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BELLSOUTH ®

BellSouth E911 Real-Time Data Interfaces for Wireless & Commercial Mobile Radio Service (CMRS) Interconnection

Technical
Reference

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BELLSOUTH E911 REAL−TIME DATA INTERFACES FOR WIRELESS AND COMMERCIAL MOBILE RADIO SERVICE (CMRS) INTERCONNECTION

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BELLSOUTH E911 REAL−TIME DATA INTERFACES FOR WIRELESS AND COMMERCIAL MOBILE RADIO SERVICE (CMRS) INTERCONNECTION

1.   **Introduction**

This document addresses system level operation of real-time data interfaces supported by BellSouth in support of FCC 94-102 Phase 1 Wireless/CMRS E911. These interfaces will allow real-time update of the BellSouth Automatic Location Identification (ALI) database to populate the wireless subscriber's call back number, and in some cases location information, in an existing database record provided by the Wireless Carrier. BellSouth's ALI system will transmit the ALI data, including the call back number and location information, to the Public Safety Answering Point (PSAP) in response to the query or bid from the PSAP. This interface applies to BellSouth's full feature E911 ALI service and not to premise based ALI systems.

The wireless subscriber's call back number is important to the PSAP in case the 911 call is disconnected and the PSAP must contact the caller. This call back number may also be known as the Mobile Directory Number (MDN) or the Wireless Subscriber Automatic Number Identification (WS-ANI).

BellSouth has contracted with SCC Communications Corp. in Boulder, Colorado to manage the BellSouth E911 database and ALI services. Wireless Carriers wishing to establish an interface with the BellSouth E911 system will be interfacing with SCC ALI computers located within the BellSouth data centers.

BellSouth currently supports Phase 1 Wireless solutions utilizing interfaces offered by different vendors. Detailed application level protocol information for each of the BellSouth supported wireless data interfaces is available directly from each of the respective manufacturers and is not included in this document. Wireless Carriers must ensure their wireless data interface is compatible with the manufacturer's specification as well as the SCC Communications Corp. interfaces supported by BellSouth.

The BellSouth E911 Real-Time Data Interfaces for Wireless/CMRS Connection utilizes an out-of-band data connection between the switching network and the ALI database. This method allows for Phase 1 compliance without impacting PSAP equipment or trunking between the E911 tandem switches and the PSAP.

2.   **Overview of BellSouth ALI**

BellSouth provides fault-tolerant and redundant ALI computers for high availability service to the PSAPs. The BellSouth ALI computers are designed to function as mated pairs for redundancy. Each PSAP served by these ALI computers have a data link to each of the mated pairs. The ALI computers are located in different BellSouth data centers in different states to provide diversity. PSAP bids or requests for ALI are sent over both data links simultaneously. The mated ALI computers contain mirrored databases at each location and alternate responding to the PSAP. In the event a data circuit or ALI computer is unavailable, the system is designed to provide continuous service from the other ALI computer in the paired arrangement.

The E911 database consists of data records provided by various service providers located within the BellSouth E911 service area. Each service provider, including Wireless Carriers, are responsible for providing their data records for the BellSouth E911 database. These records must be present in the BellSouth E911 database for the Real-Time Data Interface to function properly. Wireless Carrier records in the E911 database may contain static cell site sector location information that will assist the PSAP in determining the general location of the 911 caller. These static records do not contain the Mobile Directory Number (MDN) of the caller when initially inserted into the database. The MDN information is populated dynamically in the BellSouth E911 database during 911 call processing. With some interfaces, the location information is also populated dynamically during 911 call processing. Information for providing data for the BellSouth E911 database may be found in the BellSouth E911 Wireless Carrier Guide available from BellSouth Interconnection Services.

The BellSouth E911 Real-Time Data Interfaces for Wireless/CMRS Connection provides a method for populating the ALI database with the Mobile Directory Number (MDN) of the wireless caller, and location information for some interfaces, during 911 call processing. This real-time update is designed to occur prior to the PSAP sending bids to the ALI computers. The Wireless Carrier must have previously populated the BellSouth E911 database with a corresponding static record or the real-time update will fail and the PSAP will receive a "No Record Found" in response to the ALI bid. If the database record is present and the real-time update is successful, the ALI computer will provide the MDN with the ALI response data sent back to the PSAP. The ALI system design requires the real-time update to be transmitted by the source data system simultaneously to each BellSouth ALI computer in the mated pair. Information related to the ALI data sent to the PSAP can be found in BellSouth Technical Reference, TR 73528.

