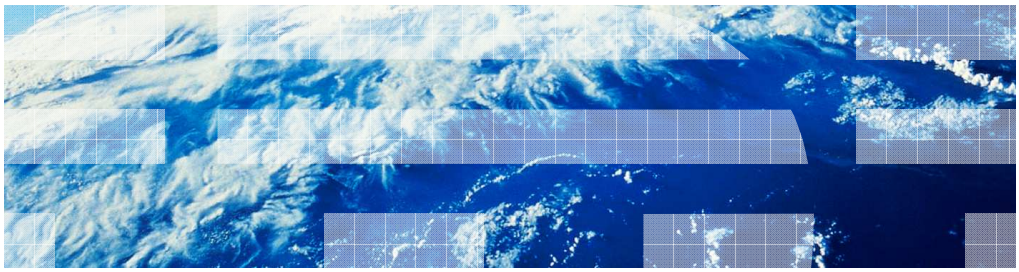
Tivoli Provisioning Manager for OS Deployment 7.1.1

Hardware configuration

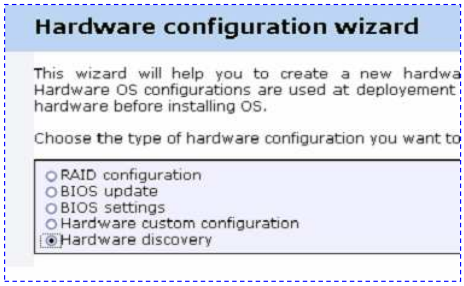


Tivoli software

In this module, you learn about the hardware configuration feature that is available with Tivoli® Provisioning Manager for OS Deployment 7.1.1. You also learn how to set up a hardware environment to execute hardware configuration tasks on target systems.

What is hardware configuration

- It is a task that you can create through a wizard for:
  - RAID configuration
  - Bios update
  - Bios settings
  - Custom configuration
  - RAID and fiber channel hardware capture (hardware discovery)
- To create and run this task, you create a hardware environment for vendor-specific hardware

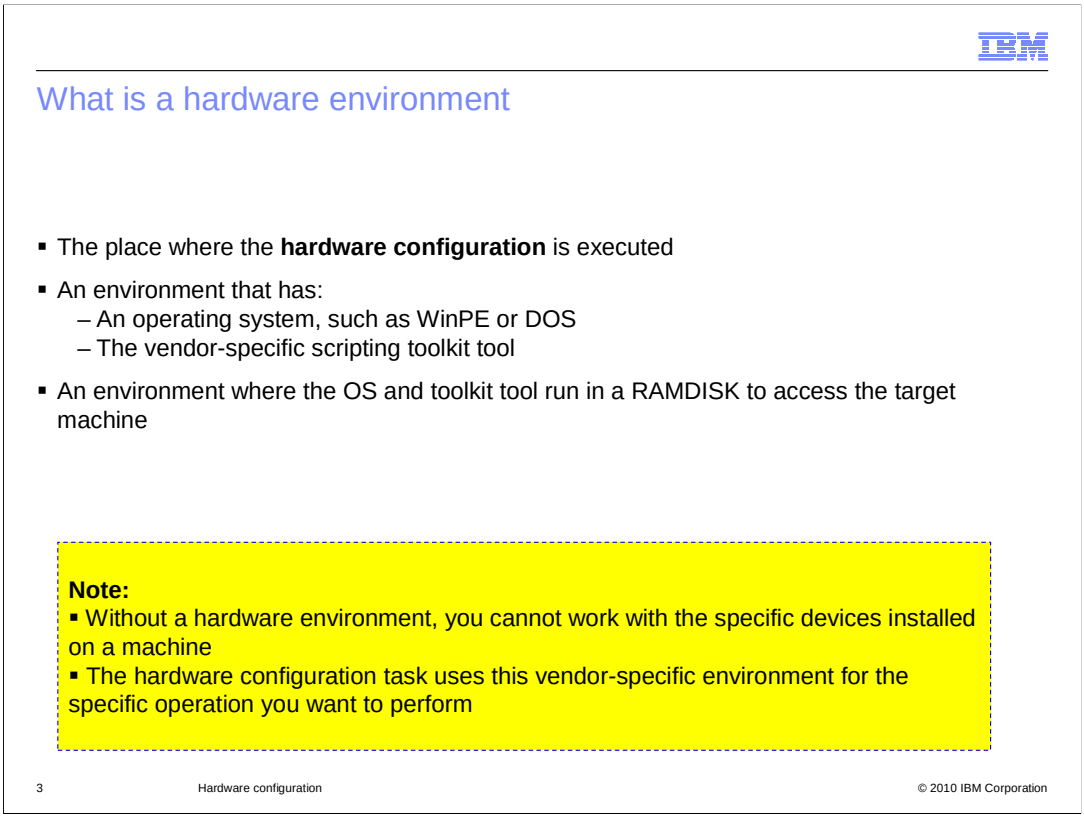


For every hardware configuration, you perform the following tasks:

