

**Network-to-Network Interface**

**Access To The TELUS Toll-Free**  
**Carrier Selection Database**

**DOCUMENT HISTORY**

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## **1.0 Introduction**

### **1.1 Purpose**

This document specifies the technical requirements for the SS7 network interface(s) between TELUS and other telecommunications carriers for access to the TELUS Toll-Free Carrier Selection Database. Access by other carriers to this database is intended only for the purpose of obtaining toll-free carrier selection information, and not for number translation.

The interface specification contained in this document describes the telecommunications service enabled by the interface in generic terms only. The specific characteristics of a telecommunications service offered by a carrier are the responsibility of that individual carrier and need conform to the generic description in this document only to the extent required for inter-network interoperability of the service.

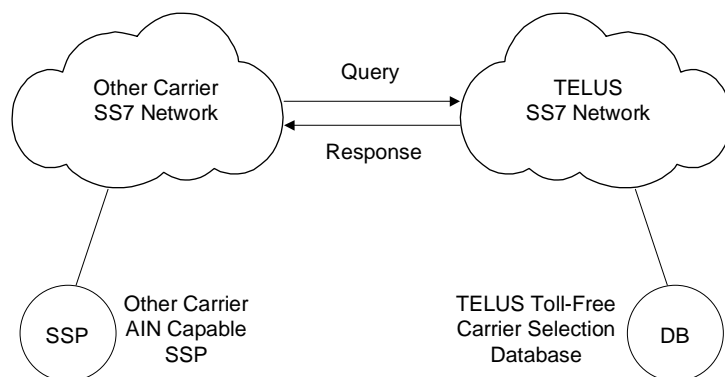
### **1.2 Scope**

This technical interface specification describes the SS7 network interface(s) between TELUS and other carriers required for access to the TELUS Toll-Free Carrier Selection Database. Routing of toll-free calls through the Public Switched Telephone Network (PSTN) is beyond the scope of this document. Features of Toll-Free Service, such as routing based on time of day, day of week, and location at which the call originated are beyond the scope of this document.

## **2.0 Interface**

### **2.1 General**

The SS7 network-to-network interface specified here is intended to be used for access by other carriers to the TELUS Toll-Free Carrier Selection Database for the purpose of obtaining toll-free carrier selection information. Figure 2-1 is a generic representation of the exchange of information across the SS7 network-to-network interface. The exchange of information across the SS7 network-to-network interface consists of a query and a response. A query is generated by the Other Carrier network and is transmitted across the interface to the TELUS network. A response is generated by the TELUS network and is transmitted across the interface to the Other Carrier network. The contents of the query and response are described in Section 2.2, Interface Protocol.



**Figure 2-1.** Information Exchange Across the Network-to-Network Interface

## 2.2 Interface Protocol

The SS7 protocol is used for the exchange of information across the network-to-network interface. Specifically, the protocol used in this interface is based on the switching and signaling generic requirements for the Advanced Intelligent Network (AIN) implementation of Toll-Free Access Service described in the following Telcordia Technologies, Inc. documents:

- GR-1298-CORE, *AINGR: Switching Systems*, Issue 5 (Telcordia, November 1999).
- GR-1299-CORE, *AINGR: Switch - Service Control Point (SCP)/Adjunct Interface*, Issue 5 (Telcordia, November 1999).
- GR-2892-CORE, *Switching and Signaling Generic Requirements for Toll-Free Service Using AIN*, Issue 1 (Telcordia, April 1995).
- GR-2902-CORE, *CCS Network Interface Specification (CCSNIS) Supporting Toll-Free Service Using AIN*, Issue 1 (Telcordia, May 1995).

For a typical call, the query and response sequence used across the network-to-network interface for the purpose of obtaining toll-free carrier selection information is as follows:

1. The Other Carrier determines that the call requires AIN processing to select the toll-free carrier.
2. The Other Carrier shall first check whether or not any Automatic Code Gapping (ACG) controls are in effect on the toll-free code. Except when prohibited by any ACG controls that may be in effect, the Other Carrier launches an Info\_Analyzed message to TELUS.
3. TELUS processes the Info\_Analyzed message and responds to the Other Carrier with an Analyze\_Route message containing the identification of the toll-free carrier to be used for the call.
4. The Other Carrier then routes the call to the toll-free carrier based on arrangements that the Other Carrier has with the toll-free carrier.

The Other Carrier Service Switching Point (SSP) shall be AIN capable. Furthermore, the Other Carrier SSP shall be capable of receiving ACG control requests and shall activate ACG controls in accordance with any requests received from the TELUS network.

Table 2-1 lists the AIN messages that are most commonly used in the query/response transactions across the network-to-network interface. For a comprehensive listing of the AIN messages and detailed encoding rules for these messages, see GR-1298-CORE and GR-1299-CORE. The key for Table 2-1 is:

T = TELUS

O = Other Carrier

**Table 2-1.** Message Table

	<b>Message Name</b>	<b>Sending Entity</b>	<b>Description</b>
1	Info_Analyzed	O	Request for toll-free carrier selection. Sent when a 3/6/10-Digit trigger associated with a toll-free code is detected, except when prohibited by any ACG controls that may be in effect.
2	Analyze_Route	T	Contains the identity of the toll-free carrier to be used for the call.
3	Send_To_Resource	T	Sent when the call is to be terminated on an announcement (usually in response to user action such as dialing an unassigned toll-free number).
4	ACG	T	The ACG (Automatic Code Gapping) instruction is sent for the purpose of limiting queries when congestion is detected. Contains the 6 to 10 digit toll-free code to be controlled.

