

In 60 Days – ICND1

Troubleshooting VLANs

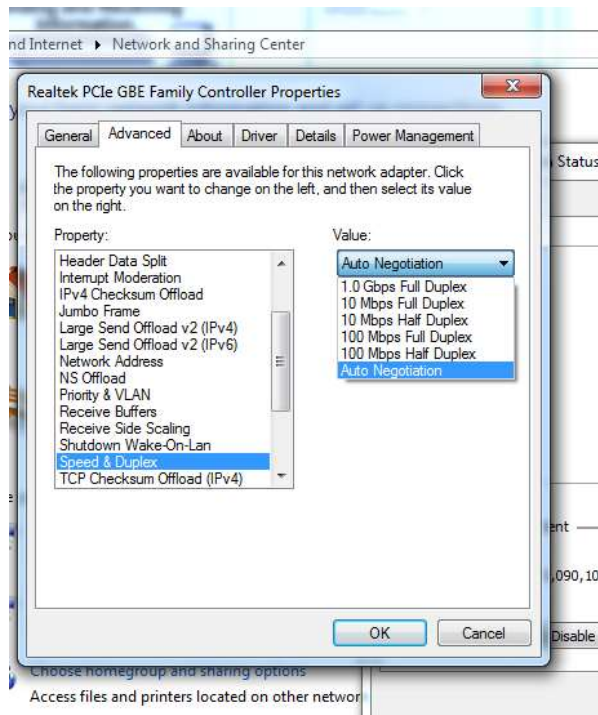
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Common intra-VLAN Issues

- Duplex mismatches
- Bad NIC or cable
- Congestion
- Hardware or software issues
- Resource oversubscription
- Configuration issues

Duplex Issues



```
Switch#show int f0/1
FastEthernet0/1 is down, line protocol is down (disabled)
  Hardware is Lance, address is 0001.c9aa.5301 (bia 0001.c9aa.
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
```

Cable Issues

```
Switch#show int f0/1
FastEthernet0/1 is down, line protocol is down (disabled)
  Hardware is Lance, address is 0001.c9aa.5301 (bia 0001.c9aa.5301)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 114 CRC, 234 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
```

Overloaded VLAN

- Frame drops
- Tx Rx buffers oversubscribed

Port	Align-Err	FCS-Err	Xmit-Err	Rcv-Err	UnderSize	OutDiscards
Fa1/0/1	0	0	177	7765	0	0

Port	Single-Col	Multi-Col	Late-Col	Excess-Col	Carri-Sen	Runts	Giants
Fa1/0/1	0	0	0	0	0	0	0

Hardware Issues

- Ports flapping (up and down rapidly)
- Check LEDs
- Swap out cable/module
- Try another port

Software Issues

- Hard to troubleshoot
- TAC can check for known bugs
- Print any error messages

Resource Oversubscription

- OSPF running on a small office router!
- CPU running 100% all day

Configuration Issues

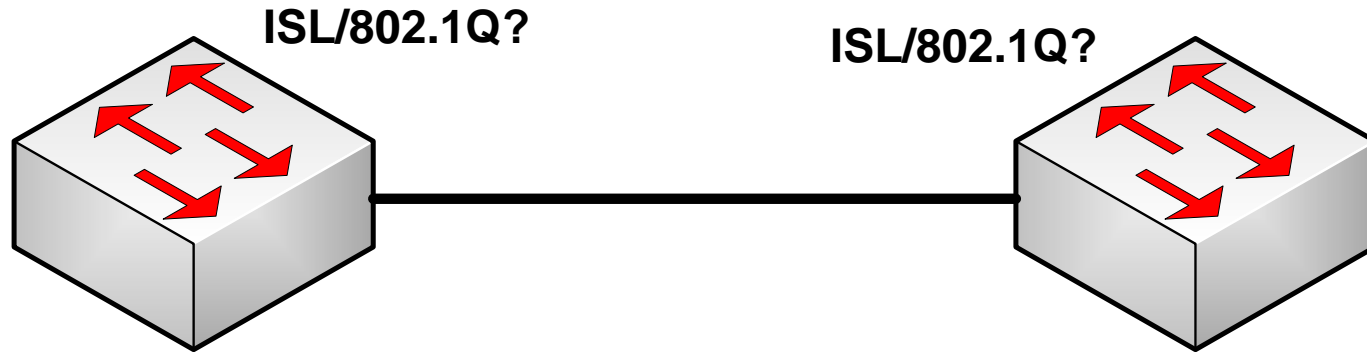
- Root bridge placement incorrect
- Plugging in a unconfigured switch

Dynamic VLAN Related Issues

- Layer 2 trunking misconfiguration*
- Incorrect VTP configuration*
- Configuration revision number*
- Software/hardware bug or issue
- Switch performance issue

VLANs

- Require a trunk link to communicate
- Don't leave trunk to autoconfigure!



