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Mid-Ohio Regional Planning Commission

Information Technology Assessment

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MORPC Information Technology Assessment
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Confidential & Proprietary

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Preface

Sophisticated Systems (SSI) would like to first extend its gratitude for the opportunity to perform the IT Environment Assessment for Mid-Ohio Regional Planning Commission (MORPC). We're honored that MORPC feels confident in our abilities to provide an unbiased and worthwhile assessment. Through this process, SSI has worked extensively with MORPC staff and leadership to review the technology environment, identify strengths & weaknesses, and develop recommendations.

Sophisticated Systems, Inc. is a Columbus, Ohio based company focused on IT consulting and Managed Services. Driven by service, SSI succeeds in building relationships based on expertise, trust, professionalism, and innovation. Whether acting as our clients' IT department, or in addition to their existing IT professionals, the mission never changes: provide the most extensive support, expertise and consulting with unparalleled service. Employing a business model based on longevity, SSI strives for partnerships which leverage technology for the betterment of business and community. With specific expertise across a variety of platforms, technologies and environments, we are well positioned to address any and all of our clients' IT needs.

Focus for this assessment has been concentrated on validation of the current environment (in comparison with best practices), review of systems, policies and procedures, and future planning for MORPC IT. Drivers of these services, comprising the core of this assessment, include: the technology environment (equipment, software, tools, etc.), IT activities and support practices, technical documentation review, communication methods between IT and other departments, etc.

In providing an unbiased assessment, we have conducted interviews with several MORPC departments, including IT and leadership of the organization. Additionally, we have performed thorough reviews of the equipment, software, documentation, processes and services that make up the MORPC IT environment. Noting current situations, potential concerns and corresponding recommendations, our research of the environment and industry best practices has enabled us to deliver a document that can serve as an evaluation of the existing environment, as well as a guide for future IT planning. Upon request, we're happy to discuss the enclosed findings with MORPC leadership.

This document is organized into the four main sections:

- **Executive Summary**
- **Section 1 – Current Situation**
- **Section 2 – Sample 18-month IT Roadmap**
- **Section 3 – Supporting Documentation (Attachments)**

The findings and recommendations expressed in this document are based on our observations of the MORPC IT environment, industry best practices and our extensive experience in the field of Information Technology.

Questions or comments about the findings or recommendations in this document may be directed to Zach Evans (zevans@ssicom.com, office: 614.918.3400 x-71, cell: 614.352.3555).

Executive Summary

Sophisticated Systems conducted an evaluation of the MORPC Information Technology (IT) environment; reviewing technical, functional, procedural, policy and security-based considerations. The objective of the evaluation was to provide an independent and unbiased look at the environment; identifying current and potential concerns, validating existing strengths, and providing recommendations where applicable.

Overall, the MORPC technology environment is functional and is meeting the needs of the organization. As with any environment, there are problems that exist, and some of these problems are more troubling than others. With this in mind, this document identifies these issues and provides a path for remediation as appropriate. For the most part, the day-to-day issues that affect the environment were known by users, management and support, but in many cases, the root cause of the issues weren't easily identified. The recommendations within this document focus on some of the root causes, so that there is a multiplying of impact for any change that is made. This document is meant to highlight both strengths and concerns for the organization, and few of the more significant ones are listed below.

Current strengths of MORPC (as related to IT) include:

- A desire by MORPC leadership to ensure that IT systems are serving the need of the users
- Innovative culture that seeks to leverage technology to serve its community
- Understanding, by the organization as a whole, of the important role that IT plays for the organization
- Tenure of the IT staff with MORPC
- Departmental management willingness to be involved in fixing what's not working
- Strong understanding of the role each department plays in the success of the organization

Some of the most significant concerns (as related to IT) include:

- Absence of an effective and consistent leader for the IT department
- Little to no formalized IT policies and procedures
- Little to no documentation of the technology environment
- Significant sprawl in department specific systems and programs; creating a very complex technology support dynamic
- Lack of bandwidth and overlap of skillsets among IT staff
- Absence of a well-defined IT roadmap
- Lack of Service Ticketing System
- Lack of communication between IT and many of the departments throughout MORPC

In addition to identifying certain concerns and potential recommendations, we've focused some of our efforts on prioritization of the recommendations and sample IT roadmapping. We hope that the information contained within this document can help guide to IT related decision-making for MORPC, and we're happy to answer any questions or to participate in additional planning or implementation of the various initiatives.

Section 1: Current Situation

Server Environment

Although functioning relatively well today, there are a variety of concerns with MORPC's server environment. Based on reports from our network analysis tool, a large majority of the server equipment is older hardware that is out of warranty (see Attachment #4 for details). This is a dangerous scenario for MORPC, as older hardware has a higher risk of failure, and without warranty protection, recovery from physical failure can be costly. In addition to concerns about the age and state of the equipment, the server environment has a significant amount of server sprawl; meaning that there are many more servers (via virtualization) in the environment than would be normally expected. This includes at least 4 file servers, and this seems to be an unnecessary use of resources. Similar to the server sprawl issue, the server role organization is convoluted and confusing. This can make support and management of the server environment difficult to handle. Another critical issue is that there are a large variety of server operating systems within the environment, and some of these are no longer supported by the manufacturer (Microsoft). Using operating systems that are no longer supported is problematic because Microsoft no longer releases security patches, making these systems vulnerable to exploitation. Additionally, if there is a problem with one of these servers, Microsoft will not support it. Also, the lack of standardization among server operating systems makes the server environment more difficult to support and manage.

MORPC Email is currently internally hosted. If keeping Email in house, MORPC IT should upgrade the current Microsoft Exchange server, as well as the Windows Server it resides on. When doing so, the MS Exchange servers should be set up with High Availability and Fault Tolerance to accommodate for any failures and/or maintenance windows. During the assessment, we also learned that the spam service being used didn't provide users with a look into their own spam filters and quarantine folders. Everything was running through IT. This created a potential for missed messages and was inconvenient for users. Additionally, it caused an unnecessary strain on IT staff. Because of this, we made an immediate recommendation to enable individual user control and access of spam services. IT staff made this change, and the issues around the spam solution were remediated.

Ultimately, our primary recommendation for the MORPC Email environment is to move it to Microsoft's Office 365 cloud Email solution. Because MORPC is a non-profit, there is a strong likelihood that this solution would be provided at no monthly cost. It provides a robust and redundant Email service, with considerable backup, and consistent access for end users. The Email environment would always be up-to-date, and all support and management would be provided by Microsoft. This solution also has a built in spam solution, so MORPC wouldn't need to purchase renewals for the existing spam filter. Moving to this cloud solution will cut costs, reduce strain on MORPC server environment, decrease IT department workload, and provide users with a more robust Email service.

Concerns:

1. **Significant server sprawl. Too many servers for the environment.** This includes at least four file servers, which is an unnecessary and inefficient use of server resources.
2. **Much of the server equipment is outdated and out of warranty.**
3. **Server roles are somewhat convoluted and don't adhere to best practices.**
4. **Lack of standardization among server operating systems.**
5. **End-of-life operating systems are still in use within server environment.**
6. **Current Email environment needs to be updated and because it is internally hosted, it is less redundant that it could be.**

Recommendations:

1. **Review existing server environment and determine what servers can be eliminated and/or consolidated.** Taking full advantage of the benefits of virtualization, the server hardware environment could likely be consolidated quite a bit.
2. **Upgrade/Refresh server equipment.** Consider getting solidly spec'd equipment that is capable of hosting a number of virtual servers (see Recommendation #1 above). When procuring new server equipment, ensure that server warranties match the expected refresh cycle for this equipment, and maintain warranties throughout life of server equipment.
3. **Develop and maintain a standard refresh cycle for server equipment.**
4. **Review and systematically clean up server roles within the environment.** Consolidate, eliminate and/or modify roles as needed to make the server environment less cluttered and more manageable.
5. **As much as is possible, upgrade operating systems to a determined standard operating system.** Continue to update standards and maintain standardization within the server environment.
6. **Where able, remove/upgrade "end-of-life" operating systems.** This includes Windows and SQL operating systems that are no longer supported by Microsoft.
7. **Move Email to Microsoft's Office 365 cloud offering.**

Network Infrastructure

For the most part, the existing network infrastructure at MORPC is sufficient for the day-to-day needs of the organization. Industry standard equipment is in use and there aren't any immediate red flags related to wired network infrastructure. From a best practices standpoint, there were a few concerns that can be addressed with relative ease. There was some uncertainty around manufacturer support agreement status for some of the network infrastructure equipment. It is important to keep these agreements in effect because their support could be essential in the event of a network failure. As with server equipment, there isn't a formalized or established refresh cycle for infrastructure equipment. This equipment is the backbone of your environment, and it's important to keep it refreshed. Also, although not uncommon, another issue is that some of the network infrastructure equipment is running on software versions that aren't the latest versions released by the manufacturer. In some cases, new versions are developed to eliminate vulnerabilities that exist in previous software versions.

Regarding the wireless network, there are areas within the facility that do not have solid and/or consistent wireless coverage. This can limit the available useful space for certain activities. A more robust network that provides full coverage would eliminate the need for users to be in particular areas for access to the wireless network. Another concern related to the wireless environment is that there have been several instances in the past in which the wireless network would bog down or become unavailable during meetings that included a substantial number of people. These types of meetings can include MORPC Board meetings or MORPC sponsored events that bring in members of the regional community. In both scenarios, insufficient wireless coverage can create a negative perception of MORPC that is undesired and potentially difficult to change. There are a variety of options available to address the current concerns. These include expansion of the existing wireless system, implementation of a new wireless solution, and/or having spare equipment available for temporary use on-demand.

There were also some concerns mentioned by staff regarding internet bandwidth. We were told that this is somewhat of a sporadic issue, so we don't necessarily feel that it is a major concern currently. With that said, if it does become a larger concern in the future, MORPC IT should analyze network traffic and work with the ISP to determine what options exist. Also, internet bandwidth needs could change based on future changes in systems and services.

Concerns:

1. **Uncertainty around manufacturer support agreements for some network infrastructure equipment.**
2. **Lack of standard refresh cycle for network infrastructure equipment.**
3. **Not all network infrastructure equipment is on the latest software/version available.**
4. **There are areas of the environment that don't have solid or consistent wireless coverage.**

5. **When hosting meetings (for the Board or for external entities), wireless coverage is strained and can cause problems for MORPC (reputational risk, productivity/efficiency risk).**
6. **Occasional concerns about the internet bandwidth.**

Recommendations:

1. **Maintain licensing and manufacturer support agreements for all network infrastructure equipment.**
2. **Develop and maintain a standard refresh cycle for all network infrastructure equipment.**
3. **Keep all infrastructure equipment software and versions up-to-date.**
4. **Increase wireless coverage by adding more access points to the existing system or by implementing a new system.**
5. **Increase wireless capacity near meeting rooms and/or public spaces to accommodate anticipated demand.** This can be addressed by adding more access points in these specific areas, by getting equipment that specifically built to more effectively handle increased connections, or by having spare access points available and configured for on-demand temporary installation.
6. **Monitor internet connection and bandwidth, and if needed, work with ISP to determine options.** If bandwidth seems to be a sporadic issue, use a network traffic analyzing tool to see what's happening on the network. There is a chance that end users are using up bandwidth for the streaming of music, etc. This is not uncommon.

Network / Information Security

In reviewing the MORPC environment from a network/information security standpoint, we found that the environment is acceptably secure from an external perspective. Best practice configurations are in place for network edge equipment, and there are no glaring holes that would provide easy access for a malicious attack. Internally, there were some concerns identified that aren't necessarily imminent threats, but they do increase risk and exposure for compromise. Primarily, these concerns are around out of date software, unsupported operating systems, and unpatched applications/programs. These are red flags for the environment because unpatched and out-of-date software can often times be exploitable. This, however, is not an uncommon occurrence, as many environments, large and small, have the same identified risks. Fortunately, minor adjustments to configurations and/or implementations of certain tools can easily correct the problem. It's also important to note that certain of these situations are unavoidable because a specific configuration is necessary for the environment. Although this doesn't cover all of the concerns for MORPC, there are at least a couple of instances in which an out-of-date operating system is necessary to support a vendor's third-

party program. In these situations, it's important to ensure that you keep in line with the vendor's recommendations to minimize the associated risks as much as possible. In other cases, in which there isn't a driving force behind the out-of-date operating systems, upgrades need to take place as quickly as possible.

There is a fine line between tightened security and user experience. We have seen many situations in which users become frustrated with certain processes, procedures or systems that are put in place to secure an environment. It is important that MORPC Leadership understands the give-and-take involved in these decisions, and once a decision is made, this needs to be clearly communicated to users. It can also be very helpful to communicate the reasons for the decisions (and solutions). Sometimes that additional insight goes a long way toward user adoption of the chosen solutions.

As technology continues to grow and as BYOD (Bring Your Own Device) continues to expand, security measures (and communication of those measures) need to expand with it. Increasing the types of platforms and devices to be supported by an environment can weaken the overall security posture and can, in turn, increase costs necessary to protect the organization.

