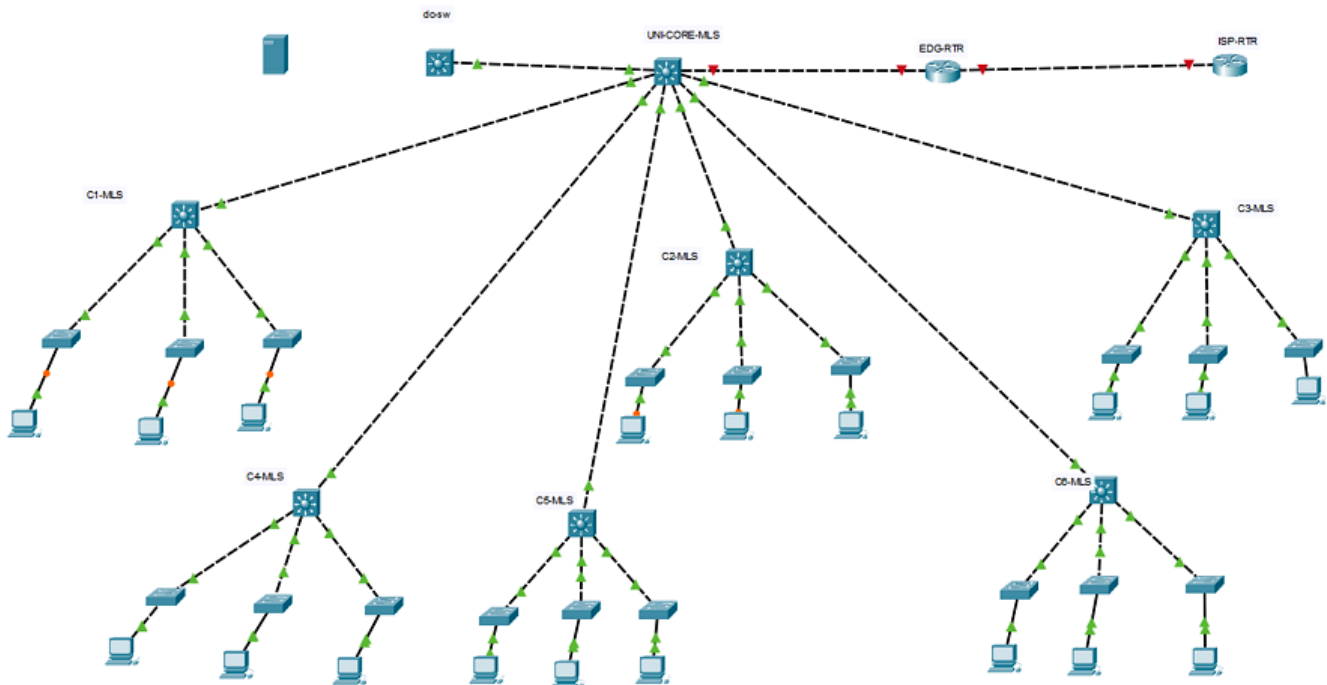


Lab 04 | Six-Campus University Routing

Full Configurations: Static Baseline, Multi-Area OSPF, Summarization and Security



Every device configuration is complete. No <C> placeholders remain.

Item	Value
Campus VLAN IDs	C1: 110/120/130, C2: 210/220/230, C3: 310/320/330, C4: 410/420/430, C5: 510/520/530, C6: 610/620/630
Campus IP pattern	Campus 1 uses 10.1.x.0/24, Campus 2 uses 10.2.x.0/24, through Campus 6 using 10.6.x.0/24
Core-to-campus links	CORE F0/2-F0/7 to campus MLS F0/1, all configured as routed /30 links
Building uplinks	Campus MLS F0/21-F0/23 to building access switch F0/24
Endpoint port	Every building PC connects to access switch F0/1

1. How to Use This Guide

1. Build and cable the topology exactly as shown.
2. Paste the Phase 1 static-baseline configuration into every device.
3. Configure all PCs and the server using the addressing table.
4. Verify static routing before continuing.
5. Paste the Phase 2 OSPF migration blocks only into UNI-CORE-MLS, EDGE-RTR and C1-MLS through C6-MLS.
6. Verify summarized OSPF routes, default routing and security controls.

Packet Tracer note: The commands use Cisco Packet Tracer-compatible syntax. The campus building-facing ports use spanning-tree guard root. The unsupported spanning-tree guard loop command is not used.

