INTRODUCTION TO
MFS LAN AND HIGH SPEED
CONNECTIVITY PRODUCT OFFERING

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METROPOLITAN FIBER SYSTEMS

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Figure M - MFS MAN to WAN Connectivity

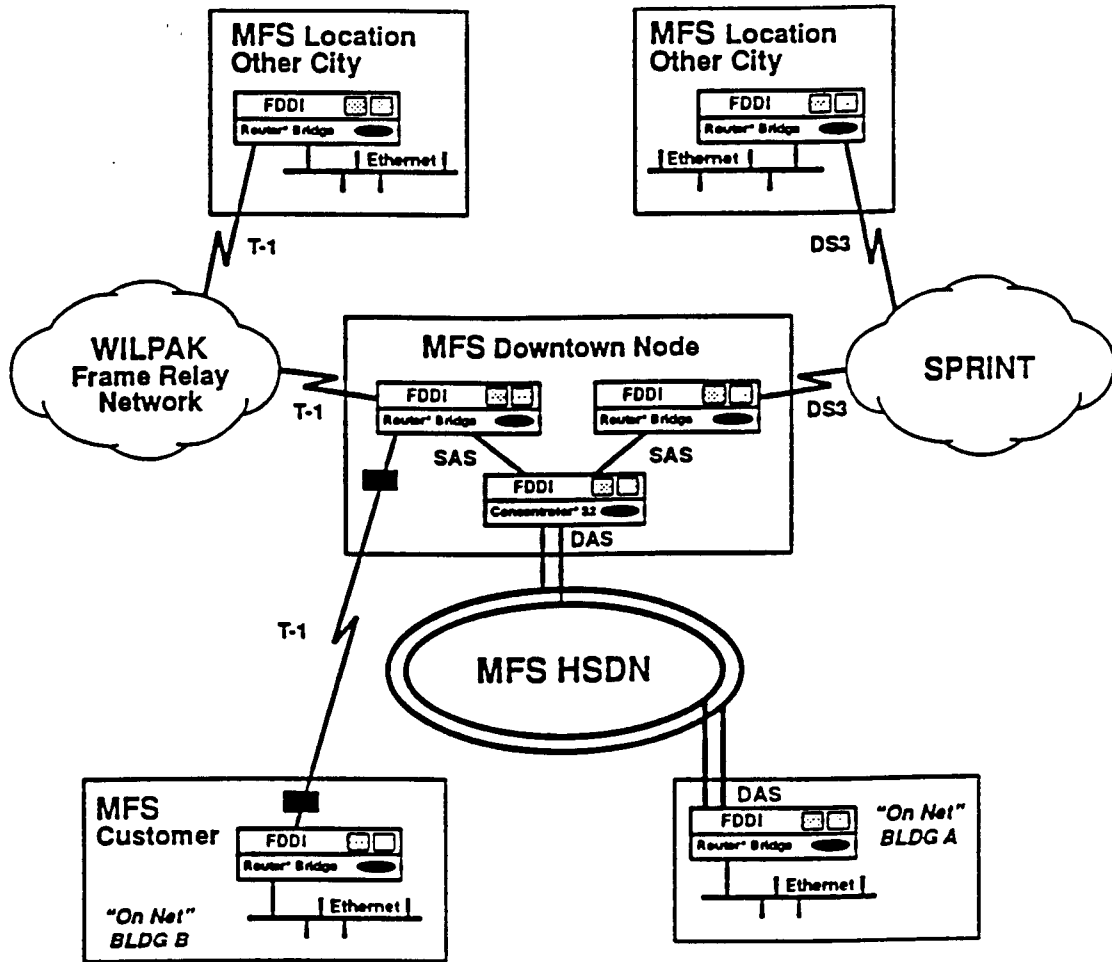With the introduction of the LAN and High Speed services, MFS will receive short term and long term revenue benefits. MFS has the potential to become the industry leader in LAN interconnection from this project with minimal risk and investment. Finally, MFS can create a clearly differentiated leadership position for itself in the local access marketplace.
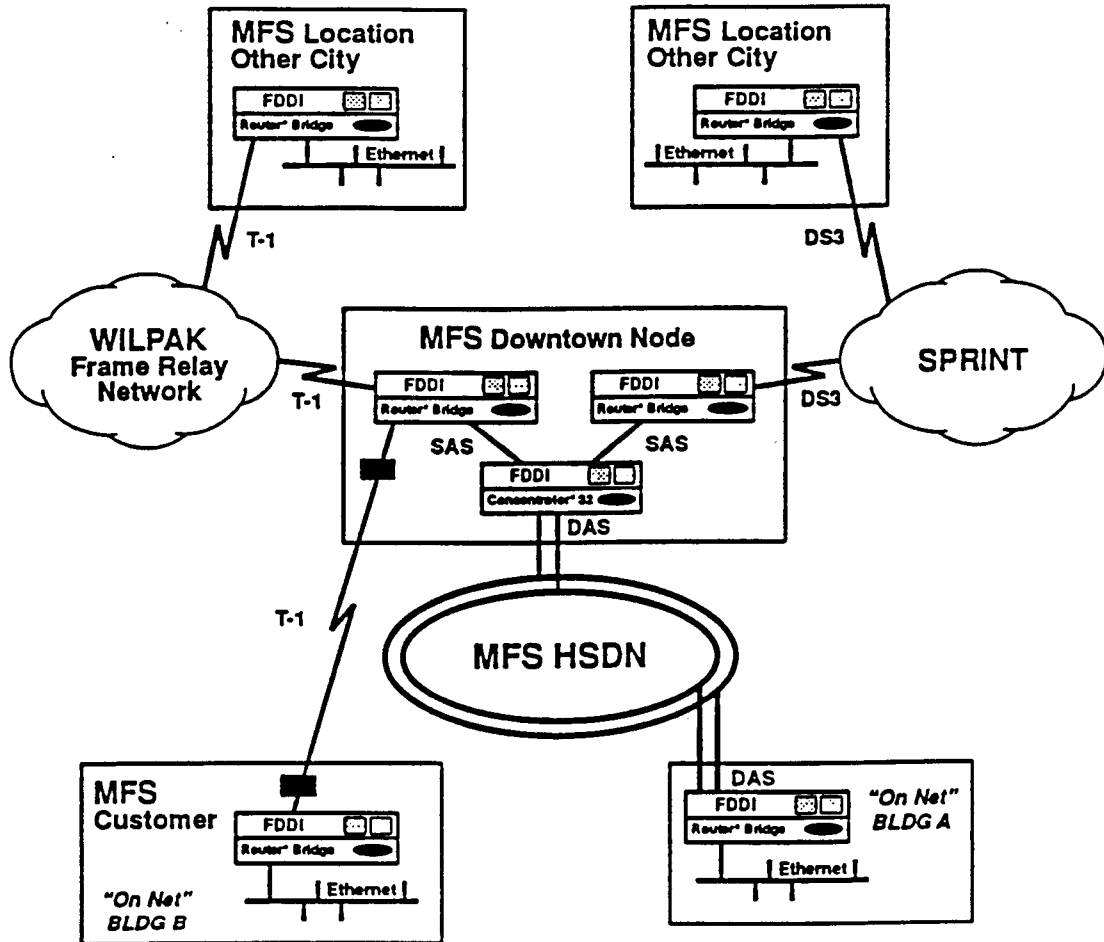
Figure M - MFS MAN to WAN Connectivity