-Create the specific hardware environment, if not yet created

- Create the hardware configuration task, specifying the hardware environment to use

Using the hardware configuration feature, you can perform several operations on target machines: **RAID configuration** to configure the RAID disks; **BIOS update** to update the BIOS firmware on the target; **BIOS settings** to update the BIOS or BMC (baseboard management controller) settings through an initialization file; **Hardware custom configuration** to perform your own configuration, based on tools and a command to be applied. In addition, you can perform a discovery (capture) of the RAID and fiber channel configuration on the target system. To use this feature, you need to create a hardware environment for each specific hardware vendor.



A hardware environment is the place where the hardware configuration task runs. A hardware environment has: an operating system, for example, WinPE or DOS; a vendor-specific scripting toolkit. Both environments run in a Ramdisk to access the target machine. The creation of a hardware environment is a requirement for the Tivoli Provisioning Manager for OS Deployment hardware configuration. You must create a hardware environment for each specific host vendor.

Supported scripting toolkit tools and related OS environments

- Three environments are supported:
  - Scripts and tools running in DOS (*used only to support some older hardware)*
  - Scripts and tools running in WinPE 1
  - Scripts and tools running in WinPE 2
- Scripting toolkit tools to configure the hardware are provided by the vendors

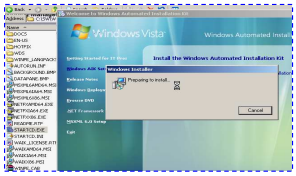
The following operating systems are supported: DOS, which is only for older hardware; WinPE 1 and WinPE 2. Scripting toolkit tools to configure the hardware are provided by the vendors.

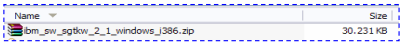
Creating a hardware environment

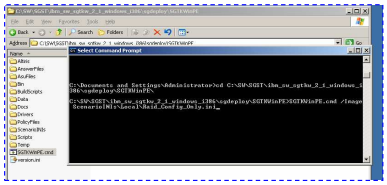
Create each vendor-specific hardware environment by using the information center

Example for IBM ServerGuide Scripting Toolkit WinPE 2

1. Install Windows® Automated Installation Kit (WAIK) or see if the correct version is installed. You need SP1 on Windows 2003.
2. Download the latest IBM ServerGuide Scripting Toolkit (SGSTK) from the IBM site. Unpack and run the specific SGTKWinPE.cmd command. Reboot.
3. Create the hardware environment by pointing to the correct installation directory, for example, ISO







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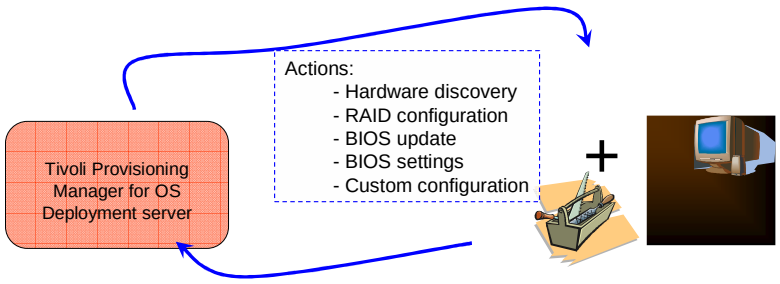
In this slide you can find a step-by-step procedure to create the hardware environment for IBM targets based on WinPE 2.

