



EXECUTIVE OFFICE OF TECHNOLOGY SERVICES & SECURITY

COMMONWEALTH OF MASSACHUSETTS | 1 ASHBURTON PLACE, 8TH FLOOR, BOSTON, MA 02108

CHARLES D. BAKER
Governor

Curtis M. Wood
Secretary

KARYN E. POLITO
Lieutenant Governor

February 15, 2022

Michael J. Heffernan
Secretary of Administration and Finance
State House, Room 373
Boston, MA 02133

The Honorable Suzanne Bump
State Auditor
State House, Room 230
Boston, MA 02133

Chair Aaron Michlewitz
House Committee on Ways and Means
State House, Room 243
Boston, MA 02133

Chair Michael Rodrigues
Senate Committee on Ways and Means
State House, Room 212
Boston, MA 02133

Dear Secretary Heffernan, Auditor Bump, Chair Michlewitz, and Chair Rodrigues:

Pursuant to Chapter 24 of the Acts of 2021, the Executive Office of Technology Services and Security (EOTSS) is pleased to provide you with the enclosed report detailing initiatives undertaken by EOTSS over the previous 12-month period to modernize the Commonwealth's information technology (IT) infrastructure and enhance its cybersecurity posture.

I am grateful for your continued partnership with EOTSS. Please feel free to contact Scott Ahern at scott.m.ahern@mass.gov should you have any questions about this report.

Sincerely,

Curtis M. Wood
Secretary, Executive Office of Technology Services and Security, and Chief Information Officer
of the Commonwealth of Massachusetts



Executive Office of Technology Services and Security

Annual Legislative Report

February 2022

Purpose of this Report

The Executive Office of Technology Services and Security's (EOTSS) 1790-0100 line item in the Fiscal Year 2022 operating budget includes language requiring EOTSS to report on various aspects of information technology (IT) consolidation initiatives in the Commonwealth under the authority granted by [Chapter 64 of the Acts of 2017](#) – which established EOTSS as the lead IT and cybersecurity secretariat for the Executive Branch.

“...that not later than February 15, 2022, the executive office shall file a report with the secretary of administration and finance, the state auditor and the house and senate committees on ways and means that shall include, but not be limited to, the following: (i) financial statements detailing savings and, where applicable, additional expenses realized from the consolidation of information technology services within each executive office and other initiatives; (ii) the number of personnel assigned to the information technology services within each executive office; (iii) efficiencies that have been achieved from the sharing of resources; (iv) the status of the centralization of the commonwealth's information technology staffing, infrastructure and network and cloud hosting; (v) the status of the commonwealth's cybersecurity; and (vi) strategies and initiatives to further improve the: (a) efficiency and security of the commonwealth's information technology; and (b) transparency of the executive office with the legislature, other executive branch agencies and the general public...”

Foreword

EOTSS continues our mission of strengthening the Commonwealth's cybersecurity posture, modernizing legacy IT infrastructure, and improving the constituent digital experience. The organization achieves transformational change in these areas through critical investments in our core teams, processes, and technologies. As our enterprise IT and cybersecurity capabilities mature, so too do those of every secretariat and state agency we serve – with core investments, funded at the center and managed by EOTSS, benefiting all agencies.

While we have made significant progress in security, IT modernization, and digital innovation since our elevation to the cabinet in 2017, we anticipate the need for continued focus and investment in priority enterprise programs to overcome several challenges facing the Commonwealth in FY22 and FY23. Increased cybersecurity threats to government entities and vendor partners may present new security challenges and potential disruptions across all levels of government and major industry sectors.

We at EOTSS thank our colleagues in the Legislature for their continued leadership and investment in the Commonwealth's technology and cybersecurity needs. We look forward to continued dialogue with the Legislature as we navigate the challenges that lie ahead as we continue our mission to make for a more accessible and resilient Commonwealth.

