

REQUIREMENTS

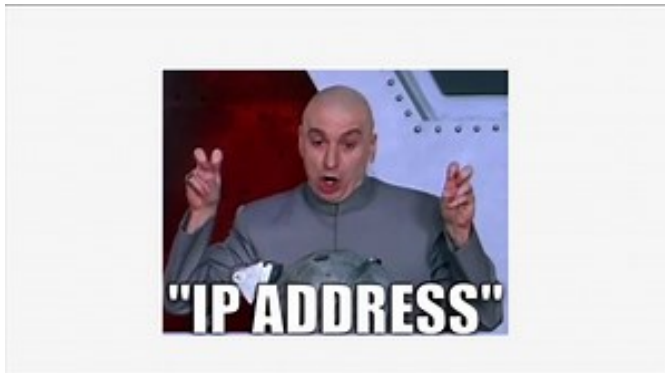
For this program students are expected to have the fundamentals understanding about IT covering the following points:

- Good understanding of different numeral systems like binary, decimal and hexadecimal numbers
- Good understanding of computer components, memory, disk space, CPU, etc
- Good understanding of how to install/uninstall a Windows and Linux operating system
- Basic understanding of how to use virtualization environments like VMware or VirtualBox
- Basic understanding of fundamental network protocols like ICMP, DNS, DHCP, HTTP
- Ability to convert between numeral systems

TECHNICAL EXAM CHEAT SHEET

Networking 101:

IP: <https://www.youtube.com/watch?v=7-qWlvQQtY>



[IP addresses. Explained.](https://www.youtube.com/watch?v=7-qWlvQQtY)

www.youtube.com

Any time you connect to the internet you've got an IP address. What's one of those, then?

IP vs MAC: <https://www.youtube.com/watch?v=HKM7qwP5Uj0>

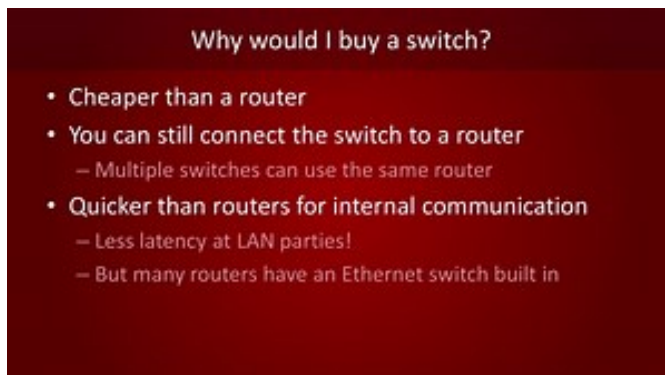


[what is IP address and MAC address?](#)

www.youtube.com

This video describes what is an IP address and what is a MAC address.

Network Devices: https://www.youtube.com/watch?v=Ofjsh_E4HFY



[Hub, Switch or Router? Network Devices Explained](#)

www.youtube.com

Hubs, switches and routers are devices that allow us to create networks and connect those networks to one another. We explain how they work and what their individual ...

TCP/UDP: <https://www.youtube.com/watch?v=Vdc8TCESlg8>



[UDP and TCP: Comparison of Transport Protocols](https://www.youtube.com/watch?v=Vdc8TCESlg8)

[www.youtube.com](https://www.youtube.com/watch?v=Vdc8TCESlg8)

Explains the basics of transport protocols and compares the two major options: UDP and TCP. Here's a list of the sections in this video and their time codes: 00:07 ...

TCP/handshake: <https://www.youtube.com/watch?v=LyDqA-dAPW4>



[What Is a Three-Way Handshake in TCP?](https://www.youtube.com/watch?v=LyDqA-dAPW4)

[www.youtube.com](https://www.youtube.com/watch?v=LyDqA-dAPW4)

What is a three-way handshake in TCP? What is flow control? What is a syn and an ack as part of the three-way handshake? This fundamental networking concept as part ...

