Microsoft

winhec

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Microsoft

Mobile Image Creation

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What we will cover…

- Basic introduction of ‘images’
- Image building environment setup
- Building an FFU image using Imaging and Configuration Designer (ICD)
- Building an FFU image using ImgGen.cmd
- How to flash a FFU file…

Agenda

- Windows Phone Image Introduction
- Environment Setup
- ICD
- ImgGen.cmd
- Flashing Image

Windows Phone Image Introduction

Packages

Microsoft packages.

- These include all OS and Microsoft-implemented driver packages required for any image, as well as additional platform-specific driver and firmware packages (for example, packages for components specific to a particular device resolution or SoC).

SoC vendor packages.

- These include packages for drivers and firmware components implemented by the SoC vendor.

OEM packages.

- These are packages created by OEMs for content such as drivers and applications.

Environment Setup

Environment setup

- Install Visual Studio 2015
- Install ADK for Windows 10
- Install Windows SDK for Windows 10
- Install Windows Driver Kit for Windows 10
- Install Windows 10 Mobile Kit
- If you use Windows 8.1 as your host system, make sure you update the registry:
  - reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem /v NtfsAllowUsnMinSize1Mb /t REG_DWORD /d 1

Environment setup

Set WPDKCONTENTROOT environment variable

- %ProgramFiles%\Windows Kits\10 (x86 OS)

  or

- %ProgramFiles(x86)%\Windows Kits\10 (x64 OS)

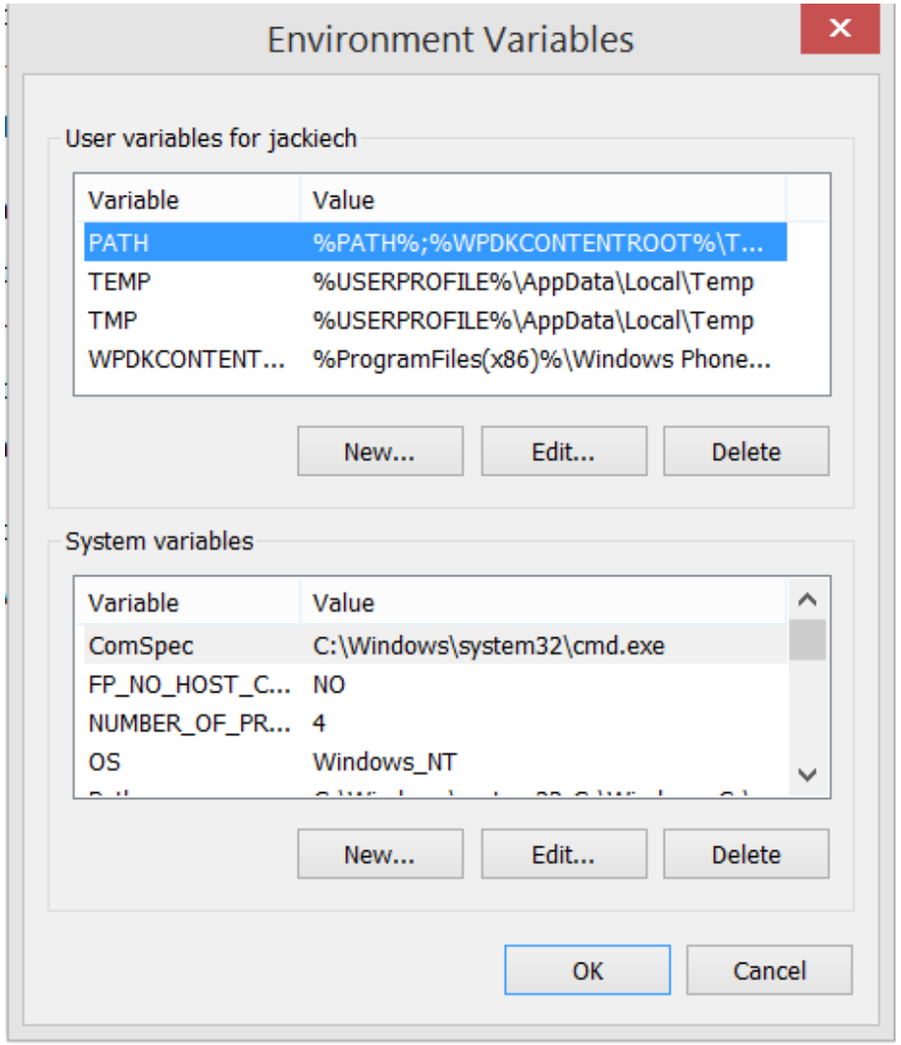
Set PATH environment variable to include

- %WPDKCONTENTROOT%\Tools\bin\i386
- And %WPDKCONTENTROOT%
- So you won't get errors when trying to run tools

Reboot

Use below commands to check

- echo "%WPDKCONTENTROOT%"
- echo "%PATH%"



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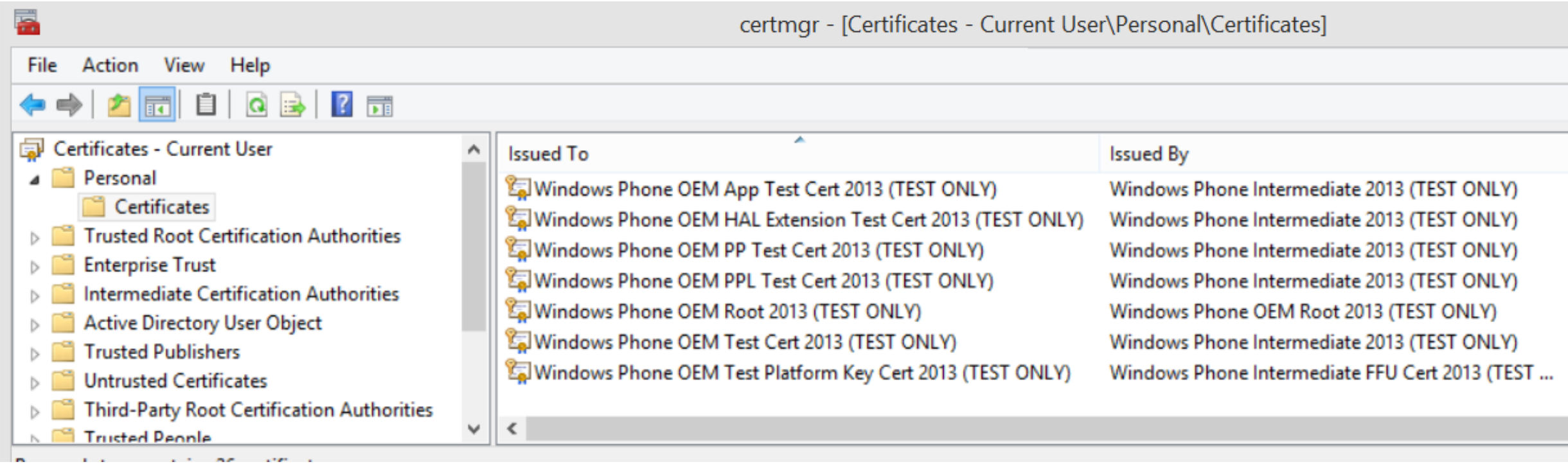
Environment setup

