Nick Smith
Lab5 writeup

Frame relay

FRP1-config

```
frame-relay switching
Interface Serial 1/0
   encapsulation frame-relay ietf
   frame-relay lmi-type ansi
   frame-relay intf-type dce
   clock rate 64000
   frame-relay route 201 interface Serial1/2 102
Interface Serial 1/2
   encapsulation frame-relay ietf
   frame-relay lmi-type ansi
   frame-relay intf-type nni
   frame-relay route 102 interface Serial1/0 201
```

FRP2-config

```
frame-relay switching
Interface Serial 1/1
   encapsulation frame-relay ietf
   frame-relay lmi-type ansi
   frame-relay intf-type dce
   clock rate 64000
   frame-relay route 202 interface Serial1/2 102
Interface Serial 1/2
   encapsulation frame-relay ietf
   frame-relay lmi-type ansi
   frame-relay intf-type nni
   frame-relay route 102 interface Serial1/1 202
```

router1-conf

```
frame-relay switching
Interface Serial 1/1
   ip address 192.168.1.225 255.255.255.252
   encapsulation frame-relay ietf
   frame-relay lmi-type ansi
   frame-relay interface-dlci 201
```

router5-conf

frame-relay switching
Interface Serial 1/1
encapsulation frame-relay ietf
frame-relay lmi-type ansi
Interface Serial 1/1.1 point-to-point
ip address 192.168.1.226 255.255.255.252
frame-relay interface-dlci 202

The point to point connection now is established

router5-conf

Interface Serial 1/1.2 multipoint
ip address 192.168.1.235 255.255.255.248
frame-relay map ip 192.168.1.233 303 broadcast
frame-relay map ip 192.168.1.234 302 broadcast

(router2-conf) *CU Denver*
frame-relay switching
Interface Serial 1/1
ip address 192.168.1.233 255.255.255.248
encapsulation frame-relay ietf
frame-relay lmi-type ansi
frame-relay map ip 192.168.1.234 302 broadcast
frame-relay map ip 192.168.1.235 301 broadcast

router6-conf

frame-relay switching
Interface Serial 1/1
ip address 192.168.1.234 255.255.255.248
encapsulation frame-relay ietf
frame-relay lmi-type ansi
frame-relay map ip 192.168.1.233 303 broadcast
frame-relay map ip 192.168.1.235 301 broadcast

FRP1-config

Interface Serial 1/2
frame-relay route 103 interface Serial1/1 301
frame-relay route 203 interface Serial1/1 302
Interface Serial 1/1
encapsulation frame-relay ietf
frame-relay lmi-type ansi
frame-relay intf-type dce

clock rate 64000
frame-relay route 301 interface Serial1/2 103
frame-relay route 302 interface Serial1/2 203

FRP2-config

Interface Serial 1/1
frame-relay route 303 interface Serial1/2 103
frame-relay route 302 interface Serial1/0 301
Interface Serial 1/2
frame-relay route 103 interface Serial1/1 303
frame-relay route 203 interface Serial1/0 303
Interface Serial 1/0
encapsulation frame-relay ietf
frame-relay lmi-type ansi
frame-relay intf-type dce
clock rate 64000
frame-relay route 301 interface Serial1/1 302
frame-relay route 303 interface Serial1/2 203

There is full-mesh connectivity on everything but the CU Boulder router now

router1-conf

Interface Serial 1/1
ip ospf network broadcast
router ospf 1
network 192.168.1.224 0.0.0.3 area 0
network 192.168.0.128 0.0.0.63 area 0 *Network A*
network 192.168.1.64 0.0.0.31 area 0 *Network B*
network 192.168.1.192 0.0.0.31 area 0 *Network I*

router2-conf

Interface Serial 1/1
ip ospf network broadcast
router ospf 1
network 192.168.1.232 0.0.0.7 area 0
network 192.168.1.0 0.0.0.63 area 0 *Network C*
network 192.168.1.232 0.0.0.7 area 0 *Network D*

