How To Boot And Then Verify That A Linux Host Is Available On The Internet

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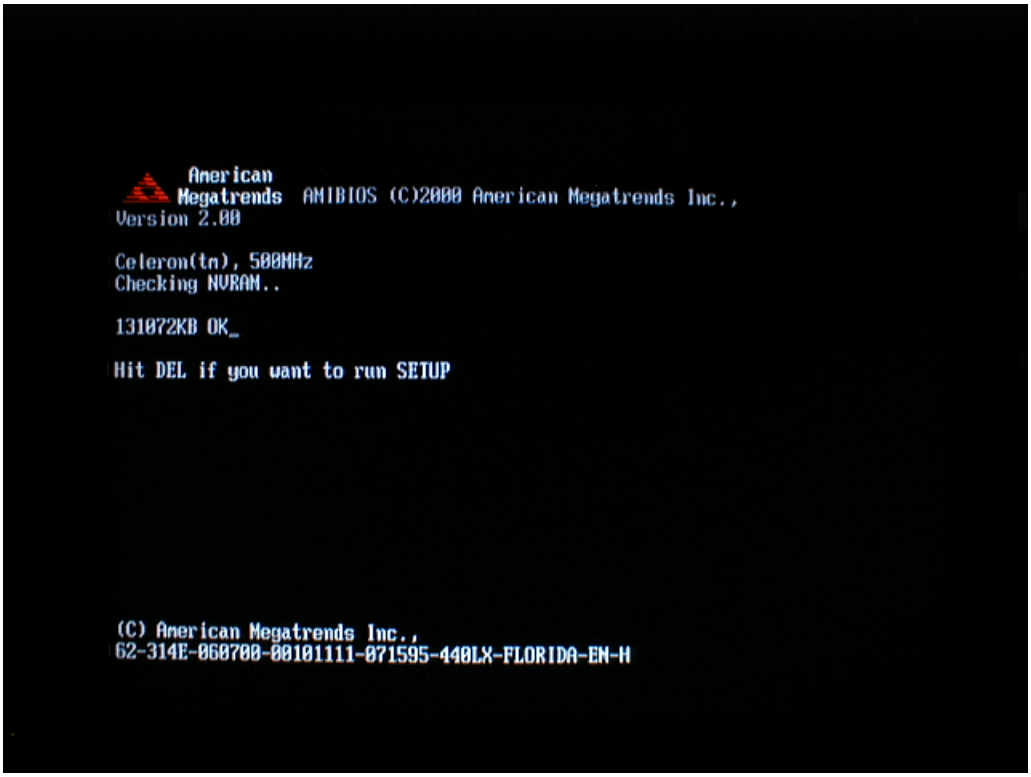
Booting a Linux Host

Typically when a Linux host becomes available to boot it is when the machine has been turned on

Consider the following.