Concerns:

1. **Out-of-date operating systems and unpatched programs pose a risk of exploitation for the organization.**
2. **MORPC does not do any periodic vulnerability scanning of the environment.**

Recommendations:

1. **Upgrade out-of-date operating systems and keep third-party programs as up to date as possible.** This can be accomplished by tools that are designed to automatically keep third-party programs patched or by consistently enforced policies for both end users and IT staff.
2. **Conduct periodic vulnerability scanning to identify potential risks and remediation techniques.** This can be accomplished by procuring a tool to conduct the scans or through a third-party that provides this service offering.

Desktop / Laptop Environment

Based on an asset inventory gathered by our network scanning tool (LANsweeper), MORPC has nearly 100 workstations in use. The majority of these are desktops (primarily Dell Optiplex machines), with a small number of laptops (primarily Dell Latitude models) and a few tablets (Microsoft Surface Pros). Operating systems are mostly Windows 7 Pro, along with some Windows 7 Enterprise and Ultimate. There are also a small number of Windows 8.1 (Pro and Enterprise) machines and one tablet running Windows 10 Pro.

Of the nearly 100 workstations that make up the end user computing environment at MORPC, our tool showed that approximately half are out of their warranty period. This is problematic for several reasons. In addition to expecting a higher rate of technical support needs (and related costs) for these machines, it can be difficult to budget for replacement when there is such a large number of machines near the end of their expected lifespan. It is important to follow a set refresh cycle for end user machines, and it's just as important to have a warranty for new machines that matches the organization's refresh plan. See the category labeled "Equipment Refresh Planning" for additional details.

Concerns:

1. **No set standard for workstation operating systems.** This allows for standard images that can drastically improve the supportability of the environment as a whole.
2. **Nearly half of the end user systems are beyond their warranty expiration date.**

Recommendations:

1. **Determine a standard (up to date) operating system, and standardize your systems throughout the environment.**
2. **Follow a set Refresh Cycle, and ensure that warranties for new systems match the organization's refresh plan.**
    a. See category labeled "Equipment Refresh Planning" for additional information.

Backup Solution

MORPC's backup solution is based on Dell's AppAssure product. This solution allows for backup of both physical and virtual server environments. Because MORPC has a mixed environment, this is a good fit. Also, AppAssure enables MORPC to do both file-level and image-level backups, which helps for quick recovery of a single file or an entire virtual server. MORPC's backups are being stored onsite on a server within the MORPC server room, as well as being stored offsite at a Level 3 data center location. This backup solution is appropriate for the MORPC environment and seems to be sufficient for the organization's needs. One concern that we do have about the existing backup solution is that there is no consistent and regular testing of the onsite or offsite backups. Testing of backups is important because if you aren't certain that you're able to restore your backups, you could have a very big surprise when a disaster strikes. This is especially true for MORPC because of a recent event in which data was lost, and IT wasn't able to fully recover all lost data from the backups. Since this event, the backup solution was reconfigured, and IT is confident that data can be restored from the backups.

Concerns:

1. **Very little periodic testing of backups occurs.**
2. **Recent backup failures (specifically around restoration of backup data) has created doubt within MORPC about effectiveness of the existing backup solution.**

Recommendations:

1. **Conduct consistent and regular testing of backups (both onsite and offsite).** We recommend monthly testing of backups, ensuring that files can be restored and accessed.
2. **Provide reports on the backup testing to MORPC leadership and various departmental management.** This can help to instill confidence in the backup system and its capabilities to restore critical data.

Disaster Recovery Planning

Backup systems and disaster recovery preparedness are necessities. An organization needs to safeguard the information held within it from potential disaster, corruption, and/or other data loss scenarios. The common questions asked are, "What would happen if you woke up tomorrow and all the organization's data was irretrievable or lost? How would the business operate?"

The current backup solution at MORPC includes moving backup data off-site to a data center. This is a prerequisite for disaster recovery. With that said, there doesn't seem to be a formalized disaster recovery plan in place at MORPC, and as described in the preceding category, there isn't sufficient testing of backups to ensure that backup data/images can be quickly restored in the event of a disaster. Although having a plan is the first step toward disaster recovery, testing and verifying sufficiency of that plan is just as critical. When a disaster strikes, MORPC needs to be confident that the recovery process will be effective and that the organization's data is safe.

There are a variety of options for remote backup and disaster recovery, so it would be important for MORPC to fully understand its needs and wants when vetting out solutions (related to disaster recovery. There are solutions by innovative technology companies, like Datto, and there are solutions hosted by organizations with a local presence as well. Virtual Sprout and Expedient Data Centers have data centers in Ohio with offerings for cloud-based backup solutions that are connected to cloud environments, providing the ability to spin up your backups and run them as a production environment.

Concerns:

1. **No thoroughly established/documented Disaster Recovery plan exists.** Having and testing a Disaster Recovery plan is of paramount importance.

Recommendations:

1. **Develop and maintain a Disaster Recovery plan.**
2. **Test Disaster Recovery plan biannually or annually.**
3. **Consider investing in solutions that allow for spinning up of backups in a remote cloud environment, in the event of a disaster.**

Printers

The printing environment at MORPC is made up of large multi-function devices and smaller desktop printers. Although printing is working as expected and there don't seem to be any major issues with the printing environment, there are a couple of items related to printing that we wanted to point out. First, there was a recent effort within MORPC to move everyone away from desktop printers, making use of the large multi-function devices for all of the organization's printing needs. This effort was intended to save the MORPC money because the multi-function printers are considerably less expensive on a per-copy basis. Additionally, because these larger devices are managed by the vendor that leases them, there is very little responsibility for IT staff related to support or maintenance. This reduces their workload, providing them with additional bandwidth for their other tasks. The concern related to this effort is that the effort seemed to stall out, and there are still some departments that are using desktop printers. Another concern around printing is that the process for deploying printers and connecting new users to printers is currently a manual process. We recommend taking advantage of Group Policy for the deployment and management of printing within MORPC.

Concerns:

1. **Recent effort to move away from desktop printers to large multi-function devices has stalled because of certain departments have kept their desktop printers in place.**
2. **Process for deploying printers and/or connecting new users to printers is a manual process.**

Recommendations:

1. **As best as possible, enforce the policy for all departments to use the multi-function devices for printing.** This can save MORPC money and can all but remove support for printers from the workload of the IT staff.
2. **Implement Group Policy to deploy and manage printing throughout the environment.**

IT Workspaces

The IT department at MORPC primarily consists of a server/infrastructure room. From an outsider's perspective, these areas seemed to be reasonably well organized and free of any significant clutter that is sometimes found in IT workspaces. The server/infrastructure room seemed to be particularly well organized. Racks, equipment, cabling and tools were all reasonably in place, and we didn't notice any immediate concerns. This is not always, or even typically, the case.

No specific concerns or recommendations related to IT Workspaces.

IT Equipment

IT Equipment can refer to any piece of hardware that connects to or interacts with the network environment. This certainly includes servers, PC's, laptops, and infrastructure equipment (routers, switches, firewalls), but it can also include peripherals (such as scanners, printers, copiers), projectors, the telephony system and even smartphones. For the purposes of this assessment, we have focused on the more typical IT assets (servers, desktops, laptops, and infrastructure equipment).

Although there are some segments of the environment that have sufficient desktop equipment, there are other areas that have aging and outdated (and out of warranty) workstation machines. Also, much server and infrastructure equipment is aging and is in need of replacement. Outdated equipment leads to a variety of problems, including decreased productivity, staff frustration, increased technical support needs, and difficulty in managing future IT spending. These types of issues can be prevented by consistent refresh cycles, along with effective maintenance and management of IT assets. This prolongs equipment life, reduces total cost of ownership (by reducing support costs), and increases overall organizational productivity.

As part of our assessment, we used a tool called LANsweeper to gather details about the equipment within the environment. This is information that wasn't readily available or consistently tracked. This lack of controlled asset management can also lead to problems and can make support of the environment more difficult. Solid asset management helps the organization…

- Uncover savings through process improvements and support for strategic decision making
- Identify and control inventory (very basic, but necessary)
- Increase accountability to ensure compliance
- Enhance performance of assets and the life cycle management process
- Reduce risk via standardization, proper documentation, and loss detection

Some important aspects to consider in defining and tweaking your Asset Management practices:

- Request and approval process for new IT equipment
- Standardization of devices
- Procurement management
- Deployment management
- Configuration management
- Inventory management
- Life-cycle management
- Disposal management

Assuming MORPC maintains a standard refresh rate and maintains equipment on an ongoing basis, support issues related to aging equipment will be minimized significantly.

Concerns:

1. **Existing equipment refresh cycles aren't being consistently followed.**
2. **No formal Asset Management exists.**
3. **Various equipment within the environment is out of date and out of warranty.**

Recommendations:

1. **Consistently follow existing equipment refresh cycles.**
2. **Develop and maintain solid Asset Management processes and practices.**
3. **Maintain warranties/support contracts with equipment manufacturers (specifically, since refresh rates extend past 3 years).**

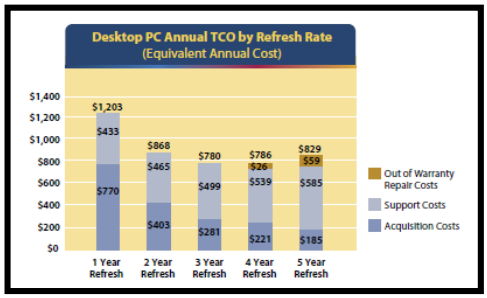
Equipment Refresh Planning

It can be easy for companies to take an “if it isn’t broke, don’t fix it” approach toward equipment lifecycles and replacement; primarily because it delays capital expenditures. The problem with this approach is that older technology equipment is more expensive to run, use, support and maintain. The resulting financial leak can quickly soak up any “savings” associated with delaying replacement.

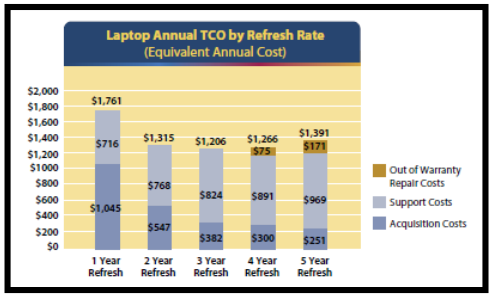
Although there are various techniques that can help to reduce TCO (like procuring better equipment in the first place), Gartner says “the most effective way for an enterprise to reduce total cost of ownership of its PCs is through the implementation of management best practices across all phases of the PC life cycle” (Gartner, January 2006). Approaches toward system management and planning around PC and Server lifecycles can vary according to organizational need, situation, culture and budget, but it’s important to note that various sources indicate TCO declines through year three of a PC’s (or Server’s) life span and then begins to rise again. It is estimated that laptops and desktops are nearly twice as expensive to manage in their fifth year of use than they are in their first year.

This is significant information for organizations as they develop their lifecycle and refresh strategies. Cash flow management certainly plays a role in an organization’s overall lifecycle strategy, but understanding and planning for optimal refresh timeframes can help to reduce total cost of ownership, improve user productivity, and more appropriately leverage IT resources (staff and otherwise).

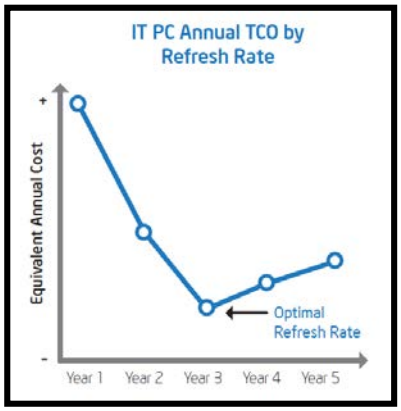
Below are several charts illustrating the value of a well-developed and planned refresh strategy. These graphics come from various sources, and although some of them can be self-serving (because the companies conducting the research and creating the charts directly benefit from more frequent sales of PCs and/or components), the data within them is both real and consistent. Ultimately, they demonstrate direct financial value related to various options for PC lifecycles and refresh schedules. Overwhelmingly, all research suggests that a 3-year refresh rate is optimal, maximizing value and minimizing TCO. The associated savings come in the form of data security, energy efficiency, end-user productivity, and overall manageability.



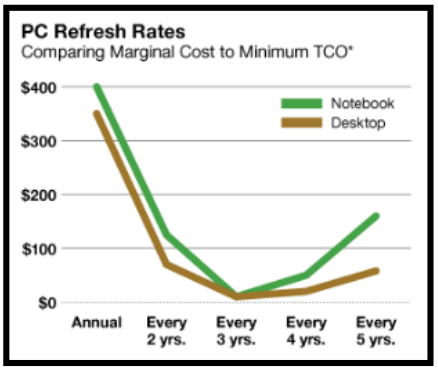
Desktop TCO based on refresh rate
(Data Source: Wipro, 2009)



Laptop TCO based on refresh rate
(Data Source: Wipro, 2009)



PC TCO based on refresh rate
(Data Source: Intel, 2012)



Refresh Rate Marginal Cost vs. Minimum TCO
(Data Source: Lenovo, 2013)

Concerns:

1. **Existing equipment refresh cycles aren't being consistently followed.**

Recommendations:

1. **Consistently follow existing equipment refresh cycles.** Although a 3-year refresh cycle for workstations is better from a TCO perspective, the existing 4-year cycle is still solid. It may be prudent to obtain warranties for these machines that match the refresh cycle, ensuring that your equipment isn't ever out-of-warranty.

