

# Telecommunications Overview



Advanced Telephony Unit  
Federal Bureau of Investigation

Disabling...

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# Purpose

To Provide an Overview of the Telecommunications Environment and  
its Implications for Law Enforcement

# IMPACT OF EMERGING TELECOMMUNICATIONS TECHNOLOGY ON LAW ENFORCEMENT

- o The Nation's telecommunications systems and networks are often used in furtherance of serious criminal activities.
  
- o Recent and continuing advances in telecommunications technology and the introduction of new technologies and transmission modes have made it increasingly difficult for Federal, State and local law enforcement agencies to enforce the criminal law through a key investigative technique--statutory-based, court ordered electronic surveillance.

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# CHALLENGE TO LAW ENFORCEMENT

- o These technologies present a two-fold challenge to law enforcement:
  - o 1) The ability to access communications subject to court authorized intercepts (Digital Telephony Legislation); and
  - o 2) The ability to gather and analyze evidence from these interceptions on a real-time basis (National Encryption Policy Issue).

## LEGISLATIVE HISTORY

- o In 1968, Congress, after carefully considering the constitutional issues between the Government's need to effectively investigate serious criminal conduct and an individual's right to privacy, passed the Omnibus Crime Control and Safe Streets Act. (Amended in 1986 - Electronic Communications Privacy Act - 18USC2510.)
  
- o This established a procedure for law enforcement to obtain judicial authorization to conduct electronic surveillance.



**TITLE III INTERCEPTIONS<sup>1</sup>**

Year	Original Interception Applications Authorized			Reported Results	
	State	Federal	Total	Arrests	Convictions <sup>2</sup>
1982	448	130	578	2,870	1,886
1983	440	208	648	2,890	2,007
1984	512	289	801	3,719	2,428
1985	541	243	784	4,159	2,615
1986	504	250	754	3,828	2,444
1987	437	236	673	3,187	1,947
1988	445	293	738	3,812	2,338
1989	453	310	763	6,068	2,019
1990	548	324	872	2,954	970
1991	500	356	856	2,364	605
<b>To- tal</b>	<b>4,828</b>	<b>2,639</b>	<b>7,467</b>	<b>35,851</b>	<b>19,259</b>

## BENEFITS OF ELECTRONIC SURVEILLANCE

- o To illustrate the impact of this extremely important investigative technique, during the period of 1985 to 1991, court authorized intercepts conducted only by the FBI for criminal investigation only led to:
  - o 7,324 individuals convicted;
  - o \$295,851,162 in fines being levied;
  - o \$756,363,288 in court ordered recoveries, restitutions and forfeitures; and
  - o \$1,862,414,937 in prevented potential economic loss.



# THE THREAT TO LAW ENFORCEMENT DIGITAL TELEPHONY

- o Emerging technologies and intelligent networks are being developed and implemented throughout the telecommunications industry without apparent consideration to the legitimate needs of law enforcement.
  
- o Without mandated assistance of electronic communications services providers, law enforcement cannot be assured access to the communications identified in the court order.

## THE THREAT TO LAW ENFORCEMENT DIGITAL TELEPHONY (CONTINUED)

- o Information obtained from these intercepts has:
  - (a) helped to prevent the death or physical injury of innocent victims,
  - (b) thwarted violent criminal activity, and
  - (c) provided extremely credible, persuasive evidence in prosecution of these cases.

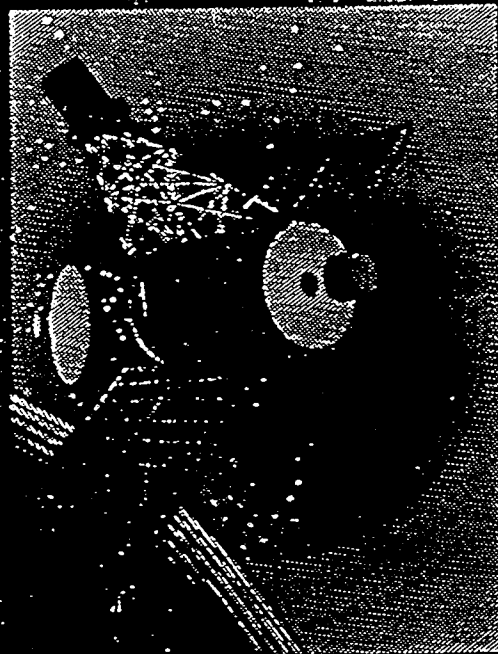
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**I. THE CURRENT ANALOG ENVIRONMENT.**

