

Yocto Project* Setup

Getting Started Guide

August 2014



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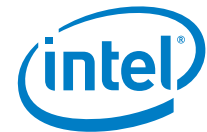
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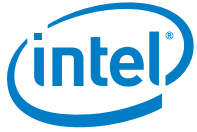
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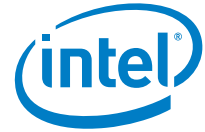
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Revision History

Date	Revision	Description
June 2014	001	Initial release.
August 2014	002	Added Section 1.4, Reference Documents .

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1 Introduction

1.1 Objective

This document provides the required information for setting up your build machine to correctly build a Yocto Project* Intel BSP reference OS image. Some of the steps below can be skipped if your build machine is not behind a firewall/network proxy. The instructions in this document use Ubuntu* 12.03 64-bit as the build machine. The steps below will work for Fedora* or other distros, but you must adapt the steps to use the software package tool for a Linux* distro choice.

1.2 OS Selection for the Development Machine

The development machine is the machine that you use to build a software distro or extend a distro from Yocto Project* reference distro. When you migrate across different Yocto Project* releases, it is important to use the sanity-tested OS for your development.

For the list of supported OS distros for your build machine, refer to the "SANITY_TESTED_DISTROS" list on the following Yocto Project* link:

<http://git.yoctoproject.org/cgi/cgit.cgi/poky/tree/meta-yocto/conf/distro/poky.conf?h=daisy>

Note: Change the Yocto Project* code name "daisy" accordingly if you are interested in another revision.

- Yocto Project* version 1.6 – daisy
- Yocto Project* version 1.5 – dora
- Yocto Project* version 1.4 - dylan

IMPORTANT

It is important to use the sanity tested OS on your development machine to ensure that the tool chains that come with the installed OS are compatible with the tool chain used to build/create/extend the whole Yocto Project* poky distribution.



1.3 Terminology

Table 1. Terminology

Term	Description
BSP	Board Support Package
Distro	PackageDistro – distribution (refers to a Linux* distribution. e.g., Fedora*, Ubuntu*, Suse*)
Repo	Repository - a collection of files that may or not may have version control capability

1.4 Reference Documents

Table 2. Reference Documents

Document	Document Number/Location
Yocto Project* Archived Documentation	Archived documentation

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2 Environment Setup

2.1 Edit the ssh Configuration File for the Proxy Settings

1. Open the config file.

```
$ vi /home/<user-name>/.ssh/config
```
2. Add the following lines to .ssh/config.

```
host *  
ProxyCommand connect-proxy -s %h %p
```

2.2 Edit/Create the git_proxy_command File

To use the proxy setting, edit or create the git_proxy_command file by performing the following steps:

1. Open the git_proxy_command file.

```
$ vi /usr/bin/git_proxy_command
```
2. Add the following lines to the git_proxy_command.

```
#!/bin/shexec  
socat stdio SOCKS:<proxy-domain-name>:$1:$2
```
3. Make git_proxy_command executables.

```
$ sudo chmod +x /usr/bin/git_proxy_command
```
4. Export the following global variable in your environment. You can also add this to ~/.bashrc file or /etc/environment file.
5. Apply the variable to the current sessions

```
$ export GIT_PROXY_COMMAND=/usr/bin/git_proxy_command
```



2.3 Create the Environment File

Before creating the environment file, you must obtain the proxy information and your IP range information. You may need to change this to your local site proxy for improved speed.

1. To retrieve the IP range information, issue the following command:

```
$ ifconfig
```

Figure 1 shows the `ifconfig` command output.

Figure 1. `ifconfig` Command Output

```
eth0      Link encap:Ethernet  HWaddr 00:0c:29:a1:7b:2e
          inet addr:172.30.240.66  Bcast:172.30.241.255  Mask:255.255.254.0
          inet6 addr: fe80::20c:29ff:fea1:7b2e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:267123 errors:0 dropped:0 overruns:0 frame:0
          TX packets:136469 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:140780134 (140.7 MB)  TX bytes:144358687 (144.3 MB)

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:10922 errors:0 dropped:0 overruns:0 frame:0
          TX packets:10922 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1200699 (1.2 MB)  TX bytes:1200699 (1.2 MB)
```

IMPORTANT

Make a note of the attribute of `inet addr` on `eth0`. This value is required in the following `HTTP_DIRECT` environment variable. In this example, `inet addr` shows a value of `172.x.x.x`, which means the IP range is `172.0.0.0`.

2. Open the environment file.

```
$ vi /etc/environment
```




3. Add the following lines to the environment file:

```
GIT_PROXY_COMMAND=/usr/bin/git_proxy_command

# Your Company proxy settings
# upper case exports
export SOCKS_SERVER=<proxy-domain-name>:<port-number>
export HTTP_PROXY=<proxy-domain-name>:<port-number>
# This HTTP_DIRECT will be effective on my development only
export HTTP_DIRECT=localhost,127.0.0.0/8,<DNS>,172.0.0.0/8
export HTTPS_PROXY=$HTTP_PROXY
export FTP_PROXY=$HTTP_PROXY
export SOCKS_DIRECT=$HTTP_DIRECT
export NO_PROXY=$HTTP_DIRECT
# lower case exports
export socks_server=$SOCKS_SERVER
export http_proxy=$HTTP_PROXY
export https_proxy=$HTTPS_PROXY
export ftp_proxy=$FTP_PROXY
export http_direct=$HTTP_DIRECT
export socks_direct=$SOCKS_DIRECT
export no_proxy=$NO_PROXY
```

