Dubuque County Open Access Conduit System - Achieved through Middle-Mile & Dig-Once
Broadband

- **Digital Equity** is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy.

- Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.

- Internet access is not about "surfing the net." It has not been that for a very long time but COVID showed how integral reliable broadband is to function in modern society.

- Government should play an active role in promoting fiber to the home deployments and encouraging competition among providers to keep costs low and quality up.
  - This can be accomplished by Dig-Once policies and building a robust Middle-Mile open access conduit system.
Middle-Mile

- If a private sector company wanted to spend thirty million to build a set of fiber rings around the County, they would be allowed to right now. They would also be allowed to lease fiber and allowed to lease ducts to 3rd parties.

- This is happening today right now on smaller scales in the County. The distinction is they can discriminate and lock out competitors in who they lease to or charge different rates so in effect locking them out.
  - If they owned the land that would be one thing but they do not.
  - They are using the public right of way!

- Government can level the playing field and encourage everyone to compete on cost & quality while also taking care of our own needs & our sister institutions at the same time.
Middle-Mile

- Smart lighting systems, Intelligent traffic systems, 5G, Electric car charging stations, fiber to the home installs, public wifi, watershed monitoring, ride sharing

- All of this is coming like a runaway train and if the County wants to support and lead on it, a County owned and operated open access conduit system is how we do that.
NACO Broadband Task Force Policy Recommendations – 07/01/2021

- Middle-mile systems should be an open network
- It is inefficient to have multiple middle-mile systems. It is important to leverage public assets & federal/state/local resources to build middle-mile solutions to areas of need & areas where ISPs do not intend to build middle-mile systems or make such systems available at a reasonable wholesale cost to retail providers.
- Such collaborative systems can ensure ISPs are held accountable in meeting community needs while also leveraging available resources to deliver cost-effective broadband solutions which provide a return on investment to public and private interests
Middle-Mile

- **Anchor Institutions**
  - Locations, usually nonprofit organizations tethered to their communities, like universities, medical centers, or local government entities.
  - Universities, hospitals and other enduring organizations that play a vital role in their local communities and economies. They tend to remain in their geographical settings, even as conditions change around them. Therefore, they are vital assets to their neighborhoods, towns, cities and regions. Increasingly, anchor institutions are expected to do more in their communities, and become active civic participants in improving health and well-being in their surroundings.

- There are a lot of these types of institutions in Dubuque County
  - 21 Cities each with their own unique local anchor institutions
  - 22+ County locations and probably more depending on what you consider an asset
  - 5 County libraries
  - 20+ Conservation locations and probably more depending on what you consider an asset
  - Western Dubuque Schools, Healthcare, Higher-Ed, County Fire, Police Stations, Radio Towers
SUMMIT COUNTY, OHIO

- Allocated $35 million for the county’s broadband fiber ring expansion, and $25 million for community broadband grants to build off the fiber ring
- Project will connect 31 community governments and the County government, and each community will have the ability to build broadband networks and provide internet/data services to schools, libraries, businesses and residents.
- Ring will serve as the backbone for public safety communications network
Middle-Mile: Grant Opportunities

- **ReConnect**
  - Managed by USDA
  - Local governments can apply
  - $1.15 billion available
  - Application period **closes** Feb 22, 2022

- **BEAD**
  - Managed through States
  - Local governments can apply
  - $42.5 billion available
  - NOFO required by May 2022

- **BiL: Div. F, Title IV, “Enabling Middle Mile Broadband Infrastructure”**
  - Managed by NTIA
  - Local governments can apply
  - $1 billion available
  - Guidance by May 2022

- **FAST Act**
  - Managed by FHWA
  - Local governments can apply
  - $60 million
  - **Expired** August 2021
Dig-Once: Benefits

- Protecting newly and recently paved roads and sidewalks
- Enhancing the uniformity of construction
- Ensuring efficient, non-duplicative placement of infrastructure in the public right of way
- Reducing overall costs of all underground work in the PROW for public & private parties
- Facilitating deployments of communication networks by reducing construction costs
- Leveraging construction by 3rd parties for the deployment of a public communications network, or deployment of conduit that can be made available to other entities
- Keep the PROW healthy & in good working order in a controlled & documented manner
Dig-Once: NO! DIG-SMART!

- Federal Highway Administration (FHWA) Definition:
  - Policies and/or practices that minimize the number and scale of excavations when installing telecommunications infrastructure in highway rights-of-way.

