TOWN OF WINDHAM

NETWORK ASSESSMENT

Prepared & Presented by AdminInternet

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ASSESSMENT METHODOLOGY

In preparing this network assessment, AdminInternet interviewed each of the Town of Windham department managers and in a few instances, supporting staff. It is important to note that the interviews were held at the individual's place of work, to avoid defensive posturing.

Testimony and documentation provided was accepted as "Personal Experience" and as accurate. AdminInternet did not perform supplemental analysis, as the Empirical knowledge of the staff and their common trustworthiness did not require this added level of review.

Each assessment interview focused on the Assets, Applications and Policies and Procedures in place.
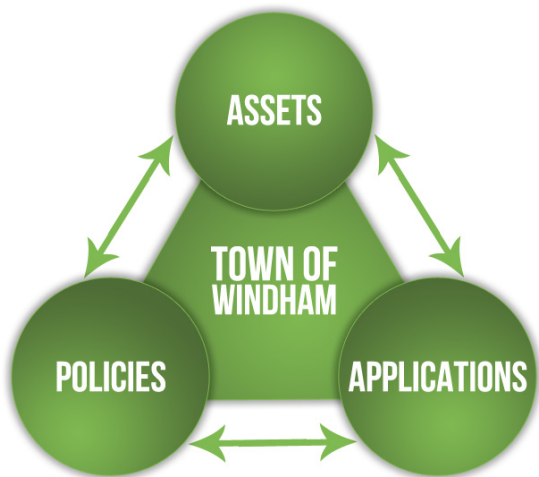
- **ASSETS**: When reviewing Assets, AdminInternet examines the system age, operating system upkeep, and mean-time between failure for each unit. This information is compared to industry standards for your organization.

- **APPLICATIONS**: When reviewing Applications, AdminInternet established the core applications in use by a department, and then discussed the skill level of departmental staff, internal and external support provided by the Town of Windham and others and finally how the application impacted the departments ability to provide service and support on behalf of the town.

- **POLICIES & PROCEDURES**: When reviewing Policy and Procedures, AdminInternet first examined any documents or procedures in place and separately discussed with department managers the actual application of the policies and procedures in the work environment.

This interview process was supplemented with frequent meetings with the IT Director and the Town Administrator. All information is presented as discussion points and AdminInternet remains available for discussion with the Board of Selectmen or Citizens of Windham.

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TOWN WIDE SUMMARY - ASSETS
WORKSTATIONS

WORKSTATIONS

In general AdminInternet found that the assets and infrastructure are supportive of the Town of Windham's business needs. While the physical assets and needs for each department vary significantly, there is an underlying issue found in the vast majority of Windham Town Departments: outdated hardware.

Studies have shown that the optimal refresh rate for workstations is a three-year cycle:[1]

> "By instituting a three-year desktop refresh program that proactively refreshes one-third of the installed base each year, companies can easily and cost-effectively reduce hardware and operating system diversity. The optimum refresh cycle balances up-front hardware costs with lower support costs to achieve the lowest overall TCO. Many companies achieve the optimum balance through a three-year lifecycle for desktop systems and a two-year lifecycle for notebooks."

By comparison, department hardware in Windham has an average age of 8 years in service.

"Many companies achieve the optimum balance through a three-year lifecycle...by comparison, department hardware in Windham has an average of 8 years in service."

WHY IS THE HARDWARE OUTDATED?

When reviewing the yearly budget statistics provided by the Town of Windham we find that the average number of workstations upgraded in the last 5 years is less than 5. This is significantly less than one-third of the workstations in the town, causing an accumulation of outdated technology.

Conversations with Department Managers indicated that requests for additional hardware have not received approval from the Board of Selectmen.

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TOWN WIDE SUMMARY - ASSETS
WORKSTATIONS

OUTDATED HARDWARE IMPACT: STAFFING FOCUS

While it is not unusual for public IT organizations to be understaffed, there is typically a well defined role for the department. In the Town of Windham's case, the role of the IT Department is to provide strategic direction and assistance to other managers along with primary support. Over the past ten years, there has been an intentional limiting of expenditures for the IT department, resulting in an aging inventory. The abundance of older hardware has necessitated a shift in roles for the IT Director from a Strategic Planning role to a basic Hardware Repair role.

The mean time between failure of equipment is impossible to measure, since there is no ticketing or management tool in place to statistically monitor the individual asset performance. What is clear is that the majority of IT resources are focused on equipment repair - perhaps not the role originally intended for the IT Director. The unintended consequence of aging equipment is that the skill set of the IT Director as a strategic planner and collaborative manager are not in line with desktop repair and remedial support that consumes the individual's day.

OUTDATED HARDWARE IMPACT: SECURITY AND SUPPORT

Another concern is the age of the Operating Systems (OS) running on the aforementioned hardware. The most prevalent OS installed the workstations is Windows XP. This operating system was released in 2001, making it over a decade old. More troubling, perhaps, is the fact that Microsoft has ended mainstream support for Windows XP back in 2009[2], which introduces security issues.