I. Executive Overview

1. A. Summary

Since its founding in January 1988, Metropolitan Fiber Systems, Inc. (MFS) has deployed networks in 11 cities providing primarily DS0, DS1, and DS3 services to business customers and Interexchange Carriers. Although these circuits carry some low speed data (typically 9.6Kbs) and video traffic, MFS' current product offerings are targeted primarily to voice traffic users. Voice traffic presently represents about 80% of the total traffic in the U.S. and is growing at about 5% per year.

During the past five years, the demand for Local Area Networks (LANs) has been dramatic. LANs typically connect personal computers, workstations (e.g., CAD/CAM), and main-frame computers in campus or intra-building environments to provide high speed data transmission between LAN users. Data transmission rates for LANs typically range from 4Mbs to 100Mbs, which is considerably faster than the 2.4Kbs to 56Kbs rates typically carried on MFS and telco networks. Demand for high speed data applications is increasing at a rate of 35% per year, with several authorities forecasting that the volume of data traffic will exceed voice traffic by the mid-1990s.

Although LANs are currently confined to campus or building environments, many users with multiple locations in a metropolitan area or across the country are searching for "user-friendly" solutions to interconnect their LANs or access remote data bases or computing centers. The only solutions available today are the construction of private networks, use of the low speed (up to 56Kbs) public data networks, or the development of a costly customer integrated solution using leased DS1s or DS3s.

With fiber deployed in 11 major metropolitan areas, MFS is in a unique position to offer a standardized "user-friendly" solution to high speed LAN interconnection in a metropolitan area environment and provide gateways to a wide area (long distance) environment. In fact, MFS could potentially participate in a wide area solution through joint ventures or the leasing of longhaul DS3 capacity. The continuing development of high speed laser diodes operating at up to 100Mbs has resulted in a technology suitable for commercializing high speed LAN interconnection in a metropolitan area environment in 1991.

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MFS proposes to deploy LAN interconnection products initially in its Houston network. The upside potential appears to be very good, especially if MFS can stimulate latent market demand by offering technologically innovative solutions. This product offering will improve MFS' image and positioning with major end users, in the press, and with the major analysts and consultants. In summary, MFS has the opportunity to take a leadership position and set the standards for high speed data transmission in metropolitan area networks and potentially wide area networks.

