

Memorandum

To: Michael Turley



Date: 12-22-21

From: Jonathan Beskid

CC: Greg Arendas

RE: Phone System Upgrades

OVERALL RECOMMENDATION

After review of the product demonstrations and quotes, Third Generation of Pennsylvania is the recommended vendor for our voice over IP phone system upgrade with their Yealink phone system. The comparative advantages of proceeding with Third Generation of Pennsylvania include:

- Entry level phones at no cost
- Experience with multiple police departments
- Local customer support

ADDITIONAL UPSTART COSTS:

A further analysis of our situation revealed some necessary equipment upgrades (see Appendix A) to accommodate the expansion no matter which vendor we proceed with. The total cost of the additional equipment subject to availability and price changes is **\$15,643.92**. I would like to highlight a couple notable items.

- The ethernet wiring in our building is old and it seems that there is residual Cat 5 wiring as all computers in the police department are capped at 100 Mbps despite having 1 Gbps (gigabit) capacity for internet speeds. All switches appear to be gigabit compatible and computers are also gigabit capable, it therefore leads me to believe that there is either old or faulty wiring or some kind of limit on the bandwidth of the switch by the dispatch area. Either way, new wiring and switches will ensure much better performance. New Cat6A wiring would also prevent crosstalk and interference and supports speeds up to 10G making our networks more reliable and future proof. Wiring is relatively simple with the right tools and can be done internally to save money.
- New PoE (power over ethernet) network switches are needed to provide power to the new phones via an ethernet cable and are capable of providing up to gigabit internet speeds to workstations. The switches will also provide the capacity to setup a Voice VLAN to segment the phones from the data on our servers and workstations.

- 4G LTE backup modems are necessary to provide a stable network for call consistency in the event of an internet disruption. These modems will require additional recurring charges for a data plan and providing technical support and managing the 4G LTE backup modems. The total additional annual recurring charges costs **\$1320 per year**.

VENDOR COSTS & EQUIPMENT:

Third Generation's non-recurring cost is \$600 for professional services including setup, installation, etcetera. The cost for the phone system is **\$1374 per month** for a 5 year agreement including all phone equipment. The monthly cost will go down after the equipment is paid for should we decide to retain their services after year 5. See Appendix B for more details. Our current phone service from Verizon for reference is **\$2184 per month**. While we may need to retain some of Verizon's services, the savings will still be substantial. An in-depth analysis is underway.

LEVEL OF SERVICE:

Our transition to a Voice-Over-IP phone service with a mobile backup not only saves the Township money but also increases the efficiency and efficacy of Township operations.

Additional Features and Functionality Include:

- Ability to call from our Township phone number on any cell phone we desire via a mobile app that can be turned on or off once installed. (Great for employees who are constantly out in the field.)
- Ability to use phones anywhere that has an ethernet internet connection. Examples would include the ability to work from home or another location in the event of a pandemic or catastrophe. Employees would use the cell phone app or simply take their desk phones with them and it is plug and play from there.
- User management and external call forwarding can easily be managed internally by logging in using a web portal.
- No downtime for phones or computers during internet outages or issues from our Internet Service Provider.
- Only need one ethernet port per employee. An ethernet cord will connect from the wall to the phone and another ethernet cord will connect the phone to the computer.
- Eliminate other persistent and recurring problems such as voicemail issues, caller ID issues, etcetera.

NOTEWORTHY COMPLICATIONS

Criminal Justice Information Security (CJIS)

Complication: The biggest complication involves ensuring information security for the Police Department. The FBI releases a set of standards for managing CJIS data in their CJIS policy because the information is sensitive. They require local police

departments to be compliant in order to access this type of data that is essential for performing law enforcement duties. The most recent version of this policy is version 5.8 (see Appendix C).

Solution: Work with Third Generation of Pennsylvania to ensure that Yealink & the cloud provider's equipment are setup properly according to the VOIP section of the CJIS Policy. This will include proper network segmentation, encryption standards, and more. It may also be necessary for fax solutions as well. The cloud service provider's servers and equipment must also follow the guidelines for Cloud Services portion of the policy. Formally incorporating these standards into our agreement is preferable.

Fax Solutions

Complication: Eliminating all copper lines would require finding a new solution for our fax services. Unfortunately, it seems like the police will need to keep a fax line for compliance with CJIS. The Township must make its own determination but there are complications with the security of e-fax solutions and there tend to be more reliability issues, particularly with lengthy documents than the standard POTS lines we have now.

Solution: The easiest way to deal with this seems to be to retain the POTS lines and costs from Verizon. This would require a technician to run a phone line for the Planning & Zoning Department and to reprogram a phone line for the Police Department. Should this prove not possible, working with Third Generation of Pennsylvania to pursue a secure e-fax solution with high reliability is the next option.

Purchasing & Shipping of Equipment

Complication: The cost of the project is just over \$16,000 and anything over that would require a supplement from the 2022 budget. Due to cost of this project, COSTARS pricing may be necessary for everything. Unfortunately, the shipping from COSTARS vendors is very delayed and equipment could take a while before Departments are ready to be moved to their new socially distanced locations. Additionally, all wiring has to be done first before we can proceed with the onsite installation.

Solution: Consult with solicitor for purchasing requirements. Proceed with purchasing necessary infrastructure equipment as soon as possible to reduce delays as much as possible. Additionally, doing the internet wiring ourselves allows for more flexible purchasing options and saves the Township money. Routine monitoring of money spent should prevent overages from ambiguous costs. Other planned improvements for each department may have to be put on hold.

Unknown Phone Lines

Complication: There are two unknown phone numbers that we have not been able to trace what they are for. The phone numbers are 724-863-2675 and 724-863-2351. Terminating these lines could terminate a necessary line such as to a fire alarm system.

Solution: It would be safer to keep these lines and the costs associated with them from a level of service option, particularly with such a significant transitioning

occurring in our operations. If the Township desires, we can terminate these services at a later date.

Termination of Police Department's Alarm Board Service

Complication: Without our typical POTS system, the Alarm Service (goes to a light board currently located at dispatch) provided at a fee to grandfathered-in businesses and residents may not work properly.

Solution: Send a termination of service notice to residents and businesses still subscribed and who paid for that service for 2022. There are only a handful of residents and businesses still subscribed, so this should be a relatively simple process but pro-rated refunds will need to be issued to each individual or business.

IMPLEMENTATION GUIDE

There is not an easy way to provide a timeframe for the completion of the entire project, but listed below are the necessary steps for completion and is subject to revision:

1. Purchase and acquire networking and infrastructure equipment
2. Finalize agreement with Third Generation of Pennsylvania
3. Finalize agreement with IPS Pittsburgh for Mobile Data redundancy
4. Send termination of service notice for the alarm service to the affected residents and businesses.
5. Request for refunds to be issues to the residents and businesses from step 4
6. Schedule a technician for fax lines to be programmed / installed
7. Rewire ethernet cabling for the entire building aside from the Tax Office
8. Schedule necessary onsite assessments from vendors
9. Acquire equipment from vendors and schedule installation
10. Contact Verizon to add a 4G data plan for the Cradlepoint modems
11. Ensure proper configurations are setup for all equipment and in compliance with CJIS
12. Port phone numbers apart from fax lines and the unknown numbers to the new VOIP system
13. Terminate Verizon services for all numbers except the fax lines and unknown numbers
14. Monitor for problems
15. Terminate service for unknown phone numbers (if desired)

APPENDIX A: COST SHEET