The variety of different operating systems (and hardware) in use across the town departments is an additional factor when addressing the current workload of the IT department. Multiple studies in this regard have shown that the more fragmented the technology, the more time is spent on regular service and maintenance:[3]

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[2] http://windows.microsoft.com/en-us/windows/products/lifecycle
[3] Microsoft's The Enterprise PC Lifestyle

TOWN WIDE SUMMARY - ASSETS
ENVIRONMENT

> "While some money may be saved in the short-term, limiting funding has created a situation where the Technical Director has been forced to focus efforts on repairing outdated (and often unsupported) computers instead of being allowed to focus on the bigger picture"

"PC Hardware is the largest PC lifecycle cost at 28% of the total; however, interviews found PC purchase often dominates planning, budgeting, fleet management, and refresh cycles. Many see this as a 'controllable' cost element and cut costs here without recognizing the impact on downstream elements (e.g. excess costs to support old non-standard machines). Almost every element of the PC lifecycle gets slightly more complicated (and expensive) when more PC models or more vendors are involved."

While Microsoft would presumably make these claims to boost sales of their most current OS, these findings were echoed in the Wipro study referenced earlier:

"By standardizing on a PC vendor's stable business PC platform, and limiting operating systems to the most current release...and the prior release...organizations can decrease diversity, lower costs, and improve IT responsiveness."

Having a three-year upgrade cycle is the most efficient and cost-effective way to upgrade and normalize the operating systems across the departments. From the aforementioned Wipro study:

"A hardware refresh is the least expensive way to bring in new operating systems and other software, saving 78 percent in software costs compared to an upgrade of the installed PC base."

While some money may be saved in the short-term, limiting funding has created a situation where the Technical Director has been forced to focus efforts on repairing outdated (and often unsupported) computers instead of being allowed to focus on the bigger picture: strategic planning.

PHYSICAL ENVIRONMENT

The Physical Environment portion of the Network Assessment gauges how well the physical environment is suited for the optimal running of IT equipment.

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TOWN WIDE SUMMARY - ASSETS
ENVIRONMENT

Several facets are reviewed including heating/cooling, humidity, power supply, physical space, fire suppression, and physical security.

EVALUATION

With the variety of physical locations it is not possible to consolidate ALL equipment into a single environmentally controlled location. However, for the primary shared IT equipment such as servers, mobile radios, network switches, firewall, and routers which are located in the Windham Police Department basement, we must recognize these locations are not well suited for the equipment's optimum operation. The following are suggestions for improving the physical environment so that the IT systems can be more available and secure.

Fig. 1 - Windham's current environment monitoring system.

• **Environment Alarming** – There is no monitoring and alarming if the ambient temperature or humidity exceeds acceptable thresholds. Alarming to administrators is important so that extreme temperature or humidity variations can be addressed in a timely fashion in order to best protect the investment in IT equipment which could otherwise be damaged.

> • *It is recommended that temperature and humidity alarms be implemented via an APC Network Management card with Environmental Monitoring to be installed in the existing APC Smart-UPS.*

• **Automatic Server Shutdown** – During an extended power outage, the UPS batteries will become exhausted and eventually stop providing power to the servers causing an abrupt shutdown of the servers. This sudden disruption of electrical supply to servers may cause information to be lost or corrupted.

•**Temperature & Humidity Control** – The servers currently sit underneath large air conditioning vents. Condensation can form outside these vents, produce water and cause equipment shortages. The temperature of the room in which the servers sit is currently suitable for electronics.

TOWN WIDE SUMMARY - ASSETS
NETWORK INFRASTRUCTURE

> "The compromise to internal security, realiability and mean-time between failure will in the long term be more costly to the town."

If cooling is an issue at other times of the year, then the following suggestions will help to keep the equipment cooler:

- *At a minimum, provide a sufficiently cool and dry environment for the servers by moving the servers to a more suitable area or building an IT room with a raised floor data center.*
- *Routinely ensure that cool air intake vents on the servers are not clogged by dust.*
- *Ensure that there is enough space in front of and behind equipment to allow proper airflow.*

- **Uninterruptible Power Supply Health** – Batteries in UPS's need routine testing, monitoring, and replacement as they only last for a few years. This is especially important since the buildings' supplemental power is not believed to feed all UPS.

NETWORK INFRASTRUCTURE

The network infrastructure consists of various business and consumer class network switches and hubs, cable modems, an Internal firewall, an internal proxy server and the cables that carry network traffic between workstations, servers, networked printers, and the Internet. Over the years, various types of wiring have been pulled and some subsequently abandoned.

EVALUATION

The network infrastructure equipment ranges from consumer to business class equipment from various common vendors such as 3Com and Cisco. However, because of equipment age, performance, and lack of abilities, the following suggestions should be considered:

- **Business Class Standard** - There exists a small set of consumer products that are being used when in reality the town should be using "business class" devices. The compromise to internal security, reliability and mean-time between failure will in the long term be more costly to the town.

