Plan Title:	**Central Resources Management**
Plan Number:	**CB-IT-94-01-E**
Plan ID:	**IT**

PART II - ANNUAL PLAN TELECOMMUNICATIONS

1. Architecture Status

The current Telecommunications architecture is shown in Figure 1. TCO has made major strides in moving the old architecture toward the planned architecture described in Part I. Standards have been defined for hardware (e.g., routers and concentrators), software (e.g., TCP/IP, SNMP, cc:Mail), and communications (e.g., FDDI ISO9314, Frame Relay). Cabling systems, concentrators, and routers are beginning to be monitored for performance since the arrival and installation of performance monitoring tools so that a performance baseline can be established in FY 1996 for the following years. Network bottlenecks have been identified and removed by the addition of fast ethernet switches, concentrators, routers, and resegmentation of the network. These modifications have resulted in increased performance and network reliability over the past two years. The architecture migration is estimated to be 40 percent complete. An overview of the architecture status for the enterprise, WAN, LAN, and voice is found below and details on all initiatives are found in Section 3 Status.

A. Enterprise

The Enterprise currently includes access to the Internet for 4000 internal Census users. Access to Census from the Internet is currently limited to data placed on the Internet Server and outside users do not cross the firewall. Access to other Government agencies is currently provided by dedicated secure lines. Dial in access is limited to Census field staff and CAPI users. Remote access is controlled by a bastion host firewall leased in 1995 under a two year lease.

As the Open Systems Migration takes place, the IPX (from Novell LANs), LAT (from VAX servers), DECNET (from VAX clusters and servers), and Appletalk (from Macintosh PCs) networking protocols are being migrated to the TCP/IP standard.

B. WAN

The WAN currently includes fiber access to the Campus LAN and T-1 Frame Relay access to the Remote and Data Center LANs. As the Bowie Computing Center (BCC) comes on line, it will

also be accessed via fiber SONET lines since it is part of the Campus LAN and the anticipated bandwidth requires a fiber connection. Multiple T-1 leased lines have been installed to the data centers and between the data centers to improve reliability and accessibility. A single leased line will not be guaranteed by FTS to have uptime in excess of 99.5% and the cost/benefit for access to the Enterprise Computing Resources requires a 99.9% uptime.

C. LAN

The LAN currently includes outdated 10Base2 and 10Base5 cable plant installations at DPD in Jeffersonville. This is being replaced by Category 5 UTP which is 100 Mbps capable to bring Jeffersonville up to the same standard used at all other locations and to increase the reliability and fault isolation of the cable plant. The replacement is 100 percent complete for all other sites. As the cable plant migration takes place, the addition of concentrators and fast ethernet switches allows performance monitoring in compliance with the overall architecture.

D. Voice

Voice has been minimally integrated into the Enterprise and current capability allows users to be informed via voice mail how many electronic messages have not been read and by electronic mail how many voice mail messages have been received.

2. Telecommunications Objectives

Telecommunications objectives are to provide users with the network infrastructure and interfaces to the compute functions they require. These components and devices will be based on industry standards and allow users to share resources and develop applications that efficiently and effectively use Census information technology resources.

- The communication network is designed with an enterprise-wide view. In addition, the network provides connectivity between all the disparate computing platforms and input/output devices.

- The network uses standards-based technologies and uniform interconnection topologies. Standards are selected in the following priority order: international, national, and de facto.

The network design strategy will achieve a balance between use of computing (distributed & centralized) and telecommunication resources. This balance will be achieved through close cooperation and communication with the user community. TCO will provide the necessary documentation and support to ensure user design parameters take advantage of network capabilities. TCO will also ensure the diverse user requirements are met while achieving efficient use of corporate resources.

