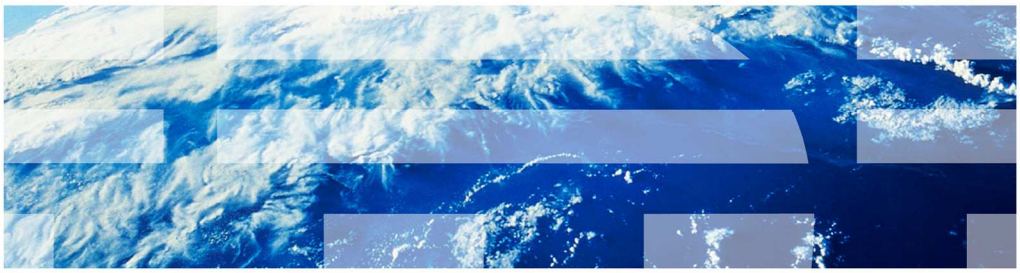
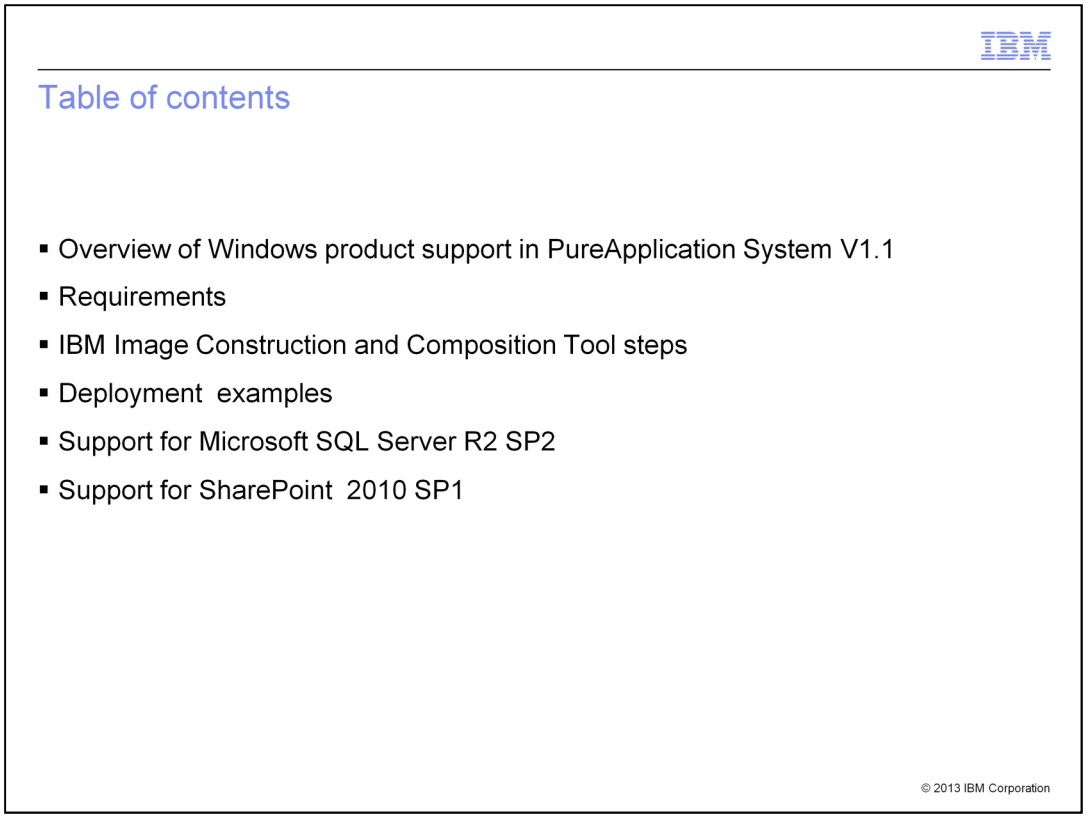
IBM PureApplication System

Microsoft Windows support



This presentation discusses the Microsoft Windows® support in PureApplication™ System V1.1.



This presentation gives you an overview of the Windows product support in PureApplication System Version 1.1. You see a discussion of the requirements for building your own Windows product virtual image and the detailed steps using the IBM Image Construction and Composition Tool. You then see deployment examples for a virtual system deployment and a virtual application deployment. Finally, you learn about the support provided for Microsoft SQL Server R2 Service Pack 2 and SharePoint 2010 Service Pack 1.

Windows product support in PureApplication Server V1.1

- Create your own Windows virtual image for:
  Microsoft Windows 2008 Server R2 SP1(64bit)

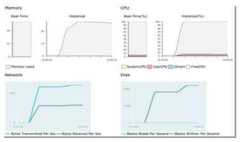
  Microsoft Windows 2012 (64bit)
  - Allows consolidation of applications which require Microsoft Windows
  - Virtual system and virtual application patterns supported
- **Bring-your-own-license** design allows you to use existing investments
  - IBM does not supply Windows product binaries
- **Scripts for virtual system patterns** made available for select Microsoft products
  - Microsoft SQL Server 2008 R2 SP2
  - Microsoft SharePoint V2010 SP1
- Use extend and capture or provided tools to **create your own** custom Windows-based catalog image

With the new support for Microsoft Windows in PureApplication System V1.1 you can now build your own Microsoft Windows virtual image for the 64-bit editions of Microsoft Windows 2008 Server Release 2 Service Pack 1 and Microsoft Windows 2012. You must provide your own Windows products and licenses. IBM also provides script packages which allow you to create patterns for Microsoft SQL Server 2008 Release 2 Service Pack 2 and Microsoft SharePoint V2010 Service Pack 1. Once you have deployed a virtual system using your Windows catalog image, you can use the “extend and capture” feature of PureApplication System to further customize the image. You then create your own custom patterns for your virtual system to meet your needs.

Summary of additional details

- Use script packages with Windows-based virtual systems to perform tasks at deploy time, or manually as needed
- Patch management of deployed Windows VMs integrates with existing IBM Endpoint Manager Servers
  - The IBM Endpoint Manager agent is automatically injected into every deployed VM
  - IBM Endpoint Manager shared service handles caching of patches and updates within the PureApplication System
- Monitor Windows based patterns with the built-in monitoring shared service
  - The monitoring agent is automatically injected into every deployed VM
- License management supports Microsoft's volume-base license activation KMS and MAK technologies