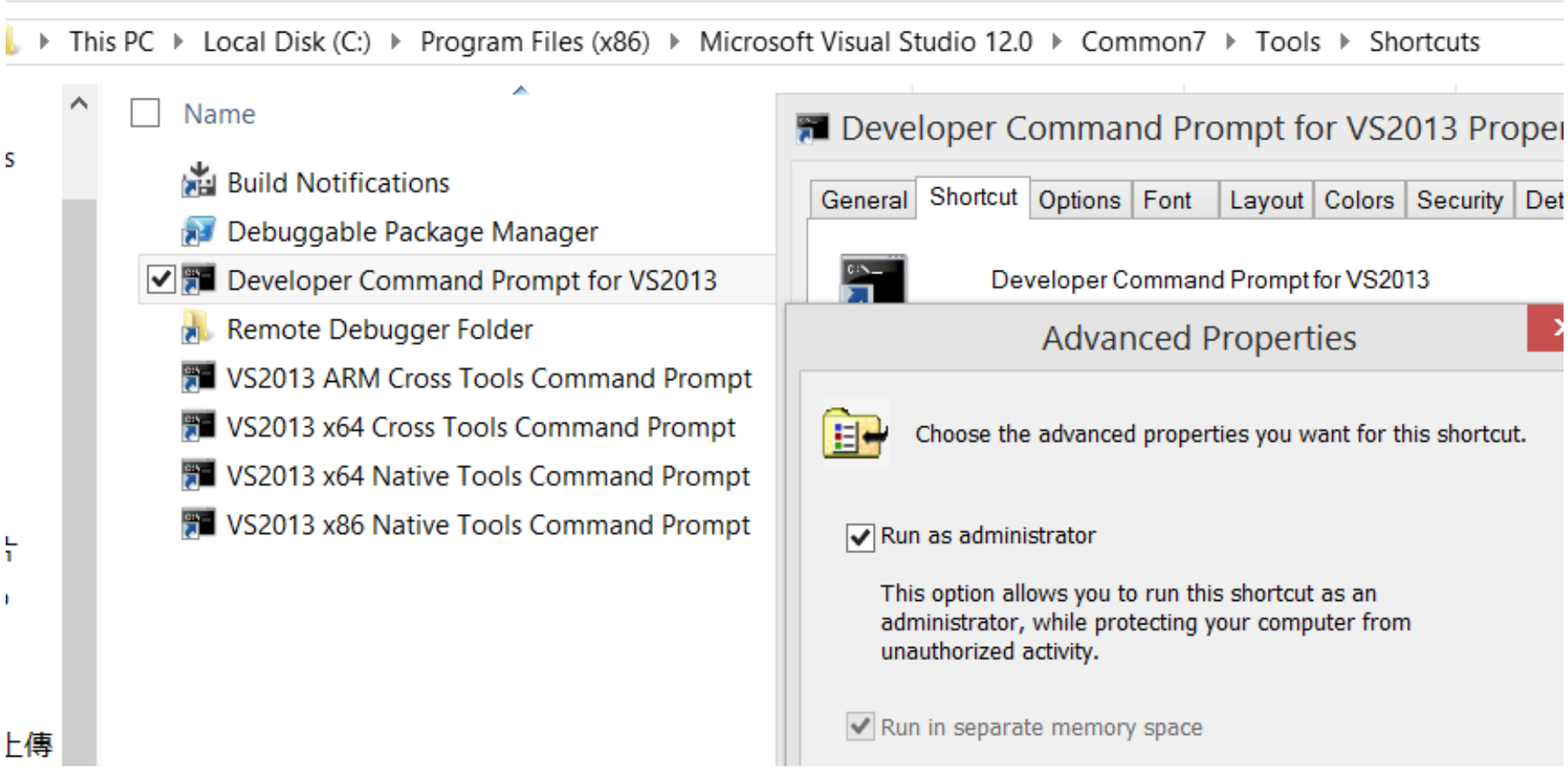
Install OEM test certificates (setup code signing environment)

- "%WPDKCONTENTROOT%\tools\bin\i386\InstallOEMCerts.cmd"
  (make sure you have " mark in your command)



Environment setup

Create an “Administrator” “Developer Command Prompt for VS2013” shortcuts



Using Image and Configuration Designer

Image and Configuration Designer

Launch ICD.exe

- from “C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Imaging and Configuration Designer\x86”