router5-conf

Interface Serial 1/1.1
ip ospf network broadcast
Interface Serial 1/1.2

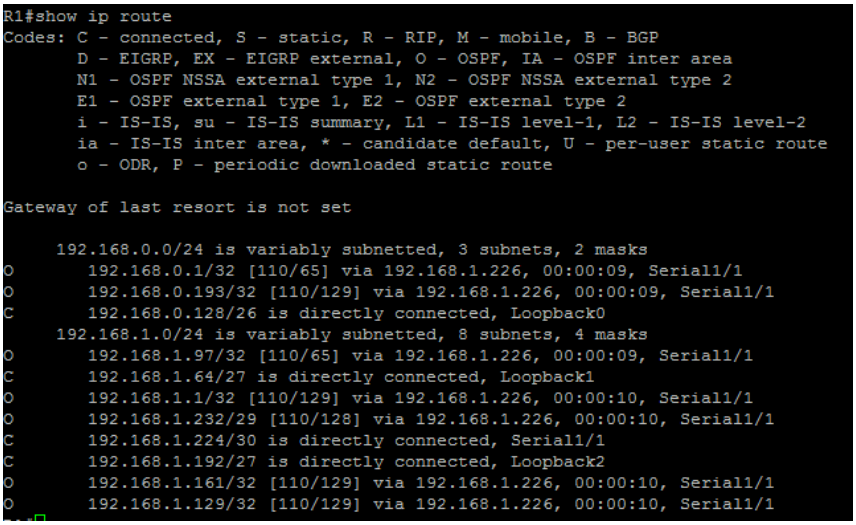
ip ospf network broadcast
router ospf 1
network 192.168.1.232 0.0.0.7 area 0
network 192.168.1.224 0.0.0.3 area 0
network 192.168.0.0 0.0.0.127 area 0 *Network E*
network 192.168.1.96 0.0.0.31 area 0 *Network F*

router6-conf

Interface Serial 1/1
ip ospf network broadcast
router ospf 1
network 192.168.1.232 0.0.0.7 area 0
network 192.168.1.128 0.0.0.31 area 0 *Network G*
network 192.168.1.160 0.0.0.31 area 0 *Network H*

OSPF is now set up and there is full network connectivity

R1 routes:



R2 Routes

```
R6#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     192.168.0.0/32 is subnetted, 3 subnets
O       192.168.0.1 [110/65] via 192.168.1.235, 00:01:24, Serial1/0
O       192.168.0.193 [110/65] via 192.168.1.233, 00:01:24, Serial1/0
O       192.168.0.129 [110/129] via 192.168.1.235, 00:01:24, Serial1/0
     192.168.1.0/24 is variably subnetted, 8 subnets, 4 masks
O       192.168.1.97/32 [110/65] via 192.168.1.235, 00:01:24, Serial1/0
O       192.168.1.65/32 [110/129] via 192.168.1.235, 00:01:24, Serial1/0
O       192.168.1.1/32 [110/65] via 192.168.1.233, 00:01:25, Serial1/0
C       192.168.1.232/29 is directly connected, Serial1/0
O       192.168.1.224/30 [110/128] via 192.168.1.235, 00:01:25, Serial1/0
O       192.168.1.193/32 [110/129] via 192.168.1.235, 00:01:25, Serial1/0
C       192.168.1.160/27 is directly connected, Loopback1
C       192.168.1.128/27 is directly connected, Loopback0
```

Frame Relay Map

```
R5#show frame-relay map
Serial1/1.2 (up): ip 192.168.1.233 dlci 303(0x12F,0x48F0), static,
              broadcast,
              IETF, status defined, active
Serial1/1.2 (up): ip 192.168.1.234 dlci 302(0x12E,0x48E0), static,
              broadcast,
              IETF, status defined, active
Serial1/1.1 (up): point-to-point dlci, dlci 202(0xCA,0x30A0), broadcast
         status defined, active
R5#
Commserver#2
[Resuming connection 2 to R2 ... ]

R2#show frame-relay map
Serial1/1 (up): ip 192.168.1.234 dlci 302(0x12E,0x48E0), static,
              broadcast,
              IETF, status defined, active
Serial1/1 (up): ip 192.168.1.235 dlci 301(0x12D,0x48D0), static,
              broadcast,
              IETF, status defined, active
R2#
Commserver#1
[Resuming connection 1 to R1 ... ]

R1#show frame-relay map
Serial1/1 (up): ip 192.168.1.226 dlci 201(0xC9,0x3090), dynamic,
              broadcast,
              IETF, status defined, active
```