IT Project Planning and Management

Planning and management, regardless of the focus, is key to the success of any project. Lack of communication, direction, documentation and organization leads to unaccomplished goals, increased expenditures, and less effective implementation. This is especially true when it comes to IT-related projects. The complexity, evolving nature and sheer expense of technology makes effective project management a must. Misguided decisions and stalled progress quickly lead to inflated costs and generalized frustration.

During our conversations with IT staff, it was evident that in the past, organizational and/or departmental decisions were often made without the input of IT; even when it involved technology. Whether due to a lack of communication or intended exclusion, it is detrimental to the overall technological infrastructure of the environment; nevermind the potential waste of money. Incorporating the IT department into equipment procurement or project discussions ensures that needs are properly defined, specifications are correctly matched, and technology is effectively used. Leadership additions within IT would help ensure that projects are appropriately planned, scoped and managed (both within IT and organization-wide).

Concerns:

1. **Lack of consulting with IT when the organization or individual departments make decisions that involve technology.** This translates into improper or inefficient use of technology; which directly affects productivity and ongoing supportability.

Recommendations:

1. **Formal Project Management and equipment procurement policies should be developed and enforced to ensure early involvement of IT.**

IT Roadmapping

Planning for the future is as important for IT as is focusing on the present. Without a solid understanding of what is needed/wanted in the future, IT expenditures can be wasted or underutilized. As technology evolves, features and functions improve; some of which can have a significant positive impact on system performance and supportability, as well as end-user productivity. As these aspects increase, total cost of ownership (for your IT assets) will likely decrease. IT Roadmapping is the process by which plans for the future of your technology environment are developed. As best as is possible, it is a solid business practice to have plans for 1, 3 and 5 years out. Keeping in mind that technology is quickly and always changing, it is also beneficial to have some thoughts beyond these timeframes as well. A well-developed roadmap can serve as a basis for decision making, especially as related to purchases, and it can also provide a strategic vision and set of goals to work towards.

When developing an IT Roadmap, it is important to consider the current situation, existing and future business practices and lines of business, functionality requirements, current and projected financial situations, and staff skill sets. Identifying various milestones can help in planning and ensuring that the necessary puzzle pieces—support structure, training, etc.—are in place to support any change or addition to the technology environment. As with most other functional documentation, it is important to periodically review (and modify, if necessary) the roadmap and/or milestones. Also, communication of this roadmap to organizational leaders, IT staff and end-users can ensure that all employees understand where IT is headed and what it might take to get there. In many cases, a simple understanding that a plan is in place can reduce frustrations.

Based on conversations with IT staff members, there is a sense that IT Roadmapping had been missing in the past. Minus a guide for the future of technology for the organization, IT staff members become reactive in their approach, and this can have a dramatic impact on organizational productivity and environment stability. This is problematic because issues are addressed on the surface without planning for resolution of root causes. Unfortunately, in this scenario, problems are never completely resolved. This leads to frustration at all levels, which is obviously not productive. Also, without an understanding of where technology might be heading for the organization, IT staff members are unable to prep their skillsets for the new technology that they might need to manage and support.

Another significant drawback in doing things this way is related to finances. Purchasing decisions are sometimes made to address a symptom, rather than the actual problem. Additionally, this reactive way of thinking focuses itself on only fixing problems, rather than finding better ways of doing things. Roadmapping helps to promote a proactive way of thinking that can translate into more effective support when the inevitable need for reactive work arises. Having an understanding of the future direction of IT can guide support, recommendations, and purchasing in the meantime; while also driving innovation for increased efficiencies and productivity in the future.

Concerns:

1. **Very little IT Roadmapping occurs, and therefore, no guide for current or future plans formally exists.**

Recommendations:

1. **Develop a Roadmap for MORPC's IT future** (see Section 2 for a sample roadmap timeline).
    a. Include (or consider) the following:
        i. Current Situation
        ii. Existing and Future Business Practices & Lines of Business
        iii. Functionality Requirements
        iv. Current and Projected Financial Situations
        v. Staff Skill Sets (both end-users and IT staff)
2. **Communicate roadmap to MORPC Leadership, IT staff and End-Users.** This can promote buy-in and support throughout the organization.
3. **Periodically review and modify roadmap as applicable.**

Supportability of IT Environment

Supportability of an environment refers to the ease with which the IT staff can manage both end user support requests and the backend systems (servers and infrastructure) that make up the technology environment. There are a variety of factors that play into this, including things like user behavior, existence and enforcement of policies and procedures, age and refresh of equipment, standardization of systems and software, maintenance of manufacturer warranties and support contracts, upgrade of unsupported operating systems and software versions, controlling of sprawl in technology platforms, and automation of tasks when appropriate. Other factors are more specifically related to capacity of the IT team, like staff bandwidth and cross training.

For MORPC, it's critical to understand how different factors impact supportability of the environment. Having a staff of only two, there are a finite number of hours available each day and only so many hands to accomplish the work. Additionally, because the staff members have very different skillsets, a lack of overlap in these skillsets stretches the team even further. Add to this an overall lack of documentation about the environment, and the risk continues to grow. It is important for leadership to be very intentional in decision making, with a focus on how any new systems will be supported and managed. For quite some time, it seems like this has not been the case at MORPC. Often times, decisions about technology seem to be made by departments, without the involvement of IT, and even if the implementation of a new system of program goes off without a hitch, the real work is in being about to manage that system effectively. There are a significant number of systems and programs (including internally hosted websites) that put a strain on the environment and the IT staff supporting it. It's not realistic to expect one or two resources to cover so many systems and platforms. Eventually, there is a point of diminishing returns, the all systems and users suffer from a reduced level of support and management.

Concerns:

1. **Technology decisions are sometimes made by departments without the involvement of IT.**
2. **Current lack of bandwidth and overlap of skillsets causes unnecessary stress and frustration for IT staff and puts the organization at risk.**
3. **Aging and out-of-warranty/out-of-support equipment leads to a significant number of support requests (that are otherwise avoidable).**
4. **There are several unsupported operating systems still in the environment.**
5. **Lack of standardization of systems and software create a lot of one-off support situations.**
6. **Lack of IT policies and procedures results in support and management chaos.**
7. **Lack of documentation about the technical environment makes support and management more difficult that it needs to be.**
8. **Lack of Service Ticketing System inhibits the tracking and documentation of support requests.**

Recommendations:

1. **IT must be involved in the early stages of any projects related to technology implementations.**
2. **Develop/Nurture vendor relationships to begin knowledge sharing/transfer for higher end skillsets.**

3. **Consistently follow existing equipment refresh cycles.** Although a 3-year refresh cycle for workstations is better from a TCO perspective, the existing 4-year cycle is still solid. It may be prudent to obtain warranties for these machines that match the refresh cycle, ensuring that your equipment isn't ever out-of-warranty.
4. **Maintain vendor support contracts to keep this avenue of support available to your IT team.**
5. **Where able, remove and replace any end-of-support/end-of-life operating systems or software.**
6. **Develop and enforce standards for systems and software.**
7. **Develop and enforce IT policies and procedures.**
8. **Create, maintain, and update documentation about the technical environment.**
9. **Implement and consistently use a Service Ticketing System to track and document all support activities.**

Support Procedures

At a very high level, the role of IT within most organizations can be broken down into three basic categories: Projects (includes design & implementation of new technologies), Maintenance/Management of IT environment, and Support of End-Users. Because the first two are primarily "behind-the-scenes," end-user support becomes the face of IT. Effectively, end-users (fellow employees) are the customers of the IT department, and therefore, general perception of the IT is based on the support provided (including skill level, customer service, organization, effectiveness, etc).

To ensure proper support (and to protect the perception of the IT department), organizations develop, maintain and follow support-based procedures/policies. This promotes standardized (and therefore, controllable and measurable) service to end-users. Defining processes allows for streamlined support; increasing efficiency and decreasing down-time. In nearly every facet of IT support, a procedure can be created to address end-user (and organizational) needs. The resulting increased productivity of the organization as a whole can help to bolster bottom lines, despite IT typically being seen as a cost center. There can be a direct correlation between efficient IT and increased margins. Although this may not relate directly to MORPC's organizational structure, it's an important concept for any organization to understand.

Although MORPC IT works hard to address issues as they arise, there are quite a few concerns related to support and related procedures. The most significant issue is that there is no Service Ticketing System, so issue tracking and documentation is inconsistent, at best. Also, there are no formalized support or maintenance procedures. This, coupled with an overall lack of documentation and no overlap in higher level skillsets, creates an inefficient support structure.

This inefficiency has created a situation in which the IT felt they needed a 2-hour window each afternoon in which IT would be unavailable/less available for support (to provide time for catchup and project work). All of these issues result in uncertain expectations among end users regarding support, and in turn, they try to figure out ways around it. This creates squeaky wheels, and this leads to departmental and IT frustrations. Although these issues are significant concerns that impact the support provided to users, there are relatively simple solutions to all of them, and these solutions have been provided throughout this document as recommendations.

Concerns:

1. **Lack of Service Ticketing System makes it difficult to track and prioritize incoming service requests, as well as issue resolutions.**
2. **Lack of formalized support or maintenance procedures.**
3. **Lack of documentation regarding design, configuration, administration, management, and troubleshooting of MORPC servers and infrastructure creates a support bottleneck.**
4. **Lack of skillset overlap and knowledge transfer can limit ability to quickly respond to issues.**
5. **2-hour window in the afternoon in which IT is unavailable causes frustration among users.**

Recommendations:

1. **Select, procure and implement a service ticketing system, and develop policies and procedures for both end-users and IT staff around the use of this system.**
2. **Develop and enforce formalized support and maintenance procedures.**
3. **Create, maintain and update documentation related to the support and management of the MORPC technology environment.**
4. **Develop/Nurture vendor relationships to begin knowledge sharing/transfer for higher end skillsets.**
5. **Eliminate the 2-hour window of unavailability for IT.** If there is still a need for time dedicated time away from reactive support, IT staff should stagger coverage times for each other.

Documentation

As an IT service provider, working with many clients, documentation is one of our primary concerns. Due to the complexity and intricacies of network environments, it is very easy for information to get lost in the shuffle. Documentation is essential to the success of any IT department.

Standard IT documentation could include (not an all-inclusive list):

- IT Policies
- Asset Inventory
- Configuration Information
- Network Design Diagrams
- Password Lists
- IT Control Book
- Warranty Tracking Information
- License Tracking Information
- IT Support and Service Procedures
- Support Incident Details (including resolution info, etc.)
- Manuals
- System Information

The IT documentation that exists within MORPC is admittedly weak. There is little documentation on assets, configurations, procedures, policies, etc. In addition to creating operational inefficiencies, this lack of documentation creates a significant amount of risk for the organization. Departments and end users resort to their own way of doing things, which likely isn't the safest or best way to proceed. IT policies, in particular, should be developed to protect MORPC from situations that put the organization, its data, and its users at risk.

During our interviews, we did learn that one area of documentation that we feel is a critical gap for MORPC. There is no service ticketing system to track support issues, system configuration info, notes, resolution details, asset inventory info, etc. Internal ticketing systems should be the life blood of IT for an organization, and currently, MORPC IT is operating without one.

This type of system and the documentation within it would provide valuable information (like trends, metrics, solutions, etc.) that can help leadership determine which problems should be prioritized for the greater good. It could also serve as trending information--to help identify potential root causes of reoccurring problems; or as a knowledgebase--to speed resolution time for common issues. For example, if the IT team is spending an inordinate amount of time fixing common issues related to user error, the documentation can show what these problems are, which users seem to have the problem, and what can be done to remediate this (like a new solution or job-specific training).

Concerns:

1. **Overall lack of documentation is a significant gap and risk for MORPC IT.**
2. **Lack of IT policies create problems and risk for the organization.**
3. **Lack of service ticketing tool (that has the capacity for and promotes documentation).**

Recommendations:

1. **Develop, implement and enforce policies regarding IT documentation.**
2. **Develop and enforce formalized IT policies that must be followed by all end users.**
3. **Create, review, maintain and update IT documentation on an ongoing basis.**
   a. Standard IT Documentation can include (among other things):
      i. IT Policies
      ii. Asset Inventory
      iii. System & Configuration Information
      iv. Network Design Diagrams
      v. Password Lists
      vi. IT Control Book
      vii. Warranty Tracking Information
      viii. License Tracking Information
      ix. IT Support and Service Procedures
      x. Manuals
      xi. Environment Specific Documentation
4. **Select, procure and implement a service ticketing system, and develop policies and procedures for both end-users and IT staff around the use of this system.**

End User Skillset

End-user skill sets directly correlate to the volume, frequency, and complexity of IT support requests. Also, productivity is diminished if employees are unable or ill-prepared to effectively complete job duties. It is important for an organization to understand both the duties to be performed and also the skills necessary to do so. With this, skills and tasks can be more easily managed. As technology increases, work roles may change to take advantage of new found efficiencies. These efficiencies are only realized if the workforce is able to make use of technology that is put in place.

Although there are certainly some users that are technologically savvy and have the skills needed to perform their duties very well, there also seems to be a subset of end-users that lack the skills necessary to navigate the MORPC systems and programs. During our conversation

with IT staff members, we learned that some employees are admittedly deficient in computer skills and/or skills related to department-specific programs and applications. Also, conversations with various departments indicated that there is an overall lack of end-user training when new employees join MORPC.

