

URL:

<https://www.hackster.io/nikilthapa/zedboard-linux-uio-application-using-vitis-ide-883a43#:~:text=When%20Linux%20boots%20up%2C%20it,Debug%20Configurations%20%3E%20New%20Configuration%20%3E%20Debug>

```
root@Nice2behere: ~  
-rw-r--r-- 1 jabeen jabeen 91611008 Apr 12 14:17 libraries/xilinx-zc702-xsct-v2024.2-11110212.bsp  
jabeen@Nice2behere:/opt/petalinuxUser$ ls  
components libraries licenses me projects scripts settings.sh sysroots templates  
jabeen@Nice2behere:/opt/petalinuxUser$ cd libraries/  
jabeen@Nice2behere:/opt/petalinuxUser/libraries$ ls  
xilinx-zc702-xsct-v2024.2-11110212.bsp  
jabeen@Nice2behere:/opt/petalinuxUser/libraries$ ls -l xilinx-zc702-xsct-v2024.2-11110212.bsp  
-rw-r--r-- 1 jabeen jabeen 91611008 Apr 12 14:17 xilinx-zc702-xsct-v2024.2-11110212.bsp  
jabeen@Nice2behere:/opt/petalinuxUser/libraries$ cd ..  
jabeen@Nice2behere:/opt/petalinuxUser$ ls  
components libraries licenses me projects scripts settings.sh sysroots templates  
jabeen@Nice2behere:/opt/petalinuxUser$ cd projects/  
jabeen@Nice2behere:/opt/petalinuxUser/projects$ ls  
zed  
jabeen@Nice2behere:/opt/petalinuxUser/projects$ cd zed/  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed$ ls  
xilinx-zc702-xsct-2024.2 xilinx-zc702-xsct-2024.2_old  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed$ ls -l  
total 8  
drwxr-xr-x 9 jabeen jabeen 4096 Apr 13 14:38 xilinx-zc702-xsct-2024.2  
drwxr-xr-x 8 jabeen jabeen 4096 Apr 12 14:45 xilinx-zc702-xsct-2024.2_old  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed$ |
```

```
petalinux-package --boot --fsbl ./zynq_fsbl.elf --fpga ./system.bit --u-boot ./u-boot.elf  
--force
```

```

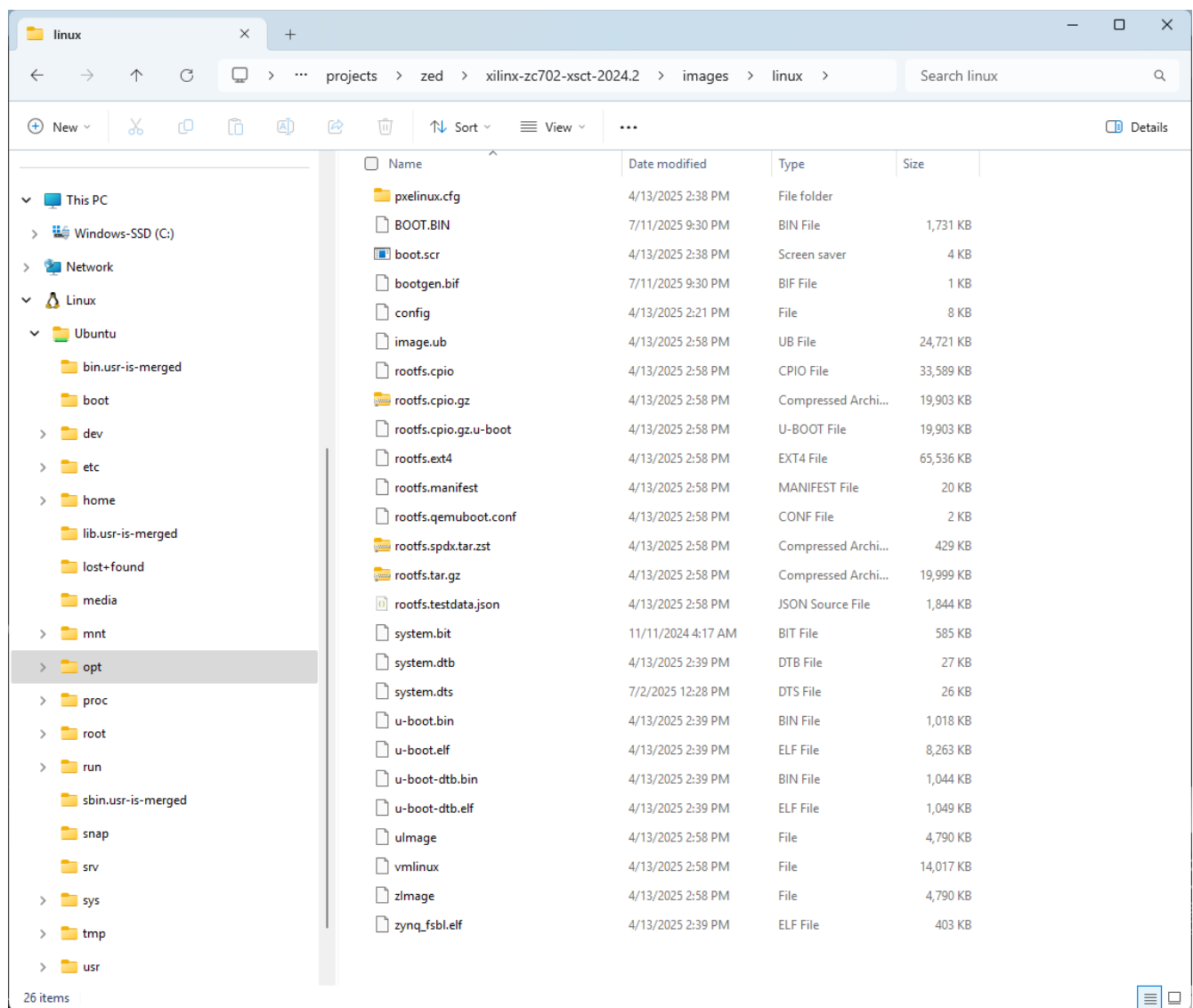
root@Nice2behere: ~
image.ub rootfs.cpio.gz rootfs.manifest rootfs.tar.gz system.dtb u-boot-dtb.bin uImage zynq_fsbl.elf
jabeen@Nice2behere: /opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux$ petalinux-package --boot --fsbl ./zynq_fsbl.elf --fpga ./system.bit --u-
boot ./u-boot.elf --force
[NOTE] Argument: "--boot" has been deprecated. It is recommended to start using new python command line Argument.
[NOTE] Use: petalinux-package boot [OPTIONS]
[INFO] File in BOOT BIN: "/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux/zynq_fsbl.elf"
[INFO] File in BOOT BIN: "/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux/system.bit"
[INFO] File in BOOT BIN: "/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux/u-boot.elf"
[INFO] File in BOOT BIN: "/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux/system.dtb"
[INFO] Generating zynq binary package BOOT.BIN...
[INFO]

***** Bootgen v2024.2
**** Build date : Oct 21 2024-10:58:34
** Copyright 1986-2022 Xilinx, Inc. All Rights Reserved.
** Copyright 2022-2024 Advanced Micro Devices, Inc. All Rights Reserved.

[INFO] : Bootimage generated successfully

[INFO] Binary is ready.
[INFO] Successfully Generated BIN File
[WARNING] Unable to access the TFTPBOOT folder /tftpboot!!!
[WARNING] Skip file copy to TFTPBOOT folder!!!
jabeen@Nice2behere: /opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux$ ls
BOOT.BIN config rootfs.cpio rootfs.ext4 rootfs.spx.tar.zst system.bit u-boot.bin u-boot.elf zImage
bootgen.bif image.ub rootfs.cpio.gz rootfs.manifest rootfs.tar.gz system.dtb u-boot-dtb.bin uImage zynq_fsbl.elf
boot.scr pxelinux.cfg rootfs.cpio.gz.u-boot rootfs.qemuboot.conf rootfs.testdata.json system.dts u-boot-dtb.elf vmlinux
jabeen@Nice2behere: /opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/images/linux$ ls -l
total 223776
-rw-rw-r-- 1 jabeen jabeen 1772000 Jul 11 21:30 BOOT.BIN
-rw-rw-r-- 1 jabeen jabeen 379 Jul 11 21:30 bootgen.bif
-rw-r--r-- 1 jabeen jabeen 3830 Apr 13 14:38 boot.scr
-rw-r--r-- 1 jabeen jabeen 7610 Apr 13 14:21 config
-rw-r--r-- 1 jabeen jabeen 25313355 Apr 13 14:58 image.ub
drwxr-xr-x 2 jabeen jabeen 4096 Apr 13 14:38 pxelinux.cfg
-rw-r--r-- 1 jabeen jabeen 34394624 Apr 13 14:58 rootfs.cpio
-rw-r--r-- 1 jabeen jabeen 20380056 Apr 13 14:58 rootfs.cpio.gz
-rw-r--r-- 1 jabeen jabeen 20380120 Apr 13 14:58 rootfs.cpio.gz.u-boot
-rw-r--r-- 1 jabeen jabeen 67108864 Apr 13 14:58 rootfs.ext4
-rw-r--r-- 1 jabeen jabeen 19527 Apr 13 14:58 rootfs.manifest
-rw-r--r-- 1 jabeen jabeen 1792 Apr 13 14:58 rootfs.qemuboot.conf
-rw-r--r-- 1 jabeen jabeen 438320 Apr 13 14:58 rootfs.spx.tar.zst
-rw-r--r-- 1 jabeen jabeen 20478783 Apr 13 14:58 rootfs.tar.gz
-rw-r--r-- 1 jabeen jabeen 1887432 Apr 13 14:58 rootfs.testdata.json
-rw-r--r-- 1 jabeen jabeen 598987 Nov 11 2024 system.bit
-rw-r--r-- 1 jabeen jabeen 26847 Apr 13 14:39 system.dtb
-rw-rw-r-- 1 jabeen jabeen 26457 Jul 2 12:28 system.dts
-rwxr-xr-x 1 jabeen jabeen 1041936 Apr 13 14:39 u-boot.bin
-rw-r--r-- 1 jabeen jabeen 1068783 Apr 13 14:39 u-boot-dtb.bin

```



Note:

```
petalinux-package --boot --fsbl ./zynq_fsbl.elf --fpga ./system.bit --u-boot ./u-boot.elf
--force
```

FW: ZedBo... x ZedBoard... x Zedboard... x Downloads... x ubuf/zed... x Vitis Emb... x Exporting... x Tutorial 2... x Getting S... x 2024.2 Re... x permission... x Layer doe... x Petalinux... x

hackster.io/nikhithapa/zedboard-linux-uio-application-using-vitis-ide-883a43#:~:text=When%20Linux%20boots%20up%2C%20it.Debug%20Configurations%20-%20New%20Configuration%20-%20Debug

Overview
Story
Overview
Hardware Project
Petalinux Project
Vitis Project: UIO Application
Application Running
Application Debugging
Conclusion
Code
Credits
Comments (1)

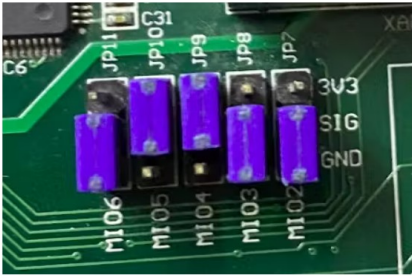
From `zedboard_uio_plnx_21_1>images>linux` directory, copy the following files into the SD Card (must be FAT32 format).

>`boot.scr` is the script that U-Boot reads during boot time to load the kernel and rootfs

>`image.ub` contains kernel image, device tree and rootfs.

>`BOOT.BIN` contains boot files, e.g., a first-stage boot loader image, FPGA bitstream, and U-Boot.

Before running, make sure the board configuration is in SD mode by adjusting the jumper as shown below.



