

IBM PureApplication System

Virtual images extend and capture



© 2012 IBM Corporation

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

Table of contents

- Overview
- Virtual image extension: extend and capture
- Summary

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.

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

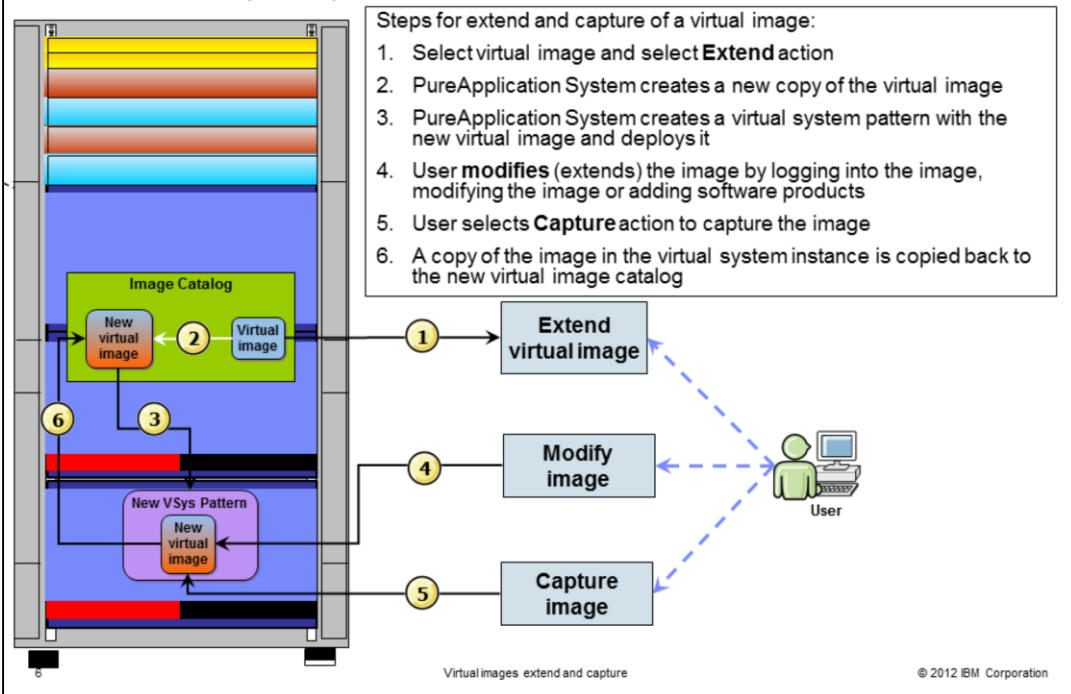
The image extension process allows you to add your own custom software or other content to a virtual image in the PureApplication System catalog. The resultant image can be reused in multiple patterns. For example, if you wanted to add some additional software to a WebSphere Application Server image, 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.

Virtual image extension: extend and capture

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

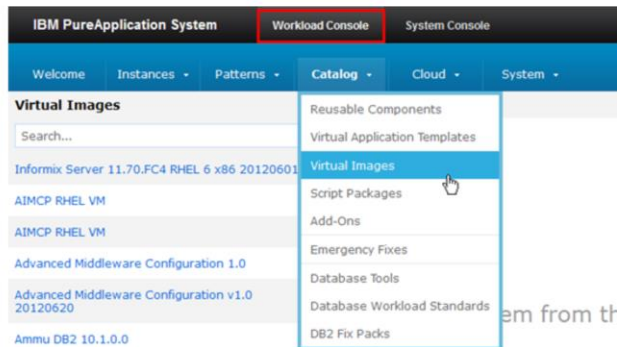
Extend and capture process



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**)



7

Virtual Images extend and capture

© 2012 IBM Corporation

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

The screenshot displays the IBM PureApplication System Workload Console interface. The top navigation bar includes 'Workload Console' and 'System Console'. The main menu has 'Catalog' selected. On the left, the 'Virtual Images' panel shows a list of images, with 'IBM OS Image for Red Hat Linux Systems' selected. On the right, the details panel for this image is shown, including fields for Description, Created on, Current status, Updated on, and License agreement. The 'Extend' button in the top right of the details panel is highlighted with a red box.

Attribute	Value
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...]

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)

A virtual system will be created that you can modify and capture as an image.

General information
 Deployment configuration

* Name:
 Description:
 * Version:

* IP version:
 * Choose profile:
 * Choose cloud:
 * IP Group:
 * Password:
 * Verify password:

9 Virtual images extend and capture © 2012 IBM Corporation

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.