Metro ethernet

PS1-conf

Interface FastEthernet 1/0/3
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3
 switchport trunk allowed vlan add 4
Interface FastEthernet 1/0/4
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3
 switchport trunk allowed vlan add 4

PS2-conf

Interface FastEthernet 1/0/3
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3
 switchport trunk allowed vlan add 4
Interface FastEthernet 1/0/4
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3
 switchport trunk allowed vlan add 4

PS3-conf

Interface FastEthernet 1/0/3
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3
 switchport trunk allowed vlan add 4
Interface FastEthernet 1/0/4
 switchport trunk encapsulation dot1q
 switchport mode trunk
 switchport trunk alowed vlan 2
 switchport trunk allowed vlan add 3

switchport trunk allowed vlan add 4

The trunking between the providers is now setup

PS1-conf

```
Interface FastEthernet 1/0/1
   switchport access vlan 10
   switchport mode dot1q-tunnel
   l2protocol-tunnel
   channel-group 1 mode desirable
Interface FastEthernet 1/0/2
   switchport access vlan 10
   switchport mode dot1q-tunnel
   l2protocol-tunnel
   channel-group 1 mode desirable
Interface port-channel 1
   switchport access vlan 10
   switchport mode dot1q-tunnel
   bandwidth 200000
   l2protocol-tunnel
```

CS1-conf

```
Interface FastEthernet 2/0/1
   switchport trunk encapsulation dot1q
   switchport mode trunk
   channel-group 1 mode desireable
Interface FastEthernet 2/0/2
      switchport trunk encapsulation dot1q
   switchport mode trunk
   channel-group 1 mode desireable
Interface port-channel 1
   switchport trunk encapsulation dot1q
   switchport mode trunk
   bandwidth 200000
interface FastEthernet 2/0/3
   switchport access vlan 2
   switchport mode access
```

PS2-conf

```
Interface FastEthernet 1/0/1
   switchport access vlan 10
```

switchport mode dot1q-tunnel
l2protocol-tunnel
channel-group 1 mode desirable
Interface FastEthernet 1/0/2
switchport access vlan 10
switchport mode dot1q-tunnel
l2protocol-tunnel
channel-group 1 mode desirable
Interface port-channel 1
switchport access vlan 10
switchport mode dot1q-tunnel
bandwidth 200000
l2protocol-tunnel

CS2-conf

Interface FastEthernet 2/0/1
switchport trunk encapsulation dot1q
switchport mode trunk
channel-group 1 mode desireable
Interface FastEthernet 2/0/2
switchport trunk encapsulation dot1q
switchport mode trunk
channel-group 1 mode desireable
Interface port-channel 1
switchport trunk encapsulation dot1q
switchport mode trunk
bandwidth 200000
interface FastEthernet 2/0/3
switchport access vlan 2
switchport mode access

PS3-conf

Interface FastEthernet 1/0/1
switchport access vlan 10
switchport mode dot1q-tunnel
l2protocol-tunnel
channel-group 1 mode desirable
Interface FastEthernet 1/0/2
switchport access vlan 10
switchport mode dot1q-tunnel
l2protocol-tunnel
channel-group 1 mode desirable

Interface port-channel 1
 switchport access vlan 10
 switchport mode dot1q-tunnel
 bandwidth 200000
 l2protocol-tunnel

CS3-conf

Interface FastEthernet 0/1
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode desireable
Interface FastEthernet 0/2
  switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode desireable
Interface port-channel 1
 switchport trunk encapsulation dot1q
 switchport mode trunk
 bandwidth 200000
interface FastEthernet 0/3
 switchport access vlan 2
 switchport mode access

