# Overview of Current Systems and Information Technology Strategic Plan
# *(Draft)*


# Vermont General Assembly

**Prepared by:**
**Kevin Moore, Deputy Director for Information Technology**
**115 State Street**
**Montpelier, Vermont 05633-5301**

**Adopted: {DATE}**

# INTRODUCTION

This strategic year plan is submitted to the Legislative Information Technology Committee pursuant to 2 V.S.A. § 752. In Part I, we provide an overview of the existing systems used by the General Assembly, including infrastructure, applications, the xmLegislator program, and the website. In Part II, we provide the high-level objectives that should help define how information technology should be guided over the next several years.

# PART I. OVERVIEW OF EXISTING SYSTEMS

## 1. Infrastructure

The General Assembly's campus in Montpelier consists of the State House and a building located nearby at 1 Baldwin Street. The General Assembly's computer system is located entirely within these two buildings but is attached to a State government wide-area network ("GovNet"), which connects virtually all State government computer systems and also provides a connection to the Internet. There are also data connections to several outlying offices at 14–16 Baldwin Street and 133 State Street.

The system consists of networked servers and personal computers operating under the Windows and Linux networking environments.

All components are connected by Category 5E, or better, twisted-pair wiring to Ethernet switch stacks located in the basement computer room, in a mechanical room under the Senate end of the State House, a closet in the "40s," and a closet on the second floor of the 1 Baldwin Street building. The switch stacks are connected to each other by both fiber-optic and copper cabling.

Each individual office has at least two data ports. Shared offices have more ports, and each committee room has between four and 12 ports. During the Senate chamber renovations, data ports were installed at each Senator's desk and the Secretary's desk. The House chamber is wired for power but not for data, with the exception of the Clerk's desk and the large table located in the well of the House.

The entire State House is also served by a robust, high-speed Wi-Fi network. This network, is primarily maintained by Summit Technologies, a Vermont-based wireless networking services company. This existing network was initially installed in 2010, replacing an older system installed in 2004, and is evolving to meet the expanding needs of the Legislature.

The wireless system provides two wireless networks, the first network providing generic Internet access, and used primarily by the public. There is no charge to the user for use of this system. This network is used to provide data access for laptop computers, smartphones, and other Wi-Fi-enabled devices.

The second network is largely a mirror of the first; however, it is secured with a WPA2 Pre-Shared Key. This network is used by members and State House staff. This network has selective access to network resources and is not available to the public.

## 1.1. Servers

Our server infrastructure is largely virtual. There are nine high-powered, physical servers within the State House system. Six are virtual hosts, running under the VMWare ESXi environment. Each host is connected to our storage area network (SAN) device, which provides approximately 22 terabytes of commercial-grade storage.

The five host servers together contain approximately 30 virtual servers, running either Windows- or Linux-based operating systems. There are also physical servers that operate our tape backup system, our disk-to-disk backup system, our network monitoring system, and a load-balancing domain controller.

The virtual servers can run on any of the six physical host servers, which are configured for high availability. In the event of the failure of any one host, the virtual servers are automatically moved to another host to ensure continued operation.

## 1.2. Networking equipment

Also located in the server room are the following:

- A Cisco Ethernet switch stack, which interconnects all networked devices in the State House
- The wireless controllers and peripherals and its Internet connection
- A monitoring and remote support server (located in an offsite, commercial data center)
- Other specialized communications hardware (including a connection to Public Safety used by the Capitol Police)

Critical production data is replicated several times per day, by way of SAN to SAN replication. The SAN is protected by an uninterruptable power supply. This is largely a proof-of-concept for real-time replication in the event of a disaster, where production data is destroyed and needs to be recovered. Ideally, we should move this replica to an off-site location, which has yet to be determined.

Fiber optic and CAT 6 copper cable runs from the server room to 1 Baldwin Street and the Senate vault. Fiber optic cable also runs from the server room to 133 State Street. The connection to 133 State Street connects the General Assembly's local area network to the GovNet wide-area network as well as the Internet.

The General Assembly's system is isolated from the GovNet by a Palo Alto 3020 unified threat management (UTM) firewall; the GovNet is similarly isolated from the rest of the Internet by another firewall, maintained by the Department of Information and Innovation.

The servers and other server room equipment run off two uninterruptible power supplies, both connected to the building's emergency generator.

## 1.3. Workstations

There are approximately 150 PCs located throughout the two buildings. All permanent staff members have a dedicated PC in their workspace. Each of the 24 committee rooms has a PC available, primarily for staff use. 12 PCs are available in

the Legislative Lounge for the exclusive use of the members, as are four PCs in the Senate Coat Room.

