Province-Wide Enhanced 9-1-1 Service

ATID-0005

December 1997

Network-to-Network Interfaces
Between Competitive Local Exchange
Carriers (CLECs) and the MT&T Network

TABLE OF CONTENTS

DOCUMENT HISTORY

---

1 December 1997 Initial issue

Renamed as Aliant Telecom Inc. Interface Document ATID-0005 from Stentor ID-0037

DISCLAIMER

Aliant Telecom Inc. reserves the right to modify the interface described in this document for any reason including, but not limited to, ensuring that it conforms with standards promulgated by various agencies from time to time, utilization of advances in the state of the technical arts, or the reflection of changes in the design of any equipment, techniques or procedures described or referred to herein.

ALIANT TELECOM INC. SHALL NOT BE LIABLE FOR ANY DAMAGES OR INJURIES INCURRED BY ANY LEGAL PERSON OR PERSONS, INCLUDING BUT NOT LIMITED TO CORPORATIONS, ARISING DIRECTLY OR INDIRECTLY FROM ANY INCOMPATIBILITY WITH THE NETWORK, OR ANY CAUSE WHATSOEVER.

Readers are specially advised that the technical requirements contained herein may change.

If further information is required, please contact:

Telephony Standards
Suite 640
160 Elgin Street
Ottawa, Ontario
K1G 3J4

In Canada:	1-877-77-TELCO (83526)
Worldwide:	613-781-7393
Fax:	613-781-1658
E-mail:	disclosure@aliant.cdn-telco.com
Web-site:	aliant.cdn-telco.com

1.0 Introduction

1.1 PURPOSE

This document describes the interfaces between Competitive Local Exchange Carriers (CLECs) and the MT&T Network for the purpose of providing **Province-wide enhanced E9-1-1 Service**. These interfaces allow 9-1-1 calls originating from CLEC customers to be passed through the MT&T network to the appropriate 9-1-1 service bureau. These interfaces also allow the CLECs to update MT&T's E9-1-1 Management System with the pertinent calling number and location information of their customers.

The Terminal-to-Network interfaces between MT&T's network and a 9-1-1 Service Bureau are outside of the scope of this document.

Operational issues that deal with interconnection between CLECs and MT&T are also outside of the scope of this document. Those issues are dealt with in MT&T's Implementation Support documentation and in special agreements with a particular CLEC.

1.2 GENERAL

The MT&T E9-1-1 service provides the transport of all 9-1-1 calls between callers' locations and the appropriate Public Safety Answer Point (PSAP), and between the PSAP and the appropriate Emergency Response Agencies (ERA), Fire, Police and Ambulance. The municipalities and the various agencies are responsible for answering and responding to the emergency calls.

1. When a CLEC end customer dials 9-1-1, the call will be switched and transported to MT&T receiving Rockwell SCX Selective Router (E9-1-1 tandem switch). The 9-1-1 call is then routed from the MT&T E9-1-1 tandem to the appropriate PSAP.

2. Interconnection facilities and functions include the following:

    a) Appropriate dedicated and diversified (where available) trunk-side connections between the CLEC's end office switch and MT&T's receiving E9-1-1 tandem switch;

    b) Multi-Frequency signaling (MF) on 9-1-1 trunks to enable the operation of call control features; and,

    c) An appropriate data transfer facility to enable data transfer of customer information between the CLEC's order entry system and the MT&T E9-1-1 Management System.

2.0 Service Description

The following is a brief description of the activities performed by the E9-1-1 Service network:

MT&T E9-1-1 Management System collects daily data from the MT&T service order system to create and maintain the E9-1-1 centralized database. The Master Street Address Guide (MSAG) is a database which contains all address ranges in a given municipality, and is maintained by the Local Emergency Administration and input to the E9-1-1 Management System.

The respective Zones of the police, fire and ambulance services are sectionalized on maps by the Local Emergency Administration and inputted to the MT&T E9-1-1 Management System to categorize the addresses into emergency services zones. A Selective Routing database is established in the E9-1-1 tandem switch based on those boundaries.

