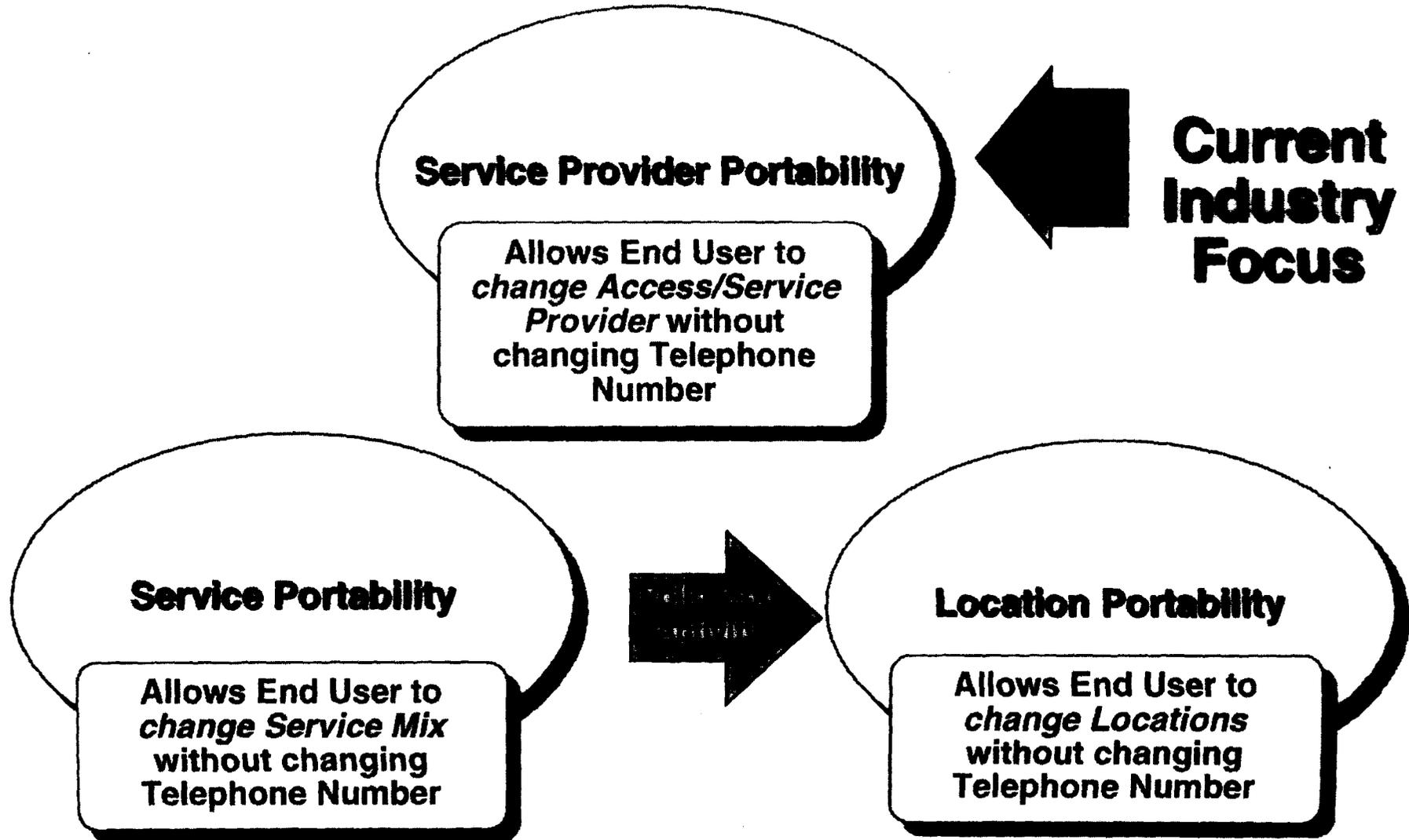
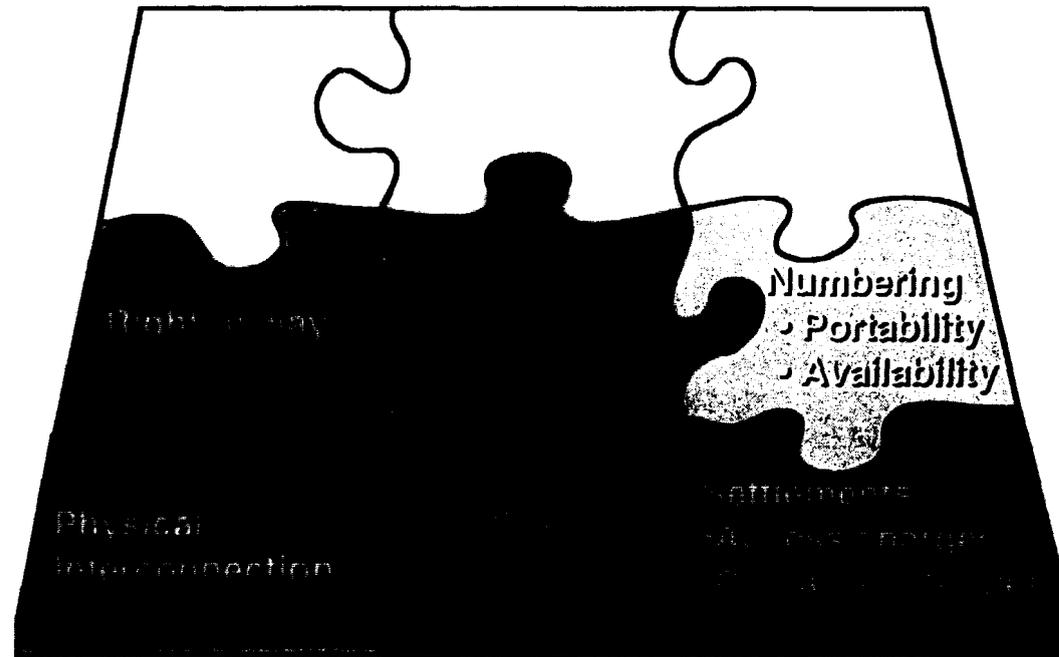

Outline (contd.) - LNP Models Details

- MCI METRO ORIGINATING TRIGGERS
- ~~Siemens~~ - Carrier Portability Code (CPC)
 - AT&T - Location Routing Number (LRN)
 - ELI/Stratus - Name & Address
 - NORTEL - Name & Address

What is LNP?

