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TELECOMMUNICATIONS

FTS 2000 Cost Comparison





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

Accounting and Information
Management Division

B-266140

May 31, 1996

The Honorable Richard C. Shelby
Chairman
The Honorable J. Robert Kerrey
Ranking Minority Member
Subcommittee on Treasury,
Postal Service and General Government
Committee on Appropriations
United States Senate

The Honorable Jim Lightfoot
Chairman
The Honorable Steny H. Hoyer
Ranking Minority Member
Subcommittee on Treasury,
Postal Service and General Government
Committee on Appropriations
House of Representatives

We are required by Section 629(c) of Public Law 104-52 of the Fiscal Year 1996 Treasury, Postal Service, and General Government Appropriations Act to deliver a comprehensive analysis of the cost of certain federal agency telecommunications services no later than May 31, 1996. As agreed with your offices, this report identifies which agencies are using the Federal Telecommunications System (FTS 2000) and compares telecommunications costs between selected agencies that use FTS 2000 and those that do not to provide insight on the cost-effectiveness of FTS 2000.

The General Services Administration (GSA) administers the FTS 2000 contracts for the federal government.¹ We focused our review on four FTS 2000 services: switched voice and dedicated transmission—which make up the bulk of FTS 2000 use—and packet switched and compressed video transmission. The glossary at the end of this report explains these services and other technical terms.

Agencies we collected information from that use non-FTS 2000 contracts include the Department of Defense, Federal Aviation Administration (FAA),

¹GSA has two prime contractors for FTS 2000, AT&T (Network A) and Sprint (Network B).

the Postal Service, and the Federal Reserve.² We also collected information concerning GAO's use of the Architect of the Capitol's contract with MCI, which provides telecommunications services to the Legislative Branch, and GAO's use of the U.S. Senate's contract with AT&T for frame relay services. We used the services of a private contractor, Snavelly King & Associates, Inc., to review and analyze data we collected from federal agencies on telecommunications costs. The results of its review are included in appendix I.

Although the non-FTS 2000 contracts we analyzed provide services similar to FTS 2000, these services are not necessarily identical. For example, some contracts include costs for hardware needed to support an agency's networking requirements. In conducting our analyses, we made every effort to account for these differences, thus ensuring that the services analyzed were reasonably comparable.

Results in Brief

As of March 31, 1996, 139 agencies and other government entities were using telecommunications services provided under the FTS 2000 contracts. Our comparison of telecommunications costs incurred by a sample of agencies that use non-FTS 2000 networks with what FTS 2000 would cost produced mixed results, with some costs comparable, some less, and others more.

Background

FTS 2000 provides intercity telecommunications to almost 1.7 million federal government users nationwide. The program provides five principal services: switched voice, switched data, dedicated transmission, packet switched, and video transmission. When the program began in 1988, GSA awarded two 10-year contracts, one to AT&T (Network A) and one to Sprint (Network B). As permitted by the contracts, in 1992 and 1995, GSA conducted price redetermination/service reallocation competitions, where each vendor could bid for a share of the other's FTS 2000 traffic. As a result of the 1995 recompetition, AT&T's revenue allocation increased from 60 to 76 percent, while Sprint's dropped from 40 to 24 percent. New prices resulting from the 1995 recompetition took effect in December 1995. Current contracts expire in 1998.

A policy of mandatory use by executive agencies has been an integral part of the FTS 2000 program since its inception. Under regulations issued by GSA

²Except for the Federal Reserve, all of the agencies we reviewed use FTS 2000 to some extent. Defense, for example, is one of the federal government's largest volume users of FTS 2000 voice services.

pursuant to its Brooks ADP Act authority, agencies have been required to use FTS 2000 services unless GSA granted an exception.³ Additionally, beginning with fiscal year 1989, the Congress has included a provision in the annual Treasury, Postal Service, and General Government appropriations act, reinforcing the mandatory use policy.

A number of agencies, including the FAA and Defense have obtained waivers from GSA, mainly for certain data communications services used to support their own networks. A few other agencies, such as the U.S. Postal Service and the Federal Reserve, are not covered by the mandatory use provision, and thus are free to obtain intercity telecommunications services on the open market. Similarly the Legislative Branch, of which GAO is a part, is not covered by the FTS 2000 mandatory use requirement, and obtains much of its intercity telecommunications services from the Architect of the Capitol's contract with MCI.⁴ GAO also obtains frame relay services from the U.S. Senate's contract with AT&T.

Scope and Methodology

To determine which government agencies are using FTS 2000 services, we obtained a listing of FTS 2000 users from GSA. To analyze the cost-effectiveness of FTS 2000 services, we first reviewed a number of reports concerning FTS 2000 costs. These include a January 1993 report for the Interagency Management Council,⁵ FTS 2000 Cost Effectiveness Comparison Acquisition Price Analysis, by Snively King and Associates, and a July 1995 report, The GSA Report to Congress on the Cost Effectiveness of the FTS 2000 Program. We then obtained GSA summary data of overall FTS 2000 billing for fiscal year 1995, for all agencies and services.

On the basis of this analysis, we decided to focus our cost comparison on four services—switched voice and dedicated transmission—which account for around 91 percent of FTS 2000 costs—and packet switched and compressed video transmission. We did not evaluate the cost of switched data services because of insufficient traffic data from our sample of

³Sections 5101 and 5124 of the Information Technology Management Reform Act of 1996, Public Law No. 104-106, February 10, 1996, repealed the Brooks Act, but provided GSA continuing authority to manage the FTS 2000 program.

⁴The Senate, the House of Representatives, and the Architect of the Capitol are not covered by "mandatory use" of FTS 2000, since none is a "Federal agency" for purposes of the Brooks ADP Act. See 40 U.S.C. § 472(b). Additionally, section 306 of the Legislative Branch Appropriations Act, 1991, Public Law No. 101-520, 104 Stat. 2254, November 5, 1990, provides that, "notwithstanding any other provision of law," legislative branch agencies are "authorized to use telecommunications systems and services provided by the Architect of the Capitol or the House of Representatives or the Senate."

⁵The Interagency Management Council is a senior-level advisory group responsible for developing governmentwide telecommunications strategies and policies.

contracts. We selected five government agencies that use various non-FTS 2000 services: Defense, FAA, the Federal Reserve, the Postal Service, and GAO. We met with telecommunications officials at each of these agencies to determine which services would be appropriate for our cost comparison. We used telecommunications prices that were in effect March 1, 1996. In doing so, we recognized that the telecommunications marketplace is volatile and that prices are continually changing.

We obtained contract pricing and call detail information from the Defense Information Systems Network Transition Contract (DTC) with AT&T, which is used to support the Defense Switched Network (DSN). We also obtained contract pricing, billing, and call detail information for switched voice services received by the Federal Reserve Board under its contract with MCI and by GAO under the Legislative Branch's MCI contract.

To analyze the cost-effectiveness of FTS 2000 dedicated circuit prices, we obtained current contract prices and billing information for non-FTS 2000 networks maintained by the Department of Defense, FAA, the Federal Reserve, and the Postal Service. GAO had only a few dedicated circuits and, therefore, was not included in this analysis. The contracts for dedicated transmission include

- Defense's DTC contract with AT&T for 9.6 analog, 9.6 digital, 56/64 digital, and T-1 circuits;
- the FAA's Leased Interfacility National Airspace System Communications System (LINCS) contract with MCI, for 9.6 analog, 9.6 digital, 56/64 digital, and T-1 circuits;
- the Federal Reserve's contracts for the Federal Reserve Network (FEDNET) with AT&T, MCI, and Sprint, all for T-1 circuits; and
- the Postal Service's Remote Bar Coding System (RBCS) contract with MCI and the Postal Integrated Telecommunications Network (PITN) contract with Sprint, both for T-1 circuits.

To analyze the cost-effectiveness of FTS 2000 packet switched services, we obtained contract pricing, billing, and traffic data on frame relay service (a version of packet switching) GAO receives under the Senate contract with AT&T. To evaluate the cost of FTS 2000 compressed video transmission services, we obtained contract pricing, billing, and traffic data on video service GAO receives under the Legislative Branch's contract with MCI.

We contracted with Snavelly King and Associates, an economic and management consulting firm, which compared the costs incurred for

services acquired under non-FTS 2000 contracts with what these services would cost under FTS 2000. Snavely King employed Mitretek Systems pricing models to determine the cost of different agencies' services on FTS 2000.⁶ Appendix I contains the results of Snavely King's analysis as well as its approach and methodology.

In conducting its analysis, Snavely King excluded all overhead costs incurred by the government for the provision of telecommunications services, regardless of whether or not these costs are passed on to individual federal agencies. In addition, Snavely King did not attempt to quantify the cost or value of any unique government requirements and constraints imposed by law, executive order, federal policy, or mission requirements of any federal agency.

We conducted our work at federal agencies in the Washington, D.C., area, and at the Defense Information Technology Contracting Organization, Scott Air Force Base, Illinois. Our review was conducted from February 1996 through May 1996 in accordance with generally accepted government auditing standards. The quantitative financial information used in this report on total FTS 2000 costs for fiscal year 1995 was produced from GSA's billing systems; it was not independently verified by GAO.

FTS 2000 Agencies and Services

As of March 31, 1996, 139 agencies and other government entities were using telecommunications services provided under the FTS 2000 contracts. In fiscal year 1995, GSA billed federal agencies and other organizations nearly \$680 million⁷ for FTS 2000 services—principally for switched voice services, which cost a reported \$450 million (66 percent of all FTS 2000 services), and dedicated transmission services, which cost a reported \$172 million (25 percent). Appendix II lists each of the FTS 2000 user agencies, the services they are using, and assigned networks.

Cost Comparison of FTS 2000 Services

Our comparison of telecommunications costs incurred by a sample of agencies that use non-FTS 2000 networks with what FTS 2000 would cost produced mixed results. The following sections detail our findings concerning switched voice services, dedicated transmission, and other services.

⁶Mitretek Systems is a not-for-profit, private consulting firm that provides ongoing technical and management support to the FTS 2000 program.

⁷This total excludes an additional \$59 million for GSA program support, reserves, and taxes.

FTS 2000 Switched Voice Services

For switched voice services, Snavelly King analyzed over 86 million calling minutes from the Defense Switched Network's October 1995 billing records.⁸ Snavelly King analyzed about 270,000 calling minutes from the Federal Reserve Board's January 1996 records and over 350,000 calling minutes from GAO's October 1995 billing records.⁹

As table 1 shows, Defense's switched voice costs, as measured by the costs the Defense Information Systems Agency (DISA) charges to military departments and other end users under the Defense Business Operations Fund (DBOF) for routine calls, would be significantly lower (75 percent) if those services had been acquired from Network A, but slightly higher (8 percent) if acquired from Network B.¹⁰ In commenting on these results, Defense officials stated that the cost differences are based upon a 1-month traffic sample in a routine operational environment, and that the figures could vary significantly if the Department was responding to a military crisis. Also, according to Defense officials, the cost to satisfy command and control requirements for assured communications, which are not available from FTS 2000, has not been considered as a factor in the cost comparison. However, at this time, these officials were unable to quantify the impact of this requirement on our cost comparison.