Subnetting: <https://www.youtube.com/watch?v=a84XIopJFXs&t=9s>

```

128 64 32 16 8 4 2 1

192.168.3.55 /24

255.255.255.0 AND

11000000.10101000.0000011.001|
11111111.11111111.11111111.00000000

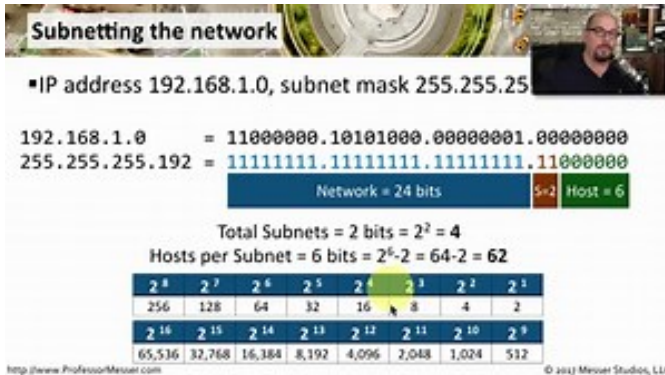
```

[Subnetting Cisco CCNA - Part 1 The Magic Number - YouTube](#)

www.youtube.com

How to do Cisco subnetting the easy way - CCNA The Magic Number Trick
<http://www.danscourses.com>

Subnetting: <https://www.youtube.com/watch?v=ZxAwQB8TZsM>



Subnetting the network

- IP address 192.168.1.0, subnet mask 255.255.255.255

192.168.1.0 = 11000000.10101000.00000001.00000000
 255.255.255.192 = 11111111.11111111.11111111.11000000

Network = 24 bits 5-2 Host = 6

Total Subnets = 2 bits = $2^2 = 4$
 Hosts per Subnet = 6 bits = $2^6 - 2 = 64 - 2 = 62$

2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1
256	128	64	32	16	8	4	2
2^{16}	2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^9
65,536	32,768	16,384	8,192	4,096	2,048	1,024	512

http://www.ProfessorMesser.com © 2013 Messer Studios, LLC

[Professor Messer - Seven Second Subnetting](#)

www.youtube.com

Subnetting with (almost) zero math. In seven seconds or less! This is the subnetting procedure I use when taking a certification exam. If you're looking for a way to ...

OSI TCP Model

https://www.youtube.com/watch?v=1uArp_bSvmA



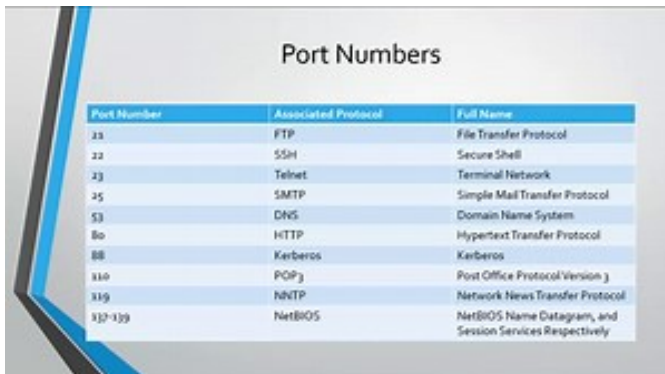
[CompTIA Network+ Certification \[License to Tech\] Ep 011: OSI and TCP/IP Model](https://www.youtube.com/watch?v=1uArp_bSvmA)

www.youtube.com

In this episode of Mike Meyers' Network+ Certification video training, Mike takes an Ethernet frame through the incoming and outgoing process using both the OSI and ...

