16

Configuring a Cluster

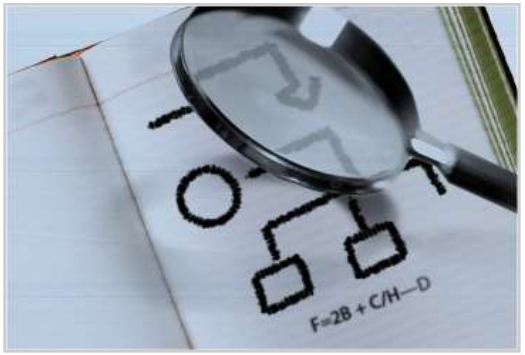
Objectives

After completing this lesson, you should be able to do the following:

- Prepare your environment for a cluster
- Create and configure a cluster
- Add servers to a cluster
- Start up and shut down clustered servers

Road Map

- Preparing for a cluster
  - Cluster architecture
  - Network and security topology
  - Machines
  - Names and addresses
- Configuring a cluster



Preparing Your Environment

Before you configure a cluster, you need to prepare your environment.

- Determine your cluster architecture.
- Understand your network and security topologies.
- Choose the machines for the cluster installation.
- Identify IP addresses or DNS names, and port numbers for the server instances in the cluster.
- For proxy architectures, you could have:
  - A single firewall between untrusted clients and the Web server layer
  - A firewall between the proxy layer and the cluster
- Configure the Node Manager

Hardware

- You can set up a cluster on a single computer for demonstration or development.
  - This is not practical for production environments.
- Each computer involved in a cluster should have a static IP address.
- There is no built-in limit for the number of server instances in a cluster.
  - Large multiprocessor servers can host clusters with numerous servers.
  - The recommendation is one server instance for every two CPUs.

IP Addresses and Host Names

- The IP address and host name information is needed for configuring and managing:
  - The administration server
  - Managed servers
  - Multicast communication
- For a production environment, use the host name resolved at DNS rather than IP addresses.
  - Firewalls can cause IP address translation errors.
- Each server should have a unique name.
- The multicast address should not be used for anything other than cluster communications.

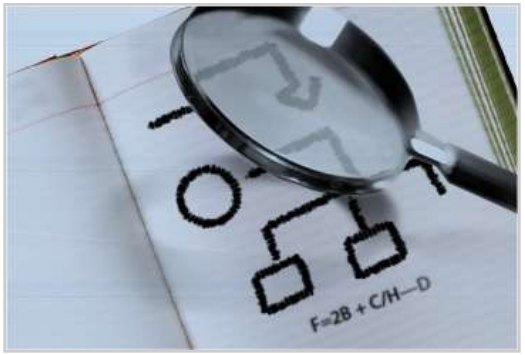
Cluster Address

- The cluster address is used to communicate with entity and session beans by constructing the host name portion of the request URLs.
- You can explicitly define the address of a cluster.
  - The cluster address should be a DNS name that maps to the IP addresses or DNS names of each Oracle WebLogic Server instance in the cluster.
- You can also have Oracle WebLogic Server dynamically generate an address for each new request.
  - Minimizes configuration
  - Ensures an accurate cluster address
- The dynamic cluster address is created in the form of:

```
listenaddress1:listenport1,listenaddress2:liste
  nport2,listenaddress3:listenport3
```

Road Map

- Preparing for a cluster
- Configuring a cluster
  - Administration Console
  - Configuration Wizard
  - WLST
  - Ant

