

# Commonwealth of Kentucky Information Technology Assessment

August 2, 2012



Pacific Technologies, Inc. Practical Planning. Positive Change.®



Practical Planning  
Positive Change



August 2, 2012

Janet Lile  
Commonwealth Office of Technology  
101 Cold Harbor Drive  
Frankfort KY 40601

**Re: Final Information Technology Assessment**

Dear Janet:

PTI is pleased to deliver our final Commonwealth Information Technology Assessment.

It has been a pleasure working with you and the Commonwealth's very engaged set of stakeholders on this project. We look forward to hearing about Kentucky's successful implementation of PTI's recommendations.

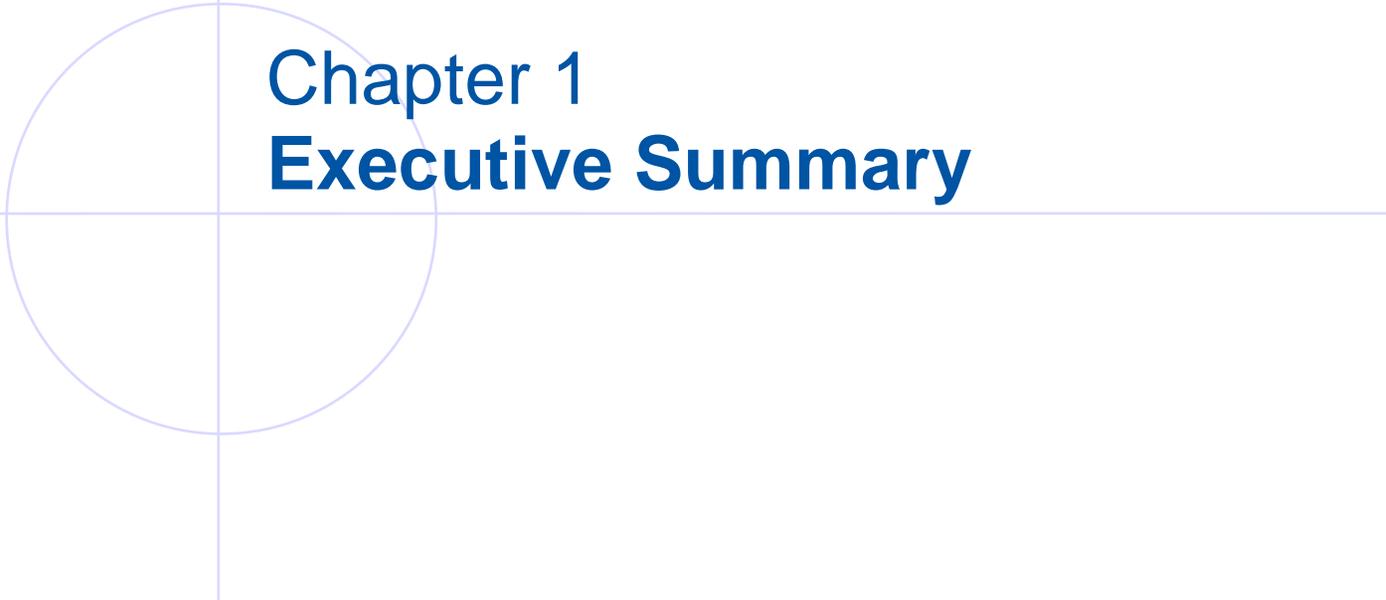
Thanks and best wishes,

*Michael Silverman*

Michael Silverman  
Co-Chief Executive Officer  
Pacific Technologies, Inc.

# Table of Contents

<b>1. Executive Summary.....</b>	<b>1</b>
Introduction.....	2
Scope and Methodology .....	3
Critical Drivers for Change.....	3
Recommendations.....	6
Potential Cost Savings.....	12
Implementation Schedule .....	13
Transition Considerations .....	15
Conclusion.....	17
<b>2. Assessment Findings.....</b>	<b>18</b>
IT Governance and Funding .....	20
IT Organization and Service Delivery.....	25
<b>3. Recommendations and Benefits .....</b>	<b>37</b>
Recommendations.....	38
Benefits .....	48
Implementation Schedule .....	54
Performance Measures .....	56
<b><u>Appendices</u></b>	
A. List of Surveyed Agencies.....	A-1
B. List of Participants .....	B-1
C. IT Service Function Definitions .....	C-1
D. Glossary .....	D-1
E. Cost, Savings, and FTE Reduction Detail .....	E-1
F. Sourcing Decision Considerations .....	F-1



Chapter 1  
**Executive Summary**

*Pacific Technologies, Inc. was engaged as part of Governor Beshear's Smart Government Initiative to conduct an independent review of Kentucky's IT governance, funding model, and service delivery approach.*

## Introduction

In January 2010 Governor Beshear launched the Smart Government Initiative (SGI) – a collaborative, statewide, multi-cabinet drive to share ideas and employ cost-saving measures. The program consists of five workgroups charged with conducting in depth reviews of spending in the areas of information technology (IT), transportation services, postal services, state-owned assets, and contracts and procurement. The workgroups made 37 recommendations which were adopted by the Governor.

Many of these recommendations have been implemented and are already saving the Commonwealth millions of dollars annually. Others are in progress or required further study. One key recommendation was to conduct a statewide information technology assessment. This assessment was to objectively review IT costs, service models, infrastructure, and governance structures and processes throughout the Executive Branch and include the perspectives of cabinet leaders, budget officers, and IT experts.

To assist in this review, the Commonwealth conducted a competitive procurement for a consulting firm with expertise in public sector IT planning. In December 2011 the Commonwealth engaged Pacific Technologies, Inc. (PTI).

PTI quantified the potential savings that the Commonwealth can realize by implementing the recommendations presented in this report. **We conservatively estimate total net savings for fiscal years (FY) 2013-2016 to range from \$32.1 million to \$55.6 million, with a net annual savings ranging from \$16.7 million to \$27.8 million thereafter.** In addition to providing fiscal savings, PTI's recommendations will also significantly reduce the Commonwealth's risk of system failure or security breach and position Kentucky to take advantage of emerging technologies and sourcing alternatives for IT services.

This report summarizes PTI's assessment and resulting recommendations for improving IT at the Commonwealth, organized as follows:

- ◆ Scope and methodology
- ◆ Critical drivers for change
- ◆ Recommendations
- ◆ Potential cost savings
- ◆ Implementation schedule
- ◆ Transition considerations
- ◆ Conclusion

The SGI IT steering committee will review PTI's work to determine which recommendations to put forward for adoption.

## Scope and Methodology

The full scope of this assessment included all IT resources and assets within the Executive Branch of Kentucky's government, with the exception of boards and commissions, departments headed by constitutional officials, and departments delivering direct educational services. Some smaller departments, primarily within the General Government cabinet, were exempted from providing detailed IT cost and labor data due to their lack of IT staff and modest budgets.

Surveyed agencies provided summaries of their IT goods and services, staffing, contractor, and overhead expenditures (Appendix A lists these responding agencies). They characterized their IT labor levels for a detailed matrix of IT service functions, provided inventories and locations of major IT assets, and listed their major applications. The study did not assess the efficiency or effectiveness of agency business applications.

PTI analyzed this data, comparing it against its proprietary database of public sector benchmarks as well as benchmarks from other consulting organizations. We also conducted best practices research to compare Kentucky's IT organization, governance, and funding models with those of other states. To provide a qualitative perspective, we conducted interviews with agency executives, senior managers, IT professionals, and analysts. Appendix B provides this list of participants.

PTI validated the quantitative analysis with a broad group of agency budget and technical staff, and presented assessment findings to the cabinet secretaries. Working with the SGI IT steering committee, we reviewed the resulting recommendations in a validation workshop. This report presents PTI's findings and recommendations, and proposes a high-level work plan to implement them. The SGI IT steering committee will be tasked with determining which recommendations to accept and adopting a final plan for moving forward.

## Critical Drivers for Change

This assessment recommends significant changes in how the Commonwealth organizes, funds, and delivers IT systems and services. What is the impetus for these changes? In sum, it is the opportunities for saving money, reducing risk, and positioning the Commonwealth for more effective use of IT in the future.

*This assessment identified potential IT cost savings with a minimum range of \$17 to \$28 million annually.*

## Cost Savings

Kentucky is in its fifth year of budget reductions. For FY2013, most agencies will see cuts of 8.4%, on top of 25% to 30% in total cuts already absorbed in previous years. At this point, all the easy cost-cutting measures have been taken. What remains will require difficult choices.

Federated delivery of IT services, with most agencies managing significant portions of their IT infrastructure, has resulted in costly redundancy of IT assets. Agencies report more than 550 IT facilities statewide housing approximately 1,550 servers – an average of less than three servers per facility. Over 100 of these facilities reside in Franklin County alone. The duplication of enterprise applications also demonstrates opportunities for cost savings. Six agencies are utilizing 11 different software solutions for document management and four agencies are separately licensed for the same business intelligence application.

The overlap of desktop support services has led to similar inefficiencies in IT labor. One important measure of IT service efficiency is the ratio of workstations to support staff. On average in Kentucky, this ratio is 157:1. This is below PTI's target range of 225:1 to 275:1, which we find in high-performance IT service organizations.<sup>1</sup>

While some agency-level economies have been achieved, savings opportunities have not been realized from an enterprise perspective. In short, agencies have trimmed IT expenses on their own, where they can, but any additional reductions will require statewide coordination.

**As noted, this assessment identified potential net IT cost savings with a minimum range of \$16.7 to \$27.8 million annually.** These are directly quantifiable operational savings, which recur year after year. Significant additional savings are likely available, though they could not be quantified with available data. To realize these savings, the Commonwealth estimates a one-time investment of approximately \$2.38 million and new annually recurring expenditures of approximately \$624,000.<sup>2</sup>

## Risk Mitigation

Every cabinet and department within the Commonwealth uses IT to deliver mission-critical services. In the event of a disaster, returning IT systems to normal operation is central to resuming business

<sup>1</sup> Gartner Group indicates that the 2011 average number of personal computing devices per end user computing FTE is 285; "IT Key Metrics Data 2012:Key Infrastructure Measures: End User Computing Analysis: Current Year," published Dec. 15, 2011 by Jamie K. Guevara, Linda Hall, and Eric Stegman

<sup>2</sup> This does not include one-time costs for professional, third-party change management services to guide the implementation of PTI's recommendations.

*Shared IT services can deliver both cost savings and quality improvements, while also reducing the need to attract and retain a wide variety of IT skills that can be difficult for the public sector to hire in today's job market.*

operations. By statute, Kentucky is mandated to protect the security and privacy of information it keeps for its citizens.

The assessment found that neither the Commonwealth Office of Technology nor the agencies have a remote backup data center which would support business continuity after a disaster or other service interruption. Agencies report more than 500 IT facilities housing their infrastructure, most in substandard condition. Management of the infrastructure is inconsistent, varying by agency. These issues pose significant risks to Commonwealth IT systems and data.

These deficiencies exist not because the agencies fail to recognize the value and vulnerability of their IT systems, but because it is simply not economical for each agency acting alone to provide high levels of security and redundancy. Only by taking an enterprise-wide view of business continuity can the Commonwealth cost effectively assure the availability of its mission-critical systems.

### Future Positioning

Many things have changed since Kentucky first deployed a highly centralized computing system in the early 1970s and consolidated the agency application development staffs in 1981 under the John Y. Brown administration. Personal computers and servers allowed agencies to take automation in to their own hands. Networks linked these systems together, and the rise of the Internet allowed delivery of Commonwealth services directly to homes and businesses. The result has been a proliferation of IT systems, managed independently by each agency. Many of these share similar infrastructure, although a variety of standards exist in the Commonwealth – a factor that increases the breadth of IT skills necessary to support daily IT operations and serves as a barrier to achieving economies of scale.

In the past few years, increased network bandwidth and the emergence of browser-based applications have put more emphasis on back-end computing. These “back-end” components are highly standardized and architected to optimize use of both hardware and support labor, a model that facilitates more effective utilization of IT resources. The resulting private sector trend has been to scale up massively and sell IT infrastructure as a commodity, like electricity or water. These shared services capabilities are changing the way basic computing services are delivered.

One benefit of this trend is that it supports the decoupling of business-side applications from the underlying IT infrastructure. This approach allows consumers of IT services to focus attention on improving business operations through application software, leaving the computing infrastructure to an organization dedicated to provision of large scale computing capacity. It also allows choice of the commodity IT services provider with the best price and quality.

Many states have recognized this shift. The associated changes in state government approaches to IT service delivery are in process across the country. Some are building their own shared services

infrastructure, while others have chosen to rely more heavily on the private sector for these services. All recognize that the shared services model can deliver both cost savings and quality improvements, while also reducing the need to attract and retain a wide variety of IT skills that can be difficult for the public sector to recruit and retain in today's job market.

## Recommendations

Taking advantage of the opportunities outlined above requires decisive action. This report makes four specific recommendations, summarized below and detailed in Chapter 3. Key benefits are listed for each recommendation. Because the recommendations have strong linkages to each other, maximizing the benefits, in particular the cost savings, requires that the recommendations be implemented as a whole.

### 1. Establish a new cabinet-level office of the Chief Information Officer.

PTI recommends the creation of a cabinet level office of the Chief Information Officer (CIO). This recommendation gives the new office operational and budgetary control of the Commonwealth's IT infrastructure, computing equipment, and associated support staff.

With this recommendation, agency-level CIOs would see a shift in their roles. They would no longer be responsible for IT infrastructure operations, instead focusing exclusively on the applications that automate agency business functions and support direct public services.

All IT infrastructure (e.g., servers, networks, storage, databases) and end user computing (e.g., PCs, laptops, phones) support staff at the Commonwealth would be transferred to this new office. Agency application support personnel would retain their existing reporting relationships and remain within the business units. Applications support personnel within the COT Office of Application Development would move to the new office of the CIO. Administrative, planning, and managerial staff would transfer to the new office as required to support these changes. For management purposes, contractors would be transferred just as staff will be – contractors working on IT infrastructure would move under the new CIO, while contractors supporting applications would retain their existing reporting relationships.

It is imperative that this new office first establish trust and credibility with customer agencies as a reliable, cost-effective infrastructure services provider. After this can be demonstrated, the Commonwealth should assess the costs and benefits of also moving enterprise applications (e.g., human resource management [KHRIS], finance management [eMARS], business intelligence) under the new office of the CIO.

*Maximizing benefits, in particular cost savings, requires that the recommendations be implemented as a whole.*

PTI recommends the new office of the CIO be responsible for:

- ◆ Providing all IT infrastructure services for the Executive Branch, including server, storage, and network administration, desktop support, telephony, IT security, disaster recovery and business continuity, database administration and related planning, administration, and procurement
- ◆ Managing over-arching IT facilities and shared systems (e.g., messaging, identity and access management, shared data management tools)
- ◆ Ensuring that shared services and systems meet the varied needs of customer agencies
- ◆ Meeting performance targets for shared services provision
- ◆ Making optimum sourcing decisions for shared services
- ◆ Managing Kentucky's IT assets from an enterprise perspective
- ◆ Controlling costs with a view to the Commonwealth's bottom line
- ◆ Coordinating IT governance and strategic planning
- ◆ Establishing an IT performance management program<sup>3</sup>
- ◆ Ensuring that cost savings and other IT performance targets are achieved

Overall, it is vital that the CIO have executive sponsorship and the complete support of the Governor's office.

---

<sup>3</sup> PTI recommends specific IT performance measures for shared IT services performance, customer satisfaction, cost savings, risk reduction, and capital IT project performance in chapter 3.

### Key Benefits

- Provides a single point of accountability for shared services performance and for achieving identified savings
- Achieves greater cost savings than are possible by agencies acting alone
- Improves IT service levels for the Commonwealth as a whole
- Allows agencies to focus IT efforts exclusively on public services and business operations
- Aligns Kentucky with future IT service provision models
- Offers better career opportunities for Commonwealth IT employees

To implement this recommendation, the Commonwealth estimates a necessary one-time investment of approximately \$50,000 to conduct a nationwide search for the new CIO. The fully burdened annual cost of the new CIO position is estimated to range from \$180,000 to \$190,000.

## 2. Optimize IT infrastructure.

PTI recommends the new Commonwealth CIO use the authority of the office to consolidate and standardize Kentucky's IT infrastructure as required for effective provision of shared services.

This recommendation would balance time and cost constraints, targeting end-of-life, high-risk, and high-cost platforms first, including:

- ◆ Consolidating voice over IP (VoIP) telephony into a single statewide system
- ◆ Moving servers, storage, and networking equipment to the Commonwealth Data Center (CDC)
- ◆ Ensuring that mission-critical systems have remote backup capability
- ◆ Closing unneeded IT facilities
- ◆ Reducing excess capacity by pooling storage and virtualizing servers
- ◆ Standardizing end user devices, with remote management capability
- ◆ Standardizing server, storage, data network and telephony architectures

### Key Benefits

- Provides an estimated minimum annual savings of \$8.61 million to \$14.32 million through reduced infrastructure operating and maintenance costs
- Provides much better disaster recovery and business continuity capabilities than agencies can achieve on their own
- Mitigates security and privacy risks
- Establishes a platform for enterprise information sharing and integration
- Improves service levels
- Reduces IT skill set requirements
- Simplifies related procurement and management of vendor contracts
- Positions Kentucky for future economies of scale and potential sourcing alternatives

To implement this recommendation, the Commonwealth estimates a one-time investment of approximately \$1.68 million to upgrade IT facilities, consolidate telephony, and expand business continuity capabilities. The Commonwealth also estimates an additional \$220,000 annually to enhance existing disaster recovery/business continuity facilities and systems.

### 3. Reduce statewide IT labor.

Optimizing the Commonwealth's IT infrastructure and consolidating the associated support staff offers several opportunities to reduce statewide IT labor expenditures:

- ◆ Pooled support teams and standardized infrastructure will improve service levels and reduce labor requirements for locations outside Frankfort
- ◆ Similar labor reductions can be expected for centrally located infrastructure under shared services management
- ◆ Some contractors can be converted to permanent staff at lower cost, and other contractor positions supporting the shared infrastructure can be eliminated as labor requirements diminish
- ◆ As the central IT labor force shrinks, management and administrative staff will be reduced proportionately
- ◆ Over time, the CIO may determine that some IT services are more cost-effectively sourced from outside vendors

### Key Benefits

- Provides an estimated minimum annual savings of \$8.74 million to \$14.06 million in reduced labor costs
- Brings contractor portion of labor force more in line with benchmarks
- Focuses on increased skill levels of permanent IT staff
- Reduces administrative and management overhead

To implement this recommendation, the Commonwealth estimates a one-time investment of approximately \$425,000 to transition, retrain, and retool IT staff. It also estimates an additional \$221,000 annually to continue staff training as well as to monitor and report on transition results.

#### 4. Increase statewide IT accountability and transparency.

Moving to shared IT services would be a major step for the Commonwealth. It requires a significant degree of collaboration and trust among agencies. It also requires a new focus on management of service levels and achievement of performance targets. To ensure accountability and transparency, PTI recommends the Commonwealth:

- ◆ **Move to negotiated service level agreements (SLAs) for shared services** – This institutes annually renewed SLAs between the new office of the CIO and customer agencies, as part of the budget cycle. It realigns the service catalog to be service-based rather than purely usage-based, providing agencies the option of negotiating specific service levels as needed. The new office of the CIO would provide agencies with cost details needed for negotiation and reimbursement purposes.
- ◆ **Create a CIO advisory council** – This charters a new council to provide the Commonwealth CIO advice on: technology services, service levels, and charges; fund balance usage; and overall IT strategy. The group will also review statewide IT performance. Chaired by the Commonwealth CIO, this council would include large executive branch agency CIOs, rotating representatives of small agencies, and a representative of the Office of the State Budget Director.
- ◆ **Institute capital IT project oversight** – This establishes a capital IT project oversight and review board, chartered to: monitor capital IT project budgets and schedules; incrementally release project funding based on performance and milestone achievements; and measure post-implementation benefits. Chaired by the Commonwealth CIO, the board would also include representatives from finance, budget, and rotating agency representatives. The Commonwealth

should consider appropriately staffing the Project Management Office (PMO), currently residing within COT's Office of Enterprise Technology, to partner with the Budget Office in providing staff support and monitoring of large projects.

- ◆ **Manage IT procurement and contract performance** – The Commonwealth CIO would ensure that vendor performance measures are included in the procurement of shared IT services and systems. Over the life of these contracts, office of the CIO staff would monitor performance on a regular basis, and the Commonwealth would take corrective action if vendors fail to meet targets.
- ◆ **Shift agency IT effort to business applications** – With commodity services being provided centrally, agency IT organizations would concentrate on using software to enhance business operations, improving data management, and building business intelligence/decision support capability.
- ◆ **Refocus the Enterprise Architecture and Standards Committee (EASC)** – This shifts the scope of the EASC's responsibility from a broad spectrum of diverse enterprise architecture domains to a focus on enterprise applications, data management, integration, and business intelligence. It allows the EASC to target its efforts on ensuring ready access to information while maintaining appropriate privacy and security statewide. Correspondingly, responsibility for infrastructure and end user computing standards will reside with the office of the CIO.