TOWN WIDE SUMMARY - ASSETS
NETWORK INFRASTRUCTURE

• **Internet Security** – Although a properly configured Proxy Server should be protecting the Town of Windham, from the Internet, there has been little to no time to properly update and maintain the Proxy in years. Implementing an outbound Internet filtering system helps to reduce the load on the existing Internet connection, making it more responsive for business needs, improving employee productivity by encouraging appropriate use of business resources, and reducing the risk that malware can negatively affect business operations.

> • *A thorough review of the proxy configuration should be performed to ensure it provides the tightest security possible.*

• **Network Equipment & Management** – Unfortunately, little to no network management tools are currently in place which can monitor internal network traffic usage to ensure that maximum responsiveness is achieved. Such network management tools can also proactively report when events occur that may inhibit network availability such as due to a bad cable to a workstation or a network loop. Additionally, the network switches are aging; aging electronics are bound to fail, and finding exact replacements will become impossible.

> • *Since the current switches are both aging & unmanageable (aka "dumb"), it is recommended to replace each of the network switches with new, manageable switches that can monitor and report on network traffic usage. These switches would also provide higher throughput capabilities allowing users to transfer large files (e.g. GIS drawings) faster if the current network is the constraint. These switches would be centrally monitored via network management software. Since no network management is currently in place, it is impossible to assess whether the current 100Mbps network is at its limit and needs to be replaced with 1000Mbps(1Gbps) network switches. At a minimum the core switches of the network to which the servers connect should*

TOWN WIDE SUMMARY - ASSETS
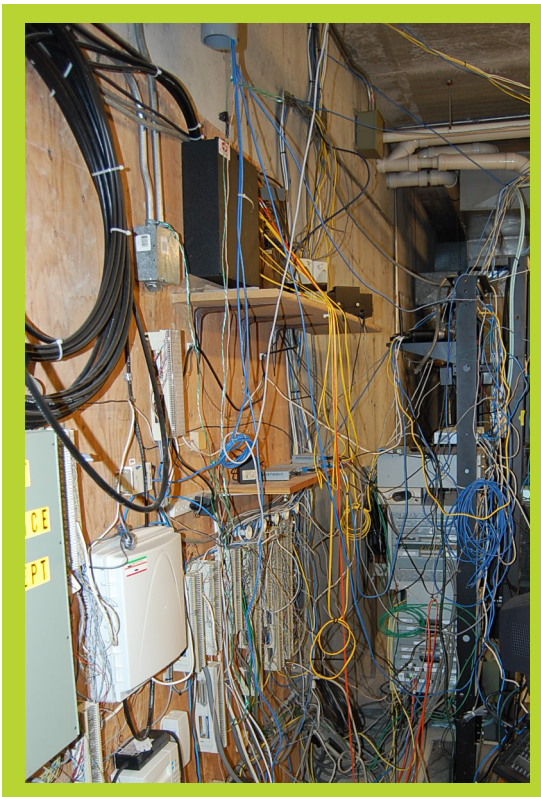
NETWORK INFRASTRUCTURE

Fig. 2 - Disorderly cabling creates issues with managing networks at a later date.

be replaced in order to assess network performance and possibly improve it.
- *Replacing the network switches would be a requirement before a VoIP phone system could be deployed as is being considered.*
- *Network monitoring will be critical as more applications are moved to an ASP (Application Server Provider).*

• **Wireless Networking** – There is currently no wireless networking available for mobile employees or visitors. Wireless networking could be useful for mobile users in the office, conference room and meetings areas.

- *It is recommended to install a wireless access point in the Board of Selectmen room, another wireless access point in the Administrative office area for administrative access, and another wireless access point in the Town Hall.*
- *A guest portion of the network should be implemented so that guests only have access to the Internet, while employees would have access to the Internet and internal network resources.*

• **Cabling** – Most cabling identified is standard Category 5 cabling which is capable of speeds only up to 100Mbps which will not be sufficient for future uses. Cabling is not well labeled which makes it difficult to trace when there are problems and this slows resolution. Cabling in server area is installed without proper supports and pathways which can stress cables over time and make them fail.

- *It is recommended to install Cat6 cabling to insure 10Gbps capability throughput in all office areas.*
- *Perhaps, as an alternative to cabling and the challenges that it presents for the various buildings, a commercial grade wireless access point may provide to be a more logical purchase.*

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TOWN WIDE SUMMARY - ASSETS
SERVERS

• **Remote Access** – There is no standard remote access tool in place for employees or IT Management to remote access office systems. This is explored as a stand alone subject later in this document.

> • *It is suggested that the necessity for remote access be re-evaluated by the Town of Windham IT Department. The ability to immediately address an end-user without moving locations improve the availability across the town, and allow the IT Manager to focus on strategic development*

SERVERS

There are currently four primary servers running the Windows Server 2003 operating system. These servers run both applications and store user data thus are central to the Town of Windham IT operations.

