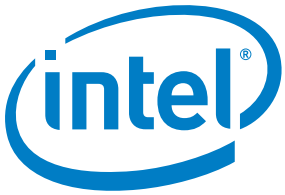

Intel® Gateway for the Internet of Things DK300 - Early Access Kit

Getting Started Guide

August 2014

Intel Confidential

Document Number: 544500-1.2

Contents

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Revision History

Date	Revision	Description
Aug 2014	1.2	Clarification on the instructions for obtaining the License Authorization Code (LAC) and Wind River Host Tools License which are needed to install the Intelligent Device Platform XT host tools.
May 2014	1.1	Updated product names Added BIOS update information Connection to WebIF changed to https://192.168.1.1 Grub file name changed from grub-ima to grub-0.97
March 2014	1.0	Added many details to the step by step instructions
05 Feb 2014	0.94	Added instructions for turning off Integrity Management with the ima_appraise=off switch.
20 January 2014	0.93	Draft for Engineering Sample release

§

1 Introduction

This guide describes how to set up and begin running the Intel® Gateway Solutions for the Internet of Things (IoT) DK300 - Development Toolkit.

In this document, for convenience:

- ***Development Kit*** is used as a generic term for the Intel® Gateway Solutions for the Internet of Things (IoT) - Development Toolkit, including the target system hardware, board firmware, and software from Wind River Systems, Inc.
- ***Target System*** is used as a generic term for the Advantech* UTX-3110 compact box PC that is included in this kit.
- ***Host System*** is used as a generic term for a stand-alone computer system onto which the development tools from Wind River Systems, Inc. are installed. The Host System is not included in this kit.

This document contains installation information for the Wind River® Intelligent Device Platform software. Details about the Intelligent Device Platform software are in the *Wind River Intelligent Device Platform Programmer's Guide* listed in Table 1.

Intel provides support for the development kit. Contact your Intel representative for assistance.

1.1 Development Kit Contents

The Development Kit contains the following:

- Advantech* UTX-3110 compact box PC
- Power cord
- 2x Wi-Fi* antennae
- Documentation packet
- USB Flash memory drive
- USB and video cables:
  - Micro HDMI to standard HDMI cable
  - HDMI to DVI-D video adapter
  - Micro USB to USB adapter

USB Flash Drive Contents

The contents of the USB flash drive are:

- Target System operating system (OS) (bootable from the USB flash drive)
- An installer for the Wind River Systems, Inc. host tools, Linux* software, and Intel® Atom™ Board Support Package (BSP). These are located in the folder `install`.
- Development Kit hardware and software documentation. These are located in the folder `wrs-idp-documents`.
- A restore image for the target system and deployment scripts. These are located in the folder `restore`.

1.2 Related Documents

Table 1. Related Documents

Title	Revision and Location
Intel® Atom™ Processor E3800 product family technical information web page	https://www-ssl.intel.com/content/www/us/en/intelligent-systems/bay-trail/atom-processor-e3800-family-overview.html
Intel® Gateway Solutions for the Internet of Things – DK300 Series – Early Access Kit – 32-bit BIOS Update	Revision 1.0 IBL Doc #547402
Wind River Intelligent Device Platform Programmer's Guide 2.0	Edition 5 Included on USB flash drive
Wind River Intelligent Device Platform Release Notes 2.0	Edition 3 Included on USB flash drive
Wind River Linux 5.0/5.0.1 Recommended Development Host Distributions	Updated 4/5/13 Included on USB flash drive
Wind River Intelligent Device Platform Security Guide 2.0	Beta Included on USB flash drive

1.3 Documentation Conventions

The following conventions are used in this manual:

- `Courier font` - code examples, command line entries, API names, parameters, filenames, directory paths, and executables
- **Bold text** - graphical user interface entries and buttons

1.4 Target System Front and Rear Views (Advantech* UTX-3110)

Figure 1. Front View

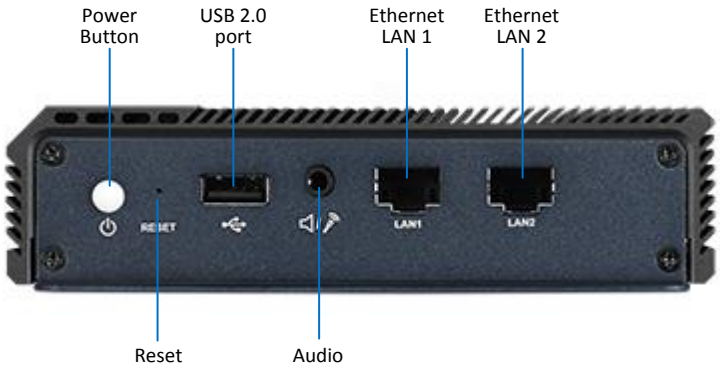
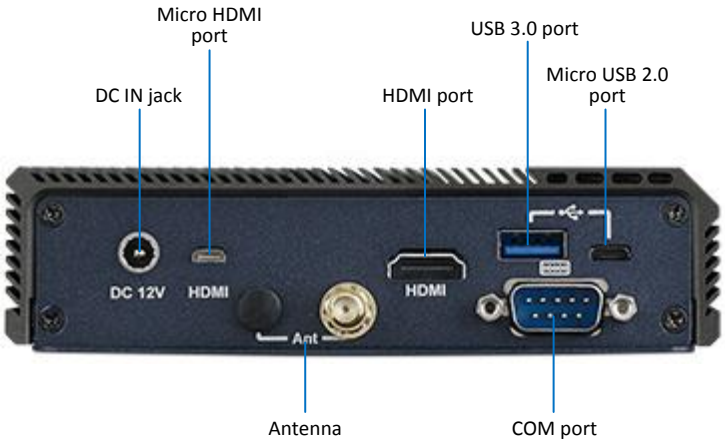


Figure 2. Rear View



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2 Target System Setup

The steps to set up the Target System include:

1. Connecting they keyboard, video, and power.
2. Using a wired or wireless Ethernet connection to connect the Target System to the internet or to another network.
3. Configuring the Target System static IP address.