These users with diminished skillsets not only affect their own productivity, but they drain productivity from other employees, as well. In some cases, there are "super users" within departments that have a solid grasp of the systems that they are using. We believe that this is a good thing, but when these "super users" go from answering quick questions about how to do a small task to actually completing entire tasks for other team members, the department's productivity will suffer. Also, users with lesser skillsets tend to create an inordinate amount of IT support requests, many of which are likely avoidable. This unnecessarily increases the burden being placed on the IT staff, decreasing their productivity and limiting their ability to take a proactive approach toward MORPC's technology.

When it comes to technology, an employee who is computer literate and proficient with department/role specific programs helps to maximize the investments made in technology. Additionally, it decreases the workload on IT staff, allowing them to focus on a more proactive approach to technology within MORPC. All of this equates to a more productive and efficient workforce.

Concerns:

1. **Some MORPC end user skillsets are admittedly weak.**
2. **There is no formal evaluation of individual end-user skill sets.**
3. **Although some training is available, it is not being fully used by users or mandated by management.**
4. **Reduced overall productivity caused by users with diminished skillsets (requiring extensive involvement of "super users" and/or the increased support of IT).**

Recommendations:

1. **Department management (with the assistance of IT) should evaluate employee skill sets to determine level of training needed (as related to specific job duties and tasks).** Training should be mandated by management and should be tailored to specific job tasks related to the use of technology systems.
2. **MORPC should develop new employee training that focuses on general use MORPC systems, as well as department specific applications and systems.**

IT Department Staff (Staffing Levels, Skillsets, etc.)

Obviously, it is important to have the right IT equipment, software, and tools, but having the proper expertise to maintain, support, and manage the network is equally as (if not, more) important. Although it can be beneficial to have internal expertise for planning, design and implementation of new technologies, it is not always feasible. In many cases, after the implementation of a new technology, maintenance and support can be less specialized, and therefore, there may not be an ongoing need internally for the highly specific technical design and implementation expertise. In determining what technical skill sets are needed for an organization, it is important to first focus on the current technology environment and specific uses. Having the technical skill sets necessary for ongoing maintenance and support is of everyday importance. From there, needs will dictate the importance of additional expertise. These additional skill sets can include redundant expertise, higher level expertise, specific technology expertise, or multi-faceted expertise. Also, this additional expertise doesn't necessarily need to be internal. Depending on needs, sometimes access to the expertise is all that is required, so using outside resources can possibly provide some benefit and save costs.

The current IT staff at MORPC consists of a Desktop Support Technician and a Systems Administrator/Engineer. In a recent poll of IT Executives, the optimal end-user to support personnel ratio was determined to be 65:1, so this puts MORPC within an acceptable range for support capability of an organization its size. The problem, however, is the fact that there is little or no overlap in skillset, specifically as related to the higher-end responsibilities. This lack of overlap in skillset, added to the absence of solid documentation of the environment, creates significant risk for MORPC. All knowledge about the design, configuration, administration, management or troubleshooting of MORPC servers and infrastructure are in the head of the Systems Administrator/Engineer, Steve White. Because of this, any extended absence for Steve would likely cause major issues for the IT department and possibly the organization as a whole. Additionally, there are a number of different department specific systems that IT is involved in supporting. This can spread the IT department very thin at times, and in many cases, IT staff bandwidth is more of a limitation than IT staff skillset is. When an IT department is spread thin like this, nearly all activity is reactive in nature, and this can be a very big problem as time goes by. Without proactive activities like planning, preventative maintenance, testing, etc., the environment will become more problematic, more expensive to maintain, and more prone to failures. MORPC should consider working with a third-party to help develop the various IT documentation that is currently missing, as well as beginning some knowledge sharing/transfer to help build redundancy in high-end skillsets.

Although sufficient for support of the network as it exists today, the current staff skill set and/or more often current staff bandwidth may not be prepared to implement newer technology or to execute technology-based projects. There is certainly a capacity (and desire) to learn, but as far as immediate abilities to address potential future needs, MORPC IT may be lacking. Highly dependent upon the chosen path for the future of MORPC's IT, it will be important to identify the technologies that may be implemented in the future and the related support needs. From there, it will be easier and more effective to perform a gap analysis—determining what additional

expertise is needed. As MORPC implements new technologies, it may be beneficial and/or necessary to bring in expertise from a third-party to ensure that technologies are implemented correctly and to train internal staff on the management and support of the new environment. Also, staff skillsets can quickly become stagnant, and in the technology world, standing still is the same as moving backwards.

Concerns:

1. **Little/No redundancy in skillsets at the higher-end of the technology spectrum.**
2. **Lack of documentation in the environment makes the lack of high-end skillset redundancy a bigger problem.**
3. **The number and variety of (non-IT) department specific systems and programs create bandwidth issues for the IT department.**
4. **Existing staff may be missing skillsets needed to implement and/or support newer technologies that may be implemented in the future.**

Recommendations:

1. **Develop/Nurture vendor relationships to begin knowledge sharing/transfer for higher end skillsets.**
2. **Consider working with a third party to create the missing IT documentation.**
3. **Consider moving department specific systems or programs to vendor supported/managed solutions.**
4. **Maintain vendor relationships to help address any temporary and/or project-based gaps in skillsets or bandwidth by bringing in additional resources (as needed and as appropriate).** Consider current and future skillset needs.

Training

There are two perspectives for training that need to be considered for MORPC; IT staff training and end-user training. Technology evolves at a rapid pace, and this evolution is only picking up speed. Great organizations are smart to not chase every trend, but they also don't fall too far behind. This balancing act requires both solid planning and effective training for both the people using the technology and the people managing it. Currently, the end-user skillsets at MORPC vary among departments and users. As described in the category labeled "End User Skillset" his can be problematic for a number of reasons, and ultimately, it's costing the organization money.

Based on our conversations, MORPC provides access to basic computer-based training (via Lynda.com) for all users and technologists, but unfortunately, this hasn't translated into a well-trained organization. As described in the "End-User Skillset" category, there is a lack of training for new employees on general use MORPC systems, as well as department specific systems and programs. It is likely necessary for existing skillsets to be assessed, and once identified, users with lower skillsets should go through training to gain the skills necessary to complete their job duties effectively and efficiently.

Also, as the organization moves forward from an IT perspective, it is critical that IT staff skillsets are moving forward with it. To accomplish this, IT staff need to have the time to proactively learn new technologies. This may likely mean the offload of certain responsibilities to allow for this time. It's also important to have a vision for where IT is heading for the organization, to give IT staff an idea of which technologies they should focus their training efforts on. And finally, the best way for a technical person to learn a new skill/technology is to interact with it. Obviously, the production environment isn't the best place to try new things, so many organizations create a Test/Dev environment that allows IT staff to test and train on technologies before implementation into production.

Overall, training can go a long way to maximizing IT expenditures and to increasing productivity and efficiency across the organization. It's important to keep in mind, however, that change is scary for most people, so unfortunately, very few will do it voluntarily. For the good of the organization, it must be mandated, ensuring that MORPC continues to grow and prosper.

Concerns:

1. **Some MORPC end user skillsets are admittedly weak.**
2. **There is no formal evaluation of individual end-user skill sets.**
3. **Although some training is available, it is not being fully used by users or mandated by management.**
4. **Reduced overall productivity caused by users with diminished skillsets (requiring extensive involvement of "super users" and/or the increased support of IT).**
5. **Although some training is available, it is not being used much by users or mandated by management.**
6. **IT staff have little time to proactively train on new technologies.**
7. **IT staff doesn't have a Test/Dev environment that allows for training and testing of new technologies (in preparation for implementation and management of these technologies in the production environment).**

Recommendations:

1. **Department management (with the assistance of IT) should evaluate employee skill sets to determine level of training needed (as related to specific job duties and tasks).** Training should be mandated by management and should be tailored to specific job tasks related to the use of technology systems.
2. **MORPC should develop new employee training that focuses on general use MORPC systems, as well as department specific applications and systems**
3. **End-user training should include training that is tailored to specific job tasks related to the use of technology systems.**
4. **Develop "Tips & Tricks" documentation that addresses job/task specific processes and procedures (with step-by-step instruction if needed).** This shortens learning curves and ensures consistency in work amongst MORPC employees.
5. **Provide IT staff with the time to do training.** This may mean getting additional resources to allow for this proactivity.
6. **Consider implementing a Test/Dev environment that can serve as a training and testing platform for IT.**

General Perception of IT Department (within MORPC)

Unfortunately, the old saying "Perception is Reality" is true more often than not. In many cases, it's difficult to determine whether the perception is correct or if the perception becomes self-fulfilling prophecy. Regardless of what is actually the case, actions are often driven by perceptions. Often times, if an individual or group has a poor perception of another individual or group, this can lead to a disconnect in communication, which only serves to frustrate both parties and perpetuate the perception. This disconnect can prevent the "reality" of the situation from being realized. When this happens within an organization, problems are sure to follow. Decreased morale, accompanied by the forming of "sides", starts the organization down a path of diminished productivity and increased frustration; and the return trip is an uphill climb.

From our observations and conversations, MORPC is struggling with this problem (particularly as related to the perception of the IT department). There can be, and likely are, many different factors that play into this, and some may not necessarily be the fault of IT staff. While ultimately, individuals must be accountable for their own efforts and job performance, lack of direct and focused IT management might play a significant role as well. Additionally, out-of-date or insufficient technology can contribute greatly to end-user frustration, which leads directly to poor perception of IT, in general. Although the IT staff and their support procedures are responsible for some of the frustrations, it may not be fair for them to shoulder all of the blame. Absence of a full-time, dedicated IT Manager/Leader has led to a breakdown in communication, follow-through and decision making.

In the next category, we discuss the impact that a lack of IT leadership can have on IT services, and this directly impacts overall perception of the IT department. One of our primary recommendations is the hiring of an IT leader that can help bridge the gap between the IT department and the rest of the organization. To do this, the IT leader will likely need to do the following: champion IT causes, support and defend IT staff, handle management and executive-level and organization-wide communication, create and enforce IT policies and procedures, make decisions (planned and "on the fly"), follow through on commitments/expectations, ensure involvement of proper expertise as necessary, etc, etc.

Another contributing factor to the existing perception of IT is a general lack of communication between the IT department and other departments throughout the organization. This widens the gap and creates a culture of "us vs. them". To further illustrate the impact of diminished communication on overall perception, it's interesting to note that one department in particular clearly had the best perception and relationship with the IT department. This department, Data & Mapping, is the only department that has both a "technical" resource within it (to increase supportability of department specific systems/programs) and regular meetings with IT (to keep lines of communication open and consistent). We believe that this should be a model for other departments within MORPC.

Concerns:

1. **Poor overall perception of IT within MORPC.**
2. **Outdated and insufficient technology increases end-user frustration and directly affects the overall perception of IT.**
3. **Lack of effective leadership in IT has contributed to a less effective IT department.**
4. **2-hour window in the afternoon in which IT is unavailable causes frustration among users.**
5. **Minimal communication between the IT department and many other departments throughout the organization.**

Recommendations:

1. **Take steps to address technology needs that have impact all MORPC users (outdated equipment, for example).**
2. **Hire an IT Leader that can help to clean up issues that plague IT.**
3. **Promote consistent communication between IT and other departments within MORPC.** Periodic status/FAQ/suggestion meetings might be a good way to accomplish this (especially in the beginning, to get the ball rolling).
4. **Eliminate the 2-hour window of unavailability for IT.** If there is still a need for time dedicated time away from reactive support, IT staff should stagger coverage times for each other.

5. **IT should take a customer service (client-based) approach toward serving other departments.**
6. **IT should consider conducting periodic client (department / end user) satisfaction surveys—to track progress and to receive feedback.**

IT Leadership

For MORPC, lack of leadership within IT is at the core of nearly every other concern we've listed. A good leader can develop solutions that can address operational concerns (support processes, system standardization), strategic concerns (alignment of IT with organizational strategy, inclusion of IT in project planning), and cultural concerns (how IT presents itself to the rest of the organization, how other departments and end users interact with IT). A leader can focus efforts on the root of an issue, and then, can develop, champion and implement change to address the issue. This was a topic in every conversation that we had with MORPC staff members—at all levels and in every department (including and specifically IT). Although well intentioned and capable of supporting/maintaining the organization's technology, the current IT staff do not have the experience or skill set to lead the department. This takes a specific set of skills that can be adapted and used to change culture, implement strategy and create operational efficiencies.

Concerns:

1. **Lack of leadership in IT has a significant impact on every other concern listed in this assessment; from the need for documentation and policies to the lack of strategic planning for technology.** This leader should, at minimum, have a background in technology and experience leading a team of technical people.

Recommendations:

1. **MORPC should hire a leader for the IT department, and the hiring process should focus on culture fit, previous experience in IT leadership, and communication at the executive level of an organization.** See Attachment #5 for a sample job description and estimated pay range, developed specifically for MORPC.