Savings, Efficiencies, and Additional Expenses through Consolidation

EOTSS is granted the authority to centralize IT personnel, programs, and policies at the enterprise level. The goal of consolidating strategically identified IT infrastructure and personnel is to eliminate

redundancies, find efficiencies, and to standardize and enhance the Commonwealth's previously disparate cybersecurity and IT infrastructure at an enterprise level. Strategic centralization also improves the efficiency and effectiveness of the services being consolidated and brings subject matter expertise to contracting, licensing, and investment management.

While new expenses can be incurred by scaling up true enterprise IT services and security programs established to meet the growing demands of the digital era and increased cyber threats for the entire Executive Branch, cost savings can be (and are) achieved by leveraging the economies of scale generated through centralization. Additionally, savings are achieved by avoiding the high costs associated with maintaining legacy systems and limiting the large-scale, custom IT procurements of the past.

For example, adopting new business models that follow private-industry standards – including the use of Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software as a Service (SaaS) products – can be a vital solution in avoiding multimillion dollar capital expenditures on customized software builds and upgrades to legacy systems to support the applications they support.

Please find additional examples below of savings, efficiencies, and additional expenses through consolidation.

Contract Management

Related to the efforts of our Enterprise Risk Management (ERM) Office, methodical contract management is critical to the Administration's ability to simultaneously undertake multiple transformational IT projects while ensuring they each meet the requisite security measures, oversight, and cost accounting. As seen with the IT Investment Advisory Board (IIAB), common missteps in the procurement process can be avoided by dedicating personnel and procedures focused on providing guidance based on industry best practices to guide the process. Our contract management unit's primary focus is on enterprise-wide projects including Modern Workplace; Adobe e-sign, Paid Family and Medical Leave (PFML), and the process improvement 'BEST' project, to name a few.

The unit provides contract review and contract negotiation services on large scale projects across the Commonwealth at the direction of the Secretary. To date, our Contract Management Team has negotiated and established highly discounted enterprise volume license agreements with several major software providers, resulting in millions of dollars of annual savings for the Commonwealth (license costs, maintenance, and cost avoidance for deployment), and more importantly a structured centrally managed program that prioritizes contractual data security obligations, and ensures access to security patches and bug fixes for software deployments across the Commonwealth. The cost avoidance gained in mandating standard data security terms and maintaining up-to-date software systems can be measured in operational impacts to government services resulting from security breaches or system failures due to unsupported or compromised software.

IT Investment Advisory Board

We remain grateful to the Legislature for its commitment to investing in the Commonwealth's cybersecurity and IT modernization efforts through the passage in 2020 of Governor Baker's General

Governmental Bond Bill, which included \$650 million in IT capital authorizations. Governor Baker has filed a General Governmental Bond Bill in January 2022 that includes additional IT capital authorizations to ensure there is no lapse in the progress being made on ongoing priority IT and cybersecurity initiatives. We appreciate the Legislature's close consideration on these proposed funds.

As background, EOTSS oversees the IT capital investment portfolio and related program management through its Office of Capital Planning. The EOTSS Secretary, in collaboration with the IT Investment Advisory Board (IIAB), reviews and recommends projects to the Governor and the Secretary for Administration & Finance (A&F) for inclusion in the annual Capital Investment Plan (CIP).

The IIAB is comprised of security, IT, and business operations executives from across state government and meets monthly (or more frequently as needed) to review and advise the Secretary on IT capital project proposals for potential inclusion in the annual Capital Investment Plan (CIP). The IIAB also considers emergency and contingency funding requests and regularly reviews the progress of ongoing projects. The Board helps ensure that IT capital funding is allocated strategically on projects that align with the Commonwealth's goals of enhancing its security and improving its delivery of government services for the people of the Commonwealth.

In the current fiscal year, we will select software and implementation vendors for the following projects and programs:

- The Employment Modernization & Transformation program at EOLWD (replacing the Commonwealth's end-of-life unemployment system)
- The Integrated Eligibility and Enrollment project at EOHHS (creating a common noticing solution and providing a foundational, flexible base for transformation over time)
- The Business Enterprise Systems Transformation program at the Office of the Comptroller (modernizing Commonwealth financial reporting and human resources systems).