The Target System comes pre-loaded with Wind River Linux and Wind River Intelligent Device Platform 2.0 XT software.

The included USB flash drive is also bootable and is pre-loaded with the Wind River Linux and Wind River Intelligent Device Platform 2.0 XT software.

The default login ID and password on the Target System are:

```
login: root

password: root
```

2.1 Connecting Keyboard, Video, and Power

- **Keyboard:** Connect a USB keyboard to the Target System using any of the available USB ports.
- **Video Monitor:** Connect the Target System to an HDMI monitor using either a micro HDMI cable in the micro HDMI port, or a standard HDMI cable in the standard HDMI port. Use an adapter to connect to a DVI or VGA monitor.
- **Power:** Plug in the 12 V DC jack of the included power adapter to the DC In of the Target System. Plug in the power cord of the adapter to 120V or 240V input power.

2.2 Connecting Target System to Internet or Another Network

Use either a wired or a wireless Ethernet connection to connect the Target System to the internet or to another network, as indicated in the following sections.

2.2.1 Wired Ethernet Connection

Connect the Target System to the internet or to another network. The best way is through an Ethernet router with integrated DHCP server. Use an Ethernet cable to connect the **LAN2 port** of the Target System to one of the I/O ports of the router.

The IDP runtime software implements a network gateway function that assumes the Ethernet eth0 interface (LAN2 port) has a WAN connection. The Target System will attempt to obtain an IP address from a DHCP server on this interface.

As an alternative to connecting the Target System to an Ethernet router with an integrated DHCP server, the Target System may be configured with a static IP address after the system has booted. (See Section 2.4 – Wind River Web Interface Tool (webif).)

2.2.2 Wireless Ethernet Connection

After the Target System has booted, the IDP gateway advertises a wireless LAN network with Service Set Identifier (SSID) of: `IDPDK-xxxx` (where `xxxx` is the last 4 digits of the wireless network card MAC address).

To find the last 4 digits of the wireless network card MAC address, issue the Linux command: `ifconfig wlan0` from the Target System command line. The MAC address is listed in the `ifconfig wlan0` output as the `HWaddr`. For example:

```
HWaddr 00:0F:20:CF:8B:42
```

In this example, the last four digits of the MAC address are: 8B42. The Target System advertises SSID `IDPDK-8B42`.

Connect to this local wireless network using the password: `windriveridp`.

2.3 Connecting Host System to Target System's Local Wireless Network

This section contains step-by-step instructions to connect the Host System (or another wireless device) to the Target System's local wireless network.

The following was performed on a Host System running Ubuntu* 12 operating system. The procedure should be similar for other operating systems.

1. Select the Network Icon at the top of the screen, or go to System Settings -> Network Connections.
2. Find the Target System's local wireless network with an SSID of IDPDK-xxxx.
3. Select the Target System's local wireless network to connect to it.
4. When prompted, enter the password: `windriveridp`.

You should now be connected to the Target System's local wireless network.

Note: The Target System's wireless LAN is set to use subnet 192.168.1.0.

2.4 Wind River Web Interface Tool (webif)

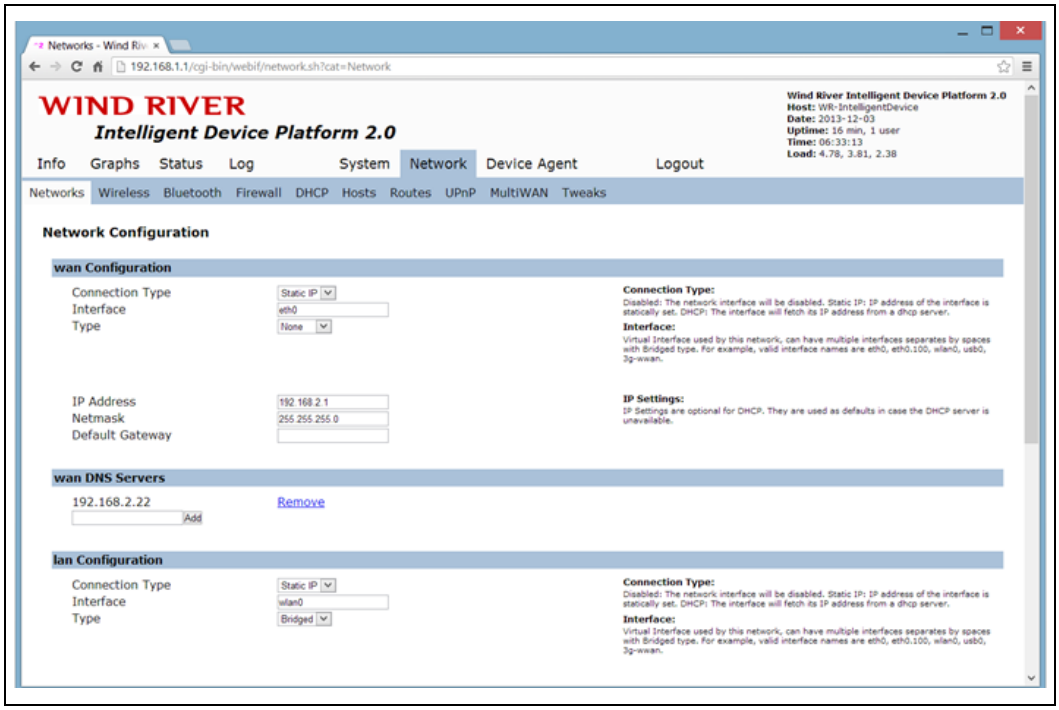
Wind River Systems, Inc. provides a Web Interface tool (webif) that allows the user to control and change many Target System settings. Use the following steps to access the Web Interface tool.

