integra TELECOM

OVERVIEW:

xDSL CAPABLE COPPER LOOPS

RESPONSIVE. RELIABLE. LOCAL.

DEFINITION OF UNBUNDLED LOOP OBLIGATION

DEFINITION OF UNBUNDLED LOOP OBLIGATION

- **Federal Definition: "The local loop network element is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and the loop demarcation point at an end-user customer premises. This element includes all features, functions, and capabilities of such transmission facility, including the network interface device. It also includes all electronics, optronics, and intermediate devices (including repeaters and load coils) used to establish the transmission path to the end-user customer premises as well as any inside wire owned or controlled by the incumbent LEC that is part of that transmission path." [From the Code of Federal Regulations ("CFR")[1] at 47 C.F.R. Section 51.319 (a)].**

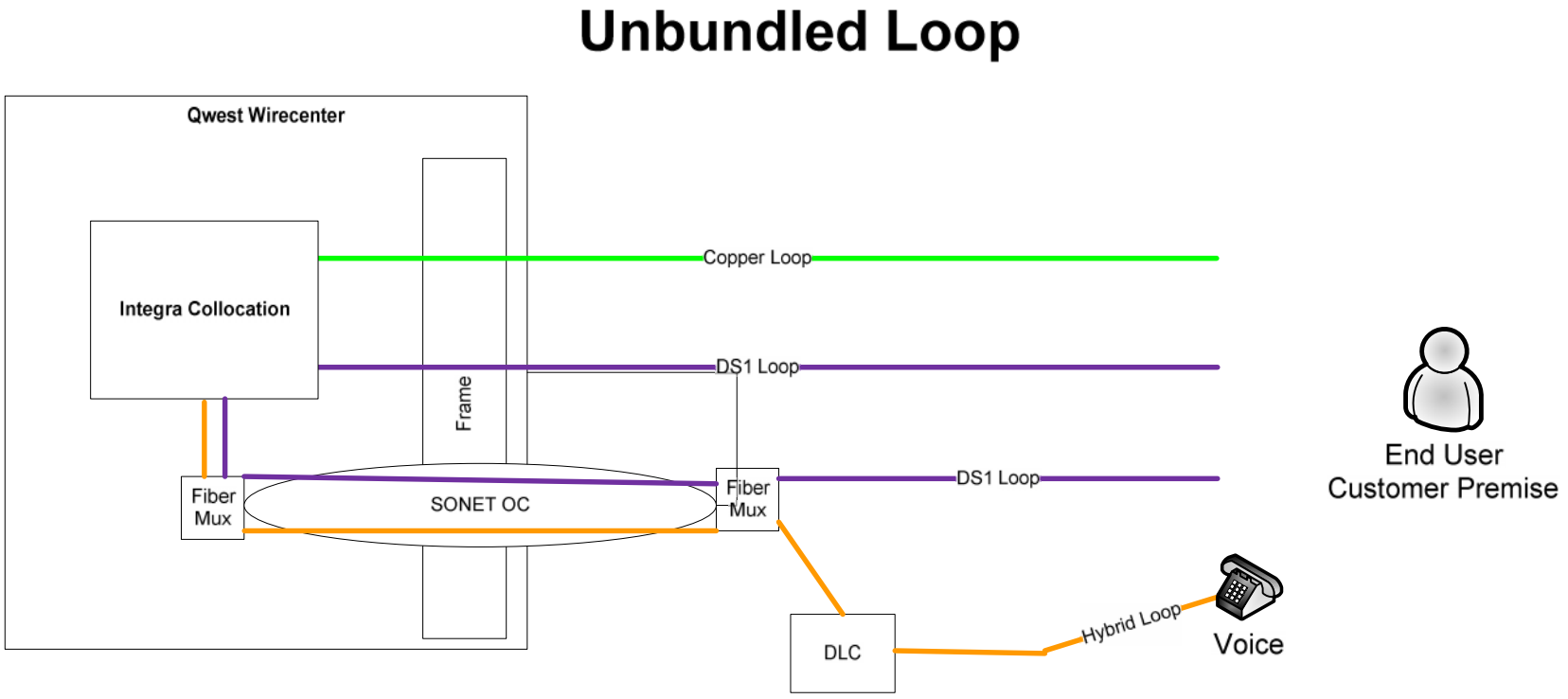
- **Conditioned Loops: The unbundled local loop includes "two and four-wire loops conditioned to transmit the digital signals needed to provide xDSL service." This includes services "such as ISDN, ADSL, HDSL, and DS1-level signals."[From FCC's Triennial Review Order ("TRO"), paragraph 643; FCC's First Report & Order, paragraph 380.]**