Table 2-2 summarizes the parameters for two of the messages listed in Table 2-1: Info\_Analyzed and Analyze\_Route. For a comprehensive listing of the AIN parameters used for these and other messages and detailed encoding rules for these parameters, see GR-1298-CORE and GR-1299-CORE. The key for Table 2-2 is:

Message 1 = Info\_Analyzed

M = Mandatory (from a protocol perspective)

Message 2 = Analyze\_Route

O = Optional (from a protocol perspective)

Q = Query

M<sub>S</sub> = Mandatory (from a service perspective)

R = Response

- = Absent from Message

**Table 2-2.** Parameter Table (Sheet 1 of 2)

Parameter	Message		Description
	1 Q	2 R	
<i>ACGEncountered</i>	O M <sub>S</sub>	-	Indicates that an ACG control has been encountered and is included only if ACG controls were encountered before launching the Query.
<i>AMALineNumber</i>	-	O	Includes Information such as the calling party ID, incoming terminating number, or Automatic Number Identification (ANI).
<i>AMAslpID</i>	-	O	Indicates that the SSP should override normal switch-based recording and invoke AIN AMA record generation.
<i>BearerCapability</i>	M	-	Identifies the bearer capability of the user, which may be the calling or called party. For more information about bearer capability, see GR-268-CORE.
<i>CalledPartyID</i>	O M <sub>S</sub>	O	Provides the actual dialed number. For more information about <i>CalledPartyID</i> , see GR-317-CORE, GR-394-CORE, TR-NWT-000444, and GR-268-CORE.
<i>CallingPartyID</i>	O M <sub>S</sub>	O	Provides the calling party Directory Number (DN).

**Table 2-2.** Parameter Table (Sheet 2 of 2)

<i>Carrier</i>	O M <sub>S</sub>	O M <sub>S</sub>	In the Info_Analyzed message, provides information about carrier selection. In the Analyze_Route message, provides the carrier identification.
<i>ChargeNumber</i>	O M <sub>S</sub>	O	Provides the ANI of the calling party. Based on the ISDNUP charge number. For more information about the content of the <i>ChargeNumber</i> parameter, see GR-394-CORE and TR-NWT-000444.
<i>ChargePartyStationType</i>	O M <sub>S</sub>	O	Indicates the calling station type. Based on the Originating Line Information ISDNUP parameter. For more information about the content of the OLI parameter, see GR-394-CORE.
<i>Lata</i>	O M <sub>S</sub>	-	Identifies the originating Local Access and Transport Area (LATA). Currently the only valid LATA in Canada is 888.
<i>TriggerCriteriaType</i>	O M <sub>S</sub>	-	Indicates that the trigger was either an npa or npaNXX trigger.
<i>UserID</i>	M	-	Identifies the originating facility. A DN included in this parameter shall be the calling party number of the facility, not necessarily its billing number.

### **2.3 Interface Configuration**

The physical configuration of the signaling interface will be determined individually for each of the other carriers authorized by TELUS to access the TELUS Toll-Free Carrier Selection Database. Typically, SS7 network interfaces between TELUS and other carriers would use A-links or D-links.

### **3.0 References**

1. GR-268-CORE, *ISDN Basic Rate Interface Call Control Switching and Signaling Generic Requirements*, Issue 1 (Telcordia, July 1998).
2. GR-317-CORE, *Switching System Generic Requirements for Call Control Using the Integrated Services Digital Network User Part (ISDNUP)*, Issue 3 (Telcordia, November 1999).
3. GR-394-CORE, *LSSGR: Switching System Generic Requirements for Interexchange Carrier Interconnection Using the Integrated Services Digital Network User Part (ISDNUP)*, Issue 3 (Telcordia, November 1999).
4. TR-NWT-000444, *Switching System Generic Requirements Supporting ISDN Access Using the ISDN User Part*, Issue 3 (Telcordia, May 1993).
5. GR-1298-CORE, *AINGR: Switching Systems*, Issue 5 (Telcordia, November 1999).
6. GR-1299-CORE, *AINGR: Switch - Service Control Point (SCP)/Adjunct Interface*, Issue 5 (Telcordia, November 1999).
7. GR-2892-CORE, *Switching and Signaling Generic Requirements for Toll-Free Service Using AIN*, Issue 1 (Telcordia, April 1995).
8. GR-2902-CORE, *CCS Network Interface Specification (CCSNIS) Supporting Toll-Free Service Using AIN*, Issue 1 (Telcordia, May 1995).

## **4.0 Acronyms**

<b>ACG</b>	Automatic Code Gapping
<b>AIN</b>	Advanced Intelligent Network
<b>AMA</b>	Automatic Message Accounting
<b>ANI</b>	Automatic Number Identification
<b>DB</b>	Database
<b>DN</b>	Directory Number
<b>IAM</b>	Initial Address Message
<b>ISDNUP</b>	Integrated Services Digital Network User Part
<b>LATA</b>	Local Access and Transport Area
<b>OLI</b>	Originating Line Information
<b>PSTN</b>	Public Switched Telephone Network
<b>SS7</b>	Signaling System Number Seven
<b>SSP</b>	Service Switching Point