1. Connect from a Host System to the Target System on the wired or wireless Ethernet interface as described in Section 2.2 or Section 2.3.
2. On the Host System, open an internet browser.
3. In the browser address window, enter internet address `https://192.168.1.1`.
4. If the connection to the Web Interface is successful, a popup box will ask for a user name and password.
5. Login with user name: `admin` and password: `admin`.

See the *Wind River Systems IDP Programmer's Guide* and *Release Notes* provided on the USB disk for details regarding the Web Interface tool and its myriad Target System customization options.

An example of one of the screens for the WebIF tool is shown by Figure 3 below.

Figure 3. Configuring Static IP Address



Scroll to the bottom of the screen and click **Save Changes**, and then be sure to click **Apply Changes**.

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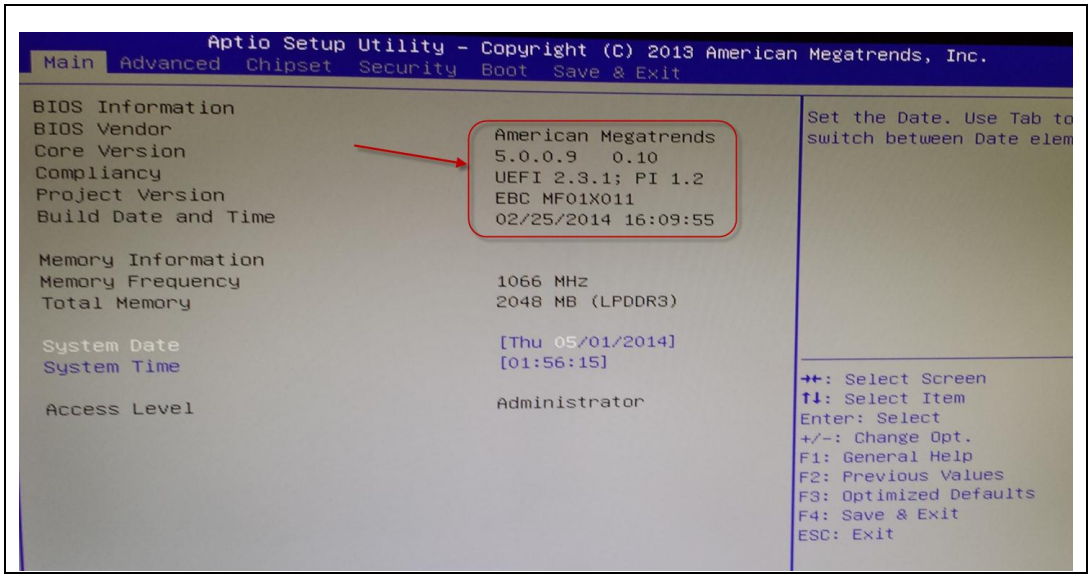
3 Installing a 32-Bit BIOS on the Target System

To use a runtime image generated with the Intelligent Device Platform XT version 2.0.1, a 32-bit BIOS is required on the Target System. To determine if you need to perform the update steps in this section, access your BIOS setup screen by pressing the power button and then immediately pressing the DEL key to open the Setup Utility. If the information in the red circled area matches the figure below, your BIOS version is already 32-bit and you can disregard this section. If you see `X64` anywhere on the line that begins with `Core Version`, you must update the BIOS to 32-bit.

Figure 4. Checking BIOS Version



If you need to update your BIOS, follow the remaining steps in this section.

3.1 Preparing for BIOS Update

Use the following steps to prepare for the update.

1. Download *Intel® Gateway Solutions for the Internet of Things – DK300 Series – Early Access Kit – 32-bit BIOS Update* from IBL (Doc # 547402).
2. Save this file on the Host System. The file is saved as `547402_UX3110_BIOS_X011_32and64.zip`
3. Create a directory named `bios` on the Host System and copy the file into it. Use the following commands to create the directory and copy the file:

```
mkdir $HOME/bios
cp 547402_UX3110_BIOS_X011_32and64.zip $HOME/bios
```

4. Go into the `bios` directory and unzip the file. Use the commands:

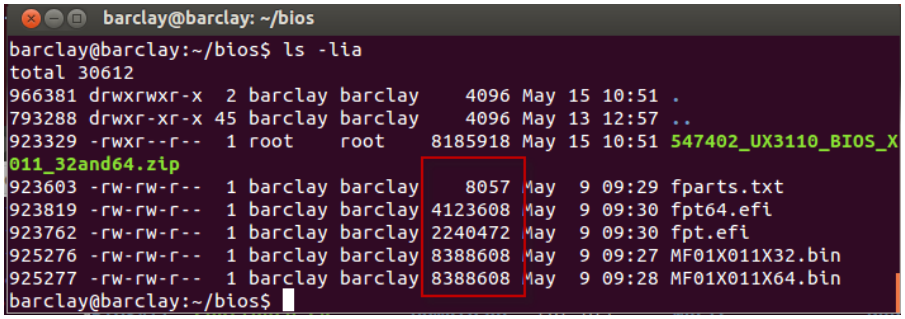
```
cd $HOME/bios
unzip 547402_UX3110_BIOS_X011_32and64.zip
```

5. Verify that the files are the correct sizes. Use the command:

```
ls –lia
```

   For the correct file sizes, see the text outlined in red in the figure below.

