



**BID-0012**

**June 1992**

**Bulk Calling Line Identification  
(BCLID)**

**800 Service Enhancements**

**Terminal-to-Network Interface**

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**DOCUMENT HISTORY**

1	March 1992	Initial issue
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		Reason for re-issue
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2	June 1992	There are no technical changes from the initial issue of this document, but editorial changes for the purpose of clarification of the definition of the interface have been made.
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## 1.0 SERVICE DESCRIPTION

The **Bulk Calling Line Identification (BCLID)** capability, where available, provides subscribers with call related information via ASCII compatible terminals. Indicators signifying the state of the line can also be delivered from the network to the terminal. This information is transmitted over dedicated voice bandwidth line(s) from the call terminating office to the ASCII compatible equipment. The transmission of this information, which occurs simultaneously with the call, does not interfere with the voice transmission.

Two enhancements to 800 Service™, i.e., Dialed Number Identifier (DNI) and 800 Caller Identifier (800 CI) <sup>(3)</sup> will be offered with the **BCLID** capability.

The DNI feature (which was approved by the CRTC on 1992 04 08) provides the capability for customers with multiple 800 Service numbers terminating on the same conversion number <sup>(1)</sup> to identify the specific 800 Service number which was dialed by the caller. 800 CI <sup>(3)</sup> provides the capability for customers to receive the number from which the call originated.

The features provide the opportunity to develop a number of customized telemarketing and customer service applications.

Bell Canada intends to introduce the DNI and 800 CI <sup>(3)</sup> features to the marketplace on 1993 02 01.

The tariff for DNI and 800 CI <sup>(3)</sup>, submitted to the CRTC, is described in Bell Canada proposed General Tariff, Items 3625.7 and 3625.8.

(1) The conversion number is the number to which the dialed 800 Service number is translated by the network in order to process the call.

(3) Subject to CRTC approval.

## **2.0 FEATURE DESCRIPTION**

Terminals utilizing the features of this interface will receive call related information from the network to the Customer Premise Equipment over one or more dedicated two wire Bell 202A grade telephone lines (Reference 7.5). This information, transmitted in ASCII format, contains details identifying the origin <sup>(3)</sup> (see also <sup>(2)</sup>) and destination of the call, called line status indicator (I - idle, B - busy), calling line type indicator (T - single line, M - multiple line, the M indicator will also be delivered in conjunction with Private or Out of Area call indicators) and call forward indicators (F - forwarded, D - direct). Based on this information the calls can be handled in a customized way.

The call related information can be used, for example, by an innovative terminal design to efficiently process incoming calls based on the received information. It can be also used to produce statistical reports which may help to improve productivity and acceptability of the call answering process.

<sup>(2)</sup> The originating number may be replaced by O - Out of Area or P - Private indicators.

<sup>(3)</sup> Subject to CRTC approval.

### 3.0 PHYSICAL CHARACTERISTICS OF THE TERMINAL-TO-NETWORK INTERFACE

#### 3.1 Data Interface

##### Parameters

Link Type	simplex, two wire
Modulation Type	analog, continuous-phase binary frequency shift keying
Logical 1 (Mark)	1200 $\pm$ 12 Hz
Logical 0 (Space)	2200 $\pm$ 22 Hz
Transmission Rate	1200 $\pm$ 12 baud
Application of Data	serial, binary, asynchronous
Bit Error Rate	less than 1 out of every 100,000 bits at the switch interface
Phase Continuity	maintained from initial service to end of message
Carrier Level	-13.5 dBm $\pm$ 1 dBm at the switch point of data application into standard 900 $\Omega$ test termination. The loop loss is typically less than 10 dB.
Carrier Purity	total power of all extraneous signals in the voice band, including products of nonlinear or quantizing distortion, should be at least 30 dB below the power of the carrier fundamental frequency.
Source Impedance	900 $\Omega$ + 2.16 $\mu$ F nominal, with a return loss satisfying requirements of Reference 7.3

The requirements listed above are satisfied by a 202 type of modem transmission (Reference 7.5). The 900  $\Omega$  + 2.16  $\mu$ F source impedance refers to the impedance that the data transmitter presents to the loop facility. The actual impedance at the terminal may vary. The received level may be affected by the terminating impedance. This must be considered in the design of the terminal. The terminal design shall adhere to requirements stated in Reference 7.4.

