

**GAO**

United States General Accounting Office  
Briefing Report to the Chairman,  
Subcommittee on Telecommunications  
and Finance, Committee on Energy and  
Commerce, House of Representatives

July 1992

**FBI**

**Advanced  
Communications  
Technologies Pose  
Wiretapping Challenges**



147215

---

---

**Information Management and  
Technology Division**

B-249358

July 17, 1992

The Honorable Edward J. Markey  
Chairman, Subcommittee on  
Telecommunications and Finance  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

In March 1992, you asked us to evaluate the (1) technological alternatives available or imminently available to the Federal Bureau of Investigation (FBI) to wiretap voice and data communications,<sup>1</sup> (2) changes required to the telecommunications network to accommodate least intrusive wiretaps,<sup>2</sup> and (3) estimated cost of developing and implementing such changes. On June 26, 1992, we briefed your office on the results of our evaluation. At that time, we also discussed the FBI's past and current actions to satisfy its wiretapping needs, including its April 1992 proposal to amend the Communications Act of 1934 and its May 1992 proposal for separate legislation to provide for its wiretapping needs by the telecommunications industry. This report documents our briefing. Appendix I contains the slides we used at that briefing.

The FBI has classified our analysis of the technological alternatives to wiretapping as National Security Information. In this regard, we provided your office with a classified briefing on our analysis on June 15, 1992.

---

**Results in Brief**

The technological wiretap alternatives available to the FBI and the network changes needed to accommodate the least intrusive wiretaps vary depending on the technology used. However, neither the FBI nor the telecommunications industry has systematically identified the alternatives, or evaluated their costs, benefits, or feasibility.

The FBI, in its April 1992 legislative proposal, did not define its wiretapping needs. The May 1992 proposal generally addressed the FBI's needs, but did

---

<sup>1</sup>Wiretapping refers to the real-time collection of dialed digits and sending of real-time, two-way communications to a listening device, regardless of the target's location or the technology used. Real time means collecting and sending this information to a listening device as it is being communicated.

<sup>2</sup>The term intrusive refers, for purposes of this report, to the level of the wiretap's detectability by the wiretap's target.

not provide specifics necessary for the telecommunications industry to determine what would constitute full compliance with the proposal in the event it were enacted. For example, the proposal did not specify the length of time allowed to install a wiretap after receipt of a court order. Further, the May 1992 proposal did not address who should pay for the cost of wiretapping solutions. FBI and industry officials have recently begun working together to identify technological alternatives available to the FBI for wiretapping and to select the alternatives that best meet their needs.

---

## Background

The FBI considers wiretapping an essential information gathering tool in fighting crime. The federal government and 37 states have statutes governing wiretapping.

The FBI now has the technical ability required to wiretap certain technologies, such as analog voice communications carried over public networks' copper wire. However, since 1986, the FBI has become increasingly aware of the potential loss of wiretapping capability due to the rapid deployment of new technologies, such as cellular and integrated voice and data services, and the emergence of new technologies such as Personal Communication Services, satellites, and Personal Communication Numbers.

In response to the rapidly changing technology, the FBI prepared two legislative proposals in April and May 1992. The May proposal replaced the April proposal.<sup>3</sup> According to the FBI, these proposals are intended to maintain the same level of wiretapping capability for new telecommunications technology that it has with technologies such as older analog communications using copper wire.

---

## Technological Alternatives and Network Changes Required to Implement Least Intrusive Wiretaps Vary With the Technology

There are six current or imminent telecommunications technologies that the FBI needs to be able to wiretap. These are (1) analog and digital using copper wire transport, (2) analog and digital using fiber optic transport, (3) Integrated Services Digital Network (ISDN), (4) Private Branch Exchange (PBX), (5) broadband, and (6) cellular. There are also three future technologies for which wiretapping capabilities need to be addressed: (1) satellite switches, (2) Personal Communication Services (PCS), and (3) Personal Communication Number (PCN). Further, the FBI

---

<sup>3</sup>The May proposal has not been formally introduced as legislation in either the Senate or the House of Representatives.

needs to be able to wiretap any special features, such as call forwarding or electronic mail.

Wiretapping can occur at six primary locations through which the communications flow—at the premises where the target is located, between the premises and the cross-connect,<sup>4</sup> at the cross-connect, or at a land line, cellular, or satellite switch.

The technological alternatives for wiretapping vary with the telecommunications technology being tapped and the location where the tap occurs. For example, the technology used to tap a non-digital telephone is different from that used to tap a digital telephone. Further, tapping at the premises may require a different technology from tapping at a switch. Similarly, the network changes needed to implement the least intrusive wiretaps vary by technology and location.

Because the FBI has classified our analysis of these alternatives as National Security Information, we are not presenting them in this report.