When a subscriber dials 9-1-1, the call is answered at a primary PSAP. As the call comes in, the caller's address and phone number will automatically be displayed on the call taker's screen, if available. The call taker will determine what public service is required (police, fire or ambulance, etc.) and transfer the call to the dispatch point for the required agency by following the established procedures. The call will be routed by the Selective Transfer software in the tandem switch, to the appropriate agency, based on the caller's location.

2.1 Network Overview

The following diagram depicts MT&T E9-1-1 service arrangements with the various network components:

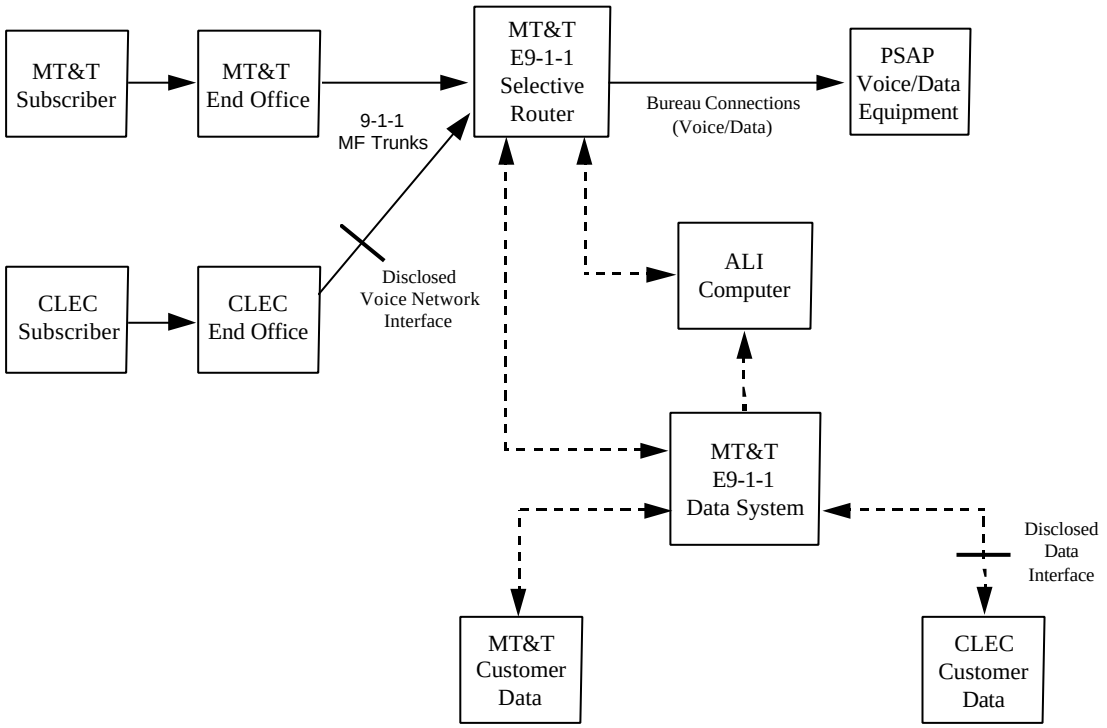


Figure 1

Trunk-Side Interconnection to MT&T E9-1-1 Network

3.0 Voice Network Interface

This section provides the interface requirements for interconnection with the MT&T E9-1-1 service voice network.

3.1 PHYSICAL TRUNK INTERFACE

The primary function of the trunks which connect an end office the E9-1-1 tandem switch is to provide the signaling capabilities for the service. These signaling capabilities can be grouped into two main areas:

- E9-1-1 protocols between the end office and the E9-1-1 tandem for call set-up, and
- E9-1-1 feature set support.

