

UEFI & EDK II TRAINING

EDK II BUILD SPECIFICATION FILES

tianocore.org

LESSON OBJECTIVE

- ★ Explain the Build components and build text files DSC, DEC, & FDF

EDK II BUILD TEXT FILES

EDK II File Extensions

- Located on tianocore.org project edk2

.DSC	- Platform Description
.DEC	- Package Declaration
.INF	- Module Definition <i>define a component</i>
.FDF	- Flash Description
.VFR	- Visual Forms Representation for User interface
.UNI	- Unicode String text files w/ ease of localization
.c & .h	- Source code files
.FD	- Final Flash Device Image
.FV	- Firmware Volume File

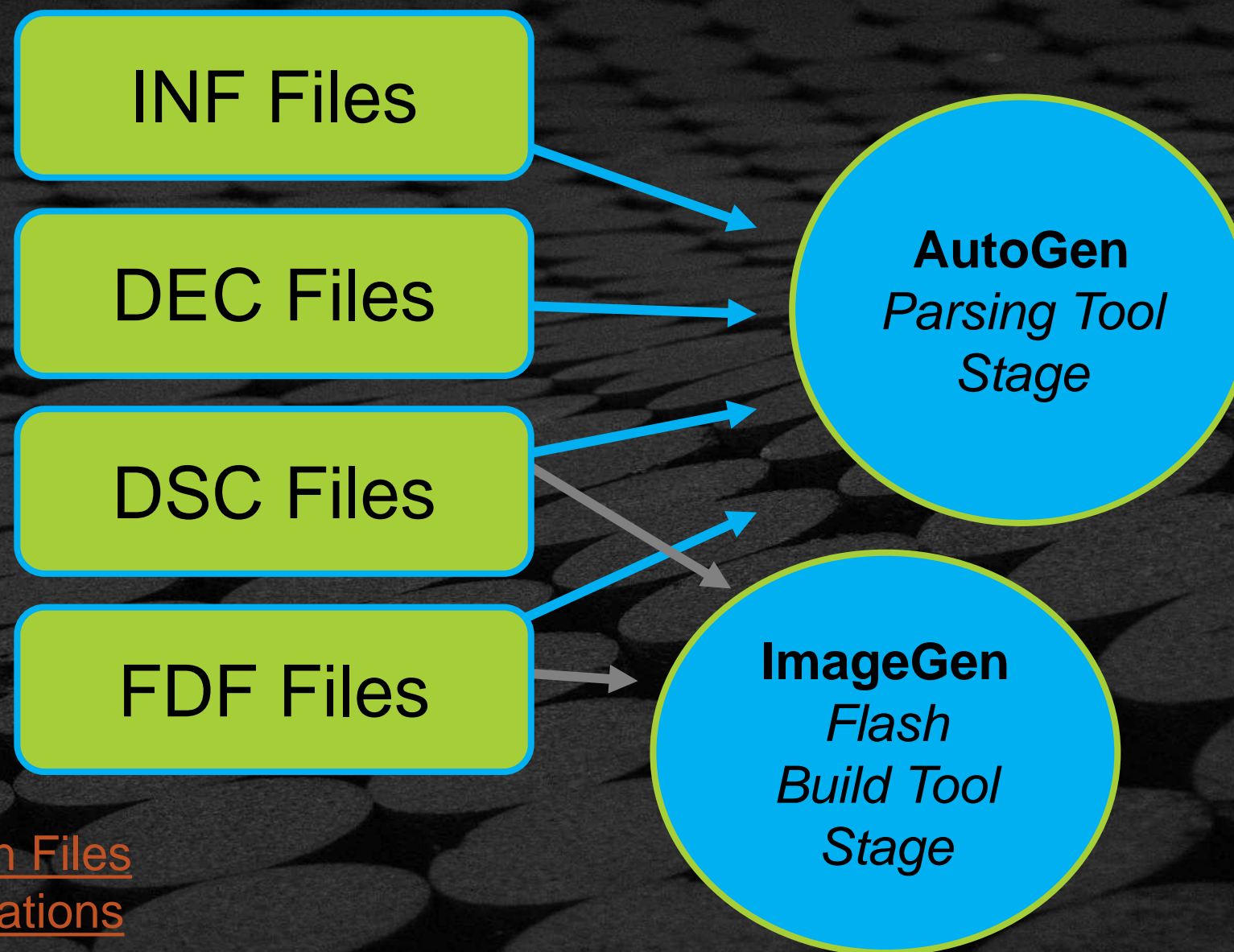
EDK II
Spec

Source

Output

BUILD DESCRIPTION FILE TYPES

**EDK II
Spec**



Wiki Link: [Build Description Files
Edk II Specifications](https://wiki.tianocore.org/Build_Description_Files/Edk-II-Specifications)

PACKAGE DECLARATION FILE (DEC)

Syntax:

```
<DECfile> ::= <Defines>  
                Include  
                [<LibraryClass>]  
                [<Guids>]  
                [<Protocols>]  
                [<Ppis>]  
                [<Pcd>]  
                [<UserExtensions>]
```

Declare

EXAMPLE DEC FILE

```
[Defines]
  DEC_SPECIFICATION      = 0x00010005
  PACKAGE_NAME           = OvmfPkg
  PACKAGE_GUID           = 2daf5f34-50e5-4b9d-b8e3-5562334d87e5
  PACKAGE_VERSION        = 0.1

[Includes]
  Include

[LibraryClasses]
  ## @libraryclass  Loads and boots a Linux kernel image
  #
  LoadLinuxLib|Include/Library/LoadLinuxLib.h

