IBM PureApplication System

Virtual images extend and capture

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This presentation shows how to create a new catalog image through the extend and capture function of IBM PureApplication™ System.

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Virtual images extend and capture

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The agenda for this presentation starts with a high level overview of the purpose of the extend and capture operation, then shows you details of how to perform the operations.

Section

Overview

This section provides a high level overview of extend and capture.

Image extension

- Image extension process
  - Extend and capture to embed custom content in a virtual image
    - Result is image that can be reused across multiple patterns
    - Useful for large, time-consuming changes
      - Examples: Product installation and operating system updates
    - Cannot modify the WebSphere® Application Server profiles
- Extend
  - Image cloned
  - Image copied to hypervisor
  - Single virtual system instantiated
- Modify the virtual machine image to meet your needs
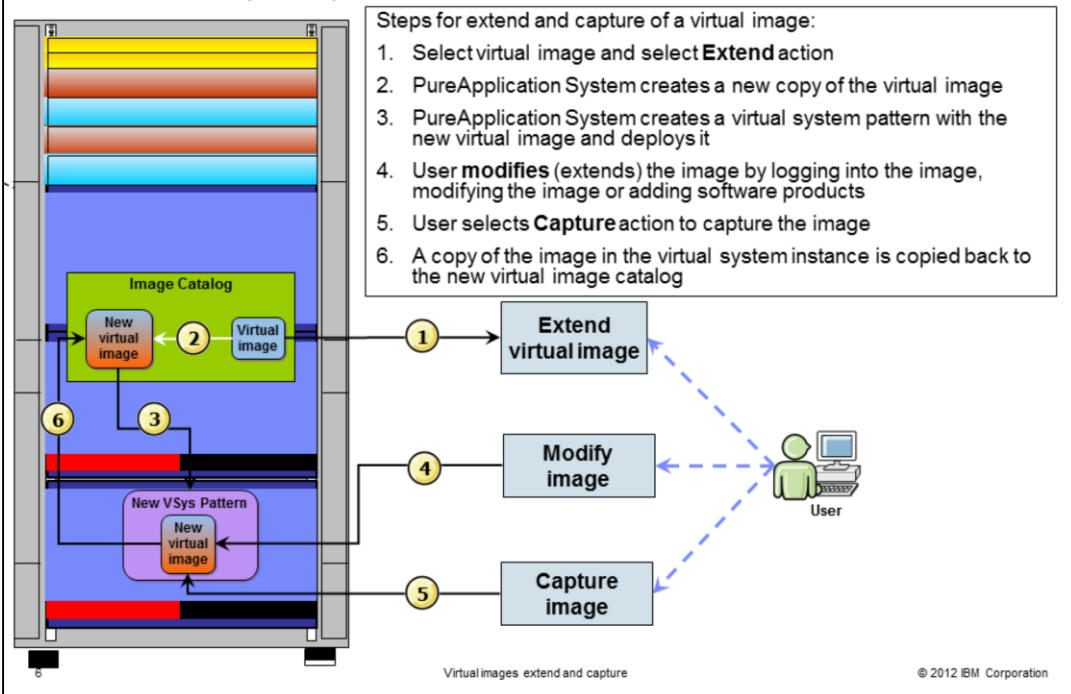- Capture
  - Changes copied back to the catalog image

The image extension process allows you to add your own custom software or other content to a virtual image in the PureApplication System catalog. The resultant image can be reused in multiple patterns. For example, if you wanted to add some additional software to a WebSphere Application Server image, you can create a virtual catalog image that already has the additional software by using the extend and capture process. This allows you to deploy a virtual image with this additional software already installed and configured for you.

The extend process clones the catalog image, copies the image you want to extend to the hypervisor, then starts a single virtual system instance using that image. You then install any additional software onto that virtual system, or make your required modifications. The capture process then copies the new image back to the PureApplication System catalog. The new image now contains the additional software and other modifications. Note that the capture process does not store changes to the WebSphere Application Server profiles.