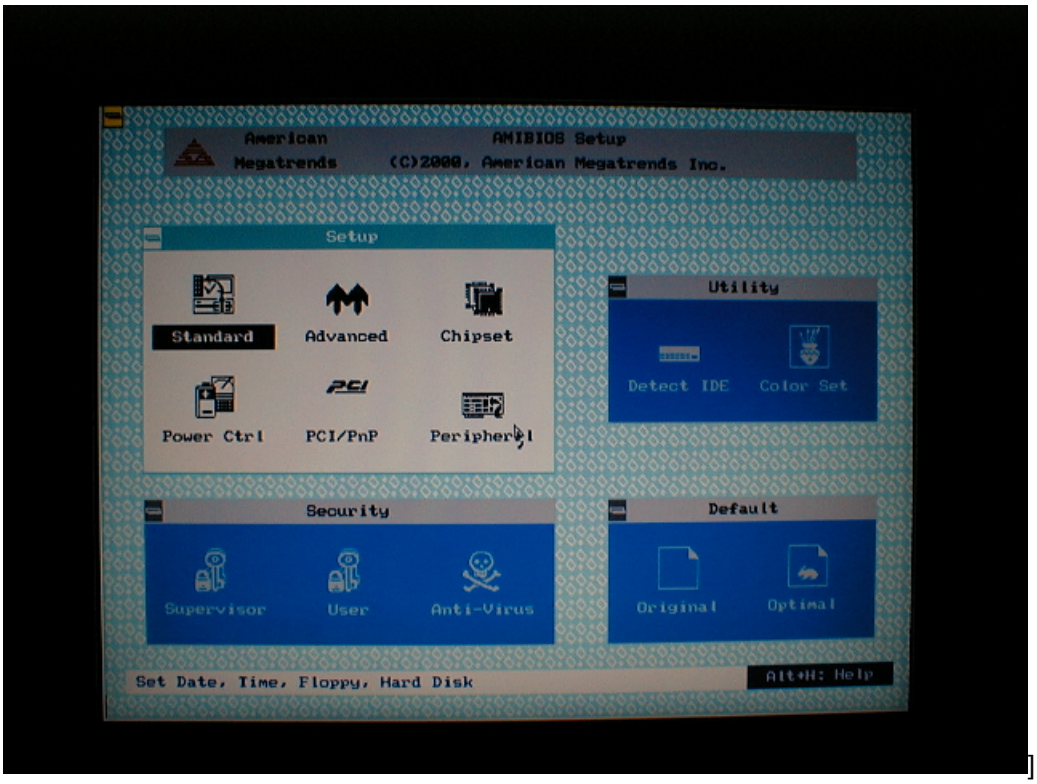


In the example, the machine is at the very beginning of its boot cycle. The memory of the machine has been counted and the BIOS prompt is displayed.

If there is a need to adjust the BIOS setting of the computer, at this time it is necessary to press the **DEL** key. If there is no need to adjust the BIOS it is not necessary to press the **DEL** key.

The BIOS Setup Screen

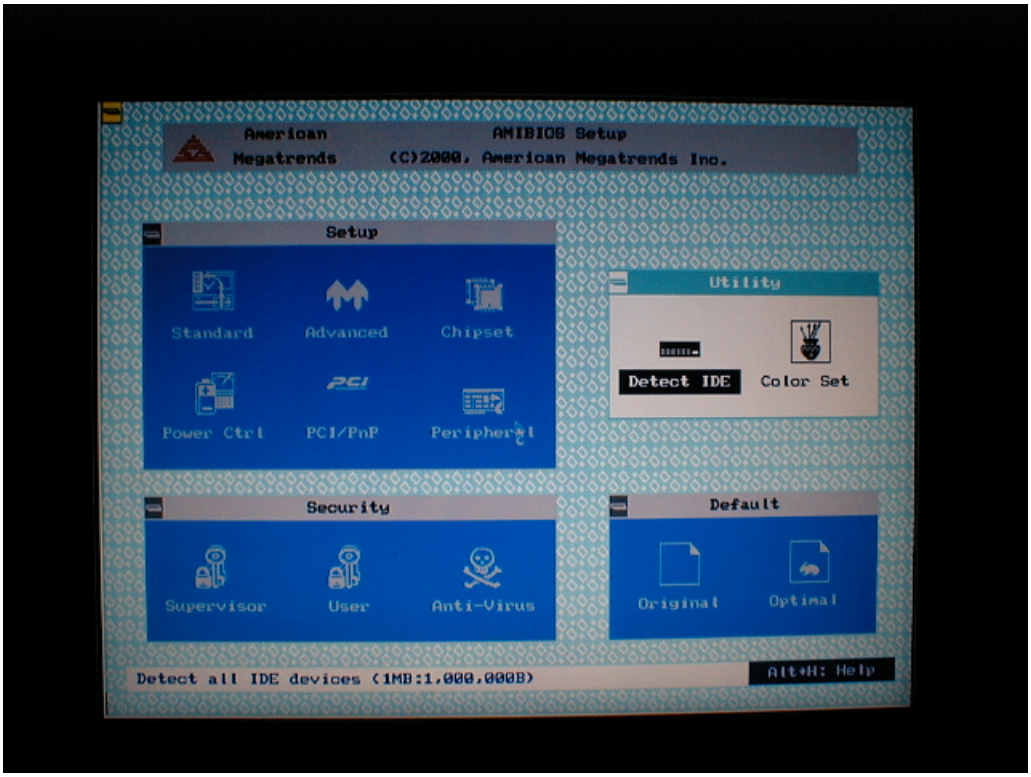
Consider the following:



In the above example, the BIOS has been entered and the initial screen is being displayed. If there is a need to adjust settings in any screen other than the mail one (upper left corner) the <TAB> key must be pressed.

Getting Into the IDE Auto Detect Screen

Consider the following:

