

Forum:[Hack Forums](#)

Thread: [Introduction to Cisco Networking and Command-Line](#)

Cimex - December 19, 2015, 3:03 pm

Hello everyone, I decided to type with little guide for the people that want to learn more about Cisco and using the command line when messing with equipment etc. It is a way for me contribute rather than money-orientated contribution ?

Note: If you feel any of the information provided is incorrect, feel free to post and I will credit you for corrections ?

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1. Introduction

The purpose of this guide is to allow people to have a little insight on the basics of Cisco networking. If you wanted to learn and advance into networking in College / University, you will most likely start on CCNA1. The information in this thread will help you towards getting you prepared for CCNA1 and other Cisco courses.

2. Where to practice.

I would personally recommend getting a copy of Cisco Packet Tracer Student Edition. I cannot provide information how to get a copy, as if you are eligible for one, you would probably know by now.

You could invest in your own equipment if you want. Investing in a Cisco router in your price range would be a great investment, and if you really wanted to, then eventually invest in to buying a switch to practice setting things up.

3. The basic commands

Alright, now let's get into the commands shall we? I will supplying examples of these commands being used in Cisco Packet Tracer as well as explaining what they do.

Here's the network I will be using:

Spoiler ([Click to View](#))

CimexPC1 - Command PC which is directly connected to router through console, therefore can go into the router to set it up.

CimexPC2 - PC on network which will be configured to both IPv4 and IPv6

CimexR1 - The router where most things will be happening, the thing which is going to allow the computers to communicate with it once IP configuration has been set up.

CimexS1 - The hardware which pretty much connects devices together on a network.

I will be using the IP range 192.168.100.x for IPv4.

IPv6 will be determined and distributed using eui-64.

The Fa notes are the ports the straight-through cabling is going into.

Red commands are full commands, yellow commands are shortened down examples.

enable / en - This command enables the router. Once the router has booted up, you will automatically be in "user exec" mode. Typing this command will move you to "privilege exec" mode.

Code Router>en

Router#

configure terminal / config t / conf t - You use this command when you're in privilege exec mode. It enters "global configuration" mode - the name is self explanatory. You configure things.

Code Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#

hostname - sets the hostname of the router

Code Router(config)#hostname cimex

cimex(config)#

no ip domain-lookup - stops the attempts to resolution of DNS.

Code cimex(config)#no ip domain-lookup

cimex(config)#

banner motd #Message# - Displays a configured message to all connecting terminals.

Code cimex(config)#banner motd #Cisco Cimex#

cimex(config)#exit

cimex#

%SYS-5-CONFIG_I: Configured from console by console

cimex#exit

cimex con0 is now available

Press RETURN to get started.

Cisco Cimex

cimex>

interface fastethernet0/0 / int fa0/0 - allows you to access the configuration of that socket / port (The 0/0 is the port on the router) - I will go back to this in IP configuration!

ip address / ip add - add an IP address to an interface - I will go back to this in IP configuration!

no shutdown / no shut - enables the interface you're in (I commonly type "no shit" accidentally... it will happen... trust me ???)

4. IPv4 configuration

Alright! Now to the good stuff!

I mentioned three commands above which are vital for IPv4 configuration. They are also similarly used in IPv6, but there's a little more to IPv6.

So, in the network diagram example I am using, you see the Fa0/0? That's the port which I am using. Nothing is connected to Fa0/1 on the router.

1. Access the interface.

Code cimex>en

cimex#conf t

Enter configuration commands, one per line. End with CNTL/Z.

cimex(config)#int fa0/0

cimex(config-if)#

Notice "config-if"? yeah... you're in!

2. Add the IP address and subnet mask.

```
Code cimex(config-if)#ip add 192.168.100.10 255.255.255.0
cimex(config-if)#
```

On the network diagram I shown you on earlier in the thread, you saw I put a label above the router "192.168.100.10", therefore I am assigning that address to the router as planned. The "255.255.255.0" is the subnet mask. The .0 does not need to be changed as we have no subnets, which I will explain later.