- **Impairment: The "following network elements must be unbundled: (1) loops – "including high-capacity lines, *xDSL-capable* loops. . . ." CLECs are "impaired" without access to xDSL-capable copper loops. [FCC's TRO, paragraphs 23 & 642.]**

---

[1] The Code of Federal Regulations (CFR) is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government (*e.g.*, the FCC). Under the Administrative Procedure Act, the agencies are permitted to promulgate detailed rules and regulations through a public "rulemaking" process where the public is allowed to comment, known as public information. After a period of time, the rules and regulations are usually published in the Federal Register. For example, the federal Telecommunications Act says that the FCC shall complete all actions necessary to establish regulations to implement the Act. The FCC takes public comments, issues orders (such as the First Report and Order, the UNE Remand Order, and the Triennial Review Order) that describe new or amended regulations, and those regulations are set out in the CFR.

Unbundled Loop



integra TELECOM

RESPONSIVE. RELIABLE. LOCAL.

DEFINITION OF LINE CONDITIONING OBLIGATION

DEFINITION OF LINE CONDITIONING OBLIGATION

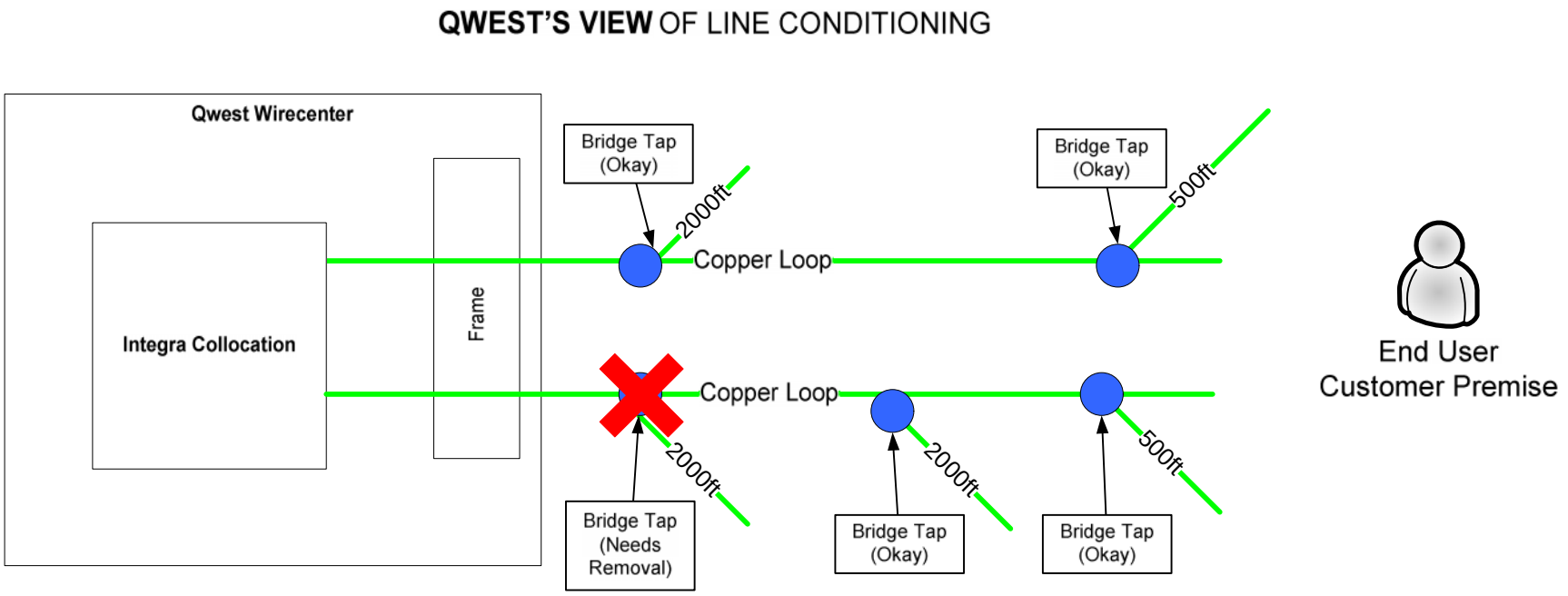
- **Line conditioning is defined as "the removal from a copper loop of *any* device that could diminish the capability of the loop to deliver xDSL. Such devices include bridge taps, load coils, low pass filters, and range extenders."** [From CFR - 47 C.F.R. Section 51.319(a)(1)(iii)(A).]

