8

Configuring Node Managers

Objectives

After completing this lesson, you should be able to:

- Define the Oracle WebLogic Server machine
- Configure a machine and assign servers to it by using the console and WebLogic Scripting Tool (WLST)
- Explain the Node Manager architecture
- Describe the organization and contents of a Node Manager directory structure
- Configure, start, and stop Node Managers
- Describe how to start and stop procedures

Road Map

- Node Managers
- Machines
- Configuring a Node Manager

What Node Managers Can Do

- You can use Node Managers to:
  - Start, shut down, and restart an administration server
  - Start, shut down, suspend, and restart managed servers
  - Automatically restart the administration and managed servers on failure
  - Monitor servers and collect log data
- Node Managers:
  - Run on the same computers as the managed servers
  - Can be run automatically in the background, as Windows services or UNIX daemons
  - Are available as either Java-based or (for UNIX only) script-based processes

Road Map

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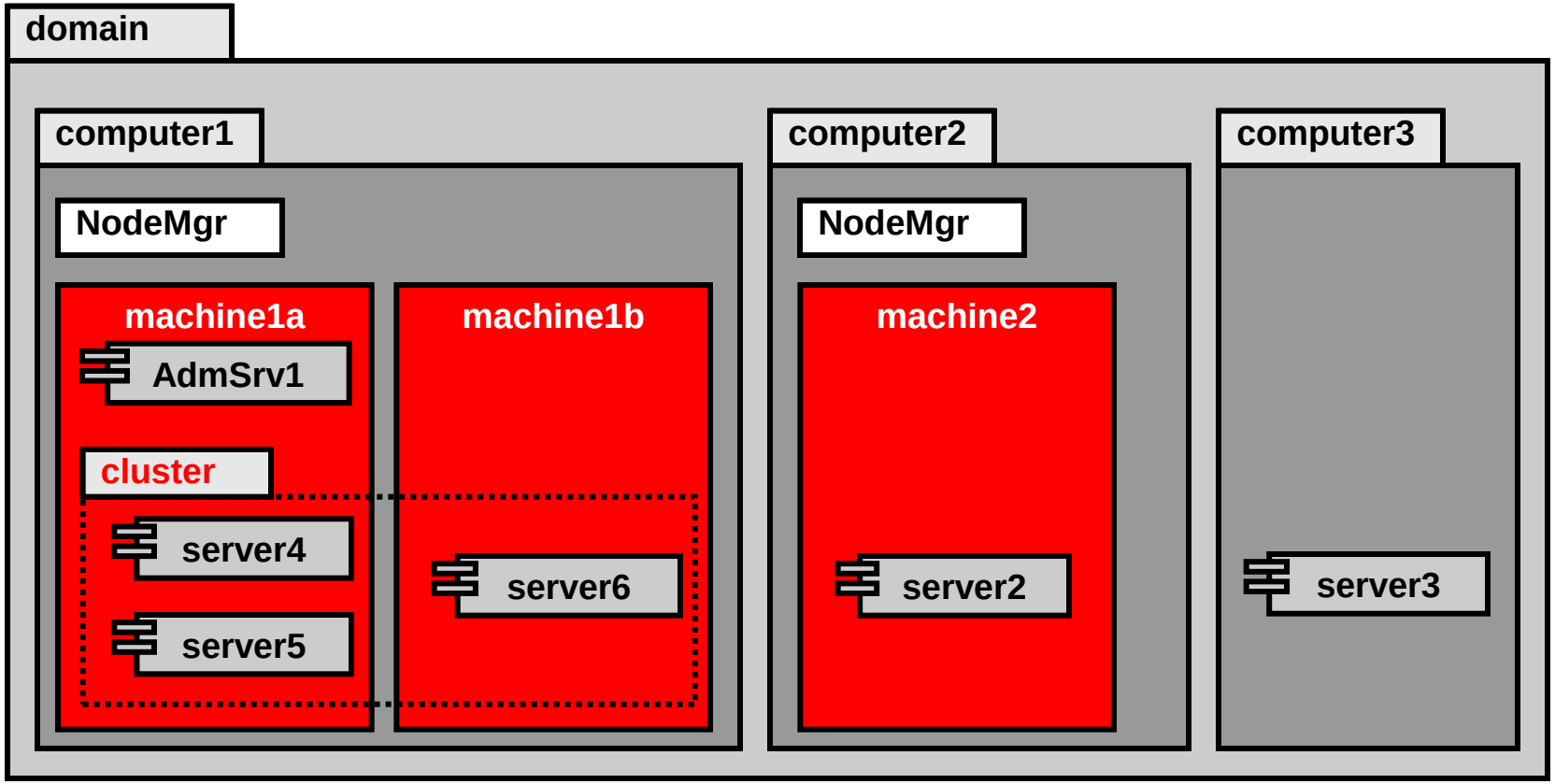
- Machines
- Configuring a Node Manager

What Is a Machine?

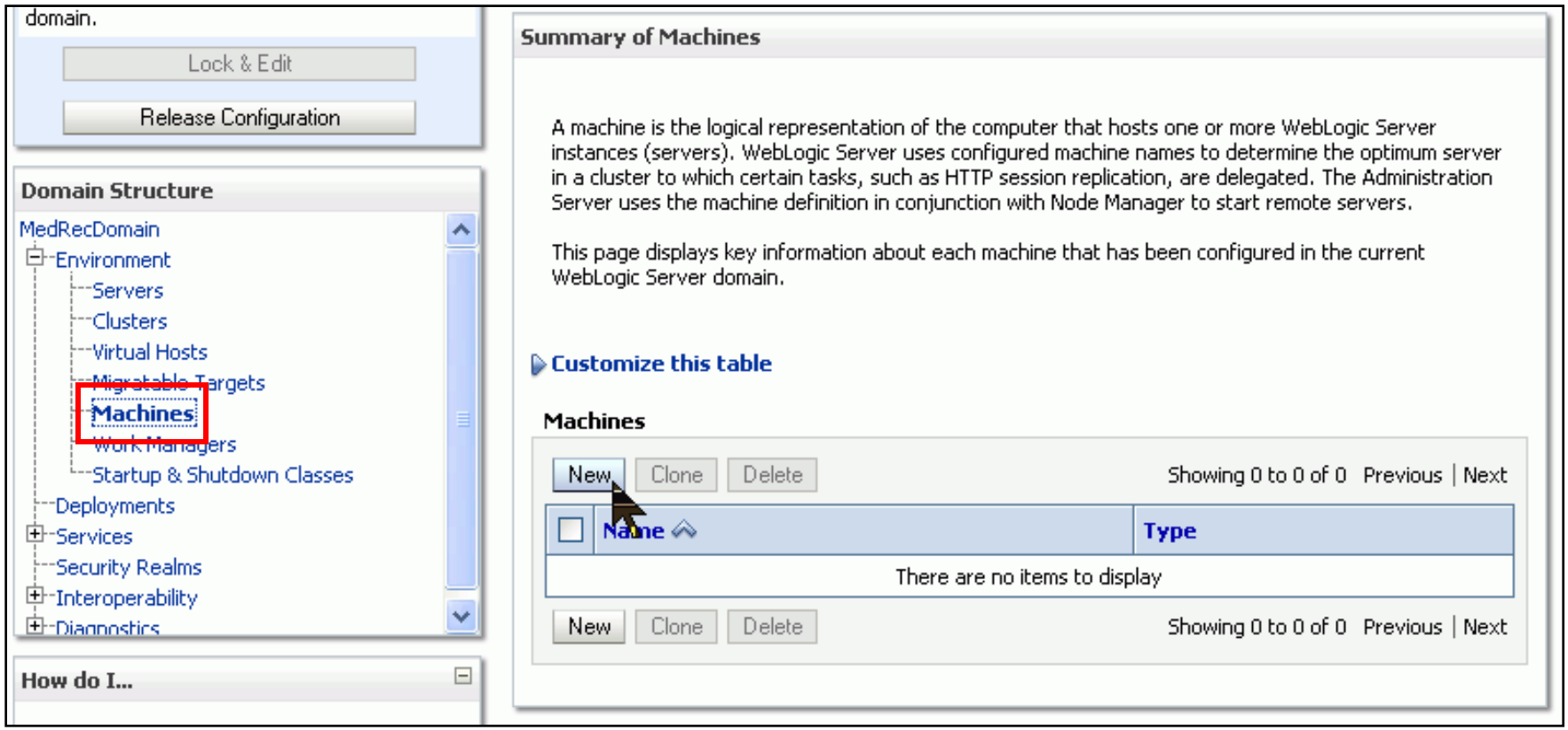
- The main purpose of a machine is to administratively manage servers.
- A machine is required by a Node Manager.
- Machines are optionally used by clusters (described later in the course).
- A machine is a logical description, not a physical entity.

