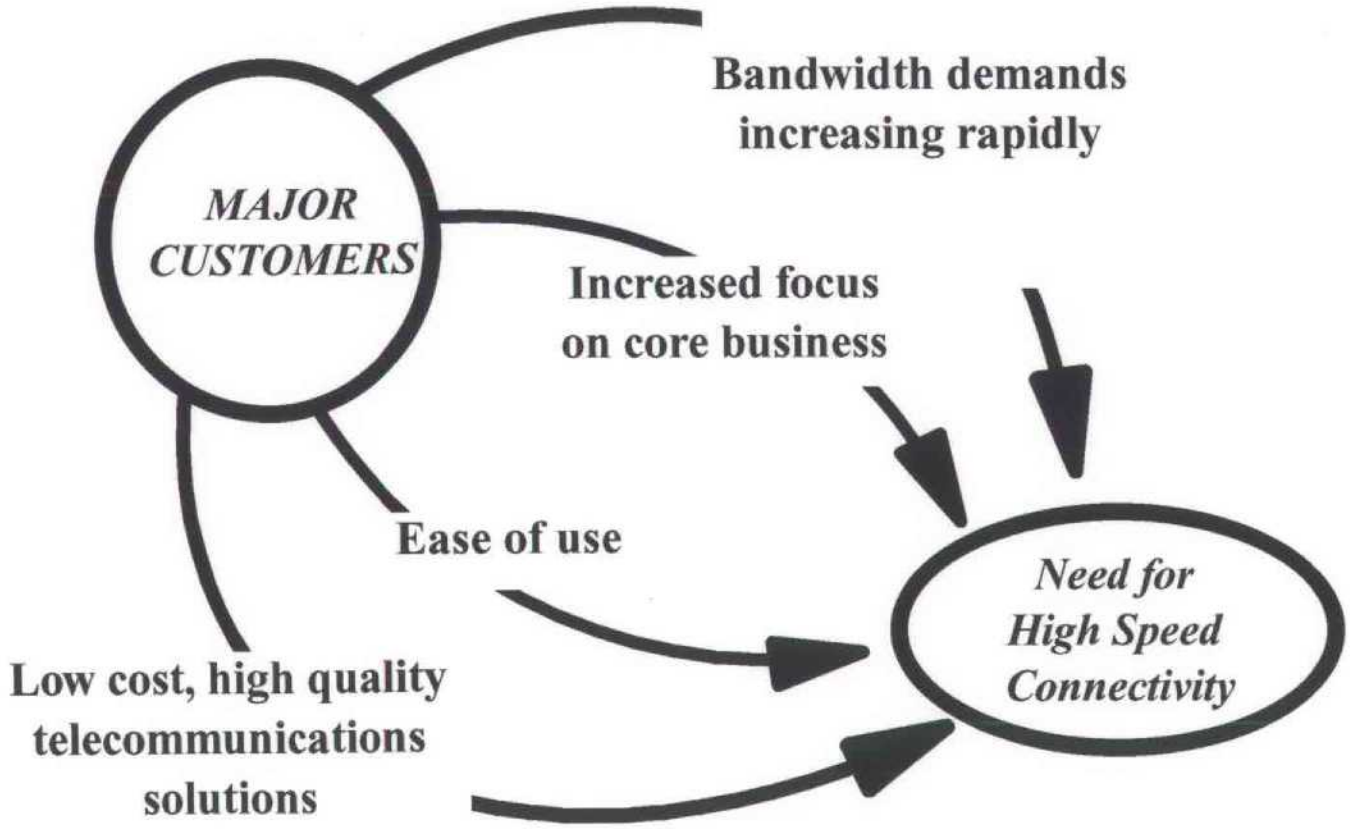
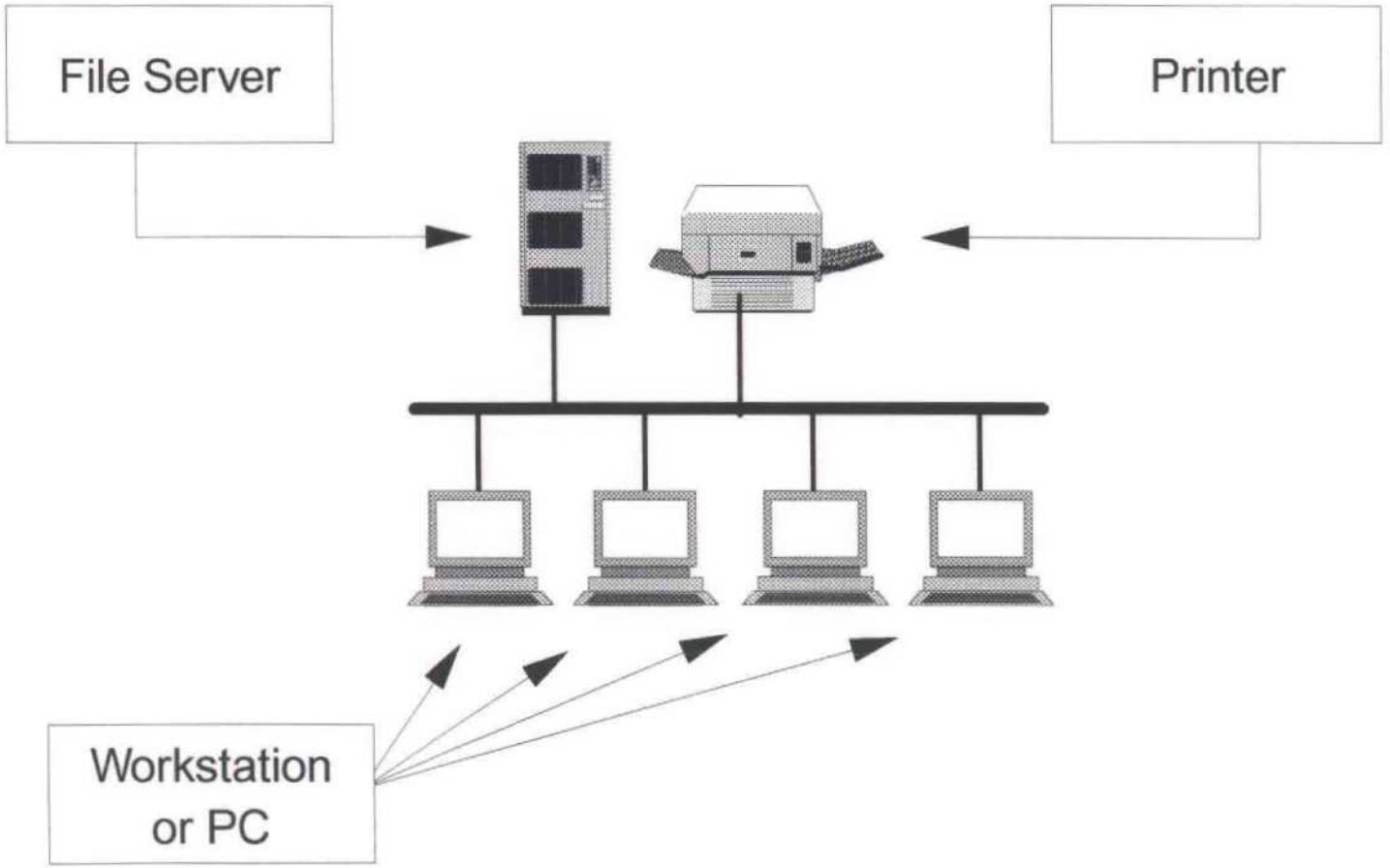
MFS DATANET
Meeting Customer Needs in the 1990's

