AA-R0V9A-TE

digital™

RouteAbout Access ES Release Notes
Firmware Version V2.0
September 1996

Revision A, September 1996

Introduction

This document is for the RouteAbout Access ES router. Please save this document with your copy of the *RouteAbout Access ES Installation and Configuration* guide for your router.

Contents

NOTE: The information in this document is subject to change without notice and should not be construed as a commitment by Digital. Digital assumes no liability for any errors that may appear in this document.

1. New Products, RouteAbout Access ES

Internet Access – The ISP Connection

Many Internet Service Providers (ISPs) are providing RouteAbout Access systems to their customers for access to their Internet connection. Digital is now introducing the availability of synchronous and asynchronous dialup WAN service connections in the RouteAbout Access ES. These services expand the ISPs' ability to broaden their customer base, enabling businesses preferring dialup connections to attach to their services. Inexpensive asynchronous dialup features provide ISPs with a method to introduce Internet services to new customers and allow new users to migrate to faster technologies as their use of the provider's service increases—without having to replace the router.

Product Description

Designed to ISP specifications, the RouteAbout Access ES provides the following features:

Hardware Features

- 68360 Processor
- One 10BaseT Ethernet LAN port (10Base2 is also offered)
- One WAN port with RS-232, V.35, and X.21 connectivity, with support for internal or external clocking
- Console port for out-of-band management
- Plug-and-play hardware installation
- Four LEDs indicating diagnostic conditions and traffic flow
- Media and installation manual
- AC 110/220 volt universal power supply
- Factory-installed software specific to each RouteAbout Access ES system's application

Software Features

- IP with access controls and antispoofing for additional security
- Static and dynamic IP routing
- RIP, ARP, PPP, Frame Relay, Dialup Serial Interface (DSI)
- Leased line support of Point-to-Point (PPP) and Frame Relay
- Dialup support with PPP running over Async or V.25 bis connections
- Chat scripts
- PAP and CHAP security features
- SNMP
- Factory-installed software specific to each RouteAbout Access ES router's application
- Graphical Configuration Tool for quick and easy setup, either locally or remotely
- Standards-based interoperability with existing ISP backbone equipment, including the Cisco 2500, Xylogics, Livingston, Bay Networks AN/LN, Proteon, and Digital routers

Interoperability with the RouteAbout Access ES

RtAbt w/ Async Supported Features	Digital RouteAbout Access EW	Proteon Routers Rel 2.0a	Cisco 2503 Rel 10.03	Bay Networks AN Rel 8.3	Livingston PM 2 Rel 3.1.4 Rel 3.3.1	Xylogics 2K Rel 10.1
PHYSICAL						
X.21	✓	✓	✓	Note #1	N/A	N/A
RS232	✓	✓	✓	✓	✓	✓
V.35	✓	✓	✓	Note #2	N/A	N/A
DATA LINK						
Sync						
PPP	✓	✓	✓	✓	N/A	N/A
FR	✓	✓	✓	✓	N/A	N/A
V.25 bis	✓	✓	✓	N/T	✓	✓
Async						
PPP	N/A	✓	N/T	N/A	✓	✓
MODEMS						
Sync						
Motorola V.3400	✓	✓	✓	N/T	N/A	N/A
Penril p2433-01	✓	✓	N/T	N/T	N/A	N/A
Hayes Optima	✓	✓	N/T	N/T	N/A	N/A
Async						
Hayes Optima	N/A	✓	Note #3	Note #3	✓	✓
USR Sport 28.8K	N/A	✓	Note #3	Note #3	✓	✓
USR Sport 14.4K	N/A	✓	Note #3	Note #3	✓	✓
Practical PC288MT	N/A	✓	Note #3	Note #3	✓	
Microcom DP28.8p	N/A	✓	Note #3	Note #3	✓	✓

RtAbt w/ Async Supported Features	Digital RouteAbout Access EW	Proteon Routers Rel 2.0a	Cisco 2503 Rel 10.03	Bay Networks AN Rel 8.3	Livingston PM 2 Rel 3.1.4 Rel 3.3.1	Xylogics 2K Rel 10.1
Pots						
Nynex (switched lines)	N/A	✓	N/A	N/A	✓	✓
Rolm (switched lines)	N/A	✓	N/A	N/A	✓	✓
CO Simulator	N/A	✓	✓	N/A	✓	✓
SECURITY						
PAP	Note #6	✓	✓	✓	✓ Note #4	✓
CHAP	Note #7	✓	✓	✓	✓	✓
PAP & CHAP	✓	✓	Note #5	✓	✓	
Chat	N/A	✓	N/A	N/A	✓	✓
IP Filters	N/A	✓	N/A	N/A	N/A	N/A
IP Antispoofing	N/A	✓	N/A	N/A	N/A	N/A
PROTOCOLS						
IP	✓	✓	✓	✓	✓	✓
RIP	✓	✓	✓	✓	✓	✓
ARP	✓	✓	✓	✓	✓	✓
TCP	✓	✓	✓	✓	✓	✓
UDP	✓	✓	✓	✓	✓	✓
ICMP	✓	✓	✓	✓	✓	✓
Dial						
In	✓	✓	✓	✓	✓	✓
Out	✓	✓	N/T	N/T	✓	N/T

