Report to:
Joint Legislative Budget Committee
Arizona Telecommunications Services

November 2002

Prepared by:
Department of Administration Information Services Division and
The Government Information Technology Agency,
State of Arizona

Table of Contents

I. ***Executive Summary*** ***1***

II. ***Introduction*** ***4***

III. ***General Background Arizona Telecommunication System (ATS)*** ***4***
- **A.** Year Created 4
- **B.** Statutory Authority 4
- **C.** Legislative Intent 4
- **D.** FY03 Appropriations Request (HB2706) for Report 4
- **E.** ATS Challenges/Key Findings 5

IV. ***ATS Size and Scope*** ***5***
- **A.** Organization & Staffing 5
- **B.** ATS Five Year Financial Summary 6
- **C.** Current Business Model 7
- **D.** ATS Services 7
- **E.** ATS Customer Base 7
- **F.** Infrastructure 7

V. ***Short Term Cost Savings Opportunities*** ***8***

VI. ***Data Collection Methodology VoIP/IP Telephony & Service Delivery Options*** ***11***

VII. ***Best Practices & Industry Trends*** ***12***
- **A.** State Government 12
- **B.** Private Industry 13
- **C.** Vendor Positioning in Marketplace 13

VIII. ***Data Collection & Analysis*** ***14***
- **A.** Statewide Telecommunications Services Total Cost of Ownership (TCO) 14
  - Gartner Statewide Telecommunications Analysis 16
  - Gartner Arizona Department of Administration Arizona Telecommunications System (ATS) Analysis 18
- **B.** Business Application Requirements 21
- **C.** Customer Care Processes 22
- **D.** Strategic Analysis and Strategy 22
  - Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis 22
  - Internal Factor Evaluation (IFE) 24
  - External Factor Evaluation (EFE) 26
  - Strategy Evaluation 30

IX. ***Telecommunications Technology*** ***32***
A. State Standards 32
B. Technology Refresh 33
C. VoIP/IP Telephony 35

X. ***Discussion of Service Delivery Options*** ***38***
A. As Is 39
B. Decentralized 40
C. Shared Services 42
D. Privatized 43

XI. ***Conclusions*** ***45***

XII. ***Recommendations*** ***46***

XIII. ***Next Steps*** ***47***

Glossary of Terms

Appendices

A. ***House Bill 2706***
B. ***Enterprise Architecture Standard***
C. ***Organization Charts***
ATS
Finance and Planning
D. ***ATS Services and Customers***
ATS Service Offerings
Services by Agency
E. ***Agencies Providing Data***
F. ***Financial Views and Assumptions***
G. ***Financial Tables***
ISD Expense Allocation – FY 1998
ISD Expense Allocation – FY 1999
ISD Expense Allocation – FY 2000
ISD Expense Allocation – FY 2001
ISD Expense Allocation – FY 2002
H. ***GITA Standard P100***
I. ***Voice Circuit Schematic Diagram***
J. ***Data Circuit Schematic Diagram***

I. Executive Summary

Purpose

This report has been prepared in response to requirements in House Bill 2706 (Appendix A). The Arizona Department of Administration (ADOA) and the Government Information Technology Agency (GITA) were tasked in that bill with reviewing telecommunications options and submitting a plan to the Joint Legislative Budget Committee (JLBC) by November 1, 2002. All options developed were intended to improve service delivery and increase the fiscal efficiency of Arizona statewide telecommunications services.

Recommendations

Arizona State Government should pursue either a Shared Service or a Privatized service delivery model. (These service delivery models are described in detail in the body of the report). The ADOA prepared cost analyses on both of these models. The ADOA Privatized financial analysis was based upon the State retaining ownership of the assets. Both of the ADOA cost analyses showed favorable 5-year budget impacts. An alternative Privatization scenario, private ownership of assets, is favored by GITA. However, the ADOA cost evaluation contained in the body of the report concludes that the Privatized Model appears to offer more potential.

A detailed discussion on the cost analyses begins on page 33 of the report. It should be noted that this recommendation is a radical departure from the existing service delivery model.

Further, given the internal weaknesses identified in the Factor Analysis contained within the body of the report, Arizona State Government needs to:

- Adopt a centralized governance model with strong executive authority and Legislative involvement.

- Depending upon which method of privatization is selected, centralized telecommunications funding to leverage resources and gain greater accountability may be desirable.

- Strongly consider the resources available in the private sector either through an outsource (leveraging the economies of scale available through public/private partnerships) or co-source (shared services) to improve efficiency, acquire expertise and ease the financial burden.

Study Methodology

The team used a variety of data collection methods, including an extensive review of the literature and a survey of fourteen of the largest agencies representing 80% of the State's telecommunications expenditures. Further, data analysis tools included the use of the Gartner Group Total Cost of Ownership (TCO) Manager Models. Finally, strategic analysis tools were also used, including an Internal Factor Evaluation (IFE) and an External Factor Evaluation (EFE).

Findings and Conclusions

Factor Analysis
The Internal Factor Evaluation (IFE) indicates that the current statewide telecommunications delivery systems are inadequate. Further, the External Factor Evaluation (EFE) clearly indicates that present statewide strategies are neither taking advantage of emerging opportunities nor avoiding external threats.

Gartner Analysis
The Gartner analysis indicates that there are significant opportunities for cost reductions through consolidation including personnel and transmission.

- For the Wide Area Data Network, the State spent $2,764,056 more on transmission facilities, personnel, hardware and software than its best-in-class clone. In the area of personnel, the State has more IT WAN FTEs than would be utilized by a best-in-class organization. Personnel costs for the State were $2,010,145 higher than the best-in-class.

- By directing more traffic to its private network (PTN access) and by utilizing dedicated circuits to long distance carriers (VNS access), the peer is able to obtain a better cost per minute than the State who is sending more traffic over the public network (VNS usage). For the Wide Area Voice Network, the State is, therefore, paying $2,248,332 more than the best-in-class clone.

When compared with the Statewide Total Cost of Ownership figure, $66,368,703 across all fund sources, the Gartner analysis reveals potential savings of 11%. A detailed discussion begins on page 16 of the report.

State Government and Voice over Internet Protocol/IP (VoIP) Telephony
While there were no current applications driving State government towards a wholesale implementation of VoIP/IP Telephony, there are standard business needs (e.g., infrastructure gaps, equipment obsolescence, security, and disaster recovery) that support gradual migration. A detailed discussion begins on page 12 of the report.

Service Delivery Options
Delivery of telecommunications services can vary both by structure and by method.
Four viable options were analyzed for this report: "As Is," Decentralized, Shared Services, Privatized (Outsourced). These options are discussed in detail in the body of the report.

- The results of the cost evaluation indicate that the "As Is" and Decentralized service delivery models do not produce favorable 5-Year budget impacts.
- As discussed earlier in the recommendation section of the report, the results of the cost evaluation indicate that the Shared Services and Privatized service delivery models do offer favorable 5-Year budget impacts with the Privatized Model offering the most potential. Between the Shared Services and the Privatized views, five-year savings ranging from $3.6 million to $5.6 million would be realized over the current service delivery model.

- Privatization offers significant benefits to the State: 1) the State gets already trained and competent personnel for new technologies, 2) if the vendor provides the equipment and services, the State does not need to make large capital investments, 3) with the rapid changing of technology and evolving standards with VoIP/IP Telephony, the State avoids the position of servicing debt on obsolete equipment as the vendor is now responsible for upgrading the technology, 4) vendor management is simplified, and 5) Service Level Agreements (SLAs) are financially driven.

  With the privatized model, there is a wide spectrum of options for private sector participation. These options may be classified into two groups: those that retain public ownership of the assets while contracting out management, operation, and even investment, and those that involve at least partial or temporary private ownership of assets.

Short-Term Cost Savings Opportunities

Ten potential short-term cost savings opportunities totaling $5,025,000 were identified by a team composed of the Governor's Office of Strategic Planning and Budgeting, GITA, Department of Administration, and four (4) agencies.

The short-term costs savings opportunities included $2.5 million for the sale and lease-back of the Arizona telecommunications services central switching mechanism. ATS solicited information from equipment wholesalers, equipment manufacturers, and telecommunications carriers to determine the residual value of the MSL-100. No one expressed interest in buying the switch outright. However, several parties were interested in obtaining the switch as part of a package deal to buy the customer base or as a trade-in against new equipment acquisitions.

The short-term cost savings opportunities included $700,000 through the prepayment of carrier services. This option was eliminated from consideration due to issues regarding the financial viability of various telecommunication carriers, Federal restrictions, and cash flow concerns.

Of the $1,825,000 remaining amount, $1,523,571 in savings has been realized and efforts continue on this initiative.

Next Steps

- Seek any legislative changes required to adopt a centralized governance model with strong executive authority and Legislative involvement.
- Seek legislative changes, if required, to centralize telecommunications funding.
- Establish a telecommunications stakeholder committee with Legislative input.
- Secure an appropriation for consultant support to draft a Request for Proposal (RFP), understanding that the outside consultant would be removed from bidding.
- Convene RFP committee, establish a charter, assign work groups, and define requirements.
- Create an RFP to outsource all statewide telecommunications operations with Service Level Agreements (including call center operations, billing, and customer relationship elements) that would provide full flexibility for vendors to bid on all degrees of ownership.
- Finalize, publish and issue the RFP.
- Review RFP responses including vendor responses regarding Statewide FTE transition.
- Award contract(s). Target: October 2003.

Introduction

This report has been prepared in response to requirements in House Bill 2706. The Arizona Department of Administration (ADOA) and the Government Information Technology Agency (GITA) were tasked in that bill with reviewing telecommunications options and submitting a plan to the Joint Legislative Budget Committee (JLBC) by November 1, 2002. These options could include: 1) updating technology, 2) privatizing the delivery and support of telecommunications services and/or 3) allowing agencies to procure their own telecommunications services. All options were intended to improve service delivery and increase the fiscal efficiency of Arizona telecommunications services.

Given the current budget crisis faced by the State of Arizona, this plan focused intensely on opportunities for savings. Three areas for savings were analyzed: 1) short-term cost savings opportunities, 2) updating technology, and 3) service delivery of statewide telecommunications options.

II. General Background Arizona Telecommunication System (ATS)

Per Arizona Revised Statutes (ARS) §§41-801, 41-798, and 41-713, the Arizona Department of Administration (ADOA) Arizona Telecommunications System (ATS) is the executive branch entity charged with providing voice, video and data telecommunications capabilities and services to State agencies and political subdivisions. This mandate is fulfilled through public-private partnerships, statewide contracts, and state-owned campus infrastructure in Phoenix and Tucson.

A. Year Created – ATS legislation was established in 1951 with the primary intent to allow for negotiation of long distance rates for the State. In 1988-89, State–owned centralized telephone systems were installed in Phoenix and Tucson. In June of 1997, House Bill 2440 amended the Arizona Revised Statutes to allow among other provisions the extension of ATS to include any transmission of voice, data, video or graphic images.

B. Statutory Authority – The ATS within the Arizona Department of Administration is the only entity with statutory authority to provide statewide telecommunication services per ARS §§41-798 and 41-801. Enabling legislation relative to the funding of ATS is found in ARS §41-713.

C. Legislative Intent – The legislative intent behind the creation of ATS was to provide cost-effective, efficient, statewide telecommunications services.

D. FY03 Appropriations Bill (HB2706) –House Bill 2706 requires a report outlining opportunities to improve service delivery and decrease operations costs associated with statewide telecommunications services. Based on information given to the Appropriations Committee Chairpersons by various groups, the hypothesis was that the State could save significant dollars by changing to a Voice over Internet Protocol/Internet Protocol (VoIP/IP) telephony telecommunications environment and by decentralizing telecommunications service delivery.

E. ATS Challenges/Key Findings – The challenges facing ATS today are:

- Transitioning to a VoIP/IP Telephony environment without increasing strained budgets.
- Assisting GITA and the agencies in analysis of Project Information Justification (PIJ) submissions to understand the total cost of ownership/net cash flow to the State.
- Removing non-enterprise related costs from the ATS rate base.
- Upgrading billing and order processing systems.
- Acquiring the executive sponsorship necessary to consistently, effectively, and successfully deliver telecommunications services to the State.

IV. ATS Size and Scope

A. Organization & Staffing

The ATS organization reports to a Deputy Assistant Director in the Information Services Division (ISD) of ADOA. The Deputy Assistant Director and three (3) subordinate supervisors provide leadership and direction for ATS. The subordinate supervisors are responsible for the following areas: 1) Project Management, 2) Operations, and 3) Service Center. Additionally, ATS provides Switchboard Services for the Capitol Mall area and the Tucson campus. The Switchboard has 18 full-time equivalents (FTEs) responsible for providing assistance to government entities and the public Monday through Friday from 7:00 am to 10:00 pm and on Saturdays from 7:00 am to 5:00 pm.

The Projects Group has 5.5 FTEs responsible for and/or intimately involved in:

1. Service analysis – responsible for development of service approaches, proposals, billing reviews, Interagency Service Agreements/Service Level Agreements , PIJs and project management.
2. Architecture – engineering analysis and design for voice and data, advanced (tier 2/3) technical support, Request For Proposal (RFP) development, and vendor contract compliance and project management, and
3. Projects – perform direct project management and oversight of vendor-led projects (call center, network and telephone system analysis, design, and construction); tailor and enforce project management approaches; develop and implement project tracking tools, processes, etc.; assist Finance and Planning with ATS rates development; and, service support contract development.

The Operations group has 12 FTEs responsible for:

1. Network Engineering:
   - Web Services – provide and support Web Application services, Web Mail service, and Domain Name resolution.
   - Wide Area Network – provide, manage and support data network connectivity to and from agency main offices to remote offices throughout the state; connectivity to the State of Arizona data network (inter-agency); broadband Internet access; Internet Protocol (IP) address management via Dynamic Host Configuration Protocol (DHCP); and, remote access solution for agency telecommuters via an Internet Virtual Private Network (VPN) server.

2. Voice Engineering:
   - Call Center Operations – support call center platform including the 81C, Nortel Enhanced ACD (Symposium), Nortel Open IVR with CTI, Symon, Headliner, Melita Predictive Dialer, and TCS.
   - Voice Services – provide and support trunking, call routing, dial tone to agencies on and off the Capitol Mall in Phoenix and Tucson.

The Service Center has 15 FTEs responsible for:

1. Voice Messaging – provide training and support the Octel system for voice mail, auto attendant, fax on demand and survey.
2. Telephone Sets – provide training and support programming on single and multi-line telephone sets.
3. Answer, route and resolve service requests and help desk calls.
4. Perform move, add, change and repair activities at all ATS customer locations.
5. Log and track service requests and help desk calls.
6. Generate ongoing and as-needed reports.
7. Maintain inventories of equipment, circuits, and services.
8. Manage customer notification (broadcasts of upcoming planned outages, etc.).
9. Maintain directory database.

The Finance & Planning (F&P) group within ISD is responsible for ATS billing services. There are 5 FTEs who are responsible for:

1. Processing carrier and vendor bills for services procured by ATS.
2. Billing the agencies for ATS services.
3. Validating payment of bills for ATS services.
4. Performing bill audits.

Organizational charts for ATS and F&P are in Appendix C.

B. ATS Five Year Financial Summary

(In Thousands)

TABLE 1: ATS FIVE YEAR FINANCIAL SUMMARY					
	FY 1998	**FY 1999**	**FY 2000**	**FY 2001**	**FY 2002**
Total Revenue	12,560.4	11,457.9	12,147.7	13,557.1	14,037.1
Total Expenditures	11,023.0	12,383.9	13,124.3	13,799.2	13,743.2
Net Income	1,537.4	(926.0)	(976.6)	(242.1)	293.9
Cash Balance*	5,249.2	3,027.1	3,641.8	2,047.9	3,548.0

***ATS proportionate share of T & T Fund Cash Balance**

C. Current Business Model

The State of Arizona's current business model for telecommunication services is a combination of centralized and decentralized structure and service delivery provided in-house and by vendors.

ATS provides services to approximately 30 percent of the State's 42,000 employees. For the approximately 70 percent of employees not utilizing ATS, their services are either provided in-house by their agency or procured directly from the vendor via ATS-developed contracts.

D. ATS Services Summary

ATS provides an array of enabling and enhancing voice and data services. ATS services range from one to many services that include telephone voice services, Internet access, Inter-LATA communications, WAN (wide area networking), web hosting, and call center services. Appendices D1 through D3 detail services delivered by ATS to the agencies.

E. ATS Customer Base

ATS has approximately 14,000 telephone subscriber lines established with the State's Capitol Mall and Tucson complex. One hundred and seventeen (117) State agencies are purchasing one or more services from ATS. A detailed breakdown of the agencies and services ATS is providing is listed in Appendices D4 through D6.

F. Infrastructure

In its role as the primary provider of voice and data telecommunications services to State agencies, ATS has evolved a physical architecture for service delivery that reflects the concentration of State agency headquarters and major offices in the Phoenix and Tucson areas. The Capitol Mall in central Phoenix, and the State complex in downtown Tucson have State-owned conduits and fiber optic and copper cabling throughout each facility. The Phoenix Capitol Mall and the Tucson Complex are tied together by a redundant inter-LATA (Local Access and Transport Area) high-speed OC-3 service leased from a major inter-exchange carrier. Additional leased circuits provide voice and data communications to many agency field offices throughout Arizona. A voice circuit schematic diagram is provided in Appendix I and a data circuit schematic diagram is provided in Appendix J.

ATS provides Capitol Mall telephony services via a Nortel MSL-100 telephone system. Three distributed fiber-interconnected on-Mall fault-tolerant remote switches complement the system. In total, the system serves approximately 14,000 subscriber lines. All ATS telephony services provided through the Nortel MSL-100, with the exception of a small VoIP/IP Telephony pilot system, is TDM (Time Division Multiplexing) based utilizing copper cable from the MSL-100 or its remote switches to the customer telephone handset. The Nortel MSL-100 has been IP-enabled to allow telephone communications to occur over data networks.

In addition to the Capitol Mall, ATS supplies telephony services to the State Tucson Complex via a Nortel Option 81C-telephone system. The systems serve approximately 1,200 subscriber lines and, like the Nortel MSL-100, is based on TDM technology.

ATS's shared data network is called MAGNET (Multi-Agency Network). MAGNET is a Cisco-based Fiber Distributed Data Interface (FDDI) network, which connects 29 buildings on the Phoenix Capitol Mall and the two Tucson Complex buildings. In layman's terms, MAGNET is the shared network for agencies throughout State Government. MAGNET supplies customers with high-speed data and Internet connectivity. ATS also provides long distance voice connectivity to a select group of State facilities, including the Arizona Departments of Corrections and Game & Fish. This type of voice connectivity provides toll bypass capabilities, i.e., the ability to conduct long distance voice calls over a (semi) private State data network.

Off-Mall/Tucson Complex connectivity to the general public and remote State offices is accomplished through circuits owned and operated by multiple telecommunication carriers. These carrier circuits are typically leased by the State on a multi-year contract basis. In general, the types of circuits used are dedicated and switched lines that vary in speed and performance (e.g. 56K/T1, T3, OC3, etc.). These services are delivered via wire and/or wireless systems. ATS's primary host link circuits, i.e., the large aggregated broadband service feeds between the carriers' facilities and the Capitol Mall and Tucson Complex are built with redundancy in mind.

V. Short-Term Cost Savings Opportunities

Ten potential short-term cost savings opportunities totaling $5,025,000 were identified by a team composed of the Governor's Office of Strategic Planning and Budgeting, GITA, Department of Administration, and four (4) agencies. Of those ten recommendations:

- Two have been completed, generating savings of $432,091:
  - ATS Toll Reduction – Historically, toll rates have been set artificially high to cover the costs associated with the Data Network. Due to careful management of the Data Network costs, ATS realized a $293,910 gain in FY 2002. Effective November 1, 2002, ATS will be able to reduce toll rates by 5.5% to return the over-recovery to the customer agencies.
  - Reduce Carrier Rates – ATS solicited rate reduction proposals from current carriers. Only one carrier, WorldCom responded. WorldCom proposed, and the State accepted, a proposal to lower its calling card surcharge from $1.60 to $0.75 per call. FY 2003 savings associated with this reduction are estimated to be $138,181.
- Two have been eliminated from further consideration for the reasons stated below:
  - Lease of Wide Area Network (MAGNET) – Eliminated from consideration since no capability exists to divide up capacity. Inclusion of MAGNET as part of a managed services bundled delivery mechanism is under study.
  - Pre-Pay Carrier Services Contracts - Eliminated from consideration due to issues regarding financial viability of various telecommunication carriers, Federal restrictions, and cash flow concerns.

- Six are still in process and have generated savings of $1,091,480.
  - Carrier Reconciliation – After discovering irregularities with QWest billings to ATS, ADOA initiated QWest audits of its billings dating back to September 2000. These audits revealed over-charges totaling $504,529. Subsequently, ADOA issued a demand for assurance letter to QWest requiring audits of all QWest billings to State Agencies. Three of those additional audits have been completed or are in the review stage, recovering $474,399. A timeline for the remaining audits is shown in the following table.
  - Re-engineering the Wide Area Network – ATS re-engineered Centrex Plus Network Access Registers saving $66,720. Additionally, by changing the current 800 Service Line to New Service, ATS will realize savings of $12,500 in FY 2003 and $25,000 in FY 2004. ATS continues to seek other cost savings opportunities through re-engineering.
  - Toll By-Pass – There are 16,632,576 minutes currently going over the private tandum network reducing Statewide telecommunications costs. ATS is currently exploring opportunities to move more traffic to the PTN by the end of the calendar year, which will result in additional savings of $33,332 in FY 2003 and $66,664 for every year thereafter.

    As the State upgrades the Data Network and moves traffic onto the converged network, additional opportunities for toll by-pass savings are created. Once full voice and data convergence is achieved, net annual savings of approximately $2 million is anticipated.
  - Centralizing Telecommunications Further – Included with the shared services and privatized service delivery options discussed later in this report.
  - Nortel MSL-100 Sale and Lease-Back – ATS solicited information from equipment wholesalers, equipment manufacturers, and telecommunications carriers to determine the residual value of the MSL-100. No one expressed interest in buying the switch outright. However, several parties were interested in obtaining the switch as part of a package deal to buy the customer base or as a trade-in against new equipment acquisitions. These scenarios are being considered and are discussed later in this report.
  - Trunking Reduction – On hold due to concerns about reducing the quality of service to the citizens of Arizona.

TABLE II: STATUS TELECOMMUNICATIONS REDUCTION OPTIONS

Options:	Estimated Completion Date	Proposed Total	Results To Date Total
Toll Bypass:	**On-going**	**500,000**	**33,332**
1. ATS 2. Non-ATS			33,332
Toll Reduction:	**Complete**	**200,000**	**293,910**
ATS will reduce toll charges by 5.5% to Return FY 2002 over-recovery to customer Agencies.			
Trunking Reduction:	**On Hold**	**100,000**	**0**
On hold, pursue all other opportunities before impact service quality			

TABLE II: STATUS TELECOMMUNICATIONS REDUCTION OPTIONS			
Options:	**Estimated Completion Date**	**Proposed Total**	**Results To Date Total**
MSL100 Sale and Lease-back:	**RFP**	**2,500,000**	**TBD**
1. Vendors willing to pay $4M for State telecom business - same as Financing $4M 2. RFP for final financials 3. Refinance MSL100 asset			
Carrier Reconciliation:	**Ongoing**	**300,000**	**978,928**
1. ATS			
a. Qwest over-billing ATS rates	**Completed 6/12/02**		504,529
b. RFP pending ATS inventory audit	To Be Awarded		
c. WorldCom ATS rate reconciliation	Included in b above.		
2. Non – ATS			
a. DES	7/15/02 – 9/15/02	**Under Review**	472,175
b. Arizona Lottery	**Completed 10/25/02**		2,224
c. Arizona Department of Transportation	8/12/02-10/15/02	**On-going**	
d. Department of Public Safety	9/11/02 –11/15/02		
e. Department of Corrections	11/11/02 – 1/15/03		
f. AHCCCS	9/11/02 –11/15/02		
g. Department of Health Services	10/14/02 – 12/15/02		
h. Supreme Court	11/11/02 – 1/15/03		
i. Department of Game and Fish	9/11/02 –11/15/02		
j. Department of Environmental Quality	10/14/02 – 12/15/02		
k. Department of Juvenile Corrections	8/12/02-10/15/02		
l. All Remaining Agencies	12/12/02 – 2/15/03		
Reduced Carrier Rates:	**Complete**	**100,000**	**138,181**
1. WorldCom calling card surcharge reduction From $1.60 to $.75	7/1/2002 – 6/30/03		138,181
2. Qwest – No Proposal			0
Lease of Magnet:	**Complete**	**75,000**	**0**
No capability to divide capacity. Only option is as part of a managed services bundled delivery mechanism			
Centralizing Telecommunications Further:	**Under Review**	**500,000**	**0**
ADOT $500K Other Agencies $75K **On hold pending completion of JLBC Report.**			
Re-engineering WAN:	**Ongoing**	**50,000**	**79,220**
1. Continued audit/grooming – Qwest Centrex Plus Network Access Registers			66,720
2. Vendor proposal $1.5M savings Review invalidated proposal			**REJECTED**
3. Change 800 Service Line to New Service			12,500
Pre-Pay Carrier Costs:	**Complete**	**700,000**	**REJECTED**
1. Qwest ATS proposal 8.15% 5/28/02	**325,000**		**REJECTED**
2. WorldCom 7% - 7/12/02	**37,000**		**REJECTED**

Rejected Due to:
a. Financial viability of all Carriers at this time.

TABLE II: STATUS TELECOMMUNICATIONS REDUCTION OPTIONS			
Options:	**Estimated Completion Date**	**Proposed Total**	**Results To Date Total**
b. Agencies would have to pre-pay ATS & have no incentive since no savings being passed to them. Additionally there are cash flow issues for Agencies that get Federal funds. These agencies would have to take money from one fund and payback as they get their Federal funds.			
Total		**5,025,000**	**1,523,571**

VI. Data Collection Methodology VoIP/IP Telephony & Service Delivery Options

To understand the impact of VoIP/IP Telephony and the various telecommunications service delivery options for the State, substantial information was required. Specifically, the team solicited the following data:

- Financials for preparation of a current Total Cost of Ownership (TCO).
- An inventory of current voice and data services and equipment.
- Agency business needs.
- Other government entities and private industry Best Practices.
- Technology trends.

The methodology used for collecting and analyzing the information gathered included both secondary (review of Best Practices and technology trends) and primary research. Secondary research included reviewing technology initiatives and Requests For Proposals from other states including Georgia, Texas, Alaska and the City of San Diego, and information gathered from members of the National Association of State Telecommunications Directors (NASTD), the association for telecommunications and technology professionals in State government. The secondary research also included reviewing Public Sector technology journals, IT trade journals, and historical reports and documents produced by various agencies within the State of Arizona and meetings with vendors. In addition, industry watchdog organizations like the Gartner Group were consulted and white papers reviewed.

Primary research included extensive data collection from fourteen (14) agencies of their costs, inventory of telecommunications equipment and services, and business needs. The Gartner Group Total Cost of Ownership (TCO) Manager Models were licensed and utilized to measure the State's wide area data and voice costs in areas of personnel, transmission, and other related costs as a baseline, and in comparison to the best-in-class. In addition to the data collected with the Gartner models, the project team gathered a detailed inventory of the wide area data and voice equipment and services. Existing sources of information were reviewed to obtain the necessary data. These included the GITA Information Services Inventory System (ISIS), Telco Control (inventory of all circuits), the Arizona Financial Information System (AFIS), agency IT Strategic Plans from the GITA Planning Application for Reporting IT Strategy (PARIS), and State and public telephone directories.

To complete the data collection, information was needed from the State agencies. As collecting data from 100% of the agencies was not viable within the timeframe needed, in-depth data collection was conducted with fourteen (14) of the largest agencies representing 80% of the State's telecommunications expenditures. Originally, fifteen (15) agencies were asked to participate, however, one agency[1] failed to return their information within the designated timeframe needed for the analysis. A list of the fourteen (14) agencies is in Appendix E.

The information from these agencies was used to extrapolate data collection needs for the remaining agencies. An orientation meeting was conducted with the original fifteen (15) agencies to outline the objectives of the statewide initiative and to establish the agency contacts. In addition, one-on-one meetings were held with agency telecommunications management to identify the needs and requirements of their respective agencies for the next five (5) years. The emphasis was on requirements that would move them toward VoIP/IP Telephony as well as general telecommunications needs. Information on their customer care processes, the skill sets of their IT personnel, and feedback on ATS-provided services was also gathered. Focus group sessions were conducted with agencies grouped into "communities of interest" to explore business needs that might drive them toward VoIP/IP Telephony technology. The focus group sessions included the fifteen (15) agencies as well as other agencies that fit into particular "communities of interest." Additional sessions were conducted with the ATS personnel to identify specific strengths, weaknesses, opportunities, and threats (SWOT) related to migration to VoIP/IP Telephony, priorities within each category of the SWOT, and strategies based on the SWOT.

VII. Best Practices & Industry Trends

A. State Government

A number of state governments were interviewed with regard to their experiences and need to move toward VoIP/IP Telephony technology, and to consider privatized or other service delivery models. After lengthy discussions and research, it was determined that there is no mainstream movement or driving business application need by these state governments to upgrade to VoIP/IP Telephony. Each state is making decisions based on their own criteria.

While there were no business applications driving the transition to VoIP/IP, there were four clear business drivers for the outsourcing decision including a gradual migration to VoIP/IP Telephony:

- The lack of staff with the core competencies required for converged voice and data technology.
- Better pricing with a comprehensive contract.
- The lack of up-front funding necessary to move to newer technology.
- The concern about investing substantial sums of money in rapidly changing technology that may be obsolete before the financing term is complete.

[1] The Department of Education provided information on their data network architecture but failed to provide TCO information and therefore the Agency was excluded from the primary research.

Additionally, some states (New York and Pennsylvania) weary of years of endless dialogue, bickering, and no positive action on the part of their state agency Chief Information Officers, simply sought alternative service delivery options.

B. Private Industry

Much like carriers who have looked to the Voice over Internet protocol (VoIP) as a strategic way to significantly lower bottom-line costs, private enterprise/business is looking to combine their voice and data networks and lower expenses. In a July 2002 article, *Survey: VOIP Moves Beyond Cost-Cutting*, published in Business Communications Review, Jim Metzler of Ashton, Metzler & Associates reports that despite the economic downturn, more organizations have been implementing VoIP systems, and are putting ever-increasing amounts of traffic over them. Mr. Metzler's conclusions are based upon a survey of Networld+Interop attendees, subscribers to Business Communications Review or attendees at BCR's VoiceCon.2002 Conference. Of the 440 qualified respondents, 28 percent indicated that they are currently using/implementing VoIP, 51 percent planned to evaluate or deploy VoIP during the next year and only 21 percent had no plans to use or evaluate VoIP technology. According to John Ridley, senior enterprise network architect at Coca-Cola Enterprises, "Packetized voice is inevitable."

The article also indicated that:

- Those companies utilizing VoIP reported that they are already using it to transmit 20 percent or more of their voice traffic and
- Those planning to implement expect to reach similar levels within the next year.

Additionally, ninety percent of the companies that had deployed VoIP reported satisfaction levels of 3 or higher on a 5-point scale (1 = not at all satisfied; 5 = very satisfied) and fifty eight percent chose 4 or 5.

Lastly, the respondents reported implementation challenges similar to those found in government deployments:

- Immature technology.
- Lack of staff (network engineers) with both voice and data experience.
- Equipment interoperability.
- Finding the budget for a purchase.

C. Vendor Positioning in Marketplace

The Gartner Group provides information on the state of VoIP in a technology white paper dated April/May 2002, "VoIP: Implementing New Mission-Critical Applications." The VoIP technology is still considered to be in the "early adoption" stage, with some vendors not expected to survive through 2004. Vendors who are considered to be "Leaders" (high on ability to execute and Visionary) are Avaya, Cisco and Nortel. The Niche Players (lower on ability to execute and moderate in their Vision) are Alcatel, Mitel, NEC, Shoreline, Siemens, and 3Com.