Zedboard Boot Configuration Jumpers

zed_uio_led_wrapper.xsa 1/2

XDF 2018 Linux Application Development on Ultra96

Debugging Your Custom Linux Applications Using Vitis

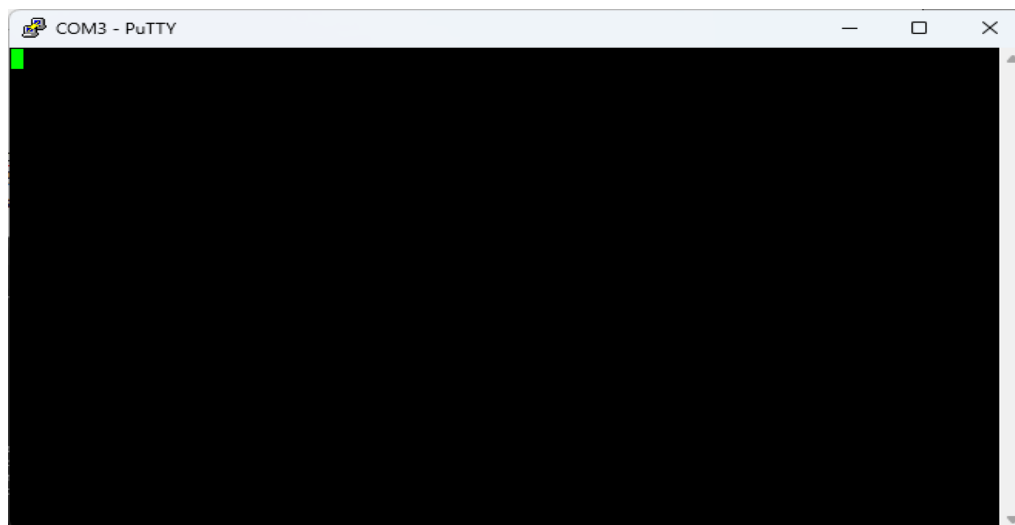
Accelerated Design Development on Kria KR260 in Vitis 2022.1

Linux on MicroBlaze: ArtyA7 Linux Design in Petalinux 2022.1

Linux on Zynq: Arty-Z7 Linux Design in Petalinux 2022.1

View more related projects

Did not work :-)



Linux Empty App

PC

```
Command Prompt
Connection-specific DNS Suffix . :
Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::4115:18f3:69f3:3855%7
    IPv4 Address. . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix . :
    IPv6 Address. . . . . : 2600:8805:d593:7a00::5223
    IPv6 Address. . . . . : 2600:8805:d593:7a00:143f:acbb:81f6:3984
    Temporary IPv6 Address. . . . . : 2600:8805:d593:7a00:71cb:4ae2:8b37:c648
    Link-local IPv6 Address . . . . . : fe80::db27:2993:589c:e3ee%10
    IPv4 Address. . . . . : 192.168.0.3
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::8a9e:68ff:feb9:c6eb%10
                                192.168.0.1

Ethernet adapter vEthernet (WSL (Hyper-V firewall)):

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::4a6d:33f6:d3eb:c923%44
    IPv4 Address. . . . . : 172.20.224.1
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . :

C:\Users\nahid>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:
Reply from 192.168.1.10: bytes=32 time=1ms TTL=64
Reply from 192.168.1.10: bytes=32 time<1ms TTL=64
Reply from 192.168.1.10: bytes=32 time<1ms TTL=64
Reply from 192.168.1.10: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

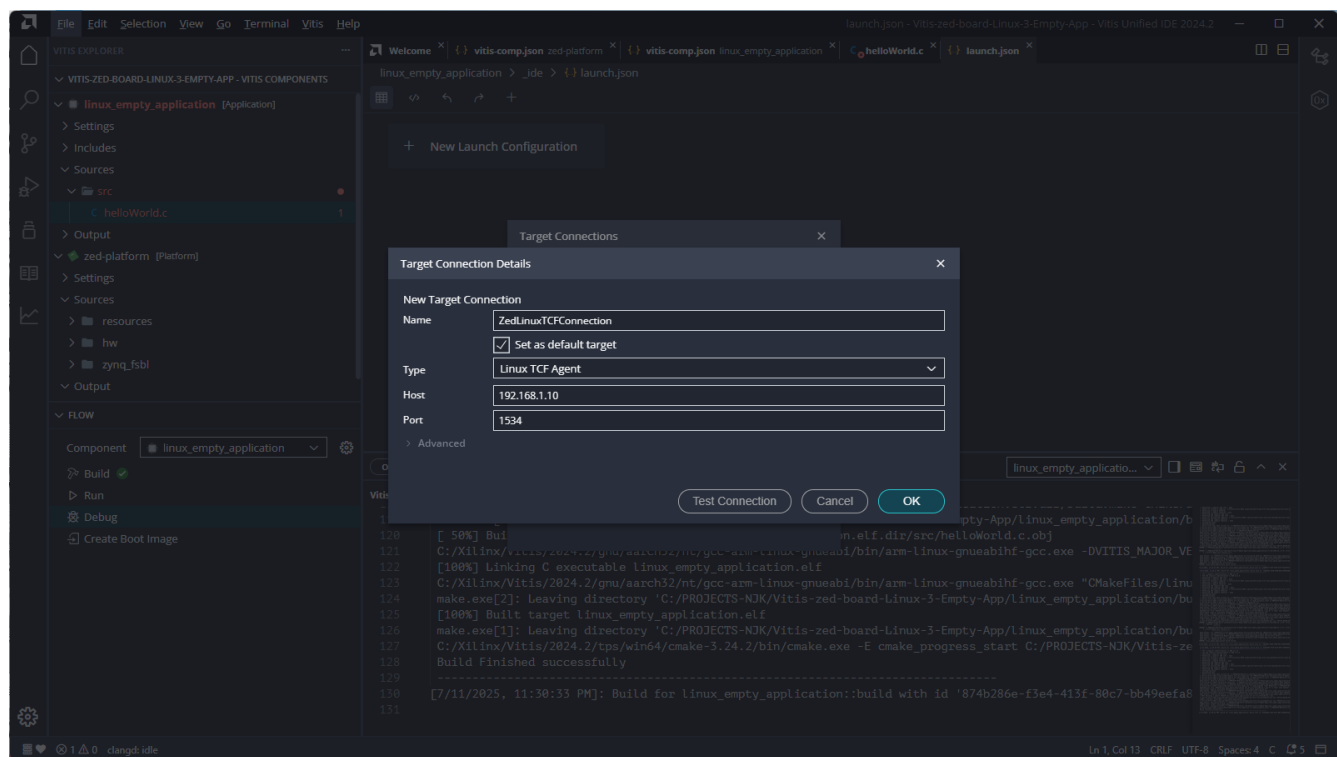
C:\Users\nahid>
```

Zed Board with Linux running

```
COM3 - PuTTY
zynq>
zynq>
zynq>
zynq>
zynq> ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0A:35:00:01:22
          inet addr:192.168.1.10  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:104 errors:0 dropped:0 overruns:0 frame:0
          TX packets:13 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6940 (6.7 KiB)  TX bytes:766 (766.0 B)
          Interrupt:54 Base address:0xb000

zynq> cd
```

Trying TCF Agent Target Connection



URL:

<https://docs.amd.com/r/en-US/ug1144-petalinux-tools-reference-guide/Prerequisites?tocId=iOeqPTdTYnu3O~neJoZQdg>

<https://docs.amd.com/r/en-US/ug1165-zynq-embedded-design-tutorial/Setup-the-Ethernet-Connection-between-Host-and-Physical-Board>

The screenshot displays the AMD Technical Information Portal for the 'Zynq-7000 SoC Embedded Design Tutorial (UG1165)'. The page is titled 'Setup the Ethernet Connection between Host and Physical Board'. The table of contents on the left lists various topics, with 'Setup the Ethernet Connection between Host and Physical Board' highlighted. The main content area shows a list of steps for setting up the Linux agent in the Vitis IDE. A 'Target Connection Details' dialog box is open, showing the following fields:

- Name: zc702
- Set as default target: ☐
- Type: Linux TCF Agent
- Host: 127.0.0.1
- Port: 1540

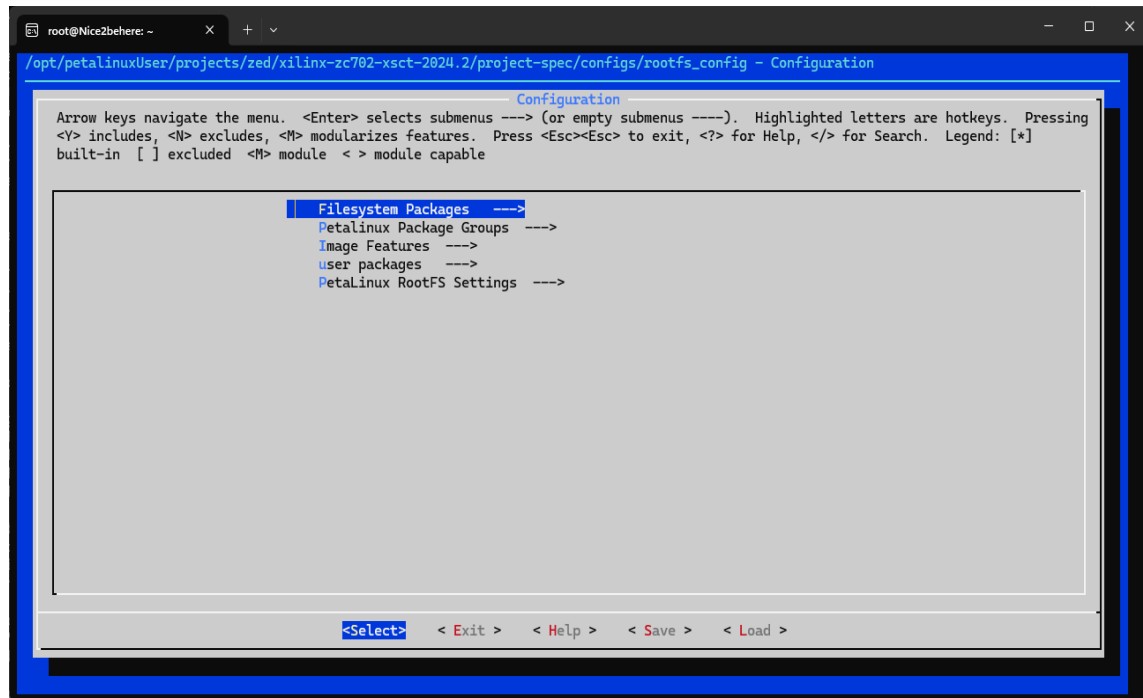
The dialog box also includes an 'Advanced' section and buttons for 'Test Connection', 'Cancel', and 'OK'.

<https://docs.amd.com/r/en-US/ug1144-petalinux-tools-reference-guide/Preparing-the-Build-System-for-Debugging?tocId=vYJdtUX7Jr518mDOXyZp5A>

```
[*] tcf-agent
[] tcf-agent-dev
[] tcf-agent-dbg
```



```
root@Nice2behere: ~  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$ petalinux-config -c rootfs  
[INFO] Bitbake is not available, some functionality may be reduced.  
[INFO] Using HW file: /opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/project-spec/hw-description/system.xsa  
[INFO] Getting Platform info from HW file  
[INFO] Silentconfig project  
[INFO] Menuconfig rootfs  
[INFO] Generating configuration files  
[INFO] Successfully configured rootfs  
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$ |
```



docs.amd.com/r/en-US/ug1144-petalinux-tools-reference-guide/Preparing-the-Build-System-for-D...

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```
petalinux-config -c rootfs
```

3. Scroll down the Linux/RootFS configuration menu to file system packages.