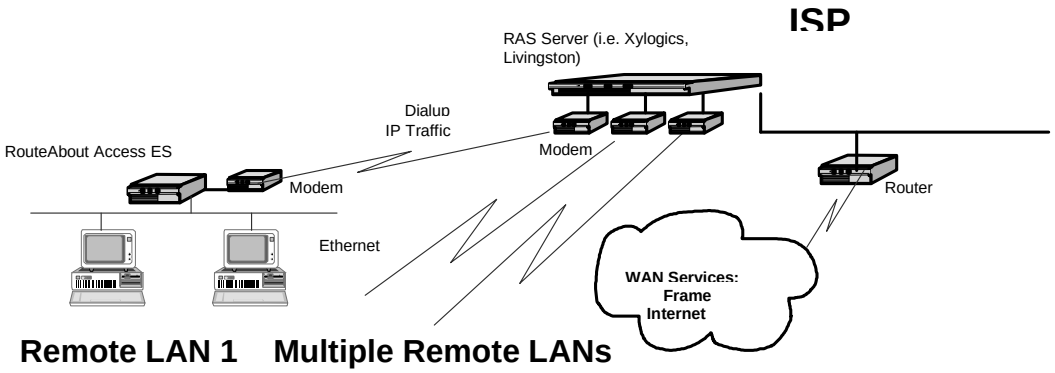
√	Passed the Test
N/A	Not Applicable
N/T	Should work but was not covered during the qualification effort

Notes:

1. The Bay AN has problems with X.21 DCE.
2. DTE runs okay on the Bay AN but the RouteAbout Access ES configured for DCE to Bay AN does not work.
3. Not tested, because router models used, did not support async PPP.
4. You must use software version 3.3.1 or better on the Livingston to make PAP work on calls originating from the Livingston to the RouteAbout Access ES.
5. Cisco does not support PAP and CHAP at the same time on one interface.
6. Must have the same password on both the local and remote router, and must have both routers in each other's access list.
7. Must have the same secret on both the local and remote router, and must have both routers in each other's access list.

Dialup Services

The Dialup Serial Interface (DSI) supports asynchronous and synchronous RS-232 communication, including synchronous V.25 bis and V.35 communication through the general switched telephone network. The figure below shows a sample DSI configuration.



You can set up the DSI

- To dial on demand when there is data to send.
- As a dedicated serial link that connects automatically when you restart the router or connects manually on command.

Each DSI consists of a serial interface that is connected to a modem and a dial circuit. Dial circuits are virtual circuits that you configure on the router. Each dial circuit is a normal serial line network, running Point-to-Point Protocol (PPP). Dial circuits control the process of placing and receiving calls. You can configure more than one dial circuit for a DSI. You provide each dial circuit with a name and a telephone number to enable users to connect to designated sites.

Ease-of-use Features

The RouteAbout Access ES features pre-loaded software for quick and easy setup. SNMP management, Telnet, and TFTP add ease-of-use features to the RouteAbout Access ES.

Configuration is easy with a new graphical Configuration Tool that Digital designed for the RouteAbout Access ES. This Microsoft™ Windows-based graphical Tool prompts you for internet addresses, subnet masks, and DSI definitions. Once entered, the RouteAbout Access ES is ready to connect to any IP-based network. The Configuration Tool comes on a 3.5” floppy disk and runs on any x386 or higher PC that is running Microsoft Windows 3.1, or above.

There is documentation provided specifically for the RouteAbout Access ES that quickly and easily steps you through the router’s setup using the graphical Tool.

With all of these ease-of-use features, the RouteAbout Access ES makes internetworking as simple as plugging in a PC.

Ordering Information

When using a RouteAbout Access ES remote access router, be sure you have selected the appropriate WAN cable. These cables can be ordered through your distributor.

NOTE: Only Digital WAN cables work with the RouteAbout Access ES routers.