The standard client PC is a Dell Optiplex business-class computer. Workstation hard drives are not large, as all work-related data is stored on the network servers. All PCs currently run the Windows 7 Professional operating system.

### 1.4. Printers

There are over 50 networked printers, including Xerox multifunction printers (MFP) and Xerox workgroup printers, located throughout the organization.

There are a few local printers installed in a user's workspace. The print drivers are generally locally installed and the printer is not shared with any other user.

Three physically large and high-capacity copiers are located in the State House copy room. These machines are also networked, and prints can be sent to them directly by a limited number of users.

### 1.5. Presentation hardware

Five large-format monitors, either wall mounted or mounted on mobile stands, are located in a number of committee and meeting rooms. Short-throw projectors and whiteboards are located in an additional 12 committee rooms. These devices are used for presentations during testimony and for bill markup, videoconferencing, and other committee functions.

## 2. Applications

The software applications used by the State House computer system are all commercial off-the-shelf products, with the exception of the Legislative Information Database application (xmLegislator), several Microsoft Access database applications, and the JFOBud budgeting application, which are explained separately, below.

### 2.1. Microsoft Suite

Most legislative documents are created using the Microsoft Office 2010 suite of applications. This includes bill drafts, bills, amendments, reports, fiscal models, etc., as well as correspondence and supporting documents of all kinds.

A large number of Microsoft Word templates have been created for each of our standard document types. This ensures that all bills, for example, have the same formatting, etc. A large number of macros have been created to supplement the bill drafting process, the creation of calendars and journals, the transcription process, etc.

Microsoft Excel is heavily used by the Joint Fiscal Office to create budget analyses and other fiscal models.

Microsoft PowerPoint is available for presentations, and Microsoft Access has been used for various, low level databases.

## 2.2. Document Management (eDocs)

We use the OpenText eDocs product (currently, v.5.3.1) for document management. (eDocs is commonly known by its old name, OpenText DM.) This application is passively integrated with Microsoft Word, Excel, Outlook, and PowerPoint. Passive integration means eDocs has to be explicitly called in order to save to/open from eDocs—a specialized Ribbon and Quick Access Toolbar have been developed to facilitate this both in Word and Excel.

For each new document, a unique document number is generated and a document profile is created. This profile contains information about the document, including a document name, the author, the document type, the legislative session to which the document applies, etc. The profile information is stored in a database on our primary SQL server, while the document is stored on the file server. Access to the document is done through the document management application interface.

The primary method of locating a document is by the document number (which is automatically inserted into document footers via macros), but a user can search for documents by name, author, type, date created, etc. Security groups have been set up to ensure that staff members within each office can access each other's documents as needed, while restricting access by other offices unless required.

Legislative documents (bill drafts, bills, and amendments) are maintained in the eDocs system in perpetuity. Users' documents, such as memos, correspondence, supporting information, fiscal models, etc., are maintained in the eDocs system by the user. We do not enforce document retention for users.

This eDocs system is available for use by all Legislative staff. Most members of the Legislature do not use eDocs, although they may choose to do so.

## 2.3. International Rollcall's xmLegislator

The primary legislative database is maintained using a highly customized, commercial legislative automation product, xmLegislator, provided by International Roll-Call of Virginia. This database incorporates bill tracking, chamber automation, maintenance of committee agendas and history, and member information in a unified application.

When a bill is introduced, a database record is created that lists the sponsor, the subject(s), the attorney, etc. As the bill proceeds through the legislative process, each legislative action is recorded in the database. The actual text of bills and amendments, in a variety of versions, are also recorded in the database, although we also maintain copies in the eDocs system for convenience.

The House and Senate offices use the application to record floor actions and to create the daily journals and calendars, which are also stored within the database. Much of the creation of these documents has been automated, significantly reducing production delays. The system is also used for messaging, engrossing of amendments, etc.

The Legislative Directory is also contained in the xmLegislator application. This database records each member's name, town, legislative district, home and work addresses, etc. This information is used by other portions of the database, as well as by staff for generating mail merges, etc.

The final part of the Legislative Information application is the committee agenda and history section. For each committee meeting, an agenda record is created, which lists the date and time of the meeting, the committees involved, the subjects to be considered, and the witnesses scheduled.

All of this information is available to staff through the application interface, and most of it is available to members of the Legislature as well as the public through the General Assembly's website (***legislature.vermont.gov***).