First, download the IBM ServerGuide Scripting Toolkit and follow the step-by-step instructions in the Tivoli Provisioning Manager for OS Deployment 7.1.1 Guide. A summary of the instructions is on this slide. Install Windows Automated Installation Kit (WAIK) 1.1 32-bit and the Web Interface Extension on a Windows 32-bit machine. You might also use this setup for the Tivoli Provisioning Manager for OS Deployment. You must reboot the machine after the WAIK installation. Download the IBM ServerGuide Scripting toolkit and install it using the specific cmd script, executed with the displayed options. After the ServerGuide Scripting toolkit is installed, create the hardware environment from the product WEBUI (**Advanced features > Hardware configurations**). Click the **New Environment** button. In the wizard, be careful to specify the correct toolkit directory. For this example, it is the full path to the ISO directory created by the toolkit installation.

How a hardware configuration task works

1. The computer boots into the Tivoli Provisioning Manager for OS Deployment kernel
2. Tivoli Provisioning Manager for OS Deployment loads the corresponding environment
3. Tivoli Provisioning Manager for OS Deployment starts the environment into a Ramdisk (no disk access)
4. When inside the environment, it starts the rbagent
5. The rbagent runs the hardware configuration, using the tools available in the environment



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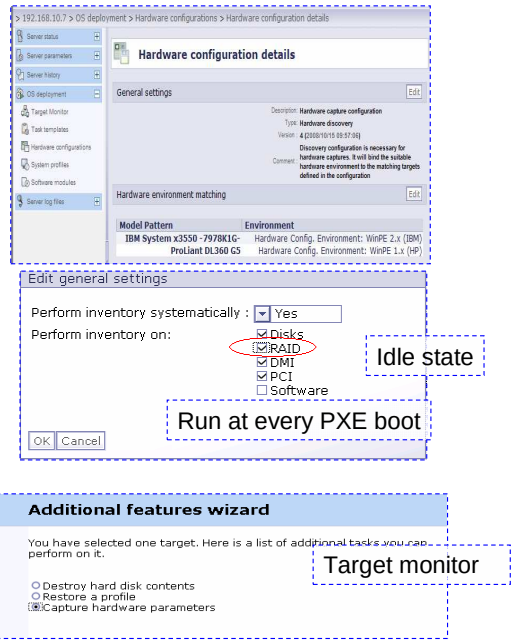
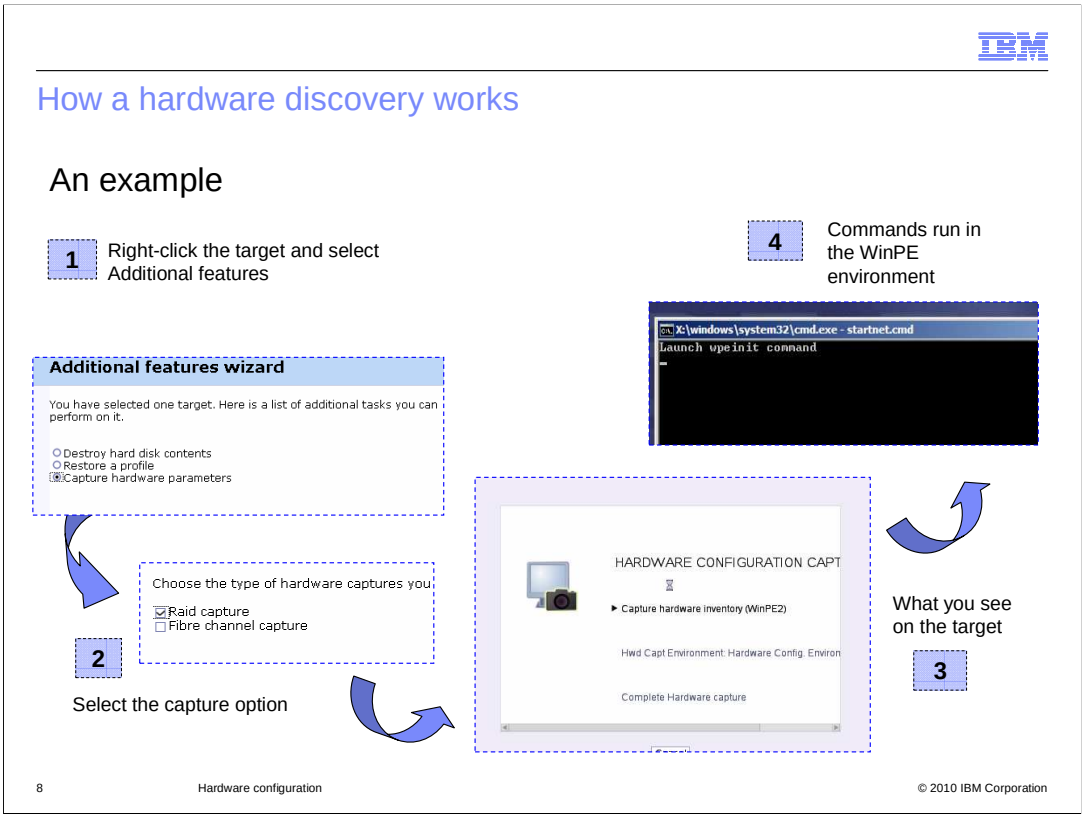
You can schedule each hardware configuration task, except for the hardware capture, using the **Deploy now** wizard. You can schedule this task on the specific target machine with an operating system deployment or as a standalone operation. The computer boots into the Tivoli Provisioning Manager for OS Deployment kernel and loads the specific hardware environment into a Ramdisk session. Inside that session, the rbagent executes the hardware configuration commands because of the tools available in the hardware environment.