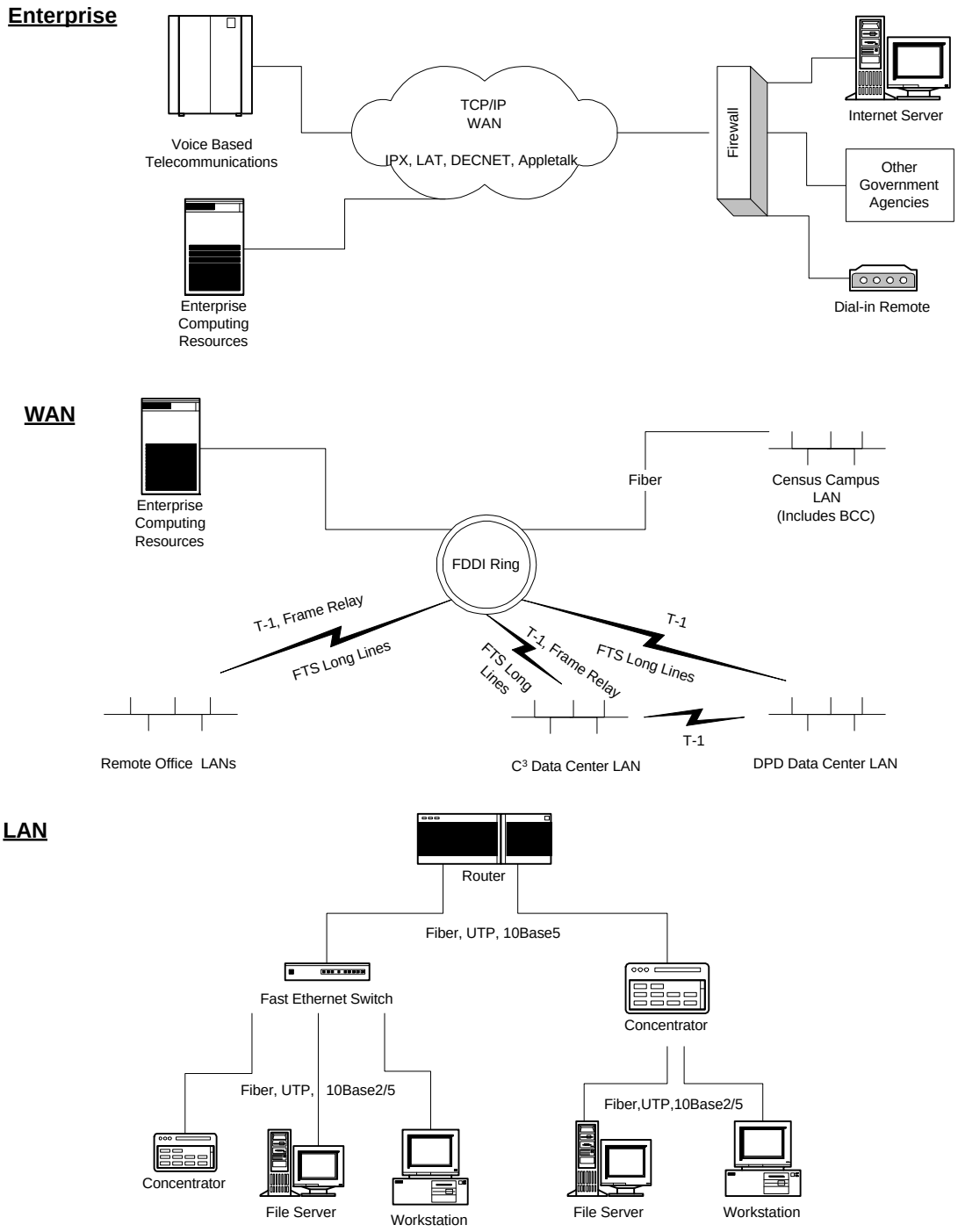


Figure 1 Current Telecommunications Architecture

Through the use of a Network Operations Center (NOC), the amount and frequency of data traversing the communication network will be optimized to take advantage of communication technologies. The objective of the NOC is to:

- Provide users with a reliable, secure, expertly managed network capable of anticipating performance problems.

- Monitor and troubleshoot the major Census networks.

- Manage and integrate the expanding user requirements for intra-interagency communications capabilities as well as the methodology for installation and maintenance.

3. Status

A. Enterprise

1. Enterprise Accomplishments Through FY 1996

TCO has made great strides in migrating to the Enterprise architecture. In FY 1996, these efforts include the following:

- TCO has enterprise versions for cc:Mail, Novell Netware, Calendaring, and Word Perfect. These systems were acquired and are supported and distributed centrally. This has been more cost effective and timely and conforms to Census standards. Costs for FY 1996 were $456,000 including software and hardware for servers and mail routers.

- An additional $200,000 has been requested for contractor support for enterprise information access. TCO is evaluating Lotus Notes and an Intranet web based browser to meet this requirement.
  - Notes has received significant user interest and requires central support before it becomes more widespread.
  - There are an increasing number of internal Internet web based sites which need a coordinated approach to define Census standards.

- TCO has started the discussions with user divisions on standardizing their file servers and LAN support. The Economic area has centralized their LAN systems and support. The Demographic area is starting to standardize their LANs across the divisions. TCO has centralized the LAN systems and support for the divisions under the CFO and expect to continue centralization activities of LAN/OA functions.

- TCO has standardized on routable protocols including TCP/IP, Appletalk, IPX/SPX, and DECNet. We have discontinued using LAT and other Bridged protocols. Over 100 devices were connected through TCP/IP terminal servers at a cost of $50,000.

- TCO has initiated work for planning and research, major items for which funds have been requested including a Research and Development contractor and hardware for WAN spares and testing at a cost of $432,000.

- A network monitoring system is being developed with the assistance of an outside contractor at an initial cost of $100,000. Additional funds to establish a full Network Operating Center, including hardware, software, and consulting services have been requested.

- Video teleconferencing is being established to improve our communications and training capabilities with the remote offices and funds of $250,000 have been requested.

