جامعة الأهرام الكندية
AHRAM CANADIAN UNIVERSITY

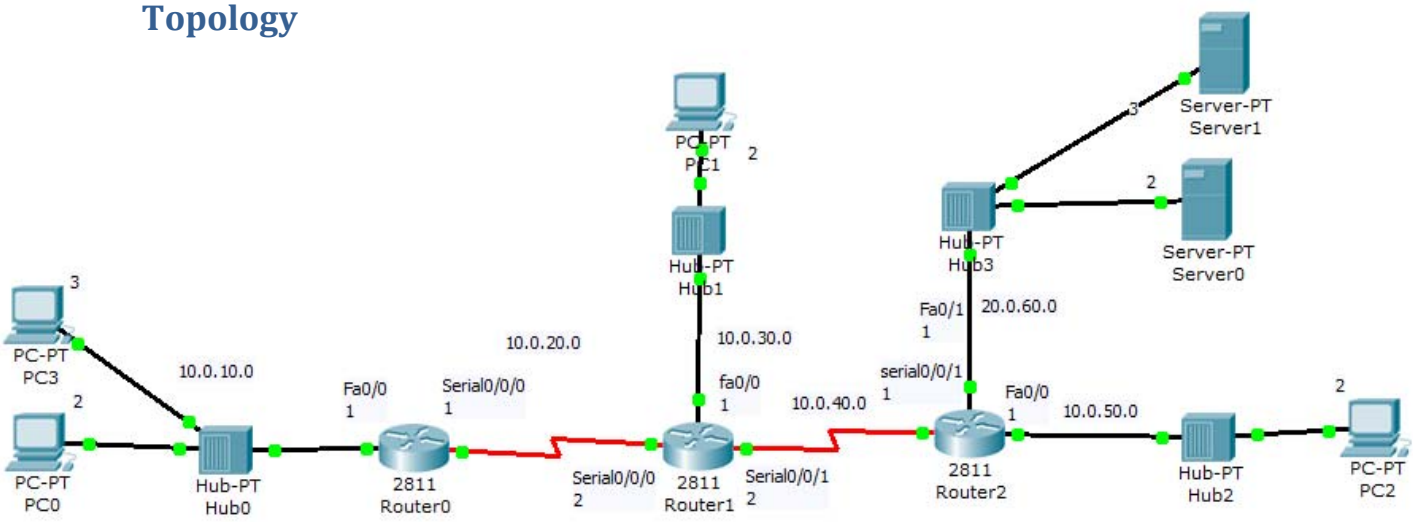
Wireless Lab 03

IP/TCP Layers Network Security III

Equipment

#	Item
4	PCs
4	Hubs
4	Router 2811
2	Server

Topology



3. Extended Access list – the whole story

Part 1:

Reboot before configuring router 2

10.0.10.0	10.0.30.0	10.0.50.0
Can ping 20.0.60.0 Can't telnet 3.3.3.3 Can web browse 20.0.60.2	Can't ping 20.0.60.0 Can telnet 3.3.3.3 Can't web browse 20.0.60.2	Can ping 20.0.60.0 Can telnet 3.3.3.3 Can web browse 20.0.60.2

R o u t e r 2	en config t access-list 198 deny icmp 10.0.30.0 0.0.0.255 20.0.60.0 0.0.0.255 echo access-list 198 permit icmp any 20.0.60.0 0.0.0.255 echo access-list 198 deny tcp 10.0.10.0 0.0.0.255 host 3.3.3.3 eq telnet access-list 198 permit tcp any host 3.3.3.3 eq telnet access-list 198 deny tcp 10.0.30.0 0.0.0.255 host 20.0.60.2 eq 80 access-list 198 permit tcp any host 20.0.60.2 eq 80 access-list 199 permit tcp host 20.0.60.2 any gt 1023 access-list 199 permit icmp 20.0.60.0 0.0.0.255 any echo-reply end

	config t interface serial0/0/1 ip access-group 198 in ip access-group 199 out end