- “Dig once” policies were identified as a best practice for local governments by the Obama administration’s Broadband Opportunity Council as a means of enhancing competition in the broadband market. The Council noted an important truth: “While sound national policies and programs are important, most decisions on broadband investment are made by Local governments in partnership with the private sector, guided by State law.”
NACO Broadband Task Force **Best Practices** – 07/01/2021

- Advocate for federal, state and local "Dig Once" policies across agencies, with smart, flexible solutions that recognize local conditions and needs.

- Require that when any critical infrastructure construction projects occur, such as those managed by DOTs, DOE, utilities, and Public Safety agencies, the construction includes adding at least three conduits of varying sizes to accommodate fiber with sufficient strand count for "future-proofed" fiber installations when ready for expansion to meet increased community needs.

- Require all federal, state, and local transportation infrastructure and construction provide at least three conduits of varying sizes to accommodate fiber lines with sufficient strand count which can be used for "future-proofed" fiber installation to ensure providers adequately use the infrastructure.
ARPA Proposals

Fiber to EOC $100,000

AV at EOC $250,000
<table>
<thead>
<tr>
<th>Conduit Proposal</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduit Fillmore</td>
<td>$66,400</td>
</tr>
<tr>
<td>Conduit Massey</td>
<td>$48,800</td>
</tr>
<tr>
<td>Conduit Mud Lake</td>
<td>$61,600</td>
</tr>
<tr>
<td>Conduit New Wine Park</td>
<td>$96,000</td>
</tr>
<tr>
<td>Conduit Swiss Valley Nature Center</td>
<td>$68,200</td>
</tr>
<tr>
<td>Conduit Swiss Valley Park</td>
<td>$69,600</td>
</tr>
<tr>
<td>Total Conduit</td>
<td>$410,600</td>
</tr>
</tbody>
</table>
ARPA Proposals

Generator Courthouse  $50,000

Video Court Courthouse  $184,000

Digital Records Health  $62,100
Dubuque County
IT Department

BUDGET: FISCAL 2023
NATHAN GILMORE
IT DIRECTOR
Agenda

- Department Overview
- Updates:
  - Sunnycrest
  - County
- Capital Requests
- Operating Requests
Department Overview

- (87) Network Switches
- (228) WIFI Access Points
- (9) Firewalls
- (232) Security Cameras
- (335) Phones
- (1) SAN
- (3) VMWare Hosts
- (3) Hyper-V Hosts
- (4) Wireless Controllers
- (30+) "Devices" – Alarms, HVAC, Lights and growing with IoT trend

- (21) Locations supported
- (3) Datacenters
  - Courthouse – 5th Floor
  - Azure – Virtual Datacenter
  - Sunnycrest – 1st Floor
- (Lots) Servers Physical & Virtual
- (320+) Computers
- (50+) Applications
- (8) Audio Video Rooms
- (3) Digital Signs
- (Lots) Printers & Scanners
Department Overview: Staffing

- Five full-time employees:
  - IT Director – Nathan
  - Help Desk Manager – Tim
  - Systems Administrator – Jered
  - Network Administrator – Darren
  - ERP Administrator – Karen

- Two Interns (Varies in hours per week):
  - Austin – University of Dubuque – Started early September 2021
  - Suresh – Loras College – Started late December 2021
  - No interns in 2021 until Austin started for COVID safety.
    - Thought we were okay to start it up again then omicron arrived but managing

- Previous interns have gone on to work upon graduation:
  - Cerner Corporation Health Technology as a Developer
  - Collins Aerospace as a Developer
  - A.Y. McDonald as a Developer
  - Transamerica in the IT Department
  - Lowes in the IT Department
  - Started local IT business in Dubuque – JOB Technologies
**County Locations**

- INET was extended to 2023
  - With option to extend more
  - Replacement solutions for INET needs to be implemented

- NEW LOCATIONS
  - EB Lyons
  - DLEC
  - Remote Workers
Updates: Sunnycrest

- Remodel East/West Wings:
  - Proceeding and no longer on hold.
  - Nearing final proposal from City of Dubuque to lease fiber strands.
### Updates: County