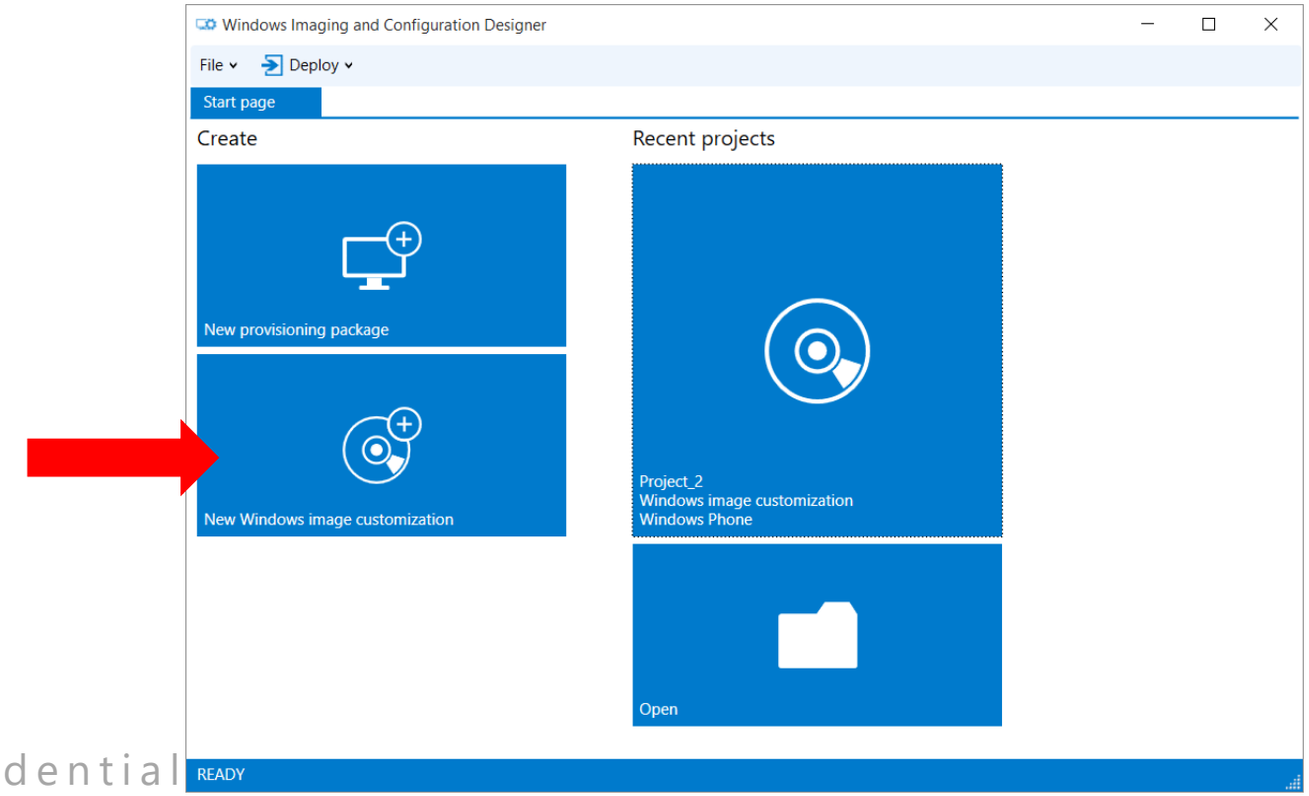


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Image and Configuration Designer