Executive / Management Buy-in

With nearly any initiative or decision that is made within an organization, support from leadership is key to adoption. Throughout this document, we've identified several areas for improvement of IT within MORPC. Many of them require a financial investment, and certainly, these types of items would need management approval. Other items, like enforcing a policy around printing, just require management support and can actually lead to savings. All of these items benefit the organization as a whole by creating more reliability in the systems in use, making users more effective and efficient in their work, and ensuring that technology is aligned with organizational goals and strategies. If IT is seen only as a cost center, the technology foundation for the organization will be weak, and over time, this will negatively impact the ability of MORPC to fulfill its mission. Executive and Management support and focus on IT will flow through to the rest of the organization and will ensure that MORPC is built for future success.

Concerns:

2. **Lack of management buy-in on strategic initiatives can minimize impact and overall organizational acceptance.**
3. **Lack of involvement of IT in strategic decisions for the organization (and individual departments) leads to disconnected systems and lost productivity.**

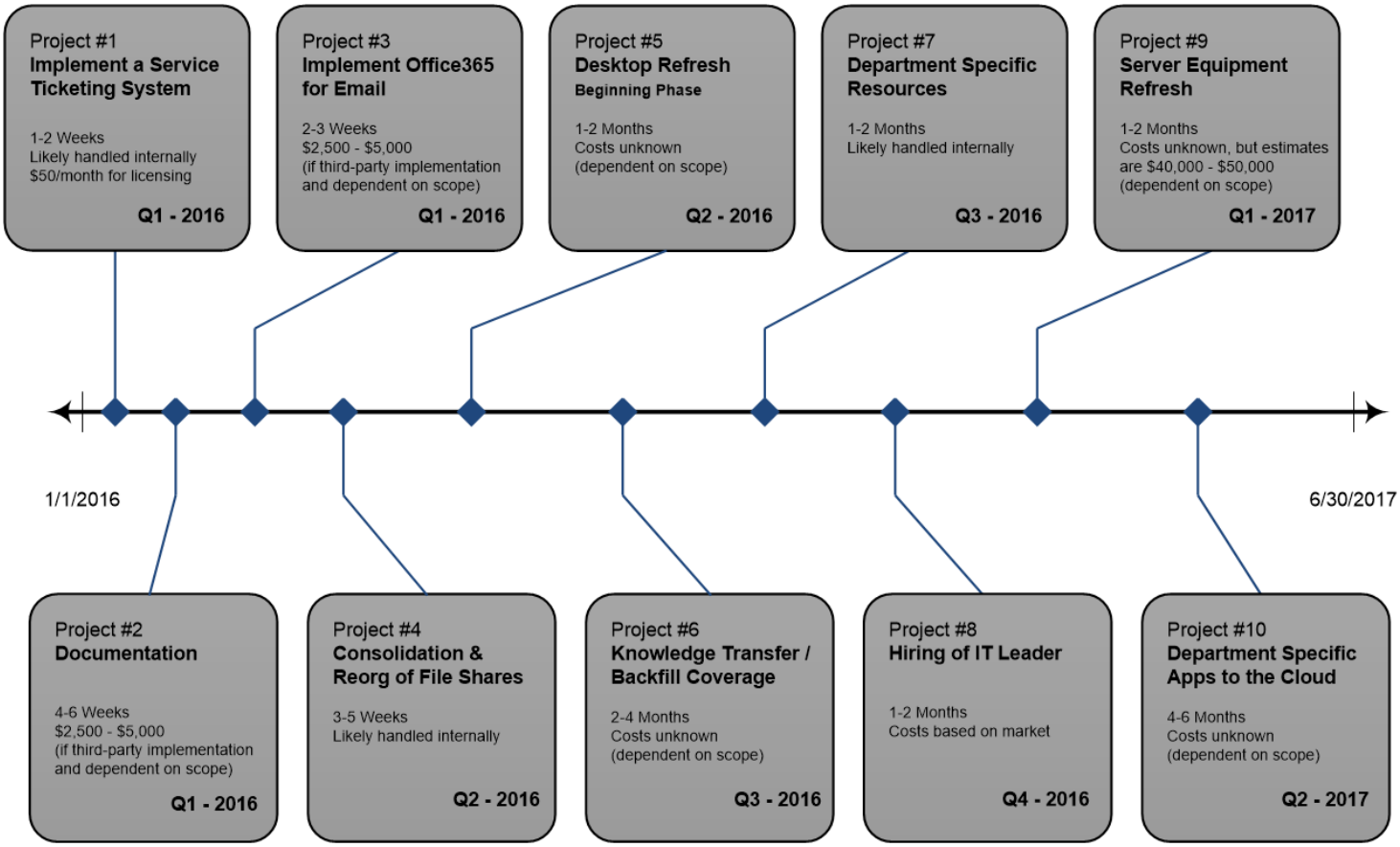
Recommendations:

2. **MORPC Leadership should be intentional about demonstrating buy-in for new IT policies, processes, and/or initiatives that are approved and developed for the organization.**
3. **IT should be aware of and/or involved in organizational decisions, specifically as related to new systems, tools, and technology**

Section 2: Sample 18-month MORPC IT Roadmap

The following graphic is a sample 18-month IT Roadmap timeline for MORPC, based on notable recommendations listed within this document. For the purposes for this document, there are a variety of smaller projects that are not included in this roadmap. This does not minimize their importance or priority. In most cases, the missing items are either things that can be addressed in relatively short order with little expense, or they are items that would be addressed further down the road and therefore have a scope that could change over time. Obviously, a full roadmap would be accompanied by more detail about each milestone and any ancillary activities. As mentioned previously, there are many factors that go into developing a roadmap, including priority, preference, budgets, etc. Careful consideration should be given to current situation, existing and future business practices, functionality requirements, current and future budgets, and staff skill sets, among other things.

Again, this is only a sample roadmap graphic. It is very important to have input from MORPC management and IT personnel to develop an accurate and functional roadmap. Hopefully, the timeline below can start the conversation and act as a guide for the development of the actual IT Roadmap.



Section 3: Supporting Documentation

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Attachment 1: Preliminary Recommendations

The document below was previously provided to MORPC Leadership, as part of a Preliminary Recommendations meeting.

MORPC Preliminary Recommendations & Estimated Costs

(September 30, 2015)

Recommendation: Hire a Technical Leader for IT Department
Priority: High
Impact: Addresses a large majority of the concerns that exist today around IT services and support within MORPC. This individual would help to develop and sustain a culture around IT services; including service delivery, processes, procedures, etc. The final assessment deliverable will elaborate on the concerns addressed and benefits provided by moving forward with this recommendation, but this is likely our highest priority recommendation because of the impact it has on nearly every other recommendation.
Estimated Costs: $75,000-$90,000 per year in salary

Recommendation: Implement a Service Ticketing System
Priority: High
Impact: Helps to keep IT organized; forces support procedures; assist with prioritization of issues; helps in understanding needs and tracking trends; provides capability for metrics; provides a basis for measuring IT staff bandwidth; provides insight into support mix (skillsets and department usage).
Estimated Costs: There are a variety of options ranging significantly in costs. osTicket (www.osTicket.com) is a solid solution that has options ranging from free (for internally hosted version) to $16/agent/month (for the Premium Cloud Hosted version). We recommend going with the Standard ($12/agent/month) or Premium Cloud Hosted version. At most, MORPC would be paying less than $50/month for three IT staff members using this solution.

Recommendation: Spam Solution with individual control and access
Priority: Medium
Impact: We've listed this as a medium priority because it isn't a gaping wound, but we see this recommendation as a no-brainer. There's little to no cost associated with moving forward with it, and it immediately and simultaneously reduces organizational risk associated with missed email communication while also freeing up some level of IT staff resource bandwidth.
Estimated Costs: $0. Only internal IT staff time, and possibly a very small amount of end-user training. Also, because we mentioned this during our meetings with the IT staff, this recommendation may have already been implemented in the last couple of weeks.

Recommendation: Department-specific technical resources (internal hires or third-parties that can focus on specific apps/programs)
Priority: High
Impact: Reduction of workload on IT staff and likely improved capability specific to the particular needs of the department(s). This would be specifically true for departments with specialized application and technology needs, and this model is already in place (and is working very well) for the Data Mapping department.
Estimated Costs: Unknown. Very specific to department needs, applications in use, access to resources, etc.

Recommendation: Office365 for email
Priority: Medium
Impact: We've listed this as a medium priority because it is not an urgent need, but we feel that this would address several concerns; by reducing IT staff responsibilities, reducing equipment resource load, increasing email reliability, eliminating the need for a separate spam solution, eliminating the need to manage (and/or upgrade) the Exchange server any longer, etc.
Estimated Costs: As a non-profit, MORPC can likely get O365 hosted email for free. If using a third-party to implement the migration, estimated services costs would be approximately $2,500-$5,000 (depending on the migration specifics), but this could also be completed by internal IT staff.

Recommendation: End 2-hour window of closed IT (stagger if uninterrupted time is necessary)
Priority: Medium
Impact: Improved perception of IT across the organization. This came up in every conversation that we had with departments and users within MORPC. Regardless of how that time is being used, users tend to make assumptions about it, and this can be a problem. There are likely ways to gain some level of uninterrupted work time without this 2-hour window of IT staff unavailability (perceived or real).
Estimated Costs: $0.

Recommendation: Dedicated planning meetings between IT and Departments
Priority: High
Impact: Connection across departments within MORPC; improved culture and organizational morale; improved perception of IT; better ROI on expenditures/investments because of increased input at the right time for projects and needs.
Estimated Costs: $0; other than staff time.

Recommendation: Project—Documentation
Priority: High
Impact: Improved knowledge transfer; reduced reliance on a single resource for issues; adherence to best practices; increased capability to recover from issues and/or disasters.
Estimated Costs: Although this will certainly involve internal IT staff and could likely be completed without external help, we recommend outsourcing some level of organization and project leadership to help get this completed very quickly/soon. Estimated costs, if outsourcing, would likely be $2,500-$5,000.

Recommendation: Formalized support procedures
Priority: Medium
Impact: Although we feel that this is very important, it is listed as a medium priority in relation to some of the other, more pressing needs. Developing (and enforcing) support procedures would help to decrease the perception of favoritism by IT toward particular users or departments, while also helping to curb inefficient "squeaky wheel" behaviors by end-users. It would also help IT staff to be more organized, efficient and productive when addressing support needs/requests.
Estimated Costs: $0; other than staff time to develop policies. This can be outsourced, but it is likely unnecessary. Also, this is something that would easily be covered by a Technical IT Leader.

Recommendation: Formalized IT policies
Priority: Medium
Impact: Although we feel that this is very important, it is listed as a medium priority in relation to some of the other, more pressing needs. Developing these policies would help by reducing risk and liability related to misuse of organizational technology, while also developing a baseline of best practice standards and policies for the MORPC technology environment.
Estimated Costs: $0; other than staff time to develop policies. This can be outsourced, but it is likely unnecessary. Also, this is something that would easily be covered by a Technical IT Leader.

Recommendation: Proactive tasks—schedule and procedures
Priority: Medium
Impact: Although we feel that this is very important, it is listed as a medium priority in relation to some of the other, more pressing needs. Although many proactive tasks are currently being completed, developing a formal list, schedule and procedure for completing these tasks will help the IT staff to be more organized and efficient in doing so. Proactive tasks help to keep your technology environment optimized and updated; reducing risk and increasing equipment lifecycles.
Estimated Costs: $0; other than staff time to develop policies. This can be outsourced, but it is likely unnecessary. Also, this is something that would easily be covered by a Technical IT Leader.

Recommendation: Project—Knowledge transfer (third-party...FCDC)
Priority: High
Impact: Connected to both the Documentation project and overlap/backfill coverage for IT skillsets, roles and responsibilities, this effort will help to minimize risk exposure related single-threaded support/expertise/knowledge of various systems, services and needs.
Estimated Costs: Although this will certainly involve internal IT staff and could likely be completed without external help (at least partially), we recommend outsourcing some level of organization and project leadership to help get this completed very quickly/soon. Also, we recommend outsourcing to a third-party vendor that could also serve in the role of overlap/backfill coverage (like Franklin County Data Center). This leverages the associated cost/investment to address multiple needs. Estimated costs, if outsourcing, would likely be $2,500-$5,000 (broken down into chunks of labor hours related to documentation, shadowing, training, etc.).

Recommendation: Overlap/Backfill coverage for IT skillsets, roles, and responsibilities
Priority: High
Impact: Prevents prolonged impact of technical issues by providing additional layer of coverage for certain IT roles and responsibilities. Currently, there are several types of issues that can only be addressed by one member of the IT team. This is a significant risk to the organization, and it significantly impacts work-life balance for IT staff.
Estimated Costs: Undetermined; ongoing costs would be tied to hourly rates and/or contract arrangements with a third-party for this type of coverage. Initial/upfront costs are included in the Knowledge Transfer project. Our recommendation is to develop this overlap in coverage both internally (across IT team members), as well as with an external third-party.

Recommendation: Strategic Planning in IT
Priority: High
Impact: From a long-term perspective, this is critical to the ongoing success of MORPC, specifically related to technology and related services (internally and externally). This includes planning specific to IT department related initiatives, as well as cooperative planning with other MORPC departments (both ongoing operations and project-based).
Estimated Costs: $0; other than staff time. Also, this is something that would easily be covered by a Technical IT Leader.

