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# Preparing a device tree blob (DTB)

The device tree blob is required to boot the Zynq with the Linux operating system. It can be created using the Xilinx SDK or Yocto.

## Create the DTB using Xilinx SDK

Install the Xilinx device-tree-xlnx repository:

```
git clone git://github.com/Xilinx/device-tree-xlnx.git
```

Open the Xilinx SDK. On a Linux system (adjust paths accordingly):

```
source /opt/xilinx/SDK/2017.4/settings64.sh
xsdk
```

Add the Xilinx device-tree-xlnx repository to the SDK:

```
> Xilinx Tools > Repositories
  Global Repositories: > New ...
  add <path to device-tree-xlnx>
```

Create new device tree files:

```
> File > New > Board Support Package
  Board Support Package OS: device-tree
> Finish
> OK
```

The result are a file "system-top.dts" and other files "\*.dtsi" in the device\_tree\_bsp\_0 sub-directory. In order to create a device tree blob you need the device tree compiler "dtc". You can find it e.g. in the linux-xlnx repository or in your Yocto build under <yocto\_build\_dir>/tmp/sysroots/x86\_64-linux/usr/bin/dtc. You run the dtc on the top-level .dts file like the following:

```
dtc -I dts -O dtb -o system-top.dtb system-top.dts
```

## Create the DTB using Yocto

Alternatively to using the Xilinx SDK, you can also let Yocto build the device tree blob. For that you have to tell it where to find the device tree file.

Edit the conf/machine/<machine>.conf file of your meta layer to contain the following lines, replace "XXXX" with the name of your choice and <machine> with your machine name:

```
MACHINE_ESSENTIAL_EXTRA_RDEPENDS += "device-tree"

XXXX_DEVICETREE_PATH = "<path_to_project>/device_tree_bsp_0"

MACHINE_DEVICETREE := " \
    ${XXXX_DEVICETREE_PATH}/zynq-7000.dtsi \
    ${XXXX_DEVICETREE_PATH}/pl.dtsi \
    ${XXXX_DEVICETREE_PATH}/pcw.dtsi \
    ${XXXX_DEVICETREE_PATH}/system-top.dts \
    "

DEPLOY_KERNEL_DTB_<machine> = "1"
```

When building your image, Yocto will produce the device tree blob in the file <yocto\_build\_dir>/tmp/deploy/images/<machine>/system-top.dtb.

-- RalfSpiwoks - 2018-05-25

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This topic: SystemOnChip > PreparingDeviceTreeBlob

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