## 3. Joint Fiscal Office (JFO)

The Joint Fiscal Office uses a custom application, JFObud Plus, to prepare and maintain the legislative budget. This application was built in-house by the JFO IT employee using the C# language and the .NET platform. Also, various utilities are contained in an MS Access 2010 database using VBA for scripting. The system is currently maintained by the JFO IT employee who also created and maintains the JFO website (http://www.leg.state.vt.us/jfo/). While these services are not directly maintained by IT department staff, the infrastructure they reside on is.

The JFObud Plus application allows the Joint Fiscal staff to create different budget scenarios and modify them quickly and easily as the budget is developed in committee. The application takes as input data from the Governor's office, the office of Finance and Management, and other sources. The application also creates web reports that make information easily available on the web. There are web reports generated as a bill moves through the legislative process. These web reports have a table of contents and allow for a spreadsheet format download in CSV format, which MS Excel can open.

When the budget is completed, the application generates the appropriations bill document and the supplemental budget bill documents automatically. As the budget goes through the legislative process, the JFObud Plus system tracks changes and creates amended versions as needed.

## 4. E-mail

We currently use Microsoft's Office 365 system to host the legislative e-mail system. This system includes e-mail, calendaring, scheduling, task management, etc.

The Microsoft Outlook client is used primarily on staff workstations. Members, who access e-mail from a wide variety of locations, generally use the Outlook Web Application (OWA), or various third-party e-mail clients on laptops or other mobile devices.

Mail sent to our system is scanned by Microsoft's commercial spam filters. The service quarantines suspected spam automatically, and deletes it after 30 days.

The Office 365 system includes extensive archiving and discovery tools. While responsibility for retention of e-mail messages under State public records laws is largely left to the user, the discovery tools built into the system make it possible to respond to public records requests in a timely and comprehensive manner.

## 5. Website

The General Assembly's website (***legislature.vermont.gov***) is the primary committee resource for staff and members, and also provides information for public consumption. While the server is part of our virtual server system, a firewall DMZ securely separates the website from the rest of our servers.

The website contains information in the following broad areas:

- Currently scheduled committee meetings and other activities
- The Legislative service (today's bills, calendars, and journals)
- The Bill Tracking System database
- Legislative documents (bills, calendars, and journals)
- Legislative Directory
- Vermont Statutes (including the Vermont Constitution)
- Reports and publications
- Individual pages for the Offices of the General Assembly
- Departmental pages

The committee schedule and agendas, the Bill Tracking system, and the Legislative Directory pages are all linked to live data on our SQL database server. As soon as a record on the SQL server is updated, that information is available on our website.

When staff completes the production of a bill, calendar, or journal, a macro is used to transmit the document to the web server in PDF format. Pages that contain links to the transmitted documents are generated dynamically by code on the Web server.

The Vermont Statutes are manually updated at least once a year, after the results of the session have been incorporated. Full-text searching of the statutes and all other legislative documents is available.

The Secretary of Administration requires all State government departments to submit reports to the Legislature electronically, and we post all reports on our site.

Reports and other publications created by the Legislature are posted in the same location as State government reports.

The Joint Fiscal Office, the House Clerk's office, and the Senate Secretary each maintain their own sections of the website.

# PART II. STRATEGIC PLAN

The purpose of a strategic plan is to help guide the information technology decisions made by the General Assembly to ensure that those decisions both further the objectives of the General Assembly and reinforce, as opposed to undermine, each other.

The overall objective of this strategic plan is to ensure that the General Assembly's information technology systems and customer support continue to improve, and that security is enhanced. The specific areas of consideration set forth below further those objectives. Appendix A contains a list of specific projects that work toward the collective goals and objectives of the General Assembly.

# 1. Cloud Computing

## 1.1. What is the cloud?

In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your local computer. Cloud computing is a general term for the delivery of hosted services over the Internet. Cloud computing enables organizations to consume a resource, such as a virtual machine (VMs), storage, or an application, as a utility—similar to electricity—rather than having to build and maintain entire computing infrastructures in-house.

## 1.2. Why use the cloud?

The cloud offers several advantages that a traditional on-site computing environment simply cannot. By leveraging the cloud, an organization becomes more agile when responding to the ever-evolving technology landscape. Cloud services eliminate many of the strict dependencies on particular technologies or hardware and are generally available on most commercially available devices.

Cloud services prevent the need for large capital investments, in favor of small short-term subscription plans. This allows for organizations to predictably plan their annual IT expenditures.

Cloud services are easily scalable. A traditional IT infrastructure is limited to the amount of resources available on-site. Cloud services are based off subscriptions, easily allowing organizations to scale up their services as demand requires, as well as scaling down in times of low usage.

Cloud services allow you to access your information from anywhere. Access to organizational data is made significantly easier, with the ability to securely authenticate to your organizations information, wherever an Internet connection is available.