Customer Issues



Typical LAN



Are there enough potential customers to make a business out of this HLI product?

- o Boston converted $500/mo customer to $10,000/mo national customer including increased sales of Telecom products
- o N.Y. converted several customers that had taken the position that they do not need MFS "because we have Teleport"
- o The HLI product family has generated $100,000/mo in HLI revenues and another $100,000/mo of Telecom Revenues
- 0 Every "on net" building has numerous LAN installations that need connectivity

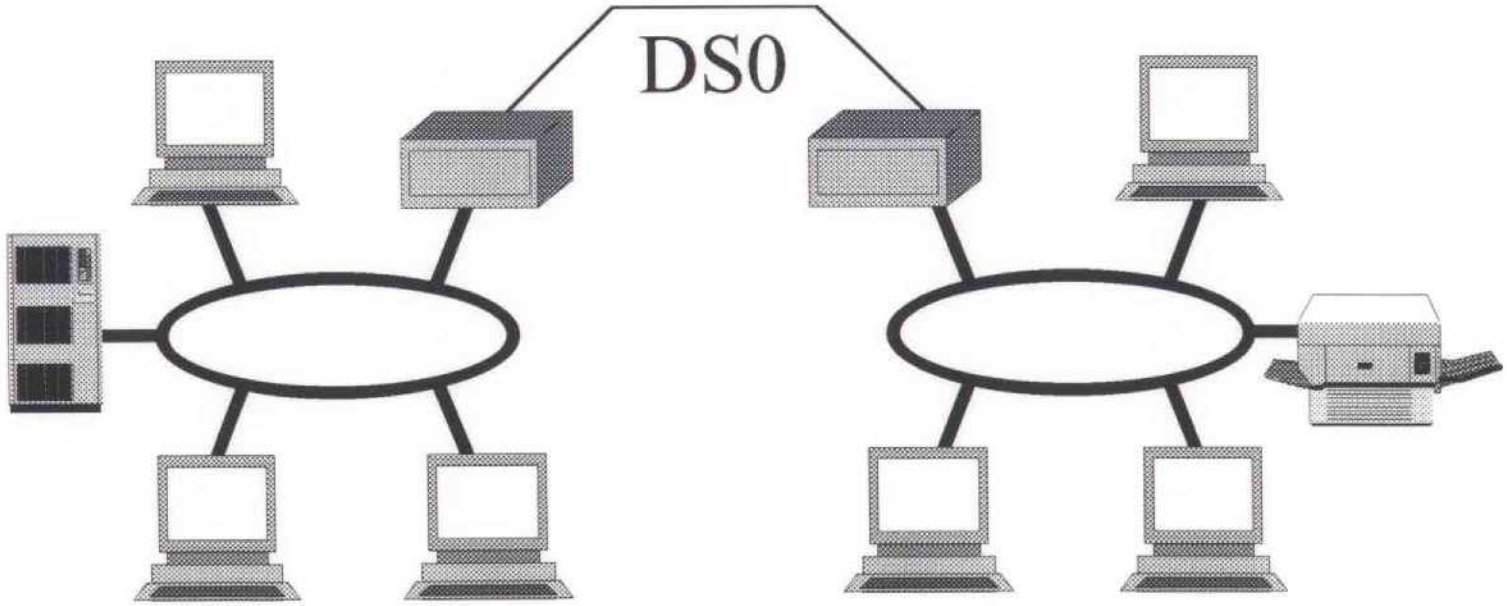
BIG POTENTIAL

Presently no MFS MRR for Customers Using Dial Up Modems

Via Modem at 9600 bits/sec
1/1000 LAN Speed

CONVERT $100/mo TO $5K/mo

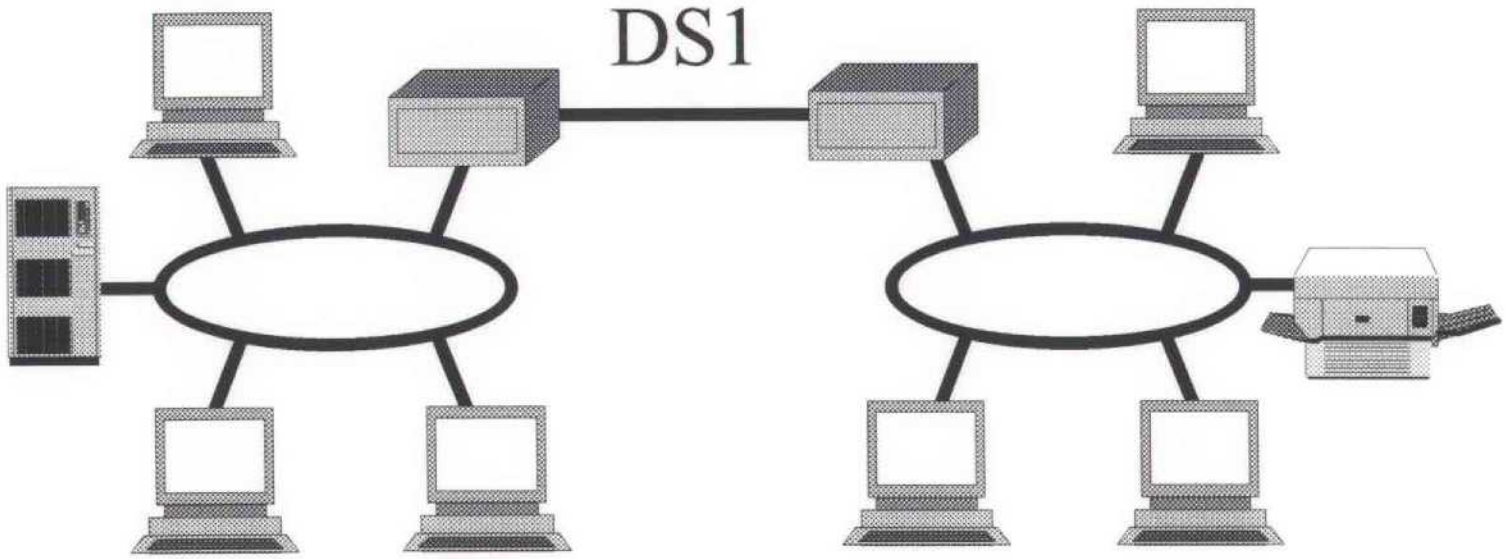
MFS Revenues Range from $55 to $135/mo for local loop used in Digital (DS0) LAN Interconnect



