Advantech General FAQ

How to change ubuntu specific kernel for quick cross test

Applicable model list	All
Model name version	N/A
BIOS Version	N/A

Description:

Products sometimes behave different with different Kernel version… customer may ask if the symptom belongs product itself or kernel changes. This note will show you how to install & change specific kernels on ubuntu 16.04.1.

Required

1. A bootable ubuntu environment
2. Network to get Internet
3. Source for downloading kernel in different versions
   - https://packages.ubuntu.com/xenial/kernel/

Methodology – 1 :

1. Check how many kernels were installed in your ubuntu (here got four kernel versions)

   root@ubuntu:~# dpkg --list | grep linux-image
   ii   linux-image-4.4.0-108-generic   4.4.0-108.131
   amd64   Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   ii   linux-image-4.4.0-112-generic   4.4.0-112.135
   amd64   Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   ii   linux-image-4.4.0-116-generic   4.4.0-116.140
   amd64   Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   ii   linux-image-4.4.0-119-generic   4.4.0-119.143
   amd64   Linux kernel image for version 4.4.0 on 64 bit x86 SMP

2. Find specific kernel file from the source link, here takes "linux-image-4.4.0-124-generic" as an example.

   link for 4.4.0-124-generic :
   http://security.ubuntu.com/ubuntu/pool/main/l/linux/linux-image-4.4.0-124-generic_4.4.0-124.148_amd64.deb

3. Download *.deb

    root@ubuntu:~# wget
    http://security.ubuntu.com/ubuntu/pool/main/l/linux/linux-image-4.4.0-124-generic_4.4.0-124.
    148_amd64.deb
    --2018-10-22 00:59:59--
    http://security.ubuntu.com/ubuntu/pool/main/l/linux/linux-image-4.4.0-124-generic_4.4.0-124.
    148_amd64.deb
    Resolving security.ubuntu.com (security.ubuntu.com)... 91.189.88.161, 91.189.91.26,
    91.189.91.23, …
    Connecting to security.ubuntu.com (security.ubuntu.com)|91.189.88.161|:80... connected.
    HTTP request sent, awaiting response... 200 OK
    Length: 22082498 (21M) [application/x-debian-package]
    Saving to: 'linux-image-4.4.0-124-generic_4.4.0-124.148_amd64.deb'

    linux-image-4.4.0-124-generic_4.4.0
    100%[===>]
    21.06M 4.89MB/s   in 5.5s

    2018-10-22 01:00:05 (3.86 MB/s) -
    'linux-image-4.4.0-124-generic_4.4.0-124.148_amd64.deb' saved [22082498/22082498]

4. Install kernel

    root@ubuntu:~# dpkg -i linux-image-4.4.0-124-generic_4.4.0-124.148_amd64.deb
    (Reading database … 178739 files and directories currently installed.)
    Preparing to unpack linux-image-4.4.0-124-generic_4.4.0-124.148_amd64.deb …
    Examining /etc/kernel/preinst.d/
    run-parts: executing /etc/kernel/preinst.d/intel-microcode 4.4.0-124-generic
    /boot/vmlinuz-4.4.0-124-generic
    Done.
    Unpacking linux-image-4.4.0-124-generic (4.4.0-124.148) over (4.4.0-124.148) …
    ~~
    ~~

5. Check installed kernel as step 1

    root@ubuntu:~# dpkg --list | grep linux-image
    ii linux-image-4.4.0-108-generic   4.4.0-108.131
    amd64   Linux kernel image for version 4.4.0 on 64 bit x86 SMP

```
ii  linux-image-4.4.0-112-generic                    4.4.0-112.135
amd64        Linux kernel image for version 4.4.0 on 64 bit x86 SMP
ii  linux-image-4.4.0-116-generic                    4.4.0-116.140
amd64        Linux kernel image for version 4.4.0 on 64 bit x86 SMP
ii  linux-image-4.4.0-119-generic                    4.4.0-119.143
amd64        Linux kernel image for version 4.4.0 on 64 bit x86 SMP
ii  linux-image-4.4.0-124-generic
```

6. Reboot and select kernel 4.4.0-124 to boot in Advanced menu.

```
                GNU GRUB   version 2.02~beta2-36ubuntu3.18
      **************************************************************
      **Ubuntu, with Linux 4.4.0-124-generic                      *
      * Ubuntu, with Linux 4.4.0-124-generic (recovery mode)      *
      * Ubuntu, with Linux 4.4.0-119-generic                      *
      * Ubuntu, with Linux 4.4.0-119-generic (recovery mode)      *
      * Ubuntu, with Linux 4.4.0-116-generic                      *
      * Ubuntu, with Linux 4.4.0-116-generic (recovery mode)      *
      * Ubuntu, with Linux 4.4.0-112-generic                      *
      * Ubuntu, with Linux 4.4.0-112-generic (recovery mode)      *
      * Ubuntu, with Linux 4.4.0-108-generic                      *
      * Ubuntu, with Linux 4.4.0-108-generic (recovery mode)      *
      **************************************************************
```

Methodology –2:

1. To find out the latest version of Linux kernel type:

   root@ubuntu:~# apt-cache search linux-generic

   simple output //
   linux-image-4.4.0-101-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-103-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-104-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-108-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-109-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-112-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-116-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
   linux-image-4.4.0-119-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP

linux-image-4.4.0-121-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP

linux-image-4.4.0-122-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP

linux-image-4.4.0-124-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP

linux-image-4.4.0-127-generic - Linux kernel image for version 4.4.0 on 64 bit x86 SMP

2. Select one version to update

   root@ubuntu:~# apt install linux-image-4.4.0-124-generic

3. After selected kernel has been installed. Reboot and select kernel 4.4.0-124 to boot in Advanced menu.

4. With apt install , the kernel header will be also downloaded and installed. It will take more time to complete installed but help for further compiler tasks.

How to remove kernel?

1. Check current kernel version
   root@ubuntu:~# uname -r
   4.4.0-124-generic

2. List all installed kernel (methodology -1 , step 1)
   root@ubuntu:~# dpkg --list | grep linux-image

3. Run the below command to remove selected kernel
   root@ubuntu:~# sudo apt-get purge linux-image-x.x.x-xxx-generic