City of Findlay, Ohio

Computer Services Department

Annual Report 2016

COMPUTER SERVICES DEPARTMENT RESPONSIBILITIES:

The Computer Services department is responsible for maintaining all hardware, software, and network access for the various City departments. Hardware support includes the evaluation, purchase, installation, preventive maintenance, repair, and the inventory of supplies for the computer equipment throughout all City departments. Some of the hardware supported includes a Hyper-V high availability failover cluster running multiple virtual servers, a stand-alone email and web server, several physical application servers, firewalls, L3 switches, VPN appliance, and every desktop computer and printer in the City. For software, we both assist the other departments when researching new software, as well as work alongside them on the final implementation, testing and training of all new software installed on the city's network of servers. Our staff then provides ongoing first line support to the city's departmental personnel for all software operating on the city's network. We are responsible for administering the 3rd party packaged software applications on the network, performing periodic system software updates, and also backing up all data on a daily basis. Several city applications and reports are custom written and maintained by Computer Services staff as well. We also provide basic operational support for various versions of Microsoft Office products such as word processing, spreadsheets, and calendar sharing.

COMPUTER SERVICES DEPARTMENT STAFFING:

Staffing for the office consists of:

- Computer Services Manager (2.8 years' service time)
- Computer Programmer (1 year service time)
- Part Time Help Desk Technician (1.6 years' service time)

COMPUTER SERVICES DEPARTMENT APPLICATIONS & EQUIPMENT:

All of the various software modules used city wide are accessed by hardware located in 28 city department locations, and in three other agency locations: Hancock County Adult Probation, Hancock Regional Planning, and Hancock County Prosecutor's Office.

There have been countless upgrades to the network infrastructure for the city throughout the year, both physical, and logical, as well as major security patches. The Microsoft Windows network servers are the central storage areas for departmental files. The city utilizes SmarterTools SmarterMail Suite for its Email management software. The email server also makes available shared calendars for an unlimited

number of licensed users. These shared calendars are accessed via MS Outlook at the individual users' desktops. City email users also have the ability to access their email and/or calendars via our SmarterMail web client from any internet connection worldwide. A Juniper SRX220 Firewall device protects the city's network, as well as the city's web server from unauthorized outside access. The City of Findlay's web site (www.findlayohio.com) delivers the city's departmental information via web pages to the World Wide Web. The Geographic Information System (GIS) stores and makes available the mapping layers to city offices. The Building Security server controls the locking and unlocking of doors in the Municipal Building. The InterAct Mobile server controls the interfacing tools used for patrol car computer access to Ohio LEADS, and the Police dispatching system via cellular cards on each system. All additional servers make up the hardware necessary for the various departmental software applications which run in a Microsoft Windows Server environment. Some, but not all of the departmental software applications include: CMI Utility BIliing, eMIT City Income Tax, Emergitech InterCad, Emergitech InterBadge, Emergitech InterFire, and Innovare's CourtMaster 2000 for Municipal Court. The network supports resource sharing, and provides seventeen remote offices with a wireless network connection via Motorola Canopy devices to the network servers. The network also provides Internet access to the entire City network through a fiber connection managed by Time Warner.

COMPUTER SERVICES DEPARTMENT ACTIVITIES FOR 2016:

Our third and final HyperV host was put into place, as well as a replicated SAN for all the City data. The replicated SAN, and one of the HyperV hosts will be moved to a remote location in the City, after the Fiber Loop has been complete. This will offer high availability during disaster recovery scenarios.

Necessary updates and fixes were installed on all of our third party software applications running on the network servers, network PCs and Police Department Laptops in the cruisers. The Computer Services staff attempts to minimize the downtime caused by these installations by performing them either after hours or during low volume processing times for the various affected personnel. The various software upgrades performed throughout the year included SmarterMail updates, MobileCop updates, Emergitech updates, CourtMaster updates, Pitney Bowes updates, as well as Windows Server updates.

Additional steps have been taken throughout the year to increase the overall security of the City's network. Some of these steps include upgrades to physical equipment, and a multiple layer approach to security. We have fully implemented Sophos UTM with a standby failover unit. We added additional licensing for a "sandbox" feature on this device that will detonate files in a sandbox environment to test for potentially unwanted events, before allowing an end user to download. We have implemented countless other security measures, including LAPS, to randomly change all local admin passwords at random intervals on all City computers.

