Cables and Cisco Devices

- **Introduction about cables types.**
- **Introduction about basic networking devices such as routers, switches, hubs**

Previous Work

Part I TCP/IP Version 4

- How to Subnet?
- Variable Length Subnet Mask VLSM
- Route Summarization

Part 2

Introduction to Cables and Cisco Devices

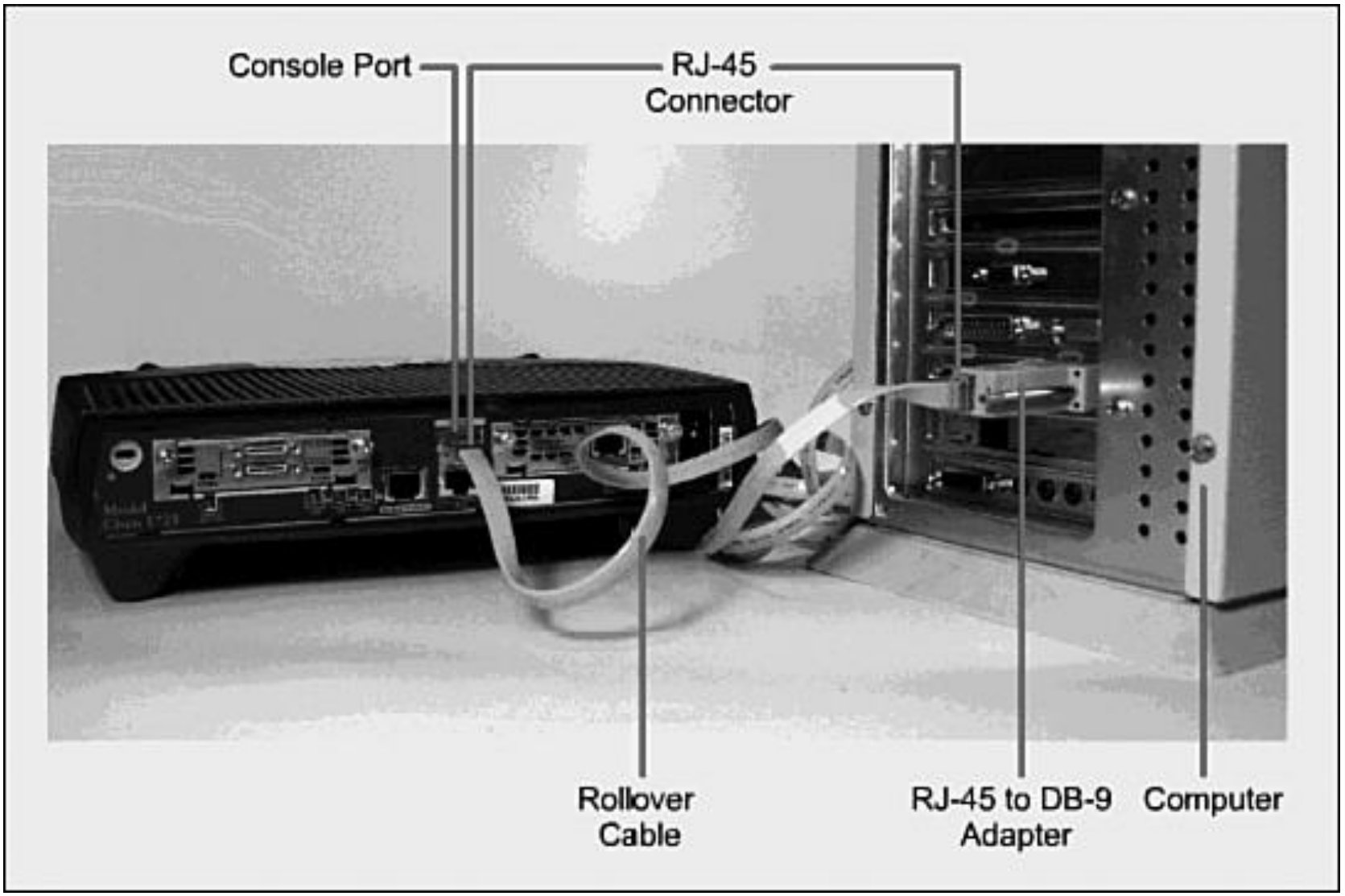
- Cables and Connections

- Cisco Router 2800, Cisco Switch 2960

Cables and Connections

- Connecting a Rollover Cable to Your Router or Switch
- Terminal Settings
- LAN Connections
- Serial Cable Types
- Which Cable to Use?
- 568A Versus 568B Cables

Connecting a Rollover Cable to Your Router or Switch



Terminal Settings

PC Settings to Connect to a Router or Switch

LAN Connections

The various port types and connections between LAN devices.