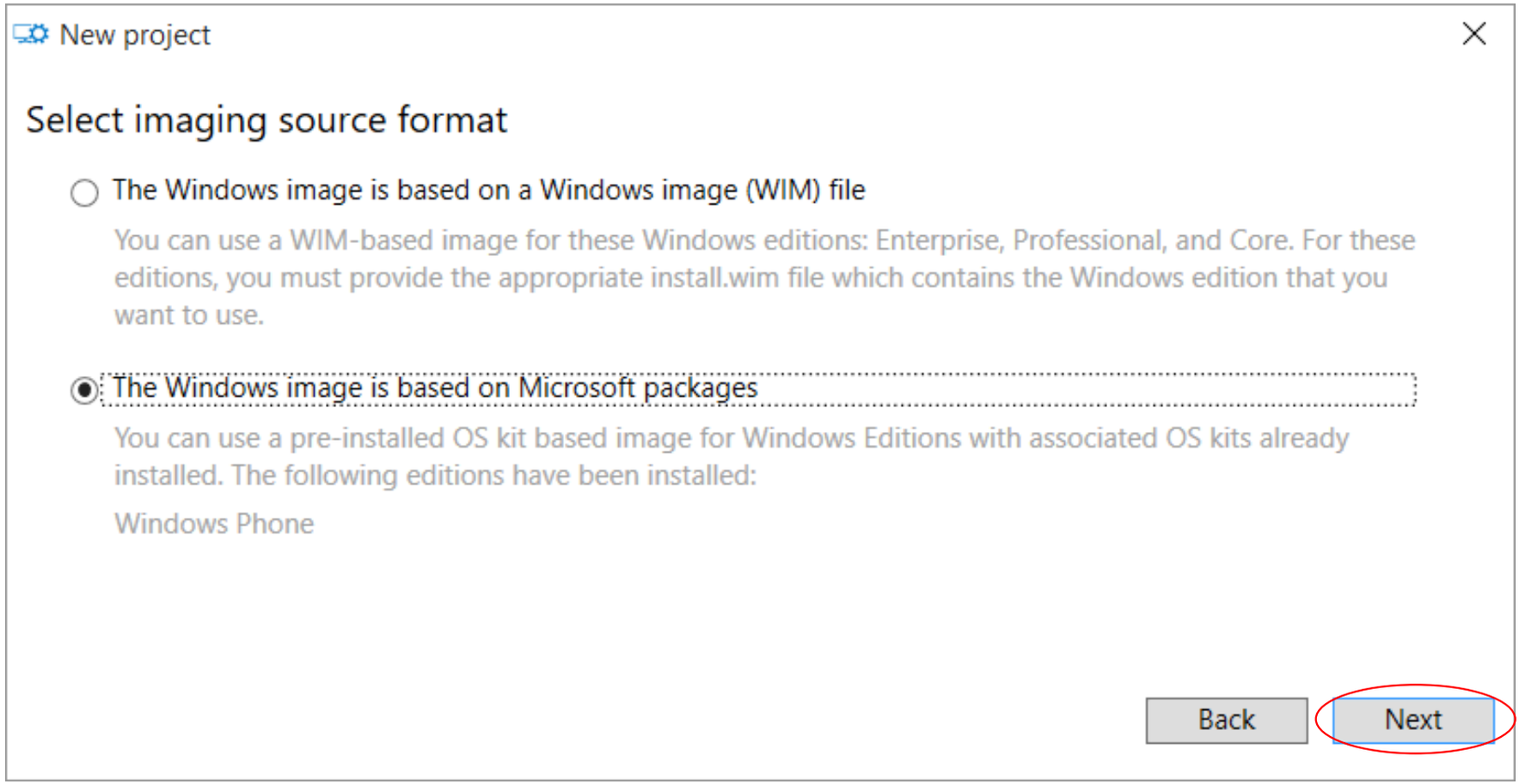

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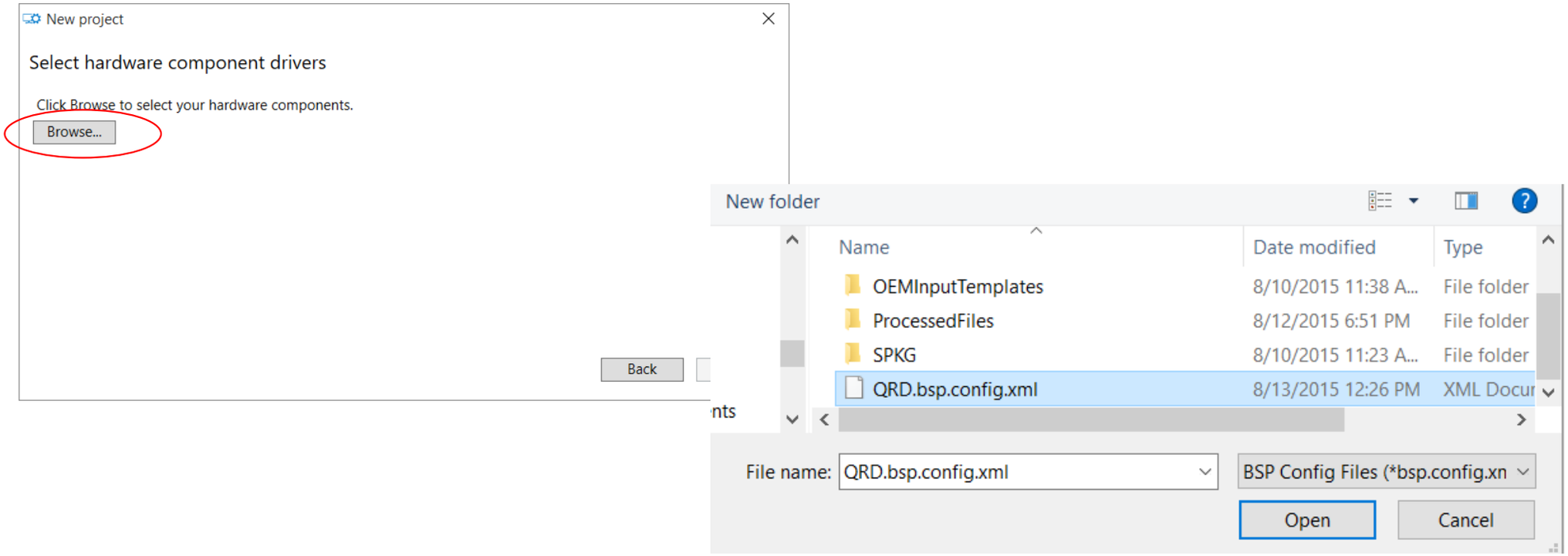
Image and Configuration Designer

- Click Browse and then select bsp.config.xml in your BSP



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OEMInput file

The type of image to generate

- Retail, Production, Test, Health, Manufacturing, Customer care

The OEM packages to include in the image

- To specify which OEM packages to include

OEMInput file

```
<!-- From Microsoft sample OEMInput.xml file -->
<AdditionalFMs>
  <AdditionalFM>%WDKCONTENTROOT%\FMFiles\MSOptionalFeatures.xml</AdditionalFM>
    <!-- Add OEM FM files here -->
</AdditionalFMs>

<Features>
   <Microsoft>
    <!-- Features from Microsoft OEMInput sample -->
    <!-- Additional OEM-selected features defined by Microsoft
         Include detailed comments about why each feature was chosen for this image -->
   </Microsoft>
   <OEM>
    <!-- Additional OEM-selected features defined by the OEM
         Include detailed comments about why each feature was chosen for this image  -->
   </OEM>
</Features>
```

Image and Configuration Designer

- After various validations and settings loading are done, it proceeds to below screen.
- Click Create and then select FFU

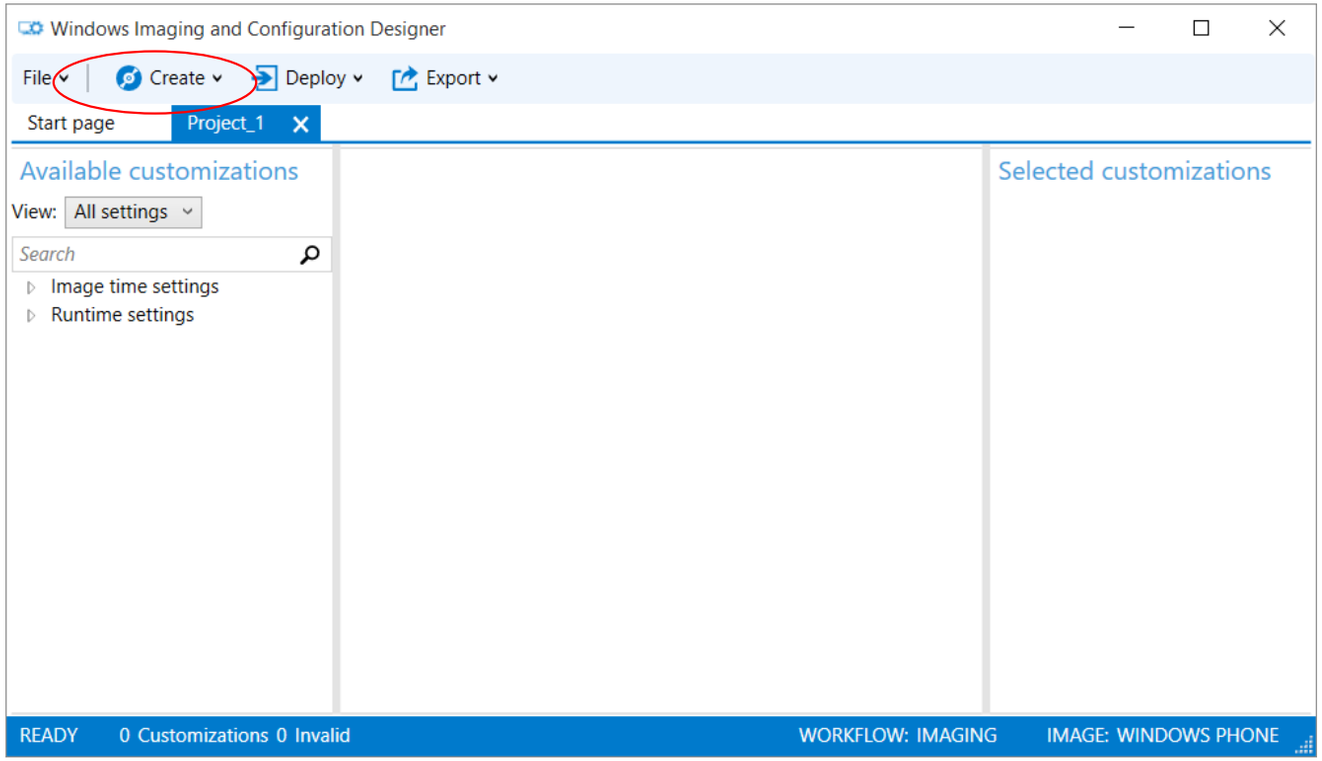

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Image and Configuration Designer

- Click Create and then select FFU.

