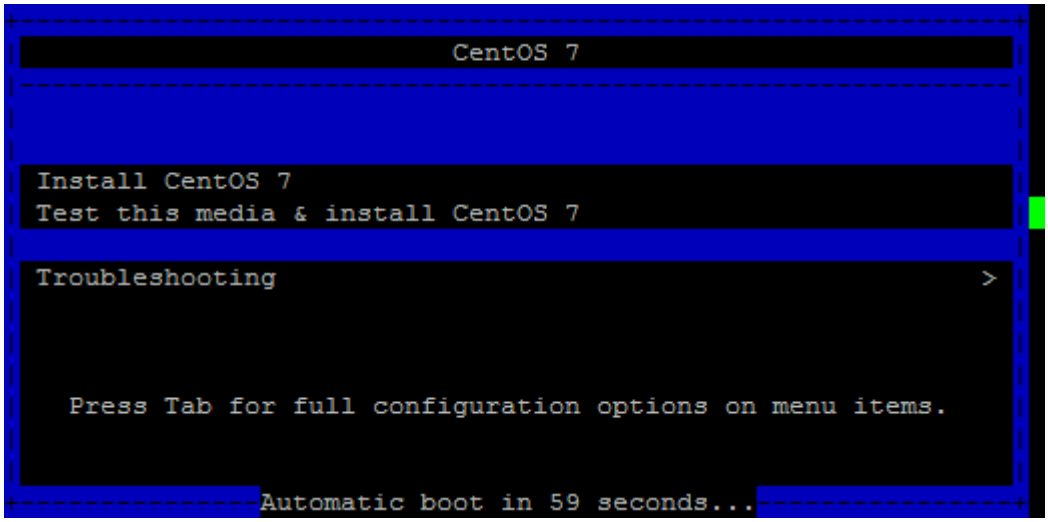
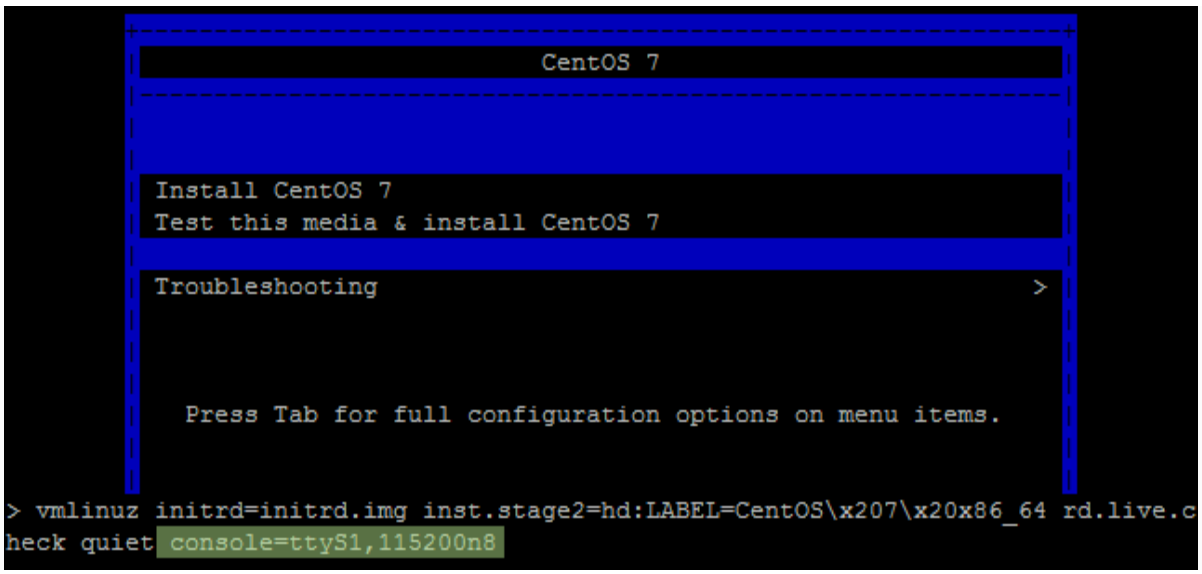
Content

CentOS 7.1 Install

1. Download *CentOS-7-x86_64-Minimal-1503-01.iso*. Go to the CentOS Website and download the **Minimal ISO**. Click one of the mirror links to download the file.
2. Write the image directly to a USB memstick.
3. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
4. Connect a network cable that is attached to the local LAN to one of the ethernet ports. On 6-port models, using one of the four ports on the right side is recommended.
5. Place the memstick in one of the USB ports and boot the system.
6. After a minute, a screen will display a menu that offers the choice to **Install CentOS 7** or **Test this media & install CentOS 7**. Move the cursor to either of the above lines and press `Tab`.