```
admin --->
audio --->
base --->
baseutils --->
benchmark --->
bootloader --->
console --->
devel --->
fonts --->
kernel --->
libs --->
misc --->
multimedia --->
net --->
network --->
optional --->
power management --->
utils --->
x11 --->
```

1 Select misc submenu:

Table of contents PDF and attachments

FW: ZedBoard (hackstar) x ZedBoardIdeas/Follow-AMD x ZedBoard: Linux UIO Appli x no linux tcf agent runnig on x Preparing the Build System

docs.amd.com/r/en-US/ug1144-petalinux-tools-reference-guide/Preparing-the-Build-System-for-Debugging?tocId=vYjdtUX7jr518mDOXyZp5A

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Keywords

Table of contents

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Debugging Applications with TCF Agent

- Prerequisites
- Preparing the Build System for Debugging
- Performing a Debug Session

Debugging Zynq UltraScale+ MPSoC and Versal Adaptive SoC Applications with GDB

Debugging Individual PetaLinux Components

Advanced Configurations

Yocto Features

Technical FAQs

Migration

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4. Select misc submenu:

```
admin --->
audio --->
base --->
baseutils --->
benchmark --->
bootloader --->
console --->
devel --->
fonts --->
kernel --->
libs --->
misc --->
multimedia --->
net --->
network --->
optional --->
power management --->
utils --->
x11 --->
```

5. Packages are in alphabetical order. Navigate to the letter 't', as follows:

FW: ZedBoard (hackstar) - n | ZedBoardIdeas/Follow-AMD | ZedBoard: Linux UIO Applic | no linux tcf agent running on | Preparing the Build System | + - □ ×

docs.amd.com/r/en-US/ug1144-petalinux-tools-reference-guide/Preparing-the-Build-System-for-Debugging?tocId=vYdtUX7/r518mDOXyZp5A ☆ □ 🔍 n

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- Debugging Applications with TCF Agent
 - Prerequisites
 - Preparing the Build System for Debugging**
 - Performing a Debug Session
- Debugging Zynq UltraScale+ MPSoC and Versal Adaptive SoC Applications with GDB
- Debugging Individual PetaLinux Components
- Advanced Configurations
- Yocto Features
- Technical FAQs
- Migration
 - PetaLinux to Create PL
 - Applications and Install on Target
- PetaLinux Project Structure
- Generating Boot Components

PDF and attachments

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x11 --->

5. Packages are in alphabetical order. Navigate to the letter 't', as follows:

```
serf --->
sysfsutils --->
sysvinit-inittab --->
tbb --->
tcf-agent --->
texi2html --->
tiff --->
trace-cmd --->
util-macros --->
v4l-utils --->
```

6. Ensure that tcf-agent is enabled and gdbserver is disabled.

```
[*] tcf-agent
[ ] tcf-agent-dev
[ ] tcf-agent-dbg
```

7. Select console/network submenu, click dropbear submenu. Ensure "dropbear-openssh-sftp-server" is enabled.

```
[*] dropbear
```

8. Select console/network > openssh. Ensure that "openssh-sftp-server" is disabled.

9. Exit the menu.

10. Rebuild the target system image, including hello_linux.elf. For more information, see [Building a System Image](#).

root@Nice2behere: ~

/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2/project-spec/configs/rootfs_config - Configuration

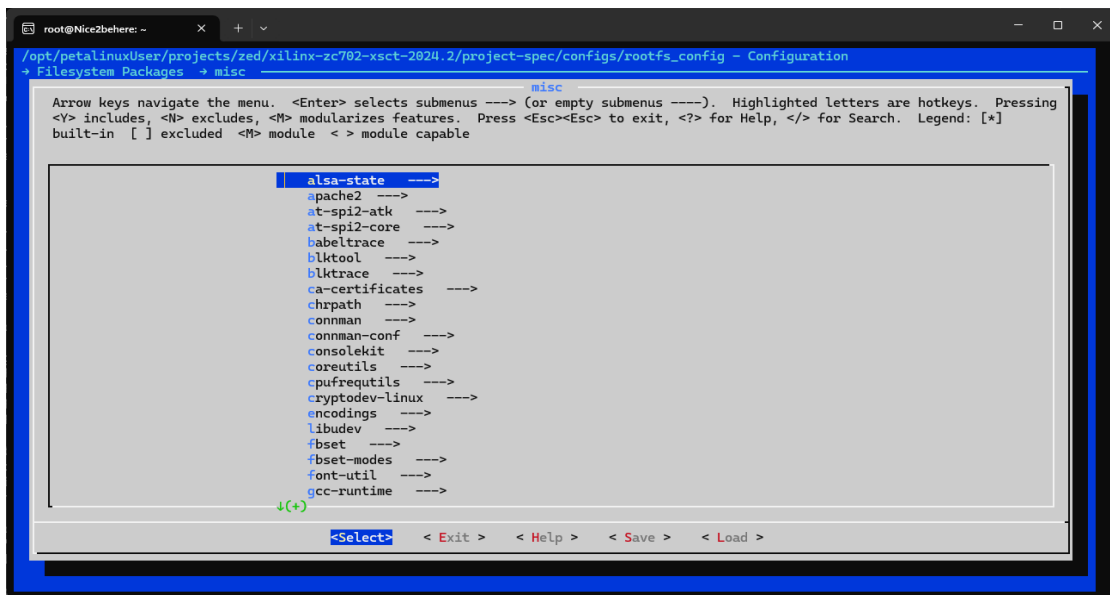
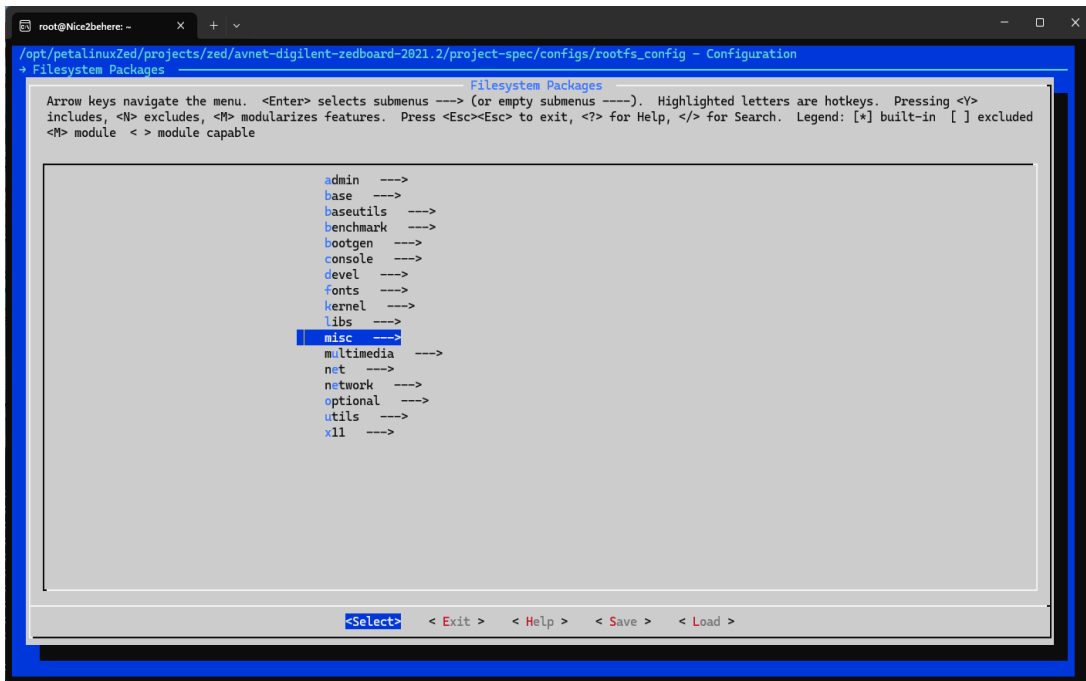
→ Filesystem Packages

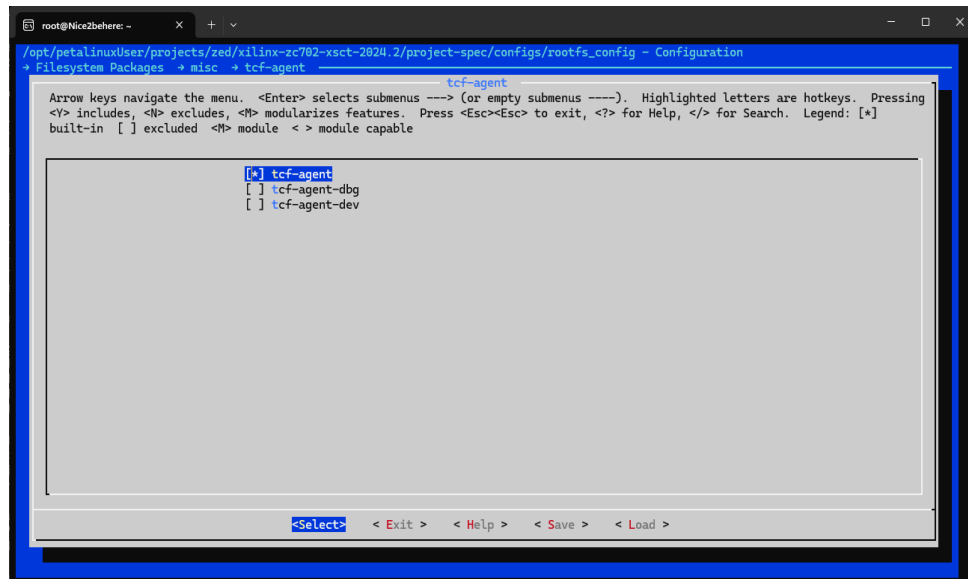
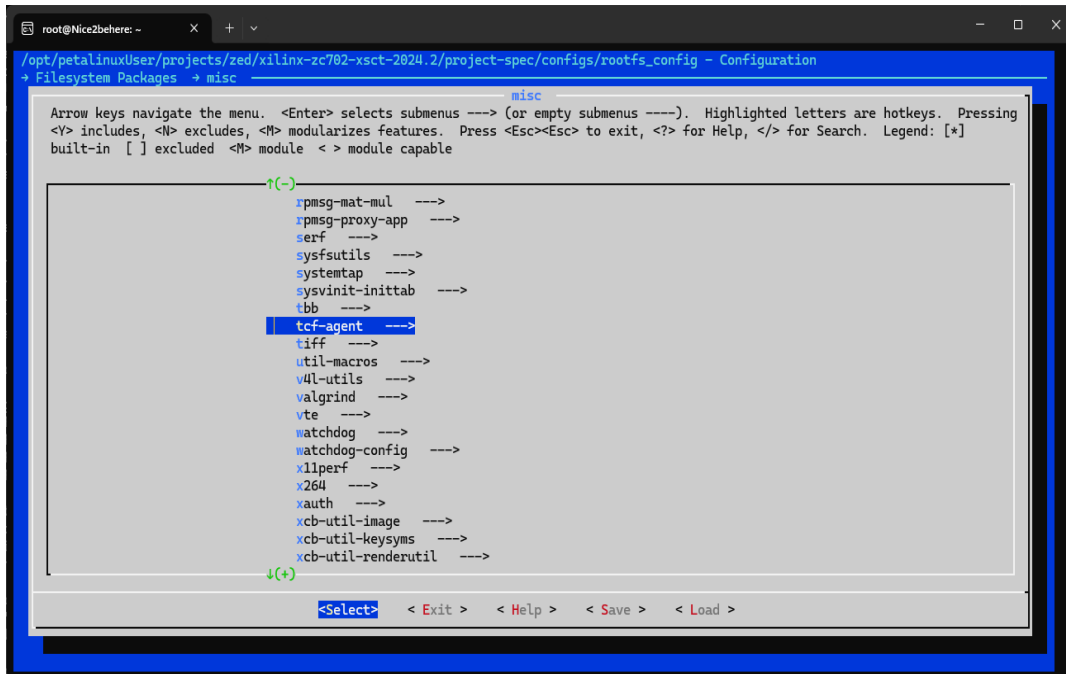
Filesystem Packages

Arrow keys navigate the menu. <Enter> selects submenus ----> (or empty submenus -----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [] excluded <M> module <-> module capable

