

CCI ENUM LLC TAC


TITLE: LIDB Overview

DATE: December 5, 2005


SOURCE:
Hala Mowafy - Telcordia
on behalf of The National LIDB Product Team
hmowafy@telcordia.com

ABSTRACT: This contribution provides information to the LLC on the available methods for accessing LIDB and the range of data stored in that database for the purpose of validating ENUM registrants.

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Outline

- **What's a LIDB?**
- **LIDB Data Organization**
- **LIDB Query Types and Capabilities**
- **LIDB Data Screening**
- **LIDB Architecture**
- **LIDB Query Routing**
- **Role of Hub Providers**




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What is a LIDB?

- **Call related databases, each containing a unique subset of all working telephone numbers**
 - If a telephone number is stored in one LIDB, it is not stored in another LIDB
 - LIDBs are geographically independent
- **LIDB data is accessed during real-time call processing or for post-call, back-office operations**
- **External LIDB interfaces conform to generic requirements; i.e., open interfaces, not proprietary**
- **Information associated with the line record belongs to and is provided by the Account Owner (AO): the entity providing dial-tone to the end user**
 - Accuracy of the data is the responsibility of the AO




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Why do AOs Store Lines in a LIDB?

- **Allows AOs who don't have a LIDB to offer the same services as the Incumbents, i.e., Alternate Billing Services (ABS), Branding, CNAM, etc.**
- **Provides a source of revenue for the AO through a practice called "revenue sharing"**
 - Amount of sharing varies by LIDB owner




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LIDB Data Storage

- **Almost all working telephone numbers are stored in LIDB**
 - Approximately 75% of all wireless numbers are stored in LIDB
 - Some, if not a majority, of VoIP numbers are stored in LIDB with the same type of data elements as PSTN numbers
 - VoIP-specific data is still under investigation
- **Each facilities-based service provider has the freedom of LIDB choices**
 - No geographic limitations




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LIDB Strengths

- **Volume of stored data**
- **Quality and Reliability of the data**
- **Real-time transactions offer timely responses to help a registrar or billing entity make decisions quickly, based on the most up-to-date information to avoid fraud**
- **LIDB query processing time < 500 ms**




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Key Players in the Industry

- US LIDB Owners
 - **Regulated LIDB Providers**
 - File tariffs for certain services
 - Impacted by FCC/PUC regulations
 - Own source of working lines
 - Verizon (3) [NYNEX, Bell Atlantic, and GTE]
 - BellSouth (1)
 - Qwest (1)
 - Hawaii Tel (1)
 - **Non-Exchange LIDB Providers**
 - Regulated by “default” ; source of data is regulated
 - More pricing flexibility
 - Don’t compete with CLECs
 - SNETDG (1)
 - VeriSign (1)
 - AccuData Technologies (1)




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LIDB Data

- **Examples of line record data**
 - AO, Revenue Accounting Office (RAO), and Billing Service Provider (BSP)
 - Generic Name and Generic Name Privacy Indicator
 - Service or Equipment Indicator (Res/Biz/hospital/prison, etc.)
 - Collect and Third Number related information
 - Calling Card related information
 - PIN
 - Billing Name and Address (BNA) information
 - Foreign Language Indicator
 - ZIP Code



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LIDB Query Types and Capabilities

LIDB Evolution:

- ABS – Supports Calling Card, Bill-to-Third, Collect Calls
- CNAM – Stores and retrieves the name of the calling party
- OLNS – Returns information about originating lines
- GetData – Allows for flexible data retrieval

mid 1980's late 1980's early 1990's mid 1990's late 1990's

(cont'd on next slide)

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LIDB Query Types and Capabilities

LIDB Evolution (cont'd):


- Data Screening – Enforces proper access to data
- IS-41 CNAP – Supports Wireless Calling Name
- LDAP Search – Supports Search requests over TCP/IP

late 1990's early 2000's

(cont'd from previous slide)


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LIDB Query Types and Capabilities