[Guids]
  gUefiOvmfPkgTokenSpaceGuid      = {0x93bb96af, 0xb9f2, 0x4eb8, {0x94, 0x62, 0xe0, 0xba, 0x74, 0x56, 0x42, 0x36}}
  gEfiXenInfoGuid                 = {0xd3b46f3b, 0xd441, 0x1244, {0x9a, 0x12, 0x0, 0x12, 0x27, 0x3f, 0xc1, 0x4d}}

[Protocols]
  gVirtioDeviceProtocolGuid       = {0xfa920010, 0x6785, 0x4941, {0xb6, 0xec, 0x49, 0x8c, 0x57, 0x9f, 0x16, 0x0a}}
  gXenBusProtocolGuid             = {0x3d3ca290, 0xb9a5, 0x11e3, {0xb7, 0x5d, 0xb8, 0xac, 0x6f, 0x7d, 0x65, 0xe6}}

[PcdsFixedAtBuild]
  gUefiOvmfPkgTokenSpaceGuid.PcdOvmfPeiMemFvBase|0x0|UINT32|0
  gUefiOvmfPkgTokenSpaceGuid.PcdOvmfPeiMemFvSize|0x0|UINT32|1
```


EXAMPLE: DEC FILE DETAILS

[EmulatorPkg.dec.md#dec-file-for-emulatorpkg](#)

[Link](#): List of List of Defines, Package Name, GUILD, Version ...

[Link](#): The Include section

[Link](#): Library classes section

[Link](#): Protocols Section

[Link](#): GUIDs section

[Link](#): PCDs Section

[Link](#): Patchable PCDs Section

PLATFORM DESCRIPTION FILE (DSC)

Syntax:

```
DSCfile ::= [<Header>]
           <Defines>
           [<SkuIds>]
           [<Libraries>]
           [<LibraryClasses>]
           [<Pcds>]
           [<Components>]
           [<UserExtensions>]
```

Description

PLATFORM DESCRIPTION FILE (DSC)

DSC file is the recipe for creating a package

Definitions for the package build

EDK libraries (for EDK Components)

EDK II Library Class Instance Mappings (for EDK II Modules)