Figure 5. ls Command Output

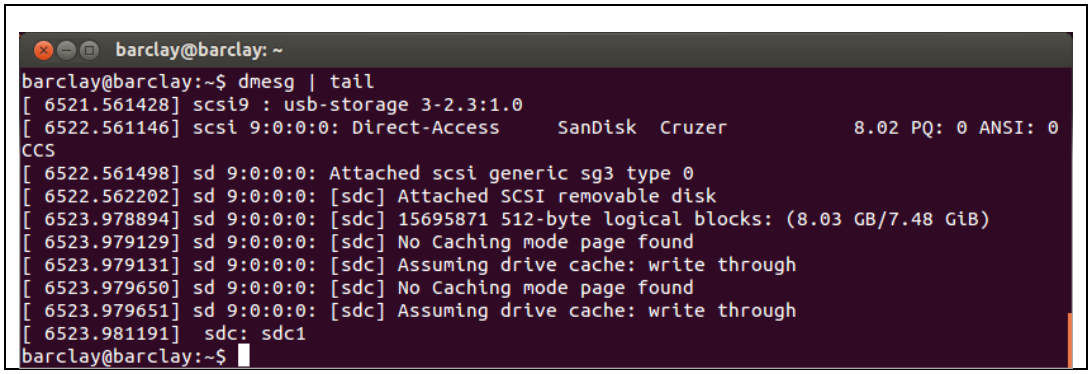


6. Insert a 1 GB or larger USB flash drive into the Host System.
7. Open a terminal on your Host System and determine the mount device for the USB flash drive. Use the command:

```
dmesq | tail
```

8. Identify the device that the flash drive is on. This example uses `/dev/sdc`. See the following figure. If the device location is in question, select the disk utility in the GUI to select the flash drive.

Figure 6. Identifying Flash Drive Device



Caution: Be certain you are selecting the correct device location to prevent formatting an incorrect drive.

9. Unmount the flash drive:

   ```
   umount /dev/sdc1
   ```

Note: `/dev/sdc1` is an example. Replace `/dev/sdc1` with the location of your flash drive.

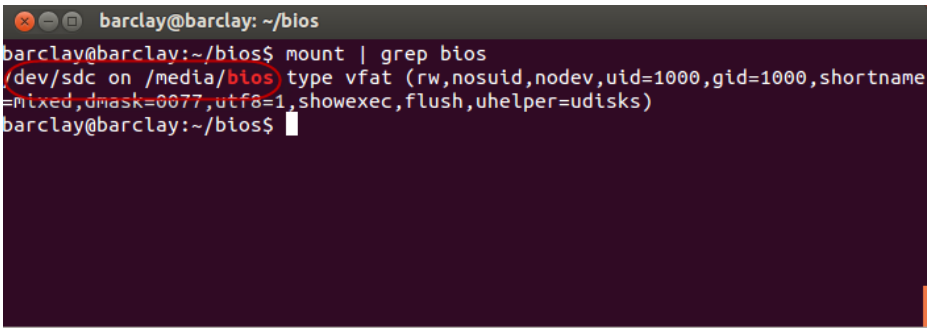
10. Format the flash drive with the name `bios`. Use the following command:

    ```
    sudo mkdosfs -n 'bios' -I /dev/sdc
    ```

11. Remove and reinsert the USB flash drive. It will mount automatically to `/media/bios`. Use the mount command to confirm the mount point. In this example, it is `/dev/sdc` and mounted on `/media/bios`. See the text circled in red in the figure below.

    ```
    mount | grep bios
    ```

Figure 7. Check USB Flash Drive



12. Copy the following files from the Host System to the USB flash drive:
    - `fparts.txt`
    - `fpt64.efi`
    - `MF01X011X32.bin`

    Use the following command to copy the files:

    ```
    cp fp* M*.bin /media/bios
    ```

13. Unmount the USB flash drive:

    ```
    umount /media/bios
    ```

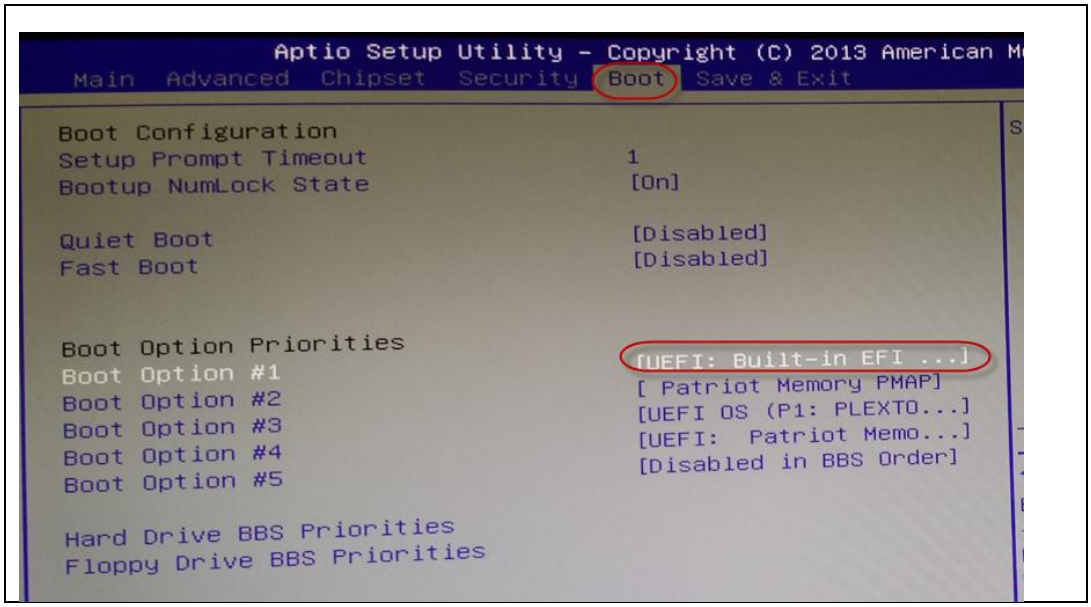
3.2 Flashing the BIOS

Section 3.1 guided you through placing the necessary files on the USB flash drive. This section provides steps to complete your BIOS update directly on the Target System.

Use the following steps:

1. Plug the USB flash drive created above into the Target System.
2. Power on the Target System and immediately press the `DEL` key to load the BIOS Setup screen.
3. In boot priority, select **UEFI** as shown in the following figure.

Figure 8. Changing Boot Priority



4. Press the right arrow key to select **Save** and **Exit**. The Target System will boot into EFI.
5. At the EFI prompt, select **fp0** to enter the fp0 partition on the USB flash drive. Use the following command:

   ```
   fp0:
   ```

6. Use the `ls` command to confirm the BIOS files are present (`fparts.txt`, `fpt64.efi`, `MF01X011X32.bin`).

Note: Do not continue before confirming you are in the location with the necessary files. If necessary, change to the fp1 partition and look again for the files. To change to the fp1 partition and look again, use the commands:

```
fp1:
ls
```

7. Complete the BIOS upgrade with the following command. Watch for errors.

```
fpt64.efi –F MF01X011X32.bin
```

§

4 Installing Intelligent Device Platform Tools on Host System

The Intel® Gateway Solutions for the Internet of Things (IoT) DK300 - Development Toolkit includes a USB flash drive that contains an installer for the Host System software.

The host software includes the *Wind River Intelligent Device Platform Version 2.0 XT Early Access Release 3*.

4.1 Host System OS Requirements

The Wind River Systems, Inc. development tools may be installed on many different Linux* based host systems. Before proceeding, review *Wind River Linux 5.0/5.0.1 Recommended Development Host Distributions* to ensure that you have installed the appropriate packages and that your system meets the minimum operating system requirements. Look for the document with the file name `Recommended-Hosts-List_5.0.1.pdf` on the USB flash drive in directory `wrs-idp-documents/`

Note: These instructions have been validated on an Ubuntu 12.04 LTS 64-bit host system.

Note: The Ethernet port used for internet access on the Host System must be named `eth0` for the Installer to work properly. If you do not know how to do this, see Section 7.1, Checking and Changing Ethernet Port Name to eth0 for Wind River Host Tools Installer.

4.2 Host System Hardware Recommendations

The following Host System hardware is recommended.

- 3rd Generation Intel® Core™ i5 processor or better.
- CPU with four or more cores and with Intel® Hyper-Threading Technology (Intel® HT Technology).
- 150 GB or more of free disk space.
- 4 GB or more RAM.

With the minimum hardware above, a typical initial compilation will take about 3 hours. Improving the specifications of the Host System can decrease that time to about 2 hours.

4.3 Wind River Systems, Inc. Software Installation Prerequisites

Before starting the host tools installation, check the installation folders, the available disk space, the Wind River Systems, Inc. host tools license, and the installed Linux packages.

4.3.1 Installation Folders and Disk Space

The installation process creates two new folders in the home directory of your Host System:

- `WindRiver` - The folder to install the host tools. The installation requires approximately 12 GB of free space in this folder.
- `Installer` - A temporary folder that can be deleted later. The installation requires approximately 15 GB of free space in this folder.

The install process also requires approximately 15 GB of temporary disk space in the `/tmp` directory.

4.3.2 Wind River Systems, Inc. Host Tools License

You must have a License Authorization Code (LAC) and a Wind River Host Tools License to install the Intelligent Device Platform XT host tools.

- For Loaner kits, use the LAC and the 90-day Wind River Host Tools License provided in the Dear Customer Letter included with your Development Kit.
- For Early Access kits, instructions to obtain a LAC and a 90-day Wind River Host Tools License are provided in the Dear Customer Letter included with your Development Kit.
- If you purchased a Development Kit, instructions to obtain a LAC and a permanent Wind River Host Tools License are provided in the Dear Customer Letter included with your Development Kit.

Contact your Intel representative for assistance.

4.3.3 Linux Packages Required for Intelligent Device Platform XT 2.0 Installation

Additional Linux packages must be installed before the Host System is ready for Wind River Intelligent Device Platform XT software. The complete list of packages is in the *Wind River Intelligent Device Platform Release Notes 2.0*.

For a system running Ubuntu 12.04, run the following command to install the necessary packages:

```
sudo apt-get install sed wget cvs subversion git-core coreutils unzip
texi2html texinfo libsdl1.2-dev docbook-utils fop gawk python-
pysqlite2 diffstat help2man make gcc build-essential xsltproc g++
desktop-file-utils chrpath libgl1-mesa-dev libglu1-mesa-dev mercurial
autoconf automake groff libtool xterm libxml-parser-perl bison
```

4.4 Installing Host Tools Base Packages

Follow the steps below to install Wind River Linux 5.0.1, Wind River Intelligent Device Platform 2.0 XT, and Wind River Workbench 3.3.5 on the Host System.