Via leased digital circuit at 64 kilobits/sec
1/156 LAN Speed

CONVERT $500/mo TO $10K/mo

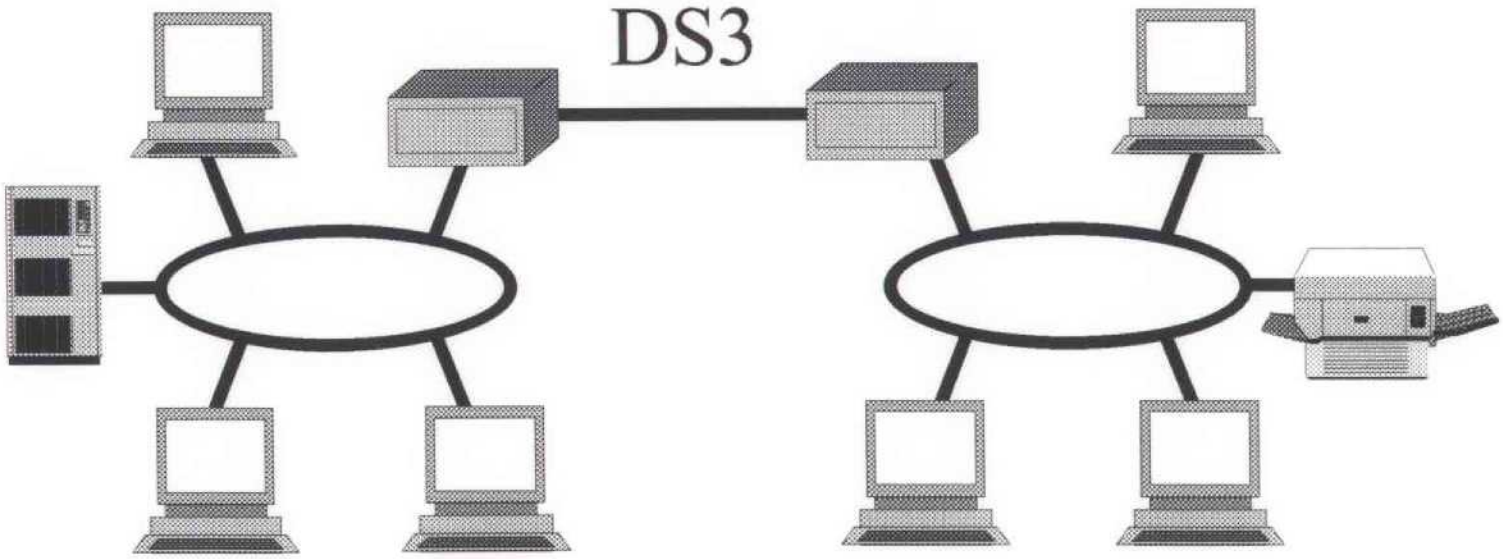
MFS MRR ranges from $185 to $500/mo for local loop T1 LAN Interconnect



Via leased digital circuit at 1.544 megabits/sec
1/6 LAN Speed

INCREASE REVENUE OPPORTUNITY BY OFFERING A UNIQUE PRODUCT

MFS MRR range from $1,000 to $3,500/mo for Point to Point DS3 LAN Interconnect



Via leased digital circuit at 45 megabits/sec

Exceeds Bandwidth needed for Native LAN Speed and under utilizes leased facilities

End User Performs Systems Integration Function

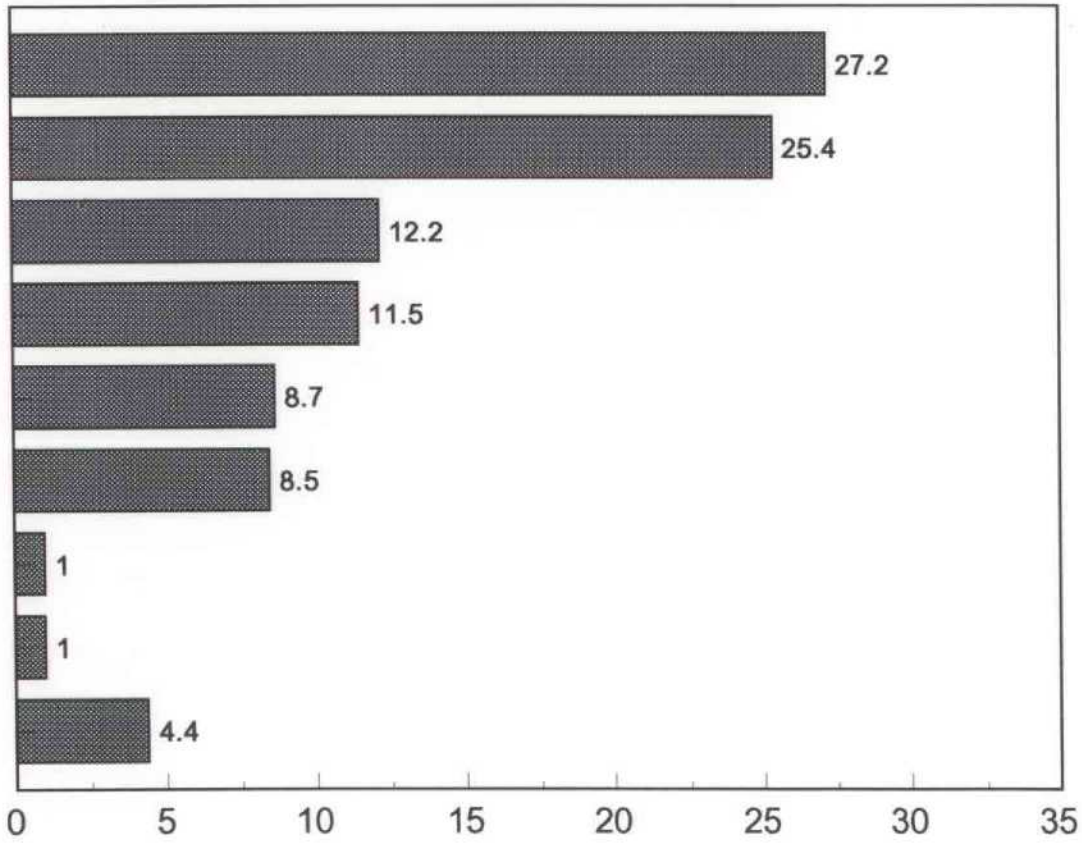
- Chose Bridging versus Routing
- Evaluate and Select Cost Effective Hardware vendor for Bridge or Router
- Estimate Network traffic load between sites
- Size and Select DS0, DS1 or DS3 leased lines or Frame Relay or SMDS Technology and Vendor
- Select Star or Meshed Topology
- Select CSU/DSU Vendor
- Select Network Management Software
- Determine proper quantity of Spare Parts needed
- Select Proper Test Equipment
- Develop business Plan and obtain Budget approval by demonstrating all cost tradeoffs for existing and future requirements while chosing the correct short term and long term technological solution without stranding investment or limiting the user community
- Implement Solution within Budget on Time