VIII. Data Collection & Analysis

A. Statewide Telecommunications Services Total Cost of Ownership

The Statewide Telecommunications Services Total Cost of Ownership was developed using the Gartner Total Cost of Ownership (TCO) Manager Models in conjunction with primary research by the project team. The Gartner Group Total Cost of Ownership (TCO) Manager Models were designed to measure the wide area data and voice services costs in areas of personnel, circuits, and other related costs as a baseline in comparison to like institutions. Gartner "Best Practices" comparisons were used. These models are used to determine:

- Cost areas that are out of line to best-in-class, determine causes, and implement improvement plans.
- Toll costs and benefits of vendor negotiations (re-negotiations) and/or toll bypass options.
- Review Best Practices (or lack of) and the effect on contract costs and operations.

The TCO has provided identification of IT costs that many agencies do not normally separate out in their IT budget. In addition, the TCO gives the State a baseline of their telecommunications costs for comparison to other options in determining fiscal efficiencies.

As shown in the table on the following page, the Statewide Telecommunications annual operating costs are $55,011,596. Annual capital expenditures are $11,357,107. The annual Statewide Telecommunications Services Total Cost of Ownership is $66,368,703. The figures presented above represent the totals across all funding sources.

TABLE III: TOTAL COST OF OWNERSHIP	
Operations	**FY 2002 Totals**
Personnel:	
WAN	5,145,793
Voice	3,700,171
Total	**8,845,964**
Hardware & Software Maintenance & Licensing	
WAN Hardware-Maintenance	929,517
Total	**929,517**
WAN Software-Maintenance	410,278
Total	**410,278**
Voice Hardware – Maintenance	777,910
Total	**777,910**
Voice Carrier Usage Charges	9,334,161
Misc. 7172 & 7173	20,861
Total	**9,355,022**
WAN Transmission Circuits	4,221,163
Voice Carrier Circuits	6,911,127
PTN Circuits	708,562
Subtotal	12,055,544
Circuits from 7179 (balance)	22,011,289
Subtotal	34,066,833
Miscellaneous 7179	597,557
Total	**34,664,390**
Internet	
Advanced Services	24,520
Total	**24,520**
Tele-management Expense:	3,995
Total	**3,995**
Total WAN/Voice Operating Expenses	**55,011,596**
Capital	
WAN Hardware-Depreciation	2,199,275
WAN Software-Depreciation	121,416
Voice Hardware – Depreciation	1,551,428
Non-Specific Capital	**7,484,988**
Total WAN/Voice Capital Expenses	**11,357,107**
STATE WAN/VOICE TCO 2002	**66,368,703**

GARTNER STATEWIDE FINDINGS:

Wide Area Data Network

- Using variables such as sites, devices, and traffic, the State performs 19% less efficiently than its best-in-class clone. The Gartner model uses these variables, together with Best Practices, to factor what should be spent on transmission facilities, personnel, hardware and software. The table below depicts this information. As shown here, the State is paying $2,764,056 or 19% more than the best-in-class model.

Gartner Analysis Overview	Actual	Best-in-Class Simulation	Simulation - Actual	% Difference
Transmission	$4,137,187	$6,232,209	$2,095,022	51%
Personnel	$5,133,905	$3,123,760	-$2,010,145	-39%
Hardware and software	$5,128,698	$2,279,765	-$2,848,933	-56%
Total	$14,399,790	$11,635,734	-$2,764,056	-19%

- In the area of personnel, the State has more IT WAN FTEs than would be utilized by a best-in-class organization. The State has 97.2 FTEs, where the best-in-class has 31.93 FTEs, a 67% difference. The table below shows the FTEs broken into the 3 major categories of management, operations and administration as compared to personnel required by its counterpart.

Personnel Summary	Actual	Best-in-Class Simulation	Simulation - Actual	% Difference
Personnel Cost				
Management Cost	$1,170,677	$1,309,536	$138,859	12%
Management FTEs	17.40	11.53	-5.87	-34%
Operations Cost	$3,711,529	$1,405,845	-$2,305,684	-62%
Operations FTEs	74.30	16.77	-57.53	-77%
Administration Cost	$251,699	$408,379	$156,680	62%
Administration FTEs	5.50	3.62	-1.88	-34%
Total Cost	$5,133,905	$3,123,760	-$2,010,145	-39%
Total FTEs	97.20	31.93	-65.27	-67%

Wide Area Voice Network

- By directing more traffic to its private network (PTN access) and by utilizing dedicated circuits to long distance carriers (VNS access), the peer is able to obtain a better cost per minute than the state who is sending more traffic over the public network (VNS usage). The resulting savings are shown below.

Transmission Summary	Actual	Best-in-Class Simulation	Simulation - Actual	% Difference
PTN access	$734,393	$1,058,106	$323,713	44%
VNS access	$121,275	$545,671	$424,396	350%
VNS usage	$7,064,584	$5,475,349	-$1,589,235	-22%
Total	$7,920,252	$7,079,126	-$841,126	-11%
Average Cost per minute rate (not including International, Calling Card, or Cellular)	$0.0960	$0.0628	-$0.0331	-35%
Savings based on State minutes of 67,720,856	$ 6,501,202.18	$4,252,869.76	-$2,248,332.42	-34%

- In the area of personnel, the State has more FTEs involved with managing their private and public voice networks than would be utilized by a best-in-class organization. The State has 23.32 FTEs, where the best-in-class has 6.36 FTEs, a 73% difference.

Personnel Summary	Actual	Best-in-Class Simulation	Simulation – Actual	% Difference
Personnel cost				
Management Cost	$107,420	$246,242	$138,822	129%
Management FTEs	4.49	1.62	-2.87	-64%
Operations Cost	$204,760	$106,567	-$98,193	-48%
Operations FTEs	8.45	3.12	-5.33	-63%
Administration Cost	$260,098	$111,414	-$148,684	-57%
Administration FTEs	10.38	1.62	-8.76	-84%
Total Cost	$572,278	$464,223	-$108,055	-19%
Total FTEs	23.32	6.36	-16.96	-73%

Gartner Recommendations

1. In order to improve efficiency in the area of network data gathering, which can impact overall efficiency levels, standardize and encourage the deployment of Best Practices throughout the State in the areas of network management tools, processes, and implementation and standardized change management processes and implementation. Periodically measure the efficiency and implementation of their deployment.

2. Based on the implementation of Best Practices in the areas of vendor management, contract management and procurement agreements, utilize negotiated vendor contracts to procure best available statewide pricing on volume purchases and services and identify a set of standard vendors that can function as the primary resources for purchasing equipment and services as a means for reducing costs.

3. Closely review IT personnel and functions to determine redundancy and redeployment opportunities.

4. The migration to private networks and utilizing more dedicated services instead of the public switched network for voice services can provide savings throughout the State.

GARTNER DEPARTMENT OF ADMINISTRATION ONLY FINDINGS:

The Department of Administration requested a comparative analysis for the Arizona Telecommunications System (ATS), which provides support for 14,000 telephone lines to approximately thirty (30) percent of the State's employees throughout the various agencies.

The following findings have resulted:

Wide Area Data Network

Using variables such as sites, devices, and traffic, the ATS performs 11% less efficiently than its best-in-class clone. The Gartner model uses these variables, together with Best Practices, to factor what should be spent on transmission facilities, personnel, hardware and software. Overall, the total difference of $228,601 is not significant, but may identify opportunities for better efficiencies in purchasing and utilizing hardware and software.

MPN TCO Analysis Overview	ATS	Best-in-Class Simulation	Simulation - ATS	% Difference
Transmission	$796,227	$954,683	$158,456	20%
Personnel	$481,586	$498,084	$16,498	3%
Hardware and software	$757,334	$353,778	-$403,556	-53%
Total	$2,035,147	$1,806,546	-$228,601	-11%

In the area of personnel, ATS has more FTEs than would be utilized by a best-in-class organization. ATS has a total of 9.5 FTE, where the best-in-class has 5.09 FTE, a 46% difference. Inversely, ATS' total personnel costs are lower. The table below shows the FTEs broken into the 3 major categories of management, operations and administration as compared to personnel required by its counterpart.

Personnel Summary	ATS	Best-in-Class Simulation	Simulation - ATS
Management Cost	$153,924	$208,806	$54,882
Management FTEs	2.50	1.84	-0.66
Operations Cost	$313,257	$224,162	-$89,095
Operations FTE	6.50	2.67	-3.83
Administration Cost	$14,405	$65,116	$50,711
Administration FTE	0.50	0.58	0.08
Total Cost	$481,586	$498,084	$16,498
Total FTE	9.50	5.09	-4.41

Wide Area Voice Network

ATS was not shown to be significantly different from its best-in-class counterpart in the total transmission costs for its private (PTN) and public (VNS) networks. ATS' cost per minute is only $.01 higher as shown below. This would indicate that ATS is incorporating Best Practices in the areas of managing network costs and negotiating best rates with Carriers.

Transmission Summary	ATS	Best-in-Class Simulation	Simulation - ATS
PTN access	$221,256	$697,595	$476,339
VNS access	$87,735	$176,591	$88,856
VNS usage	$4,626,315	$3,386,612	-$1,239,703
Total	$4,935,306	$4,260,798	-$674,508
Cost per minute	$0.0764	$0.0654	-$0.0110

ATS was not shown to be significantly different from its best-in-class counterpart as shown from the tables below. Looking at the first table, total costs for transmission, personnel and hardware/software differ by less than 11%.

TCO Analysis Overview	ATS	Best-in-Class Simulation	Simulation - ATS
Transmission	$4,935,306	$4,260,798	-$674,508
Personnel	$126,788	$388,911	$262,123
Hardware and software	$718,170	$495,116	-$223,055
Total	$5,780,264	$5,144,825	-$635,439

In the area of personnel, ATS has fewer personnel that are dedicated to the management, operations and administration of the Voice Network than its best-in-class counterpart. The Voice Network is related to circuits and Carriers providing private and public network access. Based on the analysis, more FTEs may be necessary to manage a network of this size.

Personnel Summary	ATS	Simulation	Simulation - ATS
Management Cost	$28,844	$196,687	$167,843
Management FTEs	0.45	1.39	0.94
Operations Cost	$95,063	$98,886	$3,823
Operations FTEs	2.10	2.66	0.56
Administration Cost	$2,881	$93,339	$90,458
Administration FTE	0.10	1.39	1.29
Total Cost	$126,788	$388,911	$262,123
Total FTEs	2.65	5.44	2.79

Gartner Recommendations

Based on the analysis of ATS' Wide Area Data and Wide Area Voice networks, the data shows:

1. ATS WAN operational efficiency based on its supported base does not vary significantly from best-in-class.
2. Although ATS WAN has more FTEs than best-in-class, the overall dollars spent are less.
3. ATS Voice Networks is operating near best-in-class in expenditures of network costs.
4. ATS Voice Networks has fewer FTEs than best-in-class.

B. Business Application Requirements

While there were no immediate driving applications identified by the fourteen (14) agencies that would cause them to move toward the implementation of VoIP/IP Telephony, there are standard business needs that are driving technology upgrades. Specifically, the need to replace telephone PBXs and small office Key Systems that are near or past their useful life and the ability to reduce overall costs through savings initiatives such as toll bypass available with newer technology. Many agencies are, therefore, upgrading to equipment that is capable of providing these services during their normal equipment refresh cycles. Anytime equipment needs to be replaced or refreshed agencies are moving towards the GITA Enterprise Architecture Target Standards and positioning themselves for VoIP/IP Telephony. As a matter of course, some agencies are further along in their preparedness than others.

The needs of the respective agencies reviewed are wide and varied, ranging from the necessity to complete basic infrastructure build-out, to initial installations of new technologies.

Listed and ranked below are some of the more important needs that were identified by three (3) or more agencies.

Expected Benefit	# Agencies responding
Reduce overall costs	14
Toll bypass cost savings	9
Equipment refresh	8
Increased security	7
Seamless voice & e-mail across agencies	6
Videoconferencing	3

Several focus sessions were held with the agencies, gathered into "communities of common interest;" criminal justice, healthcare, and regulatory. The consensus gained from these sessions included the need to have a truly "statewide" business plan for telecommunications. Many of the agencies were concerned that the State (particularly the ATS organization) did not have the capability to deliver and support the VoIP/IP Technology. Hence, those agencies prefer to move forward with their own implementation plans. All agencies agree there are several critical success factors that will influence any implementation strategies. These include:

- Reliability (System must work when needed).
- Adequate funding for roll out.
- Appropriate inter-agency cooperation.
- Central security to meet all needs.
- Statewide accessibility.

Conversely, the groups identified several barriers that must be overcome in order to execute a successful technology roll out:

- High initial capital expenditures.
- Lack of clarity on who provides security and how it is provided.

- Uncertainty on who provides "the last mile" of service delivery and how it is supported.
- Difficult political climate, in light of an election year with new legislators being elected and the budget deficit.
- Inadequate training of support personnel.
- Lack of an equitable fee schedule.
- Inadequate information available to policymakers to help them understand the cost structure of telecommunications service.

Although there were no immediate business application needs identified by the agencies, emerging needs were identified that support the continued upgrading of equipment to be capable of providing VoIP/IP Telephony. These include tele-computing, tele-medicine, video conferencing, and faster implementation of new applications.

C. Customer Care Processes

Most of the fourteen (14) agencies route calls for service to a centralized agency help desk function. Personnel with basic skills answer the initial call at the help desk. These personnel will attempt to resolve the problem upon receipt of the call. A majority of the agencies have some type of application software or database with which to generate a service ticket, both electronic and hard copy. If the problem cannot be resolved at the first level, the ticket is then routed to the appropriate technician or technical group (in the case of larger agencies) for resolution.

Some agencies will complete a follow-up call to the customer to ensure the service requested has been satisfactorily completed. In all cases the ticket is closed out and performance reports generated as required by agency management from these data. Smaller agencies may not have a help desk and may call technicians or technical management personnel directly for service requirements.

At present ADOA has multiple help desks to service LAN/WAN, telephony and application support needs. The agency is working toward the consolidation of these areas into a central support function. This improvement will be completed in the near term.

D. Strategic Analysis and Strategy

Strategy development requires basic information. Personal biases, politics, emotions, personalities, and halo error can overshadow the process without objective information and analysis. Assessment of internal and external factors and their estimated importance for the organization are the starting points for strategy formulation.

SWOT Analysis

A SWOT Analysis consists of a candid compilation and appraisal of an organization's Strengths, Weaknesses, Opportunities and Threats. This technique is typically used in formulating and evaluating strategy. The following SWOT is a compilation of results from sessions with ATS management and other agencies.

Strengths: Internal strengths that can be identified as key success factors (those necessary to remain competitive) in the telecommunications industry and which are competitive market advantages of the project include:

- ATS has a fully depreciated enterprise, carrier-class telephone system asset providing five 9's (down no more than 5 minutes per year) reliability and the capability to provide service for another 10 plus years.
- ATS delivers a variety of telecommunications services to multiple agencies throughout State Government including call center services.
- Some agencies have been moving toward the GITA Enterprise Architecture Target Standards as part of their refresh cycle.
- The State has a shared data network (MAGNET) in place serving the Capitol Mall and Tucson Complex.

Weaknesses: Internal weaknesses that might adversely impact the competitive position of the project:

- ATS prices are too high.
- ATS bills are difficult for customers to understand.
- Statewide lack of comprehensive network security and multiple instances of single points of failure.
- Statewide lack of trained/experienced personnel for VoIP/IP Telephony.
- Statewide lack of seamless communication across agencies through voice mail and address directories.
- Statewide lack of cost accounting policies and procedures among State Agencies to capture all IT costs.

Opportunities: External opportunities that the project might benefit from include:

- Current state of telecommunications industry provides for opportunities to negotiate better rates including the Carrier contracts that expire September 2003.
- Federal funding for security needs.
- Reduce ATS prices by consolidating all statewide telecommunications services and enforcing the legislated authority.
- Increase efficiency through emerging technology.

Threats: External threats that might impact the total cost of ownership/net cash flow of the project include:

- Budget constraints for funding equipment refresh and technology updates.
- Agency silos. This perpetuates information services and technology security risks given existing network back doors at agencies.
- Vendors marketing to individual agencies, undercutting ATS prices but not necessarily providing overall lower total cost of ownership for the State.
- Proprietary nature of most VoIP/IP vendor solutions.
- Lack of broadband telecommunications infrastructure in rural Arizona.

Internal Factor Evaluation

An Internal Factor Evaluation (IFE) Matrix summarizes and evaluates the major strengths and weaknesses in functional areas of a business. It also provides a basis for identifying and evaluating relationships among those areas. Scores range from a low of 1.00 to a high of 4.00. The higher the score, the stronger the internal position. Conversely, a lower score would indicate that the enterprise's current internal position is weak.

After conducting an internal assessment of the Arizona Telecommunications System (ATS) and other agency organizations currently providing telecommunications services to State Government, the following matrix emerged:

TABLE IV. INTERNAL FACTOR EVALUATION

KEY INTERNAL FACTORS	WEIGHT	RATING	WEIGHTING SCORE
Internal Strengths			
1. ATS has a fully depreciated enterprise, carrier-class telephone system asset providing five 9's reliability and the capability to provide service for another 10 plus years.	.10	3	.30
2. ATS delivers a variety of telecommunications services to multiple agencies throughout state government including call center services.	.10	3	.30
3. Some agencies have been moving toward the GITA Enterprise Architecture Target Standards as part of their refresh cycle.	.15	3	.45
4. The State has a wide area network (MAGNET) in place serving the Capitol Mall and Tucson Complex.	.15	3	.45
Internal Weaknesses			
1. ATS prices are too high.	.10	1	.10
2. ATS bills are difficult for customers to understand.	.05	1	.05
3. Statewide lack of comprehensive network security and multiple statewide single points of failure.	.15	1	.15
4. Statewide lack of trained/experienced personnel for VoIP/IP Telephony.	.10	1	.10
5. Statewide lack of seamless communication across agencies through voice mail and address directories.	.05	2	.10
6. Statewide lack of cost accounting policies and procedures amongst State Agencies to capture all Information Technology costs.	.05	1	.05
TOTAL	***1.00***		***2.05***
Ratings: 4 major strength, 3 minor strength, 2 minor weakness, 1 major weakness			

A total weighted score of 2.05, under the average score of 2.5, indicates that the current State's telecommunications delivery systems are inadequate. The matrix helps to identify specific areas where improvement strategies are required. Specifically, strategies are required to reduce overall telecommunications costs, to acquire a new billing system or to outsource billing, to strengthen security and eliminate single points of failure, and to attract, train and retain qualified staff. ADOA in its FY 2004 budget request has submitted critical issues relative to weaknesses one and three.

External Factor Evaluation

Having completed an IFE, the next step in the analysis of this project is to examine those external factors that can affect the viability of the project.

External factors include:

- Economic forces.
- Social and cultural forces.
- Technological forces.
- Competitive forces.
- Political and legal forces.

These factors play a significant role in strategic planning for all government and private sector business endeavors. While these factors are not controllable, data can be extracted and utilized in developing strategic plans to take advantage of or compensate for them. The goal in business planning is to take the extracted information and incorporate the data into a useable strategic business plan. Many of the various external factors affect not only this project but also the telecommunications industry as a whole. Since external factors cannot be controlled, this means the statewide telecommunications enterprise must make internal adjustments to fulfill its mission successfully. Five factors are pertinent to this project and are discussed in detail below.

Economic Forces.

BUDGET CRISIS

According to data compiled by the Goldwater Institute, the Arizona State budget more than doubled between 1990 and 2001. During the prosperous 1990's the citizens of Arizona saw an almost constant string of tax cuts without equivalent spending reductions resulting in unprecedented budget shortfalls.

To deal with a crisis of this magnitude, it is likely that State Agency spending will need to be reduced and that IT resources will not escape the budget ax. Therefore, it is imperative that the State leverage combined IT resources (processes, people, technology, and funds) to increase productivity, improve service delivery to the public and provide the infrastructure necessary for e-government.

Social and Cultural Forces.

AGENCY SILOS

The current stove-piped nature of telecommunications funding is an impediment to the successful implementation of an enterprise-wide telecommunications solution. Agency specific appropriations, federal matching grants and program-specific development are major obstacles to developing broader, customer-centric solutions. Additionally, historical data in Arizona and other states indicates that Agency Chief Information Officers (CIOs) and Agency Directors tend to focus first on agency specific priorities. Gartner Group states that "enterprise funding is the key to implementing customer-centric solutions and advancing the impact of e-government solutions."

Technological Forces.

LACK OF STANDARDS IN VoIP AND RAPIDLY CHANGING TECHNOLOGY

As indicated in a recent Gartner Group report, nearly all vendor implementations of IP Telephony have some degree of proprietary features or interfaces (even those that claim to be industry standards-based). This is indicative of an emerging market where standards are not fully developed. Therefore, all enterprises looking to IP Telephony in the near term must be careful to procure an open, multi-service infrastructure to support all applications. As the Gartner Group correctly states "The value in open IP voice systems is the ability to break away from the traditional vertical integration of communications infrastructure, signaling, and control protocols and applications."

Competitive Forces.

STATE OF THE INDUSTRY

Current market conditions apply a downward pressure on cost as vendors compete for limited market share. This requires vendors to set artificially low rates in order to increase cash flow and attract customers. Profitability no longer drives business decisions.

While this strategy fails in the long term, it provides immediate relief for short-term business problems. This is especially true in the financially plagued telecommunications industry. As market conditions improve, an upward pressure is placed on cost. Vendors are forced to recover profits and operating expenses accumulated in the depressed period. Service typically goes down while cost to the consumer goes up.

State Agencies not recognizing this marketing ploy set themselves up for significant rate increases combined with service degradation as the telecommunications industry recovers. Allowing agencies to pursue short-term solutions to long-term issues is negatively impacting the State and will ultimately result in higher total costs to State Government.

ATS BURDENED RATES

For the past several years, customer agencies of the ADOA Information Services Division have indicated that the rates charged by the division were excessive. This perception has led many agencies to seek alternative service providers, to develop in-house solutions and to resist consolidation efforts for information processing and/or telecommunications.

The Technology and Telecommunications (T & T) Fund receives all of its monies from charges to customers for services rendered. Therefore, all costs become part of the rates charged. A review of ISD's expenditures and the resultant rates revealed that the rates are not competitive due to inclusion of non-enterprise related and infrastructure costs artificially burdening the rate structure. Non-enterprise related costs add $1,310,175 to the telecommunications rate base while infrastructure costs add an additional $3,081,762.

Burdening the enterprise rates with non-enterprise related costs is in effect a tariff on ISD customers. This drives individual State agencies to seek specific solutions to avoid this defacto tariff. It also allows outside vendors to increase rates to compete with the ISD burdened rate rather than the true rate. The end result is a net increase in the total cost to State government.

EMPLOYEE TRAINING AND RETENTION

A continuing issue facing Telecommunications management today is the retention and recruitment of staff. Without technical resources, long range plans such as this Telecommunications Plan will not be accomplished. Enterprises worldwide are acquiring additional resources to adopt new technologies and remain competitive in the marketplace. At the same time there is an overall shortage of skilled professionals, and private enterprises are offering salary increases against which government cannot effectively compete. The need of government to change its personnel management to reflect private sector practices, e.g., frequent pay raises based on market rates, performance bonuses, simplified job/salary classifications, and streamlined personnel procedures, has been recognized but not resolved.

Political and Legal Forces.

UPCOMING CHANGE IN ADMINISTRATION

An undertaking of this magnitude cannot succeed without the support of the Office of the Governor and the Legislative Leadership. States that have experienced "breakthroughs" in telecommunications have had strong personal backing and involvement from their respective state Governors (e.g., Washington and Georgia). Additionally, those states received similar support from key legislative leaders. Obtaining early direction and strong support from these State executives is a critical first step in implementing changes to the current business model.

STATE PROCUREMENT PROCESS

The current State solicitation process normally involves the issuance of a detailed set of specifications to which prospective vendors respond. Vendors typically respond by replicating these specifications in order to be deemed "responsive." This process precludes the possibility that other solutions may be better suited to tackle the original problem. A key to the success of this project will be the project's ability to issue a simplified, outcome-based solicitation that will allow prospective vendors to apply their creativity in designing the best telecommunications solution for the State of Arizona.

CAPITAL INVESTMENT AND INFORMATION TECHNOLOGY FINANCING CONSTRAINTS (e.g., INABILITY TO BOND AND DEBT LIMIT)

At present, the State is facing major capital investment requirements relative to telecommunications. These expenditures fall into three basic areas: Infrastructure development, technology refresh and technology upgrades. With respect to the first category, data from the network gap analysis performed by the Government Information Technology Agency indicates the need to invest approximately $20 million to bring current intra-building cabling into compliance with target Enterprise Architecture standards. Technology refresh costs associated with aging equipment that is at, or past, its useful life and taking advantage of convergence are estimated to be $25.3 million over the next five years. Lastly, incremental costs associated with moving the State the next step, towards IP Telephony, are estimated to be $66.5 million over the next five years. Faced with capital investments likely to approximate $91.8 million, the State must develop creative public/private partnerships and financing solutions to address IT financing. Recent successes with the Privatized-Lease-to-Own program for construction of State buildings provide convincing evidence that an entrepreneurial approach to financing public projects is an effective way to deal with requirements for large capital investment.

Matrix: The External Factor Evaluation (EFE) matrix plays a role in how an enterprise can make changes in order to be competitive. These external forces continually change as the world changes. For this reason, companies need to reevaluate the external forces on a regular basis.

Scores range from a low of 1.00 to a high of 4.00. The higher the score, the better an organization is doing at taking advantage of the opportunities and avoiding threats. Conversely, a lower score would indicate that the enterprise's current strategies are neither capitalizing on the opportunities nor mitigating the external threats. The following matrix shows an EFE rating for the current state of telecommunication as 1.95. This clearly indicates an urgent need to make significant modifications to the current business model. Arizona needs to strongly consider the resources available in the private sector either through Outsourcing or Co-sourcing. Many states have leveraged or are planning to leverage the economies of scale available through public/private partnerships.

TABLE V. EXTERNAL FACTOR EVALUATION

KEY EXTERNAL FACTORS	WEIGHT	RATING	WEIGHTING SCORE
Opportunities			
1. Current state of telecommunications industry provides for opportunities to negotiate better rates including the Carrier contracts that expire September 2003.	.10	4	.40
2. Federal funding for security needs.	.05	3	.15
3. Reduce ATS prices by consolidating all statewide telecommunications services and enforcing the legislated authority.	.05	3	.15
4. Increase efficiency through emerging technology.	.10	4	.40
Threats			
1. Budget constraints for funding equipment refresh and technology updates.	.15	1	.15
2. Agency silos. This perpetuates information services and technology security risks (e.g., existing network back doors at agencies).	.25	1	.25
3. Vendors marketing to individual agencies, undercutting ATS prices but not necessarily providing overall lower total cost of ownership for the State.	.10	2	.20
4. Proprietary nature of today's VoIP/IP Telephony vendor solutions.	.15	1	.15
5. Lack of broadband telecommunications infrastructure in Rural Arizona.	.05	2	.10
TOTAL	***1.00***		***1.95***
Ratings: 4 major opportunity, 3 minor opportunity, 2 minor threat, 1 major threat			

Strategy Evaluation

Threats-Opportunities-Weaknesses-Strengths (TOWS) Matrix. The Threats-Opportunities-Weaknesses-Strengths (TOWS) Matrix relies upon information derived from the IFE and EFE to match external opportunities and threats with internal strengths and weaknesses. Matching external and

internal critical success factors is essential to devising feasible alternative strategies. The statewide telecommunications enterprise will utilize the strategies identified in the TOWS matrix. The SO strategies shown in the table below use internal strengths to take advantage of external opportunities. The WO strategies aim at improving internal weaknesses by taking advantage of external opportunities. ST strategies use strengths to avoid or reduce the impact of external threats. WT strategies are defensive tactics directed at reducing internal weaknesses and avoiding environmental threats.

Table VI. TOWS Matrix

	Strengths – S	**Weaknesses – W**
	1. ATS has a fully depreciated enterprise, carrier-class telephone system asset providing five 9's reliability and the capability to provide service for another 10 plus years. 2. ATS has the ability to deliver a variety of telecommunications services to multiple agencies throughout state government including call center services. 3. Many agencies have been moving toward the GITA Enterprise Architecture Target Standards as part of their refresh cycle. 4. The State has a wide area network (MAGNET) in place serving the entire Capitol Mall and Tucson Complex.	1. ATS prices are too high. 2. ATS bills are difficult for customers to understand. 3. Statewide lack of comprehensive network security and single points of failure. 4. Statewide lack of trained/experienced personnel for VoIP/IP Telephony. 5. Statewide lack of seamless communication across agencies through voice mail and address directories. 6. Lack of cost accounting policies and procedures amongst State Agencies to capture all Information Technology costs.
Opportunities – O 1. Current state of telecommunications industry provides for opportunities to negotiate better rates including the Carrier contracts that expire September 2003. 2. Federal funding for security needs. 3. Reduce costs by consolidating all statewide telecommunications services. 4. Increase efficiency through emerging technology.	**SO Strategies** 1. Reduce costs by leveraging ATS infrastructure to consolidate statewide telecommunications services. (S1&2, O3) 2. Obtain federal funds to upgrade MAGNET providing security for the entire Capitol Mall area (Operation Enclave). (S4, O2) 3. Implement updated technology taking advantage of the current better rate opportunities in the telecommunications industry and infrastructure readiness of some agencies. (S3, O1) 4. Leverage campus data network to enable new technology capabilities. (S4, O4)	**WO Strategies** 1. Reduce costs by consolidating all statewide telecommunications services. (W1, O3) 2. Take advantage of the current better rate opportunities in the telecommunications industry and update or outsource the billing system and update or outsource the telecommunications technology to provide seamless communication across all agencies. (W2&5, O1) 3. Hire qualified VoIP/IP Telephony personnel available at lower salaries or outsource at better rates due to the current state of the telecommunications industry. (W4, O1) 4. Obtain federal funding to upgrade MAGNET providing security for the entire Capitol Mall area (Operation Enclave). (W3, O2) 5. Obtain greater accountability and minimize single points of failure through new technologies and

		public/private partnerships. (W3&6, O3 &4)
Threats – T 1. Budget constraints for funding equipment refresh and technology updates. 2. Agency silos. This perpetuates information services and technology security risks given existing network back doors at agencies. 3. Vendors marketing to individual agencies, undercutting ATS prices but not necessarily providing overall lower total cost of ownership for the State. 4. Proprietary nature of today's VoIP/IP Telephony vendor solutions. 5. Lack of broadband telecommunications infrastructure in Rural Arizona.	**ST Strategies** 1. Leverage ATS infrastructure to provide telecommunications services to minimize budget constraints and current lack of stable standards with new technologies. (S1&2, T1&4) 2. Leverage ATS infrastructure to provide and manage telecommunications services and remove network back doors minimizing security risks. (S1&2, T2) 3. Centralize all telecommunications procurement with ATS leveraging their infrastructure and ability to deliver a variety of telecommunications services throughout the State and minimize erosion by vendors of efficient use of State budgets. (S1&2, T3)	**WT Strategies** 1. Centralize telecommunications IT management for the State to avoid agency silo mentality and vendors marketing to individual agencies which increases security risks and inefficient use of State budget. (W3, O2&3) 2. Privatize telecommunications IT to acquire trained personnel on VoIP/IP Telephony, update technology without risk of paying debt on technology where industry standards are changing, and lower costs leveraging current state of the telecommunications industry. (W1,4&5, O1&4)

IX. Telecommunications Technology

A. State Standards

The enterprise architecture-related targets for networks and platforms related to telecommunications are shown in the table on the next page. The table has been compiled from the technical architecture domain documents and related standards approved by the Arizona CIO Council, Information Technology Authorization Committee (ITAC), and the State CIO. The goal of the "target" technology designation is to communicate a direction for change that aligns agencies over time for interoperability, reinforcing the Arizona's Information Technology Policy P100.

The target technology will be selected and purchased when change occurs in response to a business need. Taking this long-term view ensures agencies continue to harness appropriate technology in a way that meets business needs and allows the advantages of simplifying and unifying assets and support methods across the enterprise. While the existence of a target does not mandate immediate change, it does communicate the State's technology direction to agencies.

