

===== Basic Config =====

hostname Router1 (Naming a device)

Configure Passwords

line console 0

password {password} (user password)

login

enable secret {password} (privileged password)

service password-encryption (encrypt the privileged password)

banner motd # message ja khushi #

copy running config to NV-RAM (boot time startup-config will be copied to running-config at boot time)

copy run starup-config

enable router port

int g0/0

no shutdown

Switch Virtual Interface Configuration

int vlan1

ip address 192.168.10.11 255.255.255.0

ip default-gateway 192.168.99.1

no shutdown

to assign gateway

int vlan1

ip default-gateway 192.168.99.1

enable telnet (in router or switch)

line vty 0 15

password {pass}

login

PC er cmd prmt theke telnet korte hoy

telnet {ip address} (oi device er access pawa jay)

===== VLAN =====

VLAN creation

vlan 10

name CSE

vlan 30

name ME

port assignment

int f0/1

switchport mode access

switchport access vlan 10

(Similar code for other VLANs)

trunk mode (sob vlan er data jabe) on switch

```
interface f0/3
switchport mode trunk
switchport trunk native vlan 10
switchport trunk allowed vlan 10,30,99
// switchport trunk allowed vlan add 1
```

===== inter VLAN routing =====

1. Legacy Inter-VLAN Routing

router (use 2901 router) e just 2ta port e 2ta ip address dibo. switch er 4ta port e thikmoto vlan assign korbo. pc gulate router er ip address hobe default gateway (router use korlei gateway deya lage)

router codes

```
int g0/0
ip address 192.168.10.20 255.255.255.0
no shutdown

int g0/1
ip address 192.168.30.20 255.255.255.0
no shutdown
end
copy running-config startup-config
```

2. Router on a stick

router er line ta trunk kore deya labe.. subinterface kora lagbe
dot1q lagbe.. switch tag kore pathale router ke untag korte hobe

- Create VLANs (VLANs 10 and 30) on the switch
- Assign the VLANs to switch ports
- Trunk the necessary switch port
- set gateways of the PCs to router IPs

Sub interfacing

```
int g0/0.10
encapsulation dot1q 10
ip address 192.168.10.20 255.255.255.0
PC of VLAN 10 will set the default gateway to 192.168.10.20
```

```
int g0/0.30
encapsulation dot1q 30
ip address 192.168.30.20 255.255.255.0
PC of VLAN 30 will set the default gateway to 192.168.30.20
end
conf t
int g0/0
no shutdown
```

===== NAT =====

Private side router# give ip to each port of the router (No need if already given subinterface IP)

```
int g0/0 (same for g0/1)
ip address 192.168.10.1 255.255.255.0
no shutdown
```

```
int s0/0/0
ip address 100.1.1.1 255.255.255.252      (real IP)
clock rate 64000                          (clock on private side router)
no shutdown
```

Public ISP router#

```
int s0/0/0
ip address 100.1.1.2 255.255.255.252
no shutdown

int g0/0
ip address 100.100.100.1 255.255.255.0
no shutdown
```

Set default gateways of PCs and servers properly

STATIC NAT (fixed one to one mapping) config (static ip bind)

Private side router#

```
ip route 0.0.0.0 0.0.0.0 s0/0/0      (kono rasta na chinle serial port 0 diye just pathay dibe)
ip nat inside source {private ip} {public ip}      (for individual PCs, optional)
int g0/0
ip nat inside
int g0/1
ip nat inside
int s0/0/0
ip nat outside
```

Public isp router#

```
ip route 0.0.0.0 0.0.0.0 S0/0/0
```

Dynamic NAT config (dynamic one to one mapping)

je je side e NAT translation lagbe oi router gulate similar cmd dibo

```
ip nat pool BUET-pool1 209.165.200.8 209.165.200.11 netmask 255.255.255.224
```

permitting our 2 VLANs

```
access-list 1 permit 192.168.10.0 0.0.0.255
access-list 1 permit 192.168.20.0 0.0.0.255
(the last portion is wildcard mask, used to filter out host part)
ip nat inside source list 1 pool BUET-pool1
```

ekhaneo inside outside chinay dite hobe (same as STATIC NAT)

```
sh ip nat translations      (for dynamic NAT & PAT)
```

PAT (same ip onekjon ke dibo)

```
int g0/0
ip nat inside
int g0/1
ip nat inside
int s0/0/0
ip nat outside

access-list 2 permit 192.168.10.0 0.0.0.255
access-list 2 permit 192.168.20.0 0.0.0.255

ip nat pool BUET-pool2 209.165.200.8 209.165.200.8 netmask 255.255.255.224
ip nat inside source list 2 pool BUET-pool2 overload
```

===== ACL =====

```
ip access-list 10 permit 192.168.10.0 0.0.0.15 (10.1-10.15 allowed)

ip access-list 10 permit host 192.168.10.10 (Just allows 192.168.10.10)

access-list 10 remark PERMISSION OF CSE LAB 1 TO FTP (Note)
```

Standard ACL (Just source) (1-99)

Named Access-List Syntax

```
ip access-list extended FTP-FILTER
permit tcp 192.168.10.0 0.0.0.255 any eq ftp
allowing 192.168.10.0 - 192.168.10.255 ip addresses to access any ftp
```

```
int s0/0/0
ip access-group FTP-FILTER in
```

Example {

```
no access-list 1 (clear any standard ACL beforehand)
access-list 101 permit tcp host 192.168.10.5 host 192.168.50.5 eq www
access-list 101 deny tcp host 192.168.10.5 host 192.168.50.6 eq ftp
```

```
access-list 101 permit tcp host 192.168.20.5 host 192.168.50.6 eq ftp
access-list 101 deny tcp host 192.168.20.5 host 192.168.50.5 eq www
access-list 101 permit ip any any
```

apply ACL to ports

```
int s0/0/0
ip access-group 101 out
}
```

```
no ip access-list 10 (clears access list 10)
permit ip any any (to enable ping)
sh access-list
```