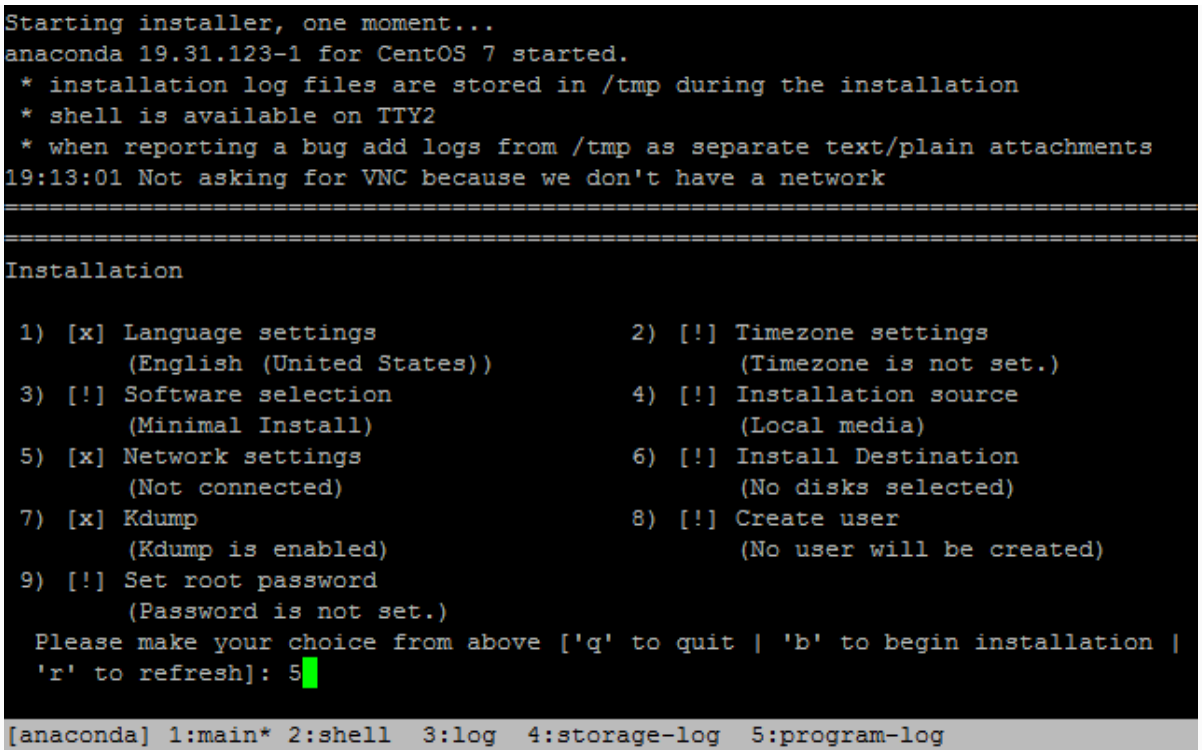


7. The command line used to start the kernel will be displayed. The current installation options will be displayed, such as `vmlinuz initrd=initrd.img inst.stage2=hd:LABEL=CentOS\x207\x20x86_64 quiet`. Move the cursor to the end of the line, press `Space` and then enter `console=ttyS1,115200n8`. Press`Enter`.



8. The kernel will then start. It can take a few seconds for output to be displayed on the console, but after some time the installer will appear.

9. A menu labeled **Installation** will display which has nine choices. Number 5 is labeled **Network settings**. Type `5` and press `Enter`.



10. The installer will display a menu labeled **Network settings**. This menu contains options to configure the network interfaces. All RCC-VE units have four ports listed and models with six ethernet ports have two additional ports listed. Type the number corresponding to the interface connected to the network and press `Enter`. Consult the table below to determine which network port to use based on the name provided by CentOS and the number of available network ports.

CentOS Installer NIC Mappings

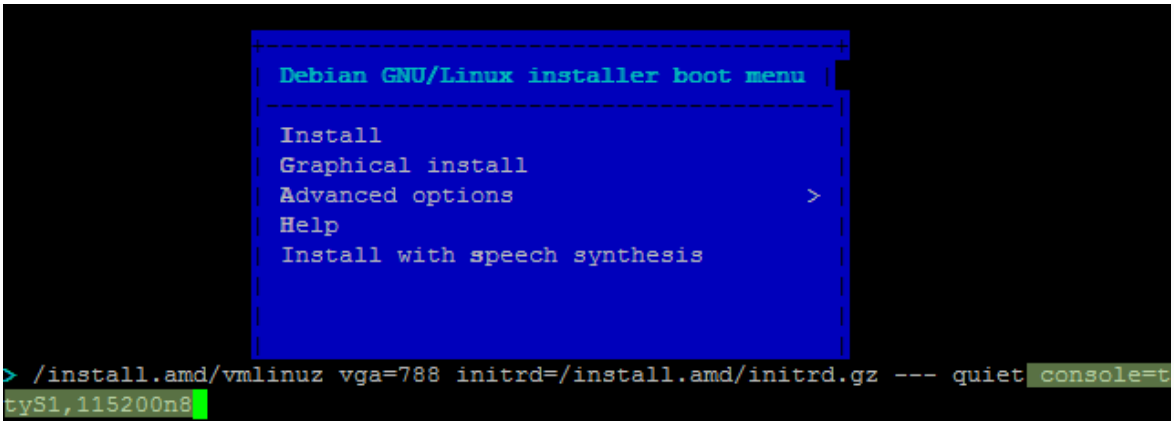
CentOS Installer NIC Label	4 Port	6 Port
enp0s20f0	eth0	eth2
enp0s20f1	eth1	eth3
enp0s20f2	eth2	eth4
enp0s20f3	eth3	eth5
enp4s0		eth0
enp3s0		eth1

```
  'r' to refresh]: 5
================================================================================
================================================================================
Network settings

Wired (enp0s20f0) disconnected
Wired (enp0s20f1) disconnected
Wired (enp0s20f2) disconnected
Wired (enp0s20f3) disconnected
Wired (enp3s0) disconnected
Wired (enp4s0) disconnected

Host name: localhost.localdomain

 1)  Set host name
 2)  Configure device enp0s20f0
 3)  Configure device enp0s20f1
 4)  Configure device enp0s20f2
 5)  Configure device enp0s20f3
 6)  Configure device enp3s0
 7)  Configure device enp4s0
  Please make your choice from above ['q' to quit | 'c' to continue |
  'r' to refresh]:
[anaconda] 1:main* 2:shell  3:log  4:storage-log  5:program-log
```

11.
12. Once the network configuration is complete, Type `c` and press `Enter` to continue
13. Configure other settings as appropriate for this installation, such as the **Root password** or **Create user**, **Time Zone**, **Install Destination**, and so on. The installation cannot continue until all of the items marked with a "!" have been resolved.
14. Press `b` from the main menu to begin the installation. Messages are displayed indicating the progress of the installation as it works. Once all installation steps have completed, a message is displayed that says "Installation complete. Press return to quit". At that point, press `Enter` and the system will reboot.
15. Remove the USB drive from the USB port while the system reboots. CentOS 7 will start up automatically from the hard drive (mSATA SSD or internal eMMC). If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