TABLE VII: TARGET ARCHITECTURE	
Technology	**Target**
Network Layer 1: Physical	Category 5e UTP (supersedes Category 5 UTP), 50/125-micron multimode fiber, 8/125-micron single mode fiber Logical star topology, SONET, ISDN/PRI, xDSL, cable modem protocols
Network Layer 2: Data Link	Open-standards-based, multi-service networks; 100/1000 Ethernet; 802.11 LAN, 802.16 MAN Wireless Ethernet; Frame Relay; ATM
Network Layers 3 & 4: Network and Transport	Converged networks with prioritization for all services; switched, multi-segment design; TCP/IP, UDP
Platforms	Platforms having industry de facto standard operating systems with imbedded security, open-standard interfaces and drivers, including: - IP telephony systems with TCP/IP, SIP, Open APIs - Hybrid IP telephony (TDM/IP) systems with TCP/IP, SIP, Open APIs - Telephones having TCP/IP and multi-function applications
Platform-Related Connectivity	Platforms deployed on target networks, having class of service (CoS) and quality of service (QoS) availability

B. Technology Refresh

Inventory data revealed significant infrastructure gaps and aging telecommunications equipment. Whether or not the State moves forward with VoIP/IP Telephony, substantial telecommunication investments will be required in the next five years.

The following elements represent the major components of a telecommunications system that must be refreshed on a scheduled basis:

Transport: Inside and outside cable plants have been identified for refresh in the Network Gap Analysis conducted by GITA. Modifications to carrier-provided circuits, which will require up front design and engineering efforts, must be made to accommodate combined voice, video, and data traffic.

Network Equipment: Updated network equipment that ties the aforementioned cabling and carrier circuits together and provides high-speed quality of service capabilities for real-time applications is needed. Periodic network equipment upgrades are performed by individual agencies today,

however a more aggressive upgrade schedule will be required if the State is to realize the net gain promises of VoIP/IP Telephony.

Client & Server Platforms: The upgrade and/or replacement of PBXs and Key Systems are required if a *true* VoIP/IP Telephony client/server environment is to be created. The term "client/server" refers to an architecture that establishes an abstraction layer between different parts of telecommunications-based technology. Server technology includes mainframes and LAN file and print servers. Client technology consists of most end-user appliances such as PCs, PDAs, telephone handsets, etc. A traditional telephone system has telephones tethered directly to it. In a client/server environment, the telephone system becomes a server and the telephones become clients of the server. Sitting between the client and server systems is the network, which is comprised of transport and equipment (see above). The separation of client appliances from server systems also applies to other value-add services supplied via a common network. Call center, video conferencing, unified messaging, and workgroup collaboration are other examples of special-purpose servers whose services are acquired by clients (and other servers) via the shared network. The more services the network has to offer, the greater the overall utility of the *total system*.

Applications: Telephony, contact management, and unified messaging are examples of applications in the client/server architecture. Each application provides a specific type of functionality. Some applications require customization. For example, an IVR call center application must be programmed to direct and/or respond to specific caller or Web visitor inquiries. The level and type of customization is dependent on the needs of the serving State agency as they provide services to their customer.

Transport, network equipment, and client and server systems are to a great extent general purpose/utility products and services that are universally applied to satisfy most customer needs. It is the *application* that distinguishes agency programs and work units from one another as they deliver services to their customers and stakeholders. Only ADOT, for example, builds freeways. Therefore, the applications ADOT needs are centered on transportation. No other agency in State Government provides this type of service.

If an organization is faced with having to re-target an application to a new platform, the cost, time and effort necessary to develop or migrate the application cannot be overemphasized. Because of the unique characteristics associated with agency customized application requirements, a tremendous amount of resources will most assuredly be required to complete the transition.

Project management, contract management, operations management, ongoing system administration and customer support services will continue as ongoing requirements regardless of the service delivery model selected in addition to the costs associated with designing, constructing, maintaining and refreshing the telecommunications-based elements.

C. VoIP/IP Telephony

The State of Arizona is deeply entrenched in traditional data and voice technology. The recent evolution of telecommunications technology has been to converge these traditional data and voice networks to provide a more streamlined and cost effective approach to delivering telecommunications and data access. This convergence is referred to as VoIP/IP Telephony.

VoIP refers to Voice over Internet Protocol and is essentially voice transmitted as packets over a data network. The base value proposition for VoIP is toll bypass and the reduction of the voice circuits.

IP Telephony refers to Internet Protocol Telephony and is the target replacement technology of traditional telephone systems. IP Telephony systems are also based on a client-server architecture making it possible to distribute call processing and minimize single points of failure. This architecture has just recently been able to provide the features and functionality available from the traditional telephone systems. IP Telephony provides a perceived reduction of costs associated with the administration of telephone set moves, adds and changes (MAC's) and enables the implementation of new integrated voice/data applications. VoIP can be implemented for toll bypass separate from IP Telephony.

Agencies have been upgrading their infrastructure during their normal refresh cycles aligning themselves with the GITA Enterprise Architecture Target Standards and positioning themselves to migrate to a VoIP/IP Telephony solution. In a few instances, VoIP has been implemented for toll bypass.

In development of the costs to implement VoIP/IP Telephony, the costs to provide a more secure, service oriented, higher capacity and redundant infrastructure by updating the MAGNET technology were not included. These costs are included in the ADOA Security Upgrade budget issue and are considered necessary for the State regardless of the implementation of VoIP/IP Telephony.

Converging traditional data and voice networks and implementing VoIP/IP Telephony requires investment in several areas. These include:

- Cable plant upgrades in older buildings to CAT 5e.
- Upgrades to equipment closets for power, environmental needs like air conditioning, and additional data rack and cable management components.
- Upgrades of proactive network monitoring tools.
- Upgrades to the existing data network to enable quality of service (QoS) support for voice and video services.
- Increases to the capacity of data circuits where needed.
- Training of personnel.
- IP Telephony equipment.
- A qualified systems integrator (usually 10% of investment).

A trade-in value of 10% of equipment investment is included in the financial analyses.

With VoIP/IP Telephony, the State anticipated savings required for debt service over the current traditional telephony environment in the areas of:

- Reduction/elimination of costs for moves, adds and changes (MACs) of telephone sets as users can move their own telephone sets in the IP Telephony environment.
- Reduction in the number of private network voice circuits as the State moves its voice traffic onto the data network.
- Reduction in long distance costs by moving those calls to the data network (toll bypass).
- A reduction in the number of personnel by converging to one network versus the management of many separate networks.
- Reduction of maintenance costs.

VoIP/IP Telephony also allows for easier implementation of new applications such as video conferencing, tele-computing, unified messaging, and web-based system management/administration. Cost savings for the implementation of these applications are not part of this analysis.

A 5-year migration view to VoIP/IP Telephony was developed. Agency locations were migrated over 5 years based on the following criteria: life cycle and exhaustion of capacity of current PBX/Key System and the need to replace, data network readiness and 4-year refresh cycles, and cable upgrades needed. Below are the breakout of costs and savings by year. Detail on the assumptions used in the development of this financial view are in Appendix F.

(In Thousands)

TABLE VIII: IMPLEMENTATION COSTS						
Implementation Costs/(Savings)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Cable Upgrades to Cat 5e	5,789.8	5,202.2	5,043.8	4,964.6	4,964.6	25,965.0
Closets Upgrades	508.9	459.1	425.9	409.4	409.4	2,212.7
Data Network Refresh Equip.	7,547.6	3,271.3	3,271.3	3,271.3	3,271.3	20,632.8
Data Network Refresh Install	811.3	648.7	648.7	648.7	648.7	3,406.1
Data Network Circuit Capacity			429.0			429.0
Network Monitoring Tools	2,917.7					2,917.7
IP Telephony Equipment	8,664.9	6,210.0	5,791.3	5,582.0	4,724.2	30,972.4
IP Telephony Installation	2,553.7	1,896.6	1,780.6	1,722.7	1,710.5	9,664.1
Training of Personnel	197.2	164.6	155.2	150.6	150.6	818.2
Trade-In Value	(1,621.3)	(948.1)	(906.3)	(885.3)	(799.6)	(5,160.6)
Total Costs	27,369.8	16,904.4	16,639.5	15,864.0	15,079.7	91,857.4
Annual Debt Service*	5,960.2	9,641.3	13,264.9	16,719.4	20,003.2	65,589.0
Less: Base Capital Budget	(11,357.1)	(11,357.1)	(11,357.1)	(11,357.1)	(11,357.1)	(56,785.5)
Net Loss/(Savings)	**(5,396.9)**	**(1,715.8)**	**1,907.8**	**5,362.3**	**8,646.1**	**8,803.5**

(In Thousands)

TABLE IX: ONGOING COSTS/SAVINGS REQUIRED FOR DEBT SERVICE						
Ongoing Costs/(Savings)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Data Network Refresh		551.7	875.3	1,198.9	1,522.6	4,148.5
Network Monitoring Tools		106.3	212.6	318.9	425.2	1,063.0
Replace by Data Network Refresh Maintenance	(80.9)	(242.6)	(404.4)	(566.1)	(647.0)	(1,941.0)
IP Telephony		2,013.3	2,954.1	3,409.1	3,833.2	12,209.7
Replace by IP Telephony Maintenance	(121.9)	(330.9)	(500.7)	(661.7)	(805.4)	(2,420.6)
Net Maintenance	(202.8)	2,097.8	3,136.9	3,699.1	4,328.6	13,059.6
Data Network Circuit Capacity	0	0	1,013.8	1,013.8	1,013.8	3,041.4
Circuits	(137.1)	(411.4)	(685.7)	(960.0)	(1,097.1)	(3,291.3)
Toll Bypass	0	(156.6)	(469.7)	(1,174.2)	(2,504.9)	(4,305.4)
Personnel	0	0	(308.7)	(514.4)	(1,028.9)	(1,852.0)
MACs	(477.9)	(814.5)	(1,134.2)	(1,437.1)	(1,689.6)	(5,553.3)
Total Expenses/(Savings) for Debt Service	**(817.8)**	**715.3**	**1,552.4**	**627.2**	**(978.1)**	**1,099.0**
Net Loss/(Savings)	**(6,214.7)**	**(1,000.5)**	**3,460.2**	**5,989.5**	**7,668.0**	**9,902.5**

***Debt Service Remaining after Year 5 is $34,427.2**

X. Discussion of Service Delivery Options

Service delivery of telecommunications services can vary both by structure and by who is delivering the services. The structure can be:

- Centralized - where the services and maintenance are contracted, managed, and delivered via a single point of contact agency or entity.
- Decentralized – where the services and maintenance are contracted, managed, and delivered via individual State agencies.
- Shared Services – where services are centrally contracted, managed and delivered to leverage economies of scale and ensure security functions and decentralized where it makes business sense. (e.g., centralizing voice and WAN telecommunications and decentralizing specific LAN-based equipment and services (e.g., servers, workstations, and associated peripherals).

Delivery of the services can be:

- Privatized – The services and maintenance are provided by a vendor also referred to as outsource.

- In-Source – The services and maintenance are provided by in-house State staff.
- Co-Source – The services and maintenance are provided in a combination of in-house and vendor staff.

Four viable options were analyzed for this report:

- "As Is" – current structure for delivery of telecommunication services which is approximately 30% centralized and 70% decentralized with services delivered via co-source with a combination of in-house and vendors.
- Decentralized Co-Source – Will be referred to as Decentralized in this document. Telecommunication services are managed by each individual agency with some services and maintenance provided by vendors.
- Shared Services Co-Source – Will be referred to as Shared Services in this document. Telecommunication services and maintenance are centralized for economic or security needs.
- Centralized Privatization – Will be referred to as Privatized in this document is a 100% outsource of all telecommunications services and maintenance of those services with the vendor management from a centralized organization. The infrastructure can either be owned by the vendor or the State can retain ownership and outsource the management of the facilities.

For the four options, the team looked at three approaches: 1) changing the service delivery options only, 2) upgrading the data network infrastructure to enable toll by-pass and 3) a full implementation of VoIP/IP Telephony to the desktop including the handset.

A. "As Is"

The State of Arizona current "As Is" delivery of telecommunication services is a combination of centralized and decentralized structure and services provided in-house and by vendors. ATS provides services to 14,000 telephone lines to the State's 42,000 employees. ATS services range from one to many, including telephone voice services, Internet access, Inter-LATA communications, network access, web hosting, and call center support. Appendices D1 through D3 detail services delivered by ATS to the agencies. For the employees not utilizing ATS, the services are either provided in-house by their agency or procured directly from the vendor via ATS developed contracts.

The benefits of the "As Is" service delivery model are: 1) control of most IT decisions can be made within the individual agencies, 2) small agencies gain technology support and expertise from ATS, and 3) ease of spending non-appropriated funds on agency specific technology. The risks associated with "As Is" are: 1) maintaining network security throughout the State's enterprise, 2) duplication of staffing, 3) lack of seamless integration of telecommunications services, and 4) the inability to uniformly apply Best Practices statewide.

The following tables identify the impact to the State's Total Cost of Ownership with the "As Is" service delivery option for 1) data network upgrade (refresh) only, and 2) an implementation of IP Telephony. The data network upgrades move the State to VoIP

allowing for toll bypass opportunities. An implementation of IP Telephony involves taking IP to the desktop including the telephone handset. The implementation of IP Telephony is based on the assumptions used in the Discussions of Options – VoIP/IP Telephony section of this document. A detailed financial analysis can be found in Appendix F.

(In Thousands)

TABLE X: "AS IS" 5-YEAR DATA NETWORK UPGRADE ONLY			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	(1,053.2)	65,315.5
Year 2	66,368.7	(8,023.1)	58,345.6
Year 3	66,368.7	(7,314.5)	59,054.2
Year 4	66,368.7	(8,766.2)	57,602.5
Year 5	66,368.7	(10,505.8)	55,862.9
5-Year Total	**331,843.5**	**(35,662.8)**	**296,180.7**
Debt Service Remaining			**0.0**

(In Thousands)

TABLE XI: "AS IS" 5-YEAR WITH FULL IP TELEPHONY IMPLEMENTATION			
	FY TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	(6,214.7)	60,154.0
Year 2	66,368.7	(1,000.3)	65,368.4
Year 3	66,368.7	3,460.3	69,829.0
Year 4	66,368.7	5,989.5	72,358.2
Year 5	66,368.7	7,668.1	74,036.8
5-Year Total	**331,843.5**	**9,902.9**	**341,746.4**
Debt Service Remaining			**34,427.2**

B. Decentralized

The Decentralized model eliminates any central State entity from providing and maintaining telecommunication services. All agencies will contract, manage and deliver their own telecommunications services.

The benefits of the Decentralized model are: 1) agency control over all technology related decisions, and 2) potential to implement new applications faster without having to wait for a centralized entity to upgrade.

The risks associated with the Decentralized model are: 1) lack of technology support for small agencies, 2) lack of seamless interagency communication and connectivity, 3) duplication of staffing and facilities, and 4) lack of effective security and disaster recovery throughout State Government.

The Decentralized model eliminates the ATS organization and costs including the switchboard operators. This transition was assumed to take 1 year. Agencies that were utilizing ATS services, except for agency locations under 35 employees, would implement VoIP/IP Telephony as they transition from ATS since it would make good business sense to migrate towards the GITA standard during this transition. Agency locations under 35 employees were assumed to procure Centrex services from a Telecommunications Carrier (e.g., QWest, Citizens). IT resource needs of the agencies were based on best-in-class standards. The agencies not using ATS today were migrated to VoIP/IP Telephony based on the assumptions used in the Discussions of Options - VoIP/IP Telephony section of this document.

The following tables identify the impact to the State's Total Cost of Ownership with the Decentralized service delivery option for 1) data network upgrade (refresh) only, and 2) an implementation of IP Telephony. The data network upgrades move the State to VoIP allowing for toll bypass opportunities. An implementation of IP Telephony involves taking IP to the desktop including the telephone handset. The implementation of IP Telephony is based on the assumptions used in the Discussions of Options – VoIP/IP Telephony section of this document with the exception of the agencies procuring telephony from ATS and migrating to IP Telephony or Centrex during the year 1 transition. A detailed financial analysis can be found in Appendix F.

(In Thousands)

TABLE XII: DECENTRALIZED 5-YEAR DATA NETWORK UPGRADE ONLY			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	36,186.7	102,555.4
Year 2	66,368.7	(7,704.4)	58,664.3
Year 3	66,368.7	(7,245.0)	59,123.7
Year 4	66,368.7	(8,578.2)	57,790.5
Year 5	66,368.7	(8,958.4)	57,410.3
5-Year Total	**331,843.5**	**3,700.7**	**335,544.2**
Debt Service Remaining			**0.0**

(In Thousands)

TABLE XIII: DECENTRALIZED 5-YEAR WITH FULL IP TELEPHONY IMPLEMENTATION			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	2,209.2	68,577.9
Year 2	66,368.7	2,393.7	68,762.4
Year 3	66,368.7	6,097.6	72,466.3
Year 4	66,368.7	7,737.0	74,105.7
Year 5	66,368.7	7,540.4	73,909.1
5-Year Total	**331,843.5**	**25,977.9**	**357,821.4**
Debt Service Remaining			**23,572.7**

C. Shared Services

With Shared Services, telecommunication services and maintenance are centralized for economic or security needs.

The benefits of Shared Services are: 1) a cohesive vision and implementation of telecommunication services, 2) seamless interoperability of equipment and services, 3) better management of security and disaster recovery, 4) savings in carrier, equipment and IT personnel costs, and 5) centralized asset tracking and reporting.

The risks of Shared Services are: 1) re-allocation of telecommunications IT resources (people, processes, technology, funds), 2) determining lines of demarcation, and 3) agency buy-in is needed for success.

For Shared Services, all telecommunication services are centrally contracted, managed and delivered through a private/public partnership with the exception of specific LAN-based equipment and services (e.g., servers, workstations, and associated peripherals). The State would realize savings in FTEs with the centralizing of telecommunications services.

The following tables identify the impact to the State's Total Cost of Ownership with the Shared Services service delivery option for 1) data network upgrade (refresh) only, and 2) an implementation of IP Telephony. The data network upgrades move the State to VoIP allowing for toll bypass opportunities. An implementation of IP Telephony involves taking IP to the desktop including the telephone handset. The implementation of IP Telephony is based on the assumptions used in the Discussions of Options – VoIP/IP Telephony section of this document. A detailed financial analysis can be found in Appendix F.

(In Thousands)

TABLE XIV: SHARED SERVICES 5-YEAR DATA NETWORK UPGRADE ONLY			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	(1,053.2)	65,315.5
Year 2	66,368.7	(8,537.5)	57,831.2
Year 3	66,368.7	(8,343.4)	58,025.3
Year 4	66,368.7	(9,795.1)	56,573.6
Year 5	66,368.7	(11,534.6)	54,834.1
5-Year Total	**331,843.5**	**(39,263.8)**	**292,579.7**
Debt Service Remaining			**0.0**

(In Thousands)

TABLE XV: SHARED SERVICES 5-YEAR WITH FULL IP TELEPHONY IMPLEMENTATION			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	(6,214.7)	60,154.0
Year 2	66,368.7	(1,514.8)	64,853.9
Year 3	66,368.7	2,431.4	68,800.1
Year 4	66,368.7	4,960.6	71,329.3
Year 5	66,368.7	6,639.2	73,007.9
5-Year Total	**331,843.5**	**6,301.7**	**338,145.2**
Debt Service Remaining			**34,427.2**

D. Privatized

With the privatized model, there is a wide spectrum of options for private sector participation. These options may be classified into two groups: those that retain public ownership of the assets while contracting out management, operation, and even investment, and those that involve at least partial or temporary private ownership of assets.

The benefits of a centralized structure are: 1) a clear and cohesive vision and direction for statewide telecommunications, 2) consistent leadership, and 3) interoperability and seamless communication between agencies. The perceived benefits of privatization are: 1) the State gets already trained and competent personnel for new technologies, 2) if the vendor provides the equipment and services, the State does not need seed money for large capital investments, 3) with the rapid changing of technology and lack of standards with VoIP/IP Telephony, the State avoids the position of servicing debt on obsolete equipment as the vendor is now responsible for upgrading the technology, 4) vendor management is simplified, and 5) service level agreements are financially driven.

The risks associated with privatization are: 1) not achieving stated cost savings, 2) not achieving contractual state service levels, 3) long-term contracts that reduce and/or eliminate the State's flexibility to in/out-task functions as needed, and 4) organizational change impacts to employees.

Most vendors or integrators expect to provide a 10% to 15% value proposition in a privatized solution for an enterprise. Some of the value comes from improved service level agreements as well as cost savings. The five-year savings are based on privatization bids by other states in the process of implementing privatized solutions. The privatized financial views provide for the least overall cost impact to the state.

The following tables identify the impact to the State's Total Cost of Ownership with the Privatized service delivery option for 1) data network upgrade (refresh) only, and 2) an implementation of IP Telephony. The data network upgrades move the State to VoIP allowing for toll bypass opportunities. An implementation of IP Telephony involves taking IP to the desktop including the telephone handset. The implementation of IP Telephony is based on the assumptions used in the Discussions of Options – VoIP/IP Telephony section of this document. A detailed financial analysis can be found in Appendix F.

(In Thousands)

TABLE XVI: PRIVATIZED 5-YEAR DATA NETWORK UPGRADE ONLY			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	66,368.7	(1,670.5)	68,039.2
Year 2	66,368.7	(9,257.7)	57,111.0
Year 3	66,368.7	(8,549.2)	57,819.5
Year 4	66,368.7	(10,000.8)	56,367.9
Year 5	66,368.7	(11,740.4)	66,368.7
5-Year Total	**331,843.5**	**(41,218.6)**	**290,624.9**
Debt Service Remaining			**0.0**

(In Thousands)

TABLE XVII: PRIVATIZED 5-YEAR WITH FULL IP TELEPHONY IMPLEMENTATION			
	FY 2002 TCO	**Adjustments**	**Future TCO**
Year 1	**66,368.7**	(6,832.0)	59,536.7
Year 2	**66,368.7**	(2,235.0)	64,133.7
Year 3	**66,368.7**	2,225.7	68,594.4
Year 4	**66,368.7**	4,754.8	71,123.5
Year 5	**66,368.7**	6,433.4	72,802.1
5-Year Total	**331,843.5**	**4,346.9**	**336,190.4**
Debt Service Remaining			**34,427.2**

XI. CONCLUSIONS

- The Internal Factor Evaluation (IFE) indicates that the current State's telecommunications delivery systems are inadequate.
- The External Factor Evaluation (EFE) clearly indicates that present strategies are neither taking advantage of emerging opportunities nor avoiding external threats.
- There were no immediate, driving applications that would necessitate State government moving forward with a wholesale implementation of VoIP/IP Telephony.
- There are standard business needs (e.g., infrastructure gaps, equipment obsolescence, security, and disaster recovery) that support the gradual migration to VoIP/IP Telephony.
- The results of the cost evaluation, shown on the next page, indicate that the "As Is" and Decentralized service delivery models do not produce favorable 5-Year budget impacts.
- The results of the cost evaluation indicate that the Shared Services and Privatized service delivery models do offer favorable 5-Year budget impacts.
- The Privatized Model appears to offer the most potential.

(In Thousands)

TABLE XVIII: TOTAL COST OF OWNERSHIP DATA NETWORK UPGRADE ONLY				
	"As Is"	Decentralized	Shared Services	Privatized
Year 1	(1,053.2)	36,186.7	(1,053.2)	(1,670.5)
Year 2	(8,023.1)	(7,704.4)	(8,537.5)	(9,257.7)
Year 3	(7,314.5)	(7,245.0)	(8,343.4)	(8,549.2)
Year 4	(8,766.2)	(8,578.2)	(9,795.1)	(10,000.8)
Year 5	(10,505.8)	(8,958.4)	(11,534.6)	(11,740.4)
5-Year Total Increase/(Decrease)	**(35,662.8)**	**3,700.7**	**(39,263.8)**	**(41,218.6)**
Debt Service Remaining	**0.0**	**0.0**	**0.0**	**0.0**

(In Thousands)

TABLE XIX: TOTAL COST OF OWNERSHIP WITH FULL IP TELEPHONY IMPLEMENTAION				
	"As Is"	Decentralized	Shared Services	Privatized
Year 1	(6,214.7)	2,209.2	(6,214.7)	(6,832.0)
Year 2	(1,000.3)	2,393.7	(1,514.8)	(2,235.0)
Year 3	3,460.3	6,097.6	2,431.4	2,225.7
Year 4	5,989.5	7,737.0	4,960.6	4,754.8
Year 5	7,668.1	7,540.4	6,639.2	6,433.4
5-Year Total Increase/(Decrease)	**9,902.9**	**25,977.9**	**6,301.7**	**4,346.9**
Debt Service Remaining	**34,427.2**	**23,572.7**	**34,427.2**	**34,427.2**
Total Cost	**44,330.1**	**49,550.6**	**40,728.9**	**38,774.1**

XII. RECOMMENDATIONS

Given the internal weaknesses identified in the IFE and the challenges identified in the EFE, Arizona State Government needs to:

- Adopt a centralized governance model with strong executive authority and Legislative involvement.
- Centralize telecommunications funding to leverage resources and gain greater accountability.
- Strongly consider the resources available in the private sector either through outsourcing (leveraging the economies of scale available through public/private partnerships) or co-sourcing (shared services) to improve efficiency, acquire expertise and ease the financial burden.

While there were no immediate, driving applications that would necessitate State government moving forward with a wholesale implementation of VoIP/IP Telephony, there are standard business needs that support the gradual migration to VoIP/IP Telephony. The needs of the agencies are wide and varied, ranging from the necessity to complete basic infrastructure build-out, to initial installations of new technologies. For example, many of the State's telephone PBXs and small office Key Systems are near the end of or past their useful life.
Additionally, opportunities exist for agencies with remote sites to reduce overall costs through savings initiatives such as toll bypass available with the newer technology.

Based upon the results of the Phase II cost evaluation, the State should eliminate from further consideration both the "AS IS" and Decentralized service delivery models as they do not provide any potential for positive budget impacts.

The State should pursue either the Shared Services or the Privatized service delivery model as both offer favorable 5-year budget impacts. The ADOA Privatized financial analysis was based upon the State retaining ownership of the assets. Both of the ADOA cost analyses showed favorable 5-Year budget impacts. An alternative Privatization scenario, private ownership of assets, is favored by GITA. However, as indicated by the ADOA cost evaluation, and consistent with the Phase I findings, the Privatized Model appears to offer more potential.

The State of Arizona should, if it retains ownership of the assets under either the shared services or outsourcing models, systematically proceed with the implementation of VoIP/IP Telephony based upon agency business requirements, a favorable cost/benefit analysis, organizational readiness and available funding. With private sector participation that involves private ownership of assets, the State would specify service requirements, features, functions, security and penalties for non-performance. The State would not specify the technology, but clearly the requirements will dictate the vendor(s) technology selections.

XIII. NEXT STEPS

- Seek any legislative changes required to adopt a centralized governance model with strong executive authority and Legislative involvement.
- Seek any legislative changes required to centralize telecommunications funding.
- Establish a telecommunications stakeholder committee with legislative input.
- Secure an appropriation for consultant support to draft a Request For Proposals (RFP), understanding that the outside consultant would be removed from bidding.
- Convene RFP committee, establish a charter, assign work groups, and define requirements.
- Create an RFP to outsource all statewide telecommunications operations with Service Level Agreements (including call center operations, billing, and customer relationship elements) that would provide full flexibility for vendors to bid on all degrees of ownership.
- Finalize, publish and issue the RFP.
- Review RFP responses including vendor responses regarding Statewide FTE transition.
- Award contract(s). Target: October 2003.

GLOSSARY OF TERMS

ACD

Short for ***A**utomatic **C**all **D**istributor*, a telephone facility that handles incoming calls and manages them based on a database of handling instructions.

ANSI

Acronym for the ***A**merican **N**ational **S**tandards **I**nstitute.* Founded in 1918, ANSI is a voluntary organization composed of over 1,300 members (including all the large computer companies) that creates standards for the computer industry. For example, ANSI C is a version of the C language that has been approved by the ANSI committee. To a large degree, all ANSI C compilers, regardless of which company produces them, should behave similarly.

API

Abbreviation of ***a**pplication **p**rogram **i**nterface*, a set of routines, protocols, and tools for building software applications. A good API makes it easier to develop a program by providing all the building blocks. A programmer puts the blocks together.

Most operating environments, such as MS-Windows, provide an API so that programmers can write applications consistent with the operating environment. Although APIs are designed for programmers, they are ultimately good for users because they guarantee that all programs using a common API will have similar interfaces. This makes it easier for users to learn new programs.

ATM

Short for ***A**synchronous **T**ransfer **M**ode*, a network technology based on transferring data in cells or packets of a fixed size. The cell used with ATM is relatively small compared to units used with older technologies. The small, constant cell size allows ATM equipment to transmit video, audio, and computer data over the same network, and assure that no single type of data hogs the line.

Some people think that ATM holds the answer to the Internet bandwidth problem, but others are skeptical. ATM creates a fixed channel, or route, between two points whenever data transfer begins. This differs from TCP/IP, in which messages are divided into packets and each packet can take a different route from source to destination. This difference makes it easier to track and bill data usage across an ATM network, but it makes it less adaptable to sudden surges in network traffic.

Bandwidth

The amount of data that can be transmitted in a fixed amount of time. For digital devices, the bandwidth is usually expressed in bits per second(bps) or bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz).

Browser

Short for *Web browser*, a software application used to locate and display Web pages. The two most popular browsers are Netscape Navigator and Microsoft Internet Explorer. Both of these are *graphical browsers*, which means that they can display graphics as well as text. In addition, most modern browsers can present multimedia information, including sound and video, though they require plug-ins for some formats.

Call Center

A place where calls are answered and made. A call center will typically have lots of people (also called agents), an automatic call distributor, a computer for order-entry and lookup on customer's orders. A call center could also have a predictive dialer for making lots of calls quickly. The term "call center" is broadening. It now includes help desks and service lines.

Cetegory (CAT) 5-e

Cabling that is one of six grades of UTP cabling that can transmit data at speeds of up to 1000 Mbpts.

Centrex

Short for ***centr****al office* ***ex****change service*, a type of PBX service in which switching occurs at a local telephone station instead of at the company premises. Typically, the telephone company owns and manages all the communications equipment necessary to implement the PBX and then sells various services to the company.

Coaxial cable

A type of wire that consists of a center wire surrounded by insulation and then a grounded shield of braided wire. The shield minimizes electrical and radio frequency interference.

Coaxial cabling is the primary type of cabling used by the cable television industry and is also widely used for computer networks. Although more expensive than standard telephone wire, it is much less susceptible to interference and can carry much more data. Because the cable television industry has already connected millions of homes with coaxial cable, many analysts believe that they are the best positioned to capitalize on the much-heralded information highway.

Computer Telephone Integration

A term for connecting a computer to a telephone switch and having the computer issue the telephone switch commands to move calls around.

DHCP

Short for Dynamic Host Configuration Protocol, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

Dynamic addressing simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. This means that a new computer can be added to a network without the hassle of manually assigning it a unique IP address. Many ISPs use dynamic IP addressing for dial-up users.

DHCP client support is built into Windows 95 and NT workstation. NT 4 server includes both client and server support.

Domain

A group of computers and devices on a network that are administered as a unit with common rules and procedures. Within the Internet, domains are defined by the *IP address.* All devices sharing a common part of the IP address are said to be in the same domain.

Encryption

The translation of data into a secret code. Encryption is the most effective way to achieve data security. To read an encrypted file, you must have access to a secret key or password that enables you to *decrypt* it. Unencrypted data are called *plain text;* encrypted data are referred to as *cipher text*.

FDDI

Abbreviation of ***F**iber **D**istributed **D**ata **I**nterface*, a set of ANSI protocols for sending digital data over fiber optic cable. FDDI networks are token-passing networks, and support data rates of up to 100 Mbps (100 million bits) per second. FDDI networks are typically used as backbones for wide-area networks.

An extension to FDDI, called *FDDI-2*, supports the transmission of voice and video information as well as data. Another variation of FDDI, called *FDDI Full Duplex Technology (FFDT)* uses the same network infrastructure but can potentially support data rates up to 200 Mbps.

Firewall

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially *intranets.* All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

Frame Relay

A packet-switching protocol for connecting devices on a Wide Area Network (WAN). Frame Relay networks in the U. S. support data transfer rates at T-1 (1. 544 Mbps) and T-3 (45 Mbps) speeds. In fact, you can think of Frame Relay as a way of utilizing existing T-1 and T-3 lines owned by a service provider. Most telephone companies now provide Frame Relay service for customers who want connections at 56 Kbps to T-1 speeds. (In Europe, Frame Relay speeds vary from 64 Kbps to 2 Mbps.

In the U. S., Frame Relay is quite popular because it is relatively inexpensive. However, it is being replaced in some areas by faster technologies, such as ATM.

