First Hop Redundancy Protocol (FHRP)
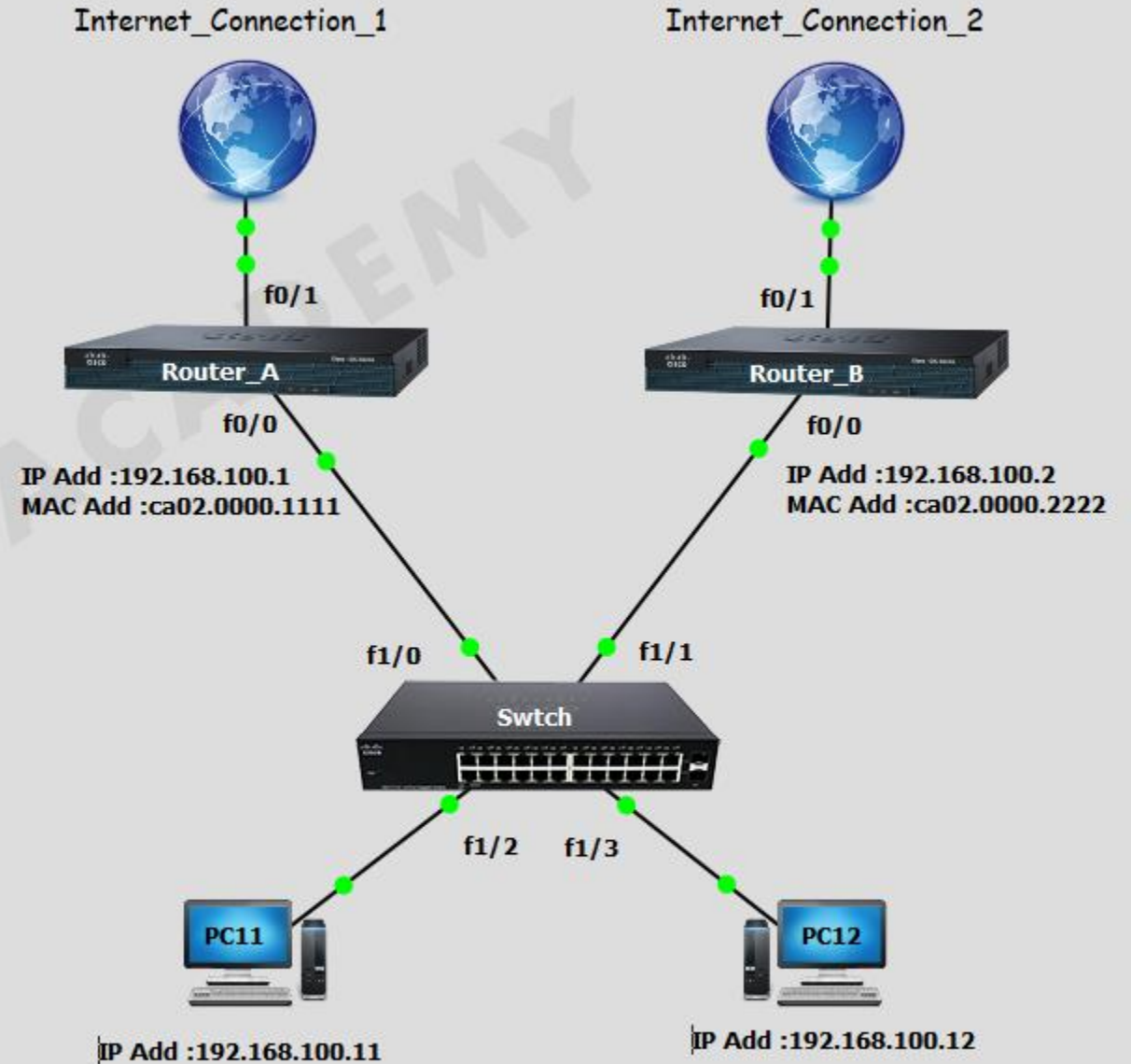
❏ Hot Standby Router Protocol (HSRP).

❏ Virtual Router Redundancy Protocol (VRRP).

❏ Gateway Load Balancing Protocol (GLBP).