Port or Connection	Port Type	Connected To	Cable
Ethernet	RJ-45	Ethernet switch	RJ-45
T1/E1 WAN	RJ-48C/CA81A	T1 or E1 network	Rollover
Console	8 pin	Computer COM port	Rollover
AUX	8 pin	Modem	RJ-45
BRI S/T	RJ-48C/CA81A	NT1 device or private integrated network exchange (PINX)	RJ-45
BRI U WAN	RJ-49C/CA11A	ISDN network	RJ-45

Serial Cable Types

DB-60 end of a serial cable that connects to a 2500 series router.

Newer Smart Serial end of a serial cable to the end port of a modular routers (1700, 1800, 2600, 2800)

Examples of the male DTE and the female DCE ends that are on the other side of a serial or smart serial cable.

V.35 DTE and DCE Cables

CCNA focuses on *V.35 cables* for back-to-back connections between routers

USB-to-Serial Connector for Laptops

Determining Which Cables to Use When Wiring Devices Together

If Device A Has A:	And Device B Has A:	Then Use This Cable:
Computer COM port	Console of router/switch	Rollover
Computer NIC	Switch	Straight-through
Computer NIC	Computer NIC	Crossover
Switch port	Router's Ethernet port	Straight-through
Switch port	Switch port	Crossover (check for uplink button or toggle switch to defeat this)
Router's Ethernet port	Router's Ethernet port	Crossover
Computer NIC	Router's Ethernet port	Crossover
Router's serial port	Router's serial port	Cisco serial DCE/DTE cables