We will also complete the modernization of background checks project at the EOE and finish the transformational Modern Workplace Program – which facilitated the shift to a more mobile workforce, streamlined desktop support, and enhanced cybersecurity. Throughout the program, EOTSS collaborated with secretariat chief information officers (SCIOs) to roll out more than 20,000 new computers to executive branch employees that followed a single-device standard and upgraded to modern, cloud-based applications and collaboration tools that can be accessed from anywhere.

COVID-19 Response

The COVID-19 pandemic has drastically increased EOTSS' role within state government and has amplified many of the IT and cybersecurity challenges facing all levels of government, including the increase in threats and scams as governments transition to an increasingly remote and hybrid workforce.

EOTSS teams are collaborating on critical business technology initiatives including, but not limited to, providing digital and communication public health services in support of the Administration's COVID response (AlertsMA), vaccinations (Smart Health Card, Mass Vaccination Website, VaxMillions Website), and remain engaged in the Administration's Future of Work (FOW) initiative.

The Secretary and members of his senior leadership team serve on the FoW Executive Steering Committee and lead the initiative's technology planning workstream in collaboration with other

secretariats and agencies in scope. This past year, EOTSS also managed the development and rollout of the Commonwealth Workplace Reservation System that allowed for the shift to hybrid work and shared office locations implemented by the initiative.

Cloud Computing

EOTSS continues to collaborate with agency leaders and business application managers to make further progress in migrating critical legacy Commonwealth applications and systems to cloud hosted services and other EOTSS-approved hosting options included in our Standard Operating Environment (SOE) framework. Cloud migrations and the move to modern hosting solutions are a vital tool in the government's ability in ensuring critical business applications that power important government services remain accessible and resilient.

All migrations are handled through a "cloud smart" approach, where EOTSS works with agencies to gain a full understanding of their business needs, while ensuring continuity of those government services to avoid any adverse effects for the constituents that rely on them. EOTSS prioritizes up-front planning to determine which hosting platform provides the better option based on several considerations: need, priority, readiness, budget, delivery, management, and security.

Migrating agency business applications and infrastructure from state-owned and operated data centers to 3rd party managed Infrastructure-as-a-Service and/or co-location hosting facilities is critical to ensure the Commonwealth's information systems and infrastructure remain resilient, secure, and available. While moving legacy systems into a highly resilient environment will incur parallel costs during the transition phase, the cost of inaction could result in a catastrophic failure of our IT systems if they remain dependent on older technology and the state-owned and managed data centers.

Failure of government IT systems are costly, both in terms of a temporary inability for constituents to access vital government services and also potential costs associated with needed data recovery. Cloud migrations can be viewed as a cost avoidance initiative for the Commonwealth and investments in the continuity of government operations and improvements to the constituent digital experience.

Executive Branch IT Personnel

IT recruitment and employee retention has become more difficult. Government has historically had to compete with the private sector for talent in key areas such as cybersecurity, technology, and digital services.

In order to improve the recruitment process, EOTSS' Personnel Team has centralized IT recruiting across the Executive Branch. This has improved our process and candidate experience through a centralized recruitment effort, as candidates work with one person throughout the recruitment and hiring process when applying to IT openings at Executive Branch agencies. Nevertheless, given the market dynamics in play, creative solutions will be required to recruit the highly skilled workforce needed to further the Commonwealth's technology goals.

The following chart shows the number of IT personnel who support IT infrastructure and business applications within each executive office as of February 2022:

Secretariat	Number of IT Personnel
A&F	203
EOE	37
EEA	51
HHS	508
HED	28
LWD	39
EPS	23
TSS	375
DOT	45
<i>TOTAL</i>	<i>1,309</i>

Status of Centralization of Infrastructure, Network, and Cloud Hosting

EOTSS continues to focus our efforts on enterprise initiatives that benefit all agencies across the Executive Branch. Government and industry best practices indicate that our enterprise cybersecurity approach improves agility, effectiveness, and efficiencies of state government by promoting collaboration and breaking down silos across enterprise-level and agency-specific programs. And, the centralization of the Commonwealth's infrastructure and networks under our Standard Operating Environment (SOE) is critical to our ability to manage Commonwealth systems from the center to ensure their security.