**II. THE NEW TELECOMMUNICATIONS TECHNOLOGIES**

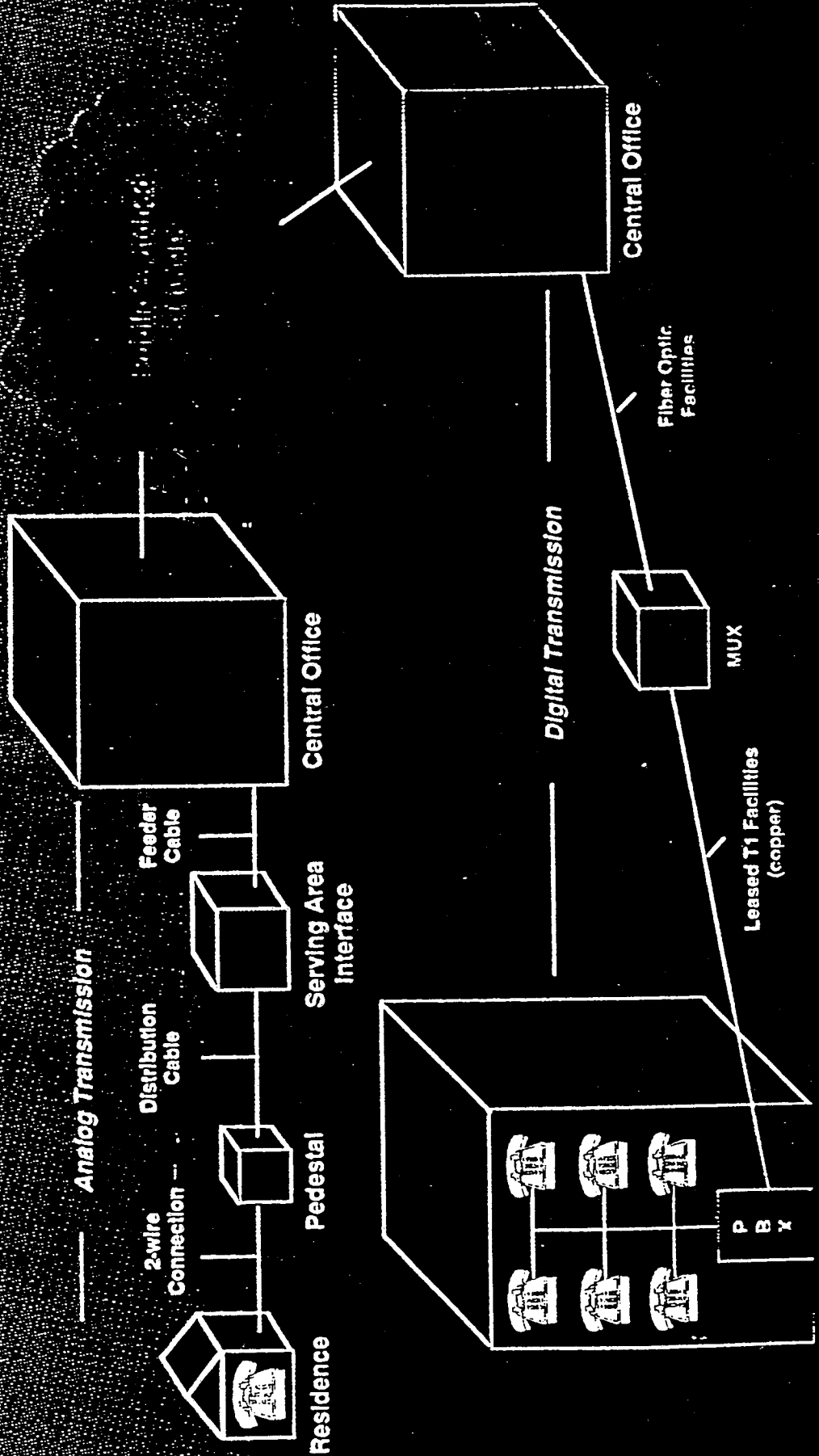
- \* ARE NOT EXPERIMENTAL;**
- \* ARE BEING DEPLOYED COMMERCIALY;**

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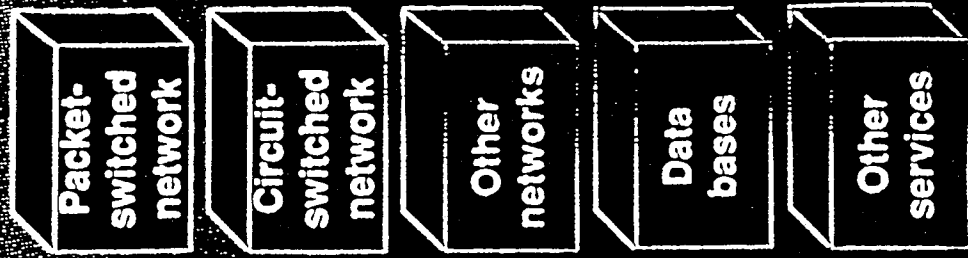