WAN Cables

Part Number on Cable	Cable Type	Digital Part Number
P4730-08	V.35 DTE	BN37D-02
P4730-09	RS-232 DTE	BN37E-02
P4730-10	X.21 DTE	BN37F-02
P4730-11	V.35 DCE	BN37G-02
P4730-12	RS-232 DCE	BN37H-02
P4730-13	X.21 DCE	BN37J-02

Documentation

Each RouteAbout Access ES ships with the *RouteAbout Access ES Installation and Configuration* guide that instructs you on how to install the product and use the Configuration Tool to configure it.

Tech Tips

Modem Requirements

To interoperate with the DSI, your modem must support the following V.24 circuits and configuration:

- Circuit 103 - Transmitted Data
- Circuit 104 - Received Data
- Circuit 105 - Request to send (RTS)
- Circuit 106 - Clear to Send (CTS)
- Circuit 107 - Data Set Ready (DSR)
- Circuit 108/2 - Data Terminal Ready (DTR)
- Circuit 109 - Data Carrier Detect (DCD)
- Circuit 125 - Ring Indicator (RI)

DSI support assumes that the modem configuration

- Enables hardware flow control between the RouteAbout Access ES and modem using RTS and CTS.
- Sets automatic dial and answer capabilities in order not to conflict with dial circuit configuration. Auto answering is enabled in the DSI modem definition as the default. If you enable manual answering in the DSI modem definition, thereby disabling auto answering, you also need to disable auto answering on the modem.
- Sets a fixed speed between the DSI and the modem.
- Matches the device type (synchronous or asynchronous).

NOTE: You cannot establish a connection using asynchronous methods and then switch to a synchronous transmission without restarting the router.

Digital also recommends the disabling of echoing by the modem of command strings that the RouteAbout Access ES issues to the modem. The DSI assumes that any data it receives from a modem in response to a modem command is a result code string. In addition, we strongly recommend setting Data Carrier Detect (DCD) to track the state of carrier signal. Setting DCD always on at the modem may make it impossible to detect that the line has disconnected.

Modems Tested

Digital has qualified the following modems for use with the asynchronous dialup capabilities of the RouteAbout Access ES:

- Hayes Optima 288
- US Robotics Sportster 14.4 and 28.8
- Practical Peripherals PC288MT
- Microcom DeskPorte 28.8
- Motorola V3400

Even if a modem has not been tested, if the modem meets the requirements defined above, it should work. It just requires you to provide the RouteAbout Access ES with the appropriate modem script.

Modem Initialization Commands

Digital recommends that you use the modem initialization commands shown below for the following modems:

Modem	Commands
Practical Peripherals PC288MT	AT&FE0M0S0=1&C1&D3&K3\r
Microcom DeskPorte 28.8	AT&FE0M0S0=1&C1&D3$B115200\Q3\r
Hayes Optima 288	AT&FE0M0S0=1&C1&D3&K3\r
US Robotics Sportster	AT&FE0M0S0=1&C1&D2&B1&H1\r

If you need to disable auto-answer, change S0=1 in the commands above to S0=0.

The modem initialization commands have the following meanings:

Command	Meaning
&F	Resets the modem to factory default settings
E0	Disables modem echoing of commands
M0	Turns off the modem speaker
S0=1	Answers on the first ring in auto-answer mode
&B1	Sets the modem's serial port speed to the speed at which the last AT command was issued
&C1	Turns CD on when the modem connects, off when the modem disconnects
&D2	Causes the modem to hang up when DTR is turned off
&D3	Causes the modem to hang up and reset when DTR is turned off
&H1	Enables hardware (RTS/CTS) flow control
&K3	Enables hardware (RTS/CTS) flow control
$B115200	Sets the modem's serial port speed to 115200 bps
\Q3	Enables hardware (RTS/CTS) flow control
\r	Sends carriage return to the modem at the end of the initialization string

Modem Result Codes

It is usually not necessary to configure a value for any result code. You can just accept the default values.

In particular, it is usually not necessary to configure a value for the CONNECT result code. The value configured for the CONNECT result code matches any result code that begins with the same character string. The default value, CONNECT, matches any result code that begins with the characters CONNECT, so CONNECT matches CONNECT 28800, etc.

Similarly, the NO DIALTONE result code matches both NO DIALTONE and NO DIAL TONE.

RouteAbout Access ES Asynchronous Line Speed

For a 28.8 Kbps asynchronous modem, set the line speed of the DSI interface to 115200. For a 14.4 Kbps asynchronous modem, set the line speed of the DSI interface to 57600.

