

RIP Configuration	
Global	<p>Enable RIPv2 IPv4 routing <code>router rip</code> <code>version 2</code></p> <p>Disable RIPv2 automatic summarization <code>no auto-summary</code></p> <p>Designate RIPv2 interfaces by network <code>network IPv4-network</code></p> <p>Originate a default route <code>default-information originate</code></p>
Interface	<p><code>interface type number</code></p> <p>Enable RIPng on the interface <code>ipv6 rip name enable</code></p> <p>Configure manual route summarization <code>ip summary-address rip IPv4-address subnet-mask</code> <code>ipv6 rip name summary-address IPv6-prefix</code></p>
OSPF	
Global Config	<p>Create an OSPF process <code>[ipv6] router ospf process-ID</code></p> <p>Specify a router ID formatted as IPv4 dotted-decimal <code>router-id router-ID</code></p> <p>Assign interfaces to areas by network (OSPFv2) <code>network IPv4-address wildcard-mask area area</code></p> <p>Originate a default route <code>default-information originate [always]</code></p>
Int.	<p><code>interface type number</code></p> <p>Enable OSPF on the interface <code>ip[v6] ospf process-ID area area</code></p>

NAT	
<p>NAT Boundary Configuration</p> <pre>interface FastEthernet0 ip address 10.0.0.1 255.255.0.0 ip nat inside ! interface FastEthernet1 ip address 174.143.212.1 255.255.252.0 ip nat outside</pre>	
<p>Static Source Translation</p> <p>One line per static translation</p> <pre>ip nat inside source static 10.0.0.19 192.0.2.1.181</pre>	
<p>Dynamic Source Translation</p> <p>Create an access list to match inside local addresses</p> <pre>access-list 10 permit 10.0.0.0 0.0.255.255</pre> <p>Create NAT pool of inside global addresses</p> <pre>ip nat pool MyPool 192.0.2.1 192.0.2.254 prefix-length 24</pre> <p>Combine them with a translation rule</p> <pre>ip nat inside source list 10 pool MyPool</pre> <p>Dynamic translations can be combined with static entries</p> <pre>ip nat inside source static 10.0.0.42 192.0.2.42</pre>	
<p>Port Address Translation (PAT)</p> <p>Static layer four port translations</p> <pre>ip nat inside source static tcp 10.0.0.3 8080 192.0.2.1 80 ip nat inside source static udp 10.0.0.14 53 192.0.2.2 53 ip nat outside source static tcp 174.143.212.4 23 10.0.0.8 23</pre> <p>Dynamic port translation with a pool</p> <pre>ip nat inside source list 11 pool MyPool overload</pre> <p>Dynamic translation with interface overloading</p> <pre>ip nat inside source list 11 interface FastEthernet1 overload</pre>	
Default Static route	<pre>ip route A.B.C.D subnet-mask gateway ipv6 route ipv6 address subnet-mask gateway</pre>
Gateway of last resort	<pre>ip route 0.0.0.0 0.0.0.0</pre>

ACL

Standard ACL Syntax (0-99).

```
access-list <number> {permit | deny} <source> [log]
```

Extended ACL Syntax (100-199 / Named)

```
access-list <number/name> {permit | deny} <protocol> <source> [<ports>] <destination> [<ports>] [<options>]
```

Source/Destination Definitions

any	Any address
host <address>	A single address
<network> <mask>	Any address matched by the wildcard mask

TCP/UDP Port Definitions

eq <port>	Not equal to
lt <port>	Greater than
range <port> <port>	Matches a range of port numbers

Applying ACLs to Restrict Traffic

```
interface FastEthernet0/0
ip access-group {<number> | <name>} {in | out}
Place standard ACL's as close near the destination.
Place extended ACL's as closed near the source
```

Troubleshooting

```
show access-lists [<number> | <name>]
show ip access-lists [<number> | <name>]
```

IPv6 ACL Syntax:

```
R1(config)# ipv6 access-list access-list-name
R1(config-ipv6-acl)# deny | permit protocol {source-ipv6-
prefix/prefix-length | any | host source-ipv6-address} [operator
[port-number]] {destination-ipv6-prefix/prefix-length | any |
host destination-ipv6-address} [operator [port-number]]
```

Applying IPv6 ACL to Restrict Traffic

```
R1(config)# interface s0/0/0
R1(config-if)# ipv6 traffic-filter NO-R3-LAN-ACCESS in
```

VLAN

VLAN Creation

```
Switch(config)# vlan 100
Switch(config-vlan)# name Engineering
```

Access Port Configuration

```
Switch(config-if)# switchport mode access
Switch(config-if)# switchport nonegotiate
Switch(config-if)# switchport access vlan 100
Switch(config-if)# switchport voice vlan 150
```

Trunk Port Configuration

```
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk encapsulation dot1q
Switch(config-if)# switchport trunk allowed vlan 10,20-30
Switch(config-if)# switchport trunk native vlan 10
```

Port security Interface configuration: (switchport mode access)

```
switchport port-security
switchport port-security maximum [nr. of max MAC addresses]
switchport port-security mac-address sticky
switchport port-security violation
switchport port-security violation {protect | restrict | shutdown}
```

Router on a stick

```
interface type number.<subnumber>
encapsulation dot1q VLAN number
<further interface information> Main interface needs to be enabled
```

DHCP

Define addresses to be excluded

```
ip dhcp excluded first-address last-address
```

Create DHCP Pool

```
ip dhcp pool pool-name
```

Define the address pool

```
network network-number [mask/prefix-length]
```

Define the default router/gateway

```
default-router address(es)
```

Additional options

```
dns-server address(es)
```

DHCP Relay

```
interface type number
ip helper-address IPv4 address of DHCP server
```