encore!networks™

MetroLAN™ Reference Guide

Software Release 5.0.3D

September 2000

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Document History

MetroLAN™ Reference Guide
an accompaniment to the
MetroLAN™ Installation Guide

PN# 0000-0000-0235
September 2000

DOCUMENT REVISION LEVEL	SOFTWARE RELEASE	DOCUMENT PUBLICATION DATE	CHANGES
A	5.0.0A	8/ 30/99	Original book for MetroLAN™ configuration.
B	5.0.0B	9/24/99	User Manual update
C	5.0.2C	2/01/00	VoIP, E&M, New Feature/Modifications/Bug Fixes Updates
D	5.0.2D	March 2000	Menu and other updates per SW Release notes and the addition of other sections (sample networks).
E	5.0.3A	July 2000	New Features and modifications per sw release notes for software version 5.0.3A.
F	5.0.3D	September 2000	Inclusion of new features: Frame Relay Multicasting, Frame Relay Unicasting, X.25 MultiLink Protocol Encapsulation (MPE) transport, Port Traces and the addition of Reset History Information.

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Publication Notice

This manual contains information intended for use by operators and technicians to assist with the software and hardware configuration of Encore Networks products.

The manual has been carefully compiled and checked for accuracy. The information in the manual does not, however, constitute a warranty of performance. Encore Networks, Inc., reserves the right to revise the contents of this manual at any time without notice. Further, Encore assumes no liability for losses incurred as a result of any out-of-date or incorrect information this manual might contain.

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Getting Parts, Product Support, & Information

To order parts, obtain a current price list, or to speak to a representative or Product Support technician, please contact Encore Networks, Inc., at the Corporate Headquarters in Virginia. If you have questions or comments concerning this product, please contact Encore Networks, Inc., at the following address or telephone number:

Corporate Headquarters:
Encore Networks, Inc.
45472 Holiday Drive
Dulles, VA 20166
Tel: 703-318-7750
Fax: 703-787-4625
Support Phone: 703-318-4350
E-mail: support@encorenetworks.com

Safety Standards

US & International

This equipment has been tested and verified to comply with CSA950, UL-1950 and/or EN60950 safety requirements.

Symbol Definitions

Below are definitions of symbols used throughout the technical manuals.

Indicates that the network connection is network approved for use in the European Community (CE).

International CAUTION symbol. Advises the user to look for CAUTION information pertaining to the task being discussed.

International ELECTRIC SHOCK HAZARD symbol. Advises the user that opening a unit while connected to power or while connected to the network may present a shock hazard.

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Safety Information

Caution! If the unit is connected to an Electrical Outlet that has been incorrectly connected to the building wiring, serious shock could result.

WARNING! Use only with a CSA certified and UL listed Class 2 transformer with an output rated at 20-24V AC, 20 VA.

WARNING! This equipment, if not installed and used properly, may cause interference to radio and television reception. Although the unit complies with Class B limits, there is no guarantee that interference will not occur. If interference to reception occurs, which can be determined by turning the unit off and on, the following measures can be taken to attempt to correct the problem:

- Reorient the receiving antenna
- Relocate the equipment with respect to the receiver
- Move the equipment away from the receiver
- Plug the equipment into a different outlet so that it is on a different branch circuit from the receiver

The equipment manufacturer is not responsible for correcting interference.

Regulations

US: FCC Regulations

This equipment has been approved by the Federal Communications Commission (FCC) as not being harmful to the telephone network when connected directly to the telephone lines. Customers must, upon request from the telephone company, provide the necessary information from the table below to the telephone company.

FCC Approval Information for F9200-DM Models

FCC Registration Numbers: EMSUSA-23144-DE-N

Universal Service Order Code (USOC): RJ-48S

Facility Interface Codes (FIC);

> 04DU5-64
>
> 04DU9-DN
>
> 04DU5-56
>
> TL11E
>
> TL31E
>
> 02LS2
>
> 02GS2
>
> Service Order Code: 9.0Y, 6.0N
>
> Ringer Equivalent Number (REN): .8B

The FCC registration number can be found on the product label, located on the bottom of the unit. The Ringer Equivalency Number (REN) determines the maximum number of devices that can be connected to your local telephone line and still ring properly when your number is called. In most but not all areas, the sum of the RENs for all devices connected should not exceed five (5). For more specific information concerning connection requirements, contact your local telephone company.