2. Exact Addressing and VLAN Plan

Campus	Role	VLAN	Subnet	SVI gateway	PC address
Campus 1	ADMIN	110	10.1.10.0/24	10.1.10.1	10.1.10.10
Campus 1	STUDENTS	120	10.1.20.0/24	10.1.20.1	10.1.20.10
Campus 1	FACULTY	130	10.1.30.0/24	10.1.30.1	10.1.30.10
Campus 2	ADMIN	210	10.2.10.0/24	10.2.10.1	10.2.10.10
Campus 2	STUDENTS	220	10.2.20.0/24	10.2.20.1	10.2.20.10
Campus 2	FACULTY	230	10.2.30.0/24	10.2.30.1	10.2.30.10
Campus 3	ADMIN	310	10.3.10.0/24	10.3.10.1	10.3.10.10
Campus 3	STUDENTS	320	10.3.20.0/24	10.3.20.1	10.3.20.10
Campus 3	FACULTY	330	10.3.30.0/24	10.3.30.1	10.3.30.10
Campus 4	ADMIN	410	10.4.10.0/24	10.4.10.1	10.4.10.10
Campus 4	STUDENTS	420	10.4.20.0/24	10.4.20.1	10.4.20.10
Campus 4	FACULTY	430	10.4.30.0/24	10.4.30.1	10.4.30.10
Campus 5	ADMIN	510	10.5.10.0/24	10.5.10.1	10.5.10.10
Campus 5	STUDENTS	520	10.5.20.0/24	10.5.20.1	10.5.20.10
Campus 5	FACULTY	530	10.5.30.0/24	10.5.30.1	10.5.30.10
Campus 6	ADMIN	610	10.6.10.0/24	10.6.10.1	10.6.10.10
Campus 6	STUDENTS	620	10.6.20.0/24	10.6.20.1	10.6.20.10
Campus 6	FACULTY	630	10.6.30.0/24	10.6.30.1	10.6.30.10

3. Routed Link Plan

Side A	Side B	Side A address	Side B address	Routing role
CORE F0/1	EDGE G0/0/0	10.0.0.1/30	10.0.0.2/30	OSPF Area 0
EDGE G0/0/1	ISP G0/0/0	10.254.0.1/30	10.254.0.2/30	Static default
CORE F0/2	C1-MLS F0/1	10.1.255.1/30	10.1.255.2/30	OSPF Area 1
CORE F0/3	C2-MLS F0/1	10.2.255.1/30	10.2.255.2/30	OSPF Area 2
CORE F0/4	C3-MLS F0/1	10.3.255.1/30	10.3.255.2/30	OSPF Area 3
CORE F0/5	C4-MLS F0/1	10.4.255.1/30	10.4.255.2/30	OSPF Area 4
CORE F0/6	C5-MLS F0/1	10.5.255.1/30	10.5.255.2/30	OSPF Area 5
CORE F0/7	C6-MLS F0/1	10.6.255.1/30	10.6.255.2/30	OSPF Area 6
CORE VLAN 100	CAMPUS-SRV	10.100.0.1/24	10.100.0.10/24	OSPF Area 100

4. Endpoint and Server Configuration

Endpoint	IPv4 address	Subnet mask	Default gateway
CAMPUS-SRV	10.100.0.10	255.255.255.0	10.100.0.1
C1-ADMIN-PC	10.1.10.10	255.255.255.0	10.1.10.1
C1-STUDENT-PC	10.1.20.10	255.255.255.0	10.1.20.1
C1-FACULTY-PC	10.1.30.10	255.255.255.0	10.1.30.1
C2-ADMIN-PC	10.2.10.10	255.255.255.0	10.2.10.1
C2-STUDENT-PC	10.2.20.10	255.255.255.0	10.2.20.1
C2-FACULTY-PC	10.2.30.10	255.255.255.0	10.2.30.1
C3-ADMIN-PC	10.3.10.10	255.255.255.0	10.3.10.1
C3-STUDENT-PC	10.3.20.10	255.255.255.0	10.3.20.1
C3-FACULTY-PC	10.3.30.10	255.255.255.0	10.3.30.1
C4-ADMIN-PC	10.4.10.10	255.255.255.0	10.4.10.1
C4-STUDENT-PC	10.4.20.10	255.255.255.0	10.4.20.1
C4-FACULTY-PC	10.4.30.10	255.255.255.0	10.4.30.1
C5-ADMIN-PC	10.5.10.10	255.255.255.0	10.5.10.1
C5-STUDENT-PC	10.5.20.10	255.255.255.0	10.5.20.1
C5-FACULTY-PC	10.5.30.10	255.255.255.0	10.5.30.1
C6-ADMIN-PC	10.6.10.10	255.255.255.0	10.6.10.1
C6-STUDENT-PC	10.6.20.10	255.255.255.0	10.6.20.1
C6-FACULTY-PC	10.6.30.10	255.255.255.0	10.6.30.1

5. Phase 1 - Full Static-Baseline Configurations

Copy-paste rule: Paste one full block into the matching blank Packet Tracer device. Wait for RSA key generation to finish before moving to the next device.