#### Key Benefits

- Increases trust and credibility between agencies and central provider
- Gives agencies flexible service levels rather than "one size fits all"
- Encourages sourcing decisions based on commonwealth wide impact rather than agency impact
- Provides greater IT cost detail to agencies
- Improves business value and lowers long-term costs for IT capital projects
- Reduces risk of IT project failure
- Provides meaningful stakeholder input to the Commonwealth CIO
- Provides a foundation for improving business operations through better application integration and increased attention to management of information as a critical Commonwealth asset

## Potential Cost Savings

PTI quantified the potential savings that the Commonwealth can realize by implementing the preceding recommendations. **We conservatively estimate total net savings for fiscal years (FY) 2013-2016 to range from \$32.1 million to \$55.6 million, with a net annual savings ranging from \$16.7 million to \$27.8 million thereafter.** The following table summarizes both the necessary investments and potential savings of these recommendations. Chapter 3 provides additional data, including annual detail for fiscal years 2013-2016. Appendix E supplies more detailed cost and savings figures and describes PTI's cost estimation methodology and associated assumptions.

Estimated Net Cost Savings

	FY13-FY16 Total		Ongoing Annual	
	Low	High	Low	High
<b>Estimated Savings<sup>3</sup></b>				
End User Computing	\$8,953,682	\$12,710,309	\$4,476,841	\$6,355,155
Servers and Network	\$8,112,237	\$16,224,474	\$3,810,178	\$7,620,355
Telecommunications	\$7,669,049	\$12,038,412	\$3,509,936	\$5,527,702
IT Contractors	\$8,354,090	\$13,288,961	\$3,712,929	\$5,906,205
Non-IT Administration and Support Labor	\$2,430,194	\$3,909,738	\$1,215,097	\$1,954,869
Overhead	\$1,323,562	\$2,170,486	\$620,395	\$1,016,377
<b>Total Estimated Savings</b>	<b>\$36,842,815</b>	<b>\$60,342,381</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>
<b>Estimated Costs<sup>4</sup></b>				
Goods/Services	(\$2,558,000)	(\$2,558,000)	(\$220,000)	(\$220,000)
Staffing/Personnel	(\$1,975,583)	(\$1,975,583)	(\$404,461)	(\$404,461)
Contingency Costs	(\$226,679)	(\$226,679)	(\$31,223)	(\$31,223)
<b>Total Estimated Costs</b>	<b>(\$4,760,262)</b>	<b>(\$4,760,262)</b>	<b>(\$655,684)</b>	<b>(\$655,684)</b>
<b>TOTAL NET SAVINGS</b>	<b>\$32,082,553</b>	<b>\$55,582,119</b>	<b>\$16,689,692</b>	<b>\$27,724,979</b>

**It is important to note that these figures represent minimum estimated savings.** It is likely that additional savings – potentially in the low millions annually – can be realized from efficiency gains and cost avoidance that were not quantified as part of the scope of this study. These include:

- ◆ Additional IT labor efficiencies in database, security, and storage administration

<sup>4</sup> Low and high-end savings estimates based on efficiency targets, detailed in Appendix E. Estimated goods and services savings result from implementation of recommendation #2: optimize IT infrastructure; assumes 25% of potential annual savings realized in FY14 and 100% thereafter. Estimated labor savings result from implementation of recommendation #3: reduce IT labor; assume 25% of potential annual savings realized in FY14, 75% in FY15, and 100% thereafter.

<sup>5</sup> All cost figures provided by the Commonwealth. Estimated costs do not include one-time costs for professional, third-party change management services to guide the implementation of PTI's recommendations. Figures are not adjusted for inflation.

*It is important to note that these figures represent minimum estimated savings. It is likely that additional savings can be realized from efficiency gains and cost avoidance that were not quantified as part of the scope of this study.*

- ◆ Centralized/standardized data storage infrastructure
- ◆ IT facilities power savings
- ◆ Reduced application redundancy
- ◆ Centralized/standardized IT purchasing, contract negotiations and ongoing contract management
- ◆ Improved capital IT project performance

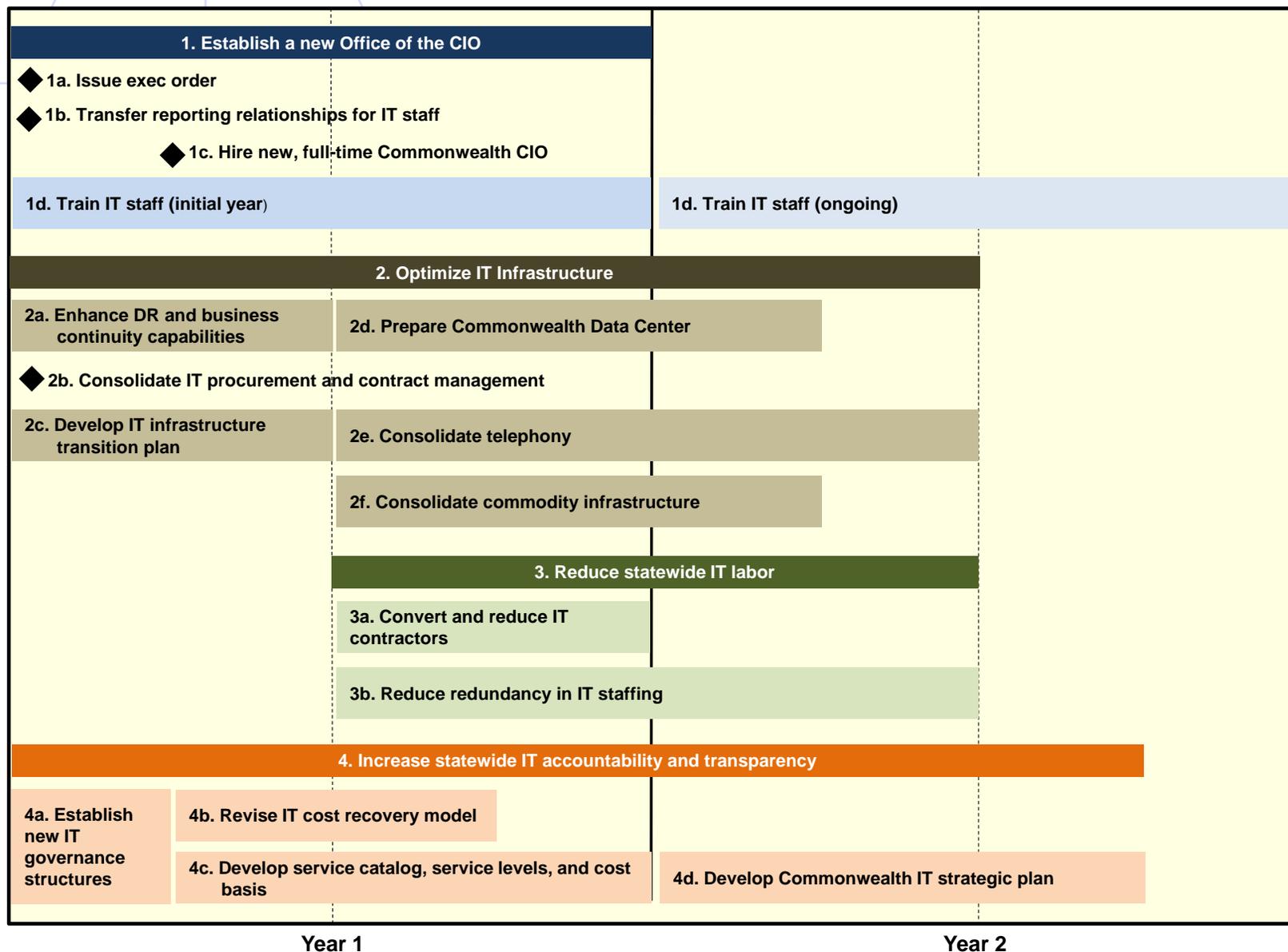
It is also important to note that the Commonwealth could achieve moderate cost savings beginning in FY2013 should it choose to accept greater risk by more aggressively implementing the recommendations. Chapter 3 further describes these cost savings, including an alternative schedule to achieving greater savings earlier. Appendix D details PTI's cost savings estimation methodology.

### Implementation Schedule

The following figure translates the IT governance and service delivery recommendations summarized here and detailed within chapter 3 into a high level set of implementation activities placed on a three-year timeline. Note that the black diamonds denote milestone activities.

## Proposed Implementation Schedule

1



## Transition Considerations

The challenges outlined above are not news to the Commonwealth, nor is this the first attempt at streamlining IT. Shared IT services is no panacea. Kentucky, along with other states, has tried and failed in the past. Key reasons why these efforts fail include:

- ◆ Ambiguously defined authority for the CIO
- ◆ Failure to move agency staff supporting shared services to the central provider
- ◆ Resistance from customer agencies
- ◆ Inadequate skill levels within the central IT organization
- ◆ Lack of clear goals and success measures

*What will be different this time? In a nutshell, broader authority, greater accountability, better customer service, and focus on enterprise cost control.*

Accordingly, these recommendations may sound familiar. What is different this time? In a nutshell, broader authority, greater accountability, better customer service, and focus on enterprise cost control. The following transition considerations are intended to ensure that the recommendations from this report succeed.

- ◆ **Take expedient action** – In less than two years, many of the Smart Government Initiative recommendations have been implemented and are already saving the Commonwealth millions of dollars annually. To realize the projected savings from these recommendations, the Commonwealth will need to take similar expedient action. Most immediately, Kentucky should focus on putting in place the structural foundations for long-term change:
  - **New IT governance structures** – A new CIO advisory council and capital IT project oversight and review board will improve statewide IT accountability and transparency and provide a forum for agency input.
  - **Senior-level transition team and detailed plan** – A small team – with the authority to implement change and the accountability for results – is essential to realizing the benefits outlined in this report. The SGI IT steering committee, augmented with a representative of the Office of the State Budget Director, would be well positioned to consider agency input while the Commonwealth transitions IT infrastructure staff and develops a new shared IT cost recovery model and service catalog.
  - **Transfer of all agency shared IT services staff to the new office of the CIO** – To achieve targeted cost savings and ensure that the new shared IT services organization has needed skill sets, it is crucial that all staff performing shared IT services report to the Commonwealth CIO – and that this shift in reporting relationships occur expediently. The executive order for this must have as little room for exception as possible.

- ◆ **Build trust and confidence in the new office of the CIO** – Hiring the right Commonwealth CIO is key to establishing the new office as a responsive, cost-effective service provider. Equally important is to manage the transition in stages, demonstrating early successes on the road to full implementation.
- ◆ **Establish measurable success targets** – This study quantifies potential cost savings, staff reductions, risk mitigation, and service level improvements. Achieving them will require the Commonwealth to establish baseline values and periodically measure performance against them.
- ◆ **Make necessary investments** – While the benefits of this undertaking are significant, they cannot be achieved without spending money on data center improvements, infrastructure upgrades, staff training, and related costs.
- ◆ **Build capability in the shared services provider** – These recommendations increase the Commonwealth's reliance on a single service provider. The shared services organization will likely need training in both management and technical areas in order to successfully transition into its role.
- ◆ **Communicate clearly to preempt political and personnel issues** – Any endeavor of this magnitude will meet organizational resistance. A change management plan with a clear process for communications and issue resolution is critical to overcoming barriers.

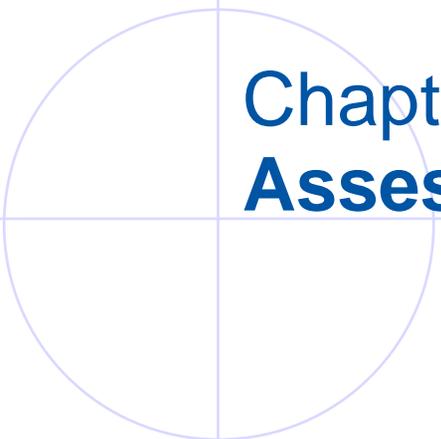
## Conclusion

As the Commonwealth deals with its worst fiscal crisis since the Great Depression, it must look at new ways of doing business. These should be viewed not as temporary cost saving measures while waiting for a better economy, but as opportunities to fundamentally improve how the Commonwealth serves its citizens. Along with the identified cost savings, implementing the recommendations in this report will result in:

*These recommendations should be viewed not as temporary cost saving measures, but as an opportunity to fundamentally improve how the Commonwealth serves its citizens.*

- ◆ **Agencies focused on deploying applications to improve delivery of government services** – Freed from the burden of operating IT infrastructure and managing a staff of related specialists, agency CIOs will be able to concentrate their efforts on the applications which are essential to improving staff efficiency and delivering services directly to citizens.
- ◆ **Management of the technical infrastructure as a utility service** – Behind the scenes, providing the underlying IT infrastructure as a shared utility lowers costs, provides appropriate service levels, manages technical skill set demands, and positions Kentucky to take advantage of future sourcing alternatives.
- ◆ **Enhanced IT security** – Locating servers in the Commonwealth Data Center and standardizing Kentucky's IT infrastructure will greatly reduce security vulnerabilities and ensure the privacy of citizen data stored in agency systems.
- ◆ **Improved ability to resume operations after a disaster** – Servers and infrastructure housed in the CDC can affordably benefit from a single business continuity/disaster recovery site, unlike those in agency IT facilities. This allows agencies to quickly resume operations in event of an emergency. Additionally, the CDC is much more disaster resistant than other IT facilities used by the agencies.
- ◆ **Better data integration and decision support information** – A shared technical infrastructure environment will remove technical barriers to application and data integration. An enterprise architecture group focused on a commonwealth wide view of automation and information management will yield long term benefits in Kentucky's ability to get value out of its significant investment in information and application software assets.

As noted, the actions recommended by this study have been tried before, with limited success. They bring benefits to the agencies far beyond cost cutting. But, without the motivation supplied by budget reductions, these changes have been seen as more trouble than they are worth. The present fiscal situation presents an opportunity to improve IT at the Commonwealth which will pay dividends for many years to come.



## Chapter 2

# Assessment Findings

The full scope of this assessment included the Executive Branch of Kentucky's government, with the exception of boards and commissions, departments headed by constitutional officials, and the departments delivering direct educational services. PTI conducted interviews and working sessions with cabinet executives and IT professionals to gain a qualitative perspective on IT organization and service delivery needs and issues at the Commonwealth. Agencies provided detailed IT cost and labor data. Some smaller departments, primarily within the General Government cabinet, were exempted from this survey due to their lack of IT staff and modest budgets.

Surveyed agencies provided estimates of permanent IT staff and contractor labor allocations applied to a detailed matrix of IT service functions (see Appendix C) and indicated whether staff was located inside or outside of Franklin County. Surveyed agencies also supplied inventories of servers, PCs, mobile devices, storage, communications equipment, and similar IT infrastructure. For each of these inventory items, respondents indicated whether they were located inside or outside Franklin County, and whether the equipment was supported by the agency or COT. Finally, respondents provided counts and locations for their IT facilities, and rated them on a five-step condition scale. Note that the study did not assess the efficiency or effectiveness of agency business applications.

PTI analyzed this information, comparing it against our proprietary database of public sector benchmarks as well as benchmarks from other consulting organizations. We augmented this analysis with best practices research, interviews with other states, conversations with experts and vendors in the IT industry, and our own experience and marketplace knowledge.

PTI also examined IT governance and funding at the Commonwealth. To this end, PTI conducted interviews and working sessions with over 100 cabinet executives and senior commonwealth staff, including representatives from every cabinet. We reviewed the Kentucky Revised Statutes (KRS) governing information technology, COT, and IT capital project reporting as well as the charters for existing governance and standards setting committees and councils. We worked with COT's Office of Enterprise Technology and IT Governance Unit to clarify the Commonwealth's existing governance bodies and processes, IT capital project planning and reporting, and COT service rate structures.

This chapter presents PTI's resulting assessment findings, organized as follows:

- ◆ IT governance and funding
- ◆ IT organization and service delivery

## IT Governance and Funding

Numerous definitions of IT governance exist. In a 2008 brief, the National Association of State Chief Information Officers (NASCIO) defined IT governance in this way:

“IT Governance is all about ensuring that state government is effectively using information technology in all lines of business and leveraging capabilities across state government appropriately to not only avoid unnecessary or redundant investments, but to enhance appropriate cross boundary interoperability.”<sup>6</sup>

More recently, the Information Technology Governance Institute (ITGI) states that:

“Effective governance of IT helps ensure that IT supports business goals, optimizes business investment in IT, and appropriately manages IT-related risks and opportunities.”<sup>7</sup>

For the purposes of this study, PTI defines IT governance as the combination of **structures and processes** that align information technology and related investments with the Commonwealth’s business priorities. It helps ensure that IT resources are used to maximize efficiency and effectiveness and that IT-related risks are managed appropriately.

The remainder of this section details our findings related to the Commonwealth’s approach to IT governance and funding, organized as follows:

- ◆ IT governance at the Commonwealth
- ◆ IT spending and funding at the Commonwealth
- ◆ Findings

### IT Governance at the Commonwealth

While numerous councils, committees, and advisory boards play a role in IT governance at the Commonwealth, PTI focused on the roles and duties of the Chief Information Officer, Commonwealth

*PTI defines IT governance as the combination of structures and processes that align information technology and related investments with the Commonwealth’s business priorities. It helps ensure that IT resources are used to maximize efficiency and effectiveness and that IT-related risks are managed appropriately.*

<sup>6</sup> “IT Governance and Business Outcomes – A Shared Responsibility between IT and Business Leadership.” NASCIO Governance Series. Lexington, KY. 2008.

<sup>7</sup> “IT Governance Institute Fact Sheet,” <http://www.isaca.org/About-ISACA/Press-room/Pages/ITGI-Fact-Sheet.aspx> (accessed April 26, 2012).

Technology Council, Enterprise Architecture Standards Committee, and Capital Planning and Advisory Board.

### **Chief Information Officer**

Chapter 42.730 of the Kentucky Revised Statutes (KRS) outlines the roles and duties of the executive director of the Commonwealth Office of Technology, otherwise known as Commissioner of the Commonwealth Office of Technology or the CIO:

“The executive director of the Commonwealth Office of Technology shall be the principal adviser to the Governor and the executive cabinet on information technology policy, including policy on the acquisition and management of information technology and resources...The executive director shall carry out functions necessary for the efficient, effective, and economical administration of information technology and resources within the executive branch.”

Since October 2010, the secretary of Finance and Administration has also been serving as the interim CIO, while a different individual has been in the position of Commissioner of COT. In the last 10 years, leadership of Kentucky’s shared technology services organization switched hands nine times.

### **Commonwealth Technology Council**

The Commonwealth Technology Council (CTC), formed from cabinet and agency chief information officers (CIOs), is chartered to assist the Commissioner of Technology in targeting and delivering IT resources for maximum business value for the Commonwealth. The CTC was formed to: provide comments and recommendations on policy, direction, planning and legislation; identify opportunities and conduct joint planning for shared services implementation, sourcing, investments, and cost recovery; and provide stewardship for other state IT programs and projects.

### **Enterprise Architecture Standards Committee**

The Enterprise Architecture Standards Committee (EASC) was established in 2009 to assist COT govern the enterprise architecture and standards for the Executive Branch of Kentucky state government. Enterprise architecture and standards cover the broad spectrum of technology environments to include software, hardware, networks, applications, data, security, access, communications, project management and other relevant architecture disciplines. Currently, the committee’s purview includes 10 enterprise architecture domains and over 100 enterprise standards. The goal of the committee is to enhance coordination, simplify integration, build a consistent infrastructure, and generally allow greater efficiencies in the development of technology solutions.

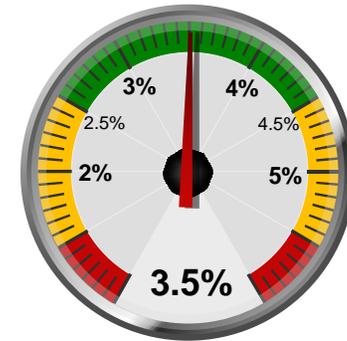
**Capital Planning Advisory Board**

Chapter 7A.100 of the Kentucky Revised Statutes establishes the Capital Planning Advisory Board (CPAB). The CPAB represents all three branches of government and is charged with preparing the comprehensive biennial statewide capital improvement plan and making funding recommendations for capital projects. In addition, a separate Capital IT Project Scoring Team reviews capital IT projects during the budget process and recommends projects to the CPAB.

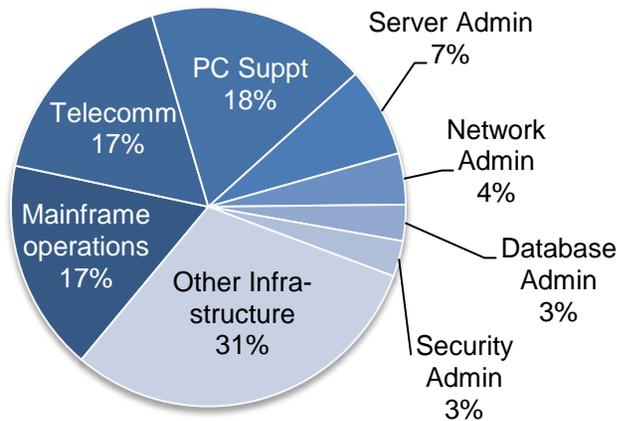
**IT Spending and Funding at the Commonwealth**

The Commonwealth of Kentucky reported \$358.52 million in Executive Branch IT spending for FY2011. For the purposes of this assessment, and to enable “apples-to-apples” benchmark comparisons, PTI reduced this figure to remove capital IT spending (\$69.14 million), non-IT administration (\$22.13 million) and non-surveyed agency IT expenditures (\$63.55 million) as well as to adjust for agency self-reported overhead, IT staff, and contractors costs (\$15.18 million). The resulting annual IT spending figure PTI used for our analysis in this chapter is \$188.52 million. This figure represents 3.5% of the Commonwealth’s overall operational spending

**IT Spending as a % of Operational Spending**



**IT Infrastructure Spending (\$85.5M)**



(similarly adjusted)

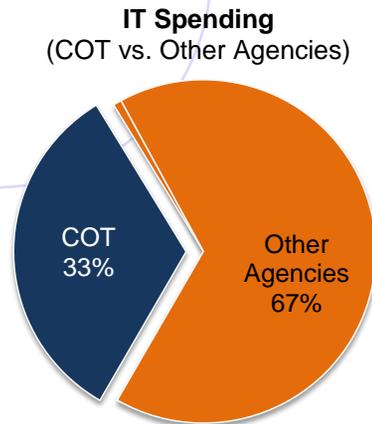
– well aligned with both PTI’s target range, illustrated to the right, and Gartner’s 2011 state and local public sector benchmark of 3.6%.<sup>8</sup>

IT infrastructure-related goods and services and personnel constitute 44% of this spending – approximately \$85.5 million each year. Sixty percent of this is spent on four IT infrastructure services: telecommunications, mainframe operations, PC support, and server administration, as illustrated to the left.

