Exhibit No:
Issues: Business Private Line/Dedicated Services
Witness: Thomas S. DeHahn
Type of Exhibit: Direct Testimony
Sponsoring Party: Southwestern Bell Telephone Company
Case No: TO-2001-467

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2001-467

DIRECT TESTIMONY

OF

THOMAS S. DEHAHN

Chicago, IL
June, 2001

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Investigation of the State of Competition in the Exchanges of Southwestern Bell Telephone Company.	)	Case No. TO-2001-467

AFFIDAVIT OF THOMAS S. DEHAHN

STATE OF ILLINOIS	)	
	)	SS
CITY OF CHICAGO	)	

I, Thomas S. DeHahn, of lawful age, being duly sworn, depose and state:

1. My name is Thomas S. DeHahn. I am presently Executive Director – Dedicated Networking Product Management for SBC.
2. Attached hereto and made a part hereof for all purposes is my direct testimony.
3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Thomas S DeHahn
Thomas S. DeHahn

Subscribed and sworn to before this 12th day of June, 2001

Patricia L. Jackson
Notary Public

My Commission Expires: 1-15-03

OFFICIAL SEAL
PATRICIA L JACKSON
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES:01/15/03

Case No. TO-2001-467

Southwestern Bell Telephone Company

Direct Testimony of Thomas S. DeHahn

Q. Please state your name and business address.

A. Thomas S. DeHahn, 225 W. Randolph Street, Room 17B, Chicago, IL 60606

Q. By whom are you employed and in what capacity are you employed?

A. I am employed by Ameritech Corporate as Executive Director, Dedicated Networking Services. I am responsible for overall Life-cycle product management for SWBT, Ameritech, Pacific Bell, Southern New England Telephone, and Nevada Bell's retail non-switched, dedicated communication services.

Q. Please describe your educational background and work history with SBC.

A. I am a graduate of Purdue University with a Bachelor of Science in Industrial Engineering. I have worked for SBC affiliate companies since 1987 in various positions including: Engineering, Network Planning, Carrier Services, Market Management, Product Development, Channel Marketing and Product Management.

Q. Have you previously testified before the Missouri Public Service Commission (Commission)?

A. No.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to describe (a) the competitive retail marketplace across the state of Missouri for intraLATA private line/dedicated services, (b) other technologically equivalent offerings, and (c) the lack of barriers to market entry which

demonstrate why it is appropriate for the Commission to confirm competitive classification for the category of all non-switched, dedicated communication services. Such Southwestern Bell Telephone Company (SWBT) services include Analog Private Line (PSC MO No. 29), DS0 (MegaLink ® Digital Service), DS1 (MegaLink 1.5 High Capacity Digital Service®), Southwestern Bell DS3, Network Reconfiguration Service (NRS) and GigaMAN^{sm} (Digital Link Tariff - PSC MO No. 38)

Q. What are the main points your testimony will demonstrate?

A. My testimony will demonstrate that:

- The Commission found on December 21, 1992, in Case No. TO-93-116, that SWBT's digital private line services were equivalent services to IXC provided services – functionally equivalent and completely interchangeable in use and therefore deemed transitionally competitive. This is further explained in the testimony of Mr. Hughes.
- There are many alternative providers of non-switched, dedicated private line type services and the services and functionality they provide are substitutable or technically equivalent to SWBT's private line services.
- There are alternatives that existed before competitive local exchange carriers (CLECs) entered the local market.
- The alternatives that SWBT competes against for private line services are either not regulated by the Commission or are at least not price regulated in the same manner as SWBT.
- The statutes already contemplate that the market for these services is competitive because the statutes grant SWBT the ability to utilize Customer Specific Pricing (CSPs) for private line services.

- Customers will benefit from a competitive classification for SWBT's private line services because SWBT will be able to compete on the same basis as its competitors.

IntraLATA Private Line Services

Q. Please describe SWBT's Private Line/Dedicated Services within the state of Missouri.

A. Private Line services are non-switched, dedicated circuits, where SWBT furnishes the requisite facilities, including channels and network terminating equipment, to enable customers and authorized users to communicate between specified intraLATA locations on a continuous basis. They are most frequently utilized for data transmissions, but are also utilized for transporting voice or integrated data/voice communications in private networks.

Types of private line services include:

Analog service

A voice grade channel connecting two or more locations providing voice frequency transmission capability in the nominal frequency range of 300 to 3000 Hz with either two-wire or four-wire terminations. These types of services are typically used for low-level data transmissions or telemetry, i.e. meter reading, and/or alarming purposes. Many customers are now migrating to digital services because they are more reliable.

DS0 service

Digital Channel service providing for the simultaneous two-way transmission of synchronous serial data at speeds of 2.4, 4.8, 9.6, 19.2, 56 or 64 Kbps. These type of services are typically used for low volume data transmissions such as file transfer and

transaction processing , for example, Automated Teller networks and Point of Sale Terminals.

DS1 service

DS1 is a high capacity digital channel service providing for the simultaneous two-way transmission of a serial, bipolar, return-to-zero, isonchronous digital signal at a terminating bit-rate of 1.544 megabits per second (Mbps). DS1 service is offered as a point-to-point (premises-to-premises) service or channelized (24 DS0 channels). These services are typically used in private networking applications, for example, Tie Lines between Private Branch Exchanges (PBXs), and Local Area Network (LAN) connectivity, Video Conferencing, Access Optimization at Headquarters/Main Office locations, and for Dedicated Internet Access.

DS3 service

DS3 is a high capacity digital channel service providing for the simultaneous two-way transmission of a serial, bipolar, return-to-zero, isonchronous digital signal at a terminating bit-rate of 44.736 Mbps. DS3 is provisioned over 100% fiber, and the interface to the customer is an electrical signal. It is offered as point- to-point service, or channelized (28 DS1 channels). Like DS1 service, it is also typically used for private networking applications, access optimization, and for Dedicated Internet Access.

Network Reconfiguration Service (NRS)

NRS is a service offering that gives customers the ability to reconfigure their dedicated network services from their premises by utilizing specialized software that issues commands to SWBT Digital Cross-Connect Systems (DCSs).

It is most frequently used by customers in disaster recovery plans such as reconfiguring circuits to a designated "back-up" data center or computing facility.