3. Enabling the interface.

```
Code cimex(config-if)#no shut
```

```
cimex(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
cimex(config-if)#
You will see some text which is a confirmation telling you that the interface state has changed to up.
```

And would you look at that, the line is now active:

Spoiler [\(Click to View\)](#)

4. PC configuration. This is different on packet tracer than Windows, but I will show you for both what to do. You need to make note of the default gateway IP (router IP) and the IP you're about to assign to the PC.

When you're going this you will be on Ethernet. So follow these steps but ignore "Wi-Fi", that will say "Ethernet" in your case.

4.1 - Access "Network and Sharing Center" on Windows.

4.2 - Click the blue "Ethernet" text"

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4.3 - Click properties

4.4 - Click IPv4 so it is highlighted, then click properties.

Here is a diagram of the PC IPv4 configuration:

Spoiler [\(Click to View\)](#)

Do the same for PC2 but with a host ID of .30 (192.168.100.30)

5. Packet Tracer Configuration

5.1 - Click a PC

5.2 - Click "Desktop Tab"

5.3 - Click "IP Configuration"

Here is what it should look like:

Spoiler ([Click to View](#))

Repeat this for all other PCs, in this case one more - remember to change host ID.

Alright, now to test the connectivity all we have to do is make sure both PCs can ping each other and the router.

You can locate command prompt under "Desktop" tab of the PC when you're using packet tracer... if you don't know how to do it on Windows, open run and type "cmd" but I hope you knew that already... please.

Results:

CimexPC1 to CimexPC2 & Router:

Code PC>ping 192.168.100.30

Pinging 192.168.100.30 with 32 bytes of data:

Reply from 192.168.100.30: bytes=32 time=8ms TTL=128

Reply from 192.168.100.30: bytes=32 time=1ms TTL=128

Reply from 192.168.100.30: bytes=32 time=0ms TTL=128

Reply from 192.168.100.30: bytes=32 time=0ms TTL=128

Ping statistics for 192.168.100.30:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 8ms, Average = 2ms

CimexPC2 to CimexPC1 & Router:

Code PC>ping 192.168.100.20

Pinging 192.168.100.20 with 32 bytes of data:

Reply from 192.168.100.20: bytes=32 time=1ms TTL=128

Reply from 192.168.100.20: bytes=32 time=0ms TTL=128

Reply from 192.168.100.20: bytes=32 time=1ms TTL=128

Reply from 192.168.100.20: bytes=32 time=0ms TTL=128

Ping statistics for 192.168.100.20:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.100.10

Pinging 192.168.100.10 with 32 bytes of data:

Reply from 192.168.100.10: bytes=32 time=1ms TTL=255

Reply from 192.168.100.10: bytes=32 time=0ms TTL=255

Reply from 192.168.100.10: bytes=32 time=0ms TTL=255

Reply from 192.168.100.10: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.100.10:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

5. IPv6 configuration

Alright! You've made it this far, well done ? don't worry! IPv6 isn't that bad!

Let's go back to the terminal!

Here is the series of commands you will be doing.

Code cimex>en

cimex#conf t

Enter configuration commands, one per line. End with CNTL/Z.

cimex(config)#ipv6 unicast-routing

cimex(config)#int fa0/0

cimex(config-if)#ipv6 add 2001:8db:ACAD::/48 eui-64

cimex(config-if)#no shut

So, you're already familiar with some of these commands... but let's go into some detail on some new ones.

ipv6 unicast-routing:

Without this command, the router will act like an IPv6 host. If you wanted to forward packets across the network, you need this command. Without it, there would be no net flow.

ipv6 add 2001:8db:ACAD::/48 eui-64:

2001:8db:ACAD is that network host I decided to chose. The /48 is the prefix length I am using. The reason it is after two colons is because of the eui-64 command afterwards. This command is used to deploy and automatic host ID to the IPv6 network ID for the router. I will go into more detail about that later.