### **3.2 Timing Information**

This section discusses the timing and tolerance requirements for this interface.

The maximum interrupt time between any two successive bytes is equivalent to 20-bit periods at 1200 bps (i.e., 16.7 ms). If this interrupt time is exceeded, that call should be considered to contain an error. In such case, the message will be lost since it will not be retransmitted.

The mark signal (which is transmitted between the messages and also between the parameter data words within the message) should be monitored for continuity by the terminating device. An interrupt of the mark signal of 0.008 sec or less should be ignored by the data receiver. An interrupt that exceeds 0.008 sec should cause the received data to be treated as erroneous. In such case, the message will be lost since it will not be retransmitted.



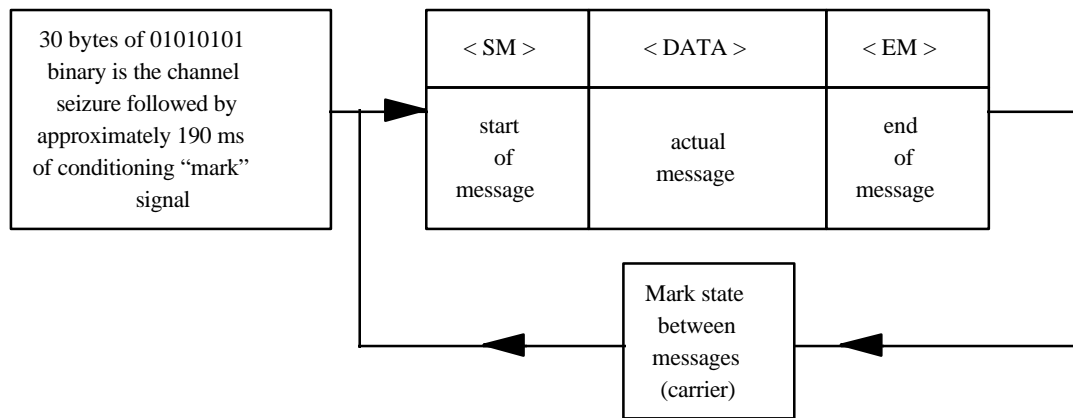
## 4.0 DETAILED DATA PROTOCOL

### 4.1 Characteristics

- The protocol uses 8-bit data words that are each bounded by a start bit (space) and a stop bit (mark). A combination of bytes is used to transmit data messages from the DMS-100 to the 800 Service subscriber's CPE.
- The data is transmitted using a binary representation of ASCII characters.
- The carrier signal (mark) is transmitted between the words in the message and between messages originating from different 800 Service calls.
- Data parameters which are not recognized by the terminal should be ignored (i.e., the corresponding data should not be processed).

### 4.2 Message Layout

The message layout is explained in the following Figure 1.



**Figure 1: Message Layout**

**Note:** The channel seizure/conditioning signal occurs when the service is initialized the first time and then only when the service is re-initialized (e.g., after carrier interruption). The modem resumes its function no later than 15 msec after carrier restoration.

## 5.0 DESCRIPTION OF PARAMETERS

### 5.1 Description of Fields

<sm> Start of Message	Signifies the beginning of new information transfer.
<cr> Carriage Return	Facilitates display device formatting.
<lf> Line Feed	Facilitates display device formatting.
BC	Bulk Calling Line Identification feature.
called (monitored) 800 Service number	This is the actual 800 line number dialed by the originator. This field contains 10 digits (800 + XXX-XXXX).
called (terminating) number	This field contains the 7 digit terminating DN or 8 digit number (4 digit hunt group + 4 digit hunt member).
calling number <sup>(3)</sup>	This is the calling number including the area code. For calls originating from behind a PBX without Direct Inward Dialing (DID) where the station number is not identified, the main directory number is used as the calling number. The number of digits used in this field is 10. The indicator "O" will be delivered by the switch if the calling DN has not been obtained from the network. The indicator "P" is delivered from the network, if the calling number has been suppressed by the network.

<sup>(3)</sup> Subject to CRTC approval.

