A decorative graphic on the left side of the slide, consisting of overlapping blue, red, and yellow squares with a black crosshair.

E9-1-1 and IP Telephony

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Cisco Systems

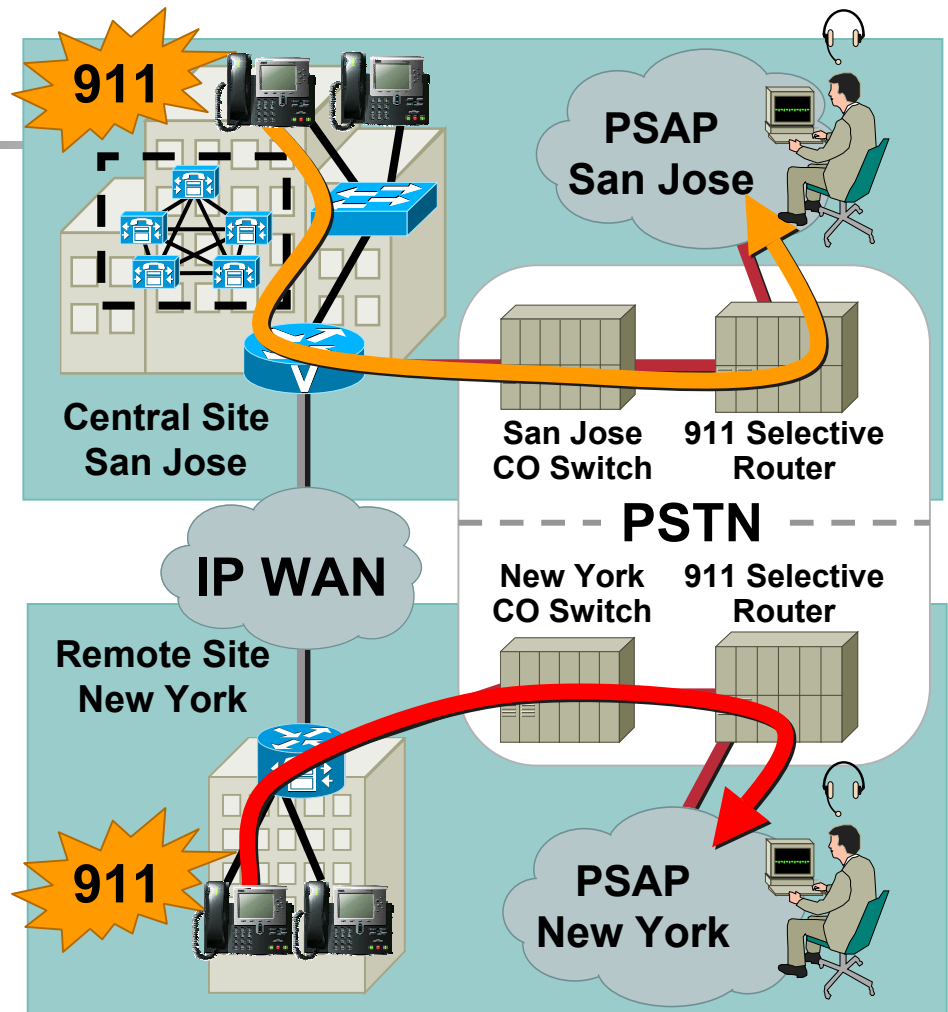


Agenda

- What Is 9-1-1 and Enhanced 9-1-1?
- The Importance of E9-1-1
- Where Is It Applicable?
- How Does It Work?
- Enhanced 9-1-1 and IP Telephony
- IP Telephony: E9-1-1 a Successful Solution

What Is E9-1-1?

- 911 provides:
 - Single number for police, medical, fire emergencies
 - No location information, or callback support
- Enhanced 9-1-1 (E9-1-1) adds:
 - Emergency calls routed to the correct call center
 - Operator knows the caller's **location** and can return the call
- E9-1-1 Requirements for Multi-line phone systems:
 - Identify at least the bldg and floor of a 911 caller
 - Customer responsible for location database!