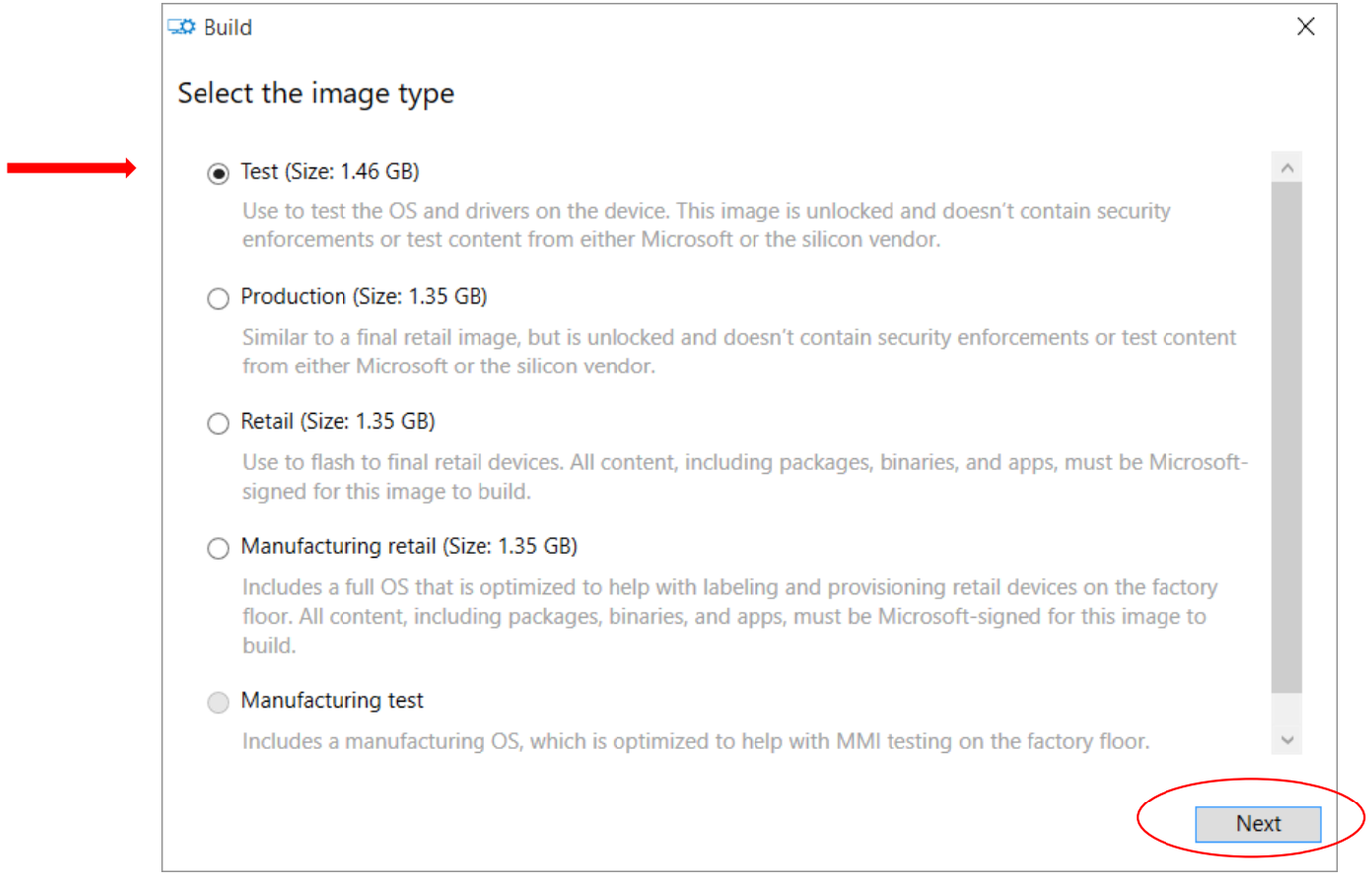

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Image and Configuration Designer