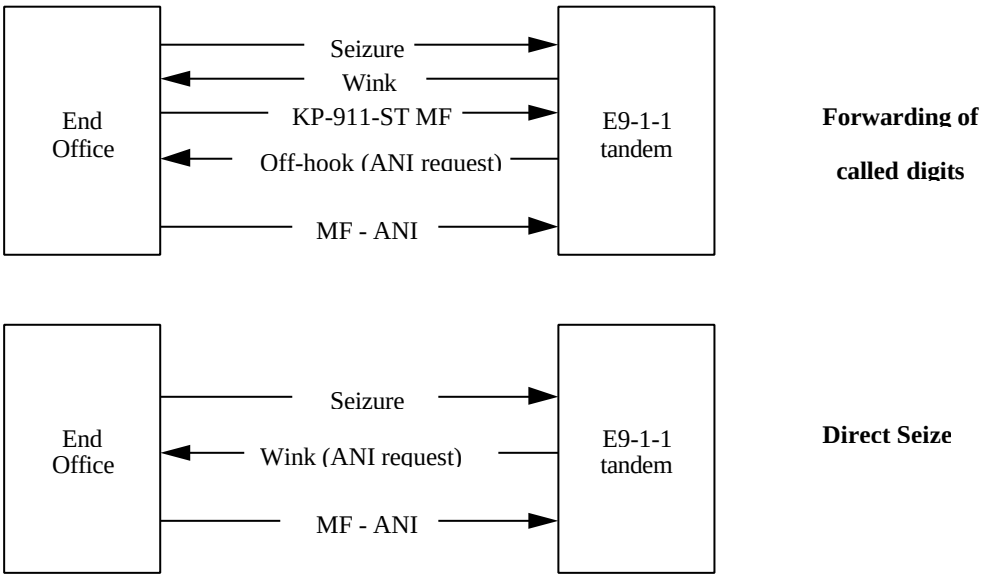
Any wink-start trunk, which is outgoing from the CLEC's end-office, conforming to "Feature Group C" signaling and capable of spilling ANI, can be used to interface with an incoming E9-1-1 trunk at the tandem switch.

The ANI information is always received as MF signals, and uses the Bellcore Standard Format with a single information digit.

The trunks that are required to interconnect a CLEC end-office to MT&T's tandem switch are available per Stentor's National Services Tariff CRTC 7400, Item 635 as filed on July 30, 1997.

3.2 SIGNALING REQUIREMENTS

9-1-1 Signalling Protocol



Dedicated 9-1-1 trunk
- MF-ANI
- "Wink" start
- Feature Group C (FG-C)

3.3 E9-1-1 FEATURE SUPPORT SIGNALING

The E9-1-1 tandem switch uses specific signaling on the E9-1-1 trunk to the end office, in support of the features developed for Province-wide Emergency Service 9-1-1.

E9-1-1 Tandem Signaling

E9-1-1 Tandem Signaling	Description
Bureau Forced Disconnect	Should the originator fail to return the phone to the "on-hook" state, this allows the PSAP call-taker to force the disconnection of a 9-1-1 call. When the PSAP call-taker goes "on-hook", the E9-1-1 tandem switch sends a disconnect signal to the end office, and times for a corresponding disconnect signal from that office in accordance with standard trunk parameters.
Call Hold (Called Party Control)	This feature gives the PSAP call-taker sole control over the disconnection of a 9-1-1 call. The E9-1-1 tandem requires an "on-hook" signal from the PSAP to initiate disconnection of the call. If the caller goes "on-hook", then "off-hook", and the PSAP call-taker has remained "off-hook", the call should remain connected. The end office cannot release the caller. The end office must indicate to the E9-1-1 tandem switch that the caller has gone "on-hook", and await a disconnect signal from the E9-1-1 tandem switch before dropping the call. The E9-1-1 tandem switch will provide the disconnect signal when the PSAP call-taker goes "on-hook", or when the E9-1-1 tandem's PSAP-disconnect timer expires, whichever is sooner.

4.0 Data Network Interface

4.1 GENERAL

This interface is intended to transport the CLEC customers' identification and service location information for the purpose of updating the MT&T E9-1-1 Management System.