```
admin ---->
base ---->
baseutils ---->
benchmark ---->
bootgen ---->
console ---->
devel ---->
fonts ---->
kernel ---->
libs ---->
misc ---->
multimedia ---->
net ---->
network ---->
optional ---->
utils ---->
x11 ---->
```

<Select> < Exit > < Help > < Save > < Load >

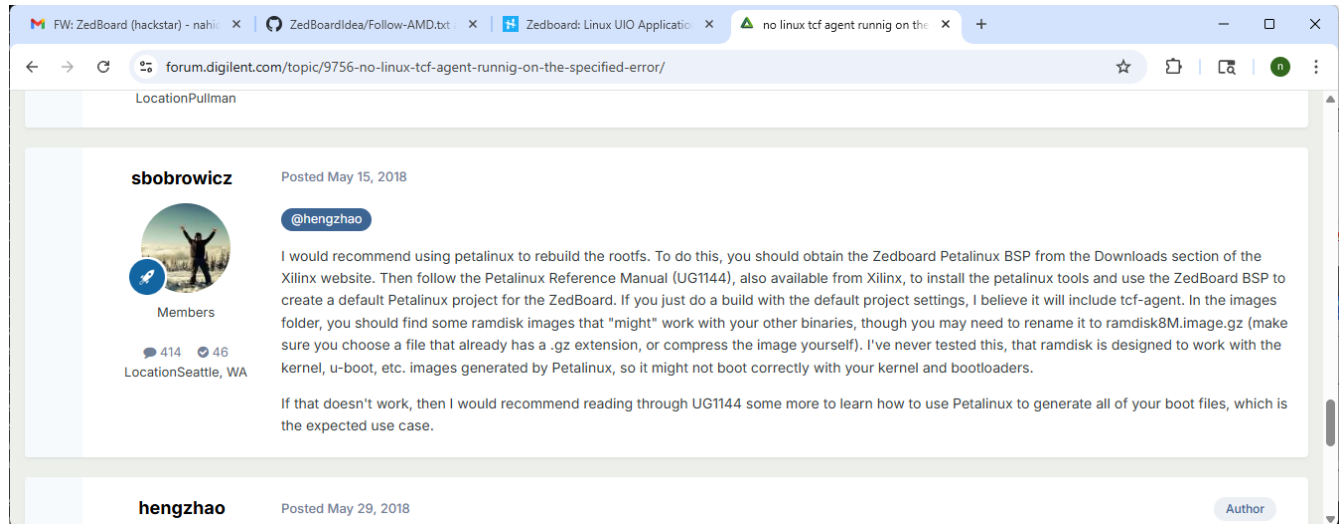




So, TCF is by default selected, by `xilinx-zc702-xsct-v2024.2-11110212.bsp`.

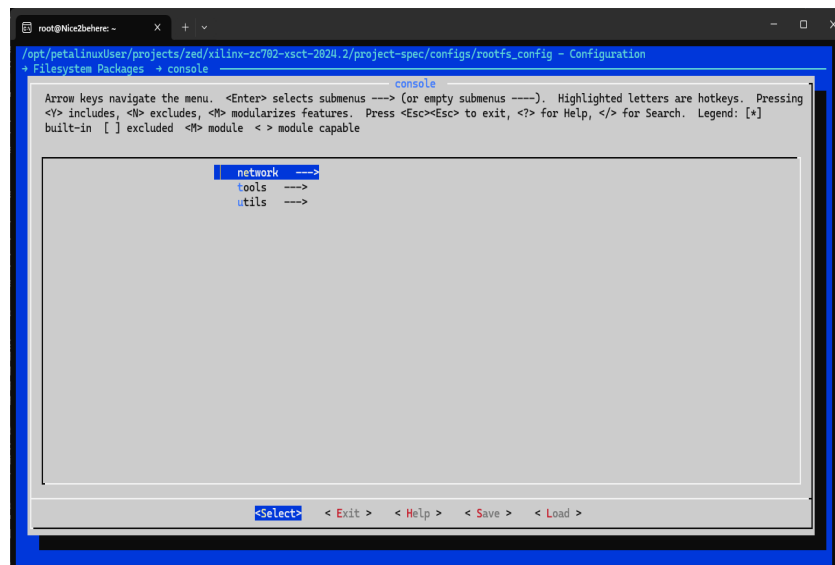
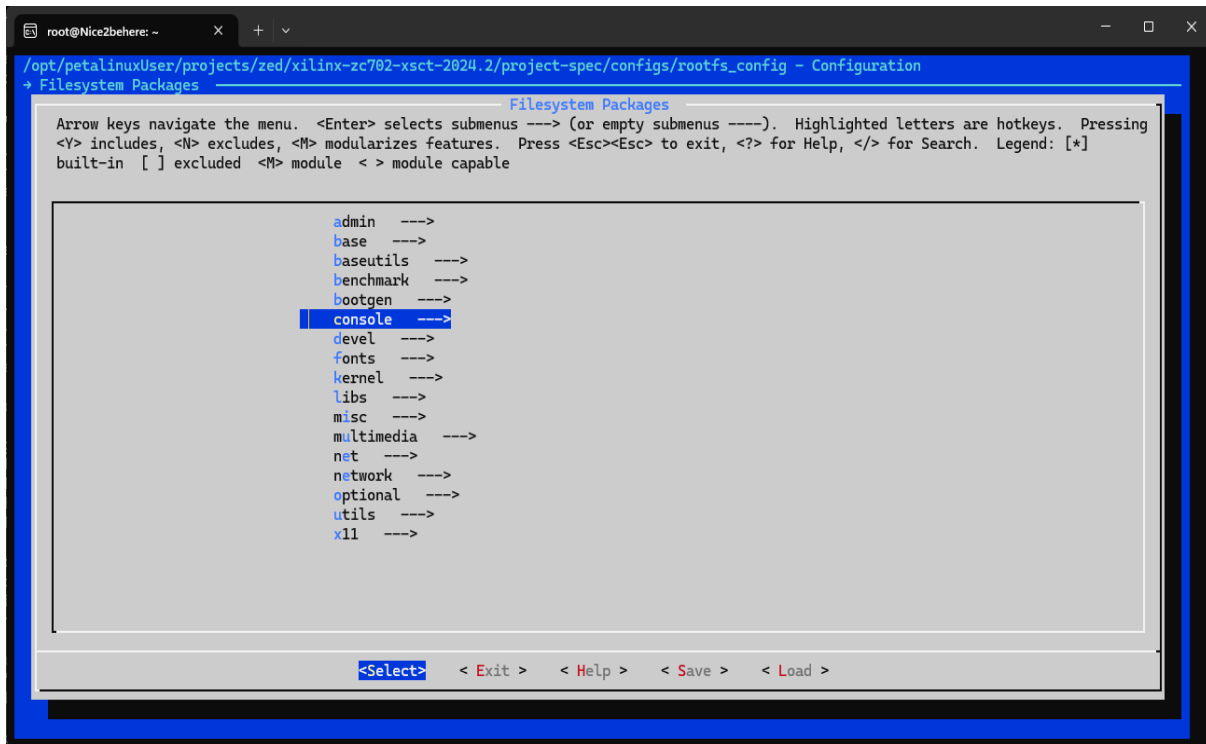
But we are not running that filesystem in our SD CARD since we have downloaded **DIGILENT 2021.1** (`avnet-digilent-zedboard-v2021.1-final.bsp`)
and
2021.2 (`avnet-digilent-zedboard-v2021.2-final.bsp`)
unzipped and used those files.

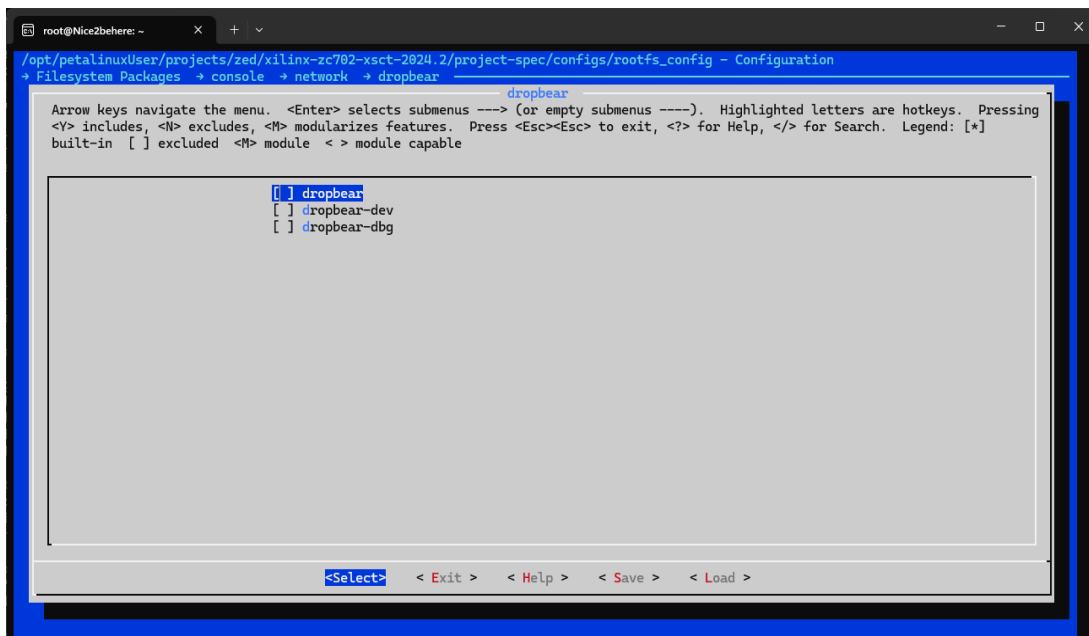
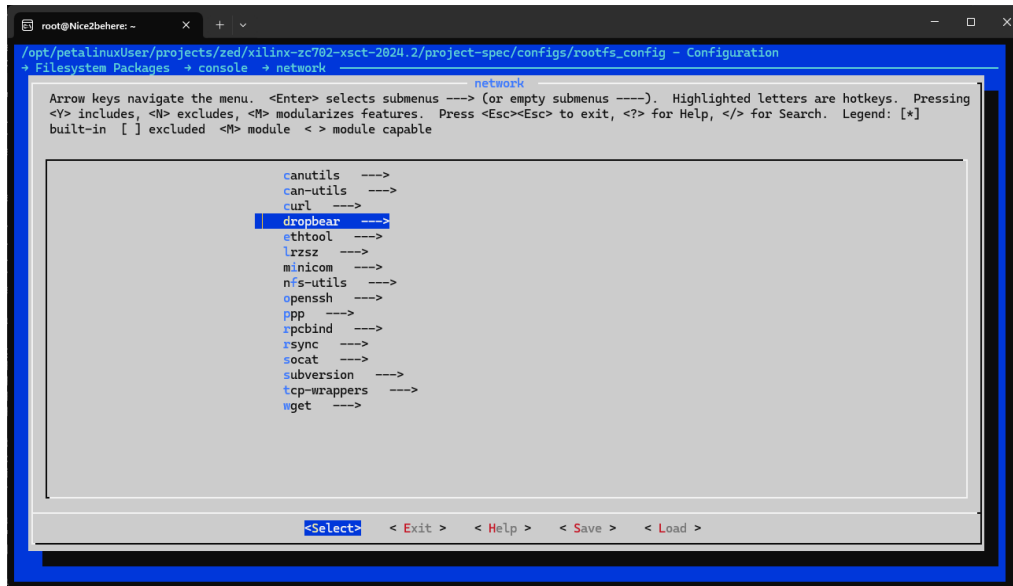
URL: <https://forum.digilent.com/topic/9756-no-linux-tcf-agent-running-on-the-specified-error/>



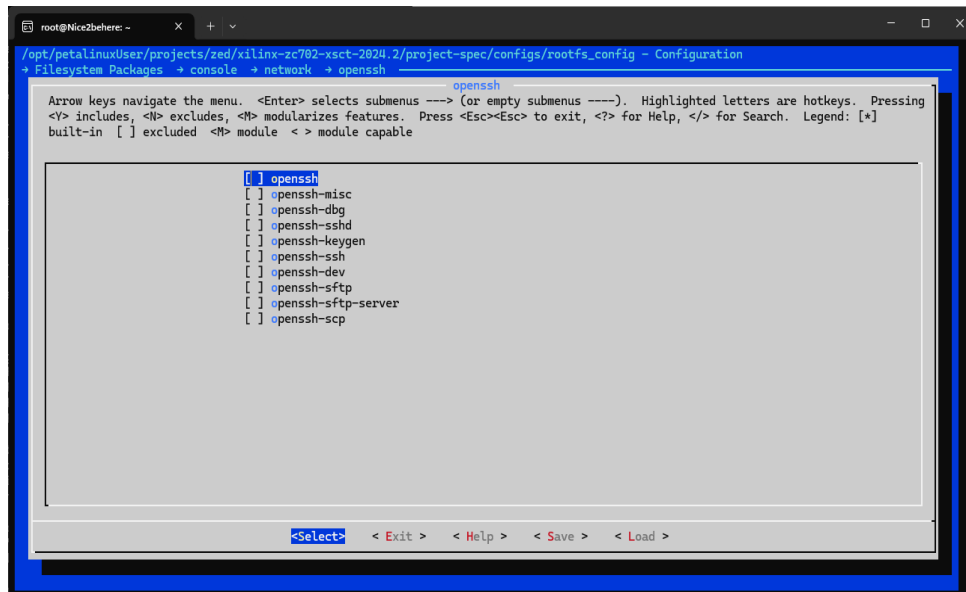
Console->network->dropbear

Dropbear is not selected. But is selected petalinux-build does not work for
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2\$





Console->network->openssh. "openssh-sftp-server" is disabled.



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Commands:

1) User login