Internet_Connection_1

Internet_Connection_2

f0/1

f0/1

Router_A

Router_B

f0/0

f0/0

IP Add :192.168.100.1
MAC Add :ca02.0000.1111

IP Add :192.168.100.2
MAC Add :ca02.0000.2222

f1/0

f1/1

Swtch

f1/2

f1/3

PC11

PC12

IP Add :192.168.100.11

IP Add :192.168.100.12

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First Hop Redundancy Protocol (FHRP)

Internet_Connection_1

Single Point Of Failure

f0/1

Router_A

f0/0

IP Add :192.168.100.1
MAC Add :ca02.0000.1111

f1/0

Swtch

f1/2   f1/3

Source	Destination	Protocol
192.168.100.11	8.8.8.8	ICMP

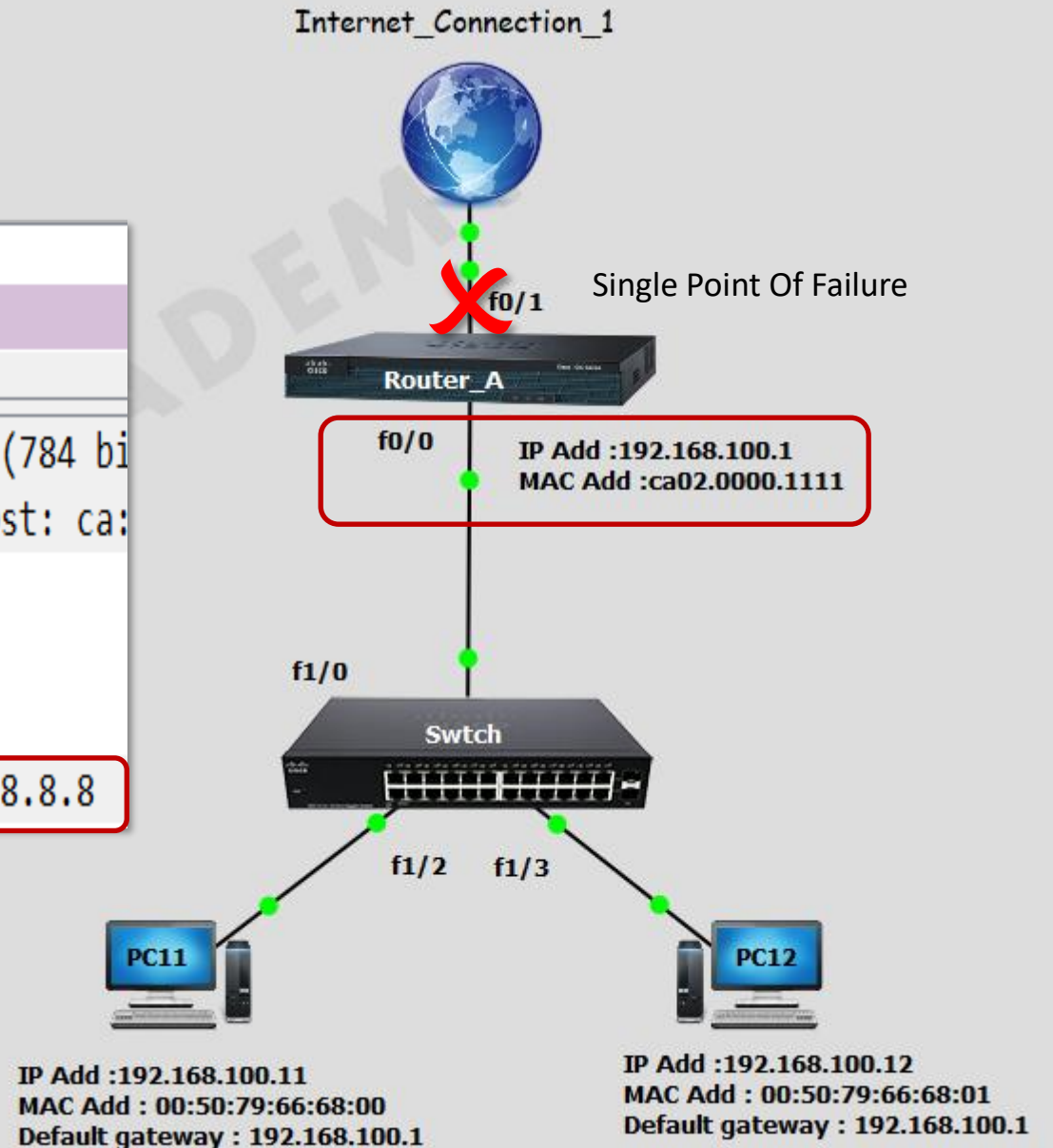> Frame 13: 98 bytes on wire (784 bits), 98 bytes captured (784 bi

v Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: ca:

> Destination: ca:02:00:00:11:11 (ca:02:00:00:11:11)

> Source: Private_66:68:00 (00:50:79:66:68:00)

Type: IPv4 (0x0800)
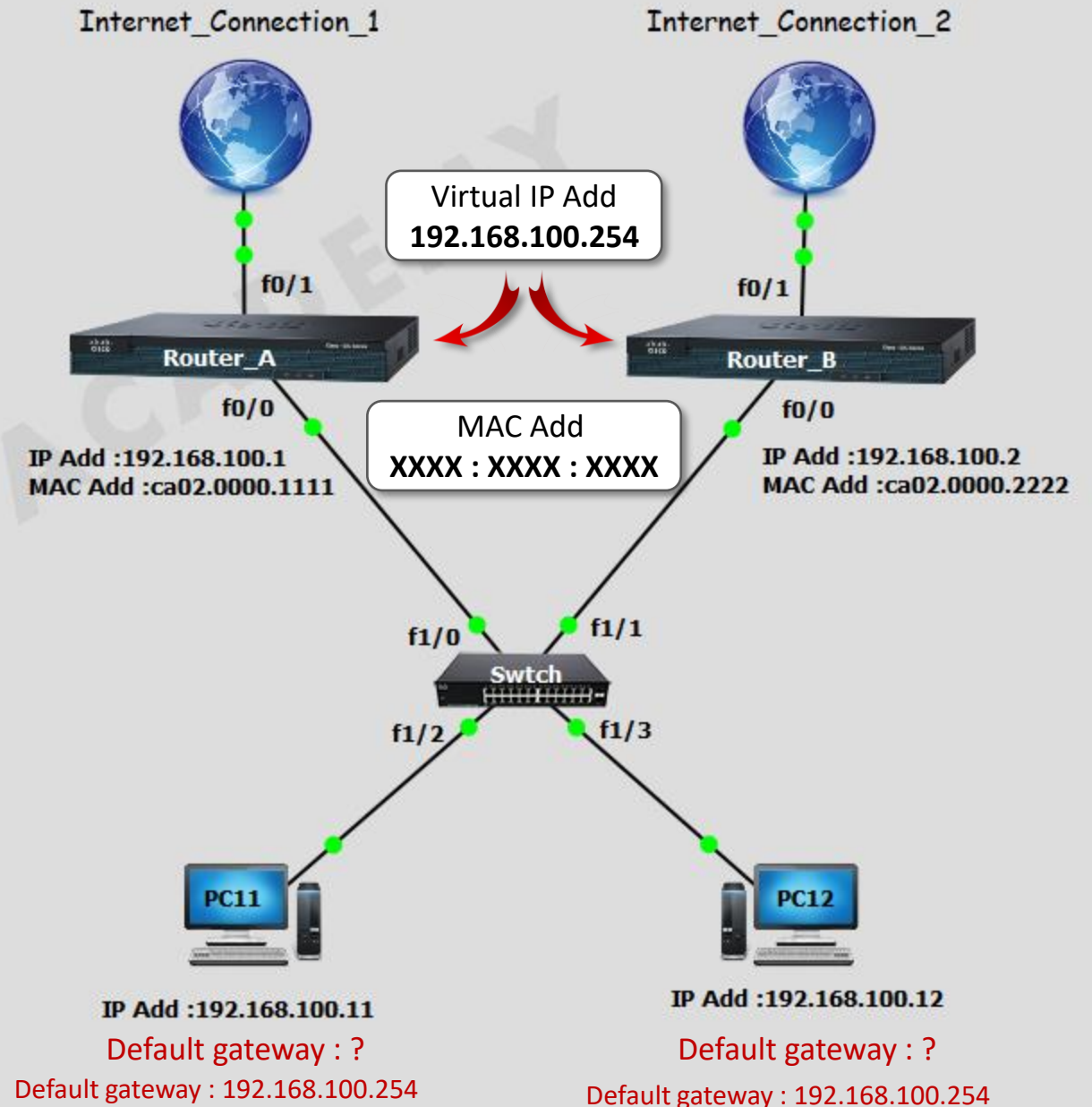
v Internet Protocol Version 4, Src: 192.168.100.11, Dst: 8.8.8.8

PC11

PC12

IP Add :192.168.100.11
MAC Add : 00:50:79:66:68:00
Default gateway : 192.168.100.1

IP Add :192.168.100.12
MAC Add : 00:50:79:66:68:01
Default gateway : 192.168.100.1

First Hop Redundancy Protocol (FHRP)

❑ Hot Standby Router Protocol (HSRP).