UNI-CORE-MLS - STATIC BASELINE

```
enable
configure terminal
hostname UNI-CORE-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

interface fastethernet0/1
  description TO_EDGE_RTR_G0_0_0
  no switchport
  ip address 10.0.0.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/2
  description TO_C1_MLS_F0_1
  no switchport
  ip address 10.1.255.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/3
  description TO_C2_MLS_F0_1
  no switchport
  ip address 10.2.255.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/4
  description TO_C3_MLS_F0_1
  no switchport
  ip address 10.3.255.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/5
  description TO_C4_MLS_F0_1
  no switchport
  ip address 10.4.255.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/6
  description TO_C5_MLS_F0_1
  no switchport
  ip address 10.5.255.1 255.255.255.252
  no shutdown
exit
interface fastethernet0/7
  description TO_C6_MLS_F0_1
  no switchport
  ip address 10.6.255.1 255.255.255.252
  no shutdown
exit
vlan 100
  name DATA_CENTER
exit
interface vlan 100
  description DATA_CENTER_GATEWAY
  ip address 10.100.0.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/8
  description TO_DC_SW_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
```

```
switchport trunk allowed vlan 100
no shutdown
exit
interface range fastethernet0/9-24
description UNUSED_PORTS
shutdown
exit
ip route 10.1.0.0 255.255.0.0 10.1.255.2
ip route 10.2.0.0 255.255.0.0 10.2.255.2
ip route 10.3.0.0 255.255.0.0 10.3.255.2
ip route 10.4.0.0 255.255.0.0 10.4.255.2
ip route 10.5.0.0 255.255.0.0 10.5.255.2
ip route 10.6.0.0 255.255.0.0 10.6.255.2
ip route 0.0.0.0 0.0.0.0 10.0.0.2
end
write memory
```

EDGE-RTR - STATIC BASELINE

```
enable
configure terminal
hostname EDGE-RTR
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 4
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

interface gigabitethernet0/0/0
  description TO_UNI_CORE_F0_1
  ip address 10.0.0.2 255.255.255.252
  no shutdown
exit
interface gigabitethernet0/0/1
  description TO_ISP_G0_0_0
  ip address 10.254.0.1 255.255.255.252
  no shutdown
exit
ip route 10.0.0.0 255.0.0.0 10.0.0.1
ip route 0.0.0.0 0.0.0.0 10.254.0.2
end
write memory
```

ISP-RTR

```
enable
configure terminal
hostname ISP-RTR
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 4
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

interface gigabitethernet0/0/0
  description TO_EDGE_G0_0_1
  ip address 10.254.0.2 255.255.255.252
  no shutdown
exit
interface loopback0
  description INTERNET_TEST_ADDRESS
  ip address 10.255.255.254 255.255.255.255
exit
ip route 10.0.0.0 255.0.0.0 10.254.0.1
end
write memory
```

DC-SW

```
enable
configure terminal
hostname DC-SW
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 100
  name DATA_CENTER
exit
interface fastethernet0/24
  description TO_UNI_CORE_F0_8
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 100
  no shutdown
exit
interface fastethernet0/1
  description CAMPUS_SERVER
  switchport mode access
  switchport access vlan 100
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  no shutdown
exit
interface vlan 100
  ip address 10.100.0.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.100.0.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```


C1-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C1-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 110,120,130 priority 4096
vlan 110
  name C1_ADMIN
exit
vlan 120
  name C1_STUDENTS
exit
vlan 130
  name C1_FACULTY
exit
interface vlan 110
  description C1_ADMIN_GATEWAY
  ip address 10.1.10.1 255.255.255.0
  no shutdown
exit
interface vlan 120
  description C1_STUDENTS_GATEWAY
  ip address 10.1.20.1 255.255.255.0
  no shutdown
exit
interface vlan 130
  description C1_FACULTY_GATEWAY
  ip address 10.1.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.1.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C1_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 110,120,130
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C1_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 110,120,130
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C1_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 110,120,130
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
  description UNUSED_PORT
  shutdown
exit
ip route 0.0.0.0 0.0.0.0 10.1.255.1
end
write memory
```

C2-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C2-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 210,220,230 priority 4096
vlan 210
  name C2_ADMIN
exit
vlan 220
  name C2_STUDENTS
exit
vlan 230
  name C2_FACULTY
exit
interface vlan 210
  description C2_ADMIN_GATEWAY
  ip address 10.2.10.1 255.255.255.0
  no shutdown
exit
interface vlan 220
  description C2_STUDENTS_GATEWAY
  ip address 10.2.20.1 255.255.255.0
  no shutdown
exit
interface vlan 230
  description C2_FACULTY_GATEWAY
  ip address 10.2.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.2.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C2_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C2_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C2_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
  description UNUSED_PORT
  shutdown
exit
ip route 0.0.0.0 0.0.0.0 10.2.255.1
```