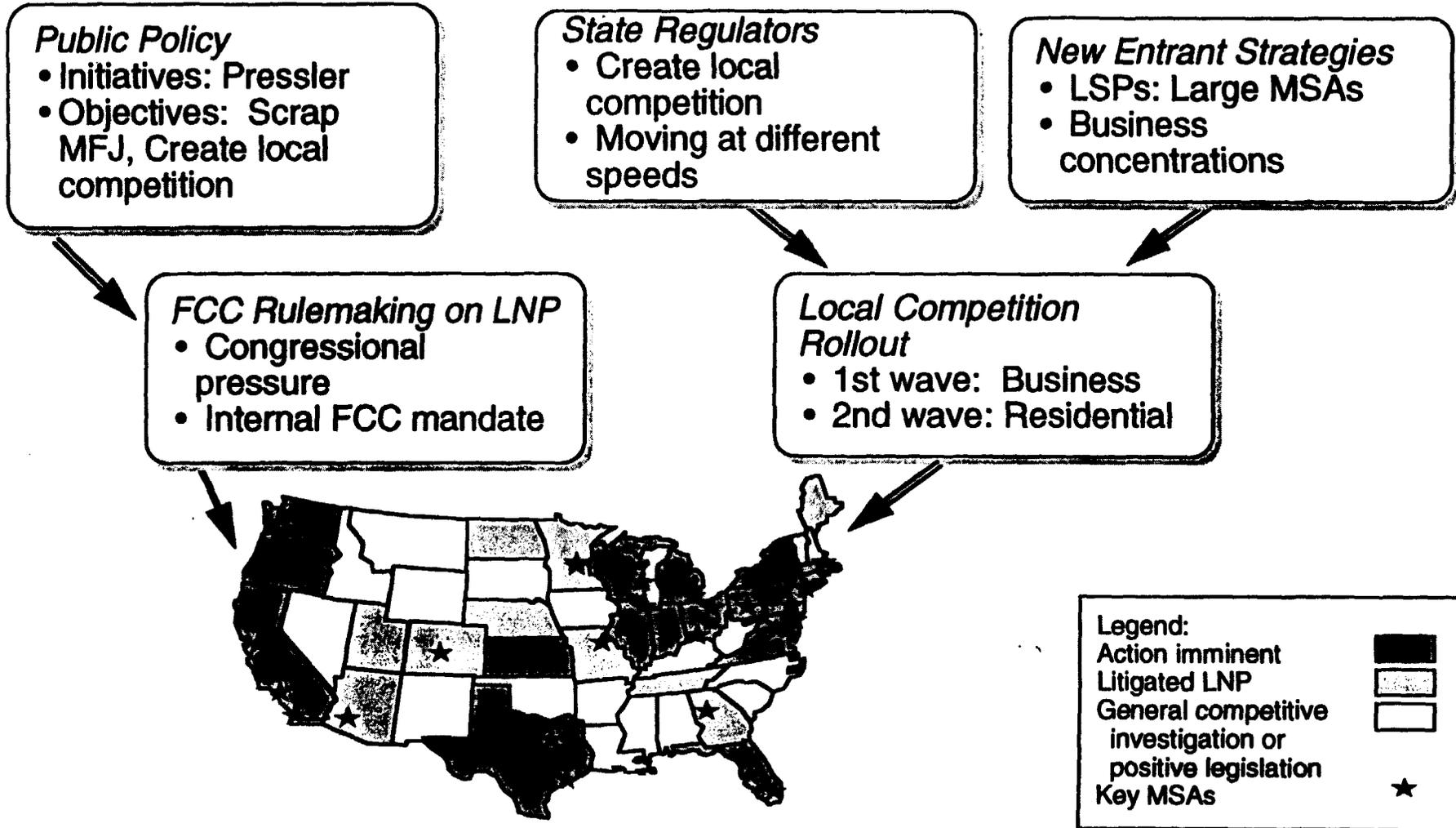


The Debate



- **Regulators seeking increased competition/decreased regulation**
- **LEC incumbents trying to enter new markets/good faith**
- **New entrants seek to establish market share**
- **IXCs seek to reduce access charges**

Regulatory Drivers



2 major tracks: state by state and federal

LNP Regulatory Pressure - Federal

FCC / Federal

Pressler Bill - potential for universal deployment mandated mid'98

Pressler Bill

Projected Enactment by July 4, 1995?