<table>
<thead>
<tr>
<th>Court Rooms AV Upgrade</th>
<th>Law Library AV Upgrade</th>
<th>Fiber DLEC</th>
<th>eMail Archive</th>
<th>Network State</th>
<th>BOS Room AV Upgrade</th>
<th>GPS System</th>
<th>SCM Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished except for Courtroom #3</td>
<td>Design has started.</td>
<td>Finished and in active use to provide County WiFi in target rooms.</td>
<td>Completed</td>
<td>Finished and in active use.</td>
<td>Started and initial updates in use currently.</td>
<td>All units have been installed and are in active use.</td>
<td>Lengthy but positive process of working with City Traffic and GDDC to build a design and proposal to connect Sunnycrest Manor.</td>
</tr>
<tr>
<td>In near constant use by stakeholders and feedback has been very positive.</td>
<td>Will be similar in design to Roads Conference Room.</td>
<td>Plenty of fiber for all stakeholders to leverage over decades ahead as needs and responsibilities evolve.</td>
<td>Moved to a hosted version.</td>
<td>No comparison to what was there before quality and organizational wise.</td>
<td>Remaining updates will continue after budgets.</td>
<td>Public portal is live and in active use.</td>
<td>Final proposal is nearly ready to review and will be in front of BOS in a few weeks.</td>
</tr>
<tr>
<td>County Attorney involved with functionality and layout</td>
<td>Supply chain could cause delays on some specific hardware components</td>
<td>9.2 million emails</td>
<td>13.05 million unique attachments</td>
<td>Will review policy with HR and CA this spring as purging will start July 2022</td>
<td>Network Administrator Darren McCarthy and Globalcom did an outstanding job in design and install.</td>
<td>Consulting with County Engineer to work out his further vision for the public portal, traffic cameras and other enhancements.</td>
<td></td>
</tr>
</tbody>
</table>
Future IT Needs: Informational

WiFi
- Majority of WiFi Access Points purchased between 2012 – 2015
- Two generations behind now on WiFi standards
- I would like to work towards a phased replacement approach where we replace so many per year and get into a predictable rotation of them.

Cloud Datacenter
- We have about 22% of our infrastructure hosted in Azure and have since 2016.
- Do a deeper review of AWS, Azure, Centurylink, Eseva and other Cloud datacenter providers.
- Goal being to pick a new provider or stay the course with Azure and increase the percentage of assets hosted each year.
- Will schedule work sessions with BOS this Fall to educate and explain strategy and reasoning why.

Remote Work
- The pandemic has changed expectations of being able to access technology resources at all hours seven days a week.
- Further hardening our network security is needed given all the vectors that occur from having so many remote workers.
- New collaboration tools and training employees on use will be a constant process.
- Inbound failover is a need so VPN does not fail and remote workers are without network access.
- Formal policies from IT and HR need to be developed to handle this new reality.

Staffing
- The current department model was created when the County had seven supported locations compared to twenty supported locations today and significantly fewer technology systems to support.
- For example, there was no WiFi, Security Cameras or GPS just to list a few.
- Middle-Mile and Dig-Once will further increase the responsibilities of the team.
- Remote workers and hybrid working has increased burden and support hours.
- I will be intentionally spending this coming year evaluating staffing and support needs while working with HR.
What is your vision for your entire department? – Select Only One

- 100% Remote: 0
- Hybrid: 14
- 100% On Premise: 3

What is your vision when applying to a specific position? – Select All Apply

- 100% Remote: 6
- Hybrid: 16
- 100% On Premise: 5
Remote Work Survey

- Printers should be supplied for some remote workers?
  - Yes – 14
  - No – 3

- Home Internet service should be subsidized in some way for remote workers?
  - Yes – 11
  - No – 6

- Would you expect IT to have formal after hours helpdesk support for remote workers?
  - Yes – 6
  - No – 11
Remote Work Survey

- Do you feel you have sufficient communication tools to work efficiently with remote/hybrid workers?
  - Yes – 15
  - No – 2

- Do you feel you have sufficient organizational tools to work efficiently with remote/hybrid workers?
  - Yes – 14
  - No – 3

- The ability to work remotely has been awesome. I think changes to how we look at remote work are here whether we are ready or not. Compared to other counties I believe we are ahead of the curve. We appreciate the county and your office’s efforts to make this possible.
Project Request: SAN – Storage Area Network

Amount: $85,000

- Is where nearly all the servers and the data they contain live.
- Critical piece of infrastructure.
- Running low on space to support existing operations.
- Need significantly more space to accommodate future scanning projects of County Attorney & Health.
- New GIS images will also strain space.
- Submitted this request to BOH grant.