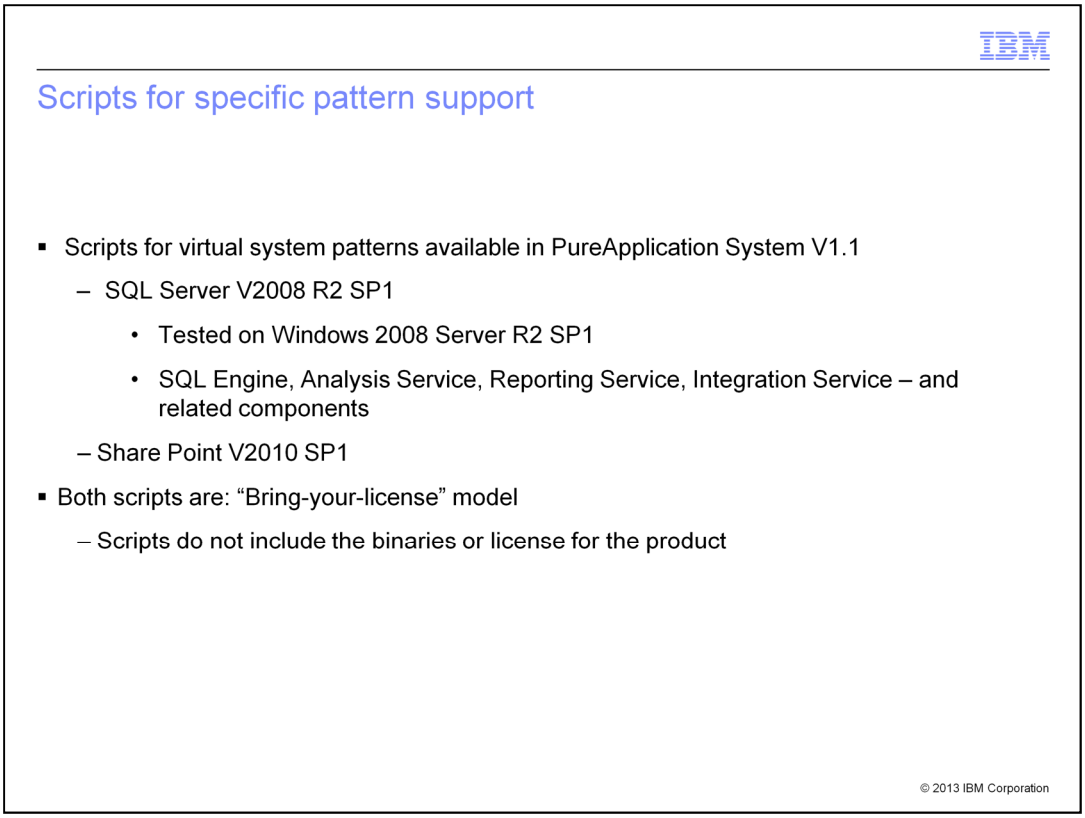
Patch Management



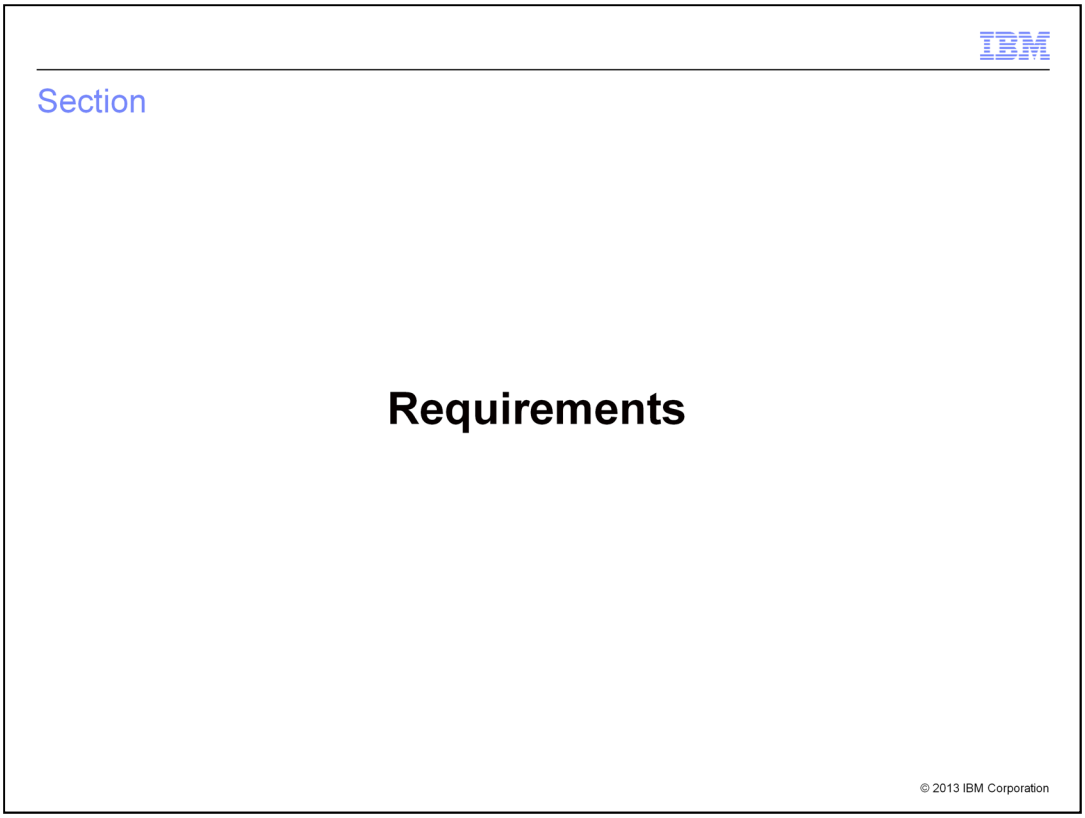
Monitoring

Microsoft | Volume Licensing

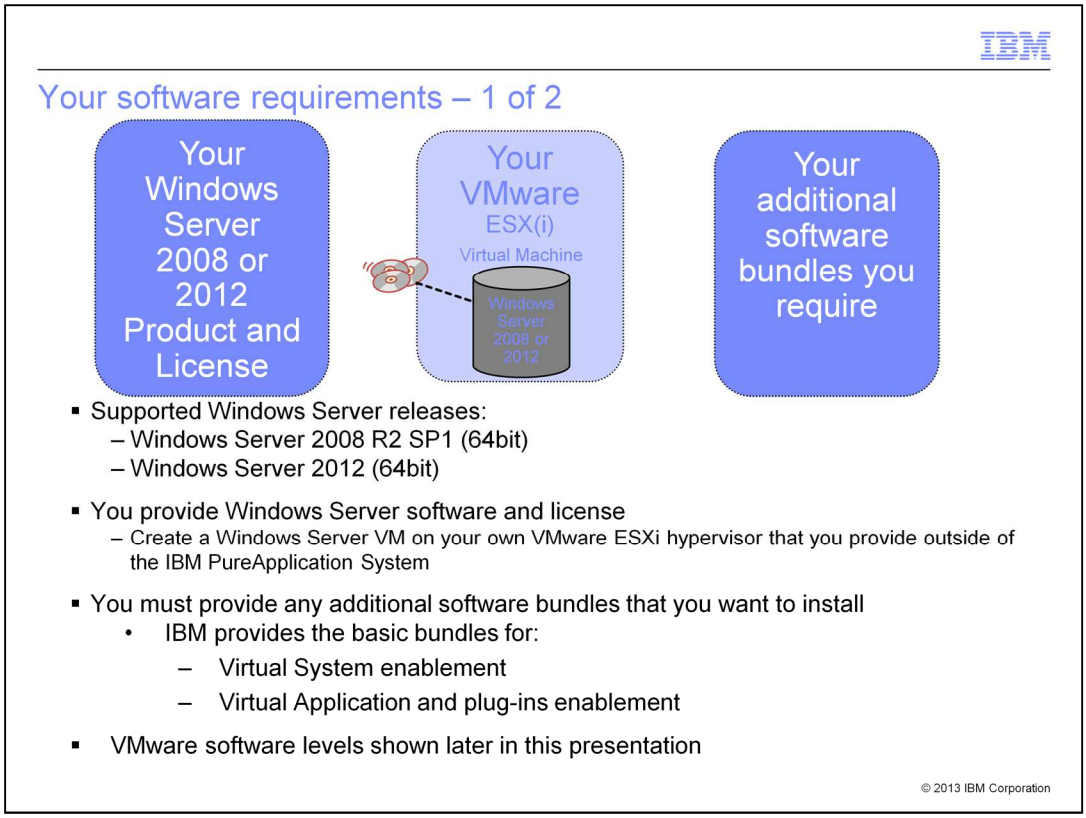
Once you have created your catalog virtual image for Windows, you can use script packages with Windows-based virtual systems to perform tasks at deploy time or manually as needed. Patch management of deployed Windows virtual machines integrates with the existing IBM Endpoint Manager. The IBM Endpoint Manager agent is automatically injected into every deployed virtual machine and allows the caching of patches and updates with PureApplication System. You can also monitor the Windows-based virtual machines with the built-in monitoring shared service. License management supports Microsoft's volume-base license activation KMS and MAK technologies.



You can create your own patterns for your Windows 2008 Server or Windows 2012 server virtual images using the specified Windows releases you see here. IBM supplies script packages you can use in your virtual system patterns to deploy the specific releases for SQL Server v2008 and SharePoint V2010. These script patterns require you to supply the product and license, since the scripts do not include the product binaries. You supply the product key at deployment time when the script is invoked.

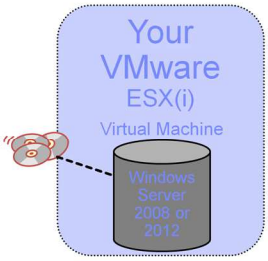


This section discusses your software and environmental requirements for Windows support in PureApplication System V1.1.



As previously mentioned, you must provide the Windows product binaries and licenses. PureApplication System V1.1 supports the specific binary levels indicated for the Windows server operating systems: the 64bit image of Windows Server 2008 Release 2 Service Pack 1, and the 64bit image for Windows Server 2012. You must a provide an ESX or ESXi server of the appropriate release where you will stage the virtual machine running the initial Windows 2008 or 2012 server. You see more about specific ESX and ESXi releases later in this presentation. You must supply any additional bundles that you require to be added to your image. The VMware software levels are shown later in this presentation.

Your software requirements – 2 of 2



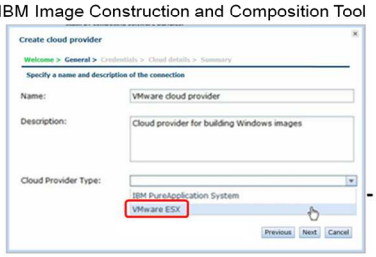
- Using your own VMware ESXi hypervisor that you provide outside of the IBM PureApplication System, create or make available a Windows VM
  - You might already have a virtual image build process in place for your Windows environments
- Do not use the "free" license version of VMware ESX(i)
- Do not use a production Windows VM for this purpose
  - The IBM Image Construction and Composition Tool steps will:
    - Install additional software
    - Reconfigure the software
    - Shut down the virtual machine during capture process
  - Build a new VM or clone and existing VM
- Typical "build new VM" preparation scenario:
    - a. Create an empty VM on your VMware hypervisor
    - b. Mount the Windows ISO to the virtual cdrom
    - c. Install Windows from scratch on the VM

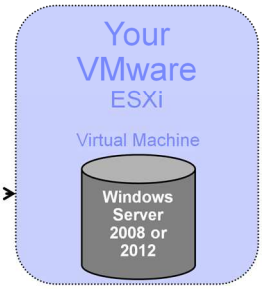
You might already have a virtual image build process in place for your Windows products. If not, this slide summarizes how you might create a Windows virtual machine on your hypervisor, used later by the IBM Image Construction and Composition Tool to create your own catalog virtual image. Note that you cannot use a "free" license version of ESX or ESXi because some required functions are not available in the free version. First, create an empty VM on your VMware hypervisor. Mount the Windows ISO to the virtual machine's cd rom. Then install the Windows product from scratch on the virtual machine.

VMware ESX/ESXi cloud provider releases supported

- VMware ESX – the only cloud provider supported for image preparation
- If building Windows Server 2008 R2 SP1, you can use:
  - VMware vSphere Version 4.0 or 4.1 Enterprise Plus with VMware ESX(i) V4.0 or V4.1 with vCenter Server Standard for V4.0 or V4.1
  - VMware vSphere Version 5.0 Enterprise Plus (Update 1 Fix 4 or newer) with VMware ESX(i) V5.0 with vCenter Server Standard for V5.0
  - **vSphere V5.1, vCenter V5.1, ESX(i) V5.0 are not supported**
- If building Windows Server 2012, you must use:
  - VMware vSphere Version 5.0 Enterprise Plus (Update 1 Fix 4 or newer) with VMware ESX(i) V5.0 with vCenter Server Standard for V5.0
  - **vSphere V5.1, vCenter V5.1, ESX(i) V5.0 are not supported**
- Do not use a free license version of ESX or ESXi

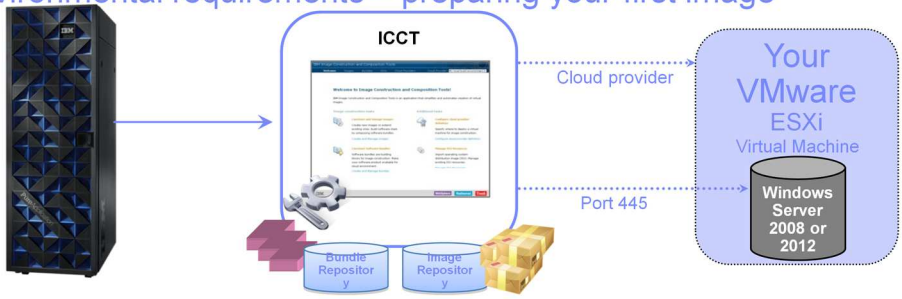
IBM Image Construction and Composition Tool





For preparing the Windows Server catalog virtual image, the **VMware ESX** cloud provider is the only cloud provider supported by IBM Image Construction and Composition Tool in PureApplication System V1.1. If you intend to build a Windows server 2008 Release 2 Service Pack 1 virtual image, you can use the levels shown on this slide. If you intend to build Windows Server 2012, you MUST use the V5.0 level specified here with at least Update 1 Fix 4 or higher fix levels of V5.0, which can also be used to prepare the Windows Server 2008 Release 2 Service Pack 1 image. PureApplication System does not yet support ESXi V5.1. Do not use a free license version of ESX or ESXi, since some required functions are not available in the free license version.

