

ช 0-สกุล navigation (for 20)

for Staples

Config ACL

1. Create Acl <standard, ext>

2. Applying Std ACL to int

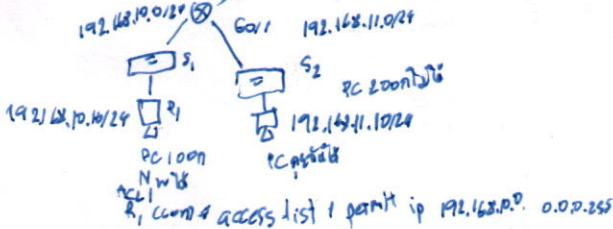
IP & Port

9. `route-map access-list access-list-number
deny/permit [remark] content
source [source-wildcard] [log]`

9. no access-list

Entering Criteria Statement

Some IP

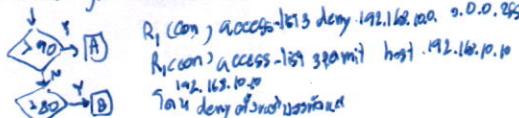


ACL 2

R1 (con) access-list 2 permit ip 192.168.0.0 0.0.0.255

R1 (con) access-list 2 deny any

Internal logic 192.168.1.1 interface



ACL group

- ip access-group

Router con->Ip access-group

{ access-list-number [access-list-name]}

list (left)

or Ip access-group

no access-list

Apply Std ACL

S1(Go1) --- S2(Go2)

192.168.0.10 --- 192.168.1.10

no access-list 1 deny host 192.168.1.10

11 --- 11 permit any

11 --- 11 permit any

interface go1

+ create ip access-group 1 in
name Std ACL

ip access-list [std/ext] name

(permit/deny, remark) & source

{source-wildcard} {log}

ip access-group name [in/out]

Commenting ACL

access-list 1 remark #

Edit Std Name

show running-config | include access-list 1

access-list 1 deny host 192.168.10.99

Edit Std Name > ip access-list std No.-Access

1s deny host 192.168.11.11

Verify

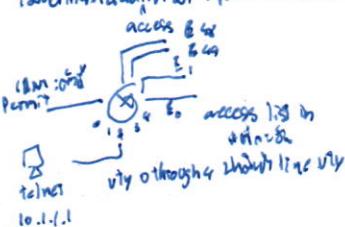
show access-list

Show ip interface

for Staples

Securing VTY port with std ACL

? จำกัดการเข้ามาในตัวรีบูต → permit/reject/restrict



Configuring std ACL to VTY

access-class command

filter vty 0-99

1. R (con-line) # access-class
access-list-number {in/vrf-access} [list]Verifying a std ACL used to secure
a VTY Port

ssh 192.168.1.1

admin

password

Extended ACL

can filter, source

Dest

Protocol

Portnum

Using Port

access-list 114 permit {cp 192.168.20.0 0.0.0.255} any eggs

114 --- 114 --- 21 20

Using Keyword

114 --- n telnet
114 --- n rlogin
114 --- n ftp
114 --- n ftp-data

Configure Extend

access-list access-list-number {deny/permit/remark}

protocol source [source-wildcard] [operator operand]

port port-number or name] destination {destination-wildcard}
[operator operand] [port port-number or name] [established]

Applying extend

access-list 104 permit tcp any 192.168.10.0 0.0.0.255 established
source in illustrik 192.168.10.0 destination in illustrik

Create Named Extended

ip access-list extended S VRP106

Edit Extended ACL

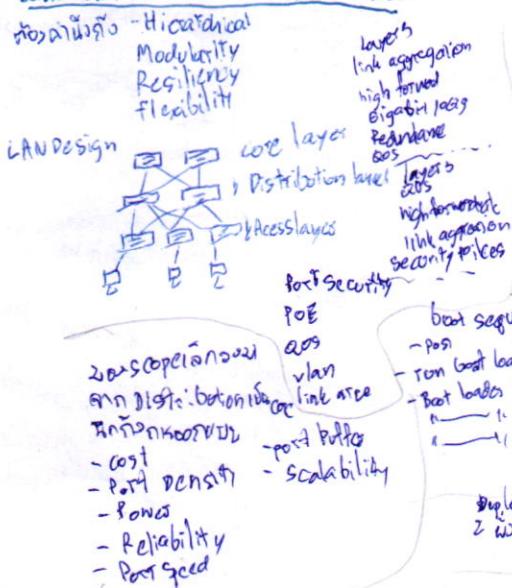
Method 1 - Text edit

Method 2 - Sequence Number (number)

debug ip packet 101



for Staples

Basic switch & Address Resolution Protocol

LAN design MDF → IDF for handling traffic

maximize available bandwidth and performance

euso function and placement of server

- enterprise server (DB, web server, application server)