The computer services staff also implemented a policy of using administrator accounts only when absolutely necessary. What this means is that at no point during a normal day, are we logged in using an admin account, unless we are actively working on a problem that requires it. This is very important, as a system infected with a virus that is actively using an admin, or domain admin account could have far reaching effects, that would otherwise be negated if a standard user account was in use.

The building re-wire has been completed with all new home-run Cat6 ethernet to the Computer Services Data Room. The entire network is now running on new Juniper EX4300 POE Gb switches, that will carry is well into the future. This network has been put through its paces, and has outperformed the old

network by several factors. Most importantly, this network will allow us to implement a VoIP solution in the near future.

Finally, we have continued working on the Fiber Loop project to get fiber optic cables run from the municipal building to each of our remote offices. This is a joint project between the City, the County, and Findlay City Schools. The make ready on all utility poles that will be used, is currently in process, and the project is expected to be out for bid by January 2017.

During the month of January the InterAct Mobile server was migrated from a stand-alone physical server to a Virtual Machine, on our Hyper-V Cluster. This server is used by Patrol Officers to connect to both dispatch, and the Ohio LEADS network. After migration was complete, Computer Services employees went to each patrol car, and updated the user software to the latest version as well. We began testing and implementing a new open source system for imaging desktop computers (Fog). So far, this system is working great, and will trim the amount of time that it takes to build/rebuild a machine substantially. Finally, several routing, and network adjustments were implemented that substantially increased network security. The Sophos UTM was taken out of Bridged mode, and a DMZ was built between the UTM, and our Edge firewall. Along with this, several other features were activated on the UTM, including a complete proxy being built between our email server, and the outside connection. Plans also continued for the Fiber optics plan to connect all city offices.

In February we replaced several of the aging computers throughout the city. This included new systems in City Income Tax, Engineering, Street, Mayor's office, and others. All new systems are being ordered with quad core i5 processors, 8GB of RAM, and Solid State drives. We also replaced many of the aging printers throughout the various departments. Work has continued on the Fiber project that will connect all of our offices. A meeting was held with City Council to better describe the project, and answer any questions related to it. Funding is planned to be appropriated for the initial phase of the project in March. We completed the transition to a virtualized server for two more systems during the month as well. Our print server, and the InterAct server for the police department are now fully operational on our HA Virtual Cluster.

In March we replaced several more aging computers, including 14 in the Police Department, and a couple more network printers. Funding for the beginning phases of the joint fiber loop project with FCS was approved and appropriated in March as well. A contractor was selected, and work began on the engineering phase of the Fiber project. Hancock County was able to get funding approved for the project as well, so we plan to do both our projects as one joint project in order to save money. Engineering is estimated to take 40 business days, and after complete, we will be able to put the project out to bid. The rewire of the Municipal building began on the last week of March. A crew will be in the building for approximately 6 weeks, during which time all new Ethernet outlets will be run to every office. These outlets will all terminate in the computer services room. This will solve many ongoing issues that has plagued this department, as well as make a new VoIP system usable in the Municipal building.

During the month of April, the rewire of the Municipal building continued. The 3rd floor was completed, but the 1st and 2nd floors were put on hold until construction begins for the remodel. The remaining switches for the stack were purchased, configured and installed. We now have 7 Juniper EX4300 POE+ switches ready to use. This will be sufficient to support all of the home run Ethernet jacks in the municipal building, and will be able to provide power to all POE devices that will be connected in the

future. Engineering for the fiber project has continued as well, a walkthrough of all remote offices was completed with the contractor so drawings could be made for building entry at each location. We have been in talks with Centracomm to provide estimates for all network equipment that will be needed for this project.

In May, new wireless access points were installed throughout the third floor of the Municipal Building, as well as a test unit being placed in Fire Station 2. This system will be configured to allow public access at a degraded speed, and will also allow City employees to login with their network credentials. These will be installed on the first and second floors when the re-wire is complete, and will also be deployed to all remote offices after the Fiber project is completed. The rewire was placed on hold until the construction work begins in the Municipal building, hopefully in June. The Terminal server was virtualized during the month of May, leaving us able to retire another physical server. We also purchased additional SQL licenses and CAL's which will allow us to upgrade, and virtualize a number of different servers this year. The fiber project is continuing on schedule, permits are currently being submitted to public utilities, ODOT, and Railways. Once permits and 'make ready' are complete, construction will be able to begin.