```
root@Nice2behere:/etc# login
```

```
Nice2behere login: jabeen
```

```
Password:mou..shi
```

2) Must Run after login if Petalinux was installed before

```
source /opt/petalinuxUser/settings.sh
```

Install PetaLinux

```
./petalinux-v2024.2-11062026-installer.run
```

(INSTALL AS A USER ./petalinux-v2024.2-11062026-installer.run) was done once

3)

```
jabeen@Nice2behere:/$ petalinux-create --help
```

```
jabeen@Nice2behere:/opt/petalinuxUser/projects/zed$ petalinux-create -t project -s ../../libraries/xilinx-zc702-xsct-v2024.2-11110212.bsp
```

4) Using ilinx-zc702-xsct-v2024.2-11110212.bsp

```
$ pwd
```

```

/opt/petalinuxUser
$ ls -ltra
total 48
drwxrwxrwx 4 root root 4096 Apr 11 16:48 ..
-rw-rw-r-- 1 jabeen jabeen 0 Apr 11 16:52 me
drwxr-xr-x 4 jabeen jabeen 4096 Apr 11 16:56 sysroots
drwxr-xr-x 5 jabeen jabeen 4096 Apr 11 16:57 templates
drwxr-xr-x 4 jabeen jabeen 4096 Apr 11 16:57 scripts
drwxr-xr-x 2 jabeen jabeen 4096 Apr 11 16:57 licenses
-rw-r--r-- 1 jabeen jabeen 1461 Apr 11 16:57 .environment-setup-x86_64-petalinux-linux
-rw-r--r-- 1 jabeen jabeen 205 Apr 11 16:57 .version-history
-rw-r--r-- 1 jabeen jabeen 3542 Apr 11 16:57 settings.sh
drwxr-xr-x 4 jabeen jabeen 4096 Apr 11 16:58 components
drwxr-xr-x 9 jabeen jabeen 4096 Apr 12 14:16 .
drwxrwxr-x 3 jabeen jabeen 4096 Apr 12 14:16 projects <----- I CREATED
drwxrwxr-x 2 jabeen jabeen 4096 Apr 12 14:17 libraries <----- I CREATED

```

```

jabeen@Nice2behere:/opt/petalinuxUser$ ls -l libraries/
total 89464
-rw-r--r-- 1 jabeen jabeen 91611008 Apr 12 14:17 xilinx-zc702-xsct-v2024.2-11110212.bsp

```

a) petalinux-create

```

jabeen@Nice2behere:/opt/petalinuxUser/projects/zed$ petalinux-create -t project -s
../../libraries/xilinx-zc702-xsct-v2024.2-11110212.bsp

```

b) petalinux-config

```

jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$ petalinux-config
Note: Can not enable dropbear in 'petalinux-config -c rootfs' for xilinx-zc702-xsct-2024.2. It fails at
'petalinux-build'.

```

```

jabeen@Nice2behere:/opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2$ petalinux-
config

```

**ERROR: Layer meta-user is not compatible with the core layer which only supports these series:
scarthgap (layer is compatible with gatesgarth)**

**ERROR: Layer meta-user is not compatible with the core layer which only supports these series:
scarthgap (layer is compatible with gatesgarth)**

See: <https://github.com/meta-rust/meta-rust/issues/451>

c) petalinux-build

```

jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$ petalinux-build

```

5) petalinux-config -c rootfs

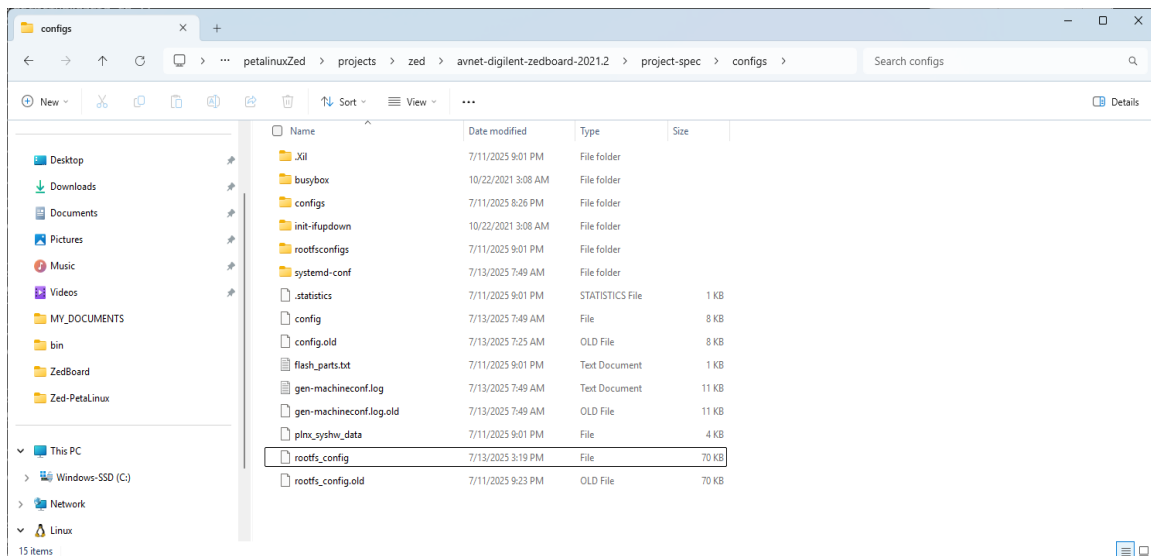
```

jabeen@Nice2behere:/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2$ petalinux-config -c
rootfs

```

jabeen@Nice2behere:/opt/**petalinuxZed**/projects/zed/avnet-digilent-zedboard-2021.2\$ **petalinux-config -c rootfs**

```
root@Nice2behere: ~  
jabeen@Nice2behere:/opt/petalinuxZed/projects/zed$ cd avnet-digilent-zedboard-2021.2/  
jabeen@Nice2behere:/opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2$ petalinux-config  
[INFO] Bitbake is not available, some functionality may be reduced.  
[INFO] Using HW file: /opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2/project-spec/hw-description/system.xsa  
[INFO] Getting Platform info from HW file  
[INFO] Menuconfig project  
[INFO] Silentconfig rootfs  
[INFO] Generating configuration files  
[INFO] Generating workspace directory  
NOTE: Starting bitbake server...  
ERROR: Layer meta-user is not compatible with the core layer which only supports these series: scarthgap (layer is compatible with gatesgarth)  
ERROR: Layer meta-user is not compatible with the core layer which only supports these series: scarthgap (layer is compatible with gatesgarth)  
[ERROR] Command devtool create-workspace "/opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2/components/yocto/workspace" failed  
jabeen@Nice2behere:/opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2$ petalinux-config -c rootfs  
[INFO] Bitbake is not available, some functionality may be reduced.  
[INFO] Using HW file: /opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2/project-spec/hw-description/system.xsa  
[INFO] Getting Platform info from HW file  
[INFO] Silentconfig project  
[INFO] Menuconfig rootfs  
[INFO] Generating configuration files  
[INFO] Successfully configured rootfs  
jabeen@Nice2behere:/opt/petalinuxZed/projects/zed/avnet-digilent-zedboard-2021.2$ |
```



6) BOOT.BIN (if needed)

petalinux-package --boot --fsbl ./zynq_fsbl.elf --fpga ./system.bit --u-boot ./u-boot.elf --force

Run

Trial- 1

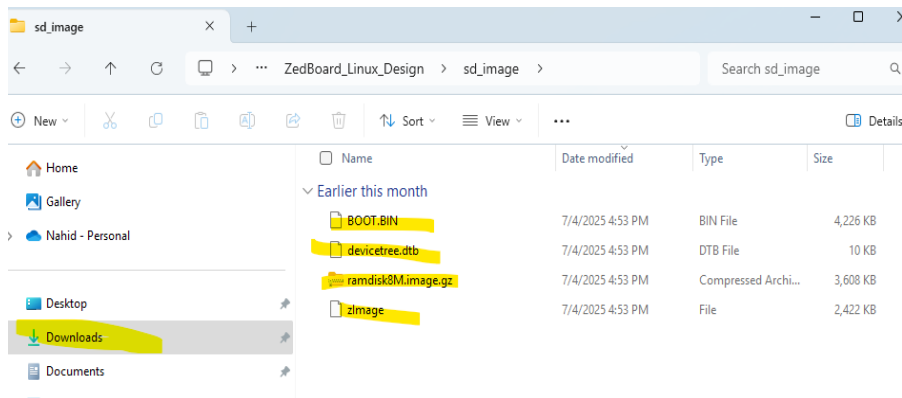
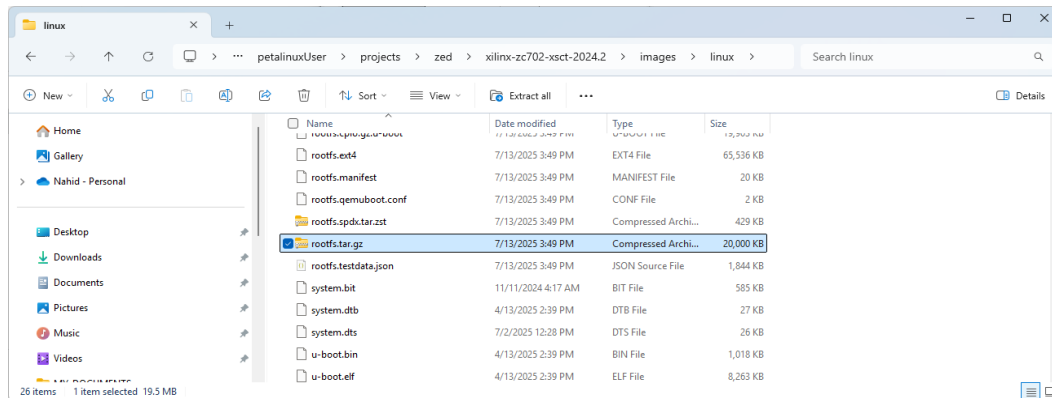
- With tcf-agent enabled in filesystem **rootfs.tar.gz** from **petalinux-build**. Copied **rootfs.tar.gz** and renamed to **ramdisk8M.image.gz** then put in SD Card.

uImage is from Digilent zip

Filesystem is rootfs.tar.gz renamed to **ramdisk8M.image.gz**

UBOOT.bin is from Digilent zip

Device tree is from Digilent zip



[jabeen@Nice2behere](#):/opt/petalinuxUser/projects/zed/xilinx-zc702-xsct-2024.2\$

Could not boot :-(

```
COM3 - PuTTY

U-Boot 2012.04.01 (Jan 07 2013 - 13:42:00)

DRAM:  512 Mi
20479038 bytes read
## Starting application at 0x00008000 ...
Uncompressing Linux... done, booting the kernel.

