QWEST Communications International Inc. Technical Publication

Answer Supervision - Line Side

77336
Issue -D
-April 2002

NOTICE

This QWEST Communications International Inc. technical publication describes the technical interface specifications for the QWEST Communications, Inc. Answer Supervision-Line Side.

QWEST Communications International Inc. reserves the right to revise this document for any reason, including but not limited to, conformity with standards promulgated by various governmental or regulatory agencies; utilization of advances in the state of the technical arts; or to reflect of changes in the design of equipment, techniques, or procedures described or referred to herein.

Liability to anyone arising out of use or reliance upon any information set forth herein is expressly disclaimed, and no representation or warranties, expressed or implied, are made with respect to the use or purchase of customer provided equipment.

This publication is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this publication represent any commitment by QWEST Communications International Inc. to purchase any product whether or not it provides the described characteristics.

If further information is required, please contact:

QWEST Communications International Inc.
Manager – New Services Planning
700 W. Mineral Ave. MN-F15.15
Littleton, CO 80120
(303) 707-7116
(303) 707--9498 Fax #
E-mail: -jsleona@QWEST.com

COMMENTS on PUB 77336
PLEASE TEAR OUT AND SEND YOUR COMMENTS/SUGGESTIONS TO:

QWEST Corporation
Manager – New Services Planning
700 W. Mineral Ave. MN-F15.15
Littleton, CO 80120
(303) 707--7116
(303) 707--9498 Fax #
E-mail: -jsleona@QWEST.com

Information from you helps us to improve our Publications. Please take a few moments to answer the following questions and return to the above address.

Was this Publication valuable to you in understanding The technical parameters of our service?	YES _____ NO _____
Was the information accurate and up-to-date?	YES _____ NO _____
Was the information easily understood?	YES _____ NO _____
Were the contents logically sequenced?	YES _____ NO _____
Were the tables and figures understandable and helpful	YES _____ NO _____
Were the pages legible?	YES _____ NO _____

If you answered NO to any of the questions and/or if you have any other comments or suggestions, please explain:

_____

_____

_____

(Attach additional sheet, if necessary)

Name _____ Date _____

Company _____

Address _____

Telephone Number

_____

E-Mail _____

CONTENTS

Chapter and Section **Page**

CONTENTS

Chapter and Section **Page**

1. Introduction

1.1 General

This publication describes the technical interface specifications for the QWEST Answer Supervision-Line Side service offering.

1.2 Reason For Reissue

To show QWEST Communications International Inc. as the owner of this publication and the one to contact concerning the content.

CONTENTS

Chapter and Section **Page**

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.

Line side answer supervision is also known as Reverse Loop Current Feed. (RLCF) signaling state is used to provide a service called line-side answer supervision. Line – side answer supervision provides the calling party with an electrical indication that the called party has answered the call. When the call is answered the Store Program Controlled Switch interface applies RLCF to the calling-party access line. Not all SPCS loop-start interfaces have to be capable of applying RLCF to a loop-start access line. However, the SPCS must provide the capability of applying RLCF to a specific loop-start access line when deemed necessary by the network provider. Line-side answer supervision using RLCF is a feature of the alternative public telephone interface specified in GR-528-CORE, LSSGR: Public Telecommunications Service, FSD-10-01-0000.

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.

CONTENTS

Chapter and Section **Page**

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.

CONTENTS

Chapter and Section **Page**

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 -Telecordia TA-NPL-000912 Compatibility Information For Telephone Exchange Service.

4.3 Further Technical Documentation

The following documents provide detailed Technical information on AS-LS signaling

- Telcordia Local Switching System Generic Requirements LSSGR: Signaling for Analog Interfaces GR-506 Issue 1, June 1996 Revision 1, November 1996. Section 3.2 Loop Start Signaling. (Refer to Reverse Loop Current Feed. (RLCF) signaling for Line Side Answer Supervision.

- Telcordia Local Switching System Generic Requirements (LSSGR: Public Telecommunications Service GR-528-CORE Issue 1 December 1994. Section 3.1.8 Alternate Interface Capabilities subsection 3.1.8.2 Line-Side, Far End Connect/Disconnect Indication.

- Lucent Technologies 5ESS Switch OA&M Documentation 235-080-100, January 2002 Section 4A63: Calling Line Side Supervision Feature Description, Feature Assignment.

- Nortel DMS100 Switch Helmsman Product Release: NA014 PCC Order Code LEC0014 SOC RES 00006 features package. Option RMR – Reference Line Reversal.

- Nortel DMS10 switch Nortel Technical Practices-NTP 297-3501-311, Supervisor Reversal – SPVXXX.

AS-LS is only available on local loop copper facilities without pair gain systems. Pair Gain equipment manufacturer channel units used in currently deployed QWEST pair gain systems are not capable of providing the AS-LS function.

**AS-LS on the 5ESS switch can be assigned on a simple POTS only line. The AS-LS functionality is mutually exclusive with Custom Local Area Signaling Services (CLASS) in the 5ESS switch. The AS-LS function is also not available on digital lines, shared analog lines, lines with Business and Residence Custom Services (BRCS) features or lines with Line slot time bridging.

CONTENTS

Chapter and Section **Page**

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 QWEST 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.