Verifying the new virtual system details

- Click extended virtual image name to view the details of the new virtual system
- Status changes to **Draft** when virtual system is available to customize

New base OS		Refresh	Export	Clone	Extend
Description:	This base OS contains custom S/W installed				
Created on:	Aug 28, 2012 3:12:31 PM				
Current status:	Creating a virtual system for virtual image extension				 Draft
Updated on:	Aug 28, 2012 3:12:31 PM				
License agreement:	 Accepted				
Hypervisor type:	PureSystems_ESX				
Operating system:	RedHat Enterprise Linux 64-Bit, version 6.2 (RHEL 6.2 X64)				
Version:	1.1				
Image reference number:	efd201235.0				
Product IDs (e.g., 5724-X89):	None provided				
Contains parts:					

10

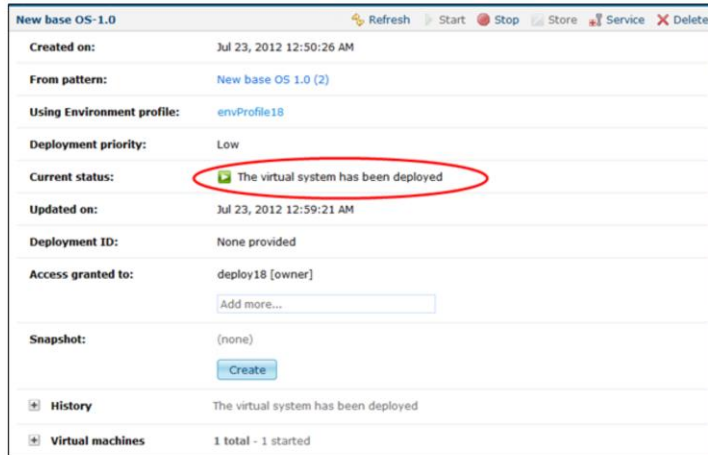
Virtual images extend and capture

© 2012 IBM Corporation

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



The screenshot displays the details for a virtual system named "New base OS- 1.0". The interface includes a header with actions: Refresh, Start, Stop, Store, Service, and Delete. The main content area lists the following details:

- 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 (highlighted with a red circle)
- Updated on:** Jul 23, 2012 12:59:21 AM
- Deployment ID:** None provided
- Access granted to:** deploy18 [owner] (with an "Add more..." button)
- Snapshot:** (none) (with a "Create" button)

Below the details, there are two expandable sections:

- History:** The virtual system has been deployed
- Virtual machines:** 1 total - 1 started

11

Virtual images extend and capture

© 2012 IBM Corporation

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

The screenshot shows the 'History' page with a message 'The virtual system has been deployed'. Under 'Virtual machines', there is a table with the following data:

Name	CPU	Memory	SSH	Actions	Group Actions
ipas-lpar-111-019-OS Node-New base OS-1.0-4802	0%		Login	Manage	

Below the table, 'General information' is shown:

- Created on: Jul 23, 2012 12:50:26 AM
- From virtual image: New base OS
- Part name: OS Node
- Current status: Virtual machine has been started

A yellow callout box states: 'Network interface gives IP address for login as well'. Below it, a box shows network details:

```
Network interface 1: ipas-lpar-111-019.purescale.raleigh.ibm.com (172.17.111.19)
```

12

Virtual images extend and capture

© 2012 IBM Corporation

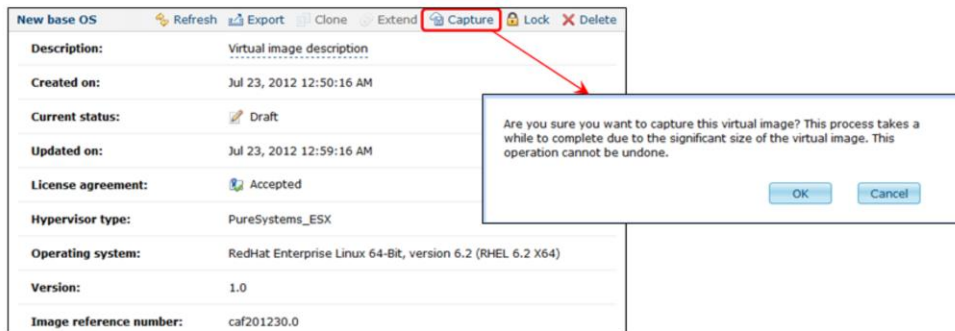
Once your virtual system is successfully deployed, you can log in and make the modifications you intend to store in your new virtual image. These modifications can be changes to the product environment or changes to the operating system.

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



13

Virtual images extend and capture

© 2012 IBM Corporation

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.

Trademarks, disclaimer, and copyright information

IBM, the IBM logo, ibm.com, PureApplication, and WebSphere are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of other IBM trademarks is available on the web at "[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)" at <http://www.ibm.com/legal/copytrade.shtml>

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE. IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM IBM (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF ANY AGREEMENT OR LICENSE GOVERNING THE USE OF IBM PRODUCTS OR SOFTWARE.

© Copyright International Business Machines Corporation 2012. All rights reserved.