- **Local Competition**
 - Explicitly Mentions LNP
 - Explicitly Mentions Reciprocal Compensation
 - Reasonable Allocation of Costs among the Parties
 - LECs Provide When Requested, As Soon as Technically Feasible
 - » Dialing Same Number of Digits Regardless of Carrier
 - » Non-discriminatory Access to Telephone Numbers, Operator Services, Directory Ast. & Directory Dialing, With No Unreasonable Delays
 - **RHC entry into various businesses**
 - In-region Toll — 3 Years or Sooner if Local Competition
 - Out-of-region Toll — 1 Year
 - Severe Penalties if Delay Local Competition > 3 Years
 - **FCC to Promulgate Rules Within 90 Days of Enactment**
-

New York LNP Trial

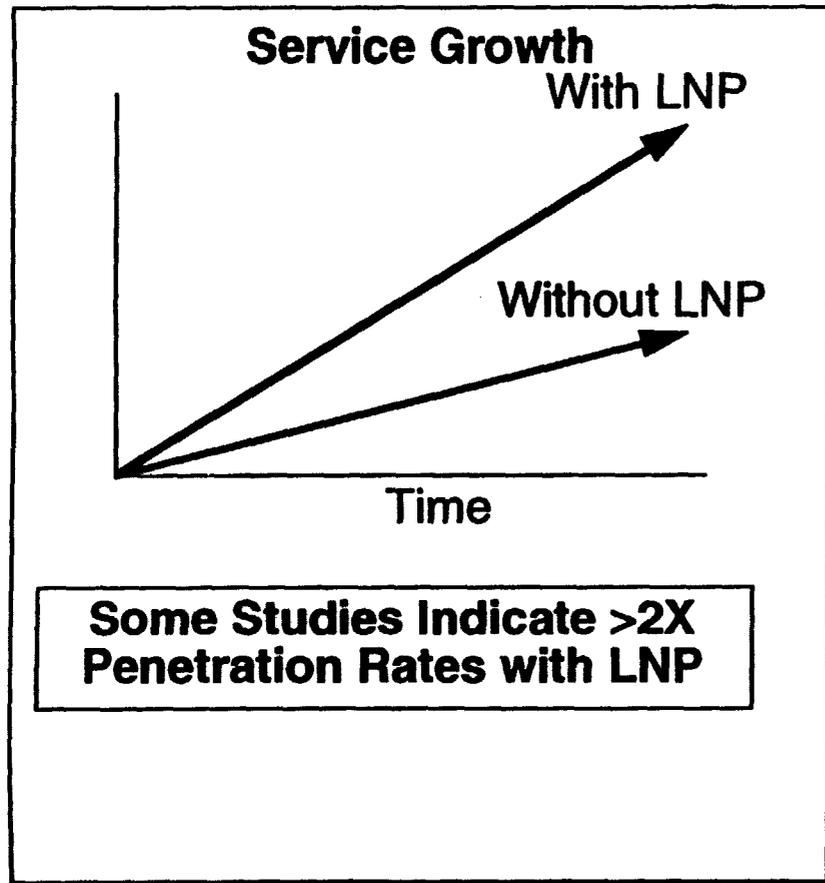
Schedule

- 2/94 State of New York Department of Public Service instituted proceedings looking at broad issue of local exchange competition
- 9/94 Interim staff report recommends trial of number portability, using database technology
- 10/94 Bi-weekly steering committee meetings
- | | | |
|---------------------|-------------------------------------|------------------------------|
| NYNEX | TCG (Teleport) | Cellular One of New York |
| Rochester Telephone | MCI Metro | Stratus Computers |
| MCI | MFS Intellenet | Time-Warner Communications |
| AT&T | US Intelco | Associated Communications |
| New York Telephone | LOCATE (a CAP) | Citizens Telecom of New York |
| | John F. Shea, Co. (OA&M Consultant) | |
- 2/95 NYNEX Release RFP
- 3/95 RFP responses due
- 5/95 Vendor selected
- 1/96 3 phase trial begins
- Phase 1: Porting from a dedicated unused NXX
Phase 2: Porting administrative office numbers
Phase 3: Porting customers currently using remote call forward

**Purpose of trial is to examine viability of service provider portability
in a multi-carrier environment (including looking at costs)**

Market Drivers - New Entrants

Penetration



Willingness to Change Service Providers

Business

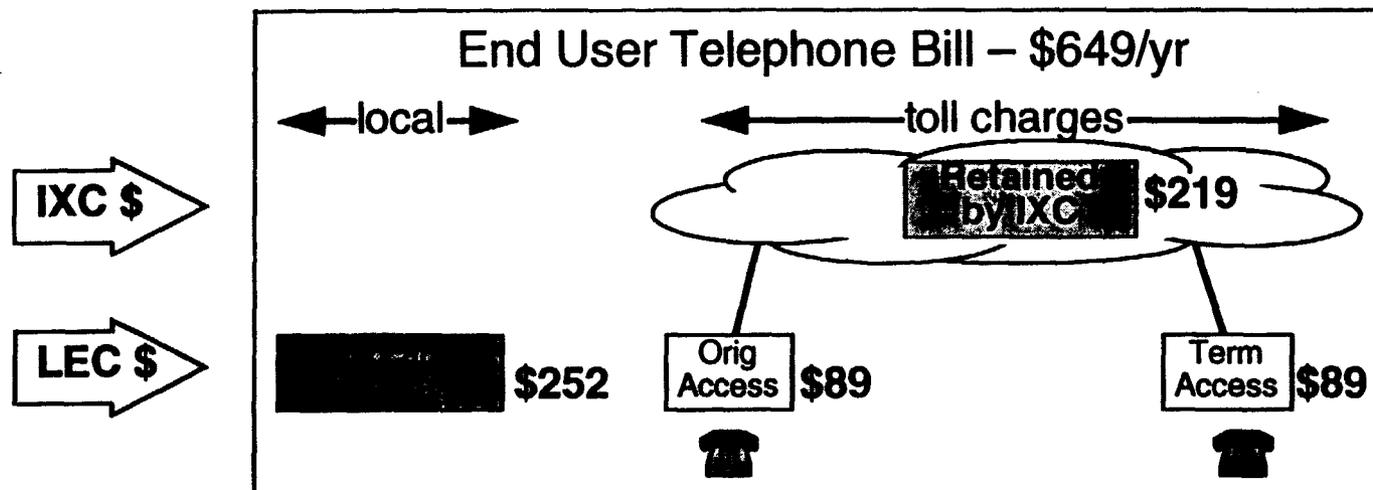
90% unlikely to switch if number change required