In June we continued our efforts to virtualize servers. The terminal server that is currently used to allow low bandwidth users to connect to internal applications was successfully migrated to a virtual server. We also were able to remove the remaining apps on the old CF-NewCAD server over to a dedicated SQL/Apps virtual server. All emergitech products had previously been removed from this server, so we were able to decommission it. The CF-Badger server was the last physical server to be virtualized this month, with the help of our vendor, the old system has been decommissioned as well. These servers will be put up for auction in the coming months. We also successfully migrated all dispatch computers over to our new network. This was needed, as they had been setup on a consumer grade switch that was causing latency, and connection issues. They are now connected to the same Juniper switch stack that the rest of the City is on, and their connection speeds to the network has increased over 15X.

In July we finished removing the final servers, and network equipment from the old server racks in the Computer Services office. Everything has officially been transferred to the new racks in the server room. We attempted to direct airflow from the cooling system more directly to the server room in an effort to keep it cooler than the rest of the office. It did help significantly, but more time will need to be spent on this to make it a more permanent solution. There are also plans to have a remote thermostat placed in this room for the cooling system, as well as temperature monitoring equipment. A rough draft of the Computer Services Internal Process Control document was completed as well. This document will cover everything our department is responsible for, and layout guides, and expectations for all users.

In August we ordered the final server that will be used in the HyperV HA Cluster, as well as a new Dell PowerVault SAN that will be used for replication. This was researched in depth to determine the best route to take to complete the push to virtualize the City servers. From this point forward, as servers go out of warranty, they will be updated to the latest version of MS Server, and virtualized. This will ultimately save the City money on server purchases, and increase redundancy of our system exponentially. Work continues to decommission the old MUNIS server, as all forms have now been completely moved to the MUNIS cloud based server. A large lot of retired servers was auctioned off after removing all HDD's, these drives will be physically destroyed in the future.

During the month of September we were finally able to work with Bender Communications to complete the Canopy upgrade for the Cube that was purchased 3 years ago. After a few hiccups, they were fully transitioned to the upgraded Canopy equipment, and are receiving higher throughput. Work also picked back up on the Municipal building re-wire. Crews had paused the work until more of the renovation had been completed, as there were several areas they would not have had walls to install cabling into. Our third and final HyperV virtual Host was installed, configured, and added to the HA virtual cluster. We also setup and configured a 2nd SAN as a replication of our main SAN. This ensures that our systems will remain up, and accessible, in the event that a catastrophic failure occurs on the main SAN. I also began negotiations with ISP's in order to increase internet throughput to the City, and reduce costs.

In October an agreement was signed with Time Warner Cable to increase internet speeds 5X to 50Mbps up/down. Plans to double this speed in 2017 to 100Mbps were built into the contract without increasing the term. We also continued efforts to move the Municipal building over to the new network. Wiring on the 1st floor was completed, and all workstations and printers were migrated over. Several adjustments were made to the network to improve security, including Certificate updates on critical devices accessible from the web. DNS requests are now made directly to the Sophos UTM, which forwards internal requests to our DC, and external requests to Google DNS. This makes maintaining logs much easier, and helps us locate machines that set off certain IPS alerts much quicker. The annual PC replacement recommendations were also sent out to all department heads, in anticipation of the yearly budget. This ensures all departments are aware of devices going end of life, and provides them the opportunity to remedy the situation

In November the long sought after City electronic Job application was completed and put into production. This allows the public to apply for open City positions by filling out forms online rather than handwriting/delivering applications as had been done in the past. This system was built in a way that limits the exposure of the City network, by utilizing 3rd party servers, and was done at no cost to the City. The police department placed orders for, and received 4 new tough tablets for patrol cars. A new image was built for these machines to allow quick deployment, and facilitate quick re-images in the case of any problems in production. We also deployed Sophos wireless access points throughout the municipal building. Over 11 WAP's are now distributed through the 4 floors of the building, providing much better coverage than what had been achieved in the past. An environment monitor system was also installed after a potential catastrophe was averted when the AC unit began to leak water. The system will monitor temperature (ambient, as well as each rack) humidity, flood, doors, etc; and will email, or text various persons based on the severity of the event. Pass self service