4.2 DATA COMMUNICATION WITH THE E9-1-1 MANAGEMENT SYSTEM

4.2.1 Access Arrangement

To transfer files to the MT&T E9-1-1 Management System, the following access arrangement and software are required:

- access to the Internet, either direct or via an internet access provider (ISP);
- an e-mail address;
- an e-mail application supporting Multipurpose Internet Mail Extension (MIME) encoding;
- a subscription to **OnWatch** ä **Service**; and
- an **Entrust/Client** ä software application allowing digital signatures and file encryption and compression (included in **OnWatch** ä **Service**).

NOTE: **OnWatch** ä **Service** *and* **Entrust/Client** ä *are required to maintain security and to protect confidential customer record information during transit over the Internet. The encryption and digital signature provide data confidentiality, data access control, data integrity, data origin authentication, and non-repudiation.*

4.2.2 Communications Process

Customer Record files from the CLEC to the E9-1-1 Management System as well as Error Return files from E9-1-1 Management System to the CLEC are sent as attachments to e-mail messages, using MIME encoding.

Each e-mail message shall contain one, and only one, file.

The file name of the attached Customer Record File shall be constructed according to Section 5.1.

Each file attachment shall be digitally signed, encrypted, and compressed using the **Entrust/Client** ä before being attached to the e-mail message.

5.0 Customer Record Information Files and Records

This section defines the CLEC end customers' identification and service location information to be transmitted by the CLEC to the MT&T E9-1-1 Management System.

MT&T will process the transaction records in the order that they are received within a Customer Record file.

No acknowledgment will be generated on completion of the processed file. If errors are encountered during processing, the record(s) that contain(s) the error(s) will be flagged and the complete file will be returned to the CLEC for corrective action. Further information on error handling is contained in Section 6.0.

5.1 FILE NAMING CONVENTION

The Customer Record Information files must be named according to the file naming convention described below.

The filename shall be 8 characters long with a three character file extension in the following format:

CO99999T.EXT

where:

"***CO***"	is the CLEC Code (uniquely assigned to each Local Exchange Carrier by MT&T).
"***99999***"	is the File Sequence Number (FSN). It is right justified and zero filled.
"T"	is the file type. The only valid value for incoming CLEC files is "I" (Incoming file).
".EXT"	is the file extension. The file extension for word processing files is ".doc"

The **CLEC Code** is provided by the E9-1-1 Service Address Maintenance Group, and is used to determine and validate the origin of the file.

The **File Sequence Number** (FSN) is used to determine if files have been lost in transit. It starts at "00001" (first file transferred) and must be incremented by 1 for each subsequent file transfer. When "99999" is reached, the File Sequence Number must be reset to "00001".

5.2 FILE FORMAT

The file format shall be in the form of a word processing file (MS Word 6.0 or later) containing a Header Record, and followed by one or more Transaction Records. Files that do not conform to this format will be rejected.

5.3 TRANSACTION TYPES

MT&T E9-1-1 Manual Input Process is designed to accept four transaction types: "Add" , "Change", "Delete", and "Error Correction".

a. Add: New telephone number and associated customer record information to be entered.
b. Change: Change of existing customer record for a given telephone number affecting the subscriber's identification (name) or service location information (service address, etc.).
c. Delete: Existing telephone number and associated customer record information to be deleted.
d. Error Correction: Corrected transaction record being returned from CLEC.

Regardless of the type of transaction record , all mandatory data fields must be filled with the appropriate information.

The telephone number and the CLEC Code of a "Change" record must match those of the existing record to be changed.

All data fields in a "Delete" record must match the corresponding data of the existing record to be deleted.

5.4 CUSTOMER RECORD INPUT FILE FORMAT

The Customer Record input file format is illustrated in Appendix 1.

5.4.1 Header Record

The Header record is used for administrative and file validation purposes. The acceptable record content is defined in Table 1 below.