1. Plug the provided USB flash drive into the Host System.
2. Using the GUI or command line, copy the Installer file from the USB flash drive `install` folder to an `Installer` folder on the Host System. The Installer file is named `DVD-R180785.1-1-00.zip` or similar. Use the following command:

   ```
   cp /media/AtomGatewaySW/install/DVD-R180785.1-1-00.zip \
      $HOME/Installer/
   ```

3. Using the GUI or command line, unzip the Installer zip file. Use the following commands:

   ```
   cd $HOME/Installer
   unzip DVD*.zip -d ./
   ```

4. In the unzipped `DVD-R180785.1-1-00` folder start the `setup_linux` executable. An Installer window will open. Use the following commands:

   ```
   cd DVD-R180785.1-1-00
   ./setup_linux
   ```

5. On the Installer popup window, select the Wind River Host Tools installation location. Use the **Browse** button to select the `WindRiver` folder you created earlier, or type in the complete path to that folder.
6. On the Installer page titled **Online Update Settings** keep the check-marked defaults.
7. On the Installer page titled **Online Update Settings**, if your network requires a proxy server for access to the internet, do the following:
   a) Mark the box titled **Connect to the internet using a proxy server**.
   b) Provide the proxy server information for your network.
8. On the Installer page titled **Install Now or Create a Local Download** keep the default **Install** checkbox enabled. (Local download is only for administrators planning multiple installs of the product.)
9. On the Installer page titled **Choose Activation Type** do one of the following:
   a) If you received a permanent *License Activation File* with the purchase of the Development Kit, do the following:
      i) Make a directory called `license` in the directory `$HOME/WindRiver`
      ii) Copy the license activation file into the directory `$HOME/WindRiver/license`
      iii) Select **Permanent activation** and enter the full path and filename of the license file, or use the **Browse** button to find it using the GUI.
   b) For temporary activation, select **Temporary activation**. A *License Activation Code* will be asked for later. Use the one provided in the Dear Customer Letter that was included in the Development Kit.

10. On the Installer page titled **Host Information**, select the Ethernet adapter that will be used for downloading the Host tools from the internet.
11. On the Installer page titled **User Information**, do the following:
    a) If you selected **Temporary activation** earlier, enter the temporary *License Authentication Code* provided in the Dear Customer Letter that was included in the Development Kit.
    b) Enter the required user information.
12. On the Installer page titled **Choose Installation Filters**, select **Intel** only.
13. On the Installer page titled **Select Products**, keep the default selections.
14. When the **License Agreement** window pops up, click the **I ACCEPT** circle to accept the standard license agreement and the product evaluation license agreement for Wind River Linux and IDP.
15. On the Installer page titled **Confirm and Install**, click Install.

Note: The download and install can take a few hours depending on the speed of your Internet connection.

16. Successful installation will end with a message that says: `Media Installation Completed`. Click **Finish** to exit the Installer window.
17. If you encounter any issues during installation, provide the `$HOME/WindRiver/setup.log` and `setup_install_failure.log` files to the Intel support contact.

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5 Building Intelligent Device Platform XT Runtime Software

This section describes how to use the Host System to build an Intelligent Device Platform XT runtime file system and operating system that can be installed on the Target System.

5.1 Build Requirements

The build process requires two folders to be created on your host system at the same level as the `WindRiver` and `Installer` folders:

- `Project` - The project folder in which you will develop your Intelligent Device Platform XT-based solution. The build requires approximately 40 GB of free space in this folder.
- `Project/build-cache` - The folder where the build cache is stored. Using a build cache can significantly reduce the time required to build the project after incremental changes are made. The build requires approximately 10 GB of free space in this folder.

Create the folders `Project` and `build-cache` before proceeding. You can use different folder names. Use the commands:

```
cd $HOME
mkdir Project
mkdir Project/build-cache
```

5.2 Wind River Linux Configure Command

1. Go to the `Project` folder. Use the command:

   ```
   cd $HOME/Project
   ```

2. Use the `configure` command to configure the Intelligent Device Platform XT build. A typical `configure` command looks like this:

   ```
   ../WindRiver/wrlinux-5/wrlinux/configure \
     --enable-board=intel-atom-baytrail \
     --enable-kernel=standard \
     --enable-rootfs=glibc-idp \
     --enable-addons=wr-idp \
     --enable-parallel-pkgbuilds=4 \
     --enable-jobs=50 \
     --enable-reconfig \
     --enable-bootimage=ext3,hdd \
     --enable-rm-oldimgs=yes \
     --with-layer=wr-wks-oneagent-tr069,wr-ieee11073,\
   wr-mcafee,wr-wks-oneagent-oma-dm-ia,\
   ```

```
wr-intel-support,wr-srm \
  --with-template=feature/online_updates,feature/pptp_vpn,\
feature/pppoe,feature/idp_devkit_full,feature/bluetooth,\
feature/recovery,feature/upnp,feature/opc,\
feature/openjdk-bin,feature/ipsec_vpn,feature/mqtt,\
feature/l2tp,feature/webif,feature/firewall,\
feature/vlan,feature/intel-wilkinpeak2  \
  --with-sstate-dir=./build-cache
```

Note: The '\' symbols in the configure command above tell the Linux command line interpreter to ignore the following return or newline. The configure command does not need the '\' symbols if it the command is entered entirely on one line.

