



Chapter 1

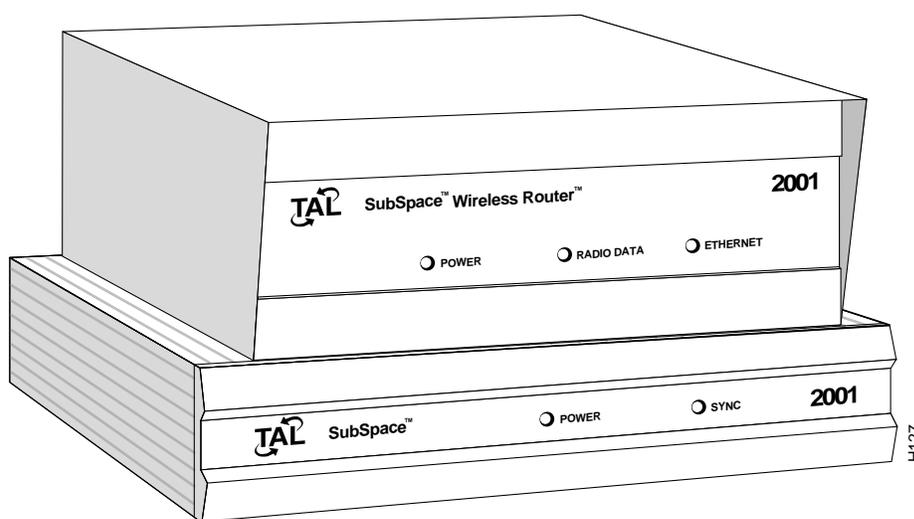
SubSpace 2001 Product Overview

TAL products provide high-speed wireless internetworking using spread-spectrum packet radio technology. Using TAL wireless routing technology, you can create full-mesh, partial-mesh, or hierarchical internetworks that connect stationary systems on a peer-to-peer basis to other stationary systems or to a central point of presence (POP).

The SubSpace 2001 Wireless Router allows you to create wireless internetworks with single-link distances of up to 30 kilometers (18.6 miles). The Wireless Router delivers raw data throughput of 160 kilobits per second (kbps) half duplex; you can achieve an average end-user rate of 64 kbps.

The SubSpace 2001 Wireless Router consists of two subsystems: the wireless subsystem and the router subsystem (see Figure 1-1). This chapter describes the two subsystems and provides an overview for installing the SubSpace 2001.

Figure 1-1 SubSpace 2001



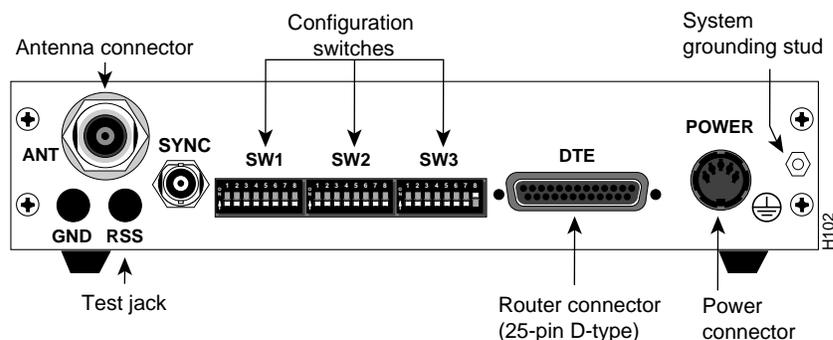
1.1 Wireless Subsystem

The wireless subsystem transmits and receives radio signals and converts those signals to a format suitable for communication with the router. The wireless subsystem consists of the following:

- Omnidirectional or high-gain directional antenna assembly
- Radio frequency (RF) transmission cable
- Spread-spectrum radio

Figure 1-2 shows the rear panel of the wireless subsystem.

Figure 1-2 Radio Rear Panel



The wireless subsystem incorporates the following features:

- Direct sequence (DS) spread-spectrum transceiver that includes 8 different pseudorandom noise (PN) codes and has a 12-decibel (dB) process gain
- L-band model that operates in the 902- to 928-megahertz (MHz) frequency range, has nine 160-kbps overlapping channels, and supports from 1- to 800-milliwatt (mW) RF power output
- S-band model that operates in the 2400- to 2483.5-MHz frequency range, has fifteen 160-kbps nonoverlapping channels, and supports from 1- to 650-mW RF power output

The frequency channel, transmission power, and PN code are fully programmable using TALnet software.

