CCNA 200-301, Volume I

Chapter 7 **Configuring and Verifying Switch Interfaces**

Objectives

- Configuring Switch Interfaces
- Analyzing Switch Interface Status and Statistics

Configuring **speed**, **duplex**, and **description** on Switch Emma

Emma#**configure terminal**
Enter configuration commands, one per line. End with CNTL/Z.
Emma(config)#**interface FastEthernet 0/1**
Emma(config-if)#**duplex full**
Emma(config-if)#**speed 100**
Emma(config-if)#**description Server1 connects here**
Emma(config-if)#**exit**
Emma(config)#**interface range FastEthernet 0/11 - 20**
Emma(config-if-range)#**description end-users connect_here**
Emma(config-if-range)#**^Z**
Emma#

How IOS Expands the Subcommands Typed After **interface range**

Emma# **show running-config**

! Lines omitted for brevity

!

interface FastEthernet0/11

 description end-users connect here

!

interface FastEthernet0/12

 description end-users connect here

!

! Lines omitted for brevity

Administratively Disabling an Interface with **shutdown**

```
SW1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SW1(config)# interface fastEthernet 0/1
SW1(config-if)# shutdown
SW1(config-if)#
*Mar 2 03:02:19.701: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to
administratively down
*Mar 2 03:02:20.708: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down
```

The Different Status Information about Shutdown in Two Different Show Commands

SW1# **show interfaces f0/1 status**

Port	Name	Status	Vlan	Duplex	Speed	Type
Fa0/1		disabled	1	auto		10/100BaseTX

Removing Configuration with the **no** Command – Initial Configuration

```
SW1# show running-config interface f0/2
Building configuration...


Current configuration : 95 bytes
!
interface FastEthernet0/2
 description link to 2901-2
 shutdown
 speed 100
 duplex half
end
```

Removing Configuration with the **no** Command – After **no** Command

```
SW1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SW1(config)# interface fastethernet 0/2
SW1(config-if)# no speed
SW1(config-if)# no duplex
SW1(config-if)# no description
SW1(config-if)# no shutdown
SW1(config-if)# ^Z
SW1#
SW1# show running-config interface f0/2
Building configuration...
Current configuration : 33 bytes
!
interface FastEthernet0/2
end
SW1#
```

