

PSTN Vulnerabilities

The Interconnection between Networks

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Recognizing and Preparing for Threats



- Natural Disasters:
 - Earthquakes
 - Hurricanes
 - Tornados
 - Floods
 - Fires
- Man-made Disasters:
 - Terrorist Attacks (WTC, 9/11, Oklahoma City)
 - Extended power outages (NYC Black-out in 2003)
 - Chemical Spills
 - Fires
- Take Action Now to Prepare
 - Harden your state's telecom infrastructure
 - Build redundancy throughout networks
 - Including tandems



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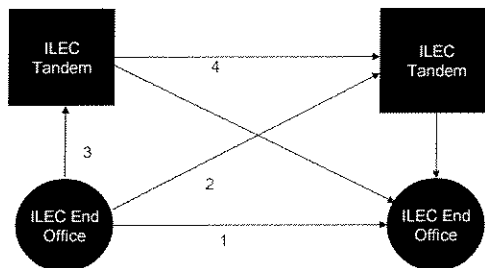
Lessons Learned...

- **FCC Katrina Report:**
 - During the New Orleans disaster, "the switches that failed, especially tandems, had widespread effects on a broad variety of communications in and out of the Katrina region."
 - "Katrina highlighted the dependence on tandems and tandem access....highlighted the need for diversity of call routing...."
- **Comments of the NY Department of Public Service (to FCC):**
 - "We found that the wireless industry may have consistently undersized trunks interconnecting their services to wireline facilities."
 - "...the danger is that it can result in network "choke points" that may easily become swamped in emergency or catastrophic situations."
- **FCC Commissioner Tate's Testimony Before Senate Commerce Comm.**
 - "...we must also learn from our experience and equip the nation and our citizens to be able to communicate more effectively in such times. The one clear message I heard was the need for redundancy in communication networks."
- **Ivan Seidenberg, Verizon's CEO**
 - "What 9/11 showed us is that the true security lies in having a diversity of technologies that gives customers redundant capabilities and provide alternative ways for Americans to communicate. You need to have more than just Verizon."

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Local Traffic Routing within a LATA



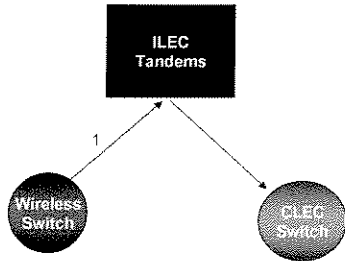
- The ILEC Network has a robust multiple routing architecture that evolved from the era of the regulated monopoly of the old AT&T.

- This architecture provides a multiple path completion opportunity for traffic originating and terminating in the ILEC Network.

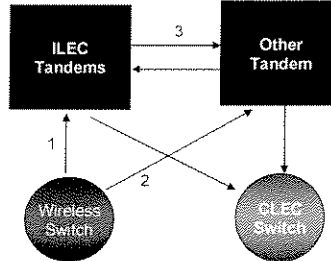
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Wireless & CLEC Carrier Traffic Vulnerability



Wireless & CLEC Carrier Potential Solution

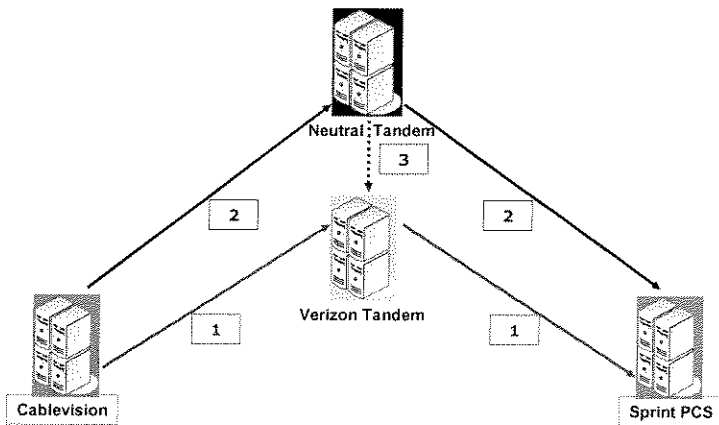


- Today, 50% of Voice traffic is originated by competitive carriers, and it's projected to reach 67% by 2010
- The interconnection of these networks is too often accomplished by a single connection into a Legacy ILEC Network Tandem
- The vulnerability of this Single Point of Failure was identified in the recent disasters of Katrina, "911" and in the 2003 East Coast Blackout
- The introduction of another tandem with non-collocated facilities and switches will provide added survivability and resiliency in times of natural and man made catastrophes and traffic surges.

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NYC Case Study



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Implications for State Commissioners...

- Review industry findings
 - *White paper on Tandem Diversity and PSTN*
 - *Initial Report by NY DPS on 8/14/03 Blackout*
 - *Network Reliability After 9/11 – NY DPS*
 - *FCC Katrina Report*

- Establish pro-competitive interconnection policies
 - Open interconnection spurs private investment to build redundancy

- Conduct forums to further explore solutions
 - Raise awareness of potential Interconnection point of failure
 - Encourage multiple switching and routing solutions to other networks

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