42nd Annual State Construction Conference

March 2, 2023

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Alternatives to Plain Old Telephone Service (POTS)

Our Panel

- Robert Talley, PE, Assistant Director, State Construction Office
- Bill Bagnell, Associate Vice Chancellor Campus Operations, East Carolina University
- Miriam Tripp, Director of Capital Planning, UNC System Office
- Cynthia Register, Engineering Executive Director, University of North Carolina at Chapel Hill

What is POTS?

- Land-line telephone service
- Copper wire technology
- Frequently used for
  - Elevators
  - Fire alarms
  - Emergency blue light telephones
  - Area of rescue telephones
  - Building control systems
  - Building access control

So what's wrong with that?

- Services and rates no longer regulated by the Federal Communications Commission (FCC) as of August 2, 2022
- Cost
- Availability
- Reliability

What to do?

- Continue as-is to failure
- Proactively consider and implement alternative solutions

Alternatives

- Cellular
- Internet Protocol/Voice over Internet Protocol (IP/VoIP)
- Radio
- Local, dedicated telephone service
- Own internal network
- Combination solutions

Considerations

- Signal strength – cellular, radio
- Power (battery) back-up – cellular, radio, VoIP
- Answering station interface – cellular, radio, VoIP
- Code compliance
- Cost
- Service availability, reliability, repair, maintenance
- Technology obsolescence – cellular, fire alarm industry

Experiences

- East Carolina University
- University of North Carolina at Chapel Hill

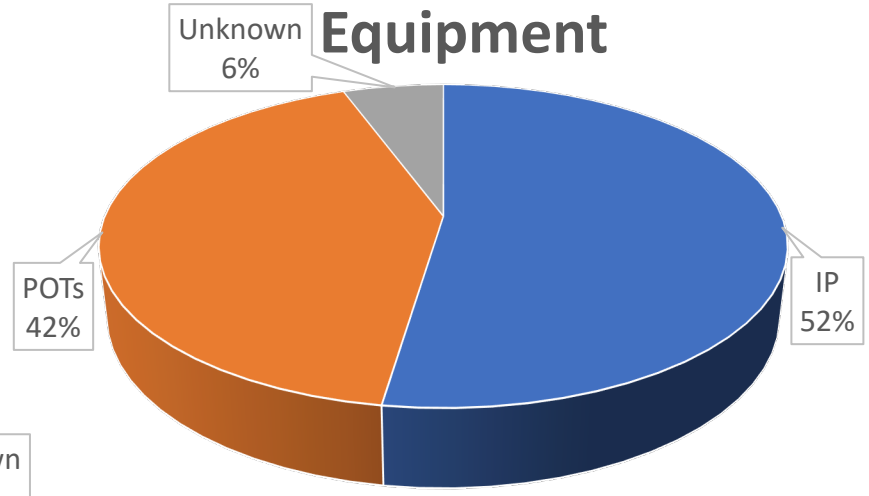
ECU Experiences

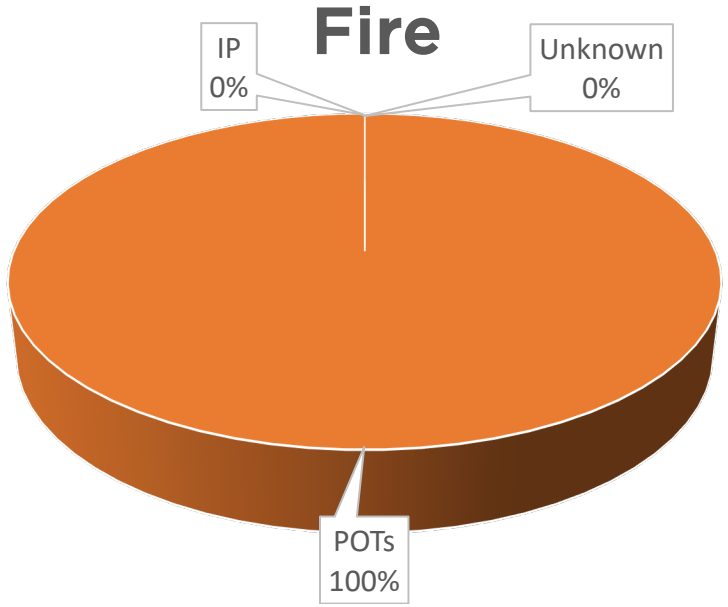
- Voice over Internet Protocol (VoIP)