- **LIDB query types that were designed to support specific services**
 - CC and BNS (SS7)
 - CNAM and IS-41 CNAP (SS7)
 - OLNS: Originating Line Number Screening (SS7)
- **LIDB query types that were designed for the retrieval of almost any line-level data**
 - GetData (SS7)
 - LDAP Search (TCP/IP)
- **GetData and LDAP Search are the more suitable query types for the ENUM validation function**




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Query Types for ENUM Validation

- **GetData**
 - Allows QOs to request only the information they need
 - *One or more data element(s) per query*
 - Allows the QOs/Clients to request Standard or Custom Elements
 - *Standard data elements are non-proprietary information published in Generic Requirements*
 - *Custom data elements are proprietary data specific to an AO (typically added for internal use)*




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Query Types for ENUM Validation

- **LDAP Search**
 - Allows TCP/IP network access to LIDB data using the LDAP protocol
 - Can be used to retrieve almost any data associated with a 10-digit line number
 - *For example, it can be used to retrieve the name associated with the line number*
 - Only authorized LDAP Clients can access LIDB
 - *Digital Certificates are used for client authentication*
 - *Data Screening is applied to enforce security of the data*




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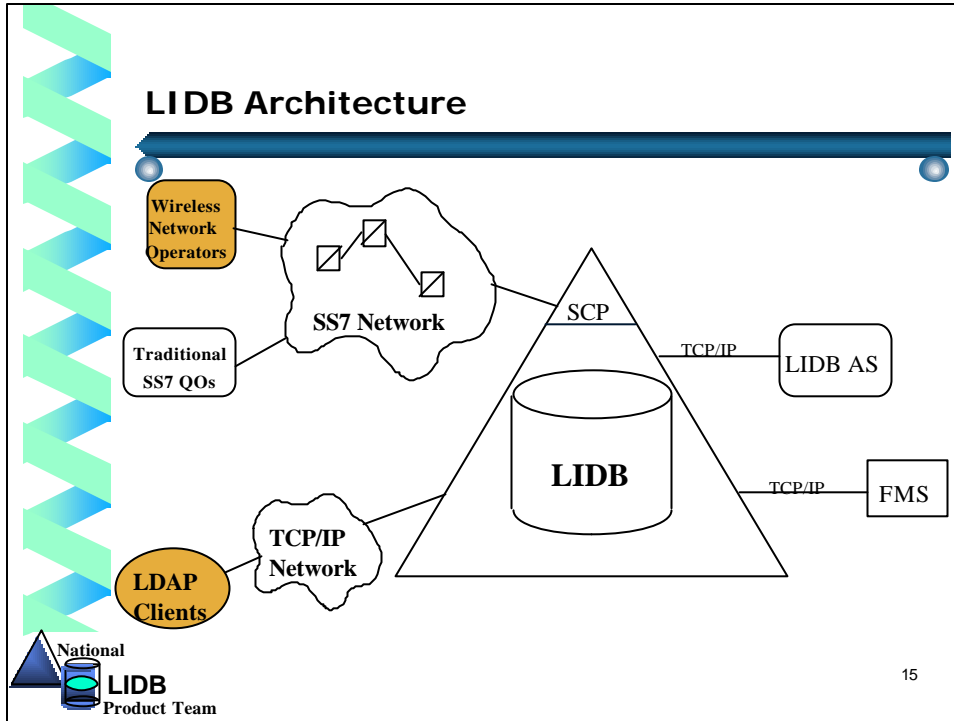
LIDB Data Screening

What does it offer?


