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1. Define the problem

→ verifying there is no connection from ALS1 on PC2 to PC1
→ could be a VLAN problem

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.100.254, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
ALS1#
```

→ verifying there is no connection from ALS1 on PC2 to default gateway on PC1

```
ALS1#ping 10.1.100.254
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.100.254, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
ALS1#
```

→ show vlan br
→VLAN 99 (management) is missing on ALS1

```
ALS1# show vlan br

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active
110  GUEST                            active
120  OFFICE                           active    Gi1/0/23
200  VOICE                            active    Gi1/0/23
666  NATIVE                           active
999  PARKING_LOT                      active    Gi1/0/5, Gi1/0/6, Gi1/0/7
                                                Gi1/0/8, Gi1/0/9, Gi1/0/10
                                                Gi1/0/11, Gi1/0/12, Gi1/0/13
                                                Gi1/0/14, Gi1/0/15, Gi1/0/16
                                                Gi1/0/17, Gi1/0/18, Gi1/0/19
                                                Gi1/0/20, Gi1/0/21, Gi1/0/22
                                                Gi1/0/24, Gi1/1/1, Gi1/1/2
                                                Gi1/1/3, Gi1/1/4
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
ALS1#
```

```
ALS1#show int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po1         on               802.1q         trunking      666
Po2         on               802.1q         trunking      666

Port        Vlans allowed on trunk
Po1         99,110,120,200
Po2         99,110,120,200

Port        Vlans allowed and active in management domain
Po1         110,120,200
Po2         110,120,200

Port        Vlans in spanning tree forwarding state and not pruned
Po1         none
Po2         none
ALS1#
```

→ COMMAND: SHOW IP INT BR
→ int g0/0 is down and no IP address assigned on both switch 2 and 3
→ vlan99 has an IP address but status is down

```
ALS1#show ip int bri
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 10.1.99.251     YES TFTP   down                  down
Vlan110                10.1.110.251    YES TFTP   up                    down
Vlan120                10.1.120.251    YES TFTP   up                    up
Vlan200                10.1.200.251    YES TFTP   up                    up
GigabitEthernet0/0     unassigned      YES TFTP   administratively down down
```

```
DLS2#show ip int bri
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 10.1.99.253     YES TFTP   up                    up
Vlan100                10.1.100.253    YES TFTP   up                    up
Vlan110                10.1.110.253    YES TFTP   up                    up
Vlan120                10.1.120.253    YES TFTP   up                    up
Vlan200                10.1.200.253    YES TFTP   up                    up
GigabitEthernet0/0     unassigned      YES TFTP   administratively down down
```

→ spanning-tree mode is mst on ALS1, need to change to PVST mode

```
ALS1#show spanning-tree summ
Switch is in mst mode (IEEE Standard)
Root bridge for: MST0
EtherChannel misconfig guard            is enabled
Extended system ID                      is enabled
Portfast Default                        is enabled
PortFast BPDU Guard Default             is disabled
Portfast BPDU Filter Default            is disabled
Loopguard Default                       is disabled
UplinkFast                              is disabled
BackboneFast                            is disabled
Configured Pathcost method used is short (Operational value is long)

Name                   Blocking Listening Learning Forwarding STP Active
---------------------- -------- --------- -------- ---------- ----------
MST0                          2         0        0          1          3
---------------------- -------- --------- -------- ---------- ----------
1 mst                         2         0        0          1          3
ALS1#
```

→ switch 2 is on PVST mode

```
DLS2#show spanning-tree summ
Switch is in rapid-pvst mode
Root bridge for: VLAN0001, VLAN0100, VLAN0200
EtherChannel misconfig guard            is enabled
Extended system ID                      is enabled
Portfast Default                        is disabled
PortFast BPDU Guard Default             is disabled
Portfast BPDU Filter Default            is disabled
Loopguard Default                       is disabled
UplinkFast                              is disabled
BackboneFast                            is disabled
Configured Pathcost method used is short

Name                   Blocking Listening Learning Forwarding STP Active
---------------------- -------- --------- -------- ---------- ----------
VLAN0001                      0         0        0          1          1
VLAN0099                      0         0        0          2          2
VLAN0100                      0         0        0          1          1
VLAN0110                      0         0        0          2          2
VLAN0120                      0         0        0          2          2
VLAN0200                      0         0        0          2          2
---------------------- -------- --------- -------- ---------- ----------
6 vlans                       0         0        0         10         10
DLS2#
```

→ switch 1 is on PVST mode