Environmental requirements – preparing your first image

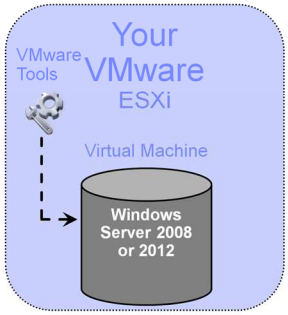


- Ensure a running Windows Server VM instance is available on your VMware hypervisor
- Ensure your VMware hypervisor available to your ICCT installation
  - If the firewall is enabled, verify port 445 is opened between ICCT and the Windows VM
    - Required for IBM Image Construction and Composition Tool to connect to the VM to capture it
- IPV4 and IPV6 protocols must be available for Ethernet adapters in running Windows VM
- Perform other configurations that you require in the image.
  - For example: enable remote desktop on the deployed VM before capturing it with the IBM Image Construction and Composition Tool
- Do not enable “Business Use Notice” Winlogon keys of “legalnoticetext” and “legalnoticecaption”

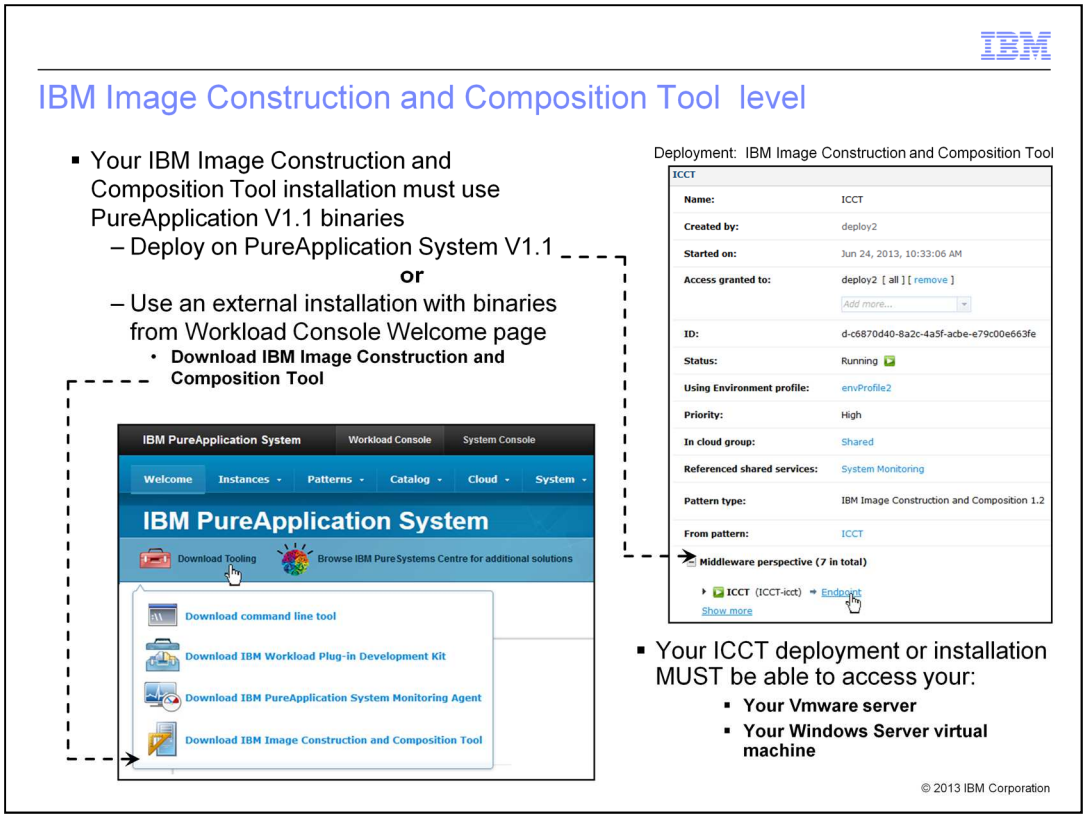
To prepare for creating your Windows catalog image, you must have a running Windows Server virtual machine available on your hypervisor. It must be accessible on the network to the IBM Image Construction and Composition Tool instance. If a firewall is present, port 445 must be open between your IBM Image Construction and Composition Tool installation and the Windows virtual machine. The IPV4 and IVP6 protocols must both be enabled on the running Windows VM. You should perform other configuration steps on your Windows Server virtual machine that you want at this time. For example, you might want to enable Remote Desktop Connection. Do not use the Microsoft Business Use Notice feature in the running Windows VM, which use the “legalnoticetext” key and “legalnoticecaption” key.

VMware Tools requirement

- VMware Tools must be installed on your Windows virtual machine
- Initiate the VMware Tools installation on VMware ESX or ESXi
  - **Guest > Install/Upgrade VMware Tools**
    - The VMware tool installer is mounted on DVD drive on the VM but not started
    - Log into the Windows VM and invoke the VMware Tools installer
- ICCT step “Create a new image” will fail if VMware Tools are not installed
  - Failure message: "Failed importing image from VM. Could not find vm on the specified cloud provider"

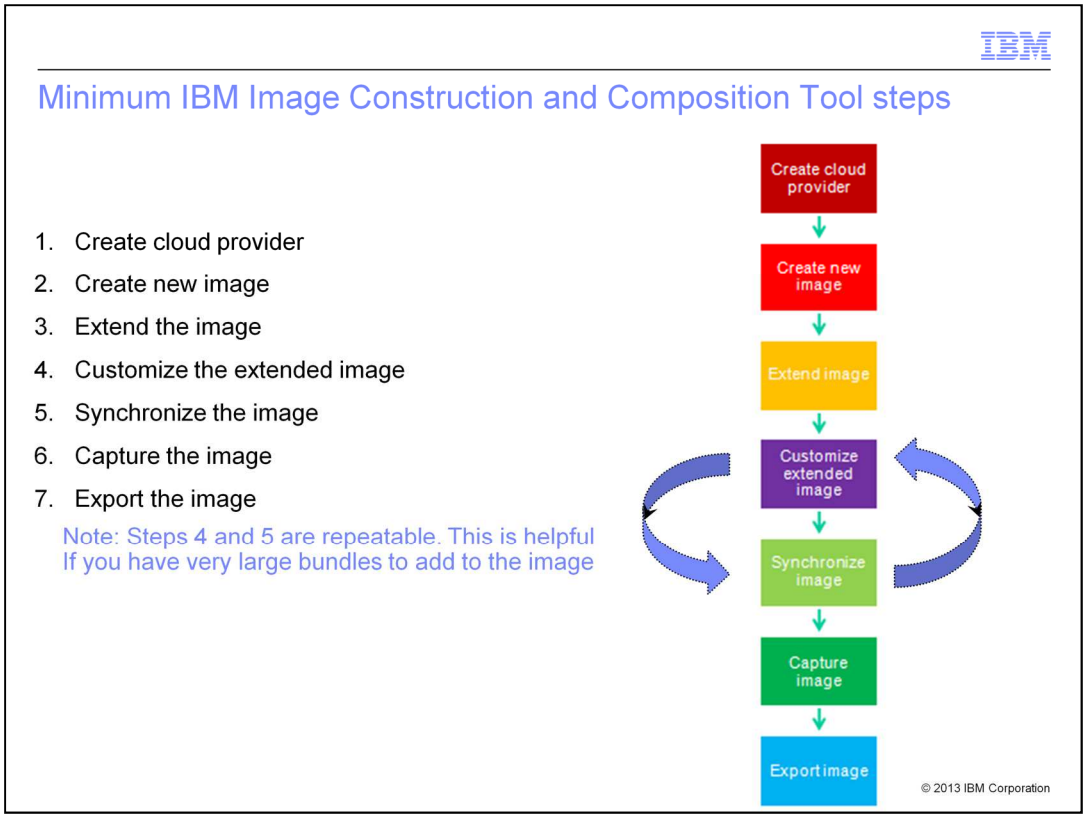


The VMware Tools must be installed on your Windows Server virtual machine before you begin preparing your Windows image with the IBM Image Construction and Composition Tool. You initiate the tools installation from the ESXi graphical interface, navigating to Guest, then Install Upgrade VMware Tools. This invocation mounts the installer binaries on the DVD drive in Windows VM but does not start the installation. You must log into the Windows VM either through the vSphere console or using the Remote Desktop Connection and invoke the VMware Tools installer. If VMware Tools are not installed on the guest operating system, then later you will see a failure in the IBM Image Construction and Composition Tool in the “Create a new image” step. For this situation, one common failure symptom with its associated message is shown on this slide.



Your IBM Image Construction and Composition Tool installation must use the PureApplication System V1.1 binaries. You can deploy the tool as a virtual application on PureApplication System V1.1. An alternative is to download the PureApplication System V1.1 binaries for the tool from the Workload Console “Download Tooling” link and install on your own Linux® operating system. In either case, your IBM Image Construction and Composition Tool installation must be able to access your VMware server and the Windows Server virtual machine.

This section discusses the IBM Image Construction and Composition Tool steps required for you to build your Windows server catalog virtual image.