Port Numbers:

<https://www.youtube.com/watch?v=x9thfmvNqTM>



Port Number	Associated Protocol	Full Name
21	FTP	File Transfer Protocol
22	SSH	Secure Shell
23	Telnet	Terminal Network
25	SMTP	Simple Mail Transfer Protocol
53	DNS	Domain Name System
80	HTTP	Hypertext Transfer Protocol
88	Kerberos	Kerberos
110	POP3	Post Office Protocol Version 3
119	NNTP	Network News Transfer Protocol
137-139	NetBIOS	NetBIOS Name Datagram, and Session Services Respectively

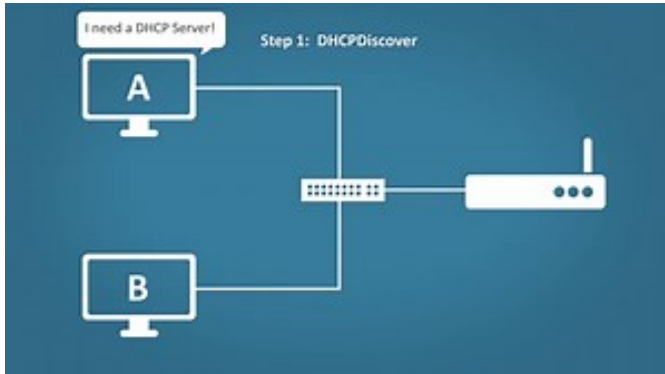
[Networking: Important Port Numbers](https://www.youtube.com/watch?v=x9thfmvNqTM)

www.youtube.com

In this video I talk about the port categories, such as Well Known, Registered & Dynamic Ports. I also talk about the port numbers that you will need to know! You can ...

What is DHCP:

<https://www.youtube.com/watch?v=S43CFcpOZSI>



[DHCP Explained | Step by Step](#)

www.youtube.com

How does DHCP work? When a device on your network needs an IP address, more than likely it will use DHCP (Dynamic Host Configuration Protocol) to obtain the IP ...

What is DNS:

<https://www.youtube.com/watch?v=72snZctFFtA>



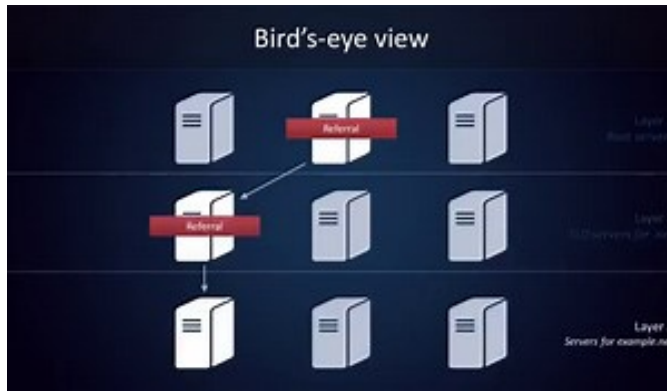
[DNS Explained](#)

www.youtube.com

Learn the ins and outs of how the Domain Name System (known as DNS by the cool kids), takes a name like dnsmadeeasy.com and translates it into an IP address to find ...

Inside the DNS:

<https://www.youtube.com/watch?v=GIZC4Jwf3xQ>



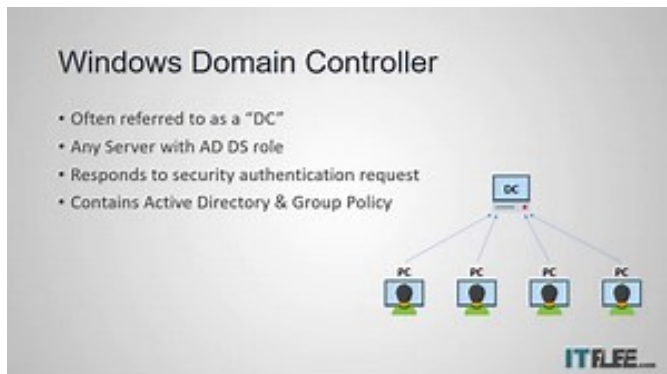
[Inside the Domain Name System](#)

www.youtube.com

When your browser tries to load youtube.com, how does it know where to contact YouTube's web servers? This video explains the basics of the Domain Name System, an ...