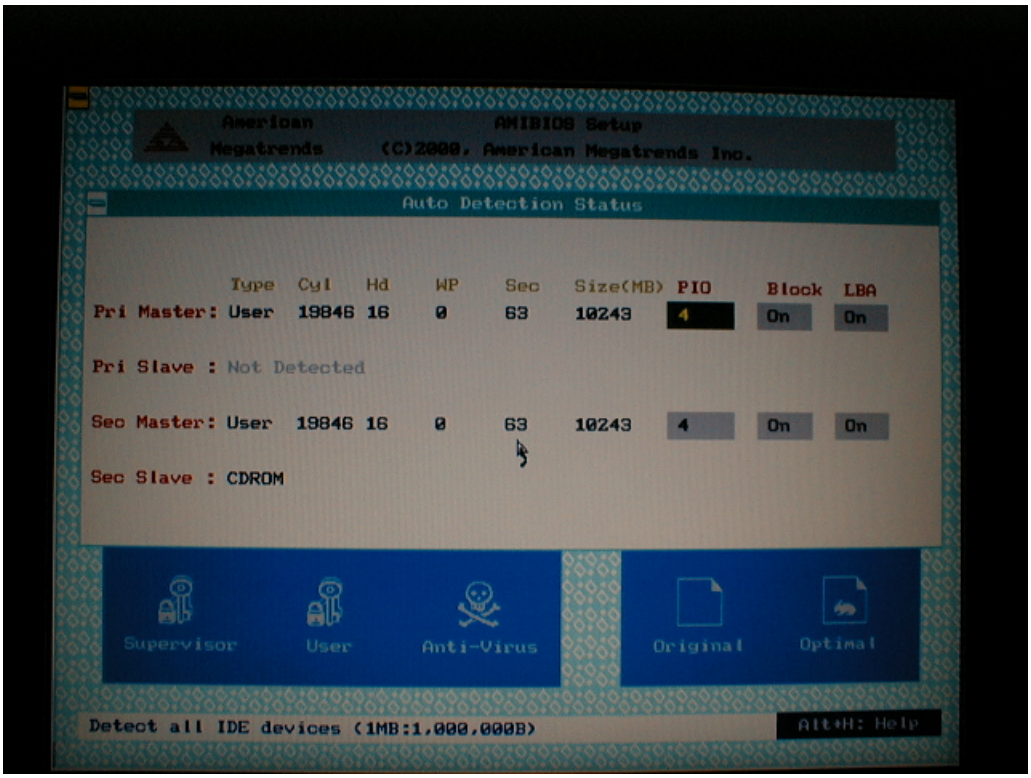


In the above example we are on the upper-right menu and about to invoke the **Detect IDE** utility. This utility will probe the hard drives and obtain their geometry information.

Run the utility by pressing the <ENTER> key.

Checking the results of the IDE Auto Detect Screen

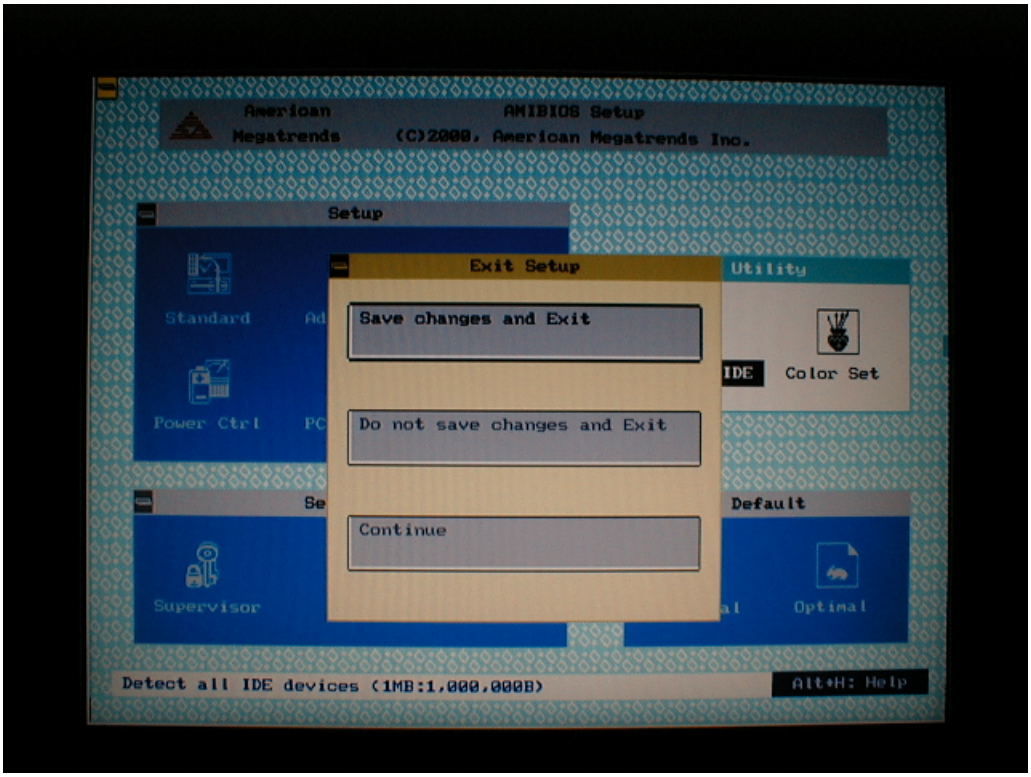
Consider the following:



In the above example the **Detect IDE** utility has been run.