- TCO has improved network security with the installation of a firewall with Internet interface at a cost of $252,000. The firewall was tested to Security Office specifications.

- TCO is in the process of planning the implementation of a prototype Decennial environment including a Local Census Office and a Data Capture Center for the Decennial Census planning operations with an initial cost allocation of $115,000 from the sponsor. This environment will be used to design, test, and size systems for the Decennial.

- In conjunction with major users, and with some user financial support, we have established network subnets to reduce WAN traffic. These activities are oriented towards improving performance for the CAPI/Field activities and in direct support of the divisions involved in the upcoming Economic Censuses.

- TCO has addressed the concerns stated in the Booz-Allen report on Census telecommunications. We have established a new TCO organizational structure with a significant planning component and with this submission have started on the plans for providing the Bureau the necessary telecommunications resources through the 2000 Decennial Census.

- TCO has begun the process of standardization on TCP/IP as the Bureau's primary transport protocol.

- TCO has initiated a Risk Assessment for current operations. This assessment is due to be completed this year.

2. Enterprise Plans For FY 1997

Our telecommunications plans include FY 1997 through FY 2001. Figure 3.1-1 contains cost information by year and Figure 3.1-2 contains the milestones and schedule items. The current plan includes the following and are cross-referenced with the Categories (Enterprise, WAN, LAN, Voice), priorities, and cost items as noted in the projected costs.

- Enterprise Program support - Activities in FY 1997 include support for prototype testing of systems and capacity planning for telecommunication needs. TCO will work with the Field division and Technology Management Office in using teleconferencing for distance learning and remote training. Significant efforts will be made in determining requirements and developing specifications for the Decennial procurements. (Enterprise Progse of a Network Operations Center (NOC), the amount and frequency of data traversing the communication network will be optimized to take atwork Operations Center. Contractors will assist in specifying hardware and software needed. Fault isolation and capacity planning tools will be examined/developed to meet the defined standards.

- Standardize on Internet Protocol Internet Access - The network will be configured to minimize non-TCP/IP traffic. Standard software will be procured to provide terminal emulation, Internet browsing, and IP accesses. Standards will be revised and procurement started to utilize the expanded Internet addressing standard.

- Security/Firewall - TCO will acquire and install encryption software for Bureau wide deployment for security data transfers. Hardware and software systems will be tested and installed to support data transfers to other Federal agencies and to users outside the Federal Government or outside the Census secure net.

- Planning & Research (including R&D Lab) - Equipment will be installed and configured to provide backups to network equipment to meet network availability standards. Test equipment will provided to ensure that new hardware and software to be installed in the enterprise meet or exceed specifications and cause no outages to the operational net.

- Enterprise Software Support - Site licenses will be implemented to include all of the desktop products that are Bureau standards. OA systems will be completely standardized and support will be centralized. TCO will begin working on a procurement methodology that will award a contract that will provide for the software and hardware systems needed for the desktop. Different levels of users would receive appropriate capabilities.

- Contingency Plan and Resources - TCO will implement the needed technology based on the findings of the Risk Assessment currently underway. The technology will be integrated with the current and planned infrastructure to ensure the user and customer uninterrupted communication to remote sites in the event of data communication equipment failures (e.g. routers, concentrators, DSU/CSU, etc.), data communication line outages, and catastrophic failures. TCO will work with user requirements, once defined, in providing connectivity to all backup and archive systems.

- Video Teleconferencing - Video teleconferencing to all of the regional offices in support of on-going surveys will be investigated and tested. Remote training centers will be set up at Headquarters and at strategic sites in all of the regional office cities in preparation for Decennial Census training requirements.

3. Enterprise Plans For FY 1998

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.1-1 lists the cost items and Figure 3.1-2 shows the related schedule.

- Enterprise Program Support - Program support activities in FY 1997 include prototype testing of systems and capacity planning for telecommunication needs. TCO will work with the Field divisions on using teleconferencing for distance learning and remote training. Significant efforts will be made in determining requirements and developing specifications for the program procurements.

- Network monitoring - TCO will begin the installation and operation of a Network Operations Center. Contractors will assist in specifying hardware and software needed. Fault isolation and capacity planning tools will be examined/developed to meet the defined standards.

- Security/Firewall - TCO will acquire and install encryption software for Bureau wide deployment for security data transfers. Hardware and software systems will be tested and installed to support data transfers to other Federal agencies and to users outside the Federal Government or outside the Census secure net. To keep up with the state-of-the-art in network protection, TCO has set a schedule of replacing the firewall technology on a two-year cycle.

- Planning & Research (including R&D Lab) - Equipment will be installed and configured to provide backups to network equipment to meet network availability standards. Test equipment will provided to ensure that new hardware and software to be installed in the enterprise meet or exceed specifications and cause no outages to the operational net.