In December we implemented a Password self-service system that allows all users the ability to unlock, their accounts, and reset forgotten passwords. This will help to eliminate calls to the help desk for simple password issues, and allow our department more time to focus on larger issues. The Civil service online application was completed and sent to the Civil Service board for approval. This was another long sought after ability that the Computer service department was able to deliver on. This system utilizes the same setup as the online City job application, with all of its benefits. The Fire department received new tough tablets (Same as police) for each engine, we completed an image for these as well, and deployed them to the field. A sandbox environment was implemented on our network as another measure to increase security. This system will stop the download of files from our end users, and upload them to a sandbox environment, where the file will be detonated, to determine if it has a malware payload. This is all done within minutes, and allows the user to download after the file has

been confirmed to be safe. Finally an Email archive site was rolled out to all end users. This is a system that was implemented earlier in the year, but has additional ability to allow each user access to the entire archive of their sent/received messages. This again helps to decrease the load on our department for requests of lost/deleted emails.

The Computer Services office has 2 large Liebert UPS units that keep all of the servers powered during unforeseen power outages, and protects them during the transition from grid power to generator power. This ensures that our servers will have continuous power and can remain operational during these types of circumstances. Our UPS units receive annual preventative maintenance and during the 2011 maintenance visit, the batteries were replaced in each unit. Battery replacements for these units are required once every 5 years. The cost for this replacement is covered under the normal annual maintenance contract cost. These batteries should be replaced next in early 2017.

Maintenance to the 400+ pieces of hardware, including PCs and Printers, was performed as needed throughout the year. This included cleaning, repairs, replacement, or retirement of pieces or whole machines. Items that were not worth fixing, upgrading, or no longer used were auctioned at GovDeals.com. More than 60 new pieces of hardware, including PCs, laptops, and printers, were deployed to the various City departments during 2016. We try to maintain a 5 year max replacement life cycle on PCs. This year, the computer services office inventoried all systems, and provided accurate information on the age of each system, so department heads had the information necessary to decide on a systems replacement.

The Computer Services staff continues to seek the most efficient software at the least cost to the City. However, we want to continue to maintain the same quality security and protection, yet at a lower cost if possible. We will continue to pursue more efficient software in the coming years, as a possible means of reducing our annual budget.

COMPUTER SERVICES DEPARTMENT USAGE 2016:

We calculate how much money should be charged back against a department based on the percent their department used of the total services and resources made available by the Computer Services department. The total of the Computer Services projected budget is multiplied by that percent, providing the amount to be charged in that particular department's budget. The items considered in services and resources are: equipment, number of users, application use, internet access, programming, and project time that will be spent on anticipated projects in a particular department for the coming year. You can find a departmental break down listed in Table A-1.

COMPUTER SERVICES DEPARTMENT OBJECTIVES FOR 2017:

We will continue our move towards server virtualization to the full extent possible, as well as continued advances in the security of our network. We have plans to replace our current email system with an enterprise grade solution, MS Exchange 2016.

We will be implementing a new VoIP phone system, and removing the current antiquated analog system in place. This will no longer be managed by the County, so this responsibility will be transitioned to the computer services office.

We will be replacing our current battery backup devices with a new UPS system that is fully expandable, and able to support the increasing electrical load in our office.

We hope to have the Fiber loop project completed by September 2017, allowing for high speed connectivity to all of the City's remote locations. This will ultimately provide a 10Gb+ connection to each location, which will support data needs for many years to come.

Network security will continue to be an important initiative. We will work to close any potential security holes, and increase network security via hardware, and configuration changes. We also hope to simultaneously improve the redundancy of both our internal network, and internet connectivity.

The Utility Billing department has committed to upgrading their CMI billing software to the new version of software that CMI has just begun deploying to their clients. As the first step of this upgrade a new Dell server was purchased and installed in October 2012 in the Computer Services office. The new system has been setup, and configured, we are hoping to go live with it in early 2017.

Computer Services personnel will continue to pursue training in areas that can be of greatest benefit to the management of the city's network. We plan to purchase online training accounts for all Computer Services personnel that can be used to gain knowledge of products and systems used by the City, and hopefully obtain certifications in various fields.

