

Understanding the Linux Kernel Build

Week 2

Santwana Verma

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Reasons to **Understand** Linux Kernel Build

- The latest TCP-**BBR code** is included **in** the Linux **Kernel Stack**.
- To test anything on the BBR, changes are required to be made in the **tcp_bbr.c** file of the net module.

Getting Started with Kernel Build

The first command is

```
$ sudo make
```

The **make** command **compiles the kernel** and links the kernel image to a file named **vmlinuz** (Virtual Memory Linux gZip). The **instructions** on how to do so are **in the Makefile**.

Getting Started with Kernel Build

The next command is

```
$ sudo make modules_install
```

This command will **compile** the **modules**, make the binaries and will load the modules to the modules directory of the kernel.

Getting Started with Kernel Build

The next command is

```
$ sudo make install
```

This command will **install the built kernel to the vmlinuz.**

Getting Started with Kernel Build

After the kernel has been built, we want to run it the next time we boot.

```
$ sudo update-initramfs -c -k 4.16.13  
$ sudo update-grub
```

The **initramfs** is a cpio archive which is extracted and loaded onto the RAM and uses it as the **initial file system** during the boot process.

The update-grub command updates the **menu.lst** file, which contains the contents of the GRUB menu. All the files whose names start with vmlinuz- are added to the menu.lst and are considered as kernel and are displayed on the next boot.

The references are as follows:

- <http://www.linfo.org/vmlinuz.html>
- <https://docs.oracle.com/cd/E19253-01/817-5504/gavhe/index.html>
- [https://man.cx/update-grub\(8\)](https://man.cx/update-grub(8))