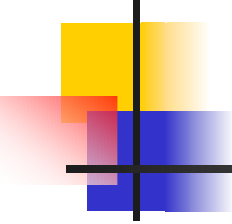


IP WAN: Internet Protocol, Wide Area Network
PSAP: Public Safety Answering Point; 911 call center



The Importance of E9-1-1

- E9-1-1 is a key tool in preserving the welfare of people, property and equipment:
 - 190 million calls each year to 911 (500,000 every day) (source: NENA)
- E9-1-1 laws for multi-line telephone systems in 7 states:
 - Colorado, Illinois, Kentucky, Mississippi, Texas, Vermont, Washington
 - More to follow
- FCC proposed E9-1-1 federal rulemaking:
 - Title 47, Part 68, Proposed Section 319
- Occupational Safety and Health Administration (OSHA):
 - Title 29, Part 1910, Section 151
 - “If life threatening injuries can reasonably be expected, trained personnel must be available within 4 minutes. This generally means that community emergency medical services cannot be relied on since their response time is usually greater than 4 minutes.” (source: U.S. Dept. of Labor)

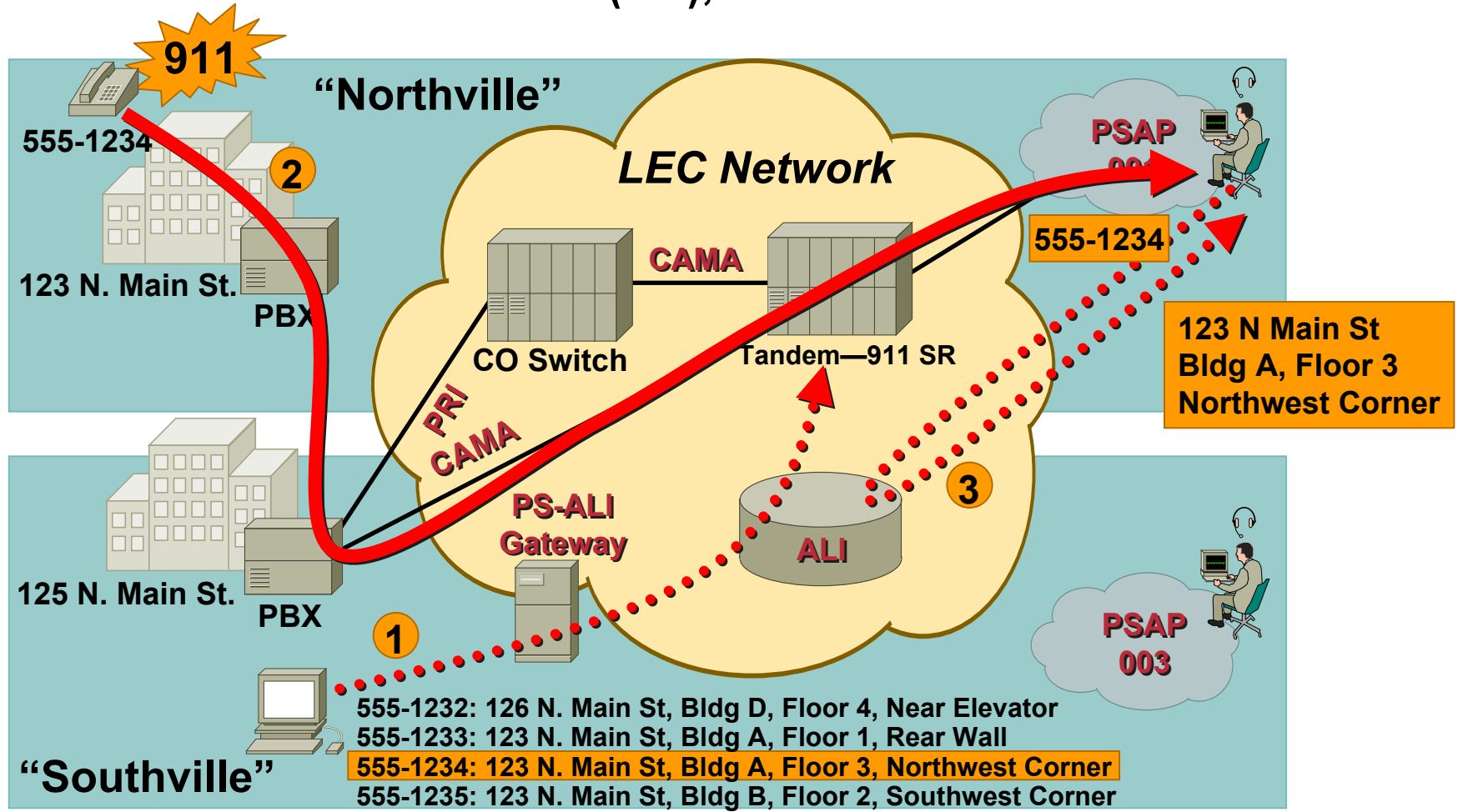


Where Is E9-1-1 Applicable?

- Per National Emergency Number Association (NENA) November 2000 Model Legislation:
http://www.nena.org/9-1-1TechStandards/TechInfoDocs/MLTS_ModLeg_Nov2000.PDF
- All entities with multi-line telephone systems
- Emergency operator must see street address, bldg, floor
- Uniquely identify each tenant in a multi-tenant building
- Cases where a single location record is acceptable:
 - Workspaces less than 7000 ft² on a single property
 - Workspaces less than 40,000 ft² on a single property and 49 users or less
 - "Key telephone systems"
- Alternative methods to support enhanced 9-1-1
 - Private answering point (e.g. campus security)
 - "Attendant notification"
 - Conference between caller, local attendant, emergency operator