Network and Infrastructure

We have completed the core network infrastructure and internet service transition to new locations. This infrastructure move is critical to ensure higher network availability, resiliency, and security, as the core networks serves as the foundation for all Commonwealth information services including email, data center operations, network communications, business applications, and internet service.

Additionally, we eliminated all non-EOTSS managed wide area network (WAN) services and transitioned to EOTSS enterprise-managed WAN services. We have also introduced Enterprise Voice to replace the legacy Mass Voice offering. Once fully implemented, Enterprise Voice will eliminate independently-operated agency and secretariat voice services currently in place. All Executive Branch agencies will be leveraging enterprise cloud-managed voice services.

Lastly, our Managed Print Services pilot evolved into the new Enterprise Print Services program aimed at better supporting a remote workforce and leveraging new digital print capabilities for all agencies.

This past year, EOTSS introduced the enterprise consolidated print services model – a software-driven solution that provides for a centrally-managed, secure service for on premise and remote printing. This program also eliminates thousands of individual desk printers in lieu of high-volume, multi-functional devices staged strategically throughout agencies – reducing operating costs, service call volume for maintenance and repairs, and the consumption of consumables such as toner.

Cloud Hosting

Cloud services, including public cloud hosting environments, provides the Commonwealth best-in-class technology that allows for incremental improvements in a faster, more agile manner. They also provide the capability to react to increased demands, reduce time to provision and de-provision, and more efficiently manage assets. Migrating to public cloud hosting environments enables the opportunity for applications that are running on-premise on aging technologies to be upgraded to modern, highly available, resilient, and scalable platforms. Cloud services supports the Commonwealth ability to leverage best-in-class technology to innovate on-demand, introducing automation for end-to-end digital transformation.

More importantly for today's work environment, cloud services strengthen security services to support remote access to our systems from any location, further enabling the Commonwealth's remote workforce. The modern architecture of public cloud hosting environments allows for a streamlined seamless integration with the security operations center (SOC) and security information and event management (SIEM) system.

As mentioned above, EOTSS works closely with the Secretariat Chief Information Officers (SCIOs) and business application owners at Executive Branch secretariats to best understand their business needs and prepare for lift and shift, lift and optimize, and complete re-platform transformations of Commonwealth systems to the cloud to ensure continuity of those government services.

Since 2017, EOTSS has coordinated the migration of over 340+ Commonwealth applications/platforms to the cloud services model. We continue to work with our agency partners to identify and prioritize opportunities for further cloud migrations.

In FY21, EOTSS led the successful migration of several major Commonwealth business applications, including, but not limited to: DPH's Mass Immunization Information System, DPH's Electronic Disease Surveillance System, EOHHS' Health Information Exchange, and DDS' Home and Community Services Information System. By the end of FY22, we anticipate the successful completion of the migration of dozens of Commonwealth business applications to the cloud over the previous fiscal year and look forward to reporting on this progress in next year's Annual Legislative Report.

Cybersecurity

As technology becomes more incorporated into the fabric of state government, the security of the Commonwealth's IT infrastructure, networks, and data is paramount. EOTSS maintains an approach of enhancing the three pillars of our security program: People, Technology, and Processes.

EOTSS continues to invest in its security workforce by recruiting top-end industry talent to lead our ongoing transformation to an enterprise security model. Likewise, providing annual cybersecurity training to all employees across the enterprise ensures that the Commonwealth's entire workforce shares a part in defending against potential cyber threats.

Furthermore, we continue to engage with partners in the vendor community to procure and deploy top class cybersecurity technologies to incorporate into the Commonwealth's Security Operations Center (SOC). Tools such as data aggregators allow our Security Operations Team to better monitor for abnormal activity on Commonwealth systems that require further investigation.

EOTSS also maintains the publication of security policies, standards, guidelines, and administrative directives as part of the Standard Operating Environment (SOE), including an Enterprise Security Incident Reporting and Response Framework and new end-user hardware and software standards.