Recommendation: Department-specific/third-party apps to cloud
Priority: Medium
Impact: Reduction of workload on IT staff and likely improved capability specific to the particular needs of the department(s). This would be closely tied to the recommendation for department-specific technical resources and should include application support/management from the third-party application provider(s).
Estimated Costs: Unknown. Very specific to department needs, applications in use, access to resources, etc. There would need to be a dedicated effort, likely led by each department and involving IT to determine what requirements exist for each department's application needs.

Recommendation: Project—Production Server Environment equipment refresh and systems reconfiguration
Priority: High
Impact: Reduction of risk associated with equipment failures; reduction in support hours related to aging equipment; improved capability for redundancy; reduction of server sprawl; improved supportability and manageability of server environment. This effort would include the upgrading, standardization and reconfiguration of the various servers, adhering to industry best practices.
Estimated Costs: $30,000-$35,000 in equipment costs, plus $10,000-$12,000 in services (if outsourcing this effort). Additional costs could apply as related to vendor-involvement for third-party, department-specific applications.

Recommendation: Maintain/enforce end-user equipment refresh cycles.
Priority: Medium
Impact: Because there is no urgent need associated with this recommendation, we have listed it as a medium priority, however we do feel that this is important from a long-term perspective. Well established and consistently adhered to refresh cycles equate to decreased system failures and reduced support needs. This, in turn, equates to increased end-user productivity and reduction of strain on IT staff resource bandwidth.
Estimated Costs: Already captured in departmental budgets.

Recommendation: Proactive system and network monitoring
Priority: Low
Impact: Although we do consider this a best practice, we've listed it as a low priority, as compared to other higher priority items. With that being said, there are many advantages to implementing a system and network monitoring tool; these advantages include improved system uptime, reduced system failures, predictive/preventative support, overall peace of mind, etc.
Estimated Costs: This cost can vary depending on the features desired. At a very basic level, MORPC could implement a solution like Uptime Robot, which is free and monitors specific services, or you work with the third-party service provider to obtain this service (likely around $300-$600/month).

Recommendation: Group Policy configuration
Priority: Medium
Impact: Improved standardization for permissions, profiles, and user experience; quicker and more consistent deployment of machines for new users; improved management and administration of server and user environment; adherence to industry best practices.
Estimated Costs: $750-$1,250 if outsourcing this effort to a third-party, but this effort can likely be handled internally by IT staff.

Recommendation: Modeling/GIS rendering in the cloud
Priority: Medium
Impact: Improved performance/speeds for these tasks; decreased reliance on MORPC server and infrastructure; reduction in load on server and infrastructure environments.
Estimated Costs: To fully determine costs related to this effort, MORPC will need to conduct a separate assessment of the need and the options that meet the requirements of that need. This can likely be completed internally by the department specific technical resource.

Recommendation: Meeting Audio/Visual Technology improvements
Priority: Low/Medium
Impact: We received mixed feedback about these needs, as well as the functionality/capability of the current systems/solutions in place. At minimum, we would recommend implementing a wireless presentation system that makes it easier for guests to connect to audio/visual systems for presentation purposes.
Estimated Costs: There is a wide range of solutions to fit this need, and costs range significantly based on system features. Basic systems start at $300, but more robust user-friendly systems can cost $10,000.

Recommendation: Reorganization and consolidation of file shares
Priority: Medium
Impact: Although this doesn't cause a major issue for MORPC today, there is significant sprawl related to file servers and file shares. To adhere to best practices and to reduce IT support/management needs, we recommend reorganizing file shares and consolidating to a smaller number of file servers. Once this is complete, we recommend implementing Distributed File System (DFS) to help provide first-layer redundancy for MORPC files.
Estimated Costs: $0; although a third-party can be brought in to help coordinate and lead this effort, this is something that can easily be completed by MORPC internally. Individual departments should be involved initially to reorganize their file shares, and then, once that is complete, IT staff can consolidate the file servers into only two (with DFS implemented).

Recommendation: End-user technology training
Priority: Low/Medium
Impact: Individual end-users, department heads, and IT staff all mentioned a lack of end-user training when new employees join MORPC. We recommend developing training related to general use MORPC systems, as well as department-specific applications and systems. This will improve user productivity, while also reducing support needs.
Estimated Costs: Depends on the depth of the training, as well as who develops the training and who implements the training. This could involve a third-party training company to develop the training, with MORPC staff conducting the training as new employees are hired, or it could have both development and implementation completed by one source (either a third-party, or MORPC, internally).

Recommendation: Website Hosting
Priority: Low
Impact: Reduction of workload on IT staff and likely improved capability specific to the particular needs of the department(s). This would involve input from departments (website owners) and third-party vendors.
Estimated Costs: Costs Unknown. Will based on website needs and requirements—will involve input from departments (website owners) and third-party vendors.

Attachment 2: Short-term Project Planning

The document below was previously provided to MORPC Leadership, as part of a Preliminary Recommendations meeting.

MORPC Short-Term Project Planning

(November 14, 2015)

Project: Implementation of Service Ticketing System

Scope: Installation and setup of SupportSystem, the hosted version of osTicket. Our recommendation would be to get the Standard edition of this solution.

Project Plan: Because this is a cloud hosted solution, SupportSystem is a click & go setup. Once you decide to move forward, the system can be ready for use in minutes. For additional help in setting up and understanding how to use the system, SupportSystem engineers will reach out to your team to set up a "guided walkthrough" with your team. Because of this level of service/support/guidance from SupportSystem, there likely isn't a need for SSI's involvement in this process. If anything, we could be available for consultation/advisory services at any point in the process.

Estimated Costs: Pricing for the Standard edition of SupportSystem is a based on a monthly subscription of $9/agent/month. This pricing includes the install, setup, updating, and ongoing support of the solution. To start, MORPC would need 2 agents (Steve and Mark). As needed, SSI could participate in this in any way. In those cases, we would bill hourly for any service provided (likely no need for anything more than 2-4 hours for consultation/advisory services). Our hourly rate for this would be $106.25/hr (15% discount from our standard hourly rate).

Project: Email Migration to Office 365

Scope: Migrate existing email accounts and data from Exchange 2007 to Exchange Online through Office 365. Provide guidance to MORPC IT staff on reconfiguring email clients and basic administration of Office 365. Execution of this project would also address the need for a better spam solution for MORPC.

Project Plan:

- Sign up and create account for MORPC with Office 365
- Create batch migration in Exchange Online
- Manage cutover migration process
- Change DNS so mail flows to the new mail service
- Validate mail flow to and from Office 365
- Provide guidance to MORPC IT on how to configure Outlook to connect to new Office 365 mailbox for each mail user
- Work with MORPC IT staff to validate connectivity for other email-aware systems

Estimated Costs: $1,062.50. As a non-profit, MORPC can get O365 hosted email for free. The pricing above is for implementation services and is based on an estimated 10 hours at an hourly rate of $106.25/hr (15% discount from our standard hourly rate).

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Project: IT Documentation Project

Scope: Develop current and accurate documentation related to the MORPC technology environment. The result of this documentation is better organization within the IT department, as well as preparation for knowledge transfer (internally and to a third-party partner).

Project Plan: Utilizing a Technical Writer for your documentation not only leverages their expertise but also helps to move the entire project forward. While using a Technical Writer to help with IT documentation is very helpful, the success of the project (related effort and costs) is highly dependent upon the involvement of the current MORPC IT team (to communicate the information to be documented). Documentation should include (in addition to any other relevant items) system & device information, vendor support contacts, IT procedures, common issues, system account information, licensing details, etc.

Estimated Costs: Pricing for this project is comprised of the estimated costs for a Technical Writer. Typical bill rates for a Technical Writer on a short-term project are in the $65-75/hr range. Assuming 100-120 hours, estimated project costs would be $7,500-$9,000. Again, this would assume that the information was clearly and efficiently communicated by existing MORPC IT staff.

Project: End 2-hour windows of closed IT (stagger if uninterrupted time is necessary.

Scope: This is just a decision that needs to be made and an arrangement of scheduling for the IT team.

Project Plan: No real plan is needed. Once decision is made about this, communicate it to all staff.

Estimated Costs: No costs associated with this effort.

Project: Implementation of Spam Solution

Scope: This would be covered by the Email Migration to Office 365 project.

Project Plan: See above.

Estimated Costs: Included in Email Migration to Office 365 project.
100-120 hours, estimated project costs would be $7,500-$9,000. Again, this would assume that the information was clearly and efficiently communicated by existing MORPC IT staff.

Project: Formalized support procedures, policies and proactive tasks

Scope: This would be covered by the IT Documentation Project.

Project Plan: See above.

Estimated Costs: Included in IT Documentation Project.

Attachment 3: Asset Inventory List

The report below was created by one of our network scanning tools, and this list provides details about the various servers and workstations within the MORPC environment.

