Test Vendor ID:	EXP 3109
Qwest Internal Tracking ID:	TI 818
Observation/Exception Title:	Mediated Access Electronic Bonding
Test Type/Domain:	Test 24 – Interface Development and Relationship Mgt.
Date Qwest Received:	01/22/2002
Initial Response Date:	02/04/2002
Supplemental Response Date:	03/13/2002

Test Incident Summary:

An exception has been identified as a result of test activities for Test 24.6 OSS Interface Development Review.

Exception:

Qwest's Mediated Access Electronic Bonding and Trouble Administration (MEDIACC-EBTA) End-to-End testing lacks a complete testing environment.
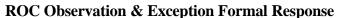
Background:

Qwest provides CLECs with the opportunity to implement a trouble reporting system called Mediated Access Electronic Bonding Trouble Administration (MEDIACC-EBTA). The Joint Implementation Agreement (JIA) describes the appropriate ANSI standards to develop, test, and deploy an interface for the exchange of trouble reports. CLECs are required to use a Common Management Information Protocol (CMIP) network management protocol and X.25 communications protocol to provision the communication from their EBTA environment to Qwest's EBTA testing and production environments.

Qwest provides CLECs with a baseline test deck for the EBTA testing environment. Test scenarios can be removed and/or created to tailor the testing to the CLEC's unique needs. A detailed System Test plan, provided by Qwest, outlines the following framework for a CLEC to test its EBTA interface:

1. Gateway-to-Gateway testing
2. Stack-to-Stack testing
3. End-to-End testing (System Testing)
4. Operational Readiness Test (Production Environment)

The End-to-End testing process, as defined in the System Test Plan, requires CLECs to submit test cases that are designed to test the functionality of the EBTA through Qwest's middleware and back-end systems.

Test scenarios for "designed services" and "non-designed services" are processed by the Work Force Administration (WFA) and Loop Maintenance Operational Services (LMOS) back end systems, respectively.

Issue:

During the End-to-End testing phase, as described in the System Test Plan, test scenarios for non-designed services, such as Plain Old Telephone Service (POTS) circuits, are processed by the LMOS production mainframe. Limitations in testing non-designed services during End-to-End testing include:

1. Qwest utilizes the LMOS production mainframe for End-to-End testing of any non-designed services. By using the LMOS production mainframe for CLEC testing purposes, Qwest does not provide CLECs with a test environment that is completely separate from the production environment.

2. The dependency to use Qwest's LMOS production mainframe for testing limits certain test scenarios, as there are particular circumstances in which Qwest is not be able to prevent services from being provisioned. As a result, if erroneous test scenarios are submitted during End-to-End testing, and are processed by LMOS, live production accounts will be affected in a negative way. These limitations for testing the full range of non-designed services, without impacting live accounts, are neither documented nor made publicly known to CLECs.

Impact:

The lack of a Qwest EBTA testing environment does not provide CLECs with a true representation of how transactions will function and respond in Qwest's EBTA production environment. The lack of a comprehensive test environment hinders a CLEC's ability to troubleshoot problems before entering production. This increases the likelihood of encountering production problems, which may result in increased time, cost, and effort for both the CLEC and Qwest to resolve these unforeseen production issues.

Qwest Formal Response:

The response below addresses the two issues raised in KPMG's exception above. The issues have been repeated in Italics to improve readability.

1. *Qwest utilizes the LMOS production mainframe for End-to-End testing of any non-designed services. By using the LMOS production mainframe for CLEC testing purposes, Qwest does not provide CLECs with a test environment that is completely separate from the production environment.*

    Qwest acknowledges that for non-Designed ETE (End-to-End) testing, trouble reports and MLT tests are processed using the LMOS production applications. However, Qwest does not view this arrangement as detrimental or limiting to ETE testing, but rather as advantageous to the CLEC. The full functionality of MEDIACC can be tested as defined in the test cases. Qwest has been successfully testing with Carriers and CLECs using this strategy since 1995.

2. *The dependency to use Qwest's LMOS production mainframe for testing limits certain test scenarios, as there are particular circumstances in which Qwest is not be able to prevent services from being provisioned. As a result, if erroneous test scenarios are submitted during End-to-End testing, and are processed by LMOS, live production accounts will be affected in a negative way. These limitations for testing the full range of non-designed services, without impacting live accounts, are neither documented nor made publicly known to CLECs.*

    Qwest has worked diligently to optimize Electronic Bonded Trouble Administration (EBTA) testing with its CLEC partners. The processes and documents described below are the cumulative result of the experience Qwest has gained since 1995 that assures robust EBTA testing while minimizing customer risk.