# Today's Operational Environment

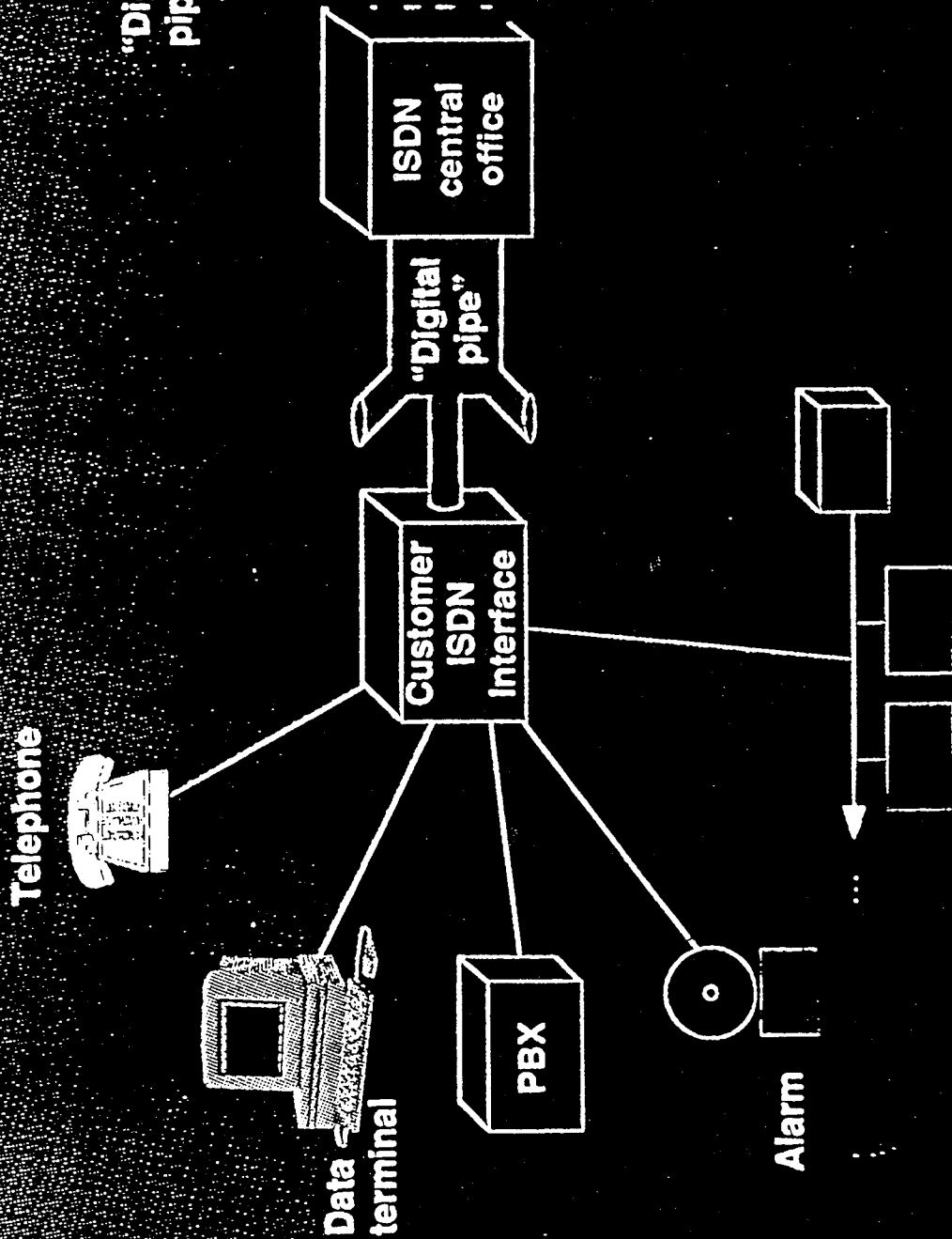
Public  
 Advt.  
 Network



# Integrated Services Digital Network (ISDN)

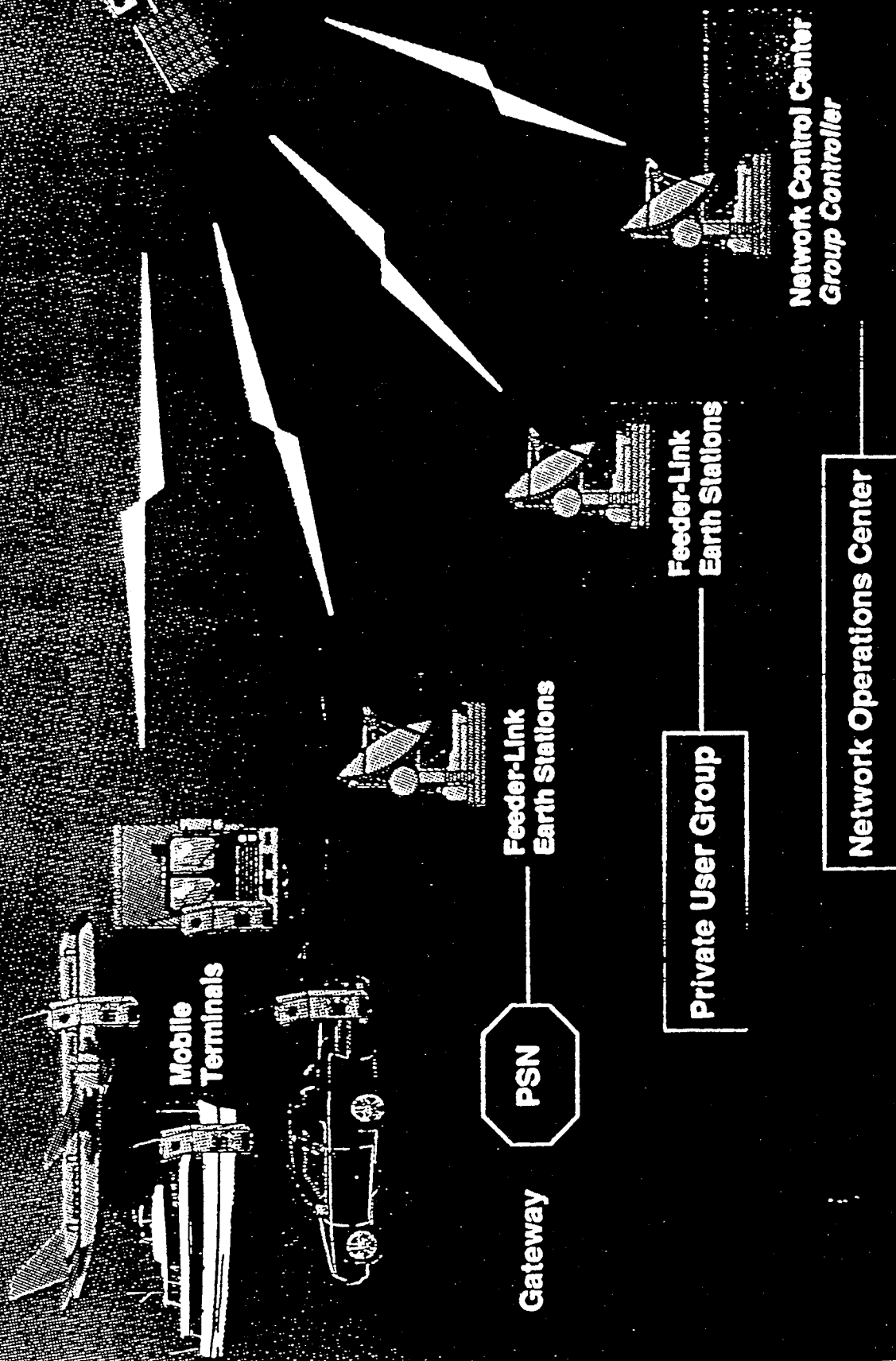


"Digital pipes"  
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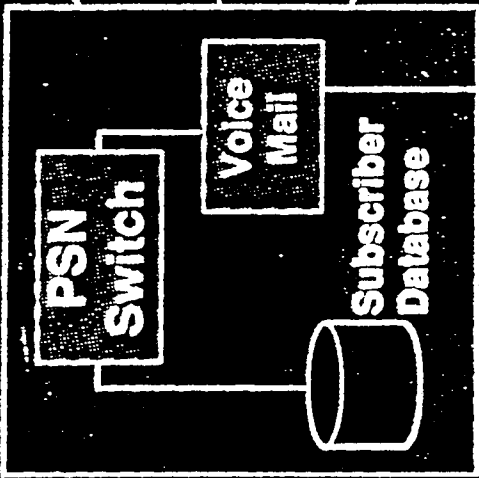
# Mobile Satellite Services




# Personal Communications Services (PCS)

  
Callers Dial Your PCS Number and