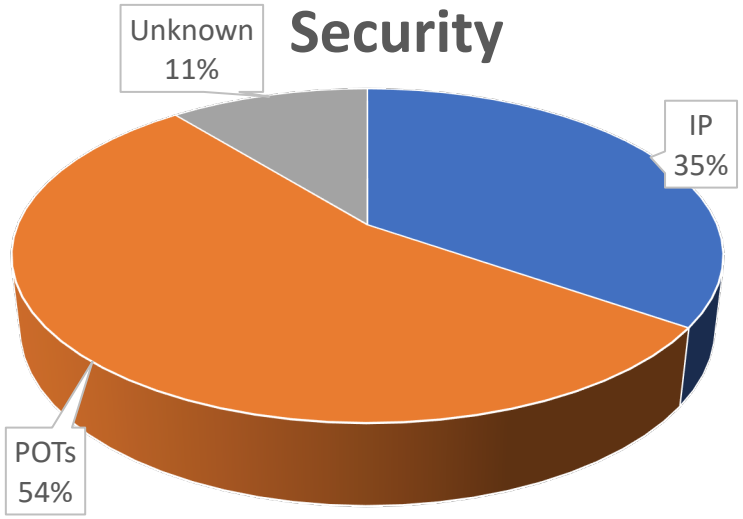
UNC-CH Experiences - Timeline

- Jul 2018: Discussion of problem, impacted systems, and potential solutions

UNC-CH Experiences – 2018 Assessment







UNC-CH Experiences - Timeline

- Aug 2018 – Present: Campus Fire Alarm Communication System
  - Aug 2018 to Feb 2019: Study of Meshed Radio vs Ethernet IP
  - Nov 2019: Ph 1 Funding Identified
  - Jun 2020: Design Contract Initiated
  - Mar 2022: Construction Contract Awarded
  - Dec 2022: Ph 1 Completed
  - Jan 2023: Ph 2 Started (projected completion July 2023)

UNC-CH Experiences - Timeline

- Jan 2022 – Present: Campus Elevator Emergency Phone
- Jan 2022 to Apr 2022: Review of Cellular vs VoIP
- Dec 2022 & Jan 2023: Cellular Option Installed; Approved by DOL (2 Buildings)
- Dec 2019 - Present: Area of Refuge Two-Way Communication
    - Jan 2020: Decision to use VoIP for Swain Hall Renovation

UNC-CH Experiences - Timeline

- Pending – Discussion of Options for:
  - Blue Light Call Stations
  - Security Alarms
  - Critical System Alarms (High Containment Labs & Equipment)

UNC-CH Experiences – Systems Using POTs

- Fire Alarm Communication
- Emergency Elevator Phones
- Emergency Blue Light Call Stations
- Area of Refuge Emergency Communication
- Other Essential Alarms
  - High containment (BSL3) Alarms
  - Burglar Alarms
  - Equipment Alarms
- IP Solutions already in place for Building Control Systems and Access Control System

UNC-CH Experiences – Meshed Radio

Meshed Radio for Fire Alarm Communication

2019 Study Compared Meshed Radio to Ethernet IP

- More Economical: $3.37M vs $31.23M
- Mesh technology provides multiple and varied pathways back to Supervising Station
- Strong self-testing capability for monitoring signal transmission
- Easily expandable
- Provides its own battery backup for standby power

UNC-CH Experiences – Meshed Radio

Meshed Radio for Fire Alarm Communication Limitations

- One-way communication only, so not suitable for Elevator, Area of Refuge, or Blue Light Call Stations
- Well-suited for dense campuses that have their own Supervising Station

UNC-CH Experiences - Cellular

Cellular for Elevator Emergency Phone

- POTs sunsetting is coinciding with new elevator code requirements for voice and video monitoring of the cab when emergency phone is activated.
- Cellular solution that is being provided by 3rd Party monitoring service. UNC-IT is not providing cellular service and UNC Police are not monitoring. Cost of service is captured in the Elevator Maintenance Contract rather than a phone service charge from IT.
- DOL has approved this approach and has accepted two new elevator modernization projects with this solution.

UNC-CH Experiences - Cellular

Cellular for Elevator Emergency Phone Limitations

- Technology obsolescence could require equipment replacement sooner than other solutions
- Cell signal strength and reliability

UNC-CH Experiences - VoIP

VoIP for Area of Refuge

- VoIP dials the Fire Alarm Supervising Station followed by call to UNC Police
- Supports 2-way audio and visual communication

VoIP for Area of Refuge Limitations

- Not as robust as other technologies

UNC Experiences – Technology Comparison

Technology	No Monthly Fees from Third Party	Fast Response Time	Employ UNC Infrastructure	Secondary Power Requirements	Dependability	Sustainability	SCO/Code Concerns
IP based (Campus LAN)	✓	✓	✓	✗	✓	✓	✓
Private Radio/Radio Mesh Network	✓	✓	✓	✓	✓	✓	✓
Cellular	✗	✗	✗	✓	✗	✗	✓
Voice Over IP	✓	–	✓	✗	✓	✗	✗
Private Proprietary Network	✓	?	✗	✓	✓	✓	✓

Questions?

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