EXHIBIT

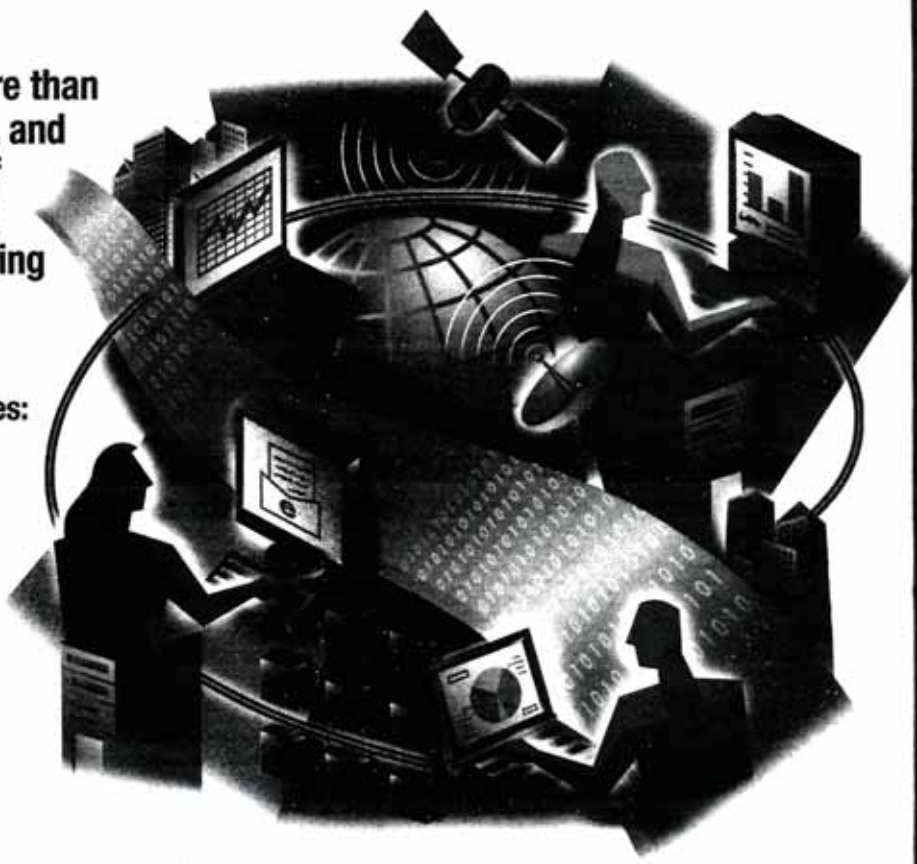
DSS-2010

Mc Graw Hill

Thoroughly Explains More Than 1,400 Networking Concepts

Encyclopedia of Networking & Telecommunications

CD contains more than 5,000 hyperlinks, and a complete set of cross-referenced Internet engineering documents



Covers emerging technologies: all-optical networks, broadband access, wireless computing, QoS, .NET, and more

Addresses vendor-specific technologies: Microsoft®, Cisco®, IBM®, Juniper®, Nortel®, Sun®, and others

Tom Sheldon

Certified Network Engineer and author of the best-selling *Encyclopedia of Networking, Electronic Edition*

OSBORNE

McGraw-Hill Encyclopedia of Networking & Telecommunications

Tom Sheldon

Osborne/McGraw-Hill
New York Chicago San Francisco
Lisbon London Madrid Mexico City
Milan New Delhi San Juan
Seoul Singapore Sydney Toronto

Osborne/**McGraw-Hill**
2600 Tenth Street
Berkeley, California 94710
U.S.A.

To arrange bulk purchase discounts for sales promotions, premiums, or fund-raisers, please contact Osborne/**McGraw-Hill** at the above address. For information on translations or book distributors outside the U.S.A., please see the International Contact Information page immediately following the index of this book.

McGraw-Hill Encyclopedia of Networking & Telecommunications

1234567890 DOC DOC 01987654321

Book p/n 0-07-212005-3 and CD p/n 0-07-212005-3
parts of
ISBN 0-07-212005-3

Publisher
Brandon A. Nordin

Vice President & Associate Publisher
Scott Rogers

Acquisitions Editors
Wendy Rinaldi and Ann Sellers

Project Editor
Lisa Wolters-Broder

Acquisitions Coordinator
Timothy Madrid

Technical Editor
Dan Logan

Copy Editor
Dennis Weaver

Proofreaders
Linda and Paul Medoff

Indexer
Jack Lewis

Computer Designers
Michelle Galicia
Tara A. Davis

Illustrator
Michael Mueller

Series Design
Peter F. Hancik

Cover Design
Amparo del Rio

This book was composed with Corel VENTURA™ Publisher.

Cisco Frame Relay Background paper	http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/frame.htm
Motorola Frame Relay Resources page (very extensive)	http://www.mot.com/networking/frame-relay/
Network World Fusion frame relay information, articles, and links	http://www.nwfusion.com/netresources/framerelay.html
Frame Relay	http://www.rad.com/networks/tutorial.htm
Protocols.com Frame Relay page with good information about standards	http://www.protocols.com/pbook/frame.htm
Frame Relay Resource Center, Alliance Datacom (extensive links and white papers)	http://www.alliancedatacom.com/framerelay.asp

me Switch

See Switch Fabrics and Bus Design; Switching and Switched Networks.

ming in Data Transmissions

A point-to-point connection between two computers or devices consists of a wire in which data is transmitted as a stream of bits. However, these bits must be *framed* into discernible blocks of information. Framing is a function of the data link layer. It provides a way for a sender to transmit a set of bits that are meaningful to the receiver. Ethernet, token ring, frame relay, and other data link layer technologies have their own frame structures. Frames have headers that contain information such as error-checking codes.

There are three different types of framing, each of which provides a way for the sender to tell the receiver where the block of data begins and ends:

- **Byte-oriented framing** Computer data is normally stored as alphanumeric characters that are encoded with a combination of 8 bits (1 byte). This type of framing differentiates one byte from another. It is an older style of framing that was used in the terminal/mainframe environment. Examples of byte-oriented framing include IBM's BISYNC protocol.
- **Bit-oriented framing** This type of framing allows the sender to transmit a long string of bits at one time. IBM's SDLC (Synchronous Data Link Control) and HDLC (High-level Data Link Control) are examples of bit-oriented protocols. Most LANs use bit-oriented framing. There is usually a maximum frame size. For example, Ethernet has a maximum frame size of 1,526 bytes. The beginning and end of a frame is signaled with a special bit sequence (01111110 for HDLC). If no data is being transmitted, this same sequence is continuously transmitted so the end systems remain synchronized.
- **Clock-based framing** In a clock-based system, a series of repetitive pulses are used to maintain a constant bit rate and keep the digital bits aligned in the data stream. SONET (Synchronous Optical Network) is a synchronous system in which all the clocks in the network are synchronized back to a master clock reference. SONET frames are then