- Enterprise Software Support - Site licenses will be implemented to include all of the desktop products that are Bureau standards. OA systems will be completely standardized and support will be centralized. TCO will begin working on a procurement methodology that will award a contract that will provide for the software and hardware systems needed for the desktop. Different levels of users would receive appropriate capabilities.

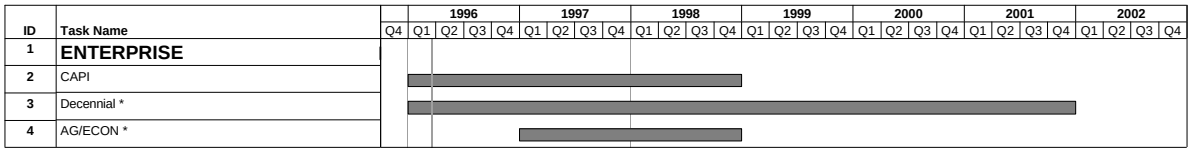
- Internet Access and TCP/IP Update - The network will be configured to minimize non-TCP/IP traffic. Standard software will be procured to provide terminal emulation, Internet browsing, and IP accesses. Standards will be revised and procurement started to utilize the expanded Internet addressing standard.

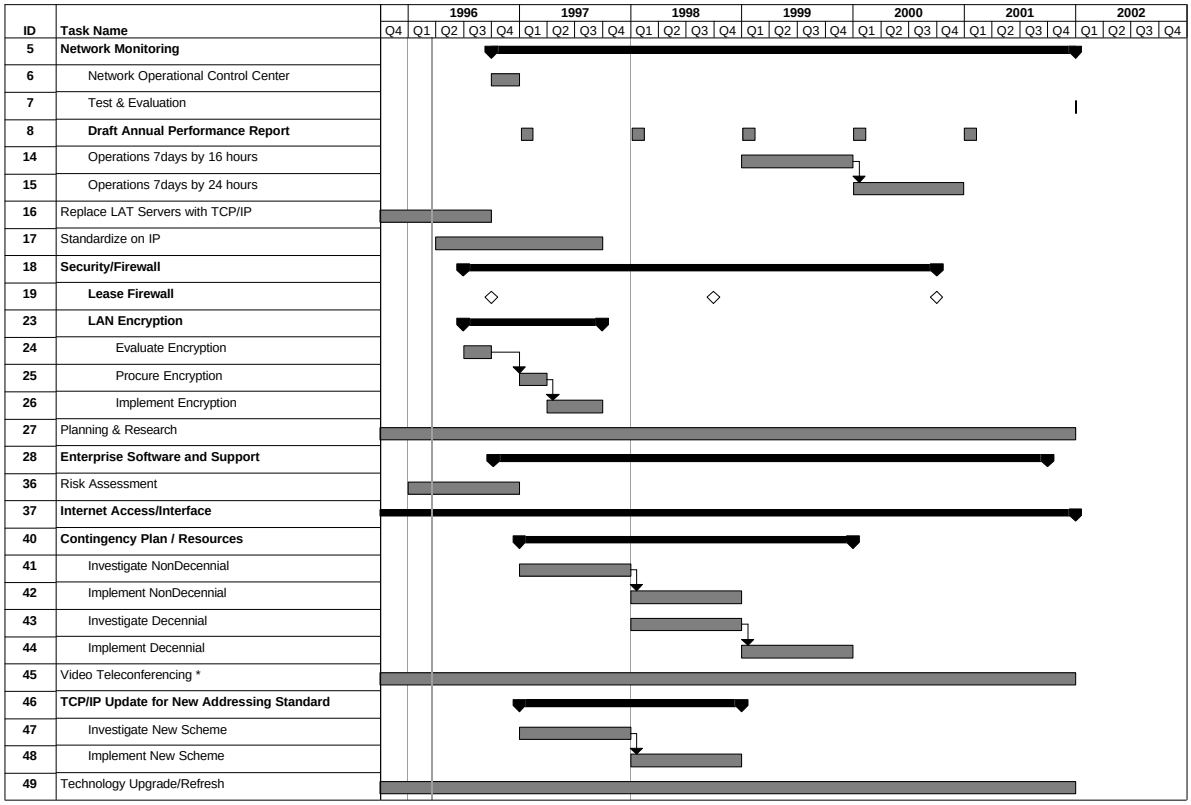
- Contingency Plan and Resources - TCO will implement the needed technology based on the findings of the Risk Assessment currently underway. The technology will be integrated with the current and planned infrastructure to ensure the user and customer uninterrupted communication to remote sites in the event of data communication equipment failures (e.g.

routers, concentrators, DSU/CSU, etc.), data communication line outages, and catastrophic failures. TCO will work with user requirements, once defined, in providing connectivity to all backup and archive systems.

- Video Teleconferencing - Video teleconferencing to all of the regional offices in support of on-going surveys will become fully operational. Remote training centers will be set up at Headquarters and at strategic sites in all of the regional office cities in preparation for Decennial Census training requirements.