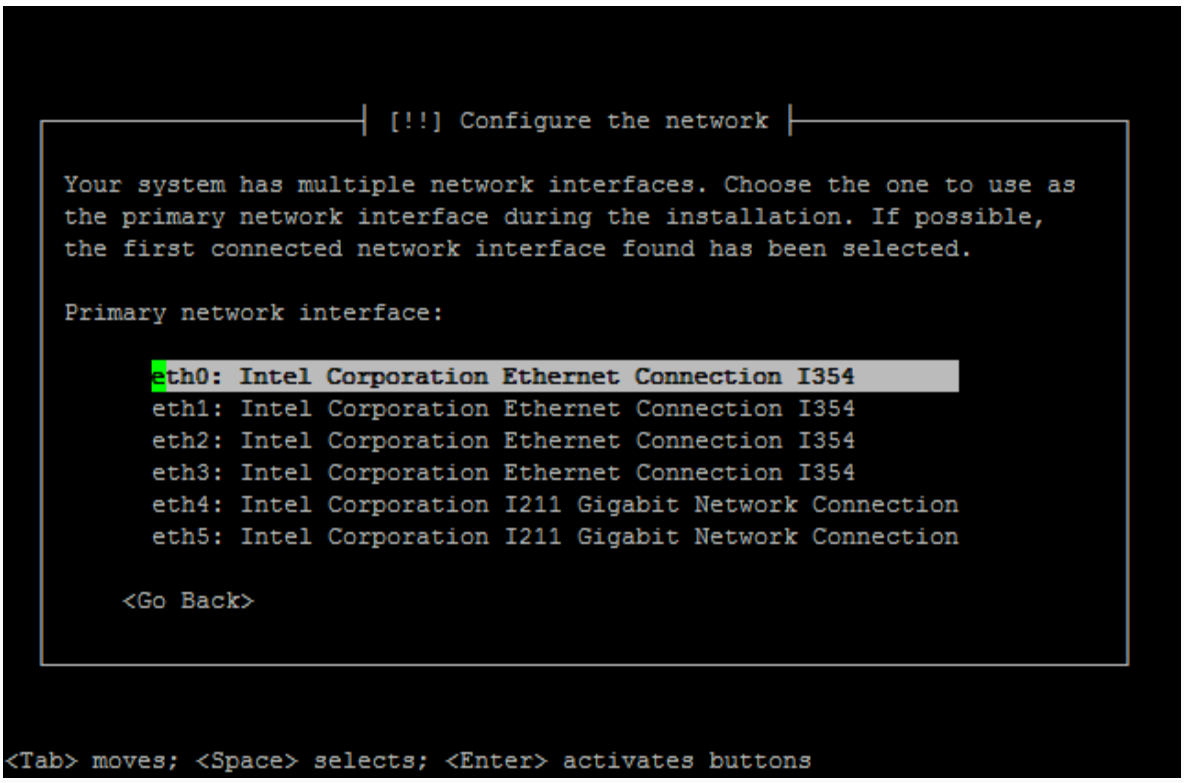
Debian 7.8.0 through 8.2 Install

1. Retrieve an installer image such as *debian-8.2.0-amd64-netinst.iso* from the Debian Website
2. Write the image to a USB memstick.
3. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
4. Connect a network cable that is attached to the local LAN to one of the ethernet ports. On 6-port models, using one of the four ports on the right side is recommended.
5. Place the memstick in one of the USB ports and boot the system.
6. After a minute a menu will be displayed with choices for **Install**, **Graphical Install**, **Advanced options**, **Help**, or **Install with speech synthesis**. Move the cursor to the line that says **Install** and press `Tab`.
7. The command line used to start the kernel will be displayed, which is typically`/install.amd/vmlinuz vga=788 initrd=/install.amd/initrd.gz -- quiet`. Move the cursor to the end of the line and type a space and then enter `console=ttyS1,115200n8`. Press `enter`.



8. A message will appear that says “Undefined video mode number: 314” and prompts to press `Space` to continue. Either press `Space` or wait 30 seconds for the installer to continue automatically.
9. The kernel will start up and after a minute the system will launch the installer, first prompting for a **Language** and **Country**.
10. The installer will display a menu labeled **Configure the Network**. This menu contains options to configure the network interfaces. All RCC-VE units have four ports listed and models with six ethernet ports have two additional ports listed. Move the cursor to select the interface connected to the network and press `Enter`. Consult the table below to determine which network port to use based on the name provided by Ubuntu and the number of available network ports.

Debian Installer NIC Label	4 Port	6 Port
eth0	eth0	eth2
eth1	eth1	eth3
eth2	eth2	eth4
eth3	eth3	eth5
eth4		eth1
eth5		eth0

11. 