2.4 Establish a Symbolic Link

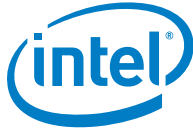
Enter the following lines to establish a symbolic link:

```
$ ls -al /bin/sh
$ sudo rm /bin/sh
$ sudo ln -s /bin/bash /bin/sh
```

2.5 Reboot Your System

It is important to reboot your system at this time to make sure all the environment changes performed in the previous steps take effect.

```
$ sudo reboot
```



2.6 Install the Necessary Tool Chain

Enter the following lines to install the necessary tool chain:

```
$ sudo apt-get -y install socat gawk wget git-core diffstat
unzip texinfo build-essential chrpath libsdl1.2-dev xterm
libncurses5-dev
$ sudo apt-get -y install connect-proxy
```

2.7 (Optional): If You Plan To Become a Contributor

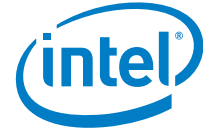
1. Open the gitconfig file.

```
Vi ~/.gitconfig
```

2. Add the following lines to gitconfig.

```
[core]
    editor = vim
[user]
    name = <your-appeared-full-name>
    email = <your-email-address >
[color]
    ui = auto
    interactive
[sendemail]
    smtpserver = <smtp-domain-name>
    signedoffcc = false
    suppresscc = all
    chainreplyto = false
    assume8bitEncoding = utf-8
    from = <your-email-address>
```

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3 Source Download

In general there are two methods for obtaining Yocto Project* Poky and Meta-Intel layers.

Method 1 Use `git` to clone “poky” and “meta-intel” repo into your local build machine.

Method 2 Download the package for your target platform from the [Yocto Project Download Page](#).

If you intend to become a Yocto Project* contributor, Intel recommends the first method. This section focuses on the `git clone` method.

If you just want to build the image with little or no customization, the second method is sufficient. To download the Yocto Project* BSP recipe package from the Yocto Project* Download Site, do the following:

1. Obtain the poky package and the meta-intel BSP package of your choice.
Make sure both packages are the same Yocto Project* version, as the versions cannot be mixed.
2. Decompress the downloaded packages accordingly to the example directory structure shown below.
3. Skip Section 3.1 and go directly to [Section 3.2](#).

Examples of the directory structure used in this document:

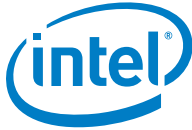
- `~/development/poky`
- `~/development/poky/meta-intel`

3.1 Download (Clone) the poky and meta-intel Repos

Yocto Project* is a collection of `git` repos. At a minimum, to build a Yocto Project* Intel BSP, you must `git clone` the following repos to your local build machine:

- `git.yoctoproject.org/poky.git`
- `git.yoctoproject.org/meta-intel.git`

These `git` repos have many `git` branches; for example, Yocto Project* version 1.5 is known as “dora” and Yocto Project* version 1.6 is known as “daisy.” The `git` can also be viewed over web from the [Yocto Project Source Repositories](#).



Note: In the following steps, make sure both git repos are check-out with the same branch. For example, you should have both poky and meta-intel on "daisy" and not poky on "dora" and meta-intel on "daisy."

Tip: You can view the available branch by using `git branch -a` after you have cloned the git repo to your local build machine.

Enter the following lines to download the poky and meta-intel repos:

```
# 'cd' to your development folder of your choice. For example:
$ cd ~/
$ mkdir -p development/
$ cd ~/development/

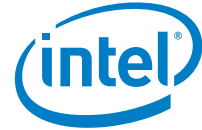
# Clone a copy of poky git locally and check-out to "daisy"
branch.
$ git clone git://git.yoctoproject.org/poky.git -b daisy
$ cd poky
$ git reset <poky-commit-ID>

# Clone a copy of meta-intel git locally and check-out to
"daisy" branch.
$ git clone git://git.yoctoproject.org/meta-intel.git -b daisy
$ cd meta-intel
$ git reset <meta-intel-commit-ID>$ cd meta-intel
```

Refer to the [Yocto Project Download Page](#) to obtain the poky and meta-intel commit-ID if you want to set both poky and meta-intel repo to follow the versions that are released there. If not, you can skip the `git reset` step mentioned above.

Intel encourages using this method as it has the following advantages:

- It provides the latest source, which will contain fixes or new feature.
- It allows you to keep track of the latest developments for your targeted meta-`<bsp>`.
- It helps prepare you to become familiar with open source development and to become a contributor.



3.2 Download Packages from the Yocto Project* Download Site

The following steps are general guidelines for downloading packages from the Yocto Project* download site to your target platform.

1. Go to <https://www.yoctoproject.org/downloads>.
2. Choose a Yocto Project* version from “Yocto Project*” and download it.
3. Choose a BSP package version from “BSP” section and download it.
4. Untar both of the downloaded packages.

Example:

```
# 'cd' to your development folder of your choice. For example:
$ cd ~/
$ mkdir -p development/
$ cd ~/development/

# In this example I choose “Yocto Project* 1.6” and “Intel
Atom Processor E38XX ValleyIsland”
$ wget http://downloads.yoctoproject.org/releases/yocto/yocto-1.6/poky-daisy-
11.0.0.tar.bz2
$ tar -jxvf poky-daisy-11.0.0.tar.bz2
$ cd poky-daisy-11.0.0
$ wget http://downloads.yoctoproject.org/releases/yocto/yocto-
1.4.2/machines/valleyisland/meta-valleyisland-dylan-
1.4.2.tar.bz2
$ tar -jxvf meta-valleyisland-dylan-1.4.2
```

By using this download package method, you can start building images in your development machine, as described in the README file located at `/poky-<version>/meta-<bsp>-<version>/meta-intel/meta-<bsp>/`.

When you are ready to make a contribution, you can switch to Method 1 described in [Section 3.1](#).



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