- workshop server (engineering, R&D, etc.)

collision detection

segmentation issue

Broadcast domain issue (collisions, broadcast storms)

Segmentation & Layer 2
Broadcast to layer 2

switch Port

Collision Domain (port) covers layer 1 (physical)
layer 1 hub in port 1 collision layer 2 (switch)
layer 2 switch in port layer 3 (switches)

Broadcast Domain (port) covers 1 domain (LAN)
by hub in broadcast domain, 1 broadcast (LAN), 1 VLAN (switch)
layer 2 switch in broadcast (LAN), 1 VLAN (switch)
layer 3 router in broadcast (internet)

boot sequence
- POST
- ROM boot loads SW
- Boot loader low-level CPU init
- 1. initialize flash filesystem
- 2. locate and load default OS

Duplex configuration
2 way full-duplex
implied
available speed end

Main distribution facility

Inter-distribution facility

Basic switch management

Configure via Telnet
Assign IP
loopback interface
tenant config

Command show mac-Address-table

int fa 0/1
display add
speed add
medium auto mode switch to

IPV4 Inter Domain Routing

Fix long sub mask

16	Y.562	11	14
17	128.0	12	15
18	192.0	13	16
19	128.0	14	17
20	256.0	15	18
21	128.0	16	19
22	192.0	17	20
23	256.0	18	21
24	128.0	19	22
25	192.0	20	23
26	256.0	21	24
27	128.0	22	25
28	192.0	23	26
29	256.0	24	27
30	128.0	25	28
31	192.0	26	29