Relationship of Machines to Other Components

A typical topology for WebLogic environments contains several components.

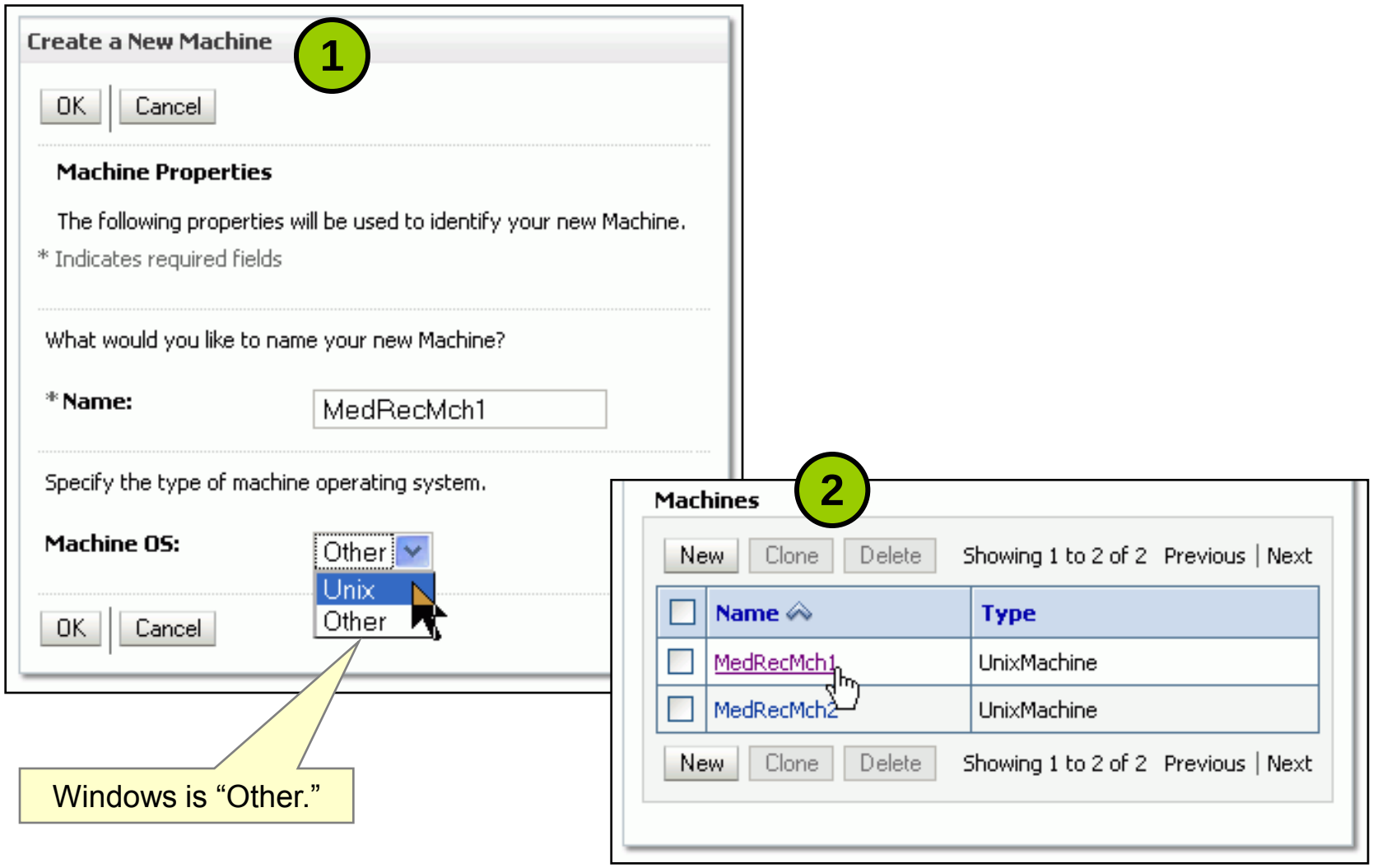


Creating a Machine

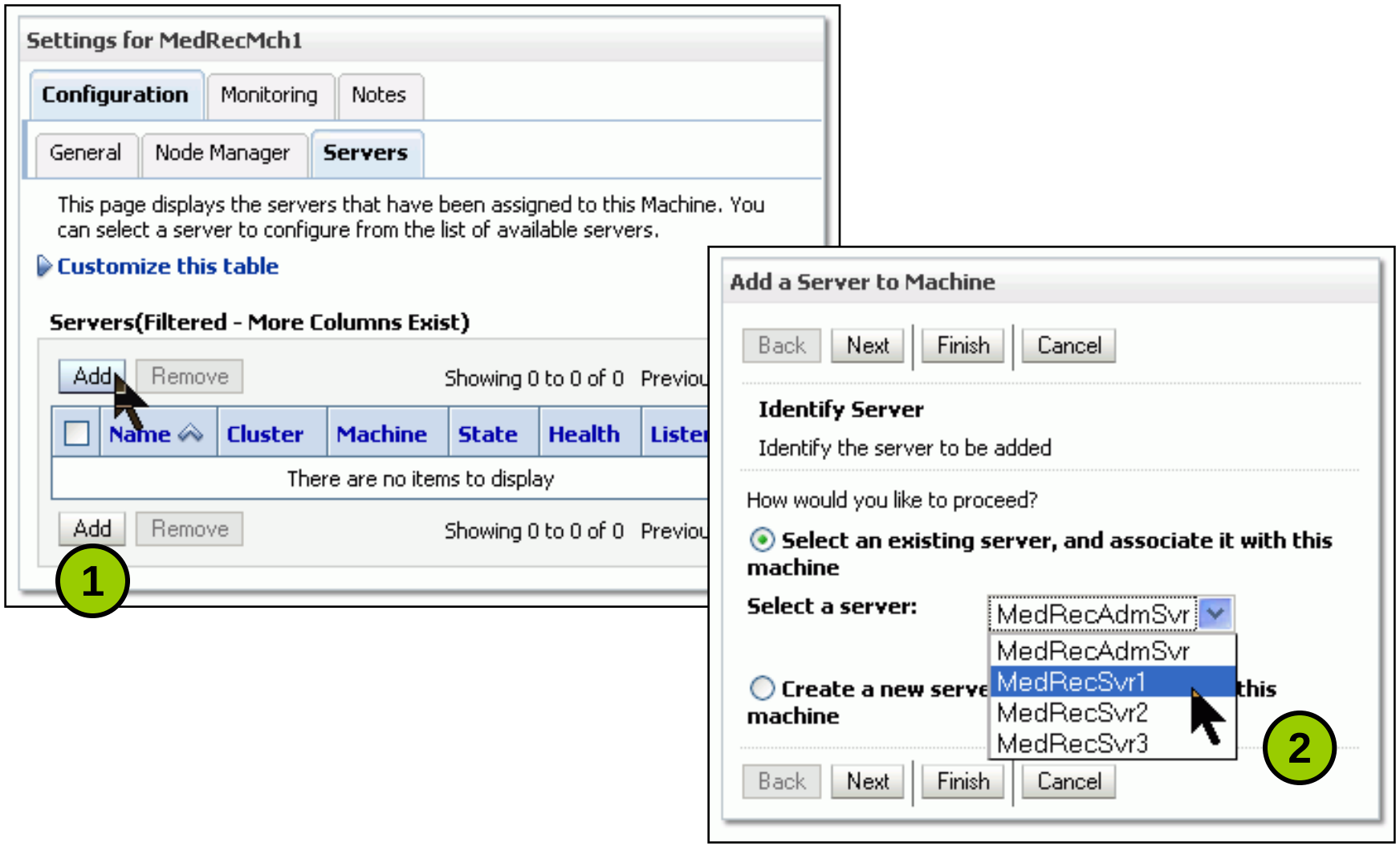



```
wls:/mydomain/edit> startEdit()
wls:/mydomain/edit !> create('MedRecMch3','Machine')
wls:/mydomain/edit !> save()
```