Snavelly King also found that the Federal Reserve's switched voice service costs were roughly comparable to FTS 2000 costs, ranging from 4 percent more to 5 percent less. Overall, GAO's switched voice service costs, which include both outbound and 800 services, were roughly comparable to FTS 2000 costs. Outbound services, which represent over 80 percent of GAO's switched voice costs, would have cost about the same on Network A and slightly more (8 percent) on Network B. The 800 service, which represents

⁸This calling volume includes all calls terminating and originating on-net during a 22-day period beginning October 1, 1995. Snavelly King extrapolated this call volume to a full month for volume purposes.

⁹In late March 1996, the Legislative Branch exercised an option on its MCI contract and obtained an approximate reduction of 15 percent in its switched voice service costs, retroactive to January 1, 1996. Likewise, the Federal Reserve Board negotiated a 1-year extension to its MCI contract and, effective in late May, will receive rate reductions ranging from around 8 to 14 percent. There was insufficient time for us to incorporate these rates into our FTS 2000 cost comparison.

¹⁰Under Defense's call precedence structure, a routine call is the lowest priority call, and thus is comparable to an FTS 2000 call.

less than 20 percent of GAO's switched voice costs, would cost 19 percent less on Network A and 38 percent less on Network B.¹¹

Table 1: Switched Voice Services

Contracting federal agency (contract/program)	Contract provider	Non-FTS 2000 contract rates	Usage and monthly recurring costs ^a			
			FTS 2000 rates Network A (AT&T)		FTS 2000 rates Network B (Sprint)	
Department of Defense ^b	AT&T					
(DTC Contract - Total)		\$4,613,291	\$1,161,994	-75%	\$4,977,498	+8%
(DTC Contract - Avg. Cents Per Minute)		5.32¢	1.34¢		5.74¢	
Federal Reserve Board of Governors	MCI					
(Outbound Service - Total)		\$22,375	\$21,335	-5%	\$23,278	+4%
(Outbound Service - Avg. Cents Per Minute)		8.28¢	7.89¢		8.61¢	
Legislative Branch (GAO usage)	MCI					
(Outbound Service - Total)		\$25,819	\$25,836	0%	\$27,966	+8%
(Outbound Service - Avg. Cents Per Minute)		7.30¢	7.31¢		7.91¢	
(800 Service - Total)		\$5,207	\$4,204	-19%	\$3,249	-38%
(800 Service - Avg. Cents Per Minute)		14.39¢	11.62¢		8.98¢	

^aThe FTS 2000 costs represent the effect of non-FTS 2000 contract usage as an incremental addition to the actual FTS 2000 usage in the test month. That is, the hypothetical cost of non-FTS 2000 traffic using FTS 2000 rate structures reflects the rates that would be obtained with the combined traffic volumes of the two (FTS 2000 and non-FTS 2000) contracts.

^bRates used are not actual contract rates charged by AT&T for this service, but are the DBOF rates used for cost recovery purposes by DISA. According to Defense officials, the DBOF rates are supposed to recover the full operating and maintenance costs of DSN. These costs include transmission lease costs, switch operations and maintenance, contract services, depreciation expenses for capital equipment, a rate stabilization fee (designed to account for any unexpected variation in cost to DBOF, and an overhead fee associated with the operations of the Defense Information Technology Contracting Office worldwide and the DISA Comptroller Revolving Fund Division. The rates for routine services include costs for command and control features, such as dual homing, alternative routing, redundancy, and survivability. Also, according to Defense officials, for fiscal year 1996, the rate stabilization fee was 3 percent, and the overhead fee was 2 percent. In addition to these special fees, they stated that Defense is currently receiving a 9.5 percent discount (transition fee) on switched voice service that is being retained by DBOF to offset future network transition costs. The 2 percent overhead fee has been removed from the rate calculation above. The transition fee and the rate stabilization fee are still included in that calculation.

¹¹FTS 2000 prices are likely to fall significantly over the next 6 months. First, as a result of the 1995 Price Redetermination and Service Reallocation recompetition, the Treasury Department is moving its FTS 2000 traffic from Network B to Network A, and, according to GSA officials, reductions in switched voice prices of up to 24 percent will occur around July 1996 when increased traffic volumes are achieved. In addition, on May 23, 1996, Sprint announced it was reducing its switched voice prices an average 27 percent on October 1, 1996. In its analysis, Snaveley King used current prices, not those that will go into effect later this year.

FTS 2000 Dedicated Transmission Services

For dedicated transmission service, Snavelly King analyzed over 12,000 circuit prices from contracts at Defense, the FAA, the Federal Reserve, and the Postal Service, and compared them with what they would cost on FTS 2000. As table 2 shows, Snavelly King found that Defense would pay between 8 and 15 percent less if it acquired this service under FTS 2000. The FAA, however, would pay 10 percent more on Network A and 21 percent more on Network B if it acquired the same circuits from FTS 2000. In total, the Federal Reserve's costs for circuits from all three FEDNET contracts would be slightly higher on Network A, but comparable on Network B. However, as shown in the table, the results of our comparison of FTS 2000 circuit costs with individual FEDNET contracts varied greatly, with the costs on Network A varying from 14 percent less to 82 percent more and on Network B from 23 percent less to 70 percent more. For services under both of its non-FTS 2000 contracts, the Postal Service would pay significantly more for circuits on FTS 2000, ranging from 54 percent to 83 percent more.

Table 2: Dedicated Transmission Services

Contracting federal agency (contract/program)	Contract provider	Non-FTS 2000 contract rates	Usage and monthly recurring costs			
			FTS 2000 rates Network A (AT&T)		FTS 2000 rates Network B (Sprint)	
Department of Defense (DTC Contract)	AT&T	\$3,623,452	\$3,340,995	-8%	\$3,089,596	-15%
Federal Aviation Administration (LINCS Contract)	MCI	\$2,390,989	\$2,642,317	+10%	\$2,905,113	+21%
Federal Reserve System						
(FEDNET Program)	AT&T	\$116,377	\$119,044	+2%	\$105,618	-9%
(FEDNET Program)	MCI	\$113,465	\$97,161	-14%	\$87,825	-23%
(FEDNET Program)	Sprint	\$49,014	\$89,149	+82%	\$83,352	+70%
U.S. Postal Service						
(RBCS Replacement Project)	MCI	\$164,696	\$268,900	+63%	\$272,447	+65%
(PITN Replacement Project)	Sprint	\$84,737	\$155,227	+83%	\$130,809	+54%

Other FTS 2000 Services

Snavelly King analyzed the cost of two other FTS 2000 services: packet switched services and compressed video transmission, and the results varied. It found that the frame relay service GAO receives under the Senate contract with AT&T would be more expensive on FTS 2000, ranging from 31 percent more on Network A to 15 percent more on Network B. Snavelly King also analyzed the cost of video transmission service GAO receives under the Legislative Branch's MCI contract and found it would be roughly

the same (3 percent more) on FTS 2000. Snavelly King's analysis is summarized in table 3.

Table 3: Other Services

Contracting federal agency (contract/program)	Contract provider	Non-FTS 2000 contract rates	Usage and monthly recurring costs			
			FTS 2000 rates Network A (AT&T)		FTS 2000 rates Network B (Sprint)	
U.S. Senate Frame Relay Contract (GAO usage)	AT&T	\$69,593	\$90,880	+31%	\$79,723	+15%
Legislative Branch Contract-Video Services (GAO usage)	MCI	\$21,015	\$21,721	+3%	^a	

^aNetwork B's video transmission service is not equivalent to what MCI provides; therefore, no cost comparison could be performed.

Agency Comments and Our Evaluation

We obtained written comments on a draft of this report from GSA. A summary of GSA's comments and our evaluation follows. The full text of GSA's written comments is provided in appendix III. For those agencies that we evaluated, we provided sections from Snavelly King's draft report pertaining to their contract costs. Because of the short time frame for producing this report, we asked that these agencies limit their responses to commenting on the accuracy of the information presented. Both we and Snavelly King have incorporated these comments, where appropriate, in our respective reports.

Defense officials provided views on our contractor's report. A summary of our discussions with Defense officials and our evaluation follows.

GSA Comments

In its comments, GSA expressed three principal concerns. First, GSA questioned the emphasis placed on the percentage differences between contracts, without recognizing the magnitude of services provided in each case and the cumulative savings based on volume and total usage of the program. Second, GSA stated that our report was misleading and out-of-date because it used prices in effect at a single point in time, and therefore does not reflect the significant reduction in FTS 2000 prices which will occur when the Department of the Treasury moves from Network B to Network A. Likewise, GSA stated that the report does not reflect the reduced prices for Network B switched voice services which Sprint announced on May 23, 1996. Finally, concerning DTS prices, GSA stated that

there has been, in some cases, a comparison of a limited quantity of street prices, (what it calls “cream skimming”) against comprehensive FTS 2000 contracts which require the same prices everywhere.

We discussed these concerns with GSA officials and analyzed their written comments. We disagree with GSA’s assessment of our report. First, we disagree that our report should emphasize cumulative savings rather than percentage differences in contract costs. The purpose of this study was to perform a contract-by-contract comparison of costs for selected non-FTS 2000 contracts and FTS 2000 contracts—and that is how the results are provided in each of the tables. Further, in doing this cost comparison, we gave FTS 2000 every advantage, by costing out other contracts as an incremental addition to FTS 2000’s huge volume and by stripping out GSA’s 8 percent overhead charge.

Second, we disagree that our report is either misleading or out-of-date because of the prices we used. Any cost comparison in a market as volatile as telecommunications is a snapshot in time and subject to change, as we clearly state in our methodology. By design, we devised a methodology to perform cost comparisons based on prices that were in effect on March 1, 1996—not those that had yet to go into effect. Still, we recognize that because of the dynamics of the telecommunications environment, the results of this study, if performed 6 months later, for example, might be very different. In our report, we explicitly recognize that FTS 2000 costs are likely to drop significantly over the next 6 months. For example, in a footnote on page 6 we discuss how the Treasury Department’s move from Network B to Network A will result in reduced prices on AT&T’s network, and we discuss Sprint’s recently announced price reductions. Similarly, we recognize in our report that both the Legislative Branch and the Federal Reserve Board have recently either exercised contract options or negotiated contract extensions that reduce the prices they pay for communications services.

Finally, concerning GSA’s discussion of “cream skimming” of DTS prices, we did not attempt to determine the reasons behind variations in contract costs. Our objective, as detailed in Public Law 104-52, was to compare the costs. GSA claims that because of “cream skimming” some agencies have been able to acquire DTS at much lower prices than those charged by FTS 2000. However, GSA offers no evidence to support its claim. The facts are that in a number of cases agencies, such as the Postal Service, have been able to acquire much better DTS prices on the open market.