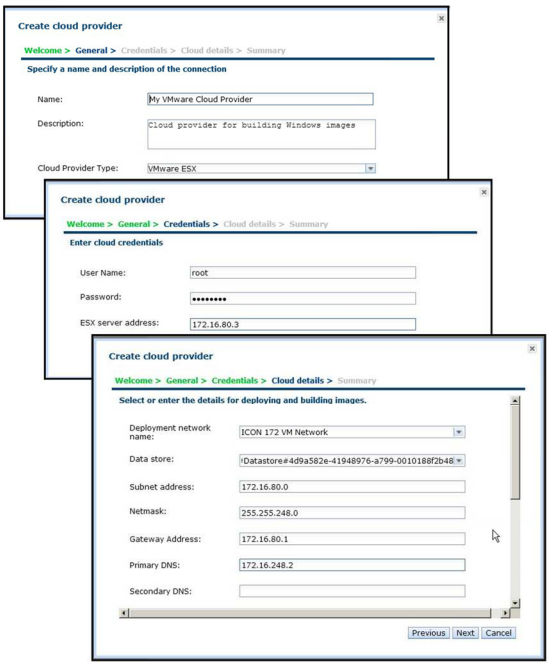


Here are the steps to follow in the IBM Image Construction and Composition Tool to build your Windows server catalog virtual image. After completion of these seven steps and optionally one additional step, you then can import the prepared image file into PureApplication System as your Windows catalog virtual image. You use the catalog virtual image as a basis for deploying Windows within the PureApplication System V1.1 environment. The next few slides will go into detail about each step. Note that steps four and five are repeatable, which can be helpful if you have very large bundles to add to the image.

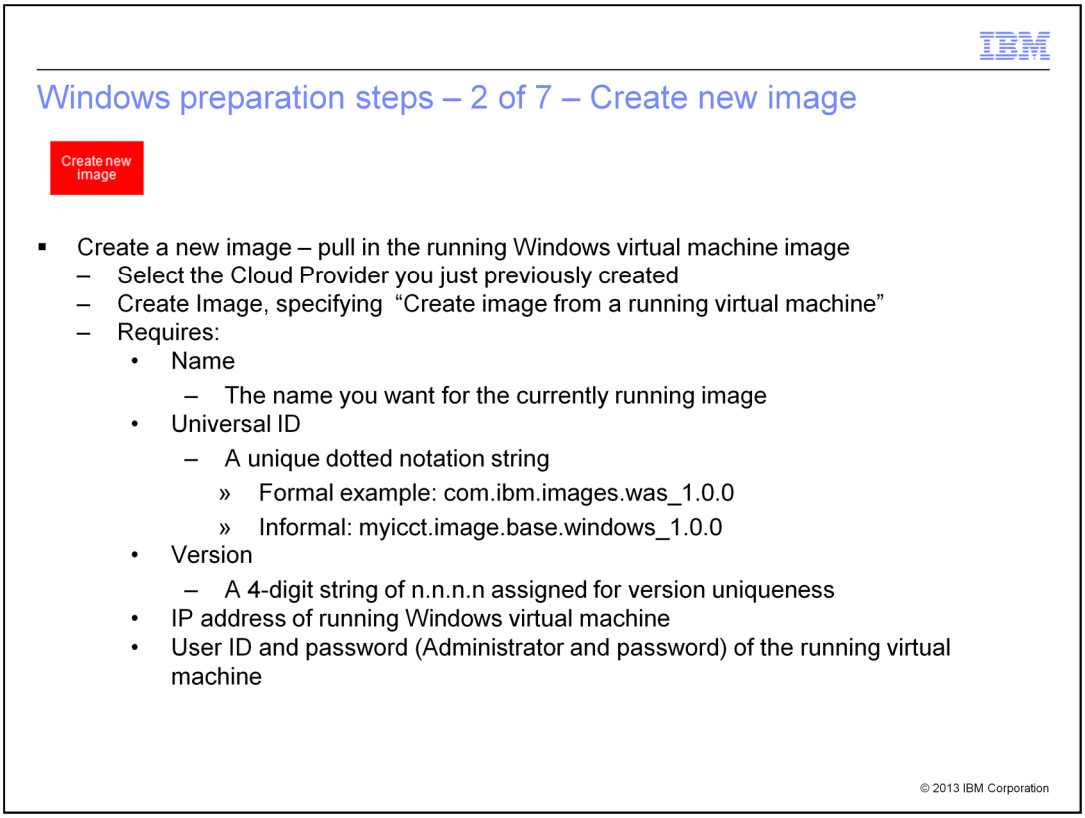
Windows preparation steps – 1 of 7 – Create cloud provider

Create cloud provider

- Create cloud provider – provides information needed to access the ESX hypervisor
  - Use “Create Cloud Providers” wizard
  - Supply:
    - Your cloud provider name and type
      - Type must be VMware ESX
    - ESX user ID, password, IP address
    - Appropriate ESX data store
    - ESX network and DNS information
    - ESX deployment address range

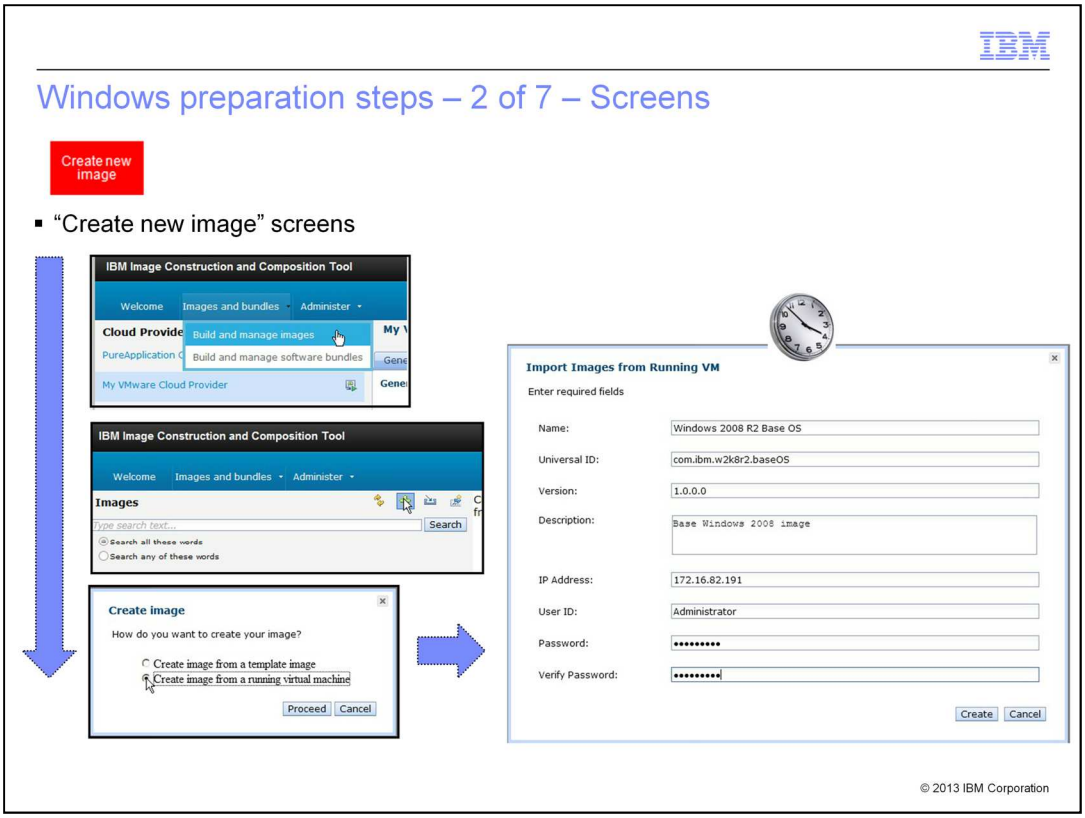


The first step involves creating the cloud provider within IBM Image Construction and Composition Tool. Use the “Create Cloud Providers” wizard to create the cloud provider for your VMware ESX hypervisor. You must name the cloud provider, supply the ESX user ID and password, and the IP Address for the hypervisor. On the final screen, you must supply the appropriate ESX data store for the running Windows server virtual machine. You must supply the ESX network and Dynamic Name Server information, and an address range for the deployment.



This step creates a new image within IBM Image Construction and Composition Tool. Once completed, you will have a copy of the running Windows server virtual machine, allowing you to extend and change it in later steps. You must supply a name for your image, a Universal ID, a Version, the IP Address of your running Windows virtual machine, and the password for the Administrator User ID.

A Universal ID is a reverse domain name using the Open Service Gateway Interface (OSGi) notation with the format major.minor.macro and an optional qualifier. One formal example is com.ibm.images.was_1.0.0, used for a WebSphere® Application Server base virtual image. In practice, you can use any dotted notation to create a unique universal ID, such as myicct.image.base.windows_1.0.0.



Here are the screens showing you the steps for “Create new image”. At the top left, you select “Build and manage images”, then click the “Create image” button, then select “Create image from a running virtual machine.” Finally, you see a screen that requires you to supply the remainder of the parameters. This step might require some time to complete, since the running Windows server virtual machine must be stopped and the image transferred to IBM Image Construction and Composition Tool.

Windows preparation steps – 3 of 7 – Extend the image

Extend image

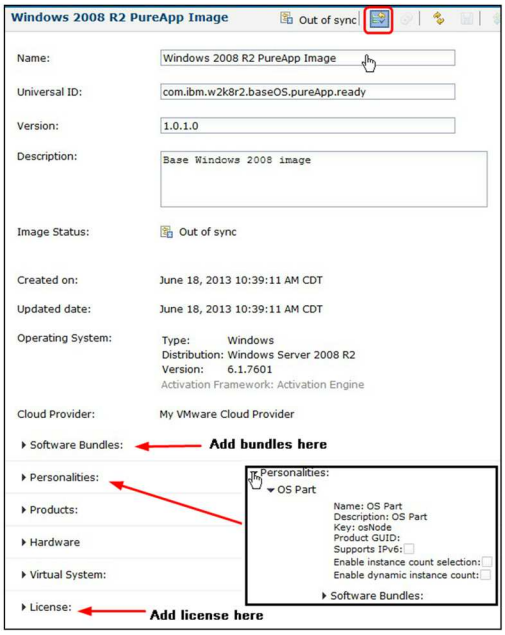
- Extend the image – creates new image for you to modify based on current image
- Requires:
  - New name for this system
    - This is name seen in the PureApplication System catalog once image is imported
  - Universal ID
    - A unique dotted notation string
  - Version
    - A 4-digit string of n.n.n.n assigned for version uniqueness

This step called “Extend the image” creates a new, modifiable image based on the image from your previous step. You supply the name for this system image, which will become the name of the system you see when you import image into PureApplication System in a later step. You must supply a Universal ID and a Version, and optionally supply a description.

