CHAPTER 1

Overview of the Cisco 2518

The Cisco 2518 combines Ethernet hub and router capabilities with a built-in Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI).

The Cisco 2518 is an intelligent workgroup Ethernet hub with sophisticated internetwork connectivity provided by its built-in WAN interfaces and the Cisco Internetwork Operating System (Cisco IOS software).

This hub provides the capabilities of an Ethernet unshielded twisted pair (UTP) concentrator, an intelligent Simple Network Management Protocol (SNMP) internetwork router, and an ISDN terminal adapter.

The Cisco 2518 has the following features:

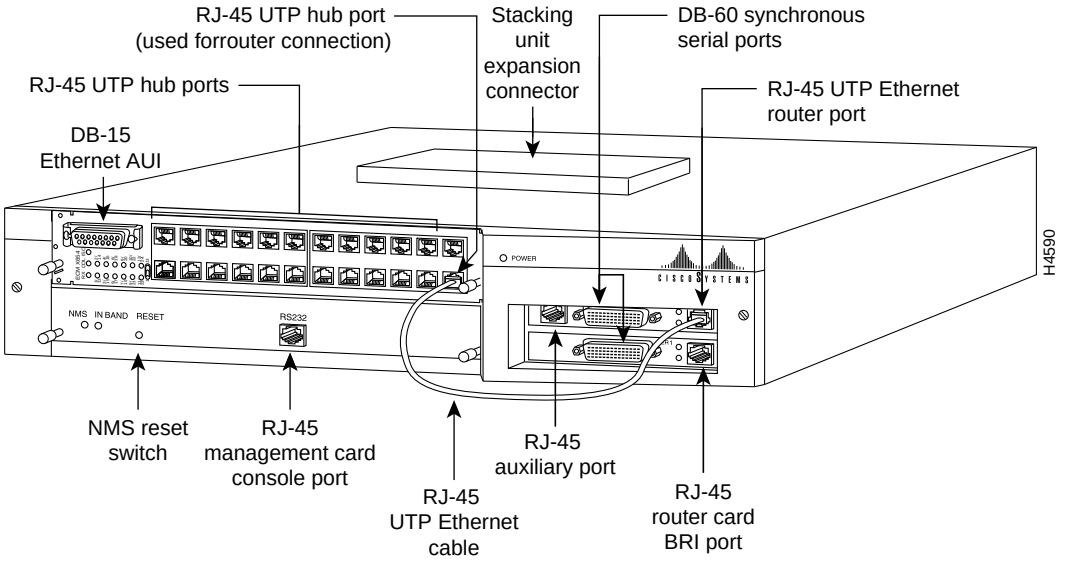
- 23 available Ethernet hub ports.
- Hub ports and router interfaces that can be configured using a modem, local terminal, or a PC.
- SNMP-managed hub and router ports.
- One ISDN (two B channels, one D channel) BRI operating at 128 kbps.
- Two synchronous serial interfaces operating at up to 2 Mbps.
- One AUI port for an external hub connection.
- Numerous Cisco IOS feature sets.
- One asynchronous serial interface for low-speed WAN access for dial-on-demand routing or dial backup connections. Dial-on-demand routing reduces the cost of wide-area access by making use of ISDN or serial dial-up lines as an alternative to costly leased lines.

- Easy access to configuration switches and jumpers on the hub port card, management card, and router card.
- Intelligent in-band hub management with the router card allows you to manage the hub.

Software for the management card is included in firmware that is accessible through the management card console port.

Figure 1-1 shows the Cisco 2518.

Figure 1-1 Cisco 2518 Router/Hub



Note Do not attempt to operate the Cisco 2518 without the stack expansion connector or an installed expansion unit.

Warning The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Users should not attempt to tamper with or open any public telephone operator (PTO)–provided equipment or connection hardware. Any hardwired connection (other than by nonremovable, connect-one-time-only lug) must be made only by PTO staff or suitably trained engineers. Translated versions of this warning are in the appendix “Translated Safety Warnings.”