❑ Virtual Router Redundancy Protocol (VRRP).

❑ Gateway Load Balancing Protocol (GLBP).

Internet_Connection_1

Internet_Connection_2

Virtual IP Add
192.168.100.254

f0/1

f0/1

Router_A

Router_B

f0/0

f0/0

MAC Add
XXXX : XXXX : XXXX

IP Add :192.168.100.1
MAC Add :ca02.0000.1111

IP Add :192.168.100.2
MAC Add :ca02.0000.2222

f1/0

f1/1

Swtch

f1/2

f1/3

PC11

PC12

IP Add :192.168.100.11

IP Add :192.168.100.12

Default gateway : ?
Default gateway : 192.168.100.254

Default gateway : ?
Default gateway : 192.168.100.254

First Hop Redundancy Protocol (FHRP)

❏ Hot Standby Router Protocol (HSRP).

Internet_Connection_1

Internet_Connection_2

```
Router_A
---------
conf t
int fa0/0
standby 1 ip 192.168.100.254
standby 1 priority 101
standby 1 preempt
standby 1 track fa0/1
end
```

```
Router_B
---------
conf t
int fa0/0
standby 1 ip 192.168.100.254
standby 1 preempt
end
```

Virtual IP Add
192.168.100.254

Active   f0/1

f0/1   **Standby**

Router_A

Router_B

f0/0

MAC Add
`0000.0c07.ac01`

f0/0

IP Add :192.168.100.1

IP Add :192.168.100.2

f1/0   f1/1

Swtch

f1/2   f1/3

PC11

PC12

IP Add :192.168.100.11

IP Add :192.168.100.12

Default gateway : 192.168.100.254

Default gateway : 192.168.100.254

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First Hop Redundancy Protocol (FHRP)

❑ Hot Standby Router Protocol (HSRP).

Internet_Connection_1   Internet_Connection_2

Virtual IP Add
192.168.100.254

Active   f0/1   f0/1   Standby

Router_A   Router_B

f0/0   f0/0

MAC Add
0000.0c07.ac01

IP Add :192.168.100.1   IP Add :192.168.100.2

f1/0   f1/1

Swtch

f1/2   f1/3

PC11   PC12

IP Add :192.168.100.11   IP Add :192.168.100.12

Default gateway : 192.168.100.254   Default gateway : 192.168.100.254

```
Router_A#
Router_A#
Router_A#
Router_A#
Router_A#
Router_A#show standby
FastEthernet0/0 - Group 1
  State is Active
    5 state changes, last state change 00:01:21
  Virtual IP address is 192.168.100.254
  Active virtual MAC address is 0000.0c07.ac01
    Local virtual MAC address is 0000.0c07.ac01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.968 secs
  Preemption enabled
  Active router is local
  Standby router is 192.168.100.2, priority 100 (expires in 10.496 sec)
  Priority 101 (configured 101)
    Track interface FastEthernet0/1 state Up decrement 10
  Group name is "hsrp-Fa0/0-1" (default)
Router_A#
Router_A#
Router_A#
```

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Virtual Router Redundancy Protocol (VRRP)