EDK II PCD Entry Settings

EXAMPLE: DSC FILE

```
[Defines]
  PLATFORM_NAME                = Ovmf
  PLATFORM_GUID                = 5a9e7754-d81b-49ea-85ad-69eaa7b1539b
  PLATFORM_VERSION              = 0.1
  DSC_SPECIFICATION             = 0x00010005
  OUTPUT_DIRECTORY             = Build/OvmfX64
  SUPPORTED_ARCHITECTURES      = X64
  BUILD_TARGETS                 = NOOPT|DEBUG|RELEASE
  SKUID_IDENTIFIER              = DEFAULT
  FLASH_DEFINITION              = OvmfPkg/OvmfPkgX64.fdf

#
# Defines for default states.  These can be changed on the command line.
# -D FLAG=VALUE
. . .
[BuildOptions.common.EDKII.DXE_RUNTIME_DRIVER]
  GCC:*_*_*_DLINK_FLAGS = -z common-page-size=0x1000
  XCODE:*_*_*_DLINK_FLAGS =
[LibraryClasses]
  PcdLib|MdePkg/Library/BasePcdLibNull/BasePcdLibNull.inf
  TimerLib|OvmfPkg/Library/AcpiTimerLib/BaseAcpiTimerLib.inf
```


EXAMPLE: DSC FILE DETAILS

[EmulatorPkg.dsc.md#dsc-file-for-emulatorpkg](#)

[Link](#): List of Defines

[Link](#): Define Switches to determine some configurations

[Link](#): Library Classes – Global

[Link](#): Library Classes for UEFI Boot phases

[Link](#): PCDs Section, changing the default

[Link](#): Dynamic PCDs Section

[Link](#): Components Section

[Link](#): Build Options Section

[Link](#): Adding More

FLASH DESCRIPTION FILE(FDF)

Syntax:

```
FDFfile ::= [<Header>]
           [<Defines>]
           <FD>
           <FV>
           [<Capsule>]
           [<VTF>]
           [<Rules>]
           [<OptionRom>]
           [<UserExtensions>]
```

Flash Layout

FLASH DESCRIPTION FILE(FDF)

Describes information about flash parts

Used to create firmware images, Option
ROM images or bootable images

Rules for combining binaries (Firmware
Image) built from a DSC file

FLASH DEVICE CONFIGURATION COMMON LAYOUT FILE (.FDF)

FV Recovery

Used to store SEC/PEI phase code

FTW spare space

Fault Tolerant Write (FTW) regions

FTW working space

Event Log

NVRAM storage for event logs

Microcode

CPU Microcode

Variable Region

Variables & platform settings

FV Main

Contains DXE phase drivers

EXAMPLE: FDF FILE

```
[Defines]
!include OvmfPkg.fdf.inc

#
# Build the variable store and the firmware code as one unified flash device
# image.
#
[FD.OVMF]
BaseAddress    = $(FW_BASE_ADDRESS)
Size           = $(FW_SIZE)
ErasePolarity  = 1
BlockSize      = $(BLOCK_SIZE)
NumBlocks      = $(FW_BLOCKS)

$(VARS_SIZE)|$(FVMAIN_SIZE)
FV = FVMAIN_COMPACT

$(SECFV_OFFSET)|$(SECFV_SIZE)
FV = SECFV
```


EXAMPLE: DEC FILE DETAILS

[EmulatorPkg.fdf.md#fdf-file-for-the-emulatorpkg](#)

[Link](#): FD Section

[Link](#): Firmware Volume – FvRecovery

[Link](#): Begin Firmware Layout Regions

[Link](#): Declaring each Firmware Volumes

[Link](#): Apriori Section

[Link](#): Example: #include of fdf file

[Link](#): Rules Section

[Link](#): FDF For Whiskey Lake Up Xtreme

[Link](#): Flash Map of Up Xtreme

SUMMARY

- ✿ Explain the Build components and build text files DSC, DEC, & FDF

Questions?



Return to Main Training Page



Return to Training Table of contents for next presentation [link](#)



ACKNOWLEDGEMENTS

Redistribution and use in source (original document form) and 'compiled' forms (converted to PDF, epub, HTML and other formats) with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code (original document form) must retain the above copyright notice, this list of conditions and the following disclaimer as the first lines of this file unmodified.

Redistributions in compiled form (transformed to other DTDs, converted to PDF, epub, HTML and other formats) must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS DOCUMENTATION IS PROVIDED BY TIANOCORE PROJECT "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL TIANOCORE PROJECT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2021, Intel Corporation. All rights reserved.