KRS 42.720 thru 42.736 grant statutory authority to the Commonwealth Office of Technology to administer IT in the Executive

<sup>8</sup> Jamie K. Guevara, Linda Hall, Eric Stegman, “IT Key Metrics Data 2012: Key Industry Measures: Government: State and Local Analysis: Multiyear.” Gartner. December 15, 2011.

Branch. However, COT may choose to delegate that authority to agencies for unique or highly specialized IT needs. In recent years, this delegated authority has led to increasing levels of IT spending outside of COT. Today, COT administers only one-third of the Executive Branch IT spending, as illustrated below.



COT offers 12 distinct technology services, including voice and data communications, messaging services, desktop device support, backup and storage services, security services, mainframe processing, server support, printing services, video conferencing, and other services. COT “charges back” these services to other agencies utilizing a combination of an enterprise assessment fee and rated services. Service rates are calculated based on total personnel, goods and services, and associated overhead costs to deliver the service divided by units sold or used (e.g., counts of desktop devices, servers, handsets, mailboxes). The Office of the State Budget Director introduced a new enterprise assessment fee in 2011. This fee includes non-rated COT services such as enterprise architecture, standards, and policies; disaster recovery and business continuity; security; and COT management and administration. It is allocated to the agencies based on the number of email boxes during the prior biennium.

*The current part-time nature of the CIO combined with the historically high turnover in this position makes it difficult to establish and move toward a long-term IT vision.*

## Findings

- ◆ **Unlike most other states, Kentucky does not have a full time CIO – inhibiting the Commonwealth’s ability to establish long-term IT direction.**

As previously stated, Kentucky’s Secretary of Finance and Administration serves as the Commonwealth’s interim CIO. This is in stark contrast to nearly every other state, which has a full-time CIO or equivalent leading its central IT organization.

*The current part-time nature of the CIO combined with the historically high turnover in this position makes it difficult to establish and move toward a long-term IT vision. For example, while COT developed a strategic IT plan for 2010-12, it was created under the leadership of the previous CIO and little has been done to track progress against its three primary goals.*

- ◆ **The lack of an effective IT advisory body diminishes agency input on strategic IT direction and contributes to a perception of COT as lacking a customer orientation.**

While the Commonwealth Technology Council was originally established as a forum for cabinet and agency CIOs to participate in IT planning and direction setting, today it serves more as an audience for COT updates on ongoing projects and initiatives. With more than 35 cabinet and agency CIOs, 12 agency representatives, and 17 COT executive directors and directors, membership has become unwieldy, rendering the council ineffectual.

*As a consequence, agencies are disenfranchised from the IT decision-making process and COT loses valuable input from its customers – resulting in a lack of confidence in COT as trusted shared service provider.*

◆ **The existing approach to funding IT is complex and not tied to service levels – contributing to a lack of trust in COT and an inability to compare services with private sector offerings.**

COT charges agencies for its rated services using 36 unique activity codes plus an enterprise assessment fee. Billing relies upon a complex combination of five separate automated systems, numerous spreadsheets, and manual entries. Agencies find these bills difficult to reconcile for budgeting purposes. Additionally, services are tied to agency consumption, and not to COT levels of service (e.g., system uptime, service availability, average time to problem resolution). The latter approach encourages agencies to manipulate their consumption, a tactic that may reduce the agency's bill but does not reduce IT expenditures from an enterprise perspective.

*Complex billing and lack of service levels further contribute to a lack of trust in COT as a reliable, cost-effective service provider. It also inhibits the Commonwealth's ability to compare the costs and service levels of COT to private sector alternatives and encourages decisions that do not consider the balance sheet of the Commonwealth as a whole.*

◆ **The Commonwealth has had difficulty delivering major capital IT projects.**

While the Capital IT Project Scoring team and the Capital Planning Advisory Board review and recommend capital projects for approval, and separate capital project steering committees provide implementation guidance for individual projects, Kentucky has no statewide capital IT project review board to oversee the portfolio of ongoing IT projects and monitor the realization of benefits after implementation. The Commonwealth initially embarked on its largest enterprise-wide technology project – the implementation of the Kentucky Human Resource Information System (KHRIS) – in 2004. While the system is now live, the project ran over budget, past schedule, and a 2012 state audit found errors and improper payments during the transition period. Similarly, Kentucky's upgrade of its tax collection system in 2010 resulted in cost and schedule overruns.

*Complex billing and lack of service levels contribute to a lack of trust in COT as a reliable, cost-effective service provider.*

*Without a structure to provide independent oversight for Kentucky's capital IT projects, the Commonwealth continues to risk significant project cost and schedule overruns.*

◆ **Vendor contract management is inconsistent.**

The Commonwealth has a large number of contracts for IT goods and services, with oversight responsibility distributed across the agencies.

*This structure makes it difficult to effectively monitor vendor performance and serves as a barrier to maximizing cost savings through supply chain management.*

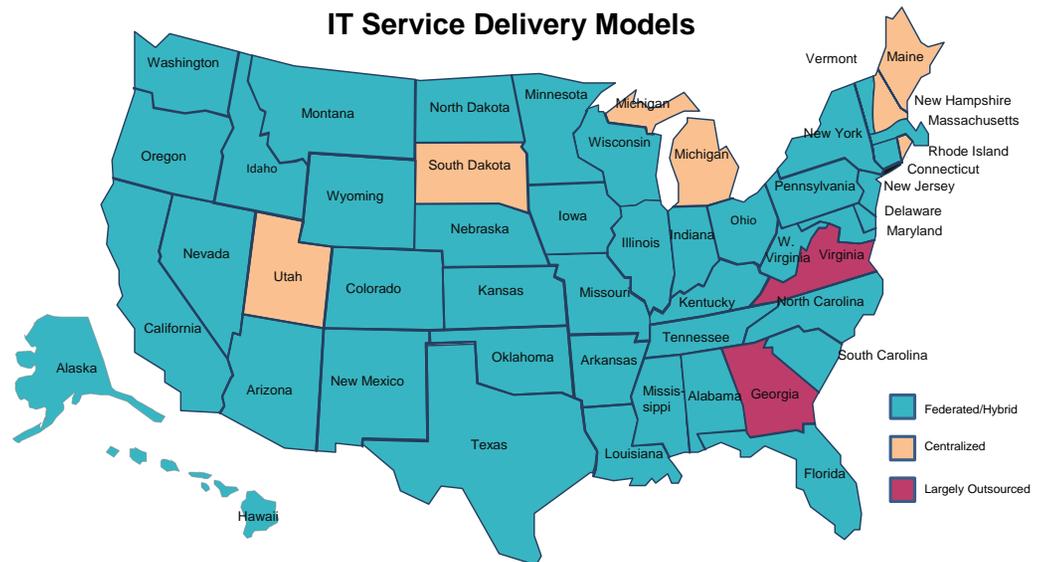
**IT Organization and Service Delivery**

This section presents PTI's findings related to the Commonwealth's approach to staffing IT services, including labor effort and the geographic distribution and reporting relationships of employees and contractors providing IT labor. We have organized it as follows:

- ◆ IT service delivery at the Commonwealth
- ◆ Findings
- ◆ Potential cost savings

**IT Service Delivery at the Commonwealth**

Kentucky uses a federated IT service delivery model, as do the majority of states. In Kentucky's instance, COT provides central IT services, with most cabinets and departments also having their own IT staff and services. Common problems with this distributed approach include higher labor costs, duplicate infrastructure, increased skill set demands, and redundant application platforms. In spite of these issues, only a handful of states have elected to fully centralize or outsource their



IT services, as shown by the map on the previous page.

A few states have failed at attempts to centralize or outsource. Colorado centralized IT staff, but a subsequent audit was unable to quantify the realization of projected savings. Texas began an outsourcing project, but fell into a dispute with the vendor and abandoned its original approach. Kentucky's own efforts at centralizing IT resulted in a handful of consolidated agencies, but stopped short of full adoption. These unsuccessful efforts highlight the criticality of effectively managing the transition considerations outlined in this report's executive summary.

**Shared Services**

Most states have chosen to reduce IT cost and redundancy through shared services. This approach designates a provider for specific IT services, used by some or all state agencies. The designated provider may be a central agency, an outside vendor, or a mixture of both. As indicated in the table below, Kentucky resembles the majority of states in having many planned and ongoing shared services initiatives, but few complete ones.

*Most states have chosen to reduce IT cost and redundancy through some level of shared services.*

**Statewide Shared Services Initiatives**

■ (Commonwealth position in green)

Service	Planned	Ongoing	Complete
Telecom	8%	27%	65%
Email	20%	42%	38%
Data centers	20%	48%	32%
Security	22%	35%	43%
Backup/disaster recovery	17%	54%	29%
Servers	21%	58%	21%
Storage	28%	46%	21%
Content management	33%	43%	25%
Desktop support	37%	37%	26%
Business applications	35%	57%	8%
Staff	43%	34%	23%
Imaging	17%	26%	17%

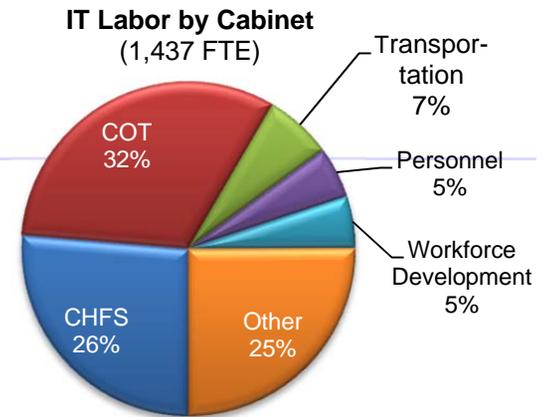
Source: NASCIO's 2011 Survey of State CIOs

### IT Labor Allocation

Surveyed agencies report a combined IT labor force of 1,437 FTEs, including contractors. Approximately two-thirds of this labor resides in agencies other than COT. Outside of COT, the Cabinet of Health and Family Services (CHFS) has the largest IT staff of any agency, representing about one-fourth of the total as illustrated to the right.

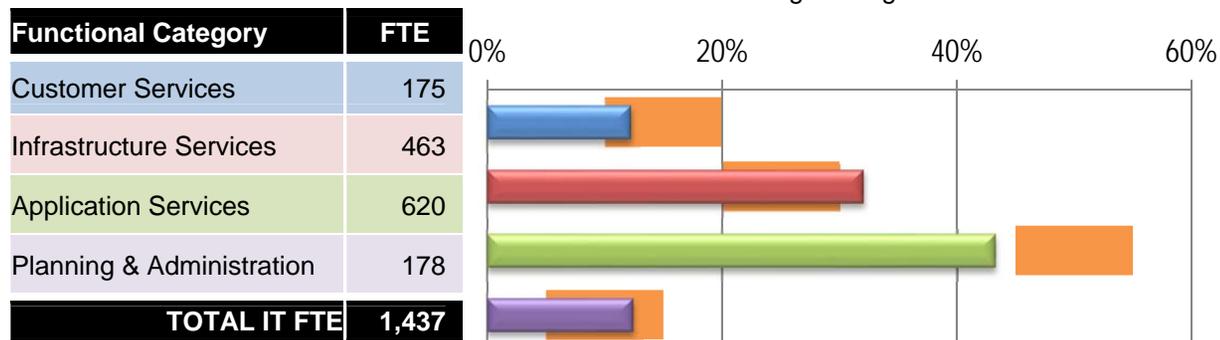
Agencies provided detailed IT labor estimates across four IT functional categories, illustrated below and further defined in Appendix C.

At the enterprise level, Kentucky's IT labor allocation is largely within PTI's target ranges.<sup>9</sup> Organizations striving for IT excellence typically seek to increase the allocation of staff to application services, reasoning that this delivers the best business value for IT investment. As a corollary, many shared services initiatives focus on efficiency gains in customer services (e.g., help desk, end user support) and infrastructure services (e.g., mainframe, server and storage administration, network, telephony), thus freeing up resources for applications. Labor savings may also be realized through common application platforms, coordinated IT planning, and shared IT administrative functions.



### IT FTE Allocation by Functional Area

PTI Target Range ■



<sup>9</sup> PTI maintains and annually updates a database of public sector IT benchmarks based on nearly 20 years of data.

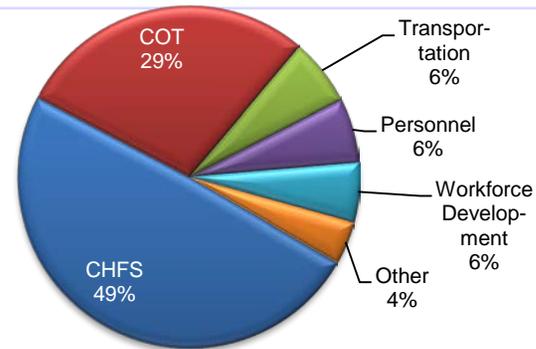
### IT Contractor Usage

Analysis of surveyed agency responses indicates that 28% of Kentucky's IT labor – 409 FTEs – is provided by contractors. This contrasts with a 2011 Gartner survey, which shows government agencies having a contract workforce of 13% on average. Because contractors are about 50% more expensive than the fully burdened cost of permanent staff in Kentucky, they comprise 37% of the Commonwealth's IT labor costs.

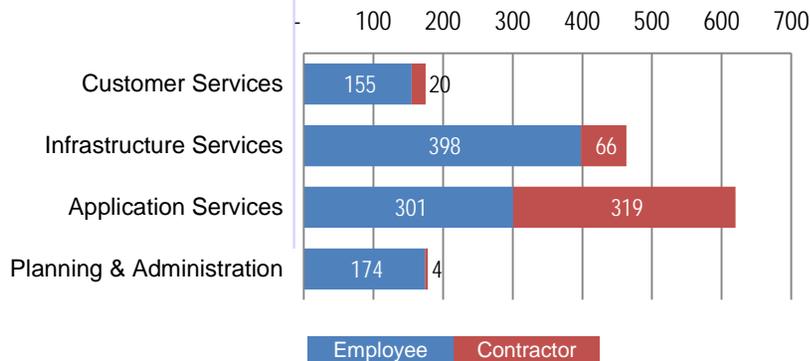
More than three-fourths of the contractors are used for application services. The great majority of these work on agency-specific applications, most of them custom developed. The Cabinet of Health and Family Services retains approximately half of the contractors, and COT nearly a third.

Contractors are most effectively used to provide skills not easily obtained in permanent staff and to deal with short-term workload peaks. Interviews with agency management indicated that the MERIT system makes it difficult to pay market salaries for specialized IT skills, contributing to the high levels of contractor usage – and some reliance on contractors for permanent workloads. Kentucky has only recently started to track the tenure of contractors, so data is not yet available to analyze their length of deployment.

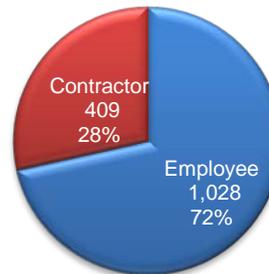
Contractor Usage by Cabinet



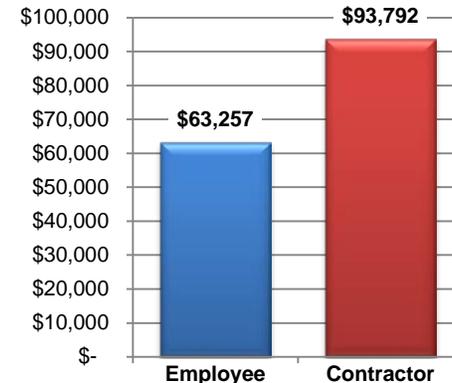
Contractor Allocation by IT Functional Area



Contractor Portion of IT Labor (FTE Level)



Average Cost Per FTE



### IT Infrastructure Distribution

About half of the workstations used by Kentucky agencies are located in Franklin County, with the remainder located throughout the Commonwealth. One-fourth of Kentucky's workstations are consolidated under COT support.

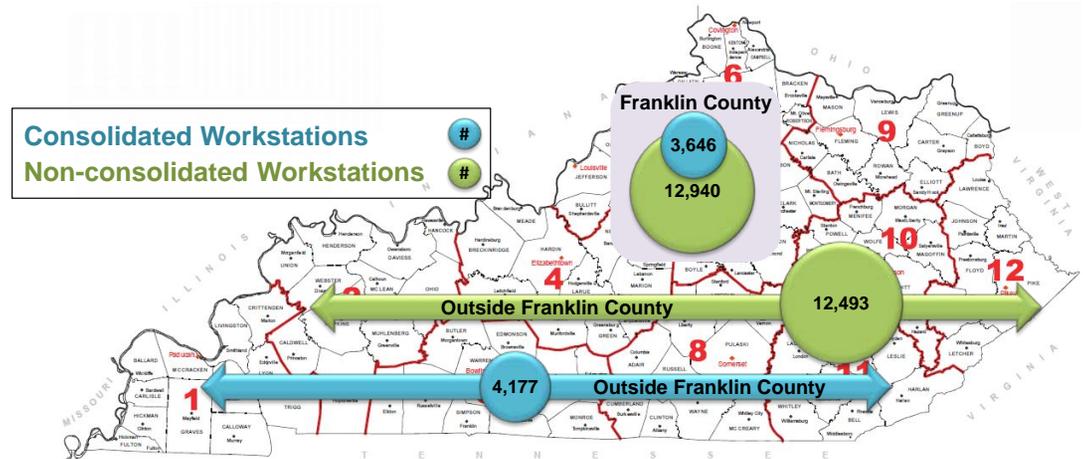
Workstations are by necessity located near their users, requiring a geographically dispersed support staff. Remote support and monitoring tools can reduce the need for onsite technicians, but these require a standardized desktop configuration. COT currently has a standardization project underway for consolidated agency workstations. Non-consolidated agencies are free to choose their own configurations.

Approximately one-third of Kentucky's servers are located outside of Franklin County. Similar to workstations, about one-fourth of the total are supported by COT, and about one-third of these are outside Franklin County as well.

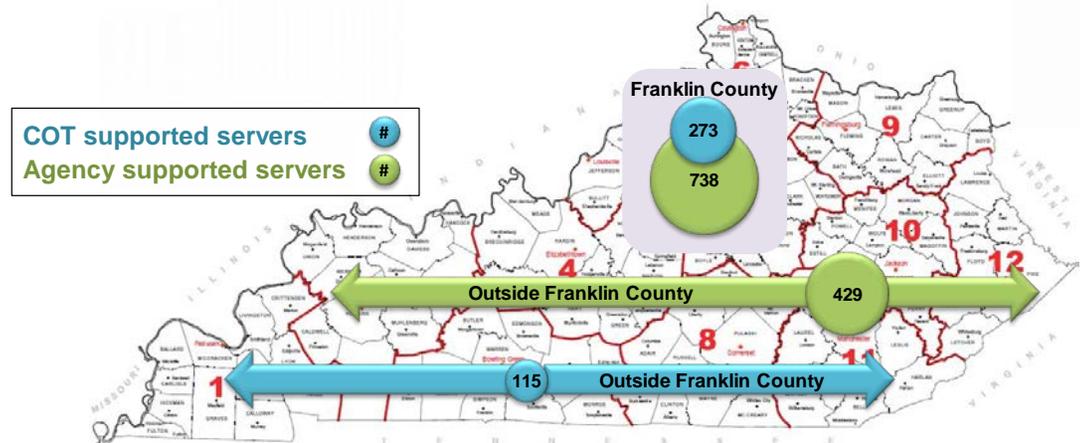
Unlike workstations, servers can often be centrally located, provided the requisite network capacity is available. Kentucky's recent network upgrades have created this capability for the Commonwealth.

*Servers can often be centrally located, provided the requisite network capacity is available. Kentucky's recent network upgrades have created this capability for the Commonwealth.*

Distribution of Workstations



Distribution of Servers



COT maintains a robust, enterprise-level data center with best-practice components at the Commonwealth Data Center. It is a Tier 3<sup>10</sup> equivalent center – the Commonwealth does not have a Tier 4 data center, as these are very costly. As of this writing, CDC has no backup facility to provide business continuity in the event of a disaster. Kentucky has issued an RFP for this service.