While cybersecurity will remain a perpetual issue and cyber-attacks are inevitable, we at EOTSS believe in the philosophy of readiness and preparedness to best position the Commonwealth to mitigate potential cyber threats and maintain continuity of government services for the customers and constituents we serve. Continued investment and prioritization of cybersecurity will be critical to the Commonwealth's ability to stay ahead of the curve and avoid becoming the victim of costly cyber-attacks.

Security Infrastructure

EOTSS's Security Operations Team made significant progress on a number of key security infrastructure initiatives over the past year:

20,000 end-user devices were deployed to the state workforce through the completion of the Modern Workplace Program, which leverages cloud-based Microsoft Office 365 Suite and Azure Active Directory identity access management framework to further promote government business continuity and technical resiliency.

The Security Operations Center (SOC) has been stood up and we continue to make progress on expanding its capacity and service offerings. We are expanding the technology platform to automate and orchestrate enterprise and agency data sources. Adding skilled personnel and managed professional cybersecurity services to continually monitor, mitigate, and eradicate threats will further support Commonwealth entities under the program. The SOC remains a top priority.

Commonwealth and Municipal Cybersecurity Awareness Training

The Commonwealth provides cybersecurity end-user awareness training to all Commonwealth Executive Branch employees to ensure they are equipped with the knowledge to remain vigilant and avoid falling prey to potential cyber threats. By training our workforce, we essentially expand the number of the Commonwealth's cybersecurity team from a couple dozen to tens of thousands of employees. EOTSS supplements its cybersecurity training with enterprise phishing simulation exercises to gain a better understanding of the Commonwealth's endpoint vulnerabilities and to enhance its training materials.

In addition to the Commonwealth's workforce, EOTSS supports opportunities to assist our partners in municipal government. In January, EOTSS' Office of Municipal and School Technology (OMST) announced the recipients of the 2022 Municipal Cybersecurity Awareness Grant Program Awards. 57,000 employees from over 210 municipalities and public-school districts will receive cybersecurity awareness training to better detect and avoid cyber threats. Coupled with the Administration's Community Compact IT Grant Program and OMST's free Cybersecurity Health Check Program, the Administration offers our partners in municipal government with multiple resources to shore up their cybersecurity capabilities.

In 2021, the federal government and Congress made a monumental statement by including \$1 billion for a State and Local Cybersecurity Grant Program in the bi-partisan infrastructure bill. This four-year program will provide states across the country with vital resources to improve their cyber defenses. EOTSS is engaging with a number of state security organizations, including the Executive Office of Public Safety and Security (EOPSS) and MassTech Collaborative's MassCyberCenter to ensure the Commonwealth is prepared to apply for and most effectively deploy these grant resources once further program guidance is issued by the federal agencies administering the program.

Enterprise Risk Management Program

State government increasingly relies on 3rd-party vendors for its business applications and services, making vendor risk a real threat to government operations. Through a qualitative and quantitative assessment process, EOTSS' Enterprise Risk Management (ERM) Program will allow the ERM Office to scrutinize the maturity of the security and privacy standards that current 3rd-party vendors and any apparent successful bidders have in place.

Proper alignment within our Security Operations Center (SOC) and our Enterprise Risk Management (ERM) Office is critical to the maturation of the Commonwealth's cybersecurity posture. The Chief Risk Officer (CRO) will lead this synthesis in coordination with the Director of the Security Operations Center (SOC).

Transparency with the Legislature, Executive Branch Agencies and the General Public

Transparency with the Legislature

In coordination with our partners in the Legislature, EOTSS has developed and implemented systems for additional oversight and reporting for IT projects and procurement. For enhanced cost oversight and control, any IT project or procurement with expenses over \$200,000 made by an executive office or one

of its' respective state agencies must be reported to and approved by the Chief Information Officer of the Commonwealth.

Additionally, on an annual basis, EOTSS provides [a report](#) to the State Auditor and Legislature detailing the complete accounting and justification for all IT expenditures over \$250,000. We appreciate the opportunity to share this information with the Legislature for increased transparency detailing how allocated funds are being invested in the Commonwealth's IT and cybersecurity infrastructure.