## 5.2 Indicators

- I/B When the called line is in use, the message generated by the switch is labeled "B" (Busy). If the called line is not in use at that time, it will be labeled "I" (Idle).
- T/M If the incoming call originates from a single line then the "T" indicator is delivered. A value "M" is delivered for DNs originating from a multiple group line, where only the main calling number is delivered to the customer serving switch. It will also be delivered in the case of out of area or private call types.
- F/D The indicator "F" is transmitted when the call has been forwarded from other operator(s), regardless of the number of times. Should the call be directly answered, the indicator "D" is transmitted.

**5.3 Parameter Codes**

		HEX	BINARY	
<sm>	Start of Message	01	00000001	
<cr>	Carriage Return	0D	00001101	
<lf>	Line Feed	0A	00001010	
BC	character "B"	42	01000010	
	character "C"	43	01000011	
	space →	20	00100000	
10	digits of the called (monitored) 800 number	30 to 39	00110000 to 00111001	0 to 9
	space ‘	20	00100000	
7	or 8 digits of the line on which the call terminated	30 to 39	00110000 to 00111001	0 to 9
	space ‘	20	00100000	
10	digits of the calling number (*)	30 to 39	00110000 or 00111001	0 to 9
	space ‘	20	00100000	
<b>Note:</b>	Indicator: O . . . or P . . . can be delivered instead of the 10 digit number	4F or 50	01001111 or 01010000	Out of Area or Private
	space ‘	20	00100000	
	Indicator: I . . . or B . . .	49 or 42	01001001 or 01000010	Operator Idle or Operator Busy
	space ‘	20	00100000	
	Indicator: T . . . or M . . .	54 or 4D	01010100 or 01001101	Single Line or Multi Line/Private/Out of Area
	space ‘	20	00100000	
continues on next page				

(3) Subject to CRTC approval.

Indicator: F . . .	46	01000110	Forwarded Call or Direct Call
or D . . .	44	01000100	
<cr> Carriage Return	0D	00001101	
<lf> Line Feed	0A	00001010	
<em> End of Message	19	00011001	

**6.0 EXAMPLES**

**6.1 Example A**

Monitored 800 Service Number: (800) 978-1111  
 Called (terminating) Number: 496-4676  
 Calling Directory Number: (514) 237-2222 <sup>(3)</sup>  
 Operator Status: Idle  
 Calling Line Type: Single Line  
 Call Forward Indicator: Direct

		HEX	BINARY		
<sm>	Start of Message	01	00000001		
<cr>	Carriage Return	0D	00001101		
<lf>	Line Feed	0A	00001010		
BC	character "B"	42	01000010		
	character "C"	43	01000011		
	space →	20	00100000		
10	digits of the called (monitored) 800 number	38	00111000	8	
		30	00110000	0	
		30	00110000	0	
		39	00111001	9	
		37	00110111	7	
		38	00111000	8	
		31	00110001	1	
		31	00110001	1	
		31	00110001	1	
		31	00110001	1	
	space ‘	20	00100000		
7	digits of the line on which the call terminated	34	00110100	4	
		39	00111001	9	
		36	00110110	6	
		34	00110100	4	
		36	00110110	6	
		37	00110111	7	
		36	00110110	6	
	space ‘	20	00100000		
		continues on next page			

<sup>(3)</sup> Subject to CRTC approval.

10 digits of the calling number (3)		35	00110101	5
		31	00110001	1
		34	00110100	4
		32	00110010	2
		33	00110011	3
		37	00110111	7
		32	00110010	2
		32	00110010	2
		32	00110010	2
		32	00110010	2
	space →	20	00100000	
Indicator: I . . .		49	01001001	Operator Idle
	space ‘	20	00100000	
Indicator: T . . .		54	01010100	Single Line Call
	space ‘	20	00100000	
Indicator: D . . .		44	01000100	Direct Call
<cr>	Carriage Return	0D	00001101	
<lf>	Line Feed	0A	00001010	
<em>	End of Message	19	00011001	

(3) Subject to CRTC approval.

