



AM-TR-NIS-000104

Ameritech LAN Interconnect Service - CSMA/CD

This service offers a dedicated bandwidth of 10 Mbps or 2 Gbps between two or more customer locations within a LATA.

To: All Interested Parties

Priority: N/A

Effective Date: December 1998

Issue Date: Issue #3, December 1998

Expires On: N/A

Training Time: N/A

Related Documents: N/A

Canceled Documents: N/A

Issuing Department: N/A

Distribution: NA

Business Unit: N/A

Points of Contact:

Jerry Gardner Product Development (248) 442-4776
James D. Martin Network PI&D (847) 248-5363
amy j. seaver SGML Editor (517) 781-0976

Author(s):

James D. Martin

Table of Contents

1. GENERAL INFORMATION	1
2. NETWORK INTERFACE	1
2.1. IEEE 802-3 CSMA/CD Interface	1
2.2. IEEE 802.3 Gigabit Ethernet Fiber Optics Interface	2
2.2.1. 1000Base-SX Gigabit Ethernet Fiber Optics Interface	2
2.2.2. 1000Base-LX Gigabit Ethernet Fiber Optics Interface	2
3. NOTES	2
4. DOCUMENTATION	3
5. ACRONYMS	4
6. FIGURES	4

TECHNICAL REFERENCE NOTICE

This Technical Reference is published by Ameritech to provide a technical description of the Ameritech LAN Interconnect Service (ALIS)-CSMA/CD.

Ameritech reserves the right to revise this document for any reason including, but not limited to, conformity with standards promulgated by various agencies, utilization of advances in the state of the technical arts, or the reflection of changes in the design of any equipment, techniques or procedures described or referred to herein.

AMERITECH MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN. AMERITECH EXPRESSLY ADVISES THAT ANY USE OF OR RELIANCE UPON THIS TECHNICAL REFERENCE IS AT THE RISK OF THE USER AND THAT AMERITECH SHALL NOT BE LIABLE FOR ANY DAMAGE OR INJURY INCURRED BY ANY PERSON ARISING OUT OF THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN.

This document is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this document represent any commitment by Ameritech or any Ameritech operating company (AOC) to purchase any product, whether or not it provides the described characteristics.

Ameritech does not recommend products, and nothing contained herein is intended as a recommendation of any product to anyone.

Nothing contained herein shall be construed as conferring by implication, estoppel, or otherwise any license or right under any patent, whether or not the use of any information herein necessarily employs an invention of any existing or later issued patent.

Ameritech reserves the right not to offer any or all of these services and to withdraw any or all of them at any future time.

With respect to services offered pursuant to tariff, however, the terms and conditions of the service offering are determined by the tariff itself and applicable laws and regulations.

Document may be ordered from Ameritech by contacting the Document Order Center at (847-248-4324).

1. GENERAL INFORMATION

This network disclosure, AM TR NIS-000104, has been reissued for the purpose adding the Gigabit Ethernet Extension service.

Ameritech's LAN Interconnect Service - CSMA/CD offers a dedicated bandwidth of 10Mbps or up to 2.0 Gbps Data Rate between two or more customer locations within a LATA. It provides a transmission repeater function for the customer's LAN at the LAN's native data rate. The repeater function involves implementing just the CSMA/CD portion of the IEEE 802-3 MAC sublayer. For data rates greater than 10Mbps, the repeater function is provided via an optical interface implementing the IEEE 802.3 standards for optical interfaces. No other services such as bridging or routing are provided.

The Ameritech LAN Interconnect Service - CSMA/CD includes:

- a termination for the customers IEEE 802-3 CSMA/CD LAN, medium dependent, physical layer on network equipment;
- recovering the clock from the Manchester-encoded data;
- recovering the data and multiplexing the data over a fiber optics carrier for transmission over a wide area;
- reversing the process at the customer's terminating location, and
- an alternate optical termination for the customer's IEEE 802.3 CPE .

2. NETWORK INTERFACE

2.1. IEEE 802-3 CSMA/CD Interface

The interface to the customer is defined by the IEEE 802-3 CSMA/CD specification. This specification is organized as two parts: the Physical Layer and the Media Access Control (MAC) sublayer of the Data Link Layer. The correspondence of these parts to the ISO model for Open Systems Interconnection is shown in Figure 1.