4. Enterprise Schedule





B. WAN

1. WAN Accomplishments through FY 1996

We have improved our wide area network to the point that we experience less than 1 hour of unscheduled down time per month compared with, in the past 5 years, the network would be down or unstable for days at a time. Our Computer Support Desk trouble ticket records verify these statistics. This was accomplished by the following steps:

- The addition of four Cisco 7000 routers to the FDDI ring.
- The segmentation of each floor of each wing.
- The moving from a BUS topology to a STAR topology.
- The changing from a copper backbone to a fiber backbone.
- The migration to UTP wiring to the desktop.
- The installation of UTP concentrators on each segment.
- Incorporated Frame Relay technology to the Regional Offices.
- Installed Cisco 7507 routers in Washington Plaza I & II.
- Replaced copper backbone with fiber in Washington Plaza I & II.
- Installed Cisco 5000 switches in Washington Plaza I.
- Converted Iverson Mall office to UTP wiring.
- Converted Iverson Mall to STAR topology.
- Installed Cisco 7000 routers in Iverson Mall.
- Planning to install ATM between Suitland and Washington Plaza.

TCO has upgraded some of the older Campus LAN routers so that all of the routers are at the same level of hardware and software. This will allow the use of the latest routing protocols which in turn will automatically switch from a failing link to a working link transparent to the users. TCO has investigated using ATM concentrators to enhance the reliability of the network and increased the network backbone capacity.

2 WAN Plans For FY 1997

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.2-1 contains cost information by year and Figure 3.2-2 contains the milestones and schedule items. The current plan includes the following:

- Upgrade Campus Routers - Our projected network capacity will double each year through 2001. See figure 2.2.A.2 in Part I. To allow for this increased traffic, we will need to replace our existing 12 routers on the campus network with Cisco 7500 series routers. For new segmenting in fiscal year 1997, we will need approximately two additional Cisco 7500 compatible routers.

- Bowie Connectivity - The bandwidth for the Bowie connectivity is expected to increase at the same rate as the Bureau traffic; i.e., double every year until 2001. This will require keeping this operating at or near the industry state-of-the-art standard. Since Bowie will house a significant portion of our enterprise computing systems, the traffic demand is expected to be in the 25 gigabyte range. We anticipate procuring and installing four Cisco 7500 series routers with ATM capabilities, and four Cisco 5000 series fast ethernet switches and/or concentrators.

- ATM Concentrators -The need for more high speed data transfer dictates the installation of at least 6 ATM concentrators to connect Headquarters and the outlying offices and various offices within the complex. This will provide ATM capabilities to the existing 6 Virtual LANs.

- Increase Backbone Capacity - As user traffic requirements increase, such as backup and archiving, Internet traffic, and video conferencing traffic, TCO will need to install additional fiber and or other media, two routers, and four ATM capable fast ethernet switches in the outlying offices.

3 WAN Plans For FY 1998

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.2-1 contains cost information by year and Figure 3.2-2 contains the milestones and schedule items. The current plan includes the following:

- Upgrade Campus Routers - As we begin testing for the 2000 census, and the projected increase in the normal day-to-day network traffic, see figure 2.2.A2 in Part I, we need to replace our 12 existing Cisco 7000 routers with Cisco 7507 or the latest version. These routers should have the latest routing software residing in them to permit us to set up load sharing paths between different sites, offices, etc.

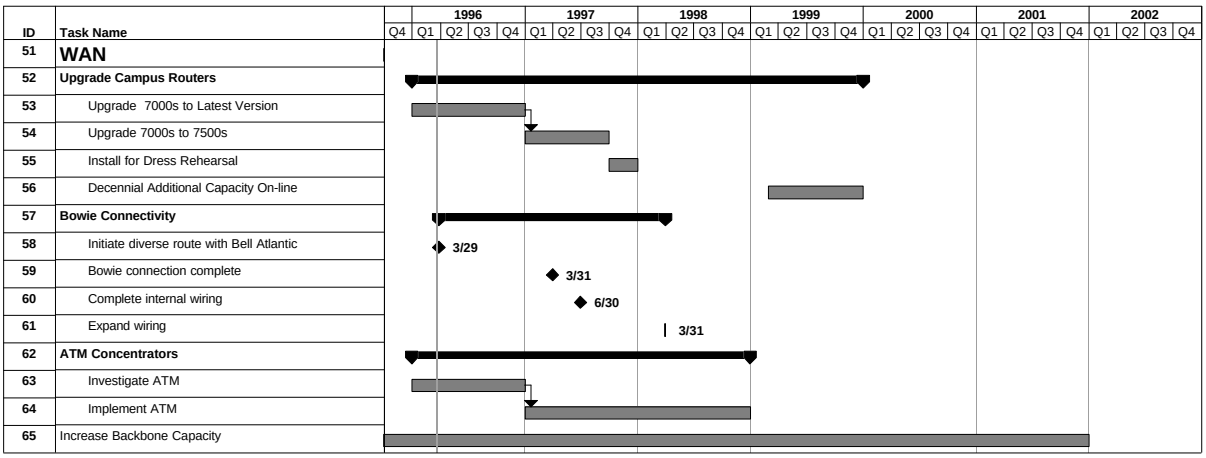
- Bowie Connectivity - With the 2000 census activity beginning, we will need to upgrade our 4 Cisco 7000 to the latest version on the market and to be compatible with the Bureau's campus routers. The 4 Cisco 5000 type ethernet switches will need to be upgraded likewise to remain compatible with the rest of the network and capable to handle the increased network traffic.