Saving BIOS Changes

Consider the following:



After the BIOS settings have been verified (and written down) they are saved to NVRAM and the machine rebooted.

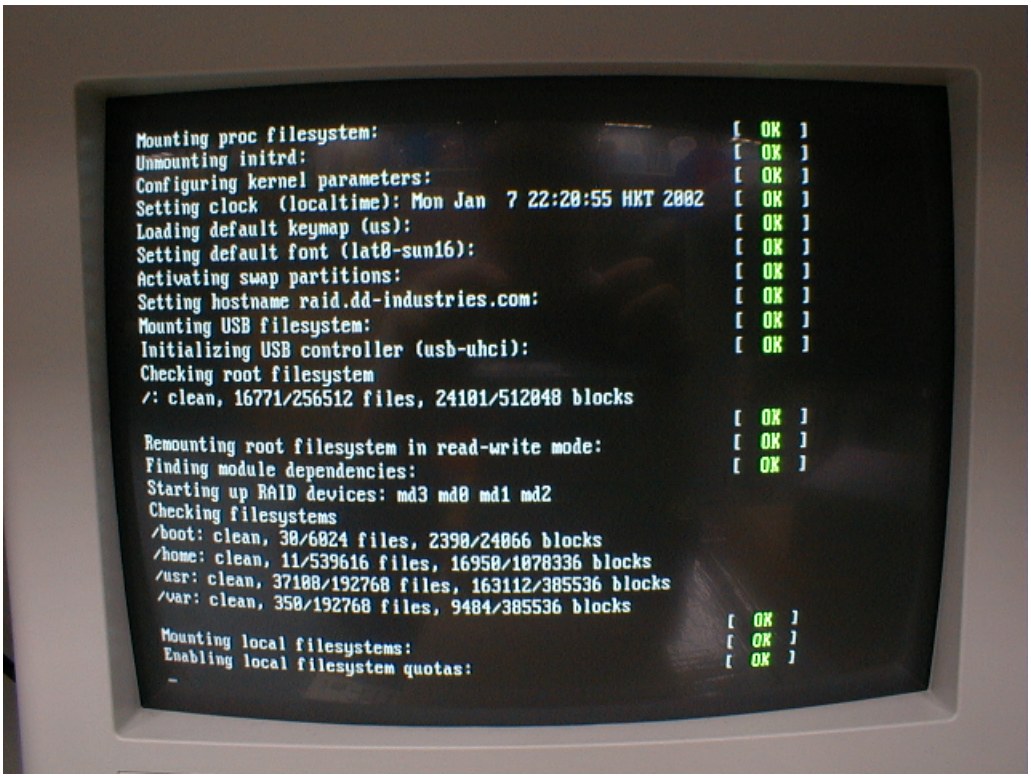
The Boot Screen

Consider the following:

In the example the machine is ready to boot. Press <ENTER> to boot the kernel, or just wait an appropriate amount of time and the system will boot automatically.

Watching The Kernel Boot

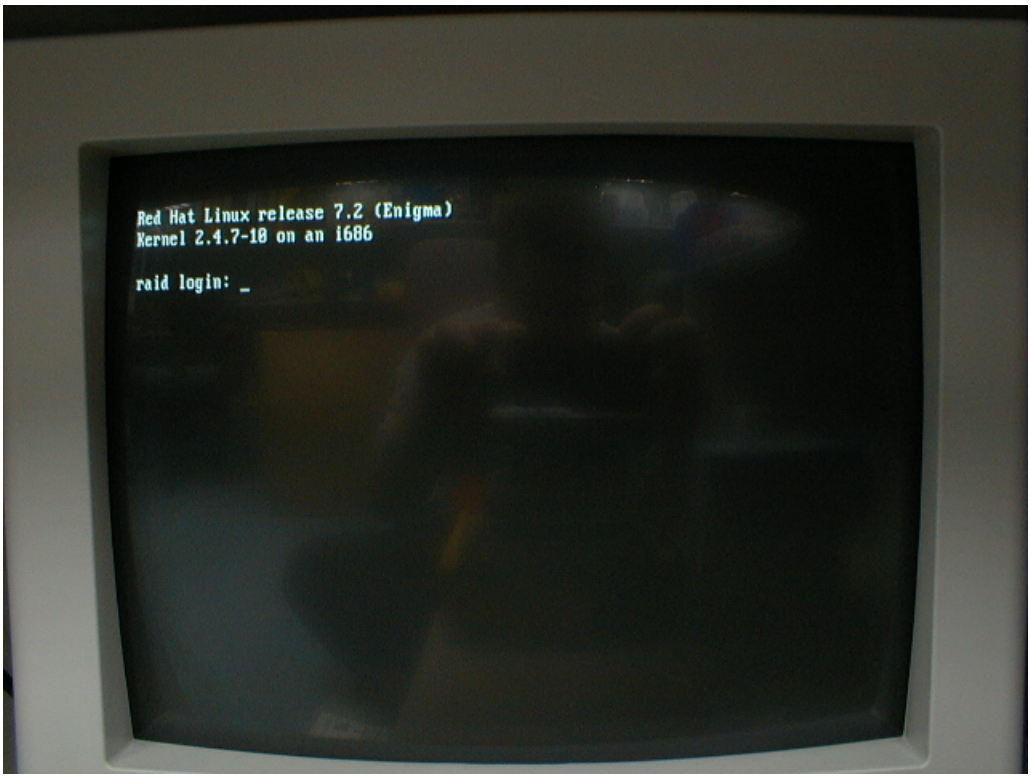
Consider the following:



As the kernel boots it shows systems coming up. If a given subsystem activates without any problems a **[OK]** message is displayed. If there is a problem, a **[FAILED]** message appears.

The Red Hat Login Screen

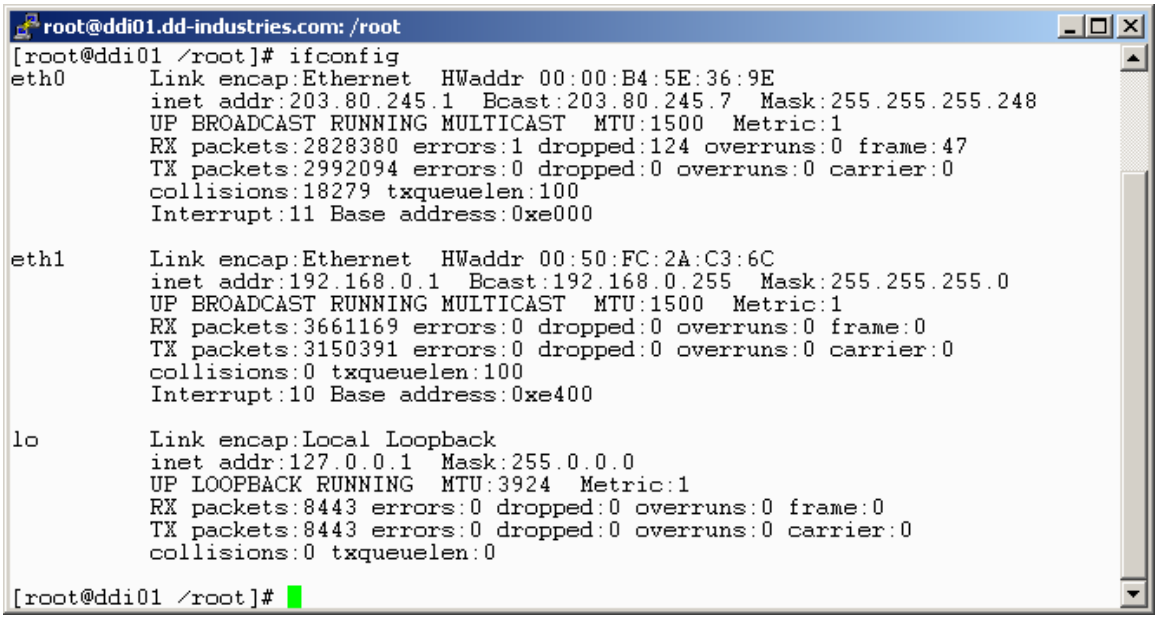
Consider the following:



In the example the linux host has booted and it is now necessary to input the user credentials for **root**.

Checking That The Host Is Up On The Internet

Consider the following:



In the example the **ifconfig** command has been issued to verify that the Ethernet interface(s) are working properly and have been assigned an IP address.

As can be seen on the screen, there are **three** interfaces on this computer:

Device	***Description***	***IP Address***	***STATUS***
eth0	Primary Interface	203.80.245.1	UP BROADCAST RUNNING
eth1	Secondary Interface	192.168.0.1	UP BROADCASE RUNNING
lo	Loopback Interface	127.0.0.1	UP LOOPBACK RUNNING