Hardware discovery

- For hardware captures
  - RAID capture
  - Fiber Channel capture
- Available in the Additional features wizard and in the Idle State task template
- Results are available on the target Inventory page
- Created only once



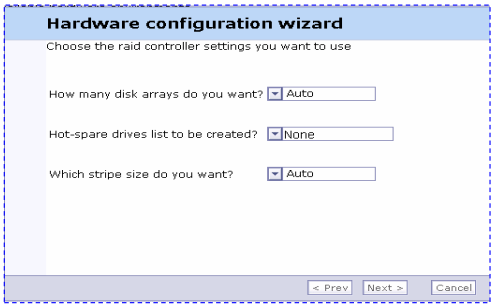
The hardware discovery is also known as the hardware capture, which captures the RAID and the Fiber channel configuration on a target system. You can run a hardware capture in two different ways: once for one target or for all targets at every PXE boot. For one target, you right-click the host in the target monitor and select the additional features option. The task is sent on the host one time and updates its inventory information. For all targets at every PXE boot, you change the general settings for the Idle State (Task Templates panel in the product WEBUI). You also select the RAID option, as shown in the screen capture. The basic inventory, for example, the DMI, PCI, and disks scan is run, and the RAID capture is run. You need to create a hardware configuration task using the hardware configuration panel before you enable any hardware discovery type.



Here is the sequence of steps to run after a hardware capture on a target machine. First, you right-click the target and select additional features. Then, you select the capture option. When you send a hardware capture task to a target system, you see a panel similar to number three in the diagram. You see a WinPE environment where some commands are run for capturing the specific information.

RAID configuration

- To configure
  - Number of disk arrays
  - Number of hot spares
  - Stripe size
- No command line to execute
- Appropriate tools are called by Tivoli Provisioning Manager for OS Deployment



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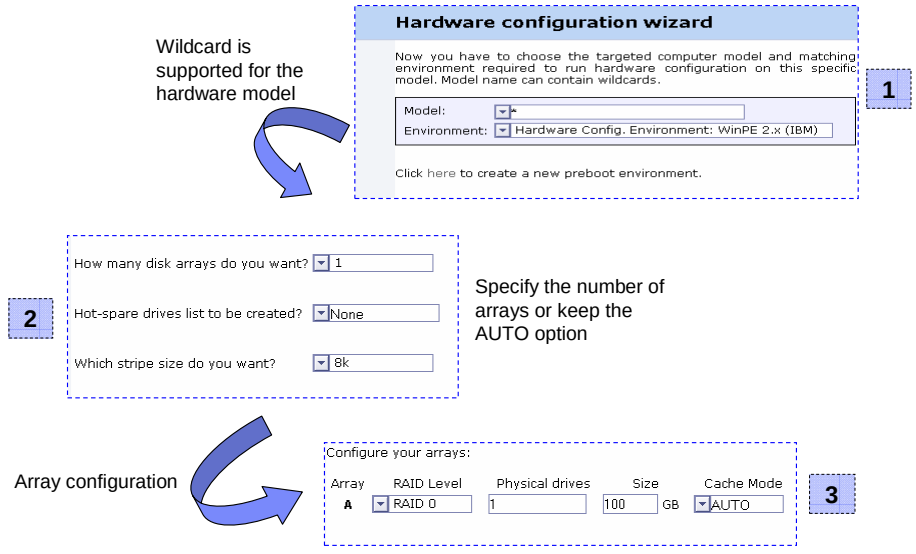
You can use the RAID configuration feature to configure the number of disk arrays, the number of hot spares, and the stripe size without the need to run any command locally on the target system. Like other hardware configuration tasks, it can be created through the product WEBUI by clicking **Advanced features > Hardware configurations**, and then clicking the **New configuration** button.