Priority: Essential

Request 1/9
Project Request: SAN – Firewall Renewal

Amount: $150,000

- County operates a NGFW
  - Next Generation Firewall
- Has significant intelligence built into it and gets updates daily minimum and more often when zero-day active exploits are happening in the wild.
- This will renew for three additional years of subscriptions, OS updates and support.
- At that time, the hardware will be nearing EOL at eight years.
- Submitted this request to BOH grant.
- **NEW: Allowed** expense through ARPA as of 01/07/22 with Treasury Final Rule

Priority: Essential
Request 2/9
Project Request: Penetration Test

Amount: $24,000

- County needs to hire a professional security company to do what is known as a penetration test.
- External scanning & exploit testing from outside our network.
- Internal scanning & exploit testing from inside our network.
- Tests physical access to infrastructure components.
  - Will coordinate with Courthouse Security on that task
- Ideally completed in fall of 2022 so if costs to remedy vulnerabilities can be submitted for review in budget cycle of 2023 & 2024
- Will work with County Attorney and County Auditor so the results can not be subject to FOIA requests
- Possible funding path via BIL – Has matching cybersecurity grant options
- **NEW: Allowed** expense through ARPA as of 01/07/22 with Treasury Final Rule

Priority: Essential
Request 3/9
Project Request: Courtroom #3 – AV Upgrade

Amount: $32,500

- North, South, East, West are finished
- Courtroom #3 was not started for insufficient funding.
- Project balance was rolled forward and combined with this would allow CR3 to be updated and match others
- Feedback from stakeholders on previous rooms has been positive and are in heavy use
- This project is also in the previously submitted ARPA requests.

Priority: Essential
Request 4/9
Project Request: VMWare Hosts

Amount: $50,000

- The majority of the servers for the County are virtual and operate in a VMWare Host server
- Current three servers were installed and purchased in 2017
- Need to replace in calendar 2023 so either this upcoming fiscal or next
Project Request: Backup System

Amount: $50,000

- The primary backup system for the County is running low on space and is nearing EOL.
- It operates nearly continuous from 7:00PM to 6:00AM every night and nearly all-day Saturday creating new full backups to start the week again.
- Need to replace in calendar 2023 so either this upcoming fiscal or next.
Project Request: Traffic Cameras

Amount: $100,000

- There are multiple locations around the County that as identified by the County engineer would bring value to have a traffic camera system installed.
- Work closely with the County engineer & will consult with Sheriff, identify priority locations.
- Design and deploy as many locations as funding allows and report back with metrics.
Project Request: NAC – Network Access Control

Amount: $20,000

- Network Access Control is the method of having automation and intelligence to interrogate devices and users wishing to connect to the network.
- We have this in place currently on WIFI and has been working well for several years.
- I want to deploy this same system on the wired network across the county.
- There is a vulnerability vector that we have 21 locations and close to a thousand network drops spread across them.
- Possible funding path via BIL – Has matching cybersecurity grant options.
- **NEW: Allowed** expense through ARPA as of 01/07/22 with Treasury Final Rule.

Priority: Important
Request 8/9
Project Request: Fiber Network Connections - Phase2

Amount: $100,000

- The previously approved funding will start to get drawn down with Sunnycrest Manor getting connected
  - *pending BOS approval*
- There are multiple other County owned locations to focus on next
- This is separate from the middle-mile ARPA but is related and there will be synergies depending on if/what is approved for that initiative
- **Allowed** expense through ARPA

Priority: Important
Request 9/9
Project Request: Network Phase 2

County Locations

Priority: Important
Request 3/6
Project Requests: Recap

- SAN $85,000 Essential Replacement
- Firewall Renewal $150,000 Essential Replacement
- Penetration Test $24,000 Essential Addition
- Courtroom #3 AV $32,500 Essential Addition
- VMWare Hosts $50,000 Important Replacement
- Backup System $50,000 Important Replacement
- Traffic Cameras $100,000 Important Addition
- NAC $20,000 Important Addition
- Fiber Phase 2 $100,000 Important Addition
Operating Change: Request

- Increase: GPS +$14,000 GPS Costs – Hosting Public & Private Websites, Support
- Increase: Agenda +$7,000 Adding CPMedia Module – Syncs Video with Agenda Progress
- Increase: Azure +$26,000 Increased Usage
- Increase: Security Cameras +$39,500 Create camera replacement rotation – Replace 1/5 of the fleet every year
- Increase: Endpoint Protection +$10,500 Five-year purchased subscription is ending, moving to annual
- Increase: New Locations +$10,200 Fillmore, Mud Lake, Massey, New Wine, Creative Adventure
- Increase: Other Lines +$9,000 Right sizing other expenses
- Decrease: Other lines -$42,000 Right sizing other expenses

- Operating Cost Increase: $116,200
- Operating Cost Decrease: $42,000
- Total operating increase request $74,000

- Continuing the process started two years ago to reallocate the funding from the very large accounts into smaller, more specific accounts to help with future budget forecasting on expenses vs. a large monolithic non-descript accounts
Thank you. Questions?