IEEE Autonegotiation Results with Both Nodes Working Correctly

Auto-Negotiation Enabled

10   10/100   10/100/1000

1   2   3

Result: **10 Full**   Result: **100 Full**   Result: **1000 Full**

10/100/1000   10/100/1000   10/100/1000

Auto-Negotiation Enabled, 10/100/1000 Ports
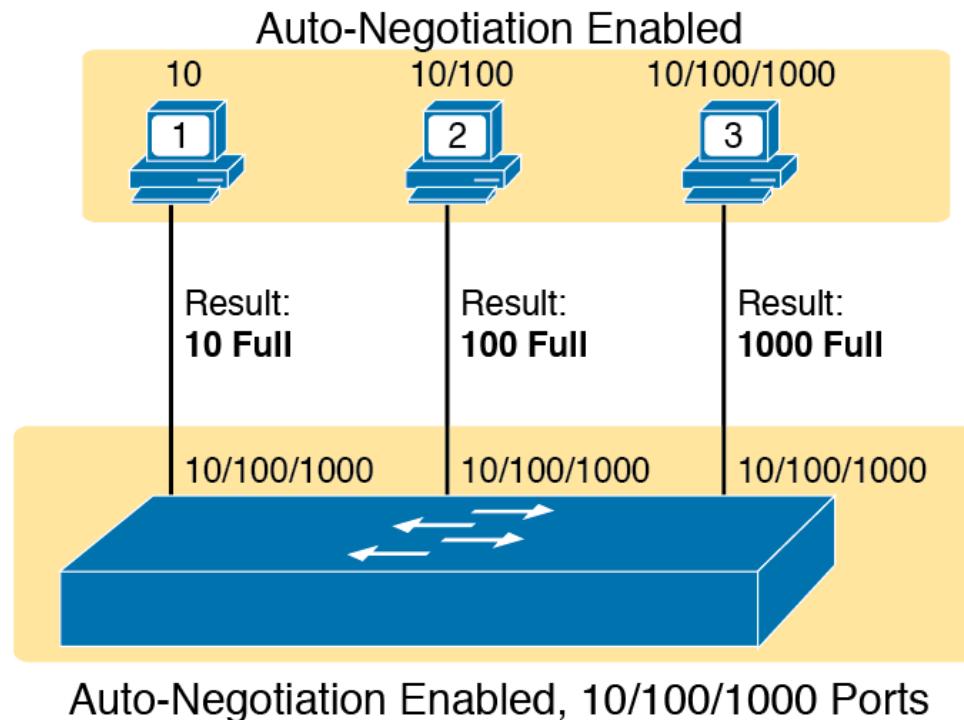
IEEE Autonegotiation Results with Autonegotiation Disabled on One Side
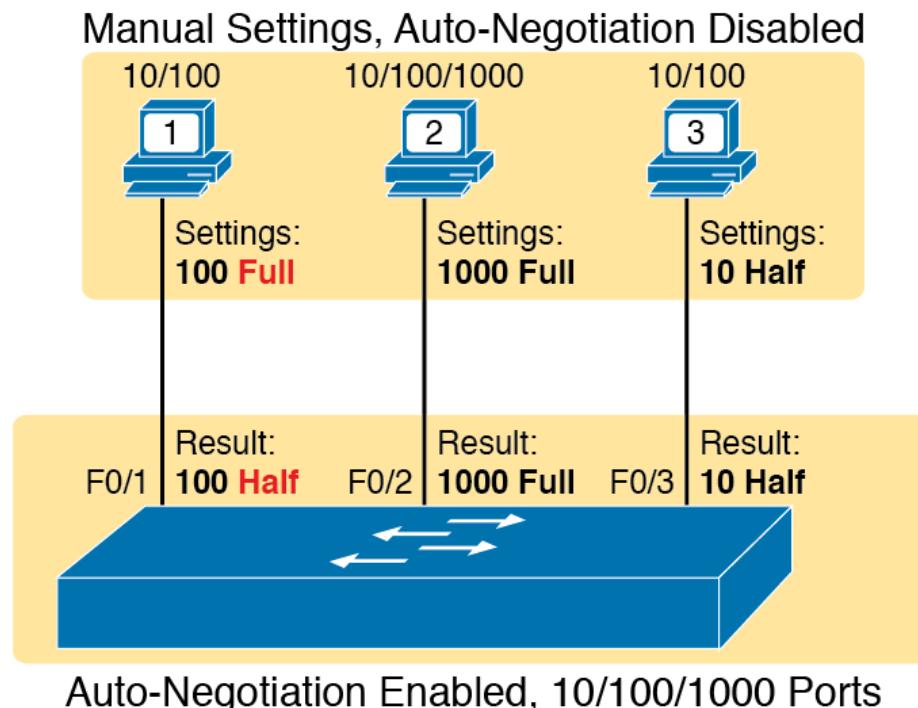
IEEE Autonegotiation with a LAN Hub
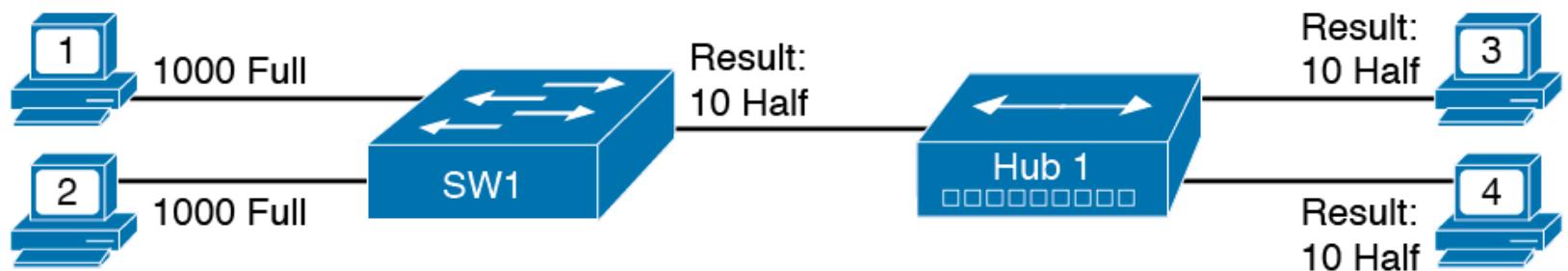
LAN Switch Interface Status Codes

Line Status	Protocol Status	Interface Status	Typical Root Cause
administratively down	down	disabled	The **shutdown** command is configured on the interface.
down	down	notconnect	No cable; bad cable; wrong cable pinouts; speed mismatch; neighboring device is (a) powered off, (b) **shutdown**, or (c) error disabled.
up	down	notconnect	Not expected on LAN switch physical interfaces.
down	down (err-disabled)	err-disabled	Port security has disabled the interface.
up	up	connected	The interface is working.