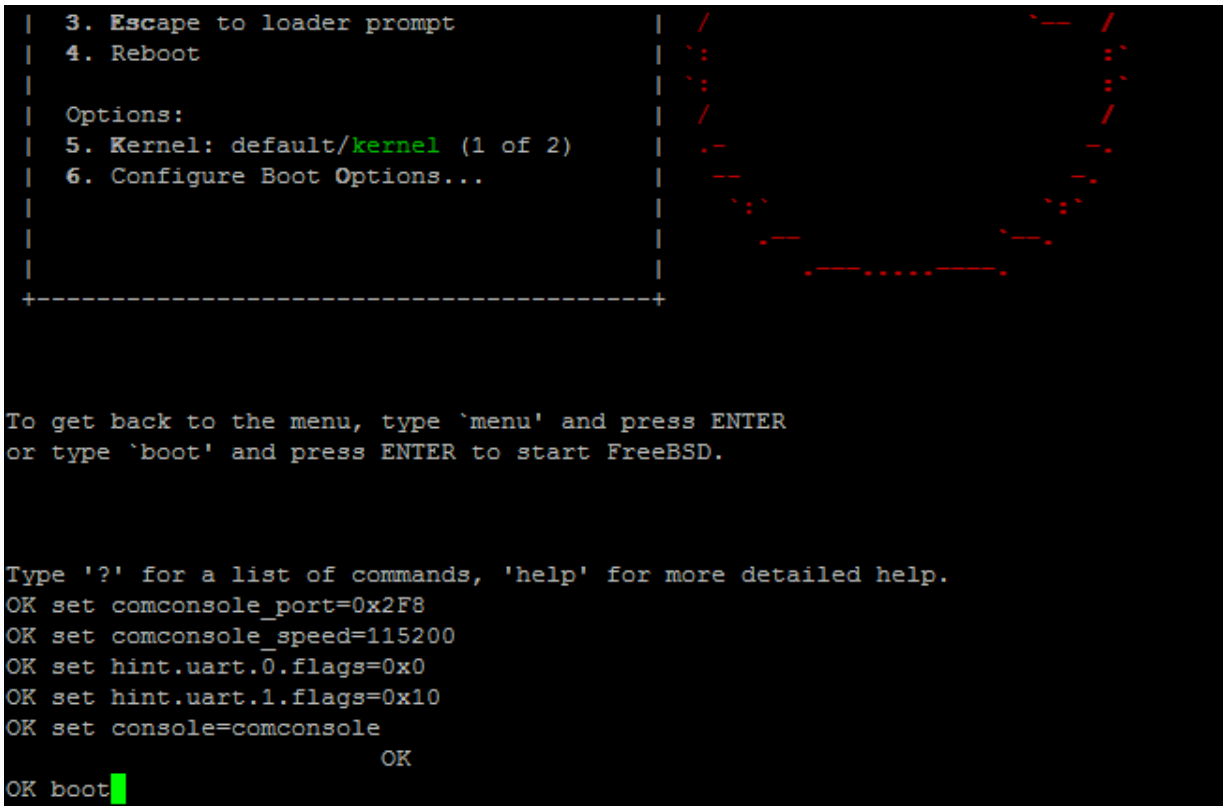
12. The installer will then prompt for various system settings, such as the hostname, users, clock, and disks, and software packages. These values must be set appropriately for to the role and environment of this system.
    When configuring the installation disk, the disks are listed with their capacity. The eMMC will be labeled “Ultra HS-Combo”, if an mSATA disk is installed it can be identified by its capacity and make/model.
13. When the installation has completed, a box labeled “Finish the installation” will be displayed with the choices Go Back or Continue. Select `Continue` and press `Enter`. The system will reboot.
14. Remove the USB drive from the USB port. Debian Linux will start up automatically from the target drive (mSATA SSD or internal eMMC). If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

FreeBSD 10.2 Install

1. Retrieve *FreeBSD-10.2-RELEASE-amd64-memstick.img* from the FreeBSD FTP Site.
2. Write the image to a USB memstick.
3. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
4. Connect a network cable that is attached to the local LAN to one of the ethernet ports.
5. Place the memstick in one of the USB ports and boot the system.
6. After a minute the FreeBSD loader menu will be displayed that contains options to **Boot Multi User**, **Boot Single User**, **Escape to loader prompt**, **Reboot**, select a non-default kernel or configure boot options. Press `3` to reach the loader prompt.

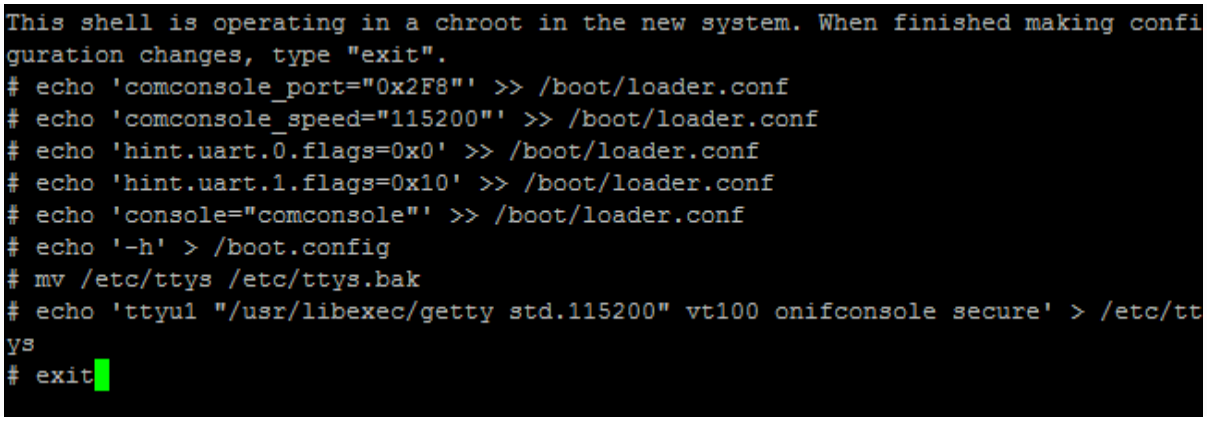
7. The loader “OK” prompt will be displayed. At the prompt type each of the following commands in the order listed. Press `Enter` after each command:

```
set comconsole_port=0x2F8
set comconsole_speed=115200
set hint.uart.0.flags=0x0
set hint.uart.1.flags=0x10
set console=comconsole
boot
```



14. The kernel will start to load. Some boot output will be displayed and then a prompt will ask for the terminal type. Enter the terminal type which best corresponds to the program used to connect to the console, or press `Enter` if it is unknown. The installer will start to run after the terminal type is entered.
15. Select `Install` from first installer screen and then a series of screens will be displayed asking about system/network settings, disk provisioning, which components to install, and other items relevant to the installation. Configure the system appropriately for the needs of this server.
16. When configuring network settings and interfaces, on 4 port models the ports will correspond to the interface names igb0, igb1, igb2, igb3 from left to right. On 6 port models, the ports will correspond to the interface names igb1, igb0, igb2, igb3, igb4, igb5 from left to right.
17. When the installer screen labeled “Final Configuration” is reached, select the option to **Exit**(described as **Apply configuration and exit installer**). and press `Enter`.
18. A box labeled “Manual Configuration” will offer the chance to launch a shell to make manual configurations before the system reboots. Select `Yes` and press `Enter`.
19. A shell prompt will be displayed, showing as a `#`. At the prompt type each of the following commands. Press `Enter` after each:

```
echo 'comconsole_port="0x2F8"' >> /boot/loader.conf
echo 'comconsole_speed="115200"' >> /boot/loader.conf
echo 'hint.uart.0.flags=0x0' >> /boot/loader.conf
echo 'hint.uart.1.flags=0x10' >> /boot/loader.conf
echo 'console="comconsole"' >> /boot/loader.conf
echo '-h' > /boot.config
mv /etc/ttys /etc/ttys.bak
echo 'ttyu1 "/usr/libexec/getty std.115200" vt100 onifconsole secure' > /etc/ttys
exit
```