```
end
write memory
```

C3-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C3-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 310,320,330 priority 4096
vlan 310
  name C3_ADMIN
exit
vlan 320
  name C3_STUDENTS
exit
vlan 330
  name C3_FACULTY
exit
interface vlan 310
  description C3_ADMIN_GATEWAY
  ip address 10.3.10.1 255.255.255.0
  no shutdown
exit
interface vlan 320
  description C3_STUDENTS_GATEWAY
  ip address 10.3.20.1 255.255.255.0
  no shutdown
exit
interface vlan 330
  description C3_FACULTY_GATEWAY
  ip address 10.3.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.3.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C3_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C3_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C3_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
  description UNUSED_PORT
  shutdown
exit
```

```
ip route 0.0.0.0 0.0.0.0 10.3.255.1
end
write memory
```

C4-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C4-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 410,420,430 priority 4096
vlan 410
  name C4_ADMIN
exit
vlan 420
  name C4_STUDENTS
exit
vlan 430
  name C4_FACULTY
exit
interface vlan 410
  description C4_ADMIN_GATEWAY
  ip address 10.4.10.1 255.255.255.0
  no shutdown
exit
interface vlan 420
  description C4_STUDENTS_GATEWAY
  ip address 10.4.20.1 255.255.255.0
  no shutdown
exit
interface vlan 430
  description C4_FACULTY_GATEWAY
  ip address 10.4.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.4.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C4_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C4_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C4_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
  description UNUSED_PORT
  shutdown
```

```
exit
ip route 0.0.0.0 0.0.0.0 10.4.255.1
end
write memory
```

C5-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C5-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 510,520,530 priority 4096
vlan 510
  name C5_ADMIN
exit
vlan 520
  name C5_STUDENTS
exit
vlan 530
  name C5_FACULTY
exit
interface vlan 510
  description C5_ADMIN_GATEWAY
  ip address 10.5.10.1 255.255.255.0
  no shutdown
exit
interface vlan 520
  description C5_STUDENTS_GATEWAY
  ip address 10.5.20.1 255.255.255.0
  no shutdown
exit
interface vlan 530
  description C5_FACULTY_GATEWAY
  ip address 10.5.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.5.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C5_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C5_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C5_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
  description UNUSED_PORT
```

```
shutdown
exit
ip route 0.0.0.0 0.0.0.0 10.5.255.1
end
write memory
```

C6-MLS - STATIC BASELINE

```
enable
configure terminal
hostname C6-MLS
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
ip routing

spanning-tree mode rapid-pvst
spanning-tree vlan 610,620,630 priority 4096
vlan 610
  name C6_ADMIN
exit
vlan 620
  name C6_STUDENTS
exit
vlan 630
  name C6_FACULTY
exit
interface vlan 610
  description C6_ADMIN_GATEWAY
  ip address 10.6.10.1 255.255.255.0
  no shutdown
exit
interface vlan 620
  description C6_STUDENTS_GATEWAY
  ip address 10.6.20.1 255.255.255.0
  no shutdown
exit
interface vlan 630
  description C6_FACULTY_GATEWAY
  ip address 10.6.30.1 255.255.255.0
  no shutdown
exit
interface fastethernet0/1
  description TO_UNI_CORE
  no switchport
  ip address 10.6.255.2 255.255.255.252
  no shutdown
exit
interface fastethernet0/21
  description TO_C6_B1_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/22
  description TO_C6_B2_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  spanning-tree guard root
  no shutdown
exit
interface fastethernet0/23
  description TO_C6_B3_ACC_F0_24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  spanning-tree guard root
  no shutdown
exit
interface range fastethernet0/2-20
  description UNUSED_PORTS
  shutdown
exit
interface fastethernet0/24
```

```
description UNUSED_PORT
shutdown
exit
ip route 0.0.0.0 0.0.0.0 10.6.255.1
end
write memory
```

C1-B1-ACC

```
enable
configure terminal
hostname C1-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
password Console@123
login
logging synchronous
exec-timeout 5 0
exit
line vty 0 15
login local
transport input ssh
exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 110
name C1_ADMIN
exit
vlan 120
name C1_STUDENTS
exit
vlan 130
name C1_FACULTY
exit
interface fastethernet0/24
description T0_C1_MLS
switchport mode trunk
switchport trunk allowed vlan 110,120,130
no shutdown
exit
interface fastethernet0/1
description C1_ADMIN_PC
switchport mode access
switchport access vlan 110
spanning-tree portfast
spanning-tree bpduguard enable
switchport port-security
switchport port-security maximum 1
switchport port-security mac-address sticky
switchport port-security violation restrict
storm-control broadcast level 5.00

no shutdown
exit
interface vlan 110
description ADMIN_SWITCH_MANAGEMENT
ip address 10.1.10.2 255.255.255.0
no shutdown
exit
ip default-gateway 10.1.10.1
interface range fastethernet0/2-23
description UNUSED_PORTS
shutdown
exit
end
write memory
```