Error: unrecognized/unsupported machine ID (r1 = 0x1fb6ad84).

Available machine support:

ID (hex)      NAME
00000d32      Xilinx Zynq Platform
00000d0f      Xilinx Zynq Platform
00000d32      Xilinx Zynq Platform
00000d0f      Xilinx Zynq Platform
00000d0f      Xilinx Zynq Platform
00000d0f      Xilinx Zynq Platform
00000d0f      Xilinx Zynq Platform

Please check your kernel config and/or bootloader.
```

Trial 2

https://adaptivesupport.amd.com/s/question/0D52E00006iI4C1SAK/got-unsupported-machine-id-on-a-custom-zynq-board?language=zh_CN

build the Linux as **ulmage** [not zImage].

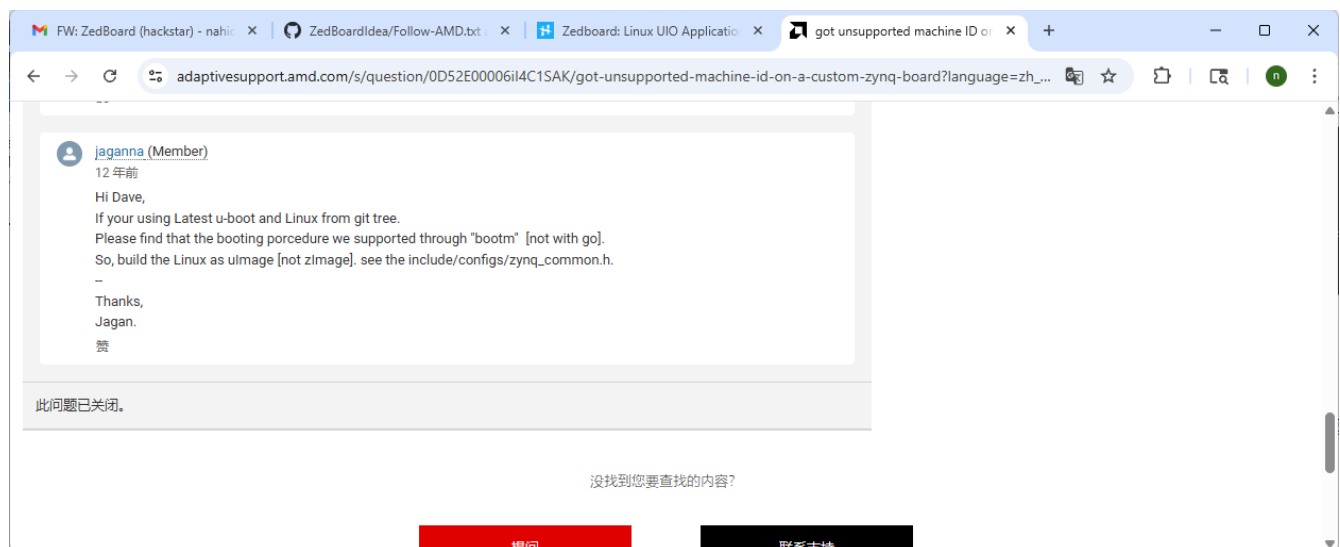
Copied **petalinuxUser** uImage to SD Card

Copied **petalinuxUser** uImage to SD Card.

Filesystem is still rootfs.tar.gz renamed to **ramdisk8M.image.gz**

UBOOT.bin is from Digilent zip

Device tree is from Digilent zip



```
COM3 - PuTTY

U-Boot 2012.04.01 (Jan 07 2013 - 13:42:00)

DRAM:  512 MiB
WARNING: Caches not enabled
MMC:   SDHCI: 0
Using default environment

In:     serial
Out:    serial
Err:    serial
Net:    zynq_gem
Hit any key to stop autoboot:  0
Copying Linux from SD to RAM...
Device: SDHCI
Manufacturer ID: 12
OEM: 3456
Name: F0F0F
Tran Speed: 25000000
Rd Block Len: 512
SD version 2.0
High Capacity: Yes
Capacity: 3.7 GiB
Bus Width: 4-bit
reading zImage

** Unable to read "zImage" from mmc 0:1 **
reading devicetree.dtb

9648 bytes read
reading ramdisk8M.image.gz

20479038 bytes read
## Starting application at 0x00008000 ...
```

Trial 3

Copied **petalinuxUser** zImage to SD Card.

Filesystem is still rootfs.tar.gz renamed to **ramdisk8M.image.gz**

UBOOT.bin is from Digilent zip

Device tree is from Digilent zip

Does not work :-)

```
COM3 - PuTTY

U-Boot 2012.04.01 (Jan 07 2013 - 13:42:00)

DRAM:  512 MiB
WARNING: Caches not enabled
MMC:   SDHCI: 0
Using default environment

In:     serial
Out:    serial
Err:    serial
Net:    zynq_gem
Hit any key to stop autoboot:  0
Copying Linux from SD to RAM...
Device: SDHCI
Manufacturer ID: 12
OEM: 3456
Name: F0F0F
Tran Speed: 25000000
Rd Block Len: 512
SD version 2.0
High Capacity: Yes
Capacity: 3.7 GiB
Bus Width: 4-bit
reading zImage

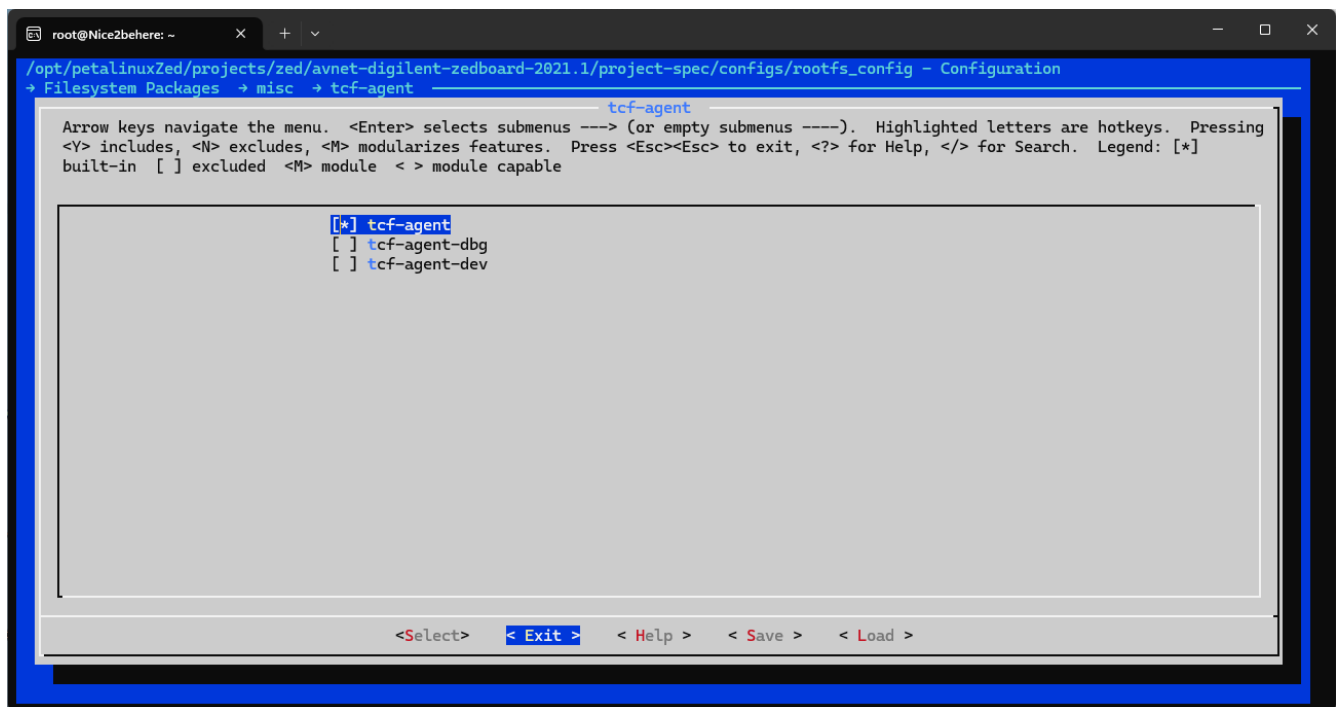
4904296 bytes read
reading devicetree.dtb