The customer A full mesh is now up

```
C:\Users\itplab>ping 192.168.0.11

Pinging 192.168.0.11 with 32 bytes of data:
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\itplab>ping 192.168.0.12

Pinging 192.168.0.12 with 32 bytes of data:
Reply from 192.168.0.12: bytes=32 time<1ms TTL=128
Reply from 192.168.0.12: bytes=32 time<1ms TTL=128
Reply from 192.168.0.12: bytes=32 time<1ms TTL=128
Reply from 192.168.0.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

CS3-conf

Interface FastEthernet 1/0/7
 switchport trunk encapsulation dot1q
 switchport mode trunk
Interface FastEthernet 1/0/4
 switchport access vlan 4
 switchport mode access

CS1-conf

Interface FastEthernet 2/0/7
 switchport trunk encapsultion dot1q
 switchport mode trunk
Interface FastEthernet 2/0/4
 switchport access vlan 4
 switchport mode access

PS1-conf

Interface FastEthernet 1/0/7
 switchport access vlan 40
 switchport mode dot1q-tunnel
 l2protocol

PS3-conf

Interface FastEthernet 1/0/7
 switchport access vlan 40
 switchport mode dot1q-tunnel
 l2protocol

The P2P is now set up for customer C

CS2-conf

Interface FastEthernet 0/5
 switchport access vlan 3
 switchport mode access
Interface FastEthernet 0/8
 switchport trunk encapsulation dot1q
 switchport mode trunk

CS1-conf

Interface FastEthernet 1/0/5
 switchport access vlan 3
 switchport mode access

Interface FastEthernet 1/0/8
switchport trunk encapsulation dot1q
switchport mode trunk

PS1-conf

Interface FastEthernet 1/0/8
switchport access vlan 20
switchport mode dot1q-tunnel
l2protocol-tunnel

PS2-conf

Interface FastEthernet 0/8
switchport access vlan 20
switchport mode dot1q-tunnel
l2protocol-tunnel

CS3-conf

Interface FastEthernet 1/0/5
switchport access vlan 3
switchport mode access
Interface FastEthernet 1/0/8
switchport trunk encapsulation dot1q
switchport mode trunk

PS3-conf

Interface FastEthernet 0/8
switchport access vlan 20
switchport mode dot1q-tunnel
l2protocol-tunnel

Customer B is now set up with the hub and spoke

```
C:\Users\itplab>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:
Reply from 192.168.1.12: bytes=32 time=1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time=1ms TTL=128
Reply from 192.168.1.12: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\itplab>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time=1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
CS1#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0011.936c.3e84    DYNAMIC     Po1
   1    0011.936c.3e8a    DYNAMIC     Fa2/0/8
   1    0012.d96a.4003    DYNAMIC     Po1
   1    0012.d96a.4004    DYNAMIC     Po1
   1    0023.ab40.fb83    DYNAMIC     Po1
   1    0023.ab40.fb84    DYNAMIC     Po1
   2    0012.d96a.4004    DYNAMIC     Po1
   4    0012.d96a.4009    DYNAMIC     Fa2/0/7
   3    0012.d96a.4009    DYNAMIC     Fa2/0/7
   3    0014.6af4.c584    DYNAMIC     Fa2/0/5
   3    0050.56a0.2835    DYNAMIC     Fa2/0/7
   3    0050.56a0.74fc    DYNAMIC     Fa2/0/5
   3    0050.56a0.7a37    DYNAMIC     Fa2/0/7
Total Mac Addresses for this criterion: 33
```