The configure command may take a few minutes to complete.

5.3 Building Runtime System Software

After the `configure` command completes, build the Target System runtime operating system. Issue the following command from the `Project` folder:

```
make fs
```

This builds the Linux runtime system and generates the runtime components that can be installed on your target system. The first time a target runtime system is built, it can take several hours depending on your host system's specifications.

There are potentially many ways in which the target root file system and boot procedure could be organized. In this release, the only supported method is based on the above configuration line and default Intelligent Device Platform XT platform settings.

5.4 Generating Bootable USB Flash Drive with Target System OS

This step obtains the Target System runtime operating system that was generated with `make fs`. You will put this file onto a USB flash drive.

Warning: These steps will overwrite all contents on the USB flash drive. The USB flash drive must have a capacity of at least 4 GB.

Note: When the configure switch `--with-template=feature/recovery` is used, then the Intelligent Device Platform XT build system automatically puts the root file system files (tarred and zipped) in the directory `Project/export`. The target root file system files are zipped and tarred into `Project/export/intel-atom-baytrail-glibc-idp-standard-dist-srm.tar.bz2`

From the `Project` directory, run the following commands, substituting the correct drive designation for the USB flash drive for `/dev/sd?`

```
sudo ./deploy.sh \
-d /dev/sd? -y –u -g ./grub-0.97 –b intel-atom-baytrail \
-f export/intel-atom-baytrail-glibc-idp-standard-dist-
srm.tar.bz2
```

Note: Linux may ask you for your user password when using `sudo` to execute the command in super user mode.

When `deploy.sh` completes, the target system can boot from the USB flash drive.

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6 Installing Intelligent Device Platform XT Runtime on Target System

The Intelligent Device Platform XT runtime software comes pre-loaded on the Target System.

This section describes how to install a new build of the runtime software, such as the runtime in the preceding chapter.

The runtime software can be booted from the provided USB flash drive. However, Intel recommends installing the runtime components on the Target System hard drive according to the instructions below.

Note: The runtime software build that is pre-loaded on the Target System has IMA whitelisting disabled. This allows changes to the system during development. The feature should be enabled on final deployed systems to improve security.

Note: Before proceeding, ensure the Target System setup in Section 2 is complete.

6.1 Setting Default Boot Device in BIOS

To boot from a USB flash drive, you must set it as the highest priority boot option in the BIOS.

1. Insert the USB flash drive created in Section 5 into the Target System.
2. Power on the Target System.
3. Press the Escape (**Esc**) key repeatedly during boot up until the BIOS menu displays.
4. Use the left and right arrow keys to navigate to the **Boot** Tab of the BIOS menu.
5. Use the up and down arrow keys to navigate to the **Hard Drive BBS Priorities**. Press **Enter**.
6. Use the arrow keys to navigate to **Boot Option #1**. Press **Enter**.
7. In the **Boot Option #1 pop-up window**, use the arrow keys to select the USB flash drive. Press **Enter**.
8. Make sure the **Boot Option #1** is now listed as the USB flash drive.
9. Press **F4** to Save Changes and Exit. Select **Yes**. Press **Enter**.
10. When the system has booted, login as user `root` using password `root`

6.2 Turning off Integrity Management on USB Flash Drive File System

Warning: Integrity Management must be turned off before the operating system will allow you to install a disk image to the Target System hard drive.

Warning: The `vim` editor referenced in these steps is included with the USB flash drive file system.

1. Open the `menu.lst` file with the vim editor:

   ```
   vim /boot/grub/menu.lst
   ```

2. Use the arrow keys to go to the end of the `kernel` line at the end of the file.
3. Begin insert editing mode by typing `i`.
4. Add `ima_appraise=off` to the end of the line.
5. Exit insert edit mode by pressing the Esc key.
6. The kernel line should look similar to this: (all on one line)

   ```
   kernel /boot/bzImage root=UUID=<uuid-number> rw,noatime\
      rootwait reboot=bios ima_appraise=off
   ```

7. Save (write) the file and quit vim, using the command:

   ```
   :wq
   ```

6.3 Installing Intelligent Device Platform (IDP) XT Runtime to the Target System Hard Disk

Reboot the Target System from the USB flash drive, and install the new Intelligent Device Platform XT Runtime onto the Target System hard drive.

1. Reboot the Target System from the USB flash drive using the following command:

   ```
   reboot
   ```

2. Login as user `root` using password `root`.
3. Make sure the `.bz2` target system image file you wish to install is in the `/opt` directory of the USB Flash Drive. If it is not, copy it into that directory.
4. From the Target System, install the Intelligent Device Platform XT from the USB flash drive to the Target System hard disk, using the command:

   ```
   tgt=/dev/sda /sbin/reset_media
   ```

   Say **yes** when prompted to "Restore the boot media to its factory defaults." This process will take several minutes.
5. When the copy has finished, shutdown with the command:

   ```
   shutdown –h now
   ```

6. Wait for the **Power** button light to turn off.
7. Remove the USB flash drive.
8. Press the **Power** button to power-on the board.
9. Login as user `root` using password `root`. The Target System is ready to use.

§

7 Errata

Note: The following errata on this version of the platform are shown in Table 2.

