Positron ISDN Overview

ISDN-BRI Delivery of 9-1-1 via
Positron’s Life Line 100 E9-1-1 ANI/ALI Controller

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Introduction

This document provides an overview of the functionality and architecture of a PSAP system using ISDN-BRI delivery of 9-1-1 calls via a Positron Public Safety Systems Life Line 100 E9-1-1 ANI/ALI Controller.

Please note that due to product evolution, enclosed specifications are subject to change. Also, ISDN service is not supported everywhere - please check with your local exchange carrier to find out if the service is available in your area.

ISDN Defined

ISDN (Integrated Services Digital Network) is a communications standard for sending voice and data over telephone lines. ISDN supports data transfer rates of 64 Kbps (64,000 bits per second). There are two forms of ISDN:

- **Basic Rate (BRI) ISDN**: ISDN-BRI provides two 64-Kbps B-channels (bearer) and one D-channel (delta). The D channel is used for transmitting control information.

- **Primary Rate ISDN**: ISDN-PRI provides 23 B-channels and one D-channel in North America (or 30 B-channels and one D-channel in Europe).

Positron’s Life Line 100 supports ISDN-BRI, using one B-channel per ISDN line.

ISDN in a 9-1-1 Environment

The vast majority of 9-1-1 calls delivered today from the Tandem office to the PSAP are delivered over multi-frequency (“MF”) CAMA trunks. CAMA trunks have helped make E9-1-1 an effective and reliable service to the community. In recent years, newer methods of connecting to the E9-1-1 Tandem have become available, one of which is ISDN.

ISDN has been available commercially for many years. ISDN-BRI provides a digital link between the E9-1-1 Tandem office and the PSAP. One channel of the digital link is reserved for voice while another channel is reserved for data communication between the Tandem office and PSAP equipment.

The greatest benefit to your community from ISDN-BRI is faster call setup time. Using traditional E9-1-1 trunks, call setup time can be substantial. With ISDN-BRI, call setup is greatly reduced, typically to under a second. This decrease in call setup time means callers reach your PSAP much faster and you can start your work of responding to the emergency quicker – in 9-1-1, seconds saves lives.
Life Line 100 ISDN Architecture

Call Flow Overview

- ISDN-BRI lines carry E9-1-1 calls from a Lucent 5ESS central office switch to the Positron ISDN Shelf (at the PSAP). Each ISDN-BRI carries one call over a 64 Kbps B-channel, and terminates to an individual Positron ISDN Line Card.

- The Life Line 100 feeds the lines to common telephony backroom equipment. The use of common telephony equipment allows any position to access any line. It also allows more than one position to access a same line (depending on how the telephony equipment is provisioned).

- Administrative lines (7-Digit Emergency, Ringdowns, etc.) are fed directly to the common telephony backroom equipment at the PSAP, and can be accessible as common line appearances.
Telephony Options

There are several approaches to provisioning PSAP Telephony for use with Positron’s ISDN-equipped Life Line 100 controller. These include:

- Power 911 IWS with Positron IAP backroom equipment
- Power 911 IWS with Nortel Networks Norstar
- Power 911 IWS with Nortel Networks Business Communication Manager (BCM)
- Power 911 IWS with Nortel Networks M1
- Power 911 IWS with Avaya Definity / G3
- Simon CTI Console with Positron IAP backroom equipment
- Simon CTI Console with Nortel Networks Norstar
- Simon CTI Console with Nortel Networks Business Communication Manager (BCM)

Regardless of which telephony option is chosen, ALI retrieval is the same:

The ANI for a 9-1-1 call is delivered over the ISDN-BRI Line’s D-channel, and used immediately by the Life Line 100 ANI/ALI controller to query a remote ALI Database pair over redundant links – the Life Line 100 will use whichever ALI comes back first.

When a calltaker answers the call, the Life Line 100 controller immediately sends the associated ALI to the calltaker’s position. Since the Life Line 100 performs ALI lookup as soon as ANI is decoded (i.e. does not wait for a calltaker to answer), and holds it in a buffer until needed, ALI will often be immediately available to the calltaker upon call pickup.

Getting More Information

To find out more about how Positron’s ISDN-enabled solutions can give you the Power to Respond, please contact:

- your Regional Sales Manager (www.positron911.com/corporate/contact)
- email info@positron911.com
- call 800-443-3313