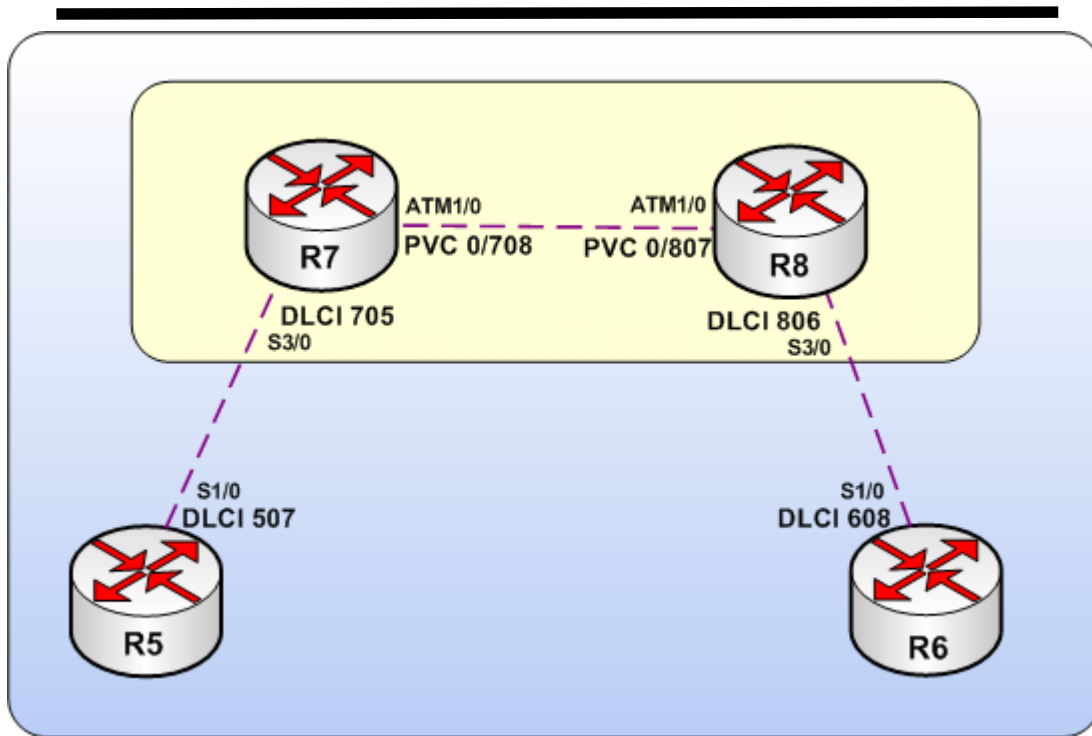


## Lab 1 - FRATM – FRF.5



R5	10.1.1.1/30
R6	10.1.1.2/30

**Task 1:** Configure R5 and R6 with a point-to-point frame relay sub-interface, Assign the ip address and dlcid shown in the diagram.

### Solution:

Note – The use of ATM interfaces in Dynamips is limited to the 7200 Series routers. The 7200 IOS has certain limitation with FRF.5 and FRF.8. Basic connectivity can be successfully configured but advanced options such as DE bit to Clp mapping cannot be used.

### R5 Configuration:

```
interface Serial1/0
no shut
no ip address
encapsulation frame-relay
serial restart-delay 0
!
interface Serial1/0.1 point-to-point
ip address 10.1.1.1 255.255.255.252
```

```
frame-relay interface-dlci 507
```

### **R6 Configuration:**

```
interface Serial1/0
no shut
no ip address
encapsulation frame-relay
serial restart-delay 0
!
interface Serial1/0.1 point-to-point
ip address 10.1.1.2 255.255.255.252
frame-relay interface-dlci 608
```

**Task 2:** Configure FRF.5 on R7 and R8. On R7 S3/0 DLCI 705 maps to ATM1/0 PVC 0/708 and on R8 S3/0 DLCI 806 maps to ATM1/0 PVC 0/807

### **Solution:**

Note – FRF.5 and FRF.8 are configured using the connect command from global configuration. On R7 and R8 the FR Dlci needs to be marked as **switched** and lmi disabled. Failure to disable lmi will result in the dlci being marked as inactive. The atm interface needs to be activated. Do not assign the pvc to the interface, Doing so will result in the connect statement failing.

### **R7 Configuration:**

```
interface ATM1/0
no ip address
!
interface Serial3/0
no ip address
encapsulation frame-relay
no keepalive
frame-relay interface-dlci 705 switched
!
connect R5-R6 Serial3/0 705 ATM1/0 0/708 interworking ip
```

### **R8 Configuration:**

```
interface ATM1/0
no ip address
!
interface Serial3/0
```

```
no ip address
encapsulation frame-relay
no keepalive
frame-relay interface-dlci 806 switched
!
connect R6-R5 Serial3/0 806 ATM1/0 0/807 interworking ip
```

### Verification on R7:

```
R7#show connect all
```

ID	Name	Segment 1	Segment 2	State
1	R5-R6	Se3/0 705	AT1/0 AAL5 0/708	UP

```
R7#show connect id 1
Connection: 1 - R5-R6
Current State: UP
Segment 1: Serial3/0 705 up
Segment 2: ATM1/0 AAL5 0/708 up
Interworking Type: ip
```

### Verification on R8:

```
R8#show connection all
```

ID	Name	Segment 1	Segment 2	State
1	R6-R5	Se3/0 806	AT1/0 AAL5 0/807	UP

```
R8#show conn
R8#show connection id 1
Connection: 1 - R6-R5
Current State: UP
Segment 1: Serial3/0 806 up
Segment 2: ATM1/0 AAL5 0/807 up
Interworking Type: ip
```

