MLTS E9-1-1 Workshop

Improving Public Safety: Provisioning E9-1-1 Caller Location Information for phones served by Multi-line Telephone Systems

July 26 & 27, 2010
San Francisco, California

Michael Aguilar
Policy Analysis Branch
Communications Division
California Public Utilities Commission
July 26 and 27, 2010

Workshop Meeting Goals and Agenda

- Stakeholders are asked to:

- Identify the public safety need for accurate caller location information
- Describe how service providers work with customers in implementing best practices
- Identify the feasibility and cost to business owners and other property owners

- Agenda – Workshop Topics

Topic 1: CD Introduction and review of concepts and starting points

Topic 2: Public Safety identification of need and high risk environments

Topic 3: Low risk environments and acceptable alternatives

Topic 4: ILEC tools and services for provisioning caller location information

Topic 5: MLTS equipment E9-1-1 capabilities and industry best practices

Topic 6: LEC practices for informing multi-line customers of the need to provision accurate caller location needed by PSAPs and public safety responders

Topic 7: Solutions and alternatives available for customers in service territories where PS/ALI and/or ISDN transmission service is not available

Topic 8: Case histories of MLTS E9-1-1 provisioning by third party providers

Topic 9: Business and property owner comment on the need, feasibility and costs

1) Background: FCC MLTS E9-1-1 Proceedings

- 1994: FCC sought comment on ensuring the compatibility of PBXs and other dispersed MLTS with E9-1-1 services[1].
  - Key feature of MLTS is the elimination of the need for an external line for each telephone number
  - Each MLTS phone has a unique TN for internal traffic and inbound external calls
  - Outbound external calls may not have a unique TN since they use lines available to any phone within the MLTS.
- 2002: "E911 Scope NPRM"[2] -- sought to refresh the record
  - Reiterated its previous conclusion that the delivery of accurate location information and callback number is vital for a local emergency response to be effective and is in the public interest.
  - Callback and station location information is not automatically available today from behind MLTS and from behind an IP-based private network.

1: Revision of the Commission's Rules to Ensure Compatibility with Enhanced 9-1-1 Emerging Calling Systems, CC Docket No. 94-102, 9 FCC Rcd. 6170 (1994)

2: FNPRM, 17 FCC Rcd. 25576 (2002)

2003 FCC Report and Order and Second Further Notice of Proposed Rulemaking[3]

"FCC was concerned that the lack of effective implementation of MLTS E911 could be an unacceptable gap in the emergency call system, and could have a deleterious effect on our homeland security system."

1. "MLTS interconnect to the PSTN and offer real-time switched voice service."
2. "MLTS callers generally expect to have access to E911."
3. "FCC rules requires all telecommunication carriers to transmit all 911 calls to appropriate public safety authorities."
4. "PBXs can be equipped with MLTS signaling through CAMA [analog] and ISDN [digital] interfaces in order to deliver the calling number that makes MLTS E911 possible."
5. "Any carrier involved must provide trunking and interfaces capable of transferring location information received from the MLTS".
6. "Variety of technologies and vendors exist currently that make E911 compliance in the MLTS context quite feasible."
7. "States are in a unique position to coordinate the disparate elements necessary for MLTS E911 implementation."

3: 18 FCC Rcd 25340 (2003)

2) High Risk MLTS Environments

1. Multiple or remote locations served by a Central / Host PBX with only one address and call back number
   - Single central location / billing address, but different PSAP for each location
2. Assisted living or medical facility with a phone in each living unit or patient room
   - No room number or call back information for the phone in each room
   - May be one or more floors
3. No on-site notification that a 9-1-1 call was made, whether or not there is 24/7 security or attendant
   - 24/7 attendant or security cannot assist PSAP during call back to main billing number
4. No live person attendant to answer main billing number
   – phone tree
5. No testing of call routing from multiple location installations prior to implementation
6. No public safety authority to require PBX owner to provision E9-1-1 caller location information
7. Other?