Qwest's CLEC testing for EBTA adheres to specific steps. The first step is to cooperatively develop the Joint Implementation Arrangement (JIA). The JIA is an outline of the responsibilities of both Trading Partners, the CLEC and Qwest. JIAs are developed to specify differing Agent (Qwest) requirements from Manager (CLEC) requirements. JIAs are a valuable tool for defining parameters, selected optional attributes, contact information and so forth. The JIA represents a letter of understanding between the two companies defining how the EBTA interface works. The JIAs reference ANSI standards documents: T1.227, T1.228, and T1.262. These standards were developed by TCIF (Telecommunications Industry Forum) to standardize EBTA implementations. MEDIACC complies with these standards.

The second step of EBTA testing is creation of the System Test Plan, a high-level overview of the testing required to implement EBTA. The System Test Plan is based on the JIA and also reflects Qwest's accumulated experience of implementing and operating EBTA. The System Test Plan helps define roles and responsibilities for both Qwest and the CLEC and helps explain how the testing proceeds. The System Test Plan helps both parties determine the resources needed to complete the project and provides data for the Project Plan.

The Project Plan sets time lines and resource allocations for the EBTA test and provides a basis for committing to get the project completed. Included as part of the Project Plan are the scenarios to be tested. Qwest maintains a baseline of EBTA test scenarios. The End-to-End (ETE) test scenario list captures the accumulated knowledge and experience gained from previous implementations.

Beginning with the ETE scenarios, the CLEC submits a list of test scenarios it believes necessary to conduct a thorough test. The final list of test scenarios is the result of negotiations between Qwest and the CLEC. Qwest works with the CLEC to develop any agreed upon scenarios that are not already in the ETE baseline. The agreed upon tests must be successfully completed as defined. All open issues must be resolved before the project is considered completed.

Qwest has never encountered a valid test scenario that could not be safely executed in Qwest's EBTA test environment, which includes the production LMOS applications. Qwest employs a combination of automatic and manual safeguards to facilitate robust testing without negatively impacting live accounts. CLEC testing is conducted only under the direct supervision and in cooperation with the assigned Qwest Tester. The Tester strictly controls access to the test environment. Before a test session can begin, the Tester must enable the environment. When the test session is complete the environment is disabled to prevent further access.

All tickets created by the CLEC for testing contain one of two values in the "can be reached" (CBR) field. One value causes the ticket to automatically close in the Shared Screening Module (SSM) through which all LMOS trouble tickets pass before any downstream activity occurs. The second CBR value causes SSM to place the ticket in a held status to allow further testing with the ticket before the tester manually closes it. A held ticket cannot trigger downstream activity. Also, Qwest's assigned Tester screens every test ticket created by the CLEC and has the ability to cancel any ticket that could present a problem.

The processes and documents described above clearly outline a safe and comprehensive EBTA testing process. However, Qwest acknowledges that the practice of using the production LMOS application for ETE testing was not clearly documented. On January 23rd, 2002 Qwest updated the Qwest Co-Provider System Test Plan, adding section 1.3.9. The added section explains test circuits and informs customers (CLECs) that non-designed circuits are tested in a production environment.

KPMG Comments (02/21/2002):

KPMG Consulting has reviewed Qwest's comments for each of the issues identified in this Exception, and has provided its responses below.

1. *Qwest utilizes the LMOS production mainframe for End-to-End testing of any non-designed services. By using the LMOS production mainframe for CLEC testing purposes, Qwest does not provide CLECs with a test environment that is completely separate from the production environment.*

Qwest acknowledges that non-designed test transactions use the LMOS production application and that the current EBTA test environment, therefore, relies on a component of the production systems.   KPMG Consulting believes that segregation of testing environments from production environments is an important aspect of interface development because it achieves the following:

- Eliminates the risk of negatively impacting the production environment (e.g., data integrity, stability, other customers' use, etc.)
- Allows a new market entrant CLEC or a CLEC testing an upgrade to a new release to test their interface systems and conduct code debugging without relying on live customer account information
- Provides a structured learning environment where both CLECs and Qwest can understand exactly how transactions process under a defined set of conditions

A test environment that is not fully segregated is inherently risky to both the CLECs and to Qwest. Since the LMOS production application is currently required for testing non-designed services, this issue remains open.

