# Cheatsheet van commando's van computer netwerken

- **puTTY**
- `devmgmt.msc`

## Startup-config (alles wipen)

- delete vlan.dat
- erase startup-config
- reload

# OSPF

```
network network-address wildcard-mask area area-id
network 192.168.20.1 0.0.0.0 area 0

interface GigabitEthernet0/0/0
ip ospf 10 area 0
```

## Router ID

```
router ospf 10
router-id 1.1.1.1
auto-cost reference-bandwidth 1000
```

## passive-interface

```
router ospf 10
passive-interface GigabitEthernet0/0/0
```

## interface

```
interface g0/0
ip ospf priority 200 (max 255)
ip ospf hello-interval 15 (default 10)
ip ospf dead-interval 60 (default 40)
ip ospf cost 50
```

## Propogate

```
ip route 0.0.0.0 0.0.0.0 Serial0/1/0
router ospf 1
default-information originate
```

### log

```
show ip ospf interface
show ip ospf neighbor
ip ospf priority value
show ip ospf
show ip ospf database
show ip ospf neighbor
show ip protocol
show ip route | begin gateway
```

### Ipv6

```
ipv6 unicast-routing
ipv6 router ospf 10
interface GigabitEthernet0/0/0
ipv6 ospf 10 area 0
auto-cost reference-bandwidth 1000
clear ipv6 ospf process
```

## ACL

### standalone ACL

```
access-list 1 deny 192.168.11.0 0.0.0.255
acces-list 1 permit any
acces-list 1 deny any

ip access-list standard File_Server_Restrictions
permit host 192.168.20.4
deny any

int g0/0/0
ip acces-group 1 out
```

### Extended ACL

```
access-list 110 permit tcp 192.168.10.0 0.0.0.255 any eq www (443)

interface g0/0/0
ip access-group 110 in
```

### Log

```
show access-lists
```

## Nat

### Static Nat

```
ip nat inside source static 192.168.10.254 209.165.201.5

interface serial 0/1/0
ip nat inside

interface g0/0
ip nat outside
```

### Dynamic Nat

```
access-list 1 permit 192.168.0.0 0.0.255.255 (ACL)
ip nat pool NAT-POOL1 209.165.200.226 209.165.200.240 netmask 255.255.255.224
ip nat inside source list 1 pool NAT-POOL1

interface serial 0/1/0
ip nat inside

interface g0/0
ip nat outside
ip access-list standard R2NAT
  permit 192.168.10.0 0.0.0.255
  permit 192.168.20.0 0.0.0.255
```

### Pat

```
ip nat inside source list 2 interface s0/1/1 overload (Pat with pool)
ip nat inside source list 1 pool ANY_POOL_NAME overload (Pat Interface)
```

### log

```
show ip nat translation
show run | include nat
show ip nat statistics
```

## Vlan opzetten

### Naam opzetten

```
vlan x
name x
```

### Bebruikers op een vlan zetten (access)

```
interface F0/1
switchport mode access
switchport access vlan 10
```

### Trunk poorten instellen

```
interface G0/1
switchport mode trunk
switchport trunk allowed vlan 10,... (voor extra vlans)
```

### Administrator vlan instellen

```
(Switch 1 & 2 instellen als admin vlan)
ip instellen van op de vlan admin
no shutdown
(belangerijk om de default-gateway in te stellen)
```

### Testing

```
do show vlan brief
do show interfaces trunk
```

```
show ip interface brief
```

**Router**

## Subinterface

```
interface g0/0.10
encapsulation dot1Q (native) 10
ip address * *
```

## Interface enable

```
interface g0/0
no shutdown
```

## Trunk poorten instellen

```
interface G0/1
switchport mode trunk
switchport trunk allowed vlan 10,... (voor extra vlans)
```

## Layer 3 switch

```
interface vlan 10
ip address 192.168.10.1 255.255.255.0
no shutdown
exit
(Repeat)
ip routing
(no switchport voor als je geen vlans wilt gebuiken)
```

**Geen trunk** interface GigabitEthernet1/0/6 switchport mode access switchport access vlan 10 exit **Trunk** interface G0/1 switchport mode trunk switchport trunk allowed vlan 10,... (voor extra vlans)

## Ospf

```
router ospf 10
network 192.168.10.0 0.0.0.255 area 0
network 192.168.20.0 0.0.0.255 area 0
```

```
network 10.10.10.0 0.0.0.3 area 0
^Z
```

# Port-Channel

## Port-Channel instellen (Router - Switch)

Switch

```
interface range f0/1 - 2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allow vlan 1,2,20
```

Router

```
interface range GigabitEthernet0/0/0 - 1
channel-group 1
exit
interface port-channel 1
interface Port-channel 1.10
encapsulation dot1Q 10
ip address 192.168.10.1 255.255.255.0
```

# HSRP

## HSRP op interface G0/0/1 op router R1 (active):

```
interface g0/0/1
ip address 172.16.10.1
standby version 2
standby 1 ip 172.16.10.1
standby 1 priority 150
standby 1 preempt
```

## HSPR bij Vlan

```
(active) instellen op elke vlan bij de router
(standby) vlan instellen op de standby router met de ips (andere ip dan van
active)
(switch) trunk instellen naar de standby router
interface g0/0.10
encapsulation dot1Q (native) 10
ip address * *
standby version 2
standby 1 ip 172.16.10.1
standby 1 priority 150
standby 1 preempt
```

# Routes

## Static routes

```
ip route 'destination(network)' 255.255.255.0 'network(destination)'
ip route 'destination' 255.255.255.0 s0/1/0
ipv6 route 'destination'  'network'

show ip route static
show ip route network
show running-config |section ip route
```