Testing	PC0	Ping 20.0.60.2 Ping 3.3.3.3 telnet 3.3.3.3 web browse “20.0.60.2”
	PC3	Ping 20.0.60.2 Ping 3.3.3.3 telnet 3.3.3.3 web browse “20.0.60.2”
	PC1	Ping 20.0.60.2 Ping 3.3.3.3 telnet 3.3.3.3 web browse “20.0.60.2”
	PC2	Ping 20.0.60.2 Ping 3.3.3.3 telnet 3.3.3.3 web browse “20.0.60.2”
	Server 0	Ping 10.0.10.2 Ping 10.0.30.2 Ping 10.0.50.2 telnet 3.3.3.3

Part 2

Reboot before configuring router 2

10.0.10.0	20.0.50.0	20.0.60.0
Can web browse 20.0.60.2 “http://localserver” Can send/receive emails	Can web browse 20.0.60.2 “http://localserver”	Can ping 10.0.10.2 Can ping 10.0.30.2 Can ping 10.0.50.2

Router2	en config t access-list 198 deny icmp 10.0.30.0 0.0.0.255 20.0.60.0 0.0.0.255 echo access-list 198 permit icmp any 20.0.60.0 0.0.0.255 echo-reply access-list 198 permit icmp any 20.0.60.0 0.0.0.255 echo access-list 198 deny tcp 10.0.10.0 0.0.0.255 host 3.3.3.3 eq telnet access-list 198 permit tcp any host 3.3.3.3 eq telnet access-list 198 deny tcp 10.0.30.0 0.0.0.255 host 20.0.60.2 eq 80 access-list 198 permit tcp any host 20.0.60.2 eq 80 access-list 198 permit tcp 10.0.10.0 0.0.0.255 host 20.0.60.3 eq pop3

	access-list 198 permit tcp 10.0.10.0 0.0.0.255 host 20.0.60.3 eq SMTP access-list 198 permit tcp 10.0.10.0 0.0.0.255 host 20.0.60.2 eq 53 access-list 198 permit udp 10.0.10.0 0.0.0.255 host 20.0.60.2 eq 53 access-list 199 permit tcp host 20.0.60.2 any gt 1023 access-list 199 permit tcp host 20.0.60.2 any eq pop3 access-list 199 permit tcp host 20.0.60.2 any eq smtp access-list 199 permit tcp host 20.0.60.2 any eq 53 access-list 199 permit udp host 20.0.60.2 any eq 53 access-list 199 permit icmp 20.0.60.0 0.0.0.255 any echo-reply access-list 199 permit icmp 20.0.60.0 0.0.0.255 any echo end config t interface serial0/0/1 ip access-group 198 in ip access-group 199 out end

Testing	PC0	Send email web browse “localserver”
	PC3	Receive email web browse “localserver”
	Server 0	Ping 10.0.10.2 Ping 10.0.30.2 Ping 10.0.50.2 telnet 3.3.3.3

