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Software Product Description

PRODUCT NAME: RouteAbout™ Access ISDN Software V2.3a **SPD 56.55.00**

DESCRIPTION

This SPD describes Version 2.3a of the RouteAbout Access ISDN Software, which provides TCP/IP as well as multiprotocol bridge-routing capability.

The RouteAbout Access ISDN Software is available in two versions:

- **RouteAbout Access ISDN/IP—**This is a TCP/IP-only Basic Rate ISDN router with wide area support, compression capability for bandwidth optimization, and security features. The RouteAbout Access ISDN TCP/IP hardware contains 2 MB of dynamic random access memory (DRAM) and 1 MB of Flash memory that cannot be expanded. The U.S. version of this router comes with an integrated NT1.
- **RouteAbout Access ISDN/MP—**This is a Multiprotocol Basic Rate ISDN bridge-router that supports TCP/IP, IPX, and AppleTalk®. It has wide area support features, compression capability for bandwidth optimization, and security features. The RouteAbout Access ISDN Multiprotocol hardware contains 4 MB of DRAM and 2 MB of Flash memory that cannot be expanded. The U.S. version of this router comes with an integrated NT1.

TCP/IP Routing

TCP/IP Routing is supported in both the RouteAbout Access ISDN IP and MP. The IP implementation routes data in accordance with TCP/IP standards. Routing table entries can be static, in which case the user configures them from the console, or they can be dynamically created by routing protocols.

Subnetting

Subnetting is supported in both the RouteAbout Access ISDN IP and MP. Subnetting support is fully compliant with RFC 950. Any number of IP networks can be subnetted. When the Routing Information Protocol (RIP) is used, subnet masks are specified on a per-network basis. In this case, a given IP network may have only one subnet mask.

TCP/IP Access Control

TCP/IP Access Control is supported in both the RouteAbout Access ISDN IP and MP. 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

Fragmentation is supported as follows: If the destination network does not support packets as large as those to be sent, the router fragments the packets before transmission, as referenced in RFC 791.

TCP/IP Static Filters

TCP/IP Static Filters are supported in both the RouteAbout Access ISDN IP and MP. IP filters start by blocking all traffic. You then create a collection of filters to allow traffic based on your organization's security policy. You can allow access to specific internal network resources, and you can allow internal clients to access services outside your corporate network. Once you set up your filters, you can test and troubleshoot them by using Event Logging System (ELS) messages.

January 1997
AE-R46UA-TE

Supported TCP/IP Standards

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
RFC 894	Transmission of IP Datagrams Over Ethernet
RFC 925	Multi-LAN Address Resolution
RFC 950	Internet Standard Subnetting Procedure
RFC 951	BOOTP
RFC 1157	SNMP
RFC 1332	IPCP Internet Protocol Control Protocol
RFC 1334	PAP/CHAP
RFC 1350	TFTP
RFC 1570	LCP Extension (partial magic number only)
RFC 1661	PPP Data Link for TCP/IP

Dynamic IP Address Assignment

Both the RouteAbout Access ISDN IP and MP support the Dynamic IP Address Assignment feature. This feature allows IP addresses to be assigned to the router's WAN port. Dynamic IP Address Assignment operates only with Point-to-Point Protocol (PPP) circuits.

IP Antispoofing

IP Antispoofing is supported in both the RouteAbout Access ISDN IP and MP. 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" (using a forged IP source address to circumvent a firewall). The packet appears to have come from inside the protected network, and therefore can 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

Secure Password is supported in both the RouteAbout Access ISDN IP and MP. From an administrative standpoint, this feature protects the router by enabling the router to ask for a password at login.

Multilink PPP

Multilink PPP is supported in both the RouteAbout Access ISDN IP and MP. This feature supports the aggregation of B channels in order to create greater bandwidth capacity as defined in RFC 1717. Multilink PPP or Split B channel supports the use of two separate lines or aggregated as one via Multilink PPP.

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 the Password Authentication Protocol (PAP) or the Challenge Handshake Authentication Protocol (CHAP). If the peer replies that it can support that protocol, the two systems perform the authentication process.

Both the RouteAbout Access ISDN IP and MP support PAP. The router initiates the authentication process by sending a PAP request packet. PAP uses a two-way handshake and does not encrypt the password that identifies the peer to the authenticator. This implementation complies with RFC 1334, PPP Authentication Protocols.

Both the RouteAbout Access ISDN IP and MP support CHAP. CHAP uses a three-way handshake to verify the identity of the peer. CHAP uses the RSA Data Security, Inc., MD5 Message-Digest Algorithm, copyright 1990. This implementation complies with RFC 1334, PPP Authentication Protocols.

Call-Back Support with PPP

The Call-back feature is supported in both the RouteAbout Access ISDN IP and MP. When enabled, this feature causes the RouteAbout Access ISDN to make or accept call-back requests to and from the remote router. The RouteAbout Access ISDN uses the LCP Callback option defined in RFC 1570 to control call-back processing; it must be supported by the remote router to the degree necessary to successfully execute in the mode specified. PPP authentication is then used to determine the identity of the calling router.