GigaMAN

GigaMAN is an intraLATA dedicated high capacity channel limited to the transport of data signals between customer stations which provides for the transmission at a discrete bit rate of 1 Gigabit per second (Gbps) in Ethernet format. It is available in a point-to-point configuration. This 100% fiber-based service may be used to provide Local Area Network (LAN) to LAN interconnection service through a transparent, native rate interface.

Q. Please describe the competitive landscape in Missouri for retail non-switched, intraLATA private line services. How long has this market place been competitive?

A. The retail intraLATA private line market in Missouri has had established competition for nearly 15 years dating back to the emergence in the 1980's of CAPs, or Competitive Access Providers. The CAPs, such as TCG, MFS and Brooks Fiber, initially focused on providing alternative access to long distance companies. They also targeted commercial business customers as they completed their fiber ring builds and gained access to multi-tenant buildings with their own facilities.

In the late 1980's it was also commonplace for the major inter-exchange carriers such as AT&T, Sprint, and MCI to compete for retail intraLATA private line services as they bid for data networks that covered intrastate services as well as interstate long-haul services.

In 1992, the Commission recognized the competitive forces in the intraLATA private line market when it found that IXC- provided services, which they were offering through their state tariffs, were "equivalent" and completely interchangeable with SWBT private line services. At that time, the Commission granted SWBT's request for re-classification of private line services to a "transitionally competitive" classification. (Report and Order Case No, TO-93-116) In the mid to late 1990's, the CAP networks became coveted crown jewels by the major IXCs for their broad network reach. IXCs completed acquisitions and moved to vertically integrate these networks to expand their local reach. AT&T purchased TCG; MCI acquired Brooks Fiber, and LDDS Worldcom purchased MFS.

By this time, the major brand name IXCs such as AT&T, Sprint, and Worldcom were aggressively competing state-wide across Missouri exchanges for intraLATA private line services, offering business customers new services and pricing bundles to leverage private line sales against SWBT.

The Telecom Act of 1996 (Act) gave the intraLATA private line market an even greater competitive boost by requiring SWBT to offer its retail services to CLECs. The Act required all retail services offered to end users to be available to resellers at discounted rates – enabling non-facilities based providers to easily enter the market. Providers such as McLeod began to emerge (see Schedule 1).

The Act also gave CLECs the ability to cost-effectively co-locate their equipment in SWBT central offices and purchase Unbundled Network Elements (UNEs) to lower their cost structure and expand their network reach.

In recent years, the major IXCs used their well- established brands to increase their presence as intraLATA service provider as evident in their marketing materials that promote their "local" and "metro" provider focus (see Schedule 2).

Aside from the major established carriers such as AT&T, Worldcom, Sprint, and McLeod, private line services face direct competitive threats from "dark fiber" providers such as Metropolitan Fiber Networks (MFN) and American Fiber Networks (see Schedule 2). Such providers are willing to construct private fiber networks or lease existing dark fibers. End users can piece together their own private telecom network solutions by purchasing optical networking equipment directly from suppliers such as Lucent, Nortel and Cisco, turning the dark fiber to "lit" fiber. The customer can then run company traffic over this private network, electing to bypass SWBT private line services entirely. Other service providers competing for private line services can also turn to these "dark fiber" providers to acquire the necessary components needed to totally bypass SWBT facilities.

In the past 15 years, a very robust competitive marketplace for retail intraLATA private line services has been established. Many providers such as AT&T and Worldcom have some of the nations most well known brands and provide data services such as private line services, or alternate technologies which provide similar transport functionality.

Q. Are the services provided by these alternative providers substitutable or functionally equivalent to SWBT's private line services?

A. Yes. At their basic level, non-switched, private line services provide dedicated connections or transmission paths between locations and are used for data, voice and video communications. The dedicated services provided by SWBT's competitors provide the same functionality as SWBT's private line services. For example, a DS1 or DS3 provided by AT&T or McLeod is technically the same channel service as SWBT's DS1 or DS3 offering – based on the same industry standards.

Q. How do the rates for alternative providers compare to SWBT's rates for Private Line Services in Missouri?

It is often difficult to get an apples-to-apples comparison on other providers "street pricing" for private lines since they are all price de-regulated. Often tariffs which are filed by competitive providers are simply used to establish "rack rates" and communicate basic service terms and conditions. These "rack rates" provide standard, non-discounted prices which carriers use to offer percentage-off "deals" to their customers.

Many of the competitive offers are frequently bundled and discounted based on long distance, local, toll usage, internet access plans, or total revenue commitments. Overall, pricing is seen as extremely competitive for such services and often pitched with 100% installation waivers with significantly discounted monthly recurring rack rates.

Q. **Are there other technologically equivalent offerings or substitute products in the marketplace that compete with private line services?**

A. In addition to direct competition for traditional private line services, there are many service providers in the marketplace offering a variety of networking solutions (with different technologies) that can meet the same "transport needs" as SWBT wireline dedicated services. These include:

- Fast Packet/Cell-Relay Services such as **Frame Relay/Asychronous Transfer Mode (ATM)**
- **The Internet** (using ISDN, DSL access, 56 Kbps Dial-up access, Cable Modems, Dedicated Access)
- **Fixed Wireless Solutions** (including CPE- based such as Cisco Aironet)

Fast Packet services were first introduced by the IXCs in the early 1990's as a means to capture more of the existing private line market by offering cheaper "virtual circuits".

These services provide "basic data transport" for customer communications just the same as private line services – but using alternate technology.

These fast-packet/cell relay services are available across the state of Missouri from numerous providers.

Pricing will vary based on network configurations and customer requirements, but these types of services are frequently displacing private line solutions today and are very competitively priced. Traditional private line networks, such as those offered by SWBT and numerous other providers, are rapidly being replaced by these fast-packet, frame relay and cell relay type of services. This is especially true for customers with four or more locations.

Internet based access for branch offices or small business customers has become a major technology substitute for analog leased line networks and 56/64 Kbps circuits. With user-friendly software programs and encryption services, customers are increasingly sending files via the Internet rather than incurring the monthly expense of SWBT's private line circuits.