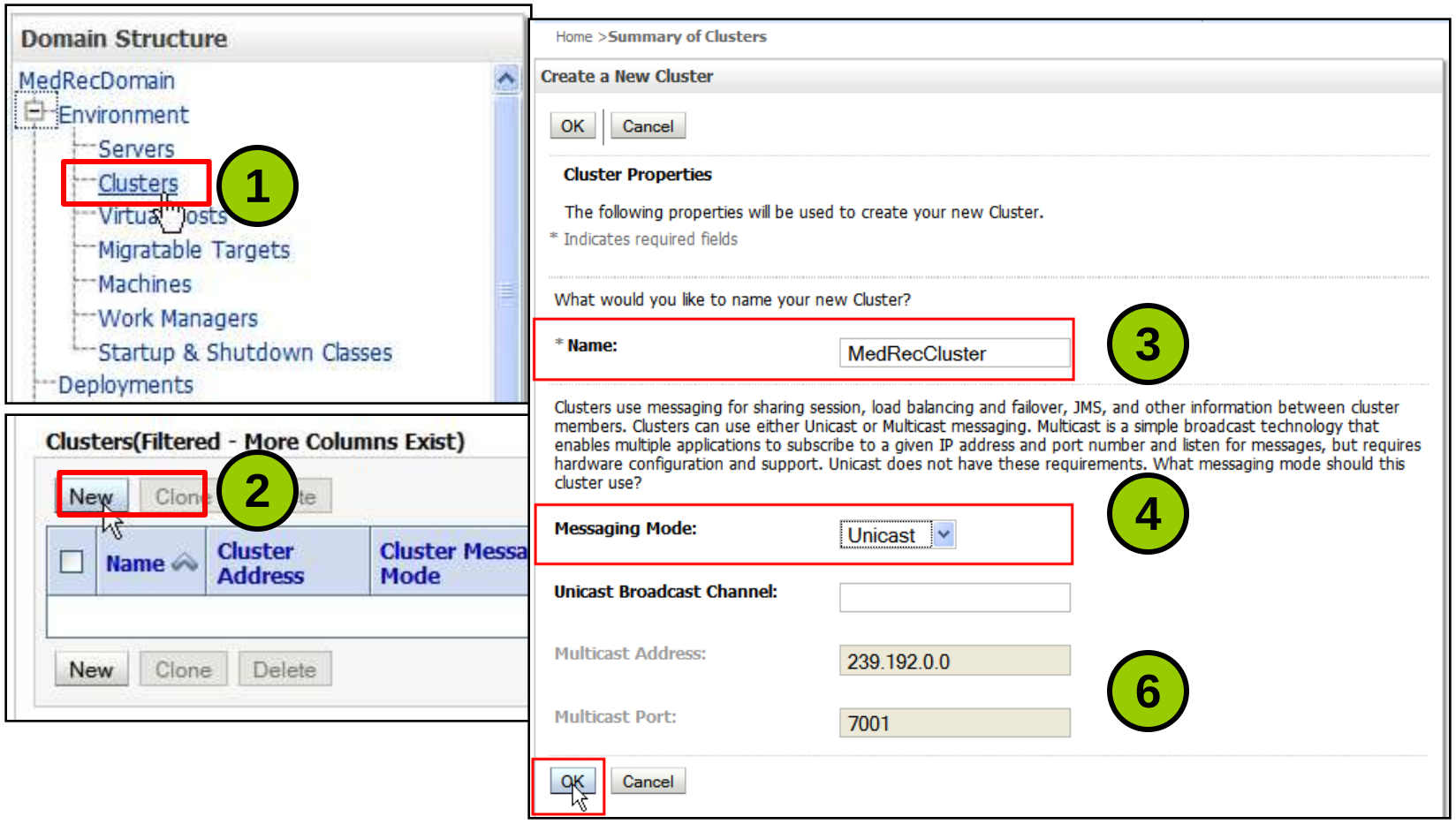


Methods of Configuring Clusters

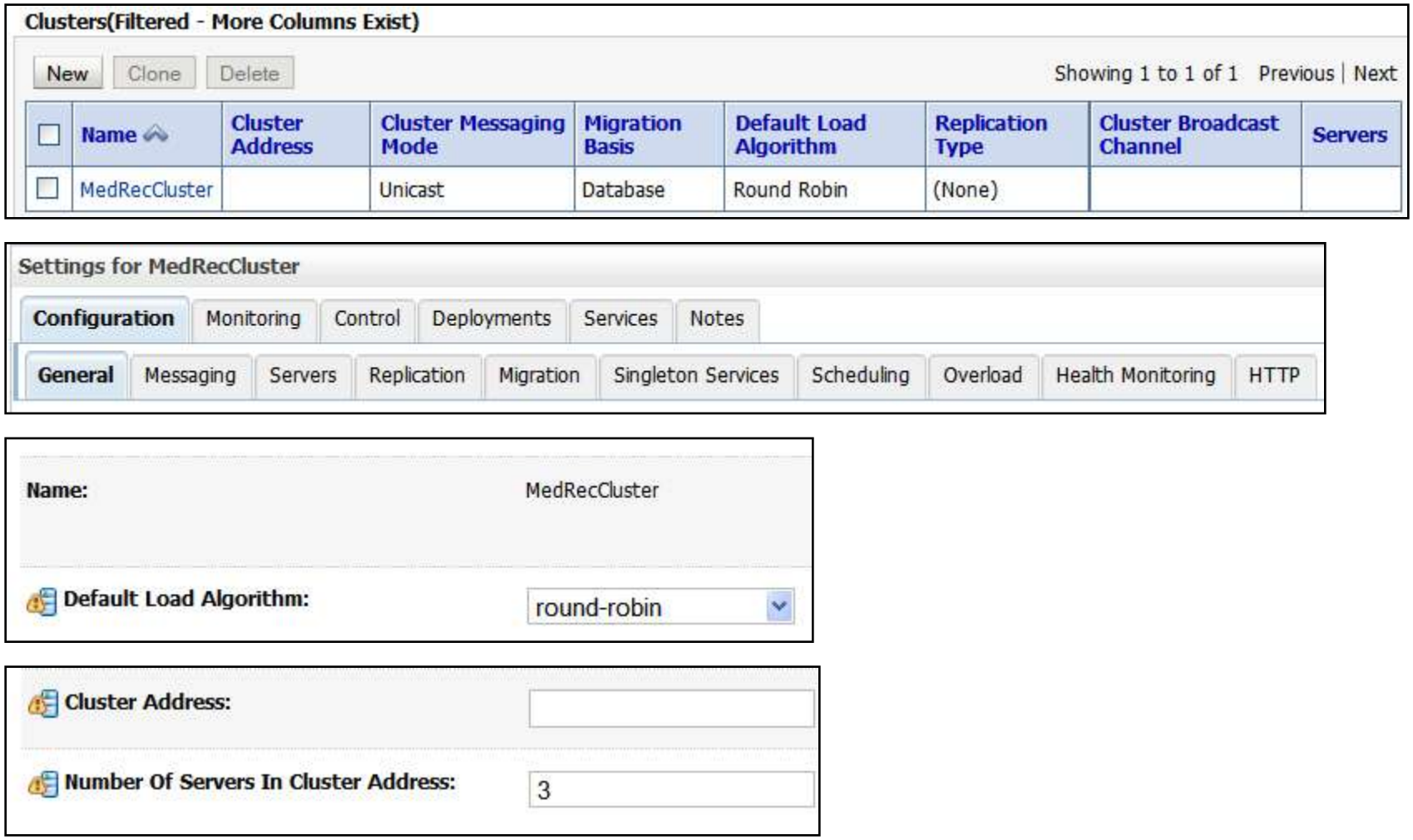
There are multiple ways to create and configure an Oracle WebLogic Server cluster:

- Configuration Wizard
- Administration Console
- WebLogic Scripting Tool (WLST)
- Java Management Extensions (JMX)
- WebLogic Server API

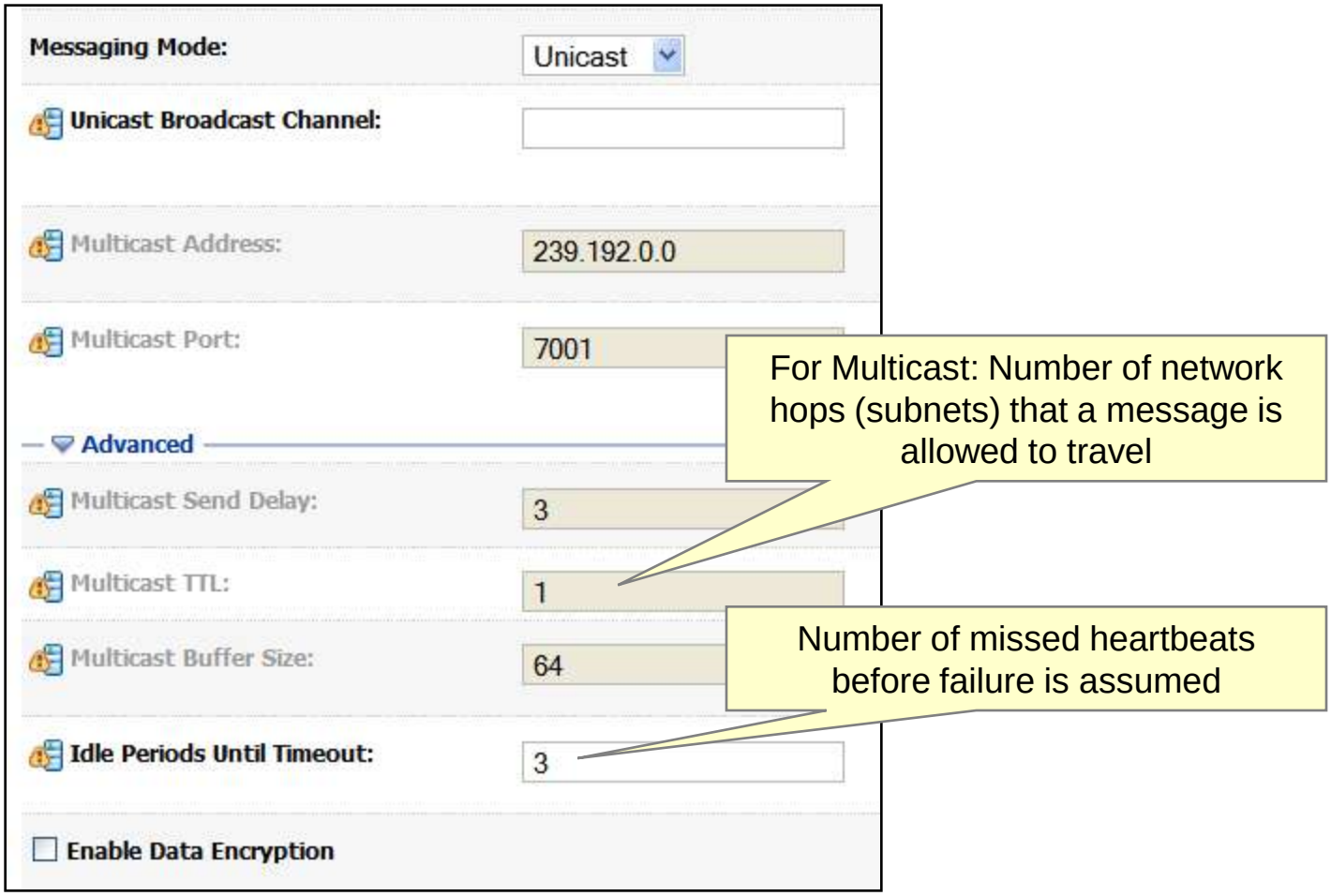
Creating a Cluster by Using the Administration Console