Windows preparation steps – 4 of 7 – Customize extended image

Customize extended image

- Customize the extended image
  - Create or manage bundles
    - Bundles provided for base functionality
      - Windows server bundle (automatically provided)
      - Enablement bundle for your cloud provider (automatically provided)
      - Enablement bundle for Virtual Application and System Plugins **(edit required)**
    - You create and import any additional software bundles
  - Customize Personalities
    - Part name, IPV6, Instance Count
  - Provide license file

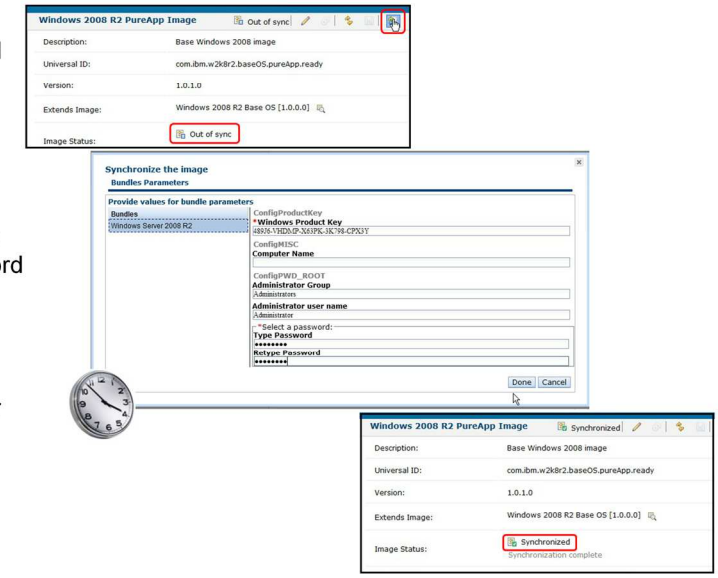


You now make changes to your image to meet your needs. The minimum required software bundles for deploying this image as a virtual system are supplied, but you also want to include the “Enablement bundle for Virtual Application and System Plugins”, which requires editing this image. Without this additional bundle, you cannot monitor your virtual system deployment, for example, and you cannot deploy a virtual application based on the image. You can also add optional bundles to your image at this point. Under the “Personalities” twisty you can enable IPV6 support, allow instance count selection in your pattern, allow the deployed virtual machine instances to be dynamically increased or decreased, and even change the name of the part from “OS Part” to whatever you prefer. You can optionally supply a license for any product you might add in the image. If you forget to save your changes in this step, the next step will remind you to do so.

Windows preparation steps – 5 of 7 – Synchronize the image

Synchronize image

- Synchronize the modified image - deploys the modified image to your current cloud provider hypervisor
- Requires:
  - Windows product key
  - Administrator password
    - Password must match the minimum password requirements for the operating system!

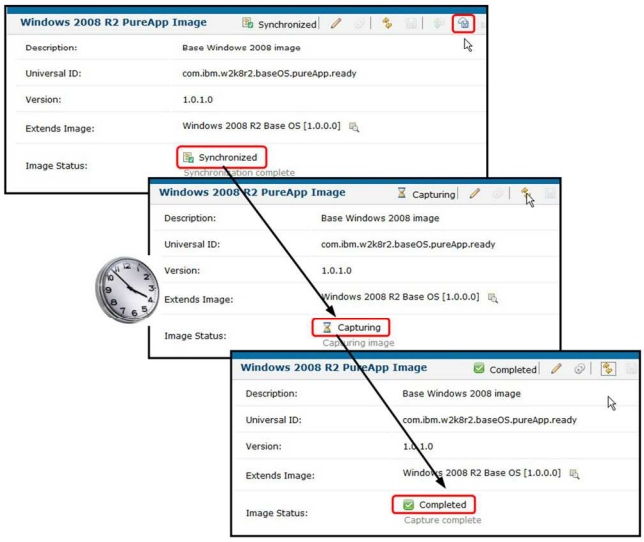


When you synchronize the image in this step, you are actually deploying your modified new image out to your VMware hypervisor. You must supply the Windows product key and the Administrator's password. The password must match the minimum password requirements for the operating system. The image will initially show "Out of sync", then "Synchronizing", and later "Synchronized". This step requires some time before you see the "Synchronized" status. Remember to refresh the screen before reviewing the status.

Windows preparation steps – 6 of 7 – Capture the image

Capture image

- Capture the image - retrieves the virtual machine image from the cloud provider into IBM Image Construction and Composition Tool



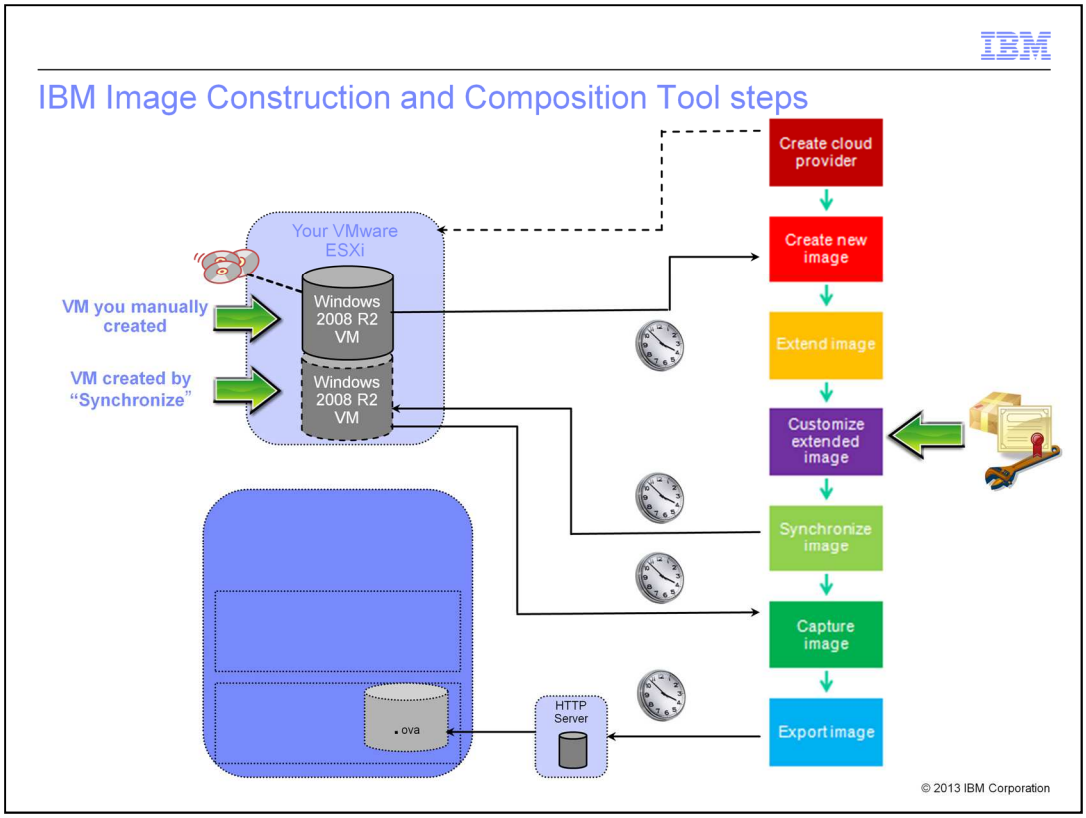
Once your image has the status of “Synchronized”, you can then click the “Capture” button to stop the image and bring this image back into IBM Image Construction and Composition Tool. The status will show as “Capturing” during the capture process and later show a status of “Completed” when finished. This step will take some time to complete as the image is transferred from your hypervisor back into the tool.