## Floating static routes (alternatief van static)

```
ip route 0.0.0.0 0.0.0.0 'network' 5
ipv6 route ::/0  'network' 5
```

## Default static routes (weg uit het netwerk)

```
ip route 0.0.0.0 0.0.0.0 'network'
ipv6 route ::/0  'network'
```

## static Host routes (naar 1 ip)

ip route 209.165.200.238 255.255.255.255 198.51.100.2

# DHCP

## Instellen

```
 no service dhcp
 service dhcp
```

## IPv4

### DHCP instellen op router

```
ip dhcp excluded-address 192.168.10.1 192.168.10.9
ip dhcp excluded-address 192.168.10.254
ip dhcp pool LAN-POOL-1
network 192.168.10.0 255.255.255.0
default-router 192.168.10.1
dns-server 192.168.11.5
domain-name example.com
end

interface g?
ip address dhcp
no shutdown
```

### Ip helper

```
interface G0/0?
ip helper-address IP
exit
```

## IPv6

### DHCP SLAAC

```
ipv6 unicast-routing
show ipv6 interface G0/0/1 | section Joined
```

### Stateless DHCPv6

```
ipv6 nd other-config-flag
end
show ipv6 interface g0/0/1 | begin ND
```

### Stateful DHCPv6

```
int g0/0/1
ipv6 nd managed-config-flag
ipv6 nd prefix default no-autoconfig
end
show ipv6 interface g0/0/1 | begin ND
```

## IPv6 DHCP Server

### Stateless DHCPv6 Server

**Server**

```
ipv6 unicast-routing
ipv6 dhcp pool IPV6-STATELESS
dns-server 2001:db8:acad:1::254
domain-name example.com
exit
interface GigabitEthernet0/0/1
description Link to LAN
ipv6 address fe80::1 link-local
ipv6 address 2001:db8:acad:1::1/64
ipv6 nd other-config-flag
ipv6 dhcp server IPV6-STATELESS
no shut
end
pc : ipconfig /all
```

**Client**

```
ipv6 unicast-routing
interface g0/0/1
ipv6 enable
ipv6 address autoconfig
end
show ipv6 interface brief
show ipv6 dhcp interface g0/0/1
```

### Stateful DHCPv6 Server

**Server**

```
ipv6 unicast-routing
ipv6 dhcp pool IPV6-STATEFUL
address prefix 2001:db8:acad:1::/64
dns-server 2001:4860:4860::8888
domain-name example.com
exit
interface GigabitEthernet0/0/1
description Link to LAN
ipv6 address fe80::1 link-local
ipv6 address 2001:db8:acad:1::1/64
ipv6 nd managed-config-flag
ipv6 nd prefix default no-autoconfig
ipv6 dhcp server IPV6-STATEFUL
no shut
end
```

**Client**

```
ipv6 unicast-routing
interface g0/0/1
ipv6 enable
ipv6 address dhcp
end
show ipv6 interface brief
show ipv6 dhcp interface g0/0/1
```

# Switch Configuren

## Basic

```
banner motd %welkom "gebruiker"%
banner motd %Toegang enkel voor bevoegden!%
hostname x
description x
no ip domain lookup
ip domain-name ccna-lab.com
ipv6 unicast-routing
```

## Data opslaan van config

```
copy run start
reset
```

```
reload
```

## BEVEILIGING

**Passwoord instellen** line console 0 password pw123 login service password-encrytion **Passwoord op enable** enable secret 123pw **Passwoord op VTY** line vty 0 4 password cisco login

## Ip instellen

```
interface FastEthernet 0/1 (met ? bekomen)
ip address 10.0.5.1 255.255.255.0
ipv6 address 2001:db8:acad:5::1/64
ipv6 address fe80::2:b link-local
no shutdown (! = no)
ipv6 unicast-routing
```

## Loopback instellen

interface lo1 ip address 10.1.0.1 255.255.255.0 ipv6 address fe80::1 link-local ipv6 address 2001:db8:acad:10::1/64 no shutdown

## SSH configurene

```
show ip interface brief (Vlanl open zetten)
interface Vlan 1
ip adress 192.168.10.5 255.255.255.0
no shutdown
line vty 0 4
login local
transport input ssh
username selabs.local password <passwoord>
ip domain-name selabs.local
crypto key generator rsa
```

# Troubleshoot

```
show ipv6 interface brief
show ipv6 dhcp interface g0/0/1
do show vlan brief
do show interfaces trunk
show ip interface brief
show ip route static
show ip route network
```

```
show running-config |section ip route
show interface port-channel
show etherchannel summary
show etherchannel port-channel
show interface etherchannel
```

### Port Security

- `interface <type> <number>` - Enters the interface configuration mode (e.g., `interface f0/1`)
  - `switchport mode access` - Sets the port to access mode
  - `switchport port-security` - Enables port security on the interface
  - `switchport port-security maximum <number>` - Limits the number of MAC addresses on the port
  - `switchport port-security mac-address sticky` - Enables sticky MAC address learning
  - `switchport port-security violation <protect|restrict|shutdown>` - Configures port violation mode
- `show port-security` - Shows port security status for all interfaces
- `show port-security interface <interface>` - Displays port security details for a specific interface
- `clear port-security sticky` - Clears the sticky MAC addresses

### STP

```
spanning-tree mode [pvst ;rapid-pvst ; mst]
spanning-tree vlan [VLAN_ID]
priority [PRIORITY]
spanning-tree bpduguard enable
spanning-tree portfast
spanning-tree portfast default
```