Residence

75% unlikely to switch if number change required

Source: MCI Gallup poll presented to Maryland PUC

New Entrant - Financials

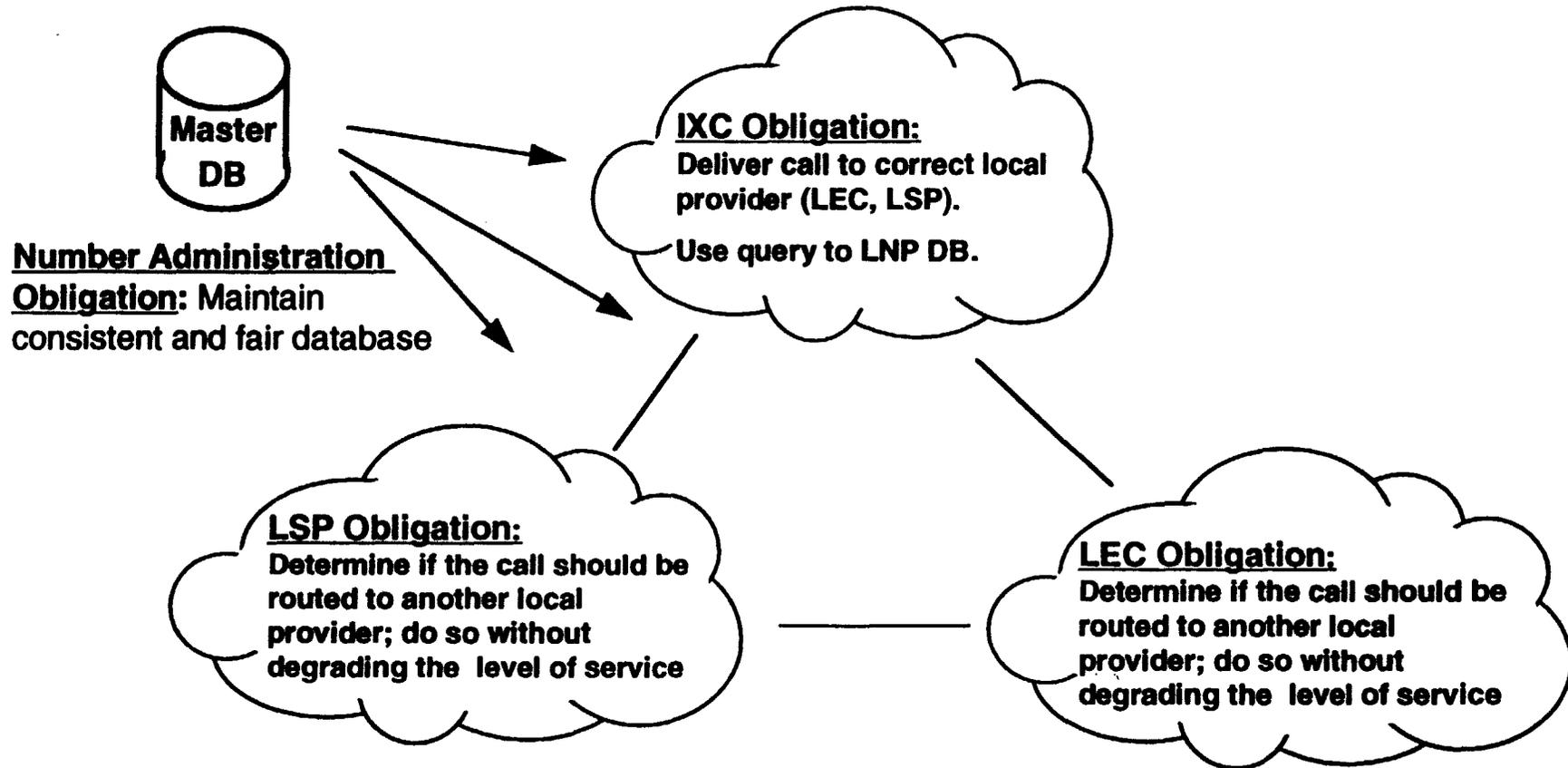


- Average annual phone bill is \$649 split as in the above diagram. Alternate service providers want to “capture” the same revenues as LEC.
- In particular, they want both originating and terminating toll access charges. **They will not accept a solution that doesn't achieve this!** (i.e. don't route terminating toll through LEC.)
- Terminating toll charges represent \$89 of \$430 (20%) of potential revenues!
- Teleport has shown revenues are more important than number change. They favor co-carrier connections to LEC – forcing a DN change – rather than PBX DID trunks for their Centrex customers.

