

# Multi-Line Telephone Systems

AND



9-1-1

*The Problems and Challenges of  
Location Information*

# Multi-Line Telephone Systems



- **Where are you?**
  - An emergency happens
  - You call 9-1-1....but
  - Where are you?
  - Your life and property could depend on the answer

# Multi-Line Telephone Systems



- **The Public Expects:**
  - 9-1-1 works.
  - It works *consistently* - from home, school, or work.
  - When calling 9-1-1, you will reach a Public Safety Answering Point (PSAP) who will send help to your location.

# Multi-Line Telephone Systems



- **The reality is:**
  - In an emergency, you may be disoriented, unaware of your location, or unable to talk.
  - If you are calling from a school, large business, hotel/motel, hospital, or some large multi-family housing, the 9-1-1 call center too often receives *only* the main phone number and billing location of the Multi-Line Telephone System, *not* your direct phone number or precise location.

# Multi-Line Telephone Systems



- **What is the problem?**
  - Every day emergency responders are delayed or sent to the wrong location because most Multi-Line Telephone Systems do *not* provide an accurate caller location when a person calls 9-1-1 in an emergency.
  - A typical 45 second 9-1-1 call may take 2 or more minutes to process.

# Multi-Line Telephone Systems



- **Scope of the problem**
  - Almost every government, school and business facility in the country has an MLTS/PBX system.
  - Half of our citizens live, work, or study behind a MLTS/PBX every day.
  - Every minute of delay jeopardizes the chances of a positive outcome to an emergency situation.

# Multi-Line Telephone Systems



- **Scope of the problem**
  - According to American Heart Association statistics, for every minute that passes between the time an individual suffers a cardiac arrest and the time they are defibrillated, the chance of survival falls by 7-10%.

# Multi-Line Telephone Systems



Consider this scenario.....

# Multi-Line Telephone Systems



- The Duluth, MN PSAP answers a call from a US Bank employee reporting a robbery has just occurred. The call taker asks the employee which bank she is calling from. She indicates she is at US Bank on Superior St.
- The PBX system at US Bank is located in the main bank and identifies a 9-1-1 call from *any* US Bank branch office with the same main bank location and phone number.

# Multi-Line Telephone Systems



- US BANK Locations
  - 130 Superior St. W.
  - 10 1 St. E.
  - 1337 Arrowhead Rd. W.
  - 4601 Superior St. E.
  - 2000 Superior St. W.
  - 2400 Maple Grove Rd.
  - 5330 Grand Av.

# Multi-Line Telephone Systems

- The Main Branch for US Bank is located at **130 Superior St. W.**
- The robbery was taking place 48 blocks away at the Lakeside Branch located at **4601 Superior St. E.**

- **(218) 723-2976 PBXB 11/21 16:25**
- **U S BANK**
- **130**
- **SUPERIOR ST W**
- **35280 P#723-2976**
- **MN DULUTH**
- **PBX**
- **PSAP=DULH—DU**
- **LE=DULH 26 PD**
- **FD=3 ENGINE**
- **AMB=GCA**

**9-1-1 CALL TAKER'S SCREEN**

# Multi-Line Telephone Systems



- Had the call taker not further clarified the bank's location beyond "Superior St. ", prior to terminating the call, a significant delay in response may have occurred. US Bank has 3 Superior St. (E & W) locations the furthest two being 66 blocks apart.
- The phone number (218) 723-2976 rings in the telephone equipment room in the basement of the main bank and is not monitored.

# Telephone Multi-Line Systems



Now consider this....

# Multi-Line Telephone Systems

- Until recently, a phone call to 9-1-1 from *any* phone on the PBX system on The College of St. Scholastica displayed the same *location* and *call back* information on the 9-1-1 call taker's computer screen.

- (218) 720-4727 PBXB 07/03 15:48
- COLLEGE OF ST SCHOLASTICA
- 1200
- KENWOOD AV
- 35129 P#723-8507
- MN DULUTH
- PSAP=DULH--DU
- LE=DULH 28 PD
- FD=4 ENGINE
- AMB=GCA

9-1-1 CALL TAKER'S SCREEN

# Multi-Line Telephone Systems

- Consequently, anytime a caller was unable to provide their exact location to the 9-1-1 call taker, a significant delay would occur for responders to locate the incident scene. The call could have originated from any one of multiple buildings or telephones located around the large campus.....