```
CS2#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0012.d96a.4003    DYNAMIC     Po1
   1    0012.d96a.4004    DYNAMIC     Po1
   1    0013.1ae6.fb04    DYNAMIC     Po1
   1    0022.9062.9003    DYNAMIC     Po1
   1    0022.9062.9004    DYNAMIC     Po1
   1    0022.9062.900a    DYNAMIC     Fa0/8
   2    0012.d96a.4004    DYNAMIC     Po1
   3    0012.d96a.4004    DYNAMIC     Po1
   3    0014.6af4.c585    DYNAMIC     Fa0/5
   3    0050.56a0.2835    DYNAMIC     Fa0/5
   3    0050.56a0.74fc    DYNAMIC     Po1
   3    0050.56a0.7a37    DYNAMIC     Po1
Total Mac Addresses for this criterion: 32
```

```
CS3#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0011.5cef.6303    DYNAMIC     Po1
   1    0011.5cef.6304    DYNAMIC     Po1
   1    0011.5cef.6309    DYNAMIC     Fa1/0/7
   1    0011.5cef.630a    DYNAMIC     Fa1/0/8
   1    0013.1ae6.fb04    DYNAMIC     Po1
   1    0013.1ae6.fb09    DYNAMIC     Fa1/0/7
   1    0023.ab40.fb83    DYNAMIC     Po1
   1    0023.ab40.fb84    DYNAMIC     Po1
   3    0014.6af4.c586    DYNAMIC     Fa1/0/5
   3    0050.56a0.2835    DYNAMIC     Po1
   3    0050.56a0.74fc    DYNAMIC     Fa1/0/7
   3    0050.56a0.7a37    DYNAMIC     Fa1/0/5
Total Mac Addresses for this criterion: 32
```

```
PS1#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0011.5cef.6305    DYNAMIC     Fa1/0/3
   1    0022.9062.9006    DYNAMIC     Fa1/0/4
  10    0011.5cef.6305    DYNAMIC     Fa1/0/3
  10    0012.d96a.4003    DYNAMIC     Fa1/0/3
  10    0012.d96a.4004    DYNAMIC     Fa1/0/3
  10    0013.1ae6.fb04    DYNAMIC     Po1
  10    0023.ab40.fb83    DYNAMIC     Fa1/0/3
  10    0023.ab40.fb84    DYNAMIC     Fa1/0/3
  10    0050.56a0.2835    DYNAMIC     Fa1/0/3
  10    0050.56a0.74fc    DYNAMIC     Fa1/0/3
  10    0050.56a0.7a37    DYNAMIC     Fa1/0/3
  40    0011.5cef.6305    DYNAMIC     Fa1/0/3
  40    0012.d96a.4009    DYNAMIC     Fa1/0/3
  40    0013.1ae6.fb09    DYNAMIC     Fa1/0/7
  40    0050.56a0.2835    DYNAMIC     Fa1/0/3
  40    0050.56a0.74fc    DYNAMIC     Fa1/0/7
  40    0050.56a0.7a37    DYNAMIC     Fa1/0/3
  20    0013.1ae6.fb0a    DYNAMIC     Fa1/0/8
  20    0050.56a0.2835    DYNAMIC     Fa1/0/8
  20    0050.56a0.74fc    DYNAMIC     Fa1/0/8
  20    0050.56a0.7a37    DYNAMIC     Fa1/0/8
Total Mac Addresses for this criterion: 41
```

```
PS2#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0011.5cef.6306    DYNAMIC     Fa0/3
   1    0023.ab40.fb8a    DYNAMIC     Fa0/8
  10    0011.5cef.6306    DYNAMIC     Fa0/3
  10    0012.d96a.4003    DYNAMIC     Fa0/3
  10    0012.d96a.4004    DYNAMIC     Fa0/3
  10    0013.1ae6.fb04    DYNAMIC     Fa0/3
  10    0023.ab40.fb83    DYNAMIC     Po1
  10    0023.ab40.fb84    DYNAMIC     Po1
  10    0050.56a0.2835    DYNAMIC     Po1
  10    0050.56a0.74fc    DYNAMIC     Fa0/3
  10    0050.56a0.7a37    DYNAMIC     Fa0/3
  20    0011.936c.3e86    DYNAMIC     Fa0/4
  20    0013.1ae6.fb0a    DYNAMIC     Fa0/4
  20    0050.56a0.2835    DYNAMIC     Fa0/4
  20    0050.56a0.74fc    DYNAMIC     Fa0/4
  20    0050.56a0.7a37    DYNAMIC     Fa0/4
Total Mac Addresses for this criterion: 36
```