**6.2 Example B**

Monitored 800 Service Number: (800) 978-1111  
 Called (terminating) Number: 496-4676  
 Calling Directory Number: Private <sup>(3)</sup>  
 Operator Status: Busy  
 Calling Line Type: Single Line  
 Call Forward Indicator: Forwarded

		HEX	BINARY	
<sm>	Start of Message	01	00000001	
<cr>	Carriage Return	0D	00001101	
<lf>	Line Feed	0A	00001010	
BC	character "B"	42	01000010	
	character "C"	43	01000011	
	space →	20	00100000	
10	digits of the called (monitored) 800 number	38	00111000	8
		30	00110000	0
		30	00110000	0
		37	00110111	7
		38	00111000	8
		35	00110101	5
		30	00110000	0
		34	00110100	4
		32	00110010	2
		32	00110010	2
	space ' ' →	20	00100000	
7	digits of the line on which the call terminated	34	00110100	4
		39	00111001	9
		36	00110110	6
		34	00110100	4
		36	00110110	6
		37	00110111	7
		36	00110110	6
	space ' ' →	20	00100000	
		continues on next page		

(3) Subject to CRTC approval.



Calling Number Private (3)		50	01010000	Private
	space →	20	00100000	
Indicator: B . . .		42	01000010	Operator Busy
	space ‘	20	00100000	
Indicator: M . . .		4D	01001101	Private Call
	space ‘	20	00100000	
Indicator: F . . .		46	01000110	Forwarded Call
<cr> Carriage Return		0D	00001101	
<lf> Line Feed		0A	00001010	
<em> End of Message		19	00011001	

(3) Subject to CRTC approval.

**6.3 Example C**

Monitored 800 Service Number: (800) 978-1111  
 Called (terminating) Number: 496-4676  
 Calling Directory Number: Private <sup>(3)</sup>  
 Operator Status: Busy  
 Calling Line Type: Multi Line  
 Call Forward Indicator: Forwarded

		HEX	BINARY	
<sm>	Start of Message	01	00000001	
<cr>	Carriage Return	0D	00001101	
<lf>	Line Feed	0A	00001010	
BC	character "B"	42	01000010	
	character "C"	43	01000011	
	space →	20	00100000	
10	digits of the called (monitored) 800 number	38	00111000	8
		30	00110000	0
		30	00110000	0
		37	00110111	7
		38	00111000	8
		35	00110101	5
		30	00110000	0
		34	00110100	4
		32	00110010	2
		32	00110010	2
	space ' ' →	20	00100000	
7	digits of the line on which the call terminated	34	00110100	4
		39	00111001	9
		36	00110110	6
		34	00110100	4
		36	00110110	6
		37	00110111	7
		36	00110110	6
	space ' ' →	20	00100000	
		continues on next page		

<sup>(3)</sup> Subject to CRTC approval.

Calling Number Private (3)		50	01010000	Private
	space →	20	00100000	
Indicator: B . . .		42	01000010	Operator Busy
	space ‘	20	00100000	
Indicator: M . . .		4D	01001101	Private Call
	space ‘	20	00100000	
Indicator: F . . .		46	01000110	Forwarded Call
<cr> Carriage Return		0D	00001101	
<lf> Line Feed		0A	00001010	
<em> End of Message		19	00011001	

(3) Subject to CRTC approval.

## **7.0 REFERENCES**

### **7.1 Bellcore:**

TR-TSY-000031, Issue 3, January 1990, "CLASS<sup>SM</sup> Feature: Calling Number Delivery".

### **7.2 Bellcore:**

TR-NWT-000032, Issue 2, September 1991, "LSSGR-LATA Switching Systems Generic Requirements, CLASS<sup>SM</sup> Feature: Bulk Calling Line Identification".

### **7.3 Bellcore:**

TR-TSY-000507, Issue 2, July 1987, "LATA Switching Systems Generic Requirements (LSSGR): Transmission (Section 7)".

### **7.4 Department of Communications:**

CS-03, "Terminal Equipment Certification Standard, Standard for Terminal Equipment, Terminal Systems, Network Protection Devices, Connection Arrangements and Hearing Aids Compatibility", Current Issue.

### **7.5 Data Set 202T Interface Specification:**

Bell System Data Communications Technical Reference, Current Issue.