the System Forwards Their Calls to You at Several Locations Simultaneously

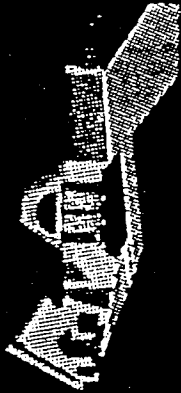
PUBLIC NETWORK



  
Change the Direction of Your Calls From Any Touch-Tone Phone



...To Where You Work



...To Your Home



...To Your Mobile Phone

# Follow-Me Services

(700) REACH ME



(415) 555-1111

(202) 555-2222

## AT&T Easy-Reach Service

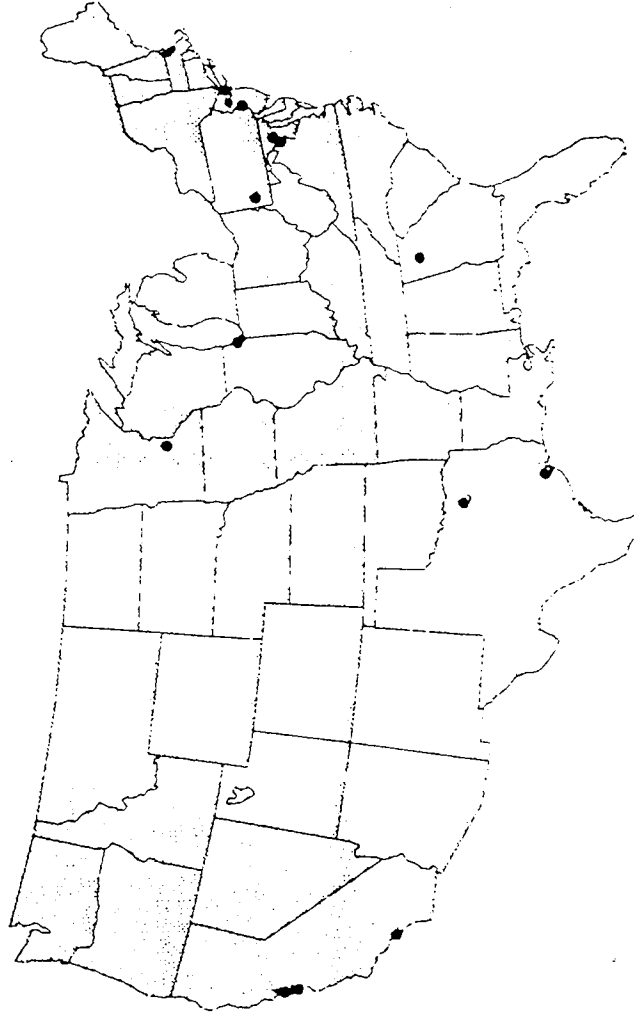
- One 700 Number for Life
- Calls Follow You When You Move
- Customized Telephone Numbers Available
- Selective Call Forwarding Capabilities
- Programmable From Any Touch-Tone Phone



# Alternate Access Providers

## Metropolitan Fiber Systems

Atlanta  
Baltimore  
Boston  
Chicago  
Dallas  
Houston  
Los Angeles  
Minneapolis  
New York  
Philadelphia  
Pittsburgh  
San Francisco  
San Jose  
Washington, D.C.