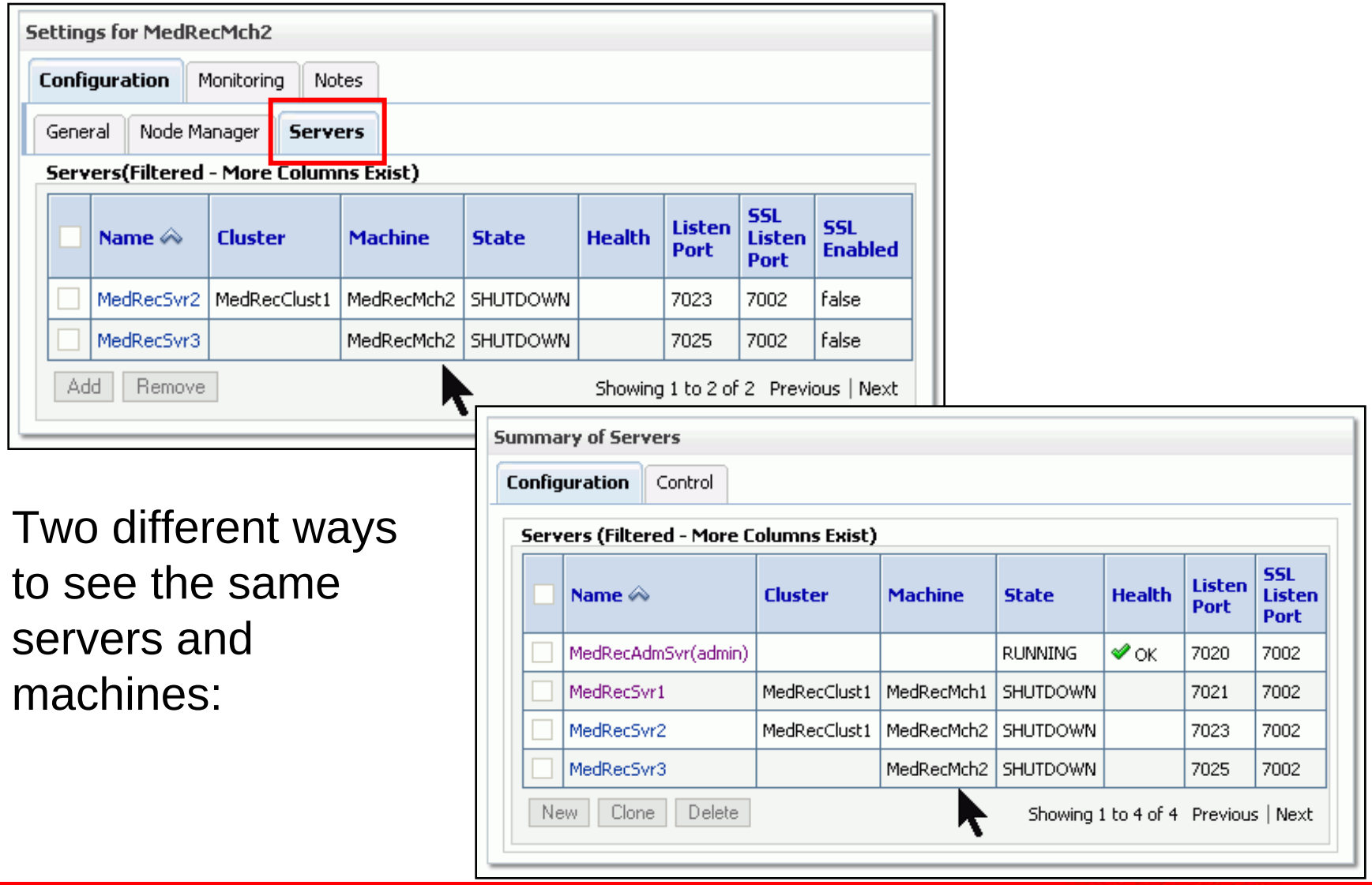
Defining Names and OS of Machines



Assigning Servers to a Machine

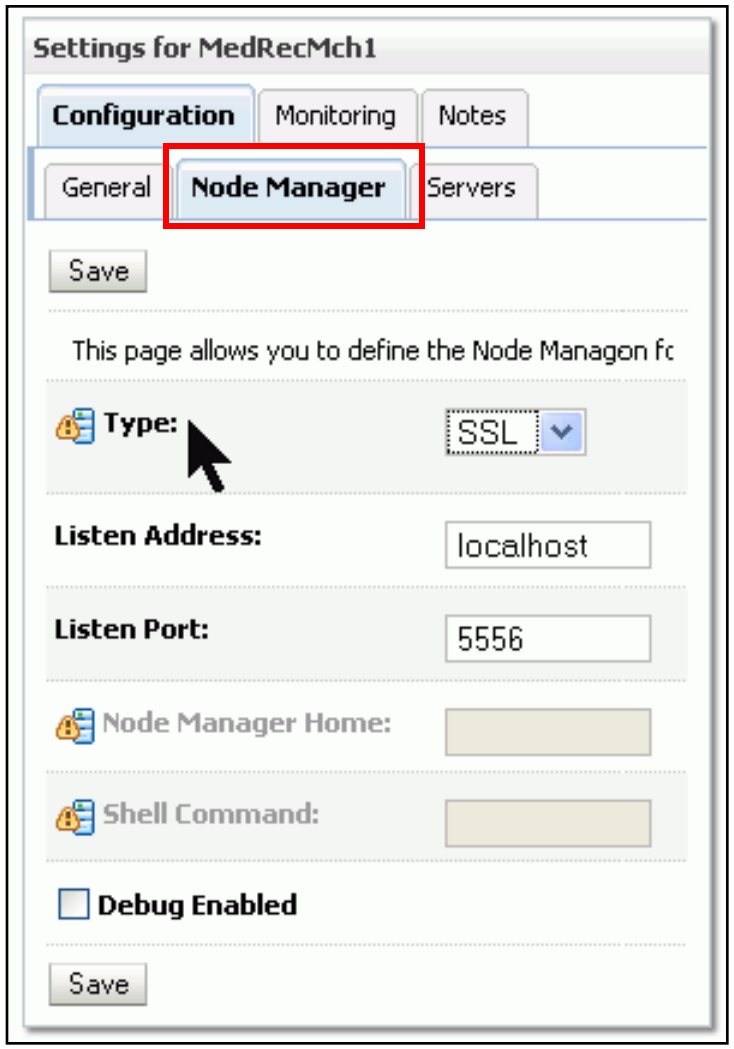


Monitoring Machines and Servers



Two different ways to see the same servers and machines:

Configuring a Machine to Use a Node Manager

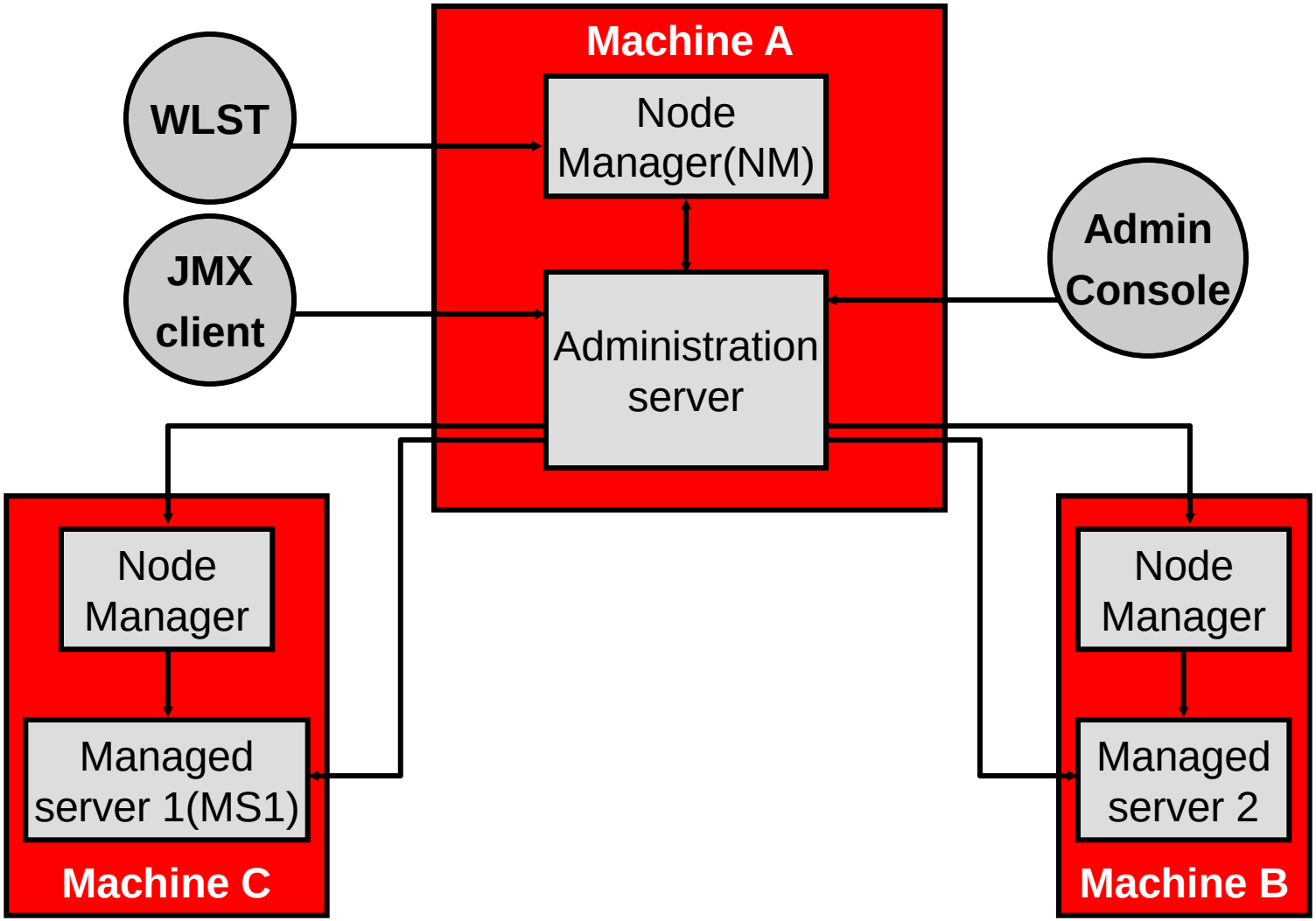


A WLS machine resource maps a machine with the server instances that it hosts.

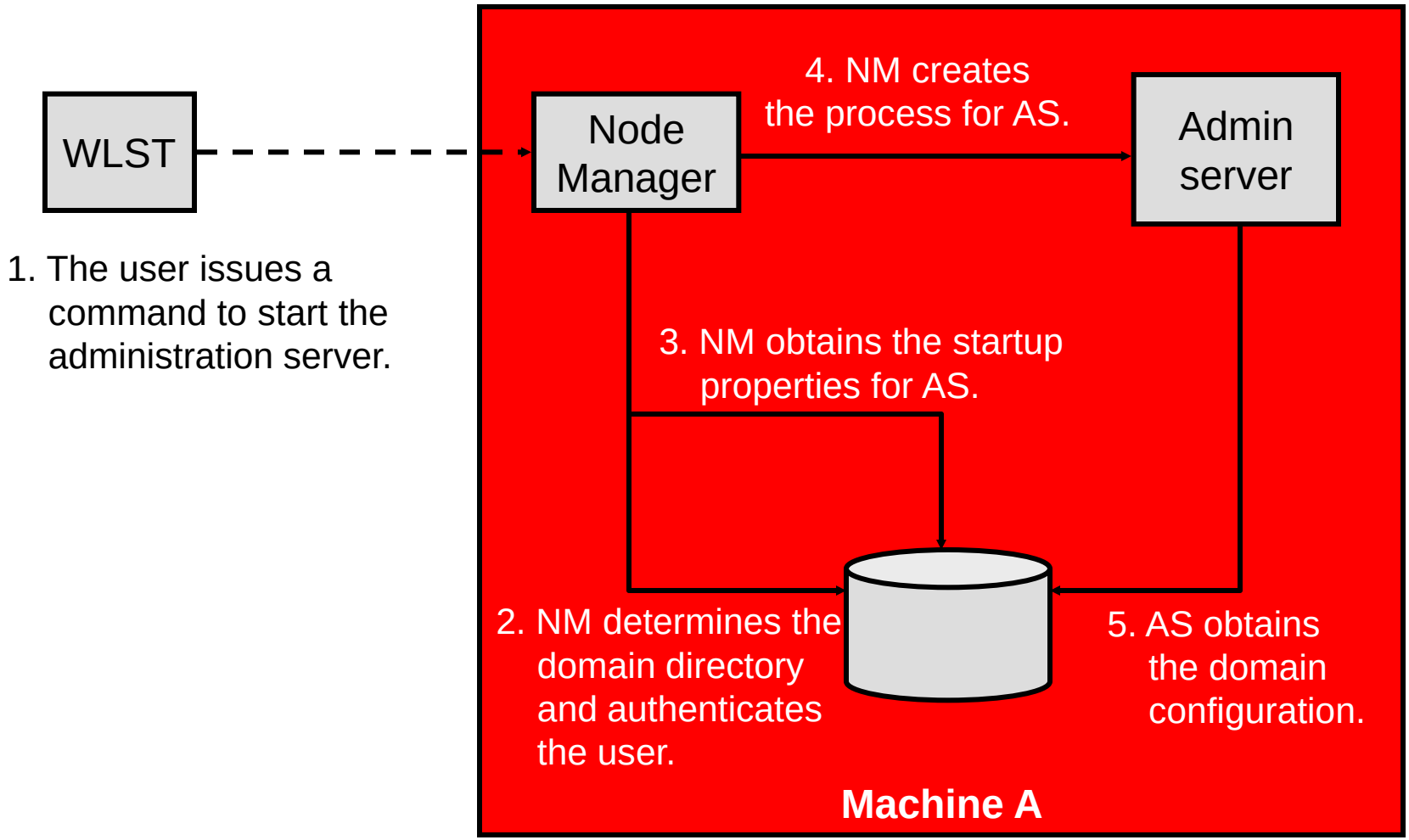
Choices for Type:

- Secure
  - SSH (`wlscontrol.sh`)
  - SSL (calls Java)
- Unsecure
  - Plain
    - `startNodeManager.sh`
    - Calls Java
  - RSH

