

# **COMMON LANGUAGE®**

## **Signaling Codes**

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Prepared for Bellcore by:

L. Modrell

For further information, please contact:

L. Modrell

732-699-5281

To obtain copies of this document, Regional Company/BCC personnel should contact their company's document coordinator; Bellcore personnel should call (732) 699-5802.

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Project funding year:1998.

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## COMMON LANGUAGE Signalling Codes

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## 1. Purpose

Data values and codes in this practice represent the signals that initiate, process, monitor, and disconnect a communication medium over a special service arrangement or a network of message trunks.

## 2. Scope

This practice contains five code sets that represent each signaling function as well as the various types of signaling systems. Their definitions are listed below:

**Address Signaling:** Signals used to direct a call to its destination. For example, address signals used in the switched message network convey the Numbering Plan Area (NPA) code, the Central Office Unit code, and the Line Number code of the called station.

**Information, Control, and Auxiliary Signals:** Information signals provide information to the telephone users (e.g., Audible Ring). Control signals pass information when establishing connections (e.g., Dial Tone). Auxiliary signals are used to coordinate address pulsing between central offices (e.g., Wink Start).

**Interconnect Methods:** Standard electrical configurations required to interconnect the necessary equipment for a communications link.

**Signaling Systems:** Used to provide circuit associated signaling. The equipment providing signaling functions is interconnected to the trunk circuits.

**Supervisory Signals:** Used to indicate whether a circuit is idle or busy. They are also used to indicate the toll billing period.

## 3. General

This practice describes the COMMON LANGUAGE codes that represent the types of signals and signaling systems used in the switched message network and special service circuits.

Questions concerning these codes should be directed to the General Codes Technical Advisory Group Chairperson, Language Standards Department, Bellcore, through the appropriate Bellcore Customer COMMON LANGUAGE General Codes code contact.

The Bellcore Language Standards Department provides the technical expertise to maintain the General Code Sets. Input to this procedure is provided by the General Codes Technical Advisory Group, in accordance with the procedure outlined in BR 751-000-102, *COMMON LANGUAGE® Code Set Request Procedures*. Paragraphs 5 through 9 describe the COMMON LANGUAGE Signaling codes.

## **4. Reason for Issue**

This practice is re-issued to include codes approved since the last issue and to update the wording of some descriptions.

## **5. Address Signaling Codes**

The COMMON LANGUAGE Address Signaling code is a one-character alphanumeric code divided into two subsets, one for message trunks and one for special services circuits.

The Address Signaling codes for message trunks are the same as the Address Signaling Codes described in BR 795-400-100, "COMMON LANGUAGE® CLCI™-MSG Code Set." Data values, codes, and definitions are listed in Table A.

The Address Signaling codes, data values, and definitions for special services circuits are listed in Table B.

## **6. Auxiliary Signal Codes**

The COMMON LANGUAGE Auxiliary Signal code is a two-character alphanumeric code. Data values, codes, and definitions are listed in Table C.

## **7. Interconnect Method Codes**

The COMMON LANGUAGE Interconnect Method code is a two-character alphabetic code. Data values, codes, and definitions are listed in Table D.

## **8. Signaling System Codes**

The COMMON LANGUAGE Signaling System code is a two-character alphabetic code. Data values, codes, and definitions are listed in Table E.

## **9. Supervisory Signal Codes**

The COMMON LANGUAGE Supervisory Signal code is a two-character alphabetic code. Data values, codes, and definitions are listed in Table F.

## 10. Deleted Codes

Table G is a summary of codes deleted from Tables C ,D and E over the years.

**Table A.** Methods for Signaling Address Information on Message Trunks

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
<b>No Address Signaling</b>	-	No address information is sent.
<b>Voice Signaling</b>		
Automatic	A	The seizure of a trunk automatically sends an incoming signal to the distant end. A disconnect signal is sent when the trunk is released.
Ringdown	R	A ringing voltage applied to a connection, automatically or by an operator, that transmits supervisory signals between two points in a connection.
Straightforward	S	When the originating operator inserts a cord into a trunk jack, a lamp lights at the distant switchboard; removal of the cord gives the disconnect signal. (Usually an audible zip-zip tone transmits to the originating end when the trunk is answered at the receiving end.)
<b>Mechanized Signaling</b>		
Dial	D	A pulsing system that transmits digits to the called station. A number of pulses from one to ten that corresponds to the digit dialed from one to zero.
Frequency Shift	F	A pulsing system where a change in the frequency of the detected tone determines the identity of each digit. The frequency of the detected tone is changed by the on-hook or off-hook condition of the loop or E&M leads at the transmitting end.
Multifrequency	M	A pulsing system where a combination of two-out-of-five frequencies determines the identity of digits. A sixth frequency, with one of the other five, is used to provide priming and start signals.
Panel Call Indicator (PCI)	P	A pulsing system that transmits each digit as a series of four marginal and polarized pulses.