Gateway

A node on a network that serves as an entrance to another network. For example, when a user connects to the Internet, that person essentially connects to a server that issues the Web pages to the user. These two devices are host nodes, not gateways. In enterprises, the gateway is the computer that routes the traffic from a workstation to the outside network that is serving the Web pages. In homes, the gateway is the ISP that connects the user to the Internet.

In enterprises, the gateway node often acts as a proxy server and a firewall. The gateway is also associated with both a router, which use headers and forwarding tables to determine where packets are sent, and a switch, which provides the actual path for the packet in and out of the gateway.

ICMP

Short for ***I****nternet* ***C****ontrol* ***M****essage* ***P****rotocol*, an extension to the Internet Protocol (IP) defined by RFC 792. ICMP supports packets containing error, control, and informational messages. The PING command, for example, uses ICMP to test an Internet connection.

Interface

A boundary across which two independent systems meet and act on or communicate with each other. In computer technology, there are several types of interfaces.

- User interface - the keyboard, mouse, menus of a computer system. The user interface allows the user to communicate with the operating system.
- Software interface - the languages and codes that the applications use to communicate with each other and with the hardware.
- Hardware interface - the wires, plugs and sockets that hardware devices use to communicate with each other.

ISP

Short for ***I**nternet **S**ervice **P**rovider*, a company that provides access to the Internet. For a monthly fee, the service provider gives you a software package, username, password and access phone number. Equipped with a modem, you can then log on to the Internet and browse the World Wide Web and USENET, and send and receive e-mail.
In addition to serving individuals, ISPs also serve large companies, providing a direct connection from the company's networks to the Internet. ISPs themselves are connected to one another through *Network Access Points (NAPs)*.

IVR

Short for ***i**nteractive **v**oice **r**esponse*, a telephony technology in which someone uses a touch-tone telephone to interact with a database to acquire information from or enter data into the database. IVR technology does not require human interaction over the telephone as the user's interaction with the database is predetermined by what the IVR system will allow the user access to. For example, banks and credit card companies use IVR systems so that their customers can receive up-to-date account information instantly and easily without having to speak directly to a person. IVR technology is also used to gather information, as in the case of telephone surveys in which the user is prompted to answer questions by pushing the numbers on a touch-tone telephone.

IP

Abbreviation of ***I**nternet **P**rotocol*, pronounced as two separate letters. IP specifies the format of packets, also called *datagrams*, and the addressing scheme. Most networks combine IP with a higher-level protocol called *Transmission Control Protocol (TCP)*, which establishes a virtual connection between a destination and a source.

IP by itself is something like the postal system. It allows you to address a package and drop it in the system, but there's no direct link between you and the recipient. TCP/IP, on the other hand, establishes a connection between two hosts so that they can send messages back and forth for a period of time.

The current version of IP is *IPv4*. A new version, called *IPv6* or IPng, is under development.

LAN

Abbreviation of *Local Area Network*. A computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a *wide-area network (WAN).*

Most LANs connect workstations and personal computers. Each *node* (individual computer) in a LAN has its own CPU with which it executes programs, but it also is able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions.

There are many different types of LANs *Ethernets* being the most common for PCs. Most Apple Macintosh networks are based on Apple's AppleTalk network system, which is built into Macintosh computers.

MAGNET

State of Arizona shared campus network for communications traffic.

MAN

Short for ***M****etropolitan* ***A****rea* ***N****etwork*, a data network designed for a town or city. In terms of geographic breadth, MANs are larger than local-area networks (LANs), but smaller than wide-area networks (WANs). MANs are usually characterized by very high-speed connections using fiber optical cable or other digital media.

Mbps

Short for ***m****ega****b****its* ***p****er* ***s****econd*, a measure of data transfer speed. Networks, for example, are generally measured in Mbps.

Megabit

When used to describe data transfer rates, it refers to one million bits. Networks are often measured in megabits per second, abbreviated as *Mbps*.

Multiplex

To combine multiple signals (analog or digital) for transmission over a single line or media. A common type of multiplexing combines several low-speed signals for transmission over a single high-speed connection. The following are examples of different multiplexing methods:

- Frequency Division Multiplexing (FDM): each signal is assigned a different frequency
- Time Division Multiplexing (TDM): each signal is assigned a fixed time slot in a fixed rotation
- Statistical Time Division Multiplexing (STDM): time slots are assigned to signals dynamically to make better use of bandwidth
- Wavelength Division Multiplexing (WDM)**:** each signal is assigned a particular wavelength; used on optical fiber.

Node

In networks, a processing location. A node can be a computer or other device, such as a printer. Every node has a unique network address, sometimes called a *Data Link Control (DLC) address* or *Media Access Control (MAC) address*.

Packet

A piece of a message transmitted over a packet-switching network. See under *packet switching*. One of the key features of a packet is that it contains the destination address in addition to the data. In IP networks, packets are often called *datagrams.*

PBX

Short for ***p****rivate* ***b****ranch* ***ex****change,* a private telephone network used within an enterprise. Users of the PBX share a certain number of *outside lines* for making telephone calls external to the PBX.

Most medium-sized and larger companies use a PBX because it's much less expensive than connecting an external telephone line to every telephone in the organization. In addition, it's easier to call someone within a PBX because the number you need to dial is typically just 3 or 4 digits.

A new variation on the PBX theme is the centrex, which is a PBX with all switching occurring at a local telephone office instead of at the company's premises.

PCM

Short for *Pulse Code Modulation,* a sampling technique for digitizing analog signals, especially audio signals. PCM samples the signal 8,000 times a second; each sample is represented by 8 bits for a total of 64 Kbps.

PCM is used with T-1 and T-3 carrier systems. These carrier systems combine the PCM signals from many lines and transmit them over a single cable or other medium.

PDA

Short for ***p****ersonal* ***d****igital* ***a****ssistant,* a handheld device that combines computing, telephone/fax, Internet and networking features. A typical PDA can function as a cellular phone, fax sender, Web browser and personal organizer. Unlike portable computers, most PDAs began as pen-based, using a stylus rather than a keyboard for input. This means that they also incorporated handwriting recognition features. Some PDAs can also react to voice input by using voice recognition technologies. PDAs of today are available in either a stylus or keyboard version. The field of PDA was pioneered by Apple Computer, which introduced the Newton MessagePad in 1993. Shortly thereafter, several other manufacturers offered similar products. Today, one of the most popular brands of PDAs is the series of Palm Pilots from Palm, Inc.
PDAs are also called palmtops, hand-held computers and pocket computers.

Predictive Dialing System

An automated method of making many outbound calls without people and then passing answered calls to a person as the calls are answered.

PSTN

Short for ***P****ublic* ***S****witched* ***T****elephone* ***N****etwork,* which refers to the international telephone system based on copper wires carrying analog voice data. This is in contrast to newer telephone networks base on digital technologies, such as FDDI.

Telephone service carried by the PSTN is often called *plain old telephone service (POTS).*

Router

A device that connects any number of LANs.

Routers use headers and a forwarding table to determine where packets go, and they use ICMP to communicate with each other and configure the best route between any two hosts.
Very little filtering of data is done through routers. Routers do not care about the type of data they handle.

Server

A computer or device on a network that manages network resources. For example, a *file server* is a computer and storage device dedicated to storing files. Any user on the network can store files on the server. A *print server* is a computer that manages one or more printers, and a *network server* is a computer that manages network traffic. A database *server* is a computer system that processes database queries.

SIP

Short for ***S**ession **I**nitiated **P**rotocol*, or ***S**ession **I**nitiation **P**rotocol*, a signaling protocol for Internet conferencing, telephony, presence, events notification and instant messaging. The protocol initiates call setup, routing, authentication and other feature messages to endpoints within an IP domain.

Stylus

A pointing and drawing device shaped like a pen. You use a stylus with a digitizing tablet or touch screen.

Switch

In networks, a device that filters and forwards packets between LAN segments. Switches operate at the data link layer (layer 2) and sometimes the network layer (layer 3) of the OSI Reference Model and therefore support any packet protocol. LANs that use switches to join segments are called *switched LANs* or, in the case of Ethernet networks, *switched Ethernet LANs*.

T-1 carrier

A dedicated phone connection supporting data rates of 1. 544Mbits per second. A T-1 line actually consists of 24 individual channels, each of which supports 64Kbits per second. Each 64Kbit/second channel can be configured to carry voice or data traffic. Most telephone companies allow you to buy just some of these individual channels, known as *fractional T-1* access.

T-1 lines are a popular leased line option for businesses connecting to the Internet and for Internet Service Providers (ISPs) connecting to the Internet backbone. The Internet backbone itself consists of faster T-3 connections.

T-3 carrier

A dedicated phone connection supporting data rates of about 43 Mbps. A T-3 line actually consists of 672 individual channels, each of which supports 64 Kbps.
T-3 lines are used mainly by Internet Service Providers (ISPs) connecting to the Internet backbone and for the backbone itself.

TDM

Short for *Time Division Multiplexing*, a type of multiplexing that combines data streams by assigning each stream a different time slot in a set. TDM repeatedly transmits a fixed sequence of time slots over a single transmission channel. Within T-Carrier systems, such as T-1 and T-3, TDM combines Pulse Code Modulated (PCM) streams created for each conversation or data stream.

Tele-Computing

The ability of employees to work at locations (e. g., home) other than their employer's office, and have full access to all computer applications required to perform their work.

UTP

Short for ***U****nshielded* ***T****wisted* ***P****air*, a popular type of cable that consists of two unshielded wires twisted around each other. Due to its low cost, UTP cabling is used extensively for local-area networks (LANs) and telephone connections. UTP cabling does not offer as high bandwidth or as good protection from interference as coaxial or fiber optic cables, but it is less expensive and easier to work with.

VPN

Short for ***v****irtual* ***p****rivate* ***n****etwork*, a *network* that is constructed by using public wires to connect nodes. For example, there are a number of systems that enable you to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

WAN

An abbreviation for *wide-area network*. A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs). Computers connected to a wide-area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet

Appendix A

HOUSE BILL 2706

(Applicable Sections Only)

PLEASE NOTE: In most BUT NOT ALL instances, the page and line numbering of bills on this web site correspond to the page and line numbering of the official printed version of the bills.

```
-----------------------------
 Senate Engrossed House Bill
-----------------------------
 State of Arizona
 House of Representatives
 Forty-fifth Legislature
 Second Regular Session
 2002
-----------------------------
     HOUSE BILL 2706
-----------------------------
```

AN ACT
AMENDING LAWS 2001, CHAPTER 236, SECTIONS 2, 8, 11, 13, 14, 21, 24, 27, 28, 29, 34, 37, 38, 39, 40, 49, 51, 59, 64, 67, 69, 70, 71, 72, 75, 76, 78, 80, 81, 87, 88, 89, 93, 94, 96 AND 106; MAKING APPROPRIATIONS FOR THE DIFFERENT DEPARTMENTS OF THE STATE, FOR STATE INSTITUTIONS AND FOR PUBLIC SCHOOLS; PROVIDING FOR CERTAIN REPORTING REQUIREMENTS.
(TEXT OF BILL BEGINS ON NEXT PAGE)
Be it enacted by the Legislature of the State of Arizona:

Sec. 117. Transfers of fund monies to the state general fund; fiscal year 2002-2003
Notwithstanding any other law, on or before June 30, 2003, the following amounts from the following funds or sources are transferred to the state general fund for the purposes of providing adequate support and maintenance for agencies of this state:
6. Technology and telecommunications fund (ADA 4201) $4,000,000.

Sec. 122. Arizona telecommunications services
A. The proceeds from the sale of the Arizona telecommunications services central switching mechanism shall reduce dollar for dollar the $4,000,000 transfer from the technology and telecommunications fund to the state general fund required pursuant to section 117, paragraph 6 of this act.
B. Before the sale of the Arizona telecommunications services central switching mechanism, and no later than November 1, 2002, the Arizona department of administration and the government information technology agency shall submit a plan for review to the joint legislative budget committee on any options, including privatization and allowing agencies to procure their own telecommunications services, that would increase the fiscal efficiency of Arizona telecommunications services.

STATE of ARIZONA

Government Information Technology Agency	Statewide **STANDARD** P100-S101	TITLE: Network Infrastructure Effective Date: February 21, 2002

1. AUTHORITY

The Government Information Technology Agency (GITA) shall develop, implement and maintain a coordinated statewide plan for information technology (A.R.S. § 41-3504(A (1))), including, the adoption of statewide technical, coordination, and security standards (A.R.S. § 41-3504(A (1(a)))).

2. PURPOSE

The purpose of this standard is to coordinate agency and State implementations of network components and their designs. It is also intended to encourage further deployment of open systems based on targeted network architectures that use common, proven, pervasive, and industry-wide standards.

3. SCOPE

This applies to all budget units. Budget unit is defined as a department, commission, board, institution or other agency of the state organization receiving, expending or disbursing state funds or incurring obligations of the state including the board of regents and the state board of directors for community colleges but excluding the universities under the jurisdiction of the board of regents and the community colleges under their respective jurisdictions and the legislative or judicial branches. A.R.S. § 41-3501(2).

The Budget Unit Chief Executive Officer (CEO), working in conjunction with the Budget Unit Chief Information Officer (CIO), shall be responsible for ensuring the effective implementation of Statewide Information Technology PSPs within each Agency.

4. STANDARD

The following network standards provide for more effective sharing of common IT resources in addition to improving quality, usefulness, and efficiency of cross-agency applications and information throughout the State.

4.1. **Copper Network Cabling:** Shall be Category 5e Unshielded Twisted Pair (UTP).

- Category 5e UTP is certified to carry 100/1000 Mbps of data.
- Category 5e UTP is an IEEE standard and is an industry-wide standard structured cabling system.
- UTP shall be used unless specific issues exist, such as high EMI or long transport distances.
- All cabling installations shall to conform to applicable building codes, IEEE, EIA/TIA, and BICSI.

4.2. **Fiber Network Cabling:** Shall be either single-mode or multi-mode, depending on requirements.

- All fiber network cabling shall be open and industry-wide standard, as supported by IEEE.
- Fiber network cabling within a building may be multi-mode or single-mode. Multi-mode transmits Gigabit Ethernet a distance of approximately 220 meters (62.5/125 micron) to 550 meters (50/125 micron), depending on the specific fiber and the Ethernet port characteristics, maximum. Single-mode (8/125 micron) transmits Gigabit Ethernet up to a distance of approximately 5,000 meters, maximum.
- Fiber network cabling between buildings shall be single-mode, allowing Gigabit Ethernet (and above) transmission rates over greater distances.
- All cabling installations shall to conform to applicable building codes, IEEE, EIA/TIA, and BICSI.

4.3. **Wireless Network Connectivity**: Shall be compliant with IEEE 802.11x (LAN) and IEEE 802.16 (MAN) and shall use the 802.1x security standard.

- IEEE 802.11x provides relatively high-speed (11 Mbps and 54 Mbps) LAN links.
- IEEE 802.16 (approved December 2001) provides Metropolitan Area Networks with up to 66 GHz of performance.

4.4. **Logical Network Topology:** Shall be a star, although the physical network topology may be a star, ring, or mesh.

- Star, ring, and mesh topologies are specified to minimize the effect of connection failures between devices while easing the addition or removal of network devices.
- Star, ring, and mesh topologies are both scalable and flexible.

4.5. **Network Link Layer Access Protocol:** Shall be Ethernet, IEEE 802.3, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method.

- Ethernet is scalable, with the newer, more recent versions able to manage the increase of data flow and provide the bandwidth and "end-to-end" Quality of Service (QoS) necessary to support the requirements of converged voice, data, and video applications.

4.6. **Transport and Network Protocols**: Shall be TCP/UDP and IP, respectively.

- TCP/UDP and IP make up an open protocol suite that allows Internet access and the seamless integration of Intranets, Extranets, VPNs, and LANs.
- TCP/UDP and IP protocols facilitate, simplify, and standardize the protocols used to deliver e-government services.

4.7. **Network Devices (routers, switches, firewalls, access servers, etc.):** Shall be manageable with Network Management platforms that use Simple Network Management Protocol (SNMP) and Remote Monitoring (RMON).

- SNMP and RMON facilitate the exchange of management information between network devices as well as network performance management, isolation and analysis of network problems, and growth planning.
- SNMP is part of the TCP/IP protocol suite recommended for the transport and network protocol layers.
- Managed network devices help to ensure the continuous delivery of e-government services and internal agency business processes.

4.8. **Switching Technologies**: Shall be used to achieve Local Area Network (LAN) network device connectivity in OSI Layers 2, 3, and 4.

- Switching enhances security and network management. It improves network performance by enabling the balancing of network traffic across multiple segments, thus reducing resource contention, providing for scalability, and increasing throughput capacity.
- All communications over a LAN in Layers 2, 3, and 4 will use switching technologies.

4.9. **Network Interfaces**: Internal networks shall use "private," unregistered Internet Protocol (IP) addresses for network workstations and appliances. External networks communicating outside the agency shall use "public," registered IP addresses for all external ports on internetworking devices.

- Network Address Translation (NAT) techniques deployed at network boundaries to the external network or Internet enable the widespread reuse of non-unique or unregistered IPv4 addresses while still providing the required connectivity to applications and the external network or Internet.
- "Private," unregistered IP addresses provide additional security and protection of information and resources. NAT creates a firewall between the internal network and outside networks or the Internet by only allowing connections that originate inside the internal network.
- "Private," unregistered IP addresses provide flexibility and simplify the process of adding workstations and devices to networks.
- To prevent duplication and resulting loss of connectivity, the organization responsible for network administration shall coordinate all "private," unregistered IP addresses within their domain of responsibility.
- The Internet Assigned Numbers Authority (IANA) has reserved three blocks of IP address space for "private" Internets (Network Working Group RFC 1918). The blocks are 10.0.0.0. to 10.255.255.255, 172.16.0.0 to 172.31.255.255, and 192.168.0.0 to 192.168.255.255. Any IP addresses outside of these spaces lack coordination with IANA or an Internet registry when used as unregistered IP addresses..
- "Public," registered IP addresses provide the required uniqueness for Internet and network integrity.
- IANA provides coordination of all "public" IP address space.

4.10. **Internal Workstation Network IP Addresses**: Shall be assigned using Dynamic Host Configuration Protocol (DHCP).
- DHCP provides the flexibility needed for growth and migration of networks.
- DHCP facilitates and simplifies IP network administration and the addition of workstations and devices to networks.
- DHCP address allocation may be (1) an automatic allocation where DHCP assigns a permanent IP address to the workstation; (2) manually allocated and assigned by the DHCP administrator; or (3) dynamically allocated where DHCP assigns an IP address to a workstation for a limited period of time (lease.)

5. DEFINITIONS AND ABBREVIATIONS

Refer to both, the PSP Glossary of Terms and the PSP Glossary of Abbreviations, for definitions and abbreviations.

6. REFERENCES

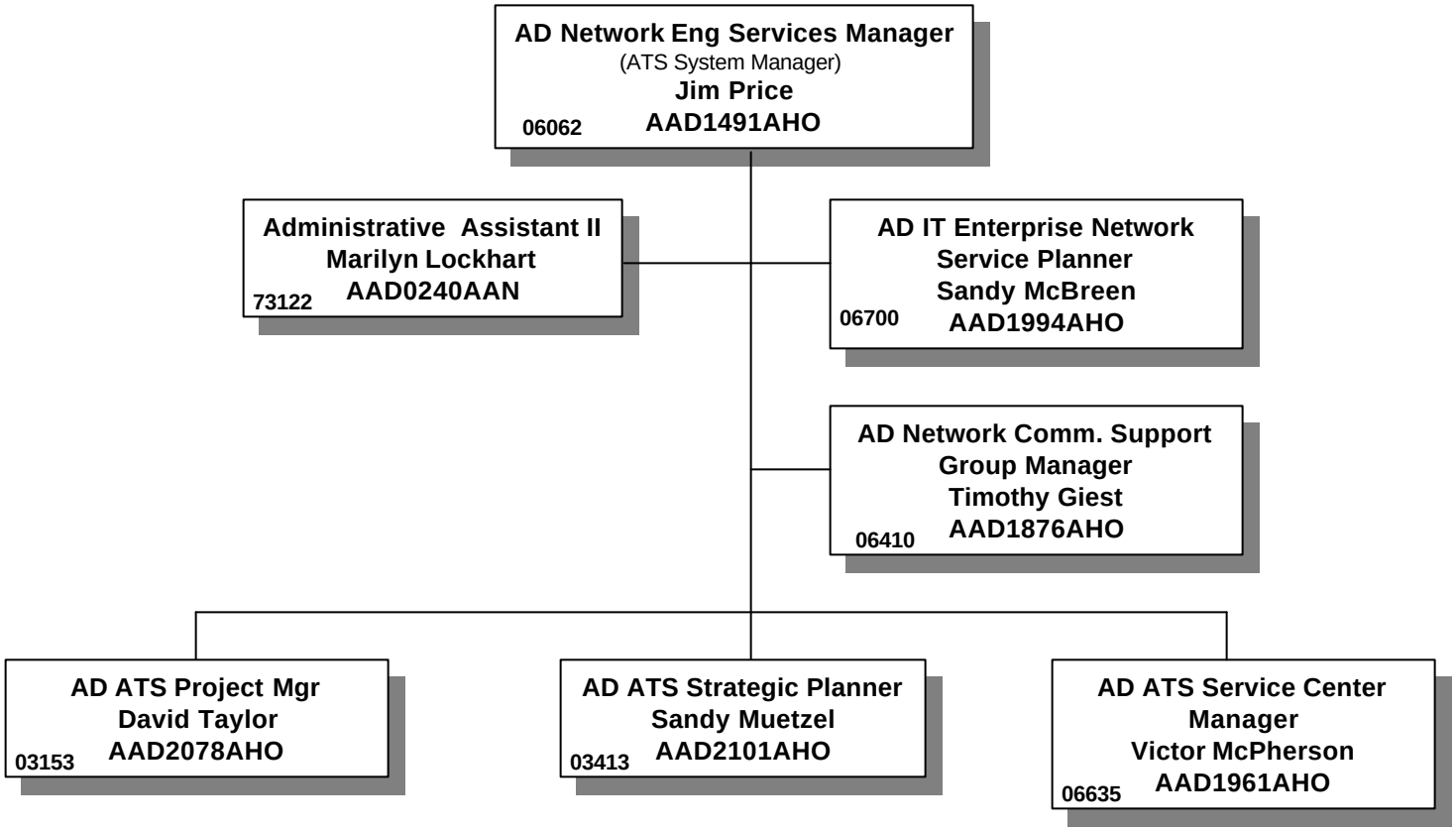
6.1. A. R. S. § 41-621 et seq., "Purchase of Insurance; coverage; limitations, exclusions; definitions."
6.2. A. R. S. § 41-1335 ((A (6 & 7))),"State Agency Information."
6.3. A. R. S. § 41-1339 (A),"Depository of State Archives."
6.4. A. R. S. § 41-1461, "Definitions."
6.5. A. R. S. § 41-1463, "Discrimination; unlawful practices; definition".
6.6. A. R. S. § 41-1492 et seq., "Prohibition of Discrimination by Public Entities."
6.7. A. R. S. § 41-2501 et seq., "Arizona Procurement Codes, Applicability."
6.8. A. R. S. § 41-3501, "Definitions."
6.9. A. R. S. § 41-3504, "Powers and Duties of the Agency."
6.10. A. R. S. § 41-3521, "Information Technology Authorization Committee; members; terms; duties; compensation; definition."
6.11. A. R. S. § 44-7041, "Governmental Electronic Records."
6.12. Arizona Administrative Code, Title 2, Chapter 7, "Department of Administration Finance Division, Purchasing Office."
6.13. Arizona Administrative Code, Title 2, Chapter 10, "Department of Administration Risk Management Section."
6.14. Arizona Administrative Code, Title 2, Chapter 18, "Government Information Technology Agency."
6.15. Statewide Information Technology Policy P100.
6.16. Statewide IT Security Policy P800.
6.17. State of Arizona Target Network Architecture, http://gita.state.az.us/enterprise_architecture.

7. ATTACHMENTS

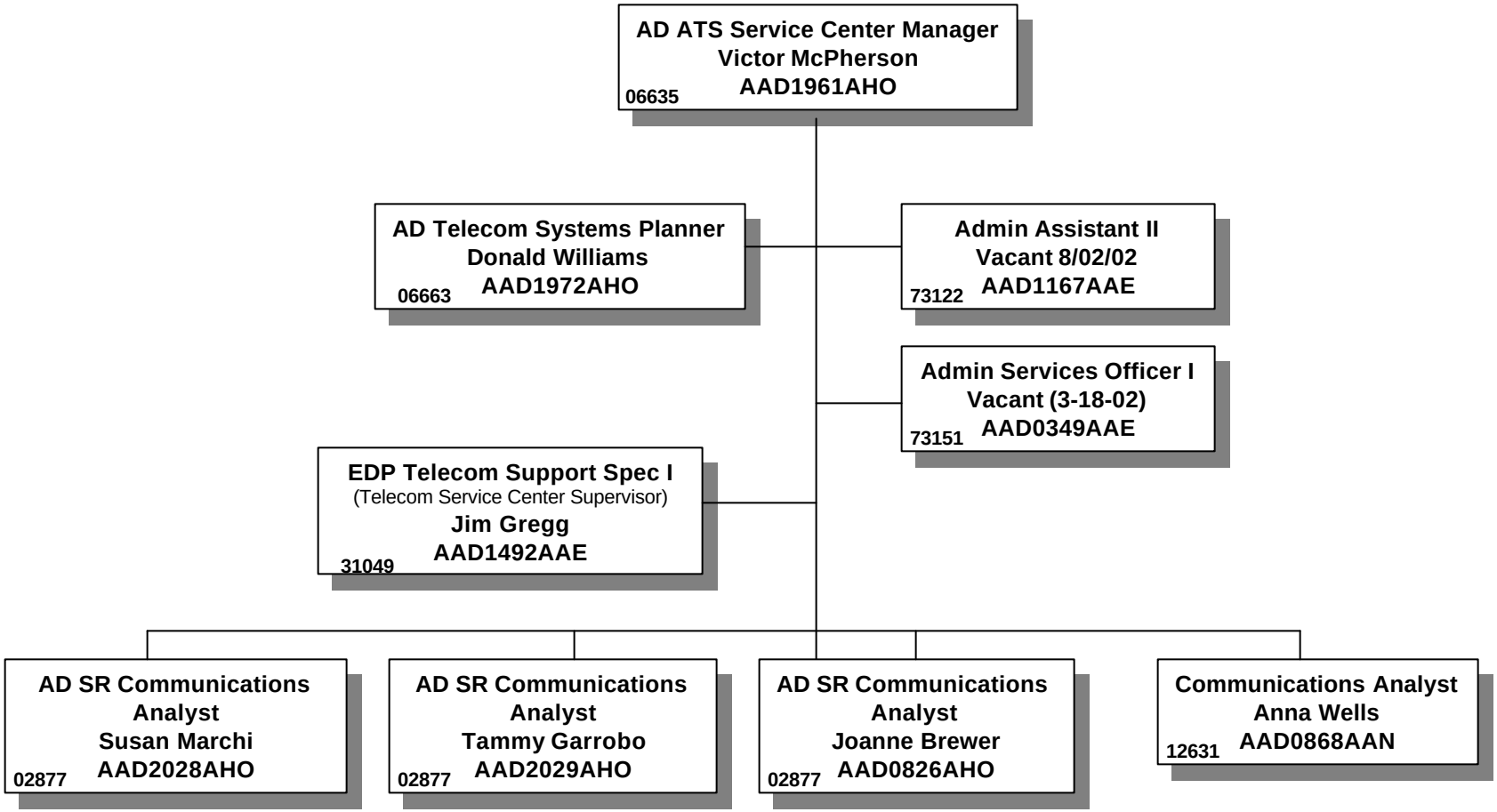
None.