---

## No Comprehensive Studies Exist Identifying Alternatives and Their Costs, Benefits, and Feasibility

As of June 30, 1992, neither the FBI nor the telecommunications industry had systematically identified the alternative approaches for implementing minimally intrusive wiretapping capabilities and the costs, benefits, and feasibility of these alternatives.

The FBI's and telecommunication industry's past efforts to identify technological alternatives have been unsuccessful. In the past, the FBI met with security officers within the telephone companies to effect wiretaps. According to the FBI and industry officials, these security officers were the designated company contacts for meeting the FBI's wiretapping needs.

However, industry security officers did not discuss the FBI's wiretapping needs with the industry's technical experts who develop the technologies. Consequently, these experts were not informed of the FBI's needs and were not involved in identifying technological alternatives and solutions until July 1990, when the FBI began technical discussions with them.

In addition, while the FBI conducted its own research on wiretapping, these research efforts were not coordinated with industry research and

---

<sup>4</sup>The cross-connect is located at the central office of the telephone company; this is where transmissions are converted from one form to another, e.g., from analog to digital.

---

development. As a result, neither the FBI nor the telecommunications industry had a comprehensive analysis of the technological alternatives for wiretapping current and emerging technologies.

---

## Recent FBI Actions to Define and Communicate Its Wiretapping Needs

Recently the FBI has taken actions to better define and communicate its wiretapping needs to the telecommunications industry.

The April 1992 proposal to amend the Communications Act of 1934 did not define the FBI's wiretapping needs. In contrast, the May 1992 proposal for separate legislation, which replaced the April proposal, contains specific high-level discussion of its needs. For example, the May proposal states that tapped data must be in the same form as that received by the target and the data must be in real time, independent of the target's location, undetectable, and capable of being transmitted to a listening device. It also specifies time limits for meeting the FBI's needs and gives the Department of Justice the authority to ensure compliance or grant exemptions.

However, the May proposal does not address what the telecommunications industry would need to do to be in full compliance with the proposal in the event it is enacted, the meaning of certain technical terms, or who would pay for the cost of wiretapping solutions. For example, the proposal did not specify the length of time allowed to install a wiretap after receipt of a court order. According to the FBI, it will address compliance in its wiretapping requirements document, which is being developed. The proposal also does not address the international implications of future technologies, such as PCN, on wiretapping. PCN will involve assigning a subscriber one telephone number. All calls will be billed to that number regardless of what instrument or network the subscriber uses. Using PCN, the subscriber may be anywhere in the world, and the service may be provided by any service provider using any technology. Since some of the service providers may be international, and since the providers may be outside the United States, the FBI will have to establish cooperative arrangements with foreign law enforcement agencies in order to wiretap.

In May 1992, the FBI formed a technical committee composed of staff from the FBI and the telecommunications industry. The purpose of this committee is to identify technological alternatives and select the alternatives that best meet the FBI's needs. As of June 1992, the committee was developing its charter. These FBI efforts are steps in the right direction.

---

## Scope and Methodology

We identified and assessed the technological alternatives for wiretapping in the following technologies: (1) analog and digital using copper wire transport, (2) analog and digital using fiber optic transport, (3) ISDN, (4) PBX, (5) broadband, (6) cellular, (7) satellite, (8) PCS, and (9) PCN. As part of our assessment, we also analyzed the wiretapping implications of special features associated with these technologies, such as call forwarding and voice mail. On the basis of our analysis of the technologies and discussions with representatives of the telecommunications industry, we identified the six primary wiretapping locations.

We also assessed the FBI's past and current actions to satisfy its wiretapping needs, including its April 1992 proposal to amend the Communications Act of 1934, and its May 1992 proposal.

We met with the FBI's Assistant Director and Deputy Assistant Director (Operations), Technical Services Division, and technical managers from the FBI Engineering Research Facility to discuss the FBI's progress in defining and communicating its wiretapping needs. We also held technical discussions on the above technologies with four Bell operating telephone companies, two switch manufacturers, two cellular providers, two cellular and satellite manufacturers, and the associations of the International Chiefs of Police and Major Cities Chiefs of Police. In addition, we contacted the National Security Agency, which told us that it does not have expertise in these areas. We performed our work at FBI's headquarters office in Washington, D.C., and Engineering Research Facility in Quantico, Virginia, as well as at the corporate offices of the industry representatives visited in various locations nationwide.

Our work was performed between April and June 1992 in accordance with generally accepted government auditing standards.

---

We did not obtain written comments on this report. However, we briefed FBI officials, including the Assistant Director and Deputy Assistant Director (Operations), Technical Services Division, on the results of our work and on our discussions with the telecommunications industry. These officials generally agreed with the facts as presented, including our technical assessment of the wiretapping alternatives. We have incorporated their views, as well as their updates on the FBI's planned actions, in the report as appropriate.