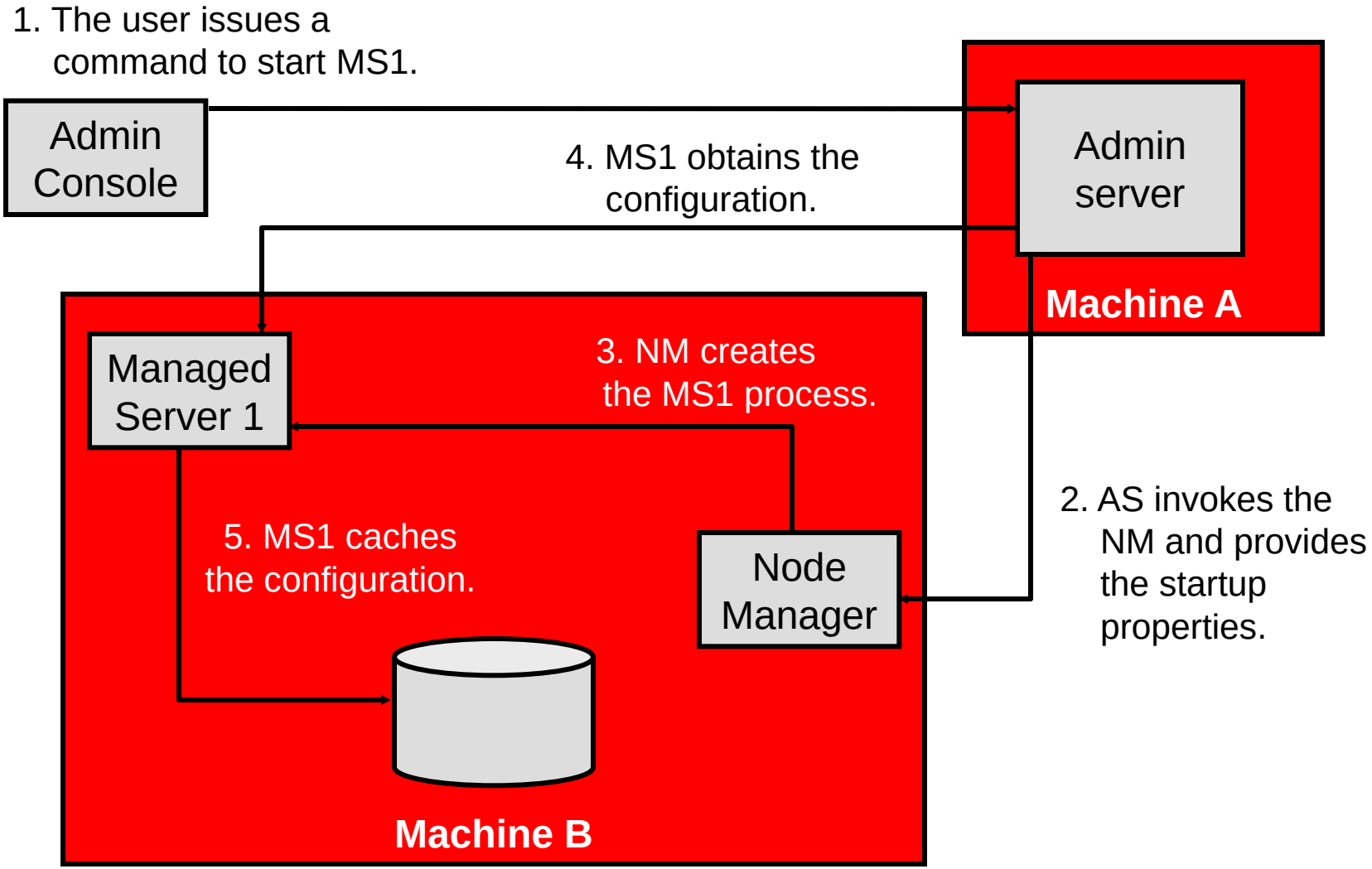
Node Manager Architecture



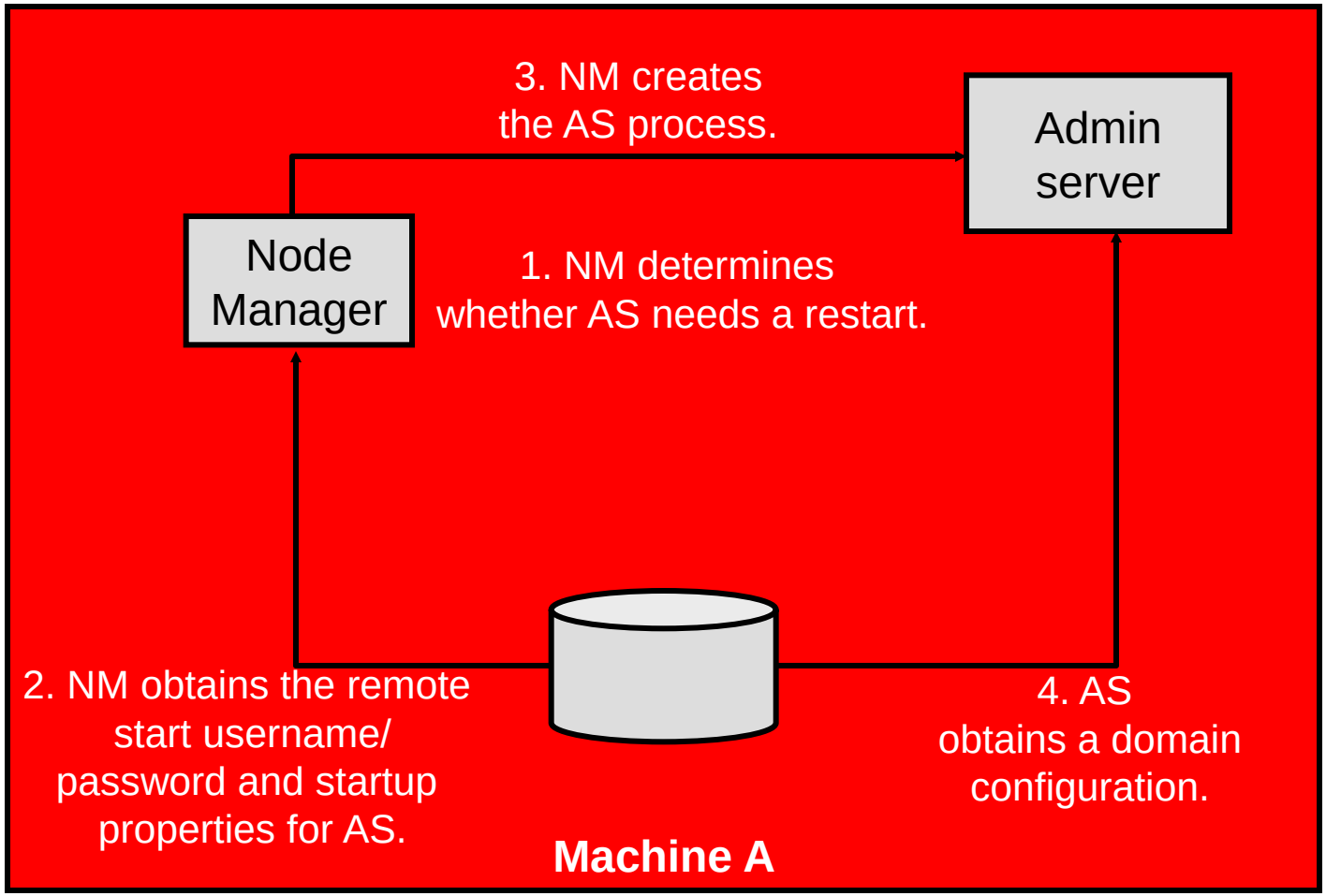
How a Node Manager Starts an Administration Server