2. *The dependency to use Qwest's LMOS production mainframe for testing limits certain test scenarios, as there are particular circumstances in which Qwest is not able to prevent services from being dispatched (sic). As a result, if erroneous test scenarios are submitted during End-to-End testing, and are processed by LMOS, live production accounts will be affected in a negative way. These limitations for testing the full range of non-designed services, without impacting live accounts, are neither documented nor made publicly known to CLECs.*

Qwest's response asserts that it has created an environment that allows CLECs to test maintenance and repair test scenarios without jeopardizing live account information in the production systems. Qwest indicated it has implemented several safeguards to prevent services from being dispatched and to minimize other impacts to the production environment. Qwest also believes the testing process allows CLECs to test a variety of agreed upon scenarios.

KPMG Consulting further investigated the commercial experience of CLECs to assess the impact of the production component on their testing efforts. KPMG Consulting discovered that, although CLECs were able to test all of the agreed upon scenarios, they found the process of testing non-designed services cumbersome, due to the necessary manual intervention of the Qwest Tester. The architecture of the EBTA test environment necessitates direct intervention and monitoring by a Qwest Tester.

The element of human intervention and monitoring increases the risk of human error and of impact to CLEC production operations. One CLEC stated that two of its non-designed services test trouble reports were not placed on hold by the Qwest Tester, causing the trouble tickets to go to Qwest Production Screeners. The Screeners then called the CLEC's production operation center requesting additional information and/or dispatch permission. Although the production environment was not ultimately impacted, the situation required the CLEC and Qwest to spend production resource time and effort resolving the two test cases. Human intervention potentially impacts other CLECs and Qwest customers

since Qwest production resources are tied up resolving issues caused by testing in the production environment.

The need for CLEC testing to be conducted under the supervision of, and in close cooperation with, the Qwest Tester potentially limits the time available for testing. It may also delay or extend the testing period due to the need to schedule and closely coordinate all EBTA testing activity with the Tester. A fully separate test environment would not impose these restrictions on the CLECs.

Qwest's response acknowledged that the use of the LMOS production application during end-to-end testing was not clearly documented. Therefore, Qwest added section 1.3.9 to the Qwest Co-Provider System Test Plan as of January 23, 2002 to explain test circuits and to inform CLECs that non-designed circuits are tested in a production environment. KPMG Consulting has received and reviewed a copy of the updated System Test Plan obtained through Data Request ID191. The new section, "Test Circuits", states the following:

"Prior to entering Gateway-to-Gateway testing, a meeting will be held to ensure that the entrance criteria are met, including a list of circuits for Serial, POTS, Message, Carrier Facility, and designed Telephone Numbers for use during testing. Qwest will provide test Designed circuits that will be built in a test OSS environment. The Co-Provider will provide non-Designed circuits (telephone numbers) for testing in Production OSS."[1]

Based on the documentation provided, KPMG Consulting does not believe that Qwest has adequately described how the LMOS production system is used during end-to-end testing or what the known limitations are of using a test environment with a production component.

KPMG Consulting recommends that Exception 3109 remain open pending resolution of the issues identified.

Qwest Response to KPMG Comments (03/13/2002):

Qwest believes that any risk inherent in utilizing a production system behind the EBTA testing interface has been managed exceptionally well. Qwest, IXC, or CLEC operations have not been negatively impacted in the more than 6 years of existence and testing of the interface using this configuration. The benefits of using the Production environment far outweigh the risk. Qwest is especially cognizant of the CLECs' need to conduct effective tests of EBTA and recognizes the mutual benefit of successfully completing those tests prior to actual business activity.

Qwest has successfully demonstrated its ability to mitigate any risk of utilizing a production LMOS system as described in the previous response. Interoperability testing amounts to less than one percent of LMOS activity at any given time. Given the minimal volume of test transactions there is no negative impact to the normal load of transactions or Qwest production resources.

The JIA Section 7 discusses the various tests performed before a CLEC is brought into production. Extensive preliminary tests (including stack to stack, network validation and gateway to gateway) are conducted. These tests check connectivity and basic business functions and are conducted in the EBTA test environment without connectivity to the OSS. The production OSS is only included in End to End testing and Operational Readiness testing. Qwest's progressive testing approach serves to minimize risk by working through any preliminary issues that could impact production.

Although one CLEC reported two test cases not being placed on hold, these two instances represent a rare exception in the overall volume of test transactions processed.