In addition to the designated Commonwealth Data Center, agencies have a large number of facilities housing IT infrastructure. These would all rate as Tier 1 or below. To evaluate risk and redundancy, PTI asked the agencies to characterize the location and condition of these facilities as shown below. Appendix D defines the five-step condition scale.



Location	Designed	Adapted	Ad Hoc	Closet	Open	TOTAL
Franklin	13	11	42	47	2	115
Other	1	38	8	241	150	438
<b>TOTAL</b>	<b>14</b>	<b>49</b>	<b>50</b>	<b>288</b>	<b>152</b>	<b>553</b>

*Kentucky has a large number of IT facilities, exposing the Commonwealth to significant security and business interruption risk.*

This is a large number of facilities, with an average of only three servers per facility. Four hundred thirty of these are completely inadequate, with servers either in the open or housed in converted closet space. This exposes the Commonwealth to significant security and business interruption risks.

Designed facilities address these risks, but are more costly to construct and operate. Agencies report 14 of these in total, 13 of which are in close proximity. The Commonwealth has duplicated a significant amount of operationally expensive IT infrastructure.

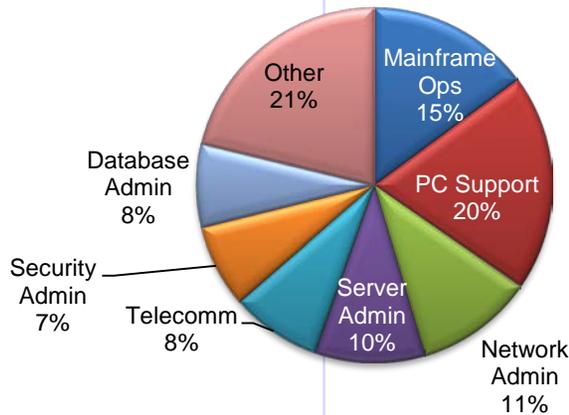
<sup>10</sup> Using the tiered scale of the Uptime Institute, defined in Appendix D.



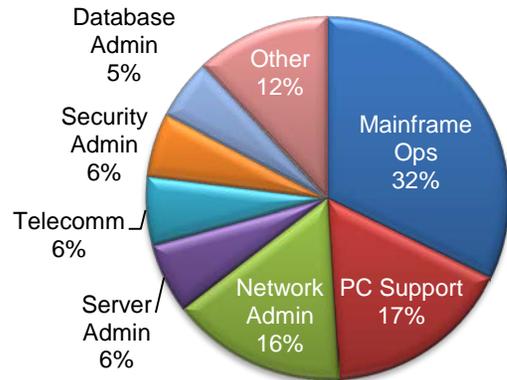
### IT Infrastructure Support

The lower left pie chart shows surveyed agencies' allocation of IT infrastructure support by major function. The middle chart shows this for COT, and the right-hand chart for other agencies. COT is the sole provider of mainframe operations. For all other infrastructure services, there is significant overlap between COT and the agencies. These "behind the scenes" services are particularly suited to the economies of scale possible with a single provider.

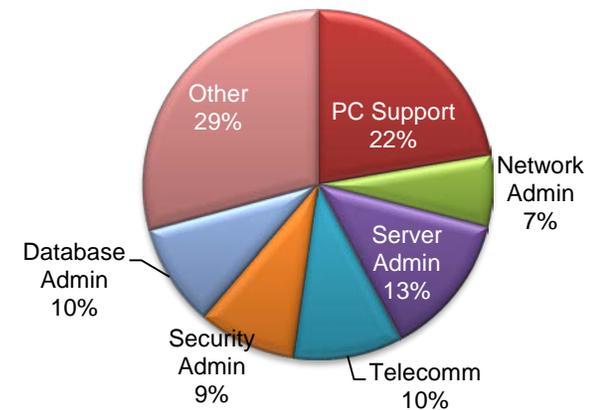
**Total IT Infrastructure Labor**  
(463 FTE)



**COT IT Infrastructure Labor**  
(217 FTE)



**Other Agency IT Infrastructure Labor**  
(247 FTE)



### Server Support Ratios

	Server Support FTE	Server Count	Support Ratio
COT Wintel	6.83	358	52:1
Agency Wintel	27.92	1,103	40:1
COT UNIX/AIX	6.33	180	28:1
Agency UNIX/AIX	2.26	64	28:1

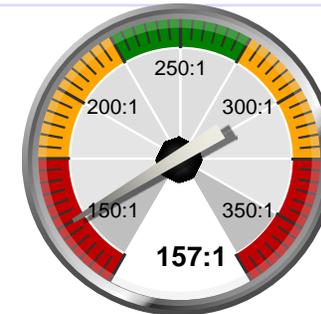
An important measure of service efficiency is the ratio of servers to support staff. Several factors influence this ratio. PTI typically finds a range of 30:1 to 40:1 in most government organizations. Wintel-based servers typically require less support than other platforms. Three "zations" – centralization, standardization, and virtualization – also reduce support demands. Many organizations report ratios of 70:1 or better after implementing these.

As shown in the table to the left, support ratios are near expected values given the distributed environment and limited degree of virtualization. Wintel support ratios are better than UNIX/AIX, and COT is somewhat more efficient than the agencies in Wintel support.

An even more important measure of service efficiency is the ratio of workstations to support staff. For most enterprises, workstation support is the single largest IT infrastructure service line in terms of labor.

PTI's methodology for calculating workstation support ratios includes IT labor from both the Customer Services and Infrastructure Services functional categories. Within Customer Services, labor totals include Help Desk (Tier 1) and Tier 2 support for desktops and laptops. Support for printer, smartphones, and other mobile devices are excluded, along with support for business applications. Within Infrastructure Services, "back-office" tasks such as upgrades, image management, and maintenance are included. These tasks are excluded for printer, smartphones, and other mobile devices.

**Workstation Support Ratio**

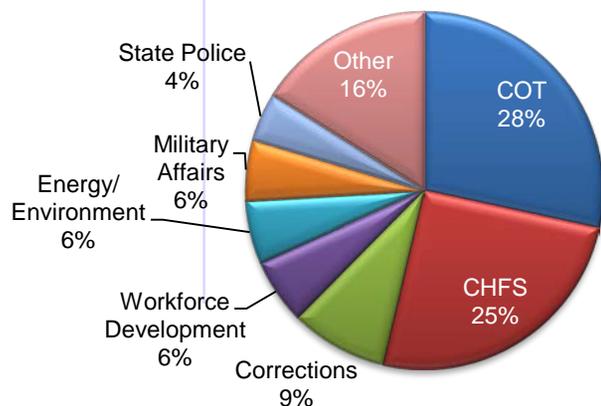


Using this methodology results in an enterprise workstation support ratio of 157:1. This is below the target range of 225:1 to 275:1, which PTI finds in high performing IT service organizations.

Workstation Support FTE	Desktops + Laptops	Support Ratio
214	33,606	157:1

Typical causes for suboptimal support ratios include lack of workstation standards, lack of remote maintenance and upgrade tools, and geographic dispersion of the workstations and support teams.

**Workstation Support by Agency (214 FTE)**



Measurements using this methodology result in slightly different figures than those shown earlier for the size of Franklin County workstation versus field technician teams, as the field techs also provide some network and server support. These figures also include help desk labor. The conclusions are similar – COT and CHFS have the largest amount of workstation support labor, and several other agencies report significant levels.

**Application Support**

As indicated earlier, applications are the IT service area representing the largest labor component in the surveyed agencies, at 620 FTEs. As shown by the figure on the following page, over 60% of application support staff reside within CHFS and COT.

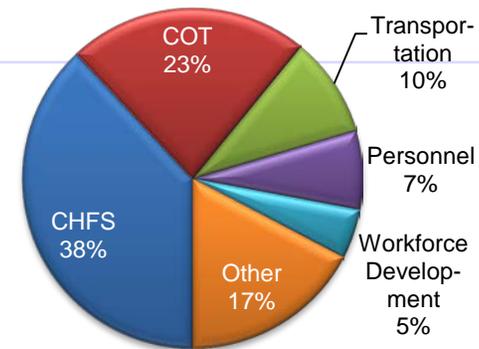
Assessment of support for agency-specific business applications was not within the scope of this study. As depicted in the graphic, these make up nearly three-fourths of the labor effort devoted to applications. The cabinets rely heavily on custom development in this arena. Note that the data included 20 FTE of project management labor not specifically assigned to agency or enterprise applications, thus these are not included in the chart.

Of the common enterprise applications, only three are centrally supported:

- ◆ KHRIS (human resources) by Personnel Cabinet
- ◆ eMARS (financial management) by Finance & Administration Cabinet
- ◆ Email by COT

Others are supported by multiple agencies, or in some instances hardly supported at all.

**Application Support by Cabinet**  
(620 FTE)



### Findings

PTI developed the following findings based on the quantitative data and benchmarks presented in the previous section as well as our interviews and working sessions with Commonwealth IT stakeholders and additional research.

◆ **Federated IT service delivery is inefficient for provision of commodity IT services.**

Because the majority of IT services are under agency control, they are optimized from an individual agency perspective and not an enterprise perspective. The result is a patchwork of duplicate services and disparate systems. Each major agency is burdened with the management of its own IT infrastructure.

*Kentucky's current IT service model increases labor and infrastructure costs, diverts agency focus from business operations, and impedes information sharing across the Commonwealth.*

◆ **Previous shared services efforts have had limited success.**

A number of factors have contributed to this. Disagreements about the realism of savings projections, ability of agencies to opt out, failure to move IT staff along with responsibilities, and

*Kentucky's current IT service model increases labor and infrastructure costs, diverts agency focus from business operations, and impedes information sharing across the Commonwealth.*

ambiguity in executive orders have made it difficult to achieve savings. In addition there has been insufficient recognition of benefits other than cost savings.

*This has led to reported low levels of trust and perceived capability between agencies and COT. These barriers must be overcome in order for Kentucky to benefit from shared IT service.*

◆ **IT contractors are costly and use exceeds industry benchmarks.**

Agency supplied figures show that contractors are 50% more expensive than permanent staff. At 28% of total IT staff the Commonwealth is far in excess of the 13% average recently reported by Gartner.

*Heavy reliance on contractors increases labor costs, risks loss of business and technical knowledge as contractors terminate, and diminishes career opportunities for permanent employees.*

◆ **Efficiency of some IT services is below benchmark levels.**

While overall IT spending and staffing are comparable to peers and within PTI's target benchmarks, specific services are performing below potential. The most obvious is workstation support, but telecomm, network, server, and other "back office" shared services are all candidates for efficiency improvement.

*These inefficiencies are missed opportunities to reduce labor expenditures and related overhead and indirect costs and/or to invest in other support areas – such as business applications – that can deliver more "bang for the buck" in operational efficiencies and direct customer services.*

◆ **Critical infrastructure is highly distributed.**

Agencies maintain a large number of IT facilities, at widely scattered locations, many of them in substandard condition. In addition, several agencies have higher quality IT facilities in close proximity around Frankfort, duplicating operationally expensive infrastructure.

*The proliferation of IT facilities exposes Commonwealth systems to security and disaster risks. It also increases support costs, wastes energy, and consumes valuable building space.*

◆ **A variety of infrastructure standards exist.**

COT is bringing the servers and workstations under its control into a standard, easily managed configuration with remote support capabilities. Non-consolidated agencies are free to choose their own configuration standards.

*Heavy reliance on contractors increases labor costs, risks loss of business and technical knowledge as contractors terminate, and diminishes career opportunities for permanent employees.*

*A variety of standards makes it difficult to centrally manage IT infrastructure. This increases security risks, requires additional skill sets, and drives support costs higher.*

◆ **Business continuity capabilities are limited.**

Kentucky has only one true data center, and it has no backup site. Agency IT facilities similarly have little or no backup site capability. A request for proposals has been issued for an alternate data center to backup mission-critical systems, but it will only apply to those housed in the Commonwealth Data Center.

*The current lack of a backup site risks timely return to operations after a disaster, and potential loss of data. Even with a new alternate data center, these risks will continue for systems located in agency IT facilities.*

◆ **Kentucky is poorly positioned for emerging trends in IT service delivery.**

The private sector is clearly moving to Infrastructure as a Service (IaaS), with simplified provision of bundled IT services. COT's service catalog is not easily compared to the private sector or to other government providers. The federated nature of IT services also makes comparisons challenging. Kentucky's IT expenditure coding is not designed to provide total cost by service, making sourcing alternatives difficult to compare.

*While Kentucky's IT service approach has been adequate for past needs, it is increasingly out of step with the marketplace. This will reduce ability to make informed service sourcing decisions, with lower quality and higher cost as a result.*

*The proliferation of IT facilities exposes Commonwealth systems to security and disaster risks.*



Chapter 3  
**Recommendations and Benefits**

This chapter presents PTI's recommendations, organized as follows:

- ◆ Recommendations
- ◆ Benefits
- ◆ Implementation Schedule
- ◆ Performance Measures

## Recommendations

Based on the assessment findings detailed in the previous chapter, PTI developed the following recommendations to enhance the effectiveness of IT governance, funding, organization, and service delivery at the Commonwealth.

1. Establish a new office of the Commonwealth CIO
2. Optimize IT infrastructure
3. Reduce statewide IT labor
4. Increase statewide IT accountability and transparency

The remainder of this section details these recommendations.

### 1. Establish a New Cabinet-Level Office of the Commonwealth CIO

PTI recommends the creation of a cabinet-level office of the Chief Information Officer (CIO). This recommendation gives the new office operational and budgetary control of the Commonwealth's IT infrastructure, computing equipment, and associated support staff.

With the creation of a Commonwealth CIO, agency-level CIOs would see a shift in their roles. They would no longer be responsible for IT infrastructure operations, instead focusing exclusively on the applications which automate agency business functions.

This recommendation lays the foundation for all of the cost savings, quality improvements, and risk mitigation envisioned by the study. It consists of four major activities, summarized in the remainder of this section.

#### 1a. Issue executive order.

PTI recommends initiating this office with an executive order from the governor. It will detail the responsibilities of the new office, specify which agencies are affected, and list the categories of IT

---

*The creation of a Commonwealth CIO allows agency CIOs to shift their focus from IT infrastructure options to agency applications in support of direct customer services.*

---

staff which will be transferred in from the agencies. Improving on past experience, the order should be as precise as possible, with very narrow scope for exception.

At a summary level, the new office of the CIO would be responsible for the list of items below. These are outlined in greater detail within the other recommendations and activities.

- ◆ Providing all IT infrastructure and end user computing services for the Executive Branch, including IT facility management, server, storage, and network administration, desktop support, telephony, IT security, disaster recovery and business continuity, database administration and related planning, administration, and procurement
- ◆ Ensuring that shared services and systems meet the varied needs of customer agencies
- ◆ Meeting performance targets for shared services provision
- ◆ Making optimum sourcing decisions for shared services
- ◆ Managing Kentucky's IT assets from an enterprise perspective
- ◆ Controlling costs with a view to the Commonwealth's bottom line
- ◆ Coordinating IT governance and strategic planning
- ◆ Ensuring that cost savings are achieved

*A well-written executive order is fundamental to establishing the authority of the new office and ensuring the success of the new IT service delivery model.*

#### **1b. Transfer reporting relationships for IT staff.**

In accordance with the executive order, the new office of the CIO would be comprised of existing IT infrastructure (e.g., servers, networks, storage, databases) and end user computing (e.g., PCs, laptops, phones) staff and contractors currently within other Executive Branch agencies. Reporting relationships for permanent IT staff, and management of IT contractors, would need to shift accordingly.

PTI recommends transferring existing COT IT infrastructure and end user computing staff out of the Finance and Administration Cabinet to the new office of the CIO as soon as the shift can be accomplished. All IT infrastructure and end user computing contractors working for COT would move under the Commonwealth CIO as well. Based on FY11 estimates, this would change reporting relationships for approximately 325 FTE of staff and contractors.

We also recommend expeditiously transferring all other IT staff within the Executive Branch who support end user IT equipment or IT infrastructure, along with contractors performing similar functions. Because many agency resources spread their time across multiple IT disciplines, estimates for the number of these staff and contractors, at approximately 380 FTE, are less precise than those for COT. Specifically, this includes staff and contractors supporting:

- ◆ Workstations and end user devices (e.g., laptops, printers, mobile devices, telephones)
- ◆ Servers and storage devices
- ◆ Data center operations
- ◆ Local and wide-area network devices and circuits, including video and telephony
- ◆ Database and security administration
- ◆ Disaster recovery and business continuity
- ◆ Select enterprise applications (e.g., GIS, document management, business intelligence)

Administrative, planning, and managerial staff would transfer to the new office as required to support these changes – most likely about 20 FTE. Outside of COT, staff and contractors who support agency applications would retain their existing reporting relationships. COT application support staff would initially move to the new office of the CIO, with subsequent discussions determining their final reporting relationship.

There would inevitably be some staff whose division of duties makes it unclear whether they should be transferred. A detailed transition plan will need to be developed to address these and other tactical implementation issues.

*Moving IT staff along with commodity IT service delivery responsibilities to the new office ensures that the shared services effort meets its goals. This is particularly important when long-term cost cutting is a key objective. Placing application support staff in the business units emphasizes the focus on using agency IT resources to directly support agency objectives.*

#### **1c. Hire new, full-time Commonwealth CIO.**

Guiding the new office through this period of transformation will require an individual of unusual talent and dedication. PTI recommends the Commonwealth conduct a nationwide search for a new CIO with experience in:

- ◆ Complex organizational change

- ◆ Building capability
- ◆ Transitioning to service-oriented delivery models
- ◆ Developing consensus and establishing trust in state government environments
- ◆ Controlling overall IT costs
- ◆ Improving IT service quality and staff skills

*Establishing the new office under the best possible leadership will yield dividends for many years to come.*

#### **1d. Train IT staff.**

Staff transferred in from the agencies will be accustomed to different infrastructure configurations than those which will be the standard for shared services under the new office of the CIO. In addition, existing staff may not be skilled at establishing and managing infrastructure in a highly standardized commodity environment. Management training will also be necessary as managers in the shared services organization will be asked to manage service levels and customer relationships in addition to IT operations. Finally, reallocation of resources may leave some staff in positions with different responsibilities than current job duties. Staff will need appropriate training to effectively optimize shared infrastructure and deliver appropriate levels of service.

A high performance environment requires highly skilled staff. In addition to the initial training required for the transition to shared services, there will be an ongoing need for higher levels of staff training than are currently in place, in order to keep pace with improvements in technology and achieve anticipated economies of scale.

*Well-trained staff are key to achieving service efficiency and quality targets. Increased professionalism and skill depth also improve employee satisfaction and career prospects.*

## **2. Optimize IT Infrastructure**

This assessment identified a number of redundancies and inefficiencies in the Commonwealth's IT infrastructure. This is due in large part to the federated delivery of IT support. With IT infrastructure and services under the control of the new office of the CIO, Kentucky can take the necessary steps to improve efficiency, lower costs, and reduce risk. This section outlines the six major activities required.

*With the State's IT infrastructure and services under the new Commonwealth CIO, Kentucky can take the necessary steps to improve efficiency, lower costs, and reduce risk.*

## 2a. Enhance disaster recovery and business continuity capability.

While the Commonwealth Data Center is designed to be disaster-resistant, there is no alternate data center at a sufficient distance to qualify as a backup in the event of an emergency. The Commonwealth has issued an RFP for this service and expects to have backup capability for the mission-critical systems in the CDC within a few months.

Mission-critical systems within agency IT facilities would also benefit from an alternate data center. As agency server and storage functions are brought in to the CDC, it becomes economic to bring them under the umbrella of the disaster recovery and business continuity service. In procuring this service, PTI recommends the Commonwealth ensure that the selected vendor has the flexibility to easily and cost-effectively add capacity to the alternate data center.

*Adequate disaster recovery ensures the integrity of Kentucky's information systems and data. It serves as the cornerstone of agency-driven business continuity plans.*

## 2b. Consolidate IT procurement and contract management.

One of the issues with federated IT service delivery has been the widely delegated IT purchasing authority and distributed oversight of IT contract management. PTI recommends consolidating this function within the new office of the CIO to provide a single point of accountability for the purchase of all IT goods and services. In addition the office will implement tracking and reporting procedures to ensure that contracts are measured against their performance targets on a periodic basis. This recommendation is intended to leverage economies of scale, improve vendor performance monitoring, and provide a single point of coordination with the Finance and Administration Cabinet for IT purchases. It is not intended to alter the purchasing authority of the Finance and Administration Cabinet.

*Consolidated IT purchasing leverages the buying power and expertise of the new office of the CIO. Active monitoring of contract performance ensures quality of service and lowers costs.*

## 2c. Develop IT infrastructure transition plan.

This report estimates the savings available from infrastructure consolidation based on a high-level inventory without a detailed technical evaluation. PTI recommends the Commonwealth develop a detailed transition plan and timeline. This plan will determine:

- ◆ The IT facilities which contain equipment that cannot be centralized for technical reasons
- ◆ The servers and other equipment to be physically moved to the CDC
- ◆ Which servers can be virtualized into the CDC environment without physical moves

- ◆ The shutdown schedule for underutilized IT facilities
- ◆ Security upgrades needed for the few remaining IT facilities
- ◆ Optimal configuration for the statewide VoIP system, including potential re-use (if any) of agency VoIP equipment
- ◆ The disconnect schedule for unneeded data circuits and voice lines

The Commonwealth may opt to seek outside technical consulting assistance in developing this plan, particularly for the VoIP consolidation. This will ensure that the plan optimally balances risk, workload, and cost savings.