```
DLS1#show spanning-tree summ
Switch is in rapid-pvst mode
Root bridge for: VLAN0001, VLAN0099, VLAN0110, VLAN0120
EtherChannel misconfig guard            is enabled
Extended system ID                      is enabled
Portfast Default                        is disabled
PortFast BPDU Guard Default             is disabled
Portfast BPDU Filter Default            is disabled
Loopguard Default                       is disabled
UplinkFast                              is disabled
BackboneFast                            is disabled
Configured Pathcost method used is short

Name                   Blocking Listening Learning Forwarding STP Active
---------------------- -------- --------- -------- ---------- ----------
VLAN0001                      0         0        0          1          1
VLAN0099                      0         0        0          2          2
VLAN0100                      0         0        0          2          2
VLAN0110                      0         0        0          2          2
VLAN0120                      0         0        0          2          2
VLAN0200                      0         0        0          2          2
---------------------- -------- --------- -------- ---------- ----------
6 vlans                       0         0        0         11         11
DLS1#
```

→ port channels are broken

→ ALS1 is not supposed to be a root bridge

```
ALS1#show spanning-tree vlan 120

MST0
  Spanning tree enabled protocol mstp
  Root ID    Priority    32768
             Address     34ed.1b57.1b80
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32768  (priority 32768 sys-id-ext 0)
             Address     34ed.1b57.1b80
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/23            Desg FWD 20000     128.23   P2p Edge
Po1                 Desg BKN*10000     128.2281 P2p Bound(PVST) *PVST_Inc
Po2                 Desg BKN*10000     128.2282 P2p Bound(PVST) *PVST_Inc
```

→ messages are not being recieved

```
ALS1#show running-config | include logging
logging buffered 16384
no device-tracking logging theft
  logging enable
  logging size 50
logging source-interface Vlan99
logging host 10.1.100.1
 logging synchronous
 logging synchronous
```

2. Commands entered to resolve the issue

Adding Vlan 99 on ALS1

Commands:

→ config t
→ int vlan 99
→ name management
→ ip address 10.1.99.251 255.255.255.0
→ ipv6 address 2001:db8:cafe:99::a1/64
→ no shutdown

Verifying issue is solved: vlan99 is now added with a name and ip/ipv6 addresses

```
ALS1#show vlan br

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active
99   MANAGEMENT                       active
110  GUEST                            active
120  OFFICE                           active    Gi1/0/23
200  VOICE                            active    Gi1/0/23
666  NATIVE                           active
999  PARKING_LOT                      active    Gi1/0/5, Gi1/0/6, Gi1/0/7
                                                Gi1/0/8, Gi1/0/9, Gi1/0/10
                                                Gi1/0/11, Gi1/0/12, Gi1/0/13
                                                Gi1/0/14, Gi1/0/15, Gi1/0/16
                                                Gi1/0/17, Gi1/0/18, Gi1/0/19
                                                Gi1/0/20, Gi1/0/21, Gi1/0/22
                                                Gi1/0/24, Gi1/1/1, Gi1/1/2
                                                Gi1/1/3, Gi1/1/4
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
ALS1#
```

Verification: vlan 99 is now active in the management domain in Po1 and Po2

- Vlan 99 is also allowed and not pruned on both DLS devices

```
ALS1#show int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po1         on               802.1q         trunking      666
Po2         on               802.1q         trunking      666

Port        Vlans allowed on trunk
Po1         99,110,120,200
Po2         99,110,120,200

Port        Vlans allowed and active in management domain
Po1         99,110,120,200
Po2         99,110,120,200

Port        Vlans in spanning tree forwarding state and not pruned
Po1         none
Po2         none
ALS1#
```

```
DLS1#show int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po1         on               802.1q         trunking      666
Po10        on               802.1q         trunking      666

Port        Vlans allowed on trunk
Po1         99,110,120,200
Po10        99-100,110,120,200

Port        Vlans allowed and active in management domain
Po1         99,110,120,200
Po10        99-100,110,120,200

Port        Vlans in spanning tree forwarding state and not pruned
Po1         99,110,120,200
Po10        99-100,110,120,200
DLS1#
```

```
DLS2#show int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po2         on               802.1q         trunking      666
Po10        on               802.1q         trunking      666

Port        Vlans allowed on trunk
Po2         99,110,120,200
Po10        99-100,110,120,200

Port        Vlans allowed and active in management domain
Po2         99,110,120,200
Po10        99-100,110,120,200

Port        Vlans in spanning tree forwarding state and not pruned
Po2         99,110,120,200
Po10        99-100,110,120,200
DLS2#
```

→ vlan 99 now has an ip address and status is up