What is Active Directory or Domain Controller:

<https://www.youtube.com/watch?v=cTe5GsyhKUK>



[What is a Windows Domain Controller?](#)

www.youtube.com

Setup your own Windows Server lab at home: instructorpaul.com/build-your-own-it-lab What is a Windows Domain Controller - Please like, comment and subscribe =) In ...

Wireless networks 101:

<https://www.youtube.com/watch?v=UxC0P-Ao144>



[CHAPTER 11 WIRELESS NETWORKS Networking Basic](#)

www.youtube.com

W1Channel Recommended Books to Learn More about Netorking

<https://goo.gl/x0qr2d> W1Channel

Recommended Books to Learn More about PC Hardware

<https://goo.gl/wGi8RU>

Windows Troubleshooting:

<https://www.youtube.com/watch?v=BVBm-mO6cyQ>



[Using Windows Tools for Troubleshooting](#)

www.youtube.com

Info Level: Beginner Presenter: Eli the

Computer Guy Date Created: May 17,

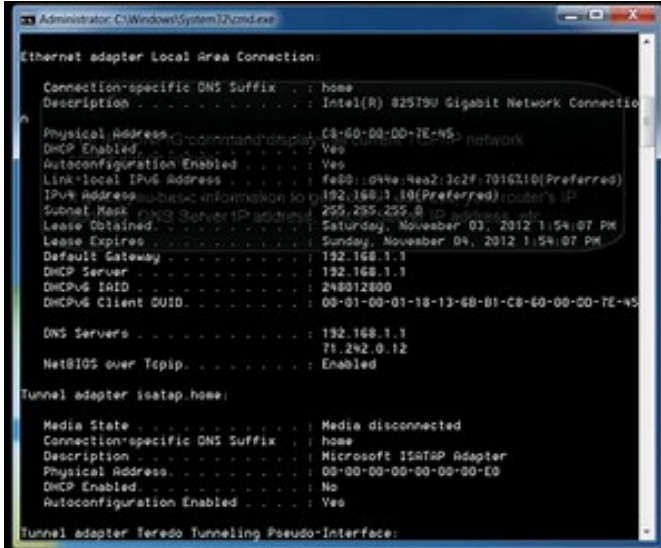
2010 Length of Class: 62 Minutes

Tracks Computer Repair Prerequisites

Familiarity with the ...

Network Troubleshooting:

<https://www.youtube.com/watch?v=AimCNTzDIVo>



```
Administrator: C:\Windows\System32\cmd.exe
Ethernet adapter Local Area Connection:
.
.
Connection-specific DNS Suffix . : hove
Description . . . . . : Intel(R) 82579U Gigabit Network Connection
.
.
Physical Address . . . . . : C8-60-00-00-7E-95
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::044e:4aa2:3c2f:7916%10(Preferred)
IPv4 Address. . . . . : 192.168.1.10(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1
DNS Servers . . . . . : 192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled

Tunnel adapter isatap.hove:
.
.
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : hove
Description . . . . . : Microsoft ISATAP Adapter
Physical Address. . . . . : 00-00-00-00-00-00-00-00
DHCP Enabled . . . . . : No
Autoconfiguration Enabled . . . . . : Yes

Tunnel adapter Teredo Tunneling Pseudo-Interface:
```

[Network Troubleshooting using PING, TRACERT, IPCONFIG, NSLOOKUP COMMANDS](#)

www.youtube.com

Watch my complete Networking Tutorial Playlist:

<http://goo.gl/WXNhTr> Video walkthrough for using the Command Prompt to troubleshoot network connectivity using 4 KEY ...