Displaying Speed and Duplex Settings on Switch Interfaces

```
SW1# show interfaces status

Port         Name               Status         Vlan       Duplex  Speed Type
Fa0/1                           notconnect     1             auto   auto 10/100BaseTX
Fa0/2                           notconnect     1             auto   auto 10/100BaseTX
Fa0/3                           notconnect     1             auto   auto 10/100BaseTX
Fa0/4                           connected      1           a-full  a-100 10/100BaseTX
Fa0/5                           connected      1           a-full  a-100 10/100BaseTX
Fa0/6                           notconnect     1             auto   auto 10/100BaseTX
Fa0/7                           notconnect     1             auto   auto 10/100BaseTX
Fa0/8                           notconnect     1             auto   auto 10/100BaseTX
Fa0/9                           notconnect     1             auto   auto 10/100BaseTX
Fa0/10                          notconnect     1             auto   auto 10/100BaseTX
Fa0/11                          connected      1           a-full     10 10/100BaseTX
Fa0/12                          connected      1             half    100 10/100BaseTX
Fa0/13                          connected      1           a-full  a-100 10/100BaseTX
Fa0/14                          disabled       1             auto   auto 10/100BaseTX
! Lines omitted for brevity
```

Displaying Speed and Duplex Settings on Switch Interfaces (Continued)

```
SW1# show interfaces fa0/13
FastEthernet0/13 is up, line protocol is up (connected)
   Hardware is Fast Ethernet, address is 0019.e86a.6f8d (bia 0019.e86a.6f8d)
   MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
      reliability 255/255, txload 1/255, rxload 1/255
   Encapsulation ARPA, loopback not set
   Keepalive set (10 sec)
   Full-duplex, 100Mbps, media type is 10/100BaseTX
   input flow-control is off, output flow-control is unsupported
   ARP type: ARPA, ARP Timeout 04:00:00
   Last input 00:00:05, output 00:00:00, 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
      85022 packets input, 10008976 bytes, 0 no buffer
      Received 284 broadcasts (0 multicast)
      0 runts, 0 giants, 0 throttles
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
      0 watchdog, 281 multicast, 0 pause input
      0 input packets with dribble condition detected
      95226 packets output, 10849674 bytes, 0 underruns
      0 output errors, 0 collisions, 1 interface resets

      0 unknown protocol drops
      0 babbles, 0 late collision, 0 deferred
      0 lost carrier, 0 no carrier, 0 PAUSE output
      0 output buffer failures, 0 output buffers swapped out
```

Conditions to Create a Duplex Mismatch Between SW1 and SW2
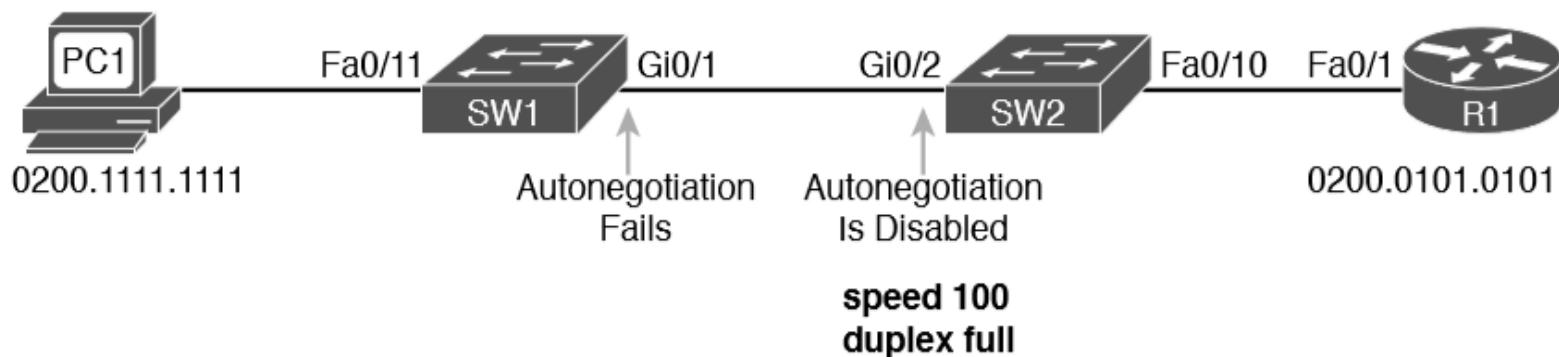
Confirming Duplex Mismatch

```
SW1# show interfaces g10/1 status


Port          Name                  Status         Vlan        Duplex  Speed Type
G10/1                               connected      trunk       a-half  a-100 10/100/1000BaseTX
```

Interface Counters for Layer 1 Problems

```
SW1# show interfaces fa0/13
! lines omitted for brevity
    Received 284 broadcasts (0 multicast)
    0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 281 multicast, 0 pause input
    0 input packets with dribble condition detected
    95226 packets output, 10849674 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier, 0 PAUSE output
    0 output buffer failures, 0 output buffers swapped out
```