RAID configuration customization steps



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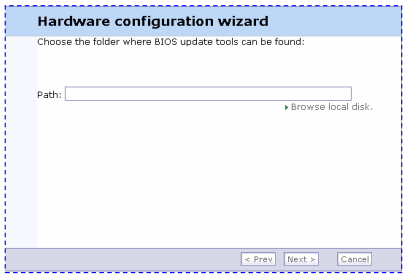
When you create the RAID configuration task, you can specify machine models with wildcards. Notice that you can create only one RAID configuration per hardware environment. The RAID configuration can be run together with a deployment or standalone environment using the profile deployment option (right-clicking the target).

BIOS update and BIOS settings

- Supported for IBM hardware
- BIOS update
  - BIOS updates are available on the IBM Web site
  - A BIOS update is a directory containing an executable that is run by Tivoli Provisioning Manager for OS Deployment
- BIOS settings
  - Updates BIOS or BMC (baseboard management controller)
    - Needs an .ini file, which is compatible with the tool asu.exe*

**ASU (IBM Advanced Settings Utility) is included in the ServerGuide Scripting Toolkit Windows edition and can be used to modify firmware settings from the command line on multiple operating system platforms.*



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The BIOS update and BIOS settings options are supported only for IBM hardware. You can update the BIOS firmware or modify the BIOS/BMC settings. For the BIOS update, you use the new hardware configuration wizard to pass a directory that contains the executable to be run. For BIOS settings, you need to pass a .ini file that is compatible with the tool asu.exe that is included in the IBM ServerGuide Scripting Toolkit. For the RAID configuration, you can have only one BIOS update and one BIOS settings configuration per hardware environment. You can run it standalone or together with an operating system deployment operation.

Custom configuration

- Is supported for all vendor hardware
- Can be used when a tool is not supported with Tivoli Provisioning Manager for OS Deployment
- Creates a software package from a command line provided by the user
- Requires user responsibility for creating the correct command line and using the correct software