EVALUATION

Information Security – There are several possible information security issues that should be investigated and remediated as necessary.

• **Backups** - A cursory review of the backup process suggests that not all data is being backed up to the Network Attached Storage (NAS) devices and its attached hard drives. Not having all application, databases, and data directories backed up can make it impossible to restore lost data. Additionally, the information that is being backed up to the NAS drives is not removed and taken off-site, thus all data and their backups are subject to being lost in the event of a flood, fire, or theft affecting the servers (even if it were being taken off-site, it is not believed to be encrypted thus information could be stolen if these offsite drives were stolen).

> • *It is strongly recommended that the entirety of each server's data be backed up by a system that does so completely, routinely, automatically, is monitored for failures, can virtually recreate a server in case of server hardware failure, and also*

TOWN WIDE SUMMARY - ASSETS
SERVERS

> "The Town of Windham's current model of disaster recovery is "rebuild & restore""

automatically transfers a copy of the data offsite in case there is ever a disaster. CrashPlan Pro is an example of one service which will do so for as little as $4.71/computer a Month.

• **Disaster Recovery** - The Town of Windham's current model of disaster recovery is "rebuild & restore" which indicates that following a server or site disaster, that replacement server hardware would be obtained and then the servers would be rebuilt and the data restored. However, as currently implemented, this disaster recovery model would likely keep the Town of Windham out of business for several days as server hardware was procured and configured. And since no backup data is kept off-site, a site disaster would mean that all meaningful information would be unrecoverable making effective disaster recovery impossible. By implementing the backup solution as recommended above, data would be backed up on-site every night and would be transferred off-site automatically every day. Thus during a server disaster, a virtual copy of the server only as old as a day prior to the server disaster could be virtualized within about 1 hour, restoring service. During a site disaster, the maximum amount of changed information that the Town of Windham would lose after a site disaster would be 24 hours.

> • *This lack of backup has already proven costly on a smaller scale, as the Town Assessor needed a forensic recovery performed on a corrupted hard drive because the data was not being backed up on a regular basis.*

• **Passwords** - The password for the highly privileged Windows Active Directory domain 'Administrator' and the administrative account on all network infrastructure equipment should be changed routinely. Additionally, there is apparently no password policy for Active Directory user accounts as they do not need to be changed.

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TOWN WIDE SUMMARY - ASSETS
SERVERS

• It is recommended that a stronger password policy be employed. A sample password policy that is stronger would be that passwords must be 6 characters or longer, need to be complex by containing both alphabetic/numeric/special characters, passwords cannot be reused, accounts are locked out for 30 minutes after 5 bad password attempts within 5 minutes, and that passwords are changed at least every 6 months.

• **Server Management** – The servers are not currently centrally monitored or managed. Central 24x7 monitoring and management via a service would allow a multitude of benefits, some of which include:

   • **Monitoring of hardware and operating system event logs, Windows services, and applications** with proactive notification to administrators about serious errors. Automatic correction of some issues can also be accomplished. User issues may be corrected before users notice the issues or the impact is shortened. Currently no server manufacturer management software is installed therefore physical issues such as hard drive or fan failures may not be noticed before affecting system availability.

   • **Automatic patch management** to ensure that servers are kept up to date against the latest information security attacks. Centralized patch management also allows control over what patches are applied to servers so that patches can be researched prior to deployment.   Conformity with desired patching levels can also be reported on to ensure that the anti-malware stance is as strong as possible.

   • **Server optimization** techniques through scheduled file system checks, scheduled reboots if required, custom cleanup scripts, etc.

   • **Remote control** of server consoles for ease of server management and troubleshooting. This includes allowing restricted access to outside vendors to troubleshoot 3rd party software issues.

TOWN WIDE SUMMARY - ASSETS

SERVERS

• Dashboards which summarize the status, performance, and capacity of various IT systems.

• **Windows Server Version** – The main Windows servers are running Windows Server 2003 Small Business and Standard. Most implemented versions of Windows Server 2003 reached their end of support by Microsoft in the summer of 2010. Therefore, continuing to run these products runs the risk of security issues as patches become less available, the inability to gain support from Microsoft if there is a production issue, and incompatibility with future desired applications.

• Consider the possibility that a server hard drive crashes, it is impossible to purchase Windows Server 2003, it is no longer for sale. Given that "rebuild & restore" back up strategy has been adopted, what will the town in the event a disaster requires a new Server and the Operating Systems are incompatible with the legacy software currently installed?

• Since there is a large quantity of applications installed directly on servers that may be affected by a Windows operating system upgrade, it is recommended that a plan be put in place to test and upgrade each of the server operating systems to Windows Server 2008. In order to build a test environment and ultimately make better use of server resources, the use of virtual server technology is proposed which allows several servers to share a single piece of server hardware thus avoiding some future capital and operating costs. This is the same virtual server technology that is being recommended to assist with the disk space issues below.