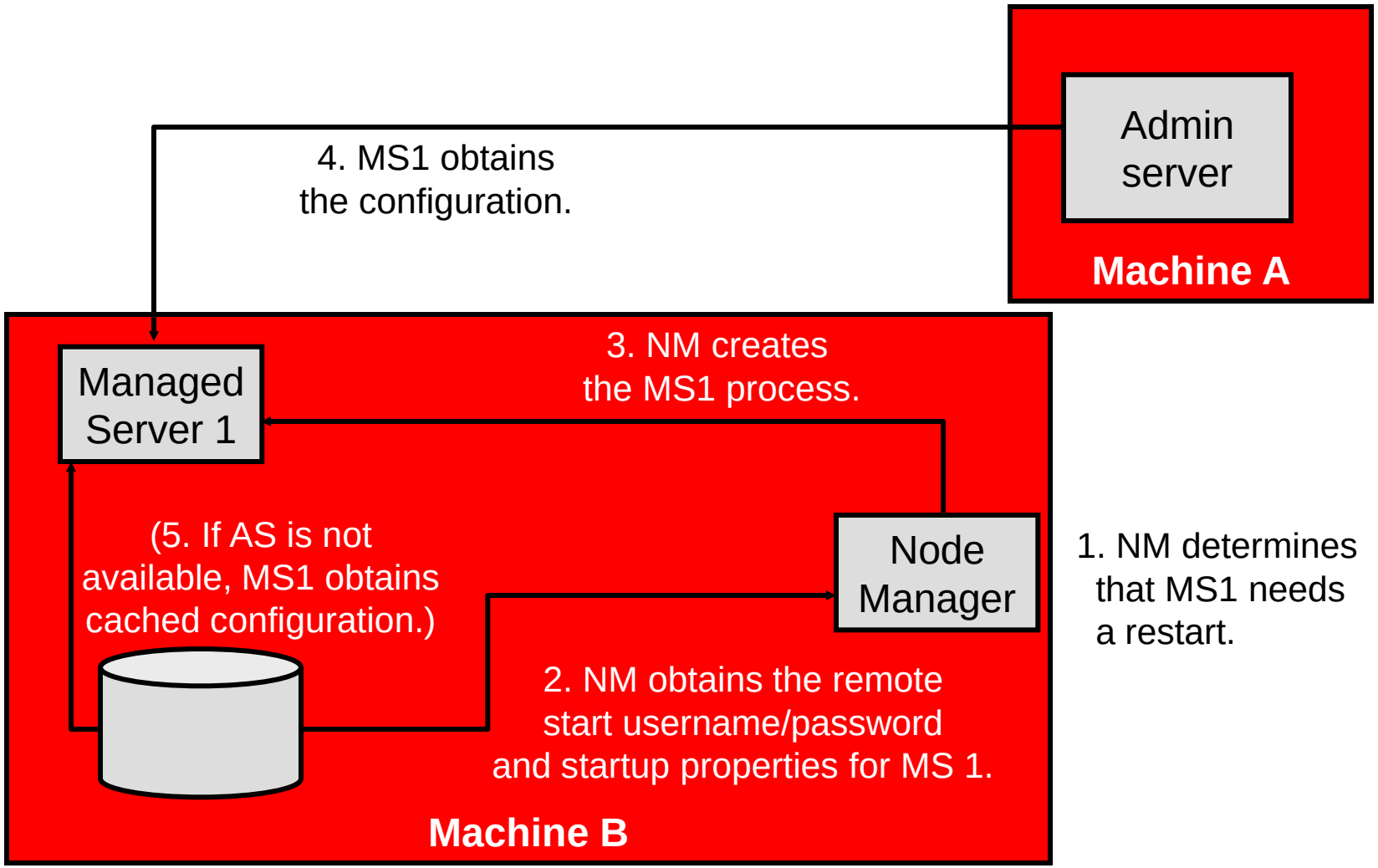
How a Node Manager Starts a Managed Server



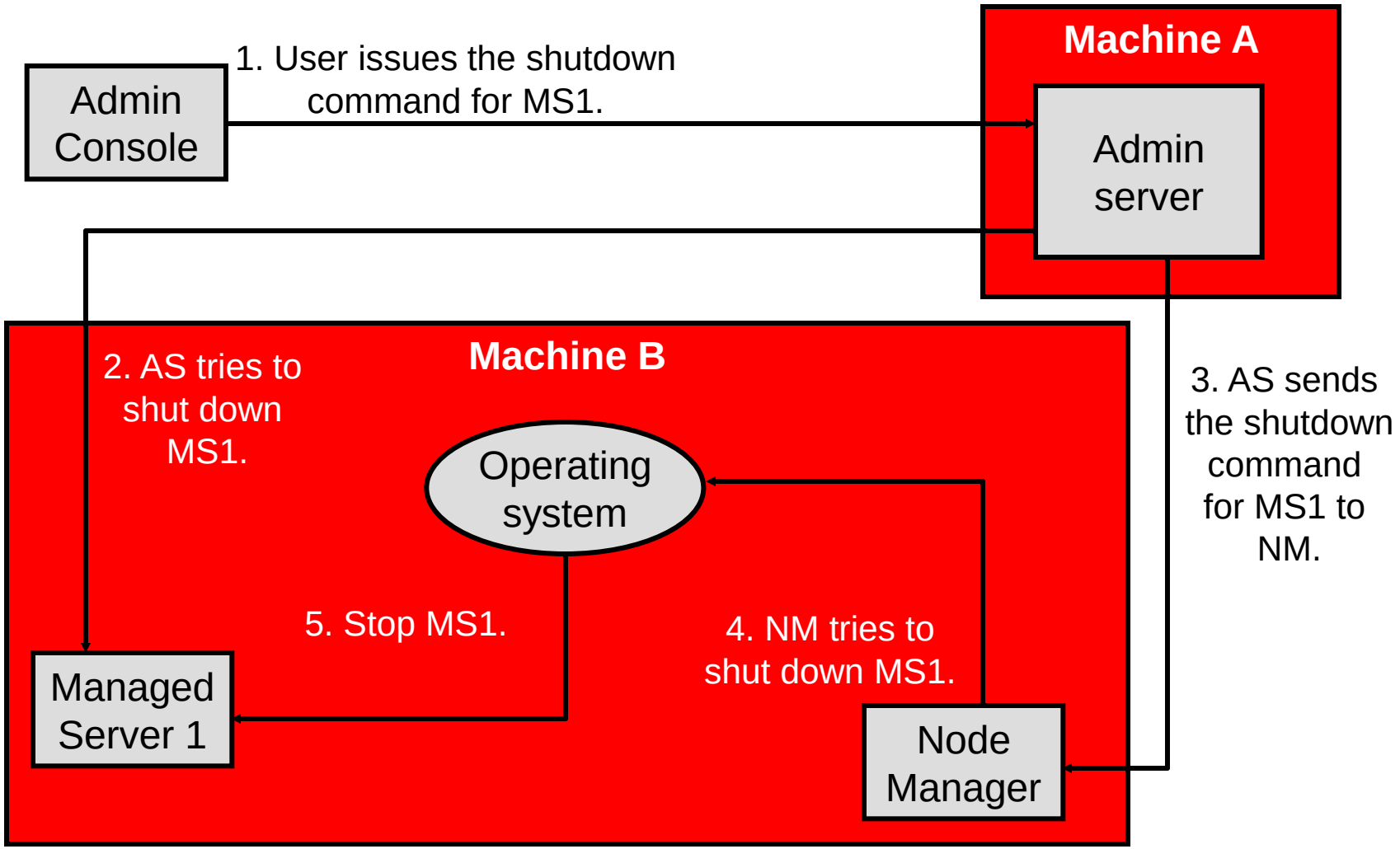
How a Node Manager Restarts an Administration Server



How a Node Manager Restarts a Managed Server



How a Node Manager Shuts Down a Server Instance

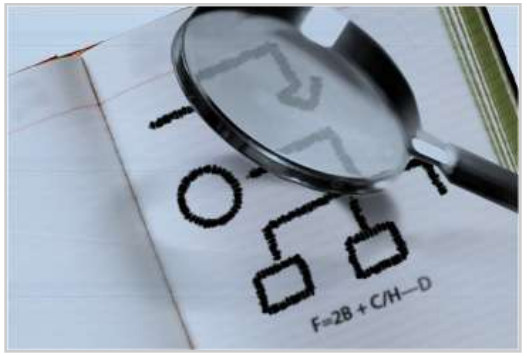


Versions of Node Managers

- There are two versions of Node Managers:
  - Java-based Node Managers
  - Script-based Node Managers
- Java-based Node Managers run within a Java Virtual Machine (JVM) process.
- Script-based Node Managers (used only for UNIX systems) do not have as much security, but provides the ability to remotely manage servers over a network using Secure Shell (SSH).
- Node Managers are required for:
  - Whole server migration
  - Some configurations of automatic server migration

Road Map

- Node Managers
- Machines
- Configuring a Node Manager



Node Manager Default Behaviors

- After Oracle WebLogic Server is installed, the Node Manager is “ready-to-run” if the Node Manager and the administration server are on the same machine.
- By default, the following behaviors are configured:
  - The Administration Console can use Node Manager to start the managed servers.
  - The Node Manager monitors the managed servers that it started.
  - The automatic restart of managed servers is enabled.

