Note: This presentation was made and provided by Intel during the Intel Embedded Education & Research Summit in March 2015

Intel Edison Workshop

Setting up Edison Step by Step
Our Workshop Goal:

1. Unbox Edison
2. Learn how to connect and configure Edison board:
   Serial connection
   Name /WiFi set up/Password
3. Install drivers (New Windows Installer and manual install)
4. Intel Development IoT Kit
5. Install IDEs
6. Run example code
Intel® Edison Arduino Expansion Board Assembly

**Microswitch and USB Ports Details**

The slider switches between USB host mode and USB device mode.

**Device mode:** The switch is toggled down and a micro-USB cable can be used to turn the Intel® Edison into a computer peripheral. Device mode allows you to do such things as: program the board over USB, or mount the onboard flash memory like a disk drive.

**Host mode:** The switch is toggled up and USB peripherals with a standard-sized USB cable (such as mice, keyboards, etc) can be plugged into the Intel® Edison. USB host mode requires the use of an external power adapter.

The Intel Edison board has three USB ports:

The **middle port** (Micro A type) is used for the following:

- Power through USB
- Ethernet over USB
- Uploading Arduino sketches
- Updating the firmware by using the board as a storage device, like a flash drive

The **edge port** (Micro A type) is used to create a terminal connection by serial over USB only.
Power Through DC Plug

If you are going to use more power intensive features such as Wi-Fi, a servo motor, or an Arduino shield, use a DC power supply in addition to the device mode micro-USB cable.

1. Plug in a 7 to 15 VDC input DC power supply to the barrel connector. (This DC power supply could be plugged into the wall, or be part of a battery pack.)
Use Device manager to find out what COM port used by Edison serial

Putty configuration
At the login prompt, type

```
root
```

# configure_edison --help
Foky (Yocto Project Reference Distro) 1.6.1 edison-3 ttyWFD2

edison-3 login: P$sw0rd
Password:
Login incorrect

edison-3 login: root
Password:
root@edison-3:~# configure_edison --help
usage: configure_edison [-h] [--server]
    |--setup | --name | --password | --wifi
    |--showWiFiIP | --version | --latest-version | --upgrade
    | --disableOneTimeSetup | --enableOneTimeSetup | --flash <version> [release name> ...]
    | --flashFile <image-file> | --showNames

optional arguments:
    -h, --help            show this help message and exit
    --server              Starts the server (testing only)
    --setup               Goes through changing the device name, password, and wifi options
    --name                Changes the device name
    --password            Changes the device password
    --wifi                Changes the wifi options
    --showWiFiIP          IP address associated with the wireless interface
    --version             Gets the current firmware version
    --latest-version      Gets the latest firmware version
    --upgrade             Downloads the latest firmware
    --disableOneTimeSetup Disable one-time setup and WiFi access point
    --enableOneTimeSetup  Enable one-time setup and WiFi access point
    --flash <version>     [release name> ...]
    Downloads and flashes an image
    --flashFile <image-file>
    Flashes the given image (.zip).
    --showNames           Show device name and SSID

root@edison-3:~#
# configure_edison --setup
The new release offers a number of enhancements, bug fixes and improved usability including:

1. Improved Eclipse C/C++ new project creation, templates and samples to get started quickly
2. Support for 70+ sensors via UPM libraries
3. Guided Windows* installer for Intel® Edison setup and configuration
4. IO library support for Intel Edison mini breakout boards
5. Improved documentation including a Developer Resources page for Intel® Edison and guides for getting started with Wi-Fi* and Bluetooth
6. Wyliodrin* (visual programming) support for Intel Edison

IoT Development Kit officially released 3/5/2015
Intel® IoT Developer Kit v1.0

Hardware components + Software image + Support for various IDEs + Cloud services + Additional tools and solutions = helpful Linux tools (GCC tool chain, perf, oProfile, etc.), required drivers (WiFi, Bluetooth, etc.), useful API libraries, and daemons like LighttpD and Node.js.

For C/C++ = For java, node.js, .html5 = For Arduino sketches = For Visual Programming

Intel IoT Analytics includes capabilities for data collection, storage, visualization, and analysis of sensor data. Free service.

