

U S WEST
Communications, Inc.
Technical Publication

Answer Supervision - Line Side

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1. Introduction

1.1 General

This publication describes the technical interface specifications for the U S WEST Communications, Inc. Answer Supervision-Line Side service offering.

2. Purpose

The purpose of this publication is to describe the Answer Supervision-Line Side Service offering with sufficient technical data as to allow the manufacturer to design Customer Provided Equipment (CPE).

Answer Supervision-Line Side provides an electrical signal that is passed back to the originating end of a switched connection. This signal indicates that the called line has gone off-hook. This service offering has applicability for billing record start and end, announcement start and end, dialtone reorigination prevention, call progress sequence indications, and other uses. This service offering may be used by terminal equipment (PBX, pay telephone, call diverter, etc.) connected to the calling line to determine that the call has been answered.

Previously, this signal was available on trunks, not on lines. At present, the Disconnect Timer returns the line to an idle or normal state upon termination of the call by the called party. This timer provides the only indication to the originating end that the called party has terminated the call. This disconnect timer has a lengthy time-out interval. This interval may be too long when used with equipment that may depend on short intervals.

3. Service Description

3.1 Signaling

This service provides the capability to deliver "off-hook" signals from the terminating central office to a line interface at the originating central office. This signal is a polarity reversal of the tip and ring conductors (tip-ring reversal) of the metallic facility between the calling customer and the serving central office. This signal (2 to 3 sec.), indicates that the called station has answered the incoming call. The same situation occurs when the called party disconnects prior to the calling party disconnecting. At present, this feature is only available in the DMS® family of digital switches, i.e., (DMS®10, DMS®100), and the 5ESS® digital switch with a generic of at least 5E7.

Answer indication is a reversal of -48 Volts and Ground at the line interface between the Tip and Ring conductors of a 2-Wire pair. At the time of answer, Tip and Ring are interchanged by the switching machine, so that the tip is now more negative than the ring. This reversal persists at least until the called line goes on-hook, and possibly until the calling line goes on-hook. All of the other electrical characteristics on a line equipped for answer supervision are identical to those of a normal line.

3.2 Loop-Network Requirements

The subscriber loop between the serving central office and the originating customer must be comprised of metallic facilities only. All network elements of a connection using this feature must conform to LATA Switching Systems Generic Requirements (LSSGR) with respect to signaling protocols.

4. Specifications

4.1 Interface Specifications

Activation/Deactivation:

- Idle: -48v on ring, tip open (Ground Start) or ground on tip (Loop Start)
- Dialing: -48v on ring, ground on tip
- Setup and Ringing: -48v on ring, ground on tip
- Talking: ground on ring, -48v on tip (line reversed)
- Disconnect Timing: (calling party hold, called party disconnects) ground on ring, -48v on tip (line reversed)
- Disconnect Timer Expires: line opens momentarily, then reverses battery (ground on ring, -48v on tip) returns momentarily, then line returns to idle state [-48v on ring, tip open (Ground-Start) or ground on tip (Loop-Start)].

Dual Tone Multi-Frequency (DTMF) telephone sets not equipped with polarity guards will not be able to use their DTMF pads once this reversal has occurred. Most new telephone sets are equipped with polarity guards.

4.2 Customer Provided Equipment (CPE)

The CPE utilized with this service offering must meet the requirements for CPE devices as stated in FCC Part 68, and Bellcore Technical Advisory TA-NPL-000912 Compatibility Information For Telephone Exchange Service.

5. Glossary/Trademarks

5.1 Glossary

Customer Provided Equipment (CPE)

Equipment owned and maintained by the customer and located on their side of the End-User Point Of Termination (EU-POT) Network Interface (NI). In the U S WEST Digital Data Service application, CPE typically includes the DSU (CSU/DSU) and data terminal equipment which are connected to the channel.

Metallic Facilities

A facility that consists of continuous metallic conductors, i.e., devoid of electronic enhancements that would corrupt Direct Current continuity.

Off-Hook

The supervisory state indicative of the active (in use) condition.

On-Hook

The supervisory state indicative of the idle condition.

Reverse Battery

The switch, during setup and ringing, places -48v on ring, ground on tip. When the called party goes off-hook, the condition is reversed (i.e., -48v on tip, ground on ring).

5.2 Trademarks

® DMS is a Registered Trademark of Northern Telecom, Inc.

® 5ESS is a Registered Trademark of AT&T Technologies, Inc.