C1-B2-ACC

```
enable
configure terminal
hostname C1-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 110
  name C1_ADMIN
exit
vlan 120
  name C1_STUDENTS
exit
vlan 130
  name C1_FACULTY
exit
interface fastethernet0/24
  description TO_C1_MLS
  switchport mode trunk
  switchport trunk allowed vlan 110,120,130
  no shutdown
exit
interface fastethernet0/1
  description C1_STUDENTS_PC
  switchport mode access
  switchport access vlan 120
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 120
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.1.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.1.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```


C1-B3-ACC

```
enable
configure terminal
hostname C1-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 110
  name C1_ADMIN
exit
vlan 120
  name C1_STUDENTS
exit
vlan 130
  name C1_FACULTY
exit
interface fastethernet0/24
  description TO_C1_MLS
  switchport mode trunk
  switchport trunk allowed vlan 110,120,130
  no shutdown
exit
interface fastethernet0/1
  description C1_FACULTY_PC
  switchport mode access
  switchport access vlan 130
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 130
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.1.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.1.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C2-B1-ACC

```
enable
configure terminal
hostname C2-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 210
  name C2_ADMIN
exit
vlan 220
  name C2_STUDENTS
exit
vlan 230
  name C2_FACULTY
exit
interface fastethernet0/24
  description TO_C2_MLS
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  no shutdown
exit
interface fastethernet0/1
  description C2_ADMIN_PC
  switchport mode access
  switchport access vlan 210
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 210
  description ADMIN_SWITCH_MANAGEMENT
  ip address 10.2.10.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.2.10.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C2-B2-ACC

```
enable
configure terminal
hostname C2-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 210
  name C2_ADMIN
exit
vlan 220
  name C2_STUDENTS
exit
vlan 230
  name C2_FACULTY
exit
interface fastethernet0/24
  description T0_C2_MLS
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  no shutdown
exit
interface fastethernet0/1
  description C2_STUDENTS_PC
  switchport mode access
  switchport access vlan 220
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 220
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.2.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.2.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C2-B3-ACC

```
enable
configure terminal
hostname C2-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 210
  name C2_ADMIN
exit
vlan 220
  name C2_STUDENTS
exit
vlan 230
  name C2_FACULTY
exit
interface fastethernet0/24
  description T0_C2_MLS
  switchport mode trunk
  switchport trunk allowed vlan 210,220,230
  no shutdown
exit
interface fastethernet0/1
  description C2_FACULTY_PC
  switchport mode access
  switchport access vlan 230
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 230
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.2.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.2.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C3-B1-ACC

```
enable
configure terminal
hostname C3-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 310
  name C3_ADMIN
exit
vlan 320
  name C3_STUDENTS
exit
vlan 330
  name C3_FACULTY
exit
interface fastethernet0/24
  description TO_C3_MLS
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  no shutdown
exit
interface fastethernet0/1
  description C3_ADMIN_PC
  switchport mode access
  switchport access vlan 310
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 310
  description ADMIN_SWITCH_MANAGEMENT
  ip address 10.3.10.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.3.10.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C3-B2-ACC

```
enable
configure terminal
hostname C3-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 310
  name C3_ADMIN
exit
vlan 320
  name C3_STUDENTS
exit
vlan 330
  name C3_FACULTY
exit
interface fastethernet0/24
  description T0_C3_MLS
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  no shutdown
exit
interface fastethernet0/1
  description C3_STUDENTS_PC
  switchport mode access
  switchport access vlan 320
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 320
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.3.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.3.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C3-B3-ACC

```
enable
configure terminal
hostname C3-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 310
  name C3_ADMIN
exit
vlan 320
  name C3_STUDENTS
exit
vlan 330
  name C3_FACULTY
exit
interface fastethernet0/24
  description T0_C3_MLS
  switchport mode trunk
  switchport trunk allowed vlan 310,320,330
  no shutdown
exit
interface fastethernet0/1
  description C3_FACULTY_PC
  switchport mode access
  switchport access vlan 330
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 330
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.3.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.3.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C4-B1-ACC

```
enable
configure terminal
hostname C4-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 410
  name C4_ADMIN
exit
vlan 420
  name C4_STUDENTS
exit
vlan 430
  name C4_FACULTY
exit
interface fastethernet0/24
  description TO_C4_MLS
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  no shutdown
exit
interface fastethernet0/1
  description C4_ADMIN_PC
  switchport mode access
  switchport access vlan 410
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 410
  description ADMIN_SWITCH_MANAGEMENT
  ip address 10.4.10.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.4.10.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```


C4-B2-ACC