TOWN WIDE SUMMARY - ASSETS:
RECOMMENDATIONS
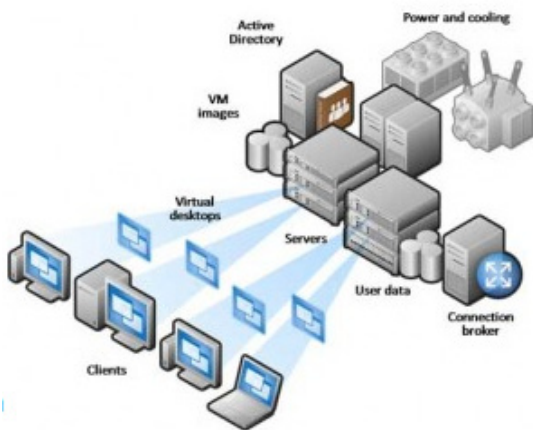
CAPITAL IMPROVEMENT PLAN

AdminInternet would recommend updating any computer over 3 years old, but could tolerate a 5 year window, and upgrading any version of the Windows operating system to the newest version, but understands that this is not a realistic goal given the current situation.

[4]

VIRTUALIZATION

Given that the department's network is utilizing a fiber optic connection, a more suitable recommendation would be the implementation of a Virtual Desktop Infrastructure (VDI) across the town offices. The initial investment would include the purchase, installation, and configuration of a server. The virtualization can be rolled out in stages to allow for a smoother transition.

The initial benefit of a VDI deployment would be the removal of application processing from the antiquated machines currently installed in the department offices. These older machines would be converted into thin clients, only needing to connect to the server to run applications, instead of running them locally. When a current workstation is in need of replacement, it is no longer necessary to purchase a full-fledged PC; as a low-power thin client is all that is needed to access the computing power of the centralized server. These thin clients require a lower initial investment, and consume a fraction of the power compared to a regular desktop PC.

On top of the hardware benefits, migrating to a server-based implementation would significantly decrease the current daily duties that are currently preventing the IT Director from operating in a more strategic manner. Utilizing a VDI deployment will allow for the creation of desktop images for each "type" of user in the town. Different images can be created based on the needs of these user groups; for instance, computer users in the police station would have access to an image that included the IMC program used by the department, while computer users at the fire station would instead have an image with their Red Alert software installed. Any updates to software can also be made to the images on the server, and any computer

> "...migrating to a server-based implementation would significantly decrease the current daily duties that are currently preventing the IT Director from operating in a more strategic manner."

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TOWN WIDE SUMMARY - ASSETS:
RECOMMENDATIONS

accessing the server will immediately see the updated software.

MOBILE DEVICES

In addition to the traditional desktop computing environment, many applications are being optimized for mobile devices. This allows for users to access and update data from outside an office setting. AdminInternet acknowledges that not every department would benefit from the introduction of smartphones or tablets, there are definitely cases to be made for certain users.

Those staff members that spend a significant amount of time out of the office (Town Assessor, Highway Agent) and departments that are constantly "on-call" (IT Department, Police, Fire) would be able to have constant contact with the information that they use to complete daily tasks.

AdminInternet recommends providing a subset of departments with internet-enabled smartphones to increase productivity and responsiveness where it is deemed necessary.

TOWN WIDE SUMMARY - ASSETS:
APPLICATIONS

With the exception of certain department-specific software (discussed in more detail below) , the majority of the town offices use a basic collection of programs in their day-to-day tasks. These programs are common amongst towns and municipalities of this size.

GLOBAL SOFTWARE

• **Munis** - The application used almost universally is Munis, which maintains much of the financial and planning information for the town staff. The Town of Windham was an early adopter of Munis, and is therefore "grandfathered" in to a much lower price than would be required to install it today. Plans are in motion to update to the ASP version of Munis in the near future, which will alleviate the need for Munis data to be stored locally.

> • *During interviews with the Department Heads, some concern was voiced regarding the dismissal of Munis as superfluous and the idea that it could be replaced with a home accounting program like Quicken.* ***This is highly discouraged; Munis provides a vast amount of functionality over these home accounting programs, which the town currently depends on to run its day-to-day activities.*** *This also illustrates a lack of understanding regarding the breadth of services, features and functionality of the Munis application.*

> *Further, the financial agreement in place with MUNIS is far superior to those found at other locations. Perhaps as a result of the length of the relationship, bottom line, this is an excellent rate.*

> • *Many complaints have come from the recent jump in versions. Investigation revealed that both the IT department and Munis had recommended upgrades several times before a forced upgrade was initiated. Migrating to the ASP model will eliminate this significant jump in version for the future.*

TOWN WIDE SUMMARY - ASSETS:
APPLICATIONS

• **Microsoft Office** - The other software used almost universally throughout the town departments is the suite of Microsoft Office tools. This includes Excel, Word, Outlook, Powerpoint, Frontpage and Access.