Configuring a Java-Based Node Manager

The configuration tasks for the Java-based Node Manager include:

- Reconfiguring the startup service for a Windows installation
- Daemonizing the Node Manager for UNIX systems
- Configuring the Java-based Node Manager security
- Reviewing `nodemanager.properties`
- Configuring the Node Manager on multiple machines

Reconfiguring the Startup Service for a Windows Installation

1. Delete the Node Manager service using `uninstallNodeMgrSvc.cmd`.
2. Edit `installNodeMgrSvc.cmd` to specify the listen address and the listen port of the Node Manager.
3. Run `installNodeMgrSvc.cmd` to reinstall the Node Manager as a service, listening on the updated address and port.

Node Manager as a UNIX Daemon

- Reinstall the Node Manager daemon.
- Configure the Node Manager using `nodemanager.properties`.
  - Reinstall the Node Manager daemon.

Reviewing `nodemanager.properties`

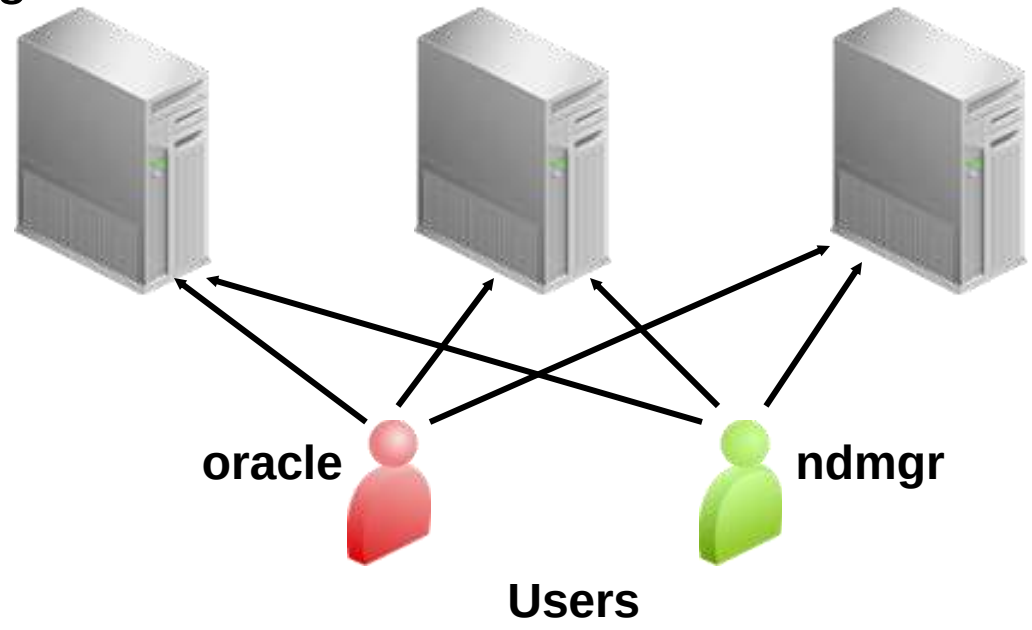
- You can specify the properties for a Java-based Node Manager process either at the command line or in the `nodemanager.properties` file.
- Values supplied on the command line take precedence over those in the `nodemanager.properties` file.
- To configure a Node Manager to use a start script, in the `nodemanager.properties` file:
  - Set the `StartScriptEnabled` property to `True` (default is `false`)
  - Set the `StartScriptName` property to the name of your script (default is `startWebLogic.sh`)

Configuring a Script-Based Node Manager

- The SSH Node Manager is a shell script, `wlscontrol.sh`, located in `NM_HOME/common/bin`.
- An executable SSH client must reside on each machine where the Node Manager or the Node Manager client runs.
  - An SSH client is typically a standard part of a UNIX or Linux installation.
- The configuration tasks for a script-based Node Manager include:
  - Using SSH with the script-based Node Manager
  - Creating a Node Manager user
  - Configuring the script-based Node Manager security

Creating Management OS Users

- Unless otherwise specified, the Node Manager runs as the user that started the domain.
- Before you run a Node Manager, you should create a dedicated UNIX user account for performing Node Manager functions.



Additional Configuration Information

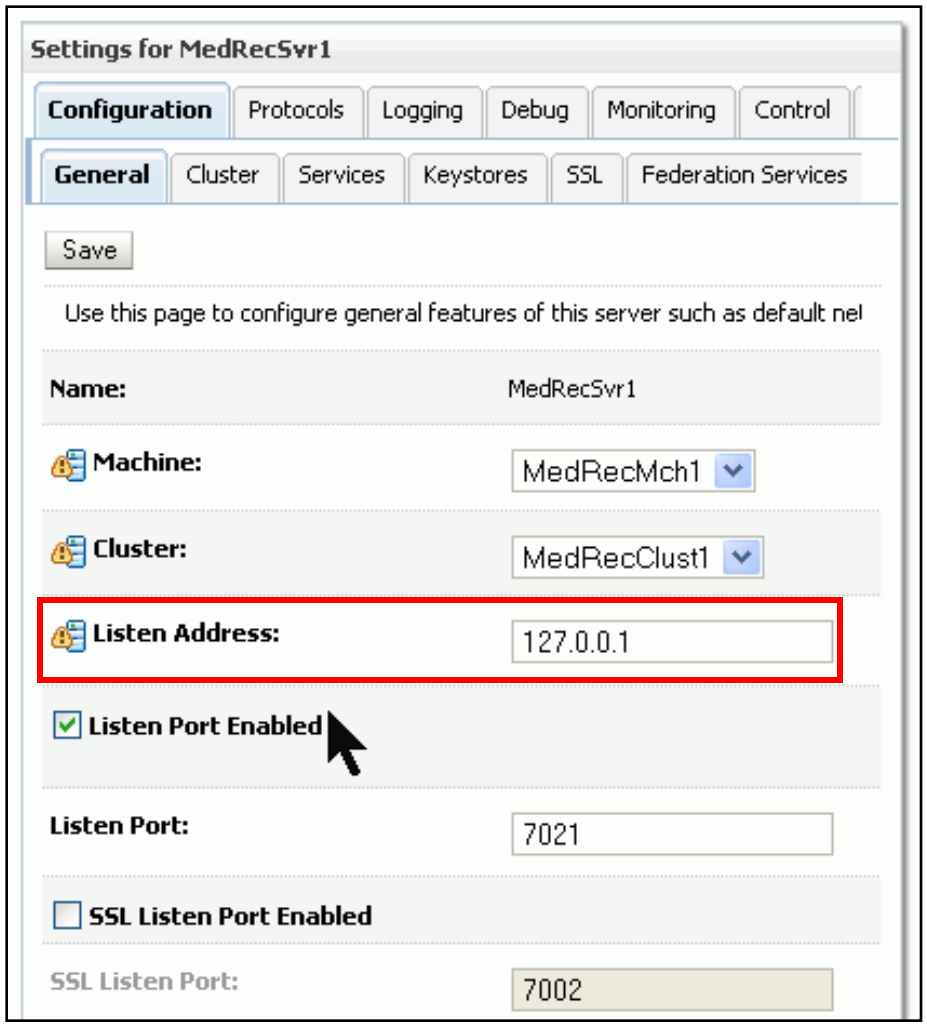
Other Node Manager configuration tasks include:

- Configuring a machine to use a Node Manager
- Configuring the `nodemanager.domains` file
- Ensuring that the administration server address is defined
- Setting the Node Manager environment variables

Configuring the `nodemanager.domains` File

- The `nodemanager.domains` file specifies the domains that a Node Manager instance controls.
- When a user issues a command for a domain, the Node Manager looks up the domain directory from this file.
- `nodemanager.domains` provides additional security by restricting the Node Manager client access to the domains listed in this file.