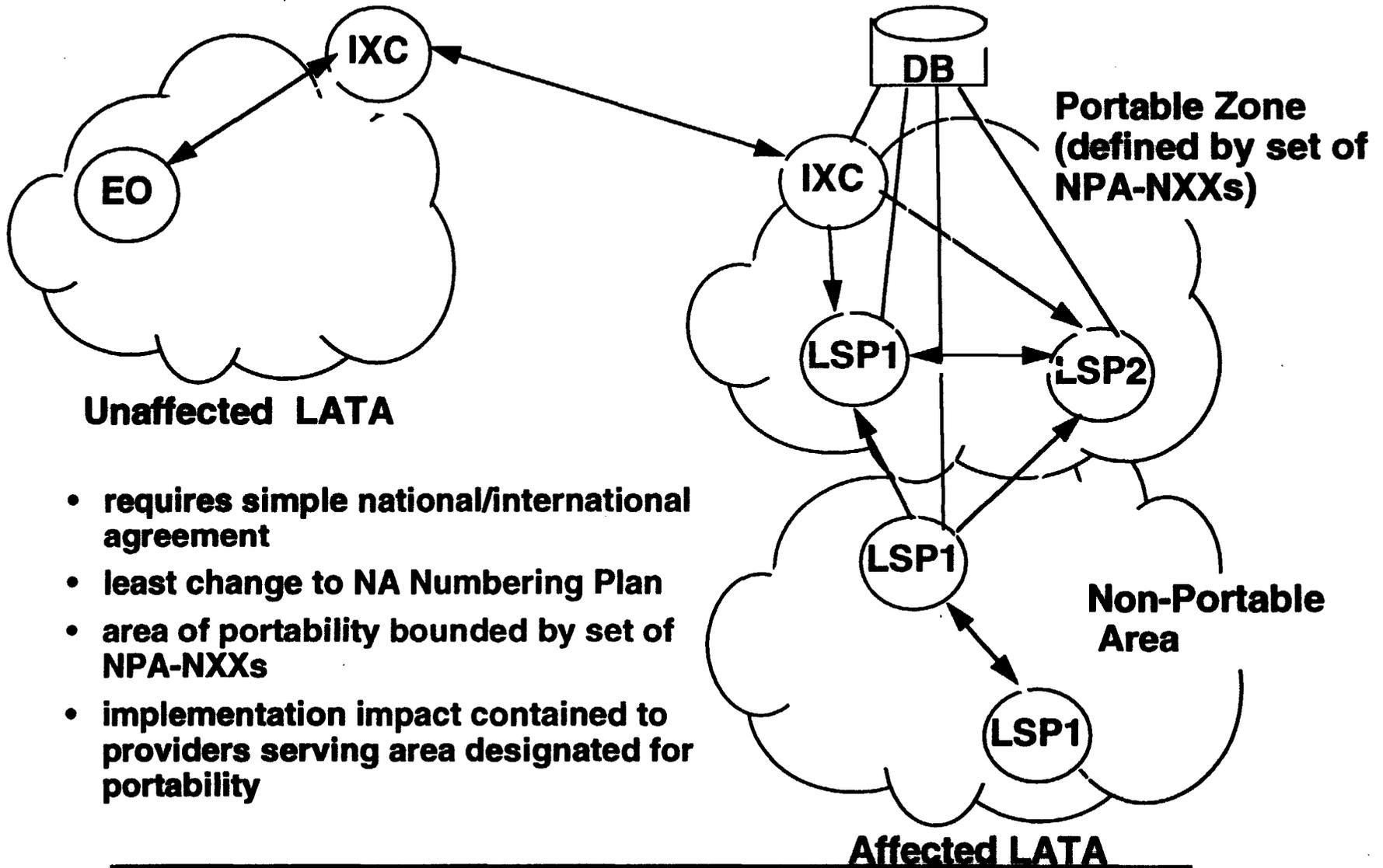
Market Drivers - IECs

- **Lack of LNP is recognized as the “major” roadblock to Local Access Competition**
- **Today toll revenues in US represent approximately \$ 75B**
- **Access charges represent approximately 40%**
- **Today this \$ 30B is shared between a small number of players**
- **Tomorrow some of this revenue will diminish due to competition and what's left will be split between many more players**

Stakeholder Interactions



LNP N-1 Architecture



- requires simple national/international agreement
- least change to NA Numbering Plan
- area of portability bounded by set of NPA-NXXs
- implementation impact contained to providers serving area designated for portability

LNP Models

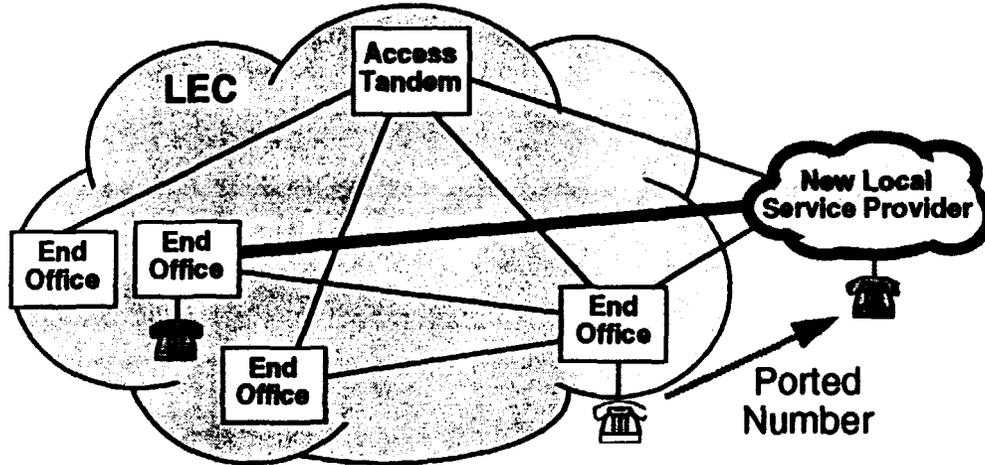
- **DID**
- **Route Index / DID via Hub**
- **Remote Call Forward (RCF)**
- **Remote Call Forward with 10XXX**
- **AIN-based**

LNP Issues/Feature Interaction

- **Major focus on call completion**
- **Non-circuit associated messaging**
 - **CLASS auto recall**
 - **CLASS screen list editing**
 - **CLASS call back**
 - **Network based message waiting**
 - **LIDB based services**
 - **Calling Name Display**
 - **Operator services Credit card validation (CC # ≠ DN+PIN)**
 - **Operator services LIDB field to block billing to 3rd Party**