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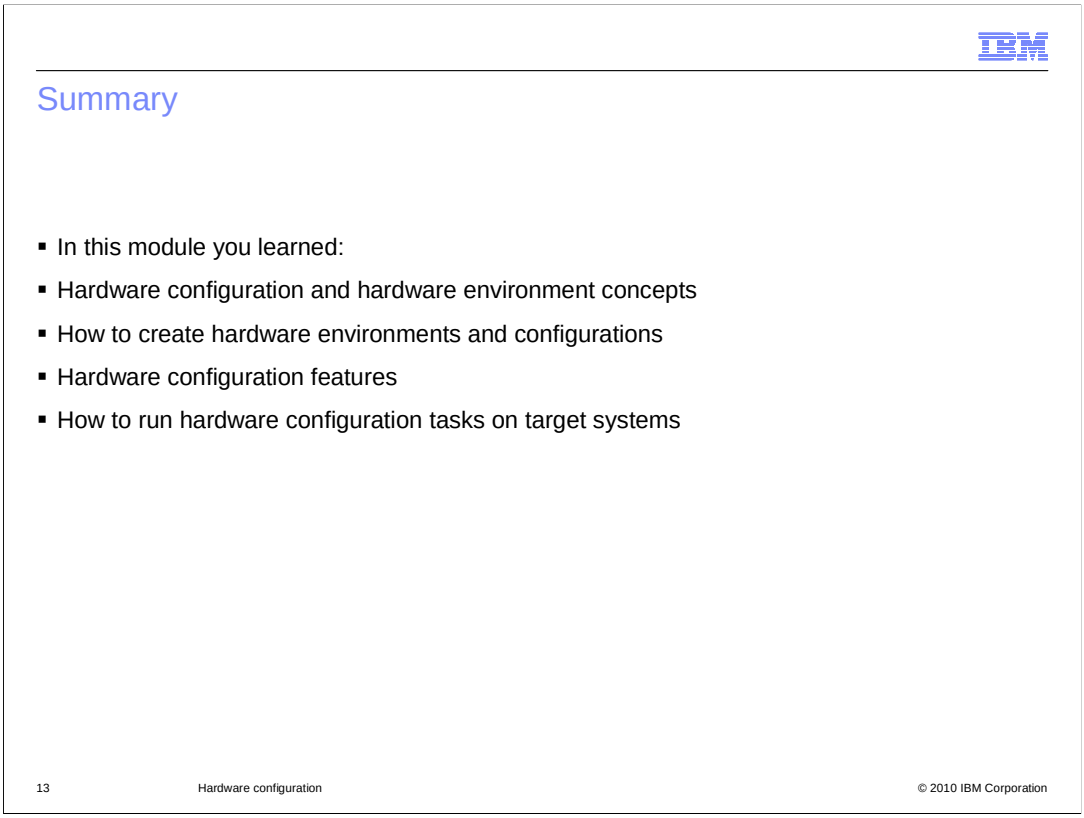
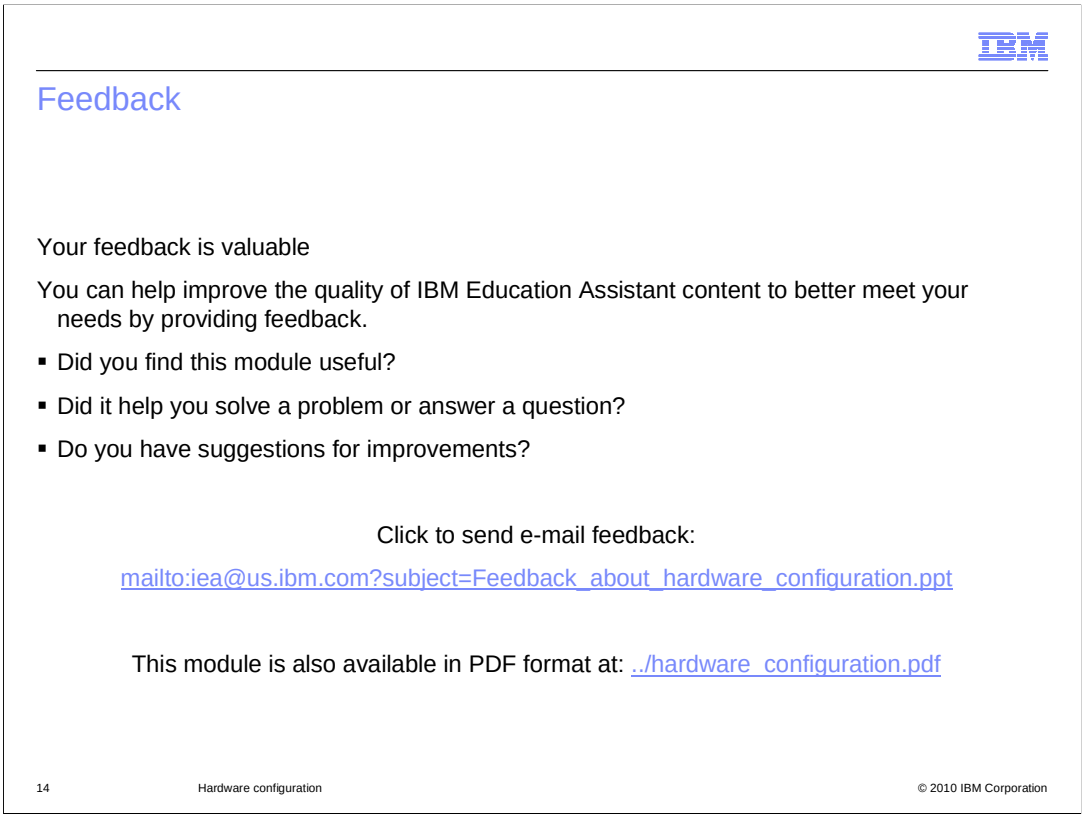
The last hardware configuration option is the custom configuration. When creating a custom hardware configuration task, you provide a command line that will be run inside the specific hardware environment, for example, WinPE. The user creates the command line. Tivoli Provisioning Manager for OS Deployment executes the provided command using a software module. The custom configuration can be run using the deployment wizard on a host (during a profile deployment) or standalone.



In this module you learned: hardware configuration and hardware environment concepts; how to create hardware environments and configurations; hardware configuration features; how to run hardware configuration tasks on target systems.



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