Table 2. Target System Errata

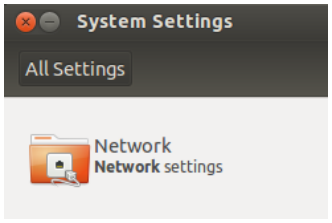
Errata Description	Workaround
Any Target System runtime image created with Wind River Linux 5.0.1 and Wind River Intelligent Device Platform XT version 2.0.1 or higher will only work with the 32-bit version of the AMI Aptio BIOS.	The 32-bit version of the AMI Aptio BIOS and tools to load it onto the Target System are available on the Intel Business Link (IBL) as document #547402 - *Intel® Gateway Solutions for the Internet of Things - DK300 Series - Early Access Kit - 32-bit BIOS Update*. Instructions to reprogram the Target System to the 32-bit BIOS are in Chapter 3, Installing a 32-Bit BIOS on the Target System.
The Serial (COM) Port is connected internally to the RS-232 connector. The RS-485 Serial Port is not available by default.	To connect the internal RS-485 port to the external Serial (COM) port, open the chassis and change the internal cable to the RS-485 connector.
In some early shipments of the development kit, the Serial (COM) Port is not working.	Contact your Intel support representative for rework or return instructions.
The multi-WAN service checks the Ethernet link status every few minutes and outputs "link down" and "link is not ready" status messages.	Stop the multi-WAN service with the command: `service multiwan stop`
The Ethernet port used for internet access on the Host System must be named eth0 for the Installer to work properly.	See instructions below regarding how to check and change the port naming.
Standard HDMI Port cannot be used when the Serial (COM) Port is used due to physical conflict with the cable connectors.	Use the micro-HDMI connector to attach an HDMI monitor.
When the Target System HDMI output is connected directly to an HDMI monitor, the HDMI video output may stop partway through Target System boot-up.	Connect the Target System to a DVI-D monitor using an HDMI to DVI-D adapter.

7.1 Checking and Changing Ethernet Port Name to eth0 for Wind River Host Tools Installer

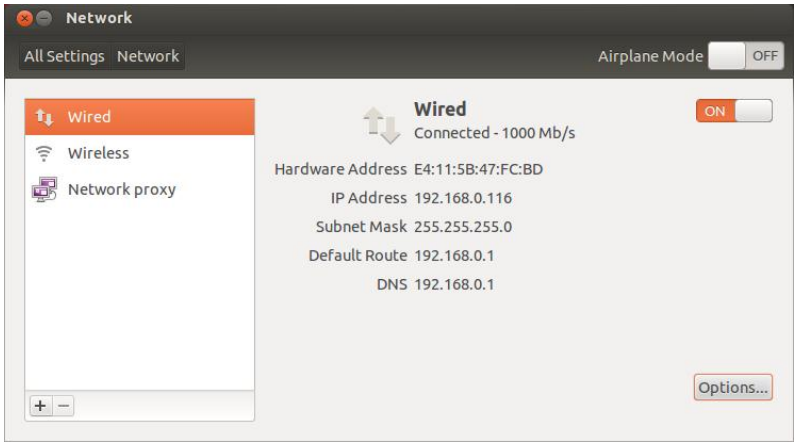
Use the following steps to check the name used for the Ethernet port.

Note: These instructions are for Ubuntu Linux. The procedure for other versions of Linux will differ somewhat.

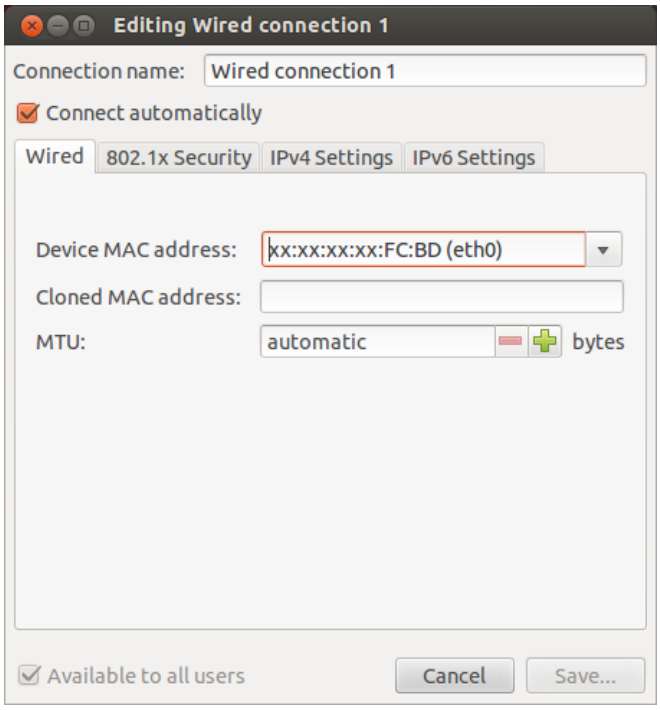
1. Open the System Settings -> Network tool.



2. In the **Network** settings window, select the network interface that will be used for internet access during installation.
3. Click the **Options** button.



The **Editing** Wired connection 1 box opens. In the **Wired** tab, the **Device MAC address** of the network connection is listed. At the end of the address, the name of the connection is listed in parentheses – usually as (eth*x*).



4. If the name of the connection is **eth0**, then no further action is necessary. You can skip the remaining steps.
5. If the name of the connection is not eth0, write down the port name.
6. Navigate to folder `/etc/udev/rules.d/` in the operating system files.
7. Open the file with a name that ends in `net.rules` and that includes the rules for the Ethernet port you will use for internet access.
8. Look for the name of the port that you wrote down.
9. Change the name of the port to **eth0**. (**0** is a numeric zero, not the letter O). After making the change the line looks like this:

   ```
   NAME=”eth0”
   ```

10. Save the file `…net.rules`.
11. Reboot the system.
12. Repeat steps 1 – 3 to confirm the port name is **eth0**.

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