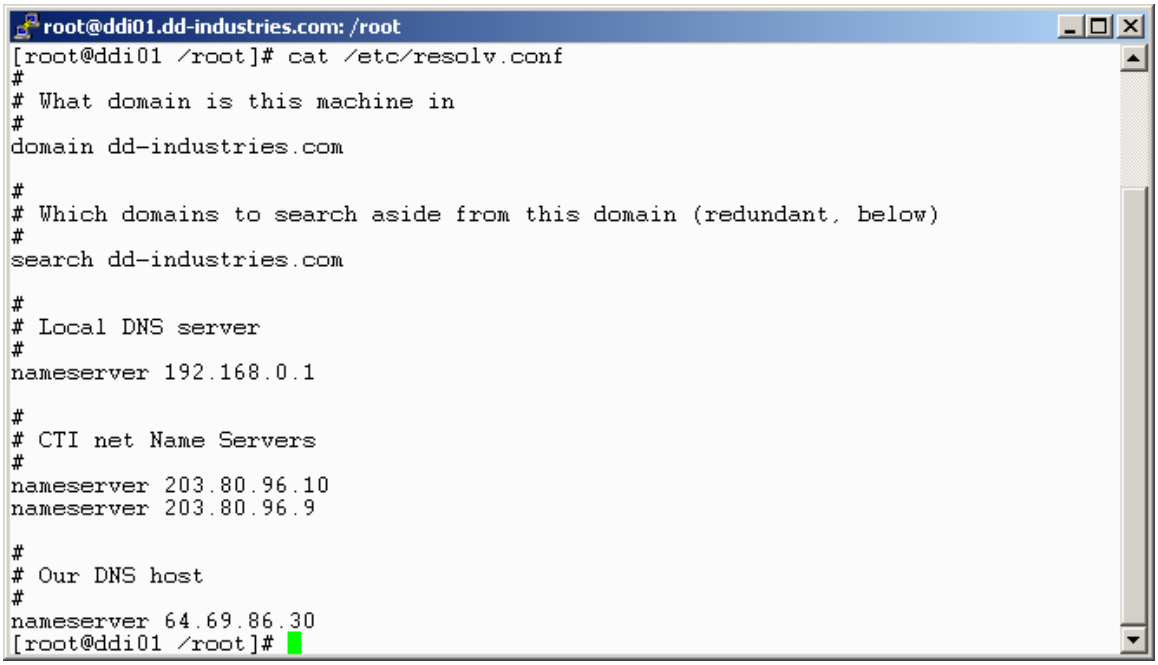
On other computers there may be more or less interfaces, but there must be a **minimum** of two basic interfaces for the Linux host to work properly:

Device	***Description***	***IP Address***	***STATUS***
eth0	Primary Interface	203.80.245.1	UP BROADCAST RUNNING
lo	Loopback Interface	127.0.0.1	UP LOOPBACK RUNNING

The **eth0** interface is the interface that is normally used to communicate with the Internet, the **lo** interface is often used by the Linux kernel or programs to allow communications within the computer itself.

Checking /etc/resolv.conf

Consider the following:



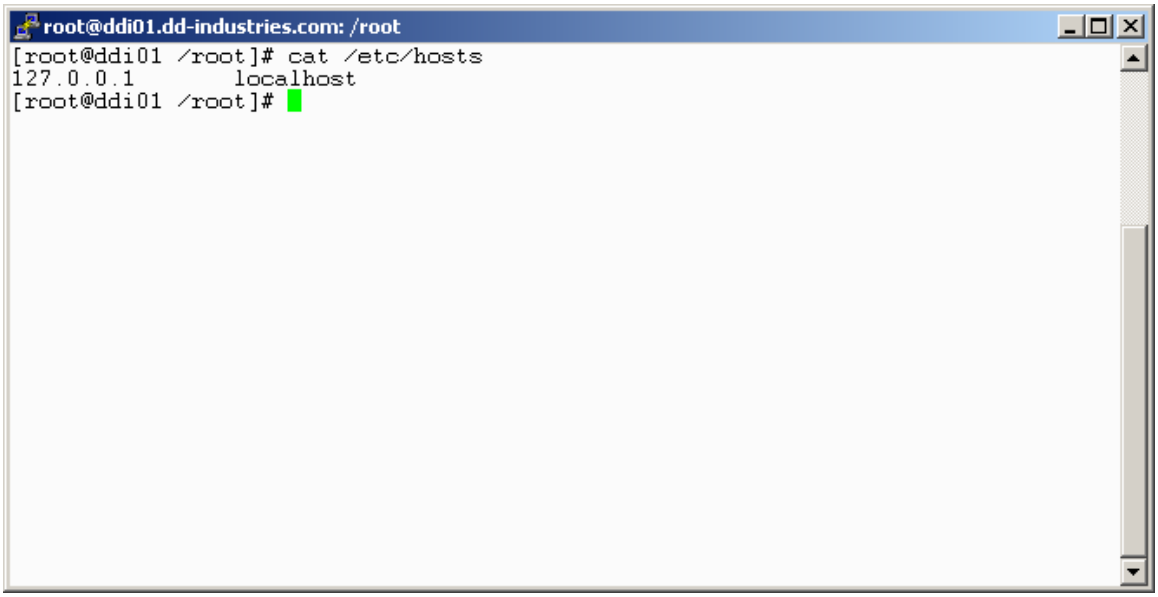
In the example the **/etc/resolv.conf** file has been output to the screen.

