CyberPatriot VI Finals:

Cisco Training Guide

Document history 2

CP6 Cisco Component Topic List: 3

Training Advice 3

Cisco Mentor Timeline 4

Available Training and Resources: 4

Network Design Basics 4

Ethernet 4

IPv4 Addressing / IP Subnetting 4

Network Device Configuration 4

Securing network devices properly with passwords & warning messages & Secure Network Device Connectivity 4

SSH 5

Domain Name Services 5

Static IP Routing 5

Virtual Local Area Networking (VLAN) and Trunking 5

Dynamic Host Configuration Protocol (DHCP) 5

Network Address Translation (NAT) 5

Logging of Network Device Messages 6

DMZ (perimeter network) 6

Access Control Lists (ACL) 6

Physical Cabling of Routers and Switches 6

Exercises: 6

You build the lab Exercises 6

You Build an ACL Lab 6

You Build a Subnetting Lab 7

Other Places to find training Material 7

# Document history

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| Document Status | Summary of changes | Next Step | Version and Date |
| Updated from CP5 competition. | \* Added Table of content  \* Added Training Guidance  \* Added section for Physical cabling to Routers and switches  \* Added section for additional learning resources  \* Added "YOU BUILD Lab Exercise" | \* Add SSH tips \* Add pictures of Physical routers and Switches  \* Post Packet Tracer Activities and links in document | Version-1: 12-Feb-2014 |
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# CP6 Cisco Component Topic List:

* Network Design Basics
* Reading a network diagram
* Logical versus physical diagrams
* Physical Cabling of Network Devices
* Ethernet
* IPv4 Addressing
* Network Device Configuration
* Securing network devices properly with passwords & warning messages
* Secure Network Device Connectivity
* Domain Name Services
* Static IP Routing
* Virtual Local Area Networking (VLAN) and Trunking
* Dynamic Host Configuration Protocol (DHCP)
* Network Address Translation (NAT)
* Logging of Network Device Messages
* DMZ (perimeter network)
* Access Control Lists (ACL)
* Using cisco.com for documentation

The competition will comprise of a network design & IP Address/subnetting portion, a Physical Connectivity portion and a Network Configuration portion. The configuration portion will use Cisco Packet Tracer to emulate the network devices, hosts and their connectivity.

# Training Advice

Start with an honest assessment of where your team's Cisco knowledgebase lies, and follow the outline below.

1. Review Cisco topics that teams might be struggling with.
2. Leverage Posted Material and WebEx videos found at: <http://www.uscyberpatriot.org/CP5/Training.aspx>
3. Review the videos, referenced on this document
4. Coaches send an email to your Cisco Mentor letting them know the topics that your team needs help with.
5. Schedule time with Cisco Mentor to help run through the requested topics.

# Cisco Mentor Timeline

Do not wait for Cisco Mentor to start your Cisco review/training. Review the training Advice section for tips on what to do to help your team, today!

These dates are conservative, most Cisco Mentors will exceed these dates.

* Cisco Mentor registration and Training [FEB19-28]
* Coaches will be given Cisco Mentor contact details
* Cisco Mentors will schedule a visit with Finalists [March 3-7]

Coaches, maximize the time with the cisco Mentor, by helping to asses what your team needs help with.

# Available Training and Resources:

## Network Design Basics

http://docwiki.cisco.com/wiki/Internetwork\_Design\_Guide#Internetworking\_Design\_Basics

## Ethernet

<http://docwiki.cisco.com/wiki/Ethernet_Technologies>

Physical Cabling - Wiring Standards

[http://youtu.be/b4cFGS\_-uZg](http://youtu.be/b4cFGS_-uZg" \t "_blank)

## IPv4 Addressing / IP Subnetting

http://www.cisco.com/en/US/tech/tk365/technologies\_tech\_note09186a00800a67f5.shtml  
<http://youtu.be/AJPZxXwOc-4> Part 1  
<http://youtu.be/z1hHG-0x7rE>  Part 2  
<http://youtu.be/_UzWSkLaflE>  Part 3

## Network Device Configuration

<http://www.cisco.com/en/US/partner/docs/ios/12_2/ip/configuration/guide/fipr_c.html>

## Securing network devices properly with passwords & warning messages & Secure Network Device Connectivity

<http://www.cisco.com/en/US/partner/docs/ios/12_2/security/configuration/guide/fsecur_c.html>

http://www.cisco.com/en/US/tech/tk365/technologies\_tech\_note09186a00800a67f5.shtml