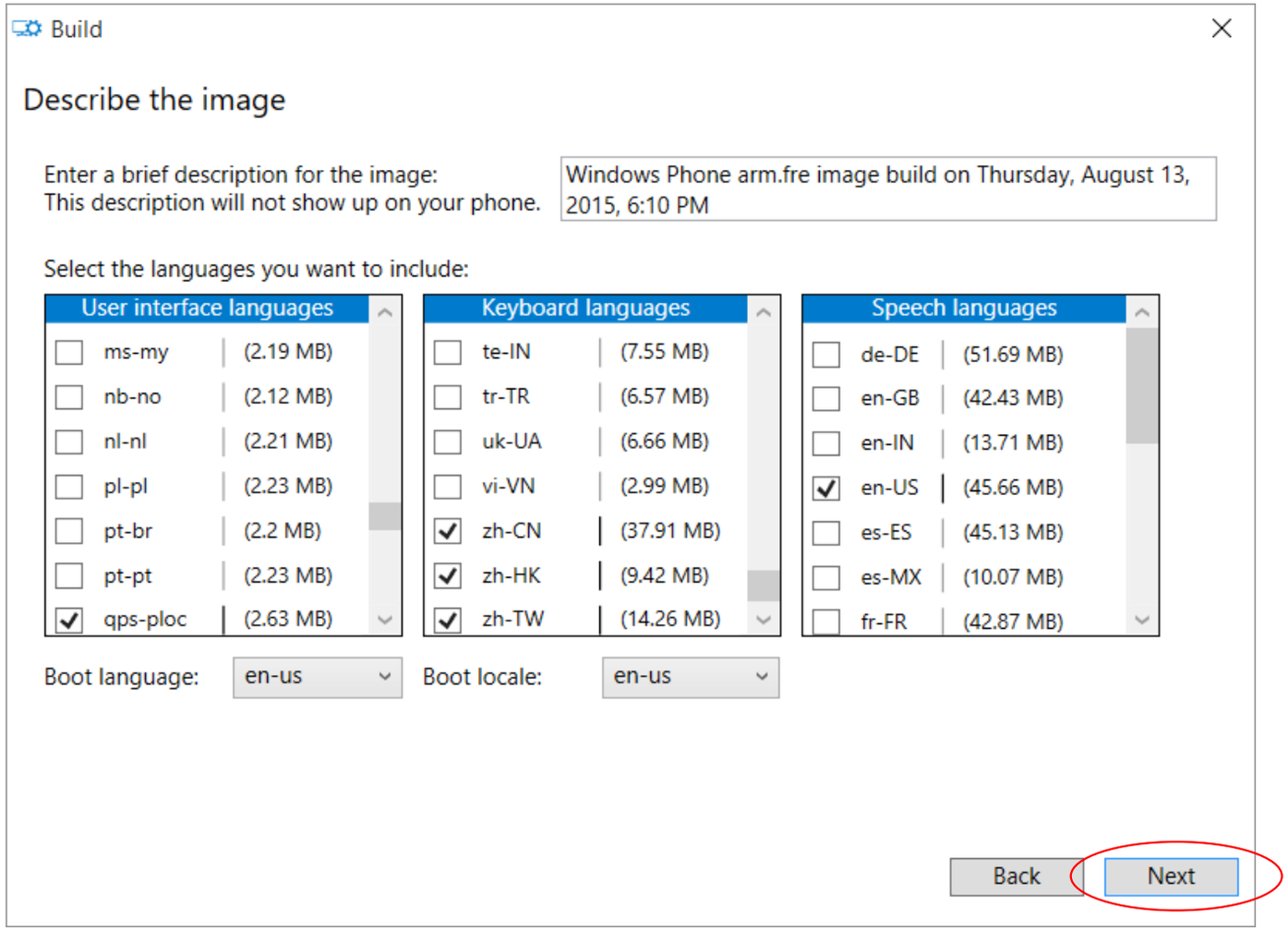

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Image and Configuration Designer

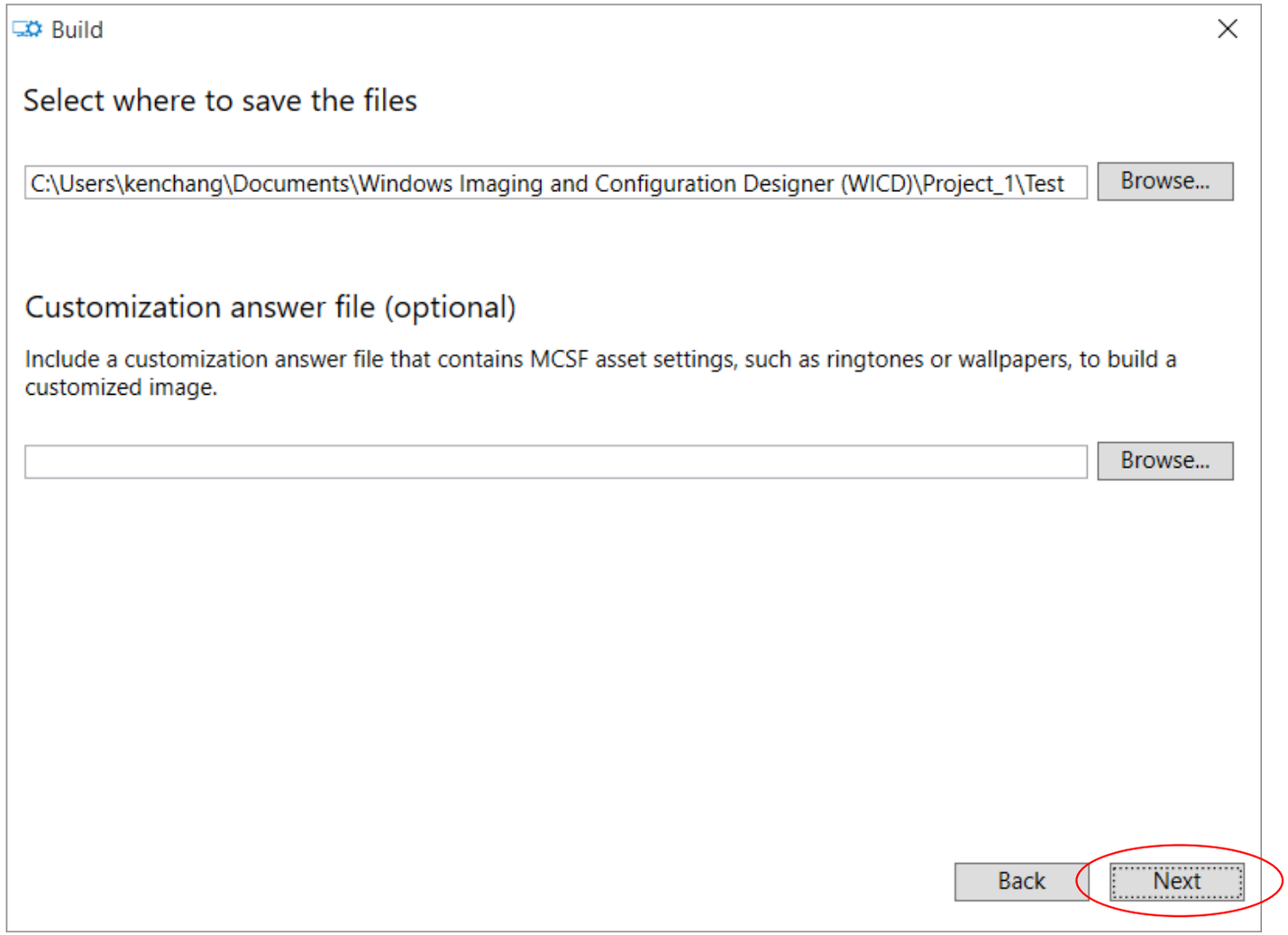

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Image and Configuration Designer