*A clearly defined transition plan ensures that the resulting consolidation yields the best service levels and long-term value.*

#### **2d. Prepare Commonwealth Data Center for consolidation.**

The CDC was built with the goal of housing the Commonwealth's entire shared IT infrastructure. The third and fourth floors have not been needed for computer equipment, so upgraded power has not been installed in them. PTI recommends the Commonwealth upgrade power to these floors and perform other needed upgrades to prepare the CDC for additional equipment to be moved in from agency IT facilities.

*With a relatively minor investment, all of the Commonwealth's agencies will be ready to benefit from the security, safety, and convenience of housing their IT equipment in the CDC.*

#### **2e. Consolidate telephony.**

PTI recommends the Commonwealth deploy an integrated statewide VoIP system to replace the many disparate systems in use today. Handsets and equipment would be standardized across all agencies, unneeded data and voice circuits would be eliminated, and the new Kentucky Information Highway (KIH) would handle all VoIP traffic. Maintenance contracts for unused telephony equipment would be canceled and the equipment surplus.

*A statewide VoIP system lowers long-distance charges, eliminates most local circuit costs, reduces equipment maintenance costs, and requires less labor to support.*

#### **2f. Consolidate commodity infrastructure.**

PTI recommends Kentucky consolidate servers, storage, and related equipment into the CDC, according to the transition plan. Some agency-owned equipment may be suitable for use in the

CDC as a shared resource in the virtualized environment. Other agency systems may need to operate stand-alone. All of this equipment would be physically moved to the CDC.

Many agency servers would not need to be moved. Their functions can simply be replicated in the CDC virtual environment. Optimization of the infrastructure would render other servers, storage devices, and similar equipment redundant. All of this equipment could be surplus once the transition is complete.

With most agency IT infrastructure moved to the CDC or eliminated, the great majority of agency IT facilities could be shut down. This would free up floor space which can be put to more productive uses.

*Centralized IT infrastructure lowers equipment costs, increases security and disaster resistance, simplifies information exchange, and reduces support requirements.*

### 3. Reduce Statewide IT Labor

A major benefit of the IaaS model is improved labor efficiency in the provision of IT services. These are the primary drivers for the projected cost savings. However, to realize these cost savings in dollar terms, it is necessary to translate them into labor force reductions. This would occur with IT contractors along with the Commonwealth's permanent IT staff. Current estimates show an IT workforce reduction ranging from 112 to 180 FTE. Appendix E contains a summary table of these reductions, and explains the basis for these cuts in workstation support, server and network administration, telephony, and IT management.

#### 3a. Convert and reduce IT contractors.

At 28% of the IT workforce, contractors are far above the 13% benchmark suggested by Gartner. On average, they are 50% more costly than permanent staff. The Commonwealth may pursue the following strategies to reduce the number and expense of IT contractors.

PTI recommends the Commonwealth move contractors providing workstation and infrastructure support under the control of the Commonwealth CIO. As consolidation reduces labor demands for specific skills, contractors in these categories could easily be terminated.

There may be some contractors whose knowledge and skills cannot be easily substituted. For these, the Commonwealth CIO would weigh the costs and benefits of offering them conversion to permanent staff. This may require writing narrowly defined position descriptions in order to pay a market salary without disrupting the pay scale of other IT staff.

*Cost savings will require IT labor force reductions – for both contractors and Commonwealth employees.*

Note that reporting relationships of application development and support contractors would be unchanged. As part of improved procurement performance, the new office of the CIO would monitor agency expenditures on IT contractors. For highly-paid and long-term contractors, the Commonwealth CIO may suggest a conversion strategy similar to that used for infrastructure contractors.

*Reducing the contractor portion of the IT labor force will save money for Kentucky, and will improve career opportunities for its permanent staff.*

### **3b. Reduce redundancy in IT staffing.**

While some of the IT workforce reduction can be accomplished through elimination of contractors, a significant portion would involve a reduction in permanent staff. PTI estimates that most of the shared services under the control of the Commonwealth CIO would be affected within the next two fiscal years. The number of permanent positions impacted would vary, depending upon the mix of contractor and permanent staff reductions. Today, approximately 90FTE of contractor effort goes toward commodity IT services. If all of these contractor positions are eliminated, achieving the projected labor savings would require additional reduction of 20 to 90 permanent positions.

*Staff reductions, while organizationally painful, are ultimately a success measure for the personnel-intensive functions of shared IT services.*

## **4. Increase Statewide IT Accountability and Transparency**

The success of shared IT services – and the realization of the cost efficiencies outlined in this report – relies on the ability of the new office of the CIO to establish itself as a trusted shared services provider to the agencies. This requires demonstrating to agencies the value of their IT dollars. This section outlines four implementation activities to increase statewide IT accountability and transparency.

### **4a. Establish new IT governance structures.**

PTI recommends Kentucky disband the CTC and create a new CIO advisory council in its place. Charter this council with the responsibility to:

- ◆ Provide the Commonwealth CIO advice on:
  - Technology services, service levels, and charges
  - Fund balance usage
  - Overall IT strategy

*Enhanced IT governance improves statewide IT accountability and transparency – increasing agency trust in the new office of the CIO as a trusted shared services provider.*

- ◆ Annually (at a minimum) review statewide IT performance and service levels against negotiated agreements
- ◆ Advise the Commonwealth CIO on IT sourcing decisions

Establish the Commonwealth CIO as the chair of this new committee and include in its membership:

- ◆ Large executive branch agency CIOs
- ◆ Rotating representatives of small agencies
- ◆ Representative of the Office of the State Budget Director
- ◆ Commonwealth deputy CIO responsible for IT infrastructure operations

PTI also recommends shifting the Enterprise Architecture and Standards Committee's focus from the broad spectrum of diverse enterprise architecture domains to enterprise applications, data management, integration, and business intelligence – allowing the EASC to target its efforts on ensuring ready access to information while maintaining appropriate privacy and security statewide. Correspondingly, responsibility for infrastructure and end user computing standards will reside with the office of the CIO.

Lastly, PTI recommends instituting a capital IT project oversight and review board. Charter this board with the responsibility and authority to:

- ◆ Monitor high cost or high risk capital IT project budgets and schedules
- ◆ Incrementally release project funding based on performance and milestone achievements
- ◆ Measure post-implementation benefits

Establish the Commonwealth CIO as the chair of the new oversight and review board and include in its membership:

- ◆ Representative(s) from the Office of Financial Management
- ◆ Representative(s) of the Office of the State Budget Director
- ◆ Rotating agency representatives

The Commonwealth should also consider appropriately staffing the Project Management Office (PMO), currently residing within the Office of Enterprise Technology of COT, to partner with the Budget Office in providing staff support and monitoring of large projects.

*A formally chartered technology advisory committee provides agencies a forum to actively participate in defining the Commonwealth shared service catalog and associated service levels. The capital IT project oversight and review board provides oversight for Kentucky's portfolio of ongoing IT projects and – through incremental release of funds and benefits measurement – increases the probability of on-time, on-budget projects that meet expectations. Together, these new structures improve statewide IT accountability and transparency – increasing agency trust in the new office of the CIO as a trusted shared services provider.*

#### **4b. Revise IT cost recovery model**

As previously stated in chapter 2, COT currently charges agencies for its services based on a combination of rated services and an enterprise assessment fee. Billing relies upon a complex combination of automated systems and manual processes, and frustrates agency customers, which cannot easily reconcile IT charges with their budgets. Additionally, services are tied to agency consumption, and not to specific levels of service. Historically this type of accounting has been necessary for federal reimbursements. However, the National Association of State Chief Information Officers (NASCIO) and states pursuing consolidation efforts are pushing the federal government to modify OMB Circular A-87, to allow more flexibility. Some states, such as Indiana, have already been successful moving to shared infrastructure and rates tied to service levels for selected services – while maintaining federal reimbursement. PTI recommends the Commonwealth move to service level agreements for shared services and charge agencies based upon delivered services.

*Service charges tied to specific service levels avoid incentivizing behaviors that negatively impact the balance sheet of the Commonwealth as a whole.*

#### **4c. Develop service catalog, service levels, and cost basis**

PTI recommends the new office of the CIO, in conjunction with the new technology advisory committee:

- ◆ Develop a catalog of clearly defined IT services, driven by the agencies' business needs
- ◆ Establish service levels, driven by the different demands of small, medium, and large size agencies
- ◆ Define service cost basis, driven by the new office's ability to offer the service as a fully self-sustaining cost center.

*An IT service catalog with clearly defined service levels and costs provides flexibility (avoiding “one size fits all” services), simplifies budgeting and billing, and more visibly demonstrates the value*

agencies receive for their IT dollars. It also positions the Commonwealth to more accurately evaluate the relative costs and benefits of sourcing options in the future.

#### 4d. Develop Commonwealth IT strategic plan

After establishing the new office of the CIO, PTI recommends Kentucky develop a statewide IT strategic plan under the aegis of the CIO advisory council and with broad participation from individual agencies. This plan will:

- ◆ Set overall statewide IT direction and communicate the benefits of coordinated information technology
- ◆ Define an agreed-upon baseline of IT spending, asset inventory, service efficiencies, and customer satisfaction from which to measure progress
- ◆ Articulate specific, measurable goals for IT systems and services
- ◆ Define performance targets and establish an action plan to achieve them
- ◆ Create a mechanism to track and report on progress

*A statewide IT strategic plan recognizes that both agencies, which rely on information systems to deliver government services, and the shared IT services organization, which is accountable for the reliability of the underlying infrastructure and associated services – must work in close partnership to achieve goals.*

### Benefits

The previous section highlighted benefits for each of the major implementation activities. This section summarizes the collective benefits of implementing all four major recommendations. They are organized as follows:

- ◆ Improved governance and future positioning
- ◆ Cost savings
- ◆ Risk mitigation

#### Improved Governance and Future Positioning

While the recommendations in this report were driven by the desire to achieve near-term IT service efficiencies and cost savings, many of their resulting benefits extend beyond the financial bottom line.

*While the recommendations in this report were driven by the desire to achieve near-term IT service efficiencies and cost savings, many of their resulting benefits extend beyond the financial bottom line.*

Establishing a new cabinet-level office of the CIO and creating a technology advisory group improves statewide IT governance and positions the Commonwealth for the future in the following ways:

- ◆ **New focus for agency CIOs** – Freeing agencies from commodity IT systems and services allows them to focus on business applications and data management – the information technologies that most directly support agency operations and government services.
- ◆ **Shared IT services** – Serving as centralized infrastructure as a service provider, the new office of the CIO will be well positioned to achieve target service efficiencies, manage statewide IT costs, and evaluate the cost-benefit of alternative sourcing options.
- ◆ **Effective governance structures** – The new CIO advisory council and capital IT project oversight and review board will improve statewide IT accountability and transparency – increasing agency trust in the new office of the CIO as a trusted shared services provider.

### Cost Savings

PTI quantified the potential savings that the Commonwealth can realize by implementing the recommendations in this chapter. **We conservatively estimate a net annual savings ranging from \$16.7 million to \$27.8 million. For the period from FY2013 through FY2016, total net savings are estimated to range from \$32.1 million to \$55.6 million.**

We calculated potential labor savings assuming Kentucky could increase IT labor efficiencies to standard industry best practices. We assumed the Commonwealth could increase workstation and telecommunications support to meet PTI's target benchmarks ratios of 225 to 275 workstations to every one support FTE and 1,500 to 2,500 telephone handset to every one support FTE, respectively. We assumed Kentucky could also increase network and server administration labor efficiency, moving from the 50<sup>th</sup> percentile of peer organizations to the top 25% (on the high end).<sup>11</sup> Goods and services savings accrue from fewer servers resulting from virtualization and greater economies of scale, consolidation of telephony circuits, and power and space savings resulting from facility and equipment consolidation. Appendix E provides more detailed cost and savings figures and describes PTI's estimation methodology and associated assumptions. The table on the following page summarizes the both necessary investments and potential savings of these recommendations by year through fiscal year 2016 and annually thereafter.

<sup>11</sup> Using benchmark data from *IT Spending and Staffing Benchmarks* (Irvine, CA: Computer Economics, Inc., 2011).

### Estimated Net Annual Cost Savings (Conservative)

	FY13		FY14		FY15		FY16		Ongoing Annual	
	Low	High	Low	High	Low	High	Low	High	Low	High
<b>Estimated Savings<sup>11</sup></b>										
<b>End User Computing</b>										
Increased PC support labor efficiency	\$0	\$0	\$1,023,580	\$1,453,036	\$3,070,741	\$4,359,108	\$4,094,322	\$5,812,145	\$4,094,322	\$5,812,145
Reduced PC support management	\$0	\$0	\$95,630	\$135,752	\$286,889	\$407,257	\$382,519	\$543,010	\$382,519	\$543,010
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,119,210</b>	<b>\$1,588,789</b>	<b>\$3,357,631</b>	<b>\$4,766,366</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>
<b>Servers and Network</b>										
Reduced IT facility space	\$0	\$0	\$210,000	\$420,000	\$840,000	\$1,680,000	\$840,000	\$1,680,000	\$840,000	\$1,680,000
Wintel server consolidation/virtualization (replacement savings)	\$0	\$0	\$182,625	\$365,250	\$730,500	\$1,461,000	\$730,500	\$1,461,000	\$730,500	\$1,461,000
Wintel server consolidation/virtualization (power savings)	\$0	\$0	\$99,257	\$198,513	\$397,027	\$794,054	\$397,027	\$794,054	\$397,027	\$794,054
Increased network administration labor efficiency	\$0	\$0	\$230,783	\$461,566	\$692,349	\$1,384,698	\$923,132	\$1,846,264	\$923,132	\$1,846,264
Increased server administration labor efficiency	\$0	\$0	\$190,519	\$381,038	\$571,556	\$1,143,113	\$762,075	\$1,524,151	\$762,075	\$1,524,151
Reduced network and server management	\$0	\$0	\$39,361	\$78,722	\$118,083	\$236,165	\$157,443	\$314,887	\$157,443	\$314,887
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$952,544</b>	<b>\$1,905,089</b>	<b>\$3,349,515</b>	<b>\$6,699,030</b>	<b>\$3,810,178</b>	<b>\$7,620,355</b>	<b>\$3,810,178</b>	<b>\$7,620,355</b>
<b>Telecommunications</b>										
Consolidated telecommunications circuits	\$0	\$0	\$609,993	\$924,232	\$2,439,973	\$3,696,929	\$2,439,973	\$3,696,929	\$2,439,973	\$3,696,929
Reduced telecommunications equipment maintenance	\$0	\$0	\$39,184	\$58,776	\$156,736	\$235,103	\$156,736	\$235,103	\$156,736	\$235,103
Increased telecommunication support labor efficiency	\$0	\$0	\$208,799	\$364,832	\$626,398	\$1,094,497	\$835,198	\$1,459,329	\$835,198	\$1,459,329
Reduced telecommunication management	\$0	\$0	\$19,507	\$34,085	\$58,522	\$102,255	\$78,030	\$136,340	\$78,030	\$136,340
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$877,484</b>	<b>\$1,381,925</b>	<b>\$3,281,629</b>	<b>\$5,128,784</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>
<b>IT Contractors</b>										
Reduced IT contractors	\$0	\$0	\$928,232	\$1,476,551	\$3,712,929	\$5,906,205	\$3,712,929	\$5,906,205	\$3,712,929	\$5,906,205
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$928,232</b>	<b>\$1,476,551</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>
Reduced non-IT administration and support labor	\$0	\$0	\$303,774	\$488,717	\$911,323	\$1,466,152	\$1,215,097	\$1,954,869	\$1,215,097	\$1,954,869
Overhead	\$0	\$0	\$155,099	\$254,094	\$548,068	\$900,015	\$620,395	\$1,016,377	\$620,395	\$1,016,377
<b>Total Estimated Savings</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,336,344</b>	<b>\$7,095,166</b>	<b>\$15,161,095</b>	<b>\$24,866,553</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>
<b>Estimated Costs<sup>12</sup></b>										
<b>Goods/Services</b>										
Facility upgrades	(\$236,000)	(\$236,000)	(\$120,000)	(\$120,000)	(\$90,000)	(\$90,000)	(\$50,000)	(\$50,000)	\$0	\$0
Infrastructure consolidation	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	\$0	\$0	\$0	\$0
Business continuity/disaster recovery	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)
<b>Subtotal</b>	<b>(\$850,000)</b>	<b>(\$850,000)</b>	<b>(\$734,000)</b>	<b>(\$734,000)</b>	<b>(\$704,000)</b>	<b>(\$704,000)</b>	<b>(\$270,000)</b>	<b>(\$270,000)</b>	<b>(\$220,000)</b>	<b>(\$220,000)</b>
<b>Staffing/Personnel</b>										
Commonwealth CIO	(\$150,000)	(\$150,000)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)
IT staff transfer, retraining, and retooling	(\$182,200)	(\$182,200)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)
Tools and services	(\$300,000)	(\$300,000)	(\$37,500)	(\$37,500)	(\$87,500)	(\$87,500)	(\$37,500)	(\$37,500)	(\$37,500)	(\$37,500)
Progress monitoring and reporting	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)
<b>Subtotal</b>	<b>(\$712,200)</b>	<b>(\$712,200)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$454,461)</b>	<b>(\$454,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>
Contingency Costs	(\$78,110)	(\$78,110)	(\$56,923)	(\$56,923)	(\$57,923)	(\$57,923)	(\$33,723)	(\$33,723)	(\$31,223)	(\$31,223)
<b>Total Estimated Costs</b>	<b>(\$1,640,310)</b>	<b>(\$1,640,310)</b>	<b>(\$1,195,384)</b>	<b>(\$1,195,384)</b>	<b>(\$1,216,384)</b>	<b>(\$1,216,384)</b>	<b>(\$708,184)</b>	<b>(\$708,184)</b>	<b>(\$655,684)</b>	<b>(\$655,684)</b>
<b>TOTAL NET SAVINGS</b>	<b>(\$1,640,310)</b>	<b>(\$1,640,310)</b>	<b>\$3,140,960</b>	<b>\$5,899,782</b>	<b>\$13,944,711</b>	<b>\$23,650,169</b>	<b>\$16,637,192</b>	<b>\$27,672,479</b>	<b>\$16,689,692</b>	<b>\$27,724,979</b>

3

<sup>12</sup> Low and high-end cost savings estimates based on efficiency targets, detailed in Appendix E. Estimated goods and services savings result from implementation of recommendation #2: optimize IT infrastructure; assumes 25% of potential annual savings realized in FY14 and 100% thereafter. Estimated labor savings result from implementation of recommendation #3: reduce IT labor; assume 25% of potential annual savings realized in FY14, 75% in FY15, and 100% thereafter.

<sup>13</sup> All cost figures provided by the Commonwealth. Estimated costs do not include one-time costs for professional, third-party change management services to guide the implementation of PTI's recommendations. Figures are not adjusted for inflation.



*It is possible to accelerate the realization of savings by more aggressively implementing selected recommendations and/or delaying planned server and workstation replacements.*

It may be possible to accelerate the realization of savings by more aggressively implementing selected recommendations<sup>14</sup> and assuming some risk by putting a hold on all server and workstation replacements planned for the next fiscal year. The following table presents an alternative cost savings scenario that highlights potential savings should the Commonwealth pursue this more aggressive tactic. It assumes that workstation replacements are delayed for one year, in essence a cost shift. It also assumes that all server replacements are deferred, and that the shift to shared services makes enough progress in that year to reduce the number of servers needing replacement by 50%. Note that this approach would require immediate action by the Commonwealth and significantly increases the risk of service interruption or reduced IT service levels due to equipment failure or transition to shared services before the shared services organization is sufficiently prepared. **Taking this tack yields a total net savings of \$47.2 million to \$78.9 million from FY13 through FY16.**

<sup>14</sup> This cost savings scenario assumes telephony consolidation and a more aggressive reduction in IT contractors in FY2013; movement to shared end user computing support and server and network administration beginning in FY2014, and the deferral of all workstation and server replacement planned for FY2013 into FY2014.