```
enable
configure terminal
hostname C4-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 410
  name C4_ADMIN
exit
vlan 420
  name C4_STUDENTS
exit
vlan 430
  name C4_FACULTY
exit
interface fastethernet0/24
  description TO_C4_MLS
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  no shutdown
exit
interface fastethernet0/1
  description C4_STUDENTS_PC
  switchport mode access
  switchport access vlan 420
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 420
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.4.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.4.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C4-B3-ACC

```
enable
configure terminal
hostname C4-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 410
  name C4_ADMIN
exit
vlan 420
  name C4_STUDENTS
exit
vlan 430
  name C4_FACULTY
exit
interface fastethernet0/24
  description TO_C4_MLS
  switchport mode trunk
  switchport trunk allowed vlan 410,420,430
  no shutdown
exit
interface fastethernet0/1
  description C4_FACULTY_PC
  switchport mode access
  switchport access vlan 430
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 430
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.4.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.4.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C5-B1-ACC

```
enable
configure terminal
hostname C5-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 510
  name C5_ADMIN
exit
vlan 520
  name C5_STUDENTS
exit
vlan 530
  name C5_FACULTY
exit
interface fastethernet0/24
  description TO_C5_MLS
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  no shutdown
exit
interface fastethernet0/1
  description C5_ADMIN_PC
  switchport mode access
  switchport access vlan 510
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 510
  description ADMIN_SWITCH_MANAGEMENT
  ip address 10.5.10.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.5.10.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C5-B2-ACC

```
enable
configure terminal
hostname C5-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 510
  name C5_ADMIN
exit
vlan 520
  name C5_STUDENTS
exit
vlan 530
  name C5_FACULTY
exit
interface fastethernet0/24
  description T0_C5_MLS
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  no shutdown
exit
interface fastethernet0/1
  description C5_STUDENTS_PC
  switchport mode access
  switchport access vlan 520
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 520
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.5.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.5.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C5-B3-ACC

```
enable
configure terminal
hostname C5-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 510
  name C5_ADMIN
exit
vlan 520
  name C5_STUDENTS
exit
vlan 530
  name C5_FACULTY
exit
interface fastethernet0/24
  description T0_C5_MLS
  switchport mode trunk
  switchport trunk allowed vlan 510,520,530
  no shutdown
exit
interface fastethernet0/1
  description C5_FACULTY_PC
  switchport mode access
  switchport access vlan 530
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 530
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.5.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.5.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C6-B1-ACC

```
enable
configure terminal
hostname C6-B1-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 610
  name C6_ADMIN
exit
vlan 620
  name C6_STUDENTS
exit
vlan 630
  name C6_FACULTY
exit
interface fastethernet0/24
  description TO_C6_MLS
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  no shutdown
exit
interface fastethernet0/1
  description C6_ADMIN_PC
  switchport mode access
  switchport access vlan 610
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 610
  description ADMIN_SWITCH_MANAGEMENT
  ip address 10.6.10.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.6.10.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C6-B2-ACC

```
enable
configure terminal
hostname C6-B2-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 610
  name C6_ADMIN
exit
vlan 620
  name C6_STUDENTS
exit
vlan 630
  name C6_FACULTY
exit
interface fastethernet0/24
  description TO_C6_MLS
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  no shutdown
exit
interface fastethernet0/1
  description C6_STUDENTS_PC
  switchport mode access
  switchport access vlan 620
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 620
  description STUDENTS_SWITCH_MANAGEMENT
  ip address 10.6.20.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.6.20.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```

C6-B3-ACC

```
enable
configure terminal
hostname C6-B3-ACC
no ip domain-lookup
ip domain-name university.local
service password-encryption
enable secret Enable@123
username admin privilege 15 secret Campus@123
banner motd #UNAUTHORIZED ACCESS IS PROHIBITED#
line console 0
  password Console@123
  login
  logging synchronous
  exec-timeout 5 0
exit
line vty 0 15
  login local
  transport input ssh
  exec-timeout 10 0
exit
crypto key generate rsa general-keys modulus 1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3

spanning-tree mode rapid-pvst
vlan 610
  name C6_ADMIN
exit
vlan 620
  name C6_STUDENTS
exit
vlan 630
  name C6_FACULTY
exit
interface fastethernet0/24
  description TO_C6_MLS
  switchport mode trunk
  switchport trunk allowed vlan 610,620,630
  no shutdown
exit
interface fastethernet0/1
  description C6_FACULTY_PC
  switchport mode access
  switchport access vlan 630
  spanning-tree portfast
  spanning-tree bpduguard enable
  switchport port-security
  switchport port-security maximum 1
  switchport port-security mac-address sticky
  switchport port-security violation restrict
  storm-control broadcast level 5.00

  no shutdown
exit
interface vlan 630
  description FACULTY_SWITCH_MANAGEMENT
  ip address 10.6.30.2 255.255.255.0
  no shutdown
exit
ip default-gateway 10.6.30.1
interface range fastethernet0/2-23
  description UNUSED_PORTS
  shutdown
exit
end
write memory
```


6. Phase 2 - Exact OSPF Migration Blocks

Migration rule: Do not erase the working VLAN, SVI, trunk or security configuration. Paste only the following migration block into each routed device after the static baseline passes.

