Running NDK Examples for KeyStone™ Devices

ABSTRACT

This document is a collection of frequently asked questions (FAQ) on running the NDK examples on the KeyStone™ family of devices.

Contents

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1 How to Run Legacy MCSDK NDK Examples on C6678, C6670, and C6657 KeyStone™ I Devices

Generally, users would get two NDK examples, hello world and client. The following list provides the file paths.

- KeyStone™ 1 NDK examples from Latest MCSDK: C:\ti\mcsdk_2_01_02_06\examples\ndk
- KeyStone 2 NDK examples from Latest MCSDK: C:\ti\mcsdk_bios_3_01_03_06\examples\ndk

To run the examples:

1. Set the boot mode to DSP No boot mode (Emulation).
2. Connect the Ethernet cable to LAN or to the PC (EVM to PC) according to the IP mode (DHCP IP or STATIC IP) that is displayed.

   Follow the next step for KeyStone I devices.
3. Select the IP mode by the DIP switch (SW9) settings in the *TMDXEVM6678L EVM Hardware Setup* wiki.
4. Connect core 0 and call the gel file, then load and run the NDK program (gel file must be selected).
5. Find the IP address from the local LAN server (DHCP server) in the NDK example output log in Code Composer Studio™ (CCS).
6. Type the IP address in the Internet browser to open the client application.

2 How to Run NDK Examples on K2H Devices

Use the following instructions to run NDK examples on K2H devices.

1. Set the boot mode to DSP No boot mode (Emulation).
2. Connect the Ethernet cable to LAN or to the PC (EVM to PC) according to the IP mode (DHCP IP or STATIC IP) that is displayed.

   NOTE: Users must use the Ethernet port that is close to the SIM card connector (PORT0, ENET0, see EVMK2H Hardware Setup).

   KeyStone II boards use DHCP IP mode by default. This setting must be changed by altering the code to run in STATIC IP mode.

   ```
   Line no: 305 (client.c) if (0) TO if (1)
   ```
3. Connect core 0, then load and run the NDK program (gel file must be selected).
4. Find the IP address from the local LAN server (DHCP server) in the NDK example output log in Code Composer Studio™ (CCS).
5. Type the IP address in the Internet browser to open the client application.

3 How to Run NDK Examples on K2E Devices

Use the following instructions to run NDK examples on K2E devices.

1. Set the boot mode to DSP No boot mode or Emulation.
2. Connect the Ethernet cable to LAN or to the PC (EVM to PC) according to the IP mode (DHCP IP or STATIC IP) that is displayed.

NOTE: Users must use Ethernet PORT0. See EVMK2E Hardware Setup.

KeyStone II boards use DHCP IP mode by default (on K2E devices). This setting must be changed by altering the code to run in STATIC IP mode.

Line no: 305 (client.c) `if (0) TO if (1)`

3. Connect core 0.
4. Run the setupPhy script (Scripts → DSP Clock Estimation → setupPhy).
5. Load and run the program.
6. Find the IP address from the local LAN server (DHCP server) in the NDK example output log in CCS.
7. Type the IP address in the Internet browser to open the client application.

The following snippet is a sample NDK log.

```
[C66xx_0] QMSS successfully initialized

CPPI successfully initialized

PA successfully initialized

TCP/IP Stack 'Hello World!' Application

TCP/IP Stack 'Hello World!' Application

PASS successfully initialized

Ethernet subsystem successfully initialized

Ethernet eventId : 48 and vectId (Interrupt) : 7

Registration of the EMAC Successful, waiting for link up ..

Service Status: DHCPC  : Enabled  :  : 000

Service Status: DHCPC  : Enabled  : Running  : 000

Network Added: If-1:10.100.1.26

Service Status: DHCPC  : Enabled  : Running  : 017
```

4   How to run Processor SDK Based NDK Examples on C6678 and C6657 KeyStone™ I Devices

In the Processor SDK package, the NDK examples do not come prebuilt in the software package. The user must create these projects by running the pdkProjectCreate.bat script and invoking the necessary parameters (such as platform name, endianness, and others).

For C6678, do the following command to create the NDK examples (NIMU) in Processor SDK package of C6678 C:\ti\pdk_c667x_2_0_3\pdkProjectCreate.bat C6678 all little nimu dsp

For C6657, do the following command to create the NDK examples (NIMU) in Processor SDK package of C6657 C:\ti\pdk_c665x_2_0_3\packages\pdkProjectCreate.bat C6657 all little nimu dsp.

Please refer to the following TI wiki pages to know more about the creating and rebuilding the Processor SDK package.
- Processor SDK Building The SDK
- Processor SDK — Create PDK projects

Then, users get the following Hello world and Client examples in the following directory (MyExampleProjects).
- C6678:
    - C:\ti\pdk_c667x_2_0_3\packages\MyExampleProjects\NIMU_emacClientExample_EVMC6678C66BiosExampleProject
    - C:\ti\pdk_c667x_2_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMC6678C66BiosExampleProject
- C6657:
    - C:\ti\pdk_c665x_2_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMC6657C66BiosExampleProject

Use the following instructions to run the Processor SDK examples on the EVM.
1. Set boot mode to DSP No boot mode (Emulation).
2. Connect the Ethernet cable to LAN (switch) or to the host PC (EVM to PC) according to the desired IP mode (DHCP IP or STATIC IP).
3. Use the following KeyStone I board (C6678 and C6657) hardware-setup pages for setting up the emulator and boot mode.
    - TMDXEVM6678L EVM Hardware Setup
    - TMDSEVM6657L EVM Hardware Setup

By default, the KeyStone NDK hello world and client examples are configured to STATIC IP mode or DHCP IP mode; users can alter the examples to run the code in a different mode (see the following code snippets).