29. A box labeled “Complete” will be displayed and offer the choice to **Reboot** into the installed system or access the **Live CD**. Select `Reboot` and press `Enter`. The system will reboot.
30. Remove the USB drive from the USB port. FreeBSD will start up automatically. If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

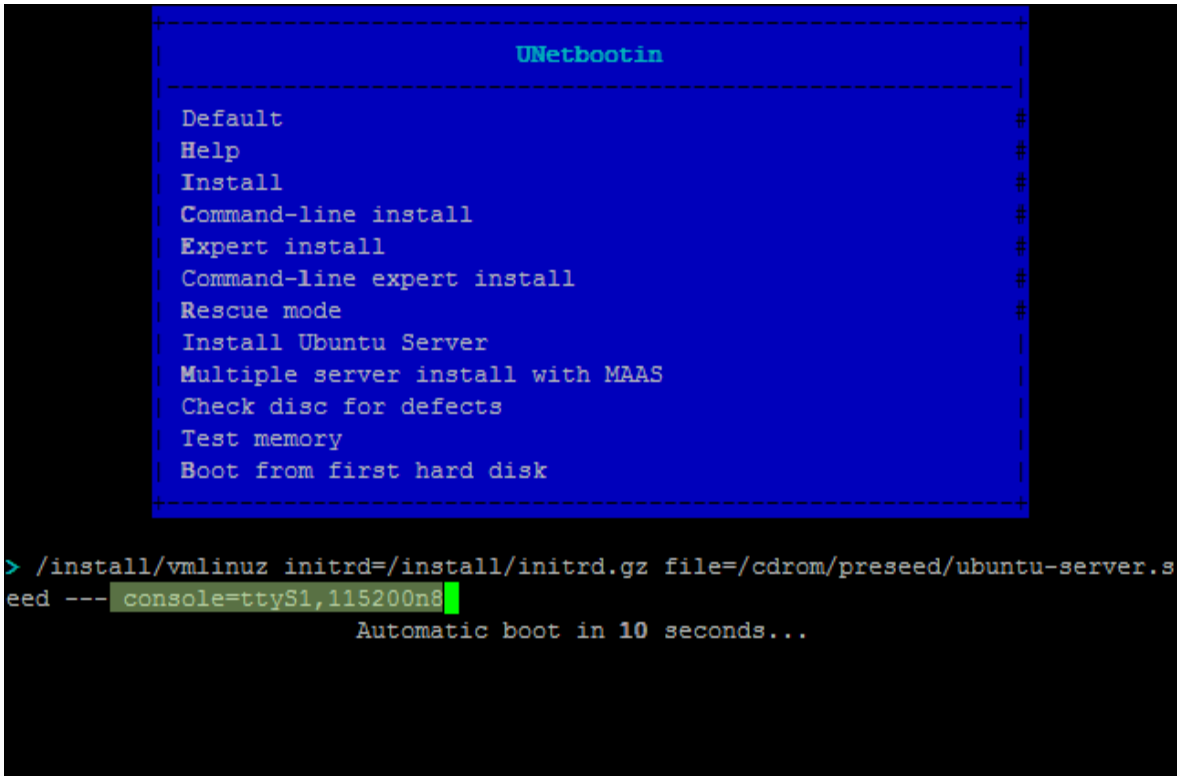
Ubuntu 15.x USB Install

1. Download an Ubuntu server install image from the Ubuntu Website, such as *ubuntu-15.10-server-amd64.iso*
2. Write the image to a USB memstick using Unetbootin.
3. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
4. Connect a network cable that is attached to the local LAN to one of the ethernet ports. On 6-port models, using one of the four ports on the right side is recommended.
5. Place the memstick in one of the USB ports and boot the system.

6. When the boot menu appears, scroll down to ‘Install Ubuntu Server’ and press `Tab`
7. Change the boot line to remove `vga=xxx` and `quiet`, replace with `--- console=ttyS1,115200n8` so it reads:

```
/install/vmlinuz initrd=/install/initrd.gz  file=/cdrom/preseed/ubuntu-server.seed --- console=ttyS1,115200n8
```

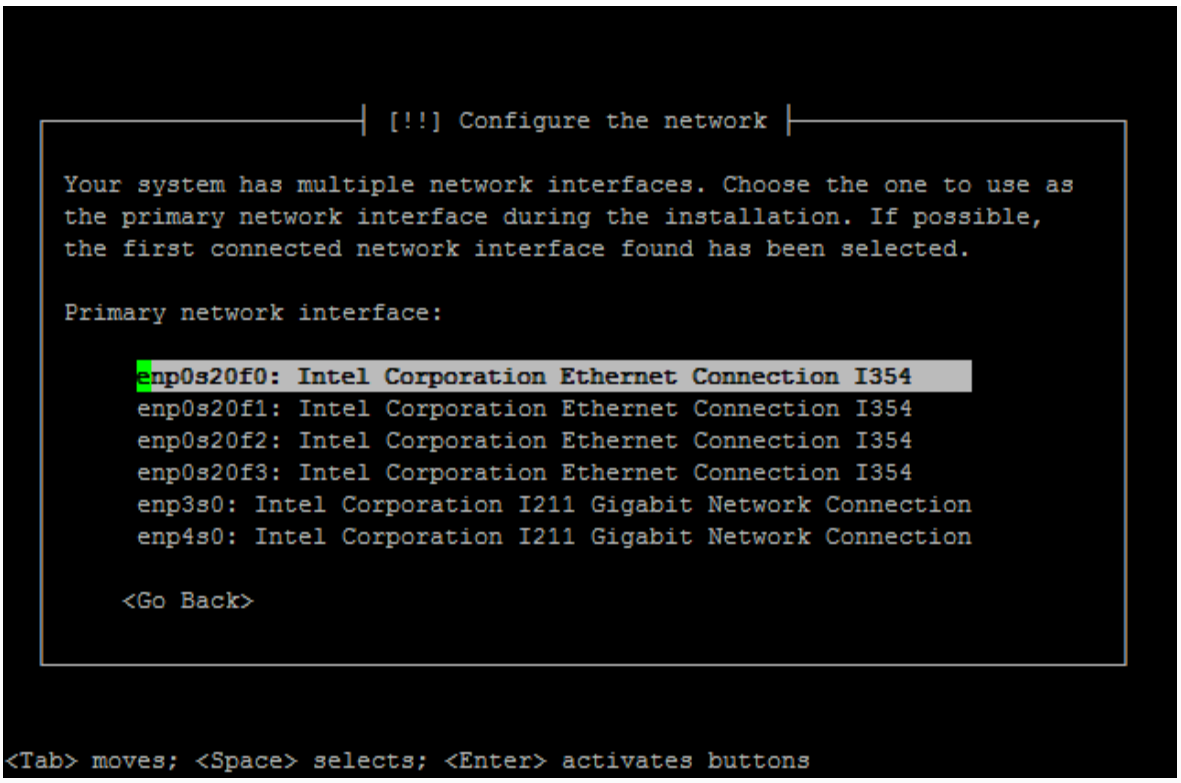
9. Press `Enter` to boot. The kernel will start up and after a minute the system will launch the installer, first prompting for a **Language** and **Country**.