> • *Microsoft Office requires a one-time licensing fee for new deployments of the software. Moving forward, if virtualization is implemented, Admin-Internet would recommend a free alternative to the Office line of products. The most popular free alternatives are OpenOffice and LibreOffice. This change may require some training for users to get comfortable with the differences in the workflow process.*

• **GIS** - The graphical information system (GIS) used by the town in the development of official maps used by the citizens of Windham. As it stands there is an internal departmental dispute about the accuracy of these maps, to a degree that exceeds the purpose and scope of this document or the expertise of the authors.

> • *From a network assessment standpoint, GIS is clearly a complex and critical application. The IT department has provided an amazing amount of support, without formal training. Long term the GIS application deserves an individual who has the time and resources to eliminate the internal disputes, and would benefit from formal training.*

DEPARTMENT SPECIFIC SOFTWARE

Below is a breakdown of those departments that have specific software requirements on top of the software mentioned above.

• **Police Department** - In addition to the software mentioned above, the police department utilizes the mission critical TriTech Software Systems "Imc" for documentation and recordkeeping of daily services to include dispatch and investigation records. As expressed by many members of the Police Department, this software is excellent, but not reliable.

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TOWN WIDE SUMMARY - ASSETS:
APPLICATIONS

The application has been reported to be problematic and unstable, to the point of having regular periods of daily disruptions. This is entirely unacceptable.

> • *Given the value and mission-critical nature of the Imc application, it is strongly recommended that a suitable server solution be deployed ASAP to support the Police Department. Suitable server options include a purchased server, as requested in the budget, potentially acquired from the library, or if "virtualization" is adopted a VM server be devoted to strictly to Imc.*
> • *In addition to the IT Manager, a member of the Police Department should be trained to provide access and primary server support and access for TriTech support with regards to the Imc software.*

• **Fire Department** - Similar to the police department, the fire department uses Red Alert for reporting fire-related incidents and Temsis for their EMS employees. Both programs run smoothly without major performance issues. However, at times remote accessibility by vendors to update, configure or repair software has not been readily provided.

> • *Further research reveals that it is a matter of the single man IT department getting physical access to the server while managing other concerns. Long term there should be a well defined process to grant access to the Red Alert server without engaging the IT Department. The options are many.*

• **Town Assessor** - Vision Appraisal is used by the Town Assessor. While there are no issues with the program itself, there is no connection to Munis, which has created a situation where building permits get submitted by paper with handwritten dates.

> • *While integration with Munis was not enthusiastically embraced by the Town Assessor, ample training in Munis for those responsible for the building permits would alleviate this issue.*

TOWN WIDE SUMMARY - ASSETS:
APPLICATIONS

• **Town Clerk** - The Town Clerk is dependant upon a state regulated software package - which demands a stand-alone computing system. Because of the need to access internal Town of Windham tools, the Town Clerk office is forced to use multiple systems. There is nothing that can be done about this situation at this time.

The Town Clerk has expressed a desire to develop and craft more tools which could enhance the timeliness and accuracy of services offered to the citizen's. The requests relate to improved database tools, and recordkeeping tools.

> • *The NH Secretary of State regularly provides services and grants to support Town Clerks (http://www.sos.nh.gov/vitalrecords/VR_pres_grants.html) at $10,000 per town. The IT Department should be in a position to work with the Town Clerk to apply for and implement such grants and actions.*
> • *With Munis in place and a planned "Investment Analysis" consolidation of some features may be revealed.*
> • *In lieu of the aforementioned - the Town Clerk would benefit from external "development" assistance to streamline the management of services.*

• **Tax Collector** - While Munis and Excel are the main programs used for the day-to-day activities in the department, the Tax Collector has expressed a strong desire for additional ease of use tools that work in conjunction with Munis. At this time, the Tax Collector is eager to have this tool available, and the associated training.

> • *Munis's "Investment Analysis" should provide a list or proscribed coursework and training that will assist the Tax Collector.*

• **Website Administrator** - The website administrator currently uses Microsoft Frontpage to manage the town website. The latest release of this program is

TOWN WIDE SUMMARY - ASSETS:
APPLICATIONS

from 2003, which is no longer supported, and can not be deployed on new systems. Currently updates are currently done by editing raw code at this point. The lack of a streamlined approach to website updates has caused some departments to create their own websites, which is not ideal in presenting a united online experience. Every manager expressed an interest in being able to update their own portion of the web site - without complaining about the current process.