DEPARTMENT OF ADMINISTRATION
Information Services Division

Arizona Telecommunications System

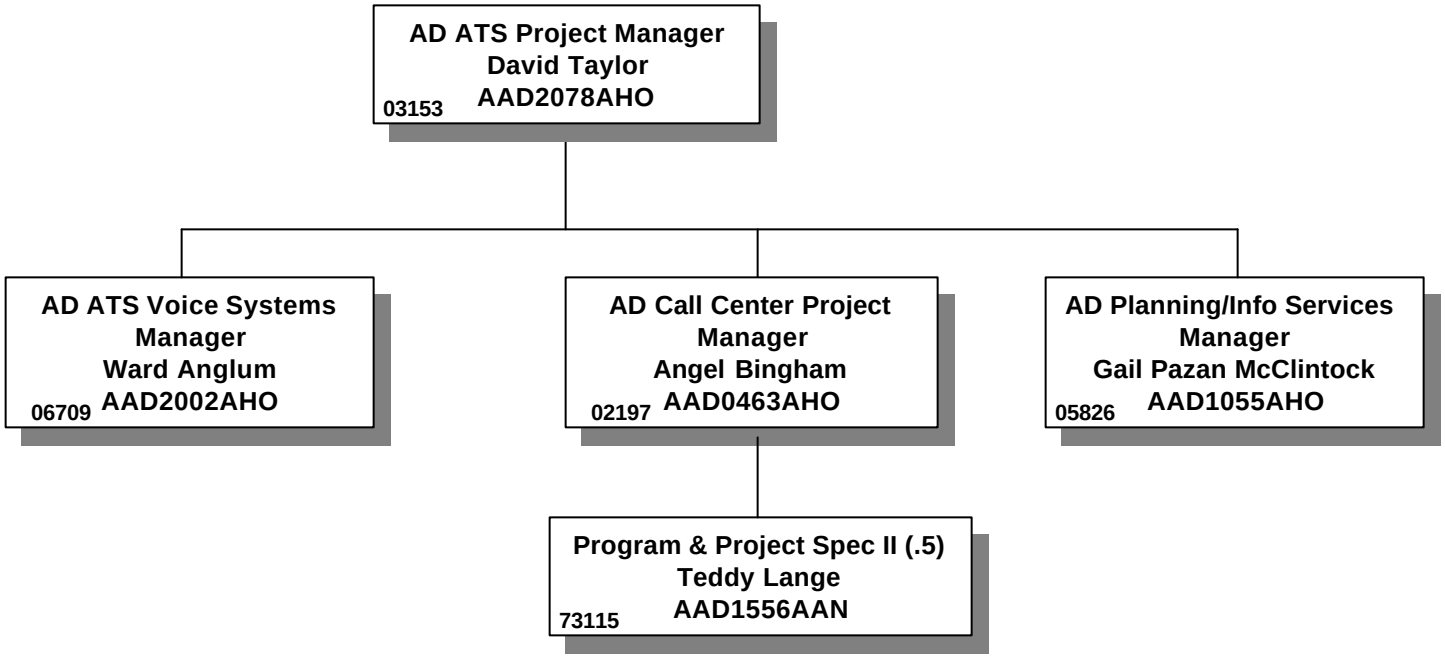


DEPARTMENT OF ADMINISTRATION
Information Services Division
Arizona Telecommunications System - Customer Fulfillment Administration

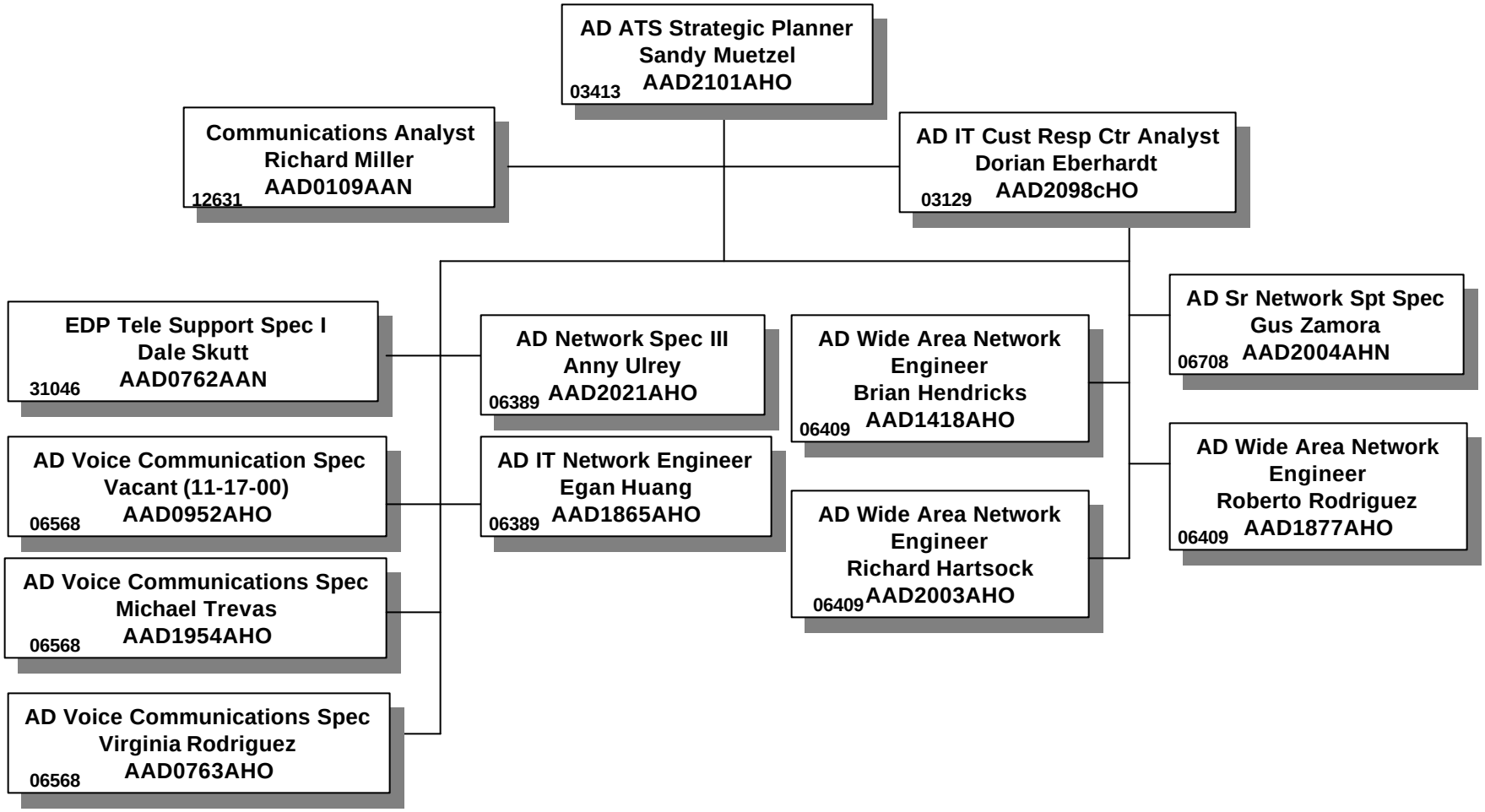


DEPARTMENT OF ADMINISTRATION
Information Services Division

Arizona Telecommunications System - Project Management Unit

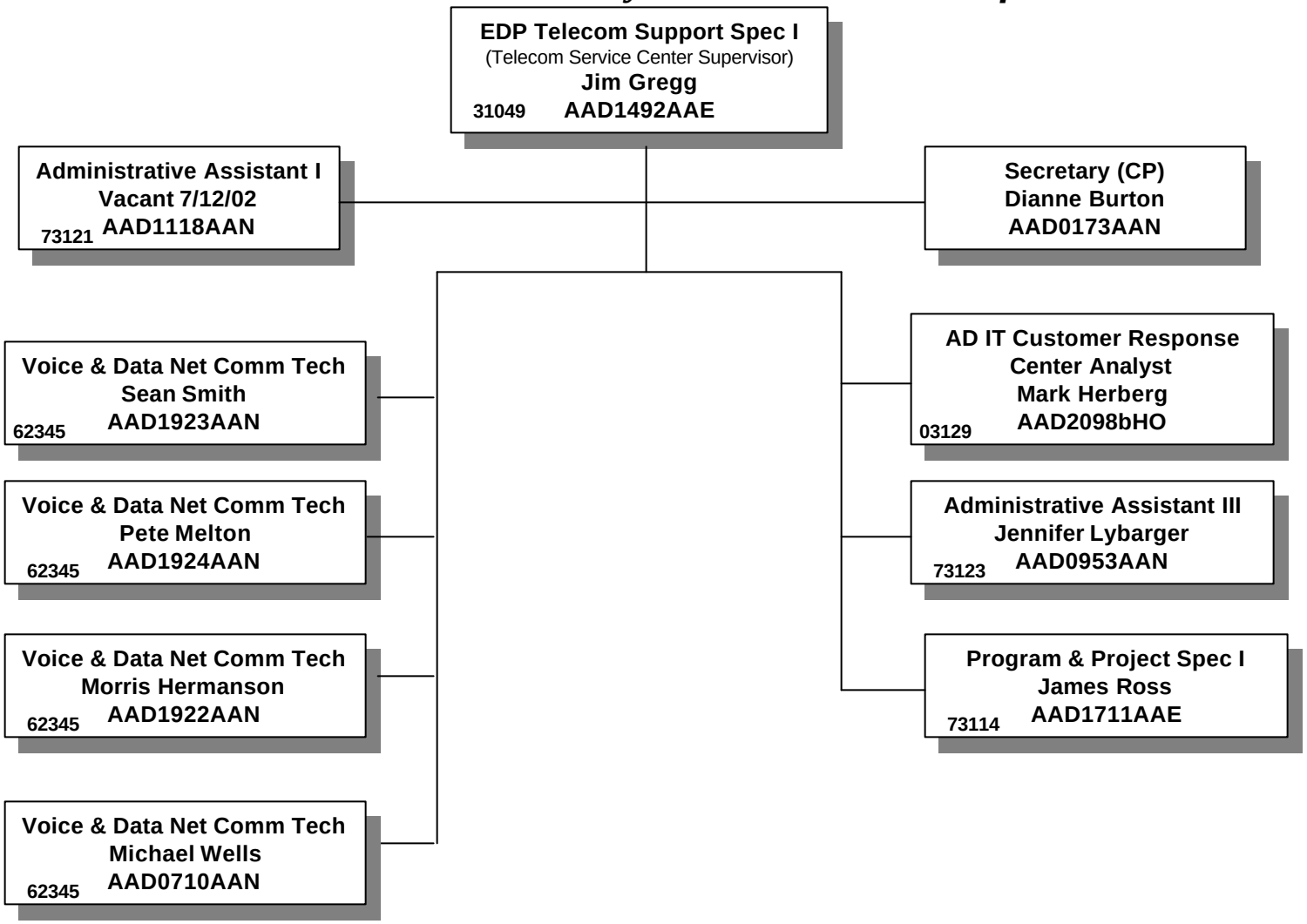


DEPARTMENT OF ADMINISTRATION
Information Services Division
Arizona Telecommunications System - Infrastructure



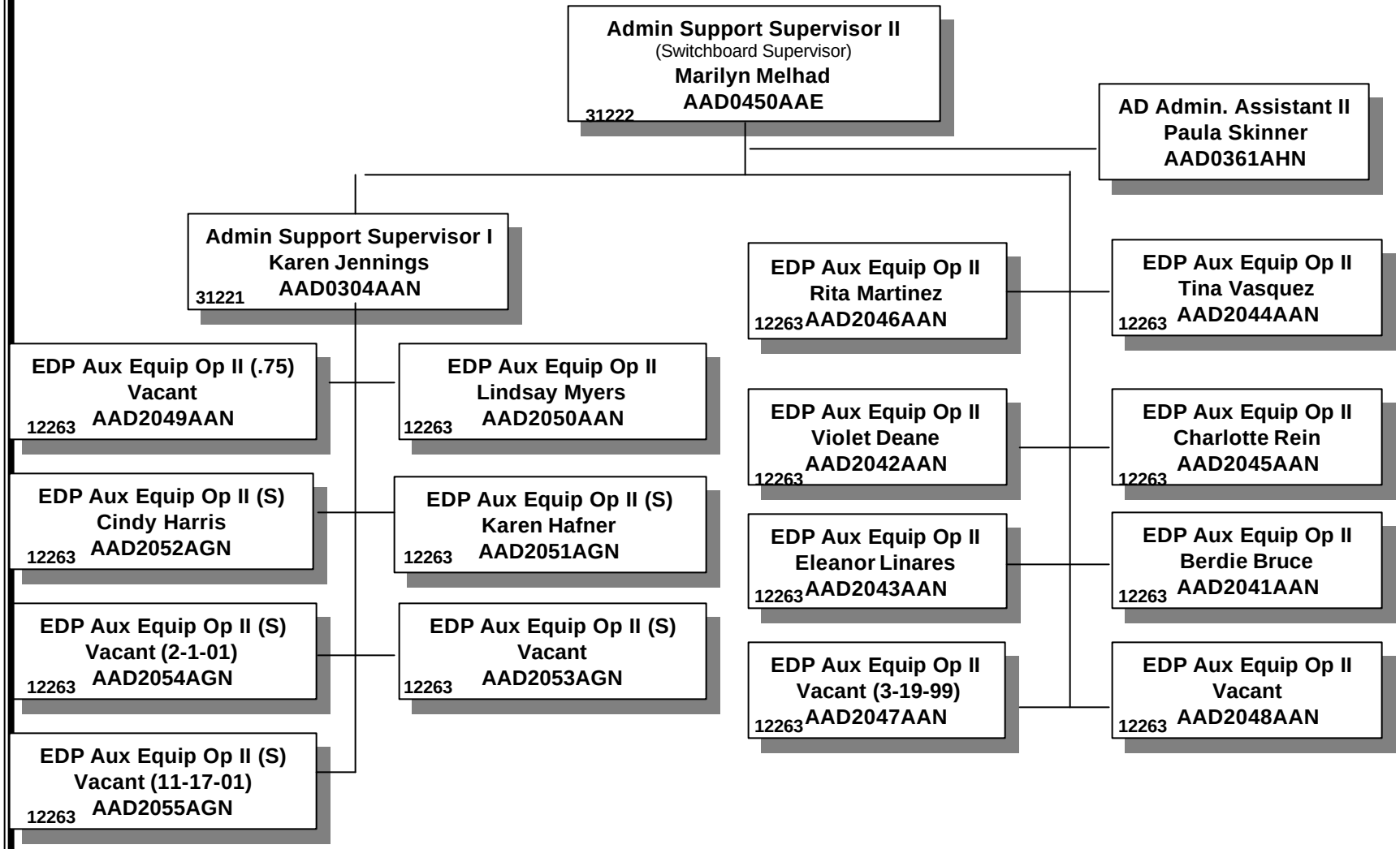
DEPARTMENT OF ADMINISTRATION
Information Services Division

Arizona Telecommunications System - Customer Fulfillment Center



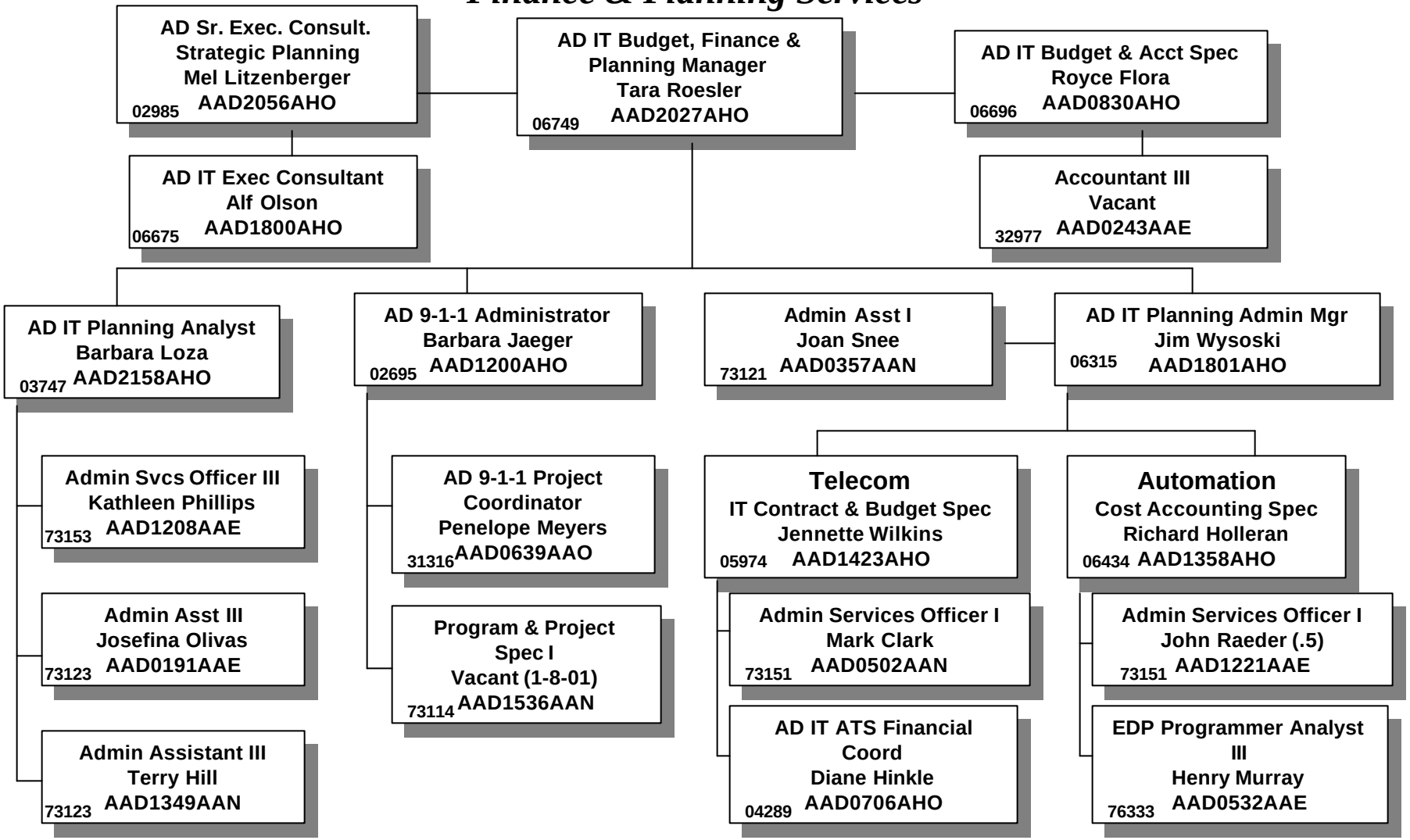
DEPARTMENT OF ADMINISTRATION
Information Services Division

Arizona Telecommunications System - Switchboard Services



DEPARTMENT OF ADMINISTRATION
Information Services Division

Finance & Planning Services



ATS SERVICES

ATS provides an array of enabling and enhancing voice and data services:

Telephony Services

Enabling Services:
Provision, Install, Maintain, and Refresh Customer Equipment and Services

- Telephones
- In-Building Wiring/Cabling
- Off-premise Extensions
- "Dry" Data Circuits - On Mall

Provide Basic Voice Messaging Services

- Voice Mail (Pager Notify, "0" Out, Distribution Lists, Delay Send, Confirm, Receipt)
- TDD Access

Enhancing Services:
Operator Services

- Public Information
- Direct Inward System Access (DISA) - Attendant Supervised
- Meet-Me Conference
- Attendant Controlled Conference

Other Value-Add Products and Services

- Page From Station
- Listen Only From Source
- Custom Recordings
- Special Assemblies
- System performance and Maintenance Reports

Provide Enhanced Voice Messaging Services

- Auto Attendant
- Info/Intercept
- FAX - Station
- FAX - Agent
- FAX-on-Demand
- Voice Forms
- Message Desk
- Automated Call Distribution (ACD)
- Interactive Voice Response (IVR)
- Computer Telephony Integration (CTI)
- Predictive Dialing System (PDS)

Consulting Services

- Voice Mail Training
- User Training (Telephone, Voice Messaging, Special)
- Billing Services
- Pre/Post Sales Support
- Telephone System Design (Dialing Plans, Network Layouts, etc.)

Call Center Services

- Call Center Systems
- Automated Call Distribution (ACD)
- Interactive Voice Response (IVR)
- Computer Telephony Integration (CTI)
- Predictive Dialing System (PDS)
- Call Center Wall Boards
- Remote Call Center Telephone Equipment

Network Access Services

On-and-off-campus data communication services are provided through a centrally managed WAN operation. These include the fiber optic networks on the Phoenix and Tucson campuses, and leased lines to several Arizona cities and towns. Various line speeds and communications technologies are applied depending on the business need of a given agency. WAN services include:

Enabling Services:

Provision, Maintain, Operate, and Refresh Network Customer Premise Equipment

- Hubs
- LAN Switches
- Routers
- ATM Switches
- Gateways
- Network Management

Administrative Support

- Billing Services
- Contracts Management/Administration

Enhancing Services:

Value-Add Services

- Virtual Private Network (VPN) Solutions
- Network Traffic Load Analysis

Consulting Services

- Network Architecture, Design and Engineering

- System Architecture, Design and Engineering
- Facility Architecture, Design and Engineering

Internet Enabling Services

Messaging Services Engineering

- Internet Web Hosting
- Internet Web Search Engine Administration
- Internet Web Database Integration
- Internet Netnews Services
- Internet Proxy Services
- Internet Electronic Email Hosting
- Enhanced Simple Mail Transfer Protocol (SMTP) Gateway - State Electronic Mail Hub
- File Transfer Protocol (FTP) Support
- State Internet Domain Name Registration Authority (state.az.us)
- Domain Name Service (DNS) Administration
- Internet Firewall Security
- Network Directory Services

Administrative Support

- Billing Services
- Contracts Management/Administration

ATS Customer By Service Category 2001

Summary of ATS On-Mall Customers by Service Type:

Total Agencies:	117	
Agencies on Mall:	53	
WAN On-Campus:	37 of 53 On-Mall Agencies	(69.8%)
WAN Off-Campus:	11 of 53 On-Mall Agencies	(22.4%)
Internet:	37 of 82 Applicable Agencies	(45.1%)
Inter-LATA:	29 of 32 Applicable Agencies	(90.6%)
Telephony – Desktop:	48 of 53 On-Mall Agencies	(90.5%)
Telephony – Jack:	48 of 53 On-Mall Agencies	(90.5%)
Telephony – Key System:	6 of 53 On-Mall Agencies	(8.8%)
Call Center System:	2 of 53 On-Mall Agencies	(3.7%)
Web Hosting:	18 of 53 On-Mall Agencies	(33.9%)

Service → [1] / Agency ↓	Is Agency On Mall?	Network (WAN On-Campus Connection)	Network (WAN Off-Campus Connection)	Inter-LATA Connection	Internet Access	Network (LAN Connectivity)	Telephony [2] (to the Desktop)	Telephony (to the Jack)	Telephony (to a Key System)	Call Center System	Web
Accountancy Board			X	N/A	X						
Dept of Administration	X	X	X	X	X	X	X	X	X		X
Office of Admin Hearing	X	X		N/A	X		X	X			
Dept of Agriculture	X	X	X	X	X		X	X			X
Agricultural Employment Board	X			N/A	UNK		X	X			
Board of Appraisal	X			N/A	UNK		X	X			X
Arizona Automobile Theft		X	X	N/A	UNK						X
Arizona Commission for Deaf & Hard of Hearing	X	X	X	N/A	X		X	X			X
Arizona Exposition & State Fair			X	N/A	X						
Arizona Geological Survey		X		X	X						X
AHCCCS		X	X	X	T1 to ASU						
Arizona Historical Society				N/A	UNK						
Arizona Peace Officer Standards Training Board			X	N/A	X						

[1] Identify in the affirmative by placing an 'X' in the cell corresponding to ATS services provided to each State agency.
[2] Telephony categories include dial-tone, long distance, toll-free, and voice mail services.

Service → [1] / Agency ↓	Is Agency On Mall?	Network (WAN On-Campus Connection)	Network (WAN Off-Campus Connection)	Inter-LATA Connection	Internet Access	Network (LAN Connectivity)	Telephony [2] (to the Desktop)	Telephony (to the Jack)	Telephony (to a Key System)	Call Center System	Web
Arizona Pioneer's Home			X	N/A	X						X
Arizona Power Authority	X			N/A	UNK		X	X			
Arizona State of Charter Schools			X	N/A	X						
Commission on the Arts				N/A	Qwest DSL						
Attorney General	X	X	X	X	X		X	X			X
Banking Department			X	N/A	UNK						
Barber Board	X	X		N/A	UNK		X	X			
Behavioral Health Exam	X	X		N/A	X		X	X			
Boxing Commission	X	X		N/A	X		X	X			
Building & Fire Safety				N/A	X						
Chiropractic Board				N/A	UNK						X
Citizens Clean Elections Commission			X	N/A	X						X
Commerce			X	N/A	X						
Cooperative Extension				N/A	UNK						
Corporation Commission	X	X		X	X		X	X			
Dept of Corrections	X	X	X	X	X		X	X			X
Cosmetology Board			X	N/A	X						
Court of Appeals	X	X		X	UNK		X	X			X
Credit Unions				N/A	UNK						
Criminal Justice Commission			X	N/A	X						X
AZ State School for the Deaf & Blind			X	X	X		X	X			
Deferred Compensation				N/A	UNK						
Dental Examiners Board				N/A	UNK						
Disease Control Research	X	X		N/A	X		X	X			
DES	X	X	X	X	T1 to ATT		X	X	X	X	
Dept of Education	X	X	X	X	X		X	X			
Emergency & Military Affairs			X	N/A	X						
DEQ			X	X	X						
Board of Equalization			X	N/A	X						
Board of Executive Clemency	X	X		N/A	X				X		
Fire Marshal				N/A	UNK						
Funeral Directors and Embalmers	X	X		N/A	X		X	X			
Game & Fish Department			X	X	X						X
Gaming Department			X	N/A	X						X
Geographic & Historic Names				N/A	UNK						
GITA			X	N/A	X						X
Governor's Office	X	X		X	X		X	X			X

Service → [1] / Agency ↓	Is Agency On Mall?	Network (WAN On-Campus Connection)	Network (WAN Off-Campus Connection)	Inter-LATA Connection	Internet Access	Network (LAN Connectivity)	Telephony [2] (to the Desktop)	Telephony (to the Jack)	Telephony (to a Key System)	Call Center System	Web
Health Services	X	X	X	X	X		X	X			X
Governors office of Highway Safety				N/A	UNK						X
Homeopathic Medical Examiners				N/A	UNK						
House of Representatives	X			N/A	T1 to Qwest		X	X			
Independent Redistricting Commission	X	X		N/A	X		X	X			
Commission of Indian Affairs	X	X		N/A	X		X	X			X
Industrial Commission	X	X		X	X		X	X			
Insurance Department		X	X	X	X						X
Joint Board on the Regulation				N/A	UNK						
Judicial Conduct	X			N/A	UNK		X	X			
Dept of Juvenile Corrections	X	X	X	X	X		X	X			X
State Land	X	X		N/A	X		X	X			X
Law Enforcement Merit System				N/A	UNK						
Legislative Council	X			N/A	T1 to Qwest		X	X			
Library & Archives	X	X	X	N/A	X		X	X			
Liquor Licenses and Control	X	X		X	X		X	X			
Lottery			X	X	X						
Medical Examiners Board				N/A	UNK						
Mine Inspectors	X	X		X	X				X		X
Mines & Mineral Resources	X	X		N/A	X						X
Naturopathic Physicians Board of Medical Examiners	X			N/A	UNK		X	X			
Navigable Stream Adjudication	X			N/A	UNK		X	X			
Board of Nursing				N/A	UNK						
Nursing Care Institutions	X			N/A	UNK		X	X			
Occupational Therapy				N/A	UNK						
Ombudsman Citizens Aide			X	N/A	UNK						
Board of Opticians Dispensing	X	X		N/A	X		X	X			
Board of Optometry	X	X		N/A	X		X	X			
Osteopathic Examiners in Medicine & Surgery		X		N/A	UNK						
Arizona Parks	X	X	X	X	X		X	X			
Personnel Board	X	X		N/A	X		X	X			X
Pharmacy Board		X		N/A	X						X
Board of Physical Therapy	X	X		N/A	X		X	X			
Board of Podiatry Examiners	X	X		N/A	X		X	X			
Post Secondary Education Commission		X		N/A	X						X
Prescott Historical Society				N/A	UNK						

Service → [1] / Agency ↓	Is Agency On Mall?	Network (WAN On-Campus Connection)	Network (WAN Off-Campus Connection)	Inter-LATA Connection	Internet Access	Network (LAN Connectivity)	Telephony [2] (to the Desktop)	Telephony (to the Jack)	Telephony (to a Key System)	Call Center System	Web
Private Post Secondary	X			N/A	UNK		X	X			X
Board of Psychologist	X	X		N/A	X		X	X			
DPS			X	UNK	X						X
Public Safety Personnel Retirement System				N/A	UNK						
Racing Department			X	N/A	X						X
Radiation Regulatory Agency			X	N/A	Cox						
Real Estate Dept		X	X	X	X						
Board of Regents				N/A	UNK						X
Registrar of Contractors	X	X	X	X	X				X		X
Residential Utility Consumer				N/A	X						
Respiratory Care	X			N/A	UNK		X	X			
Retirement System			X	X	X						X
Dept of Revenue	X	X		X	X		X	X	X	X	X
School Facilities	X	X		N/A	X		X	X			
Secretary of State	X	X		X	X		X	X			
Senate	X			N/A	T1 to Qwest		X	X			
State Compensation Fund				UNK	UNK						
Structural Pest Control			X	X	X						
Supreme Court	X	X		X	X		X	X			
Tax Appeals			X	N/A	UNK						
Technical Registration			X	N/A	X						X
Office of Tourism				N/A	X						
Dept of Transportation	X	X		UNK	X						
Uniform State Law Commission				N/A	UNK						
NAU				N/A	UNK						
U of A			X	N/A	UNK						
Veterans Services			X	N/A	X						
Veterinary Medical Examining	X	X		N/A	X		X	X			
Water Resources		X	X	X	X						
Weights & Measures		X	X	N/A	X						
Total Agencies 117	**53**	**37**	**11**	**29**	**37**	**1**	**48**	**48**	**6**	**2**	**18**

Appendix E

AGENCIES PROVIDING DATA

AGENCIES PROVIDING DATA

Arizona Department of Administration

Arizona Health Care Cost Containment System

Arizona Department of Economic Security

Arizona Department of Environment Quality

Arizona Department of Revenue

Arizona Department of Health Services

Arizona Lottery

Arizona Game and Fish

Arizona Department of Corrections

Arizona Department of Juvenile Corrections

Arizona Department of Transportation

Arizona Retirement System

Arizona Department of Public Safety

Arizona Attorney General's Office

IPT - Data Network Refresh (Toll Bypass) & IP Telephony

IPT - Data Network Refresh (Toll Bypass) & IP Telephony	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass) & IPT						
2. Cabling	$ 5,789,800	$ 5,202,200	$ 5,043,800	$ 4,964,600	$ 4,964,600	$ 25,965,000
3. Power in Closets	$ 508,920	$ 459,135	$ 425,945	$ 409,350	$ 409,350	$ 2,212,700
4. Data Network Refresh						$ -
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony						$ -
a.Equipment	$ 8,664,893	$ 6,210,002	$ 5,791,326	$ 5,581,988	$ 4,724,243	$ 30,972,451
b. Installation	$ 2,553,665	$ 1,896,553	$ 1,780,630	$ 1,722,669	$ 1,710,454	$ 9,663,971
8. Training	$ 197,236	$ 164,576	$ 155,245	$ 150,579	$ 150,579	$ 818,215
9. Trade-In Value	$ (1,621,252)	$ (948,130)	$ (906,262)	$ (885,328)	$ (799,554)	$ (5,160,526)
10. Total Refresh & IPT Implementation	**$ 27,369,962**	**$ 16,904,329**	**$ 16,639,677**	**$ 15,863,850**	**$ 15,079,665**	**$ 91,857,483**
11. Annual Debt Service	$ 5,960,191	$ 9,641,345	$ 13,264,867	$ 16,719,441	$ 20,003,249	$ 65,589,093
12. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
13. Net Loss/(Savings)	**$ (5,396,916)**	**$ (1,715,762)**	**$ 1,907,760**	**$ 5,362,334**	**$ 8,646,142**	**$ 8,803,558**
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass) & IPT						
Maintenance:						
14. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$ 4,148,570
15. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
16. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
17. IP Telephony	$ -	$ 2,013,314	$ 2,954,080	$ 3,409,053	$ 3,833,206	$ 12,209,654
18. Replace by IP Telephony Maintenance	$ (121,899)	$ (330,869)	$ (500,657)	$ (661,738)	$ (805,405)	$ (2,420,568)
19. Net Maintenance	**$ (202,772)**	**$ 2,097,864**	**$ 3,137,008**	**$ 3,699,066**	**$ 4,328,592**	**$ 13,059,758**
20. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
21. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
22. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
23. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
24. MACs	$ (477,864)	$ (814,452)	$ (1,134,211)	$ (1,437,140)	$ (1,689,581)	$ (5,553,248)
25. Total Anticipated Savings	**$ (615,002)**	**$ (1,382,420)**	**$ (2,598,223)**	**$ (4,085,698)**	**$ (6,320,428)**	**$ (15,001,769)**
26. Total Ongoing Costs/(Savings)	**$ (817,774)**	**$ 715,444**	**$ 1,552,545**	**$ 627,129**	**$ (978,076)**	**$ 1,099,269**
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT	**$ (6,214,689)**	**$ (1,000,318)**	**$ 3,460,305**	**$ 5,989,463**	**$ 7,668,066**	**$ 9,902,827**
28. TCO IPT	$ 60,154,013	$ 65,368,385	$ 69,829,007	$ 72,358,165	$ 74,036,769	$ 341,746,339
29. Net Loss/(Savings) IPT	$ (6,214,689)	$ (1,000,318)	$ 3,460,305	$ 5,989,463	$ 7,668,066	$ 9,902,827
30. Debt Services Remaining						$ 34,427,152

Financial Assumptions: IPT - Data Network Refresh (Toll Bypass) & IP Telephony

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - Upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95% of closets for each MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - of the state's 968 sites, the closets needing upgrading: 198 on Phoenix campus - 175 IDF & 23 MDF; off Phoenix mall sites - 196 IDF & 6 MDF (power upgrades not needed in closets requiring just routers).
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO.
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List prices plus government discounts.
7. IP Telephony:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. List prices with government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony over 5 years based on PBX useful life, data network upgrade, & building cabling needs.
8. Training - Train the trainers session: 42 IT voice personnel @ $14K/person & 42 IT WAN personnel @ $6K/person.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh & IPT Implementation - Sum of items 2 through 9.
11. Annual Debt Service - Financing of Implementation costs @ 3.4%.
12. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
13. Net Loss/(Savings) - Sum of items 10 through 12.
14. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
15. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
16. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
17. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
18. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
19. Net Maintenance - Sum of items 14. through 18.
20. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
21. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
22. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
23. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
24. MACs - Savings with moves, adds and changes due to implementation of IP Telephony:
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
25. Total Anticipated Savings - Sum of items 21. through 24.
26. Total Ongoing Costs/(Savings) - Sum of items 19., 20., & 25.
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT - Sum of items 13. & 26.; represents incremental impact of implementing Data Network Refresh & IP Telephony.
28. TCO IPT - Sum of items 1., & 27.; represents new TCO after implementing Data Network Refresh & IP Telephony.
29. Net Loss/(Savings) IPT - Difference of items 1. & 28; represents incremental impact to TCO.
30. Debt Services Remaining - Debt service remaining after year 5.