If any of your telephone equipment causes harm to the telephone network, the telephone company may temporarily discontinue service to your lines. If possible and practical, the company notifies you in advance. If not, the company notifies you as soon as possible. With the notification, you are advised of your right to complain to the FCC.

The telephone company may make changes to its facilities, equipment, operations and procedures which could affect the operation of your equipment. Before these changes are made, the telephone company will provide advance notice that communications service will be interrupted.

FCC regulations prohibit the connection of customer-provided equipment to coin services (central office implemented systems). Connection to party lines is subject to tariffs; contact your state public service commission for information.

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This unit has been verified to meet the requirements for a Class A or Class B computing device (depending on the model you have) pursuant to Subpart J Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses and can radiate radio frequency energy which may cause harmful interference to radio communications. Operation of Class A devices in a residential area is likely to cause harmful radio interference to televisions, radios, computers, etc. If it does, the user is required to correct the interference at the user's expense. See Safety Information, in this chapter, if interference to reception is suspected.

See the label on the bottom of the unit to determine whether it is classified as Class A or Class B. In order to comply with Class B requirements, you must use Encore Networks data cables or cables made with equivalent specifications.

Canada: Communications Regulations

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network requirements for protection, operation and safety. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing the equipment, users should seek permission to be connected to local telecommunications company facilities. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

The standard connecting arrangement code for a DDS DSU/CSU is CA 48S.

The standard connecting arrangement code for a DDS-SC DSU/CSU is CA 81A.

The standard connecting arrangement code for T1 is CA 48C.

The standard connecting arrangement code for ISDN is CA-A11.

Repair to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any equipment repair or alterations made by the user or equipment malfunctions may give the

telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination of a loop may consist of any combination of devices subject only to the requirement that the total REN of all devices does not exceed 5.

The REN for both F9100 and F9200 is 0.3 for units with 33.6 modems.

This Digital apparatus does not exceed the requirements for Class A limits for emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Product Warranty

Encore Networks, Inc.

Encore Networks warrants that the Product shall be free from defects in material and workmanship for a period of twelve (12) months from the date of shipment to the end user, or fifteen (15) months from date of manufacture, whichever is shorter. Proof of delivery may be required prior to warranty repair.

Encore Networks' liability shall be limited to either repair or replacement of the defective product, at its option.

Encore Networks shall incur no obligation under this warranty if (1) the allegedly defective goods are not returned to Encore Networks within 30 days of the discovery of the alleged defect or (2) Encore Networks' verifiable tests disclose that the alleged defect is not due to defects in material or workmanship.

ENCORE NETWORKS MAKES NO EXPRESS OR IMPLIED WARRANTIES ABOUT THE QUALITY, MERCHANTABILITY, OR FITNESS OF THE PRODUCT FOR

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A PARTICULAR PURPOSE. ENCORE SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES, INCLUDING, BUT NOT LIMITED TO LOSS OF PROFITS, OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

Encore Networks will process requests for the repair of products sold pursuant to this agreement according to the following policy:

No Product will be returned without prior authorization.

All requests for return of Product should be made to Encore Networks. Encore Networks' Technical Support Administrator will obtain all necessary information from the customer for processing the return and issuing a Return Material Authorization (RMA) number.

Defective Product must be returned in static protective material, securely packaged to prevent damage in transit, and shipped prepaid with the RMA number written on the outside of the package to:

Encore Networks, Inc.
45472 Holiday Drive
Dulles, VA 20166   RMA #:_____
Phone: 703-318-7750
Fax: 703-787-4625

Encore will use commercially reasonable efforts to either repair or, at its option, replace defective Products covered under warranty within fifteen (15) working days of receipt. The warranty period for repaired or replaced Products shall be the remainder of the original warranty or ninety (90) days, whichever is greater. Product will be returned to the customer prepaid via UPS Groundtrac service. Expedited freight is at customer's expense.

Products found to be operable after testing (e.g., no trouble found) according to Encore's current manufacturing standards will be subject to a bench fee per unit.

Encore will use commercially reasonable efforts to either repair or replace, at its option, defective Products not covered under warranty, within fifteen (15) working days of receipt. The warranty on serviced Products is ninety (90) days

measured from the date of service. Out-of-Warranty repair charges vary according to model and are subject to change without notice.

Encore Networks, Inc., will use its best efforts to ship replacement Product within 24 hours of request from the Dealer/Distributor in emergency situations. The Dealer/Distributor must contact Encore within thirty (30) days of receipt of defective Product to initiate (D.O.A) advance replacement procedures.

Overnight and express shipments from Encore to the customer will be at the customer's expense.