> • *AdminInternet recommends updating the family of town websites to a Content Management System (CMS). This would allow department heads the flexibility to manage their own content, while relieving the website administrator from having to code all updates. The website administrator would instead be allowed to administer the website by moderating content, which allows for a more frequently-updated site that visitors would be more likely to visit.*
>
> • *The Police Department, Fire Department, Town Library Site, and Searles Chapel sites are all independent web sites lacking in ease of management and upkeep, requiring updates by a single individual. Converting to a CMS would allow for a more diverse set of people entering information - the integration of many modern functional features and a set of tools that the citzens would expect.*
>
> • *Another added benefit of a CMS is the ability to implement a multifaceted internal ticketing system. Ticketing systems could be implemented per department (i.e. Highway Department, Maintenance Department requests) as well as having a global IT issue reporting system to allow the IT Director to better manage incoming technical support issues.*
>
> • *All Access database use throughout the district (burn permit database, census, etc) could be replaced by a more accessible and malleable database system from within the structure of the website, with the ability to easily format and display the data to the public when necessary.*

TOWN WIDE SUMMARY - ASSETS:
REMOTE ACCESS

REMOTE ACCESS

The IT Director has been hesitant to adopt a Remote Access policy when it comes to dealing with minor software issues on department workstations. This is partly due to a perceived "need" to be physically in front of the computer, as well as being forced into a reactive role in terms of computer maintenance (due to age of overall network).

- **LogMeIn Free** - AdminInternet strongly recommends the use of the LogMeIn Free program. As the name suggests, this free, secure program can be installed on all workstations in the town to allow remote access from any supported browser (and even smartphones). LogMeIn provides a dashboard that displays all pertinent information about every computer linked to the account - current status, access logs, available updates, etc.

  - *Since the IT department is a department of one, the ability to remotely access the town computers from any computer with an internet connection would also alleviate some of the problems that arise when the IT Director is not in the area (i.e. on vacation).*
  - *Multiple staff members expressed interest in accessing their office computers from home, and some departments have independently installed the aforementioned LogMeIn on their computers already. An affordable upgrade to LogMeIn Central ($299/year) would allow the IT Department to grant remote access to certain staff members on certain computers.*

SOFTWARE TRAINING

Aside from training on new equipment and applications, there doesn't appear to be any formal method in place for "remedial" and "primary" training of staff. Based on the interviews with Windham Town staff, there is a definite desire for training on the software used throughout the departments. On several occasions, staff members expressed their feelings that Munis wasn't being used to its fullest extent due to a lack of operating knowledge.

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TOWN WIDE SUMMARY - ASSETS:
SOFTWARE TRAINING

Independent of the possible migration to an open-source alternative to the Microsoft Office suite, basic training on word processing and spreadsheet programs was often stated as lacking. The IT director spends a disproportionate amount of time fixing minor issues with Excel spreadsheets, when a formal training session would empower employees to be able to fix these issues independently.

We strongly urge an evaluation by department of staff, and once completed an assignment to remedial training be a requirement for those who fall below an established level. This is not limited to those employees outside of the IT Department, as a common concern is the general lack of professional development by IT staff. The budgetary constraints enforced by the Board of Selectmen have undoubtedly played a part in this lack of professional development, but the IT Director is viewed by some department heads as relying too heavily on outdated methodologies and not keeping up to date with current technology. Training sessions for employees of the Town of Windham should be implemented.

POLICIES & PROCEDURES

During the initial meetings between the IT Director and AdminInternet staff, it became immediately obvious that the majority of official policies and procedures usually drafted by IT departments while developed, have not been updated in many years. This presents a concern, as staff and Board of Selectmen should be made aware of the changes in behavior required as a result of new technology and the aggressive and negative nature of IT threats. As stated in multiple parts of this document, lack of strategic planning stems directly from years of focus on remedial equipment repair, but doesn't reduce the importance.

Continued meetings with department heads confirmed the initial findings: no standard policies were in place across the departments. While many of the policies tend to be "common sense," there were varying degrees of knowledge on what should and shouldn't be done with town computers, removable media, and data security and backup.

> " ..no standard policies were in place across the departments. While many of the policies tend to be "common sense," there were varying degrees of knowledge on what should and shouldn't be done with town computers... "

- *AdminInternet will provide a template of suggested policies to be considered by the Town of Windham. Each policy is typically customized to fit the nature of the business and organizational makeup.*

IT DEPARTMENT MANAGEMENT

The IT department services the department managers and town in an effort to ensure each department is operating as smoothly as possible. Based upon feedback from interviews, the perception is that the IT department must devote the majority of available time on network repairs and network support, with minimal time available for strategic development. The gravity of this concern is understood when certain departments are actually seeking assistance from external sources for primary support.

- **Desktop Support Policy** - There is no formal policy. Computers are evaluated and repaired based upon the mission-critical nature of the individual operator and in the order in which they are reported.

- Departments have created their own internal "repair logs" as a reference guide to the IT manager when he arrives to repair a single system.

POLICIES & PROCEDURES

• There are no ticketing or managerial tools in place to review the frequency of equipment failures, individual performance/training issues, or to prioritize the workload when it exceeds a single calendar day. The actions are arbitrary.

• In conjunction with the deployment of a CMS web site, the ability to integrate tickets, previously mentioned solution, is an immediate benefit to the department and town. Suddenly the IT manager would be able to provide managerial reports on the scope and nature of repetitive repairs and individual performance concerns based upon frequency of common questions.