Solution for the User is a Publicly Offered Highspeed LAN Interconnection Service ***not a new Technology***

- Share costs of dedicated facilities
- Provide 7 day, 24 hour operations support
- Manage growth transparently
- Manage technology change transparently
- Provide interconnects to other businesses and services
- Minimize capital, management, and operations expenses compared to private network

MFS Datanet must seperate itself from RBOC and IXC's

Customer Vendor Preference is not RBOC or IXC !!!



Source: Business Research Group

Who are the Potential Customers?

- Any "on net" existing customer that has more than one additional site in one city or only one site "on net" in multiple cities

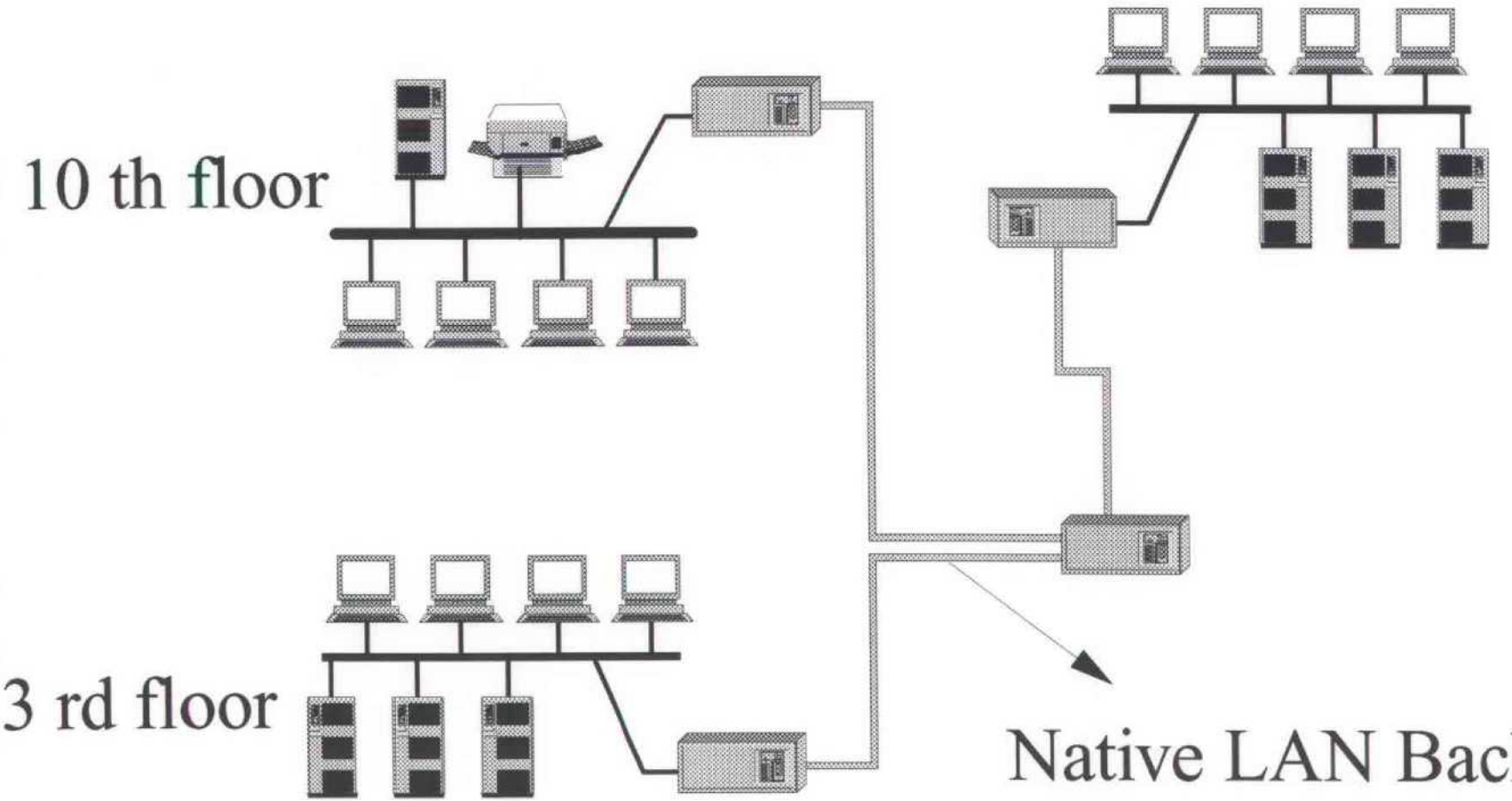
- Key Targets: Law Firms, Accounting Firms, Financial Institutions, Information Services, Systems Integrators, Any Business with Multiple Sites.