Service Policy

Encore Networks, Inc., provides technical assistance for all products of Encore Networks. <u>Encore Networks' Technical Support Department can be reached by calling 703-318-4350</u>. When the call is answered, the Administrator will request the following informattion:

• Customer Name
• Customer Location
• Distributor name and point-of-contact
• Telephone Number
• Equipment Description
• Problem

Repair Policy

In the event that repairs to the equipment are required, you must obtain a Return Material Authorization number (RMA) from Encore in order to return the equipment to the factory. The RMA can be obtained by phone, fax or letter by contacting the Repair Department at the following address:

Encore Networks, Inc.
45472 Holiday Drive
Dulles, VA 20166
Tel: (703) 318-7750 Fax: (703) 787-4625

Return Material Authorization Policy

Please follow these instructions to ensure proper service of your product(s) and customer account.

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Return Policy & Procedures

- All returns, including returns for credit, must be shipped freight pre-paid. Encore will return ship all repairs UPS ground, or a similar service, pre-paid to the customer.
- **All returns MUST display a valid Return Material Authorization (RMA) number on the outside of the package**. Any product returned without an RA number will be refused.
- RA numbers are valid for ninety (90) days from the date of issuance.
- Products returned without accessories (i.e., manual, cables) will be replaced "as new" on request by the Distributor for an additional fee.

Return Policy & Procedures for Credit

In addtion to meeting the above criteria for all products, returns for credit must follow these rules:

- All Return for Credit RA numbers are issued by the Accounting Department.
- The model being returned must be a current stocking product.
- To receive credit, all returns must be in new condition with the original box and contents, including cables and manuals.
- The product must be received no later than thirty (30) days from the date of invoice.
- All authorized and acceptable returns, other than those covered by the D.O.A. or Warranty Return Policy (below) will be subject to an <u>inspection and restocking fee</u>.
- All returns for credit must be approved by Encore's Accounting Department (703-318-4369). This must be coordinated before an RMA number will be issued. Equipment returned without a valid RMA number will automatically be refused.

D.O.A. and Warranty Return

In addition to meeting the above criteria for all products, D.O.A. and Warranty Returns must follow these rules:

- D.O.A. as defined by the manufacturer as any product which experiences a failure directly out of the factory box or fails within thirty (30) days <u>from the date of purchase by the distributor.</u>
- All warranties are for factory repair, not replacement, of the product. This applies to <u>dealers and distributors</u>, as well as direct customers. Equipment meeting the D.O.A.

definition as listed in item (A) will be replaced or repaired upon receipt of the defective equipment. All D.O.A. replacements should be coordinated through the distributor.

- At the discretion of the manufacturer, when a product is deemed non-repairable it may be replaced with an equivalent model during the warranty period.
- If a product is deemed to have failed for reasons other than those covered by the warranty, the standard repair charge will be assessed for services rendered to the product. A basic charge will apply when the customer decides not to repair the product.
- If a product is returned for repair and found to be in operating order (i.e., no problem found), a bench charge will be assessed for testing and materials. The Technical Support Department hours are Monday through Friday, 8:30 AM to 6:00 PM (EST). The Support number is 703-318-4350. Contact the Encore salesperson for your account/region to order replacement power supplies, firmware upgrades and like items.

How to Use This Book

This book has been organized, bookmarked, and indexed to help you find the information you need as quickly as possible. Its content has also been cross-referenced extensively to provide you with speedy access to additional information on the referenced material. Below is a description of how the content of the book is organized and tips on using hyperlinks in the online version.

If you have suggestions on how to improve this manual, or if you have any comments about the content of this book, please contact the Technical Publications Department at (703) 318-4309.

Contents

The book should be used in conjunction with the <u>MetroLAN™ Installation Guide</u>. This book uses a functional approach to content, describing the entire process of configuring ports and routing schemes, monitoring, system administration, and remote management. The book's content is organized as follows:

The book begins with a notice of FCC regulations , a set of safety guidelines, warranty information, and the return policy.

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The Introduction chapters provides information on the MetroLAN™, Frame Relay, IP, and IPX.

The Getting Familiar with the System chapter discusses the menu system, navigational steps, and port types. It also provides an overview of all the top level menu options from Port Definitions to System Administration.

The Configuring Data Ports chapter discusses the steps you must go through before configuring protocol parameters for data ports, such as assigning the unit a name and address or defining a routing path. It discusses the concept of logical ports and describes how to select one. It carries you through the steps involved in linking logical ports to physical ports.