The repeater function of this Service involves implementing the MAC sublayer. Below the MAC sublayer, there are many possible Physical Layer interface options. An example is detailed below.

This example specifies 802-3 10BaseT thin coaxial cable and is shown in Figure 2. The customer's 10BaseT coaxial cable must end in a male BNC connector. The network repeater has a built-in transceiver for transmitting and receiving signals over the 10BaseT cable as per IEEE 802-3 10BaseT. The network repeater must be no more than 185 meters from its nearest neighbor transceiver on the customer's 10BaseT coaxial cable.

Other options such as IEEE 802-3 fiber optics media used by the customer may need to connect to the network repeater by means of customer-provided adapters.

2.2. IEEE 802.3 Gigabit Ethernet Fiber Optics Interface

The IEEE 802.3 Gigabit Ethernet Fiber Optics Interface is available in two versions. The first is a short wavelength design (1000Base-SX) and the second is the long wavelength design (1000Base-LX).

2.2.1. 1000Base-SX Gigabit Ethernet Fiber Optics Interface

This interface uses either a 62.5 micrometer multimode fiber for interconnections up to 260 meters from the CPE, or 50 micrometer multimode fiber for interconnections up to 550 meters from the CPE. The fiber connector is a physical connector (SC) type of plug.

2.2.2. 1000Base-LX Gigabit Ethernet Fiber Optics Interface

This interface either 62.5 micrometer multimode fiber for interconnections up to 440 meters from the CPE, 50 micrometer multimode fiber for interconnections up to 550 meters from the CPE, or a 9 micrometer single mode fiber for interconnections up to 3 Km from the CPE. The fiber connector is a physical connector (SC) type of plug.

3. NOTES

1. This document does not specify the customer's cable length nor any manufacturer for connection to the network. They are specified generically in IEEE 802-3. The cable type and length may have an impact on the quality of data transmission between the customer's equipment and the network equipment.
2. The Ameritech LAN Interconnect Service - CSMA/CD does not provide specific lightning/hazardous voltage protection; however, the use of Ameritech's fiber optics network between buildings and the use of coaxial cable as the medium on the customer's side of the network interface minimize the potential for induced voltages.

3. The Ameritech LAN Interconnect Service - CSMA/CD will provide dedicated bandwidth of 10 Mbps between customer locations. However, if multiple customer locations simultaneously need to transmit to other locations using a single 10 Mbps channel, the network repeaters will simulate collisions (as per IEEE 802-3) on the customer's physical media. This enables the customer's equipment and the network repeaters to retransmit the data lost due to collisions as per the IEEE 802-3 exponential backoff algorithm. Otherwise, the network repeaters perform a simple repeater function.
4. Two adjacent customer locations can be up to 50 Kilometers (approximately 31.25 miles) apart.
5. The transmission delay between any two adjacent customer network interface reference points will vary depending on the transmission processing delays, transmission framing delays and the signal propagation delay along the transmission medium.
6. The Gigabit Ethernet Fiber Optics Interface extension service allows the connection of two gigabit switches (CPE) over distances of up to 80 Km via fiber optics facilities. It provides up to 2 Gbps data throughput between the CPE.

4. DOCUMENTATION

The IEEE 802.3 document is available from IEEE at the address below.