1.2 Router Subsystem

The router subsystem is a microprocessor-based controller that provides routing functionality; in other words, it is an internetworking device that determines on which path to forward data packets based on certain routing metrics.

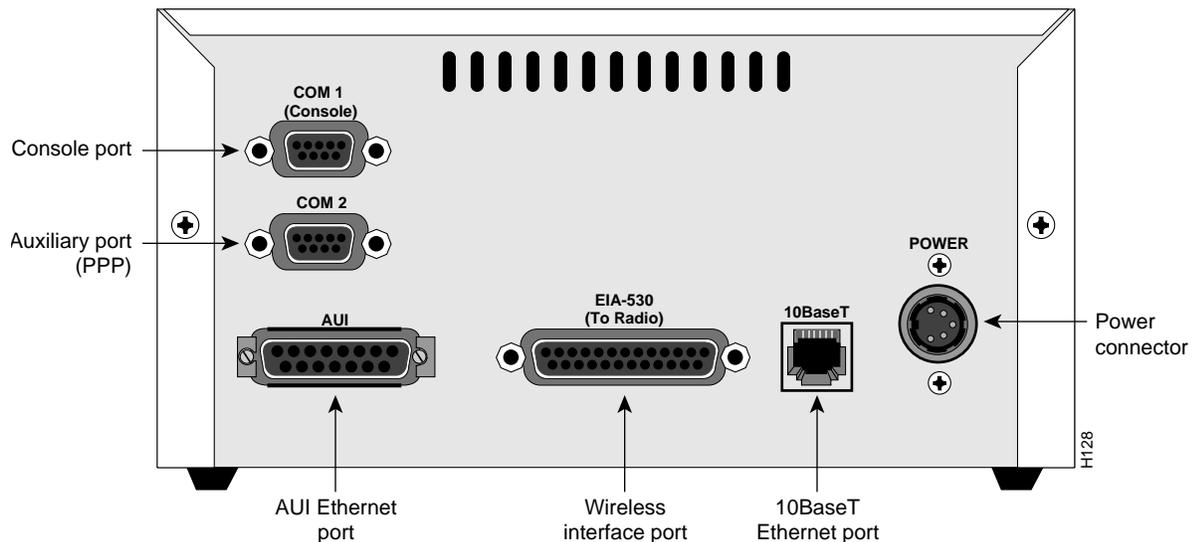
The router subsystem provides connections for external network hardware and is preloaded with TALnet software. The router subsystem includes ports for the following interfaces:

- COM 1 (Console)—Asynchronous serial line interface to connect to a service console using RS-232.

- COM 2—Asynchronous serial line interface to make Point-to-Point Protocol (PPP) connections using RS-232.
- AUI—Attachment unit interface (AUI) interface to connect to a wired local area network (LAN) using an AUI. Note that you should not connect to both a 10BaseT Ethernet LAN and an AUI Ethernet LAN. If you do, only the 10BaseT Ethernet LAN will function.
- EIA-530 (To Radio)—High-speed synchronous serial interface to connect to the wireless subsystem using an EIA-530 cable.
- 10BaseT—10BaseT Ethernet interface to connect to a wired LAN using a 10BaseT modular patch cable. Note that you should not connect to both a 10BaseT Ethernet LAN and an AUI Ethernet LAN. If you do, only the 10BaseT Ethernet LAN will function.

Figure 1-3 shows the rear panel of the router subsystem.

Figure 1-3 Router Rear Panel



1.3 Installing the SubSpace 2001

The following is the general process for installing your SubSpace 2001. Refer to the specified chapters in this document for instructions and guidelines on each step.

- 1 Perform a link analysis to determine the hardware configuration and initial radio parameters. *Chapter 2.*
- 2 Mount your antenna based on information from the link analysis. *Chapter 3.*
- 3 Connect the radio and antenna using the RF cable. *Chapter 3.*
- 4 Test the radio and antenna installation using static path analysis. *Chapter 3.*
- 5 Connect the router to the radio using the EIA-530 cable. *Chapter 3.*
- 6 Connect a console to the router. *Chapter 3.*

- 7 If applicable, connect the router to the Ethernet LAN using the 10BaseT modular patch cable. *Chapter 3.*
- 8 If applicable, make a PPP connection to another device, such as a personal computer (PC) or another router. *Chapter 3.*
- 9 Perform a dynamic path analysis using TALnet software, the wireless subsystem, and the router subsystem. *Chapter 3.*

After you install your SubSpace 2001 Wireless Router, you must configure the software. Refer to the *TALnet Configuration Guide* for more information.