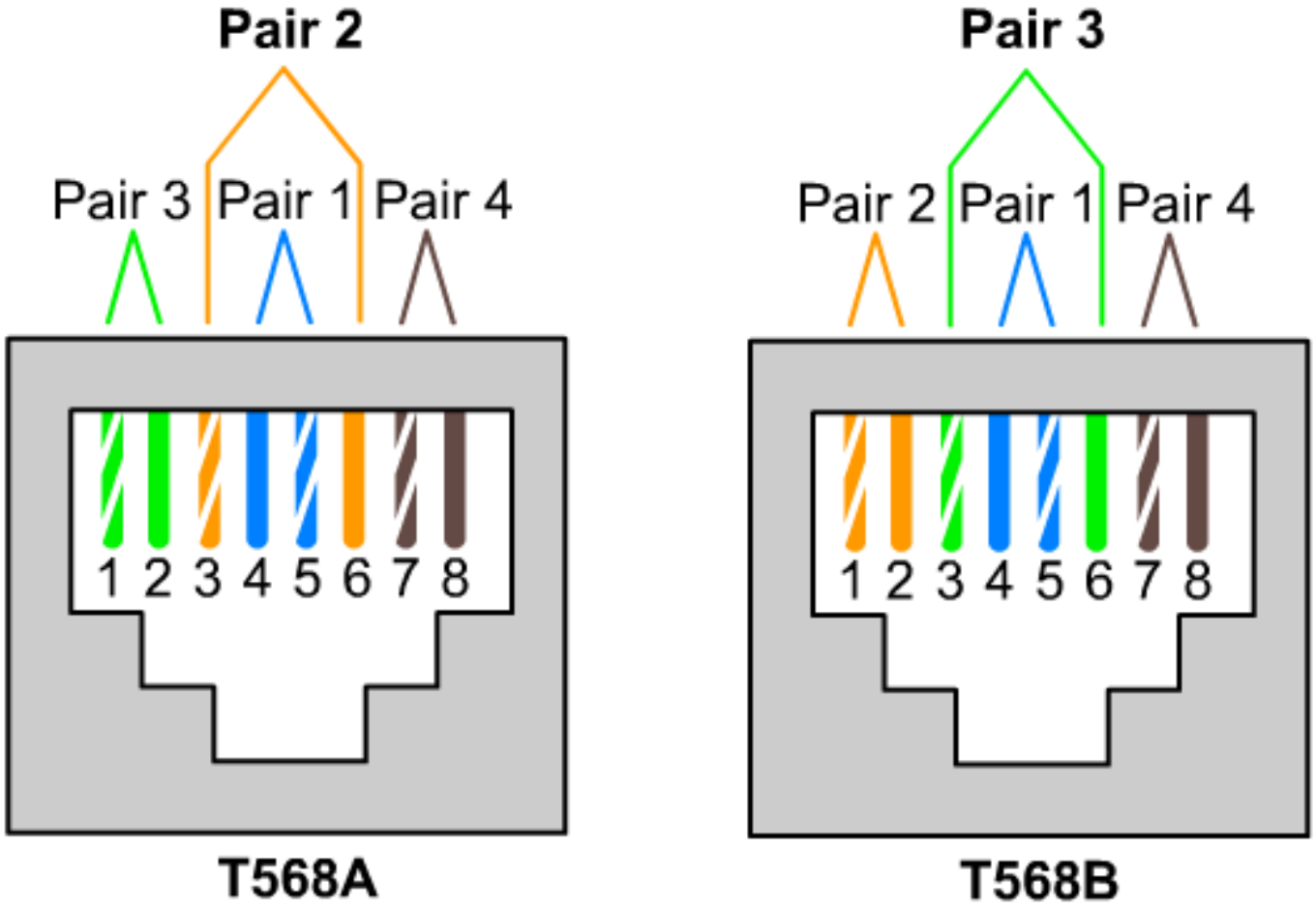
Pin outs for Different Cables

Straight-Through Cable	Crossover Cable	Rollover Cable
Pin 1 – Pin 1	Pin 1 – Pin 3	Pin 1 – Pin 8
Pin 2 – Pin 2	Pin 2 – Pin 6	Pin 2 – Pin 7
Pin 3 – Pin 3	Pin 3 – Pin 1	Pin 3 – Pin 6
Pin 4 – Pin 4	Pin 4 – Pin 4	Pin 4 – Pin 5
Pin 5 – Pin 5	Pin 5 – Pin 5	Pin 5 – Pin 4
Pin 6 – Pin 6	Pin 6 – Pin 2	Pin 6 – Pin 3
Pin 7 – Pin 7	Pin 7 – Pin 7	Pin 7 – Pin 2
Pin 8 – Pin 8	Pin 8 – Pin 8	Pin 8 – Pin 1

UTP Wiring Standards

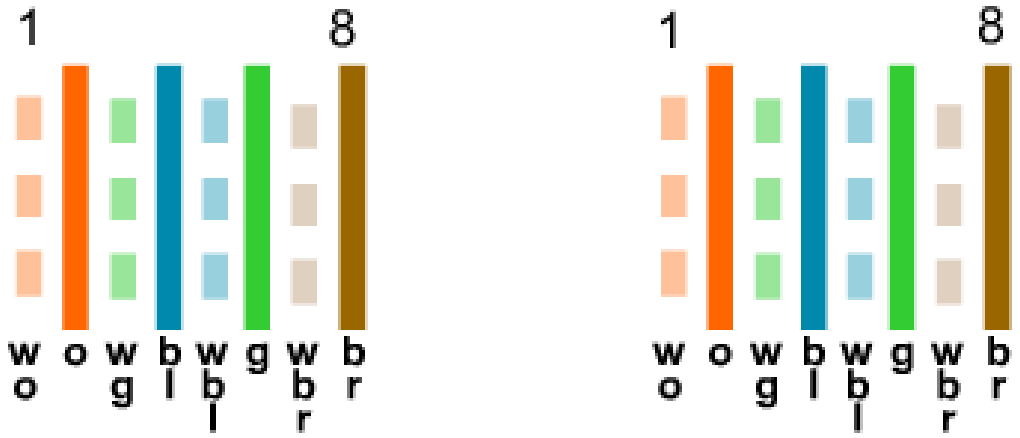
568A Standard				568B Standard			
Pin	**Color**	**Pair**	**Description**	**Pin**	**Color**	**Pair**	**Description**
1	White/green	3	RecvData +	1	White/ orange	2	TxData +
2	Green	3	RecvData -	2	Orange	2	TxData -
3	White/ orange	2	Txdata +	3	White/green	3	RecvData +
4	Blue	1	Unused	4	Blue	1	Unused
5	White/blue	1	Unused	5	White/blue	1	Unused
6	Orange	2	TxData -	6	Green	3	RecvData -
7	White/brown	4	Unused	7	White/ brown	4	Unused
8	Brown	4	Unused	8	Brown	4	Unused

- Odd pin numbers are always the striped wires.
- A straight-through cable is one with both ends using the same standard (A or B).
- A crossover cable is one that has 568A on one end and 568B on the other end.


