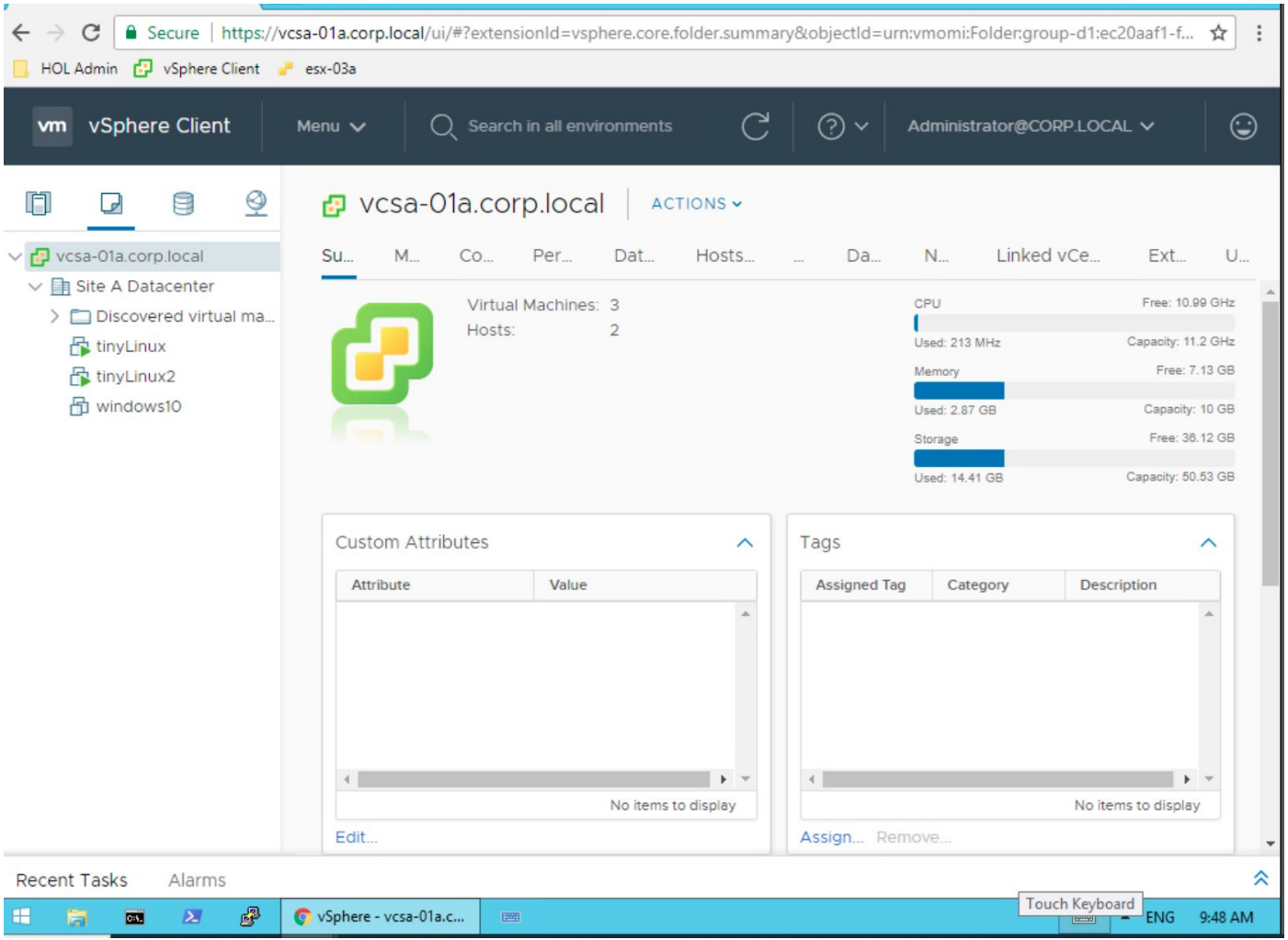
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CLUSTER SETTINGS