- ATM Concentrators -The need for more high speed data transfer dictates the installation of at least 6 ATM concentrators to connect Headquarters and various offices within the complex.

- Increase Backbone Capacity - With the projected traffic increasing annually by 97%, the backbone bandwidth must also expand to accommodate the traffic. This will be accomplished by installing 3 FDDI rings each with 4 Cisco type 7507 or later routers dual

homed through 3 Cisco 5000 type switches. This makes a total of 9 Cisco type switches for these 3 rings.

4. WAN Schedule



C. LAN

1. LAN Accomplishments Through FY 1996

Significant reliability improvements in the LAN connections have been made such as:

- Replacement of copper backbone with fiber backbone at Headquarters.
- Installation of UTP Category 5 to the desktop at Headquarters.
- Change from a Bus topology to a Star topology for better fault isolation and standardization.
- Installation of concentrators and fast ethernet switches at Headquarters.
- Wiring of all Regional Offices except for Seattle with UTP.
- Replacement of a laser link with Fiber in Jeffersonville.
- Installation of Fiber between three buildings in Jeffersonville.
- Segmenting of three floors of Building 66 in Jeffersonville.
- Installation of concentrators in Building 66 in Jeffersonville.
- Installation of Fiber backbone in Building 63 in Jeffersonville.
- Installation of UTP in part of Building 63 in Jeffersonville.
- Installation of concentrators in Building 63 in Jeffersonville.
- Subnetted five LANs on the Campus LAN.
- Maintenance of hyperchannel link for user access to the UNISYS mainframe.

- Two bays (63B and 63E) in DPD have had UTP installed. DPD has a total of 41 bays which need to be recabled to meet the UTP, fiber architecture. This recabling effort has been spread across six fiscal years and TCO plans on recabling seven bays this year.
- DPD has had fiber backbone installed in and between all buildings on the complex.

2. LAN Plans For FY 1997

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.3-1 contains cost information by year and Figure 3.3-2 contains the milestones and schedule items. The current plan includes the following:

- Scalability for LAN - Scalability allows the network to grow as the user traffic needs increase. We will continue to improve the network scalability using 6 state-of-the-art ether switches or the appropriate equipment that will most effectively perform this task. All LANs will be improved by the use of up to 10 ATM capable ether switches and 4 ATM capable routers.

- UTP Wiring - Wire Seattle RO and any new RO space for UTP. Replace all remaining DEC connections with UTP and support any move, changes and additions required for network connectivity.

- Hyperchannel - The Hyperchannel must remain intact until September 30, 1997. Maintenance contract must continue until we terminate the use of the UNISYS Mainframe.

- UTP Wiring for DPD - Install UTP and fiber in seven DPD bays.

3 LAN Plans For FY 1998

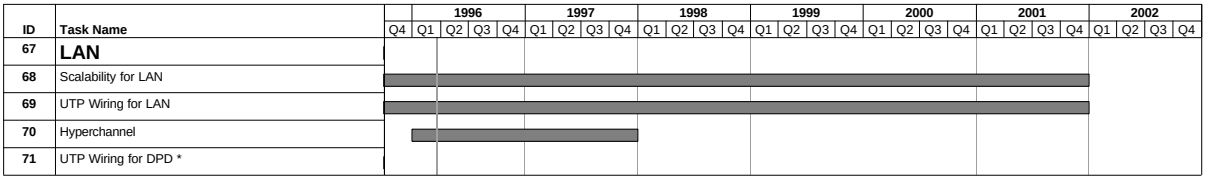
Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.3-1 contains cost information by year and Figure 3.3-2 contains the milestones and schedule items. The current plan includes the following:

- Scalability for LAN - The continuing scalability of the network is necessary because of the projected increase in network traffic. See Figure 2.2.A.2 Part I. This will be accomplished by further subdividing the network which will require the procurement of 6 more Cisco 5000 type (or better) ether switches, 10 more ATM capable ether switches and 4 more ATM capable routers.

- UTP Wiring - Wire any new RO space for UTP. Support any move, changes and additions required for network connectivity.

- UTP Wiring for DPD - Install UTP and Fiber in seven bays at DPD.