As Is - Data Network Refresh (Toll Bypass)

As Is - Data Network Refresh (Toll Bypass)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass)						
2. Cabling	$ -	$ -	$ -	$ -	$ -	$ -
3. Power in Closets	$ -	$ -	$ -	$ -	$ -	$ -
4. Data Network Refresh						
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony	$ -	$ -	$ -	$ -	$ -	$ -
a.Equipment	$ -	$ -	$ -	$ -	$ -	$ -
b. Installation	$ -	$ -	$ -	$ -	$ -	$ -
8. Training	$ -	$ -	$ -	$ -	$ -	$ -
9. Trade-In Value	$ (754,763)	$ (327,130)	$ (327,130)	$ (327,130)	$ (327,130)	$ (2,063,281)
10. Total Refresh Implementation	**$ 10,521,938**	**$ 3,592,863**	**$ 4,021,863**	**$ 3,592,863**	**$ 3,592,863**	**$ 25,322,392**
11. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
12. Net Loss/(Savings)	$ (835,169)	$ (7,764,244)	$ (7,335,244)	$ (7,764,244)	$ (7,764,244)	$ (31,463,143)
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass)						
Maintenance:						
13. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$ 4,148,570
14. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
15. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
16. Net Maintenance	**$ (80,873)**	**$ 309,113**	**$ 470,975**	**$ 632,836**	**$ 875,570**	**$ 2,207,620**
17. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
18. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
19. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
20. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
21. MACs	$ -	$ -	$ -	$ -	$ -	$ -
22. Total Anticipated Savings	**$ (137,137)**	**$ (567,967)**	**$ (1,464,012)**	**$ (2,648,558)**	**$ (4,630,847)**	**$ (9,448,521)**
23. Total Ongoing Costs/(Savings)	**$ (218,010)**	**$ (258,854)**	**$ 20,723**	**$ (1,001,962)**	**$ (2,741,517)**	**$ (4,199,621)**
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass)	**$ (1,053,179)**	**$ (8,023,098)**	**$ (7,314,521)**	**$ (8,766,206)**	**$ (10,505,760)**	**$ (35,662,764)**
As Is Loss/(Savings)						
25. FTE Savings	$ -	$ -	$ -	$ -	$ -	$ -
26. Total As Is Loss/(Savings)	$ -	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
27. TCO As Is	$ 65,315,523	$ 58,345,605	$ 59,054,182	$ 57,602,497	$ 55,862,942	$ 296,180,749
28. Net Loss/(Savings) As Is	$ (1,053,179)	$ (8,023,098)	$ (7,314,521)	$ (8,766,206)	$ (10,505,760)	$ (35,662,764)

Financial Assumptions: As Is - Data Network Refresh (Toll Bypass)

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Not applicable.
3. Power in Closets - Not applicable.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List price plus government discounts.
7. IP Telephony - Not applicable.
8. Training - Not applicable.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh Implementation - Sum of items 2 through 9.
11. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
12. Net Loss/(Savings) - Sum of items 10 through 11.
13. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
14. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
15. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
16. Net Maintenance - Sum of items 13. through 15.
17. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
18. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
19. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
20. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
21. MACs - Not applicable.
22. Total Anticipated Savings - Sum of items 18. through 21.
23. Total Ongoing Costs/(Savings) - Sum of items 16., 17., & 22.
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass) - Sum of items 12. & 23.; represents incremental impact of implementing Data Network Refresh.
25. FTE Savings - No change in FTE for the "As Is" service delivery option.
26. Total As Is Loss/(Savings) - Sum of item 25.
27. TCO As Is - Sum of items 1., 24., & 26; represents new TCO after implementing Data Network Refresh for the As Is service delivery option.
28. Net Loss/(Savings) As Is - Difference of items 1. & 30; represents incremental impact to TCO.

As Is - Data Network Refresh (Toll Bypass) & IP Telephony

As Is - Data Network Refresh (Toll Bypass) & IP Telephony	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass) & IPT						
2. Cabling	$ 5,789,800	$ 5,202,200	$ 5,043,800	$ 4,964,600	$ 4,964,600	$ 25,965,000
3. Power in Closets	$ 508,920	$ 459,135	$ 425,945	$ 409,350	$ 409,350	$ 2,212,700
4. Data Network Refresh						$ -
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony						$ -
a.Equipment	$ 8,664,893	$ 6,210,002	$ 5,791,326	$ 5,581,988	$ 4,724,243	$ 30,972,451
b. Installation	$ 2,553,665	$ 1,896,553	$ 1,780,630	$ 1,722,669	$ 1,710,454	$ 9,663,971
8. Training	$ 197,236	$ 164,576	$ 155,245	$ 150,579	$ 150,579	$ 818,215
9. Trade-In Value	$ (1,621,252)	$ (948,130)	$ (906,262)	$ (885,328)	$ (799,554)	$ (5,160,526)
10. Total Refresh & IPT Implementation	**$ 27,369,962**	**$ 16,904,329**	**$ 16,639,677**	**$ 15,863,850**	**$ 15,079,665**	**$ 91,857,483**
11. Annual Debt Service	$ 5,960,191	$ 9,641,345	$ 13,264,867	$ 16,719,441	$ 20,003,249	$ 65,589,093
12. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
13. Net Loss/(Savings)	**$ (5,396,916)**	**$ (1,715,762)**	**$ 1,907,760**	**$ 5,362,334**	**$ 8,646,142**	**$ 8,803,558**
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass) & IPT						
Maintenance:						
14. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$ 4,148,570
15. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
16. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
17. IP Telephony	$ -	$ 2,013,314	$ 2,954,080	$ 3,409,053	$ 3,833,206	$ 12,209,654
18. Replace by IP Telephony Maintenance	$ (121,899)	$ (330,869)	$ (500,657)	$ (661,738)	$ (805,405)	$ (2,420,568)
19. Net Maintenance	**$ (202,772)**	**$ 2,097,864**	**$ 3,137,008**	**$ 3,699,066**	**$ 4,328,592**	**$ 13,059,758**
20. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
21. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
22. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
23. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
24. MACs	$ (477,864)	$ (814,452)	$ (1,134,211)	$ (1,437,140)	$ (1,689,581)	$ (5,553,248)
25. Total Anticipated Savings	**$ (615,002)**	**$ (1,382,420)**	**$ (2,598,223)**	**$ (4,085,698)**	**$ (6,320,428)**	**$ (15,001,769)**
26. Total Ongoing Costs/(Savings)	**$ (817,774)**	**$ 715,444**	**$ 1,552,545**	**$ 627,129**	**$ (978,076)**	**$ 1,099,269**
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT	**$ (6,214,689)**	**$ (1,000,318)**	**$ 3,460,305**	**$ 5,989,463**	**$ 7,668,066**	**$ 9,902,827**
As Is Loss/(Savings)						
28. FTE Savings	$ -	$ -	$ -	$ -	$ -	$ -
29. Total As Is Loss/(Savings)	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
30. TCO As Is	$ 60,154,013	$ 65,368,385	$ 69,829,007	$ 72,358,165	$ 74,036,769	$ 341,746,339
31. Net Loss/(Savings) As Is	$ (6,214,689)	$ (1,000,318)	$ 3,460,305	$ 5,989,463	$ 7,668,066	$ 9,902,827
32. Debt Services Remaining						$ 34,427,152

Financial Assumptions: As Is - Data Network Refresh (Toll Bypass) & IP Telephony

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - Upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95% of closets for each MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - of the state's 968 sites, the closets needing upgrading: 198 on Phoenix campus - 175 IDF & 23 MDF; off Phoenix mall sites - 196 IDF & 6 MDF (power upgrades not needed in closets requiring just routers).
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List prices plus government discounts.
7. IP Telephony:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. List prices with government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony over 5 years based on PBX useful life, data network upgrade, & building cabling needs.
8. Training - Train the trainers session: 42 IT voice personnel @ $14K/person & 42 IT WAN personnel @ $6K/person.
9. Trade-In Value - 10% of capital investment based on bids received by Alaska.
10. Total Refresh & IPT Implementation - Sum of items 2 through 9.
11. Annual Debt Service - Financing of Implementation costs @ 3.4%.
12. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
13. Net Loss/(Savings) - Sum of items 10 through 12.
14. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
15. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
16. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
17. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
18. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
19. Net Maintenance - Sum of items 14. through 18.
20. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
21. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
22. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
23. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
24. MACs - Savings with moves, adds and changes due to implementation of IP Telephony:
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
25. Total Anticipated Savings - Sum of items 21. through 24.
26. Total Ongoing Costs/(Savings) - Sum of items 19., 20., & 25.
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT - Sum of items 13. & 26.; represents incremental impact of implementing Data Network Refresh & IP Telephony.
28. FTE Savings - No change in FTE for the "As Is" service delivery option.
29. Total As Is Loss/(Savings) - Sum of item 28.
30. TCO As Is - Sum of items 1., 27., & 29; represents new TCO after implementing Data Network Refresh & IP Telephony for the As Is service delivery option.
31. Net Loss/(Savings) As Is - Difference of items 1. & 30; represents incremental impact to TCO.
32. Debt Services Remaining - Debt service remaining after year 5.

Decentralized - Data Network Refresh (Toll Bypass)

Decentralized - Data Network Refresh (Toll Bypass)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass)						
2. Cabling	$ 7,390,780	$ -	$ -	$ -	$ -	$ 7,390,780
3. Power in Closets	$ 1,616,800	$ -	$ -	$ -	$ -	$ 1,616,800
4. Data Network Refresh						$ -
a. Equipment	$ 12,756,836	$ 1,819,525	$ 1,418,227	$ 1,366,930	$ 3,271,296	$ 20,632,814
b. Installation	$ 1,914,122	$ 321,041	$ 269,550	$ 252,701	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony	$ -	$ -	$ -	$ -	$ -	$ -
a.Equipment	$ 14,301,881	$ -	$ -	$ -	$ -	$ 14,301,881
b. Installation	$ 4,861,136	$ -	$ -	$ -	$ -	$ 4,861,136
8. Training	$ 560,599	$ -	$ -	$ -	$ -	$ 560,599
9. Trade-In Value	$ (2,705,872)	$ (181,953)	$ (141,823)	$ (136,693)	$ (327,130)	$ (3,493,469)
10. Total Refresh Implementation	**$ 43,614,030**	**$ 1,958,613**	**$ 1,974,955**	**$ 1,482,938**	**$ 3,592,863**	**$ 52,623,400**
11. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
12. Net Loss/(Savings)	$ 32,256,923	$ (9,398,494)	$ (9,382,152)	$ (9,874,169)	$ (7,764,244)	$ (4,162,135)
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass)						
Maintenance:						
13. Data Network Refresh	$ -	$ 1,083,991	$ 1,260,675	$ 1,394,192	$ 1,522,553	$ 5,261,411
14. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
15. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
16. IP Telephony	$ -	$ 2,579,077	$ 2,579,077	$ 2,579,077	$ 2,579,077	$ 10,316,308
17. Replace by IP Telephony Maintenance	$ (200,263)	$ (400,526)	$ (400,526)	$ (400,526)	$ (400,526)	$ (1,802,366)
18. Net Maintenance	**$ (281,136)**	**$ 3,126,229**	**$ 3,247,473**	**$ 3,325,549**	**$ 3,479,342**	**$ 12,897,456**
19. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
20. Circuits	$ (811,853)	$ (109,710)	$ (87,768)	$ (87,768)	$ (1,097,099)	$ (2,194,198)
21. Toll Bypass	$ -	($460,147)	($788,662)	($1,442,343)	($2,504,883)	$ (5,196,036)
22. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
23. MACs	$ (780,793)	$ (780,793)	$ (780,793)	$ (780,793)	$ (780,793)	$ (3,903,967)
24. Total Anticipated Savings	**$ (1,592,647)**	**$ (1,350,650)**	**$ (1,965,883)**	**$ (2,825,337)**	**$ (5,411,640)**	**$ (13,146,157)**
25. Total Ongoing Costs/(Savings)	**$ (1,873,782)**	**$ 1,775,578**	**$ 2,295,350**	**$ 1,513,972**	**$ (918,538)**	**$ 2,792,580**
26. Net Loss/(Savings) Data Network Refresh (Toll Bypass)	**$ 30,383,141**	**$ (7,622,915)**	**$ (7,086,803)**	**$ (8,360,197)**	**$ (8,682,782)**	**$ (1,369,556)**

Decentralized Data Network Refresh Loss/(Savings)						
27. ATS Migration	$ (6,262,923)	$ (12,525,846)	$ (12,525,846)	$ (12,525,846)	$ (12,525,846)	$ (56,366,307)
28. MAGNET/WAN FTE	$ 29,800	$ 59,600	$ 59,600	$ 59,600	$ 59,600	$ 268,200
29. Telephony Services						$ -
a. 35 or less Employees						$ -
1. Implementation						$ -
A. Installation	$ 23,912					$ 23,912
B. Phone Purchase	$ 10,675					$ 10,675
2. Monthly						$ -
A. Line	$ 107,604	$ 215,208	$ 215,208	$ 215,208	$ 215,208	$ 968,436
B. Voice Messaging	$ 32,025	$ 64,050	$ 64,050	$ 64,050	$ 64,050	$ 288,225
b. 36 plus Employees refer to 7. IP Telephony Numbers						$ -
30. Long Distance						$ -
a. ATS Long Distance Charges	$ 3,222,294	$ 6,444,588	$ 6,444,588	$ 6,444,588	$ 6,444,588	$ 29,000,646
b. ATS Private Tandem Network Minutes	$ 457,396	$ 377,041	$ 300,344	$ 240,554	$ 182,958	$ 1,558,293
c. Carrier PICX	$ 140,000					$ 140,000
31. Web Hosting						$ -
a. Implementation	$ 166,000					$ 166,000
b. Monthly	$ 740	$ 1,481	$ 1,481	$ 1,481	$ 1,481	$ 6,664
32. ISP						$ -
a. 35 or less Employees						$ -
1. Transport						$ -
A. Implementation	$ 4,257					$ 4,257
B. Monthly	$ 22,704	$ 45,408	$ 45,408	$ 45,408	$ 45,408	$ 204,336
2. Internet						$ -
A. Implementation	$ 645					$ 645
B. Monthly	$ 5,663	$ 11,326	$ 11,326	$ 11,326	$ 11,326	$ 50,968
b. 36 plus Employees						$ -
1. Transport						$ -
A. Implementation	$ 49,500					$ 49,500
B. Monthly	$ 66,000	$ 132,000	$ 132,000	$ 132,000	$ 132,000	$ 594,000
2. Internet Monthly	$ 234,300	$ 468,600	$ 468,600	$ 468,600	$ 468,600	$ 2,108,700
33. Call Centers						$ -
a. Startup	$ 5,089,300					$ 5,089,300
b. Monthly						$ -
1. Carrier Costs	$ 120,600	$ 241,200	$ 241,200	$ 241,200	$ 241,200	$ 1,085,400
2. Vendor Support	$ 142,033	$ 284,065	$ 284,065	$ 284,065	$ 284,065	$ 1,278,293
3. Equip/Maint/License	$ 254,465	$ 508,930	$ 508,930	$ 508,930	$ 508,930	$ 2,290,185
4. FTE Costs	$ 140,000	$ 280,000	$ 280,000	$ 280,000	$ 280,000	$ 1,260,000
34. Connection to PSTN						$ -
a. 35 or less Employees refer to 27. a.						$ -
b. 36 to 100 Employees						$ -
1. Implementation	$ 7,200					$ 7,200
2. Monthly	$ 86,400	$ 172,800	$ 172,800	$ 172,800	$ 172,800	$ 777,600
c. 101 - 245 Employees						$ -
1. Implementation	$ 14,400					$ 14,400
2. Monthly	$ 172,800	$ 345,600	$ 345,600	$ 345,600	$ 345,600	$ 1,555,200
d. 246 plus Emloyees						$ -
1. Implementation	$ 69,597					$ 69,597
2. Monthly	$ 835,164	$ 1,670,328	$ 1,670,328	$ 1,670,328	$ 1,670,328	$ 7,516,476
35. FTE	$ 561,057	$ 1,122,114	$ 1,122,114	$ 1,122,114	$ 1,122,114	$ 5,049,512
36. Total Decentralized Loss/(Savings)	**$ 5,803,608**	**$ (81,508)**	**$ (158,204)**	**$ (217,995)**	**$ (275,590)**	**$ 5,070,312**
37. TCO Decentralized	$ 102,555,451	$ 58,664,280	$ 59,123,696	$ 57,790,511	$ 57,410,331	$ 335,544,269
38. Net Loss/(Savings) Decentralized	$ 36,186,749	$ (7,704,423)	$ (7,245,007)	$ (8,578,192)	$ (8,958,371)	$ 3,700,756

Financial Assumptions: Decentralized - Data Network Refresh (Toll Bypass)

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - For agencies migrating from ATS only; development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - For agencies migrating from ATS only; upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95 % of MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - Based on agencies with ATS services.
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discount; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. Costs based on list prices & government discounts.
7. IP Telephony - for agencies migrating from ATS:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. Costs based on list prices & government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony in year 1 for ATS customers.
8. Training - Train the trainers session: IT voice personnel @ $14K/person & IT WAN personnel @ $6K/person based on employees in agencies with ATS services today.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh Implementation - Sum of items 2 through 9.
11. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
12. Net Loss/(Savings) - Sum of items 10 through 11.
13. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
14. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
15. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
16. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
17. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
18. Net Maintenance - Sum of items 13. through 17.
19. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
20. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
21. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
22. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
23. MACs - Savings with moves, adds and changes due to implementation of IP Telephony (ATS customers):
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
24. Total Anticipated Savings - Sum of items 20. through 23.
25. Total Ongoing Costs/(Savings) - Sum of items 18., 19., & 24.
26. Net Loss/(Savings) Data Network Refresh (Toll Bypass) - Sum of items 12. & 25.; represents incremental impact of implementing Data Network Refresh.
27. ATS Migration - Migration completed after year 1; 50% of ATS costs removed year 1; 100% year 2 - 5.
28. MAGNET/WAN FTE - 1 WAN FTE in ISD to manage network for agency mainframe applications that have traffic on MAGNET; average annual loaded salary from TCO - $59.6K.
29. Telephony Services - Implementation & ongoing costs for agency employees migrating from ATS services:
    a. 35 employees or less - Purchase Centrex services from statewide carrier contracts:
        1. Implementation per Centrex line - $56
        2. Cost to purchase phone - $25
        3. Monthly line charge - $42.00
        4. Monthly voice mail - $12.50
    b. 36 Plus Employees - Migrating to IP Telephony & calculated in line 7.

30. Long Distance - Carrier bills paid by ATS will now be paid by each agency separately:
    a. 50% charged to agencies year 1 & 100% year 2-5 (offset for toll bypass in item 22.).
    b. Agencies will pay long distance rates to the Carriers @ $0.055/minute for traffic currently on the ATS private voice network; 50% of traffic year 1 & 100% yer 2-5 & offset for toll bypass in item 22.
    c. One time charge of $10 to change the Carrier PICX on each DID trunk and Centrex line - conversion of 14,000 lines.
31. Web Hosting - Transfer of agencies utilizing ATS for web hosting:
    a. Implementation costs - $1000 transfer & $1000 setup per web site
    b. Monthly costs - $12/10 mb.
    c. 75 agencies with 83 web sites
32. ISP - Transfer of agencies utilizing ATS for ISP (used ATS handset counts):
    a. 35 or less employees:
        1. Transport - 1 DSL per agency; implementation charge - $99; monthly charge - $88
        2. Internet - Implementation - $15/employee; monthly charge - $21.95/employee
    b. Medium & Large Agencies:
        1. Transport - 1 T1 per agency; Implementation charge - $900; monthly charge $200
        2. Internet - $710/month charge/agency for ISP bandwidth & agencies have their own e-mail
33. Call Centers - Agencies currently utilizing ATS for Call Centers will implement their own; implementation & ongoing costs based on costs to replicate ATS Call Centers.
34. Connection to PSTN:
    a. Small agencies have Cenrex as shown in item 30.
    b. Agencies 36 - 100 employees at location - 1 T1 including 2-way DID; implementation cost $900; monthly $1800
    c. Agencies 101 - 245 employees at location - 2 T1's including 2-way DID; implemention cost $900/T1; monthly $1800/T1
    d. 246 plus employees at location - for every 100 employees/location need 1 T1; implementation cost $900/T1; monthly $1800/T1
35. FTE - Additional FTE needs due to agencies now handling own telephone & WAN services; used industry standard of 1 IT employee/495 ports; average annual salary based on annual average loaded salary of $54037 for voice/WAN employee from TCO.
36. Total Decentralized Loss/(Savings) - Sum of items 27. Through 35.
37. TCO Dencentralized - Sum of items 1., 26., & 36.; represents new TCO after implementing Data Network Refresh, and the Decentralized service delivery option.
38. Net Loss/(Savings) Decentralized - Difference of items 1. & 37.; represents incremental impact to TCO.

Dencentralized - Data Network Refresh (Toll Bypass) & IP Telephony

Decentralized - Data Network Refresh (Toll Bypass) & IP Telephony	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass)						
2. Cabling	$ 6,966,020	$ 5,117,300	$ 4,906,880	$ 4,787,600	$ 4,187,200	$ 25,965,000
3. Power in Closets	$ 1,126,451	$ 442,403	$ 342,525	$ 185,411	$ 115,910	$ 2,212,700
4. Data Network Refresh						$ -
a. Equipment	$ 13,096,463	$ 1,868,043	$ 1,272,672	$ 1,124,339	$ 3,271,296	$ 20,632,814
b. Installation	$ 1,981,310	$ 330,639	$ 240,756	$ 204,710	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony	$ -	$ -	$ -	$ -	$ -	$ -
a.Equipment	$ 16,349,282	$ 5,805,179	$ 4,746,999	$ 2,622,648	$ 1,448,344	$ 30,972,451
b. Installation	$ 4,877,316	$ 1,839,892	$ 1,544,172	$ 969,989	$ 432,600	$ 9,663,971
8. Training	$ 406,486	$ 165,736	$ 127,601	$ 57,404	$ 42,325	$ 799,552
9. Trade-In Value	$ (2,944,575)	$ (767,322)	$ (601,967)	$ (374,699)	$ (471,964)	$ (5,160,526)
10. Total Refresh Implementation	**$ 44,776,502**	**$ 14,801,870**	**$ 13,008,638**	**$ 9,577,402**	**$ 9,674,409**	**$ 91,838,821**
11. Annual Debt Service	$ 9,750,708	$ 12,974,022	$ 15,806,834	$ 17,892,447	$ 19,999,185	$ 76,423,196
12. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
13. Net Loss/(Savings)	**$ (1,606,399)**	**$ 1,616,915**	**$ 4,449,727**	**$ 6,535,340**	**$ 8,642,078**	**$ 19,637,661**
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass)						
Maintenance:						
14. Data Network Refresh	$ -	$ 1,102,242	$ 1,246,747	$ 1,356,878	$ 1,454,157	$ 5,160,024
15. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
16. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
17. IP Telephony	$ -	$ 2,073,203	$ 2,791,164	$ 3,352,075	$ 3,648,749	$ 11,865,190
18. Replace by IP Telephony Maintenance	$ (200,263)	$ (400,526)	$ (400,526)	$ (400,526)	$ (400,526)	$ (1,802,366)
19. Net Maintenance	**$ (281,136)**	**$ 2,638,606**	**$ 3,445,631**	**$ 4,061,233**	**$ 4,480,617**	**$ 14,344,951**
20. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
21. Circuits	$ (811,853)	$ (109,710)	$ (87,768)	$ (87,768)	$ (1,097,099)	$ (2,194,198)
22. Toll Bypass	$ -	($460,147)	($788,662)	($1,442,343)	($2,504,883)	$ (5,196,036)
23. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
24. MACs	$ (895,065)	$ (1,210,448)	$ (1,468,274)	$ (1,610,819)	$ (1,689,581)	$ (6,874,188)
25. Total Anticipated Savings	**$ (1,706,918)**	**$ (1,780,305)**	**$ (2,653,364)**	**$ (3,655,363)**	**$ (6,320,428)**	**$ (16,116,378)**
26. Total Ongoing Costs/(Savings)	**$ (1,988,054)**	**$ 858,301**	**$ 1,806,027**	**$ 1,419,630**	**$ (826,050)**	**$ 1,269,854**
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass)	**$ (3,594,453)**	**$ 2,475,216**	**$ 6,255,754**	**$ 7,954,970**	**$ 7,816,027**	**$ 20,907,515**
Decentralized Data Network Refresh Loss/(Savings)						
28. ATS Migration	$ (6,262,923)	$ (12,525,846)	$ (12,525,846)	$ (12,525,846)	$ (12,525,846)	$ (56,366,307)
29. MAGNET/WAN FTE	$ 29,800	$ 59,600	$ 59,600	$ 59,600	$ 59,600	$ 268,200
30. Telephony Services						$ -
a. 35 or less Employees						$ -
1. Implementation						$ -
A. Installation	$ 23,912					$ 23,912
B. Phone Purchase	$ 10,675					$ 10,675
2. Monthly						$ -
A. Line	$ 107,604	$ 215,208	$ 215,208	$ 215,208	$ 215,208	$ 968,436
B. Voice Messaging	$ 32,025	$ 64,050	$ 64,050	$ 64,050	$ 64,050	$ 288,225
b. 36 plus Employees refer to 7. IP Telephony Numbers						$ -

31. Long Distance						$ -
a. ATS Long Distance Charges	$ 3,222,294	$ 6,444,588	$ 6,444,588	$ 6,444,588	$ 6,444,588	$ 29,000,646
b. ATS Private Tandem Network Minutes	$ 457,396	$ 377,041	$ 300,344	$ 240,554	$ 182,958	$ 1,558,293
c. Carrier PICX	$ 140,000					$ 140,000
32. Web Hosting						$ -
a. Implementation	$ 166,000					$ 166,000
b. Monthly	$ 740	$ 1,481	$ 1,481	$ 1,481	$ 1,481	$ 6,664
33. ISP						$ -
a. 35 or less Employees						$ -
1. Transport						$ -
A. Implementation	$ 4,257					$ 4,257
B. Monthly	$ 22,704	$ 45,408	$ 45,408	$ 45,408	$ 45,408	$ 204,336
2. Internet						$ -
A. Implementation	$ 645					$ 645
B. Monthly	$ 5,663	$ 11,326	$ 11,326	$ 11,326	$ 11,326	$ 50,968
b. 36 plus Employees						$ -
1. Transport						$ -
A. Implementation	$ 49,500					$ 49,500
B. Monthly	$ 66,000	$ 132,000	$ 132,000	$ 132,000	$ 132,000	$ 594,000
2. Internet Monthly	$ 234,300	$ 468,600	$ 468,600	$ 468,600	$ 468,600	$ 2,108,700
34. Call Centers						$ -
a. Startup	$ 5,089,300					$ 5,089,300
b. Monthly						$ -
1. Carrier Costs	$ 120,600	$ 241,200	$ 241,200	$ 241,200	$ 241,200	$ 1,085,400
2. Vendor Support	$ 142,033	$ 284,065	$ 284,065	$ 284,065	$ 284,065	$ 1,278,293
3. Equip/Maint/License	$ 254,465	$ 508,930	$ 508,930	$ 508,930	$ 508,930	$ 2,290,185
4. FTE Costs	$ 140,000	$ 280,000	$ 280,000	$ 280,000	$ 280,000	$ 1,260,000
35. Connection to PSTN						$ -
a. 35 or less Employees refer to 27. a.						$ -
b. 36 to 100 Employees						$ -
1. Implementation	$ 7,200					$ 7,200
2. Monthly	$ 86,400	$ 172,800	$ 172,800	$ 172,800	$ 172,800	$ 777,600
c. 101 - 245 Employees						$ -
1. Implementation	$ 14,400					$ 14,400
2. Monthly	$ 172,800	$ 345,600	$ 345,600	$ 345,600	$ 345,600	$ 1,555,200
d. 246 plus Emloyees						$ -
1. Implementation	$ 69,597					$ 69,597
2. Monthly	$ 835,164	$ 1,670,328	$ 1,670,328	$ 1,670,328	$ 1,670,328	$ 7,516,476
36. FTE	$ 561,057	$ 1,122,114	$ 1,122,114	$ 1,122,114	$ 1,122,114	$ 5,049,512
37. Total Decentralized Loss/(Savings)	**$ 5,803,608**	**$ (81,508)**	**$ (158,204)**	**$ (217,995)**	**$ (275,590)**	**$ 5,070,312**
38. TCO Decentralized	$ 68,577,857	$ 68,762,411	$ 72,466,253	$ 74,105,678	$ 73,909,140	$ 357,821,340
39. Net Loss/(Savings) Decentralized	$ 2,209,155	$ 2,393,708	$ 6,097,551	$ 7,736,976	$ 7,540,438	$ 25,977,827
40. Debt Services Remaining						$ 23,572,727

Financial Assumptions: Decentralized - Data Network Refresh (Toll Bypass) & IP Telephony

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - Upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95% of closets for each MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - of the state's 968 sites, the closets needing upgrading: 198 on Phoenix campus - 175 IDF & 23 MDF; off Phoenix mall sites - 196 IDF & 6 MDF (power upgrades not needed in closets requiring just routers).
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discount; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. Costs based on list prices & government discounts.
7. IP Telephony:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. Costs based on list prices & government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony over 5 years based on year 1 transition of ATS customer to IP Telephony, PBX useful life, data network upgrade, & building cabling needs.
8. Training - Train the trainers session: 42 IT voice personnel @ $14K/person & 42 IT WAN personnel @ $6K/person.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh & IPT Implementation - Sum of items 2 through 9.
11. Annual Debt Service - Financing of Implementation costs @ 3.4%.
12. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
13. Net Loss/(Savings) - Sum of items 10 through 12.
14. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
15. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
16. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
17. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
18. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
19. Net Maintenance - Sum of items 14. through 18.
20. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
21. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
22. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
23. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
24. MACs - Savings with moves, adds and changes due to implementation of IP Telephony:
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
25. Total Anticipated Savings - Sum of items 21. through 24.
26. Total Ongoing Costs/(Savings) - Sum of items 19., 20., & 25.
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT - Sum of items 13. & 26.; represents incremental impact of implementing Data Network Refresh & IP Telephony.
28. ATS Migration - Migration completed after year 1; 50% of ATS costs removed year 1; 100% year 2 - 5.
29. MAGNET/WAN FTE - 1 WAN FTE in ISD to manage network for agency mainframe applications that have traffic on MAGNET; average annual loaded salary from TCO - $59.6K.
30. Telephony Services - Implementation & ongoing costs for agency employees migrating from ATS services:
    a. 35 employees or less - Purchase Centrex services from statewide carrier contracts:
        1. Implementation per Centrex line - $56
        2. Cost to purchase phone - $25
        3. Monthly line charge - $42.00
        4. Monthly voice mail - $12.50

b. 36 Plus Employees - Migrating to IP Telephony & calculated in line 7.

31. Long Distance - Carrier bills paid by ATS will now be paid by each agency separately:
    a. 50% charged to agencies year 1 & 100% year 2-5 (offset for toll bypass in item 22.).
    b. Agencies will pay long distance rates to the Carriers @ $0.055/minute for traffic currently on the ATS private voice network; 50% of traffic year 1 & 100% yer 2-5 & offset for toll bypass in item 22.
    c. One time charge of $10 to change the Carrier PICX on each DID trunk and Centrex line - conversion of 14,000 lines.
32. Web Hosting - Transfer of agencies utilizing ATS for web hosting:
    a. Implementation costs - $1000 transfer & $1000 setup per web site
    b. Monthly costs - $12/10 mb.
    c. 75 agencies with 83 web sites
33. ISP - Transfer of agencies utilizing ATS for ISP (used ATS handset counts):
    a. 35 or less employees:
        1. Transport - 1 DSL per agency; implementation charge - $99; monthly charge - $88
        2. Internet - Implementation - $15/employee; monthly charge - $21.95/employee
    b. Medium & Large Agencies:
        1. Transport - 1 T1 per agency; Implementation charge - $900; monthly charge $200
        2. Internet - $710/month charge/agency for ISP bandwidth & agencies have their own e-mail
34. Call Centers - Agencies currently utilizing ATS for Call Centers will implement their own; implementation & ongoing costs based on costs to replicate ATS Call Centers.
35. Connection to PSTN:
    a. Small agencies have Cenrex as shown in item 30.
    b. Agencies 36 - 100 employees at location - 1 T1 including 2-way DID; implementation cost $900; monthly $1800
    c. Agencies 101 - 245 employees at location - 2 T1's including 2-way DID; implemention cost $900/T1; monthly $1800/T1
    d. 246 plus employees at location - for every 100 employees/location need 1 T1; implementation cost $900/T1; monthly $1800/T1
36. FTE - Additional FTE needs due to agencies now handling own telephone & WAN services; used industry standard of 1 IT employee/495 ports; average annual salary based on annual average loaded salary of $54037 for voice/WAN employee from TCO.
37. Total Decentralized Loss/(Savings) - Sum of items 28. Through 36.
38. TCO Dencentralized - Sum of items 1., 27., & 37.; represents new TCO after implementing Data Network Refresh, IP Telephony, and the Decentralized service delivery option.
39. Net Loss/(Savings) Decentralized - Difference of items 1. & 38.; represents incremental impact to TCO.
40. Debt Services Remaining - debt service remaining after year 5.