	IEEE Member	Non-Member
Document	Cost	Cost
IEEE 802.3	260.00	325.00

<http://standards.ieee.org/catalog/sol/>

or

<http://standards.ieee.org/catalog/olis/>

IEEE Customer Service

Hoes Lane

PO Box 1331

Piscataway, NJ 08855-1331

1-800-678-4333 445

5. ACRONYMS

ALIS - Ameritech LAN Interconnect Service

CSMA/CD - Carrier Sense Multiple Access with Collision Detection

Gbps - Giga (Billion) bits per second

IEC - International Electrotechnical Commission

IEEE - Institute of Electrical and Electronics Engineers

IEEE - International Organization for Standardization

LAN - Local Area Network

LATA - Local Access and Transport Area

MAC - Media Access Control

Mbps - Million Bits Per Second

OSI - Open Systems Interconnection

6. FIGURES

Figure 1: 802-3 Layer Relationship to OSI Model

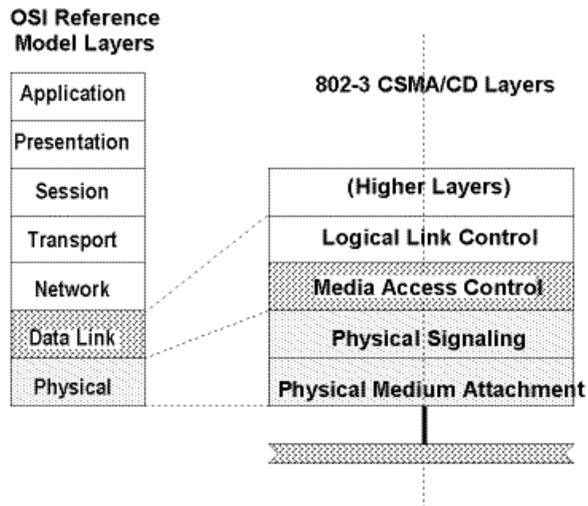


Figure 2: 10BaseT Connection

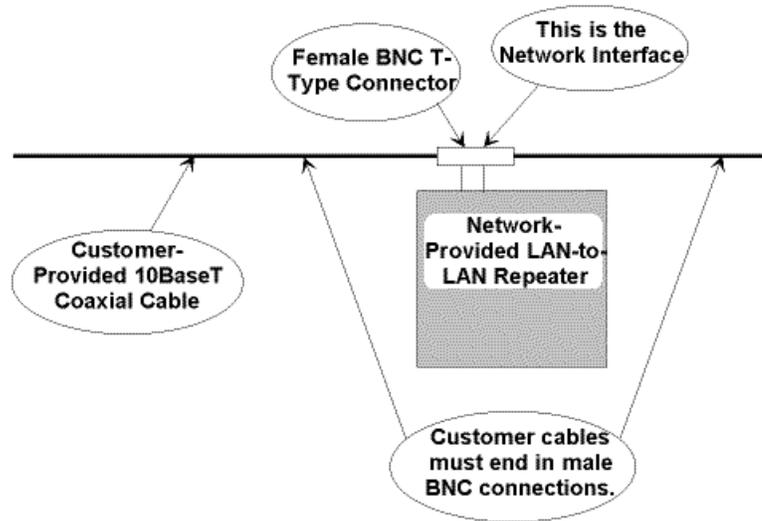
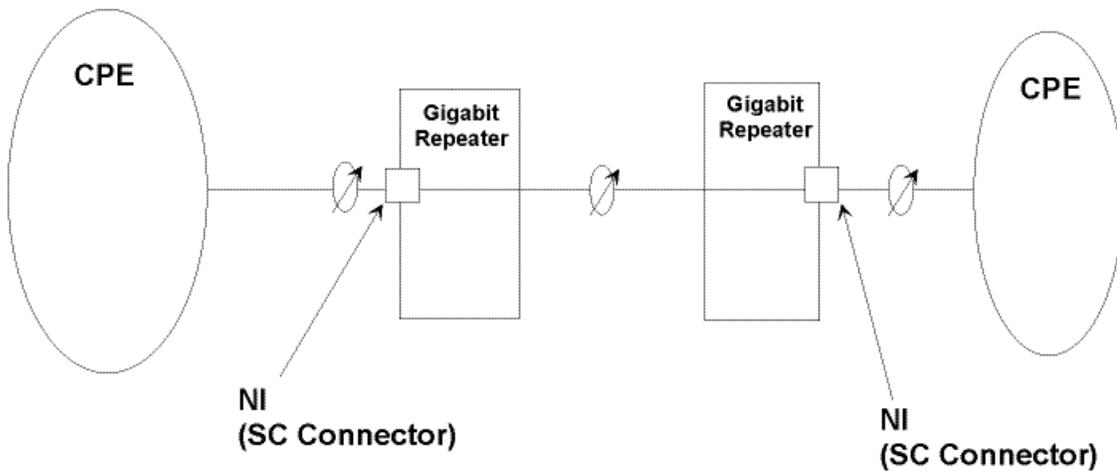


Figure 3: 1000Base SX/LX Connection
(Gigabit Fiber Optic Extender)



This page intentionally blank.