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[1] Qwest and Co-Provider Electronic Bonded Trouble Administration System Test Plan, Version 1.0, Created February 12, 2002 - Section 1.3.8, "Test Circuits", p.3.

Qwest and the CLEC identify, work through, and manage the transactions through joint testing. Use of the production system allows the CLEC to test all test scenarios. Qwest has successfully used this strategy to test with CLECs and IXCs. There has been no request by a CLEC or IXC to change the environment used for testing.

The creation and execution of a structured, comprehensive test plan is the key to a CLEC's understanding of how transactions are processed. Qwest's testing environment allows for the complete execution of the defined test scenarios and, therefore, successful interoperability testing. Included in KPMGs response is the remark "CLECs were able to test all of the agreed upon scenarios". This statement confirms that Qwest's test environment and architecture as defined meet the requirements necessary for CLEC development. Similarly, an end-to end test was conducted by KPMG in conjunction with a CLEC who has successfully completed EBTA interoperability testing across several releases. This test effort was successfully concluded on 8/24/01 with related exceptions.

Participation of a Qwest Tester during interoperability testing is independent of the LMOS environment used. Even if a completely isolated LMOS test instance was employed, the Qwest Tester's role would remain the same. Qwest encourages cooperative testing because the nature of EBTA demands real-time responses to input from the CLEC. The Qwest Tester fills the roles of downstream Qwest personnel during interoperability testing. For example, the Qwest Tester would enter test results to mimic the activity of a Screener in entering test results and updating a repair ticket.

Qwest values the interoperability test highly and makes its testing staff available as required. To Qwest's knowledge, no CLEC request for interoperability testing has ever been denied for lack of tester availability.

The Qwest/Co-Provider EBTA END-TO-END FUNCTIONAL TEST SCENARIOS document has been updated. The revised document includes additional clarifying language in Sections 2.0 and 2.2. The language expands the explanation of the testing process and the responsibilities of Qwest Testers. The CLEC is informed that production LMOS is used. The additional wording explains the steps the Qwest Tester takes to prevent outages and manual screening activities.

Qwest maintains that the EBTA testing environment does provide CLECs with a true representation of how transactions will function and respond in Qwest's EBTA production environment. The lack of a comprehensive test environment does not hinder a CLEC's ability to troubleshoot problems before entering production. There is no increased likelihood of encountering production problems, increasing time, cost, or effort for CLEC or Qwest, because the test environment is production.

In summary, Qwest has addressed each of KPMGs concerns raised in its response.
- Qwest, IXC, or CLEC operations have not been negatively impacted in the more than 6 years of existence and testing of the interface using this configuration.
- Qwest's test environment and architecture as defined meet the requirements necessary for CLEC development.
- Qwest encourages cooperative testing because the nature of EBTA demands real-time responses to input from the CLEC representing activity of screeners and technicians.
- Qwest maintains that the EBTA testing environment does provide CLECs with a true representation of how transactions will function and respond in Qwest's EBTA production environment.

Additionally, the FCC has in the past held that the provision of an integrated, computer-to-computer maintenance and repair interface is not required to satisfy the "substantial same time and manner" test, provided that the BOC otherwise demonstrates that it provides equivalent access to its maintenance and repair functions. [2]/ To accommodate the needs of CLEC community, Qwest provides a computer-to-

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[2]/ *See New York Section 271 Order*, 15 FCC Rcd at 4069 (¶ 215).

computer M&R interface. If KPMG maintains its position that the use of production LMOS for EBTA testing has impact to the CLECs, Qwest respectfully requests that KPMG close this exception and categorize it as "closed/unresolved".

Attachments: None

215.	We disagree with AT&T's assertion that Bell Atlantic must demonstrate that it provides an integratable, application-to-application interface for maintenance and repair. Bell Atlantic is obligated to provide maintenance and repair functionality in substantially the same time and manner that it provides the functionality to itself. Although the Commission has indicated that a BOC would afford carriers a more complete opportunity to compete by offering an integratable, application-to-application maintenance and repair interface, we also found that the lack of integration does not necessarily constitute discriminatory access, provided that the BOC otherwise demonstrates that it provides equivalent access to its maintenance and repair functions. Accordingly, although it presently does not offer an application-to-application interface, we find Bell Atlantic satisfies its checklist obligation by demonstrating that it offers substantially the same means of accessing maintenance and repair functions as Bell Atlantic's retail operations.