9648 bytes read
reading ramdisk8M.image.gz

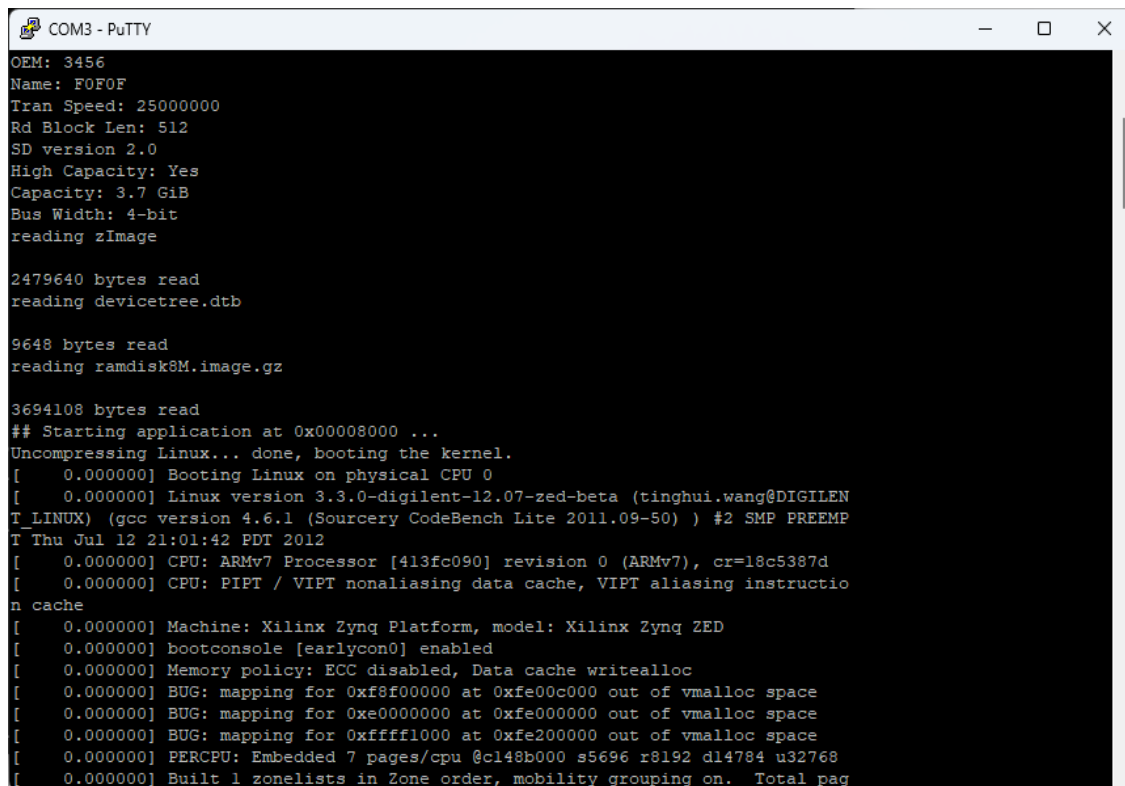
20479038 bytes read
## Starting application at 0x00008000 ...
█
```

Trail 4

[*] tcf-agent <----- This should work
[] tcf-agent-dbg
[] tcf-agent-dev



So we should stay with default



/ + Shift + S to start a snip

linux_empty_application_hw_1

Linux Agent [default]

Empty-App/linux_empty_application/build/linux_empty_application

Host Executable

Target Setup Mode

Cmd Line Args

Application Debug

Attach to running process

Target Connection Details

New Target Connection

Name

TCF-trial1

Set as default target

Type

Linux TCF Agent

Host

198.168.1.10

Port

1534

Advanced

Test Connection

Cancel

OK

ERROR : Failed in Validating the test connection for 198.168.1.2

ERROR : Failed in Validating the test connection for 198.168.1.1

ERROR : Failed in Validating the test connection for 198.168.1.10

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
18	40.645597	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard quer
19	41.060978	192.168.1.2	224.0.0.251	MDNS	84	Standard quer
20	41.062162	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard quer
21	45.169384	192.168.1.2	192.168.1.255	UDP	50	1534 → 1534 l
22	60.331353	192.168.1.2	224.0.0.251	MDNS	84	Standard quer
23	60.331670	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard quer
24	60.750130	192.168.1.2	224.0.0.251	MDNS	84	Standard quer
25	60.751662	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard quer
26	61.168940	192.168.1.2	224.0.0.251	MDNS	84	Standard quer
27	61.171407	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard quer
28	65.285960	192.168.1.2	192.168.1.255	UDP	50	1534 → 1534 l

> Frame 7: 50 bytes on wire (400 bits), 50 bytes captured (400 bits) on 0000 ff ff ff fi

> Ethernet II, Src: RealtekSemic_41:43:5b (00:e0:4c:41:43:5b), Dst: Broad 0010 00 24 44 0:

> Internet Protocol Version 4, Src: 192.168.1.2, Dst: 192.168.1.255 0020 01 ff 05 fe

> 0030 00 00

> 0100 = Version: 4

> 0101 = Header Length: 20 bytes (5)

> Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)

> Total Length: 36

> Identification: 0x4403 (17411)

> 0000 = Flags: 0x0

> ...0 0000 0000 0000 = Fragment Offset: 0

> Time to Live: 128

> Protocol: UDP (17)

> Header Checksum: 0x0000 [validation disabled]

> [Header checksum status: Unverified]

> Source Address: 192.168.1.2

> Destination Address: 192.168.1.255

> [Stream index: 1]

> User Datagram Protocol, Src Port: 1534, Dst Port: 1534

> Data (8 bytes)

User Datagram Protocol (udp), 8 bytes

Packets: 28

ftp port 50085

***Ethernet 2**

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
121	282.323449	fe80::4115:18f3:69f...	ff02::fb	MDNS	104	Standard query 0x0000 PTR 2
122	286.430939	192.168.1.2	192.168.1.255	UDP	50	1534 → 1534 Len=8
123	296.320918	192.168.1.2	192.168.1.10	FTP	80	Request: PORT 192,168,1,2,1
124	296.321732	192.168.1.10	192.168.1.2	FTP	80	Response: 200 Operation suc
125	296.328670	192.168.1.2	192.168.1.10	FTP	60	Request: NLST
126	296.329885	192.168.1.10	192.168.1.2	TCP	74	41102 → 50085 [SYN] Seq=0 W
127	296.330023	192.168.1.2	192.168.1.10	TCP	74	50085 → 41102 [SYN, ACK] Se
128	296.330679	192.168.1.10	192.168.1.2	TCP	66	41102 → 50085 [ACK] Seq=1 A
129	296.330679	192.168.1.10	192.168.1.2	FTP	77	Response: 150 Directory lis
130	296.330679	192.168.1.10	192.168.1.2	TCP	69	41102 → 50085 [PSH, ACK] Se
131	296.331331	192.168.1.10	192.168.1.2	TCP	162	41102 → 50085 [FIN, PSH, AC
132	296.331331	192.168.1.10	192.168.1.2	FTP	80	Response: 226 Operation suc

> Frame 123: 80 bytes on wire (640 bits), 80 bytes captured (640 bits) on
 > Ethernet II, Src: RealtekSemic_41:43:5b (00:e0:4c:41:43:5b), Dst: Xilin
 > Internet Protocol Version 4, Src: 192.168.1.2, Dst: 192.168.1.10
 > Transmission Control Protocol, Src Port: 50083, Dst Port: 21, Seq: 26,
 > File Transfer Protocol (FTP)
 > PORT 192,168,1,2,195,165\r\n
 > Request command: PORT
 > Request arg: 192,168,1,2,195,165
 > Active IP address: 192.168.1.2
 > Active port: 50085
 > [Current working directory:]
 > [Command response frames: 0]
 > [Command response bytes: 0]
 > [Command response first frame: 0]
 > [Command response last frame: 0]
 > [Setup frame: 0]

0000 00 0a 35 00 01 22 00 e0 4c 41 4
 0010 00 42 34 2a 40 00 80 06 00 00 c
 0020 01 0a c3 a3 00 15 3b 9b 38 8d 9
 0030 1f b7 83 91 00 00 50 4f 52 54 2
 0040 36 38 2c 31 2c 32 2c 31 39 35 2

File Transfer Protocol (FTP) (ftp), 26 bytes | Packets: 143 · Dropped: 0 (0.0%) | Profile: Default

URL

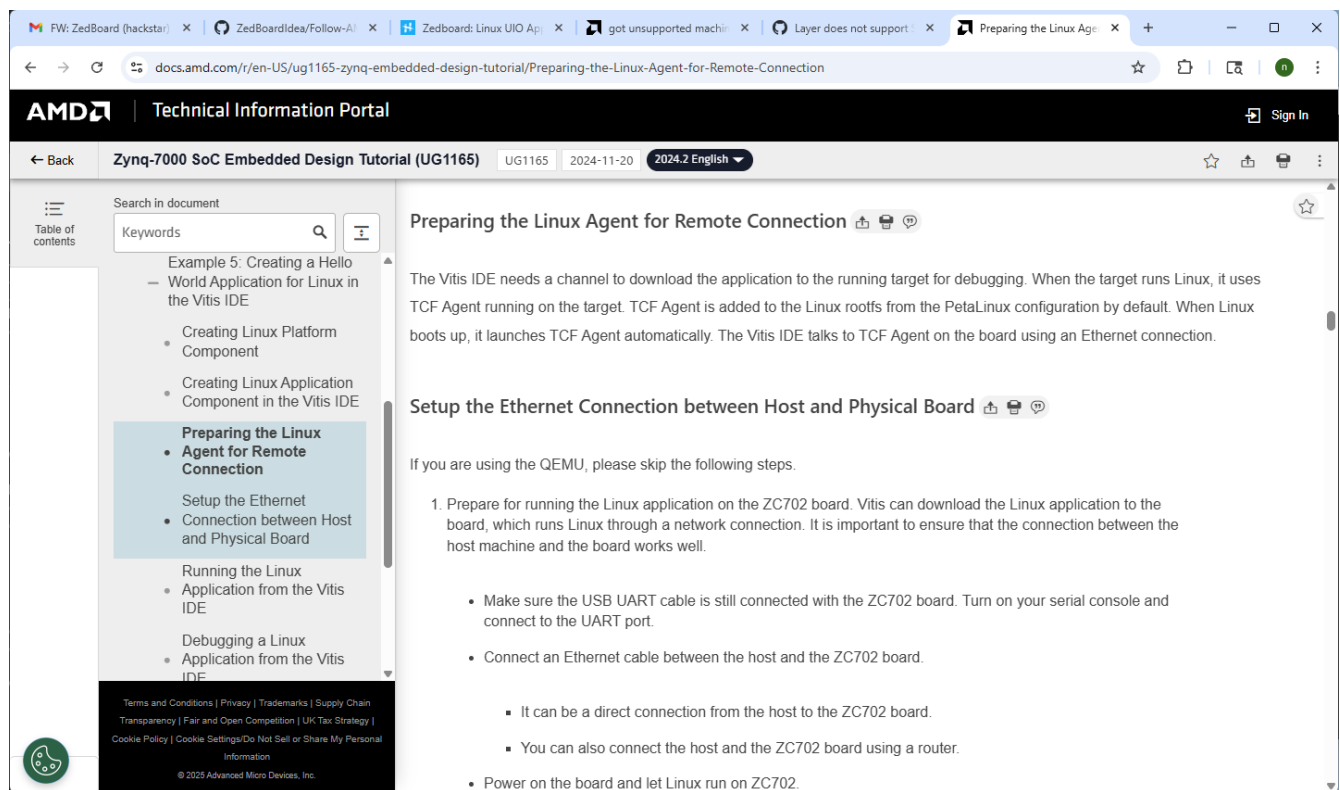
TCF can be to Zed board or **QEMU??**

<https://docs.amd.com/r/en-US/ug1165-zynq-embedded-design-tutorial/Setup-the-Ethernet-Connection-between-Host-and-Physical-Board>

When QEMU is run we get 127.0.0.1 IP address