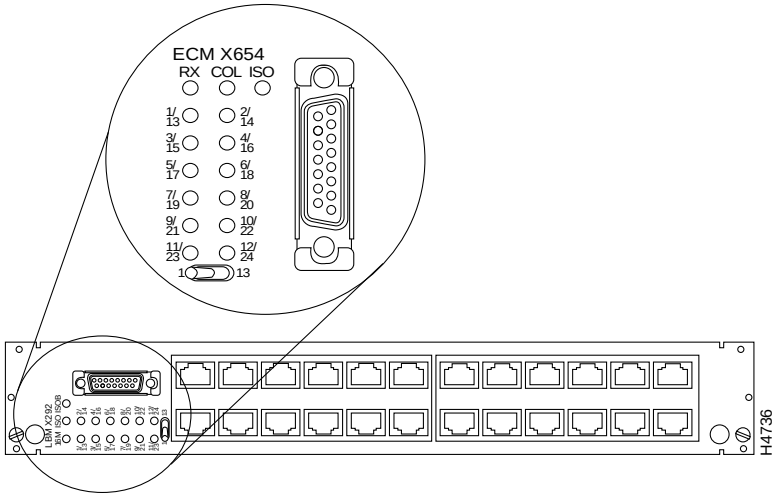
Warning The ports labeled “Ethernet” and “AUX” are safety extra-low voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits. Because the BRI circuits are treated like telephone-network voltage, avoid connecting the SELV circuit to the telephone network voltage (TNV) circuits. Translated versions of this warning are in the appendix “Translated Safety Warnings.”

Hub Port Cards

The hub port card is a slide-in card with 24 Ethernet hub ports.

Figure 1-1 shows the location of the hub port card in the chassis. Figure 1-2 shows the front of the Ethernet port card.

Figure 1-2 Cisco 2518 Hub Ethernet Port Card



Ethernet Hub Port Card LEDs

The Ethernet hub port card has an LED for the receive data, collision indication, isolation mode, and each of the Ethernet hub ports.

Table 1-1 lists and describes the LEDs.

Table 1-1 Ethernet Hub Port Card LEDs

LED	Status	Description
RX (receive)	ON	Currently receiving a data packet.
	OFF	No data packets are being received.
	OFF	No collisions detected.
	OFF	The module is connected to the backplane (normal).
Port LEDs The LED toggle switch determines whether the status for ports 1-12 or ports 13-24 are displayed.	Green	An active station is connected and operational.
	Red	The management system disconnected the port or partitioning occurred automatically as a result of channel malfunction.
	Off	No station is connected and disconnect was not performed from the management station.

A switch toggles the LED display between ports 1to 12 and ports 13 to 24.

Ethernet Hub Port Card AUI Port

The Ethernet hub port card has a female DB-15 female AUI (attachment unit interface) port. You can connect another Ethernet hub to this port to extend your Ethernet LAN.

Management Card

The management card is a removable card tray in the Cisco 2518 that has an integrated PC–AT compatible chip set and ISA bus. The router card and daughter card are inserted into the two ISA slots.

Figure 1-3 shows the front panel of the management card, and Table 1-2 describes the LEDs.