You may choose your own IPv6 address remember. But stick with "2001" at the beginning.

Once you have followed those series of commands, let's go find what IP address was deployed to the router.

Exit back to privilege exec mode (en) and type this command in:

show ipv6 int brief

```
Code cimex#show ipv6 int brief
FastEthernet0/0      [up/up]
    FE80::2E0:B0FF:FE57:1601
    2001:8DB:ACAD:0:2E0:B0FF:FE57:1601
FastEthernet0/1      [administratively down/down]
Vlan1                [administratively down/down]
cimex#
```

As you can see we have our 2001 address up and running on fa0/0. Now you have that, time to configure the PCs. Save that IP to a text document or keep it up on your screen.

The same way you accessed your IPv4 settings, open your IPv6 settings on Windows and here's what I have:

Spoiler ([Click to View](#))

I just took this part of the IPv6 address 2001:8DB:ACAD, added two semi colons, and gave the PC a host ID of 1.

There is the prefix length we setup and the default gateway.

You can also do this on packet tracer, the same section where you setup IPv4.

Ping results:

PC1 to Router & PC2:

```
Code PC>ping 2001:8DB:ACAD::2
```

Pinging 2001:8DB:ACAD::2 with 32 bytes of data:

```
Reply from 2001:8DB:ACAD::2: bytes=32 time=1ms TTL=128
Reply from 2001:8DB:ACAD::2: bytes=32 time=0ms TTL=128
Reply from 2001:8DB:ACAD::2: bytes=32 time=1ms TTL=128
Reply from 2001:8DB:ACAD::2: bytes=32 time=1ms TTL=128
```

Ping statistics for 2001:8DB:ACAD::2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

```
PC>ping 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601
```

Pinging 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601 with 32 bytes of data:

```
Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=1ms TTL=255
Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=0ms TTL=255
Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=0ms TTL=255
```

Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=0ms TTL=255

Ping statistics for 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC2 to Router & PC1:

Code PC>ping 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601

Pinging 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601 with 32 bytes of data:

Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=1ms TTL=255

Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=1ms TTL=255

Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=0ms TTL=255

Reply from 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601: bytes=32 time=0ms TTL=255

Ping statistics for 2001:8DB:ACAD:0:2E0:B0FF:FE57:1601:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 2001:8DB:ACAD::1

Pinging 2001:8DB:ACAD::1 with 32 bytes of data:

Reply from 2001:8DB:ACAD::1: bytes=32 time=1ms TTL=128

Reply from 2001:8DB:ACAD::1: bytes=32 time=0ms TTL=128

Reply from 2001:8DB:ACAD::1: bytes=32 time=0ms TTL=128

Reply from 2001:8DB:ACAD::1: bytes=32 time=0ms TTL=128

Ping statistics for 2001:8DB:ACAD::1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

That ends this tutorial. I will expand on it in the future, just thought I would put this out first. Thank you all for reading :)

Regrab - December 19, 2015, 7:54 pm

Awesome man! I am taking a new class at my school here in a few weeks and I know nothing about any of this. This seems to be very interesting though, hopefully I find it to be fun because I may want a career in it.

Sahaj - December 19, 2015, 7:59 pm

HQ thread man, keep up the good work.

B FOR BADASS - December 19, 2015, 8:18 pm

This will surely help me. Thx

Cimex - December 20, 2015, 5:48 am

Thanks guys. Just a note, I cannot remove the message "IPv6 coming soon" as editing the thread seems to exceed the limit. I had no idea how to reserve posts so looks like this will have to do

(Dec 19, 2015 08:54 PM)Regrab Wrote: [\[CITE\]](#) Awesome man! I am taking a new class at my school here in a few weeks and I know nothing about any of this. This seems to be very interesting though, hopefully I find it to be fun because I may want a career in it.
Good luck with the class man, I am sure you'll enjoy it :)

Dazzee - December 20, 2015, 9:48 am

Nice post, I didn't read it all but it looked good from what I read.