Defense Views

We discussed the contents of our contractor's report with Defense officials, and they expressed concerns about comparing the telecommunications services obtained through these different contracts. Although these officials agreed that the DTC rates they are paying are much too high, they stated that the report fails to recognize and account for the very distinct differences between DTC and FTS 2000. These officials cited a number of unique requirements that would need to be considered when comparing service costs. For example, they noted that significant additional investment would be required to enable FTS 2000 to support its Command and Control mission needs, including support for interfaces and connectivity to other Defense networks, support for Defense's worldwide numbering plan, and other costs related to interoperability with deployed and tactical forces. Also, Defense officials stated that the DBOF rates used in the analysis include additional operations and support costs related to their global environment.

We agree that the non-FTS 2000 contracts we analyzed, including DTC, provide services similar to but not necessarily identical to FTS 2000. Still, in conducting our analyses, we made every effort to account for differences in services, thus ensuring that the services analyzed were reasonably comparable. For example, in comparing DTC/DSN costs with FTS 2000, we analyzed only routine traffic originating and terminating within the continental United States, which accounted for nearly 84 percent of our traffic sample, and which is comparable with—but not identical to—typical FTS 2000 voice traffic. We did not compare the cost of the remaining 16 percent because it comprised voice services that have no equivalent on FTS 2000, such as traffic having a higher precedence level.

We also agree that additional charges in the DBOF rates for operations and support costs, could account, as least in part, for higher Defense costs. We believe that Defense should be able to estimate the value of these operations and support requirements, and evaluate their impact on costs. However, Defense officials provided no evidence at this time as to the cost of these requirements or their impact on DBOF rates. As a result, Defense officials were unable to explain the significant difference between FTS 2000 and DTC/DSN rates.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we will not distribute it until 30 days from its issue date. At that time, we will send copies of this report to other interested congressional committees and the heads of all federal agencies listed in the report. Copies will also be sent to others upon request.

This report was prepared under the direction of Linda D. Koontz, Associate Director, who may be reached at (202) 512-6240 if you or your staff have any questions. Other major contributors to this report are listed in appendix IV.

A handwritten signature in black ink, appearing to read 'J. Brock, Jr.', with a stylized, flowing script.

Jack L. Brock, Jr.
Director, Information Resources
Management/General Government Issues

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Abbreviations

CVTS	Compressed Video Transmission Service
DBOF	Defense Business Operations Fund
DISA	Defense Information Systems Agency
DITCO	Defense Information Technology Contracting Organization
DSN	Defense Switched Network
DTC	DISN Transition Contract
DTS	Dedicated Transmission Service
FAA	Federal Aviation Administration
FEDNET	Federal Reserve Network
FTS 2000	Federal Telecommunications System 2000
GSA	General Services Administration
LINCS	Leased Interfacility National Airspace System Communications System
PITN	Postal Integrated Telecommunications Network
PSS	Packet Switched Services
RBCS	Remote Bar Coding System
SDIS	Switched Digital Integrated Services
SDS	Switched Data Services
SVS	Switched Voice Services

Snavely King and Associates' Telecommunications Cost Study

Cost Comparison Study of Federal Telecommunications Contracts

for

U.S. General Accounting Office

by

Snavely King Majoros O'Connor and Lee, Inc.

Washington, D.C.

Study performed under

GSA Contract No. GS00K95AHD0003

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**Cost Comparison Study of
Federal Telecommunications Contracts
for
U.S. General Accounting Office**

I. Executive Summary

As required by legislation enacted as part of the Fiscal Year 1996 Appropriations laws, the GAO initiated a study to determine the cost-effectiveness of telecommunications contracts obtained by federal agencies outside of the government's own telecommunications program -- the FTS 2000. To meet this requirement in a timely manner, the GAO engaged Snively King Majoros O'Connor & Lee, Inc. ("Snively King") to conduct a study comparing the cost of these non-FTS 2000 contracts with the cost of the equivalent services had those services been provided under either of the FTS 2000 contracts. This report presents Snively King's findings.

For the cost comparisons in this study, GAO identified the following federal agencies that use outside sources for one or more of the services that are also available under one of the FTS 2000 contracts:

- Department of Defense contracts with AT&T for Switched Voice and Dedicated Transmission Services;
- Federal Aviation Administration contract with MCI for Dedicated Transmission Services;
- Federal Reserve Board contract with MCI for Switched Voice Services;
- Federal Reserve System contracts with AT&T, MCI and Sprint for Dedicated Transmission Services;
- Legislative Branch contracts with MCI for Switched Voice (including 800 service) and Compressed Video Transmission Services;

- U.S. Postal Service contracts with MCI and Sprint for Dedicated Transmission Services; and
- U.S. Senate contract with AT&T for Packet Switched Services (Frame Relay).

While both of the FTS 2000 contracts include Switched Data Services, Snavely King performed no cost comparisons for this service. Switched Data Services were excluded because the traffic sample from the only non-FTS 2000 contract with this service -- the Legislative Branch contract with MCI -- was too small to produce a statistically valid comparison. Also, with the extensive use of modems in recent years, most lower speed data messages are transmitted over the general switched network in a form that cannot be distinguished from analog "voice" calls.

Switched Voice Service represents the largest single service category under either of the FTS 2000 contracts. This service accounts for approximately 66 percent of the total FTS 2000 billings. The contracts used in the comparison for this service were from the following federal agencies -- Department of Defense, Federal Reserve Board of Governors and the Legislative Branch. Nearly all of the services obtained through these contracts could have been obtained at lower cost on the FTS 2000 Network A. On the other hand, the FTS 2000 Network B costs were greater than the contract costs, except for 800 services.

Dedicated Transmission Services, although not as large in aggregate billings as Switched Voice Services, are important telecommunications facilities employed by most federal agencies. The four contracts used in the comparison for this service were with the following federal agencies -- Department of Defense, Federal Aviation Administration, Federal Reserve System and U.S. Postal Service.

Overall, the cost of obtaining DTS under the FTS 2000 contracts would have been greater than under the individual agencies' contracts. However, there are significant disparities among the non-FTS 2000 contracts. For instance, the cost of the Department of Defense circuits using the rates of both FTS 2000 networks was lower than the cost of those circuits on the Department's own contract with AT&T. On the other hand, the FTS 2000 costs for the Federal Aviation Administration circuits and the U.S. Postal Service circuits would be greater than the costs of those circuits on the agency's own contracts.

Packet Switched Services are now being obtained by federal agencies in the form of Frame Relay services. These services, which are relatively new options in the FTS 2000 contracts, are ideally suited for the interactive and related communications applications that involve irregular bursts of high speed data. The U.S. Senate's contract with AT&T was employed as the basis for the comparison of this service. The cost of the Frame Relay services would have been greater under the FTS 2000 Network A and Network B rates than under the Senate's contract with AT&T.

Compressed Video Transmission Services are employed primarily for video teleconferencing and distance learning. As such, the proportion of usage for these services is a relatively small in comparison to the other services analyzed in this study. The Legislative Branch contract with MCI served as the basis for comparison with the FTS 2000. The cost of these services using the FTS 2000 rates for Network A would have been more than the cost of these services under the MCI contract.

II. Project Overview

A. Purpose

The purpose of this study is to compare the costs of telecommunications services obtained by federal agencies through individual telecommunications contracts with the costs of comparable services provided through the government's own inter-city telecommunications program, the Federal Telecommunications System 2000 ("FTS 2000"). Snavey King Majoros O'Connor and Lee, Inc. ("Snavey King") conducted this study for the U.S. General Accounting Office ("GAO") during the period February 26, 1996 through May 31, 1996 under General Service Administration ("GSA") Contract No. GS00K95AHD0003.

B. Background

The Federal Telecommunications System was initially created in 1963 to meet the inter-city telecommunications needs of the federal government. By purchasing services in the aggregate, the GSA was able to provide significant cost savings to 1.3 million government users. However, the telecommunications industry and the federal government's requirements changed markedly over two decades. Therefore, in the early 1980s, the GSA began to develop a replacement for the Federal Telecommunications System. In December 1986, the GSA issued a request for proposals for a replacement system called the FTS 2000. Two years later, on December 7, 1988, 10-year FTS 2000 contracts were awarded to two firms -- AT&T Corp. ("AT&T") and Sprint Communications Company, L.P. ("Sprint").

Today, the FTS 2000 provides the federal government with state-of-the-art long distance voice, data and video telecommunications services. The principal FTS 2000 services are:

- Switched Voice Services ("SVS");
- Dedicated Transmission Services ("DTS");
- Packet Switched Services ("PSS");

- Switched Data Services ("SDS"); and
- Compressed Video Transmission Services ("CVTS").

The FTS 2000 contracts for these services allow for the prices and the service allocations between the vendors to be re-determined in the fourth and seventh years. The second of these re-determinations has been completed and the rates became effective on December 7, 1995.

Under the FTS 2000 contracts, the two vendors are responsible for providing complete end-to-end telecommunications services between Service Delivery Points ("SDP"), including network management, service ordering, billing, and network trouble handling. In contrast to the practice of managing the government's own leased network facilities under the previous FTS, GSA oversees the vendor's delivery of services to ensure contract compliance under the FTS 2000.

C. Scope

During the past several decades, a number of government agencies have contracted with vendors outside of the FTS 2000 system to obtain some telecommunications services. In response to legislation enacted as part of the Fiscal Year 1996 Appropriations laws, the GAO was required to conduct a study of these non-FTS 2000 contracts. To evaluate the cost-effectiveness of these contracts, the GAO engaged Snively King to conduct a study comparing the costs to government agencies of obtaining services under these contracts with the costs they would have incurred if they had obtained the services under the FTS 2000.

For the cost comparisons in this study, GAO identified a number of contracts between government agencies and telecommunications carriers to provide one or more services which are also available under the FTS 2000. Most of these contracts involved the same carriers that provide services under the FTS 2000 program. These

comparison contracts are listed by service and federal agency as follows:

Switched Voice Services

- Department of Defense contract with AT&T;
- Federal Reserve Board contract with MCI;
- Legislative Branch contract with MCI for outbound services (GAO usage); and
- Legislative Branch contract with MCI for 800 services (GAO usage).

Dedicated Transmission Services

- Department of Defense contract with AT&T;
- Federal Aviation Administration contract with MCI;
- Federal Reserve System contracts with AT&T, Sprint and MCI; and
- U.S. Postal Service contracts with MCI and Sprint.

Packet Switched Services

- U.S. Senate contract with AT&T for Frame Relay services (GAO usage).

Compressed Video Transmission Services

- Legislative Branch contract with MCI (GAO usage).

Snively King did not perform any cost comparisons for Switched Data Services contained in the FTS 2000. The Legislative Branch contract with MCI was the only identified contract which also provided for this service, and it was not possible to obtain a specific sample of "data" messages transmitted in any month. Indeed, with the extensive use of modems in recent years, most lower speed data messages are transmitted over the general switched network in a form that cannot be distinguished from analog "voice" calls. At the other end of the spectrum, high speed data transmission requirements are being met by Frame Relay and other technologies. Therefore, SDS as previously defined is becoming less important.