3) NENA Solutions / Low Risk MLTS Environments

- NENA Solutions
  1. Single ERL (Emergency Response Location) = contiguous space on a single floor not exceeding 7000 Ft^2
  2. Shared Residential MLTS
  3. Business MLTS
  4. Shared Tenant Service – Joint User Service
  5. Temporary Residence
  6. ALI Database Maintenance / Updates
  7. Dialing Instructions
  8. MLTS Operator Education / Testing

- Exemptions = Low Risk Environments
  1. Single ERL on one floor less than 7000 Ft^2
  2. Key Telephone Systems
  3. On premise interception authorized by law and supported by training
  4. Other acceptable alternatives?

4) California's 9-1-1 Database Managers

- Pacific Bell and GTE designed, built and operate the 9-1-1 Network and Database Management System
  - 9-1-1 Service Order Requirements and Standards for connecting carriers
  - E9-1-1 service available throughout California
  - 25 Million 9-1-1 records in combined databases
  - 25 Million 9-1-1 calls delivered in 2008[4]
  - $40M Database services, $15M Wireline Network -- average annual payments
- AT&T and Verizon serve on NENA Technical Standards Committees
  - Trunking for Private Switch 9-1-1 Service, NENA 03-502
  - Private Switch (PS) E-9-1-1 Database Standard, NENA 06-003
  - Industry Common Mechanisms for MLTS E9-1-1 Caller Location, NENA 06-502
  - Standard Data Formats For ALI Data Exchange & GIS Mapping, NENA 02-010
  - Model Legislation E9-1-1 for Multi-Line Telephone Systems, NENA 06-750

- Tools and Services for provisioning MLTS caller location information
- New NENA formats that capture PS/ALI info and facilitate XML processes

4: California 9-1-1 Strategic Plan 2009

5) Types of Multi-line Telephone Systems

Technology/Site	Premise-based	Hosted or Network-based
Circuit-Switched, or Traditional, or Legacy	Analog PBX Digital or ISDN PBX Key System Hybrid Key System	Centrex (PacBell) CentraNet (Verizon California) Other LECs
Packet-Switched, or Next Generation, or IP-based	IP-PBX IPBX VoIP-PBX	IP-Centrex IP-CentraNet Hosted/Virtual IP
Location of equipment	Customer premises	Central Office or LEC switch, or Equipment Manufacturer's site