- Customers with both "on net" and "off net" sites that MFS can use Co-location to connect

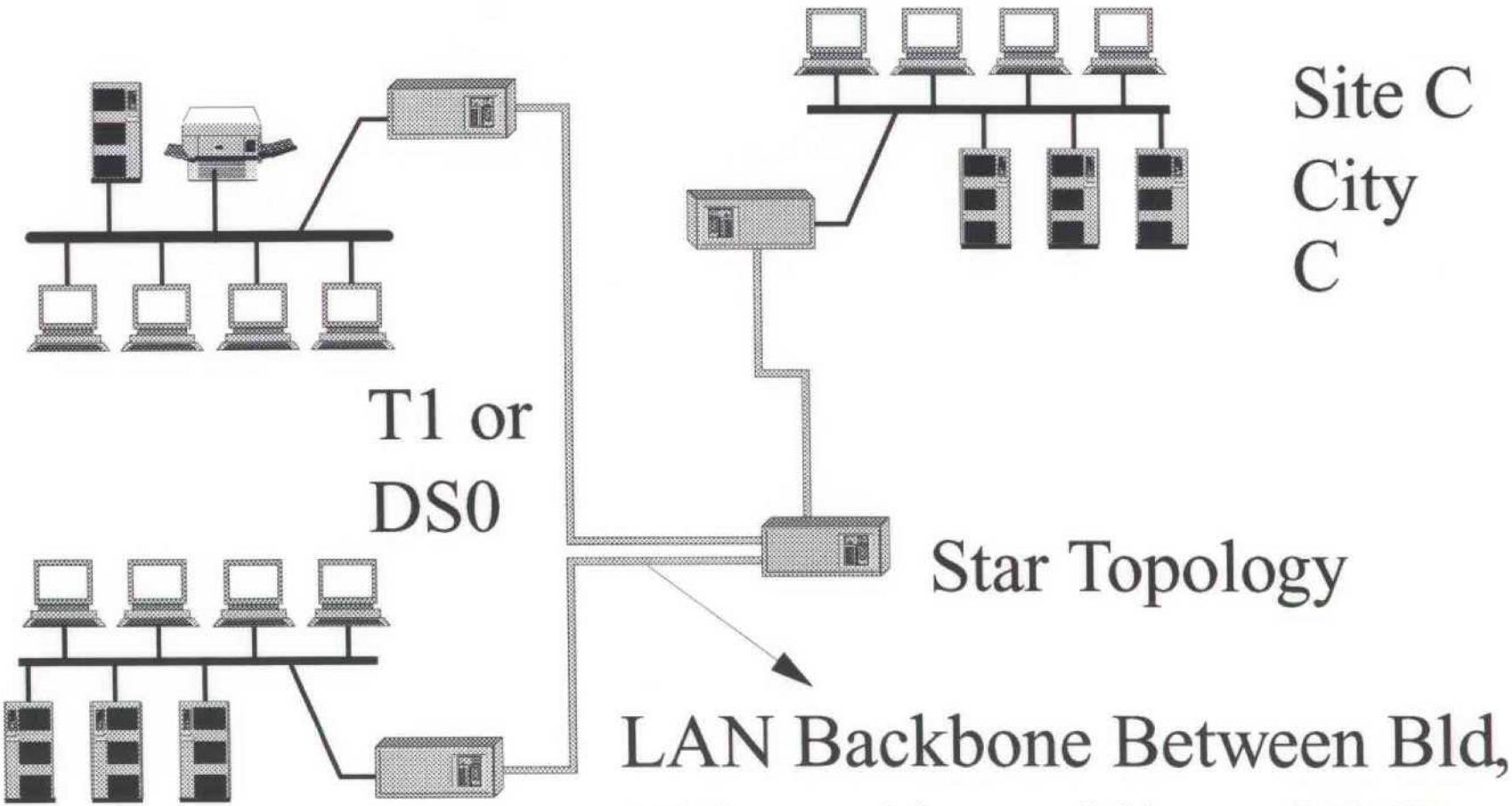
Who are the Decision Makers for the Customer?

- LAN Administrators
- MIS Managers or Directors
- Applications Programmers
- Telecom Managers
- T1 Network Managers
- TCP/IP Network Managers
- Novell (IPX) Network Managers
- SNA Network Managers
- Partners in Law or Accounting Firms

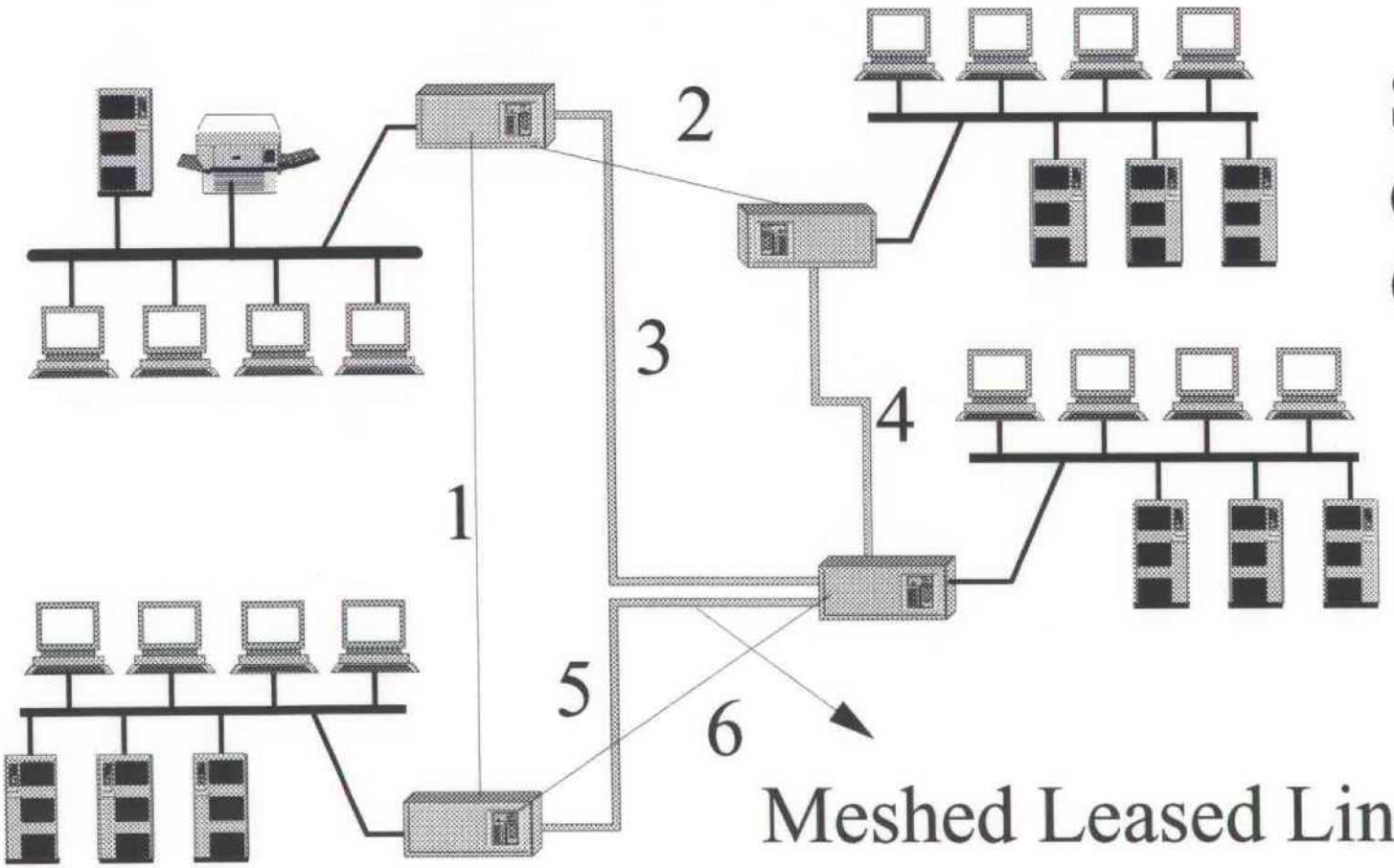
Typical Users LAN on multiple floors in one building