Pair 2
Pair 3
Pair 1
Pair 4
1 2 3 4 5 6 7 8
T568A
Pair 3
Pair 2
Pair 1
Pair 4
1 2 3 4 5 6 7 8
T568B

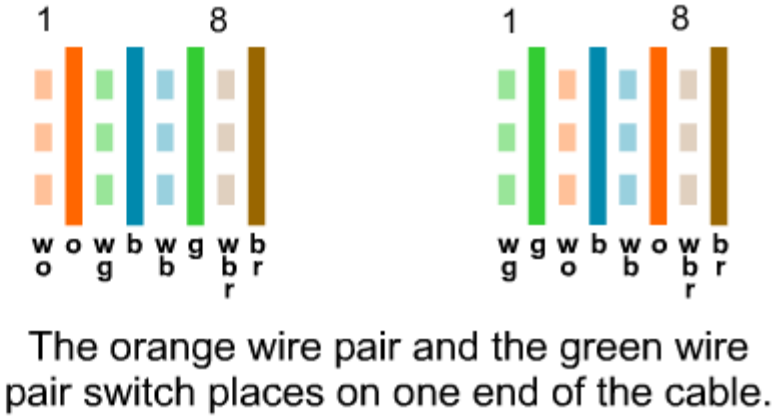
Straight-through Cable

Pin	Label
1	TD+
2	TD-
3	RD+
4	NC
5	NC
6	RD-
7	NC
8	NC



Wires on cable ends are in same order.

Crossover Cable



The orange wire pair and the green wire pair switch places on one end of the cable.

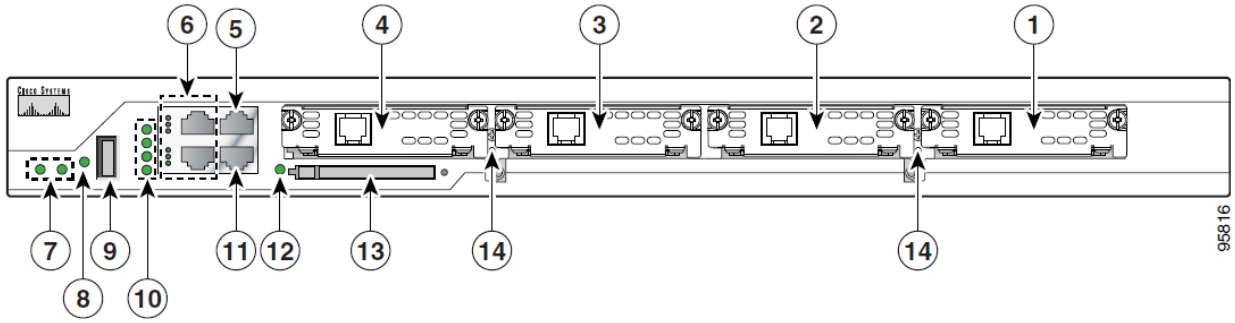
Pins 1 and 2 on one connector connect respectively to pins 3 and 6 on the other.

Cisco 2800 series routers contain the following types of memory:

• **DRAM:** Stores the running configuration and routing tables and is used for packet buffering by the network interfaces. Cisco IOS software executes from DRAM memory.

• **Boot/NVRAM:** Internal flash memory. Stores the bootstrap program (ROM monitor), the configuration register, and the startup configuration.

• **Flash memory:** External flash memory. Stores the operating system software image.



5. Console Port
6. Fast Ethernet Ports and LEDs
7. System LEDs
8. Auxiliary Power (AUX/PWR) LED
11. Auxiliary Port
12. Compact Flash (CF) LED
13. External Compact Flash Memory Card Slot

Connecting to the Internet and Testing connectivity with ping

- The **ping** command works by sending multiple IP packets to a specified destination.
- Each packet sent is a request for a reply.
- The output response for a ping contains the success ratio and round-trip time to the destination.
- From this information, it is possible to determine if there is connectivity to a destination. T
- The **ping** command is used to test the NIC transmit/receive function, the TCP/IP configuration, and network connectivity.

Example 1
C:\>*ping 192.168.1.254*

```
Pinging 192.168.1.254 with 32 bytes of data:

Reply from 192.168.1.254: bytes=32 time<10ms TTL=64
Reply from 192.168.1.254: bytes=32 time<10ms TTL=64
Reply from 192.168.1.254: bytes=32 time<10ms TTL=64
Reply from 192.168.1.254: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Example 2

If the target device is unreachable, a request timeout is returned.

C:\>*ping 192.168.1.250*

```
Pinging 192.168.1.250 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.250:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```