The Computer Services Department will continue to support all of the existing applications running on the city's network, both 3rd party and custom written. Maintenance programming and user help support for the various application systems will consume much of our time. We will make ourselves available to discuss and analyze the technical needs of the various city departments. We will strive to become more efficient and cost effective through the use of technology advancements within the city's network environment.

DEPARTMENT	Computers	Servers	Printer	Users	Apps	Internet	Proj Hrs	Proj Pts	Prog. Ur	Usage %	Budget Amt
Airport	3	14	1	5	7	5	22.86	4.57	5.0	3.03%	$9,750.58
Auditor	9	14	3	6	9	17	22.86	4.57	5.0	3.82%	$12,289.91
City Council	0	3	0	0	6	0	22.86	4.57	0.0	0.83%	$2,678.41
Civil Service	1	12	1	1	6	1	22.86	4.57	0.0	2.27%	$7,306.17
Comp Serv *	3	8	1	3	7	28	315.86	63.17	5.0	5.14%	$0.00
Dispatch	8	2	3	11	9	10	68.86	13.77	10.0	2.31%	$7,436.70
Engineering	11	16	7	10	10	11	22.86	4.57	5.0	4.15%	$13,357.86
Fire	24	17	8	61	13	19	68.86	13.77	5.0	5.97%	$19,207.83
HRPC	6	14	2	8	9	6	58.86	11.77	0.0	3.37%	$10,842.26
Income Tax	9	15	7	7	7	9	58.86	11.77	5.0	4.01%	$12,906.95
Law Director	6	16	6	6	9	4	22.86	4.57	0.0	3.45%	$11,103.31
Mayor	6	13	3	4	9	4	22.86	4.57	0.0	2.90%	$9,323.40
Muni Court	41	19	19	29	13	34	110.86	22.17	5.0	7.76%	$24,939.13
NEAT	2	14	1	1	7	1	80.00	16.00	5.0	3.25%	$10,442.13
Police	59	19	17	71	13	52	350.00	70.00	10.0	11.09%	$35,669.37
PW - Cemetery	2	14	2	2	6	2	22.86	4.57	5.0	2.86%	$9,204.74
PW - Recreation/CU	5	15	4	9	10	7	34.86	6.97	0.0	3.48%	$11,174.50
PW - Streets	5	14	3	5	11	5	22.86	4.57	0.0	3.12%	$10,035.36
PW - Traffic Lights	1	12	0	1	5	1	22.86	4.57	0.0	2.20%	$7,068.85
HR Director	1	13	1	1	7	1	22.86	4.57	0.0	2.46%	$7,899.47
Service/Safety Dir	2	13	1	1	8	1	22.86	4.57	0.0	2.53%	$8,136.79
Treasurer	1	12	0	1	4	1	22.86	4.57	0.0	2.16%	$6,950.19
Water Billing	10	17	3	10	11	10	110.86	22.17	10.0	4.35%	$15,920.93
Water Dist.	4	15	2	13	10	4	22.86	4.57	5.0	3.41%	$10,949.05
Water Treatment	9	14	5	15	11	7	22.86	4.57	5.0	3.67%	$11,791.54
WORC	3	13	2	10	7	2	122.86	24.57	5.0	3.60%	$11,589.82
WPC/Sewer Maint	12	16	5	19	13	9	82.86	16.57	0.0	4.49%	$14,437.67
Zoning	2	14	1	2	7	1	22.86	4.57	5.0	2.83%	$9,086.08
TOTALS *	245	378	108	312	244	252	1829.36	365.87	95.0	105.14%	$321,499.00

2016 Computer Services Budget Request	$321,499.00

2016 Computer Services Budget Request

* Computer Services Usage is subtracted from totals before % is calculated for departments

Computers = 1 point for each individual system

Servers = 4 point for physical or virtual server

Printers = 1 point for each individual printer

Users = 0.3 points for each user over the total number of computers for a department (this accounts for shared systems)

Apps = 1 point for each application used by the department

Projects Points equals .20 points per man hour for these estimated project hours

* 640 of the total Project Hours are shared equally by the 28 Departments

Programming Units to maintain their custom application = 5 points per application (some are split)

Usage % is calculated as: (Computers+Servers+Printers+((Users-Computers)*.3)+Applications+ Internet+Proj Points+Programming Units)/

(The totals of columns B C D E G H - Computer Services amounts))