Linux Troubleshooting:

<https://www.youtube.com/watch?v=oxuRxtrO2Ag>



```
joe@Dell:~$ ls
Audio          Documents     Pictures      Videos
Chart Hits Archive Downloads     Public       VirtualBox VMs
Desktop        Music        Templates    Work
joe@Dell:~$ cd Do
Documents/ Downloads/
joe@Dell:~$ cd Downloads/
joe@Dell:Downloads$ cd ..
joe@Dell:~$ cd Downloads/
joe@Dell:Downloads$ cd
joe@Dell:~$ cd -
joe@Dell:~$
```

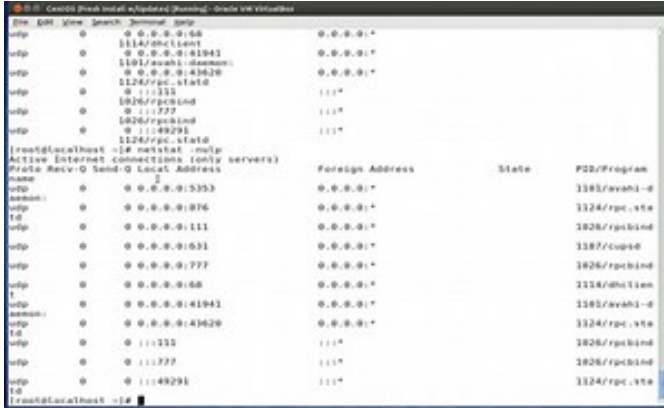
[Beginner's Guide to the Bash Terminal](#)

www.youtube.com

This video is a crash course to help new users get started with BASH. Here is a list of the commands we'll cover: BEGINNER'S GUIDE TO THE BASH TERMINAL NAVIGATION Is ...

Linux Common Network Utilities/Tools:

<https://www.youtube.com/watch?v=CigJXmUYXJY>



```
ssh 0 0 0.0.0.0:68 0.0.0.0:*
ssh 0 0 0.0.0.0:41941 0.0.0.0:*
ssh 0 0 0.0.0.0:43628 0.0.0.0:*
ssh 0 0 11132 111*
ssh 0 0 111222 111*
ssh 0 0 11149291 111*
[root@localhost ~]# ss -tlnat -nulp
Active Internet connections (only servers)
StateRecv-Q Send-Q Local Address          Foreign Address        State       PID/Program
tcp        0      0 0.0.0.0:22          0.0.0.0:*              LISTEN     1383/sshd
tcp        0      0 0.0.0.0:41941     0.0.0.0:*              LISTEN     1383/sshd
tcp        0      0 0.0.0.0:43628     0.0.0.0:*              LISTEN     1383/sshd
tcp        0      0 0.0.0.0:111       0.0.0.0:*              LISTEN     1383/xinetd
tcp        0      0 0.0.0.0:11132     0.0.0.0:*              LISTEN     1383/xinetd
tcp        0      0 0.0.0.0:111222    0.0.0.0:*              LISTEN     1383/xinetd
tcp        0      0 0.0.0.0:11149291  0.0.0.0:*              LISTEN     1383/xinetd
```

[Linux Common Network Utilities/Tools](#)

www.youtube.com

In this video I discuss some of the common network utilities used by system administrators. The tools discussed in this video are ping, telnet, netstat, nslookup, dig ...

PortScanning with NMAP:

<https://www.youtube.com/watch?v=0xZqQDof-JA>



[NMap 101: Port Scanning Options, Haktip 98](#)

www.youtube.com

This week Shannon Morse discusses several port scanning options you can use in NMap. NMap scans 1000 commonly used ports by default, which include ones like 80 for ...

What is Kali Linux?:

<https://www.kali.org/>

[Kali Linux | Penetration Testing and Ethical Hacking Linux ...](#)

www.kali.org

Home of Kali Linux, an Advanced Penetration Testing Linux distribution used for Penetration Testing, Ethical Hacking and network security assessments.