Shared Services - Data Network Refresh (Toll Bypass)

Shared Services - Data Network Refresh (Toll Bypass)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass)						
2. Cabling	$ -	$ -	$ -	$ -	$ -	$0
3. Power in Closets	$0	$0	$0	$0	$0	$0
4. Data Network Refresh						
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$2,917,748
7. IP Telephony	$0	$0	$0	$0	$0	$0
a. Equipment						
b. Installation						
8. Training	$0	$0	$0	$0	$0	$0
9. Trade-In Value	($754,763)	($327,130)	($327,130)	($327,130)	($327,130)	($2,063,281)
10. Total Refresh Implementation	**$10,521,938**	**$3,592,863**	**$4,021,863**	**$3,592,863**	**$3,592,863**	**$25,322,392**
11. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
12. Net Loss/(Savings)	$ (835,169)	$ (7,764,244)	$ (7,335,244)	$ (7,764,244)	$ (7,764,244)	$ (31,463,143)
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass)						
Maintenance:						
13. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$4,148,570
14. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$1,063,053
15. Replace by Data Network Refresh Maintenance	($80,873)	($242,619)	($404,364)	($566,110)	($646,983)	($1,940,950)
16. Net Maintenance	**($80,873)**	**$309,113**	**$470,975**	**$632,836**	**$875,570**	**$2,207,620**
17. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$3,041,280**
Anticipated Savings from Toll Bypass						
18. Circuits	($137,137)	($411,412)	($685,687)	($959,962)	($1,097,099)	($3,291,297)
19. Toll Bypass	$0	($156,555)	($469,666)	($1,174,164)	($2,504,883)	($4,305,268)
20. FTE Savings			($308,659)	($514,432)	($1,028,864)	($1,851,956)
21. MACs	$0	$0	$0	$0	$0	$0
22. Total Anticipated Savings	**($137,137)**	**($567,967)**	**($1,464,012)**	**($2,648,558)**	**($4,630,847)**	**($9,448,521)**
23. Total Ongoing Costs/(Savings)	**($218,010)**	**($258,854)**	**$20,723**	**($1,001,962)**	**($2,741,517)**	**($4,199,621)**
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass)	**$ (1,053,179)**	**$ (8,023,098)**	**$ (7,314,521)**	**$ (8,766,206)**	**$ (10,505,760)**	**$ (35,662,764)**
Shared Services Loss/(Savings)						
25. FTE Savings	$0	($514,432)	($1,028,864)	($1,028,864)	($1,028,864)	($3,601,026)
26. Total Shared Svcs Loss/(Savings)	$0	**($514,432)**	**($1,028,864)**	**($1,028,864)**	**($1,028,864)**	**($3,601,026)**
27. TCO Shared Services	$65,315,523	$57,831,173	$58,025,317	$56,573,632	$54,834,078	$292,579,723
28. Net Loss/(Savings) Shared Service	($1,053,179)	($8,537,530)	($8,343,385)	($9,795,070)	($11,534,625)	($39,263,790)

Financial Assumptions: Shared Services - Data Network Refresh (Toll Bypass)

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Not applicable.
3. Power in Closets - Not applicable.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List prices plus government discounts.
7. IP Telephony - Not applicable.
8. Training - Not applicable.
9. Trade-In Value - 10% of capital investment.
10. Total Refresh Implementation - Sum of items 2 through 9.
11. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
12. Net Loss/(Savings) - Sum of items 10 through 11.
13. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
14. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
15. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
16. Net Maintenance - Sum of items 13. through 15.
17. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
18. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
19. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
20. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
21. MACs - Not applicable.
22. Total Anticipated Savings - Sum of items 18. through 21.
23. Total Ongoing Costs/(Savings) - Sum of items 16., 17., & 22.
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass) - Sum of items 12. & 23.; represents incremental impact of implementing Data Network Refresh.
25. FTE Savings - Expected FTE savings due to centralizing telecommunications services; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 - no savings.
    b. Year 2 - 5%
    c. Year 3 - 5 - 10%
26. Total Shared Services Loss/(Savings) - Sum of item 25.
27. TCO Shared Services - Sum of items 1., 24., & 26.; represents new TCO after implementing Data Network Refresh for the Shared Services service delivery option.
28. Net Loss/(Savings) Shared Services - Difference of items 1. & 27.; represents incremental impact to TCO.

Shared Services - Data Network Refresh (Toll Bypass) IP Telephony

Shared Services - Data Network Refresh (Toll Bypass) & IP Telephony	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass) & IPT						
2. Cabling	$ 5,789,800	$ 5,202,200	$ 5,043,800	$ 4,964,600	$ 4,964,600	$ 25,965,000
3. Power in Closets	$ 508,920	$ 459,135	$ 425,945	$ 409,350	$ 409,350	$ 2,212,700
4. Data Network Refresh						$ -
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony						$ -
a.Equipment	$ 8,664,893	$ 6,210,002	$ 5,791,326	$ 5,581,988	$ 4,724,243	$ 30,972,451
b. Installation	$ 2,553,665	$ 1,896,553	$ 1,780,630	$ 1,722,669	$ 1,710,454	$ 9,663,971
8. Training	$ 197,236	$ 164,576	$ 155,245	$ 150,579	$ 150,579	$ 818,215
9. Trade-In Value	$ (1,621,252)	$ (948,130)	$ (906,262)	$ (885,328)	$ (799,554)	$ (5,160,526)
10. Total Refresh & IPT Implementation	**$ 27,369,962**	**$ 16,904,329**	**$ 16,639,677**	**$ 15,863,850**	**$ 15,079,665**	**$ 91,857,483**
11. Annual Debt Service	$5,960,191	$9,641,345	$13,264,867	$16,719,441	$20,003,249	$ 65,589,093
12. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
13. Net Loss/(Savings)	**$ (5,396,916)**	**$ (1,715,762)**	**$ 1,907,760**	**$ 5,362,334**	**$ 8,646,142**	**$ 8,803,558**
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass) & IPT						
Maintenance:						
14. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$ 4,148,570
15. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
16. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
17. IP Telephony	$ -	$ 2,013,314	$ 2,954,080	$ 3,409,053	$ 3,833,206	$ 12,209,654
18. Replace by IP Telephony Maintenance	$ (121,899)	$ (330,869)	$ (500,657)	$ (661,738)	$ (805,405)	$ (2,420,568)
19. Net Maintenance	**$ (202,772)**	**$ 2,097,864**	**$ 3,137,008**	**$ 3,699,066**	**$ 4,328,592**	**$ 13,059,758**
20. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
21. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
22. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
23. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
24. MACs	$ (477,864)	$ (814,452)	$ (1,134,211)	$ (1,437,140)	$ (1,689,581)	$ (5,553,248)
25. Total Anticipated Savings	**$ (615,002)**	**$ (1,382,420)**	**$ (2,598,223)**	**$ (4,085,698)**	**$ (6,320,428)**	**$ (15,001,769)**
26. Total Ongoing Costs/(Savings)	**$ (817,774)**	**$ 715,444**	**$ 1,552,545**	**$ 627,129**	**$ (978,076)**	**$ 1,099,269**
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT	**$ (6,214,689)**	**$ (1,000,318)**	**$ 3,460,305**	**$ 5,989,463**	**$ 7,668,066**	**$ 9,902,827**
Shared Services Loss/(Savings)						
28. FTE Savings	$ -	$ (514,432)	$ (1,028,864)	$ (1,028,864)	$ (1,028,864)	$ (3,601,026)
29. Total Shared Svcs Loss/(Savings)	$ -	**$ (514,432)**	**$ (1,028,864)**	**$ (1,028,864)**	**$ (1,028,864)**	**$ (3,601,026)**
30. TCO Shared Services	$ 60,154,013	$ 64,853,952	$ 68,800,143	$ 71,329,301	$ 73,007,904	$ 338,145,314
31. Net Loss/(Savings) Shared Service	$ (6,214,689)	$ (1,514,750)	$ 2,431,440	$ 4,960,598	$ 6,639,202	$ 6,301,801
32. Debt Services Remaining						$34,427,152

Financial Assumptions: Shared Services - Data Network Refresh (Toll Bypass) & IP Telephony

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - Upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95% of closets for each MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - of the state's 968 sites, the closets needing upgrading: 198 on Phoenix campus - 175 IDF & 23 MDF; off Phoenix mall sites - 196 IDF & 6 MDF (power upgrades not needed in closets requiring just routers).
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List price plus government discounts.
7. IP Telephony:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. List prices with government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony over 5 years based on PBX useful life, data network upgrade, & building cabling needs.
8. Training - Train the trainers session: 42 IT voice personnel @ $14K/person & 42 IT WAN personnel @ $6K/person.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh & IPT Implementation - Sum of items 2 through 9.
11. Annual Debt Service - Financing of Implementation costs @ 3.4%.
12. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
13. Net Loss/(Savings) - Sum of items 10 through 12.
14. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
15. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
16. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
17. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
18. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
19. Net Maintenance - Sum of items 14. through 18.
20. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
21. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
22. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
23. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
24. MACs - Savings with moves, adds and changes due to implementation of IP Telephony:
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
25. Total Anticipated Savings - Sum of items 21. through 24.
26. Total Ongoing Costs/(Savings) - Sum of items 19., 20., & 25.
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT - Sum of items 13. & 26.; represents incremental impact of implementing Data Network Refresh & IP Telephony.
28. FTE Savings - Expected FTE savings due to centralizing telecommunications services; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 - no savings.
    b. Year 2 - 5%
    c. Year 2 - 5 - 10%
29. Total Shared Services Loss/(Savings) - Sum of item 28.
30. TCO Shared Services - Sum of items 1., 27., & 29; represents new TCO after implementing Data Network Refresh & IP Telephony for the Shared Services service delivery option.
31. Net Loss/(Savings) Shared Services - Difference of items 1. & 30.; represents incremental impact to TCO.
32. Debt Services Remaining - Debt service remaining after year 5.

Privatized - Data Network Refresh (Toll Bypass)

Privatized - Data Network Refresh (Toll Bypass)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass)						
2. Cabling	$ -	$ -	$ -	$ -	$ -	$0
3. Power in Closets	$0	$0	$0	$0	$0	$0
4. Data Network Refresh						
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$2,917,748
7. IP Telephony	$0	$0	$0	$0	$0	$0
a. Equipment						
b. Installation						
8. Training	$0	$0	$0	$0	$0	$0
9. Trade-In Value	($754,763)	($327,130)	($327,130)	($327,130)	($327,130)	($2,063,281)
10. Total Refresh Implementation	**$10,521,938**	**$3,592,863**	**$4,021,863**	**$3,592,863**	**$3,592,863**	**$25,322,392**
11. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
12. Net Loss/(Savings)	$ (835,169)	$ (7,764,244)	$ (7,335,244)	$ (7,764,244)	$ (7,764,244)	$ (31,463,143)
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass)						
Maintenance:						
13. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$4,148,570
14. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$1,063,053
15. Replace by Data Network Refresh Maintenance	($80,873)	($242,619)	($404,364)	($566,110)	($646,983)	($1,940,950)
16. Net Maintenance	**$ (80,873)**	**$ 309,113**	**$ 470,975**	**$ 632,836**	**$ 875,570**	**$ 2,207,620**
17. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
18. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
19. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
20. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
21. MACs	$ -	$ -	$ -	$ -	$ -	$ -
22. Total Anticipated Savings	**$ (137,137)**	**$ (567,967)**	**$ (1,464,012)**	**$ (2,648,558)**	**$ (4,630,847)**	**$ (9,448,521)**
23. Total Ongoing Costs/(Savings)	**$ (218,010)**	**$ (258,854)**	**$ 20,723**	**$ (1,001,962)**	**$ (2,741,517)**	**$ (4,199,621)**
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass)	**$ (1,053,179)**	**$ (8,023,098)**	**$ (7,314,521)**	**$ (8,766,206)**	**$ (10,505,760)**	**$ (35,662,764)**
Privatized Loss/(Savings)						
25. FTE Savings	$ (4,115,458)	$ (8,230,916)	$ (8,230,916)	$ (8,230,916)	$ (8,230,916)	$ (37,039,121)
26. Privatized Fee	$ 3,498,139	$ 6,996,278	$ 6,996,278	$ 6,996,278	$ 6,996,278	$ 31,483,253
27. Total Privatized Loss/(Savings)	**$ (617,319)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (5,555,868)**
28. TCO Privatized	$ 64,698,205	$ 57,110,968	$ 57,819,544	$ 56,367,859	$ 54,628,305	$ 290,624,881
29. Net Loss/(Savings) Privatized	$ (1,670,498)	$ (9,257,735)	$ (8,549,158)	$ (10,000,843)	$ (11,740,398)	$ (41,218,632)

Financial Assumptions: Privatized - Data Network Refresh (Toll Bypass)

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Not applicable.
3. Power in Closets - Not applicable.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List prices plus government discounts.
7. IP Telephony - Not applicable.
8. Training - Not applicable.
9. Trade-In Value - 10% of capital investment based on bids received by State of Alaska.
10. Total Refresh Implementation - Sum of items 2 through 9.
11. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
12. Net Loss/(Savings) - Sum of items 10 through 11.
13. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
14. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
15. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
16. Net Maintenance - Sum of items 13. through 15.
17. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
18. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
19. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
20. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54,037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
21. MACs - Not applicable.
22. Total Anticipated Savings - Sum of items 18. through 21.
23. Total Ongoing Costs/(Savings) - Sum of items 16., 17., & 22.
24. Net Loss/(Savings) Data Network Refresh (Toll Bypass) - Sum of items 12. & 23.; represents incremental impact of implementing Data Network Refresh.
25. FTE Savings - Expected FTE savings due to centralizing & privatizing telecommunications services; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Privatized transition complete during year 1.
    b. Year 1 - 40%
    c. Year 2 - 5 - 80%
26. Privatized Fee - 15% value proposition.
27. Total Privatized Loss/(Savings) - Sum of item 25. & 26.
28. TCO As Is - Sum of items 1., 24., & 27; represents new TCO after implementing Data Network Refresh for the Privatized service delivery option.
29. Net Loss/(Savings) Privatized - Sum of items 1. & 28.; represents incremental impact to TCO.

Privatized - Data Network Refresh (Toll Bypass) & IP Telephony

Privatized - Data Network Refresh (Toll Bypass) & IP Telephony	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. TCO	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$ 66,368,703**	**$331,843,513**
Implementation Data Network Refresh (Toll Bypass) & IPT						
2. Cabling	$ 5,789,800	$ 5,202,200	$ 5,043,800	$ 4,964,600	$ 4,964,600	$ 25,965,000
3. Power in Closets	$ 508,920	$ 459,135	$ 425,945	$ 409,350	$ 409,350	$ 2,212,700
4. Data Network Refresh						$ -
a. Equipment	$ 7,547,631	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 3,271,296	$ 20,632,814
b. Installation	$ 811,322	$ 648,697	$ 648,697	$ 648,697	$ 648,697	$ 3,406,111
5.Data Network Circuit Capacity	$ -	$ -	$ 429,000	$ -	$ -	$ 429,000
6.Network Monitoring Tools	$ 2,917,748	$ -	$ -	$ -	$ -	$ 2,917,748
7. IP Telephony						$ -
a.Equipment	$ 8,664,893	$ 6,210,002	$ 5,791,326	$ 5,581,988	$ 4,724,243	$ 30,972,451
b. Installation	$ 2,553,665	$ 1,896,553	$ 1,780,630	$ 1,722,669	$ 1,710,454	$ 9,663,971
8. Training	$ 197,236	$ 164,576	$ 155,245	$ 150,579	$ 150,579	$ 818,215
9. Trade-In Value	$ (1,621,252)	$ (948,130)	$ (906,262)	$ (885,328)	$ (799,554)	$ (5,160,526)
10. Total Refresh & IPT Implementation	**$ 27,369,962**	**$ 16,904,329**	**$ 16,639,677**	**$ 15,863,850**	**$ 15,079,665**	**$ 91,857,483**
11. Annual Debt Service	$ 5,960,191	$ 9,641,345	$ 13,264,867	$ 16,719,441	$ 20,003,249	$ 65,589,093
12. Less Base Capital Budget	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (11,357,107)	$ (56,785,535)
13. Net Loss/(Savings)	**$ (5,396,916)**	**$ (1,715,762)**	**$ 1,907,760**	**$ 5,362,334**	**$ 8,646,142**	**$ 8,803,558**
Ongoing Costs/(Savings) Data Network Refresh (Toll Bypass) & IPT						
Maintenance:						
14. Data Network Refresh	$ -	$ 551,732	$ 875,339	$ 1,198,946	$ 1,522,553	$ 4,148,570
15. Network Monitoring Tools	$ -	$ 106,305	$ 212,611	$ 318,916	$ 425,221	$ 1,063,053
16. Replace by Data Network Refresh Maintenance	$ (80,873)	$ (242,619)	$ (404,364)	$ (566,110)	$ (646,983)	$ (1,940,950)
17. IP Telephony	$ -	$ 2,013,314	$ 2,954,080	$ 3,409,053	$ 3,833,206	$ 12,209,654
18. Replace by IP Telephony Maintenance	$ (121,899)	$ (330,869)	$ (500,657)	$ (661,738)	$ (805,405)	$ (2,420,568)
19. Net Maintenance	**$ (202,772)**	**$ 2,097,864**	**$ 3,137,008**	**$ 3,699,066**	**$ 4,328,592**	**$ 13,059,758**
20. Data Network Circuit Capacity	$ -	$ -	**$ 1,013,760**	**$ 1,013,760**	**$ 1,013,760**	**$ 3,041,280**
Anticipated Savings from Toll Bypass						
21. Circuits	$ (137,137)	$ (411,412)	$ (685,687)	$ (959,962)	$ (1,097,099)	$ (3,291,297)
22. Toll Bypass	$ -	$ (156,555)	$ (469,666)	$ (1,174,164)	$ (2,504,883)	$ (4,305,268)
23. FTE Savings			$ (308,659)	$ (514,432)	$ (1,028,864)	$ (1,851,956)
24. MACs	$ (477,864)	$ (814,452)	$ (1,134,211)	$ (1,437,140)	$ (1,689,581)	$ (5,553,248)
25. Total Anticipated Savings	**$ (615,002)**	**$ (1,382,420)**	**$ (2,598,223)**	**$ (4,085,698)**	**$ (6,320,428)**	**$ (15,001,769)**
26. Total Ongoing Costs/(Savings)	**$ (817,774)**	**$ 715,444**	**$ 1,552,545**	**$ 627,129**	**$ (978,076)**	**$ 1,099,269**
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT	**$ (6,214,689)**	**$ (1,000,318)**	**$ 3,460,305**	**$ 5,989,463**	**$ 7,668,066**	**$ 9,902,827**
Privatized Loss/(Savings)						
28. FTE Savings	$ (4,115,458)	$ (8,230,916)	$ (8,230,916)	$ (8,230,916)	$ (8,230,916)	$ (37,039,121)
29. Privatized Fee	$ 3,498,139	$ 6,996,278	$ 6,996,278	$ 6,996,278	$ 6,996,278	$ 31,483,253
30. Total Privatized Loss/(Savings)	**$ (617,319)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (1,234,637)**	**$ (5,555,868)**
31. TCO Privatized	$ 59,536,694	$ 64,133,747	$ 68,594,370	$ 71,123,528	$ 72,802,131	$ 336,190,471
32. Net Loss/(Savings) Privatized	$ (6,832,008)	$ (2,234,955)	$ 2,225,668	$ 4,754,825	$ 6,433,429	$ 4,346,958
33. Debt Services Remaining						$ 34,427,152

Financial Assumptions: Privatized - Data Network Refresh (Toll Bypass) & IP Telephony

1. TCO - Total Cost of Ownership of statewide telecommunications both operating expense and capital. Represents multiple funding sources including federal.
2. Cabling - Development numbers taken from the GITA Network Gap Report. Upgrades to CAT 5e building cable needed for IP Telephony. Some DOC cable needs upgrades for VoIP.
3. Power in Closets - Upgrades needed to support IP Telephony:
    a. Security - assume that all closets have capability to lock today.
    b. Power - 95% of closets for each MDF or IDF will require an isolated 208 volt single phase power feed to support a large-capacity UPS @ $750/room; 95% of rooms will need a large capacity UPS @ $3700/room.
    c. Number of closets - of the state's 968 sites, the closets needing upgrading: 198 on Phoenix campus - 175 IDF & 23 MDF; off Phoenix mall sites - 196 IDF & 6 MDF (power upgrades not needed in closets requiring just routers).
    d. Environmental - 95% of closets need isolated A/C controls @ $500/room; 90% of MDF rooms need separte A/C unit at $2500/room.
    e. Installation Hardware - 10% of closets require additional data rack & associated cable management components @ $750/room.
4. Data Network Refresh: based on list prices & government discounts; refresh based on 4 year cycle.
5. Data Network Circuit Capacity - Implementation costs to expand data network to handle increased voice traffic:
    a. Anything less than a T1 is upgraded to a T1
    b. 20% of existing T1's will need to double in capacity after 50% of the network has migrated.
    c. T1's are available to all State sites.
    d. Install @ $700 & existing monthly average costs from TCO
6. Network Monitoring Tools - Implemented year 1;1 per main site with LAN/WAN/Voice management capabilities - exception is DES with 2 due to size & diversity. List prices plus government discounts.
7. IP Telephony:
    a. Core network & voice services enginneered for redundancy & survivability
    b. Engineered for basic 911 (additional costs may be required for E911).
    c. Remote sites where practicable, routers installed instead of call processors.
    d. List prices with government discounts.
    e. Integrator costs of 10% are included in the implementation costs.
    f. Migration to IP Telephony over 5 years based on PBX useful life, data network upgrade, & building cabling needs.
8. Training - Train the trainers session: 42 IT voice personnel @ $14K/person & 42 IT WAN personnel @ $6K/person.
9. Trade-In Value - 10% of capital investment - based on bids received by State of Alaska.
10. Total Refresh & IPT Implementation - Sum of items 2 through 9.
11. Annual Debt Service - Financing of Implementation costs @ 3.4%.
12. Less Base Capital Budget - Capital in 2002 budget & assumed as part of ongoing fiscal year budgets.
13. Net Loss/(Savings) - Sum of items 10 through 12.
14. Data Network Refresh Maintenance - Ongoing maintenance costs associated with item 4.; assumed no maintenance costs first year.
15. Network Monitoring Tools Maintenance - Ongoing maintenance costs associated with item 6.; assumed no maintenance costs first year.
16. Replace by Data Network Refresh Maintenance - Ongoing data network maintenance costs that have been replaced with new equipment.
17. IP Telephony Maintenance - Ongoing maintenance costs associated with item 7.a.; assumed no maintenance costs first year.
18. Replace by IP Telephony Maintenance - Ongoing voice equipment maintenance costs that have been replaced with new equipment.
19. Net Maintenance - Sum of items 14. through 18.
20. Data Network Circuit Capacity - Ongoing costs for circuits identified in item 5.
21. Circuits - Savings from voice TIE lines that are removed as voice traffic is migrated to the data network.
22. Toll Bypass - Savings in long distance charges as the voice traffic is migrated to the data network:
    a. Assume have an opportunity to bypass 80% of the Intra-State minutes (that of the calls & minutes within the State, 80% of them are between State agency locations).
    b. As more of the State migrates to a converged network over 5 years, the more opportunity for toll bypass.
    c. Year 1 - no savings.
    d. Year 2 - 20% of minutes where converged network available.
    e. Year 3 - 30% of minutes where converged network available.
    f. Year 4 - 50% of minutes where converged network available.
    g. Year 5 - 80% of minutes where converged network available.
    h. Year 6 - 100% of minutes where converged network available (not shown in financials as is only 5 year view).
23. FTE Savings - Anticipated FTE savings due to convergence of the network; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Year 1 & 2 - no savings
    b. Year 3 - 3%
    c. Year 4 - 5 %
    d. Year 5 - 10%
24. MACs - Savings with moves, adds and changes due to implementation of IP Telephony:
    a. MAC average annual cost of $40 per employee based on average between ATS @ $16.28/employee & industry average @ $48/employee.
    b. Savings each year based on % migration to IP Telephony.
25. Total Anticipated Savings - Sum of items 21. through 24.
26. Total Ongoing Costs/(Savings) - Sum of items 19., 20., & 25.
27. Net Loss/(Savings) Data Network Refresh (Toll Bypass) & IPT - Sum of items 13. & 26.; represents incremental impact of implementing Data Network Refresh & IP Telephony.
28. FTE Savings - Expected FTE savings due to centralizing & privatizing telecommunications services; based on current voice/WAN average annual loaded salary of $54037 (from TCO) & 190.4 employees (from TCO):
    a. Privatized transition complete during year 1.
    b. Year 1 - 40%
    c. Year 2 - 5 - 80%
29. Privatized Fee - 85% of FTE savings.
30. Total Privatized Loss/(Savings) - Sum of item 28. & 29.
31. TCO Privatized - Sum of items 1., 27., & 30; represents new TCO after implementing Data Network Refresh & IP Telephony for the Privatized service delivery option.
32. Net Loss/(Savings) Privatized - Sum of items 1. & 31; represents incremental impact to TCO.
33. Debt Services Remaining - Debt service remaining after year 5.

ADOA Information Services Division

FY 98 Year-End Cost Center Expense Allocation Worksheet

09/28/98

	Total	Information Processing					Applications					Telecommunications					
		Mainframe	Tape Lib.	Printing	AS400	HP9000	HRMS	AFIS	Business Services	ADOA LAN	ET LAN	Lines	Equip.	Service	Voice Network	Pass Thru	Data Network
Revenue																	
Sales (External)	23,223,479	7,962,355	332,043	427,248	121,469		629,994	823,031	222,016	360,277	159,735	4,978,516	426,835	206,706	5,776,904	348,150	448,200
Sales (Internal)	1,168,327		358,633	58,018	46,853					329,776		173,069	19,301	5,917	113,770	18,151	44,840
Total	**24,391,806**	**7,962,355**	**690,676**	**485,267**	**168,321**		**629,994**	**823,031**	**222,016**	**690,053**	**159,735**	**5,151,584**	**446,136**	**212,624**	**5,890,674**	**366,301**	**493,040**
Expense																	
Direct Cost																	
Base	11,797,191	1,812,358	194,447	510,189	169,441	130,892	467,620	622,959	299,072	635,793	207,733	2,590,409	136,396	205,816	2,301,510	390,446	1,122,112
Technical Support	2,617,370	2,617,370															
Internal Charges	499,460	476,651							22,809								
Total	14,914,021	4,906,379	194,447	510,189	169,441	130,892	467,620	622,959	321,881	635,793	207,733	2,590,409	136,396	205,816	2,301,510	390,446	1,122,112
Distributed Costs																	
IPC Admin.	754,339	626,096	24,813	65,104	21,622	16,703											
Help Desk	137,462	119,773	10,389	7,300													
Security	536,414	443,461	38,467	27,027													27,460
Data Base Management	737,420	737,420															
Applications Adminstration	127,359	31,375					19,896	26,505	13,695	27,051	8,838						
Switch Board	284,883											146,762	7,728		130,394		
ENS Administration	335,361											136,672	7,196	10,859	121,430		59,204
Switch System	1,562,422											804,904	42,382		715,136		
Voice Operations Admin.	577,682											285,899	15,054	22,716	254,014		
Total	5,053,342	1,958,124	73,669	99,431	21,622	16,703	19,896	26,505	13,695	27,051	8,838	1,374,237	72,359	33,575	1,220,973		86,663
Total Rev. Ctr. Cost	19,967,363	6,864,503	268,116	609,619	191,063	147,594	487,516	649,464	335,576	662,843	216,572	3,964,646	208,756	239,390	3,522,483	390,446	1,208,775
Indirect Costs																	
Administrative Pool	2,368,985	830,667	32,445	73,769	23,120	17,860	58,994	78,591	40,608	80,210	26,207	479,758	25,261	28,968	426,252		146,273
Internal LAN Charges	269,776	94,595	3,695	8,401	2,633	2,034	6,718	8,950	4,624	9,134	2,984	54,634	2,877	3,299	48,541		16,657
Internal Telcom Charges	375,048	131,508	5,136	11,679	3,660	2,828	9,340	12,442	6,429	12,699	4,149	75,953	3,999	4,586	67,483		23,157
Customer Care Center	15,281	5,358	209	476	149	115	381	507	262	517	169	3,095	163	187	2,750		944
Accounting Support (MSD)	157,618	55,268	2,159	4,908	1,538	1,188	3,925	5,229	2,702	5,337	1,744	31,920	1,681	1,927	28,360		9,732
Total	3,186,708	1,117,396	43,644	99,233	31,101	24,025	79,357	105,719	54,625	107,897	35,253	645,360	33,981	38,968	573,386		196,763
Total Cost	**23,154,071**	**7,981,899**	**311,760**	**708,852**	**222,164**	**171,620**	**566,873**	**755,183**	**390,201**	**770,740**	**251,825**	**4,610,006**	**242,737**	**278,358**	**4,095,869**	**390,446**	**1,405,538**
Unit Recovery	**1,237,735**	**(19,544)**	**378,916**	**(223,586)**	**(53,842)**	**(171,620)**	**63,121**	**67,848**	**(168,185)**	**(80,687)**	**(92,090)**	**541,578**	**203,400**	**(65,734)**	**1,794,806**	**(24,145)**	**(912,499)**
Rate Adj. Option	-5%	0%	-55%	46%	32%	100%	-10%	-8%	76%	12%	58%	-11%	-46%	31%	-30%	7%	185%
Section Recovery	**$1,237,735**	**($89,676)**					**($209,994)**					**$1,537,406**					

ADOA Information Services Division

Expense Allocation Worksheet

Jun 99 Year-to-Date

08/18/99

	Total	Information Processing					Applications					Telecommunications						
		05/04/00	05/14/00	04/24/00	06/03/00	04/04/00	10/11/00	11/10/00	12/16/99	06/09/99	06/19/99	09/07/99	10/27/99	10/07/99	09/27/99	09/17/99	10/17/99	05/30/99
		Mainframe	Tape Lib.	Printing	AS400	HP9000	HRMS	AFIS	Prog. Services	ADOA LAN	ET LAN	Lines	Voice Network	Call Center	Station Equip.	Service	Pass Thru	Data Network
Revenue																		
Sales (External)	23,565,677	9,592,832	387,242	519,161	123,766	0	676,661	757,940	29,613	382,702	79,675	4,685,472	4,363,014	380,233	398,987	182,203	513,667	492,512
Sales (Internal)	1,210,432		411,221	61,279	23,266		0			272,868		163,171	79,239	10,064	19,139	4,990	41,401	123,796
Total	**24,776,110**	**9,592,832**	**798,464**	**580,440**	**147,032**	**0**	**676,661**	**757,940**	**29,613**	**655,570**	**79,675**	**4,848,643**	**4,442,252**	**390,296**	**418,126**	**187,192**	**555,067**	**616,308**
Expense																		
Direct Cost																		
Base	12,474,931	1,596,647	273,445	618,183	259,414	157,120	528,248	604,948	123,174	723,555	76,386	2,730,960	2,276,106	104,620	227,690	133,911	435,272	1,605,255
36610 Technical Support	2,932,151	2,932,151																
Internal Charges	479,218	476,380							2,837									
Total	15,886,299	5,005,178	273,445	618,183	259,414	157,120	528,248	604,948	126,011	723,555	76,386	2,730,960	2,276,106	104,620	227,690	133,911	435,272	1,605,255
Distributed Costs																		
36340 Telecom Administration	820,130											316,413	263,713	12,121	26,380	15,515		185,987
36470 Voice Operations Admin.	581,331											290,062	241,751	11,112	24,184	14,223		
36480 Switch Board	320,277											163,814	136,530	6,276	13,658			
36490 Switch System	1,396,362											714,205	595,251	27,360	59,546			
36670 IPC Administration	517,148	409,992	22,399	50,638	21,249	12,870												
36710 Help Desk	158,584	138,653	11,541	8,390														
36820 Data Base Management	325,998	325,998																
36850 Applications Adminstration	153,429	20,970					33,981	38,914	8,106	46,544	4,914							
36910 Security	593,727	491,500	40,910	29,740														31,577
Total	4,866,987	1,387,114	74,850	88,767	21,249	12,870	33,981	38,914	8,106	46,544	4,914	1,484,494	1,237,245	56,869	123,768	29,738	0	217,564
Total Rev. Ctr. Cost	20,753,287	6,392,292	348,295	706,950	280,663	169,990	562,229	643,863	134,117	770,099	81,299	4,215,454	3,513,351	161,489	351,458	163,649	435,272	1,822,820
Indirect Costs																		
36110 General Administration	2,323,660	731,051	39,833	80,850	32,098	19,441	64,299	73,635	15,338	88,072	9,298	482,098	401,803	18,469	40,194	18,716		208,466
Internal LAN Charges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Internal Telcom Charges	698,941	219,895	11,981	24,319	9,655	5,848	19,341	22,149	4,614	26,491	2,797	145,012	120,860	5,555	12,090	5,630		62,705
36120 MSD Services	212,508	66,858	3,643	7,394	2,935	1,778	5,880	6,734	1,403	8,055	850	44,090	36,746	1,689	3,676	1,712		19,065
36230 Customer Care Center	182,354	57,371	3,126	6,345	2,519	1,526	5,046	5,779	1,204	6,912	730	37,834	31,532	1,449	3,154	1,469		16,360
Total	3,417,464	1,075,175	58,583	118,908	47,207	28,592	94,566	108,297	22,558	129,530	13,674	709,034	590,941	27,162	59,115	27,525	0	306,596
Total Cost	**24,170,750**	**7,467,467**	**406,878**	**825,858**	**327,870**	**198,582**	**656,795**	**752,160**	**156,676**	**899,628**	**94,974**	**4,924,488**	**4,104,292**	**188,651**	**410,572**	**191,174**	**435,272**	**2,129,415**
Unit Recovery	**605,360**	**2,125,365**	**391,586**	**(245,418)**	**(180,838)**	**(198,582)**	**19,866**	**5,780**	**(127,063)**	**(244,059)**	**(15,299)**	**(75,845)**	**337,961**	**201,645**	**7,553**	**(3,982)**	**119,796**	**(1,513,108)**
Rate Adj. Option	-2%	-22%	-49%	42%	123%	100%	-3%	-1%	429%	37%	19%	2%	-8%	-52%	-2%	2%	-22%	246%
Section Recovery	**$605,360**	**$1,892,113**					**($360,775)**					**($925,979)**						