These reporting requirements support the mission of EOTSS and its IT Investment Advisory Board to ensure that taxpayer money is being invested wisely to improve delivery of government services and secure the Commonwealth's IT and data assets.

Transparency with Executive Branch Agencies

EOTSS recently embarked on a multi-year customer engagement initiative, the EOTSS Customer and Service Engagement Enhancement Program, to provide enhanced service to our partners in the Executive Branch, Independents and Constitutional Offices. Through this program, our priorities are to increase transparency around EOTSS offerings and costs, ensure service offerings that match customer needs, and promote greater trust and satisfaction with EOTSS through an improved customer experience and fulfillment. We believe that this initiative is vital to our ability to provide best-in-class services and we look forward to its further development in FY22 and beyond.

Our Data Team continues to undertake a number of data initiatives to increase access and transparency to public data sets, as well as increase the Commonwealth's usage of business intelligence through data analytics to guide sound public policy decision making. Specifically, our team is leading engagements such as Criminal Justice Reform's cross-tracking system, Learn to Earn, Mass.gov Data Hub portal, and a juvenile justice initiative in coordination with the Office of the Child Advocate (OCA). To ensure the proper storage, use, and lifecycle management of Commonwealth data, we continue to make progress on the Information Governance Framework and Information Governance Program established this past year.

Transparency with the General Public

EOTSS' engagement in the Administration's COVID-19 response has led to a number of improvements in transparency with the general public, including communications and digital services in coordination with the Department of Public Health to amplify information to the public on COVID-related matters. This ongoing effort includes the assisting of Executive Branch agencies in developing content for hundreds of pages on Mass.gov on COVID guidance. AlertsMA, the Commonwealth's emergency notification system designed to send important text, voice, and email alerts continues to be an important tool with 400,000+ opt-ins receiving text alerts, and also leveraging a 5 million+ contact set to push high priority info out to the public via Residents Connect. Most recently, the rollout of the Smart Health Card, a digital vaccine credential allows residents the ability to access their vaccine records in a digital format on their mobile phone. This successful launch was aided by the deployment of chatbots to assist with customer questions – a technology we hope to find expanded uses for in the coming years.

In October 2021, the EOTSS' MassGIS Team launched MassMapper, a new online interactive mapping tool. MassMapper offers municipalities, researchers, and private sector organizations, especially in the construction, land survey, engineering, and real estate industries an enhanced performance and new features from the previous legacy system.

EOTSS' Digital Team has made a number of improvements to the Commonwealth's official website, Mass.gov. Enhancements have been made to improve the public's ability to find information in a more streamlined fashion, including improvements to the mobile experience to make for less scrolling. Additionally, we have added greater flexibility for agencies to post agency-specific information to ensure website information is current (this has been especially helpful during the COVID-19 pandemic). More recently, we have made improvements to banner information at the top of state websites to allow state agencies the ability to utilize this highly-visible space for critical information, while also assuring the public that the content they are reading is from an official site of the Commonwealth.

The EOTSS e-discovery Team supports secretariats and agencies in the Executive Branch by providing technical tools and services for searching electronically stored email data located in multiple Commonwealth email systems and files. Legal departments across the Executive Branch are increasingly relying on digital tools to perform their work. To meet this increasing demand, the EOTSS e-discovery Team is actively engaged in the implementation of enterprise software capable of ingesting large volumes of electronic data from multiple sources beyond email data, such as desktop applications and network share drives.

This enterprise software solution offers Commonwealth lawyers the capability of using cutting-edge search, analysis, and visualization tools. The Commonwealth's investment in this type of robust enterprise software is expected to increase transparency and operational efficiencies in responding to legal requests, including public records requests (PRRs) and litigation. Over the previous year, the e-discovery enterprise software solution has successfully assisted Commonwealth lawyers in responding to hundreds of requests.

Looking Forward

In closing, we at EOTSS thank the Legislature for the opportunity to showcase some of the work undertaken and underway at the enterprise level in collaboration with our IT and business partners from across state government. We welcome the continued partnership with the Legislature to find innovative solutions to tackle the challenges of the 21st century and to best position the Commonwealth to provide secure, first-class government services to the constituents we all serve.