The availability of cost-effective Fixed Wireless CPE solutions such as Cisco's Aironet product line has also been displacing wireline DS1s in campus settings such as school districts in the K-12 education market (see Schedule 3). These newer CPE- based wireless solutions often are attractive to such customers because they avoid inside wiring expenses (in older school buildings) and recurring expense payments for leased private lines from SWBT or other wireline providers.

The Chart below provides a summary of various technology substitutes for SWBT's private line services:

Dedicated Service Type	Customer Application	Technology Substitutes	Availability
Analog/DS0/DS1	File Transfer/Transaction Processing	Dial-up/56 KB modems Internet Access (DSL, CableModems, Dial-up) Frame Relay	Multiple providers such as AT&T, Worldcom, Sprint, AOL, Intermedia, etc.
DS0/DS1/DS3/GigaMAN^{sm}	LAN/WAN Connectivity	Frame Relay/ATM	AT&T, Worldcom, Intermedia, Sprint, etc
DS1/DS3	Tie Lines	Voice over IP (CPE based)	Cisco, Lucent Solutions
DS1/DS3	Local Access	Fixed Wireless	Sprint, Adelphia, Teligent, AT&T Cisco Aironet (CPE)

Q. Just to clarify, is it correct that the chart above only describes other types of technologies that provide the same functionality as SWBT's private line services?

A. Yes. The chart above shows technology substitutes. Clearly, as I have previously demonstrated, there are alternative providers using the same types of technology as SWBT to provide services that are substitutable for SWBT's private line services.

Q. Are there any barriers to market entry for non-switched private line services?

A. As previously discussed, the retail private line market in Missouri has been very competitive for over a decade and is marked by ease of entry because:

1. No capital intensive switching systems are needed,
2. Billing is straightforward (since it is industry practice to offer circuits to customers on a flat-rated basis vs. usage based (i.e., one rate per month regardless of how much the service is used)

3. Sales channels do not require complex training.

In many cases, service providers start off with private line service offerings and branch out to include traditional switched services.

There are a variety of avenues for service providers to enter (and grow) in the retail private line marketplace including:

- Resale
- Facility Based Provider (Total Bypass)
- Facility Based Provider w/ Co-location and Unbundled Network Elements (Hybrid)

Competitors may elect to resell private line services of large IXCs and CLECs. They can also utilize SWBT's interstate dedicated transport services. Competitors may also build out fiber networks or lease dark fiber from utility companies, cable companies, or private fiber operators, and co-locate terminating equipment in SWBT central offices, utilizing Unbundled Network Element Local Loops to provide access to end user customers that would otherwise be off-network to them. (Note: As of May 15, 2001, there were 35 certified carriers co-located in 85 wire centers in Missouri (approximately 40% of SWBT wire centers) accounting for 510 Collocation arrangements either completed or finished and waiting for occupancy.)

Q. *Has the Commission previously recognized that private line services have established competitors with functionally equivalent offerings ?*

A. Yes. In 1992, the Commission granted transitionally competitive status to intraLATA "MegaLink II", "MegaLink III", "MegaLink Data Service" and "High Capacity Service" private line services (Report and Order Case No. TO-93-116)

Q. Does Missouri statute permit SWBT to utilize Customer Specific Pricing ("CSP") for private line services?

A. Yes. Section 392.200.8 R.S. Mo 2000, which was passed in 1996, permits SWBT and other providers to use CSPs to offer customer specific pricing for private line services.

Q. What does this indicate about the market for private line services in 1996?

A. I believe it suggests that in 1996 the legislature recognized the private line market to be sufficiently competitive to permit SWBT and all other regulated competitors the opportunity to freely price private line services.

The Commission should take this opportunity to recognize the intent of the statute and confirm the competitive classification on a state-wide basis for private line services that have faced effective competition for well over a decade.

Q. How would the customers in Missouri benefit from a competitive classification for SWBT's private line services?

A. The customers in Missouri would benefit from a competitive classification for SWBT's private line services because it would insure parity among all providers.

It would enable SWBT to adjust its prices, restructure offerings, and modify terms and conditions to meet customers needs in a more timely manner on the same basis as its competitors. A competitive classification would provide customers with the full benefits of a competitive market for private line services.

Q. **Please summarize your testimony.**

A. My testimony has discussed how the retail intraLATA private line services market in Missouri has evolved over the past 15 years giving customers a robust mix of well-established competitive providers to choose from. It also outlined how in today's technologically advanced world, there are many other cost effective substitutes available to meet customer's needs for "basic transport" of their voice, data, and video services.

In addition, I discussed the lack of barriers to entry and various alternatives available to new providers.

In the nine years since the Commission first acknowledged competitive forces which SWBT faced in these markets, the competitive marketplace has matured greatly. In light of this information, the Commission should confirm the competitive classification of SWBT's intraLATA private line services and bring parity to the marketplace to enable customer's the full benefit of a competitive market.

Q. ***Does this conclude your testimony?***

A. Yes, it does.

SCHEDULE 1

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2001-467

DIRECT TESTIMONY

OF

THOMAS S. DEHAHN

Chicago, IL
June, 2001

Schedule of Rates, Rules and Regulations
Governing Resale of Local Service
Provided in the State of Missouri

OFFERED BY

McLeodUSA Telecommunications Services, Inc.

6400 C Street SW
Cedar Rapids, IA 52406-3177

Applying generally to its authorized territories within the State of Missouri. This tariff applies to the Telephone Company's resale of Southwestern Bell Telephone Company (SWBT) services (and only SWBT services), in specified exchanges within the Telephone Company's certificated area in the State of Missouri.

Tariff Reference
SWBT PSC Mo. 38 ' 3

2. PRODUCTS/SERVICES (continued)

2.8 **Digital Link Services** (continued)

2.8.1 MegaLink II[R]

Local Distribution Section

Per termination of a Local Distribution Section on a customer=s premises.