10. The installer will display a menu labeled **Configure the Network**. This menu contains options to configure the network interfaces. All RCC-VE units have four ports listed and models with six ethernet ports have two additional ports listed. Move the cursor to select the interface connected to the network and press `Enter`. Consult the table below to determine which network port to use based on the name provided by Ubuntu and the number of available network ports.

Ubuntu Installer NIC Mappings¶

Ubuntu Installer NIC Label	4 Port	6 Port
enp0s20f0	eth0	eth2
enp0s20f1	eth1	eth3
enp0s20f2	eth2	eth4
enp0s20f3	eth3	eth5
enp4s0		eth0
enp3s0		eth1

11. 

12. The installer will then prompt for various system settings, such as the hostname, users, clock, and disks. These values must be set appropriately for to the role and environment of this system.
    When configuring the installation disk, the disks are listed with their capacity. The eMMC will be labeled “Ultra HS-Combo”, if an mSATA disk is installed it can be identified by its capacity and make/model.
13. When the installation has completed, a box labeled “Finish the installation” will be displayed with the choices Go Back or Continue. Select `Continue` and press `Enter`. The system will reboot.
14. Remove the USB drive from the USB port. Ubuntu will start up automatically from the target drive (mSATA SSD or internal eMMC). If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

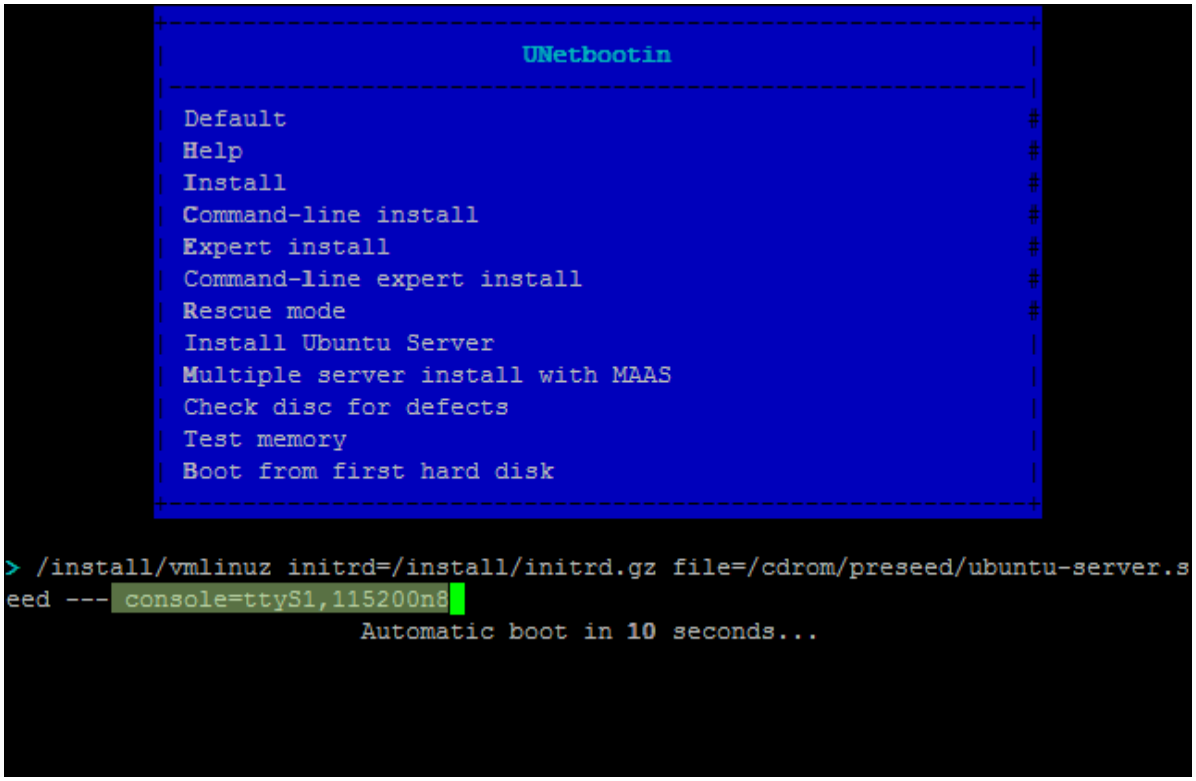
Ubuntu 14.x USB Install

The Ubuntu server installer on 14.x and before lacked full support for installing from USB. This document shows one possible workaround.