```
ALS1#show ip int bri
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 10.1.99.251     YES TFTP   up                    down
Vlan110                10.1.110.251    YES TFTP   up                    down
Vlan120                10.1.120.251    YES TFTP   up                    up
Vlan200                10.1.200.251    YES TFTP   up                    up
GigabitEthernet0/0     unassigned      YES TFTP   administratively down down
GigabitEthernet1/0/1   unassigned      YES unset  up                    up
```

Adding interface g0/0 on ALS1 and DLS2

ALS1 Commands:

→ int g0/0

→ ip address 10.41.30.122 255.255.255.0

→ no shutdown

Verifying interface g0/0 is assigned an ip address and status is up

```
ALS1#show ip int bri
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 10.1.99.251     YES TFTP   up                    down
Vlan110                10.1.110.251    YES TFTP   up                    down
Vlan120                10.1.120.251    YES TFTP   up                    up
Vlan200                10.1.200.251    YES TFTP   up                    up
GigabitEthernet0/0     10.41.30.122    YES manual up                    up
```

DLS2 Commands:
→ int g0/0
→ ip address 10.41.30.121

Verifying interface g0/0 is assigned an ip address and status is up

```
DLS2#show ip int br
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 10.1.99.253     YES TFTP   up                    up
Vlan100                10.1.100.253    YES TFTP   up                    up
Vlan110                10.1.110.253    YES TFTP   up                    up
Vlan120                10.1.120.253    YES TFTP   up                    up
Vlan200                10.1.200.253    YES TFTP   up                    up
GigabitEthernet0/0     10.41.30.121    YES manual up                    up
```

Changing spanning-tree mode from mst to pvst on ALS1
Commands:
→spanning-tree mode rapid-pvst
→ spanning-tree vlan 99 priority 32867
→ spanning-tree vlan 120 rapid-pvst
→ spanning-tree vlan 120 priority 32888

Verifying switch is in rapid-pvst mode

```
ALS1#show spanning-tree sum
Switch is in rapid-pvst mode
Root bridge for: none
EtherChannel misconfig guard            is enabled
Extended system ID                      is enabled
Portfast Default                        is enabled
PortFast BPDU Guard Default             is disabled
Portfast BPDU Filter Default            is disabled
Loopguard Default                       is disabled
UplinkFast                               is disabled
BackboneFast                            is disabled
Configured Pathcost method used is short

Name                   Blocking Listening Learning Forwarding STP Active
---------------------- -------- --------- -------- ---------- ----------
VLAN0099                    1         0        0          1          2
VLAN0110                    1         0        0          1          2
VLAN0120                    1         0        0          2          3
VLAN0200                    1         0        0          2          3
---------------------- -------- --------- -------- ---------- ----------
4 vlans                     4         0        0          6         10
ALS1#
```

Verifying ALS1 is not a root bridge and port-channels are not blocked

```
ALS1#show spanning-tree vlan 99

VLAN0099
  Spanning tree enabled protocol rstp
  Root ID     Priority    24675
              Address     7061.7bfd.e600
              Cost        3
              Port        2281 (Port-channel1)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32867  (priority 32768 sys-id-ext 99)
              Address     34ed.1b57.1b80
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Po1                 Root FWD 3         128.2281 P2p
Po2                 Altn BLK 3         128.2282 P2p
```

```
ALS1#show spanning-tree vlan 120

VLAN0120
  Spanning tree enabled protocol rstp
  Root ID     Priority    24696
              Address     7061.7bfd.e600
              Cost        3
              Port        2281 (Port-channel1)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32888  (priority 32768 sys-id-ext 120)
              Address     34ed.1b57.1b80
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/23            Desg FWD 4         128.23   P2p Edge
Po1                 Root FWD 3         128.2281 P2p
Po2                 Altn BLK 3         128.2282 P2p
```

Verification: ALS1 is now able to connect to SRV1

```
ALS1#ping 10.1.100.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.100.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
ALS1#
```

Verification: ALS1 is now able to connect to SRV1 gateway

```
ALS1#ping 10.1.100.254
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.100.254, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/4 ms
ALS1#
```

Verification: There is connectivity from SRV1 to ALS1

```
Z:\>ping 10.1.99.251

Pinging 10.1.99.251 with 32 bytes of data:
Request timed out.
Reply from 10.1.99.251: bytes=32 time=2ms TTL=253
Reply from 10.1.99.251: bytes=32 time=1ms TTL=253
Reply from 10.1.99.251: bytes=32 time=1ms TTL=253

Ping statistics for 10.1.99.251:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

Syslog

Commands:

→logging trap informational

→ logging source-interface vlan99

Verification: syslog now can receive messages

```
ALS1#send log 6 hello!
ALS1#
Oct  2 16:37:11.370: %SYS-6-USERLOG_INFO: Message from tty0(user id: ): hello!
ALS1#
```