Table 1 - Header Record

Field Name	Inclusion	Contents	Description
Record Type	mandatory	"H"	Always "H" to indicate that this is a Header record.
CLEC Code	mandatory	XX	Must match the CLEC Code in the first two characters of the file name. (see Section 5.1)
CLEC Contact	mandatory	NAME	Name of CLEC person to call by MT&T to resolve Customer Record file related problems.
CLEC TN	mandatory	NPA-NXX-XXXX	Telephone Number of the above CLEC Contact person.
Date/Time (CLEC File)	mandatory	YYYY:MM:DD:HH:MM	The date and time the Customer Record file was created, using a 24 hour clock.
Error Flag		"E"	See Section 6 - (Used by MT&T in Error Return files only)
Date/Time (Error Return File)		YYYY:MM:DD:HH:MM	See Section 6 - (Used by MT&T in Error Return files only)

5.4.2 Transaction Record

The field entries in the Transaction records will be validated for acceptable format, content, and naming convention. MT&T maintains listings of acceptable names and abbreviations in accordance with internal and municipal practices. These lists are subject to frequent change.

The information that allows the CLECs to compose records with appropriate field entries will be made available by the Province of Nova Scotia and by MT&T at the time of interconnection.

The acceptable record content is defined in Table 2 below.

Table 2 - Transaction Record

Field Name	Length	Inclusion	Type	Contents/Description
Error Correction	1	mandatory for corrected records	X	Field is normally blank. CLEC shall check mark this field to indicate a corrected transaction record.
Phone Number	12	mandatory	Numeric	902-NXX-XXXX CLEC Customer telephone number
Civic Number	6	mandatory	Numeric	Service Address: numeric part of street number
Street Name	40	mandatory	Alphanumeric	Service Address: street name
Suffix	11	mandatory	Alphabetic	Service Address: road , street, boulevard, etc.
Community	28	mandatory	Alphabetic	Service Address: community name
County	28	mandatory	Alphabetic	Service Address: county name
Province	2	mandatory	Alphabetic	Service Address: Always = NS
Indicator	1	conditionally optional	Numeric	Indicator = 8 if the Unit Number field is populated, otherwise blank
Unit Number	5	optional	Alphanumeric	Service Address: apart./suite/unit/room number
Floor	5	optional	Alphanumeric	Service Address: floor information
Building	25	optional	Alphanumeric	Service Address: building name
Complex	30	optional	Alphanumeric	If applicable, the name of the Complex, consisting of a number of Structures, at the above Address.
Structure	30	optional	Alphanumeric	If applicable, the name of the Structure within the above Complex at the above Address.
Customer	40	mandatory	Alphanumeric	CLEC Customer name
CPX/STR Flag	1	optional	Alphabetic	Z = if a complex address S = if a structure address
Effective Date	8	mandatory	Numeric	CLEC service order due date
CLEC ID	4	mandatory	Alphanumeric	CLEC ID = abbreviated CLEC name
Service Order No.	14	mandatory	Alphanumeric	CLEC Service order number
Secondary Address	1	optional	Numeric	0 = no additional address for Phone 1 = Phone exists at more than one Address
Type of Change	1	mandatory	Alphabetic	A = Add C = Change D = Delete
Central Office Code	4	mandatory	Alphabetic	Always = LOAD
Type of Record	1	mandatory	Alphabetic	M = Master record - this is the main address record for this telephone number. A = Additional record - this is an auxiliary address for this phone number. Example: off premise PBX extensions, second or subsequent address on a party line.
Type of Phone	1	mandatory	Numeric	0 = not foreign/not non pub 1 = foreign 3 = non pub 4 = non pub foreign
Class of Phone	1	mandatory	Numeric	0 = Customer Control Centrex 1 = Residential Single Line Service 2 = Business Single Line Service 3 = Business Multi-Line PBX Service 4 = Residential Multi-Line PBX Service 5 = CO Centrex Telephone Service 6 = Semi-Public Pay Phone (privately owned)

				7 = Public Coin Telephone (Telco owned)
Error Code	4			See Section 6 - (Used by MT&T in Error Return files only)

6.0 Error Handling

When errors in one or more transaction records are detected, all records will be processed with the exception of those that contain errors.