UNI-CORE-MLS - OSPF MIGRATION

```
enable
configure terminal
!REMOVE ALL IP ROUTING
no ip route 10.1.0.0 255.255.0.0 10.1.255.2
no ip route 10.2.0.0 255.255.0.0 10.2.255.2
no ip route 10.3.0.0 255.255.0.0 10.3.255.2
no ip route 10.4.0.0 255.255.0.0 10.4.255.2
no ip route 10.5.0.0 255.255.0.0 10.5.255.2
no ip route 10.6.0.0 255.255.0.0 10.6.255.2
no ip route 0.0.0.0 0.0.0.0 10.0.0.2
!ADD NEW OSPF
router ospf 10
router-id 10.255.255.1
passive-interface default
no passive-interface fastethernet0/1
no passive-interface fastethernet0/2
no passive-interface fastethernet0/3
no passive-interface fastethernet0/4
no passive-interface fastethernet0/5
no passive-interface fastethernet0/6
no passive-interface fastethernet0/7
network 10.0.0.0 0.0.0.3 area 0
network 10.1.255.0 0.0.0.3 area 1
network 10.2.255.0 0.0.0.3 area 2
network 10.3.255.0 0.0.0.3 area 3
network 10.4.255.0 0.0.0.3 area 4
network 10.5.255.0 0.0.0.3 area 5
network 10.6.255.0 0.0.0.3 area 6
network 10.100.0.0 0.0.0.255 area 100
area 1 range 10.1.0.0 255.255.0.0
area 2 range 10.2.0.0 255.255.0.0
area 3 range 10.3.0.0 255.255.0.0
area 4 range 10.4.0.0 255.255.0.0
area 5 range 10.5.0.0 255.255.0.0
area 6 range 10.6.0.0 255.255.0.0
area 100 range 10.100.0.0 255.255.0.0
exit
ip route 0.0.0.0 0.0.0.0 10.0.0.2 200
end
write memory
```

EDGE-RTR - OSPF MIGRATION

```
enable
configure terminal
!REMOVE STATIC ROUTING
no ip route 10.0.0.0 255.0.0.0 10.0.0.1
!ADD NEW OSPF
router ospf 10
router-id 10.255.255.254
passive-interface default
no passive-interface gigabitethernet0/0/0
network 10.0.0.0 0.0.0.3 area 0
default-information originate
exit
end
write memory
```

C1-MLS - OSPF MIGRATION

```
enable
configure terminal
!REMOVE STATIC ROUTING
no ip route 0.0.0.0 0.0.0.0 10.1.255.1
router ospf 10
  router-id 10.1.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.1.255.0 0.0.0.3 area 1
  network 10.1.10.0 0.0.0.255 area 1
  network 10.1.20.0 0.0.0.255 area 1
  network 10.1.30.0 0.0.0.255 area 1
exit
ip route 0.0.0.0 0.0.0.0 10.1.255.1 200
end
write memory
```

C2-MLS - OSPF MIGRATION

```
enable
configure terminal
no ip route 0.0.0.0 0.0.0.0 10.2.255.1
router ospf 10
  router-id 10.2.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.2.255.0 0.0.0.3 area 2
  network 10.2.10.0 0.0.0.255 area 2
  network 10.2.20.0 0.0.0.255 area 2
  network 10.2.30.0 0.0.0.255 area 2
exit
ip route 0.0.0.0 0.0.0.0 10.2.255.1 200
end
write memory
```

C3-MLS - OSPF MIGRATION

```
enable
configure terminal
no ip route 0.0.0.0 0.0.0.0 10.3.255.1
router ospf 10
  router-id 10.3.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.3.255.0 0.0.0.3 area 3
  network 10.3.10.0 0.0.0.255 area 3
  network 10.3.20.0 0.0.0.255 area 3
  network 10.3.30.0 0.0.0.255 area 3
exit
ip route 0.0.0.0 0.0.0.0 10.3.255.1 200
end
write memory
```

C4-MLS - OSPF MIGRATION

```
enable
configure terminal
no ip route 0.0.0.0 0.0.0.0 10.4.255.1
router ospf 10
  router-id 10.4.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.4.255.0 0.0.0.3 area 4
  network 10.4.10.0 0.0.0.255 area 4
  network 10.4.20.0 0.0.0.255 area 4
  network 10.4.30.0 0.0.0.255 area 4
exit
ip route 0.0.0.0 0.0.0.0 10.4.255.1 200
end
write memory
```