```
lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:2 errors:0 dropped:0 overruns:0 frame:0
        TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:140 (140.0 B)  TX bytes:140 (140.0 B)
```

or for Zed board



The screenshot shows a web browser displaying the AMD Technical Information Portal. The page title is "Zynq-7000 SoC Embedded Design Tutorial (UG1165)". The main content area is titled "Preparing the Linux Agent for Remote Connection". It explains that the Vitis IDE needs a channel to download the application to the running target for debugging. It mentions that the TCF Agent is added to the Linux rootfs from the PetaLinux configuration by default. When Linux boots up, it launches TCF Agent automatically. The Vitis IDE talks to TCF Agent on the board using an Ethernet connection.

The page also includes a section titled "Setup the Ethernet Connection between Host and Physical Board". It states that if you are using the QEMU, please skip the following steps. The steps listed are:

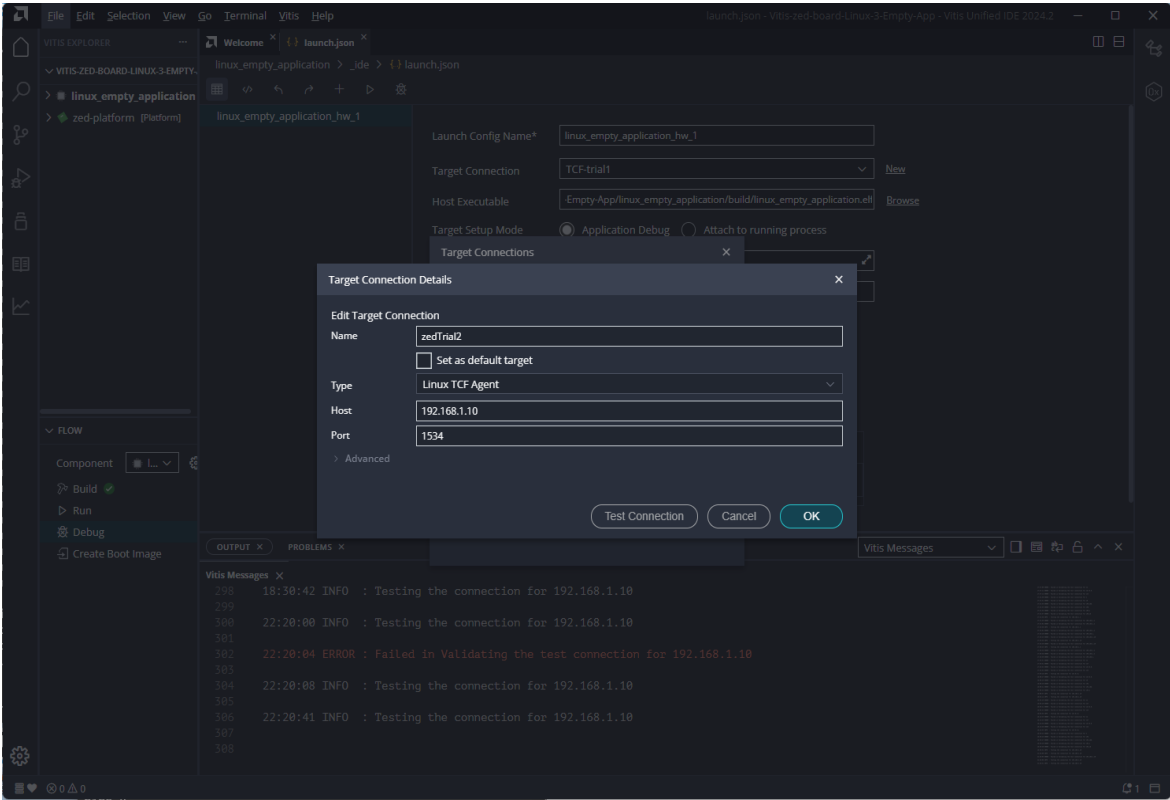
1. Prepare for running the Linux application on the ZC702 board. Vitis can download the Linux application to the board, which runs Linux through a network connection. It is important to ensure that the connection between the host machine and the board works well.

- Make sure the USB UART cable is still connected with the ZC702 board. Turn on your serial console and connect to the UART port.
- Connect an Ethernet cable between the host and the ZC702 board.
 - It can be a direct connection from the host to the ZC702 board.
 - You can also connect the host and the ZC702 board using a router.
- Power on the board and let Linux run on ZC702.

more reading...

https://github.com/Xilinx/Vitis-Tutorials/tree/2024.2/Embedded_Software/Feature_Tutorials/02-Debugging/2-debugging-linux-applications

7/14/25



Vitis-Zed-TCF.pcapng

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

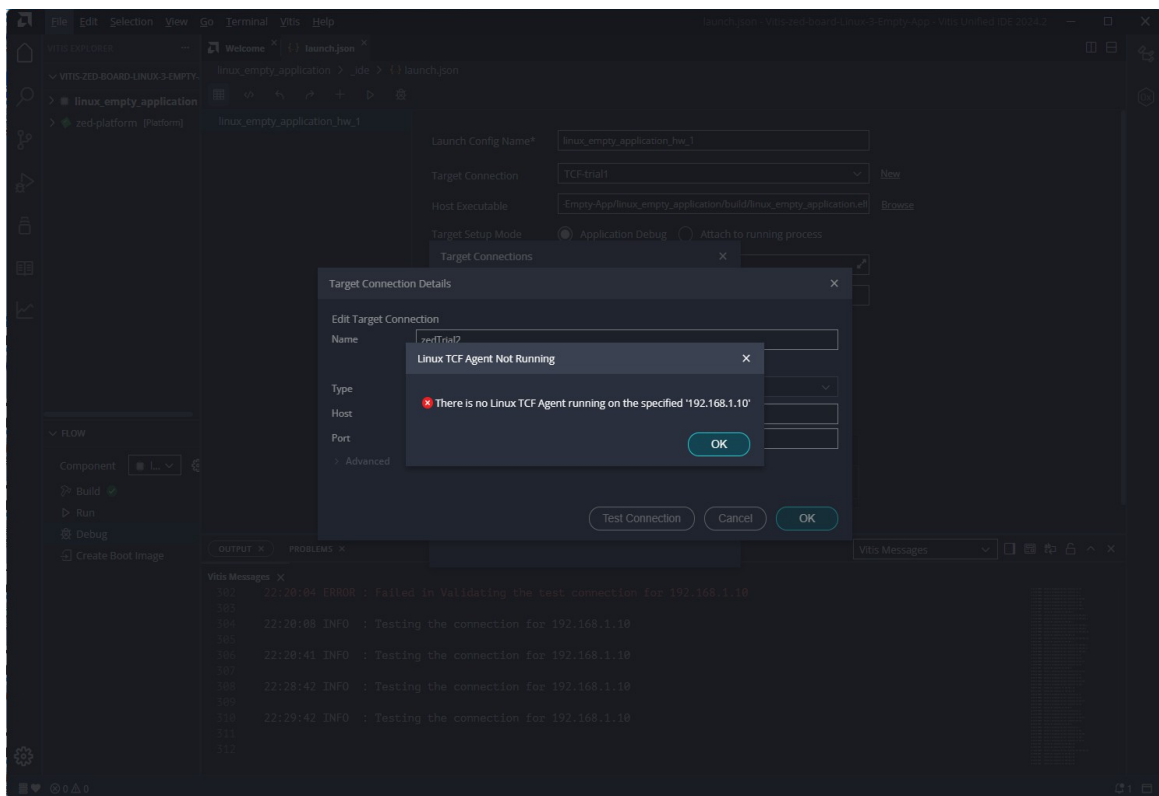
Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
22001	102167.466188	192.168.1.10	192.168.1.2	TCP	60	1534 → 51782 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
22002	102167.626445	192.168.1.2	224.0.0.251	MDNS	371	Standard query response 0x0000 PTR, cache flush Nice2behe
22003	102167.627794	fe80::4115:18f3:69f...	ff02::fb	MDNS	391	Standard query response 0x0000 PTR, cache flush Nice2behe
22004	102167.629077	192.168.1.2	224.0.0.251	MDNS	311	Standard query response 0x0000 SRV, cache flush 0 0 7680
22005	102167.630353	fe80::4115:18f3:69f...	ff02::fb	MDNS	331	Standard query response 0x0000 SRV, cache flush 0 0 7680
22006	102167.972594	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51782 → 1534 [SYN] Seq=0 Win=65
22007	102167.973492	192.168.1.10	192.168.1.2	TCP	60	1534 → 51782 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
22008	102168.477484	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51782 → 1534 [SYN] Seq=0 Win=65
22009	102168.478232	192.168.1.10	192.168.1.2	TCP	60	1534 → 51782 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
22010	102168.982011	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51782 → 1534 [SYN] Seq=0 Win=65
22011	102168.982698	192.168.1.10	192.168.1.2	TCP	60	1534 → 51782 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
22012	102171.946146	Xilinx_00:01:22	RealtekSemic_41:43:...	ARP	60	Who has 192.168.1.2? Tell 192.168.1.10
22013	102171.946172	RealtekSemic_41:43:...	Xilinx_00:01:22	ARP	42	192.168.1.2 is at 00:e0:4c:41:43:5b
22014	102172.963992	RealtekSemic_41:43:...	Xilinx_00:01:22	ARP	42	Who has 192.168.1.10? Tell 192.168.1.2
22015	102172.964702	Xilinx_00:01:22	RealtekSemic_41:43:...	ARP	60	192.168.1.10 is at 00:0a:35:00:01:22
22016	102178.301406	fe80::4115:18f3:69f...	ff02::1:2	DHCPv6	120	Information-request XID: 0x21ce47 CID: 000100012f9b871860

> Frame 22006: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device...
> Ethernet II, Src: RealtekSemic_41:43:5b (00:e0:4c:41:43:5b), Dst: Xilinx_00:01:22 (00:0a:35:00:01:22)
> Internet Protocol Version 4, Src: 192.168.1.2, Dst: 192.168.1.10
▼ Transmission Control Protocol, Src Port: 51782, Dst Port: 1534, Seq: 0, Len: 0
Source Port: 51782
Destination Port: 1534
[Stream index: 52]
[Stream Packet Number: 1]
> [Conversation completeness: Incomplete (37)]
[TCP Segment Len: 0]
Sequence Number: 0 (relative sequence number)
Sequence Number (raw): 1429160828
[Next Sequence Number: 1 (relative sequence number)]
Acknowledgment Number: 0
Acknowledgment number (raw): 0
1000 = Header Length: 32 bytes (8)
> Flags: 0x002 (SYN)
Window: 65535
[Calculated window size: 65535]
Checksum: 0x8383 [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
> Options: (12 bytes), Maximum segment size, No-Operation (NOP), Window scale, No-Operation
> [Timestamps]
> [SEQ/ACK analysis]

0000 00 0a 35 00 01 22 00 e0 4c 41 43 5b 08 00
0010 00 34 35 4a 40 00 80 06 00 00 c0 a8 01 02
0020 01 0a ca 46 05 fe 55 2f 43 7c 00 00 00 00
0030 ff ff 83 83 00 00 02 04 05 b4 01 03 03 08
0040 04 02

Destination Port (tcp.dstport), 2 bytes | Packets: 22016 · Dropped: 10132 (46.0%) | Profile: Default



*Ethernet 2

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.1.2	192.168.1.255	UDP	50	1534 → 1534 Len=8
2	3.529086	192.168.1.2	192.168.1.10	ICMP	74	Echo (ping) request id=0x0001, seq=441/47361, ttl=128
3	3.529760	192.168.1.10	192.168.1.2	ICMP	74	Echo (ping) reply id=0x0001, seq=441/47361, ttl=64
4	3.535360	192.168.1.2	192.168.1.10	TCP	66	51908 → 1534 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=2
5	3.536027	192.168.1.10	192.168.1.2	TCP	60	1534 → 51908 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
6	4.043623	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51908 → 1534 [SYN] Seq=0 Win
7	4.044373	192.168.1.10	192.168.1.2	TCP	60	1534 → 51908 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
8	4.544778	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51908 → 1534 [SYN] Seq=0 Win
9	4.545587	192.168.1.10	192.168.1.2	TCP	60	1534 → 51908 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
10	5.058300	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51908 → 1534 [SYN] Seq=0 Win
11	5.058977	192.168.1.10	192.168.1.2	TCP	60	1534 → 51908 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
12	5.574026	192.168.1.2	192.168.1.10	TCP	66	[TCP Port numbers reused] 51908 → 1534 [SYN] Seq=0 Win
13	5.574750	192.168.1.10	192.168.1.2	TCP	60	1534 → 51908 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
14	8.358586	RealtekSemic_41:43:...	Xilinx_00:01:22	ARP	42	Who has 192.168.1.10? Tell 192.168.1.2
15	8.359826	Xilinx_00:01:22	RealtekSemic_41:43:...	ARP	60	192.168.1.10 is at 00:0a:35:00:01:22
16	15.163100	192.168.1.2	224.0.0.251	MDNS	84	Standard query 0x0000 PTR 2.1.168.192.in-addr.arpa, "Q

> Frame 3: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
 > Ethernet II, Src: Xilinx_00:01:22 (00:0a:35:00:01:22), Dst: RealtekSemic_41:43:5b (08:00:27:00:00:00)
 > Internet Protocol Version 4, Src: 192.168.1.10, Dst: 192.168.1.2
 > Internet Control Message Protocol
 Type: 0 (Echo (ping) reply)
 Code: 0
 Checksum: 0x53a2 [correct]
 [Checksum Status: Good]
 Identifier (BE): 1 (0x0001)
 Identifier (LE): 256 (0x0100)
 Sequence Number (BE): 441 (0x01b9)
 Sequence Number (LE): 47361 (0xb901)
 [Request frame: 2]
 [Response time: 0.674 ms]
 > Data (32 bytes)

0000 00 e0 4c 41 43 5b 00 0a 35 00 01 22 08 00 45 00 ...
 0010 00 3c ac 53 00 00 40 01 4b 11 c0 a8 01 0a c0 a8 ...
 0020 01 02 00 00 53 a2 00 01 01 b9 61 62 63 64 65 66 ...
 0030 67 68 69 6a 6b 6c 6d 6e 6f 70 71 72 73 74 75 76 gh:
 0040 77 61 62 63 64 65 66 67 68 69 wat

Sequence Number (big endian representation) (icmp.seq), 2 bytes

Packets: 21 · Dropped: 0 (0.0%) Profile: Default

No connection

There is no Linux TCF Agent running... See: Vitis-Zed-TCF.pcapng