Asset Name	Domain	Asset Type	Username	IP Address	Manufacturer	Model	Serialnumber
SQL2OLD	morpc_nt	Windows	ssiuser	192.168.1.126	Dell Inc.	PowerEdge 2800	2W0C961
DC3	morpc_nt	Windows	Administrator	192.168.1.6	Dell Inc.	PowerEdge 2950	73610G1
HYPERV-02	morpc_nt	Windows		192.168.0.147	Dell Inc.	PowerEdge 2950	53610G1
MOSS64APPS	morpc_nt	Windows		192.168.1.19	Microsoft Corporation	Virtual Machine	4777-6841-3962-3528-9221-6734-88
ARCGISSERVER1	morpc_nt	Windows	administrator	192.168.1.101	VMware		
REPORTSERVER	morpc_nt	Windows	Administrator	192.168.1.105	VMware		
PYXIS	morpc_nt	Windows	administrator	192.168.1.17	VMware		
WEBSERVERPHIP	morpc_nt	Windows	administrator	192.168.1.107	VMware		
ARCGISWEBADP1	morpc_nt	Windows		192.168.1.25	VMware		
VCA	morpc_nt	Windows		192.168.1.99	VMware		
GITANE1	morpc_nt	Windows	Administrator	192.168.1.31	Dell Inc.	PowerEdge 2600	3PV3X31
2950STORAGE01	morpc_nt	Windows	Administrator	192.168.2.80	Dell Inc.	PowerEdge 2950	6RF9YH1
VC	morpc_nt	Windows		192.168.1.98	VMware		
SYSTEMCENTER	morpc_nt	Windows		192.168.1.139	VMware		
SCCA	morpc_nt	Windows		192.168.1.140	VMware		
KILLME	morpc_nt	Windows	ssiuser	192.168.1.137	VMware		
TRANS3	morpc_nt	Windows	ssiuser	192.168.1.56	Dell Inc.	PowerEdge 2950	8LYLNK1
SCENDPOINT	morpc_nt	Windows	Administrator	192.168.2.170	VMware		
APPS	morpc_nt	Windows	rpowell	192.168.1.129	VMware		
FINANCESERVER	morpc_nt	Windows	sdcpa	192.168.1.83	VMware		
SCIOTO2-PC	morpc_nt	Windows	laptop	192.168.2.124	Dell Inc.	OptiPlex 760	JH3CBK1
TDATA2	morpc_nt	Windows	Administrator	192.168.2.192	VMware		
DC2012A	morpc_nt	Windows	Administrator	192.168.1.7	VMware		
APPASSURECORE2	morpc_nt	Windows	administrator	192.168.1.164	Dell Inc.	PowerEdge R720xd	F84KSW1
TRANS4	morpc_nt	Windows	administrator	192.168.1.170	VMware		
MORPC2	morpc_nt	Windows	administrator	192.168.1.174	VMware		
SQL-A	morpc_nt	Windows	administrator	192.168.1.10	Dell Inc.	PowerEdge 2950	1LJBVH1
ARCGISLBRS	morpc_nt	Windows		192.168.1.52	VMware		
SQL-P	MORPC_NT	Windows	administrator	192.168.1.14	Dell Inc.	PowerEdge 2950	D91NBG1
DC2012B	morpc_nt	Windows	revolution	192.168.1.2	VMware		
CM1	morpc_nt	Windows	administrator	192.168.1.131	VMware		
MORPCESXVC01	morpc_nt	Windows	administrator	192.168.1.61	Dell Inc.	PowerEdge 2950	3TPT4C1
WEBSERVER2	morpc_nt	Windows	administrator	192.168.1.175	VMware		
DAVIDPORCHETTI	morpc_nt	Windows	dporchetti	192.168.2.205	Dell Inc.	OptiPlex 745	J1X7ZC1
DMURPHYSURFACE	morpc_nt	Windows	dmurphy	192.168.71.210	OEMC	O_E_M_C_	14851251153
IT2JAPRICE-PC	morpc_nt	Windows		192.168.10.11	Dell Inc.	OptiPlex 760	9C73TH1
APRILDRAKE-PC	morpc_nt	Windows	adrake	192.168.2.19	Dell Inc.	OptiPlex 3020	9VBCM02
FRONTDESK-PC	morpc_nt	Windows	laptop	192.168.2.162	System manufacturer	System Product Name	System Serial Number
DARBY-PC	morpc_nt	Windows	laptop	192.168.2.233	Dell Inc.	OptiPlex 9020M	C88MS52
NGILL-PC	morpc_nt	Windows	ngill	192.168.2.122	Dell Inc.	OptiPlex 3020	80T6842
MARTYELLIS-PC	morpc_nt	Windows	mellis	192.168.2.112	Dell Inc.	OptiPlex 755	7L6F4G1
HYPERV-01	morpc_nt	Windows		192.168.1.145	Dell Inc.	PowerEdge 2950	DGK3QH1
AMCELDOWNEY	morpc_nt	Windows	amceldowney	192.168.2.56	Dell Inc.	OptiPlex 3020	BWWGDZ1
RUTHYORSTON-PC	morpc_nt	Windows	ryorston	192.168.2.217	Dell Inc.	OptiPlex 760	CD73TH1
WEBSERVER1	morpc_nt	Windows	Administrator	192.168.1.153	VMware		
KERSTINCARR2-PC	morpc_nt	Windows	kcarr	192.168.2.142	Dell Inc.	OptiPlex 7010	HGQ5RW1
WILLIAMMURDOCK	morpc_nt	Windows	wmurdock	192.168.2.245	Dell Inc.	Latitude E6530	C74VBW1
MBORGER-PC	morpc_nt	Windows	mborger	192.168.2.198	Dell Inc.	OptiPlex 3020	80V7842
BEVANSCHNECK-PC	morpc_nt	Windows	bschneck	192.168.2.139	Dell Inc.	Latitude E6520	22WSFS1
LYNCARCHIVER	morpc_nt	Windows		192.168.1.158	VMware		
HWASHIKJANG-PC	morpc_nt	Windows	hjang	192.168.2.247	Dell Inc.	OptiPlex 7010	HGSQRW1
STEVEGARNACK-PC	morpc_nt	Windows	sgarnack	192.168.2.105	Dell Inc.	OptiPlex 3020	BWTFDZ1
PRINTMONITOR-PC	morpc_nt	Windows	mcrosten	192.168.2.95	Dell Inc.	OptiPlex 745	G4RMSD1
BUCKEYEROOM-PC	morpc_nt	Windows	laptop	192.168.2.137	Dell Inc.	OptiPlex 9020M	4PXVRS2
DSHEEHAN	morpc_nt	Windows	dsheehan	192.168.2.219	Dell Inc.	OptiPlex 7010	HGRTRW1
SCIOTO-PC	morpc_nt	Windows	laptop	192.168.2.205	To Be Filled By O.E.M.	To Be Filled By O.E.M.	To Be Filled By O.E.M.
PHONEDIRECTORY	morpc_nt	Windows	swhite	192.168.1.35	To Be Filled By O.E.M.	To Be Filled By O.E.M.	To Be Filled By O.E.M.
ZHUOJUNJIANG-PC	morpc_nt	Windows	zjiang	192.168.2.211	Dell Inc.	OptiPlex 3020	BWSHDZ1
DMURPHY-PC	morpc_nt	Windows	dmurphy	192.168.2.206	Dell Inc.	OptiPlex 3020	BWXGDZ1
MARKCROSTEN-PC	morpc_nt	Windows	mcrosten	192.168.2.199	System manufacturer	System Product Name	System Serial Number
JWHISLER	morpc_nt	Windows	jwhisler	192.168.2.193	Dell Inc.	OptiPlex 3020	BWWHDZ1
DAVIDRUTTER-PC	morpc_nt	Windows	drutter	192.168.2.99	Dell Inc.	OptiPlex 3020	80WS842
PATTYOLMSTED-PC	morpc_nt	Windows	polmsted	192.168.2.29	Dell Inc.	OptiPlex 7010	HGRSRW1
EAQSURFACEPRO2	morpc_nt	Windows	mellis	192.168.71.89	Microsoft Corporation	Surface Pro 2	13613733653
HOCKINGROOM-PC	morpc_nt	Windows	laptop	192.168.2.147	Dell Inc.	OptiPlex 9020M	1Z5MN22
AMCCABE-PC	morpc_nt	Windows	amccabe	192.168.2.141	Dell Inc.	OptiPlex 3020	BWXFDZ1
SCOM2012	morpc_nt	Windows		192.168.1.156	VMware		
AMUNRE	morpc_nt	Windows		192.168.1.5	VMware		
ARCGISCACHER	morpc_nt	Windows	deisenberg	192.168.1.88	VMware		
THEAWALSHYOGA	morpc_nt	Windows	twalsh	192.168.71.140	Lenovo	80HE	PF06607D
ARCGISSERVER2	morpc_nt	Windows		192.168.1.127	VMware		
TAS2	morpc_nt	Windows	rp3.morpc5	192.168.1.30	VMware		
SHARINGSERVER	morpc_nt	Windows	administrator	192.168.1.39	VMware		
LYNC	morpc_nt	Windows	administrator	192.168.1.50	VMware		
UTILITIESSERVER	morpc_nt	Windows		192.168.1.141	VMware		
MOSS64	morpc_nt	Windows		192.168.1.20	Microsoft Corporation	Virtual Machine	5398-5401-6389-7002-5868-6634-15
SCOTTEELLIOTT	morpc_nt	Windows	selliott	192.168.2.90	Dell Inc.	OptiPlex 780	F32DBM1
BRANDIWHETSTONE	morpc_nt	Windows	bwhetstone	192.168.2.76	Dell Inc.	XPS 13 9343	JT1GT32
MUSKINGUM-PC	morpc_nt	Windows	laptop	192.168.2.115	Dell Inc.	OptiPlex 9020M	4PXWRS2
BRENDANOE-PC	morpc_nt	Windows	bnoe	192.168.2.151	Dell Inc.	OptiPlex 7010	HGQTRW1
MARKSMITH-PC	morpc_nt	Windows	msmith	192.168.2.244	Dell Inc.	OptiPlex 760	8KJZJG1
JOHNWILDMAN-PC	morpc_nt	Windows	jwildman	192.168.2.18	Dell Inc.	OptiPlex 7010	H8FKVV1
joegarrity-pc	morpc_nt	Windows	jgarrity	192.168.2.168	Dell Inc.	XPS 13 9343	10WBM32
ENTERPRISES	morpc_nt	Windows	swhite	192.168.1.108	System manufacturer	System Product Name	System Serial Number
AMELIALAPTOP	morpc_nt	Windows	acostanzo	192.168.2.220	Dell Inc.	Latitude E6530	2Y7VWW1
CJENNINGS	morpc_nt	Windows	cjennings	192.168.2.235	Dell Inc.	OptiPlex 3020	DG6MDZ1

MARIASCHAPER-PC	morpc_nt	Windows	mschaper	192.168.2.200	Dell Inc.	OptiPlex 7010	HGRRRW1	
MARIONDEANPC	morpc_nt	Windows	mdean	192.168.2.26	Dell Inc.	OptiPlex 7010	HGQQRW1	
LYNNROBINSON-PC	morpc_nt	Windows	cetu	192.168.2.22	Dell Inc.	OptiPlex 3020	BWTHDZ1	
GARTHWLAPTOP	morpc_nt	Windows	mwalsh	192.168.71.204	Dell Inc.	Latitude D820	2CSY5C1	
NREGER-PC	morpc_nt	Windows	nreger	192.168.2.41	Dell Inc.	OptiPlex 3020	80V6842	
COKEEFFE	morpc_nt	Windows	Administrator	192.168.2.34	Dell Inc.	Precision M4800	JK75XY1	
DANIELE-PC	morpc_nt	Windows	deisenberg	192.168.2.244	Dell Inc.	OptiPlex 7010	HGSRRW1	
WILMA-PC	morpc_nt	Windows	wyoder	192.168.2.89	Dell Inc.	OptiPlex 3020	BWVHDZ1	
TCLIFTON-PC	morpc_nt	Windows	tclifton	192.168.2.202	Dell Inc.	OptiPlex 790	HR6J1R1	
EVELYNEBERT-PC	morpc_nt	Windows	eebert	192.168.2.156	Dell Inc.	Latitude E5550	D1FCT32	
VCS	morpc_nt	Windows	administrator	192.168.1.94	Microsoft Corporation	Virtual Machine	6102-2085-2175-0644-3832-4118-31	
NONAMEROOM-PC	morpc_nt	Windows	laptop	192.168.2.24	Dell Inc.	OptiPlex 9020M	1YWNN22	
CIELKLEIN-PC	morpc_nt	Windows	cklein	192.168.2.214	Dell Inc.	OptiPlex 7010	BXWXRW1	
RIKKIACOLON	morpc_nt	Windows	rcolon	192.168.2.48	Dell Inc.	OptiPlex 780	142DBM1	
JENNIFERNOLL-PC	morpc_nt	Windows	jnoll	192.168.2.96	Dell Inc.	OptiPlex 790	66RSJQ1	
CHADPARASA-PC	morpc_nt	Windows	cparasa	192.168.2.236	Dell Inc.	OptiPlex 7010	HGQRRW1	
CHERIMANSPERGER	morpc_nt	Windows	cmansperger	192.168.2.57	Dell Inc.	OptiPlex 3020	BWVGDZ1	
ROBERTPOWELL-PC	morpc_nt	Windows	rpowell	192.168.2.8	Dell Inc.	OptiPlex 9020	4J6KDZ1	
MAFRANTZ	morpc_nt	Windows	mafrantz	192.168.2.128	Dell Inc.	OptiPlex 3020	BWVFDZ1	
CRAIGWILDMAN-PC	morpc_nt	Windows	cwildman	192.168.2.10	Dell Inc.	OptiPlex 760	HH3CBK1	
REPORTS	morpc_nt	Windows	Administrator	192.168.2.154	VMware			
EXCHANGEARCHIVE	morpc_nt	Windows	Administrator	169.254.250.234	VMware			
SHAWNHUFSTEDLER	morpc_nt	Windows	shufstedler	192.168.2.55	Dell Inc.	OptiPlex 790	2BR1VR1	
DLEE-PC	morpc_nt	Windows	Administrator	192.168.1.182	VMware			
DINALOPEZ-PC	morpc_nt	Windows	dlopez	192.168.2.111	Dell Inc.	OptiPlex 3020	BWWFDZ1	
RNIMPS-PC	morpc_nt	Windows	rnimps	192.168.2.163	Dell Inc.	OptiPlex 3020	80T8842	
SSAUNDERS	morpc_nt	Windows	ssaunders	192.168.2.28	Dell Inc.	OptiPlex 3020	80V5842	
RANDYDEARWESTER	morpc_nt	Windows	rdearwester	192.168.2.13	Lenovo	7450WFB	R9OLD9N	
TIMBATES-PC	morpc_nt	Windows	dspencer	192.168.2.25	Dell Inc.	OptiPlex 3020	9VBBM02	
JACKWAGONER-PC	morpc_nt	Windows	jwagoner	192.168.2.5	Dell Inc.	OptiPlex 745	15RM5D1	
LORETTAAKERS-PC	morpc_nt	Windows	ngoodman	192.168.2.31	Dell Inc.	OptiPlex 780	442DBM1	
EILEENLEUBYLAPT	morpc_nt	Windows	eleuby	192.168.2.37	Dell Inc.	Latitude E6520	G9T8FS1	
STEVESOVA	morpc_nt	Windows	ssova	192.168.2.38	Dell Inc.	OptiPlex 790	2BR4VR1	
SHAWNH-PC	morpc_nt	Windows	trosier	192.168.2.130	Dell Inc.	OptiPlex 790	2BR1VR1	
TAMMYROBERTSON	morpc_nt	Windows	trobertson	192.168.2.47	Dell Inc.	OptiPlex 760	8KJYJG1	
KIPMATTSON-PC	morpc_nt	Windows	kmattson	192.168.2.46	Lenovo	7764CTO	LVB78B0	
COHIBA	morpc_nt	Windows		169.254.159.236	VMware			
BRIANWILLIAMS	morpc_nt	Windows	bwilliams	192.168.2.74	Dell Inc.	OptiPlex 760	3J3CBK1	
NEWPLANNER-PC	morpc_nt	Windows	jboehk	192.168.2.79	Dell Inc.	OptiPlex 3020	80V8842	
JASONSHENDER-PC	morpc_nt	Windows	jshender	192.168.2.83	Dell Inc.	OptiPlex 780	342DBM1	
BWHETSTONE-DESK	morpc_nt	Windows	bwhetstone	192.168.2.18	Dell Inc.	OptiPlex 760	8KJXJG1	
BCAGE-PC	morpc_nt	Windows	bcage	192.168.2.234	Dell Inc.	OptiPlex 3020	989F942	
TIMMURPHY-PC	morpc_nt	Windows	tmurphy	192.168.2.132	Lenovo	7450WFB	R9OLD9M	
COKEEFFESURFACE	morpc_nt	Windows	cokeeffe	192.168.71.83	Microsoft Corporation	Surface Pro 3		11308145253
JASONKAPER	morpc_nt	Windows	jkaper	192.168.2.88	Dell Inc.	OptiPlex 3020	BWTGDZ1	
STSEN-PC	morpc_nt	Windows	stsen	192.168.2.44	Dell Inc.	OptiPlex 9020	BLKZ552	
TIFFANYSHEPPARD	morpc_nt	Windows	tsheppard	192.168.2.131	Dell Inc.	OptiPlex 7010	51ZWNW1	
SUSANTSEN-PC	morpc_nt	Windows	stsen	192.168.2.187	Dell Inc.	OptiPlex 760	1J3CBK1	
WIN7-32-PC	morpc_nt	Windows	swhite	192.168.2.82	Microsoft Corporation	Virtual Machine	4552-6744-0055-3679-4597-9335-94	
TRANTEMP-PC	morpc_nt	Windows	nwarren	192.168.2.118	Dell Inc.	OptiPlex 780	FRVBPM1	
THEAWALSH-PC	morpc_nt	Windows	twalsh	192.168.2.223	Dell Inc.	OptiPlex 790	66SQJQ1	
MMONTGOMERY-PC	morpc_nt	Windows	mmontgomery	192.168.2.45	Lenovo	20A7CTO1WW	R9030D1Z	
DAVIDABEL-PC	morpc_nt	Windows	mwalsh	192.168.2.21	Dell Inc.	OptiPlex 760	8KHZJG1	
JERAMYGREEN-PC	morpc_nt	Windows	jgreen	192.168.71.38	Lenovo	3434CTO	R9R0NV9	
BUCKEYE-PC	morpc_nt	Windows	Administrator	192.168.2.179	To Be Filled By O.E.M.	To Be Filled By O.E.M.	To Be Filled By O.E.M.	
RIDESOLUTIONS	morpc_nt	Windows	laptop	192.168.71.225	Dell Inc.	Latitude 3340	3ZWYB32	
DANIELSHEEHAN	morpc_nt	Windows	dsheehan	192.168.2.161	Dell Inc.	OptiPlex 760	HC73TH1	
HOUSINGLAPTOP	morpc_nt	Windows	sgarnack	192.168.2.194	Dell Inc.	Latitude E6500	436MWH1	
INTERNPC-PC	morpc_nt	Windows	jboehk	192.168.2.13	Dell Inc.	OptiPlex 780	242DBM1	
CEESPARE-PC	morpc_nt	Windows	rbeeman	192.168.2.194	Dell Inc.	OptiPlex 745	GNGS6C1	
CINDYHICKMAN-PC	morpc_nt	Windows	chickman	192.168.2.85	Dell Inc.	OptiPlex 7010	FDTMGX1	
JOHNGRIMM-PC	morpc_nt	Windows	mcrosten	192.168.2.200	Lenovo	7764CTO	LVB78B1	