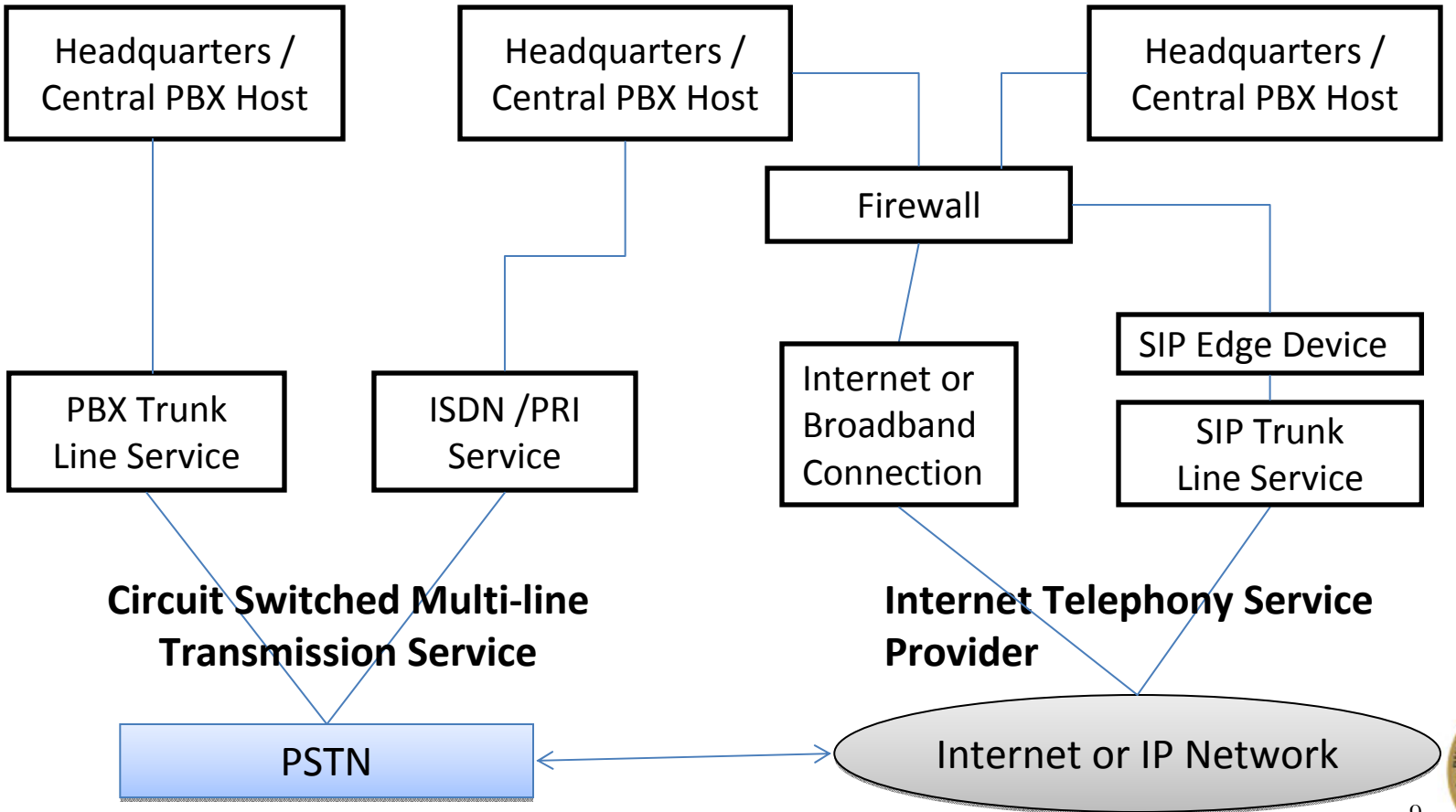
- Hosted Service is a MLTS owned, operated and managed by a regulated carrier. Most (All) ILECs offer a CENTREX like service.
- Premise based PBXs are owned by a business, government agency or non-profit. They utilize a regulated carrier's multi-line transmission service to interconnect with the PSTN. LEC Affiliates offer IP-based interconnection.
- California's ILECs provide 9-1-1 to all customers – to the demarcation point.