Lastly, cloud services are considered “always on” and “always available.” This prevents the IT department from needing to implement separate disaster recovery solutions, as the redundancy is already built into the monthly subscription costs. Cloud computing allows IT to provide more services, more securely, with a smaller staff than would be required to support ever-expanding local installations.

## 1.3. We already use the cloud

Over the last five years, the General Assembly has begun to move toward the use of the cloud, including our enterprise class e-mail system, our remote access and assistance systems, as well as our mobile device management systems.

Over the next several years, the General Assembly should continue to leverage cloud services whenever appropriate.

# 2. Cyber Security

As the information systems supporting the General Assembly continue to advance, it is becoming increasingly important that our security solutions keep pace with the technological advances and their related vulnerabilities to mitigate the threat of data loss or other system compromises.

## 2.1. Policies

The development and implementation of effective security policies, plans, and procedures require the collaborative input and efforts of stakeholders in the various departments of the General Assembly. No usable system is 100 percent secure or impenetrable. The goal of these policies is to identify the risks, understand their likelihood and impact on the General Assembly, and then put in place security controls that mitigate the risks to a level acceptable to the organization.

## 2.2. Procedures

A robust vulnerability-management program includes ongoing evaluation and assessment of cyber security risks and implementation of appropriate controls throughout the life cycle of networked components. The General Assembly should perform periodic vulnerability assessments, followed by timely mitigation of any threat or vulnerability found by the assessments. The frequency of these assessments should be determined by the IT department, in collaboration with the offices of the General Assembly, to prevent any degradation of services.

## 2.3. Education and training

Employees at virtually every organizational level have a responsibility for some part of developing or applying security policies and procedures. Therefore, it is imperative that all employees who use IT services are educated on a regular basis about their responsibilities in ensuring the organization's IT services remain as secure as possible. Insufficiently trained personnel are often the weakest security link in an organization's security perimeter and are frequently the target of social engineering or phishing attacks. It is therefore crucial to provide adequate security awareness training to all new hires, as well as refresher training to current employees on a regular basis.

# 3. Customer Service Groups

## 3.1 Legislators

Legislators are the primary group supported by the IT department. Most legislators are typically only present during the legislative session. The legislative session begins in early January and typically ends sometime in May; however, there can be exceptions. Due to the short nature of the session, and the demand for services, it is imperative that most, if not all, upgrade and development work takes place during the interim. The impact of a system outage during the legislative session is severe and has the potential to drastically affect the committee process and organizational timelines.

### 3.2. Staff

Staff members of the general assembly are the most diverse when it comes to technological needs. Each staff office has unique duties that require various technologies to accomplish their respective tasks. The IT department should consult each office, should a future project have an effect on them, so as to ensure that all stakeholders are on board with the project and clearly understand any potential change or impact on their office and staff.

### 3.3. Public

The public are heavy users of our website and Wi-Fi system. It is imperative that IT provides reliable services in order for the members and staff of the General Assembly to effectively communicate with the public. Not only do we want to make sure our services are as available as possible, but we want to make sure that we organize and explain content in a way that is easy for someone who may be unfamiliar with the legislative process to follow and find the information they need.

## 4. General System Improvements

### 4.1. Expand the use of commercial off-the-shelf (COTS) products

In a complex technology environment, it is not enough to deal with problems as they become apparent. Prevention is the key to maximizing performance and getting the most out of systems, applications, and the IT staff. We should strive to implement dependable, commercial off-the-shelf (COTS) products whenever possible. This has the potential to greatly reduce security risks because the product's manufacturer has a significant stake in the proper identification and resolution of system vulnerabilities, any potential legal compliance issues, stability problems, efficiency weaknesses, performance degradation, and identified security flaws. Users of COTS products also benefit greatly as the manufacturer is always looking to introduce new features, while ensuring the product is as secure as possible.

### 4.2. Simplification of systems and services

Whenever possible, IT should consider leveraging data and systems that already exist. As the General Assembly continues to modernize its IT systems, the department should strongly consider the possibility of system integration and/or collaboration to reduce the need for any duplication of data or data entry work.

## 5. Staffing, Retention, and Processes

### 5.1. Staffing and retention

IT is integral to every part of the General Assembly. In fact, it is no longer a peripheral part of any major organization. The IT department comprises a relatively small, collaborative team; however, the loss of a single staff member causes great strain on the ability to complete projects, as well as on the day-to-day maintenance of the IT

environment. It is essential that we continue to find effective ways to retain and ultimately recruit new IT staff whenever we have a vacant position.