- **The FCC requires ILECs to "condition" loops:**

  - "for the provision of digital subscriber line (xDSL) services" [FCC's TRO, page 14.]

  - "to enable the requesting carrier to offer advanced services" [FCC's TRO, paragraph 7.]

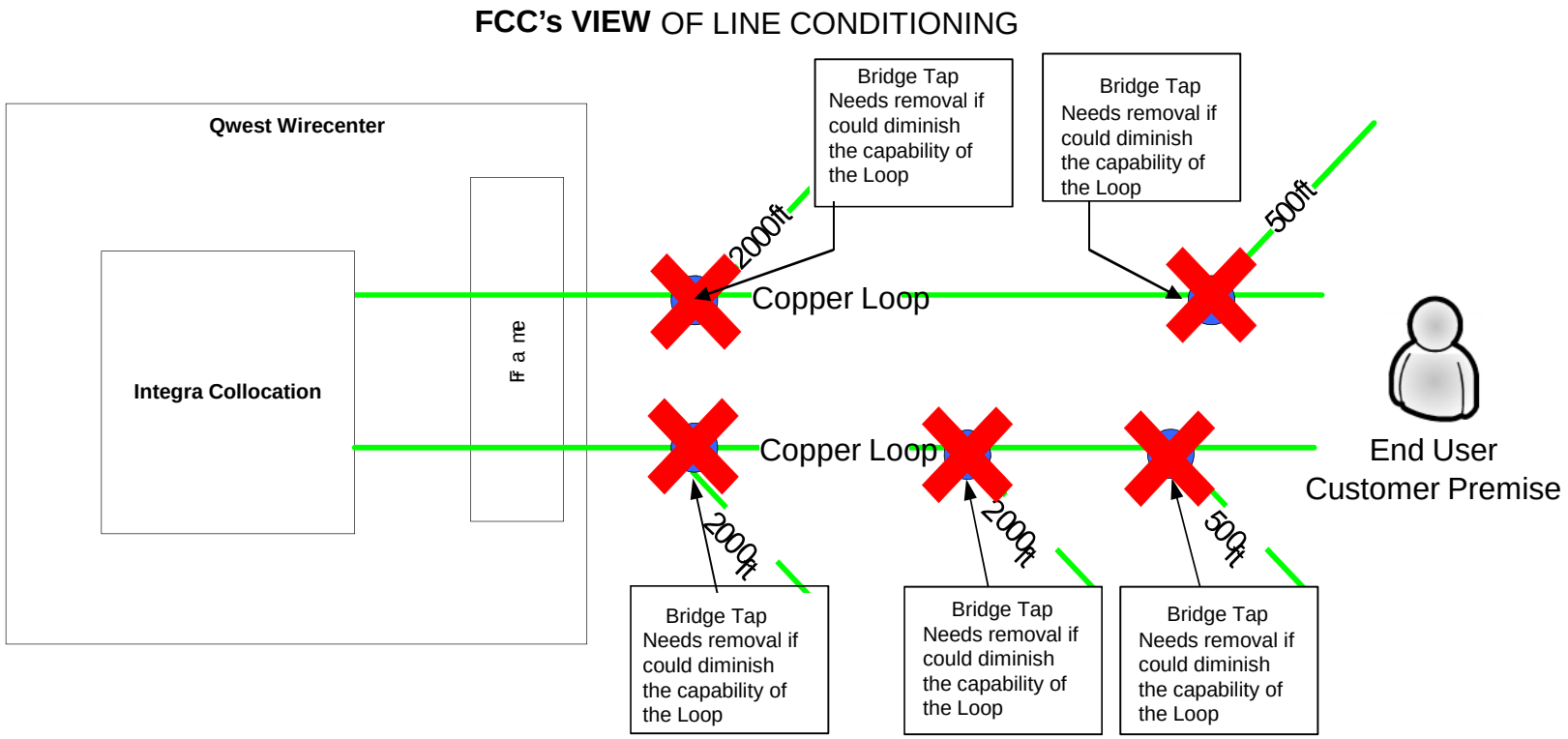
Qwest's View of Line Conditioning



integra TELECOM

RESPONSIVE. RELIABLE. LOCAL.

FCC's View of Line Conditioning



integra TELECOM

RESPONSIVE. RELIABLE. LOCAL.

TESTING AND REPAIR OBLIGATION

TESTING AND REPAIR OBLIGATION

- **"Insofar as it is technically feasible, the incumbent LEC *shall test and report troubles* for all the features, functions and capabilities of conditioned copper lines . . . ." [Code of Federal Regulations - 47 C.F.R. Section 51.319(a)(1)(iii)(C).]**

- **"Insofar as it is technically feasible, the incumbent LEC . . . *may not restrict its testing to voice transmission only*." [CFR - 47 C.F.R. Section 51.319(a)(1)(iii)(C).]**