- (218) 720-4727 PBXB 07/03 15:48
- COLLEGE OF ST SCHOLASTICA
- 1200
- KENWOOD AV
- 35129 P#723-8507
- MN DULUTH
- PSAP=DULH--DU
- LE=DULH 28 PD
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9-1-1 CALL TAKER'S SCREEN

# Multi-Line Telephone Systems



**Reif Recreation Center 1200 Kenwood Av.**



**Mitchell Auditorium 1200 Kenwood Av.**



**Benedictine Health Center 935 Kenwood Av.**



**Westwood Apartments 925 Kenwood Av.**

# Multi-Line Telephone Systems



- Over the course of 2 years, CSS has taken the voluntary initiative to upgrade their phone system to provide accurate call back and location information to 9-1-1 from all 1,500 phones within their system.
- To achieve this goal, they implemented a three step plan.

# Multi-Line Telephone Systems



- **3 Step Process**
  - Installed a switch upgrade.
  - Converted local phone lines from analog lines to digital trunks.
  - Created a database identifying all phones within the CSS phone system.

# Multi-Line Telephone Systems



- **CSS costs to upgrade 1,500 phones**
    - \$75,000 for switch upgrade.\*
    - \$3,500 set up fee with database provider.
    - \$3,000 annual fee for database maintenance.
- \* (not all MLTS/PBX switches will require an upgrade)

# Multi-Line Telephone Systems

- Following the phone upgrade, a phone call to 9-1-1 from *any* phone on the PBX system on The College of St. Scholastica now displays the accurate *call back number* of the phone placing the call as well as the *exact location* of the telephone.

- **(218) 723-6191 PBXB 07/03 15:48**
- **COLLEGE OF ST SCHOLASTICA**
- **935**
- **KENWOOD AV**
- **BENEDICTINE HLTH CTR RM 336**
- **35 02129 P#723-6191**
- **MN DULUTH**
- **PSAP=DULH—DU**
- **LE=DULH 28 PD**
- **FD=4 ENGINE**
- **AMB=GCA**

**9-1-1 CALL TAKER'S SCREEN**

# Multi-Line Telephone Systems

- **Continued Action**
  - CSS Telecom Manager (PBX owner) maintains the campus database and submits any changes to the database provider as they occur.
  - All campus buildings have been labeled and campus maps have been provided to emergency responders to assist them in locating callers.

# Multi-Line Telephone Systems



- For more information on CSS phone system upgrade, contact:
  - Tom Brekke – Director of Facilities  
218-723-6717 or [tbrekke@css.edu](mailto:tbrekke@css.edu)
  - Art Sasse – Telecommunications Manager  
218-723-6191 or [asasse@css.edu](mailto:asasse@css.edu)

# Multi-Line Telephone Systems



- Journey of a 9-1-1 call (without precise callback and location information)
  - A 9-1-1 call travels through the 9-1-1 telephone network to the 9-1-1 call center.
  - The 9-1-1 call is identified by *only* the main number of the MLTS/PBX system, *not* the caller's direct phone number.

# Multi-Line Telephone Systems

- Journey of a 9-1-1 call (without precise callback and location information)
  - That main telephone number is used at the 9-1-1 call center to retrieve the location information from the 9-1-1 database.
  - The location information is typically the billing location of the MLTS/PBX system, which may *not* be the caller's location.

# Multi-Line Telephone Systems

- **Accurate 9-1-1 Data is Critical**
  - An accurate 9-1-1 database is critical. Questioning should be focused on the situation, *not* on obtaining the location of the incident. The billing address normally does *not* provide the *exact location*.
  - The 9-1-1 database *can* provide the exact location *if* the MLTS/PBX system provides the actual number of the telephone and cross references it within the corresponding database.