• A commonly understood "triage" and mission-critical prioritization should be drafted. Since the current "repair" workload exceeds the single day ability, the town staff should understand the order in which they will be repaired.

• **Departmental Redundancy** - The town of Windham is very dependent upon the IT equipment in place; yet has no redundancy manpower solution in the event that the single man department is not available for an extended period of time due to unforeseen circumstances. For as long as department managers can recall, when the IT manager is absent, so is direct and immediate IT support. In the unlikely event that both staff and equipment are involved in a disaster, the town could be faced with a very long recovery period.

• The migration to an ASP environment for major applications reduces the risk substantially - and long term is an excellent shifting of maintenance costs and time consumption to application providers. The increased platform costs are less to an averaging of comparable server costs over a common period of time.

• To eliminate this exposure and to supplement support needs when the department staff is not available, the town would have to engage and outside IT support organization. There are many organizations who provide this supplementary

POLICIES & PROCEDURES

service and can be retained with limited invest-ment. The additional resources an outside IT sup-port organization could lend an overburdened de-partment are significant.

• **Professional Development** - A single person IT de-partment is by definition limited to new IT experi-ences and should be exposed to regular "Professional Development" opportunities. Concepts such as Vir-tualization, Server Management , Network Analy-sis, and Security are in constant evolution and to keep pace the regular attendance of industry specific coursework is highly recommended.

ACTION PLAN

In this part of the document we review each major topic and provide general direction. You may note that for the most part pricing is not included in the document. This is intentional, as IT equipment and services are commodity like in pricing, and through aggressive negotiation, special pricing for government organizations the results could be different. In is perhaps more important to address the priority of actions and then perform the financial research as that element of the project is addressed.

• **Policies and Procedures** - Starting in reverse order, the current set of policies and procedures require an update and review with staff. There are a few policies, such as the use of removable media, that will be introduced as a first draft - for the most part, this should be a straightforward process. AdminInternet is prepared to provide a template of "Policies and Procedures" that the town may use a reference for this project.

Sense of Urgency & Impact - During the Departmental interviews, it was clear that the managers are using sound common sense in those areas which are not currently documented. A policy framework establishes a common ground and understanding of how the IT department will operate, and the expectations of performance, something that is lacking in the town today. Setting expectations, understanding how the IT department operates and adhering to these policies and procedures, would benefit both the town offices and the citizens of Windham. The implementation of a ticketing systems and adoption by the town is long overdue.

• **Applications** - The town of Windham consistently selects the most appropriate and best use applications for town services: Munis, GIS, MS Office, Imc and RedAlert are all well regarded as tier one providers and applications. The migration to ASP for primary providers is an excellent choice to reduce long term internal investment and maintenance cost for related servers and equipment. AdminInternet has worked with several towns that utilize Munis - the negotiated

ACTION PLAN

rate is exceptional. That being said, the lack of of IT departmental tools is a concern.

While the existing family of websites are certainly informative, it is important to recognize opportunities. There are a variety of new tools in place since the inception of the existing website, that would create a far more interactive and feature rich family of websites. Websites have become both consumer facing instruments of communication and internal tools for business management. It is quite easy to draft calendars, maintain ticketing systems, retain information repositories interact with databases and provide client services between departments - all of which are not possible in today's framework.

Sense of Urgency & Impact - A move to more ASP (Application Service Providers) is a commitment to insure appropriate internet bandwidth and network performance is in place. There are NO tools available to the IT department to evaluate the condition of the network - this can lead to exceptionally long repair periods. If additional assets are purchased there is the strong possibility that such networking management tools would be provided as part of the purchase. The town should be advised that operating without these tools is not advised.

As previously mentioned - the migration to a CMS (content management system) based website will provide a generous set of new features to enhance business management and would allow for a more streamlined approach of communication. This is not something to be ignored.

• **Assets** - As the balance of this document illustrates, over time the lack of investment and strategy now places the town of Windham in a position to manage what is a near obsolete and unserviceable set of IT assets. In terms of priority, the town must decide if it intends to invest in IT Capital Equipment, create an IT strategic plan, and thus allow the IT Department to fulfill the original mission as presented to the

ACTION PLAN

Assessment Team - Strategic Development and Management or follow the current strategy. The current strategy has resulted in a slow progression to obsolescence, causing the focus and direction of the IT Department to change from "Strategic" to "Reactive".

A single "Strategic" Director, with the skill set to manage and develop IT resources will be able to provide regular desktop support - but not town wide support for equipment nearing end-of-life status as defined by industry standards. That level of support requires multiple individuals with a different set of skills - and potentially eliminates the ability to "develop" new tools with managers.

Sense of Urgency & Impact - In the fullness of time the equipment in place will be replaced, as slowly as they begin to fail. Distinguishing between a "support group" and a "development group" creates two distinct action plans. While there are many individual asset recommendations presented in this assessment, this "Mission" decision is perhaps the most important.