

**QWEST Communications
International Inc.
Technical Publication**

**MESSAGE WAITING
INDICATION VISUAL**

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1 Introduction

This publication describes the technical interface specifications for QWEST Communications International Inc. Message Waiting Indication – Visual.

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3 Service Description

Message Waiting Indication – Visual is a feature whereby subscribing end-users receive an alerting signal that lights a lamp on the end-user's Customer Provided Equipment (CPE).

When this feature is selected, and the end-user has a message waiting, QWEST will transmit a Frequency Shift Key (FSK) signal via the end-users business or residential line to the CPE. The end-users CPE identifies this signal and lights a lamp to indicate that there is a message waiting.

QWEST Communications will only transmit the message waiting signal when the end-user is On-Hook. If the end-user is Off-Hook, QWEST Communications will wait until the end-user returns to the On-Hook State and will then transmit the message waiting signal. After 2.5 hours, and the end-user is still Off-Hook, QWEST Communications International Inc. will not transmit the message waiting signal.

Message Waiting Indication – Visual, is only functional on metallic facilities and certain Digital Loop Carriers. Due to these limitations, it may not be available on all access lines in a given area.

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4 Specifications

4.1 Interface Specifications

4.1.1 Modulation Scheme

- 202T Compatible
- Frequency Shift Keying
- Logical 1 (Mark): 1200 +/- 12 Hz
- Logical 0 (Space): 2200 +/- 12 Hz
- Transmission Rate: 1200 BPS
- Data: Serial, Binary, Asynchronous

Information bits are grouped into 8-bit characters preceded by a start (logical 0) and followed by a stop bit (logical 1). They are sent in order of the least significant bit first (the first bit sent is the least significant bit of the 8-bit character and the last bit sent, before the stop bit, is the most significant bit of the character). This information is transmitted on single party business or residential lines in the On-Hook State.

All data is sent as ASCII characters (American Standard Code for Information Interchange)

The message word format is as follows:

CHANNEL SEIZURE SIGNAL	CARRIER SIGNAL	MESSAGE TYPE WORD	DATA WORD COUNT	DATA WORD	CHECK SUM WORD
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1. Channel Seizure Signal: Provides a detectable alerting function to the CPE (Customer Provided Equipment). Composed of 30 continuous bytes of octal 125 (i.e., 01010101).
2. Carrier Signal: Aids in conditioning the receiver for data. Composed of 18 continuous bytes of mark (logical 1, i.e., 11111111).
3. Message Type Word: Identified as message type 6 (1 byte, data format: 00000110).
4. Data Word Count: Indicates the number of data words that will be transmitted following this word. The data word count is always 3 (1 byte, data format: 00000011). This does not include the Check Sum Word.

5. Data Word: Contains the visual “Message Waiting Indicator (MWI)” information. The ASCII character “B” for MWI activation (01000010) or the ASCII character “o” (01101111) for MWI deactivation is transmitted 3 times (3 continuous bytes).
 6. Check Sum Word: This single 8-bit word is used by the CPE to insure the integrity of the received data. The Check Sum Word consists of one byte containing the “2s complement” of the sum of the Message Type Word, Data Word Count, and the Data Word. The CPE must be capable of deriving the sum of the received message and data words and adding this to the Check Sum. Any result other than zero indicates that there is an error in the information received. No retransmission or request for correction is possible.
- B. The maximum interrupt time between any two successive bits is equivalent to 20 bit-time periods at 1200 bps (i.e., 16.7 msec). If this interrupt time is exceeded, the message is considered not recoverable.
 - C. The end-user and not QWEST Communications International Inc provide power required for the CPE.
 - D. The CPE provided by the end-user must meet the requirements in FCC Part 68 and Bellcore Technical Advisory TA-NPL-000912.

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5 Definitions

5.1 Glossary

Asynchronous Data	A method of transmitting data in which each transmission character (byte) is preceded by a start bit and followed by a stop bit, thus permitting the intervals between characters to vary.
ASCII	American Standard Code for information interchange. A standard 8-bit information code used with most computers and data terminals.
Bit	A binary digit. A unit of data in binary notation.
Binary	A numbering system based on 2's rather than 10's and uses digits "0" and "1" when written.
BPS	Bits per second. In serial transmission, the instantaneous bit speed with which a device or channel transmits a character.
Byte	A generic term to indicate a measurable portion of consecutive binary digits, ie., an 8-bit byte.
Frequency Shift Keying (FSK)	<p>A form of frequency modulation in which the carrier frequency is raised or lowered to represent the octal digits of an octal number. Expresses values as multiples of powers of eight (i.e., the binary number 10011101101 is interpreted as octal as follows):</p> <p>010,011,101,101</p> <p>for</p> <p>010 (2), 011 (3), 101 (5), 101 (5)</p>
Serial Data	Method of data transmission in which the bits that compose a character are transmitted sequentially.

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6 References

6.1 Bellcore Publications

Bellcore Technical Advisory TA-NPL-000912, Compatibility Information for Telephone Exchange Service, February 1989.

6.2 Other Technical References

Part 68, Connection of Terminal Equipment to the Telephone Network of the Federal Communications Commission's "Rules and Regulations" may be purchased from the Superintendent of Documents, Government printing office, Washington, D.C. 20402.

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