Subnet mask

A. 255.255.255.0

B. 255.255.0.0

C. 255.0.0.0

D. 255.255.255.255

E. 255.255.255.248

F. 255.255.255.240

G. 255.255.255.224

H. 255.255.255.192

I. 255.255.255.128

J. 255.255.128.0

K. 255.128.0.0

L. 128.0.0.0

M. 64.0.0.0

N. 32.0.0.0

O. 16.0.0.0

P. 8.0.0.0

Q. 4.0.0.0

R. 2.0.0.0

S. 1.0.0.0

T. 0.0.0.0

U. 0.0.0.0

V. 0.0.0.0

W. 0.0.0.0

X. 0.0.0.0

Y. 0.0.0.0

Z. 0.0.0.0

AA. 0.0.0.0

AB. 0.0.0.0

AC. 0.0.0.0

AD. 0.0.0.0

AE. 0.0.0.0

AF. 0.0.0.0

AG. 0.0.0.0

AH. 0.0.0.0

AI. 0.0.0.0

AJ. 0.0.0.0

AK. 0.0.0.0

AL. 0.0.0.0

AM. 0.0.0.0

AN. 0.0.0.0

AO. 0.0.0.0

AP. 0.0.0.0

AQ. 0.0.0.0

AR. 0.0.0.0

AS. 0.0.0.0

AT. 0.0.0.0

AU. 0.0.0.0

AV. 0.0.0.0

AW. 0.0.0.0

AX. 0.0.0.0

AY. 0.0.0.0

AZ. 0.0.0.0

BA. 0.0.0.0

BB. 0.0.0.0

BC. 0.0.0.0

BD. 0.0.0.0

BE. 0.0.0.0

BF. 0.0.0.0

BG. 0.0.0.0

BH. 0.0.0.0

BI. 0.0.0.0

BJ. 0.0.0.0

BK. 0.0.0.0

BL. 0.0.0.0

BM. 0.0.0.0

BN. 0.0.0.0

BO. 0.0.0.0

BP. 0.0.0.0

BQ. 0.0.0.0

BS. 0.0.0.0

BT. 0.0.0.0

BU. 0.0.0.0

BV. 0.0.0.0

BW. 0.0.0.0

BX. 0.0.0.0

BY. 0.0.0.0

BZ. 0.0.0.0

CA. 0.0.0.0

CB. 0.0.0.0

CC. 0.0.0.0

CD. 0.0.0.0

CE. 0.0.0.0

CF. 0.0.0.0

CG. 0.0.0.0

CH. 0.0.0.0

CI. 0.0.0.0

CJ. 0.0.0.0

CK. 0.0.0.0

CL. 0.0.0.0

CM. 0.0.0.0

CN. 0.0.0.0

CO. 0.0.0.0

CP. 0.0.0.0

CQ. 0.0.0.0

CR. 0.0.0.0

CS. 0.0.0.0

CT. 0.0.0.0

CU. 0.0.0.0

CV. 0.0.0.0

CW. 0.0.0.0

CX. 0.0.0.0

CY. 0.0.0.0

CZ. 0.0.0.0

DA. 0.0.0.0

DB. 0.0.0.0

DC. 0.0.0.0

DD. 0.0.0.0

DE. 0.0.0.0

DF. 0.0.0.0

DG. 0.0.0.0

DH. 0.0.0.0

DI. 0.0.0.0

DJ. 0.0.0.0

DK. 0.0.0.0

DL. 0.0.0.0

DM. 0.0.0.0

DN. 0.0.0.0

DO. 0.0.0.0

DP. 0.0.0.0

DQ. 0.0.0.0

DR. 0.0.0.0

DS. 0.0.0.0

DT. 0.0.0.0

DU. 0.0.0.0

DV. 0.0.0.0

DW. 0.0.0.0

DX. 0.0.0.0

DY. 0.0.0.0

DZ. 0.0.0.0

EA. 0.0.0.0

EB. 0.0.0.0

EC. 0.0.0.0

ED. 0.0.0.0

EE. 0.0.0.0

EF. 0.0.0.0

EG. 0.0.0.0

EH. 0.0.0.0

EI. 0.0.0.0

EJ. 0.0.0.0

EK. 0.0.0.0

EL. 0.0.0.0

EM. 0.0.0.0

EN. 0.0.0.0

EO. 0.0.0.0

EP. 0.0.0.0

EQ. 0.0.0.0

ER. 0.0.0.0

ES. 0.0.0.0

ET. 0.0.0.0

EU. 0.0.0.0

EV. 0.0.0.0

EW. 0.0.0.0

EX. 0.0.0.0

EY. 0.0.0.0

EZ. 0.0.0.0

FA. 0.0.0.0

FB. 0.0.0.0

FC. 0.0.0.0

FD. 0.0.0.0

FE. 0.0.0.0

FG. 0.0.0.0

FH. 0.0.0.0

FI. 0.0.0.0

FJ. 0.0.0.0

FK. 0.0.0.0

FL. 0.0.0.0

FM. 0.0.0.0

FN. 0.0.0.0

FO. 0.0.0.0

FP. 0.0.0.0

FU. 0.0.0.0

FV. 0.0.0.0

FW. 0.0.0.0

FX. 0.0.0.0

FY. 0.0.0.0

FZ. 0.0.0.0

GA. 0.0.0.0

GB. 0.0.0.0

GC. 0.0.0.0

GD. 0.0.0.0

GE. 0.0.0.0

GF. 0.0.0.0

GH. 0.0.0.0

GI. 0.0.0.0

GJ. 0.0.0.0

GK. 0.0.0.0

GL. 0.0.0.0

GM. 0.0.0.0

GN. 0.0.0.0

GO. 0.0.0.0

GP. 0.0.0.0

GR. 0.0.0.0

GS. 0.0.0.0

GT. 0.0.0.0

GU. 0.0.0.0

GV. 0.0.0.0

GW. 0.0.0.0

GX. 0.0.0.0

GY. 0.0.0.0

GZ. 0.0.0.0

HA. 0.0.0.0

HB. 0.0.0.0

HC. 0.0.0.0

HD. 0.0.0.0

HE. 0.0.0.0

HF. 0.0.0.0

HG. 0.0.0.0

HI. 0.0.0.0

HQ. 0.0.0.0

HR. 0.0.0.0

HS. 0.0.0.0

HT. 0.0.0.0

HU. 0.0.0.0

HV. 0.0.0.0

for Staples

VTP (Vlan trunking protocol) → ຮັບຈຳກັດ VLAN
 VTP (msg encap ISL, IEEE 802.1Q) ກວດສອກ ໃນ VTP
 Operation msg update version 2 & 3
 Version number 32 bit
 (0-429499245) ເພື່ອກຳນົດຂະໜາດ
 VLAN mode → Server add, remove, rename VLAN ອັນ domain
 client info for VTP process know message exchange trunk transparent
 VLAN mode → add, remove, rename

feature	Server	Client	Transparent
Save VTP Message	✓	✓	✗
Listen to ~	✓	✓	✗
Create VLAN	✓	✗	✓
Removes VLAN	✓	✗	✓

config 2 vtp - global config becomes vtp version 2 → vtp domain → vtp password prs → vtp mode server (indicates client transparent)

vlan config & VLAN ID v2 mode? show vtp status (config) → port vlan port 15200
 delect VLAN def in Cisco switch config

Running VLAN database VLAN ID interface info, the tunnel configuration
 VLAN & VLAN pruning → interface configuration → VLAN configuration → Security - the switch port trunk pruning VLAN remove VLAN ID

NAT (Network Address Translation) under private IP or public/real IP

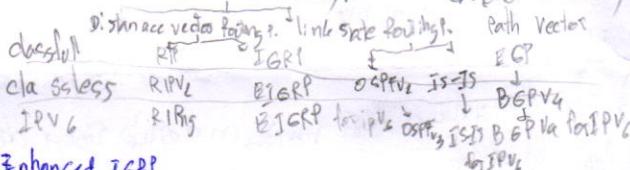
Terminology 4 types of inside local address (private IP) & outside local address (public IP) & inside global address & outside global address