**Table A.** Methods for Signaling Address Information on Message Trunks (Continued)

Data Value	Code	Definition
Dual Tone Multifrequency 12 Combinations	J	A pulsing system where the use of two tones, established by the 12-tone (touch-tone) combination signaling system, represents individual digits.
Dual Tone Multifrequency 16 Combinations	K	A pulsing system where the use of two tones, established by the 16-tone (touch-tone) combination signaling system, represents individual digits.
Revertive	V	<p>A dc pulsing system that transmits telephone address signals in the following manner:</p> <p>(a) The equipment at the originating location presets the number of required pulses and counts the pulses received from the terminating location.</p> <p>(b) The equipment at the terminating location transmits a series of pulses until the originating location breaks the dc path indicating that the required number of pulses has been counted.</p>
R1 Signaling System	1	A signaling system that adheres to Consultative Committee International Telephone and Telegraph (CCITT) recommendations Q.310 to Q.313.
R2 Signaling System	2	A signaling system that adheres to Consultative Committee International Telephone and Telegraph (CCITT) recommendations Q.400 to Q.490.
Signaling System #4	4	A signaling system that adheres to CCITT recommendations Q.120 to Q.180.
CCITT Recommendation #5	5	An inband signaling arrangement that adheres to CCITT recommendation #5. Address signals are coded in multi-frequency code and transmitted in block at the rate of ten digits per second. Line and supervisory signals are transmitted over a two-out-of-six multifrequency (MF) frequency compelled arrangement.

**Table A.** Methods for Signaling Address Information on Message Trunks (Continued)

Data Value	Code	Definition
<b>Message Protocol Signaling, Common Channel, Separate International Standards Level #1</b>		
CCITT Recommendation #6	6	A common channel interoffice signaling system that adheres to the CCITT #6 signaling recommendation.
ANSI, T1X1 Standard SS7 - ISDN User Part (ISUP)	7	A common channel interoffice signaling system that adheres to the ANSI, Signaling System #7, ISDN User Part T1.113. <b>NOTE:</b> ANSI SS7 MTP (Message Transfer Part), T1.111, is the transport mechanism for this signaling.
CCITT SS7 - ISDN User Part (ISUP)	I	CCITT Signaling System #7, ISDN User Part. <b>NOTE:</b> CCITT SS7 MTP (Message Transfer Part) is the transport mechanism for this signaling.
CCITT SS7 - Telephone User Part (TUP)	B	CCITT Signaling System #7, Basic Telephone User Part. <b>NOTE:</b> CCITT SS7 MTP (Message Transfer Part) is the transport mechanism for this signaling.
		<p><b>NOTE for codes 7, I and B:</b> SS7 is implemented in the switch for call control.</p> <p>7 is used within USA, Canada and the Caribbean and at the discretion of the company in Mexico for SS7 traffic that may be ISDN or not.</p> <p>I is used internationally for traffic that uses ISDN.</p> <p>B is used internationally for end to end traffic which is not ISDN; I may also be used at the discretion of the company.</p> <p>AIN services would likely use I.</p>

**Table A.** Methods for Signaling Address Information on Message Trunks (Continued)

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
AT&T Common Channel Interoffice Signaling CCIS	C	A common channel interoffice signaling system that adheres to the AT&T Common Channel Interoffice Signaling (CCIS) protocol.
<b>Message Protocol Signaling</b> Non-specific	N	There is no pulsing of address information over the trunk, but information is sent within vendor-specific protocol of an unspecified type.