D. Study Methodology and Assumptions

To determine the costs of services obtained under outside contracts as if they were procured through the FTS 2000, it was necessary to apply the complex FTS 2000 rate structures to these services. One unique feature of the FTS 2000 contracts is the fact that charges under the FTS 2000 depend strongly on calling volumes. Indeed, these calling volumes are relevant in the aggregate, as a basis from which the network usage rates are determined, and also relevant at individual SDPs or circuit terminations, where the concentration of traffic defines the applicable usage charges for network access facilities. This complexity allows for a wide range of potential rates for similar calls under the FTS 2000, even within a small geographic region.

To obtain an estimate of the cost of telecommunications services under the complex rate structures of the FTS 2000, it was necessary to determine the cost of the non-FTS 2000 contract usage as an incremental addition to the actual FTS 2000 usage in a test month. That is, the hypothetical price of the non-FTS 2000 contracts using the FTS 2000 rate structures must reflect the rates that would be obtained with the combined traffic volumes of the two contracts.

To adjust for variations in traffic volumes, Snively King attempted to conduct as many analyses as possible using measures of usage for October 1995. This month was selected as an attempt to represent a "normal" period without major holidays or severe weather conditions. If usage data was not available for October 1995, data for a later month was employed. However, in all cases Snively King used the FTS 2000 prices in effect as of December 7, 1995.

In addition, while some changes in FTS 2000 contract prices are expected because of the transfer of the Department of Treasury from Network B to Network A, Snively King made no attempt to extrapolate the effect of this shift on the costs of using the FTS 2000. In all cases, Snively King employed the FTS 2000 rates in effect before the transfer of the Treasury's traffic.

Because of the complexity of the FTS 2000 rate structures, and differences between contract terms in the FTS 2000 and non-FTS 2000 contracts, Snavely King made several assumptions concerning traffic data and accounting records to make the comparisons more accurate and consistent. First, Snavely King did not include any costs related to the transition or reassignment of services to or between contracts, or the non-recurring charges incurred to initiate, move or change services. Second, Snavely King excluded all "overhead costs" incurred by the government for the provision of telecommunications services, regardless of whether or not these costs are passed on to individual federal agencies. Third, Snavely King did not attempt to quantify the cost or value of any "unique" government requirements and constraints imposed by law, executive order, federal policy, or the mission requirements of any federal agency. Fourth, Snavely King excluded all taxes for telecommunications services from the computations of cost.

Considering these assumptions and the complexity of telecommunications contracts, the results of these analyses must be viewed as general relationships or guidelines and not precise cost relationships. This qualification is particularly relevant for the Department of Defense contract for switched voice services, where data did not permit direct cost comparison, but only indirect comparisons for a subset of message traffic.

E. Principal Project Activities

Snavely King's first task was to develop a study methodology and data collection instrument. Snavely King developed the methodology and data collection instrument based on the requirements established by the GAO, as well as the company's previous experience in evaluating the FTS 2000 and other rate structures in more than 500 telecommunications consulting assignments. Snavely King submitted drafts of the methodology and the data collection instrument to the GAO on March 7, 1996 and March 13, 1996, respectively.

Snavelly King's second major task was to work very closely with GAO personnel to collect data on the contracts to be compared with the FTS 2000. Snavelly King personnel accompanied a GAO representative to Scott Air Force Base, Illinois. Snavelly King personnel also accompanied GAO representatives at meetings to discuss contracts with the Federal Reserve Board and the Federal Reserve System. In addition, Snavelly King initiated and participated in telephone conferences with personnel in the Legislative Branch and various Executive agencies to discuss the telecommunications contracts and to obtain additional information on circuits, usage data and contract costs for the analysis.

Snavelly King's third principal task was to conduct the cost analyses and comparisons. Snavelly King conducted the comparisons using data describing the use of telecommunications services under each of the contracts for a test month. The first step was to determine the total recurring charges incurred by the agency under the contract in that month by analysis of the invoice and other detailed billing information. The second step was to determine the recurring cost which would have been incurred to obtain this service under the FTS 2000 contracts at the FTS 2000 rates in effect on December 7, 1995.

F. Summary of Results

The table shows a comparison of the costs incurred by the Federal agencies with the costs that would have been incurred if the telecommunications services have been obtained under the FTS 2000 contracts.

Appendix I
Snively King and Associates'
Telecommunications Cost Study

**Summary of Cost Comparisons for
Federal Telecommunications Contracts**

SERVICE Contracting Federal Agency (Contract/Program)	Contract Provider	Usage and Monthly Recurring Costs				
		Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
			\$	\$	%	\$
SWITCHED VOICE SERVICE						
Department of Defense (DTC Contract - Total) ¹	AT&T	\$4,613,291	\$1,161,994	-75%	\$4,977,498	+8%
(DTC Contract - Per Minute)	AT&T	5.32¢	1.34¢		5.74¢	
Federal Reserve Board of Governors (Outbound Service - Total)	MCI	\$22,375	\$21,335	-5%	\$23,278	+4%
(Outbound Service - Per Minute)	MCI	8.28¢	7.89¢		8.61¢	
Legislative Branch (GAO) (Outbound Service - Total)	MCI	\$25,819	\$25,836	0%	\$27,966	+8%
(Outbound Service - Per Minute)	MCI	7.30¢	7.31¢		7.91¢	
(800 Service - Total)	MCI	\$5,207	\$4,204	-19%	\$3,249	-38%
(800 Service - Per Minute)	MCI	14.39¢	11.62¢		8.98¢	
DEDICATED TRANSMISSION SERVICE						
Department of Defense (DTC Contract)	AT&T	\$3,623,452	\$3,340,995	-8%	\$3,089,596	-15%
Federal Aviation Administration (LINCS Contract)	MCI	\$2,390,989	\$2,642,317	+10%	\$2,905,113	+21%
Federal Reserve System (FEDNET Program)	AT&T	\$116,377	\$119,044	+2%	\$105,618	-9%
(FEDNET Program)	MCI	\$113,465	\$97,161	-14%	\$87,825	-23%
(FEDNET Program)	Sprint	\$49,014	\$89,149	+82%	\$83,352	+70%
U.S. Postal Service (RBCS Replacement Project)	MCI	\$164,696	\$268,900	+63%	\$272,447	+65%
(PITN Replacement Project)	Sprint	\$84,737	\$155,227	+83%	\$130,809	+54%
PACKET SWITCHED SERVICE						
U.S. Senate (GAO) (Frame Relay Service)	AT&T	\$69,593	\$90,880	+31%	\$79,723	+15%
COMPRESSED VIDEO TRANSMISSION SERVICE						
Legislative Branch (GAO) (Video Teleconference Service)	MCI	\$21,015	\$21,721	+3%	NA	NA

¹ The non-FTS 2000 rates used in this analysis are not the actual contract rates charged by AT&T for this service, but are the rates used for cost recovery purposes by the Defense Information Systems Agency.

III. Switched Voice Services

A. Introduction

Switched Voice Services ("SVS") provide the capability to send voice messages between points with charges for each individual message depending on its duration. Inter-city "long distance" telephone service is the SVS generally used by the public.

For large business and government users, the monthly charges for SVS usually have two principal components -- a "transport" charge for the inter-city link and "access" charges for facilities at the terminal points. The transport charge usually depends on the duration of the message, the time of day, and the distance between the calling and called locations. The access charges are dependent on the originating and terminating points, and may vary significantly between differing locations. At high volume locations, dedicated access facilities, which incur fixed monthly charges, are frequently employed. At lower volume locations, access facilities are generally shared, and access charges depend on usage levels.

B. FTS 2000 Services

SVS is the largest of the FTS 2000 services. Each of the two FTS 2000 networks consists of a defined set of Service Delivery Points ("SDP"). Calls may originate or terminate at any place in the 50 states and the District of Columbia as well as Puerto Rico, the Virgin Islands and Guam. SVS calls between SDPs on the same network are termed "on-net," while calls originating on one network and terminating on the public switched network or on the other network are termed "off-net". Incoming calls from the public switched network, or from the other FTS 2000 network, are also considered "off-net". With these variables, there are four categories of calls:

- on-net originating and on-net terminating ("on-on");
- on-net originating and off-net terminating ("on-off");
- off-net originating and on-net terminating ("off-on");² and

² Most off-on calls on the FTS 2000 are 800 calls.

- off-net originating and off-net terminating ("off-off").

Because there are major differences in on-net and off-net originating and terminating access charges, the cost of these four call types differs significantly. A call between two cities may have any one of four different rates depending upon whether the originating and terminating points in the respective cities are on-net or off-net.

Like most switched voice contracts, the FTS 2000 pricing structures consist of two principal rate elements -- transport and access. Transport is priced from access area to access area. The access areas generally correspond with the Local Access and Transport Areas ("LATAs") that were established when the Bell System was broken up in 1984. The transport charge is distance sensitive, although it does not vary proportionately with mileage. The transport charge is also influenced by the volume of traffic for all services on all segments of the network. Finally, the transport charge varies by time of day, with lower rates for night and weekend calls.

In contrast to most other switched voice contracts, the FTS 2000 access charges, which apply to each end of the connection, vary according to the type of access arrangement, the access area, time of day, and the volume of traffic through the SDP. When an SDP's volume is aggregated with other SDPs through a Switched Digital Integrated Service ("SDIS") access arrangement, the other SDPs' access volume counts as additional usage in computing the total SDP volume for pricing purposes. Increasing volume through aggregation sharply reduces the unit access charge.

There are nine different access arrangements in the FTS 2000 pricing structures, and the selection among them is primarily a function of traffic volume. The arrangement that is generally the least expensive for higher usage volumes is T-1 access, which accommodates 24 voice grade channels. The T-1 may be dedicated to SVS, or it may be used by several FTS 2000 services, through an SDIS. For lower traffic volumes, the least costly access arrangement is likely to be single voice grade

channels. For the very lowest traffic volumes, the preferred arrangement is usually the "virtual on-net" or VON, which appears to the user as on-net, but is actually a call-by-call connection to the network that does not use any dedicated facilities.³

C. Contract Comparisons

1. Department of Defense Contract

The Department of Defense ("DoD") has a large contract with AT&T, called the DISN Transition Contract ("DTC"), which provides network facilities for SVS. This extensive communications capability is managed by the Defense Information Systems Agency ("DISA"), which has developed its own SVS rate structures to recover the cost of switched voice services from the individual military departments and other end users of the system.

Under the terms of the DTC, the DoD pays AT&T for the capacity to transmit voice and other messages throughout the world. It is not possible to compare AT&T's aggregated charges to the DoD with the call-by-call rate structure employed for SVS on the FTS 2000. Furthermore, it is not possible to compare costs at the aggregate level because the DTC also encompasses services for which there is no FTS 2000 analog whatsoever, such as the calls to points outside the U.S. and the ability to rate calls based on precedence level. Consequently, to obtain a broad measure of the DoD's costs, Snavey King compared the rate structure used by DISA to bill end users for domestic "Routine" calls with the FTS 2000 rate structures for Network A and B. The charges to DoD end users for voice messages depend upon:

- the originating and terminating locations;
- the duration of the message;
- the rating period of the day in which the call is made; and
- the "precedence level" designated by the sender.

