

# UEFI & EDK II TRAINING

EDK II BUILD SPECIFICATION FILES

[tianocore.org](https://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](http://tianocore.org) project edk2

<b>.DSC</b> <b>.DEC</b> <b>.INF</b> <b>.FDF</b>	<ul style="list-style-type: none"> <li>- <b>Platform Description</b></li> <li>- <b>Package Declaration</b></li> <li>- <b>Module Definition</b> <i>define a component</i></li> <li>- <b>Flash Description</b></li> </ul>
<b>.VFR</b> <b>.UNI</b> <b>.c &amp; .h</b>	<ul style="list-style-type: none"> <li>- Visual Forms Representation for User interface</li> <li>- Unicode String text files w/ ease of localization</li> <li>- Source code files</li> </ul>
<b>.FD</b> <b>.FV</b>	<ul style="list-style-type: none"> <li>- Final Flash Device Image</li> <li>- Firmware Volume File</li> </ul>

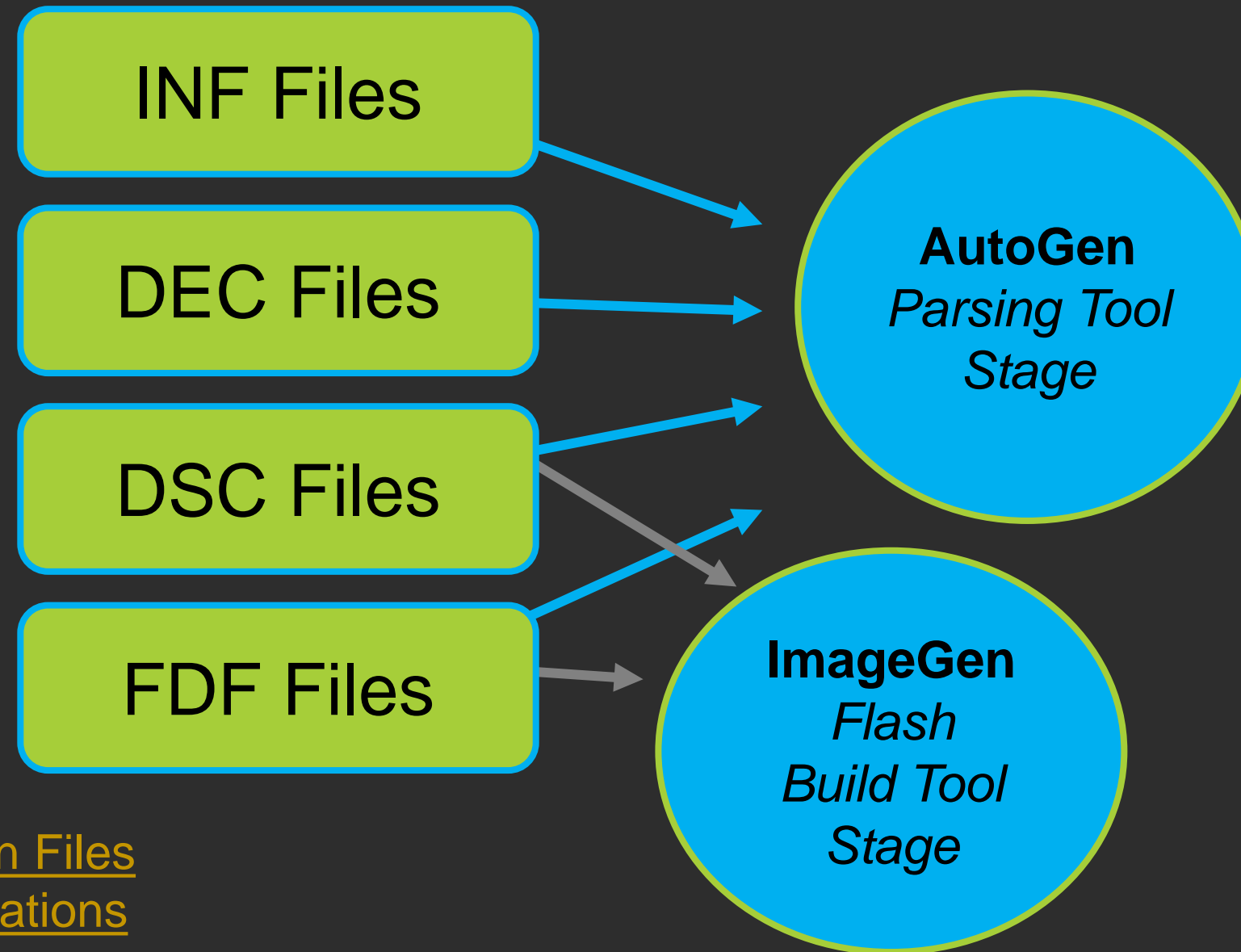
EDK II  
Spec

Source

Output

# Build Description File Types

**EDK II  
Spec**



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

# 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

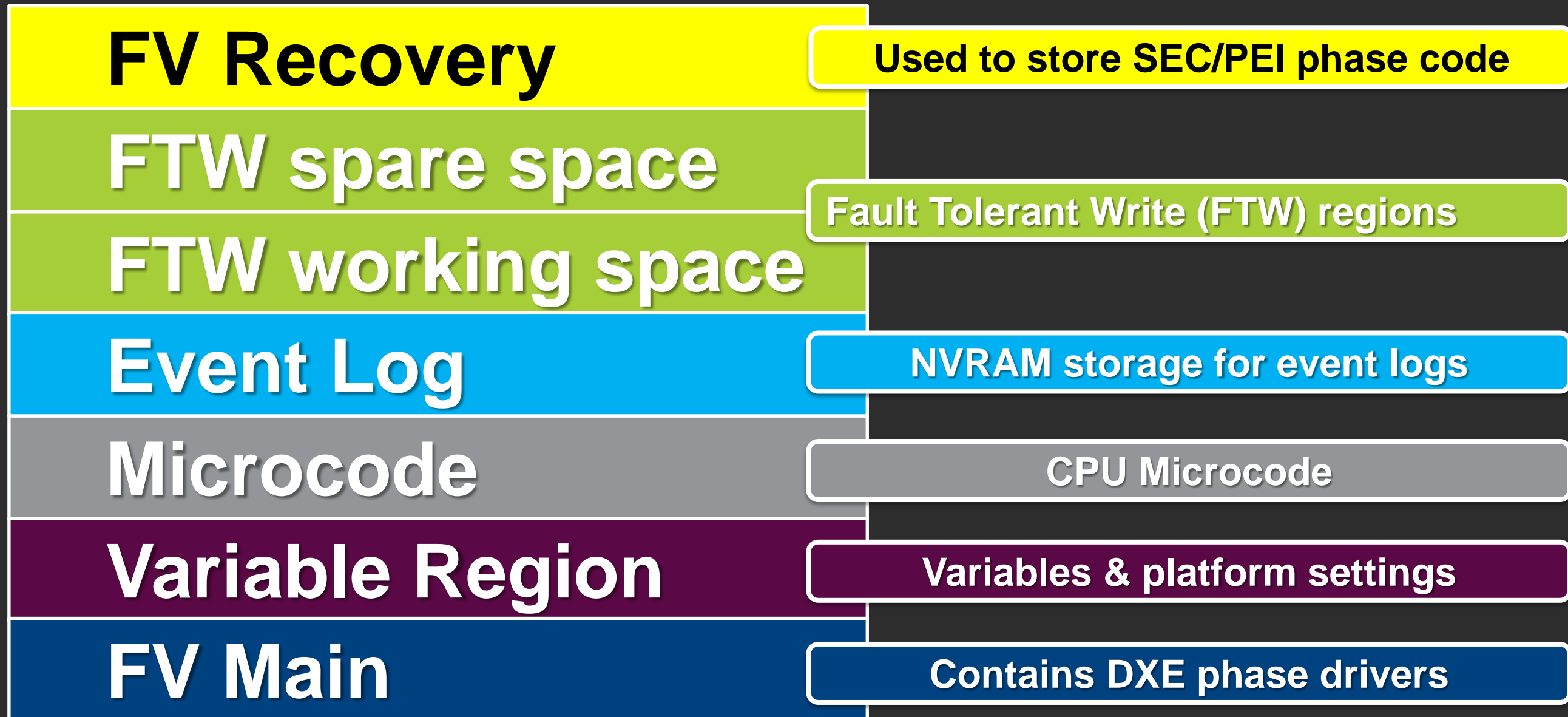
# Flash Description File(FDF)

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)



# 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?



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# ACKNOWLEDGEMENTS

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