Windows preparation steps – 7 of 7 – Export the image

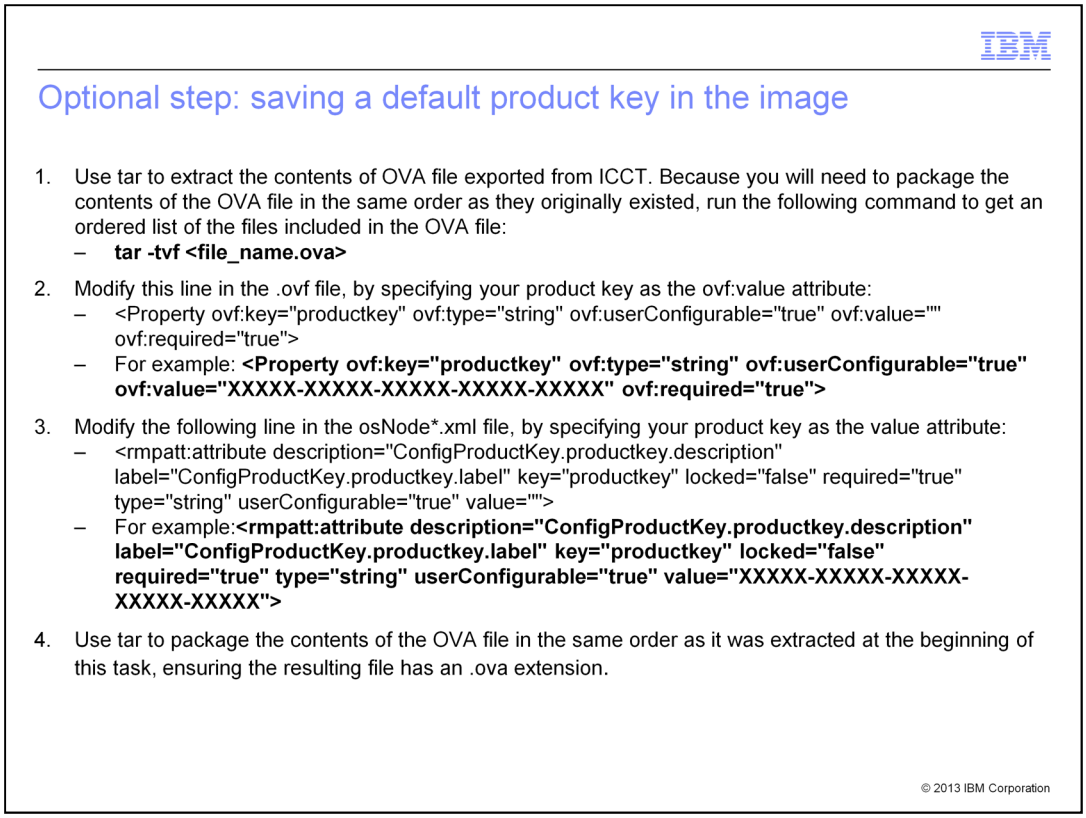
Export image

- Export the image to a server
- Requires:
  - Host IP address
  - Destination folder
  - File name
  - Authentication method
  - User name and password (if destination server is protected)
- Optional step: after exporting, edit the image to save a default product key in the image
- PureApplication System can now import the image into the virtual system catalog

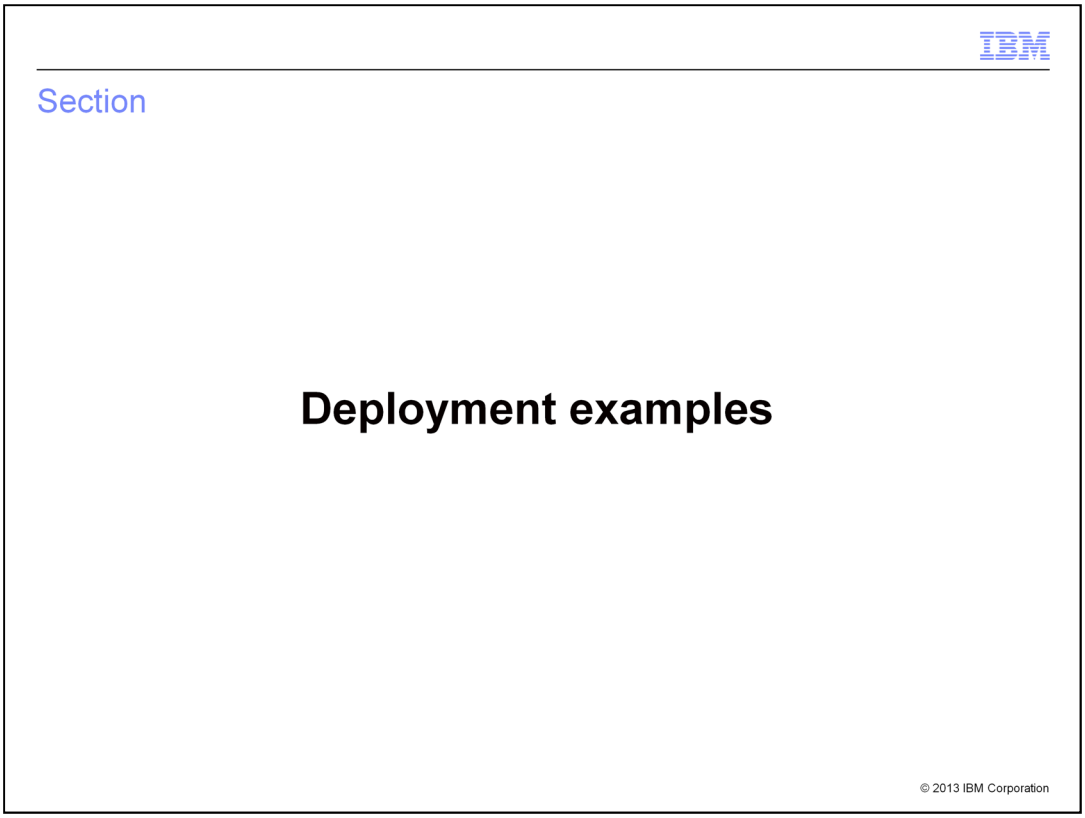
At this point, you've captured your Windows server virtual image in the tool. It is now ready for exporting to a server of your choice, such as an HTTP or SCP server. You must supply the server IP address, the destination folder, the name for the file, the authentication method of your destination server, if required, and the User name and password. After you've exported the image file, you can now import the catalog image file from your PureApplication System. There is an optional step you might want to perform before importing the image into PureApplication System, which allows you to prime the Windows product key within the image. This is explained later in this presentation.



Here is a summary slide which might help you understand the detailed steps you've just seen. The "clock" graphic indicates those steps that require extra time.



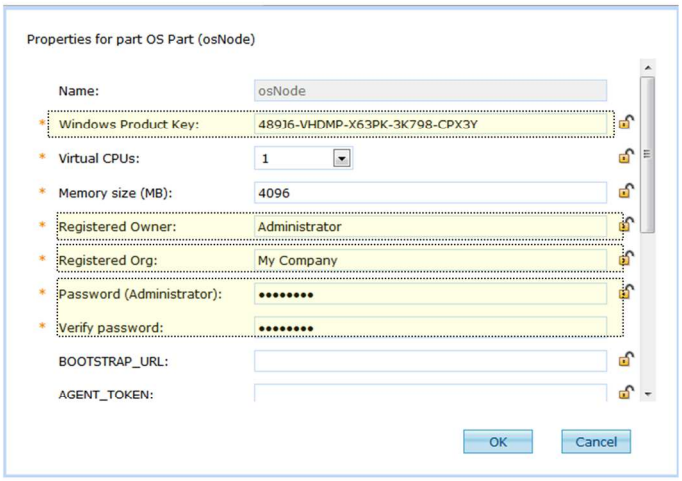
Stop on this slide if you want to review the information in detail. Here are the steps for saving a default Windows product key within the Windows virtual image .ova file which you had previously created. By following these steps before you import the image into your catalog in PureApplication System, your virtual system and virtual application deployments using this catalog image will display the product key you provide here within an unprotected field on the deployment screens. This gives you the option of using this supplied key during deployment or changing it by overtyping this key during deployment.



This section shows you deployment examples using your Windows virtual image.

Virtual system deployment example

- Similar settings as any virtual system deployment
- Additionally provide:
  - **Windows Product Key** (required)
  - **Registered Owner**: (required)
  - **Registered Org**: (required)
  - **Password** (Administrator) (required)



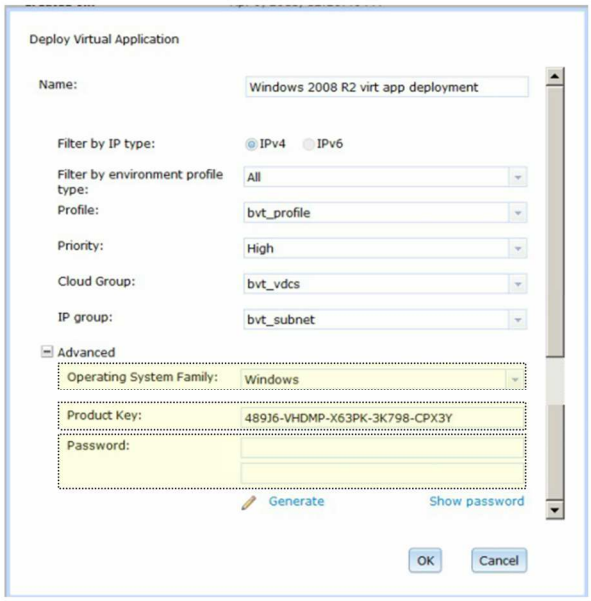
Values for "Registered Owner" and "Registered Org" are stored in key:
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion

The properties you specify for a Windows virtual system deployment are similar to those required for other operating system deployments. The items in yellow are properties you must supply. The Windows Product Key can be typed in during deployment, or if you modified the virtual catalog image according to previous instructions, the product key can be automatically filled in. The Registered Owner field – with a default value of "Administrator" – is a free-format field which can be any value you want. The Registered Org field is another free-format field which can be any value you want. The password field must be the password for the Administrator account for the Windows operating system. The Administrator account is required for the proper deployment and operation of the Windows deployment.

The values for Registered Owner and Registered Org are stored in: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion)