I. B. Houston Opportunity Overview

Metropolitan Fiber Systems of Houston has received numerous requests for Local Area Network connectivity at native LAN data rates (10Mbs, 4 or 16Mbs) utilizing the existing MFS network. MFS of Houston has also received requests for high speed circuits such as IBM channel extension or super computer links. Houston has eleven super computers which may be more than any city in the United States. Wiltel recently approached MFS to offer LAN connectivity for their frame relay network (WilPAK).

Based on these inquiries, MFS has initiated the development of a business plan to offer native LAN, throttled LAN and High Speed services as a new MFS product family. These services represent incremental revenue opportunities with success-based, incremental capital costs. The risks associated with offering LAN and high speed connectivity are minimal while the market gains for MFS are significant. In addition, these services will allow MFS to approach all Interexchange Carriers (IXCs) with a solution for LAN connectivity between MFS cities. Sprint has expressed a willingness to begin technology testing immediately for native LAN circuits while Wiltel wants to begin testing of frame relay local loops.

The plan demonstrates that MFS can position itself as an industry leader by offering these services in 1991. The Regional Bell Operating Companies (RBOCs) are waiting for the development of industry standards for technologies more compatible with the public switched network prior to offering LAN and high speed connectivity[1]. MFS of Houston will implement the products initially, with other MFS cities deploying the product as the market demand is quantified more clearly and MFS gains experience in installation and operation of these products.

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[1] Note: Although the RBOCs have been slow to enter the LAN market, two independent telephone companies (Centel and United) have recently deployed FDDI backbones in Tallahassee, FL, and Mansfield, OH.

MFS has been told by several end users and one IXC that this offering will differentiate MFS from all other network providers, both Local Exchange Carriers (LECs) and Alternative Access Vendors (AAVs). The offering will "take MFS out of the commodity bandwidth business." LAN vendors such as IBM, DEC and Novell have stated that this offering will assist them in proliferating their products. Similarly, all Fiber Distributed Data Interface (FDDI) vendors have stated that this service is required by the users and strongly supported by the vendors in the LAN arena. All vendors have demonstrated major commitment to the project, even with the knowledge that MFS intends to order only a few pieces of equipment initially. This project has been elevated to the president and CEO level of all major FDDI vendors because of its significance to the industry.

The standard MFS DS0, DS1 and DS3 business will be enhanced by this product offering as MFS will be positioned to fulfill a significantly larger portion of a user's local telecommunications services needs. Network expansion may also occur as a result of this project as users assist MFS to expand its network to new geographic areas to obtain these services. For example, the Rice University DS3 order from MCI was a direct result of the desire to have MFS present at Rice University with LAN connectivity products.

I. C. Product Summary

MFS will offer connectivity for the following types of LANs:

1. Ethernet Circuits (10Mbs)
2. Token Ring Circuits (4 or 16Mbs)
3. FDDI Circuits (100Mbs)

The products will be provisioned in three different ways. First, MFS will use the existing DS3 backbone (Time Division Multiplexing (TDM) - Dedicated Services). Second, a new FDDI backbone will be deployed for the shared network products. Finally, MFS will use DS1 circuits which are inherent in the existing MFS network and will become universally available with central office (C.O.) interconnection to offer a throttled LAN interconnection. The DS1 product will allow customers to obtain, and pay for, reduced throughput levels.

The products will be divided into three major groups.

Dedicated Services

MFS will utilize TDM techniques to carry LAN traffic on a DS3. Both Ethernet and Token Ring circuits will be offered to the end user. These circuits will provide the total amount of bandwidth (10Mbs, 4Mbs, 16Mbs) to the user between the points specified by the customer. The customer will have the full throughput of that LAN available 24 hours a day with no contention issues. The monthly recurring charge for the dedicated circuit will be greater than a shared backbone circuit or a throttled LAN circuit.

Shared FDDI Backbone Services

The FDDI backbone allows MFS and users to combine Ethernet, Token Ring and FDDI circuits on the same backbone and gain the cost benefits of such an arrangement. MFS will be able to spread the cost of each circuit across a user group and offer a lower cost circuit to the user community for Ethernet and Token Ring circuits. Customers will also be able to interface optically to the high speed backbone for applications requiring more than native LAN data rates.

Throttled LAN Services

MFS will also offer throttled LAN services by routing Ethernet/Token Ring to DS1 circuits for low cost LAN circuits "on net", LAN circuits "off net" using C.O. interconnection and frame relay local loops for IXCs such as Wiltel. MFS will be able to monitor and control these using the FDDI network management system. Initially, MFS will only offer throttled LAN services "on net".

These new services will be priced on a flat rate, per location basis (i.e., individual channel terminations) as opposed to a on complete circuit basis since many users will have multiple site requirements.

In addition to flat rate pricing, MFS will be in a position to offer the first and only usage sensitive product within each MFS city. This will allow the IXCs to deploy a usage sensitive product between MFS cities with MFS performing the billing functions. The combination of dedicated native LAN, shared FDDI backbone and throttled LAN services with usage sensitivity ultimately will allow MFS to respond to all LAN and high speed applications with a cost effective solution.