³ Other options for SVS access include compressed T-1, Basic Rate Interface of two 64 Kbps "B" channels plus one 19.2 Kbps "D" channel, and Primary Rate Interface of twenty-three 64 Kbps "B" channels plus one 19.2 Kbps "D" channel.

These pricing factors apply to calls originating in the continental U.S. and terminating either in this country or overseas.

The rate structure used to reflect these pricing factors includes access charges, network (or "transport") charges for inter-city transmission, and a factor for message priority or precedence level. Per-minute rates for access are specified in tables for each DoD location in the United States. Each domestic location has a specific access charge that is the same whether that location is originating or terminating a call. To determine the price of a call, the per-minute access line charges for originating and terminating locations are added to the per-minute transport charge (which depends upon the combination of originating and terminating points). For "Routine" messages during the "business day," the total cost of the message is computed by multiplying this total per-minute cost by the duration of the message. The total cost of "Routine" messages outside of the business day is 50 percent of the business day cost.

The total cost for messages with a greater precedence levels, which were not included in this analysis, are computed by multiplying the total cost of the corresponding "Routine" messages by a precedence factor.

The GAO obtained call detail information for all calls originating and terminating on-net during a 22 day period beginning October 1, 1995. The call volume for this period was extrapolated to one month, using an expansion factor reflecting the occurrence of weekdays, weekends and holidays in October 1995. The call detail information for these calls included both access and transport charges, and excluded overhead charges.

The call detail information was provided to the GAO on computer tapes, which required nearly 1.6 gigabytes of computer storage space. The tapes were processed by computer systems at Mitretek Systems to eliminate messages terminating outside of the U.S. and messages with greater than "Routine" priority. After this step, approximately 86,716,000 minutes of on-net traffic remained for analysis. The average

cost of this traffic was 5.32 cents per minute under DoD's existing contract. Snavely King also determined the costs of this traffic using the rates for each of the two FTS 2000 contracts. The amounts are shown in the table below.

Department of Defense
Contract Comparison for SVS

SVS Call Type	Usage and Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
On-net to On-net Total Cost Cost Per Minute	\$4,613,291 5.32¢	\$1,161,994 1.34¢	-75%	\$4,977,498 5.74¢	+8%

As the table indicates, the cost of the DoD traffic on FTS 2000 Network A would be 75 percent less than under the DoD's own contract. On FTS 2000 Network B, however, the cost would be 8 percent more than under the DTC. This disparity results from the addition of the large volume of DTC traffic on the FTS 2000 and the applicable rates specified in the pricing structures for both networks.⁴ For Network A, on-net rates decline sharply with high traffic volumes from concentrated locations. The DTC traffic meets these conditions, resulting in an overall rate of 1.34 cents, the lowest possible Network A rate under any set of conditions. In contrast, Network B rates are relatively less sensitive to usage and also relatively less favorable for pure on-net traffic. Therefore, the cost of the DTC traffic would be greater under Network B rates.

2. Federal Reserve Board of Governors Contract

The Federal Reserve Board of Governors has a contract with MCI to provide SVS. The majority of usage under this contract is for calls originating in Washington,

⁴ In contrast, the other contracts analyzed by Snavely King had relatively minor traffic volumes compared to the existing FTS 2000 traffic volumes. Therefore, they were insufficient to produce any appreciable difference in the FTS 2000 rates applicable prior to the addition of this traffic.

D.C., however, some calls are originated from locations in other cities where the Federal Reserve Board also has access to the MCI network through dedicated facilities. Calls originating at these dedicated facilities may terminate at any on-net location or off-net location in the U.S. While the GAO was also provided with some data on the calls originating at off-net locations, the small number of calls of this type did not allow for a statistically valid cost comparison with the FTS 2000 contracts.

The usage rates for SVS in this MCI contract are postalized and do not depend on the time of day. The charge is XXX⁶ cents per minute for calls to on-net locations and XXX cents per minute for off-net calls. These rates are also subject to a five percentage point discount based on the Federal Reserve Board's total usage of MCI's telecommunications services. The rates are XXX cents per minute and XXX cents per minute respectively after this discount is applied.

In addition to these usage charges, the Board incurred a total charge of \$773.25 for dedicated access for January 1996. Snavely King distributed MCI's total \$773.25 dedicated access charge by dividing this charge by the total number of minutes using dedicated access facilities. Snavely King determined that the per minute dedicated access charge was XXX cents for each on-net termination or origination point. Thus by addition, the applicable rates for SVS services are XXX for on-net calls and XXX cents for off-net calls.

The GAO was provided with billing information and call detail records for SVS under this contract for January 1996. This information encompassed 270,366 minutes of SVS usage. For that month, the total charge for calls to on-net locations was \$866 and the total charge for calls to off-net locations was \$21,509. Both of these figures reflect the five percent discount on usage applied by MCI. The total usage and access costs are shown in the table below.

⁵ Specific contract pricing information has been redacted from this report.

Snavelly King also computed the cost of SVS services under this contract using the FTS 2000 rates for Network A and Network B. These analyses were conducted by employing the FTS 2000 pricing models developed by Mitretek Systems. The results of these computations are also shown in the table below.

**Federal Reserve Board
Contract Comparison for SVS**

SVS Call Type	Usage and Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
On-net to On-net					
Total Cost	\$866	\$1,100	+27%	\$1,380	+59%
Cost Per Minute	5.06¢	6.43¢		8.07¢	
On-net to Off-net					
Total Cost	\$21,509	\$20,235	-6%	\$21,882	+2%
Cost Per Minute	8.49¢	7.99¢		8.64¢	
TOTAL COST	\$22,375	\$21,335	-5%	\$23,278	+4%
COST PER MINUTE	8.28¢	7.89¢		8.61¢	

As this table indicates, the total cost of the calls in the test month would have been 5 percent less on the FTS 2000 Network A than under the Board's own contract. In contrast, the cost of these calls using the FTS 2000 Network B rates would have been 4 percent greater than the cost using the MCI contract rates.

3. Legislative Branch Contract for Outbound SVS (GAO)

The Legislative Branch of the government obtains SVS through a contract between the Architect of the Capitol and MCI. This contract provides services for approximately 1,540 Legislative Branch locations nationwide and also provides off-net calling capabilities. In addition, the contract supports synchronous and asynchronous digital access up to 9,600 bps for data and 14,400 bps for fax.

The rate structure for this contract consists of two principal types of charges -- usage and access. The usage charges consist of a postalized transport charge of XXX cents per minute and a dial-up access charge of XXX cents per minute for originating or terminating messages on shared facilities. Usage charges are the same at all times during the day. With this rate structure, the cost for a call between two dedicated access points is always XXX cents per minute. The cost for a call between a dedicated access point and a switched access point (or between a switched access point and a dedicated access point) is XXX cents per minute.

For this contract comparison, Snavely King analyzed the costs incurred by the GAO during October 1995. To perform this analysis, Snavely King was provided with call detail records -- totaling 353,462 minutes of use -- and other related invoices that documented the GAO's use of these services during the test month.

In addition to the usage charges, the GAO incurred costs of \$1,452 in during the test month for dedicated access facilities in Atlanta, Cincinnati and Washington, D.C. As with the other SVS contracts, this access charge was distributed proportionally among the on-net minutes. Snavely King determined that the dedicated access cost was XXX cents per minute, so that the total cost of a call between two on-net locations is XXX cents per minute and the total cost of a call from an on-net dedicated location to an off-net location is XXX cents per minute. The total usage and access cost is shown in the table below.

Snavely King also computed the cost of SVS services under this contract using the FTS 2000 rates for Network A and Network B. These analyses were conducted by employing the FTS 2000 pricing models developed by Mitretek Systems. The results of these computations are also shown in the table below.

Legislative Branch (GAO)
Contract Comparison for Outbound SVS

SVS Call Type	Usage and Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
On-net to On-net					
Total Cost	\$1,220	\$1,434	+17%	\$1,722	+41%
Cost Per Minute	4.96¢	5.83¢		7.00¢	
On-net to Off-net					
Total Cost	\$24,599	\$24,402	-1%	\$26,244	+7%
Cost Per Minute	7.48¢	7.42¢		7.98¢	
TOTAL COST	\$25,819	\$25,836	0%	\$27,966	+8%
COST PER MINUTE	7.30¢	7.31¢		7.91¢	

Overall, the cost of calls during the test month under FTS 2000 Network A was nearly identical to the total cost under the MCI contract. In contrast, the total cost of these services under FTS 2000 Network B was 8 percent higher than under the MCI contract.

4. Legislative Branch Contract for 800 Services (GAO)

The Legislative Branch also obtains 800 services through a contract between the Architect of the Capitol and MCI. As with the Legislative Branch contract for outbound SVS, Snavey King analyzed only the use of this contract by the GAO.

The MCI contract allows individuals to call any one of twenty-seven GAO 800 numbers with charges automatically reversed. The rate structure for this service is not complex. The usage charge is XXX cents per minute for calls to any of the 800 numbers from any place in the continental U.S. at any time of the day. The only additional recurring charge is a service charge of XXX monthly per 800 number in service.

The GAO was provided with billing and call detail records for 36,180 minutes of 800 services under this contract for February 1996. These records showed usage charges of \$4,667 for the month. The total service charge for the twenty-seven 800 numbers was \$540, which was apportioned equally among these numbers. The total of usage charges and service charges are shown in the table below.

To develop the cost of the equivalent 800 calls for the test month using the FTS 2000 rates for Network A and Network B, Snavelly King employed the FTS 2000 pricing models developed by Mitretek Systems. The results of these computations are also shown in the table below.

Legislative Branch (GAO)
 Contract Comparison for 800 Services

800 Service	Usage and Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
Off-net to On-net					
Total Cost	\$5,207	\$4,204	-19%	\$3,249	-38%
Cost Per Minute	14.39¢	11.62¢		8.98¢	

In contrast with the GAO outbound SVS, the monthly recurring charges under either of the FTS 2000 contracts are significantly lower than the cost of 800 services under the MCI contract. The cost of the 800 services under the FTS 2000 Network A was 19 percent less than the cost of the services under the MCI contract, while the cost of services under the FTS 2000 Network B was 38 percent less than the cost of services under the MCI contract.

IV. Dedicated Transmission Services

A. Introduction

Dedicated Transmission Services ("DTS") provide the capability for carrying voice, data or video signals between two or more designated terminal points with a flat monthly recurring charge that is independent of circuit usage. The recurring charge usually consists of a "transport" charge for an inter-city link, as well as one or more types of "access" charges for the facilities at the terminal points. The transport charge usually depends on mileage, as well as the type and data speed of the circuit. Access charges usually depend on whether the terminating point is an on-net or off-net location.