An appropriate Error Code will be inserted into the ERROR CODE field of the respective transaction record containing the error. The ERROR CODE field in error free transaction records will remain blank.

Note: The complete list of Error codes and their significance will be provided to the CLEC at the time of interconnection.

The entire Customer Record File will be returned to the CLEC, including the error free records that were processed.

The Header Record of the returned file will have an "E" in the Error Flag field as well as the Date/Time of the Error Return File creation. The Time will be shown in 24 hour format.

The CLEC is expected to correct the error(s) and return only the corrected transaction records. The corrected transaction records shall have an "X" inserted in the Error Correction field, and leave the Error Code field unchanged.

The corrected transaction records may be resubmitted, either by inserting them into a dedicated Customer Record File, or by adding them to the next regular Customer Record File.

Appendix 1: Customer Record Input File Format

The word processing file template in this Appendix is for illustration purposes only. The actual template will be provided by MT&T to the CLEC at the time of interconnection.

To prepare the file, the CLEC requires Microsoft Word 6.0 or later. Files should be saved as Word Documents with a .doc extension. The data to be entered should conform to the format of Table 1 and Table 2, respectively.

Header Record

CLEC Customer Header Record - Input Form

(Note: A number in brackets behind a field name denotes the maximum acceptable number of characters)

Record Type: H

CLEC Code (2): __.

CLEC Contact Name: __.

CLEC Telephone Number: __-__-____
NPA-NXX-XXXX

Date/Time (CLEC File)**:** __:__:__:__
YYYY:MM:DD:HH:MM

For use by MT&T only

Error Flag: __.

Date/Time (Error Return File)**:** __:__:__:__
YYYY:MM:DD:HH:MM

Transaction Record

CLEC Customer Transaction Record - Input Form

(Note: A number in brackets behind a field name denotes the maximum acceptable number of characters)

Error Correction:☐ **Phone Number**: 902- -

Civic Number(6) :___ **Street Name**(40) :___ **Suffix**(11) :___

Community(28) :___ **County**(28) :___ **Province**(2) :NS

Indicator(1) :___ **Unit Number**(5) :___ **Floor**(5) :___ **Building**(25) :___

Complex(30) :___ **Structure**(30) :___

Customer(40) :___ **CPX/STR Flag**(1) :___

Effective Date(8) :__-__-__ MM-DD-YY

CLEC ID(4) :___

Service Order No.(14):___

Secondary Address(1):___ **Type of Change**(1): ___

Central Office Code(4): LOAD **Type of Record** (1): ___

Type of Phone(1): ___

Class of Phone(1): ___

Error Code(4):___ (For MT&T use only)

Appendix 2: Glossary

ALI Automatic Location Identification
Information regarding the location associated with the caller's telephone number.

ANI Automatic Number Identification
The telephone number of the calling party displayed at the answering point.

CLEC Competitive Local Exchange Carrier

E9-1-1 Management System
A system of manual procedures and computer process used to create, store and update the data required to provide the E9-1-1 Service

E9-1-1 Province Wide Enhanced 9-1-1 Service
A system that provides automatic location identification (ALI), automatic number identification (ANI) and selective routing.

ERA Emergency Response Agency

ESN Emergency Service Number
The number assigned to each residence, business and coin telephone that is determined by a specific police, fire and ambulance zone.

ESZ Emergency Service Zone
A geographical area where all residents are served by the same set of PSAPs.

Local Emergency Administration
A municipal government or other governmental authority having local jurisdiction over one or more E9-1-1 Service Areas

MSAG Master Street Address Guide
A master file listing street names, address ranges, and routing codes.

NPA Number Plan Area
The three-digit area code.

NXX Network Exchange (prefix)
The first 3 digits of the 7-digit TN.

PSAP Public Safety Answering Point
The answering location for 9-1-1 calls originating within a specified area.