**Table B.** Address Signaling Codes for Special Services Circuits

Data Value	Code	Definition
Automatic	A	Plugging into the circuit at the calling station automatically operates the signal at the called station.
Code Selective	E	A form of ringdown signaling used on multipoint circuits. A selector decodes the ring and signals the called station without disturbing the other stations.
Coded Ringing	G	A specific combination of long and/or short rings is assigned each station on a circuit. Signaling is customarily manual and all stations receive all rings.
Dial Pulse	D	The momentary opening of the dc path a number of times that corresponds with the decimal digit dialed.
Dial Selective - 2 Tone	T	Tones of 600 and 1500 Hz are controlled by a dial to transmit the desired digits. A selector at the receive end decodes and recognizes a predetermined combination of digits.
Frequency Shift Keying	F	A method of signaling in which the carrier frequency is varied by a small amount, using one frequency for a mark signal and another for a space signal.
Loudspeaker	L	An on-line monitor without any visual or other audio signaling devices. A station may attract another station by calling it by name or a predetermined code.
Ringdown	R	Applying ringing current at the calling station, which operates the line signal at the called station.
SC2 Selective	2	A signaling system with remote supervisory and control functions. Used for pipelines, water reservoirs, etc.

**Table B.** Address Signaling Codes for Special Services Circuits (Continued)

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
SS1 Selective Signaling System	1	Each station on a Selective Signaling (SS1) system is assigned a two-digit code that may be dialed by other stations on the system. This system offers enhancements such as privacy arrangements.
Straightforward	S	The called number is passed from operator to operator over the same circuit used to complete the call.
Dual Tone Multifrequency 12 Combinations	J	A pulsing system where two tones, established by the 12-tone combination signaling system, represent individual digits.
Dual Tone Multifrequency 16 Combinations	K	A pulsing system where two tones, established by the 16-tone combination signaling system, represent individual digits.
No Address Signaling	-	No address information is sent.

**Table C.** Information, Control and Auxiliary Signals

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
Audible Ring	AR	An audible signal to the calling station indicating that ringing current has been applied to the called station.
Class of Service	CS	Tones transmitted to the switchboard indicating the class of service of the calling station.
Coin Tone	CT	Tones transmitted over the trunk indicating the number of coins deposited.
Delay Dial	DD	A signal returned to the calling station indicating the called station is not ready to receive pulses.
Dial Tone	DT	A tone to the calling station indicating that the serving office is ready to receive address information.
Double Wink	DW	A method used in a Traffic Service Position System (TSPS) to indicate coin collect or coin return.
Key Pulse	KP	A signal that prepares the MF receiver for address pulsing.
Line Busy	BY	An interrupted tone informing the calling station that the called line is busy.
Party Identification	PI	A signal used by the serving office to identify the calling party on a two-party line. The signal is tip ground or ring ground.
Receiver-Off-Hook	RH	A high amplitude tone applied to alert the customer that the receiver is unnecessarily off-hook.
Recorded Announcement	RA	Verbal announcements to the calling station explaining why a call cannot be completed.

**Table C.** Information, Control and Auxiliary Signals (Continued)

Data Value	Code	Definition
Recorder Warning Tone	RC	A "beep" tone applied to the circuit indicating that the call is being recorded.
Reorder Tone	RO	An interrupted tone informing the calling station that switching paths to the called serving office are busy.
Revertive Calling Tone	RV	A tone directing the calling party to hang up during ringing when calling a party on the same line.
Ringing	RG	A signal applied by the serving office alerting the called party to an incoming call.
Send Calling Number	SN	A signal to the Automatic Number Identification (ANI) office indicating that the Centralized Automatic Message Accounting (CAMA) or TSP equipment is ready to receive the address digits of the calling number.
Start Dial	SD	A signal to the operator indicating that dialing may begin; dialing must be completed within the duration of the signal.
Stop-Go	SG	A stop dialing signal from the called station to the calling station after some of the digits have been received, followed by a "go" signal when the called office is ready to receive additional digits.
Wink Start	WS	A signal indicating a register is ready to receive pulses from the calling office.

**Table D.** Interconnect Method Codes\*

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
One Wire	OW	One-wire interconnect with the return path over ground (differences in earth potential, simplex interconnect).
Loop	LP	The signaling interface is affected through the speech path connection. No ancillary signaling equipment is needed.
E&M	EM	E&M Type 1 signaling interconnect.
	E2	E&M Type 2 signaling interconnect.
	E3	E&M Type 3 signaling interconnect.
	E4	E&M Type 4 signaling interconnect.
	E5	E&M Type 5 signaling interconnect.

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\* Connection of trunk relay equipment to associated signaling device or connection of trunk equipment directly to the associated facility pair.