Defining the Administration Server Address



You must define a listen address for each administration server that connects to the Node Manager process.

Setting Node Manager Environment Variables

Environment Variable	Description
JAVA_HOME	This is the root directory of the JDK that you are using for Node Managers. For example: `set JAVA_HOME=c:\oracle\jdk1.6.0_05` The Node Manager has the same JDK version requirements as Oracle WebLogic Server.
WL_HOME	This is the Oracle WebLogic Server installation directory. For example: `set WL_HOME=c:\oracle\wlserver_10.3`
PATH	You must include the Oracle WebLogic Server `bin` directory and path to your Java executable. For example: `set PATH=%WL_HOME%\server\bin;%JAVA_HOME%\bin;%PATH%`

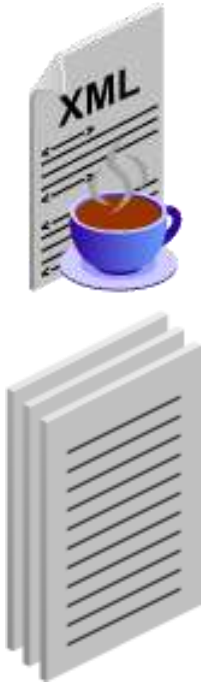
LD_LIBRARY_PATH
or
SHLIB_PATH
(UNIX only)
	For UNIX systems, you must include the path to the native Node Manager libraries.
	Linux and Solaris example:
	`LD_LIBRARY_PATH:$WL_HOME/server/native/solaris:$WL_HOME/server/lib/solaris/oci816_8`
	AIX and HP-UX example:
	`SHLIB_PATH=$SHLIB_PATH:$WL_HOME/server/native/hpux11:$WL_HOME/server/lib/hpux11/oci816_8`

CLASSPATH	You can set the Node Manager `CLASSPATH` either as an option on the Java command line that is used to start the Node Manager or as an environment variable. Windows example: set `CLASSPATH=.;%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar`

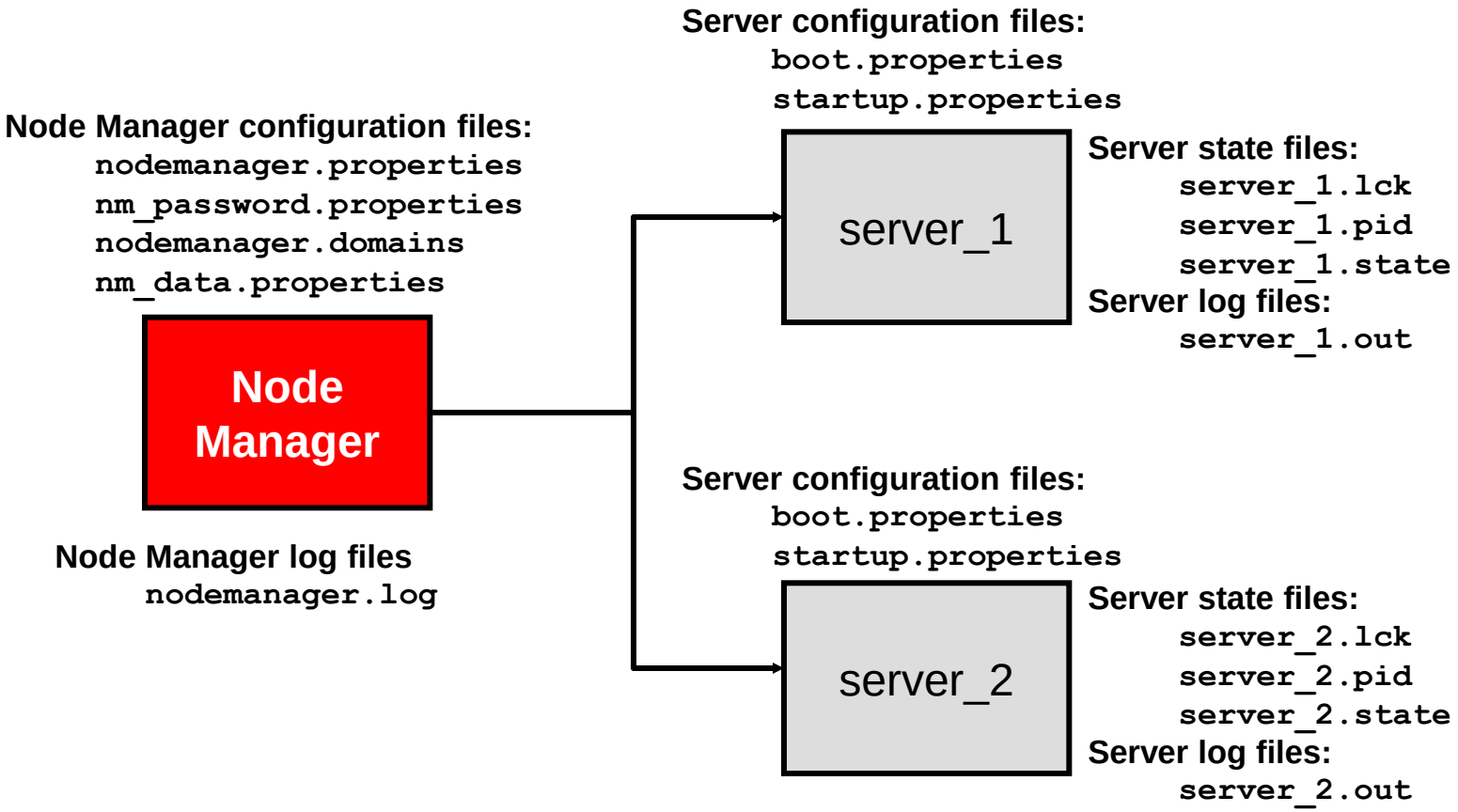
Node Manager Configuration and Log Files

Two sets of files:

- The Node Manager `config` files, located in *`DOMAIN_HOME`*`/servers/server_name/data/nodemanager`
- The Node Manager `log` files, located in *`DOMAIN_HOME`*`/servers/server_name/logs` and `<WL_HOME>/common/nodemanager`



Node Manager Configuration and Log Files



Quiz

You can start a managed server using WLST and without using a Node Manager.

1. True
2. False

Quiz

Which of the following statements is true?

1. There is one Node Manager for each machine.
2. There is one Node Manager for each domain.
3. There is one Node Manager for each cluster.

Quiz

To start a managed server using the Administration Console, a Node Manager must be configured on the machine where the managed server resides.

1. True
2. False

Summary

In this lesson, you should have learned how to:

- Configure machines
- Use a Node Manager
- Monitor domains and servers

Practice 8 Overview: Configuring Machines and Node Managers

This practice covers the following topics:

- Configuring and running Node Managers
- Creating a WebLogic machine using the Administration Console
- Configuring a machine
- Assigning managed servers to machines using the Administration Console
- Starting and stopping managed servers using the Administration Console and WLST