The file **/etc/resolv.conf** is used to control how a linux computer resolves name queries. As can be seen within the output, many settings are controlled within this file:

Entry	***Description***
domain	What domain name to “tack on” to the end of incomplete host names (e.g. ddi02)
search	Additional domains to search if the primary domain does not render a result
nameserver	The name servers for this host

Checking /etc/hosts

Consider the following



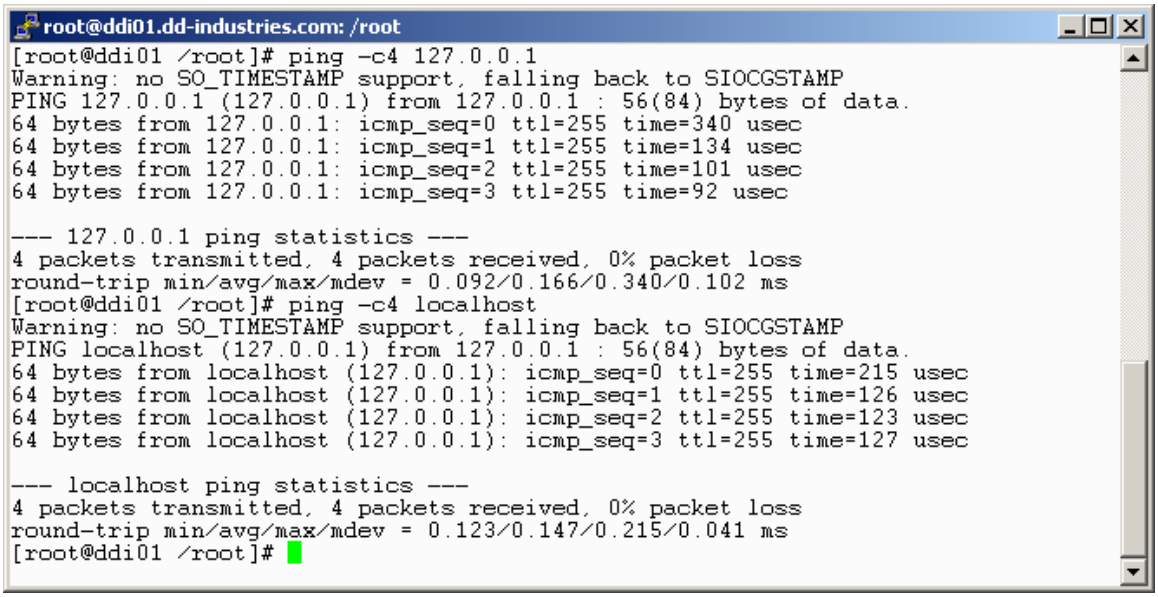
In the example the **/etc/hosts** file has been output to the screen. Before the system has DNS working (or even networking up) it sometimes needs to define some things on an IP level in terms of host -> IP mapping.

The **/etc/hosts** file pre-dates DNS and was the original way that hostname to IP address conversion was accomplished. This was replaced by DNS because it wasn't scalable.

The thing to check here is that **localhost** has been mapped to the IP address **127.0.0.1**