```
PS3#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0180.c200.0000    STATIC      CPU
 All    0180.c200.0001    STATIC      CPU
 All    0180.c200.0002    STATIC      CPU
 All    0180.c200.0003    STATIC      CPU
 All    0180.c200.0004    STATIC      CPU
 All    0180.c200.0005    STATIC      CPU
 All    0180.c200.0006    STATIC      CPU
 All    0180.c200.0007    STATIC      CPU
 All    0180.c200.0008    STATIC      CPU
 All    0180.c200.0009    STATIC      CPU
 All    0180.c200.000a    STATIC      CPU
 All    0180.c200.000b    STATIC      CPU
 All    0180.c200.000c    STATIC      CPU
 All    0180.c200.000d    STATIC      CPU
 All    0180.c200.000e    STATIC      CPU
 All    0180.c200.000f    STATIC      CPU
 All    0180.c200.0010    STATIC      CPU
 All    ffff.ffff.ffff    STATIC      CPU
   1    0011.936c.3e85    DYNAMIC     Fa1/0/3
   1    0022.9062.9005    DYNAMIC     Fa1/0/4
  10    0012.d96a.4003    DYNAMIC     Po1
  10    0012.d96a.4004    DYNAMIC     Po1
  10    0013.1ae6.fb04    DYNAMIC     Fa1/0/3
  10    0023.ab40.fb83    DYNAMIC     Fa1/0/4
  10    0023.ab40.fb84    DYNAMIC     Fa1/0/4
  10    0050.56a0.2835    DYNAMIC     Fa1/0/4
  10    0050.56a0.74fc    DYNAMIC     Po1
  10    0050.56a0.7a37    DYNAMIC     Po1
  40    0012.d96a.4009    DYNAMIC     Fa1/0/7
  40    0013.1ae6.fb09    DYNAMIC     Fa1/0/3
  40    0050.56a0.2835    DYNAMIC     Fa1/0/7
  40    0050.56a0.74fc    DYNAMIC     Fa1/0/3
  40    0050.56a0.7a37    DYNAMIC     Fa1/0/7
  30    0012.d96a.400a    DYNAMIC     Fa1/0/8
  30    0050.56a0.2835    DYNAMIC     Fa1/0/8
  30    0050.56a0.74fc    DYNAMIC     Fa1/0/8
  30    0050.56a0.7a37    DYNAMIC     Fa1/0/8
Total Mac Addresses for this criterion: 39
```

After two days in the lab this was as far as I was able to get this week on the lab.

Study Questions:

1. One advantage is that it uses less physical lines. One disadvantage is that it can get more congested.
2. Make sure the frames are error free and executed in the right sequence.
3. BC it is the max number of information units that can be transmitted in a certain interval T.
4. It has a frame sequence so that multiple packets can be sent over multiple data links.
5. It is the maximum amount of units that can be transmitted which is calculated with speed of the network.
6. In the packets there are fields that are set to help with the flow control of the packets.
8. There are no sequence numbers so they the direct link can be attached to a switch.
9. It has the maximum which you can then use to figure out what the burst rate is.
10. PVCs are permanent so they are there all the time while SVCs come up when there is data to send.
11. If the bit is set then they can see that there is congestion and slow downing the sending.
12. FECN will inform that there was traffic the way it came so that more traffic won't go that way.

13. If the packet is eligible to be discarded then it is set and the packet is discarded.
14. It has more congestion so it is not great for real time communication.
15. You assign an inside dlci which the packets get forwarded on and between those two switches you have the same dlci. See the configs from above.

Very Useful Commands:

Show frame-relay map --- Show the frame relay map
Show frame-relay lmi --- Show the frame relay lmi
Show frame-relay pvc --- show frame relay pvc
Show frame-relay route --- Show frame relay route