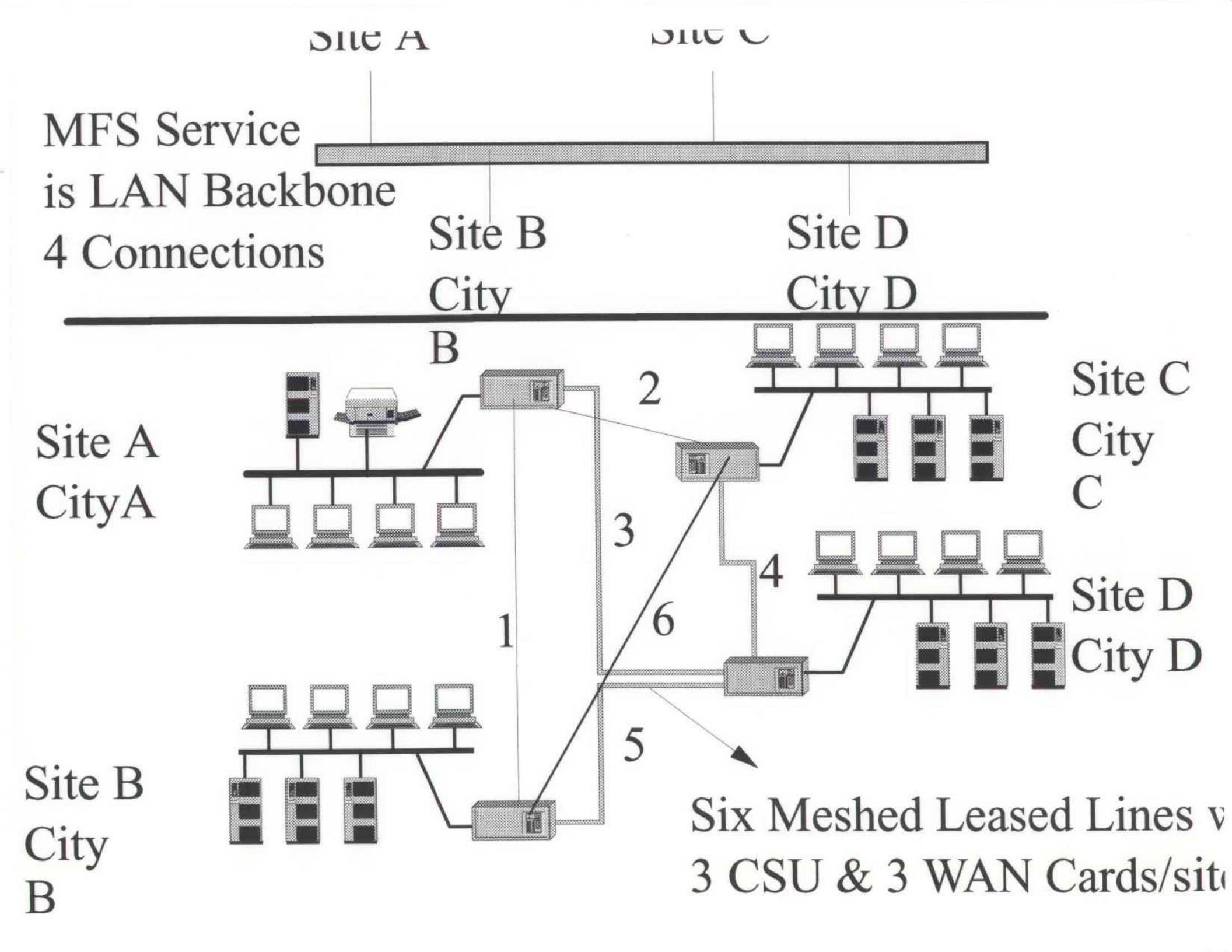


Example: This Users LAN's need to interconnect between 3 buildings in one city or one building in 3 cities