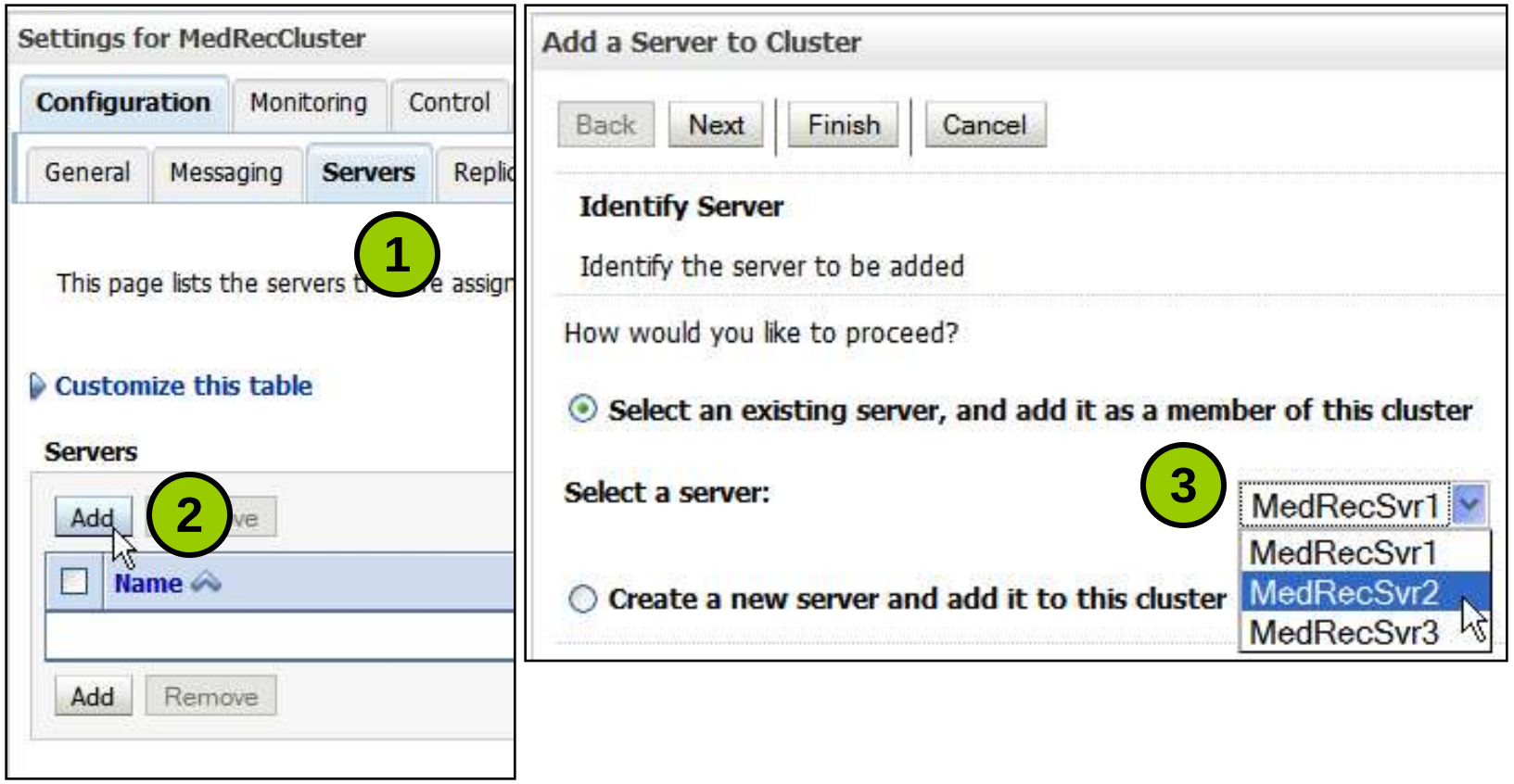
Setting Cluster Attributes



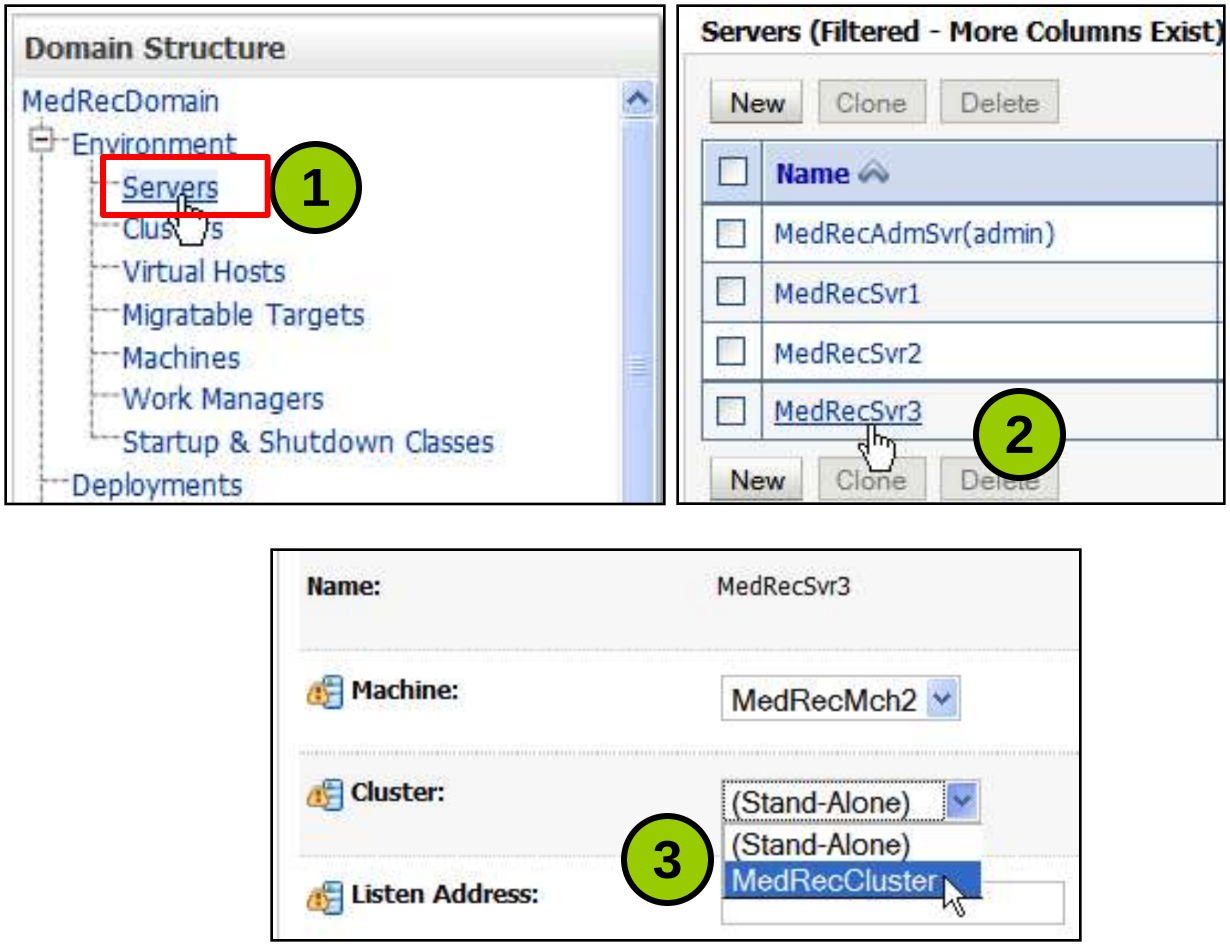
Configuring Cluster Communication



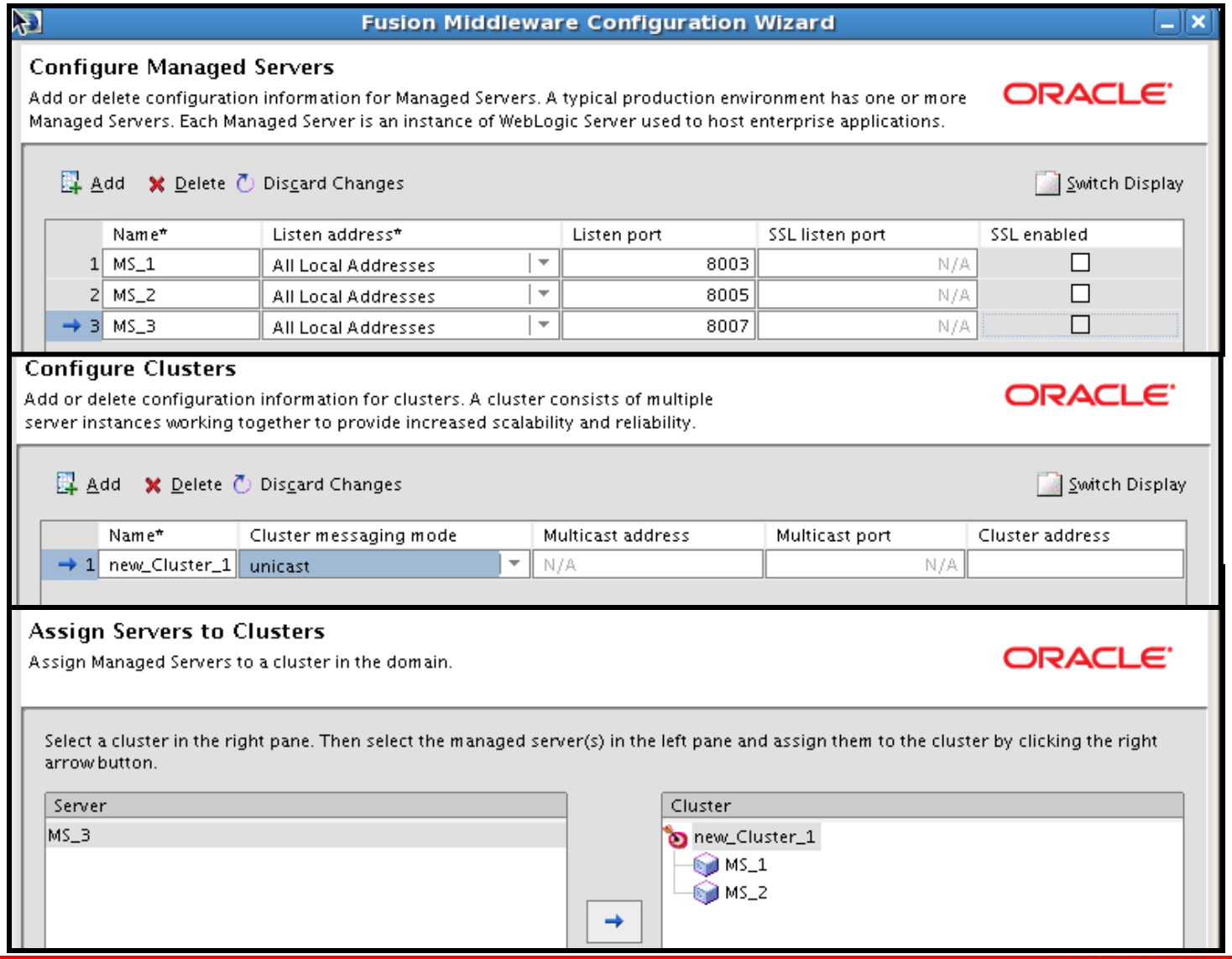
Adding Cluster Members: Option 1



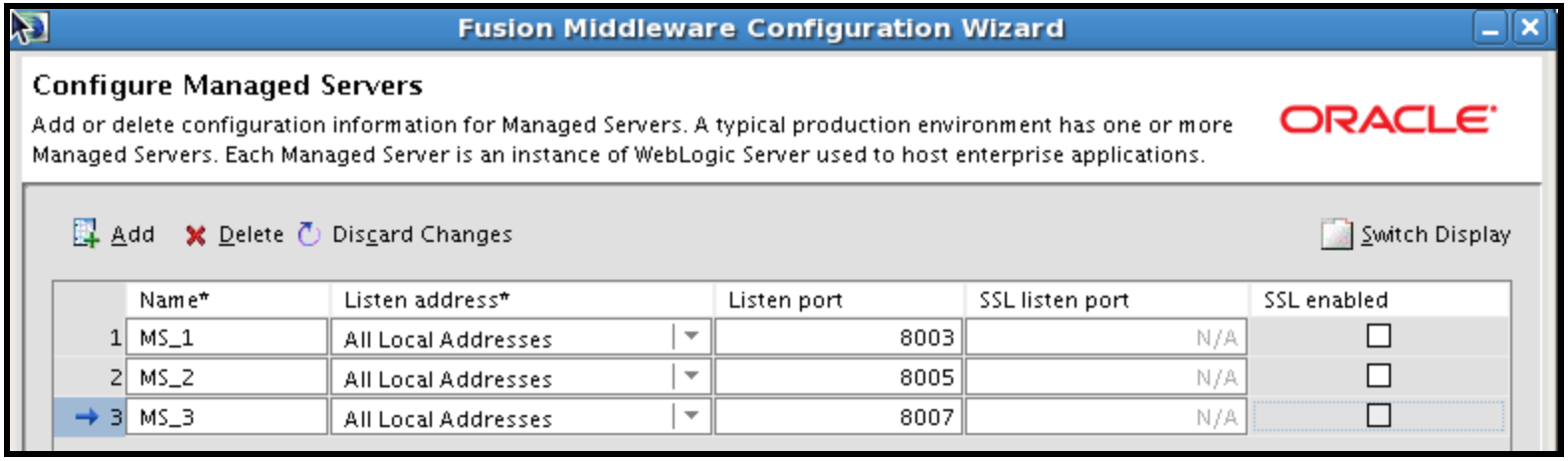
