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Notes on the Networks

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Telcordia Notes on the Networks

SR-2275 replaces SR-2275, *Bellcore Notes on the Networks*, Issue 3, December 1997.

Related documents:

> SR-NOTES-SERIES-01, *Telcordia Notes on the Synchronous Optical Network (SONET)*
> SR-NOTES-SERIES-02, *Telcordia Notes on Dense Wavelength-Division Multiplexing (DWDM) and Optical Networking*
> SR-NOTES-SERIES-03, *Telcordia Notes on Number Portability and Number Pooling*
> SR-NOTES-SERIES-04, *Telcordia Notes on the Evolution of Enhanced Emergency Services.*

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prevents repetitive call attempts to reach distant busy lines, reducing inefficient use of circuits.

- TCAP supports cellular switching functions such as automated user registration.

- There is an ability to protect the transfer of TCAP information against a variety of security threats, as needed.

14.2.2.5   Operations, Maintenance, and Administration Part (OMAP)

OMAP is the layer of the SS7 protocol that is specified for managing the CCS network by using SS7 to transport operation and maintenance information between SPs. Architecturally, OMAP lies above TCAP in the SS7 protocol stack and uses the remote operations service of TCAP to communicate between OMAP applications. OMAP functions include network monitoring, routing updates, signaling network management, automatic call gapping, and consolidation of Operations, Administration, and Maintenance (OA&M) information. OMAP currently performs these functions through the following procedures:

- MTP Routing Verification Test (MRVT) — verifies MTP routing data for a Destination Point Code (DPC).

- SCCP Routing Verification Test (SRVT) — verifies SCCP routing data for a global title address.

- Link Equipment Failure (LEF) — notifies an SP of a signaling terminal or interface equipment failure at the far end of a signaling link.

- Link Fault Sectionalization (LFS) — identifies the failed component on a signaling link.

- Circuit Validation Test (CVT) — ensures that two exchanges have sufficient and consistent translation data for placing a call on a specific circuit of an interexchange circuit group.

More details on the SS7 protocol can be found in Section 6 of this document and in GR-246-CORE.

14.2.3   CCS Call Setup

This section describes an example of basic intraLATA Plain Old Telephone Service (POTS) call setup using CCS and gives additional information on interLATA and ISDN calls.

The ISDNUP portion of the SS7 protocol is used to support call setup. The Initial Address Message (IAM) is a mandatory message sent in the forward direction to initiate seizure of an outgoing circuit and to transmit address and other information relating to the routing and handling of a call. The Address Complete Message (ACM) is a message sent in the backward direction indicating that all the address signals

required for routing the call to the called party have been received. The Answer Message (ANM) is a message sent in the backward direction indicating that the call has been answered. The Release Message (REL) is a message sent in either direction indicating that the circuit identified in the message is being released due to the reason (cause) supplied and is ready to be put in the idle state on receipt of the Release Complete Message (RLC). The RLC is a message sent in either direction in response to the receipt of an REL.

The following describes how these messages are used for setup of an intraLATA interoffice call. This call scenario is for an intraLATA call switched through an Access Tandem (AT) where a Continuity Check Message (COT) is required. Refer to Figure 14-4 for a diagram of the scenario.

When the customer dials an intraLATA interoffice call, the originating office sends an IAM over the SS7 signaling link to the AT via the STP pair. The AT then sends an IAM to the terminating office indicating the circuit to be used for the call between the AT and the terminating office. When the terminating office receives the IAM and the COT, it sends an ACM to the AT and applies power ringing to the called party's line. When the AT receives the ACM, it sends an ACM to the originating end office. When the called party goes off-hook, an ANM is sent from the terminating end office to the AT. When the AT receives the ANM, it sends an ANM to the originating end office. After the calling and called party finish their conversation, one party will go on-hook. If the calling party goes on-hook, the originating end office sends an REL to the AT. When the access tandem receives the REL, it sends an RLC to the originating office, and sends an REL to the terminating office. When the terminating office receives the REL, it sends an RLC to the AT.

CCS-based POTS call setup to ICs uses the same switch-to-switch message flow as described above for an intraLATA call. For calls routed to ICs, however, additional optional parameters may be included in the IAM depending on which IC has been selected. Examples of these additional optional parameters include Charge Number (containing Automatic Number Identification [ANI]), Carrier Identification Parameter (containing the 3- or 4-digit Carrier Identification Code [CIC] for the call), and Calling Party Number (CPN).
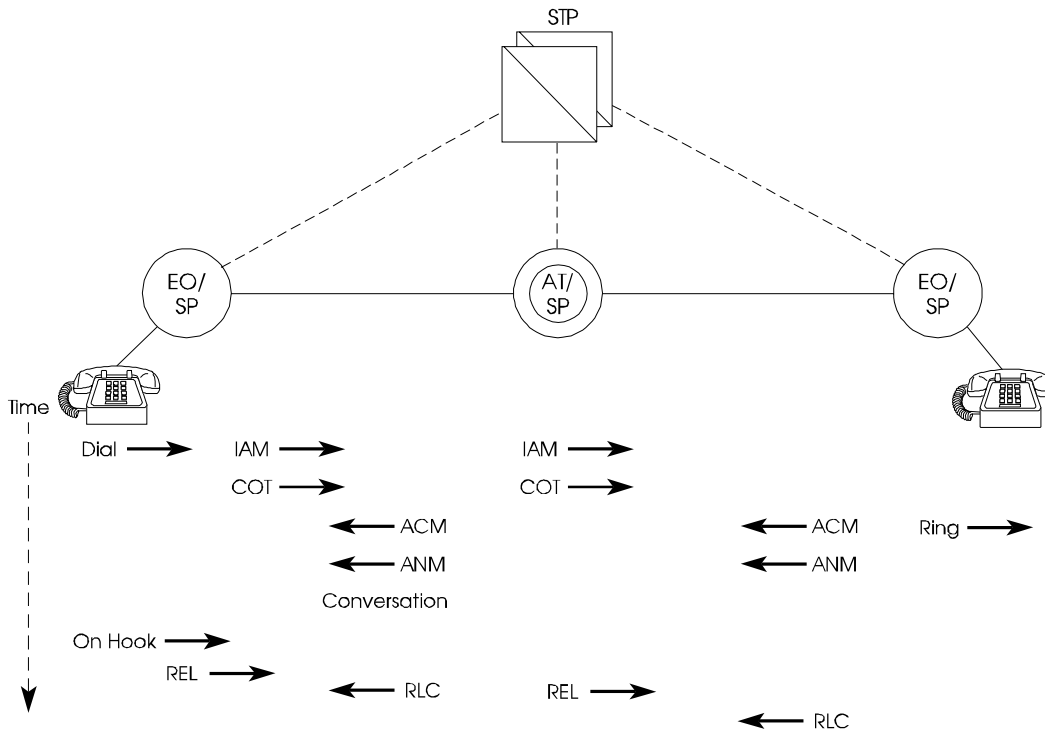
Legend:

ACM	=	Address Complete Message
ANM	=	Answer Message
AT	=	Access Tandem
COT	=	Continuity Check Message
EO	=	End Office
IAM	=	Initial Address Message
REL	=	Release Message
RLC	=	Release Complete Message
SP	=	Signaling Point
STP	=	Signaling Transfer Point

Figure 14-4. CCS IntraLATA Call Setup

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