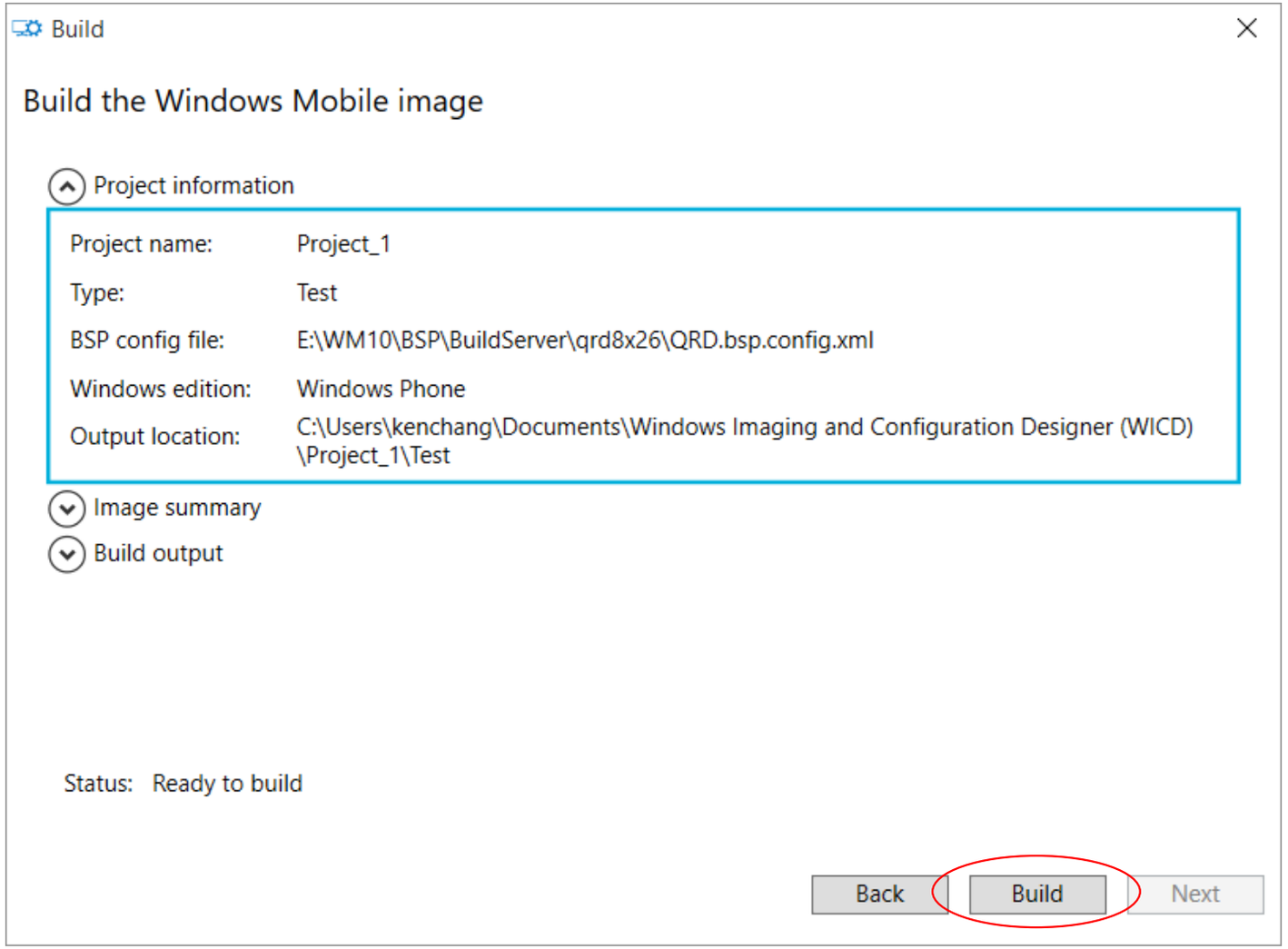

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Image and Configuration Designer

- Expand “Build Output” to monitor messages.