### Estimated Net Annual Cost Savings (Aggressive)

3

	FY13		FY14		FY15		FY16		Ongoing Annual	
	Low	High	Low	High	Low	High	Low	High	Low	High
<b>Estimated Savings<sup>14</sup></b>										
<b>End User Computing</b>										
Increased PC support labor efficiency	\$0	\$0	\$4,094,322	\$5,812,145	\$4,094,322	\$5,812,145	\$4,094,322	\$5,812,145	\$4,094,322	\$5,812,145
Reduced PC support management	\$0	\$0	\$382,519	\$543,010	\$382,519	\$543,010	\$382,519	\$543,010	\$382,519	\$543,010
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>	<b>\$4,476,841</b>	<b>\$6,355,155</b>
<b>Servers and Network</b>										
Reduced IT facility space	\$0	\$0	\$630,000	\$1,260,000	\$840,000	\$1,680,000	\$840,000	\$1,680,000	\$840,000	\$1,680,000
Wintel server consolidation/virtualization (replacement savings)	\$0	\$0	\$547,875	\$1,095,750	\$730,500	\$1,461,000	\$730,500	\$1,461,000	\$730,500	\$1,461,000
Wintel server consolidation/virtualization (power savings)	\$0	\$0	\$297,770	\$595,540	\$397,027	\$794,054	\$397,027	\$794,054	\$397,027	\$794,054
Increased network administration labor efficiency	\$0	\$0	\$692,349	\$1,384,698	\$923,132	\$1,846,264	\$923,132	\$1,846,264	\$923,132	\$1,846,264
Increased server administration labor efficiency	\$0	\$0	\$571,556	\$1,143,113	\$762,075	\$1,524,151	\$762,075	\$1,524,151	\$762,075	\$1,524,151
Reduced network and server management	\$0	\$0	\$118,083	\$236,165	\$157,443	\$314,887	\$157,443	\$314,887	\$157,443	\$314,887
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,857,633</b>	<b>\$5,715,267</b>	<b>\$3,810,178</b>	<b>\$7,620,355</b>	<b>\$3,810,178</b>	<b>\$7,620,355</b>	<b>\$3,810,178</b>	<b>\$7,620,355</b>
<b>Telecommunications</b>										
Consolidated telecommunications circuits	\$609,993	\$924,232	\$2,439,973	\$3,696,929	\$2,439,973	\$3,696,929	\$2,439,973	\$3,696,929	\$2,439,973	\$3,696,929
Reduced telecommunications equipment maintenance	\$39,184	\$58,776	\$156,736	\$235,103	\$156,736	\$235,103	\$156,736	\$235,103	\$156,736	\$235,103
Increased telecommunication support labor efficiency	\$208,799	\$364,832	\$835,198	\$1,459,329	\$835,198	\$1,459,329	\$835,198	\$1,459,329	\$835,198	\$1,459,329
Reduced telecommunication management	\$19,507	\$34,085	\$78,030	\$136,340	\$78,030	\$136,340	\$78,030	\$136,340	\$78,030	\$136,340
<b>Subtotal</b>	<b>\$877,484</b>	<b>\$1,381,925</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>	<b>\$3,509,936</b>	<b>\$5,527,702</b>
<b>IT Contractors</b>										
Reduced IT contractors	\$464,116	\$738,276	\$1,856,465	\$2,953,102	\$3,712,929	\$5,906,205	\$3,712,929	\$5,906,205	\$3,712,929	\$5,906,205
<b>Subtotal</b>	<b>\$464,116</b>	<b>\$738,276</b>	<b>\$1,856,465</b>	<b>\$2,953,102</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>	<b>\$3,712,929</b>	<b>\$5,906,205</b>
<b>Costs Shifts</b>										
Workstation replacement delay	\$6,721,200	\$6,721,200	(\$6,721,200)	(\$6,721,200)						
Server replacement delay	\$2,922,000	\$2,922,000	(\$1,461,000)	(\$1,461,000)						
<b>Subtotal</b>	<b>\$9,643,200</b>	<b>\$9,643,200</b>	<b>(\$8,182,200)</b>	<b>(\$8,182,200)</b>						
Reduced non-IT administration and support labor	\$38,356	\$67,018	\$1,137,706	\$1,800,087	\$1,215,097	\$1,954,869	\$1,215,097	\$1,954,869	\$1,215,097	\$1,954,869
Overhead	\$53,664	\$84,808	\$508,035	\$822,049	\$620,395	\$1,016,377	\$620,395	\$1,016,377	\$620,395	\$1,016,377
<b>Total Estimated Savings</b>	<b>\$11,076,820</b>	<b>\$11,915,227</b>	<b>\$6,164,415</b>	<b>\$14,991,161</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>	<b>\$17,345,376</b>	<b>\$28,380,663</b>
<b>Estimated Costs<sup>15</sup></b>										
<b>Goods/Services</b>										
Facility upgrades	(\$236,000)	(\$236,000)	(\$120,000)	(\$120,000)	(\$90,000)	(\$90,000)	(\$50,000)	(\$50,000)	\$0	\$0
Infrastructure consolidation	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	(\$394,000)	\$0	\$0	\$0	\$0
Business continuity/disaster recovery	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)	(\$220,000)
<b>Subtotal</b>	<b>(\$850,000)</b>	<b>(\$850,000)</b>	<b>(\$734,000)</b>	<b>(\$734,000)</b>	<b>(\$704,000)</b>	<b>(\$704,000)</b>	<b>(\$270,000)</b>	<b>(\$270,000)</b>	<b>(\$220,000)</b>	<b>(\$220,000)</b>
<b>Staffing/Personnel</b>										
Commonwealth CIO	(\$150,000)	(\$150,000)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)	(\$183,361)
IT staff transfer, retraining, and retooling	(\$182,200)	(\$182,200)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)	(\$103,600)
Tools and services	(\$300,000)	(\$300,000)	(\$37,500)	(\$37,500)	(\$87,500)	(\$87,500)	(\$37,500)	(\$37,500)	(\$37,500)	(\$37,500)
Progress monitoring and reporting	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)	(\$80,000)
<b>Subtotal</b>	<b>(\$712,200)</b>	<b>(\$712,200)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$454,461)</b>	<b>(\$454,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>	<b>(\$404,461)</b>
Contingency Costs	(\$78,110)	(\$78,110)	(\$56,923)	(\$56,923)	(\$57,923)	(\$57,923)	(\$33,723)	(\$33,723)	(\$31,223)	(\$31,223)
<b>Total Estimated Costs</b>	<b>(\$1,640,310)</b>	<b>(\$1,640,310)</b>	<b>(\$1,195,384)</b>	<b>(\$1,195,384)</b>	<b>(\$1,216,384)</b>	<b>(\$1,216,384)</b>	<b>(\$708,184)</b>	<b>(\$708,184)</b>	<b>(\$655,684)</b>	<b>(\$655,684)</b>
<b>TOTAL NET SAVINGS</b>	<b>\$9,436,510</b>	<b>\$10,274,917</b>	<b>\$4,969,032</b>	<b>\$13,795,777</b>	<b>\$16,128,992</b>	<b>\$27,164,279</b>	<b>\$16,637,192</b>	<b>\$27,672,479</b>	<b>\$16,689,692</b>	<b>\$27,724,979</b>

<sup>15</sup> Low and high-end cost savings estimates based on efficiency targets, detailed in Appendix E.

<sup>16</sup> All cost figures provided by the Commonwealth. Estimated costs do not include one-time costs for professional, third-party change management services to guide the implementation of PTI's recommendations. Figures are not adjusted for inflation.

**It is important to note that all of these figures represent a minimum range of savings.** Additional savings – potentially in the low millions annually – can be realized from efficiency gains and cost avoidance that were not quantified as part of the scope of this study. These include:

- ◆ **Additional IT labor efficiencies** – Database, security, and storage administration likely have about the same efficiency gain potential as server and network administration, but comparable benchmarks are not available.
- ◆ **Centralized/standardized data storage infrastructure** – There is almost certainly excess storage capacity within agency IT facilities. Rightsizing this will reduce equipment maintenance and replacement costs, as will standardizing on a limited set of storage technologies. This figure will not be known until the IT infrastructure transition plan is complete. Some of these savings may be offset by the need to move data that currently resides on sub-standard storage media onto more secure, recoverable platforms. This will put the data on more expensive media than is currently used, with the benefit of better protection for the information.
- ◆ **IT facilities power savings** – IT equipment draws more power per square foot, and has greater cooling requirements, than most other uses of floor space. Removing excess equipment and repurposing this space to other uses will reduce agency power bills; though it is unlikely they will be able to quantify this figure precisely.
- ◆ **Reduced application redundancy** – Enterprise applications such as business intelligence, document management, GIS, and others are present on multiple platforms across the agencies. These applications can benefit from provision as a shared service just as infrastructure does. Since they are more integrated into agency business processes, the cost savings will be more difficult to segregate, but opportunities certainly do exist. Under PTI's recommendations, planning related to this effort would fall to the Enterprise Architecture Standards Committee.
- ◆ **Centralized/standardized IT purchasing, contract negotiations and ongoing contract management** – Historically the Commonwealth has done little to monitor the performance of IT goods and services contracts once they are negotiated. It is hard to put a value on the higher costs and lower quality that have resulted, but doubtless they are substantial. A greater focus on contract performance will avoid these cost and quality issues in the future.
- ◆ **Improved capital project performance** – Recent problems with IT capital projects speak to the need for tighter controls in this arena. Again, these are not so much cost savings as cost avoidance – in this case, avoidance of potentially very large costs.

## Risk Mitigation

Some of the major benefits from these recommendations are better expressed in terms of the risks they reduce, rather than the dollars they save. Reducing IT facilities and standardizing infrastructure leads to significant risk reduction via:

- ◆ **Improved security** – Fewer facilities make physical security easier. Standardized infrastructure is less susceptible to hacking, and easier to keep current with the latest security updates.
- ◆ **Disaster recovery and business continuity capabilities matched to business need** – Until now it has been uneconomic for the agencies to provide backup data centers for their mission critical systems. Consolidation makes this cost-effective for them, and better positions Kentucky for improved business continuity.
- ◆ **IT skills focused on a core set of technologies** – Standardization reduces the breadth of skills required, allows staff to develop skill depth in the selected technologies, and reduces the risk that the Commonwealth's technology platforms will be out of synch with skills available in the marketplace.
- ◆ **Enhanced IT asset management** – Desktop and network management tools installed as part of the infrastructure standard will allow Kentucky to track the location and usage of all major IT assets. This allows better utilization of IT inventory, improves management of the related supply chain, and discourages theft or misuse.

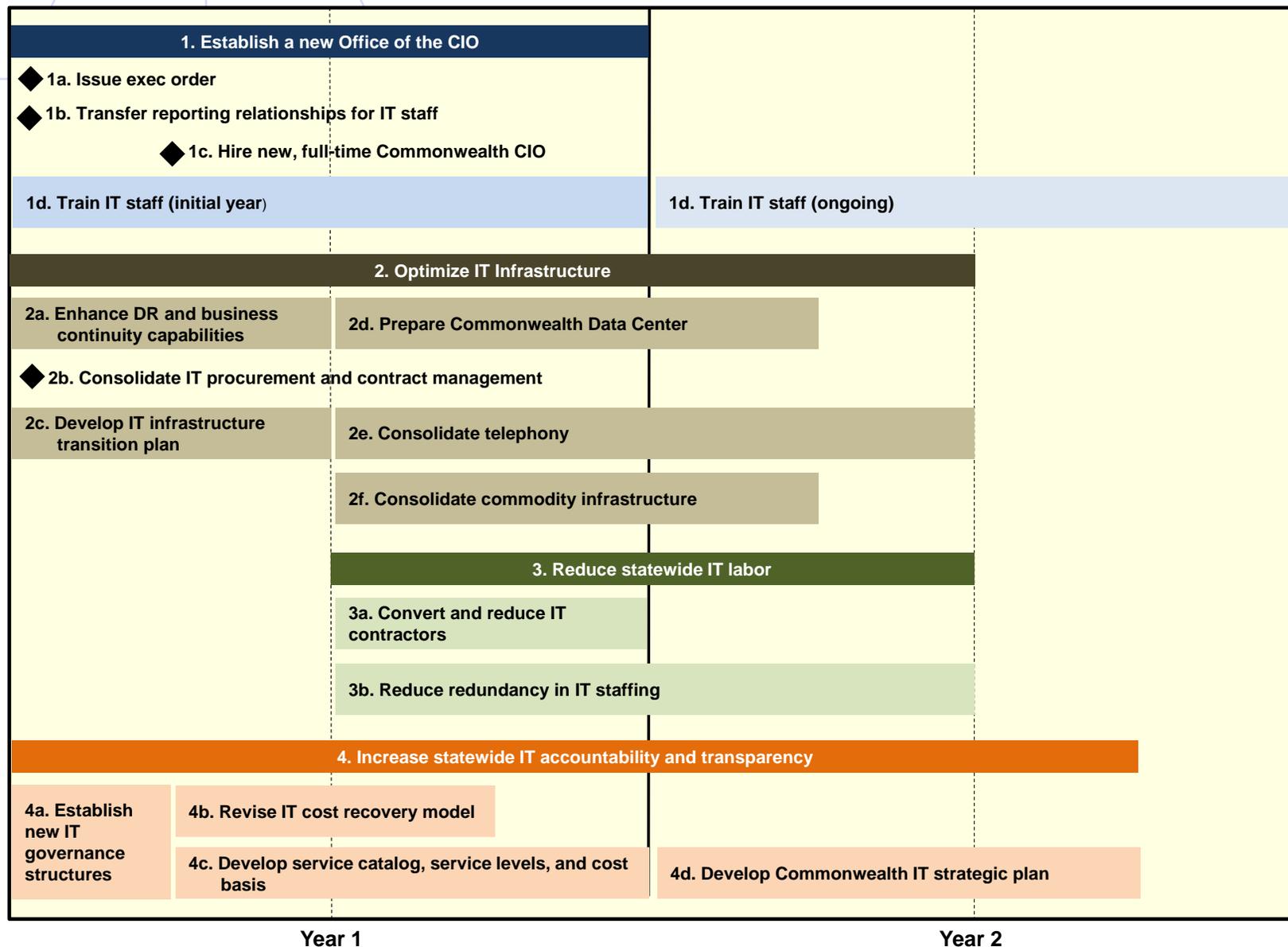
Finally, the recommendations will also improve performance on capital IT projects. While related cost savings represent an important associated benefit, cost is not the only liability of failed capital IT projects. Citizens suffer from service degradation, employees are disheartened, and elected officials must answer to their voters. Enhanced IT governance delivers capital projects as promised, avoiding these negative outcomes.

## Implementation Schedule

The following figure translates the IT governance and service delivery recommendations detailed in this chapter into a high level set of implementation activities placed on a three-year timeline. The recommendations section of this chapter briefly described each of the implementation activities.

## Proposed Implementation Schedule

3



## Performance Measures

Across the nation, shared services initiatives at the state level have met with mixed success. While a variety of factors make these efforts challenging, many states that have failed to achieve their consolidation goals point to the lack of performance measures and targets as a significant contributing factor. After all, as one unknown author stated, “you can’t manage what you don’t measure.” For this reason, PTI recommends the Commonwealth define specific performance measures and establish a mechanism to monitor and regularly report on the data. We include the following performance measures for Kentucky’s consideration.

3

### Suggested Performance Measures

Category	Performance Measure
<b>Shared IT Services Performance</b>	<ul style="list-style-type: none"> <li>• Commodity IT operational spending trend</li> <li>• Commodity IT operational spending as a percent of total operational spending trend</li> <li>• Commodity IT operational spending per connected workstation trend</li> <li>• Service level-specific measures (e.g., percent of service levels met during the reporting period)</li> <li>• Selected IT workforce efficiency measures (e.g., ratio of workstations to workstation support FTE)</li> </ul>
<b>Customer Satisfaction</b>	<ul style="list-style-type: none"> <li>• Percent of agency customers “satisfied” or “very satisfied” with key customer service metrics, such as:               <ul style="list-style-type: none"> <li>– Service catalog</li> <li>– Service level performance</li> <li>– Value of services</li> </ul> </li> </ul>
<b>Cost Savings</b>	<ul style="list-style-type: none"> <li>• On an ongoing basis, track and trend costs aligned with the revised service catalog</li> <li>• Over the transition period, track specific cost savings elements identified in accord with this report’s recommendations (e.g., server purchase costs, server administration labor costs, contractor costs, total IT labor costs)</li> </ul>

Category	Performance Measure
<b>Risk Reduction</b>	<ul style="list-style-type: none"><li>• Number and percent of servers housed in lower risk IT facilities</li><li>• Number and percent of IT systems not positioned for recovery according to business continuity goals</li><li>• Number of security breaches</li><li>• Number of 'severe' events (e.g., data loss, major system outage)</li></ul>
<b>Capital IT Project Performance</b>	<ul style="list-style-type: none"><li>• Percent of capital IT projects delivered on time</li><li>• Percent of capital IT projects delivered within budget</li><li>• Percent of capital IT projects meeting requirements</li><li>• Percent of capital IT projects meeting customer expectations</li></ul>



Appendix A  
**List of Surveyed Agencies**



The full scope of this assessment included the Executive Branch of Kentucky's government, with the exception of boards and commissions, departments headed by constitutional officials, and the departments delivering direct educational services. Surveyed agencies provided detailed IT cost and labor data used to support PTI's IT quantitative analysis in chapter 2 and associated recommendations in chapter 3. Some smaller departments, primarily within the General Government cabinet, did not contribute to this data collection effort due to their lack of IT staff and modest budgets. The following agencies participated in the data collection effort:

- ◆ Department of Military Affairs
- ◆ Department for Local Government
- ◆ Council on Postsecondary Education
- ◆ General Government Cabinet
- ◆ Transportation Cabinet
- ◆ Cabinet for Economic Development
- ◆ Finance and Administration Cabinet
- ◆ Tourism, Arts and Heritage Cabinet
- ◆ Education and Workforce Development Cabinet
- ◆ Cabinet for Health and Family Services
- ◆ Justice and Public Safety Cabinet
  - Department of Criminal Justice Training
  - Public Advocate
  - Kentucky State Police
- ◆ Personnel Cabinet
- ◆ Labor Cabinet
- ◆ Energy and Environment Cabinet
- ◆ Public Protection Cabinet



Appendix B  
**List of Participants**

Over 100 stakeholders of the Commonwealth – including representatives of the Smart Government Initiative (SGI), cabinet executives, senior managers, IT professionals, and analysts – participated directly in interviews, workshops, and other meetings with PTI.<sup>17</sup> The table below lists these project participants. Many others contributed to this planning effort with their detailed data collection and validation efforts.

<b>Name</b>	<b>Title</b>	<b>Agency</b>
<b>Jill Anderson</b>	Contractor/KHRIS Project Manager	Personnel Cabinet
<b>Jim Barnhart</b>	Deputy Commissioner of COT	Commonwealth Office of Technology
<b>Brad Bates</b>	Police Lieutenant Colonel	Justice and Public Safety Cabinet
<b>Randal Bohannon</b>	Mechanical Maintenance and Ops Mgr.	Finance and Administration Cabinet
<b>Tammy Branham</b>	Executive Director	Transportation Cabinet
<b>J. Michael Brown</b>	Cabinet Secretary	Justice and Public Safety Cabinet
<b>Mark Brown</b>	Cabinet Secretary	Labor Cabinet
<b>Jeanne Campbell</b>	Data Base Analyst	Department of Local Government
<b>Kevin Cardwell</b>	Deputy State Budget Director	Office of State Budget Director
<b>Tommy Case</b>	IT Consultant	Commonwealth Office of Technology
<b>Lindy Casebier</b>	Executive Director	Tourism, Arts, and Heritage Cabinet
<b>James Caudle</b>	Information Systems Supervisor	Military Affairs
<b>Jon Clark</b>	Executive Director	Transportation Cabinet
<b>Heather Combs</b>	Policy Advisor	Public Protection Cabinet
<b>David Couch</b>	Associate Commissioner	Department of Education
<b>Jamie Davis</b>	Assistant Director	Tourism, Arts, and Heritage Cabinet
<b>Deepa Dubal</b>	IT Director	Council on Postsecondary Education
<b>Lori Flanery</b>	Cabinet Secretary	Finance and Administration Cabinet
<b>Joseph Fontanez</b>	Systems Administrator	Military Affairs
<b>Eric Friedlander</b>	Deputy Secretary	Cabinet for Health and Family Services

<sup>17</sup> Common themes resulting from these interviews and workshops contributed to the qualitative findings presented in chapter 2.