---

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan to make no further distribution until 30 days from the date of this letter. We will then send copies to the Attorney General; the Director of the Federal Bureau of Investigation; the Director, Office of Management and Budget; and interested congressional committees. Copies will also be made available to others upon request. This report was prepared under the direction of Howard G. Rhile, Director, General Government Information Systems, who can be reached at (202) 512-6418. Major contributors to this report are listed in appendix II.

Sincerely yours,



*for* Ralph V. Carlone  
Assistant Comptroller General





# Briefing Slides

---

GAO Information Management and  
Technology Division

---

**ADVANCED COMMUNICATIONS  
TECHNOLOGIES POSE  
WIRETAPPING CHALLENGES**

Briefing to Staff,  
House Committee on Energy  
and Commerce, Subcommittee  
on Telecommunications and  
Finance

June 26, 1992

---

---

## GAO Objectives

---

- What technological alternatives are currently available to the FBI to wiretap voice and data communications?
  - What is the least intrusive level of network changes needed to enable telephone companies to accommodate wiretaps?
-

---

## GAO Objectives (cont'd.)

---

- What is the estimated cost of developing and implementing such changes?

---

## GAO Overview

---

- Technological alternatives available to wiretap voice and data communications have not been defined
  - Least intrusive/minimally necessary wiretapping alternatives will vary by technology
  - Costs will depend on technical alternatives chosen
-

---

## GAO Background

---

- By wiretapping, we mean
    - real time access
    - two-way communication monitoring
    - regardless of target's location
  - Wiretapping is an essential FBI information gathering tool
-

---

## GAO Background (cont'd.)

---

- Federal and state statutes govern wiretapping
  - Rapidly changing telephony environment requires different wiretapping capabilities
  - FBI has developed proposal to address telephony changes
-

---

## GAO Scope

---

- Technical discussions with
- Local telephone companies
  - Switch manufacturers
  - Cellular/satellite providers
  - FBI and NSA
  - State/local associations
-



---

## GAO Locations of Wiretap

---

- At premises
  - Between premises and cross-connect
  - At the cross-connect
  - At the land line switch
  - At the cellular switch
  - At the satellite switch
-

---

**GAO Past Attempts to Define  
Alternatives Unsuccessful**

- Law enforcement wiretapping needs not clearly defined
  - FBI/industry technical discussions on wiretapping needs not begun until July 1990
  - FBI research not coordinated with industry
  - Unclear responsibility for cost and implementation of technical solutions
-

---

## GAO FBI Corrective Actions

---

- May 1992 - Drafted wiretapping requirements and proposed legislation
  - May 1992 - Established technical committee with industry officials
  - Continuing to conduct independent research to find technical solutions
-

---

**GAO May 1992 Proposal to Clarify  
Wiretapping Responsibilities**

---

- Provides general FBI wiretapping needs to maintain current wiretapping capabilities
  - Specifies industry responsibilities and time limits for meeting FBI's needs
  - Gives Justice authority to ensure compliance or grant exceptions
-

---

## GAO What Is Not Addressed in Proposal

---

- Specifics on what is full compliance (e.g., response time, sizing, etc.) and the meaning of technical terms
  - Draft May 1992 wiretapping requirements intended to provide specifics on full compliance
  - Who pays for the cost of solutions
-

---

## GAO Costs

---

- Cost and feasibility studies on the changes needed have not been conducted
  - Least intrusive/minimally required tapping method may increase costs
  - Industry may seek reimbursement through government agencies
-

---

## GAO Overall Assessment

---

- FBI is finally moving in right direction to define its wiretapping needs and communicate with industry
  - FBI still needs to
    - Finalize wiretapping needs including specifics on what is meant by full compliance and by technical terms
    - Resolve cost and feasibility of technical alternatives and solutions
-

---

## GAO Overall Assessment (cont'd.)

---

- Define least intrusive/minimally necessary alternatives for each technology
  - Also, FBI needs to work with foreign law enforcement agencies to establish cooperative agreements for wiretapping foreign service providers of new, emerging technology
-



---

# Major Contributors to This Report

---

**Information  
Management and  
Technology Division,  
Washington, D.C.**

**William D. Hadeisty, Technical Assistant Director  
Dr. Rona B. Stillman, Chief Scientist  
Stephen A. Schwartz, Assistant Director  
Brian C. Spencer, Evaluator-in-Charge  
Robert C. Sorgen, Senior Evaluator**

---

**Office of General  
Counsel**

**Raymond J. Wyrsh, Legal Counsel**



---

### **Ordering Information**

**The first copy of each GAO report is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.**

**U.S. General Accounting Office  
P.O. Box 6015  
Gaithersburg, MD 20877**

**Orders may also be placed by calling (202) 275-6241.**

United States  
General Accounting Office  
Washington, D.C. 20548

Official Business  
Penalty for Private Use \$300

First-Class Mail  
Postage & Fees Paid  
GAO  
Permit No. G100