- **Security**
 - LIDB providers need the ability to deny unauthorized access to their platforms
 - AOs need the ability to deny unauthorized use of their customers' information
 - Security restrictions apply to all query types
- **Data Screening processing follows successful authentication of the QO/Client**



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- ### LIDB Architecture QOs
- Entities that use information retrieved from LIDB to perform services
 - Examples of QOs include:
 - End Office and Operator Services switches
 - Intelligent Network (IN) Services Control Point (SCP)
 - Hub Providers
 - IP Client supporting LDAP
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LIDB Architecture *LIDB Administrative System*

- Provides initial load of LIDB data
- Provides ongoing updates of customer information
- Audits LIDB data




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LIDB Query Routing


- Each LIDB has a unique subset of the working telephone numbers in the country
- GTT is used for the queries to find their way to the correct LIDB in SS7 networks
- GTT tables for LIDB queries are updated through industry routing resources, such as LARG and CNARG
 - NPAC data is used in the case of LNP



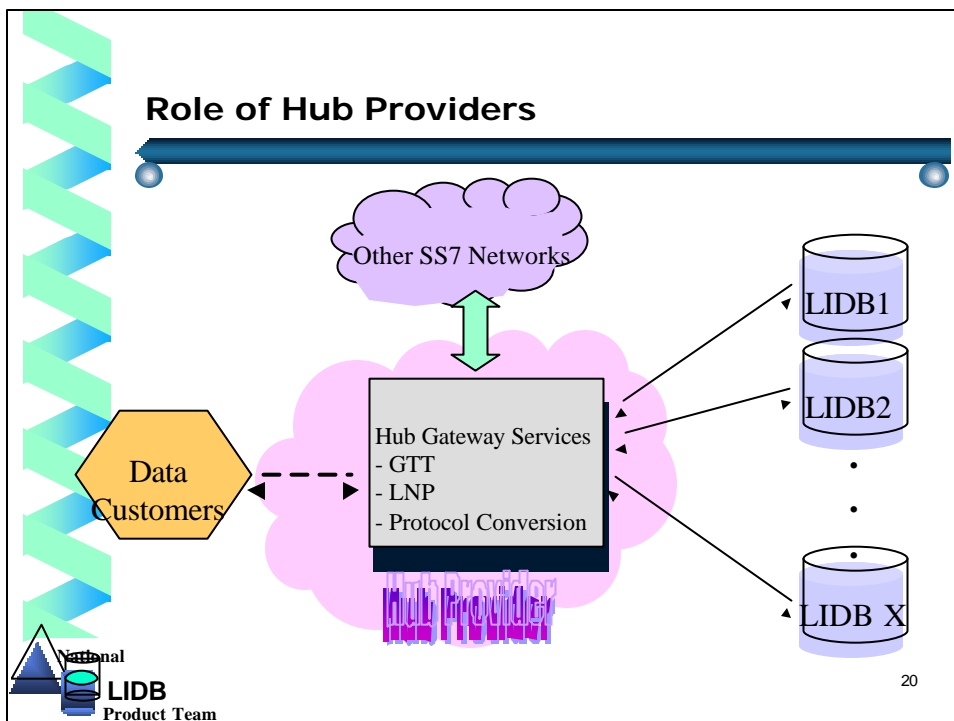
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Role of Hub Providers

- Hub providers offer access to LIDB databases from a **single connection**, rather than requiring a connection to each database
- Hub providers can perform routing on LIDB queries (e.g., using GTT)
 - Taking LNP into account
- Hub providers offer **Protocol Conversion** services in order to accommodate customers who are not SS7 capable
 - Take in non-SS7 type of file format or protocol (e.g., X.25 or IP-based such as SIP, LDAP), convert it to an SS7 LIDB query type, and perform the transaction as usual




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Key Points

- LIDB contains data on landline, wireless and VoIP numbers that can be used for various communication services
- LIDB supports a number of query types which enable both SS7 and TCP/IP network access to its data
- Hub providers can add routing flexibility and Protocol Conversion functions for accessing individual LIDB databases
- LIDB Security enables AOs to control access to their data




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Acronyms

- ABS: Alternate Billing Services
- AO: Account Owner
- BNA: Billing Name and Address
- CNARG: CNAM Access Routing Guide
- FMS: Fraud Monitoring System
- GTT: Global Title Translation
- LARG: LIDB Access Routing Guide
- LIDB: Line Information Database
- LIDB AS: LIDB Administrative System
- LNP: Local Number Portability
- NPAC: Number Portability Administration Center
- QO: Query Originator



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