PPP Data Link

The RouteAbout Access ISDN IP and MP support PPP Data Link for the following protocols: IP, IPX (IPXWAN), and AppleTalk.

Compression

STAC LZS5 V5.0 technology is supported in both the RouteAbout Access ISDN IP and MP. STAC LZS V5.0 provides compression on PPP data links over ISDN lines.

Bandwidth Reservation

Bandwidth Reservation is supported in the RouteAbout Access ISDN/MP. Bandwidth Reservation guarantees outgoing bandwidth on serial lines, Frame Relay interfaces, V.25 bis switched circuits, and ISDN lines. This system reserves percentages of the total bandwidth for specified classes of traffic. These percentages are a guaranteed minimum for the class when the line is fully loaded. A class can exceed its guaranteed minimum on a line with light traffic, using up to 100 percent of the line bandwidth. The system dynamically adapts to changes in line speed, applying the same percentage to the new line speed.

IPX Routing

Novell® NetWare® Routing is supported in the RouteAbout Access ISDN/MP. The IPX implementation routes NetWare traffic in accordance with the Novell specification for the IPX protocols. IPX support includes full implementation of the NetWare Routing Information Protocol (RIP) and Service Advertising Protocol (SAP). The router keeps multiple equal cost routes to a given remote IPX network, but selects a primary route that is used exclusively when the route is available.

IPX Static Routes

The RouteAbout Access ISDN/MP supports IPX Static Routes. IPX Static Routes minimize IPX routing traffic over the ISDN WAN dial-on-demand connection by using IPX static routing as the routing protocol chosen for the IPX WAN connection for very simple network connections. This means that no IPX routing information of any kind is sent over the WAN link. Therefore, the IPX network routes and the SAPs must be statically configured.

IPX WAN

The RouteAbout Access ISDN/MP supports IPX WAN. IPX WAN is a point-to-point concept. It is the Novell standard way of running the Novell IPX protocol over various WAN media. DIGITAL™ now supports IPX WAN Version 2 over PPP, X.25, and IP Relay.

Supported IPX Standards

RFC 1362	Novell IPX Over Various WAN Media, Novell, Inc., September 1992
RFC 1634	Novell IPX Over Various WAN Media, Novell, Inc., May 1994

AppleTalk Routing

AppleTalk Phase 2 Routing is supported in the RouteAbout Access ISDN/MP. The router maintains its AppleTalk routing table by using the Route Table Maintenance Protocol (RTMP). The Phase 2 implementation of RTMP has two extensions:

- A notify neighbor technique, which propagates bad entries faster.
- A split horizon technique, which reduces the size of the RTMP route update.

Zone Information Protocol

The router maintains a Zone Information Table (ZIT) through the use of the Zone Information Protocol (ZIP). The ZIT consists of zone information associated with each network in the routing table. Phase 2 AppleTalk extends ZIP to allow zone lists for each network range along with a default zone name.

Network Zone Filters

The AppleTalk Phase 2 implementation supports network and zone name filters for each interface. There are separate filter lists for incoming and outgoing information. The router does not advertise filtered zone information in the specified directions. Both inclusive (allowed zone) and exclusive (blocked zone) lists are supported.

AppleTalk Address Resolution Protocol

The AppleTalk Address Resolution Protocol (AARP) is supported in the RouteAbout Access ISDN/MP.

Supported AppleTalk Standards

RFC 1243	AppleTalk Management Information Base
—	Apple Computer, Inc., *Inside AppleTalk* (Phase 2), Second Edition, Addison Wesley, May 1990

Event Logging System

Event logging is supported in both the RouteAbout Access ISDN IP and MP. The Event Logging System (ELS) is a monitoring system that manages messages generated by system components within the router. Messages are caused by system activity, status changes, service requests, data transmission and reception, and data and internal errors. User configuration determines the types of messages to be collected. The messages can be displayed on the console terminal screen or accessed through SNMP.

ISDN Interface

Both the RouteAbout Access ISDN IP and MP have a single ISDN Basic Rate Interface. The ISDN Basic Rate Interface provides two 64-kb/s B channels for data and a 16-kb/s D channel for signaling.

INSTALLATION

The RouteAbout Access ISDN IP and MP V2.3a software is factory installed in the Flash memory of the router. Software 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 programmable read-only memory (PROM). The load host can be either local or remote.

CONFIGURATION AND MANAGEMENT

The RouteAbout Access ISDN IP and MP can be configured by using the Configuration Tool, which is a Microsoft® Windows® based graphical configurator shipped with the RouteAbout ISDN module. The tool runs under Windows 3.1, Windows for Workgroups 3.11, Windows NT™, and Windows 95®. The RouteAbout Access ISDN Router Configurator Configuration Utility allows for fast configuration of the router interface and protocol support protocols.

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.

This software is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions. For more information about DIGITAL's licensing terms and policies, contact your local DIGITAL office.

HARDWARE

	RouteAbout Access ISDN/IP	RouteAbout Access ISDN/MP
U.S., Canada	DEX1C-FA	DEX1B-DA
Europe, AP, Japan	DEX1E-F*[1]	DEX1D-D*[1]

[1] Asterisk (*) denotes the country kit variant.