<b>Name</b>	<b>Title</b>	<b>Agency</b>
<b>Gene Fuqua</b>	Chief of Staff	Economic Development Cabinet
<b>Walt Gaffield</b>	Executive Director	Personnel Cabinet
<b>Robert (Mack) Gillim</b>	Executive Director	Finance and Administration Cabinet
<b>Ande Godsey</b>	Information Systems Manager	Justice and Public Safety Cabinet
<b>Jack Goins</b>	Systems Consultant	Commonwealth Office of Technology
<b>Ryan Green</b>	Executive Director	Education and Workforce Cabinet
<b>Geri Grigsby</b>	Policy Advisor	Transportation Cabinet
<b>Mike Grisham</b>	Systems Technician Spec II	Office of the State Budget Director
<b>Nancy Haggerty</b>	Special Assistant	Finance and Administration Cabinet
<b>Ben Hall</b>	Economic Dev. Director	Economic Development Cabinet
<b>Mike Hancock</b>	Cabinet Secretary	Transportation Cabinet
<b>Carla Hawkins</b>	Executive Director	Office of Application Development
<b>Larry Hayes</b>	Cabinet Secretary	Economic Development Cabinet
<b>Rod Hayes</b>	Supervisor - IT Specialist, retired	Military Affairs
<b>Tony Henderson</b>	Information Systems Manager	Tourism, Arts, and Heritage Cabinet
<b>John Heltzel</b>	Division Director	Military Affairs
<b>John Hicks</b>	Deputy State Budget Director	Office of State Budget Director
<b>Melissa Highfield-Smith</b>	Director of Division of Budgets	Energy and Environment Cabinet
<b>Skip Hunt</b>	IT Manager	Department for Libraries and Archives
<b>Rick Johnson</b>	Branch Manager	Labor Cabinet
<b>Stuart Johnston</b>	Division Director	Education and Workforce Cabinet
<b>Ken Jorette</b>	Director	GAPS
<b>Travis Kays</b>	Network Analyst	Finance and Administration Cabinet
<b>David Kincaid</b>	Manager, Change Management	Finance and Administration Cabinet
<b>Gary Kincaid</b>	Purchasing Officer	Justice and Public Safety Cabinet
<b>Robert King</b>	President	Council on Postsecondary Education
<b>Todd Kirby</b>	Exec Staff Advisor	Department for Local Government
<b>Joy Kiser</b>	Administrative Branch Manager	Department for Local Government

<b>Name</b>	<b>Title</b>	<b>Agency</b>
<b>James Koontz</b>	Information Systems Manager	Personnel Cabinet
<b>Mary Lassiter</b>	Cabinet Secretary	Governor's Executive Cabinet
<b>Katrina LeMay</b>	Executive Director	Commonwealth Office of Technology
<b>Janet Lile</b>	Executive Director	Commonwealth Office of Technology
<b>Allen Lind</b>	VP of IT	Council on Postsecondary Education
<b>Jamie Link</b>	Deputy Secretary	Finance and Administration Cabinet
<b>Tim Longmeyer</b>	Cabinet Secretary	Personnel Cabinet
<b>Dan Mauer</b>	Information Systems Manager	Transportation Cabinet
<b>Bill May</b>	Information Systems Manager	Justice and Public Safety Cabinet
<b>Greg McCall</b>	Systems Consultant	Commonwealth Office of Technology
<b>Brett McDonald</b>	Director	Division of Communications
<b>Joe Meyer</b>	Cabinet Secretary	Education and Workforce Cabinet
<b>Janie Miller</b>	Cabinet Secretary	Cabinet for Health and Family Services
<b>Jeff Mitchell</b>	Information Systems Manager	Finance and Administration Cabinet
<b>Robin Morley</b>	Special Assistant	Finance and Administration Cabinet
<b>Rodney Murphy</b>	Executive Director	Cabinet for Health and Family Services
<b>Keith Peercy</b>	Police LT Colonel	Justice and Public Safety Cabinet
<b>Robbie Perkins</b>	Assistant Director	Personnel Cabinet
<b>Len Peters</b>	Cabinet Secretary	Energy and Environment Cabinet
<b>Stacia Peyton</b>	Deputy Commissioner	Department for Local Government
<b>Jack Phipps</b>	Internal Policy Analyst	Cabinet for Health and Family Services
<b>Tim Pollard</b>	Executive Director	Tourism, Arts, and Heritage Cabinet
<b>Theresa Rakes</b>	Executive Staff Advisor	Commonwealth Office of Technology
<b>Shari Randle</b>	Division Director	Cabinet for Health and Family Services
<b>Chad Redfern</b>	Network Analyst	Finance and Administration Cabinet
<b>Bill Riggs</b>	Deputy Secretary	Education and Workforce Cabinet
<b>Michael Rodgers</b>	Division Director	Justice and Public Safety Cabinet
<b>Thomas Rossman</b>	Director	Division of Geographic Information

<b>Name</b>	<b>Title</b>	<b>Agency</b>
<b>Steve Rucker</b>	Commissioner of Technology	Commonwealth Office of Technology
<b>Matt Sawyers</b>	Deputy Secretary	Tourism, Arts, and Heritage Cabinet
<b>Samantha Stamper</b>	Network Engineer	Cabinet for Health and Family Services
<b>Terry Stephens</b>	Executive Director	Finance and Administration Cabinet
<b>Terry Terrell</b>	Information Systems Manager	Department of Corrections, Justice and Public Safety Cabinet
<b>Glenn Thomas</b>	Division Director	Division of IT Governance
<b>Shawn Thomas</b>	Division Director	Technical Services
<b>Lee Tompkins</b>	State Portal Director	Kentucky Interactive LLC
<b>Edward Tonini</b>	Adjutant General	Military Affairs
<b>Ken Ueltschi</b>	Division Director	Division of Printing Services
<b>Bob Vance</b>	Cabinet Secretary	Public Protection Cabinet
<b>Layne Wagoner</b>	CIO	Justice and Public Safety Cabinet
<b>Tony Wilder</b>	Commissioner	Department for Local Government
<b>Richard Woodruff</b>	Information Systems Manager	Finance and Administration Cabinet
<b>Jerry Wright</b>	Commander	Justice and Public Safety Cabinet
<b>John Zeitz</b>	Network Engineer	Justice and Public Safety Cabinet



Appendix C  
**IT Service Function Definitions**

In developing the information technology service delivery findings in chapter 2, PTI evaluated the Commonwealth's information technology staffing levels across five IT functional areas:

- ◆ **Customer Services** – labor related to directly helping end users utilize IT systems and services (e.g., help desk, tier 2 support)
- ◆ **Infrastructure Services** – labor related to implementing and maintaining the organization's computers, systems software, and connectivity (e.g., servers, networks)
- ◆ **Application Services** – labor related to developing custom applications, installing and configuring software packages, and otherwise maintaining the software needed to meet the operational, management, and reporting requirements of the organization
- ◆ **IT Planning Services** – labor related to technology planning and governance
- ◆ **IT Administration Services** – labor related to the oversight and administration of technology

Commonwealth staff initially provided this labor data, and reviewed and validated it after PTI assembled and analyzed it.

## IT Functional Area and Activities Definitions

---

### Customer Services

Customer Services include those activities related to directly supporting users of IT systems and services (e.g., help desk).

#### Help Desk (Tier 1)

The activities related to providing a first point of contact for users to report problems and seek answers to questions related to their personal computers, network access, email, personal productivity software, and business application software. Includes initial problem resolution, triage, and problem escalation.

#### Tier 2 Support

The activities related to providing specialized assistance with the software and hardware that support user work functions, including: desktops/workstations; laptops; tablets; blackberry/smart phones; and printers and other multi-function devices as well as personal productivity tool support.

**O&M IT Project Management**

The activities related to the management of customer service related projects, which are funded by operations and maintenance dollars rather than capital accounts.

**Infrastructure Services**

Infrastructure Services include those activities related to implementing and maintaining the organization's computers, systems software, and connectivity (servers, networks, etc.).

**Database Administration**

The activities related to planning, implementing, and administering the data structures required to support the organization's applications portfolio, and to maintaining the data contained within the Organization's defined data structures. Includes performance management and recovery.

**Security Administration**

The activities related to developing, maintaining, and administering the security plan for the organization's host processors, servers, personal computers, communication devices and networks. Does not include installation of desktop security tools nor server account management – does include managing centrally managed server based security solutions.

**Production/Operations Support**

The activities related to the planning, administration, and operation of the facility that houses the organization's computing equipment, including backup/restore operations. Includes operation and maintenance of the attendant systems, including fire suppression, backup electrical power, air conditioning, etc.

**System Architecture**

The activities related to high-level design of IT systems.

**Server Administration**

The activities related to implementing and maintaining servers, including administration, account management, and operation of file, print, and application servers and other logical network devices; performance management; tuning; applying operating system patches and upgrades; and administering configuration data.

### **Personal Computer Administration**

The activities related to the setup, configuration, original installation, and scheduled maintenance of end users' desktop and laptop computers, end user terminals, and related peripherals. Includes installation and configuration of PC operating systems and software, such as personal productivity tools and anti-virus applications. Includes the creation and maintenance of disk images, application of patches and updates, and all scheduled maintenance.

### **Communication Services**

The activities related to the administration of the devices, services and vendors responsible for voice and data communication within and external to the organization. May include infrastructure device installation and maintenance (phones, routers, etc.), and managing service agreements and relationships with vendors and/or contractors.

#### Network Administration (LAN/WAN/Wireless)

The activities related to implementing and maintaining the operational integrity of the organization's local and wide-area networks, both wired and wireless. Technologies include building wiring, fiber optic data circuits, and point-to-point technologies such as laser and microwave. These activities include responding to user requests for assistance, performance monitoring, coordinating with external network service providers, and taking appropriate corrective actions as needed.

#### VoIP-Based Phone Systems Administration

The activities related to phone systems using Voice over Internet Protocol technologies. Includes long distance support, directory assistance, calling cards and collect calls.

#### Centrex- and POTS-based Phone Systems Administration

The activities related to phone systems using legacy technologies. Includes long distance support, directory assistance, calling cards and collect calls.

#### "Feature" Phones Administration

The activities related to supporting mobile phones with limited features (i.e. not smartphones).

#### Radio Systems Administration

The activities related to maintaining voice radio systems.

#### Other Communication Services

The activities related to maintain fax machines and videoconferencing equipment.

#### **O&M IT Project Management**

The activities related to the management of IT infrastructure-related projects, which are funded by operations and maintenance dollars rather than capital accounts.

#### **Application Services**

Application Services include those activities related to developing, installing, configuring, and otherwise maintaining the software needed to meet the operational, management, and reporting requirements of the organization.

#### **Enterprise Applications**

The activities related to the management and maintenance of software applications that are used across the organization.

#### Business Intelligence/Decision Support

The activities related to the management and maintenance of the applications responsible for integrating data from various systems to present summarized and trended data in graphical and tabular format with drill-down capabilities.

#### Document Management

The activities related to the management and maintenance of the applications responsible for the automated control of documents, electronic or otherwise, throughout their lifecycle (i.e., from initial creation through final archiving and destruction).

#### eGovernment/Constituent Relationship Management (CRM)

The activities related to the management and maintenance of the applications that interact and conduct financial transactions with constituents and customers via the Web (eGovernment) or to help them locate desired information/services and provide a means of tracking constituent-agency interaction (CRM).

#### GIS

The activities related to the management and maintenance of the applications responsible for capturing, storing, updating, manipulating, analyzing, and displaying spatial and tabular information.

### Financial Management

The activities related to the management and maintenance of the applications responsible automating the Commonwealth's management of financial transactions.

### Email/Calendar

The activities related to the management and maintenance of the applications responsible for scheduling, and e-mail capabilities.

### Intranet/Collaboration Software

The activities related to the management and maintenance of the applications responsible for the dissemination of information among staff utilizing a web browser for access.

### Human Resources/Timekeeping

The activities related to the management and maintenance of the applications responsible for online processing and maintenance of employee records or collecting and validating employee hours.

### Other

The activities related to the management and maintenance of the applications responsible for other enterprise software not accounted for by the preceding application categories.

### **Cabinet/Agency Applications**

The activities related to the management and maintenance of agency-specific software applications.

### **O&M IT Project Management**

The activities related to the management of application-related projects, which are funded by operations and maintenance dollars rather than capital accounts.

### **IT Planning**

IT Planning includes those activities related to planning for the technology function at the organization.

### **Strategic Planning and Governance**

The activities related to identifying and evaluating the future directions for IT application, networks, and hardware for the organization. Includes strategic planning, evaluating and prioritizing IT investments, technology research, participating in committees and task forces, and feasibility studies.

**Research and Development**

The activities related to evaluation and testing of current and future IT products and services, and to the deployment of pilot projects to test the viability of these technologies for the organization. Includes dissemination of relevant information to appropriate parties.

**Disaster Recovery/Planning**

The activities related to developing, maintaining, updating, and testing the organization's IT disaster recovery/business resumption plan, and to activating and managing the plan in the event of a disaster.

**IT Administration**

IT Administration includes those activities related to the oversight and administration of the technology function at the organization.

**Asset Management**

The activities related to managing the IT properties of the organization, include tracking serial number, warranty, and inventory.

**IT Procurement**

The activities related to acquisition of goods and services in support of all IT functions; including the development of requests for proposals, evaluation and selection of vendors, management of purchasing activities, receipt and inventory of goods, and tracking of warranty information and performance guarantees.

**Standards and Policies Development**

The activities related to the creation and updating of IT standards and policies related to hardware, software, procurement, security, and staffing.

**Customer Account Management**

The activities related to working in conjunction with departments or divisions guaranteeing that service level agreements are adhered to and customer needs are being met. Includes tracking and reporting service levels, business need assessments and service gap determination, and the collection and reporting of service measures (e.g., tier 1 and tier 2 response and resolution rates, customer satisfaction surveys). May also include directly managing vendor service contracts or assisting with vendor relationship management.

**Administrative Support**

The activities related to the provision of clerical, administrative, and related services required for the ongoing operation of the IT division.

**Training**

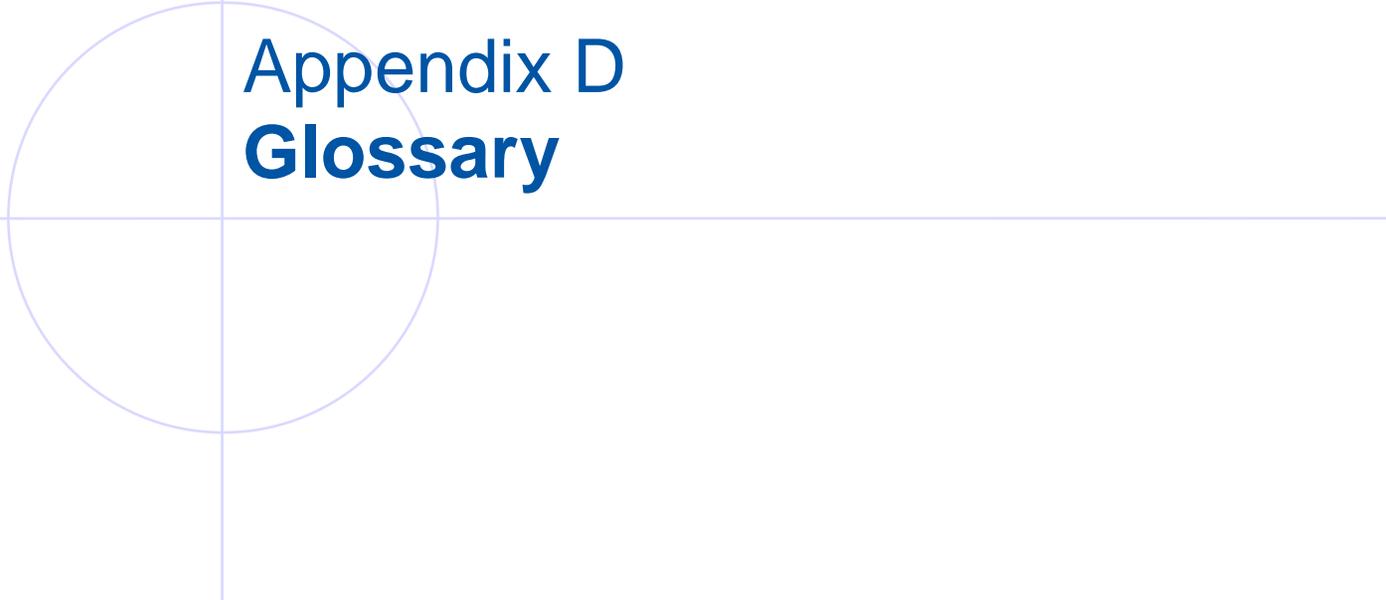
The activities related to providing technology-related instruction to staff aimed at enhancing their skills, knowledge, and performance. Includes training requirement analysis, course design and development, and training delivery.

**Departmental Management**

The activities performed by information systems managers or supervisors related to management and oversight of the organization's technology functions, including staff development and performance evaluation, workload prioritization, and budgeting.

**Executive Management**

The activities performed by executive-level management related to management and oversight of the organization's technology functions, including setting overall direction, staff development and performance evaluation, workload prioritization, and budgeting.



Appendix D  
**Glossary**

This appendix provides a glossary of terms referenced throughout this document:

- ◆ Data Center Tiers
- ◆ IT Facility Conditions

## Data Center Tiers<sup>18</sup>

### **Tier I: Non-Redundant**

#### *Dedicated Data Center Infrastructure Beyond Office Setting*

Tier I solutions meet the data center owner's or operator's desire for dedicated site infrastructure to support information technology (IT) systems. Tier I infrastructure provides an improved environment compared to an office setting and includes a dedicated space for IT systems; an uninterruptible power supply (UPS) to filter power spikes, sags, and momentary outages; dedicated cooling equipment that won't get shut down at the end of normal office hours; and an engine generator to protect IT functions from extended power outages.

### **Tier II: Basic Redundant**

#### *Power and Cooling Systems Have Redundant Capacity Components*

Tier II facility infrastructure solutions include redundant critical power and cooling components to provide an increased margin of safety against IT process disruptions that would result from site infrastructure equipment failures. The redundant components are typically power and cooling equipment such as extra UPS modules, chillers or pumps, and engine generators. This type of equipment can experience failures due to manufacturing defects, installation or operation errors, or, over time, worn-out equipment.

### **Tier III: Concurrently Maintainable**

#### *No Shutdowns for Equipment Replacement and Maintenance*

Tier III site infrastructure adds the capability of Concurrent Maintenance to Tier II solutions. As a result, a redundant delivery path for power and cooling is added to the redundant critical components of Tier II so that each and every component needed to support the IT processing environment can be shut down and maintained without impact on the IT operation.

---

<sup>18</sup> Based on *Data Center Site Infrastructure Tier Standard: Topology* (New York: Uptime Institute Professional Services, LLC, 2010).

**Tier IV: Fault Tolerant**

*Withstand a Single, Unplanned Event (e.g., Fire, Explosion, Leak)*

Tier IV site infrastructure builds on Tier III, adding the concept of Fault Tolerance to the site infrastructure topology. Fault Tolerance means that if/when individual equipment failures or distribution path interruptions occur the effects of the events are stopped short of the IT operations.

**IT Facility Conditions****Designed**

Designed facilities include secured/controlled access, internal security system, environmental controls, appropriate non-water based fire suppression system, raised flooring, cable management solutions, seismic hardening, server/device racks, administrative monitoring/workspace, power line conditioning/UPS backup systems, backup power generation for emergency operations.

**Adapted**

Adapted facilities include secured/controlled access, water-based or no fire suppression system, raised or conventional flooring, limited cable management solutions, server/device racks/closets, limited "stand-up" administrative monitoring/workspace, limited power line conditioning/UPS backup systems, limited or no backup power generation for emergency operations.

**Ad Hoc**

Ad hoc facilities include minimally secured/minimally controlled access, water-based or no fire suppression system, conventional flooring, limited or no cable management solutions, limited or no server/device racks, limited power line conditioning/UPS backup systems.

**Closet**

Closet facilities include unsecured "behind a door" access, servers on the floor/table/shelf in a "broom closet" or other enclosed space, limited or no power line conditioning/UPS backup system.

**Open**

Open facilities include unsecured/open access, servers on the floor/table/shelf in an unenclosed and accessible space, limited or no power line conditioning or UPS backup system.



Appendix E  
**Cost, Savings,  
and FTE Reduction Detail**



This appendix details the cost and savings estimates presented in this report and describes PTI's estimation methodology and associated assumptions, organized as follows:

- ◆ Estimated Costs
- ◆ Potential Savings

## **Estimated Costs**

---

The chart on the following page represents the estimated cost figures, provided by the Commonwealth.

### Estimated Costs<sup>19</sup>

	FY13	FY14	FY15	FY16	4-Year Total	Assumptions/Notes
<b>GOODS/SERVICES</b>						
<b>Facility Upgrades</b>						
Commonwealth Data Center (CDC) at Cold Harbor power upgrades	\$50,000	\$0	\$0	\$0	\$50,000	No equipment transition to 2nd floor
CDC power distribution (floors 3 and 4)	\$150,000	\$120,000	\$90,000	\$50,000	\$410,000	No equipment transition to 2nd floor
Equipment move	\$36,000	\$0	\$0	\$0	\$36,000	200 non virtualized servers (4 hr. ea. at \$45/hr)
<b>Subtotal</b>	<b>\$236,000</b>	<b>\$120,000</b>	<b>\$90,000</b>	<b>\$50,000</b>	<b>\$496,000</b>	
<b>Infrastructure Consolidation</b>						
CDC telephony network upgrade to full SIP compliance	\$394,000	\$394,000	\$394,000	\$0	\$1,182,000	Consolidates all available capacity outside COT Continues CS2100 maintenance for 3 years (less OH,
<b>Subtotal</b>	<b>\$394,000</b>	<b>\$394,000</b>	<b>\$394,000</b>	<b>\$0</b>	<b>\$1,182,000</b>	
<b>Business Continuity/Disaster Recovery</b>						
Expanded BC/DR to systems not adequately covered currently	\$120,000	\$120,000	\$120,000	\$120,000	\$480,000	10% increase above current BCRS spend (\$1.2M)
Alternate data additional floor space	\$100,000	\$100,000	\$100,000	\$100,000	\$400,000	
<b>Subtotal</b>	<b>\$220,000</b>	<b>\$220,000</b>	<b>\$220,000</b>	<b>\$220,000</b>	<b>\$880,000</b>	
<b>SUBTOTAL - Goods/Services</b>	<b>\$850,000</b>	<b>\$734,000</b>	<b>\$704,000</b>	<b>\$270,000</b>	<b>\$2,558,000</b>	
<b>STAFFING/PERSONNEL</b>						
<b>Commonwealth CIO</b>						
Nationwide search	\$50,000	\$0	\$0	\$0	\$50,000	
Annual salary (incl benefits)	\$100,000	\$183,361	\$183,361	\$183,361	\$650,083	Partial year in FY13
<b>Subtotal</b>	<b>\$150,000</b>	<b>\$183,361</b>	<b>\$183,361</b>	<b>\$183,361</b>	<b>\$700,083</b>	
<b>IT Staff Transfer, Retraining, and Retooling</b>						
Ongoing toolset training	\$7,200	\$3,600	\$3,600	\$3,600	\$18,000	Ongoing training for 6 FTEs at \$600 ea, 2 classes in FY13
Re-purpose personnel into service level management activities	\$60,000	\$60,000	\$60,000	\$60,000	\$240,000	Ongoing training for 12 FTEs at \$5K ea
Re-purpose personnel into contract management activities	\$15,000	\$15,000	\$15,000	\$15,000	\$60,000	Ongoing training for 3 FTEs at \$5K ea
Re-purpose personnel into procurement activities	\$15,000	\$15,000	\$15,000	\$15,000	\$60,000	Ongoing training for 3 FTEs at \$5K ea
New oversight responsibility training	\$10,000	\$10,000	\$10,000	\$10,000	\$40,000	Ongoing training for 2 FTEs at \$5K ea
Training computer operations staff on changes to offline procedures, etc.	\$75,000	\$0	\$0	\$0	\$75,000	Training for 15 FTEs at \$5K ea
<b>Subtotal</b>	<b>\$182,200</b>	<b>\$103,600</b>	<b>\$103,600</b>	<b>\$103,600</b>	<b>\$493,000</b>	
<b>Tools and Services</b>						
Periodic inventory of infrastructure equipment	\$50,000	\$0	\$50,000	\$0	\$100,000	
IT asset and inventory management and provisioning toolset	\$250,000	\$0	\$0	\$0	\$250,000	
Toolset maintenance	\$0	\$37,500	\$37,500	\$37,500	\$112,500	15% maintenance begins in FY14
<b>Subtotal</b>	<b>\$300,000</b>	<b>\$37,500</b>	<b>\$87,500</b>	<b>\$37,500</b>	<b>\$462,500</b>	
<b>Progress Monitoring and Reporting</b>						
Training to develop standard cost and cost savings measures	\$30,000	\$30,000	\$30,000	\$30,000	\$120,000	Ongoing training for 3 FTEs at \$10K ea
Training to develop standard service quality and delivery measures	\$30,000	\$30,000	\$30,000	\$30,000	\$120,000	Ongoing training for 3 FTEs at \$10K ea
Training to monitor eMARS expenditure coding and agency IT cost reporting	\$20,000	\$20,000	\$20,000	\$20,000	\$80,000	Ongoing training for 2 FTEs at \$10K ea
<b>Subtotal</b>	<b>\$80,000</b>	<b>\$80,000</b>	<b>\$80,000</b>	<b>\$80,000</b>	<b>\$320,000</b>	
<b>SUBTOTAL - Staffing/Personnel</b>	<b>\$712,200</b>	<b>\$404,461</b>	<b>\$454,461</b>	<b>\$404,461</b>	<b>\$1,975,583</b>	
Contingency (5%)	\$78,110	\$56,923	\$57,923	\$33,723	\$226,679	
<b>TOTAL ESTIMATED COSTS</b>	<b>\$1,640,310</b>	<b>\$1,195,384</b>	<b>\$1,216,384</b>	<b>\$708,184</b>	<b>\$4,760,262</b>	

<sup>19</sup> Estimated costs do not include one-time costs for professional, third-party change management services to guide the implementation of PTI's recommendations.