4. LAN Schedule



D. Voice

1. Voice Accomplishments For FY 1996

Our current FTS2000 network is fully operational and all Bureau long haul telecommunications are provided by this network. Other progress includes:

- WITS telephone service is fully operational in the Suitland Complex, Washington Plaza, and the Suitland Professional Center. TCO continues to strive to extend WITS to the SHEP and Iverson Mall.

- TCO has determined the telecommunications requirements for the Bowie site and is now developing the plans for procurement of telecommunications equipment and services. A SONET network is required to support the Bowie Computer Center and TCO is continuing to work with GSA to extend SONET network service to the facility.

- Work has begun on the telephone system upgrade from the Merlin system to the Legend system. TCO continues to work to improve our voice mail system with our goal to have an integrated Voice Mail/Electronic Mail network available to all Census employees, Nationwide.

- TCO has realized a cost savings of 11% for all FTS2000 voice and data service for the Bureau.

- TCO has installed 10 Mbps Fiber Network Service (FNS) to all of the outlying building in the Washington Metro Area except SHEP and has placed orders to Bell Atlantic to install FNS service to SHEP and improve the fiber services at the serving Central Office for Iverson Mall and SHEP.

2. Voice Plans For FY 1997

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.4-1 contains cost information by year and Figure 3.4-2 contains the milestones and schedule items. The current plan includes the following:

- FTS2000 - TCO will continue to use FTS2000 for all existing Bureau voice and Data long haul telecommunications requirements. TCO plans to transition as quickly as possible to the Post FTS2000 (PF2K) network(s) and intends to use the PF2K system for all Decennial related telecommunications.

- WITS Service - The system provides 4 digit dial and costs less than $16 per line per month. We are working with GSA to extend WITS switched voice service to the Iverson Mall (IMall) and Silver Hill Executive Plaza (SHEP) which are currently served by GSA Consolidated Centrex service.

- Local Service - This includes all local data and voice telecommunications other that WITS. It includes GSA Consolidated Centrex, 10Mbps Fiber Network Service (FNS) and SONET network service for both voice and data to the Bowie Computer Facility.

- Decennial Telephone Service - Telephone Services will be provided by the Post FTS2000 (PF2K) contract. Although it is not known what form this new contract will take, based on the latest information from the Interagency Management Council and GSA, TCO anticipates the system will be able to handle all Decennial requirements. TCO is working with GSA to make sure that the transition to the new contract does not impact on the Decennial Dress Rehearsal scheduled for FY 1998 and that all Decennial communications are installed, tested, and fully operational prior to the expiration of the current FTS2000 contract in December 1998. (Enterprise Program priority 2)

- Telephone System Upgrade - The TCO goal is to complete the upgrade of Merlin to Legend for all locations nationwide by the end of CY 1997. This will allow us to consolidate maintenance, programming, and support functions and consolidate the existing Merlin systems into groupings by wing in FOB 3 & 4. The first 100 Legend processors have been acquired and the installation has begun on systems in the Washington Metro Area. Regional Office system change outs will be scheduled in conjunction with Field to minimize impact on the RO workloads. TCO continues to work with DPD and TMO on the JTC PBX. The HTC and TCC PBXs were upgraded in FY 1995 but as new releases of software are released, they will be reviewed for possible use in these facilities. TCO will work with TMO on the purchase and installation of a PBX for the JTC and the continued upgrade of the PBXs in the HTC and the TTC. (Voice priority 14, 15, 34)

- Voice/Email Integration - TCO is investigating systems that can provide voice mail capabilities for every Census employee and office nationwide. TCO is working with the current voice mail vendor Octel, to Beta test their system that will provide for voice mail/electronic mail integration.

- PBX for HQ and Voice Mail for Each Employee - TCO is exploring the hardware requirements for a PBX for Headquarters. An onsite PBX with full voice mail integration will allow us to provide a voice mailbox for each employee. (Voice priority 26, 28, 34)

- Voice Mail for Remote Offices - TCO will investigate voice mail systems for the remote office locations. Systems for the Remote Offices should provide basic voice mail, call processing, and fax capability. The system will be flexible and able to accommodate increased user requirements. (Voice priority 27)

- Wireless Communications and Personal Communications Services (PCS) - TCO has acquired 3 PCS devices for testing in the Washington Metro Area. As the service becomes available in other areas of the country, TCO will work with the local offices to evaluate possible use of the systems. We continue to meet with vendors of wireless communications systems and will acquire several systems for testing. (Voice priority 31, 32)

3. Voice Plans For FY 1998

Our telecommunications plans include the time frame from FY 1997 through FY 2001. Figure 3.4-1 contains cost information by year and Figure 3.4-2 contains the milestones and schedule items. The current plan includes the following:

- FTS2000 - TCO will continue to use the system for all existing Bureau voice and Data long haul telecommunications requirements. TCO plans to transition as quickly as possible to the PF2K network(s).