- **Qwest has an obligation to restore transmission quality, including to data levels.[1] The Washington Commission said: "While Qwest should have the discretion to modernize and maintain its own network, it should be apparent that 'modernization' and 'maintenance' efforts should enhance or maintain, not diminish, transmission quality."[2]**

---

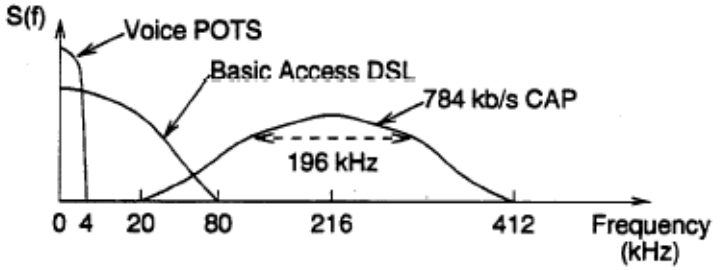
[1] **See State Commission Decisions: AZ Opinion and Order, ACC No. T-03406A-06-0572, Decision No. 70356, pp. 39-40; MN Arbitrator's Report, MPUC Docket No. P-5340, 421/IC-06-768, paragraphs 140 and 142; OR Order No. 08-365, OPUC ARB 775, App. A, p. 39; UT Report and Order, UT PSC No. 07-2263-03, pp. 41-42; WA Arbitrators' Report, WUTC UT-063061, Order No. 16 (aff'd), paragraph 83 (all adopting ICA language regarding degradation in the transmission quality of voice *or data*).**

[2] **WA Arbitrators' Report, WUTC UT-063061, Order No. 16 (aff'd), paragraph 83.**