B. FTS 2000 Services

DTS provides point-to-point private line connections among the SDPs on the FTS 2000 networks. DTS circuits are available for seven transmission categories:

- 4,800 baud analog;
- 9,600 baud analog;
- 9,600 bps digital;
- 56/64 Kbps digital;
- fractional T-1 digital;
- unchannelized T-1 (1.544 Mbps) digital; and
- T-3 (45 Mbps) digital.

While the FTS 2000 contracts include all of these circuit speed groups, it was not possible to compare the costs of every circuit speed group. The costs of 4,800 baud and fractional T-1 circuits were excluded from this analysis due to data limitations. T-3 circuits were also excluded from all cost calculations because the FTS 2000 pricing models do not include end-to-end T-3 charges. Access facilities for T-3 circuits under the FTS 2000 contracts are obtained on an individual case basis.

There are two recurring rate elements for DTS -- transport and access. Transport is priced from access area to access area. The access areas generally correspond to the LATAs. The transport charges for the respective data speeds are mileage banded and increase significantly with distance.

DTS is available with SDIS access, using either T-1 access (1.544 Mbps), Basic Rate Interface, or Primary Rate Interface.⁵ The access charges that apply at each end of the dedicated circuit vary by access area. For each access area, the rate depends upon the transmission speed and, in the SDIS configuration, the total volume of on-net use by all services through the SDP. To compute this total volume for rating purposes at an SDP, minute counts for the message services are added to equivalent minute volumes for the dedicated circuits. For example, 64 Kbps dedicated circuit termination is assumed to equal 10,000 minutes of voice traffic.

C. Contract Comparisons

1. Department of Defense Contract

The DoD obtains thousands of dedicated telecommunications circuits through a contract with AT&T. In this contract comparison, however, Snavely King compared only the costs for those dedicated circuits that had all termination points within the continental United States.

The DoD provided GAO with information on each circuit obtained under its contract with AT&T for February 1996. This information included the NPA-NXX⁶ for each of the circuit terminals, the data speed of the circuit, and the monthly recurring charge. Additional information was also provided relating to the discount rates that apply to these circuits. Data speeds include voice-grade, digital data service (at various speeds), T-1 and T-3. The total monthly recurring charge for each circuit obtained

⁵ Basic Rate Interface consists of two 64 Kbps "B" channels and one 19.2 Kbps "D" channel. The Primary Rate Interface consists of twenty-three 64 Kbps "B" channels and one 19.2 Kbps "D" channel.

⁶ The term "NPA-NXX" refers to the first six digits of every telephone number according to the North American Numbering Plan. The "NPA" is the numbering plan area, commonly known as the "area code." The "NXX" is the first three digits of the local telephone number, sometimes called the "exchange."

under the AT&T contract includes all access facilities and channel service units. These charges do not include the applicable discounts, which are applied in steps ranging from 20% to 48% depending on the total monthly billing for DTS.

Snavely King computed the total monthly recurring charge for each of the 3,103 DoD circuits in each data speed group, except T-3, by addition of the charges for the individual circuits. After the total cost was calculated, Snavely King employed the stepped discount schedule to derive the average discount for this total, which was 25.5%. The total charges for each data speed group, after the discounts, are shown in the table below.

Snavely King also computed the cost of each of these circuits using the FTS 2000 rates for Network A and Network B. These analyses were conducted by employing the FTS 2000 pricing models developed by Mitretek Systems. The results of these computations are also shown in the table below.

Department of Defense
Contract Comparison for DTS

DTS Circuit Type	Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
Unchannelized T-1	\$2,287,522	\$2,382,545	+4%	\$2,138,645	-7%
56/64 Kbps	\$385,478	\$241,539	-37%	\$276,739	-28%
9,600 bps digital	\$19,658	\$13,827	-30%	\$18,051	-8%
9,600 baud analog	\$930,794	\$703,084	-24%	\$656,161	-30%
TOTAL	\$3,623,452	\$3,340,995	-8%	\$3,089,596	-15%

As shown in this table, the monthly recurring charges that would be incurred under either of the FTS 2000 contracts are significantly lower than under the AT&T

contract for all speed categories, except for T-1 circuits in FTS 2000 Network A. In total, the monthly recurring charges would be 8 percent lower using the FTS 2000 Network A rates, and 15 percent lower under the FTS 2000 Network B rates, when compared to the cost of these circuits under the AT&T contract.

2. Federal Aviation Administration Contract

The Federal Aviation Administration ("FAA") obtains dedicated transmission services for its Leased Inter-facility NAS Communications System ("LINCS") through a contract with MCI. The integrated LINCS system is an inter-facility communications system that provides high reliability dedicated circuits for the National Airspace System ("NAS"). This network serves over 4,500 locations nationwide and consists of approximately 260 nodes, each of which has at least two transmission paths to another node. The contract provides a family of both analog and digital channels, ranging from 56/64 Kbps voice grade channels through T-3 circuits capable of transmitting at 45 Mbps. Because the FAA uses this system for transmission of voice and data messages between airports, air traffic control facilities and other critical locations, high levels of reliability and availability are required.

The contract with MCI distinguishes two types of locations for service, known as End User Locations ("EUL"). EUL-A sites are FAA locations on the backbone network where large numbers of channels are terminated and vital air traffic control services are performed. EUL-B sites are all other locations. The contract distinguishes channels entirely on the backbone (EUL-A to EUL-A) from channels leaving the backbone (EUL-A to EUL-B and EUL-B to EUL-B). Channels entirely on the backbone, which are referred to as Inter-Nodal Links, have higher operational standards and much tighter service restoration requirements than the other channels, which are referred to as Non-Diverse Links.

The FAA provided GAO with information on each of its circuits for February 1996. This information included the NPA-NXX for each of the circuit terminals, the data

Appendix I
Snively King and Associates'
Telecommunications Cost Study

speed of the circuit and the monthly recurring charge. The total monthly recurring charge includes all access facilities, channel service units and applicable discounts.

Snively King computed the total monthly recurring charge for the FAA circuits in each data speed group, except T-3, by addition of the charges for the individual circuits. The total charges for each data speed group are shown in the table below.

As with the contract comparison for the DoD, Snively King also computed the cost of each of the FAA circuits using the FTS 2000 rates for Network A and Network B, which are shown in the table below.

Federal Aviation Administration
Contract Comparison for DTS

DTS Circuit Type Circuit Speed	Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
Inter-Nodal Links (A to A)					
Unchannelized T-1	\$26,606	\$54,683	+106%	\$58,817	+121%
56/64 Kbps	\$102,186	\$40,219	-61%	\$50,072	-51%
9,600 bps digital	\$6,232	\$2,431	-61%	\$3,898	-37%
9,600 baud analog	\$350,266	\$465,124	+33%	\$454,569	+30%
Non-Diverse Links (A to B, B to A, and, B to B)					
Unchannelized T-1	\$31,769	\$45,987	+45%	\$58,564	+84%
56/64 Kbps	\$43,417	\$37,594	-13%	\$43,135	-1%
9,600 bps digital	\$4,347	\$5,108	+17%	\$5,471	+26%
9,600 baud analog	\$1,826,166	\$1,994,171	+9%	\$2,230,587	+22%
TOTAL	\$2,390,989	\$2,642,317	+10%	\$2,905,113	+21%

For the 1,838 Inter-Nodal Links analyzed by Snively King, the equivalent FTS 2000 charges for both T-1 and 9,600 baud analog circuits, using Network A and Network B rates, are considerably more than the charges under the MCI contract. However, for 56/64 Kbps and 9,600 bps digital links, the rates under both of the FTS 2000 contracts are less than the rates under the MCI contract.

For the 7,011 Non-Diverse Links analyzed by Snively King, the FTS 2000 rates for both Network A and Network B are greater than the rates under the MCI contract for all speed categories except 56/64 Kbps.

3. Federal Reserve System Contracts

The Federal Reserve System obtains DTS through contracts with AT&T, MCI and Sprint. These three contracts are used to provide links for the FEDNET network, which allows the Federal Reserve Board of Governors, the Federal Reserve Banks and depository institutions to transmit data between these three entities. The contracts are administered by Federal Reserve Automation Services ("FRAS"), which is located in Richmond, Virginia.

The contracts provide a wide variety of types of dedicated channels – voice-grade, digital data service (at various speeds), fractional T-1 (at various speeds), T-1 and T-3. FRAS provided GAO with information on each of the T-1 and T-3 circuits obtained through these contracts for March 1996. These circuits provision the backbone network of the FEDNET system. This information included the NPA-NXX for each of the circuit terminals and the monthly recurring charge. The total monthly recurring charge includes all access facilities, channel service units and applicable discounts.

Snively King computed the total monthly recurring charge for all of the T-1 circuits by addition of the charges for the individual circuits. A total of 120 unchannelized T-1 circuits was analyzed -- 46 from AT&T, 37 each from MCI and

Sprint. As with the other DTS contract comparisons, the T-3 circuits were excluded from this analysis.

Snavely King also computed the cost of each of the FEDNET T-1 circuits using the FTS 2000 rates for Network A and Network B, which are shown in the table below.

**Federal Reserve System
Contract Comparison for DTS**

DTS Circuit Type	Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
AT&T T-1	\$116,377	\$119,044	+2%	\$105,618	-9%
MCI T-1	\$113,465	\$97,161	-14%	\$87,825	-23%
Sprint T-1	\$49,014	\$89,149	+82%	\$83,352	+70%
TOTAL	\$278,856	\$305,354	+9%	\$276,795	-1%

Overall, the cost of these circuits under the FTS 2000 contracts would have been 9 percent higher under Network A, and 1 percent lower under Network B, than the cost under the AT&T, MCI and Sprint contracts. However, there is considerable variability among the cost of circuits obtained from the three vendors. For example, the costs of T-1 circuits using either of the FTS 2000 contracts were less than the costs of T-1 circuits obtained from MCI -- 14 percent less for Network A and 23 percent less for Network B. Conversely, the costs for T-1 circuits under either of the FTS 2000 contracts were significantly greater than the costs under the Sprint contract -- 82 percent more for Network A and 70 percent more for Network B.

4. U.S. Postal Service Contracts

The U.S. Postal Service ("USPS") obtains dedicated transmission services through contracts with MCI and Sprint. Both contracts provide unchannelized T-1 circuits for transmission at 1.544 Mbps between specified terminal points.

The MCI contract, which is under the RBCS Replacement Project, covers 124 point-to-point T-1 circuits. The USPS provided GAO with detailed information on each RBCS circuit for March 1996, including the recurring charge and the NPA-NXX for each of its terminals. MCI's total monthly recurring charge for each circuit includes all access facilities except channel service units. The monthly recurring charges for each of the MCI circuits was \$151,056 for March 1996. Because the FTS 2000 rates include the costs of channel service units, Snavey King added an estimated cost of \$55 monthly for a channel service unit at each end of each circuit. For 124 circuits, this is a total monthly cost of \$13,640. The total recurring cost is therefore \$164,696 for these the RBCS circuits.