Type of static configuration (map 1 to 1) & Recconfigurable IP not inside source static local IP global IP
 (① Dynamic & pool 10) Global/Real IP (map many to 1) IP not pool to static IP ending netmask net / prefix length
 (③ PAT (Port Address Translation) → port mapping many to 1) port number (map many to 1) set ACL 1.3 if not inside source list ACL-map pool access-list number permit source width
 config by NAT ④ Inside & config-id & IP not inside (3 outside Recconfig-id) & IP not outside (overload, NAPT and DNAT)

- EIGRP

Dynamic routing Protocol

Interior Gateway \rightarrow exterior gateway.



Enhanced IGRP

characteristics:

Basic features → Cisco-proprietary (not interoperable) protocol

version 1 (1991)

→ EIGRP classless version of IGRP - efficient, reliable, and faster than IGRP

→ Dual (diffusing update algorithm) maintains loop free & no routing loops

→ backup path redundancy routing domain → on best path

→ fast routing, converges very fast, converges fast time (less than 1 second) → if link down: 1st path in backup

- Establish Neighbor

Adjacencies (minimum cost between) is a group of directly connected EIGRP routers

↳ from 2 routers → neighbors

2. Reliable Transport protocol = RTP provide delivery of EIGRP packet to neighbors

↳ metric: RTP and neighbor adjacencies are used by (Dual) to maintain

- Partial and Bounded = update, maintain topology table with updates and updates

- Equal and Unequal Cost = Administered distance and metric

↳ load balancing & cost when load balancing

↳ protocol-dependent modules (PDMs) → protocol specific protocol for IP, IPv6, legacy protocol IPX and Apple talk

PDMs maintain EIGRP neighbor and topology table & neighbor table → topology table → routing table in routing

- unequal metric is dual - uses dual topology table

- individual topology cost per interface

- in redistribution of protocols

- RTP is EIGRP implement filtering and ack - in redistribution of protocols

is transport layer for EIGRP packet

→ TCP msg header application layer to maintain seq, msg type, ACK/EIGRP

- reliable, packet requires explicit acknowledgement (msg sequence)

- unreliable packet does not require acknowledgement - update, query, reply

→ no authentication (no encryption) routing update is up; unauthenticated authentication RIPv2, OSPF

for Staples



- Packet type routing update or queries EIGRP multicast IPV₄: 224.0.0.10, IPV₆ FF02::A/64, EIGRP broadcast 255.255.255.255
 ① Hello It advertises its routes to its neighbors; response is unreliable
 ② Update update int routers, update info to routing table neighbor route
 ③ Advertisement: neighbor updates Ad
 ④ Query request into routing table neighbor route
 ⑤ Reply neighbor query reply
 Implement EIGRP for IPV₄

- Autonomous system (AS), it's responsible for advertising authority (RFC 1930)

It is number of routers in one AS

- It includes IANA & Assigned RIRs, ISP, regional organizations and others

1669 0-65535 since 2009 is 32 bits available

verity: show ip eigrp neighbors

show ip protocols eigrp# RouterID 32 bits
show ip protocols

route eigrp router-id 32 bits loopback 10.1.1.1 public address Active

network nw-number wildcard mask 32 bits

Individually
passive-interface type number of default in interface number interface

Initial Router Discovers its neighbors, say hello to neighbor $\oplus k_1 \oplus k_2 \oplus k_3 \oplus k_4 \oplus k_5 \oplus k_6 = 0$ & R1 sends Ad & update into its local

Metric = BW [lowest], Delay [second], Reliability [worst], Load [worst] value show current best route w/o update routing table

$$\text{Default metric } [k_1 \times \text{bw} + k_2 \times \text{delay}] \times \text{SL} \quad \text{Sensored } [k_1 \times \text{bw} + (k_2 \times \text{bw}) + (k_3 \times \text{delay})] \times \frac{\text{SL}}{\text{SL-load}}$$

R config-topology metric weight k_1, k_2, k_3, k_4, k_5 - set for link interface & config bandwidth kibit/bw-rate

Dual and the topology table if FSM 1 (initial) - show ip eigrp topology [all-links]

- Successor (outermost dest) = neighbor route has smallest dest in min topo

- Feasible Successor (FS) is a feasible condition to backup path

- Feasible Distance Distance in neighbor route is advertised distance neighbor dest least cost with 20% by

distance unus - this force to consider dest neighbor in cost less than dest cost

$$\begin{array}{ll} \text{IPV4} & \text{IPV6} \\ 128 \text{bit} & 32 \text{bit} \\ \text{base 16} & \text{base 10} \end{array}$$