Section

Virtual image extension: extend and capture

Virtual images extend and capture

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This section provides details of virtual image extend and capture function to extend any virtual image available in the PureApplication System image catalog.
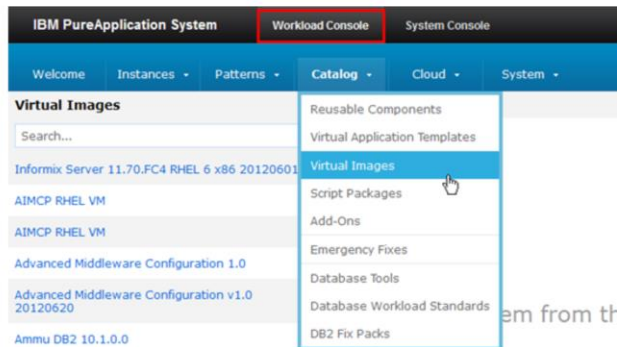
Virtual images extend and capture

It is important to understand the details of what happens to a virtual image when it is extended. User clicks on the virtual image Extend function, as shown by step (1). PureApplication System creates a copy of an existing virtual image as shown by step (2). PureApplication System creates a new virtual System pattern with the copy of the virtual image and deploys the pattern, as shown in step (3). Once the virtual system instance is up and running, you can log into the LPAR of the image, and make any necessary changes to the image, as shown in step (4). For example, you can add some additional software packages to the image. Once the changes have been made, you can go back to the copy of the virtual image and initiate a capture function, indicated in step (5). PureApplication System then copies the virtual image in the deployed virtual System instance to the new virtual image in the catalog, as shown in step (6). This virtual image now contains the changes you made to the deployed image.

Initial steps for extending a virtual image

- Prerequisite:
  - User must be assigned appropriate permissions
    - **Create new catalog content** permission
    - Access to image to be extended, or
    - **Manage workload resources (Full-permission)**
  - Licenses must be accepted
- Navigate to virtual images panel (**Workload Console → Catalog → Virtual images**)

Before you begin, ensure you are assigned either the "Create new catalog content" permission or granted access to the virtual image you want to extend. You can also perform an extend if you are assigned the PureApplication System Manage Workload Resources administration role with full permissions. Once permissions are set and licenses are accepted, the extension can be created and the new virtual image you ultimately generate can be saved to the catalog. To begin the image extension process, navigate to the "Virtual Images" panel from the "Catalog" menu at the top of the PureApplication System workload console.

Extend and capture steps (1 of 2)

- Under **Workload Console** ➔ **Catalog** ➔ **Virtual images**
- Select the virtual image you want to extend and click **Extend**, as shown below

| IBM PureApplication System | Workload Console | System Console | | 👤 deploy18 |

Welcome   Instances ▾   Patterns ▾   Catalog ▾   Cloud ▾   System ▾

Virtual Images   🔧 ➕   **IBM OS Image for Red Hat Linux Systems**   🔧 Refresh   📤 Export   📋 Clone   🔗 Extend

Search...

IBM Business Process Manager Advanced 8.0.0.0 RHEL 6 x64 (VMWare)

IBM Business Process Manager Advanced 8.0.0.0 RHEL 6 x64 (VMWare)

IBM OS Image for Red Hat Linux Systems

IBM OS Image for Red Hat Linux Systems ICCT

Description:	IBM OS Image for Red Hat Linux Systems
Created on:	Jul 31, 2012 1:08:38 PM
Current status:	🔧 Read-only
Updated on:	Jul 31, 2012 1:25:48 PM
License agreement:	🔖 Accepted [view...]

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Once in the Catalog Virtual images panel, you click the virtual image you want to extend. Once the virtual image attribute panel comes up, click the **Extend** function, as shown here.

Extend and capture steps (2 of 2)

- A new image is created in the Catalog
- A new virtual System pattern is created with the new image part
- The virtual System pattern is deployed, creating a new virtual System instance
- Deployment parameters include
  - Provide name and version information for the virtual image
  - Select environment profile as a deployment target
  - Set the password for the virtual system (root and virtuser)

The extend process creates a new image in the catalog with the name you specify in the panels. It creates a new virtual system pattern with the new image part and deploys it into the cloud. The deployment panels of the virtual system pattern are shown in the slide.

Type in your custom values for the virtual system instance, such as a image name, a version number for the administrator to keep track of the changes made, and specify the Environment Profile to which to deploy. When you deploy the virtual system, two user IDs are configured: "virtuser" and "root". Once the extend finishes, you can then log into the virtual system with the password specified here for either of those two user IDs.

When extending a virtual image, you have the option of adjusting the volume size for different parts of the image. The volume sizing options are an important feature in PureApplication System, because this is the only time that you get the opportunity to change the size of the virtual disks inside the image.

Click the "OK" button, and a clone of the existing virtual image is generated, a default pattern from that virtual image is created using with the values you entered, and the deployment process begins, creating the new virtual system instance. Once deployed, you add your additional software or make your modifications to this virtual system instance.

You can verify the details of the new virtual system you just created by clicking the extended virtual image name. The "current status" changes from "Creating a virtual system for virtual image extension" to "Draft" when the new virtual system is successfully deployed into the cloud. The deployment does not happen instantly and the amount of time it takes depends on the level of system activity in progress and on the size of the virtual image. You need to manually refresh the webpage occasionally to get updated status messages.