For Transmission Speed of:	Monthly Rate	Service Charge
2.4 kbps (1L7AJ)	$ 88.21	$ 323.00
4.8 kbps (1L7BJ)	$ 89.30	$ 327.75
9.6 kbps (1L7CJ)	$ 88.30	$ 308.75
56 kbps (1L7DJ)	$ 162.78	$ 337.25

- Interoffice Channel

Per V-H mile between Serving offices, between Digital or NRS Hubs and a Serving Office, or Between a Digital or NRS [illegible]

Tariff Reference
SWBT PSC Mo. 38 '3

2. PRODUCTS/SERVICES (continued)

2.8 Digital Link Services (continued)

2.8.1 MegaLink II® (continued)

Local Distribution Section-Continued

Mileage Band	For Transmission Speed of:	Monthly Fixed Charge	Rate per Mile
Over 25 to 50	2.4 kbps (3LBSE)	$ 73.85	$ .57
	4.8 kbps (3LBPE)	$ 69.85	$ 0.95
	9.6 kbps (3LBQE)	$ 94.50	$ 1.90
	56 kbps (3LBLE)	$ 160.50	$ 3.42
Over 50	2.4 kbps (3LBSF)	$ 73.01	$ .52
	4.8 kbps (3LBPF)	$ 66.38	$ .95
	9.6 kbps (3LBQF)	$ 89.82	$ 1.90
	56 kbps (3LBLF)	$ 152.95	$ 3.42

MegaLink II® is a Registered Trademark of Southwestern Bell. (T)

Tariff Reference
SWBT PSC Mo. 38 '4

2. PRODUCTS/SERVICES (continued)

2.8 **Digital Link Services (continued)**

2.8.1 MegaLink III[R]

A. Local Distribution Channel

B. Interoffice Channel Mileage

-Rate per V-H mile or fraction thereof, per channel

	Monthly Fixed Charge	Rate per Mile
1. 64 KBPS		
Mileage Band		
0 (1)	$19.86	N/A
Over 0 to 4	$53.82	$2.38
Over 4 to 8	$54.63	$2.28
Over 8 to 25	$54.72	$2.28
Over 25 to 50	$54.15	$2.23
Over 50	$54.15	$2.23

	Monthly Service Rate	Charge
2. 1.544 Mbps		
A. Local Distribution Channel		
-per point of termination 1LDPJ	$213.75	$650.75

MegaLink III® is a Regiserted Trademark of Southwestern Bell. (T)

Tariff Reference
SWBT PSC Mo. 38 ' 4

2. PRODUCTS/SERVICES (continued)

2.8 **Digital Link Services** (continued)

2.8.1 MegaLink III[R](continued)

B. Interoffice channel Mileage

-Rate per V-H mile or fraction thereof, per channel

	Monthly	
	Fixed Charge	Rate per Mile
2. 1.544 Mbps (continued)		
Mileage Bands		
0	N/A	N/A
Over 0 to 4	$95.00	$47.50
Over 4 to 8	$95.00	$57.00
Over 8 to 25	$76.00	$57.00
Over 25 to 50	$76.00	$57.00
Over 50	$76.00	$57.00

Tariff Reference
SWBT PSC Mo. 38 ' 4

2. PRODUCTS/SERVICES (continued)

2.8 Digital Link Services (continued)

2.8.1 MegaLink III ® (continued)

Additional Service Features

	Monthly Rate	Service Charge
1. Multiplexing		
DS1 to Voice		
-per arrangement	$190.00	N/A
DS1 to DSO		
-per arrangement	$570.00	N/A
DSO to Subrate		
-per arrangement		
-up to twenty 2.4 kbps	$139.65	N/A
-up to ten 4.8 kbps services	$276.64	N/A
-up to five 9.6 kbps services	$528.49	N/A
2. Transfer Arrangement (key activated)		
-per four port arrangement including control channel termination	$229.43	$223.25
3. SecureNet		
-per local distribution channel	$ 90.25	$634.60

Tariff Reference
SWBT PSC Mo. 38 '4

2. PRODUCTS/SERVICES (continued)

2.8 **Digital Link Services** (continued)

2.8.1 MegaLink III[R] (continued)

Pricing Flexibility

	Monthly	
	Minimum	Maximum
A. Local Distribution Channel	$146.00	$225.00

B. Interoffice Channel Mileage Rate per
V-H mile or fraction thereof, per channel

	Monthly Rates			
	Fixed		Per Mile	
	Minimum	Maximum	Minimum	Maximum
1. 1.544 Mbps				
Mileage bands				
0	$61.75	$95.00	$30.88	$47.50
Over 0 to 4	$61.75	$95.00	$37.05	$57.00
Over 4 to 8	$49.40	$76.00	$37.05	$57.00
Over 8 to 25	$49.40	$76.00	$37.05	$57.00
Over 25 to 50	$49.40	$76.00	$37.05	$57.00
Over 50	$49.40	$76.00	$37.05	$57.00

SCHEDULE 2

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2001-467

DIRECT TESTIMONY

OF

THOMAS S. DEHAHN

Chicago, IL
June, 2001

Metro Private Line Services

The ultimate metropolitan point-to-point and point-to-multipoint solution

If your business needs to transmit data between one or more locations within the same metropolitan area, WorldCom℠ Metro Private Line Services (MPL) is an excellent alternative to comparable services offered by your Local Exchange Carrier (LEC).

Private Line Product Family

- Domestic Private Line
- International Private Line
- Metro Private Line
  - Metro Private Line SONET
- SONET

Customer Resources

- WorldCom Fund

Printable Page

WorldCom, an inter-exchange carrier, now offers local service over its own local network facilities. MPL has the bandwidth capacity to provide your company with a flexible, secure, and cost-effective intraLATA (Local Area Transport Area) private line solution. And because our local network facilities are totally separate from your LEC's facilities (including building access), there are no single points of failure on the WorldCom network. That means MPL is one of the most reliable private line services on the market.

Metro Private Line offers a wide range of different applications. MPL point-to-point services provide full bandwidth and channelized circuit arrangements. The point-to-multipoint services include hubbed and muxed arrangements.

Metro Private Line Full Bandwidth Services

Circuit Availability

- DS0 with VGA or digital
- DS1
- DS3
- OC3
- OC12

Applications

Peer-to-Peer. MPL provides high-performance, secure dedicated lines between two customer-designated locations for data communications.

Local Area Networks (LAN). With appropriate bridges and routers provided by the customer, Ethernet and token ring local area networks (LAN) use Metro Private Line Services for connectivity to other LANs, mainframes, personal computers, or supercomputers.

Tie Lines. MPL provides dedicated lines between two customer-designated locations for connectivity to the customer's internal telephone system.

Videoconferencing. Customers can establish virtual meeting areas at two customer-designated locations using video conferencing Coder-Decoder (Codec) equipment, monitors, and cameras.