- WITS Service - The system provides 4 digit dial and costs less than $14 per line per month. TCO is working with GSA to extend WITS switched voice service to the Iverson Mall (IMall) and Silver Hill Executive Plaza (SHEP) which are currently served by GSA Consolidated Centrex service.

- Local Service - This includes all local data and voice telecommunications other than WITS. It includes GSA Consolidated Centrex, 10 Mbps Fiber Network Service (FNS), and SONET network service for both voice and data to the Bowie Computer Facility.

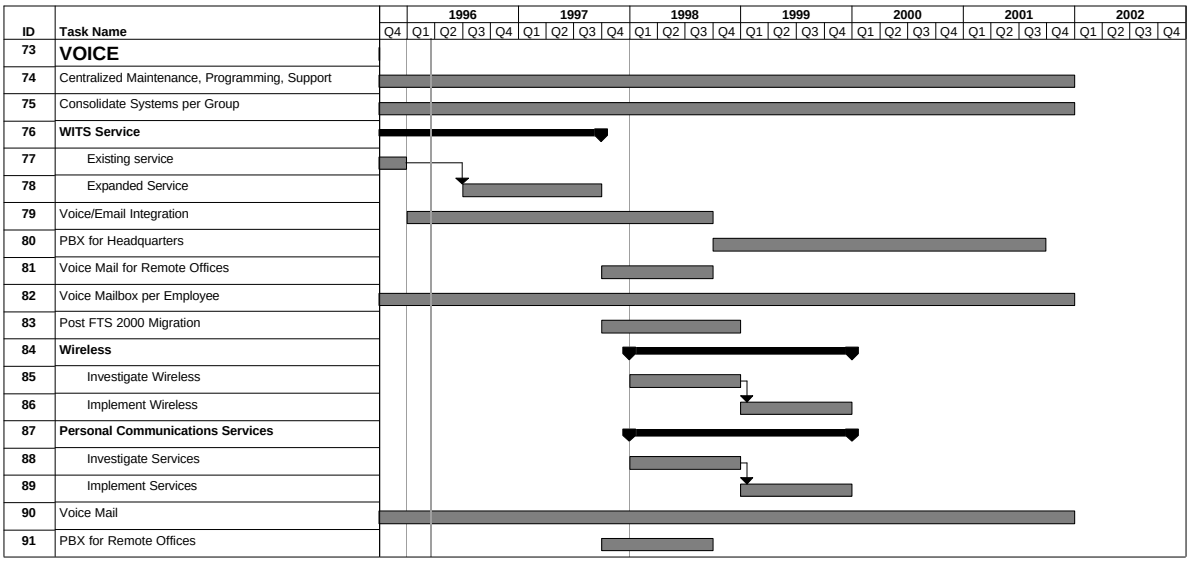
- Decennial Telephone Service - Telephone Services will be provided by the Post FTS2000 (PF2K) contract. We do not know what form this new contract will take, but, based on the latest information from the Interagency Management Council and GSA, we anticipate the system will be able to handle all of our Decennial requirements. We are working with GSA to make sure that the transition to the new contract does not impact on the Decennial Dress Rehearsal scheduled for FY 1998 and that all Decennial communications are installed, tested, and fully operational prior to the expiration of the current FTS2000 contract in December 1998. (Enterprise Program priority 2)

- Telephone System Upgrade - The TCO goal is to complete the upgrade of Merlin to Legend for all locations nationwide by the end of CY 1997. This will allow us to consolidate maintenance, programming and support functions and consolidate the existing Merlin systems into groupings by wing in FOB 3 and 4. Regional Office system change outs will be scheduled in conjunction with FIELD to minimize impact on the RO workloads. TCO will continue to work with DPD and TMO on the JTC PBX. The HTC and TCC PBXs were upgraded in FY 1995 and as new releases of software are released, they will be reviewed for possible use in these facilities. TCO will work with TMO on the purchase and installation of a PBX for the JTC and the continued upgrade of the PBXs in the HTC and the TTC.

- Voice/Electronic mail Integration - TCO is investigating systems that can provide voice mail capabilities for every Census employee and office nationwide. TCO is working with the current voice mail vendor Octel, to Beta test their system that will provide for Vmail/Electronic mail integration.

- PBX for HQ and Voice Mail for Each Employee - We are exploring the hardware requirements for a PBX for HQ. An onsite PBX with full voice mail integration will allow us to provide a voice mailbox for each employee at HQ. (Voice priority 26, 28, 33)

- Voice Mail for Remote Offices - TCO will investigate voice mail systems for the remote office locations. Systems for the Remote Offices should provide basic voice mail, call processing and fax capability. The system will be flexible and able to accommodate increased user requirements.

- Investigate the use of Wireless Communications and Personal Communications Services (PCS) - As the service becomes available in other areas of the country, TCO will continue to work with the local offices to evaluate possible use of the systems. TCO will continue to meet with vendors of wireless communications systems and will acquire several systems for testing.

4. Voice Schedule