Verifying the deployment of the new virtual system

- Navigate to **Instances** > **Virtual Systems**
- Select the virtual system you created during the image extension process
- Status changes to **The virtual system has been deployed** when virtual system is available to customize

New base OS-1.0		Refresh ▶ Start ● Stop Store Service ✕ Delete
Created on:	Jul 23, 2012 12:50:26 AM	
From pattern:	New base OS 1.0 (2)	
Using Environment profile:	envProfile18	
Deployment priority:	Low	
Current status:	The virtual system has been deployed	
Updated on:	Jul 23, 2012 12:59:21 AM	
Deployment ID:	None provided	
Access granted to:	deploy18 [owner]	
	Add more...	
Snapshot:	(none)	
	Create	
⊞ **History**	The virtual system has been deployed	
⊞ **Virtual machines**	1 total - 1 started	

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Click the "Virtual Systems" menu at the top of the PureApplication System workload console and select the virtual system you just created during the image extension process. You can verify the details of the new virtual system you just created in the panel to the right. Verify that the current status states "The virtual system has been deployed".

Making modifications to the virtual system

- Navigate to **Workload console > Instances > Virtual Systems**
- Select the virtual system you created during the image extension process
- Expand virtual machines, and log in to make the necessary modifications

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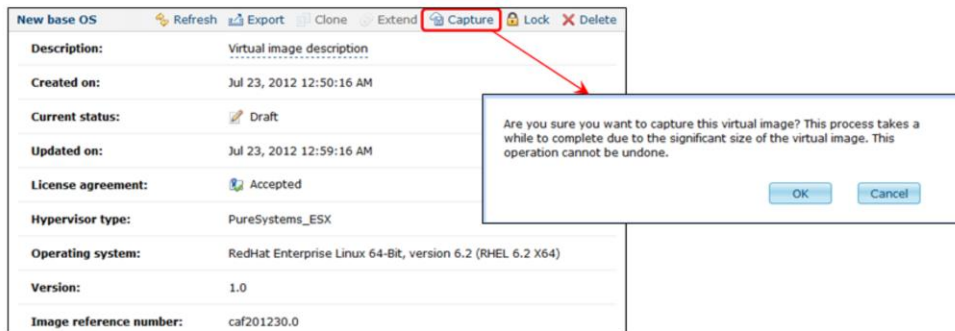
Once your virtual system is successfully deployed, you can log in and make the modifications you intend to store in your new virtual image. These modifications can be changes to the product environment or changes to the operating system.

To access the virtual system, click the "Login" link under the "SSH" column header. When you deployed the virtual system, two ids were configured: "virtuser" and "root". Login with one of these user IDs and with the password you specified when you extended the virtual image. A new window opens that is connected through SSH directly to the native operating system console.

The key limitation of image extension is that you cannot capture any changes that are made to the WebSphere Application Server profiles directory.

Capturing the virtual system

- Return to virtual images panel - **Workload console > Catalog > Virtual images**
- Select the virtual image you want to capture
- Click the capture icon and to create a new virtual image in your catalog based upon the extended virtual image

New base OS	Refresh · Export · Clone · Extend · Capture · Lock · Delete
Description:	Virtual image description
Created on:	Jul 23, 2012 12:50:16 AM
Current status:	Draft
Updated on:	Jul 23, 2012 12:59:16 AM
License agreement:	Accepted
Hypervisor type:	PureSystems_ESX
Operating system:	RedHat Enterprise Linux 64-Bit, version 6.2 (RHEL 6.2 X64)
Version:	1.0
Image reference number:	caf201230.0

Are you sure you want to capture this virtual image? This process takes a while to complete due to the significant size of the virtual image. This operation cannot be undone.

OK   Cancel

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After you make your changes, return to the "Virtual images" panel in the workload console panel to store the changes. Click the capture icon to copy the changes you made to the virtual system. Like the displayed message states, there is a significant amount of data processing required to capture the image, so the process takes a while to complete. Also, while more than one image capture can be scheduled and added to the task queue, no more than two image captures are performed concurrently.

After successfully completing these steps, you have a new virtual image in your catalog that is based upon the virtual image you extended.

Summary

- Image extension allows simple additions to images
- Embed custom content in a virtual image for re-use across multiple patterns

This presentation presented a high level overview and details of image extension and capture available in IBM PureApplication System catalog of images. You were shown details of how to modify an extended virtual system and capture the image back into the catalog for re-use in multiple patterns.

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