Imaging. Using imaging hardware and software, customers can transmit documents between two customer-designated locations.

Customer Premises Equipment (CPE)

- Customers must provide their own CSUs/DSUs, routers, multiplexing equipment, or other network terminating equipment. Customers are also responsible for the maintenance and repair of their CPE.

Metro Private Line channelized services

Circuit Availability

- DS1 channelized into 24 DS0s
- DS3 channelized into 28 DS1s
- OC3 channelized into 3 DS3s
- OC12 channelized into 12 DS3s

Applications

Peer-to-Peer. Provides high-performance, secure, dedicated lines between two customer-designated locations for data communications. Channelized DS1 provides 24 DS0 channels; DS3 provides 28 DS1 channels.

Tie Lines. Provides 24 DS0 (channelized DS1) or 28 DS1 (channelized DS3) dedicated lines between two customer-designated locations for connectivity to the customer's internal telephone system.

Multiplexing equipment

- WorldCom provides, maintains, and repairs the multiplexing functionality equipment (DS1 to DS0 - M10 multiplexer or D4 channel bank or DS3 to DS1 - M13 multiplexer) located within the WorldCom metropolitan network.

Other Customer Premises Equipment (CPE)

- Customers must provide their own CSUs/DSUs, routers, or other network terminating equipment. Customers are also responsible for the maintenance and repair of their CPE.

Metro Private Line Muxed Services

Circuit Availability

- DS1
- DS3

Applications

Peer-to-Peer. Provides high-performance, secure, dedicated lines between a customer's primary location and two or more secondary locations for data communications. Muxed DS1 service provides a DS1 customer interface at the primary customer location and up to 24 DS0 circuits to two or more secondary locations. The muxed DS3 service provides a DS3 customer interface at the primary customer location and up to 28 DS1 circuits to two or more secondary locations.

Tie Lines. Provides a DS1 or DS3 customer interface and 24 DS0 or 28 DS1 dedicated lines, respectively, between a customer's primary location and two or more secondary locations for connectivity to the customer's internal telephone system.

Need More Information?

To order or request additional information on WorldCom[SM] products and services for your business, call 1-800-WORLDCOM (1-800-967-5326) or contact us.

If you have questions regarding an existing account or require Customer Service assistance, please call the toll-free number listed on your invoice for prompt assistance.

AT&T Private Line Services

Your business is growing in a fast-changing, complex and expanding marketplace. You need access to vital information: customer billing records, medical and engineering images, the collaborative efforts of workers in diverse locations, and more.

feature

Check out our other services in the Data family.

AT&T's Frame Relay Plus Service - technology to monitor, adapt and control your network.

AT&T knows that sophisticated network users demand powerful data

services that deliver reliable, high-quality service at all times. **AT&T Private Line Services** meets your demand for unsurpassed reliability and flexibility so you can harness the power of your applications across your company to be more productive–and competitive.

Comprehensive Data Communications Solutions

Whether your needs are local, intrastate, interstate or global, AT&T has the solution. **AT&T Private Line Services** offer your business an array of outstanding service features and powerful options that provide high availability and unsurpassed performance to give you the power, capacity and reliable connections that your business applications demand.

AT&T Private Line Services offer you:

- Bandwidth Options including Single Channel, Fractional T1, T1 and High-Speed Services, including T3, SONET OC3, OC12, OC48 and OC192
- Application Support for a wide range of applications
- End-to-End Service Assurance Warranty for High Speed Services
- A Customer Refund Allowance for Single Channel and Fractional T1 Services
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- Clear Channel Capability
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AT&T

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- AT&T's single point of contact service and 24x7 monitoring

Dedicated to Efficient, Cost-Effective, Secure Communications

What is your business doing? Growing, of course, adding sites, expanding locations - and finding that your mission-critical data communications are increasing all the time.

Every minute of the day, companies like yours are connecting LANs. Sharing e-mail. Running POS applications, credit line authorizations, online banking, new-hire training. Managing patient and client records, human resource databases, corporate mergers. Internet access. In short, tapping into virtually every kind of client/server application on the market today.

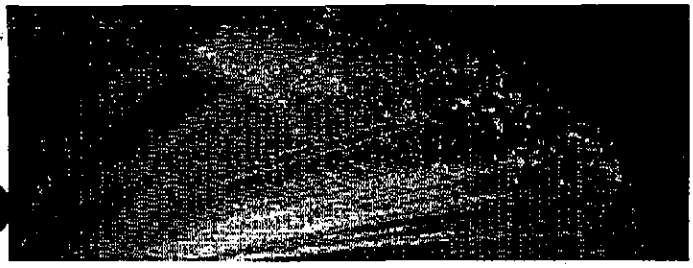
To do it all, you need what you've always needed - networking speed, efficiency and reliability. Now you can get it in a new, yet reassuringly familiar, way.

AT&T Local Private Line Services offer private line, the business world's original solution to exploding data demands, in an extremely cost-effective package. Your business doesn't need to invest in new equipment, or transfer to a switched environment. You can run all your data applications, access all your corporate intranets and extranets, plus integrate your voice services - all with AT&T Local Private Line Services.

Speeding Over a Local Network Near You

Delivered over the AT&T Local Service SONET backbone network, AT&T Local Private Line Services are available to your business as point-to-point services between two locations - including two of your locations. From your headquarters on one city block, for example, to your satellite office around the corner. Or from your hospital to your outpatient clinic. From a dormitory to your campus data center, or from your bank to an automatic teller machine in the supermarket.

AT&T Local Private Line can also establish a point-to-point connection from your premises to a carrier's point-of-presence (POP), to an AT&T POP, to your disaster recovery center or even to your ISP for Internet access. These full-duplex services come at the speed you need: 9.6 Kbps, 56 Kbps, T1/E1, DS1, DS3, OC3, OC12 and OC48 transmissions.



You'll find that you can grow your business across town or across the US and still take advantage of AT&T Local Private Line Services - in 84 metropolitan areas in 35 states, depending on availability. You'll gain significant bandwidth capacity and efficiency, giving you even more room to grow.

Pricing and Management for the Local Market

AT&T Local Private Line Services emphasize local, even if your business spans multiple states. That's particularly true when it comes to pricing. Pricing is mileage-based, and the prices are set regionally. You'll find that our pricing is always competitive.