The Sprint contract, which is under the PITN Replacement Project, covers 52 point-to-point T-1 circuits. The USPS provided GAO with the NPA-NXX for each of the circuit terminals and the monthly recurring charge for each circuit in March 1996. Sprint's total monthly recurring charge for each circuit includes all access facilities, including channel service units. By addition of the charges for each circuit, Snavey King determined that the total monthly recurring charge to the USPS under this contract was \$84,737.

The circuits obtained under the RBCS and PITN contracts were priced on both FTS 2000 networks using the pricing model developed by the Mitretek Systems. The analysis assumed that each of these circuits with T-1 unchannelized access on the FTS 2000. The table below compares the costs under the RBCS and PITN contracts with the costs for corresponding services on the FTS 2000.

**U.S. Postal Service
Contract Comparison for DTS**

DTS Circuit Vendor	Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
MCI (RCBS)	\$164,696	\$268,900	+63%	\$272,447	+65%
Sprint (PITN)	\$84,737	\$155,227	+83%	\$130,809	+54%
TOTAL	\$249,433	\$424,127	+70%	\$403,256	+62%

As shown in the table above, the charges under both the FTS 2000 Network A and Network B are considerably greater than the cost under the USPS contracts with MCI and Sprint. In total, the costs using FTS 2000 Network A would have been 70 percent higher than the costs under the MCI and Sprint contracts, and the costs using FTS 2000 Network B would have been 62 percent higher than the costs under the USPS contracts.

V. Packet Switched Services

A. Introduction

Packet Switched Services ("PSS") refer to a group of services used to transmit data in "packets," or groups of binary digits, as pulses over a digital channel. Two of the principal applications for PSS are file transfer between computers and interactive terminal-to-computer communications.

Interactive computer-to-computer communications often cover relatively extended periods of time. During much of this time, the transmission facilities are inactive because the computers interact with each other in relatively short bursts. For example, a personal computer user drawing information from a remote database will transmit an inquiry and the receiving computer will process the inquiry, search its

memory, and then transmit the response. The personal computer user will usually wait a while before making the next inquiry. This interactive exchange may last for some time, but the actual communications consist of short bursts of data transferred between the database computer and the remote terminal.

One version of PSS, called "Frame Relay" service, is ideally suited for these interactive communications and other applications with irregular bursts of data. With "Frame Relay", packets are divided into frames containing addressing information that can be individually and sequentially routed through the network, using network capacity only when required.

B. FTS 2000 Services

The FTS 2000 provides PSS with different access methods, line speeds and protocol options. The protocol designates the mathematical plan used to code data in the form of binary digits. It is possible to transmit in one protocol and receive in a different protocol, with computers in the transmission system performing the necessary mathematical conversion.

As with other services on the FTS 2000, the charges for PSS have two principal elements -- access and transport. Access charges apply at each end of the connection. Transport is priced from access area to access area, where the access areas generally correspond geographically with the LATAs.

In late 1995, AT&T implemented Frame Relay service on the FTS 2000 Network

A. There are two principal recurring rate two principal elements:

- a charge for each port, depending principally on data "speed"; and
- the committed information rate ("CIR") for the circuit.

FTS 2000 provides ports and access at data speeds of 1.544 Mbps. It also provides CIRs for permanent virtual connections ("PVC"), which are purported to nearly "guarantee" that the contracted bandwidth will be available. Each PVC connects a pair of locations at an associated CIR. Two rate structures may be employed -- either a

charge based on the size of the CIR and the distance between terminals, or a distance-insensitive charge based only on the size of the CIR. There is no charge for transmission above the customer's CIR, (*i.e.* sustained bursting) up the full port speed.

C. U.S. Senate Contract Comparison (GAO)

The U.S. Senate obtains Frame Relay service through a contract with AT&T. For this comparison, Snavely King analyzed only the use of this service by the GAO during January 1996. The service is provided to the GAO between on-net locations in 18 major urban areas. In nearly every location, the GAO incurs a monthly charge for a 1.544 Mbps port, a 1.544 Mbps access facility, and a 512 Kbps PVC.⁸

The GAO was provided with billing and traffic detail records for this service for January 1996. From this data, Snavely King computed the total monthly recurring charge for this service by addition of the charges for the individual terminal locations. Under the U.S. Senate's contract, the total monthly recurring charge to the GAO was \$69,593 during January 1996, as shown in the table below.

As with the contract comparisons for other services, Snavely King also computed the costs of comparable services using the FTS 2000 rates for Network A and Network B, which are shown in the table below.

**U.S. Senate (GAO)
Contract Comparison for PSS**

PSS Service	Usage and Monthly Recurring Costs				
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A		FTS 2000 Rates Network B	
	\$	\$	%	\$	%
Frame Relay	\$69,593	\$90,880	+31%	\$79,723	+15%

⁸ From Snavely King's analysis, it appears that one of the two Washington D.C. locations obtains the PVC free of charge. The other location pays \$92.15 for a 32 Kbps PVC, which connects that facility to AT&T's Network Operating Center ("NOC").

As the table indicates, the charges under both the FTS 2000 Network A and Network B are greater than the cost of these services under the Senate's own contract. In total, the costs using FTS 2000 Network A would have been 31 percent higher and 15 percent higher using FTS 2000 Network B, as compared to the AT&T contract.

VI. Compressed Video Transmission Services

A. Introduction

Video Transmission Services ("VTS") provide the capability for video conferences between two or more locations on a telecommunications network. Generally, there are two forms of VTS -- "wideband" and "compressed". Transmitted digitally, wideband service requires more than 1.544 Mbps. Compressed Video Transmission Service ("CVTS") uses only part of the 1.544 Mbps pulse stream, so that the video reproduction is of lower quality.

B. FTS 2000 Services

The FTS 2000 offers both "wideband" and "compressed" Video Transmission Services. The "wideband" video option uses the full 45 Mbps T-3 pulse stream for transmission. CVTS is implemented on Network A at 384 Kbps and on Network B at 768 Kbps. The CVTS option is used more often, primarily because of its lower cost.

On the FTS 2000, the CVTS rate structures contains two principal rate elements -- access and transport. Both access and transport charges vary with time of the day, with lower rates for evening and night transmissions.

FTS 2000 CVTS access may be configured to both transmit and receive or to handle receive-only video transmissions. The rates for "transmit/receive" are much greater than those for "receive only" access. For both types of access, the charges depend upon the access area and the total amount of originating and terminating video traffic at the SDP. Both access and transport are priced in six-second increments, but there is a minimum duration of 30 minutes.

The CVTS transport charge varies by distance between the access areas involved. For a multipoint connection, which is common in CVTS, both a transport link and access must be established to each SDP participating in the conference. Additionally, a "conference establishment charge" is assessed at each terminal location for each use of the service.

CVTS is ubiquitous in that the FTS 2000 vendors may be required to provide the service at any SDP. However, video conference service is not provided on demand. An SDP must be pre-equipped to provide the service, and a substantial service initiation charge is incurred to initiate such service.

C. Legislative Branch Contract Comparison (GAO)

The Legislative Branch obtains CVTS under the same MCI contract used to obtain SVS as described previously in this report. As with other services under this contract, Snively King analyzed the use of CVTS only by GAO during October 1995.

CVTS is provided between on-net and on-net/off-net locations. For point-to-point conferences, the service is implemented by simultaneous use of multiple 56/64 Kbps channels to achieve a CVTS transmission speed of 392 Kbps. Multipoint conferences are implemented by simultaneous calls to an off-net bridging point. MCI's usage charge for point-to-point calls is XXX cents per minute for each 56/64 Kbps channel. The usage charge for multipoint calls is XXX cents per minute for each 56/64 Kbps channel. MCI also bills the Legislative Branch for use of the conference bridge.

The GAO was provided with billing and call detail records for this contract for CVTS in October 1995. From this data, Snively King determined that the GAO incurred access charges of \$8,104 and bridging charges of \$7,630 during the test month for the 11 locations using these services. Snively King distributed the access charges between point-to-point and multipoint services based on the number of minutes for each type of conference call. The bridging charges were entirely ascribed to the multipoint services. The point-to-point and multipoint costs of CVTS, including usage,

access and bridging, are shown in the table below. The table also shows the costs of providing these services on the FTS 2000 Network A. Because there was no equivalent service on Network B, Snively King made no comparison for this contract.

**Legislative Branch (GAO)
 Contract Comparison for CVTS**

Conference Type (Other fees)	Monthly Recurring Costs		
	Non-FTS 2000 Contract Rates	FTS 2000 Rates Network A	
	\$	\$	%
Point-to-Point	\$4,098	\$5,485	+34%
Multipoint	\$16,917	\$16,236	-4%
TOTAL	\$21,015	\$21,721	+3%

As shown in the table, CVTS services would have been 3 percent more costly on the FTS 2000 Network A than on the MCI contract. Point-to-point CVTS would have been 34 percent more costly, while multipoint services would have been 4 percent less expensive.

Organizations on FTS 2000, Assigned Networks, and Services Used

FTS 2000 NETWORK A AGENCIES AND SERVICES USED

Agency Name	SVS	SDS	PSS	CVTS	DTS
Administrative Conference of the U.S.	✓				
Advisory Commission on Intergovernmental Relations	✓				
Agency for International Development	✓		✓		
Appalachian Regional Commission	✓		✓		
Architectural Transportation Safety Board	✓				
Board for International Broadcasting	✓		✓		
Central Intelligence Agency	✓		✓		
Combined Federal Campaign	✓				
Commission for Preservation of American Heritage Abroad	✓				
Commission on Purchase from Blind/Handicapped	✓		✓		
Commission on Fine Arts	✓				
Commission on Immigration Reform	✓				
Competitiveness Policy Council	✓				
Consumer Protection Safety Commission	✓		✓		
Corporation for National and Community Service	✓		✓		✓
DC Government	✓				✓
DC Public Service Commission	✓				
Defense Nuclear Facility Safety Board	✓				
Delaware River Basin Commission	✓		✓		
Department of Agriculture	✓	✓	✓	✓	✓
Department of Commerce	✓	✓	✓	✓	✓
Department of Defense	✓	✓	✓	✓	✓
Department of Education	✓	✓	✓		✓
Department of Energy	✓	✓	✓	✓	✓
Department of Health and Human Services	✓	✓	✓	✓	✓
Department of Interior	✓	✓	✓	✓	✓
Department of State	✓		✓		✓
Department of Transportation	✓	✓	✓	✓	✓
Environmental Protection Agency	✓	✓	✓	✓	✓
Export-Import Bank of the United States	✓		✓		
Federal Communications Commission	✓	✓	✓		✓
Federal Deposit Insurance Corporation			✓		
Federal Elections Commission	✓		✓		

SVS: Switched Voice Service
 SDS: Switched Data Service
 PSS: Packet Switched Service

