



# Software Product Description

**PRODUCT NAME:** RouteAbout™ Access ES V2.0 Software

**SPD 56.42.00**

## DESCRIPTION

This SPD describes Version 2.0 of the RouteAbout Access ES Distributed Routing Software, which provides IP routing plus wide area capability.

The RouteAbout Access ES has one local area Ethernet port and one T1/E1 serial interface that supports PPP, asynchronous PPP, RIP, Frame Relay, and V.25bis for dialback support.

**TCP/IP Routing:** The RouteAbout Access ES supports TCP/IP. The IP implementation routes data in accordance with TCP/IP standards. Routing table entries may be static, in which case they are configured by the user from the console, or they can be dynamically created by routing protocols.

**Subnetting:** Subnetting support is fully compliant with RFC 950. Any number of IP networks may be subnetted. When using RIP, subnet masks are specified on a per-network basis. In this case, a given IP network may have only one subnet mask.

**Access Control:** The IP implementation supports selective packet filtering for security. Access control lists can be applied separately to each interface for either incoming or outgoing traffic. Packets can be filtered based on the source or destination address, IP protocol number, or TCP/UDP port number.

**Fragmentation:** If the destination network does not support packets as large as those to be sent, the router fragments the packets before transmission.

**Frame Relay Support:** The RouteAbout Access ES supports routing of IP traffic over Frame Relay networks as specified in RFC 1490. The router interface also

supports IP traffic over PPP via an encapsulation technique. ARP correctly resolves MAC addresses and inverse ARP maps the MAC address to the IP address, as defined in RFC 1293.

The IP Standards include:

- RFC 768—User Datagram Protocol
- RFC 791—Internet Protocol
- RFC 792—Internet Control Message Protocol
- RFC 793—Transmission Control Protocol
- RFC 826—IP Datagrams over Public Data Networks
- RFC 854—Telnet Protocol Specifications
- RFC 894—Transmission of IP Datagrams over Ethernet
- RFC 925—Multi-LAN Address Resolution
- RFC 950—Internet Standard Subnetting Procedure
- RFC 951—Bootstrap Protocol
- RFC 1058—Routing Information Protocol
- RFC 1293—Inverse Address Resolution Protocol
- RFC 1350—TFTP Protocol Version 2
- RFC 1490—Multiprotocol Interconnect Over Frame Relay Networks

**PPP Data Link:** The Point-to-Point Protocol (PPP) data link is supported for the TCP/IP Protocol. This implementation is in compliance with RFC 1661.

Additional supported RFCs include:

- RFC 1332—IPCP Internet Protocol Control Protocol

- RFC 1570—LCP Extension (partial magic number only)

**IP Antispoofing:** The RouteAbout Access ES supports IP antispoofing. This feature provides a mechanism to stop unauthorized remote users from masquerading as authorized users. Hackers may attempt to break into a network by "spoofing" a forged IP source address to circumvent a firewall. The packet appears to have come from inside the protected network, and therefore be eligible for forwarding through the network. With the antispoofing feature, the router identifies the remote user as a user coming in over the WAN serial port—one that cannot have the same IP address as the internal LAN. Having identified the act of intrusion, the router does not allow the packet through.

**Secure Password:** The router is protected from an administrative standpoint by the ability to have it ask for a password at login. In this manner, the configuration can only be changed by authorized personnel.

**PAP and CHAP Support:**

The authenticator and peer negotiate an authentication protocol during the Link Establishment phase of PPP. To do so, the authenticator requests the peer to use either PAP or CHAP. If the peer replies that it can support that protocol, the two systems perform the authentication process.

**PAP:** The RouteAbout Access ES supports the Password Authentication Protocol (PAP). The router initiates the authentication process by sending a PAP request packet. PAP uses a two-way handshake and it does not encrypt the password that identifies the peer to the authenticator. This implementation complies with RFC 1334, "PPP Authentication Protocols."

**CHAP:** The RouteAbout Access ES supports the Challenge Handshake Authentication Protocol (CHAP). This implementation complies with RFC 1334, "PPP Authentication Protocols." The router initiates the authentication process by sending a CHAP request packet.