Just as important, you can pare down the complex management of multiple carriers. With AT&T Local Private Line Services, AT&T becomes your "one-stop-shopping" provider, delivering local services to every one of your facilities. So if you have several offices in multiple cities where the AT&T service is available, you don't have to manage three separate local exchange carriers anymore. You'll have a single point-of-contact with AT&T, and a single bill for all your local lines.

You'll also see a reduced cost structure in your voice services through AT&T Local Private Line Services. For example, you can remove your internal "intercom" calling from the external trunks. You'll be reducing the number of local switch trunks needed for your company's PBX. You'll see a cut in toll costs with fixed flat monthly rates. And your long-distance access costs will drop, because dedicated minutes are cheaper than switched access minutes.

Protecting Your Mission-Critical Data

Because your communications run over AT&T's highly robust Local SONET network, you're assured of their protection - the reliability you've always known from AT&T. We target a 99.9995% availability, made possible because of the state-of-the art, self-healing fiber optic network. In fact, the network is designed to recover from disasters such as fiber cuts or electronic component failures within 50 milliseconds!

To proactively guard the service, we monitor the Local SONET network 24 hours a day from the AT&T Network Monitoring Center in Staten Island, New York, backed up by a redundant center in New Jersey.

Giving New Meaning to Local Service

AT&T Local Private Line Services mean you can grow your business with even more flexibility than ever before - in multiple sites within a city or in different regions of the c ountry. AT&T will deploy local services in virtually every (WILL LEGAL APPROVE THIS? IT AVOIDS USING "where available" YET AGAIN.-deb) metropolitan location you need, at the transmission speeds that make sense for each location.

We'll be one phone call away should you need assistance, providing an end-to-end solution with the quality and customer care you've come to trust from AT&T. Above all, you'll have the advantage of tremendous, national resources at an economical, local level.

For more information, contact your AT&T Account Representative or AT&T Alliance Program Agent, or call 1-800-288-3199.

AT&T

AT&T ACCU-Ring® Network Access Service

High-Speed "Total Service" Access for Multiple Data Services

For large corporations, managing communications connections from state-to-state, or among metro areas within a state, is becoming extremely complex. You're handling LANs, Internet and intranet traffic, e-commerce and much more - taking too much time and costing too much money.

feature

Check out our other services in the Data family.

AT&T's Frame Relay Plus Service - technology to monitor, adapt and control your network.

AT&T ACCU-Ring® Network Access Service takes the burden off you. Using AT&T SONET technology, AT&T ACCU-Ring provides dedicated, high-capacity access for digital transmissions, fully managed by AT&T. You can count on:

- Two-way digital transmission of multiple synchronous, asynchronous or Time Division Multiplex (TDM) signals at rates from 1.5 Mbps to 155 Mbps (OC3)
- Aggregation of all access traffic on a single service that is installed, managed and monitored by AT&T
- High reliability and millisecond restoration through the self-healing SONET architecture
- Flexibility in access speeds without a need for special equipment on your premises
- A Service Assurance Warranty (SAW) that provides credit for service interruptions

Order Now! Click Here

Or Call 1-800-288-3199

AT&T ACCU-Ring® Network Access Service

AT&T ACCU-Ring® Network Access Service is available in most geographic areas in 49 states (not available in Alaska). It requires customization and tailoring to your environment. For further information, you can contact an AT&T representative by adding the product to your cart. Note: This does not commit you to completing an order.

For more information about AT&T ACCU-Ring® Network Access Service, you can call 1-800-288-3199.

Order Now! Click Here

Or Call 1-800-288-3199

Private Line Services

DigiLink (DDS)

Sprint's DigiLink is a dedicated private line service that delivers high-quality, voice and data connectivity at extremely low error rates. DigiLink provides di network connectivity for point-to-point or multi-point arrangements at transmi speeds of 2.4, 4.8, 9.6, 19.2, 56 and 64 Kbps, and accommodates all forms transmissions. Applications include:

- Combination of voice and data between two or more locations
- Perfectly suited for IBM SNA environments
- Database access and management access to host computers from P remote terminals
- Bulk data transfer
- File transfers and maintenance
- On-line research, data collection and inquiry/response
- Transaction processing
- Inventory management, evaluation and control
- Remote batch processing
- Remote CAD/CAM functions
- High-speed imaging

Offering bandwidths of up to 64 Kbps, DigiLink service provides a cost-effec alternative to networks of multiple analog leased lines. There are no usage f charges are based on distance between locations and bandwidth required. F businesses that need 24-hour connectivity between two or more locations, D simple, affordable solution.

Hardware Requirements

Connects to a data service unit (DSU) at the customer's premises, which is c to the computer's data terminal equipment, such as a host computer or PC. needs change, the speed, capacity and quality of DigiLink allow you to take a of advanced applications, such as LAN bridging, high-speed file transfers, m imaging and voice/data combination applications.

Back to top

Private Line Services

TransLink (T1)

Sprint's TransLink is a high-quality digital, private line service (T1) providing connectivity for customers with large bandwidth requirements of up to 1.544 TransLink delivers 56 Kbps on up to 24 simultaneous voice, data and video to one location. It connects to a channel service unit (CSU) or channel bank enterprise's premises, which is connected to your data terminal equipment, s host computer.

TransLink provides 24-hour connectivity with no usage fees. Applications tha from Sprint's TransLink (T1) service include:

- Integrated voice, data or video
- Replacement for multiple voice-grade circuits
- Interactive processing
- High-speed imaging
- Video conferencing
- Point-to-point voice, data and video
- CAD/CAM transmissions
- Video freeze-frame and full motion
- Tie lines
- Connectivity between two PBXs
- On-line research
- Database access fund management
- Support for transaction-based systems (reservations, billing, etc.)
- Support for batch file transfers (payroll, inventory, etc.)
- Inventory management and control
- Off-premises extensions
- LAN bridging

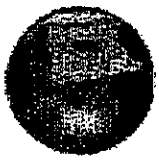
The price for service is based on the distance between locations. If your ente currently manages a complex network of eight or more private analog lines, will likely save money and provide faster, more reliable network performance

Options.