**Table E. Signaling Systems\***

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
<b>Loop Interconnect</b>		
High-Low	HL	A method of signaling in which a high-resistance shunt indicates on-hook and a low-resistance shunt indicates off-hook.
Wet-Dry	WD	A signaling method which sends signals by opening and closing the circuit. No current flows when idle.
Reverse-Battery	LR	A signaling method that indicates returned supervision by reversing battery and ground potentials over the loop.
Battery-Ground	BG	After the connection is established, the loop provides supervision. The supervision is used with battery and ground address signaling.
<b>E&amp;N Interconnect</b>		
Duplex	DX	A system using balanced, symmetrical, polar relays at each end.
Simplex	SX	A system using two sides of a circuit in parallel, derived by connecting to midpoints on repeat coils.
Composite	CX	A system using one side of a voice circuit, derived by connecting the composite circuit to both low pass and high pass filters.
Single Frequency (In Band)	SF	An in-band signaling system that passes supervisory information through the use of 2600 Hz tones.
Single Frequency	OB	An out-of-band signaling system that passes supervisory information using 3700 Hz tones.

\* Signaling Systems (Types of systems dependent on the interconnect methods specified with Table D).

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**Table F.** Supervisory Signals

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
Off Hook	OF	This signal indicates that the called station is in the busy condition.
On Hook	ON	This signal indicates that the called station is idle.
Connect	CN	This signal indicates that the calling station is requesting service.
Disconnect	DC	This signal indicates that the calling station no longer requires service.
Ring Forward (Re-ring)	RF	This signal indicates that the operator at the calling station wishes to recall the operator at the called station.
Ringback	RB	This signal indicates that the operator at the called station wishes to recall the operator at the calling station.

**Table G. Deleted Codes\***

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
<b>Table C</b>		
Automatic Number Identification	AI	A method of identifying the calling station and transmitting its identity to the CAMA equipment by sending MF signals over the same trunk after dialing has been completed.
Answer	AN	A sustained off-hook signal returned to the calling end when the called station answers.
Common Channel Interoffice Signaling	CC	Any auxiliary signals (other than address or supervision signals) generated by the CCIS system in a communications link.
Flash	FL	An on-hook signal sent by momentarily depressing and releasing the switchhook when a connection is established.
Ground Start	GS	Application of a ground to one side of the line to seize the circuit and prepare the distant circuit to receive signals.
Hold	HD	A feature that holds a connection on one line while allowing the station to use another line.
Loop Start	LS	Application of a short across the line to seize the circuit and prepare the distant circuit to receive signals.
Ring Trip	RT	The removal of the ringing signal when the called party answers.
Seizure	SZ	A request for service at the calling station that changes the line condition from on-hook to off-hook.

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**Table G.** Deleted Codes\* (Continued)

Data Value	Code	Definition
Toll Diversion	TD	A signal sent by the serving office to a PBX, that allows selected PBX stations to make toll calls.
Traffic Service Position System (TSPS)	TS	Any auxiliary signals required for call completion in TSPS that are not otherwise listed in this table.
<b>Table D</b> A and B Lead	AB	Leads derived from the midpoints of the two pairs in a four-wire circuit.
Common Channel Interoffice Signaling (CCIS)	CC	Interconnections established by CCIS signals.
Logic Interface	LI	A method of establishing interconnection by passing information in the form of logic. This method is used in the 4ESS <sup>TM</sup> switch.
SS1	S1	Interconnect method used with the SS1 selective signaling system.
SC2	S2	Interconnect method used with the SC2 selective signaling system.
Three Wire	TW	A method using three wires, the normal tip and ring, and a sleeve lead. Control signals are sent over the sleeve lead.
<b>Table E</b> Common Channel Interoffice Signaling (CCIS)	CC	Supervision provided by the CCIS system.
Digital	DI	Supervision provided by using pulse code modulation (PCM) T1 carrier signaling.

**Table G.** Deleted Codes\* (Continued)

<b>Data Value</b>	<b>Code</b>	<b>Definition</b>
<b>Table E</b> E and M	EM	Any of the five types of E and M signaling, where the busy or idle condition of a circuit is controlled by changing the potential on the E and M leads.
Forward Disconnect	FE	A supervisory arrangement an operator uses for the control of coins.

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\* Summary of codes deleted from Tables C, D and E.

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