**RADIUS compatible:** The RouteAbout Access ES is RADIUS compatible. RADIUS (Remote Authentication Dial In User Service) compatible means that when users on a remote LAN connect in through a remote access server, the end users will be able to authenticate themselves against the RADIUS server; the router will pass the appropriate packets through. The router itself is not authenticated; both the LAN end users are.

**Frame Relay Networks:**

Frame Relay provides extended LAN services over a wide area network in a point-to-point or point to multi-point manner. The Frame Relay interface gives access to Frame Relay services based on the Core Aspects of the LAPD data link layer protocol, ANSI T1.618-1991.

The Frame Relay interface provides network addressing, congestion control, and network synchronization for permanent virtual circuit (PVC) connections. TCP/IP is supported according to Frame Relay RFC 1490 (MPI).

**Physical Access:** Physical access is through the serial port, via the network side of the CSU/DSU. Frame Relay can run up to T1/E1 speeds.

**Frame Relay Standards:** The Frame Relay implementation is based on the following specifications:

- CCITT Q.933 Annex D—DSS1 Signaling Specification for Frame Mode Basic Call Control
- ANSI T1.617—DSS1 Signaling Specification for Frame Relay Bearer Service
- ANSI T1.617 Annex D—Additional Procedures for Permanent Virtual Connections (PVCs) Using Un-numbered Information Frames

**Asynchronous Dialup:** The RouteAbout Access ES Dialup Serial Interface (DSI) feature supports asynchronous and synchronous RS-232 communication, including V.25 bis communication through the general switched telephone network. This allows the router to work with a modem and provide connectivity back to other dialup routers or remote access servers. Although there is only a single physical serial interface, the router supports multiple virtual dial circuits, each acting as a normal serial network running async PPP.

**Dial-on-Demand:**

**V.25bis Switched Circuit Support:** The RouteAbout Access ES initiates and accepts switched circuit connections. Switched circuit support requires use of a V.25bis compliant synchronous modem, or CSU/DSU. The data rate is limited by the DCE device and the carrier service used for the serial line.

**SNMP:** SNMP provides a method of monitoring and managing the operation of the RouteAbout Access ES remotely, using a standardized, extensible-UDP protocol, as stated in RFC 1157. It can examine the state of the route, collect various statistics, and generate trap messages.

**Installation:** RouteAbout Access ES V2.0 Distributed Routing Software is factory installed in the flash memory of the router. Upgrades are performed with the TFTP protocol either locally or remotely over any supported interface.

For reloads when there is no valid software image in the flash memory of the router, loading is supported by BOOTP/TFTP code in the router's PROM. The load host may be either local or remote.

Router Configurator: The RouteAbout Access ES Router Configurator utility allows for fast configuration of the router interface protocol support.

### HARDWARE REQUIREMENTS

The RouteAbout Access ES V2.0 Distributed Routing Software requires the following hardware:

- Router Hardware Unit: A RouteAbout Access ES module
- Console Terminal: A terminal for local configuration of the router

**Table 1**  
**Product Ordering Information**

Description	Order Number
RouteAbout Access ES (US & Canada)	DEX1S-FA
RouteAbout Access ES (Europe, AP, & Japan)	DEX1R-F <sup>1</sup>

<sup>1</sup>Asterisk (\*) denotes the country kit variant. For additional information on available country kits and services, refer to the appropriate price book.

**Table 2**  
**Physical Interfaces and Adapter Cables**

Interface	Adapter Cable Order Number
V.35 DTE	BN37D-02
RS232 DTE	BN37E-02
X.21 DTE	BN37F-02
V.35 DCE	BN37G-02
RS232 DCE	BN37H-02
X.21 DCE	BN37J-02

### SOFTWARE PRODUCT SERVICES

A variety of service options are available from DIGITAL™. For more information, contact your local DIGITAL office.

### SOFTWARE LICENSING

A separate license is required for each Router hardware unit on which the software product is to be used. This license is included in the price of the Router hardware. A license letter is shipped with the hardware unit along with the invoice; both of these serve as proof of license.

The licensing provisions of DIGITAL's Standard Terms and Conditions specify that the software and any part thereof (but excluding those parts specific to the load hosts) may be used only on the single Router hardware unit on which the software is operated, but may be copied in whole or in part (with proper inclusion of DIGITAL's copyright notice and any proprietary notices on the software) between multiple load hosts on the same LAN.

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