<http://youtu.be/uSRdi1R9Uno>

http://www.cisco.com/en/US/partner/docs/ios/12\_2/security/configuration/guide/scfpass.html

<http://youtu.be/3v3Iw87vEQ8>  
[http://youtu.be/\_leNK30ZGXg](http://youtu.be/_leNK30ZGXg" \t "_blank) Part 1  
[http://youtu.be/HVsvnADcFSo Part 2](http://youtu.be/HVsvnADcFSo%20Part%202)

<http://www.youtube.com/watch?v=2JB7OFSs2c4>

### SSH

SSH

## Domain Name Services

http://www.youtube.com/watch?v=oxMJaaIkns8  
<http://www.cisco.com/en/US/tech/tk648/tk362/technologies_tech_note09186a00800c525f.shtml>

## Static IP Routing

<http://www.cisco.com/en/US/partner/tech/tk365/technologies_tech_note09186a00800ef7b2.shtml>

http://www.youtube.com/watch?v=kpehwgNwsMg  
http://www.danscourses.com/CCNA-2/static-and-default-routes.html

## Virtual Local Area Networking (VLAN) and Trunking

http://www.youtube.com/watch?v=TTtubS1ZScw  
http://www.danscourses.com/CCNA-3/inter-vlan-routing.htmlhttp://www.youtube.com/watch?v=2VboOLyRxyg  
  
http://www.danscourses.com/CCNA-3/vlans-and-trunks.htmlhttp://www.youtube.com/watch?v=2VboOLyRxyg  
<http://www.danscourses.com/CCNA-3/vlans-and-trunks.html>

http://www.cisco.com/en/US/partner/tech/tk389/tk689/technologies\_configuration\_example09186a008009478e.shtml

## Dynamic Host Configuration Protocol (DHCP)

<http://www.cisco.com/en/US/partner/docs/ios/12_0t/12_0t1/feature/guide/Easyip2.html>

ttp://www.bitpapers.com/2012/04/cisco-dhcp-static-mapping.html  
http://www.youtube.com/watch?v=gfRXUD\_vnhE

## Network Address Translation (NAT)

http://www.youtube.com/watch?v=kKxYzdaiX60  
<http://www.youtube.com/watch?v=VY3a82ctihk&list=PL452256E1D4CDA875&index=25>

<http://www.cisco.com/en/US/partner/docs/ios-xml/ios/ipaddr_nat/configuration/12-2sx/iadnat-addr-consv.html>

## Logging of Network Device Messages

<http://www.cisco.com/en/US/partner/products/sw/cscowork/ps2073/products_tech_note09186a00800a7275.shtml>

http://www.cisco.com/en/US/partner/tech/tk648/tk361/technologies\_tech\_note09186a0080120f48.shtml

## DMZ (perimeter network)

http://www.cisco.com/en/US/partner/docs/security/pix/pix72/quick/guide/dmz\_p.html

## Access Control Lists (ACL)

http://www.youtube.com/watch?v=ZlQUl3hu7rg&feature=plcp  
<http://www.youtube.com/watch?v=aSkv5-0S0ZM&list=PL3802490B125D64D8&index=20>

http://www.cisco.com/en/US/partner/products/sw/secursw/ps1018/products\_tech\_note09186a00800a5b9a.shtml

http://en.wikipedia.org/wiki/Ingress\_filtering

# Physical Cabling of Routers and Switches

**Router Interfaces**

**WAN**

**LAN**

**Management Ports**

**Switch Interface Ports**

# Exercises:

## You build the lab Exercises

This section will have instructions for labs that students can create to demonstrate mastery of Packet Tracer and Networking concepts.

### You Build an ACL Lab

Build an ACL lab that shows:

* A functioning DMZ
* at least one, correctly placed Standard Access List
* At least two Extended Access List
* ACL blocking a Host
* ACL blocking a subnet or vlan
* ACL blocking a single port
* Include the scenario description and diagram
* Bonus: use RFC 2827 compliant ACL

### You Build a Subnetting Lab

Build a subnetting lab that shows:

* 5 different length network Masks
* Use one Class-B RFC 1918 Address
* Use one network that has a maximum of two useable hosts
* Use one network that can be split into 4 networks with at least 10 hosts each

# Other Places to find training Material

**YouTube is a great resource**

**US Cyber Patriot's website**

**packetlife.net (Cheat sheets)**