Check Trunking

```
Switch0#show int trunk
```

```
Port      Mode      Encapsulation  Status  Native vlan
Fa0/1     on        802.1q         trunking  1
```

```
Port          Vlans allowed on trunk
Fa0/1         1-1005
```

```
Switch0#show int f0/1 switchport
```

```
Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
```

```
Switch1#show int trunk
```

```
Port      Mode      Encapsulation  Status  Native vlan
Fa0/1     auto      n-802.1q       trunking  1
```

```
Port          Vlans allowed on trunk
Fa0/1         1-1005
```

```
Port          Vlans allowed and active in management domain
Fa0/1         1
```

```
Port          Vlans in spanning tree forwarding state and not pruned
Fa0/1         none
```

```
Switch1#show int f0/1 switchport
```

```
Name: Fa0/1
Switchport: Enabled
Administrative Mode: dynamic auto
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
```

Native VLAN Mismatch

- Will cause trunking issue
- STP will place port in inconsistent state

```
Switch0#show int trunk
Port      Mode  Encapsulation  Status  Native vlan
Fa0/1     on    802.1q         trunking  1

Port      Vlans allowed on trunk
Fa0/1     1-1005
```

```
Switch1(config-if)#switchport trunk native vlan 10
Switch1#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered
on FastEthernet0/1 (10), with Switch FastEthernet0/1 (1)
```

VTP Parameters Must Match

```
Switch0(config)#vtp domain Paul
Changing VTP domain name from NULL to Paul
Switch0(config)#vtp password cisco
Setting device VLAN database password to cisco
Switch0(config)#
Switch0(config)#end
Switch0#
%SYS-5-CONFIG_I: Configured from console by console
show vtp status
VTP Version                : 2
Configuration Revision     : 0
Maximum VLANs supported locally : 255
Number of existing VLANs   : 5
VTP Operating Mode        : Server
VTP Domain Name           : Paul
VTP Pruning Mode          : Disabled
VTP V2 Mode               : Disabled
VTP Traps Generation      : Disabled
MD5 digest                : 0x49 0x4A 0x6E 0x90 0x73
0xD6 0xFC 0x60
Configuration last modified by 172.10.1.1 at 2-2-13
23:01:20
```

```
Cat-3550-1#show vtp status
VTP Version                : running VTP2
Configuration Revision     : 0
Maximum VLANs supported locally : 1005
Number of existing VLANs   : 8
VTP Operating Mode        : Server
VTP Domain Name           : TSHOOT
VTP Pruning Mode          : Enabled
VTP V2 Mode               : Enabled
VTP Traps Generation      : Disabled
MD5 digest                : 0x26 0x99 0xB7 0x93
0xBE 0xDA 0x76 0x9C
*** MD5 digest checksum mismatch on trunk: Fa0/11 ***
*** MD5 digest checksum mismatch on trunk: Fa0/12 ***
...
[Truncated Output]
```

End-to-End Intra-VLAN Connectivity

- Physical layer issues
- VTP pruning*
- VLAN trunk filtering*
- New switches*
- Network congestion
- Software/hardware issues or bugs

VTP Pruning

- Removes VLANs from switch if no ports in that VLAN

```
Switch(config)#vtp pruning
```

Filtering VLANs

```
Switch0(config-if)#switchport trunk allowed vlan 10-20
```

```
Switch0(config-if)#end
```

```
Switch0#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch0#show int trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	1

```
Port Vlans allowed on trunk
```

```
Fa0/1 10-20
```

Port	Vlans allowed and active in management domain
Fa0/1	none

Port	Vlans in spanning tree forwarding state and not pruned
Fa0/1	none

```
Switch#show int f1/0/1 sw
```

```
Name: Fa1/0/1
```

```
Switchport: Enabled
```

```
Administrative Mode: trunk
```

```
Operational Mode: down
```

```
Administrative Trunking Encapsulation:  
dot1q
```

```
Negotiation of Trunking: On
```

```
Access Mode VLAN: 1 (default)
```

```
Trunking VLANs Enabled: 10-20
```

```
Pruning VLANs Enabled: 2-1001
```

```
Capture Mode Disabled
```

```
Capture VLANs Allowed: ALL
```

show vlan

- Displays all VLAN info for domain

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24, Gig1/1 Gig1/2
1002	fddi-default	act/unsup	
1003	token-ring-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trnet-default	act/unsup	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

```
Switch0#show vlan id 10
```

```
VLAN Name                Status    Ports
-----
-
10    VLAN0010              active    Fa0/2, Fa0/3, Fa0/4

VLAN Type  SAID      MTU   Parent RingNo BridgeNo  Stp  BrdgMode Trans1 Trans2
-----
10   enet    100010   1500  -      -      -      -      -      0      0
```

```
Switch0(config)#int range f0/2-4
Switch0(config-if-range)#switchport mode access
Switch0(config-if-range)#sw acc vlan 10
```

New Switch

- Can make itself the root
- Can overwrite entire switching domain
- Needs configuring before adding



End

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