# Multi-Line Telephone Systems



- **Legislation**
  - At least 13 states, including Minnesota, have already passed legislation requiring the MLTS/PBX owner to send *direct phone number* and more *precise location information* to 9-1-1.

# Multi-Line Telephone Systems

- **Legislation (Minnesota - MN)**
  - MN PBX legislation was passed in May 2004.
  - MN legislation was patterned after the model APCO/NENA legislation.



# Multi-Line Telephone Systems

- **Legislation (MN)**
  - The law *requires* that each PBX owner must demonstrate or otherwise inform each new telephone system user how to call for emergency assistance from that particular Multi-Line Telephone System.
  - The law *requires* that PBX owners who upgrade, replace or install new phone systems must design and maintain the system to provide a *call back number* and emergency response location (*precise location of caller*).

# Multi-Line Telephone Systems

- Legislation (HF 622/SF 653)

For more information on the Minnesota legislation:

[www.911.state.mn.us](http://www.911.state.mn.us)

Click on **New PBX Law**

# Multi-Line Telephone Systems



[www.911.state.mn.us](http://www.911.state.mn.us)

## New PBX Law

Click to:

View a copy of the new law

View a copy of the 9-1-1 statute as modified by this law

View a decision tree indicating the effects of the law

# Multi-Line Telephone Systems

- **Is your system problematic?**
  - Talk to your telecom manager. Is this a problem for you and your family's school, workplace, or home?
  - Find out how those telephone systems work.
  - Generally, if it is necessary to dial 9 for an outside line, likely the phone system is an MLTS/PBX.

# Multi-Line Telephone Systems



- **What can you do now?**
  - Initiate legislation and encourage your PBX owner to upgrade your system to provide:
    - The *caller's phone number* to the network.
    - The caller's *precise location information* to the 9-1-1 database.


# Multi-Line Telephone Systems



- **What can you do now?**
  - Ask your telecom manager to:
    - Inform end users how 9-1-1 works
    - Post instructions by the phone

# Multi-Line Telephone Systems

- The American Heart Association has designed stickers and instructions for MLTS/PBX owners to place at all phone locations to assist in educating callers about providing their *exact location* and *call back number* to 9-1-1.



American Heart Association  
Fighting Heart Disease and Stroke

If you call 9-1-1 from this phone you MUST give your EXACT location:

Name of building \_\_\_\_\_

Street address \_\_\_\_\_

Floor \_\_\_\_\_

Office name/cube # \_\_\_\_\_

Direct dial phone # (\_\_\_\_\_) \_\_\_\_\_

Other information (entrances, security, etc.)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Multi-Line Telephone Systems

- Until now, the FCC has left it to states to determine whether or not to adopt any legislation to regulate PBX/MLTS systems.
- Only a relative handful of states (13) have enacted some form of E9-1-1 regulations for PBX/MLTS systems.
- APCO has requested FCC intervention to develop meaningful federal regulation to ensure calls from PBX/MLTS systems provide E9-1-1 to the extent necessary to provide rapid and accurate emergency response.

# Multi-Line Telephone Systems

- APCO has released important information regarding PBX/MLTS systems and their relationship with E9-1-1 Automatic Location Identification in the form of a white paper.
  - States that have implemented legislation which require a solution are applauded.
  - States that do not have legislation are encouraged to lead or support the efforts necessary to a solution, as the FCC is seeking information which will likely lead to mandate a national approach.

# Multi-Line Telephone Systems

- The need for accurate location information during an emergency has never been more important.
- It is becoming increasingly critical as the nature, magnitude and landscape of emergencies continue to broaden.
- A pro-active intervention is needed.

# Multi-Line Telephone Systems

- **For more information see:**
  - **The Metropolitan 9-1-1 Board**
    - [www.metro911board-mn.org](http://www.metro911board-mn.org)
  - **The American Heart Association**
    - [www.americanheart.org](http://www.americanheart.org)
  - **APCO**
    - [www.apco911.org](http://www.apco911.org)
  - **NENA**
    - [www.nena.org](http://www.nena.org)

**Thank you for your time and  
attention**

Questions? Comments?

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