Attachment 4: Out-of-Warranty Machine List

The report below was created by one of our network scanning tools, and this list provides details about machines within the MORPC environment that are past their warranty expiration date.

Asset Name	IP Address	Asset Type name	Model	Manufacturer	Serial number	Purchase Date	Warranty Expiration
GITANE1	192.168.1.31	Windows	PowerEdge 2600	Dell Inc.	3PV3X31	12/11/2003	12/10/2006
SQL2OLD	192.168.1.126	Windows	PowerEdge 2800	Dell Inc.	2W0C961	12/13/2004	12/13/2007
MORPCESXVC01	192.168.1.61	Windows	PowerEdge 2950	Dell Inc.	3TPT4C1	11/22/2006	11/21/2009
GARTHWLAPTOP	192.168.71.204	Windows	Latitude D820	Dell Inc.	2CSY5C1	12/2/2006	12/1/2009
CEESPARE-PC	192.168.2.194	Windows	OptiPlex 745	Dell Inc.	GNG56C1	12/4/2006	12/3/2009
DAVIDPORCHETTI	192.168.2.205	Windows	OptiPlex 745	Dell Inc.	J1X7ZC1	5/18/2007	5/17/2010
PRINTMONITOR-PC	192.168.2.95	Windows	OptiPlex 745	Dell Inc.	G4RM5D1	7/2/2007	7/1/2010
JACKWAGONER-PC	192.168.2.5	Windows	OptiPlex 745	Dell Inc.	15RM5D1	7/2/2007	7/1/2010
DC3	192.168.1.6	Windows	PowerEdge 2950	Dell Inc.	73610G1	4/2/2008	4/2/2011
HYPERV-02	192.168.0.147	Windows	PowerEdge 2950	Dell Inc.	53610G1	4/2/2008	4/2/2011
RUTHYORSTON-PC	192.168.2.217	Windows	OptiPlex 760	Dell Inc.	CD73TH1	12/7/2008	12/7/2011
ITZIAPRICE-PC	192.168.10.11	Windows	OptiPlex 760	Dell Inc.	9C73TH1	12/7/2008	12/7/2011
DANIELSHEEHAN	192.168.2.161	Windows	OptiPlex 760	Dell Inc.	HC73TH1	12/7/2008	12/7/2011
HOUSINGLAPTOP	192.168.2.194	Windows	Latitude E6500	Dell Inc.	436MWH1	12/22/2008	12/22/2011
2950STORAGE01	192.168.2.80	Windows	PowerEdge 2950	Dell Inc.	6RF9YH1	1/12/2009	1/12/2012
KIPMATTSON-PC	192.168.2.46	Windows	7764CTO	Lenovo	LVB78B0		3/27/2012
JOHNGRIMM-PC	192.168.2.200	Windows	7764CTO	Lenovo	LVB78B1		3/27/2012
TAMMYROBERTSON	192.168.2.47	Windows	OptiPlex 760	Dell Inc.	8KJYJG1	4/4/2009	4/4/2012
BWHETSTONE-DESK	192.168.2.18	Windows	OptiPlex 760	Dell Inc.	8KJXJG1	4/4/2009	4/4/2012
DAVIDABEL-PC	192.168.2.21	Windows	OptiPlex 760	Dell Inc.	8KHZJG1	4/4/2009	4/4/2012
MARKSMITH-PC	192.168.2.244	Windows	OptiPlex 760	Dell Inc.	8KJZJG1	4/4/2009	4/4/2012
SQL-A	192.168.1.10	Windows	PowerEdge 2950	Dell Inc.	1LJBVH1	4/11/2009	4/11/2012
MARTYELLIS-PC	192.168.2.112	Windows	OptiPlex 755	Dell Inc.	7L6F4G1	4/22/2008	4/22/2012
CRAIGWILDMAN-PC	192.168.2.10	Windows	OptiPlex 760	Dell Inc.	HH3CBK1	6/24/2009	6/24/2012
SUSANTSEN-PC	192.168.2.187	Windows	OptiPlex 760	Dell Inc.	1J3CBK1	6/24/2009	6/24/2012
BRIANWILLIAMS	192.168.2.74	Windows	OptiPlex 760	Dell Inc.	3J3CBK1	6/24/2009	6/24/2012
SCIOTO2-PC	192.168.2.124	Windows	OptiPlex 760	Dell Inc.	JH3CBK1	6/24/2009	6/24/2012
KEVINMOORELAPTO	192.168.2.34	Windows	7764CTO	Lenovo	LVB7DXC		7/11/2012
TRANS3	192.168.1.56	Windows	PowerEdge 2950	Dell Inc.	8LYLNK1	7/30/2009	7/30/2012
HYPERV-01	192.168.1.145	Windows	PowerEdge 2950	Dell Inc.	DGK3QH1	3/1/2010	3/1/2013
SQL-P	192.168.1.14	Windows	PowerEdge 2950	Dell Inc.	D91NBG1	4/8/2010	4/8/2013
LORETTAAKERS-PC	192.168.2.31	Windows	OptiPlex 780	Dell Inc.	442DBM1	4/9/2010	4/9/2013
JASONSHENDER-PC	192.168.2.83	Windows	OptiPlex 780	Dell Inc.	342DBM1	4/9/2010	4/9/2013
SCOTTEELLIOTT	192.168.2.90	Windows	OptiPlex 780	Dell Inc.	F32DBM1	4/9/2010	4/9/2013
INTERNPC-PC	192.168.2.13	Windows	OptiPlex 780	Dell Inc.	242DBM1	4/9/2010	4/9/2013
RIKKIACOLON	192.168.2.48	Windows	OptiPlex 780	Dell Inc.	142DBM1	4/9/2010	4/9/2013
JERAMYGREEN-PC	192.168.71.38	Windows	3434CTO	Lenovo	R9R0NV9		7/18/2013
TRANTEMP-PC	192.168.2.118	Windows	OptiPlex 780	Dell Inc.	FRVBPM1	9/9/2010	9/9/2013
RANDYDEARWESTER	192.168.2.13	Windows	7450WFB	Lenovo	R90LD9N		10/16/2013
TIMMURPHY-PC	192.168.2.132	Windows	7450WFB	Lenovo	R90LD9M		10/16/2013
STEVEGARNACK-PC	192.168.2.105	Windows	OptiPlex 3020	Dell Inc.	BWTFDZ1	12/29/2010	12/29/2013
LAURAKOPROWSKIL	192.168.71.36	Windows	Latitude E4300	Dell Inc.	CRRW9P1	2/1/2011	2/1/2014
THEAWALSH-PC	192.168.2.223	Windows	OptiPlex 790	Dell Inc.	66SQJQ1	6/18/2011	6/18/2014
JENNIFERNOLL-PC	192.168.2.96	Windows	OptiPlex 790	Dell Inc.	66RSJQ1	6/18/2011	6/18/2014
SHAWNHUFSTEDLER	192.168.2.55	Windows	OptiPlex 790	Dell Inc.	2BR1VR1	6/18/2011	6/18/2014
TCLIFTON-PC	192.168.2.202	Windows	OptiPlex 790	Dell Inc.	HR6J1R1	9/21/2011	9/21/2014
SHAWNH-PC	192.168.2.130	Windows	OptiPlex 790	Dell Inc.	2BR1VR1	10/26/2011	10/26/2014
STEVESOVA	192.168.2.38	Windows	OptiPlex 790	Dell Inc.	2BR4VR1	10/26/2011	10/26/2014
EILEENLEUBYLAPT	192.168.2.37	Windows	Latitude E6520	Dell Inc.	G9T8FS1	12/10/2011	12/10/2014
BEVANSCHNECK-PC	192.168.2.139	Windows	Latitude E6520	Dell Inc.	22W5FS1	12/10/2011	12/10/2014

Attachment 5: Sample Job Description
(for Director of Information Technology)

The document below was previously provided to MORPC Leadership, as part of a Preliminary Recommendations meeting.

Sample Job Description: Director of Information Technology

Description

The Director of Information Technology will oversee the development, implementation, and use of technology throughout the firm, working closely with advocacy staff to assess and address organizational, departmental and user-based needs. Areas of responsibility include the full range of information systems and telecommunications activities, including determining user requirements, recommending practical solutions, and leading firm-wide efforts to improve the effective use of technology. This position reports to the Executive Director and supervises all IT department employees. Other principal working relationships include the Leadership staff, MORPC Officers and Board members, Department heads, all system users, and vendors and consultants.

Primary Duties and Responsibilities:

1. Manage the deployment, monitoring, maintenance, development, upgrade, and support of all IT systems, including servers, PCs, operating systems, telephones, software applications, and peripherals.

2. Provide expertise and support during systems upgrades, installations, conversions and file maintenance.

3. Oversee systems development and enhancement and the integration of new systems with existing systems.

4. Work with Department heads and staff to develop strategies and plans to enhance client services, improve user effectiveness, and foster innovation.

5. Communicate regularly with executive leadership and all users of information services and systems.

6. Manage IT staff, including hiring, training, evaluation, guidance, discipline and discharge.

7. Develop the IT staff to meet the changing needs of the organization, departments, users, and community; new projects and technologies; and varying staff strengths.

8. Develop standard operating procedures and best practices, including providing written protocols and guidance to IT staff and to end-users.

9. Ensure the creation and maintenance of all written documentation, including system and user manuals, license agreements, and documentation of modifications and upgrades.

10. Oversee provision of end-user services, including help desk and technical support services.

11. Keep current with the latest technologies and determine what new technology solutions and implementations will meet business and system requirements.

12. Manage financial aspects of the IT Division, including purchasing, budgeting, and budget review.

Sophisticated Systems, Inc.
IT staffing considerations for MORPC
2191 CityGate Drive, Columbus, Ohio 43219
(phone) 614.918.3400 ● (fax) 614.918.3401
Confidential & Proprietary

morpc
sophisticated systems
Response•Ability•Results

13. Develop and implement all IT policies and procedures, including those for architecture, security, disaster recovery, standards, purchasing, and service provision.

14. Manage servers, security solutions, network hardware and equipment.

15. Manage telecommunications infrastructure and development plans, projects, policies and procedures.

16. Negotiate and administer vendor, outsourcer, and consultant contracts and service agreements.

17. Develop and manage strong partnering relationships with key vendors and service providers.

18. Present IT-based strategic planning initiatives to MORPC Leadership team and Board members.

19. Support MORPC's overall mission and follow all standards, policies, procedures, and confidentiality guidelines.

20. Develop and manage training program to continually improve IT staff technical knowledge and expertise.

21. Advise and support MORPC Executive Director and MORPC Board on all matters relating to employee use of MORPC information, network and communication systems, including as it relates to personnel matters.

Qualifications

A Bachelor's degree in computer science or equivalent education and experience, along with advanced technical or managerial credentials (including PMP, CISM, ITIL, etc.) preferred. Ten or more years of progressive IT experience. Experience in working with non-profits, community-based organizations, or governmental entities preferred. Demonstrated ability to lead a team of technical staff, to work with the Executive Management of an organization, and to manage multiple concurrent projects. Excellent verbal and written communication skills. Ability to meet deadlines, to conduct and direct research into IT issues and products, and to take initiative in the development and completion of projects. Strong project management, organizational and time management skills. Excellent problem-solving, analytical and evaluative skills.