CVTS: Compressed Video Teleconferencing Service
 DTS: Dedicated Transmission Service

Appendix II
Organizations on FTS 2000, Assigned
Networks, and Services Used

FTS 2000 NETWORK A AGENCIES AND SERVICES USED					
Agency Name	SVS	SDS	PSS	CVTS	DTS
Federal Emergency Management Agency	✓	✓	✓		✓
Federal Financial Institution Examiner Council	✓				
Federal Home Loan Banks	✓				✓
Federal Housing Board	✓				✓
Federal Labor Relation Authority	✓		✓		
Federal Retirement Thrift Investment Board	✓		✓		✓
Food & Agriculture Organization of the U.N.	✓				
General Accounting Office	✓		✓		
Goldwater Education Foundation	✓				
Inter-American Foundation	✓				
International Boundary and Water Commission	✓				
John F. Kennedy Center for Performing Arts	✓		✓		
James Madison Foundation	✓				
Library of Congress	✓				
Marine Mammal Commission	✓				
Martin Luther King Federal Holiday Commission	✓				
Merit System Protection Board	✓		✓		✓
National Academy of Sciences	✓				
National Aeronautics and Space Administration	✓	✓	✓		✓
National Building Museum	✓				
National Capital Planning Commission	✓				
National Council on Disability	✓				
National Gallery of Art	✓		✓		
National Science Foundation	✓	✓	✓		
Neighborhood Reinvestment Corporation	✓		✓		
Nuclear Regulatory Commission	✓		✓		✓
Nuclear Waste Technical Review Board	✓				
Office of Nuclear Waste Negotiators	✓		✓		
Office of Special Counsel	✓		✓		✓
Office of Special Events	✓				
Office of Technology Assessment	✓		✓		
Overseas Private Investment Corporation	✓		✓		
Pan American Health Organization	✓		✓		
Panama Canal Commission	✓				
Peace Corps	✓		✓		✓

SVS: Switched Voice Service
SDS: Switched Data Service
PSS: Packet Switched Service

CVTS: Compressed Video Teleconferencing Service
DTS: Dedicated Transmission Service

Appendix II
Organizations on FTS 2000, Assigned
Networks, and Services Used

FTS 2000 NETWORK A AGENCIES AND SERVICES USED					
Agency Name	SVS	SDS	PSS	CVTS	DTS
Pennsylvania Avenue Development Corporation	✓				
Physicians Payment Review Commission	✓				
Postal Rate Commission	✓		✓		
Postal Service	✓	✓	✓		✓
Prospective Payment Assessment Commission	✓				
Railroad Retirement Board	✓		✓		✓
Resolution Trust Corporation	✓		✓		✓
Securities Exchange Commission	✓		✓		✓
Selective Service System	✓		✓		✓
Smithsonian Institution	✓		✓		✓
Social Security Administration	✓	✓	✓	✓	✓
Tennessee Valley Authority	✓		✓	✓	✓
U.N. International Labor Office	✓				
U.S. Court of Veterans Appeals	✓		✓		
U.S. Enrichment Corporation	✓		✓	✓	✓
U.S. Japan Friendship Commission	✓		✓		
U.S. National Committee on Library and Information Science	✓				
U.S. Naval Home	✓				✓
U.S. Office of Government Ethics	✓		✓		
U.S. Senate	✓	✓	✓		
U.S. Soldier's and Airman's Home	✓			✓	
U.S. Army Corps of Engineers	✓	✓	✓	✓	✓
U.S. House of Representatives	✓		✓		
U.S. Mission to the United Nations	✓				
Veterans Affairs	✓	✓	✓	✓	✓
Washington Metro Area Transit Commission	✓				✓

SVS: Switched Voice Service	CVTS: Compressed Video Teleconferencing Service
SDS: Switched Data Service	DTS: Dedicated Transmission Service
PSS: Packet Switched Service	

Appendix II
Organizations on FTS 2000, Assigned
Networks, and Services Used

FTS 2000 NETWORK B AGENCIES AND SERVICES USED					
Agency Name	SVS	SDS	PSS	CVTS	DTS
African Development Foundation	✓				
Arkansas State Agency for Surplus Property	✓				
Commission on Civil Rights	✓		✓		
Commodity Futures Trading Commission	✓		✓		✓
Department of Housing & Urban Development	✓		✓	✓	✓
Department of Justice	✓	✓	✓	✓	✓
Department of Labor	✓	✓	✓	✓	✓
Department of the Treasury	✓	✓	✓	✓	✓
Equal Employment Opportunity Commission	✓		✓		
Federal Bureau of Investigation	✓	✓	✓		✓
Federal Maritime Commission	✓		✓		
Federal Mediation & Conciliation Service	✓				
Federal Mine Safety & Health Review Commission	✓				
Federal Trade Commission	✓		✓		✓
General Services Administration	✓	✓	✓	✓	✓
Institute of American Indian Arts	✓				
Institute of Museum Services	✓				
Louisiana Federal Property Assessment Agency	✓				
Morris K. Udall Scholarship & Excellence Found.	✓				
National Archives & Records Administration	✓		✓		✓
National Credit Union Administration	✓		✓		✓
National Endowment for the Arts	✓		✓		
National Endowment for the Humanities	✓				
National Labor Relations Board	✓		✓		✓
National Mediation Board	✓				
National Performance Review	✓				
National Transportation Safety Board	✓	✓	✓		
Occupational Safety & Health Commission	✓		✓		
Office of Personnel Management	✓	✓	✓		✓
Office of the Governor of Texas	✓				
Pension Benefit Guarantee Corporation	✓	✓	✓		
Public Defender Service for D.C.	✓				
Puerto Rico Federal Affairs Admin.	✓				
Small Business Administration	✓	✓	✓		✓

SVS: Switched Voice Service
SDS: Switched Data Service
PSS: Packet Switched Service

CVTS: Compressed Video Teleconferencing Service
DTS: Dedicated Transmission Service

Appendix II
Organizations on FTS 2000, Assigned
Networks, and Services Used

FTS 2000 NETWORK B AGENCIES AND SERVICES USED					
Agency Name	SVS	SDS	PSS	CVTS	DTS
State of Alabama	✓				
State of Illinois / CMS	✓				
State of Texas	✓				✓
Surface Transportation Board	✓		✓		✓
State of Utah	✓				
U.S. Information Agency	✓	✓			✓
U.S. Courts - Judiciary	✓	✓	✓	✓	✓
U.S. International Trade Commission	✓		✓		
U.S. Supreme Court	✓				
U.S. Tax Court	✓				
Veterans Affairs	✓				
White House	✓				

SVS: Switched Voice Service	CVTS: Compressed Video Teleconferencing Service
SDS: Switched Data Service	DTS: Dedicated Transmission Service
PSS: Packet Switched Service	

Comments From the General Services Administration



General Services Administration
Federal Telecommunications Service
7799 Leesburg Pike
Suite 210 North
Falls Church, VA 22043-2413

May 25, 1996

Ms. Linda D. Koontz
Associate Director, Information
Resources Management/General
Government Issues
General Accounting Office
441 G Street NW
Washington, DC 20548

Dear Ms. Koontz:

We received yesterday afternoon a copy of your draft report comparing telecommunications costs between agencies that use FTS2000 and those that do not. We appreciate the opportunity to provide comments regarding this draft report, and of having been provided a copy of the Snavely King report for reference. There has obviously been a considerable amount of effort and analysis accomplished in a short time period. The analyses show competitive FTS2000 prices and impressive savings to the government when all of these agency services are priced on FTS2000. We do have some general concerns regarding the approach and presentation of the GAO report which are included below. We also included comments and suggested changes in the enclosed marked-up copy of the draft report.

1. The report places emphasis on the percentage differences between contracts without recognizing the magnitude of services provided in each case and the cumulative savings based on volume and total usage of the program.
2. The report fails to account for FTS2000 prices after transition of the Department of Treasury. The volume sensitive voice, data and video services will realize significant price reductions on Network A in June or July 1996, with additional very significant reductions in all prices effective October 1, 1996, and with yet additional reductions in all prices effective October 1, 1997.

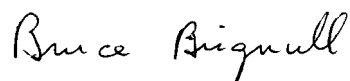
Without recognizing these built-in price reductions, the report is out of date, and therefore misleading, before it is released.

3. The report will also be viewed as out of date by failing to acknowledge the significant switched voice service (SVS) price reductions which Sprint, the Network B contractor, announced at the Network B Users' Forum. The announced SVS prices will place the on-net to on-net SVS prices for DoD well below that shown in your Table 1, and will also place the Avg. Cents Per Minute prices for the Federal Reserve Board and Legislative SVS under 6 cents/minute. This greatly changes percentage figures and shows both Networks providing savings for SVS in all cases. Sprint has also announced the provision of Asynchronous Transfer Mode (ATM) service within the Packet Switched Service (PSS) which was praised by the agency customers for its technical features and low price.
4. Finally, as noted in the report, all agencies except the Federal Reserve Board obtain Dedicated Transmission Service (DTS) from FTS2000 as well as from individual contracts. In effect, there has been some "cream skimming" of the FTS2000 DTS prices. Had all the DTS requirements been on the FTS2000 networks during Price Redetermination, yet lower prices may have been obtained for all customers. There has also been in some cases, a comparison of limited quantity street prices against comprehensive FTS2000 contracts which require the same prices everywhere.

In assessing whether or not FTS2000 use is cost-effective, we believe the GAO should summarize the overall cost savings to the Government, including the additional cost savings were these other agency services all transitioned to FTS2000 by October 1, 1996. We were also disappointed that you were unable to quantify the overhead associated with the provision of telecommunications services in the subject agencies. We understand that it is extremely difficult to interpret where such costs are involved in appropriated budgets. However, your determination of such costs would have helped the Federal Government address strategic issues related to level of telecommunications management centralization.

Appendix III
Comments From the General Services
Administration

If you have any questions regarding these comments or the attached marked copy of the draft report, please contact me on 703-610-2813.

A handwritten signature in cursive script that reads "Bruce Brignull".

Bruce F. Brignull
Assistant Commissioner
for Service Development

Enclosure

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Glossary

Compressed Video Transmission Service (CVTS)	A service that provides the capability of transmitting a video signal between two or more end locations at a bit rate significantly lower than standard video transmission.
Dedicated Transmission Service (DTS)	A service that provides a continuously available transmission path between two or more end locations and is priced independently of the number of minutes or calls transmitted.
Frame Relay	A type of fast packet technology using variable length packets called frames.
Packet Switched Services (PSS)	A service in which messages are broken down into smaller units called packets, which are then individually addressed and routed through the network.
Switched Data Services (SDS)	A switched service that provides the capability of transmitting data at rates of 56/64 kilobits per second over conditioned facilities.
Switched Digital Integrated Services (SDIS)	SDIS provides the capability of integrating voice, data, image, and video services from an individual terminal location by means of digital connectivity.
Switched Voice Services (SVS)	A service that provides the capability of transmitting voice through a switched network.

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