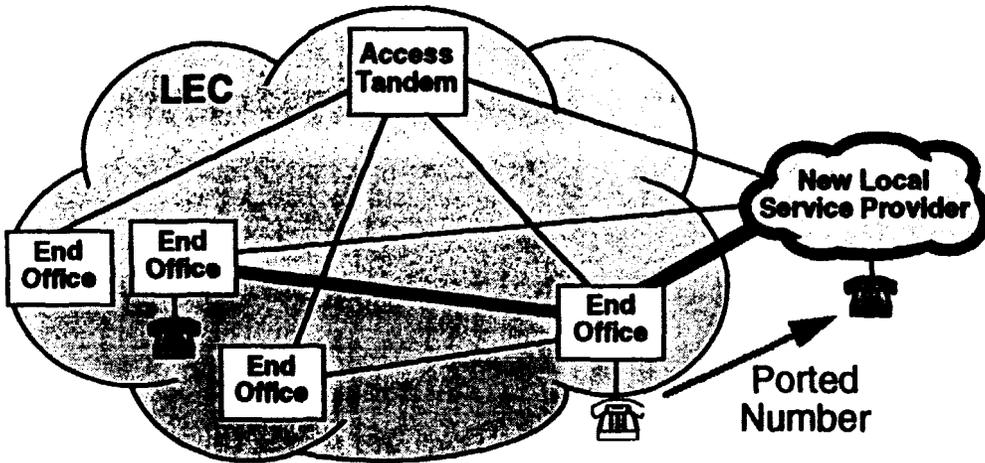
Impact on Trunking Efficiency

Originating End Office Query or Look-Ahead and Orig Query when Needed



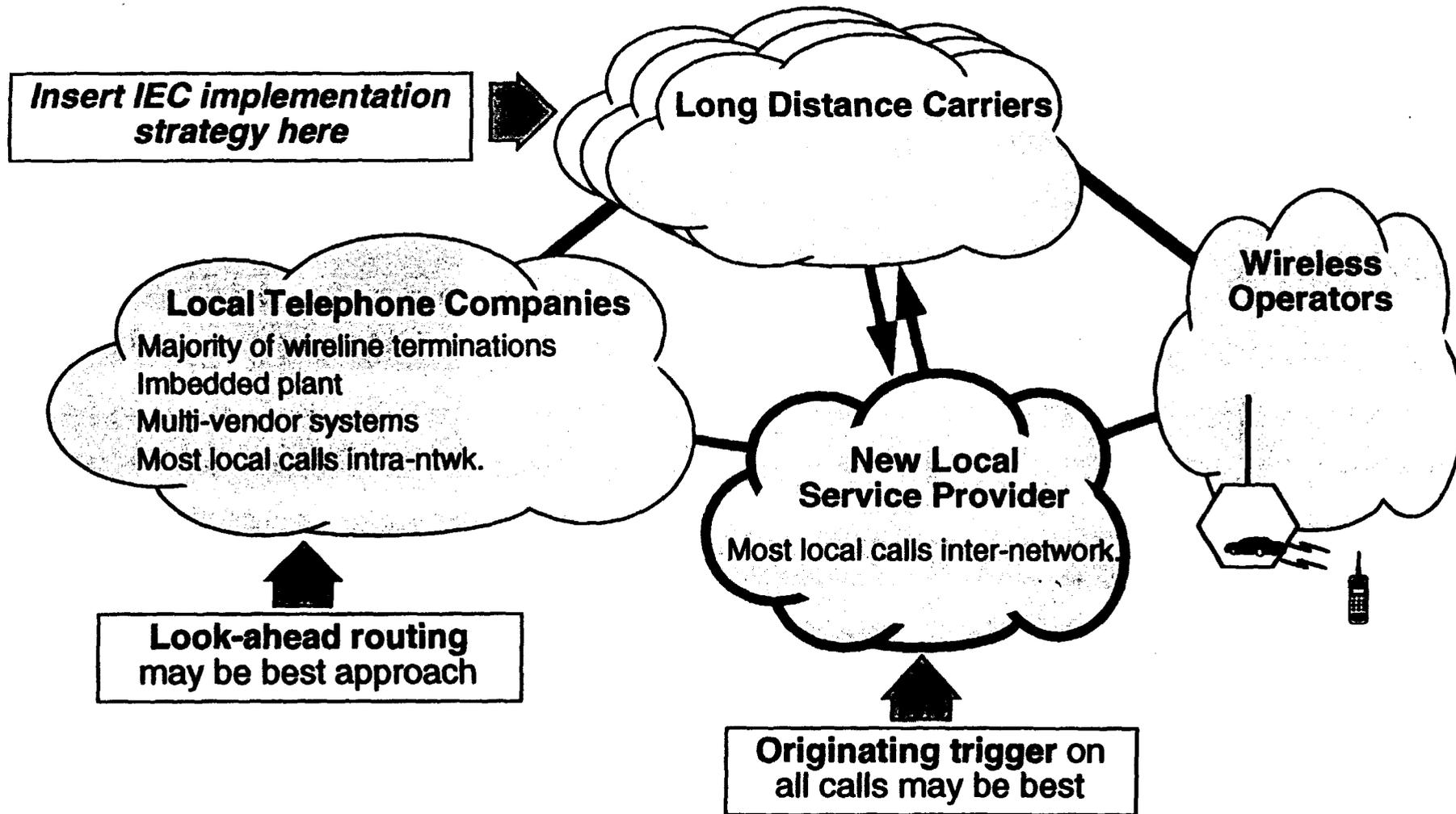
TCAP services (like ring again) likely compatible with LNP