TDM, Hybrid and VoIP/Enterprise PBXs

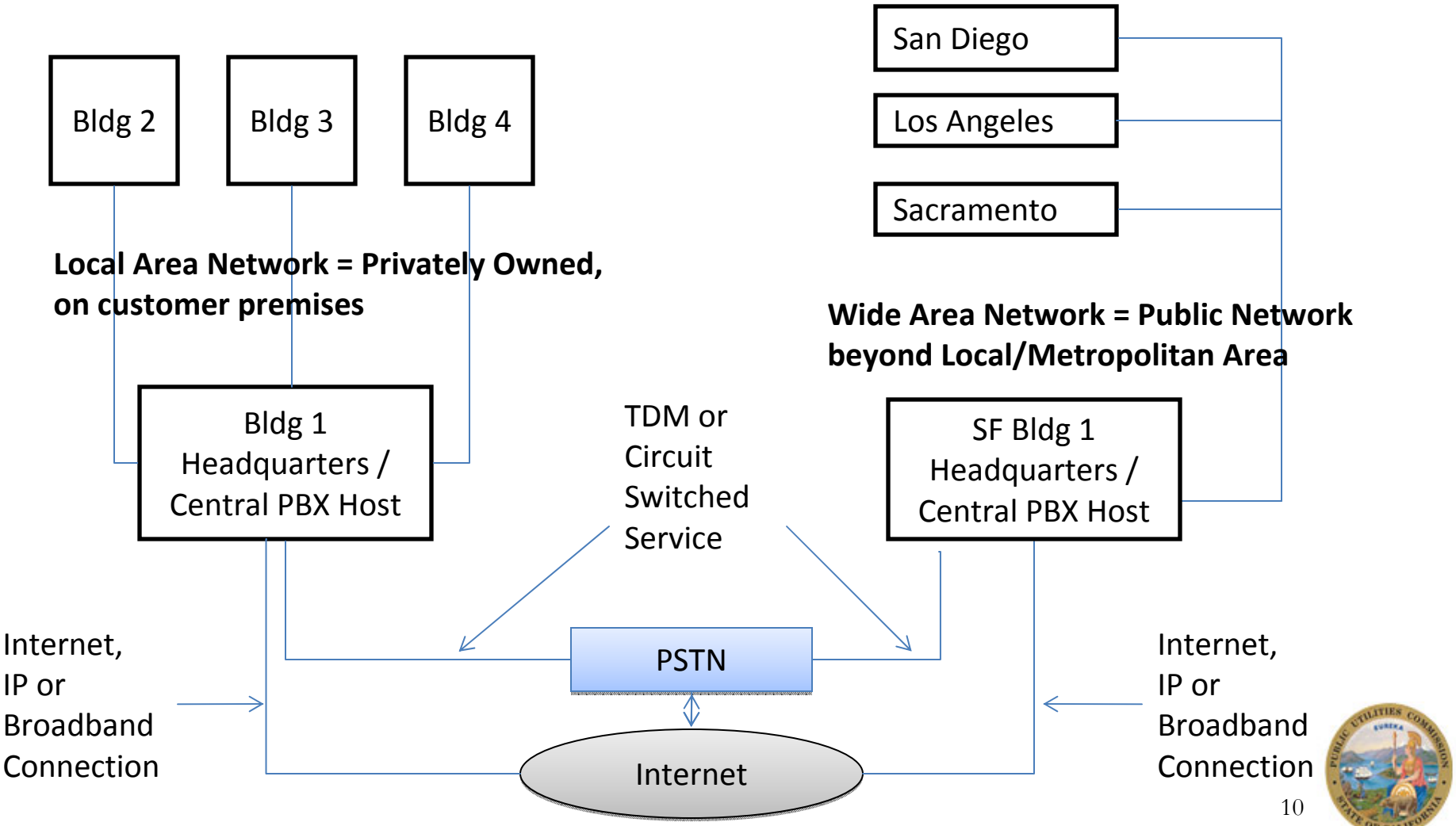
Traditional Voice Only = TDM

Hybrid = voice and data

VoIP = Voice calls are digitized and transmitted in packets



Fixed/Nomadic VoIP LAN and WAN PBX Networks



MLTS Equipment E9-1-1 Capabilities

- Telecommunications Industry Association Standards
- 1995 TIA/EIA-689 Standard: PBX and KTS Support of E9-1-1 Service
  - 'This standard is intended to guide the design of new MLTS equipment to help assure that 9-1-1 callers from phones connected to that equipment receive the full benefits of E9-1-1 calling.'
  - 'E9-1-1 call misdirection and response unit misdirection problems'
  - Specifically addressed dialing, routing, attendant notification, network interfaces, DID and non-DID database information, and installation instructions.
- 2003 Revised TIA-689A ' Telecommunications Multiline Terminal Systems: PBX and KTS Support of E9-1-1 Emergency Calling Service'
  - 'The standard may be used in the design of MLTS that are installed in many businesses, hotels or campus environments. … helps emergency responders to determine the location of 911 calls connected to MLTS, as occurs with fixed single-line telephones that are typically found in a residence.'
- What are the current industry best practices supported by NENA, PBX manufacturers, carriers and third party solution providers?

9) PBX Owners are looking for guidelines

Russel Wilmes, Enterprise Architect | Security Officer, Facey Medical Foundation: email to CPUC dated July 16, 2010

'Facey Medical Foundation is a non-profit, multi-specialty, multi-site healthcare provider group with 150 physicians providing healthcare services to over 150000 residents of Los Angeles County.'

'While implementing E-911 services with our PSTN providers to minimize the risk of an ambulance arriving at a location 10 miles from the emergency, I did a bit of research and found many states are now requiring that the correct location information gets sent to 911 call centers, sometimes even going down to the suite level.'

'I would think that as [VoIP] technology becomes widespread that it would be beneficial for the public safety if CPUC were to establish the following:

A) Similar regulations to other states requiring accurate station level location identification be sent to 911 systems.

B) Public outreach communications such that information on e-911 services was easy to find

C) A working dialogue and cooperative mission with Telco providers that would help ensure that the telco providers customers needs are proactively addressed.'