1. Download an Ubuntu server install image from the Ubuntu Website, such as *ubuntu-14.04.3-server-amd64.iso*
2. Write the image to a USB memstick using Unetbootin.
3. Copy the *ubuntu-14.04.3-server-amd64.iso* file to the root of the USB memstick.
4. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
5. Connect a network cable that is attached to the local LAN to one of the ethernet ports. On 6-port models, using one of the four ports on the right side is recommended.
6. Place the memstick in one of the USB ports and boot the system.
7. When the boot menu appears, scroll down to ‘Install Ubuntu Server’ and press `Tab`
8. Change the boot line to remove `vga=xxx` and `quiet`, replace with `--- console=ttyS1,115200n8` so it reads:

```
/install/vmlinuz initrd=/install/initrd.gz  file=/cdrom/preseed/ubuntu-server.seed --- console=ttyS1,115200n8
```

10. Press `Enter` to boot. The kernel will start up and after a minute the system will launch the installer, first prompting for a **Language** and **Country**.



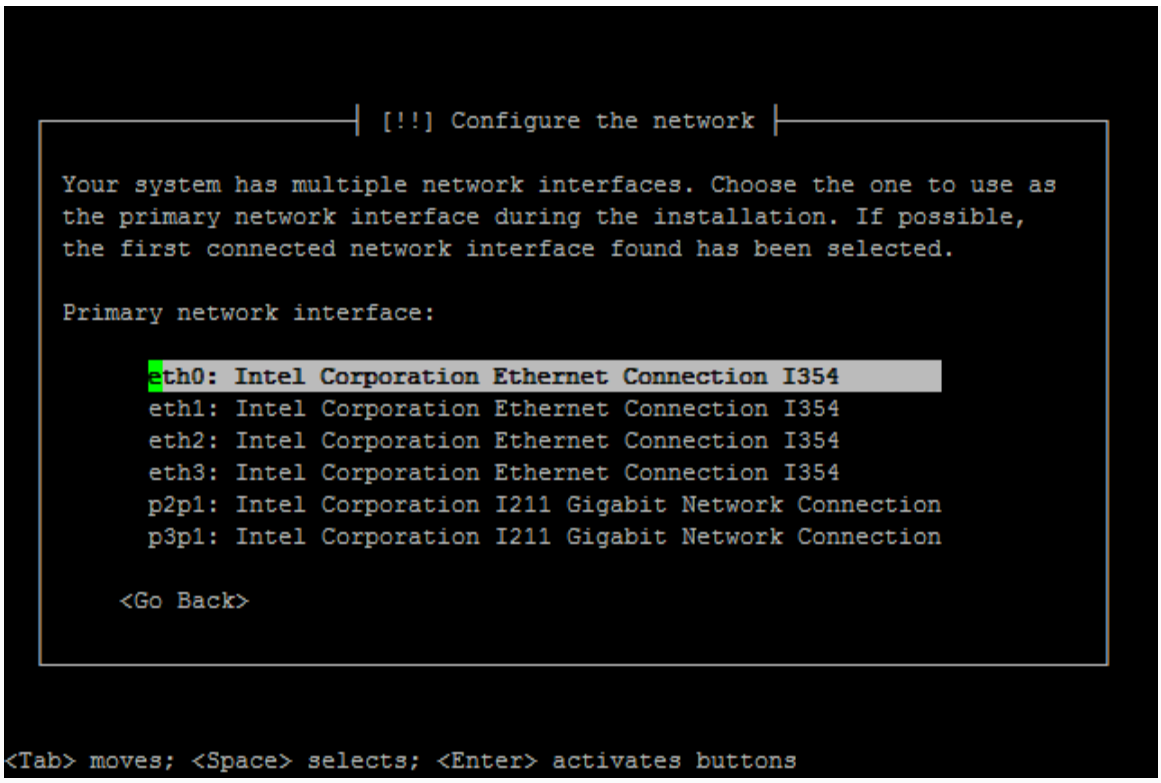
11. After a while an error will appear stating that the **Detect and mount CD- ROM** action failed. On this screen, select **No**, then **Continue**
12. A new menu will appear with more options, from this list, select **Execute a shell**, then **Continue**
13. Enter the following command (substitute the name of the ISO if different than quoted):

```
mount -o loop /media/ubuntu-14.04.3-server-amd64.iso /cdrom
exit
```

16. From the menu, select **Detect and Mount CD-ROM** and the installation will proceed again as usual.
17. The installer will display a menu labeled **Configure the Network**. This menu contains options to configure the network interfaces. All RCC-VE units have four ports listed and models with six ethernet ports have two additional ports listed. Move the cursor to select the interface connected to the network and press `Enter`. Consult the table below to determine which network port to use based on the name provided by Ubuntu and the number of available network ports.

Ubuntu Installer NIC Mappings¶

Ubuntu Installer NIC Label	4 Port	6 Port
eth0	eth0	eth2
eth1	eth1	eth3
eth2	eth2	eth4
eth3	eth3	eth5
p3p1		eth0
p2p1		eth1

18. 

19. The installer will then prompt for various system settings, such as the hostname, users, clock, and disks. These values must be set appropriately for to the role and environment of this system.
    When configuring the installation disk, the disks are listed with their capacity. The eMMC will be labeled “Ultra HS-Combo”, if an mSATA disk is installed it can be identified by its capacity and make/model.
    When selecting the installation target disk, be careful **not** to unmount the USB disk (*/dev/sdb*) and make sure not to select it as the install target.
20. When the installation has completed, a box labeled “Finish the installation” will be displayed with the choices Go Back or Continue. Select `Continue` and press `Enter`. The system will reboot.
21. Remove the USB drive from the USB port. Ubuntu will start up automatically from the target drive (mSATA SSD or internal eMMC). If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

Ubuntu 12.x through 15.x PXE Install

1. Download *netboot.tar.gz* for the desired Ubuntu version fromhttp://cdimage.ubuntu.com/netboot/.
2. Setup a TFTP server somewhere on the network and extract *netboot.tar.gz* into the TFTP root.
3. Configure the netboot files for use of the serial console. Under the TFTP root directory, enter the*ubuntu-installer/amd64/boot-screens/* directory.
4. **Skip this step for Ubuntu 15.x** Edit the file in *syslinux.cfg* in this directory and add the following two lines to the top of the file:

```
console 0
serial 1 115200 0
```

7. Edit the file *txt.cfg* in this directory. Under “label install”, change the “append vga ...” line to remove “vga=788” and “quiet” from the end and append`console=ttyS1,115200n8 earlyprint=serial,ttyS1,115200n8` so that line resembles the following:

```
append initrd=ubuntu-installer/amd64/initrd.gz --- console=ttyS1,115200n8 earlyprint=serial,ttyS1,115200n8
```

Save changes to the file and exit.