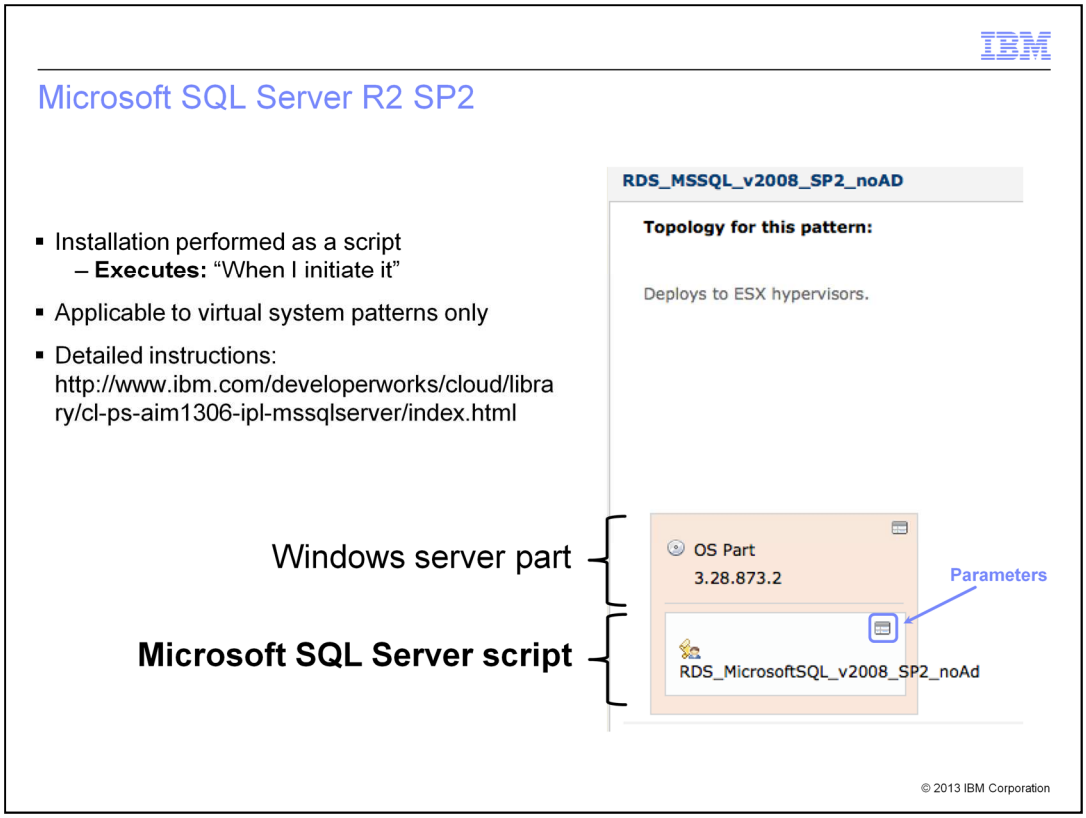
Virtual application deployment example

- Similar settings as any virtual application deployment
- Additionally:
  - Select **Operating System Family**
    - **Linux**
    - **Windows**
  - Provide Microsoft Windows **Product Key**
  - Administrator **Password**



The properties you specify for a Windows virtual application deployment are similar to those required for other operating system deployments. The items in yellow are properties you must supply. For the Operating System Family setting, you must select “Windows” in the pull-down menu. The Windows Product Key can be typed in during deployment, or if you modified the virtual catalog image according to previous instructions, the product key can be automatically filled in. The password field must be the password for the Administrator account for the Windows operating system. The Administrator account is required for the proper deployment and operation of the Windows deployment.

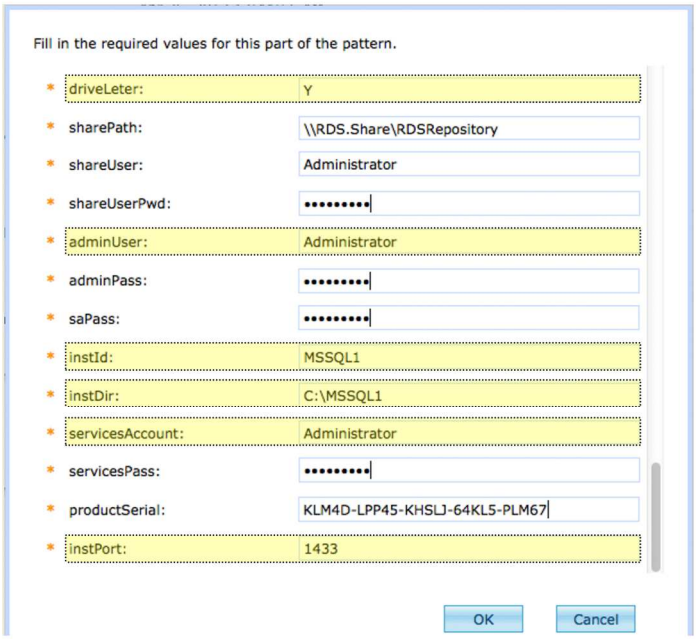
This section discusses the support for Microsoft SQL server R2 SP2 in PureApplication System V1.1.



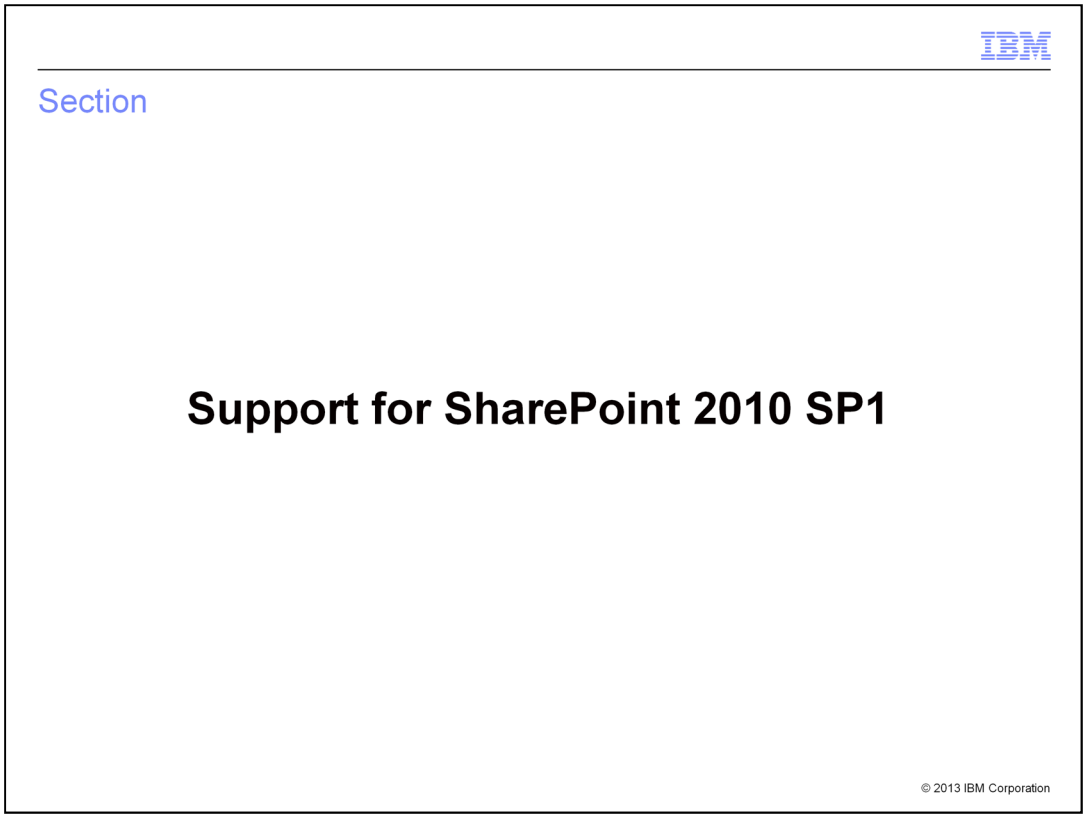
The Microsoft SQL Server R2 SP2 script provided for PureApplication System V1.1 is typically set to with an “Executes” parameter of “When I initiate it”. This allows you to include the script into your Windows virtual system pattern, although you might not meet the requirements for running the script when the virtual system is first deployed. After deployment, you make the necessary changes in the virtual machine environment to satisfy the script parameters. Then you click the “Execute now” button associated with the script to install the product. The “Execute now” button is located on your virtual system deployment screen under the Virtual machines section.

Microsoft SQL Server – All parameters

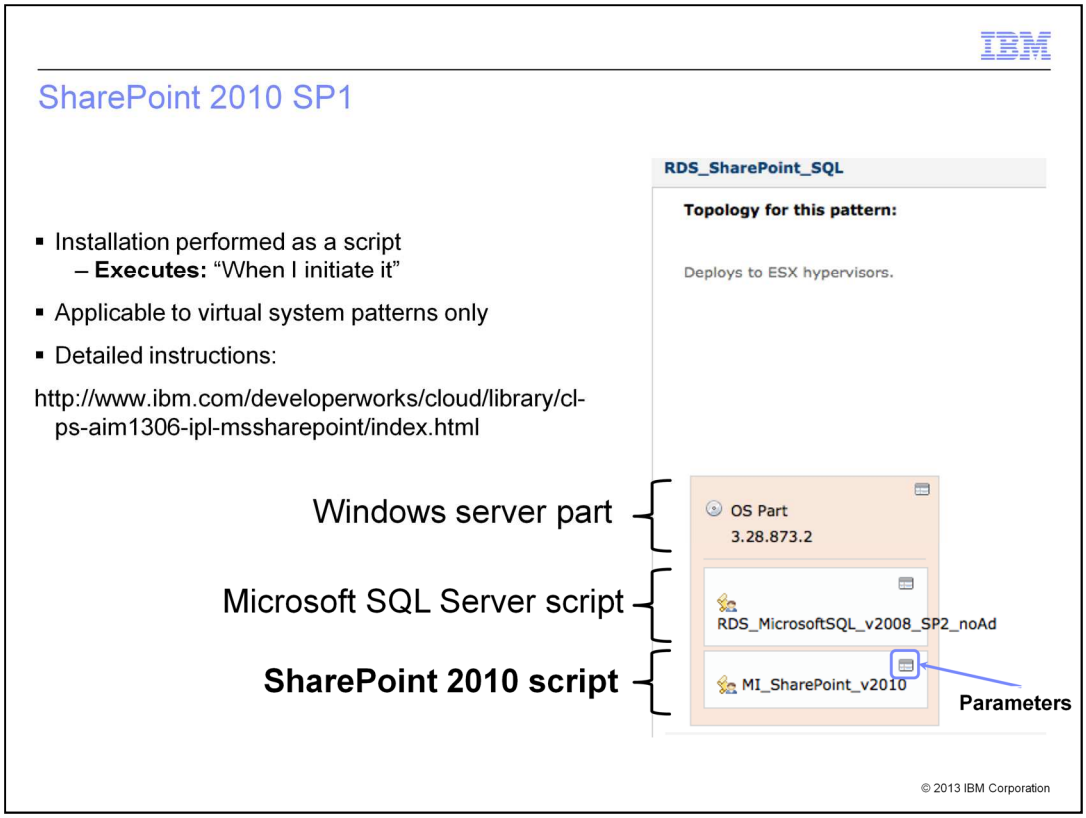
- Items marked in yellow are:
  - Default settings
  - Can be changed if required
- Remainder of settings are blank
  - Must be provided for deployment



When you click the “parameters” button on the script in the pattern, you see the parameters you can supply for the script. The items marked in yellow are default settings but can be changed if required. The remainder of the settings are blank and must be provided for deployment.