The Configuring & Routing Voice chapter provides procedures on configuring voice channels, setting up voice profiles, defining global paths for voice routes, setting up hunt groups and address translation tables.

The Routing with IP & IPX and Routing with Frame Relay chapters provide procedures on configuring each protocol and port interface. It also provides indepth information and procedures on routing functionalities such as NAT and IP Filtering.

The Monitoring Statistics chapter provides a display of each Status screen, along with a definition of each field on the screen.

The System Administration, Managing the System Remotely, and Downloading & Upgrading Software chapters offer procedures for performing the administrative tasks within the system, such as copying configurations or downloading firmware, and provide useful information and procedures for using Telnet, SNMP, and ICMP.

Online Documentation

Using Bookmarks

When you open the book through Adobe Acrobat Reader™ 4.0, you can view a list of Bookmarks, which outline of the book's main topics. If you click on an arrow in the Bookmark list, you can display additional sub-topics for that heading. When you click on a topic in the Bookmark list, you are automatically taken to the first page of that section within the book. The Bookmarks remain on the side of the open page so you can quickly jump from one topic to another without ever closing the book.

Using Entries in the Contents, List of Illustrations, & Index

All entries in the Table of Contents, List of Illustrations, and Index are hyperlinked to their respective reference points within the text. If you move the cursor over the entry until it turns into a hand figure with a pointing finger, and then click, you will be taken to the place within the text where that topic or illustration is discussed.

Using Cross-References

When you see a blue, underlined title or step number within the text of the book, you can click on it and automatically be taken to related material.

Using Headers & Footers

- Page Numbers - Throughout the book, you can find the page number at the bottom of the page in the corner.
- Title & Firmware Release Number - On odd-numbered pages, the title of the book appears in the lower left corner, and on even-numbered pages, the release number of the relevant firmware appears in the lower right corner.
- Chapter Name & Main Heading - At the top of each page, you will find the name of the chapter and the title of the top level heading of the section being discussed.

Printed Documentation

### Using Entries in the Contents, List of Illustrations, & Index

An extensive Table of Contents, List of Illustrations, and Index have been provided to help you find a given topic quickly and easily. You will notice in the Table of Contents that the sections on port protocol configurations and protocol statistics are listed in alphabetical order, according to the name of the protocol.

Using Cross-References

An underlined title or procedural step number within the text indicates that you can find information in the referenced section that relates to the subject at hand.

Using Headers & Footers

- Page Numbers - Throughout the book, you can find the page number at the bottom of the page in the corner.
- Title & Firmware Release Number - On odd-numbered pages, the title of the book appears in the lower left corner, and on even-numbered pages, the release number of the relevant firmware appears in the lower right corner.

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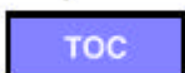
- Chapter Name & Main Heading - At the top of each page, you will find the name of the chapter and the title of the top level heading of the section being discussed.

Additional Documentation

The companion to this book is <u>MetroLAN™ Installation Guide</u> which provides the following chapters:

The Introduction Chapter introduces the MetroLAN and covers specifications and pinouts to provide technical information such as environmental concerns and cable pinouts.

The <u>Installation and Testing</u> chapter carries you through the basic process for planning your network, installing and cabling the equipment, testing back-to-back, and monitoring statistics during set up. This chapter also discusses how to quickly configure units for initial connectivity; how to configure internal CSU/DSUs; and how to set up a Cypress Chassis and Distributed Routing System, should any of these last three options apply to you.

Documentation Conventions

The following conventions are used throughout the manual:

CONVENTION	DESCRIPTION
Small bold text	Represents the text and numerals that are displayed on the unit's screens.
Step 1	Used before steps in a procedure.
1a	Used before a step in a procedure when a numbered procedural step is broken into sub-steps.
CONFIGURATION MENU.	Used at the beginning of a procedural step to introduce the name of the menu or field that is being defined or discussed in this step.

CONVENTION	DESCRIPTION
STARTING PATH . . .	Specifies the path you must take to reach a particular menu option.
Section 5.12, IP RIP	Denotes a cross-reference to a related topic.
‼ Caution	Alerts you to situations in which you can cause minor damage to configurations, data, or equipment.
⚡ Warning	Alerts you to situations in which you can cause serious damage to data or equipment, or that can cause bodily harm.
NOTE	Represents additional information that you may need to complete your task. May also say *FOR EXAMPLE, HELPFUL HINTS, TROUBLESHOOTING TIP,* and *IMPORTANT.*

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