9. Configure the DHCP server for network booting. Configure option **next- server** with the IP address of the TFTP server and specify option **filename** as `pxelinux.0`.
10. Connect to the console port of the RCC-VE using a mini-USB cable attached to another system.
11. Connect a network cable that is attached to the local LAN to one of the ethernet ports. On 6-port models, using one of the four ports on the right side is **required** as they are the only ports available for PXE booting.
12. When prompted with “Press F12 for boot menu”, press `F12`. The list of boot options will depend on the hardware installed in the system. Four NICs will be listed with an iPXE option. The left-most NIC on 4 port models will show as “iPXE (PCI 00:14.0)”, followed by 14.1, 14.2 and so on for each port left to right. On 6 port models 14.0 is the third NIC from the left, 14.1 is the fourth, 14.2 is fifth and 14.3 is the furthest right NIC:

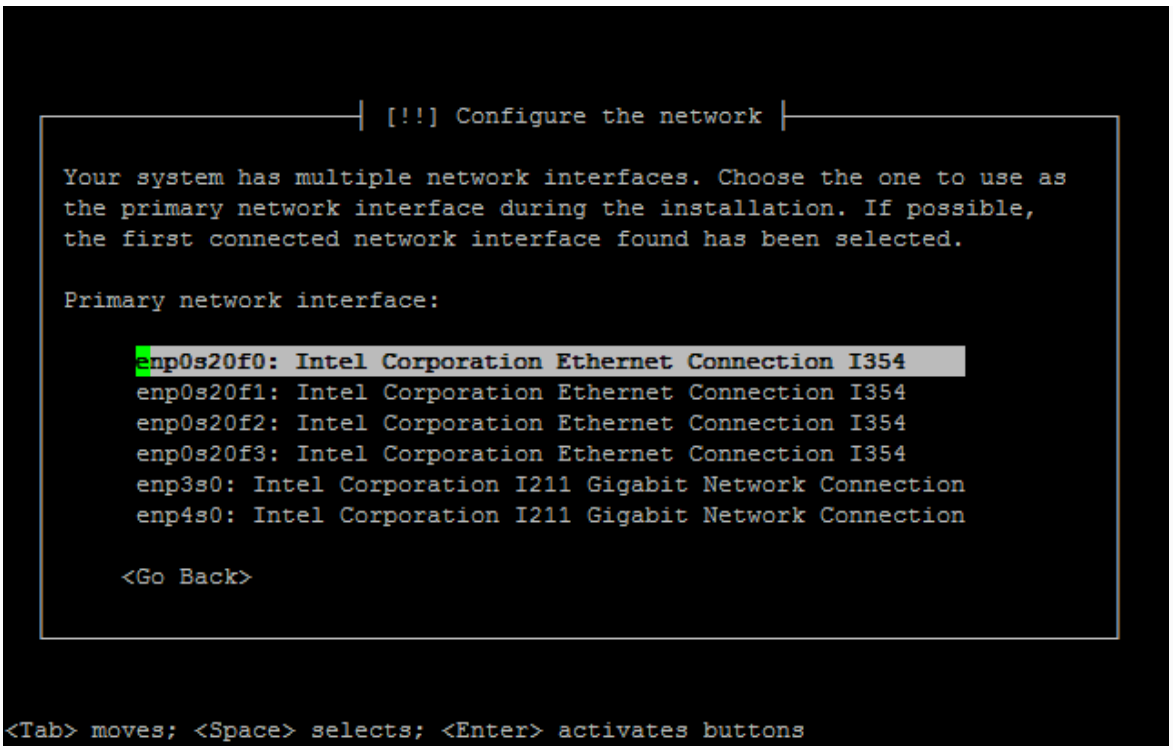
```
Press F12 for boot menu.

Select boot device:

1. AHCI/0: INTEL SSDMCEAC030B3 ATA-9 Hard-Disk (28626 MiBytes)
2. USB MSC Drive Generic Ultra HS-COMBO 1.98
3. iPXE (PCI 00:14.0)
4. iPXE (PCI 00:14.1)
5. iPXE (PCI 00:14.2)
6. iPXE (PCI 00:14.3)
```

Press the number corresponding to the NIC that is plugged into the network, and the system will begin to boot.

23. When the boot menu appears, scroll down to ‘Install’ and press `Enter`.
24. The kernel will start up and after a minute the system will launch the installer, first prompting for a **Language** and **Country**.
25. The installer will display a menu labeled **Configure the Network**. This menu contains options to configure the network interfaces. All RCC-VE units have four ports listed and models with six ethernet ports have two additional ports listed. Move the cursor to select the interface connected to the network and press `Enter`. Consult the table below to determine which network port to use based on the name provided by Ubuntu and the number of available network ports.

Ubuntu Installer NIC Mappings¶

Ubuntu 14.x Label	Ubuntu 15.x Label	4 Port	6 Port
eth0	enp0s20f0	eth0	eth2
eth1	enp0s20f1	eth1	eth3
eth2	enp0s20f2	eth2	eth4
eth3	enp0s20f3	eth3	eth5
p3p1	enp4s0		eth0
p2p1	enp3s0		eth1

26. 

27. The installer will then prompt for various system settings, such as the hostname, users, clock, and disks. These values must be set appropriately for to the role and environment of this system.
    When configuring the installation disk, the disks are listed with their capacity. The eMMC will be labeled “Ultra HS-Combo”, if an mSATA disk is installed it can be identified by its capacity and make/model
28. When the installation has completed, a box labeled “Finish the installation” will be displayed with the choices Go Back or Continue. Select `Continue` and press `Enter`. The system will reboot.
29. Remove any bootable USB drives from the USB ports on the system. Ubuntu will start up automatically from the target drive (mSATA SSD or internal eMMC). If the USB drive remains attached, the system will boot into the installer again because the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.