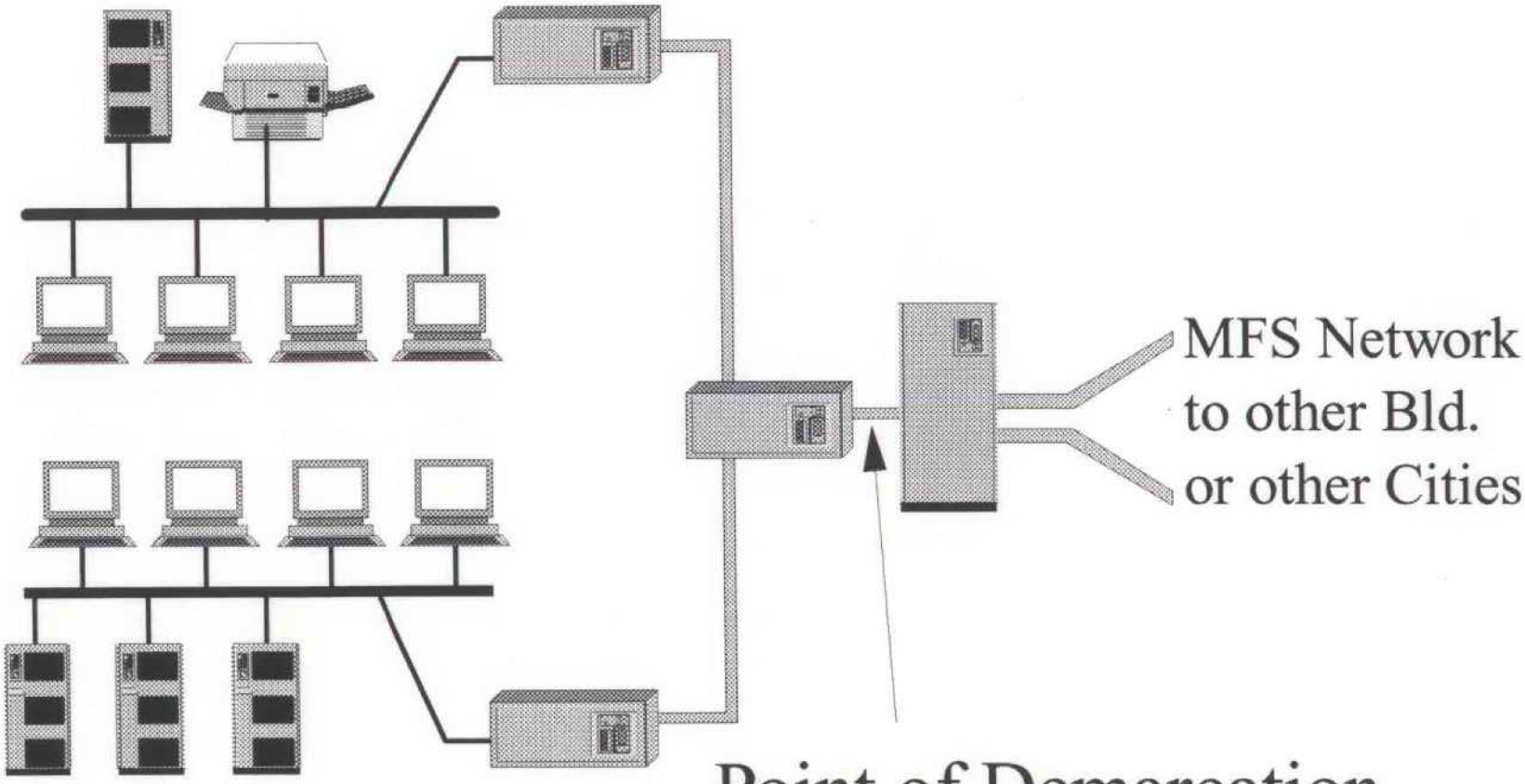


Four Site LAN
Backbone Requires
6 leased lines for
total connectivity




Site A
Site C
MFS Service
is LAN Backbone
4 Connections
Site B
City
B
Site D
City D
Site A
CityA
Site C
City
C
Site D
City D
Site B
City
B
1
2
3
4
5
6
Six Meshed Leased Lines v
3 CSU & 3 WAN Cards/sit

Need for LAN Connectivity



Customer Costs for LAN Connectivity for Four Site Meshed Backbone

- 12 CSU/DSU's at $1,500 ea
- 12 WAN Ports at $2,500 ea
- 4 Router Chassis with local cards at $20,000 ea
- 6 leased lines in city or between cities
  choose DS0, DS1, or DS3 circuits
  Cost varies depending on the Type
- Network Management System at $30k

MFS Datanet HLI is COMPETITIVE IN ALL CASES

MFS Datanet HLI
Products and Services

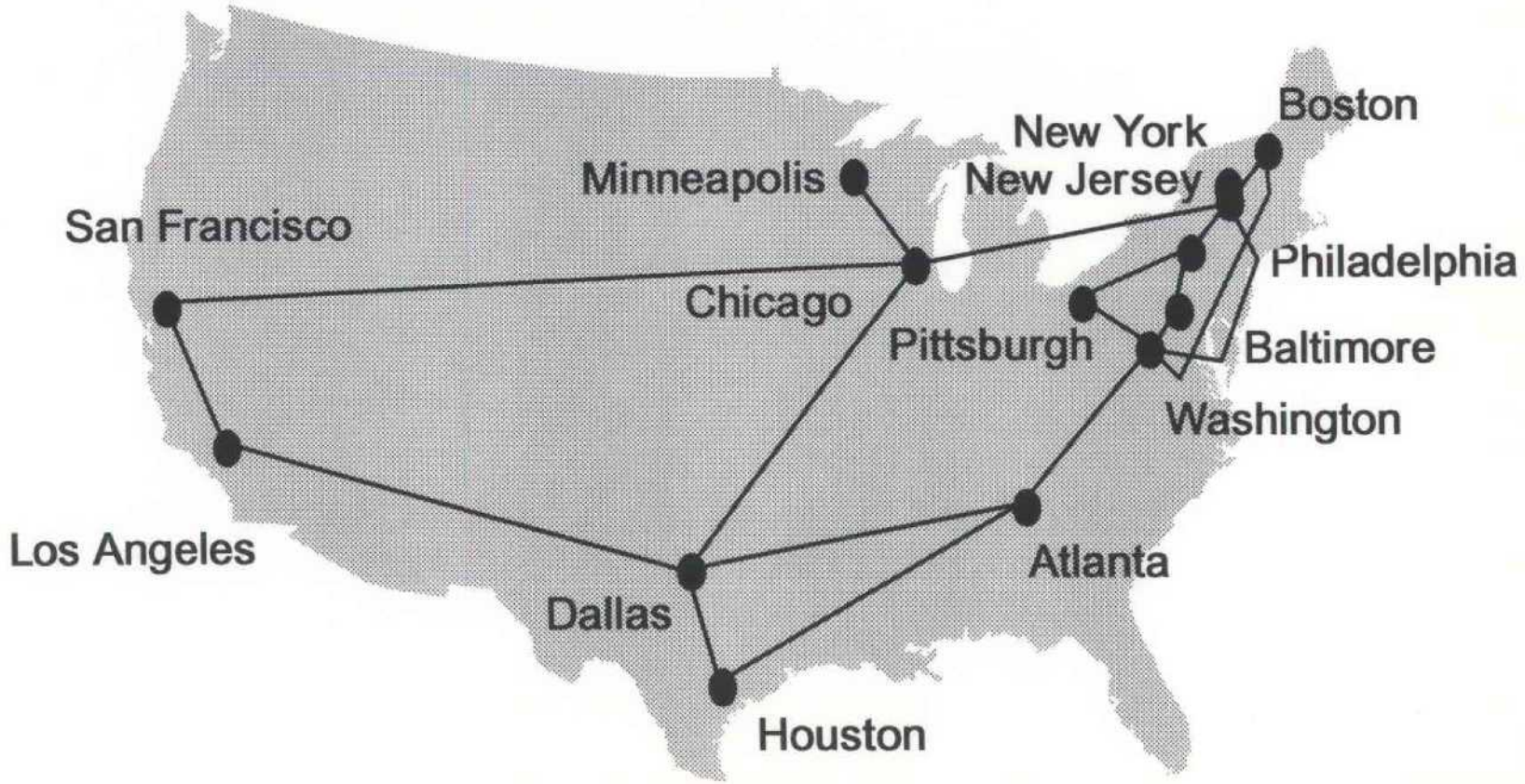
- Ethernet Interconnect Service
- Token Ring Interconnect Service
- FDDI & High Speed Services
- Native and Fractional Speeds
- Metropolitan Area and National Options
- Full Spectrum of Performance Options
- Future Added Value Services

Customer Value Provided

- "a Simple" solution
- Grows with need
- No need to learn about SMDS, ATM, BISDN, Frame Relay, Switches and Routers
- No need to take technical obsolesence risks
- No need for external traffic forecasts
- One phone to call in case of problems
- Price is competitive with alternatives
- Migration path to new services as needs evolve

MFS Datanet
shared DS3 not T1
Backbone

- National LAN Network Uses ATM to provide Auto rerouting in event of path failure

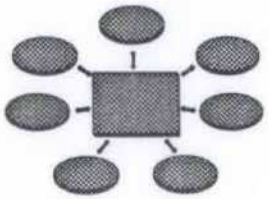


Why MFS ?