Remote Call Forwarding or Terminating End Office Query



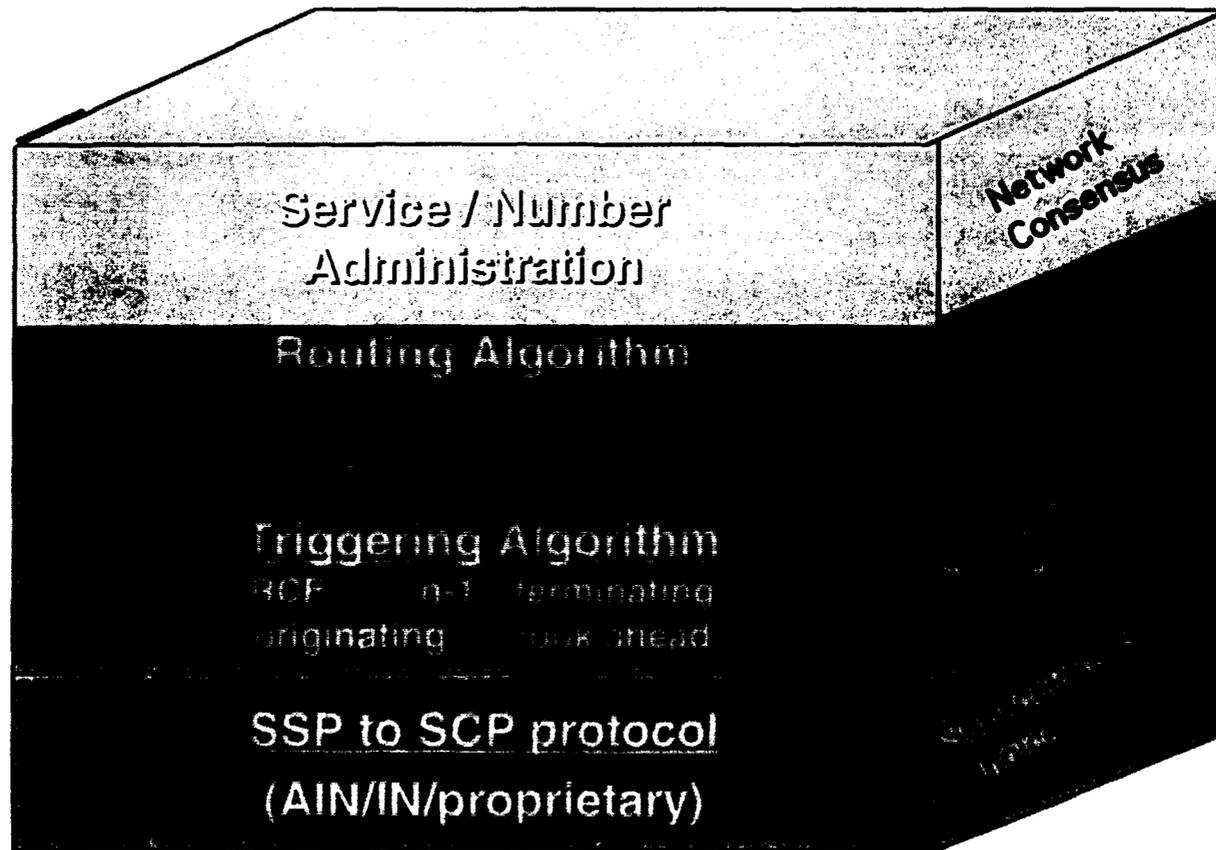
TCAP services (like ring again) likely incompatible with LNP

Different providers adopt different solutions



Service Provider Decisions vs. Industry Decisions

Focus of this
Presentation



- Need “win-win” to get consensus and expedite deployment
- Different answer to trade-off for different problem components

Triggering Technology

	Architecture Type	How Often are DB Dips?	Trunking Efficiency
Possible Trigger Points			
• Remote Call Forwarding	nodal	n/a	Inefficient
• Originating	ntwk (DB query)	All calls	Best
• Terminating	ntwk (DB query)	Ported calls only	Inefficient
• Look-Ahead	ntwk (DB query)	Ported calls only	Best

Summary of Routing Methods

<u>Criteria</u>	<i>mc1/METRO</i> <u>CPC</u>	<i>AT&T</i> <u>LRN</u>	<i>STRATUS</i> <u>ELI</u>	<u>NORTEL</u>
Existing ISUP	Yes	No	No	Yes
Service Provider Portability	Yes	Yes	Yes	Yes
Location Portability	Limited	Yes	Yes	Yes
CLID Delivery	Yes	Yes	Yes	Yes
MF Support	Yes	Limited	Yes	Yes
Auto Recall	Yes*	Yes	Yes	Limited**
Auto Callback (BY)	Yes*	Yes	Yes	Limited**

* 10-digit GTT

** Blocked per spec

Outline

NIC/MER
• ~~Siemens~~ - Carrier Portability Code (CPC)