## Teleport

Boston  
Chicago  
Dallas  
Houston  
Los Angeles  
New York  
Northern New Jersey  
San Francisco

*The Emergence of Alternate Access Providers  
Is Increasing the Number of Players in the  
Local Exchange*

# THE PROPOSED LEGISLATIVE SOLUTION FOR DIGITAL TELEPHONY

- o The purpose of this proposal is to clarify the responsibilities of the providers of electronic communication services when providing law enforcement with the "technical assistance necessary to accomplish the interception," as required by Title 18, U.S.C., Section 2518(4) and Title 18, U.S.C., Section 3124(a)(b) and to set reasonable time frames for compliance.

**NATIONAL POLICY  
ON  
ENCRYPTION**

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o The Threat Facing Law Enforcement  
Encryption

o The challenge facing law enforcement is the ability to understand the contents of intercepted communications in a real-time manner. Technology advances in the telecommunications industry will facilitate the development and production of affordable, superior voice quality, cryptographically excellent encryption devices for voice, data, and image transmissions.

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(S)

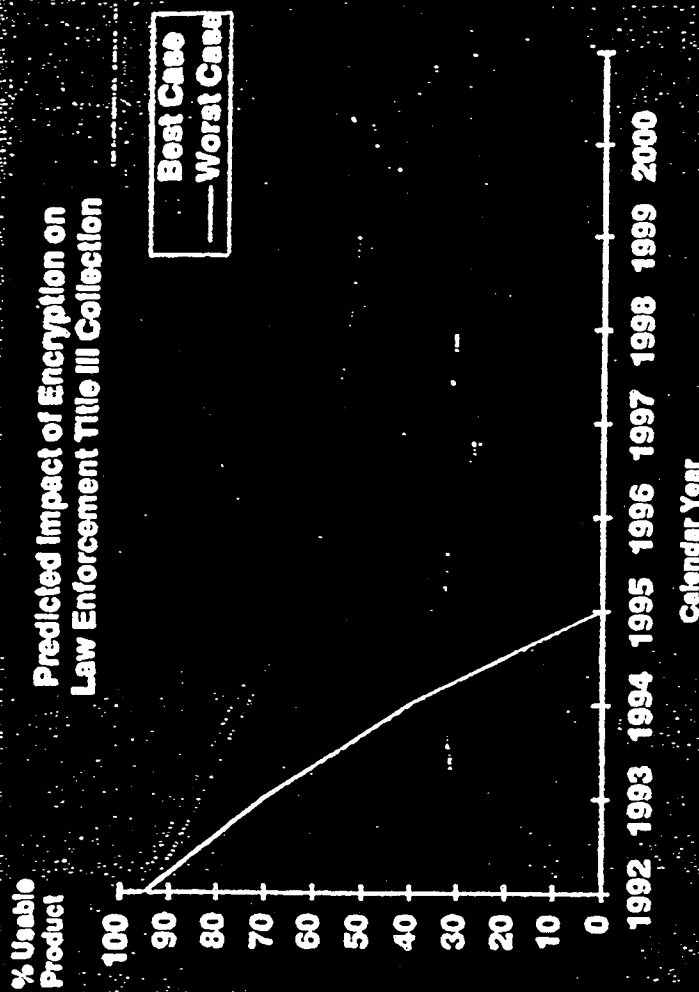
# Encryption Equipment

- Growth in Data Encryption Equipment Market Will Be Spurred By Increases In:

- Networking
- Legal Mandates for Security
- Commercial Espionage
- Resolution of Standards Issues

- US Data Encryption Equipment Market Will Reach \$443 Million in 1992 and \$946 Million By 1996

Source: Digital Review



Source: Advanced Telephony Unit, FBI

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## NEED FOR A NATIONAL POLICY:

- o Although the export of encryption products within the United States is controlled, its domestic use is not regulated. A policy is needed which embodies national legislation, which:
  - o Affords legitimate users of cryptography protection which their adversaries cannot defeat.
  - o Insures that cryptographic devices and systems are capable of real-time decryption by law enforcement.
  - o Prohibits cryptography that cannot meet the standard enumerated above.
    - o An exception will, of course, exist for the protection of classified National Defense Information.

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# RATIONALE FOR DECRYPTION ABILITY BY LAW ENFORCEMENT

- o The protection of a citizen's possessions against unreasonable searches and seizures is guaranteed by the Constitution.
- o This does not, however, prohibit court authorized searches performed by law enforcement officers, based upon probable cause (e.g., reasonable belief grounded on facts).