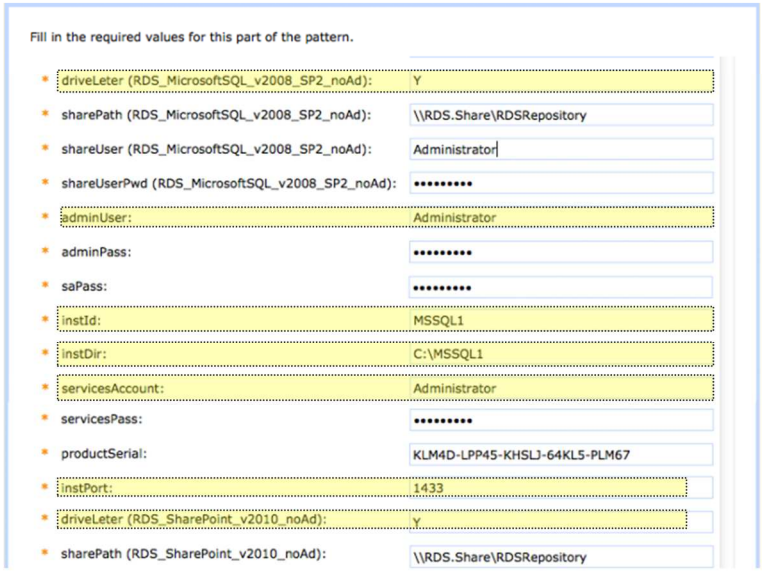
This section discusses the support for SharePoint 2010 SP1 in PureApplication System V1.1.



The SharePoint 2010 SP1 script provided for PureApplication System V1.1 is typically set to with an "Executes" parameter of "When I initiate it". This allows you to include the script into your Windows virtual system pattern, although you might not meet the requirements for running the script when the virtual system is first deployed. After deployment, you make the necessary changes in the virtual machine environment to satisfy the script parameters. Then you click the "Execute now" button associated with the script to install the product. The "Execute now" button is located on your virtual system deployment screen under the Virtual machines section.

SharePoint 2010 SP1 – All parameters – 1 of 2

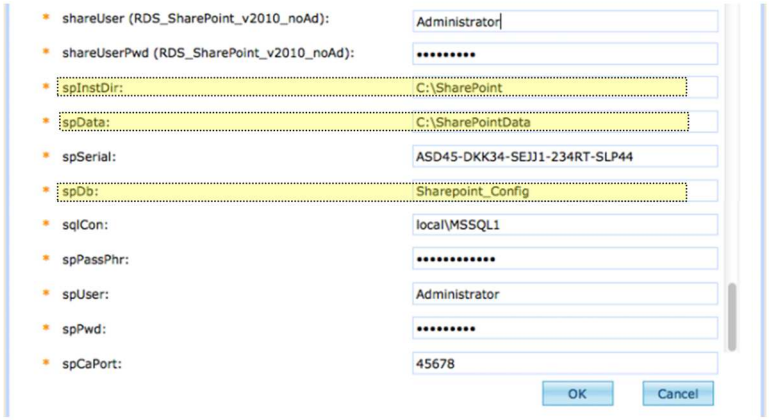
- Item marked in yellow are:
  - Default settings
  - Can be changed if required
- Remainder of settings are blank
  - Must be provided during deployment



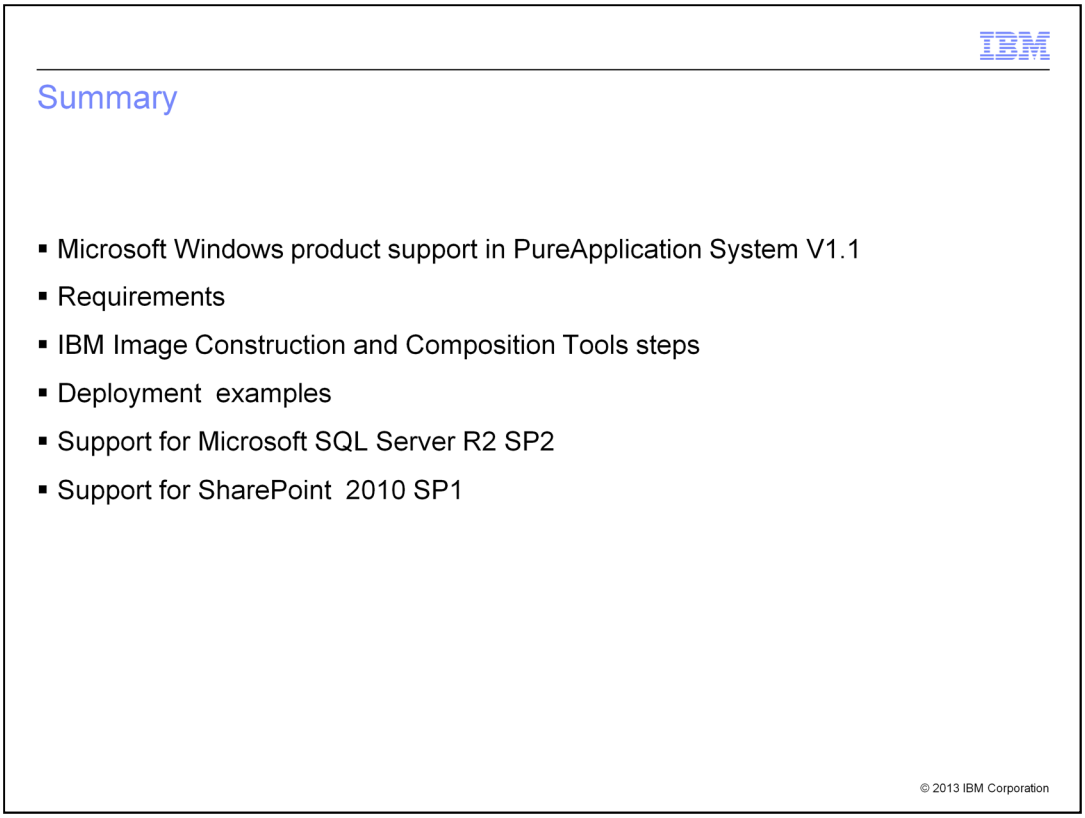
When you click the “parameters” button on the script in the pattern, you see the parameters you can supply for the script. The items marked in yellow are default settings but can be changed if required. The remainder of the settings are blank and must be provided for deployment.

SharePoint 2010 SP1 – Parameters – 2 of 2

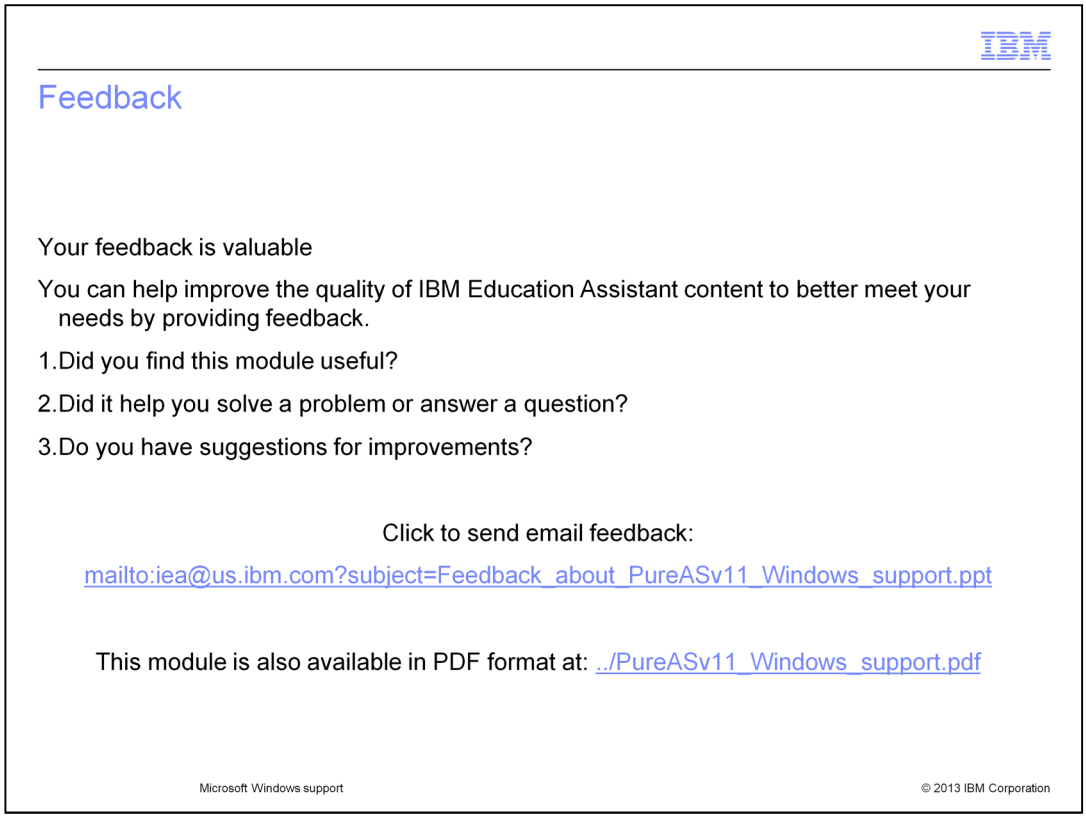
- Item marked in yellow are:
  - Default settings
  - Should not be changed
- Remainder of settings are blank
  - Must be provided during deployment



These are the additional parameters for this script after scrolling down in the parameter list.



This presentation provided you an overview of the Windows product support in PureApplication System Version 1.1. You saw a discussion of the requirements for building your own Windows product virtual image and the detailed steps using the IBM Image Construction and Composition Tool. You then saw deployment examples for a virtual system deployment and a virtual application deployment. Finally, you learned about the support provided for Microsoft SQL Server R2 Service Pack 2 and SharePoint 2010 Service Pack 1.



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