## 5.2. Technical training

New technologies continue to drive demand for strong IT talent, and diverse skills are required to maintain even the most common environments. In order to get the most out of an IT investment, IT staff training should be included with the budget of any new or changing technology. By doing so, we not only ensure that, should a problem arise, we have the on-site staff expertise to resolve the problem quickly, and that we reduce systematic problems through the implementation of proper preventive maintenance procedures.

## 5.3. Technical coverage

In order to ensure continuity of operations, the IT team should have at least two staff members fully trained in each discipline. This is to say that there should always be at least two programmers on staff, two system administrators on staff, two user support staff, etc. Ultimately this will ensure that as the department experiences turnover, we retain the ability to maintain the current environment while beginning the search for a replacement staff member. It is important to understand that IT is as diverse and skilled as any other profession. Each person brings a unique set of skills and strengths to the team. While cross-training is possible, and encouraged, it is not always reasonable to assume that any one IT staff member can accomplish what another can.

## 5.4 Contracting

The IT department contracts with a large number of vendors for information technology goods and services on behalf of the General Assembly. Although the General Assembly is not statutorily required to comply with the State of Vermont's procurement process, the IT department closely follows the State's best practices for IT procurement. This protects the interests of the General Assembly by ensuring enforceability of a contract, reducing risks associated with IT procurement, and providing clarity to IT department staff and vendors with respect to expectations for a project, including deliverables, milestones, timeline, and terms of payment.

## 5.5. Project management

IT projects can be expensive and time-consuming. It is essential that all projects of a predefined size and scope are properly overseen and evaluated by a project manager. A project manager assures that all stakeholders are properly informed throughout the process, while ensuring that project milestones and performance measures are being met according to the project plan. Additionally, a project manager assures that all required staff, both technical and nontechnical, are assigned to the project from project launch through completion. Each project should have clearly defined deliverables, a well-defined scope, a plan for quality assurance and testing, and a clearly defined delivery date.

*Note: Legislative IT does not currently have a dedicated project manager. The Deputy Director assumes this role.*

# CONCLUSION

Technology is ever changing. What was once brand new is often outdated six months later. Problems cost time, money, and aggravation. If the General Assembly is able to implement this plan successfully, the quality of services provided will continue to improve. Security of the General Assembly's IT systems cannot be an afterthought, and we must continue to improve upon the technologies and efforts of the past. We must also continue to take advantage of technical solutions offered by the various cloud providers, when reasonable. Not only will these efforts greatly increase the General Assembly's ability to react and continue to function in the event of a disaster or other emergency situation, but they will allow for more predictable technical and financial planning.

# APPENDIX A

Last Reviewed: {DATE}

| Sections Affected | Project | Est. Comp. Date | Budget Impact | FTE Impact |
|---|---|---|---|---|
| | Intranet updates (Duncan) | | | 0 |
| | Website updates (BlueHouse) | | | 0 |
| | xmLegislator updates (IRC) | | | 0 |
| | Network Stack Cable Management | | | 0 |
| | Active Directory Domain Controller Replacement | | | 0 |
| | Update 64-bit image for Summer 2017 | | | 0 |
| | Upgrade all General Assembly machines to 64-bit image | | | 0 |
| | Workstation replacement | | | 0 |
| | Laptop replacements | | | 0 |
| | Anti-Virus system upgrade/update | | | 0 |
| | Scanning system upgrade/update | | | 0 |
| | VMware host upgrade/updates | | | 0 |
| | VMware host replacement | | | 0 |
| | Core Switch rolling replacement | | | 0 |
| | Tascam firmware updates | | | 0 |
| | VDIaaS testing | | | 0.25 |
| | Palo Alto Firewall HA Pair | | | 0 |
| | SAN Replacement | | | 0 |
| | Configure BGP for seamless ISP failover | | | 0 |
| | Re-IP all DMZ servers | | | 0 |
| | Update ALL server OS to 2012R2 standards | | | 0 |
| | DRaaS Procedure Development and Testing | | | 0.25 |
| | Analyze user performed password resets through O365?? | | | 0 |
| | Xerox MFP replacements | | | 0 |
| | Upgrade SCCM | | | 0.25 |
| | Inventory Update/cleanup | | | 0 |
| | Surplus shipment | | | 0 |
| | Purge unneeded data from Inventory | | | 0 |
| | K&S Audio system | | | 0 |
| | User Laptop Patching/update/upgrade | | | 0 |
| | VMware Horizon View upgrade | | | 0 |
| | AirPrint Server Replacement | | | |
| | | | | |
| | | | | |
| | **Total Number of Projects** | | **Total Budget Cost** | **Total FTE Cost** |
| | 33 | | 0 | 0.75 |