Adding Cluster Members: Option 2

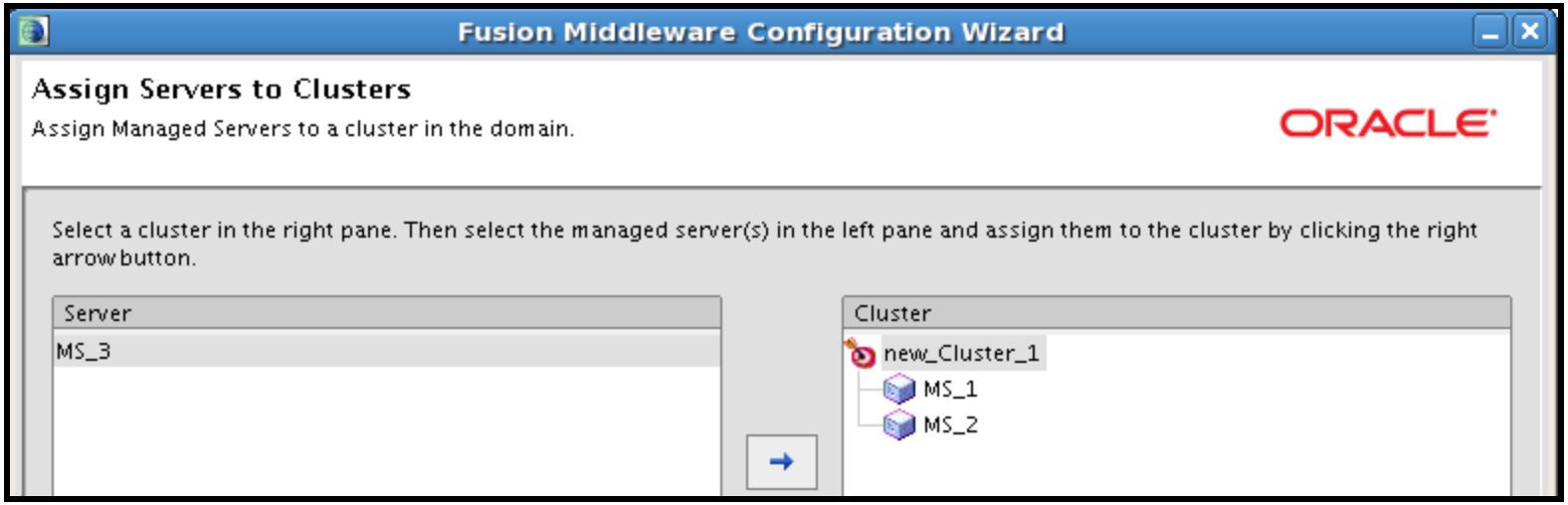


Creating a Cluster with the Configuration Wizard



Clusters and the Configuration Wizard





Clusters and WLST

```
connect('myuser','mypass','myhost:7001')
edit()
startEdit()
cd('/')
cmo.createCluster('HRWebCluster')
cd('/Clusters/HRWebCluster')
cluster = getMBean('/Clusters/HRWebCluster')
cd('/Servers/serverA')
cmo.setCluster(cluster)
cd('/Servers/serverB')
cmo.setCluster(cluster)
cd('/Servers/serverC')
cmo.setCluster(cluster)
activate()
disconnect()
exit()
```