For even greater capacity, 28 T1 lines can be combined into what's known a circuit, ideally suited to high-bandwidth applications such as broadcast-qualit **Fractional T1** has the flexibility to support the full range of bandwidth below however Fractional T1 typically runs at 384 Kbps, giving you dedicated band without the cost of adding a full T1 circuit.

Hardware Requirements.

Private Line Services



LightLink (DS3)

Sprint's LightLink is a private-line, point-to-point or multi-point service provide fiber optic transmission facilities. With LightLink, you get the functionality of r private lines over one facility – with an aggregate speed of 44.736 Mbps. Th: to 672 digital communication channels of 64 Kbps each, or 28 T1 lines!

LightLink is capable of providing multiple full-time, dedicated voice, data and connections for customers requiring a large number of private lines and larg bandwidth. The channels can be used in varying amounts of bandwidth for h data and video applications, such as:

- Integrating multiple voice, data and video T1 lines
- File transfer
- Full motion video conferencing
- Interactive database access
- CAD and imaging
- Electronic mail
- File transfer
- Resource sharing

Hardware Requirements

A fiber optic transmission system must be installed between each connectec and that location's serving central office. The DS3 channel can be terminate special multiplexer, an M13. The M13 breaks the DS3 channel into 28 DS1 c The individual DS1 channels can be further subdivided with channel banks c DS1 rate multiplexers.

Back to top

User equipment, such as computer terminals, may be connected by a LAN v router T1 or T3 multiplexer (or subrate multiplexer) at each end of the transn path. Also required is CSU/DSU at each end of the transmission path, physic located between the multiplexer or router and the circuit. Sprint provides a cc line of voice, data and video customer premises equipment to support your T networking requirements now, and well into the future.

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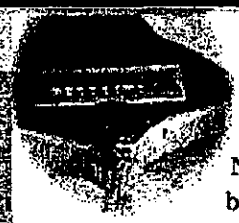


Private Line Point-to-Point

No matter how you do the math, the shortest distance between two points is a straight line.

In This Se

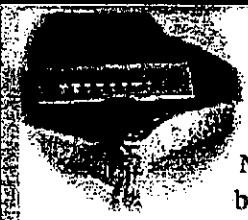
- Benefits
- Description
- FAQ

Now more than ever, information delivery depends on digital transmissions. Enjoy fast, clear transmissions as our state-of-the-art, fiber optic network accommodates all the digital communications traffic of your organization, and only your organization. McLeodUSA Private Line, with its variety of ways to deliver and receive information, is the premiere choice for voice and data transmission.

A variety of bandwidths are available depending on the scope of your business needs. We offer lower bandwidths for handling voice traffic and higher bandwidths useful for your computer or your entire network.

For more information about McLeodUSA services for your business call 1-800-890-2230 or contact us online.

Business Products
- Frame Relay
- Hosting Services
- VPN
- Dial-up Internet Access
- DSL
- Colocation Services
- Dedicated Internet Access
- KnowledgePortal™ Application
- Private Line Point-to-Point



Private Line Point-to-Point

No matter how you do the math, the shortest distance between two points is a straight line.

In This Se
Benefits
Description
FAQ

Private Line Point-to-Point provides dedicated circuits for the transmission of data and/or voice applications such as: Private Branch Exchange (PBX) voice networking or Local Area Network/Wide Area Network (LAN/WAN) networking needs. Private Line services are typically ordered in the following bandwidth increments:

- Sub-rate 19.2kbps or less
- DS0 or 56/64kbps
- DS1 or 1.544 mbps (megabits per second)
- DS3 or 45 mbps (megabits per second)

The amount of bandwidth you choose depends on the size and function of your organization. The more data you need to deliver the more bandwidth necessary. The more data you need to deliver the more bandwidth necessary.

For more information about McLeodUSA services for your business call 1-800-890-2230 or contact us online.

The Network

The Worlds Most Demanding Markets

Metromedia Fiber Network is changing communications with a single premise: provide the infrastructure to meet the growing demand for bandwidth.

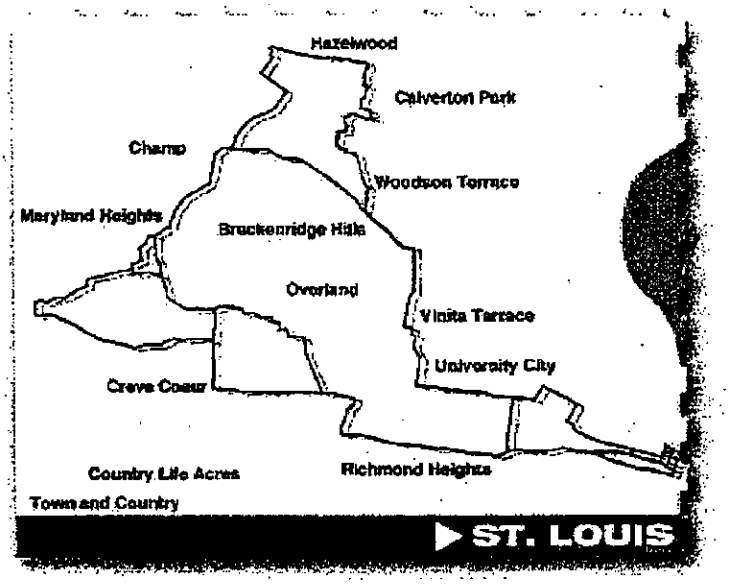
Servicing some of the largest and busiest markets in the world, MFN is building the end-to-end optical infrastructure capable of meeting the rigorous demands of the world's largest service providers and enterprise customers. With networks being built across North America and Europe, MFN is putting the future of communications in your hands today.

Utilizing the latest fiber optic cabling, with trunks containing up to 864 strands of fiber, MFN's network will extend over 3 million fiber miles when completed. In addition to our extensive metro area builds, our cities are linked together, by one inter-city network creating a seamless, end-to-end optical infrastructure.

MFN's optical infrastructure is optimized for IP traffic and the high bandwidth needs of the Internet. Through our subsidiary AboveNet, customers can gain access to AboveNet's high performance Internet infrastructure, while gaining the advantages of MFN's fiber optic network.