❑ Hot Standby Router Protocol (HSRP).

```
Router_A
---------
conf t
int fa0/0
standby 1 ip 192.168.100.254
standby 1 priority 101
standby 1 preempt
standby 1 track fa0/1
end
```

```
Router_B
---------
conf t
int fa0/0
standby 1 ip 192.168.100.254
standby 1 preempt
end
```
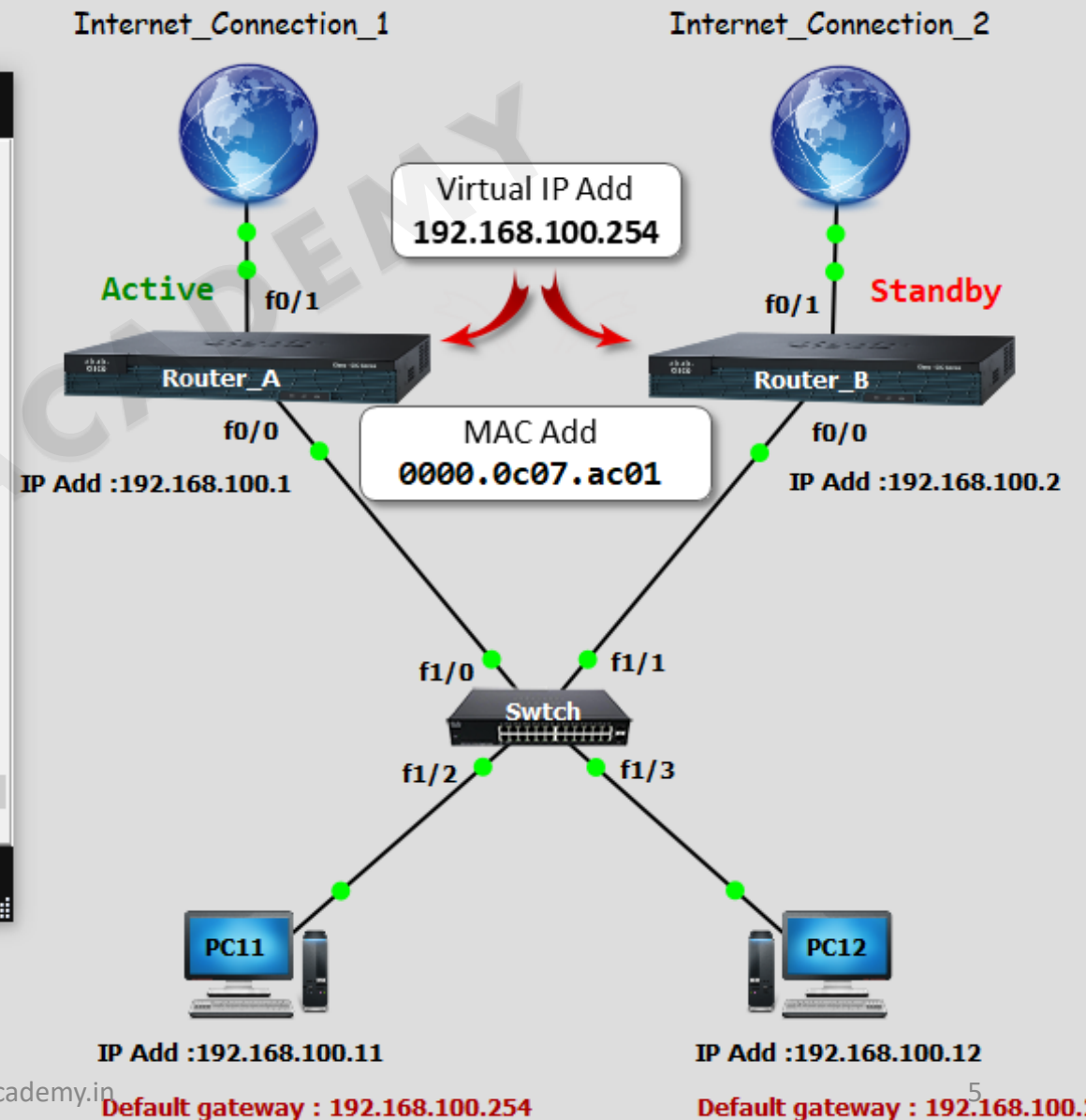
❑ Virtual Router Redundancy Protocol (VRRP).

```
Router_A
---------
conf t
int fa0/0
vrrp 1 ip 192.168.100.254
vrrp 1 priority 101
vrrp 1 preempt
vrrp 1 track 2
exit
track 2 interface fa0/1 line-protocol
end
```

```
Router_B
---------
conf t
int fa0/0
vrrp 1 ip 192.168.100.254
vrrp 1 preempt
end
```

Internet_Connection_1

Internet_Connection_2

Virtual IP Add
192.168.100.254

Master

Backup f0/1

f0/1

Router_A

Router_B

f0/0

MAC Add
0000.0c9f.f001

f0/0

IP Add :192.168.100.1

IP Add :192.168.100.2

f1/0   f1/1

Swtch

f1/2   f1/3

PC11

PC12

IP Add :192.168.100.11

IP Add :192.168.100.12

Default gateway : 192.168.100.254

Default gateway : 192.168.100.254