E9-1-1 Call Flow with Traditional PBX

Scenario: Same Central Office (CO), Different Cities

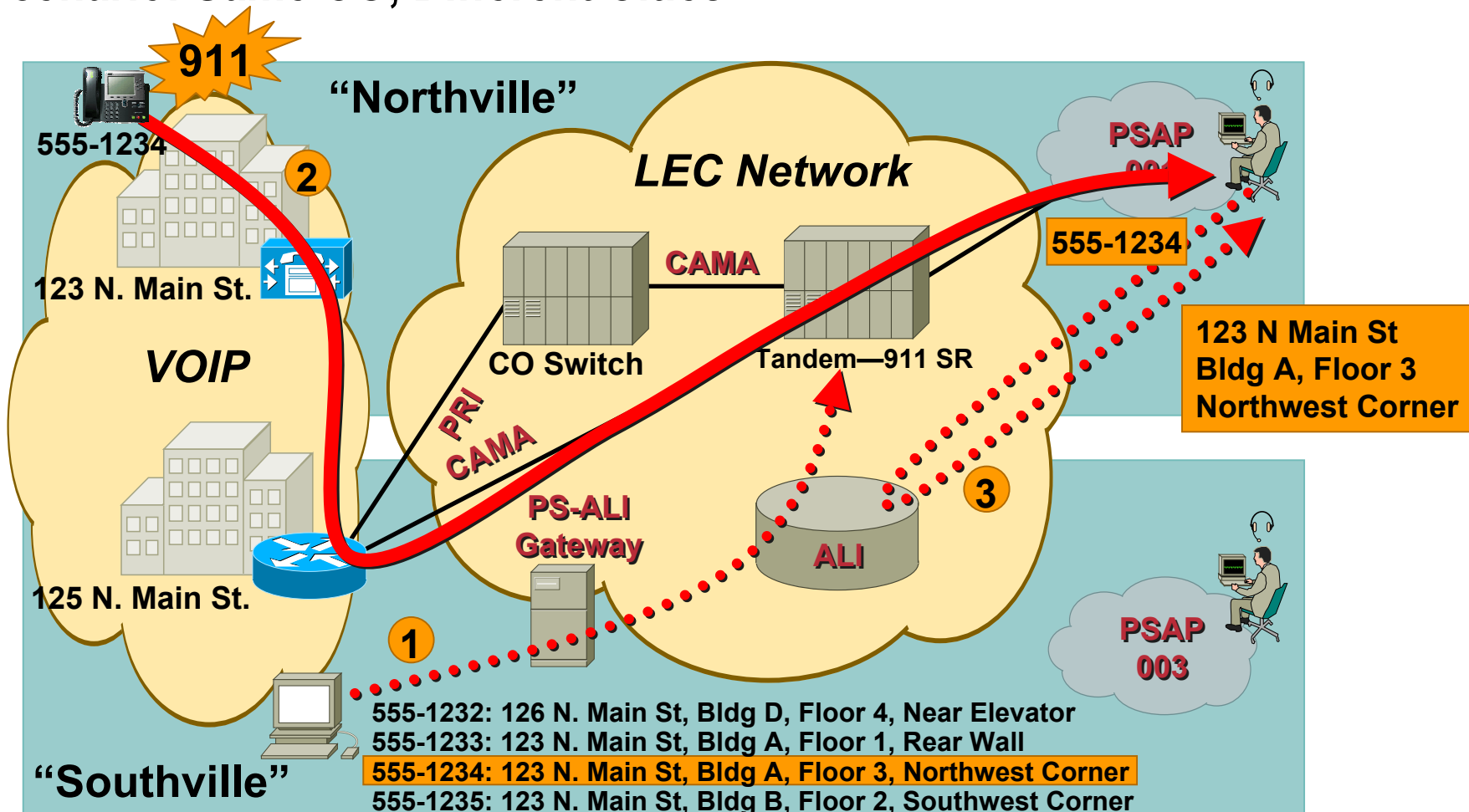


CAMA: Centralized Automated Message Accounting; dedicated analog E9-1-1 trunks
PSAP: Public Safety Answering Point; 911 call center
PS-ALI: Private Switch Automatic Location Identification; E9-1-1 location database
911 SR: Selective Router; performs 911 call routing based on calling party number



E9-1-1 Call Flow with IP Telephony

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Enhanced 9-1-1 and IP Telephony

	IP Telephony		Traditional PBX	
	Stationary	Nomadic	Stationary	Nomadic
Automatically provide 911 caller location	✓	✓	✓	X
Identify precise building/floor in campus	✓	✓	✓	X
Enable callback to original 911 caller	✓	✓	✓	X
Moves, adds, changes; no administration	✓	✓	X	X
Alert 3 rd -Parties via email/pager/web/tel	✓	✓	½	X

◆ IP Telephony Strengths

- Reduced cost and complexity for phone moves/adds/changes
- Increased productivity; users relocate without waiting for a work order

◆ E9-1-1 Challenges

- Where is the caller?
- Where to route the call?
- What to populate in the location database?
- When to update?

IP Telephony: E9-1-1 a Successful Solution

- Locate IP phones based on Ethernet MAC
 - MAC address tracked to Ethernet switch port
 - Ethernet switch port tied to physical location
- Send 911 calls to appropriate gateway based on current caller location
- Present an alternate calling party number to the E9-1-1 network
 - Replace the original calling party number with an Emergency Location Identification Number (ELIN)
 - ELINs are DIDs assigned to locations, not people!
 - Cache the association of ELIN to original calling party number for return calls from PSAP
- Alert 3rd parties via e-mail, pager, phone, web, printer, etc.
- Extend IP telephony benefits to E9-1-1