For the C6678 Hello world example (for DHCP IP):

```
C:\ti\pdk_c667x_2_0_3\packages\ti\transport\ndk\nimu\example\helloWorld\src
Line no: 322 (helloworld.c)
if (1)
to
if (0)
```

For the C6678 Client example (for STATIC IP):

```
C:\ti\pdk_c667x_2_0_3\packages\ti\transport\ndk\nimu\example\client\src
Line no: 263 (client.c)
if (0)
to
if (1)
```

For the C6657 Hello world example (for STATIC IP):

```
C:\ti\pdk_c665x_2_0_3\packages\ti\transport\ndk\nimu\example\helloWorld\src
Line no: 322 (helloworld.c)
if (0)
to
if (1)
```

4. Rebuild the project.

5. Connect core 0 and call the gel file, then load and run the NDK program (ensure that the appropriate gel file is selected).

   Now, the EVM board will get the IP address from the local LAN server (DHCP server) and print the IP in the NDK example output log on the CCS console.

6. Type the IP address in the browser for running the NDK Client example.

7. Use the following command terminal based winapps to test the connectivity for the Hello world NDK example: C:\ti\ndk_2_24_03_35\packages\ti\ndk\winapps.

5   How to run Processor SDK Based NDK Examples on K2H and K2E KeyStone™ II Devices

In the Processor SDK package, users will not get any example by default, so users must create the examples and mention the platform name, module, and endianness by using the pdkProjectCreate.bat script.

For K2H, do the following command to create the NDK examples (NIMU) for ARM and DSP cores in the Processor SDK package of K2H C:\ti\pdk_k2hk_4_0_3\packages\pdkProjectCreate.bat K2H all little nimu dsp C:\ti\pdk_k2hk_4_0_3\packages\pdkProjectCreate.bat K2H all little nimu arm.

For K2E, do the following command to create the NDK examples (NIMU) for ARM and DSP cores in the Processor SDK package of K2E C:\ti\pdk_k2e_4_0_3\packages\pdkProjectCreate.bat K2E all little nimu dsp C:\ti\pdk_k2e_4_0_3\packages\pdkProjectCreate.bat K2E all little nimu arm.

Please refer to the following TI wiki pages to know more about the creating and rebuilding the Processor SDK package.
- Processor SDK Building The SDK
- Processor SDK — Create PDK projects

Then, users would get the following Hello world and Client (ARM and DSP) examples in the following directory (MyExampleProjects).
- K2H ARM NDK Hello world:
  - C:\ti\pdk_k2hk_4_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMK2H_armBiosExampleProject
- K2H DSP NDK Hello world:
  - C:\ti\pdk_k2hk_4_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMK2HC66BiosExampleProject
- K2E ARM NDK Hello world:
  - C:\ti\pdk_k2e_4_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMK2E_armBiosExampleProject
- K2E DSP NDK Hello world:
  - C:\ti\pdk_k2e_4_0_3\packages\MyExampleProjects\NIMU_emacExample_EVMK2EC66BiosExampleProject

6   How to run NDK Examples on K2H Devices

Use the following instructions to run NDK examples on K2E devices.
1. Set the boot mode to DSP No boot mode or Emulation.
2. Connect the Ethernet cable to LAN or to the PC (EVM to PC) according to the IP mode (DHCP IP or STATIC IP) that is displayed.

NOTE: Users must use Ethernet PORT0. SeeEVMK2E Hardware Setup.

KeyStone II boards use STATIC IP mode by default (on K2H devices). This setting must be changed by altering the code to run in DHCP IP mode.

Line no: 322 (helloworld.c) if (1) TO if (0)

3. Connect core 0.
4. Run the setupPhy script (Scripts → DSP Clock Estimation → setupPhy).
5. Load and run the program.
6. Find the IP address from the local LAN server (DHCP server) in the NDK example output log in CCS.
7. Type the IP address in the Internet browser to open the client application.

7 How to run NDK Examples on K2E Devices

Use the following instructions to run NDK examples on K2E devices.

1. Set the boot mode to DSP No boot mode or Emulation.
2. Connect the Ethernet cable to LAN or to the PC (EVM to PC) according to the IP mode (DHCP IP or STATIC IP) that is displayed.

NOTE: Users must use Ethernet PORT0. See EVMK2E Hardware Setup.

KeyStone II boards use DHCP IP mode by default (on K2E devices). This setting must be changed by altering the code to run in STATIC IP mode.

`Line no: 322 (helloworld.c)` if (1) TO if (0)

3. Connect core 0.
4. Run the setupPhy script (Scripts → DSP Clock Estimation → setupPhy).
5. Load and run the program.
6. Find the IP address from the local LAN server (DHCP server) in the NDK example output log in CCS.
7. Type the IP address in the Internet browser to open the client application.

NOTE: Use the following ARM gel file for running the ARM NDK examples:
C:\ti\ccsv6\ccs_base\emulation\boards\xtcievmk2x\gel\xtcievmk2x_arm.gel.

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8 Other Resources

The following list contains other helpful NDK (frequently asked questions) FAQs and information.

1. *Before asking for NDK support*
2. *NDK, PA Resource Wiki for Keystone Devices*
3. *Network Developers Kit FAQ*

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