- Largest base of Fiber served buildings in U.S.
- Can install fiber to extend network to customer
- Significance of "last mile" line charges
- MFS Datanet can utilize LEC facilities to provide service to "off net" sites
- Only supplier of "DS3+" services to buildings
- Metropolitan and Wide Area Coverage
- National Sales and Support
- Attractive pricing
- Ease of use

MFS Datanet Products

By F.S. Yeager



Definitions

- Ethernet - A 10 Mbs Local Area Network (LAN) that was designed with a special Coaxial Cable as a Backbone and Transceiver drops to connect work stations, PC's, printers or file servers to the LAN to allow communications between devices. Typically used in DEC and Novell PC environment.
- Token Ring - A 4 or 16 Mbs LAN that was promoted by IBM that uses the IBM cabling system as a physical Backbone to allow all types of devices to be interconnected.
- FDDI - A Token Passing Fiber Optic self-healing Ring that allows devices to be interconnected at speeds up to 100 Mbs. It may be used as a common backbone to carry Ethernet and Token Ring traffic.

Definitions

Native - Each Type of LAN operates at a Data Rate that is unique to its' own specifications. The speed that the LAN was designed to operate within a building or campus is the Native Speed.

- Ethernet - 10 Mbs
- Token Ring - 4 or 16 Mbs
- FDDI - 100 Mbs

- Fractional - Any Data Rate (Speed) that is less than the Native Speed of that particular LAN. Typical Fractional Speed is 1.544 Mbs for throughput of 1.3 Mbs. Custom network solutions might include a 56 Kbs fractional Ethernet or Token Ring Backbone.

Definitions

- Backbone - Any LAN must have a physical cable plant that allows the connection of multiple floors within one building or multiple buildings within a campus. This connectivity is referred to as the Backbone of the LAN and may consist of copper or fiber cable.
- Ethernet started with thick Ethernet Coaxial cable with transceiver drops to each device.
- Token Ring started with Type 1 cable designed by IBM.
- FDDI used 62.5/125 micron multimode fiber.
- The concept of a collapsed backbone using concentrators (10 Base T) and horizontal pulls to the desk top of twisted pair cable has replaced thick Ethernet cable and T.R. cable. Fiber is often used between floors .

Definitions

- 10 Base T - LAN 's needed to be wired in a star topology back to a central point per floor to make the cable management economical. 10 Base T evolved as a Defacto standard.
- Allows the users to install a uniform cable plant that is manageable but allow Ethernet or Token Ring to work over the same physical cable plant.
- Logical Network (Bus or Ring) functions over physical topology (Star) with no performance degradation.

Definitions

- Dedicated - MFS Datanet guarantees the Bandwidth to be available to that customer by using Time Division Multiplexing (TDM) for the Metropolitan Services and later through prioritization when using ATM. Only available for Metropolitan Services presently.
- Virtual - MFS Datanet will manage the congestion and flow control of the packets or cells on the MFS portion of the network to provide the throughput and latency of a dedicated time slice. There is no Guaranteed time slot or Guaranteed throughput for these services. However, it is managed by MFS to function Virtually like a dedicated piece of Bandwidth.

OSI Model/Level for MFS Datanet Ethernet Products

- Ethernet Dedicated available at Physical Layer (level 1) or at Data Link Layer (level 2) in the Metropolitan Area Only
- Ethernet Virtual available at Data Link Layer (level 2) in both the Metropolitan and National Area
- Ethernet Fractional available at Data Link Layer (level 2) in Dedicated or Virtual version in Metropolitan Area and available as a Virtual version only in the National Area.
- Level 3 Network Layer is available as a custom product offering for additional costs.

MFS Datanet Products

- Ethernet Native - Dedicated Cable Backbone and Dedicated Bridged Backbone in City
- Ethernet Native - Virtual Bridged Backbone in City and Between Cities
- Ethernet Fractional - Dedicated Bridged Backbone in Cities and Virtual Bridged Backbone Between Cities.
- Token Ring Native - Dedicated Cable Backbone (No Bridge) within the City
- Token Ring Native - Virtual Bridged Backbone within the City and Between Cities
- Token Ring Fractional - Dedicated Bridged Backbone in City and Virtual Bridged Backbone between Cities
- FDDI - Dedicated & Virtual Native and Fractional within City Only

OSI Model/Level for MFS Datanet Token Ring Products

- Token Ring Dedicated 4 or 16 Mbs available at Level 1 Physical Layer only in Metropolitan Area Only (Dedicated Native Cable in City)
- Token Ring Virtual Products available at Data Link (level 2) Layer Only in both Metropolitan or National Area (Virtual Native Bridged Backbone in City and between Cities)
- Token Ring Fractional Products available at Data Link Layer (level 2) in both Metropolitan and National Area. (Dedicated Fractional Bridged Backbone in City and Virtual Fractional Bridged Backbone Between Cities)
- Custom network solutions are available for Network Layer (level 3) Router solutions of Fractional versions only.

Point to Point Links

- Requires two connections per Link
- Allows user to construct logical star or meshed backbone.
- Allows user to extend LAN from one building to another or to connect two LANs' in two buildings.

Multi - Site Connectivity

- Requires two connections per Link
- Allows user to construct logical star or meshed backbone.
- Allows user to extend LAN from one building to another or to connect two LANs' in two buildings.

Pricing Options

- Services are priced on a per connection basis not a per link basis the way that circuits are priced.
- Pricing for two sites is less attractive than pricing for multiple sites because a multi-site backbone functions like a meshed backbone if the customer were to install their own backbone.
- Installation Charges are not waived.
- The cost of cabling from the customer site to the MFS POP is extra and cannot be waived.
- Pricing between cities includes a local loop and a between city component.

MFS Datanet Products

- Ethernet, dedicated, virtual and fractional versions available in both Metropolitan and National Area
- Token Ring, dedicated, virtual and fractional versions available in both Metropolitan and National Area
- FDDI available on customer specific basis as dedicated, virtual or fractional versions only in the Metropolitan Area
- Custom Network Solutions