Figure 1-3 Management Card Front Panel

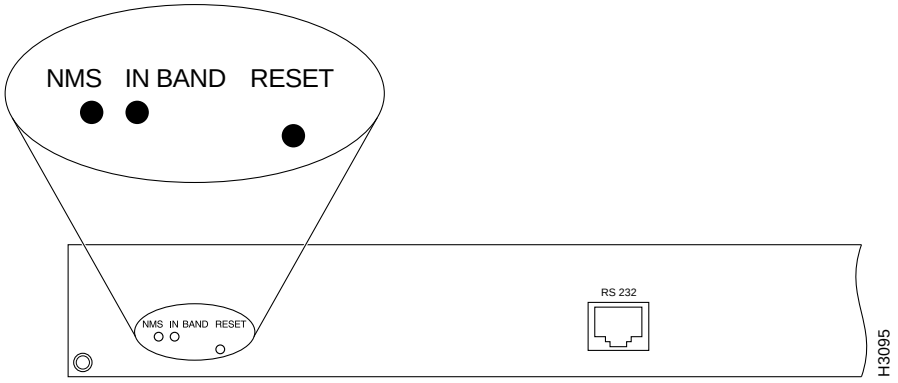
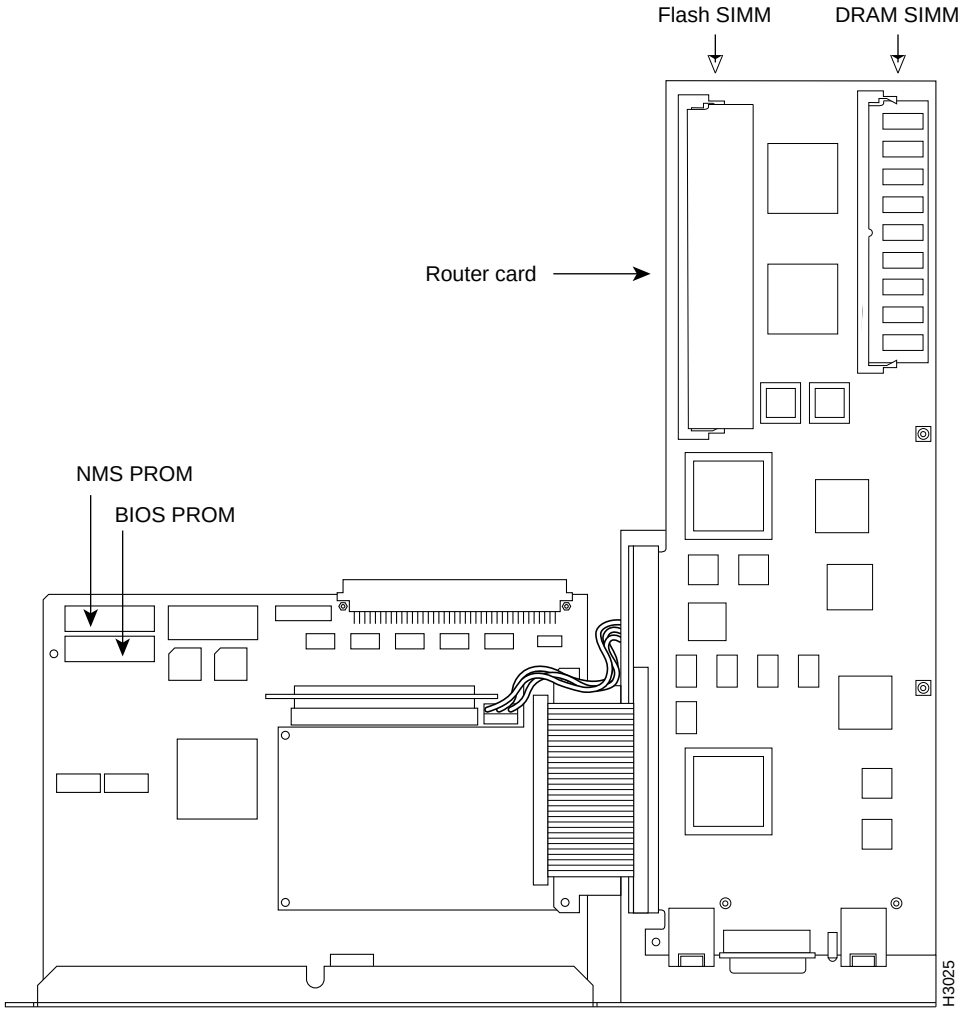


Table 1-2 Management Card LEDs and Reset Button

LED/Button	Description
NMS	Indicates that the management card is active.
IN BAND	When blinking, data is being transmitted or received over in-band communication.
RESET	Push this button to reset the management card and SNMP agent.