- AT&T - Location Routing Number (LRN)
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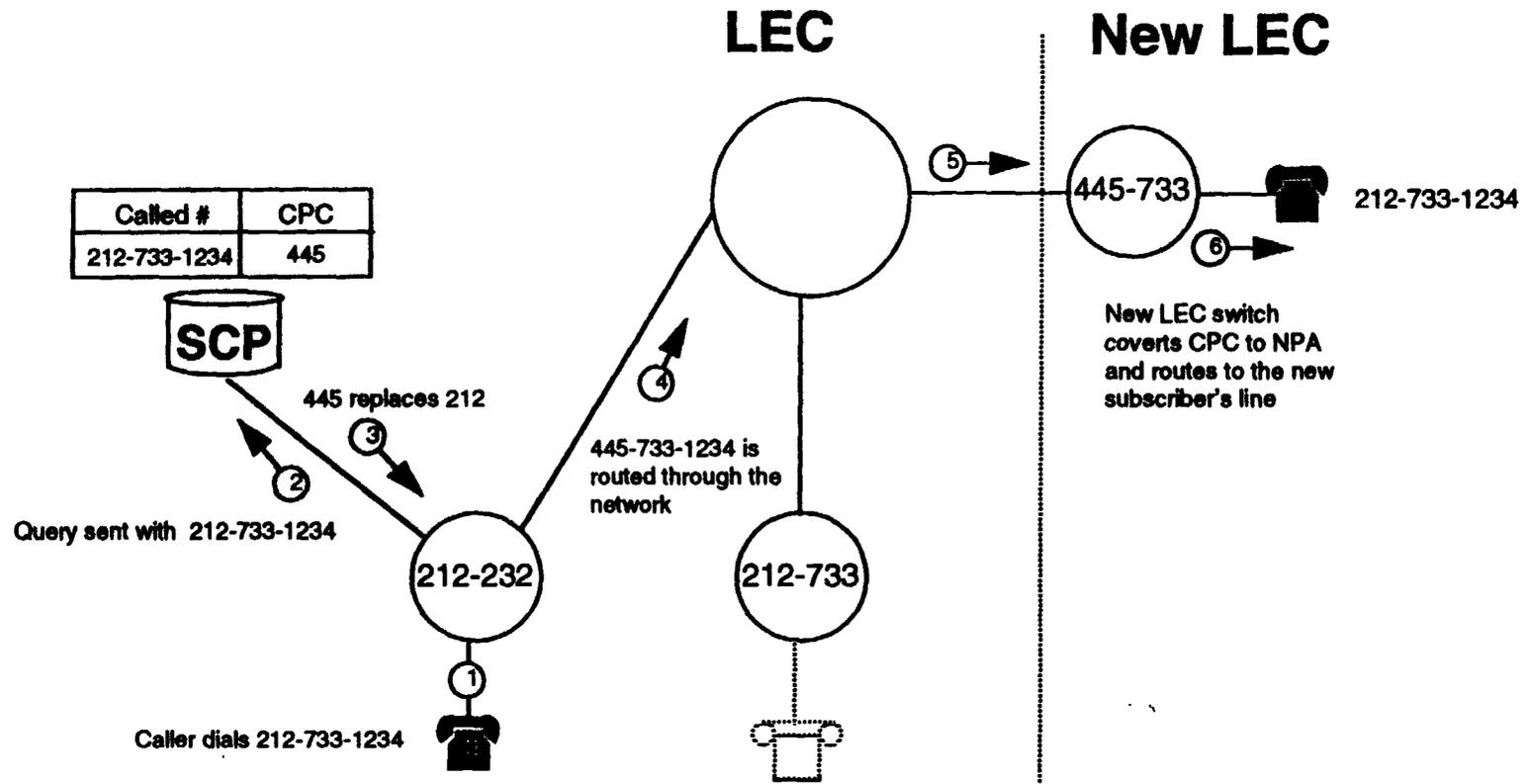
Addressing Mechanism - CPC



- **The CPC is**
 - a 3-digit Local Exchange Carrier (LEC) identifier
 - unique within querying LATA
 - unused NPA or SAC
 - replaces NPA in ten digit number returned from LNP DB
 - per new entrant, per NPA
- **LEC's CPC = current NPA**

**For routing purpose, the network sees the new LEC
as another NPA**

CPC Example Call



Location Portability with CPC

- **Location portability is not possible without modifying CPC model**
 - **CPC model does not scale**
 - ◆ number of new entrants
 - ◆ number of NPAs
 - ◆ Each New Entrant Switch needs a unique CPC for each NPA served
 - ◆ Example: A 20% LNP penetration rate in Los Angeles will require 480+ CPCs by 2005
 - **Further and rapid exhaust of NPAs**

*CPC model - Summary***PROS**

- **Supports Intra-LATA Service Provider Portability**
- **Supports MF trunks**
- **No ISUP Changes Needed**

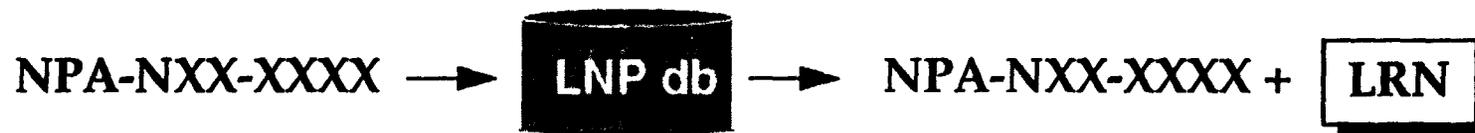
CONS

- **Limited support for Location Portability**
 - **CLASS support requires 10 digit GTT (impact on STP)**
 - **Additional load to LNP DB, Signaling network**
 - **Additional NPA-NXX translations in new LEC switches**
-

Outline

- ^{MC1/METRO}~~Siemens~~ - Carrier Portability Code (CPC)
- **AT&T - Location Routing Number (LRN)**
- **ELI/Stratus Name & Address**
- **NORTEL's Name & Address**

Location Routing Number (LRN)



- **Location Routing Number (LRN):**
 - **Uniquely identifies a single end office (in North America)**
 - **Simplifies routing in Access Tandem and Carrier Tandems**
 - **Impact on terminating offices (carrier, winbacks)**
- **AT&T proposes format NPA-NXX for the LRN**
 - **Assign existing NPA-NXX as LRN for incumbent switches**
 - **Assign unused NPA-NXX to new switches**
 - **Sixteen digits needed to route: Dialed number + LRN**

LRN proposal not clear on triggering mechanism