4. Named access list

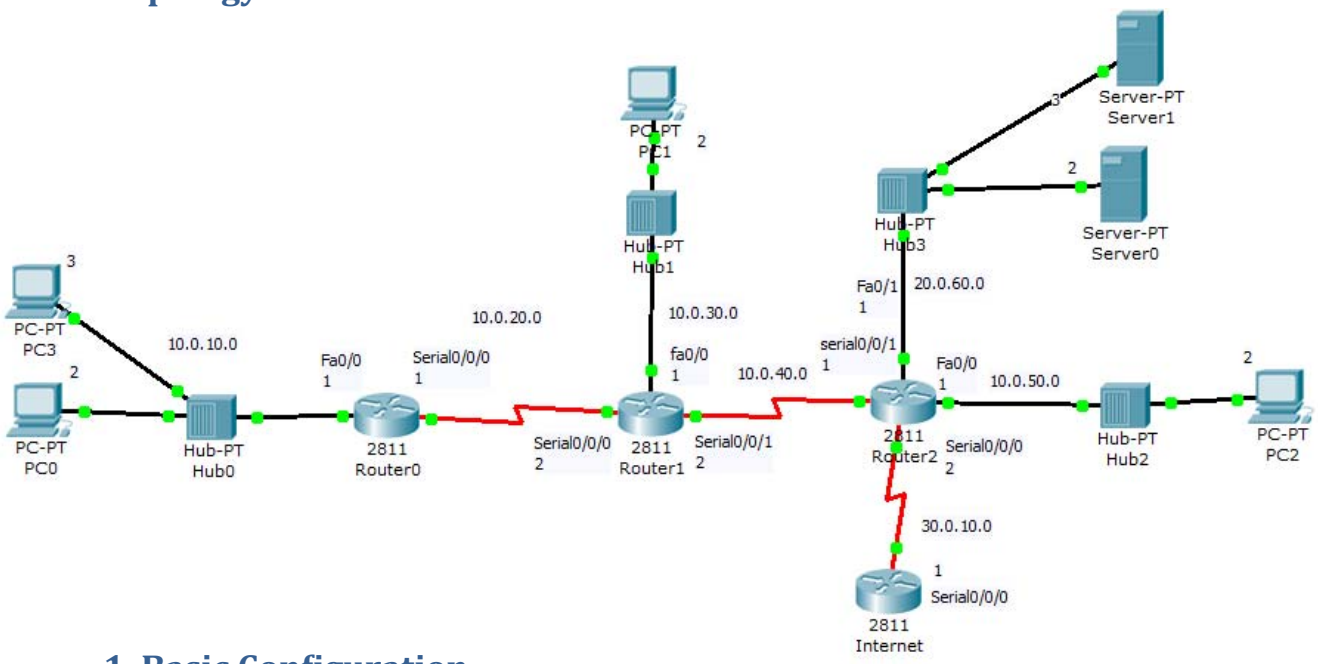
Reboot before configuring router 2

Router 2	en config t ip access-list extended ASL01 deny ip 10.0.10.0 0.0.0.255 host 3.3.3.3 permit ip any host 3.3.3.3 end en config t interface serial0/0/1 ip access-group ASL01 in end

Testing	PC0	Send email web browse “localserver”
	PC3	Receive email

		web browse “localserver”
	Server 0	Ping 10.0.10.2 Ping 10.0.30.2 Ping 10.0.50.2 telnet 3.3.3.3

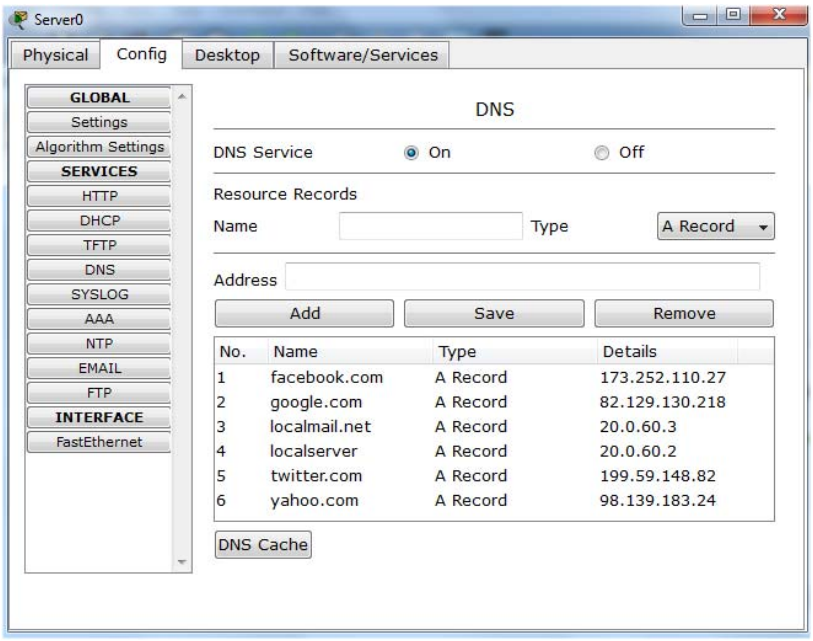
5. DMZ and internet simulation Topology



1. Basic Configuration

<u>Reboot before configuring router 2</u>

Sever 0:



Internet	en config t interface serial0/0/0 ip address 30.0.10.1 255.255.255.0 no sh exit ip route 0.0.0.0 0.0.0.0 30.0.10.2 interface loopback 1 ip address 8.8.8.8 255.255.255.255 no sh exit interface loopback 2 ip address 4.2.2.2 255.255.255.255 no sh exit interface loopback 3 ip address 82.129.130.218 255.255.255.255 no sh exit interface loopback 4 ip address 98.139.183.24 255.255.255.255 no sh exit interface loopback 5 ip address 173.252.110.27 255.255.255.255 no sh exit interface loopback 6 ip address 199.59.148.82 255.255.255.255 no sh end copy running-config startup-config

Router2	en config t interface serial0/0/0 ip address 30.0.10.2 255.255.255.0 clock rate 2000000 no sh exit ip route 0.0.0.0 0.0.0.0 30.0.10.1 end copy running-config startup-config

Router1	en config t ip route 0.0.0.0 0.0.0.0 10.0.40.1 end copy running-config startup-config

Router0	en config t ip route 0.0.0.0 0.0.0.0 10.0.20.2 end copy running-config startup-config

Testing	PC0	Ping google.com
	PC1	Ping twitter.com
	PC2	Ping yahoo.com
	Server 0	Ping 8.8.8.8

2. specifying which traffic can exit out the network

Router2	en config t access-list 101 permit ip 20.0.60.0 0.0.0.255 any access-list 102 permit ip any any exit config t interface serial 0/0/0 ip access-group 101 out ip access-group 102 in end

Testing	PC0	Ping google.com	
	PC1	Ping twitter.com	
	PC2	Ping yahoo.com	
	Server 0	Ping 8.8.8.8	

3. protect network by allowing the originated traffic from the network

Router2	en config t access-list 103 permit tcp any any established access-list 103 permit icmp any any echo-reply access-list 103 permit icmp any any unreachable access-list 103 deny ip any any exit config t interface serial0/0/0 ip access-group 103 in end

Testing	Server 0	Ping 8.8.8.8
	internet	Ping 20.0.60.2

4. activating allowed traffic to DMZ (email/dns/web/icmp)

Router2	en config t access-list 104 permit tcp any host 20.0.60.2 eq www access-list 104 permit tcp any host 20.0.60.2 eq 53 access-list 104 permit udp any host 20.0.60.2 eq 53 access-list 104 permit tcp any host 20.0.60.3 eq pop3 access-list 104 permit tcp any host 20.0.60.3 eq SMTP access-list 104 permit icmp any host 20.0.60.1 access-list 104 deny ip any any access-list 105 permit ip any any access-list 105 permit tcp any any gt 0 access-list 105 permit icmp any any exit config t interface fa0/1 ip access-group 104 out ip access-group 105 in end copy running-config startup-config

Testing	PC0	Browse http://localserver Send/receive email Ping localserver Ping localcmail.net Ping 8.8.8.8 Ping google.com
	PC1	Browse http://localserver Send/receive email Ping localserver Ping localcmail.net Ping 8.8.8.8 Ping google.com
	PC2	Browse http://localserver Send/receive email Ping localserver Ping localcmail.net Ping 8.8.8.8 Ping google.com
	Server 0	Ping 8.8.8.8 Ping google.com Ping 10.0.10.2 Ping 10.0.30.2 Ping 10.0.50.2