Testing Loopback Networking

Consider the following

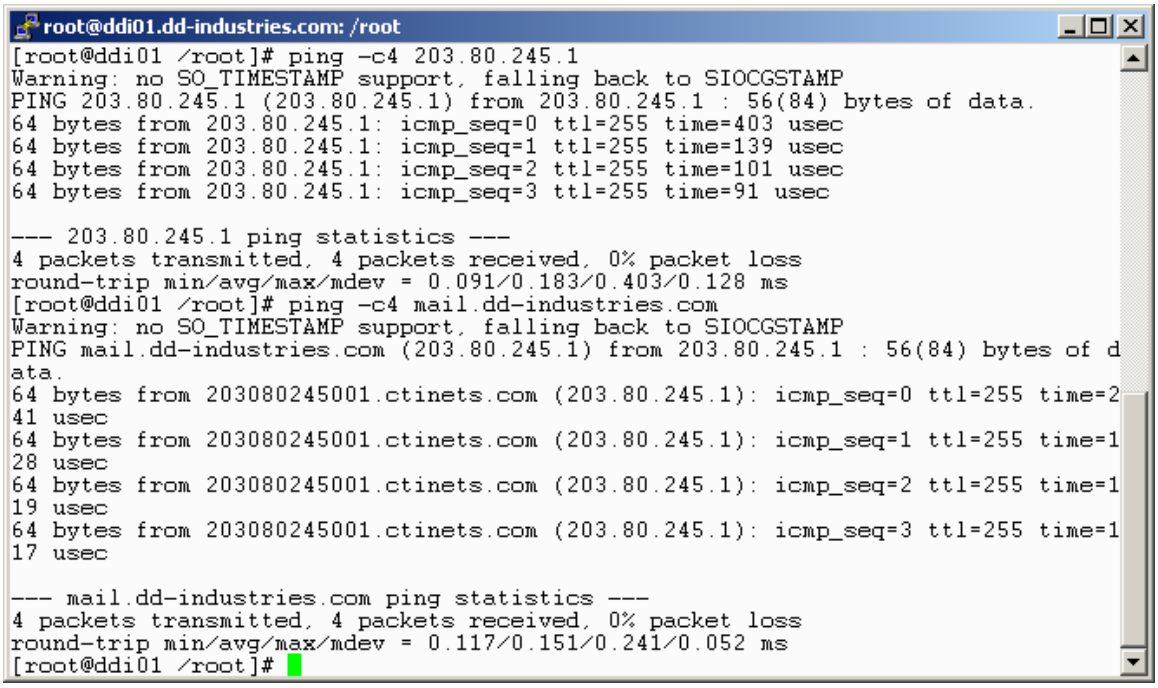


In the example the **loopback** address was tested in two ways. First of all the raw IP address of **127.0.0.1** was used to make sure that the Linux kernel was handling TCP/IP properly.

Next the name **localhost** was used to test the name -> IP mapping of the **/etc/hosts** file.

Testing Primary Interface Networking

Consider the following:

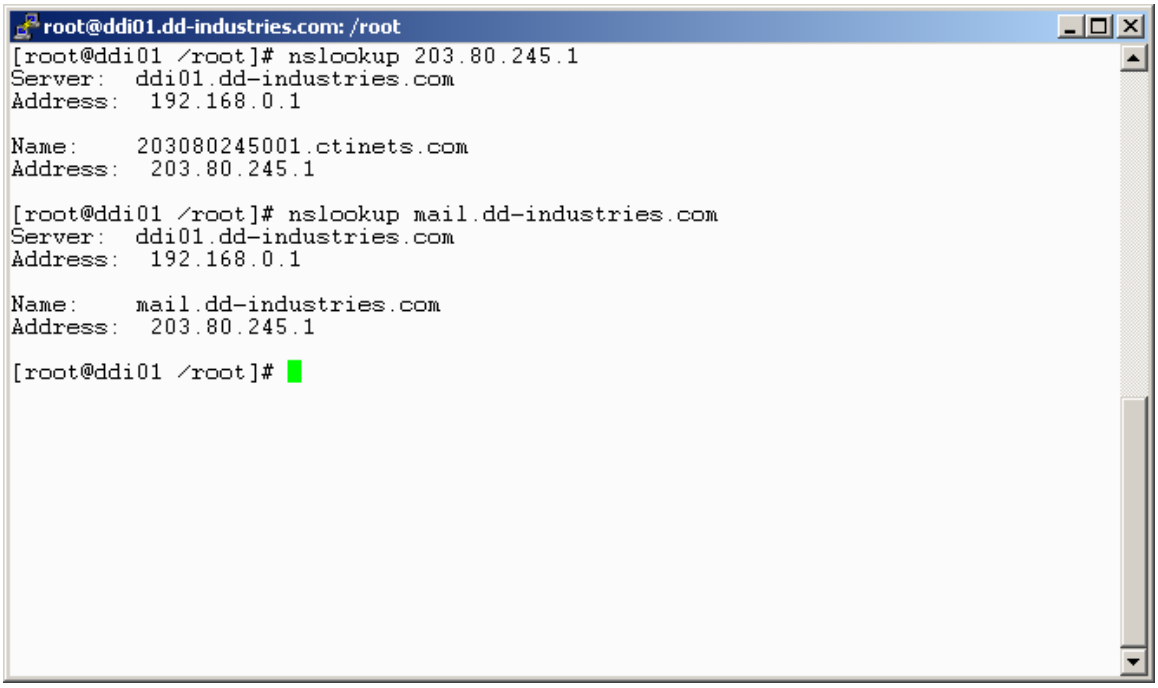


In the above example the raw IP address was used to test if the interface was processing packets correctly by using the **ping** command to send TCP/IP packets to the Ethernet Interface at **eth0**, which has been assigned the IP address **203.80.245.1**.

Next the **Fully Qualified Domain Name (FQDN)** of the computer was used to test if the DNS resolution was working correctly for this computer.

Testing Name Resolution With nslookup

Consider the following:



In the example the **nslookup** command was used to perform a **reverse lookup** and a **forward lookup**.

Reverse lookups attempt to obtain the Fully Qualified Domain Name (FQDN) of an IP address, **forward lookups** attempt to obtain the IP address of a supplied FQDN.

If Every Step Was Successful Then This System Is UP!