Figure 1-4 shows a top view of the management card.

Figure 1-4 Management Card



No jumpers or DIP switches on the management card are user configurable. Remove the management card to replace ROMs or service the router card. See the appendix "Cisco 2518 Hub Maintenance" for management card ROM replacement procedures, or the appendix "Router Card Maintenance" for router card service procedures.

The console port on the management card is used to access the management card's firmware that contains the router card software. See the section "Connecting a Terminal or PC to the Router/Hub Console Port" in the chapter "Installing the Router/Hub" for more information.

You can also configure the port for a SLIP connection to a PC running the Cisco Hub/Ring Manager. See the chapter "Configuring the Cisco 2518 SNMP Agent with SPSET" in the *Cisco Hub/Ring Manager for Windows Getting Started Guide* on UniverCD or the printed documentation for more information.

Router Card

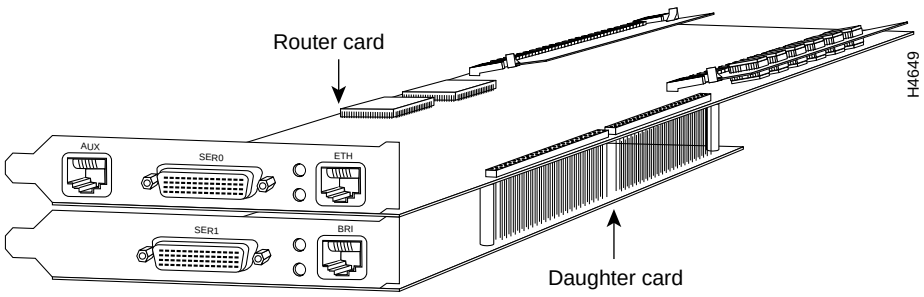
The router card is a full-featured, multiprotocol router card installed in the chassis's ISA slots. The router card has the following features:

- Multiprotocol router functions
- 2 MB of primary memory, using dynamic random-access memory (DRAM), expandable to 18 MB via a single inline memory module (SIMM)
- 4 MB of Flash memory for the Cisco IOS software, expandable to 16 MB
- 32-KB nonvolatile random-access memory (NVRAM) for configuration storage
- Two serial ports for connection to a channel service unit/digital service unit (CSU/DSU) or protocol analyzer
- Data terminal equipment/data communications equipment (DTE/DCE) auxiliary port

The RJ-45 asynchronous auxiliary port on the router is used to connect to a terminal or modem.

Figure 1-5 shows a side view of the router card with a daughter card.

Figure 1-5 Router Card with a Daughter Card



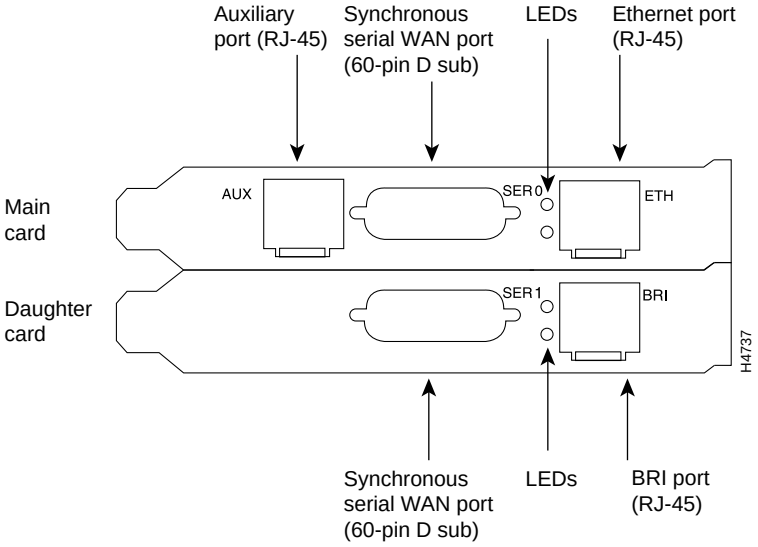
The router card has the following ports:

- RJ-45 Ethernet
- RJ-45 EIA/TIA auxiliary/console
- Two DB-60 synchronous serial
- RJ-45 BRI

Warning Hazardous network voltages are present in the BRI cable. If you detach the BRI cable, detach the end away from the router card first to avoid possible electric shock. Network hazardous voltages also are present on the system card in the area of the BRI port (RJ-45 connector), regardless of when power is turned off. Translated versions of this warning are in the appendix "Translated Safety Warnings."

Note EIA/TIA-232 and EIA/TIA-449 were known as recommended standards RS-232 and RS-449 before their acceptance as standards by the Electronics Industry Association (EIA) and Telecommunications Industry Association (TIA).

Figure 1-6 Ethernet Router Card Ports



Management Levels

The integrated management software allows you to monitor and control your entire network from a central site.

Physical level management includes port monitor and control for port activity, status, and repeater ports. MAC layer management includes the following features:

- Automatic configuration discovery to identify active stations and determine their functional parameters.
- Monitor functions allow you to monitor the activity of specified critical devices such as hubs.
- The router card is managed with either Cisco IOS commands or the CiscoWorks SNMP manager. The hub ports are configured with DIP switches or managed with Cisco Hub/Ring Manager for Windows.

System Configuration

Configure the router card first by accessing the Cisco IOS software through the management card's console port. The IP address of the router/hub management SNMP agent is assigned automatically with PCbus address resolution protocol (ARP), and is based on the IP address you assigned to the router's PCbus.

See the chapter "Configuring the Cisco 2518 SNMP Agent with SPSET" for more information.

Specifications

Table 1-3 lists the specifications for the Cisco 2518.

Table 1-3 Cisco 2518 Hub Specifications

Specification	Description
Dimensions (H x L)	3.0 x 19.0" (7.62 x 48.26 cm)
Input voltage and frequency	100–120/200-240 VAC, 60/50 Hz
Output power	20.0A maximum @ 5V
Power dissipation	100W maximum
Ethernet interfaces	24 IEEE 802.3 (RJ-45) 1 AUI
Serial interfaces	1 EIA/TIA-232
Operating environment	50 to 95°F (10 to 35°C)
Nonoperating temperature	–4 to 185°F (–20 to 85°C)
Operating humidity	5 to 95%, noncondensing
Regulatory Compliance	This product conforms to FCC Class A compliance requirements and other compliance as outlined in the *Cisco 2518 Public Network Certification* document that shipped with your system.

Table 1-4 lists the technical specifications for the router card.

Table 1-4 Router Card Specifications

Specification	Description
Dimensions (H x L)	4.8 x 13.3" (12.2 x 33.8 cm)
Power requirements	3.0A @ 5V, 0.5A @ ±12V
Processor	20-MHz Motorola 68EC030
Memory	2-MB primary memory (DRAM SIMMs, replaceable with 4 or 16 MB) 4-MB Flash memory (expandable to 16 MB) 32-KB NVRAM
Network interfaces	1 BRI and 2 synchronous serial
Ethernet interface	1 IEEE 802.3 10BaseT (RJ-45)
Synchronous serial interfaces	EIA/TIA-232, EIA/TIA-449, V.35, X.21 (NRZ/NRZI[1] and DTE/DCE) EIA-530 (NRZ/NRZI and DTE) All serial cables use a DB-60 chassis connector.
BRI	ISDN basic rate (RJ-45)
Auxiliary/console port	Asynchronous serial (RJ-45, EIA/TIA-232-compatible)
Regulatory Compliance	This product conforms to FCC Class A compliance requirements, and other compliance as outlined in the *Cisco 2518 Public Network Certification* document that shipped with your system.

1. NRZ = nonreturn to zero; NRZI = nonreturn to zero inverted.