### Failure to use the no keepalive command results in the following

```
R7#show connection id 1
Connection: 1 - R5-R6
Current State: OPER DOWN
```

Segment 1: Serial3/0 705 **down**  
Segment 2: ATM1/0 AAL5 0/708 up  
Interworking Type: ip

R7#show frame pvc 705

PVC Statistics for interface Serial3/0 (Frame Relay DTE)

DLCI = 705, DLCI USAGE = SWITCHED, PVC STATUS = **INACTIVE**, INTERFACE = Serial3/0

### Successful Pings from R5 to R6

R5#ping 10.1.1.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 52/69/80 ms

R5#ping 10.1.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 28/53/72 ms

R6#ping 10.1.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 60/80/100 ms

R6#ping 10.1.1.1

Type escape sequence to abort.

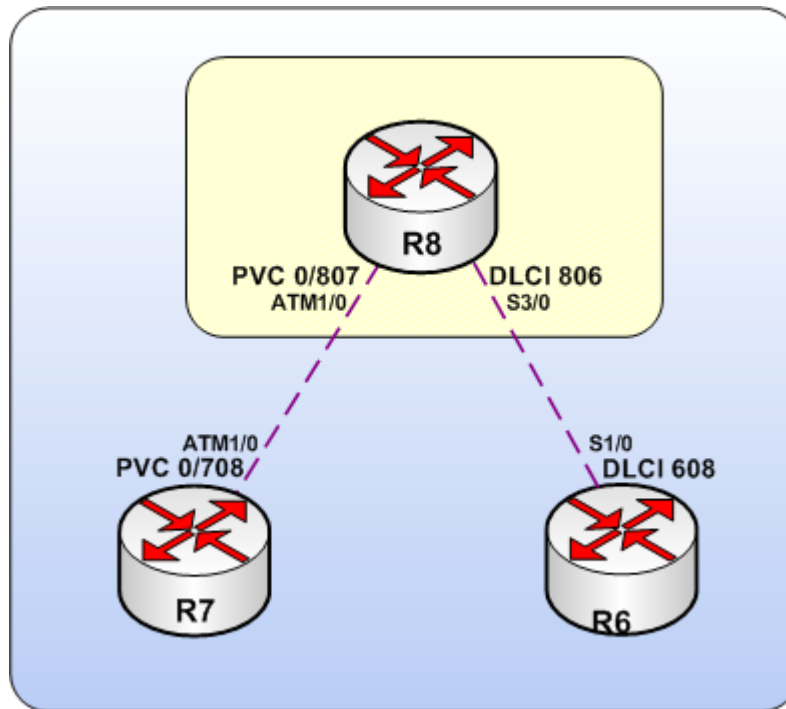
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 12/29/40 ms

**Lab completed, Erase config and continue to next lab.**

## Lab 2 - FRATM – FRF.8



R7	10.1.1.1/30
R6	10.1.1.2/30

**Task 1:** Configure R6 with a point-to-point frame relay sub-interface, Assign the ip address and dcli shown in the diagram. Configure R7 with a point-to-point atm sub-interface using the pvc and ip address show.

### Solution:

Note – The use of ATM interfaces in Dynamips is limited to the 7200 Series routers. The 7200 IOS has certain limitation with FRF.5 and FRF.8. Basic connectivity can be successfully configured but advanced options such as DE bit to Clip mapping cannot be used.

### R7 Configuration:

```
interface ATM1/0
no shut
no ip address
!
interface ATM1/0.1 point-to-point
ip address 10.1.1.1 255.255.255.252
no atm enable-ilmi-trap
```

```
pvc 0/708
encapsulation aal5snap
```

### R6 Configuration:

```
interface Serial1/0
no shut
no ip address
encapsulation frame-relay
serial restart-delay 0
!
interface Serial1/0.1 point-to-point
ip address 10.1.1.2 255.255.255.252
frame-relay interface-dlci 608
```

**Task 2:** Configure FRF.8 on R8. On R8 S3/0 DLCI 806 maps to ATM1/0 PVC 0/807

### Solution:

Note – FRF.5 and FRF.8 are configured using the connect command from global configuration. On R8 the FR DlcI needs to be marked as **switched**. The atm interface needs to be activated. Do not assign the pvc to the interface, Doing so will result in the connect statement failing.

### R8 Configuration:

```
interface ATM1/0
no shut
no ip address
!
interface Serial3/0
no shut
no ip address
encapsulation frame-relay
frame-relay interface-dlci 806 switched
!
connect R6-R5 Serial3/0 806 ATM1/0 0/807 interworking ip
```

### Verification on R8:

```
R8#show connection all
```

ID	Name	Segment 1	Segment 2	State
----	------	-----------	-----------	-------

```
=====  
1 R6-R5 Se3/0 806 AT1/0 AAL5 0/807 UP
```

```
R8#show conn
```

```
R8#show connection id 1
```

```
Connection: 1 - R6-R5
```

```
Current State: UP
```

```
Segment 1: Serial3/0 806 up
```

```
Segment 2: ATM1/0 AAL5 0/807 up
```

```
Interworking Type: ip
```

### Successful Pings from R6 to R7

```
R6#ping 10.1.1.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/26/60 ms
```

```
R6#ping 10.1.1.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 32/52/80 ms
```

```
R7#ping 10.1.1.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 32/35/44 ms
```

```
R7#ping 10.1.1.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/16/20 ms
```

**Lab completed, Erase config and continue to next lab.**