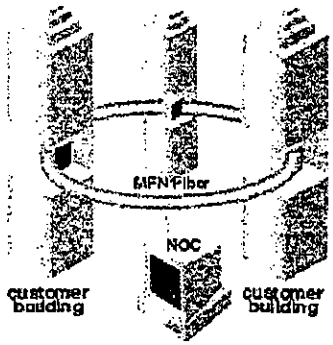
Whether your business is in the US or Europe, MFN is building the infrastructure that is changing the way people and data is communicated.To see where MFN's extensive networks are being built, click here for network maps.

Select a Map


Hazelwood
Calverton Park
Champ
Woodson Terrace
Maryland Heights
Brackenridge Hills
Overland
Vinita Terrace
University City
Creve Coeur
Country Life Acres
Richmond Heights
Town and Country
ST. LOUIS

Corporate — Managed Sonet Network

Metromedia Fiber Network has the perfect solution for the company looking for a complete turnkey network solution. With our Managed SONET Network, you enjoy all the advantages of fiber optics – **speed, capacity, flexibility, security,** and **reliability** – plus, **end-to-end planning, installation**, and **maintenance** of your network. MFN provides the SONET equipment as an operating lease requiring **no capital outlay.** Our team of telecommunications professionals will work with you to design and maintain a network tailored to your specific requirements.



The Managed SONET Network includes:

Dark Fiber Optic Network – available with diverse routing, entrances, and risers.

Sonet Netork – available from OC3 to OC192 Optic backbone configurations, with service drops available in DS1/3, OC3/12/48, ethernet and ATM. Configurations can include either ring or linear design, with n-n or n-1 redundancy

Installation – complete system installation of Fiber Optic Network and SONET ADMs. MFN provides Project Management to ensure effective scheduling, communication, and implementation.

Maintenance – MFN's Technicians provide all necessary maintenance of the Fiber Optic Network and SONET ADMs.

Customer Support – the MFN Network Operations Center (NOC) is in operation 24 hours a day, 365 days a year. Our skilled technicians will monitor the network for potential faults and proactively remedy identified problems. The NOC will respond to customer trouble reports, identifying the failing component and dispatching a MFN technician to remedy the problem.

Network Provisioning – MFN offers upgrade and provisioning support for the addition of new services to the SONET network.

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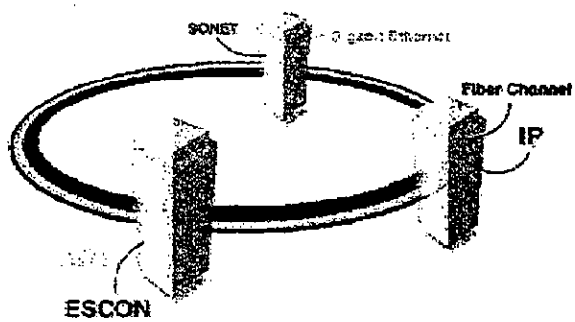
Corporate

Wavechannel Optical Network

One network for voice, data and video – scalable, upgradeable, protocol-independent and forecast tolerant. WaveChannel™ Optical Network provides this capability today through an integration of MFN dark fiber and Nortel Networks OPTera Metro™ technology.



Utilizing MFN dark fiber and DWDM technology, WaveChannel™ gives you a private optical network to transport all current applications and protocols while preparing you to meet unpredictable future bandwidth requirements. This single private network replaces the traditional metered services you use today, simplifying your operation and greatly increasing your flexibility and control.

WaveChannel ™ Optical Network includes:

Dedicated Optical Fiber – all the advantages of MFN dark fiber, including a ring-based network topology and diverse fiber routing for a secure and reliable network.

Turnkey Operation – your network solution is complete from end-to-end, including fiber, equipment, engineering, installation and ongoing network operations and maintenance. Our NOC provides 24x7 network monitoring to ensure best-in-class availability.

Optical networking equipment – Nortel Networks OPTera MetroTM wavelength-based optical networking equipment provides the flexibility to implement a true multi-service network.

Your network will simultaneously transport virtually any optical signal, regardless of protocol, including:

- ATM
- IP
- SONET
- Gigabit Ethernet
- ESCON Fibre Channel

click here to download a PDF description of this product

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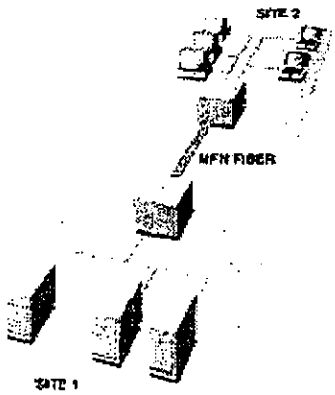
Corporate — Metro Gig-E Gigabit Ethernet Solution

A network to grow your business

Capacity requirements for desktop and server applications are exploding while traditional Metropolitan Area Networks (MAN) backbone services and their high cost have constrained growth. Without a faster communication infrastructure, your business productivity and bottom-line potential may not be achieved. Recognizing this problem, Metromedia Fiber Network has created an integrated optical solution for your business – Metro Gig-ETM, a Gigabit Ethernet Optical Network.



By integrating MFN's dark fiber with Cisco's Catalyst® switch technology, Metro Gig-E™ allows you to easily expand your LAN into a MAN, connecting multiple sites on a completely private optical network.
Metro Gig-E gives you:

Dedicated Optical Fiber – the industry's choice for today's bandwidth intensive communication applications, your fiber network is 100% dedicated to your business needs.

Gigabit Ethernet – a LAN extension providing full 1 Gigabit (1000 Mbps) of bandwidth, using the industry's most popular technology to support the latest applications.

Fully Managed Solution – a total solution including fiber, equipment, engineering, installation and ongoing network operations.

Leading Optical Equipment Ð the network is powered by proven equipment supplied by Cisco Systems, Inc., the worldwide leader in networking for the Internet.

Cisco Powered Network

click here to be contacted by an account manager
click here to download a PDF description of this product

Get Acrobat Reader

Link to other Corporate sections
WaveChannel™ Optical Network
Managed Sonet System

SCHEDULE 3

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2001-467

DIRECT TESTIMONY

OF

THOMAS S. DEHAHN

Chicago, IL
June, 2001

Cisco Aironet 340 Series Bridges

- Building-to-Building connectivity at up to 25 miles (line of sight)
- Cost effective alternative to leased line/T1
- Rapid, simple deployment and re-deployment
- Point-to-Point and Point-to-Multipoint
- No government license required