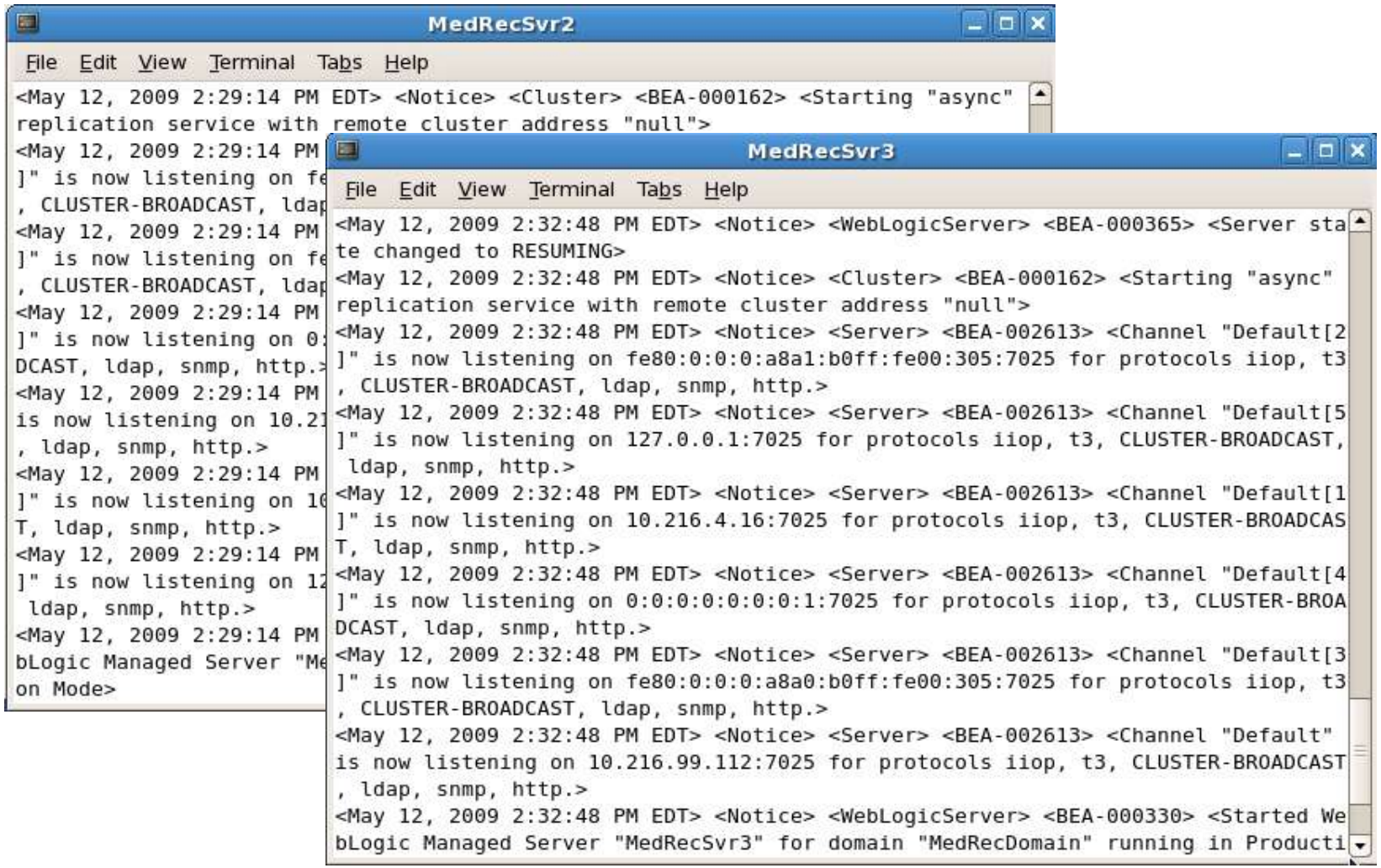
Create a new cluster.

Assign cluster members.

Creating a Cluster Using the Cluster MBean

- The Cluster MBean is used to create a cluster by using Ant or command-line tools.
- Configuring the cluster from the command line requires the combined use of Cluster and Server MBeans.
- To create new clusters within a domain, use:
  - `weblogic.management.configuration.ClusterMBean`

Synchronization When Starting Servers in a Cluster



Configuring OHS as Proxy Server

- To effectively use the load balancing and failover features, you should configure a proxy.
- You can configure OHS as the proxy by:
  - Including configuration directives in `httpd.conf`
  - Creating another file with directives and setting an include directive in `httpd.conf`
- The WebLogicCluster directive is the most important `mod_wl_ohs` for a cluster.
- You specify the list of host names of the managed servers with their ports in the WebLogicCluster directive.
- If you add or remove members to or from this list, you may have to restart OHS.

Starting and Stopping OHS Manually

- To give effect to configuration changes to `httpd.conf`, you should restart OHS.
- The processing life cycle for OHS is managed by Oracle Process Manager and Notification Server (OPMN).
- The command-line interface to OPMN is `opmnctl`.
- To restart OHS, use the following command:

```
$> ./opmnctl restartproc process-type=OHS
```

- You can also stop, and then start OHS.

```
$> ./opmnctl stopproc process-type=OHS
$> ./opmnctl startproc process-type=OHS
```

Verifying Access Through OHS

Get the port on which OHS is running by using:

```
$> ./opmnctl status -l
Processes in Instance: wtinst
-------------+------------+------+------+----------+-
---------+----------+-----------------------------
ias-component | process-type|  pid |status |       uid |
memused |   uptime | ports
-------------+------------+------+------+----------+-
---------+----------+-----------------------------
ohsa          | OHS         | 8614 | Alive | 1775979054|
348736 |   0:00:29 | https:8889,https:4443,http:8888
```

Quiz

Which of the following is NOT an available configuration attribute associated with Oracle WebLogic Cluster?

1. Messaging mode
2. Multicast TTL
3. Multicast port
4. Broadcast server

Summary

In this lesson, you should have learned how to:

- Prepare your environment for a cluster
- Create and configure a cluster
- Add servers to a cluster
- Start up and shut down clustered servers

Practice 16 Overview: Configuring Clusters

This practice covers the following topics:

- Creating a cluster
- Assigning two servers to the cluster
- Verifying the port and status of Oracle HTTP Server