## Potential Savings

---

PTI quantified the potential savings that the Commonwealth can realize by implementing the recommendations in this report. This section details these savings estimates, organized as follows:

- ◆ Estimation Methodology
- ◆ Cost Savings Estimates
- ◆ Associated FTE Reductions

### Savings Estimation Methodology

PTI quantified potential cost savings in the following categories:

- ◆ Labor
- ◆ End user computing
- ◆ Servers and network
- ◆ Telecommunications
- ◆ IT contractors
- ◆ Administration and overhead

The following describes our methodology to estimate savings in each of these categories, relying on PTI's target public sector benchmarks, staffing benchmarks from Computer Economics,<sup>20</sup> and vendor estimates as noted.

#### Labor Cost Basis

All of the savings calculations for non-management labor reduction use a burdened cost of \$63,257 per FTE, based on the weighted average for permanent staff reported by the agencies.

Savings calculations for management reduction use a burdened cost of \$80,374 per FTE, based on the average of management-titled IT staff provided by the Personnel Cabinet. This data showed an average of 13.6 IT staff for each manager. The savings assume this same ratio is kept through the reductions.

---

<sup>20</sup> *IT Spending and Staffing Benchmarks* (Irvine, CA: Computer Economics, Inc., 2011).

Actual savings will be higher or lower depending on which staff are reduced. Labor cost savings do not include potential savings resulting from conversion of contractors to Commonwealth employees. The latter figure is calculated separately to avoid double-counting contractor-related savings.

### **End User Computing**

Kentucky currently has 214 FTE of staff and contractors supporting 33,606 PCs and laptops, a ratio of 157:1. PTI commonly sees ranges of 225:1 to 275:1 in well-managed IT organizations. These are used as the low and high targets respectively. The low target reduces workstation support to 149 FTE, and the high target reduces it to 122 FTE, resulting in the savings shown.

Reducing the number of service staff will also allow a reduction in management. These are estimated at 4.8 FTE for the low target and 6.8 FTE for the high target, with associated savings. The latter figures were calculated using the 13.6 ratio of staff to managers (e.g.,  $(214-149)/13.6=4.8$ ).

### **Servers and Network**

Consolidation of servers and network equipment into the virtualized environment of the CDC will produce several savings. On the labor side, Kentucky is currently very much in the “average” category for server and network administration efficiency, in the 50<sup>th</sup> percentile based on benchmarks provided by Computer Economics. PTI calculated the labor savings resulting from progress to the 62<sup>nd</sup> percentile as a low target, and the 75<sup>th</sup> percentile as the high target. At the high target, Kentucky would be in the top 25% of rankings relative to peers.

Network administration currently has 49.3 FTE. Moving to the 62<sup>nd</sup> percentile would reduce this by 14.6 FTE, and moving to the 75<sup>th</sup> percentile would reduce it by 29.2 FTE. Server administration currently has 45.8 FTE. Moving to the same percentile brackets would result in 12.1 FTE and 24.1 FTE reductions respectively. Reducing the network and server administration staff allows management reductions of 2.0 and 3.9 FTE for the low and high targets, using the 13.6 ratio of staff to managers.

Virtualization will reduce the number of servers needed by the Commonwealth, saving the costs of replacing them periodically. Based on the current inventory of 1,416 servers, with a replacement cost of \$10,000 and a replacement cycle of 5 years, Kentucky spends \$2,922,000 on server replacement annually. Targeting a range of 25% to 50% reductions in the number of servers results in the replacement savings shown.

Reducing the number of servers also reduces power requirements. Computer Economics provided an average annual power cost of \$1,087 per server for large organizations. Using the same 25% to 50% range of server reductions gives the savings shown.

Centralizing servers and network equipment will allow the agencies to put the space used by their IT facilities to more productive use. A floor space inventory for these facilities is not available, so the numbers shown here are rough estimates. They assume a lease rate of \$20 per square foot. Designed and adapted facilities are assumed to average 1500 square feet, while most of the substandard facilities are much smaller and are assumed to be 150 square feet. There are 63 designed/adapted facilities, and 490 substandard ones. With reductions of 25% to 50% in IT facility floor space, the savings from repurposing the space are as shown.

### **Telecommunications**

Consolidating the Commonwealth's telephony into a single integrated VoIP system will also yield a number of savings. Currently, 37.9 FTE of labor supports the various telephone systems across the agencies. Total number of handsets is estimated at about 37,000, giving a support ratio of about 1000:1. PTI has seen support ratios of 1500:1 to 2500:1 in the public sector, which are used as the low and high targets here. These reduce telephony support requirements to 24.7 FTE and 14.8 FTE respectively. The associated reductions in management labor are 1.0 FTE and 1.7 FTE, using the 13.6 ratio of staff to managers.

Extracts from eMARS show that the agencies spend \$7.4 million annually on telephone charges outside of COT. Many of these circuit charges and long-distance charges will be eliminated by VoIP consolidation. Low and high range targets of 33% and 50% reduction are used based on estimates provided by a consulting company that specializes in circuit optimization, yielding the savings shown in the following section.

Consolidation will eliminate the need for most agency PBX and VoIP equipment. This currently costs over \$300,000 per year in maintenance. Targeting reductions of 50% and 75% in maintenance costs for surplus equipment results in the savings shown.

### **IT Contractors**

As discussed in the labor cost basis, savings for contractor reductions are calculated separately to avoid double-counting. Contractors currently comprise 28% of the Commonwealth's IT labor force, compared to an average of 13% reported by Gartner for peer organizations. The savings shown here are calculated with low and high targets of 20% and 15% of workforce respectively. They are based on the \$30,536 average differential in annual cost between contractors and permanent staff.

Actual savings will vary depending on whether contractors are simply released, or are converted to permanent staff. There is considerable variation in contractor rates, and the differential may be higher than shown for the particular contractors targeted. This will yield higher savings than shown.

### **Administration and Overhead**

The Commonwealth provided standard figures used to calculate non-IT administration and support, and general overhead related to facilities, utilities, insurance, etc. The admin/support rate is 16.8%, and is applied as a savings only to the labor reduction items. The overhead rate is 4.0% and is applied to all items.

### **Cost Savings Estimates**

PTI quantified the potential savings that can be realized by implementing the recommendations in this report. The table on the following page presents these estimated annual savings. It is important to note that these figures represent a minimum range of savings. It is likely that additional savings can be realized from efficiency gains and cost avoidance that were not quantified as part of the scope of this study.

### Estimated Annual Savings

Recommendation	Current Cost		Estimated Savings			
	Metric	Cost	Low End Target		High End Target	
			Metric	Savings	Metric	Savings
<b>End User Computing</b>						
Increased PC support labor efficiency	157:1	\$ 13,542,347	225:1 ratio	\$ 4,094,322	275:1 ratio	\$ 5,812,145
Reduced PC support management	not applicable	\$ 1,265,218	225:1 ratio	\$ 382,519	275:1 ratio	\$ 543,010
<b>Subtotal</b>		<b>\$ 14,807,565</b>		<b>\$ 4,476,841</b>		<b>\$ 6,355,155</b>
<b>Servers and Network</b>						
Reduced IT facility space	553 IT facilities	\$ 3,360,000	25% reduction	\$ 840,000	50% reduction	\$ 1,680,000
Wintel server consolidation/virtualization (replacement savings)	1,461 servers	\$ 2,922,000	25% reduction	\$ 730,500	50% reduction	\$ 1,461,000
Wintel server consolidation/virtualization power savings)	1,461 servers	\$ 1,588,107	25% reduction	\$ 397,027	50% reduction	\$ 794,054
Increased network administration labor efficiency	50th percentile	\$ 3,120,447	62nd percentile	\$ 923,132	75th percentile	\$ 1,846,264
Increased server administration labor efficiency	50th percentile	\$ 2,895,886	62nd percentile	\$ 762,075	75th percentile	\$ 1,524,151
Reduced network and server management	not applicable	\$ 562,087	62nd percentile	\$ 157,443	75th percentile	\$ 314,887
<b>Subtotal</b>		<b>\$ 14,448,527</b>		<b>\$ 3,810,178</b>		<b>\$ 7,620,355</b>
<b>Telecommunications</b>						
Consolidated telecommunications circuits	not applicable	\$ 7,393,858	33% reduction	\$ 2,439,973	50% reduction	\$ 3,696,929
Reduced telecommunication equipment maintenance	not applicable	\$ 313,471	50% reduction	\$ 156,736	75% reduction	\$ 235,103
Increased telecommunication support labor efficiency	1,000:1	\$ 2,395,527	1500:1 ratio	\$ 835,198	2500:1 ratio	\$ 1,459,329
Reduced telecommunication management	not applicable	\$ 223,806	1500:1 ratio	\$ 78,030	2500:1 ratio	\$ 136,340
<b>Subtotal</b>		<b>\$ 10,326,662</b>		<b>\$ 3,509,936</b>		<b>\$ 5,527,702</b>
<b>IT Contractors</b>						
Reduced IT contractors	28%	\$ 103,356,256	20% contractors	\$ 3,712,929	15% contractors	\$ 5,906,205
Reduced non-IT administration and support labor	not applicable	\$ 4,032,893	16.80%	\$ 1,215,097	16.80%	\$ 1,954,869
Reduced overhead	not applicable	\$ 5,094,463	4.00%	\$ 620,395	4.00%	\$ 1,016,377
<b>TOTAL</b>		<b>\$ 152,066,366</b>		<b>\$ 17,345,376</b>	<b>TOTAL</b>	<b>\$ 28,380,663</b>

### Associated FTE Reductions

PTI calculated many of the above savings calculations based on reductions in the FTE level of staff and contractors, as discussed in the previous section. The table on the following page summarizes our assumptions surrounding labor reductions in these areas.

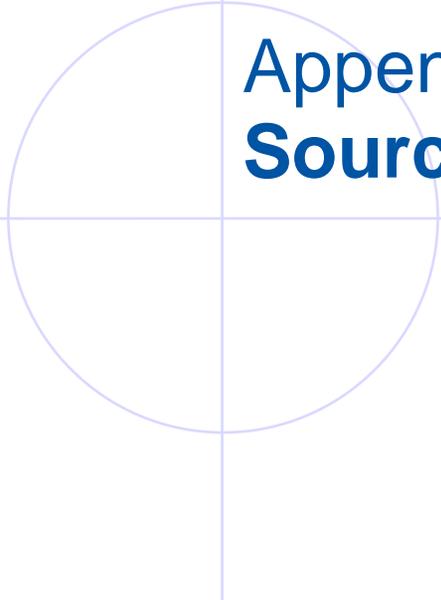


### FTE Reduction Assumptions<sup>21</sup>

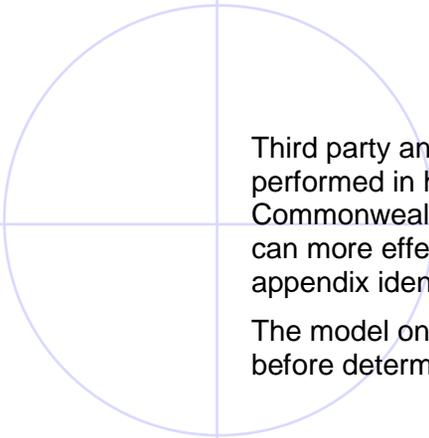
Recommendation	Current		Projected			
	Metric	FTE	Low End Target		High End Target	
			Metric	FTE Reduction	Metric	FTE Reduction
<b>End User Computing</b>						
Increased PC support labor efficiency	157:1	214.09	225:1 ratio	64.73	275:1 ratio	91.88
Reduced PC support management	not applicable	15.74	225:1 ratio	4.76	275:1 ratio	6.76
<b>Subtotal</b>		<b>229.83</b>		<b>69.48</b>		<b>98.64</b>
<b>Servers and Network</b>						
Increased network administration labor efficiency	50th percentile	49.33	62nd percentile	14.59	75th percentile	29.19
Increased server administration labor efficiency	50th percentile	45.78	62nd percentile	12.05	75th percentile	24.09
Reduced network and server management	not applicable	6.99	62nd percentile	1.96	75th percentile	3.92
<b>Subtotal</b>		<b>102.10</b>		<b>28.60</b>		<b>57.20</b>
<b>Telecommunications</b>						
Increased telecommunication support labor efficiency	1,000:1	37.87	1500:1 ratio	13.20	2500:1 ratio	23.07
Reduced telecommunication management	not applicable	2.78	1500:1 ratio	0.97	2500:1 ratio	1.70
<b>Subtotal</b>		<b>40.65</b>		<b>14.17</b>		<b>24.77</b>
<b>TOTAL</b>		<b>372.59</b>		<b>112.26</b>		<b>180.60</b>

Although not quantified in the above table, some additional FTE reductions would be required in non-IT administration and support labor to realize the corresponding savings detailed in the previous section's Estimated Annual Savings table.

<sup>21</sup> Current management FTE levels calculated based on an average span of control of 13.6 staff positions to each manager.



Appendix F  
**Sourcing Decision Considerations**

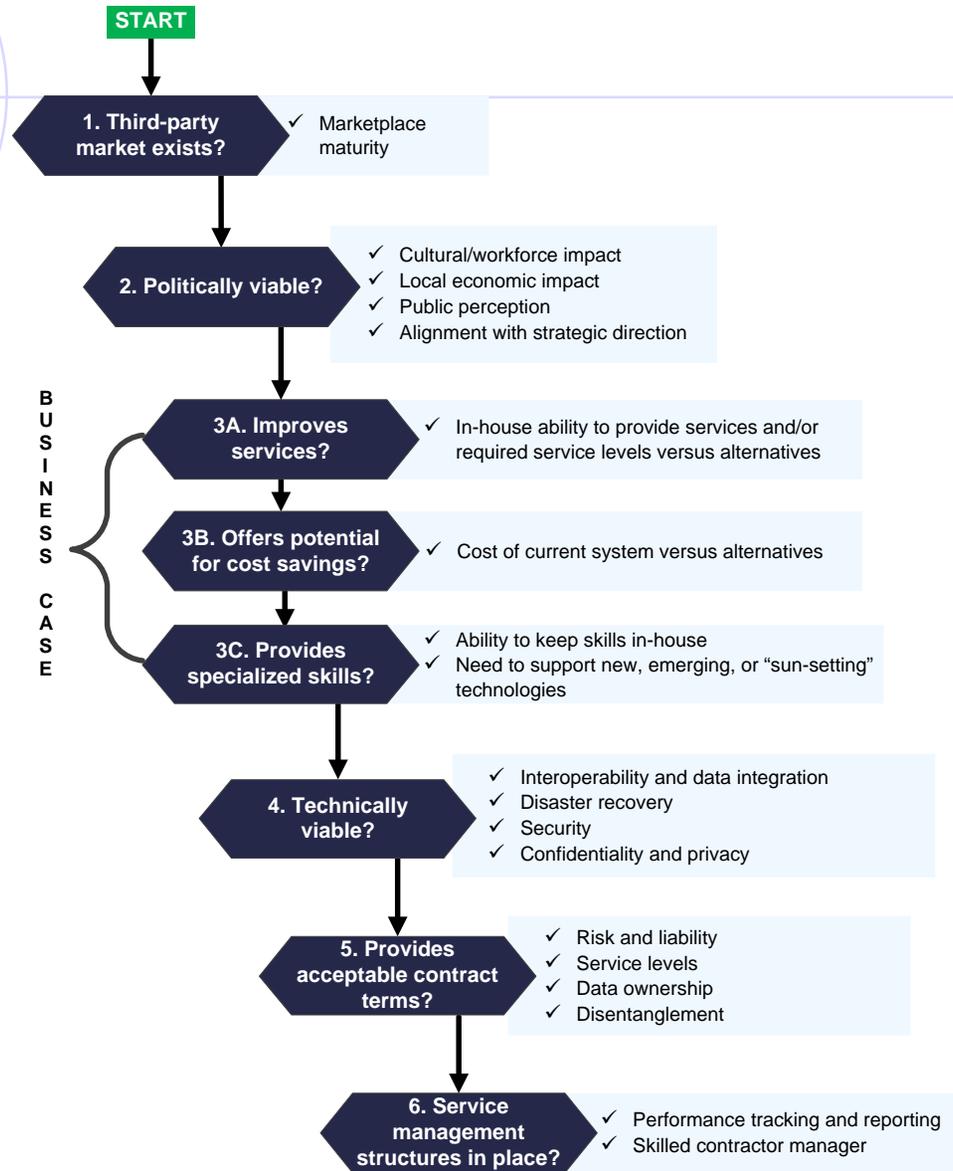


Third party and cloud IT services provide alternate avenues for delivering IT functions typically performed in house. Many of the recommendations made in this report target restructuring the Commonwealth's commodity IT services in alignment with the private sector – in part so that Kentucky can more effectively evaluate the costs and benefits of these sourcing options in the future. This appendix identifies key considerations to guide these sourcing decisions.

The model on the following page illustrates decision points the Commonwealth may wish to evaluate before determining a sourcing direction. A brief description of each step follows the graphic.

F

### IT Sourcing Decision Model



Ultimately, the chosen solution should pass each step before moving to final approval. The following outline summarizes major considerations for each step.

1. Does a third-party market exist? How developed is the marketplace? Does it have a track record of success? Are other large public sector organizations using these services? How stable are the service providers? Are there multiple viable service providers that could meet the Commonwealth's requirements?
2. Is the sourcing decision politically viable? How does it affect the Commonwealth's workforce? What are the economic impacts on the Frankfort area? The Commonwealth as a whole? How is it perceived by the public? Does it align with the Commonwealth's long-term strategic direction?
3. Steps 3A – 3C form the basis of the business case; although an ideal solution would meet each of the considerations in step 3, meeting just one is enough to continue through the decision-making process.
  - 3A. Does the proposed solution improve IT services? How well can the Commonwealth meet required service levels in-house? What service levels are offered by external providers?
  - 3B. Does the proposed solution offer long term cost savings over the current service?
  - 3C. Does the proposed solution provide specialized skills not available or difficult to retain in-house? Is there a need to support emerging or sun-setting technologies?
4. Is the proposed solution technically viable? How does it integrate with other systems? What are its disaster recovery/business continuity and security capabilities? Does it meet the Commonwealth's requirements for confidentiality and privacy?
5. Does the proposed solution provide acceptable contract terms? What is the Commonwealth's risk and liability? What are the defined service levels and related performance commitments? Is performance measurement clearly defined? How are data ownership and disentanglement handled? Is there a viable recovery option if the Commonwealth has to terminate the contract? Is cost escalation effectively managed? Are licensing and other intellectual property issues covered?
6. Does the Commonwealth have the necessary structures in place to manage the IT service? Is there a skilled contract manager available to monitor performance against contract specifications?