C5-MLS - OSPF MIGRATION

```
enable
configure terminal
no ip route 0.0.0.0 0.0.0.0 10.5.255.1
router ospf 10
  router-id 10.5.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.5.255.0 0.0.0.3 area 5
  network 10.5.10.0 0.0.0.255 area 5
  network 10.5.20.0 0.0.0.255 area 5
  network 10.5.30.0 0.0.0.255 area 5
exit
ip route 0.0.0.0 0.0.0.0 10.5.255.1 200
end
write memory
```

C6-MLS - OSPF MIGRATION

```
enable
configure terminal
no ip route 0.0.0.0 0.0.0.0 10.6.255.1
router ospf 10
  router-id 10.6.255.2
  passive-interface default
  no passive-interface fastethernet0/1
  network 10.6.255.0 0.0.0.3 area 6
  network 10.6.10.0 0.0.0.255 area 6
  network 10.6.20.0 0.0.0.255 area 6
  network 10.6.30.0 0.0.0.255 area 6
exit
ip route 0.0.0.0 0.0.0.0 10.6.255.1 200
end
write memory
```


7. Verification Commands

UNI-CORE-MLS verification

```
show ip interface brief
show ip ospf neighbor
show ip ospf interface brief
show ip route ospf
show ip route 0.0.0.0
show ip ospf database summary
ping 10.1.10.10
ping 10.6.30.10
ping 10.100.0.10
ping 10.255.255.254
```

EDGE-RTR summary verification

```
show ip ospf neighbor
show ip route ospf
show ip route 10.1.0.0
show ip route 10.2.0.0
show ip route 10.3.0.0
show ip route 10.4.0.0
show ip route 10.5.0.0
show ip route 10.6.0.0
show ip route 10.100.0.0
```

Expected EDGE-RTR result: The edge should learn seven summarized inter-area routes: 10.1.0.0/16 through 10.6.0.0/16 and 10.100.0.0/16. It should not learn the eighteen detailed campus /24 networks.

Campus MLS verification

```
show ip ospf neighbor
show ip route ospf
show ip route 0.0.0.0
show interfaces trunk
show spanning-tree
ping 10.100.0.10
ping 10.255.255.254
```

Access-switch verification

```
show vlan brief
show interfaces trunk
show port-security interface fastethernet0/1
show spanning-tree interface fastethernet0/1 detail
show ip interface brief
```

8. Required Security Tests

- BPDU Guard: replace a PC with a rogue switch on F0/1. Confirm the protected port stops forwarding or becomes err-disabled.
- Root Guard: temporarily set a building access switch to STP priority 0 for its active VLAN. Confirm the campus MLS building-facing port protects the root role.
- Port Security: allow the first PC to create a sticky MAC address, replace the PC, then verify a violation counter.
- SSH: from each campus, connect to the campus MLS SVI and the local building access-switch SVI using username admin.

BPDU Guard recovery

```
show interface status
show spanning-tree interface fastethernet0/1 detail
configure terminal
interface fastethernet0/1
shutdown
no shutdown
end
```

Root Guard test example for Campus 1

```
C1-B1-ACC(config)# spanning-tree vlan 110 priority 0
C1-MLS# show spanning-tree vlan 110
C1-MLS# show spanning-tree inconsistentports
C1-B1-ACC(config)# no spanning-tree vlan 110 priority 0
```

Floating static default test

```
EDGE-RTR(config)# router ospf 10
EDGE-RTR(config-router)# no default-information originate
C1-MLS# show ip route 0.0.0.0
UNI-CORE-MLS# show ip route 0.0.0.0
EDGE-RTR(config-router)# default-information originate
```

Floating-route limitation: The AD 200 route proves route preference and fallback. It does not provide physical redundancy because each campus has only one cable to the core in the submitted topology.

9. Completion and Evidence Checklist

- ☐ All device names match the topology.
- ☐ CORE F0/2-F0/7 and every campus F0/1 are routed ports with the correct /30 addresses.
- ☐ Campus 1 uses VLANs 110/120/130.
- ☐ Campus 2 uses VLANs 210/220/230.
- ☐ Campus 3 uses VLANs 310/320/330.
- ☐ Campus 4 uses VLANs 410/420/430.
- ☐ Campus 5 uses VLANs 510/520/530.
- ☐ Campus 6 uses VLANs 610/620/630.
- ☐ All eighteen PCs use the correct 10.<campus>.<role>.10 address.
- ☐ Static routing works before OSPF migration.
- ☐ CORE forms seven OSPF neighbors.
- ☐ EDGE learns seven summarized /16 routes only.
- ☐ Every campus learns the OSPF default route.
- ☐ All campuses reach CAMPUS-SRV and ISP loopback 10.255.255.254.
- ☐ BPDU Guard, Root Guard, port security and SSH tests are recorded.
- ☐ All devices are saved with write memory.