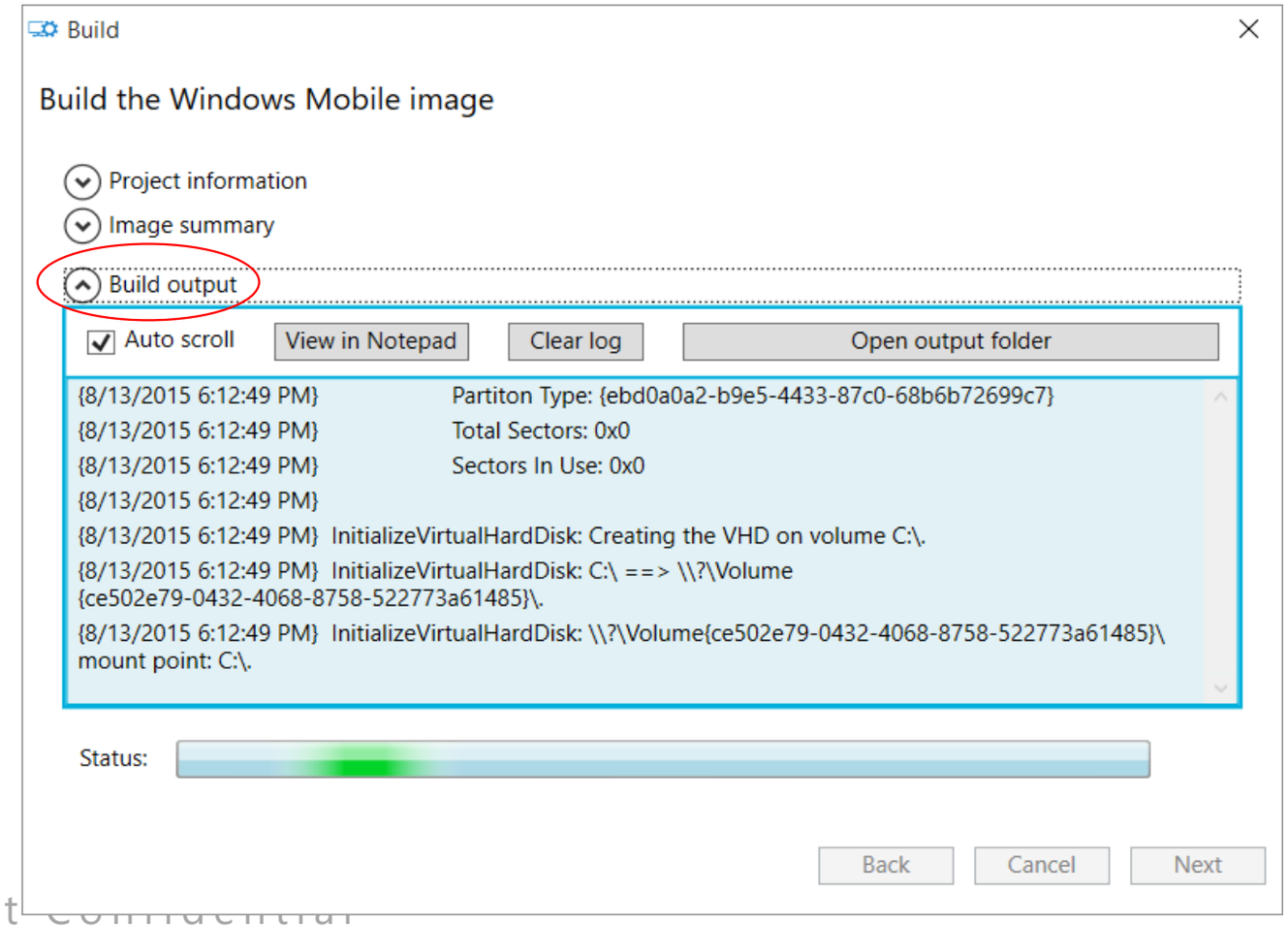

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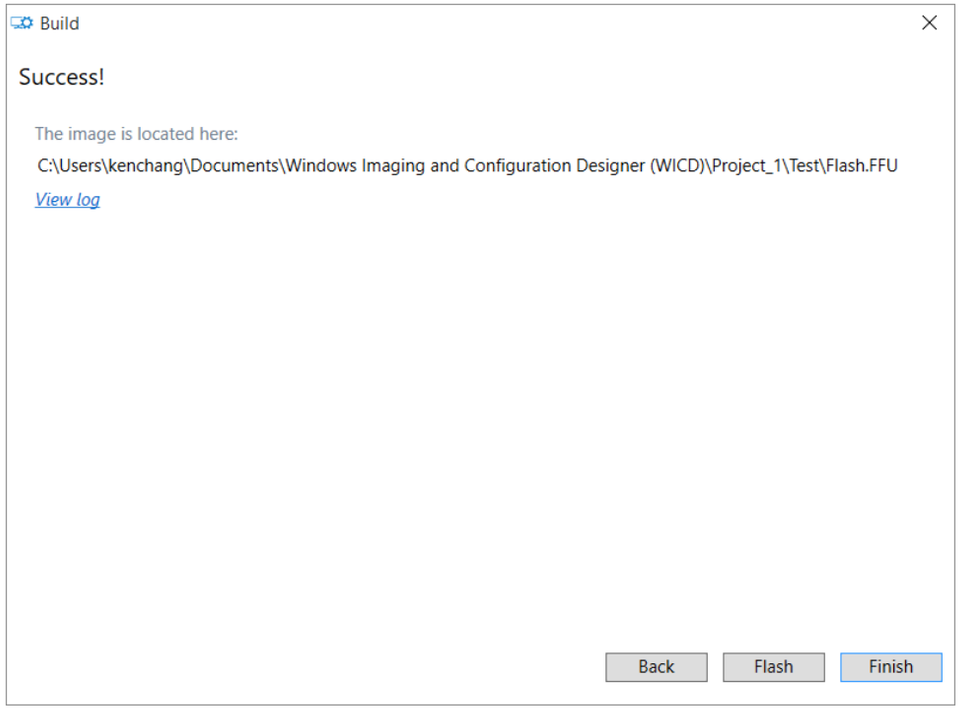
Image and Configuration Designer

- Wait around 15 minutes for FFU to be generated.




```
{8/13/2015 6:27:16 PM}  Imaging: Image processing complete.
{8/13/2015 6:27:18 PM}  DismountFullFlashImage:[2.438] Cleaning up temporary paths.
{8/13/2015 6:27:19 PM}  Storage Service: Dismounting the image in 2.4 seconds.
{8/13/2015 6:27:19 PM}  Imaging: Performance Results:
{8/13/2015 6:27:19 PM}          Total Run Time: 00:14:32.1801374
```

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Demo

ImgGen.cmd

Environment setup

Take MTP 8992 as an example:

- Set Platform=arm
- Set device=8992
- set QCNHDebug=\
- set SIGN_OEM=1
- set SIGN_WITH_TIMESTAMP=0
- set QCPackageDir=E:\Prebuilt\
- Set WDKCONTENTROOT=E:\MobileOS-arm-fre

ImgGen.cmd

- Identify the packages to include in the image.
- Specify sets of packages to include in the image by using feature manifest files.
- OEMs must create a device platform package to specify data specific to the device platform, and include this package in the image.
- Create an OEMInput file that defines the image.
- Optionally create a customization answer file. Do this if you want to build one of the supported Windows Phone customizations into the image.
- Run the ImgGen.cmd to build the image.
- Flash the image to a phone.

OEMInput file

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   <OEM>
    <!-- Additional OEM-selected features defined by the OEM
         Include detailed comments about why each feature was chosen for this image  -->
   </OEM>
</Features>
```

How to build image using ImgGen.cmd

ImgGen.cmd OutputFile OEMInputXML MSPackageRoot [OEMCustomizationXML] [OEMCustomizationVer]

- ImgGen Flash.ffu OEMInput.xml "%WPDKCONTENTROOT%\MSPackages“
- ImgGen Flash.ffu OEMInput.xml "%WPDKCONTENTROOT%\MSPackages" OEMCustomization.XML 8.1.0.1

Flash Image

Flash Image

Boot the device into the FFU download mode while it is connected to the host computer.

- To force the device into the FFU download mode manually, press and release the power button to boot the device, and then immediately press and hold the volume up button. This option is available only after an initial FFU has been flashed to the device.

Run ffutool.exe from the command line to flash an image.

- ffutool -flash <FFU file>

Demo

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