Tips for Chat Scripts

Be sure to add a carriage return (\r) at the end of character strings to be transmitted by the Chat script TRANSMIT command.

The first character of a character string received from the remote system may be case sensitive. For example, a login prompt might be `Login`: or `login`:. If you do not know the case of the first character, then enter the string in the Chat script RECEIVE command without the first character. For example, enter `ogin` instead of `Login`: or `login`:.

2. Known Deficiencies, Limitations, and/or Clarifications in the Software

RouteAbout Access ES

- If you are connecting to a Livingston Portmaster (model PM2, software version 3.1.4) and you are running authentication across PPP, then you must be aware of the following special setup needed for the Livingston Portmaster.

  During the initial negotiation stage of authentication, the Digital router responds with an ACK (OK) to the request for PAP from the Livingston Portmaster, but the Livingston Portmaster sends a NAK (not OK) in response to the Digital PAP request and suggests CHAP.

  Digital must have CHAP configured and enabled in order to satisfy the desire of the Livingston Portmaster to respond only to CHAP. This has been corrected in Livingston software release 3.3.1.

- A dial circuit configured on the RouteAbout Access ES for incoming calls must have the ANY_INBOUND parameter set. If the ANY_INBOUND parameter is not set, the dial circuit does not accept incoming calls.

- The maximum number of dial circuits that can be configured on a RouteAbout Access ES is 32. Attempting to configure more than 32 dial circuits on a RouteAbout Access ES causes the router to exhaust available memory and crash during initialization. If you configure more than the maximum number of dial circuits and cause the router to crash, you have to clear your configuration before reloading unless you have saved a configuration with no more than the maximum number of dial circuits.

- Do not configure routing protocols on the DSI base network supporting a dial circuit. This can sometimes also occur as an undesirable side effect when you change data link protocols after you configure the routing protocol.

- The Digital V.25 bis implementation requires V.25 bis DCEs (modems) to adhere to a subset of the allowed interchange circuit (modem signal) transitions described in the V.25 bis Recommendation in Fascicle VIII.1 of the CCITT Series V Recommendations.

  To operate successfully with the Digital V.25 bis implementation, V.25 bis modems must turn on CTS (circuit 106) when the router turns on DTE (circuit 108/2) and must turn CTS off when an answering tone is detected or when the router turns off DTR. Modems that make the transition directly from state 9 (incoming call recognized) to state 13 (line seized) without first turning on CTS do not work with the Digital V.25 bis implementation.

- Call collisions may not resolve satisfactorily. When you configure two routers to call one another in any mode (demand, fixed, or particularly for WAN restoral) it is possible that both callers get a busy signal, back off, try again, and so on. You can resolve this problem by designating one end as the caller (CALLS OUTBOUND) and the other end as the called party (CALLS INBOUND).

- Do not use router hostnames of 24 or more characters in conjunction with PAP or CHAP. This causes the router to crash.

- If an unnumbered IP serial line is configured on a PPP dial circuit, and the PPP dial circuit is disconnected, IP traffic is not resumed when the dial circuit is reconnected. To restart IP traffic on the unnumbered serial line, the dial circuit must be disabled and then self-tested, or the router must be restarted.

- If two RouteAbout Access ES routers are connected by an asynchronous line, the PPP Asynchronous Control Character Map (ACCM) *must* be changed to FFFFFFFF. The current default for this field is 0. With an ACCM of 0, the PPP async link between the two routers does not come up. You can change the ACCM value in the LCP Parameters/Options group in the PPP Configuration window in the Configuration Tool.

- Some vendor's routers do not properly handle the PPP magic number. An easy work around to this problem is not to negotiate the magic number. This can be done by disabling the Magic Number parameter in the LCP Parameters/Options group in the PPP Configuration window in the Configuration Tool.

RouteAbout Access ES Configuration Tool

- Under Windows 95, the installation does not set up the applications icon on your desktop. The icon is available in the installed directory (rtabtcfg.ico).

- Acknowledge and dismiss all RouteAbout Access ES Setup Error message dialog boxes before continuing on. Extraneous dialog boxes may produce unexpected results.

- We recommend that you use the latest winsock.dll available (if using the network to configure the router), preferably a version dated 4/25/94 or later.

- When using the IBD Management Utility to list, get, put, or delete IBD information, do not interupt the process by closing the application or exiting Windows, nor should you disable the routers interface while the application is executing. This may cause problems with the router's IBD which contains the routers hardware and software configuration.

- When doing Circuit Configuration some of the folders you will need to access do not display the Circuit number which you are modifying. So be sure to note the Circuit number as you proceed. The Circuit number may also be found in the Circuit Address folder.