3. **Supported Application Level Interface Protocols**

The BellSouth E911 System and SCC ALI computers support different application level protocols for accepting Phase 1 wireless E911 real-time data updates. Other interfaces not currently supported must be negotiated with BellSouth. Carriers wishing to use one of the supported interfaces must ensure compatibility with the solution provider as well as SCC Communications Corp. The BellSouth supported solutions are listed in this section. Detailed application level specifications for these solutions are available directly from each of the respective manufacturer and is not duplicated in this document.

3.1 **Proctor & Associates Cell-Link Interface**

BellSouth supports asynchronous connectivity only for this interface to the Proctor & Associates Cell-Link Model 45699 Version 1.

3.2 **CML Technologies Inc. SIR-AMI Interface**

BellSouth supports asynchronous connectivity only for this interface. The EP_ANI_MATCH command in this interface is not currently supported. Carriers wishing to use this interface should check with CML for the latest BellSouth interface specifications.

3.3 **SignalSoft Corporation W911-ALI Interface**

BellSouth supports synchronous X.25 based connectivity only for this interface.

3.4 **Nortel E911 Wireless Interface to ALI for DMS-100 E911 Tandem**

BellSouth supports asynchronous connectivity only for this interface.

4. **Physical Connectivity**

The physical demarcation point for real-time ALI updates are data communications ports located on the ALI computers. In all cases the connector on the port is an EIA DB-25 female connector. This connector may be supporting either V.35 or RS-232 electrical interfaces and are always configured as (hardware) DTE devices.

4.1 **EIA Handshaking**

For both RS-232 and V.35 links, the ALI computers require full EIA handshaking. Data sets must be configured for "true" EIA handshaking and lead control versus "forced" for any specific conditions.

4.2 **Asynchronous RS-232 Port Configuration**

ALI computer asynchronous RS-232 ports operate at 9.6 or 19.2 Kbps and can be configured on a per port basis in support of the connected device and/or network. These ports are configured for 8 data bit, 1 stop bit, no parity operation.

4.3 **Asynchronous V.35 Port Configuration**

ALI computer asynchronous V.35 ports operate at 9.6 or 19.2 Kbps and can be configured on a per port basis in support of the connected device and/or network. These ports are configured for 8 data bit, 1 stop bit, no parity operation.

4.4   Synchronous RS-232 Port Configuration

ALI computer synchronous RS-232 ports supporting X.25 operate up to 56 Kbps and require external clock timing. Link level parameters such as software DTE/DCE, packet length, etc. are configured on a link by link basis in cooperation with the dynamic data source system provider.

4.5   Synchronous V.35 Port Configuration

ALI computer synchronous V.35 ports supporting X.25 operate up to 56 Kbps and require external clock timing. Link level parameters such as software DTE/DCE, packet length, etc. are configured on a link by link basis in cooperation with the dynamic data source system provider.

4.6   Interface Consistency

For any single system making real-time updates to a BellSouth ALI system, the physical, electrical, and protocol interface to each of the mated ALI computers must be the same. Mixed modes of connectivity from the same source system is not supported.

4.7   Connection Restrictions

Carriers wishing to interconnect with BellSouth utilizing one of these interfaces must negotiate the desired interface with BellSouth at least sixty days in advance of desired service to ensure proper ALI computer port availability. Asynchronous RS-232 ASCII connections are available on all ALI computers. Support for X.25 connectivity is available on all ALI computers, however support of RS-232 or V.35 may vary by location of ALI computers.

4.8   Facility Characteristics

Access to the ALI computers for real-time updates is provided by private line digital data links to each of the mated ALI computers. Digital data links must be ordered with secondary channel. This feature is necessary in order to deploy end-to-end diagnostic and configuration capability from the master end (BellSouth data center) without disruptive consequences. The characteristics of the equipment used to modulate these links are:

- Sub-rate digital Channel Service Unit/Data Service Unit (CSU/DSU) compatible with Memotec SC56
- 10 bit data character
    - 1 start bit
    - 8 data bits (8th bit ignored)
    - 1 stop bit
- Full duplex
- Continuous Carrier

5.	**Interface Testing**

Wireless Carriers shall conduct joint testing of wireless interfaces to the BellSouth ALI computers. Testing shall be conducted with SCC Communications Corp. utilizing their testing facility in Boulder, Colorado, as well as field testing with the BellSouth production ALI computers within the BellSouth region.

Testing will be required for first applications of new wireless interfaces to the BellSouth ALI computers as well as after modifications or enhancements are made to existing wireless interfaces.

Charges may be incurred by the Wireless Carrier for this testing. Details shall be specified in interface agreements.

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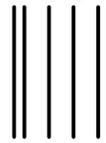
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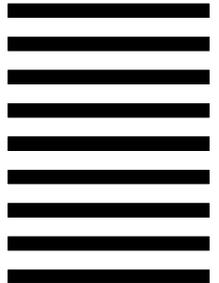   _____