Cimex - December 20, 2015, 5:09 pm

(Dec 20, 2015 10:48 AM)Dazzee Wrote: [\[CITE\]](#) Nice post, I didn't read it all but it looked good from what I read.

Thank you very much.

#Skyline - December 22, 2015, 1:02 am

This is very nice tutorial about Cisco networking/CLI.

Nice stuff.

Pwn_star_60 - December 23, 2015, 1:30 am

Very nicely structured and easy to follow. Thanks

DeleteMyAccount - December 23, 2015, 1:17 pm

Cool tutorial. I'd urge people that are actually interested in this, or are learning it in school, to fiddle about with packet tracer. Try to make the weirdest configurations you can without connectivity failures. There are contests like BPA and SkillsUSA that have a networking section, and they like to throw really dumb configurations at you. Practice subnetting as well, it's not that hard, but some people have trouble with VLSM. The more you sit there and fiddle with the simulation, the more your knowledge will grow. You'll probably learn about as much from messing around as you will from the CCNA curriculum itself.

Cimex - December 24, 2015, 6:26 am

(Dec 23, 2015 02:17 PM)Zenkotsu Wrote: [\[CITE\]](#) Cool tutorial. I'd urge people that are actually interested in this, or are learning it in school, to fiddle about with packet tracer. Try to make the weirdest configurations you can without connectivity failures. There are contests like BPA and SkillsUSA that have a networking section, and they like to throw really dumb configurations at you. Practice subnetting as well, it's not that hard, but some people have trouble with VLSM. The more you sit there and fiddle with the simulation, the more your knowledge will grow. You'll probably learn about as much from messing around as you will from the CCNA curriculum itself.

I completely agree, I normally sit there routing more and more networks together and using different subnets.

Subnetting is hard to learn at first, I still get confused at parts, but I do prefer VLSM for the efficiency. I was going to make a tutorial on subnettings including VLSM, but I personally want to revise and practice more of it before I do so.

But I will be producing one at some point ?

JackRed - February 3, 2017, 2:20 pm

Thank you for your good tut, very useful! ?

lokoo34 - February 4, 2017, 3:03 am

looking nice if any body have any questions, can pm for help (i have cert CCNA+CCNP SWITCH &

ROUTE + CCSA+CCSE CHECK POINT), I did some courses in JUNIPER but no any cert Official

Infinity™ - February 12, 2017, 2:48 pm

Very useful tutorial mate. I am currently learning Cisco commands and do practicing some configuration using real Cisco modem and this help me a lot.

Cimex - February 13, 2017, 3:51 am

(Feb 12, 2017 03:48 PM)Properties Wrote: [\[CITE\]](#) Very useful tutorial mate. I am currently learning Cisco commands and do practicing some configuration using real Cisco modem and this help me a lot.

I'm glad it helped you. Good luck.

Exquisite. - February 13, 2017, 4:13 pm

It'd be awesome if you downloaded Packet Tracer; basically it's a program (Cisco endorsed) where you can create your own virtual network -- you can add routers, switches, firewalls, machines, all of that jazz and you can also configure your networks and devices, and doing so would be a great addition to the thread for visuals. Just a recommendation. I think it's free, that may or may not be true; don't quote me on it. Great tutorial, nevertheless

#Skyline - February 14, 2017, 7:57 pm

(Feb 13, 2017 05:13 PM)robustbug922 Wrote: [\[CITE\]](#) It'd be awesome if you downloaded Packet Tracer; basically it's a program (Cisco endorsed) where you can create your own virtual network -- you can add routers, switches, firewalls, machines, all of that jazz and you can also configure your networks and devices, and doing so would be a great addition to the thread for visuals. Just a recommendation. I think it's free, that may or may not be true; don't quote me on it. Great tutorial, neverthelessIf you have an account on Netcad you can download it for free.