TESTING AND REPAIR

FCC AND CLEC VIEW	QWEST VIEW
TEST AND REPAIR APPROPRIATE FOR THE SERVICE ORDERED (at Commission-approved rates)	**LIMIT TESTING AND REPAIR TO VOICE (unless CLEC Orders a More Expensive DS1 Capable Loop)**
Voice Grade Insertion Loss = ≤ 0 to -8.5 dB at ***1004 Hz*** *Examples* for ***xDSL-capable loops***: ISDN (xDSL-I) Insertion Loss = ≤ 40 dB at 40 kHz HDSL2 Insertion Loss = ≤ 28 dB at ***196 kHz**** HDSL4 Insertion Loss = £ 31 dB at ***196 kHz*** *Range of 20 kHz to 500 kHz (see next slide)	Non Loaded Loop - Qwest will test the circuit at ***1004 Hz*** (including for the LX-N 04QB9.00H NC/NCI codes, which per Qwest is HDSL). DS1 Capable Loop - If CLEC wishes to receive a signal that is tested at ***196 kHz***, it needs to request a ***DS1 capable loop***. It is optional for Qwest unless CLEC orders 4 wire loop. *See* Qwest 4/1/09 letter and 6/5/08 email.
Qwest has an obligation to test and report trouble and, when the trouble is in Qwest's network (including, for example, when the Qwest network contains interfering bridge tap), Qwest has an ***obligation to restore service to xDSL working levels***.	Non Loaded Loop – Once provisioned, if a CLEC has been able to place xDSL on the loop, Qwest has ***no obligation to restore*** it so that the xDSL service will continue to work. Qwest considers this a "minor" change in transmission parameters, though the xDSL service is adversely affected. DS1 Capable Loop only - Qwest has an obligation to restore it so that the xDSL service will continue to work. *See* Qwest 4/1/09 letter and 6/5/08 email
Assign, design, provision, test and repair unbundled loops to the requirements requested by CLEC, including NCI/SECNCI Code ***industry standards***. Qwest's choice to grandparent its retail ADSL finished service does not relieve Qwest of its obligation to provide ADSL capable loops. The FCC has said that CLECs are impaired without access to xDSL-capable loops (which includes ADSL). LX-R should be available.	The Network Channel Interface (NCI) codes for the Unbundled Loop LX-N and LX-R products are informational only. For Unbundled Loops, the NCI codes do not affect transport designs or performance. (See CMP 3/13/09 CR Response #PC082808-1IGX and 6/5/08 email.) However, Qwest is not allowing some use of the LX-R NC code (which per Qwest's tech pub is appropriate for ADSL compatible loops), and Qwest appears to be strictly enforcing use of particular NCI codes for repairs even though it said they are informational only. (See 10/08 emails regarding Oregon and Washington escalations.)

EXAMPLE: HDSL2 TEST PARAMETERS AND LEVELS



(c) POTS Voice, ISDN DSL & CAP HDSL Spectra

(Amplitudes are not to scale. Shapes are approximations only.)

Source: From Figure 6 on p. 37 (PDF p. 44) of ANSI T1E1, Technical Report Number 28 (cited in Qwest's technical publication).

Range (20 kHz to 500 kHz range): ANSI Standard T1-417 (cited in Qwest technical publication 77384, p. 1-1), in footnote 9 on page 24, identifies ANSI T1.418 as the standard "for HDSL2 performance requirements." The ANSI Standard T1.418 Performance Testing Section states (on p. 86): "This section specifies performance tests for HDSL2 equipment. These out-of-service tests verify the performance of HDSL2 in impaired environments." On page 89, it indicates that insertion loss should be measured from a 20 kHz to 500 kHz range.

Adtran vendor documentation: "The practice of using insertion loss (at 196 kHz) for loop qualification has continued throughout recent history for 2B1Q HDSL. Due to its ease of measurement, insertion loss is commonly used to characterize the loss of a loop and is usually taken at the Nyquist frequency (½ baud rate)."

See http://www.adtran.com/adtranpx/Doc/0/K45854GQTRJ4D4FIH6AG6PN92D/61221HDSLL1-10C.pdf

integra TELECOM

RESPONSIVE. RELIABLE. LOCAL.