ADOA Information Services Division

Expense Allocation Worksheet

Jul 99 Thru Jun 00

08/25/00

	Total	Information Processing									Arizona Telecommunications System (ATS)						
		05/04/00	05/14/00	04/24/00	06/03/00	04/04/00	06/09/99	10/11/00	11/10/00	12/16/99	09/07/99	10/27/99	10/07/99	09/27/99	09/17/99	10/17/99	05/30/99
		Mainframe	Tape Lib.	Printing	Mid-Range Support	HP9000	Dist. Proc. (LAN)	HRMS Support	AFIS Support	Prog. Services	Lines	Voice Network	Software Services	Station Equip.	Service	Pass Thru	Data Network
Revenue																	
Sales (External)	25,151,516	10,089,328	416,264	821,457	173,746	15,825	390,024	826,433	685,520	59,533	4,510,721	4,535,540	684,239	350,069	233,862	764,443	594,512
Sales (Internal)	1,356,292		482,633	68,164	24,685	47,275	259,220				138,896	67,271	15,851	16,585	8,032	30,905	196,776
Total	**26,507,808**	**10,089,328**	**898,897**	**889,621**	**198,431**	**63,100**	**649,244**	**826,433**	**685,520**	**59,533**	**4,649,616**	**4,602,810**	**700,090**	**366,654**	**241,895**	**795,347**	**791,288**
Expense																	
Direct Cost																	
Base	13,210,339	1,857,792	288,228	579,500	285,672	48,289	889,214	647,012	521,783	270,614	2,035,491	2,756,127	642,863	286,400	180,352	637,077	1,283,924
36610 Technical Support	4,526,716	4,526,716															
Internal Charges	723,783	609,583			8,600		76,800				9,600		19,200				
Total	18,460,838	6,994,091	288,228	579,500	294,272	48,289	966,014	647,012	521,783	270,614	2,045,091	2,756,127	662,063	286,400	180,352	637,077	1,283,924
Distributed Costs																	
36340 ATS Administration	951,315										247,805	333,962	80,223	34,703	21,853	77,195	155,574
36470 ATS Customer Services	552,523										176,922	238,435	57,276	24,777		55,114	
36480 ATS Switch Board	353,750										150,681	203,069					
36490 ATS Infrastructure System	1,856,563										539,814	727,497	174,756	75,597			338,900
36670 IPC Administration	209,648	178,721	7,365	14,808	7,520	1,234											
36710 Help Desk	201,350	159,060	14,171	14,025			8,054										6,041
36820 Data Base Management	331,751	316,261			13,306	2,184											
36850 Statewide Sys. Admin.	200,741	44,381						86,556	69,804								
36910 Security	693,473	552,261	49,203	48,695													43,313
Total	5,351,114	1,250,684	70,739	77,528	20,826	3,417	8,054	86,556	69,804		1,115,222	1,502,962	312,254	135,077	21,853	132,309	543,827
Total Rev. Ctr. Cost	23,811,952	8,244,775	358,968	657,028	315,099	51,707	974,068	733,568	591,586	270,614	3,160,313	4,259,089	974,317	421,477	202,206	769,386	1,827,751
Indirect Costs																	
36110 General & Administrative	2,120,715	734,287	31,970	58,516	28,063	4,605	86,751	65,332	52,687	24,101	281,460	379,318	86,774	37,537	18,009	68,522	162,781
Internal LAN Charges																	
Internal Telcom Charges	551,135	190,828	8,308	15,207	7,293	1,197	22,545	16,979	13,692	6,263	73,146	98,578	22,551	9,755	4,680	17,808	42,304
36120 MSD Services	180,567	62,520	2,722	4,982	2,389	392	7,386	5,563	4,486	2,052	23,965	32,297	7,388	3,196	1,533	5,834	13,860
36230 Customer Care Center	242,914	84,108	3,662	6,703	3,214	527	9,937	7,483	6,035	2,761	32,239	43,448	9,939	4,300	2,063	7,849	18,646
Total	3,095,330	1,071,743	46,662	85,407	40,960	6,721	126,620	95,357	76,901	35,177	410,811	553,642	126,652	54,788	26,285	100,013	237,590
Total Cost	**26,907,282**	**9,316,518**	**405,630**	**742,436**	**356,058**	**58,428**	**1,100,688**	**828,925**	**668,487**	**305,791**	**3,571,124**	**4,812,731**	**1,100,969**	**476,265**	**228,490**	**869,399**	**2,065,341**
Unit Recovery/(Loss)	**(399,474)**	**772,810**	**493,267**	**147,185**	**(157,627)**	**4,672**	**(451,444)**	**(2,492)**	**17,033**	**(246,258)**	**1,078,492**	**(209,921)**	**(400,880)**	**(109,611)**	**13,404**	**(74,052)**	**(1,274,053)**
Rate Adj. Option	2%	-8%	-55%	-17%	79%	-7%	70%	0%	-2%	414%	-23%	5%	57%	30%	-6%	9%	161%
Section Recovery	**($399,474)**	**$577,146**									**($976,620)**						

ADOA Information Services Division

Expense Allocation Worksheet

Jul 00 Thru Jun 01

09/26/01

	Total	Information Processing									Arizona Telecommunications System (ATS)						
		05/04/00	05/14/00	04/24/00	06/03/00	04/04/00	06/09/99	10/11/00	11/10/00	12/16/99	09/07/99	10/27/99	10/07/99	09/27/99	09/17/99	10/17/99	05/30/99
		Mainframe	Tape Lib.	Printing	Mid-Range Support	HP9000	Dist. Proc. (LAN)	HRMS Support	AFIS Support	Prog. Services	Lines	Voice Network	Messaging Services	Station Equip.	Voice Tech Service	Pass Thru	Data Network
Revenue																	
Sales (External)	29,230,580	12,859,297	422,157	665,890	156,338	2,760	593,238	732,566	672,109		4,605,856	4,943,963	1,083,116	488,469	274,221	716,506	1,014,095
Sales (Internal)	1,512,073		677,564	83,546	25,940	48,163	245,975				90,913	56,833	15,097	16,975	3,884	5,599	241,585
Total	**30,742,653**	**12,859,297**	**1,099,721**	**749,437**	**182,278**	**50,923**	**839,213**	**732,566**	**672,109**		**4,696,768**	**5,000,795**	**1,098,213**	**505,443**	**278,106**	**722,105**	**1,255,680**
Expense																	
Direct Cost																	
Base	13,854,588	1,858,428	640,861	625,240	340,963	41,029	682,137	512,858	480,528	271,433	2,176,527	2,794,713	642,752	180,616	201,997	807,943	1,596,563
36610 Technical Support	7,657,347	7,657,347															
Internal Charges	1,030,870	847,904	240	1,775	16,378		85,398	16,435	11,320	6,120	9,600		21,050				14,650
Total	22,542,805	10,363,680	641,101	627,015	357,341	41,029	767,535	529,293	491,848	277,553	2,186,127	2,794,713	663,802	180,616	201,997	807,943	1,611,213
Distributed Costs																	
36340 ATS Administration	1,219,978										349,157	446,358	106,019	28,847	32,262		257,335
36470 ATS Customer Services	675,483										245,002	313,207	74,393	20,242	22,638		
36480 ATS Switch Board	348,657										153,028	195,629					
36490 ATS Infrastructure Systems	1,928,810										567,019	724,869	172,172	46,847			417,903
36670 IPC Administration	492,009	423,853	26,220	25,644	14,615	1,678											
36710 Help Desk	210,158	176,388	15,085	10,280													8,406
36820 Data Base Management	344,265	331,521			11,431	1,312											
36850 Statewide Sys. Admin.	285,164	71,899						110,542	102,722								
36910 Security	788,336	635,014	54,306	37,008													62,008
Total	6,292,860	1,638,675	95,610	72,932	26,045	2,990		110,542	102,722		1,314,207	1,680,063	352,584	95,936	54,900		745,652
Total Rev. Ctr. Cost	28,835,665	12,002,355	736,711	699,947	383,387	44,019	767,535	639,835	594,570	277,553	3,500,334	4,474,776	1,016,386	276,552	256,897	807,943	2,356,865
Indirect Costs																	
36110 General & Administrative	1,763,941	755,375	46,365	44,052	24,129	2,770	48,305	40,268	37,420	17,468	220,296	281,623	63,967	17,405	16,168		148,331
Internal LAN Charges	43,585	18,664	1,146	1,088	596	68	1,194	995	925	432	5,443	6,959	1,581	430	399		3,665
Internal Telcom Charges	207,573	88,889	5,456	5,184	2,839	326	5,684	4,739	4,403	2,056	25,923	33,140	7,527	2,048	1,903		17,455
36120 MSD Services	201,871	86,448	5,306	5,041	2,761	317	5,528	4,608	4,282	1,999	25,211	32,230	7,321	1,992	1,850		16,975
36230 Customer Care	282,392	120,929	7,423	7,052	3,863	444	7,733	6,447	5,991	2,796	35,267	45,085	10,241	2,786	2,588		23,747
36240 Customer Response Cente	117,600	50,360	3,091	2,937	1,609	185	3,220	2,685	2,495	1,165	14,687	18,775	4,265	1,160	1,078		9,889
Total	2,616,963	1,120,666	68,787	65,354	35,797	4,110	71,665	59,742	55,515	25,915	326,828	417,812	94,900	25,822	23,987		220,062
Total Cost	**31,452,628**	**13,123,021**	**805,498**	**765,301**	**419,184**	**48,129**	**839,200**	**699,577**	**650,085**	**303,469**	**3,827,162**	**4,892,588**	**1,111,287**	**302,373**	**280,883**	**807,943**	**2,576,927**
Unit Recovery/(Loss)	**(709,975)**	**(263,724)**	**294,223**	**(15,864)**	**(236,906)**	**2,793**	**13**	**32,989**	**22,024**	**(303,469)**	**869,606**	**108,208**	**(13,074)**	**203,070**	**(2,778)**	**(85,838)**	**(1,321,247)**
Rate Adj. Option	2%	2%	-27%	2%	130%	-5%	0%	-5%	-3%	100%	-19%	-2%	1%	-40%	1%	12%	105%
Section Recovery	**($709,975)**	**($467,921)**									**($242,054)**						

ADOA Information Services Division

Expense Allocation Worksheet

Jul 01 Thru Jun 02

09/17/02

	Total	Information Processing Center (IPC)				Internal Technology Services (ITS)				Arizona Telecommunications System (ATS)						
		05/04/00	05/14/00	04/24/00	06/03/00	06/09/99	10/11/00	11/10/00	12/16/99	09/07/99	10/27/99	10/07/99	09/27/99	09/17/99	10/17/99	05/30/99
		Mainframe	Tape Lib.	Printing	Mid-Range Support	Dist. Proc. (LAN)	HRMS Support	AFIS Support	Prog. Services	Lines	Voice Network	Messaging Services	Station Equip.	Voice Tech Service	Pass Thru	Data Network
Revenue																
Sales (External)	32,650,632	15,483,629	344,940	620,571	246,354	876,926	811,394	715,920		4,641,498	5,268,239	1,111,744	462,912	201,515	416,987	1,448,003
Sales (Internal)	1,445,400	1,120	549,924	71,458	87,617	249,078				97,669	59,345	24,001	16,730	4,016	3,914	280,529
Total	**34,096,032**	**15,484,749**	**894,864**	**692,029**	**333,971**	**1,126,004**	**811,394**	**715,920**		**4,739,167**	**5,327,584**	**1,135,745**	**479,642**	**205,530**	**420,901**	**1,728,531**
Expense																
Program Operating Cost																
Direct																
Base	14,099,242	1,713,820	732,096	580,938	277,047	1,028,628	514,597	494,544	59,936	2,463,612	2,615,275	672,041	159,033	169,931	373,908	2,243,836
36610 Technical Support	7,042,644	7,042,644														
Internal Charges	927,822	740,583	920	4,260	16,396	99,644	17,800	11,558	1,660	8,560		20,560				5,880
Total	22,069,707	9,497,047	733,016	585,198	293,442	1,128,273	532,397	506,102	61,596	2,472,172	2,615,275	692,601	159,033	169,931	373,908	2,249,716
Distributed																
36340 ATS General & Administrative	1,342,880									397,169	420,160	111,271	25,550	27,300		361,430
36470 ATS Customer Services	665,463									269,297	284,886	75,446	17,324	18,511		
36480 ATS Switch Board	363,748									176,758	186,990					
36490 ATS Switch Systems	1,339,031									973,831	324,610		40,589			
36620 HP-9000 Remedy System	29,167	25,398	1,468	1,135												1,167
36670 IPC General & Administrative	646,140	552,398	42,636	34,038	17,068											
36710 Help Desk	198,386	172,747	9,983	7,720												7,935
36820 Data Base Management	343,706	333,706			10,000											
36850 ITSD General & Administrative	375,722	93,429					144,720	137,573								
36910 Security	793,821	653,830	37,785	29,220												72,986
Total	6,098,063	1,831,507	91,872	72,114	27,068		144,720	137,573		1,817,056	1,216,645	186,717	83,463	45,811		443,518
Total Program Operating Cost	**28,167,770**	**11,328,554**	**824,887**	**657,312**	**320,510**	**1,128,273**	**677,117**	**643,674**	**61,596**	**4,289,228**	**3,831,920**	**879,318**	**242,496**	**215,742**	**373,908**	**2,693,234**
General & Administrative Costs																
36110 ISD General & Administrative	1,735,484	707,369	51,507	41,043	20,013	70,451	42,280	40,192	3,846	267,825	239,270	54,906	15,142	13,471		168,169
Internal Telcom Charges	217,791	88,770	6,464	5,151	2,512	8,841	5,306	5,044	483	33,610	30,027	6,890	1,900	1,691		21,104
36120 MSD Services	197,801	80,622	5,871	4,678	2,281	8,030	4,819	4,581	438	30,525	27,271	6,258	1,726	1,535		19,167
36130 Director's Office Support	137,140	55,897	4,070	3,243	1,581	5,567	3,341	3,176	304	21,164	18,907	4,339	1,197	1,065		13,289
36230 Customer Care	286,625	116,826	8,507	6,779	3,305	11,635	6,983	6,638	635	44,233	39,517	9,068	2,501	2,225		27,774
36240 Customer Response Center	209,464	85,376	6,217	4,954	2,415	8,503	5,103	4,851	464	32,325	28,879	6,627	1,828	1,626		20,297
Total General & Admininstrative	**2,784,306**	**1,134,861**	**82,635**	**65,848**	**32,108**	**113,027**	**67,832**	**64,481**	**6,171**	**429,682**	**383,870**	**88,087**	**24,292**	**21,612**		**269,800**
Total Cost	**30,952,077**	**12,463,415**	**907,522**	**723,160**	**352,618**	**1,241,300**	**744,949**	**708,156**	**67,767**	**4,718,910**	**4,215,790**	**967,405**	**266,788**	**237,355**	**373,908**	**2,963,034**
Unit Recovery/(Loss)	**3,143,955**	**3,021,335**	**(12,658)**	**(31,131)**	**(18,647)**	**(115,296)**	**66,445**	**7,764**	**(67,767)**	**20,257**	**1,111,794**	**168,340**	**212,854**	**(31,825)**	**46,993**	**(1,234,503)**
Rate Adj. Option	-9%	-20%	1%	4%	6%	10%	-8%	-1%	100%	0%	-21%	-15%	-44%	15%	-11%	71%
Section Recovery	**$3,143,955**	**$2,958,899**				**($108,853)**				**$293,910**						

Appendix H

GITA STANDARD P100

STATE of ARIZONA

Government **I**nformation **T**echnology **A**gency	**Statewide** **POLICY** **P100**	TITLE: Information Technology Effective Date: June 11, 2001

1. Authority
The Government Information Technology Agency (GITA) shall develop, implement and maintain a coordinated statewide plan for information technology (A.R.S. § 41-3504(A (1))), including, the formulation of policies to effectuate the purposes of the agency (A.R.S. § 41-3504(A (13))).

2. Purpose
The policy establishes the following:
State agencies shall develop, acquire and/or implement computer hardware systems, software systems, application systems, operating systems, security systems and networking systems that are of quality and cost effective, which will support the following statewide environment:
A. Open Architecture
B. Interoperability
C. Portability
D. Scalability
E. Internet/Intranet and Extranet capabilities.
F. Technologies that will enhance agency services and operational capacities.
G. Technologies that will improve productivity and performance.
H. Technologies that will improve public service.

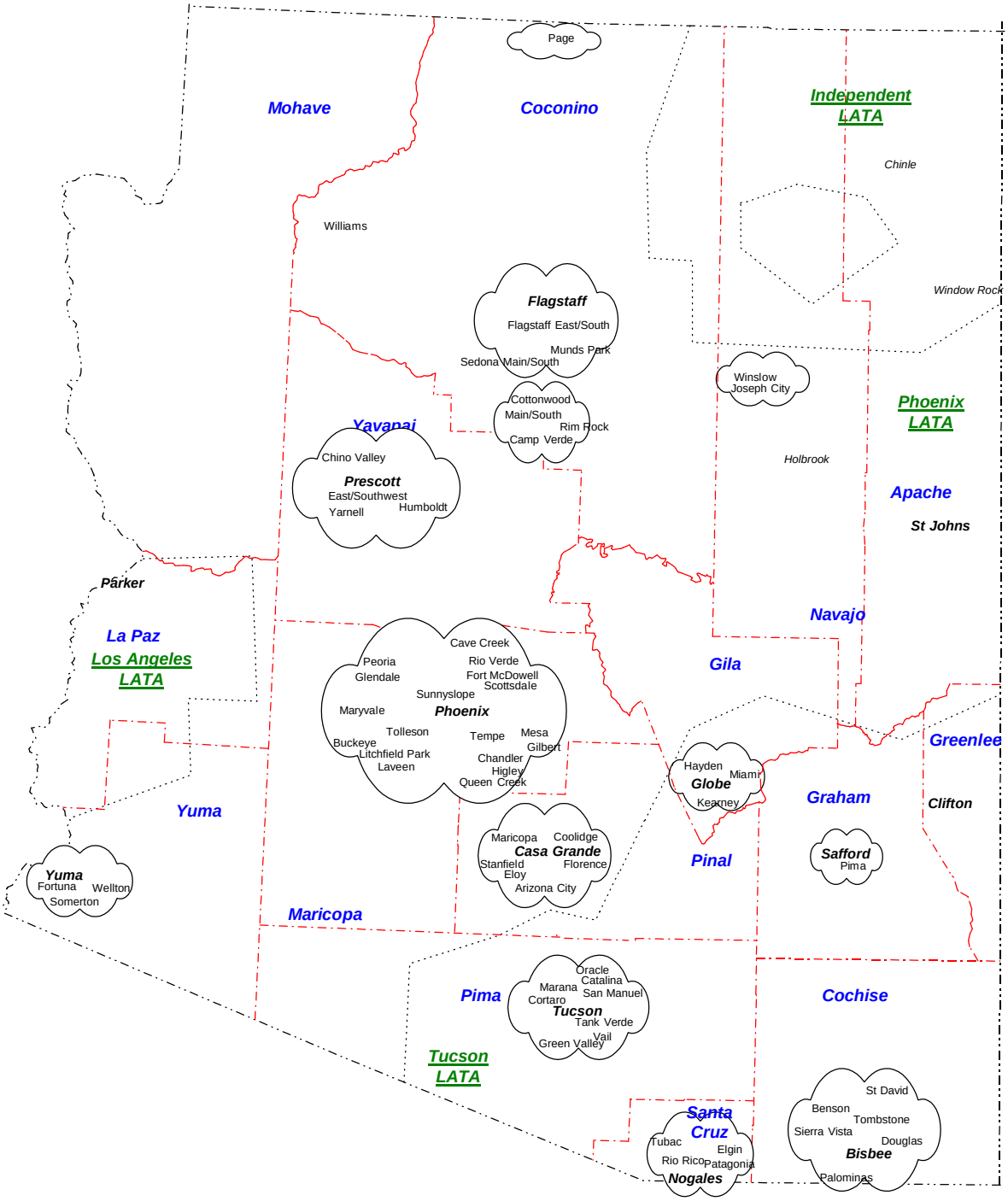
3. Scope
This applies to all budget units. Budget unit is defined as a department, commission, board, institution or other agency of the state organization receiving, expending or disbursing state funds or incurring obligations of the state including the board of regents and the state board of directors for community colleges but excluding the universities under the jurisdiction of the board of regents and the community colleges under their respective jurisdictions and the legislative or judicial branches. A.R.S. § 41-3501(2).

4. Definitions and abbreviations
Refer to the PSP Glossary of Terms for definitions and abbreviations.

5. References
5.1. Developmental
5.1.1. A. R. S. § 41-3501, “Definitions”.
5.1.2. A. R. S. § 41-3504, “Powers and Duties of the Agency”.
5.1.3. A. R. S. § 41-3521 “Information Technology Authorization Committee; members; terms; duties; compensation; definition”.
5.1.4. Arizona Administrative Code, Title 2, Chapter 18.

6. Attachments
None

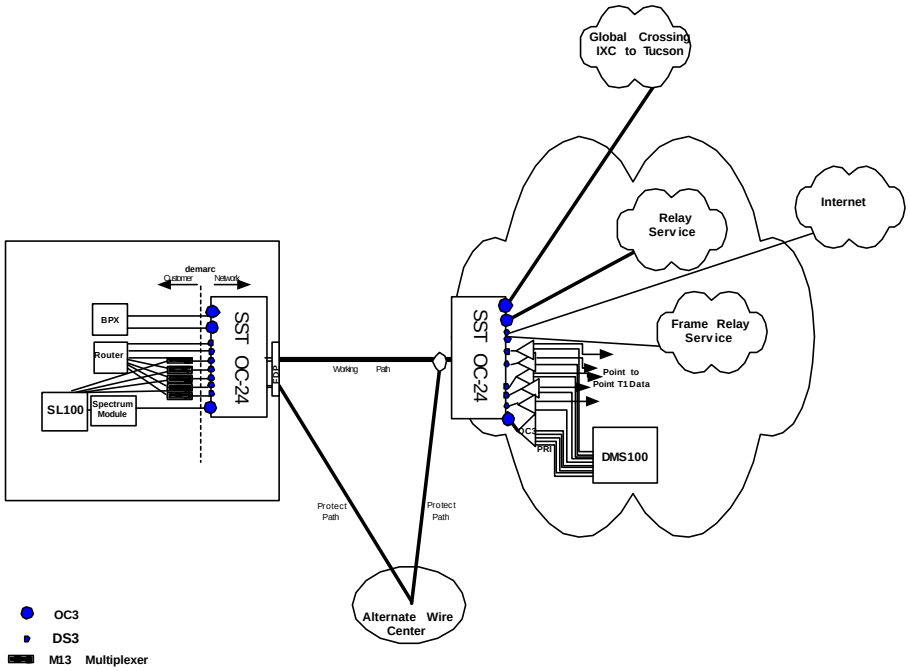
Arizona Frame Relay Service Locations



Frame Relay Service Area

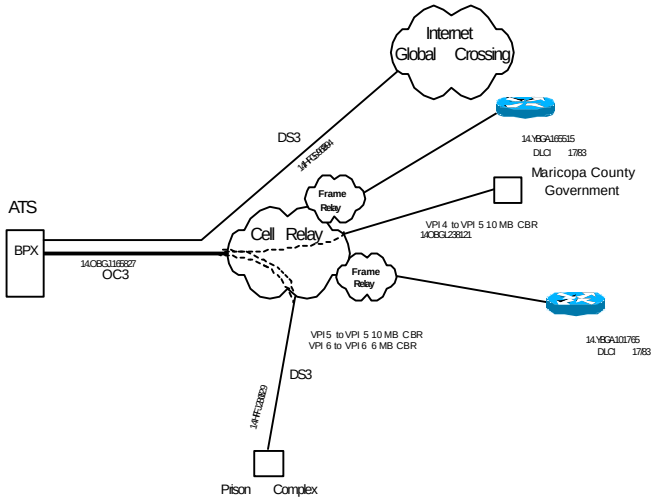
Arizona State Government

July 12, 2002

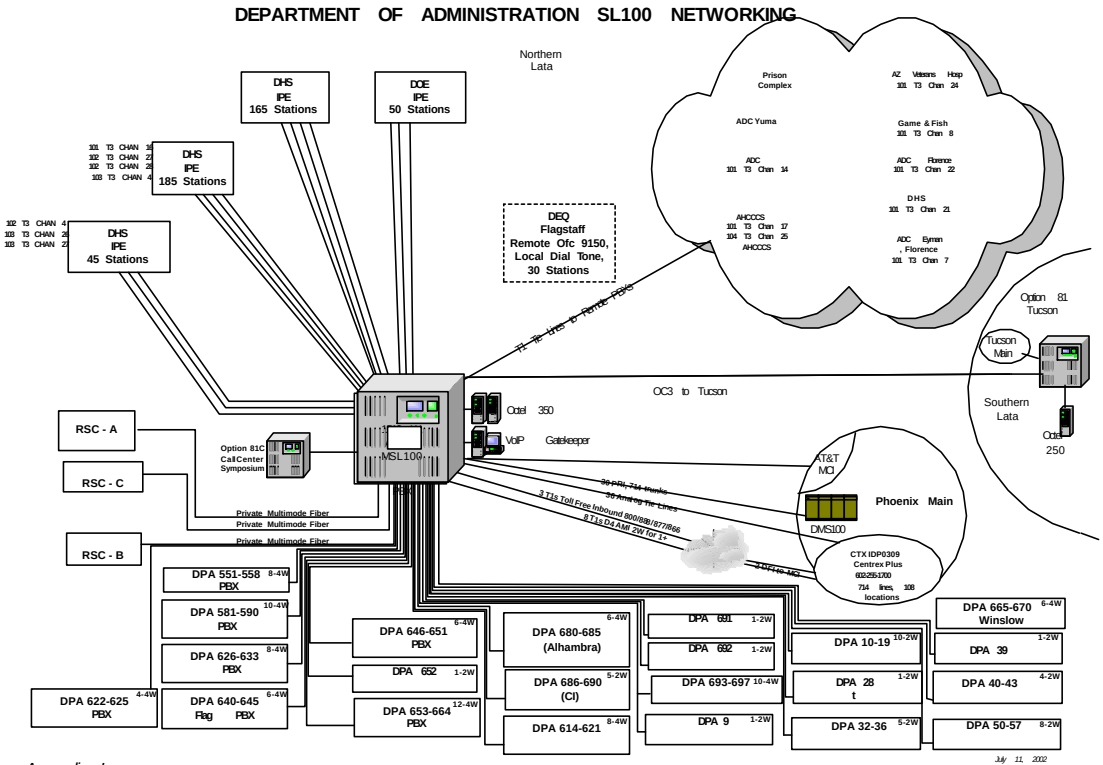
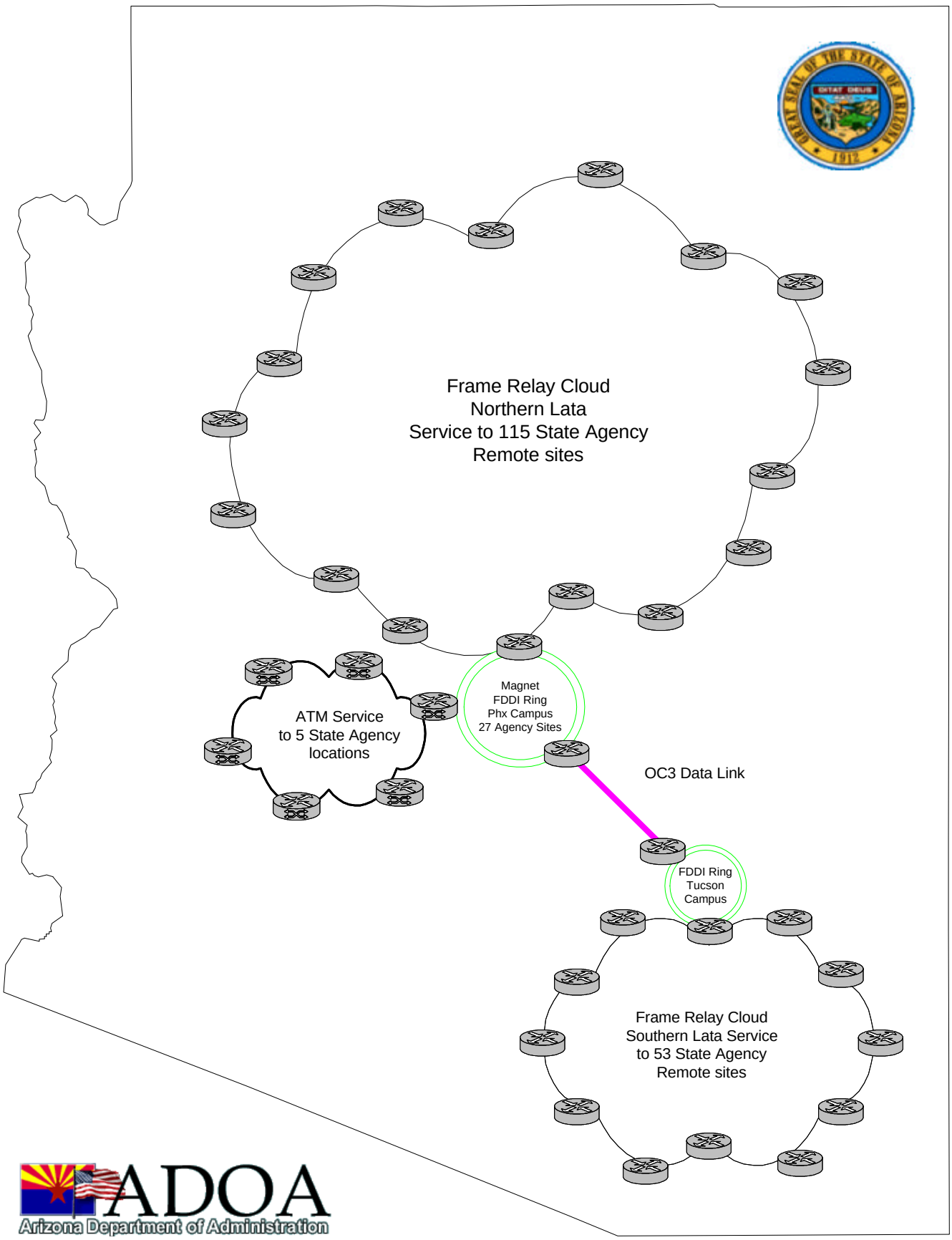


Arizona State Government

Current Northern LATA Cell Relay Network



ARIZONA STATE GOVERNMENT
DEPARTMENT OF ADMINISTRATION SL100 NETWORKING



ADOA/ATS "State-wide" IT Infrastructure Support Overview