= Intel System Studio for IoT + Wind River VxWorks* for Makers
# IoT Target audience and developer path

<table>
<thead>
<tr>
<th>Arduino Developer</th>
<th>Visual Programming</th>
<th>JavaScript Developer</th>
<th>C / C++ Developer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yocto Linux</td>
<td>Wyliodrin</td>
<td>Yocto Linux</td>
<td>Yocto Linux, Windows, VxWorks, WR Linux</td>
</tr>
<tr>
<td>SPI</td>
<td>Web</td>
<td>XDK</td>
<td>Eclipse</td>
</tr>
<tr>
<td>Arduino* IDE</td>
<td>Visual Python</td>
<td>Win/ Mac/ Linux</td>
<td>Win/ Mac / Linux</td>
</tr>
<tr>
<td>Win / Mac/ Linux*</td>
<td></td>
<td>JavaScript</td>
<td>C/ C++</td>
</tr>
<tr>
<td>Arduino Sketch</td>
<td></td>
<td>(Node JS)</td>
<td>Quark, Atom, Core, Xeon</td>
</tr>
<tr>
<td>C++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quark (Galileo,</td>
<td></td>
<td>Quark (Galileo,</td>
<td></td>
</tr>
<tr>
<td>Edison)</td>
<td></td>
<td>Edison)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intel® XDK IoT</td>
<td></td>
</tr>
<tr>
<td>Arduino Libraries</td>
<td>Wyliodrin*</td>
<td>Intel® XDK IoT</td>
<td>Intel® System Studio Wind River* Workbench</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Edition</td>
<td></td>
</tr>
</tbody>
</table>
Arduino impact in maker space

• **Before**
  - Learn, buy, solder together components (caps, controllers, chips, regulators etc)
  - Learn complex toolchains, buy specialized hardware

• **After**
  - Open sourced HW & SW
  - Huge online community & ecosystem
  - Radically simplified development
Wyliodrin* Visual Programming
(for Edison and Galileo)

Select your peripheral/sensor

Simply drag and drop ‘blocks’

Tool automatically creates Javascript code

www.wyliodrin.com/galileo
Intel® XDK:

- Rapidly growing developer base
- Every 33 sec: a developer builds an app using XDK
- >10M: app downloads, built using XDK
Design companion app UI in HTML5 for the IoT device. Control via phone/tablet/browser. Program the device (Edison or Galileo) using Node.JS. Visualize & analyze data generated from a system of IoT devices.
Deliver next-gen IoT systems and applications

- Accelerate time to market
- Strengthen System Reliability
- Boost power efficiency and performance

- Software tools to Build, Debug and Tune IoT systems

IoT Development Kit officially released 3/5/2015

Download Software for the Intel® IoT Developer Kit v1.0

**Intel® Edison Updates**
The dev kit libraries are already available in the operating system distributed with the Intel® Edison development board. If you already followed the latest Intel® Edison Getting Started guide, you already have the latest versions.

A Windows® 64-bit installation program is now available for the Intel Edison development board.

Download the installation program

[Windows® 64-bit (21MB) ▶](#)

**Intel® Galileo Board (Linux Boot Image)**
Yocto 1.6 embedded Linux-based OS and our API libraries, useful daemons like LightPD and Node.js.

**Note:** Image must be copied to an SD card and is required for using development environments.

Instructions for: Windows®, Mac OS®, and Linux®

Download (200MB) ▶
IoT Development Kit officially released 3/5/2015
Flashing Edison (step-by-step):

Important note: if you Edison is brand new from factory or you need to reflash image due to corruption use this procedure

1. Unbox, connect Edison to Arduino break out board
2. Connect board with USB to PC, power-on board
3. Serial connect to board
4. Format Edison drive to FAT32 (full format) from PC
5. Copy latest Yokto image to Edison drive (http://www.intel.com/support/edison/sb/CS-035180.htm)
6. In serial console: `# reboot ota`
7. After reboot verify that image was flashed `# configure_edison --version` (should be 120 or better)
8. In serial console: `#opkg update`
   `#opkg upgrade`
Useful links

Setting up Edison HW
https://software.intel.com/en-us/iot/getting-started
https://software.intel.com/en-us/iot/getting-started

Starter Kit  https://software.intel.com/en-us/iot/devkit
IDE (software) download  https://software.intel.com/en-us/iot/downloads

Other Useful Links:
Developer Zone IoT  https://software.intel.com/en-us/iot
Makers forum  https://communities.intel.com/community/makers
Edison Documents and guides:  http://www.intel.com/support/maker/edison.htm#documents
Edison mini breakout board documentation:  http://download.intel.com/support/edison/sb/edisonbreakout_hg_331190006.pdf

Sparkfun Edison Blocks  https://www.sparkfun.com/categories/272
Debian for Edison and Galileo (ubilinux)  http://www.emutexlabs.com/ubilinux