The Regional Oversight Committee (ROC) 3rd Party Test

Qwest
OSS Evaluation Project
Master Test Plan

Revised Release

Version 5.2

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Submitted by:

KPMG Consulting

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1. Executive Overview

Execution of a Master Test Plan (MTP) based on the Test Requirements Document (TRD) will evaluate the operational readiness, performance and capability of Qwest to provide pre-ordering, ordering, provisioning, maintenance and repair (M&R) and billing Operation Support Systems (OSS) documentation, interfaces and functionality to competitive local exchange carriers (CLECs) within the 13 participating Regional Oversight Committee (ROC) states. KPMG Consulting, in its role as Test Administrator, used the TRD and its OSS testing experience to develop this formal MTP to review and evaluate Qwest's systems and processes.

The TRD was developed in a collaborative process initiated by the ROC. This process included state commission staff, Qwest, CLECs and other industry participants referred to as the ROC Technical Advisory Group (TAG).

KPMG Consulting further refined the scenarios, and will develop the test transaction mix and volume estimates with input from the TAG. KPMG Consulting developed this MTP to be reviewed by the TAG and approved by the ROC. The overall test is designed to be multi-faceted and provide end-to-end coverage of the systems, interfaces, and processes that will impact the ability of CLECs to enter the market in the Qwest region and provide local service to regional consumers at estimated production volumes.

In constructing the TRD and this MTP many factors were considered. They include the systems and processes to be tested, the measurement points and respective evaluation criteria, and the necessary conditions required to stage a successful, efficient, and objective test.

As Test Administrator, KPMG Consulting will ensure that all tests reflected in this plan are executed. Test results and evaluations will be provided to the ROC and TAG as the test progresses. At least one Interim Report, at approximately the mid-point of the test, possibly other interim reports, and a Final Report at test completion will be produced.

Through the ROC's extensive collaborative testing effort, the TRD and MTP, the following benefits should be realized:

- ROC Commission staff, Qwest and CLECs may eliminate duplicative work across states by determining a complementary set of OSS functionalities, performance measurements and methods to be used in the test.
- Increased administrative efficiency may result in time and cost savings for all participants.

2. Introduction

2.1 Background, Purpose and Objectives

The Telecommunications Act of 1996 (the Act) and related FCC orders require Qwest to provide just, reasonable and nondiscriminatory access to its operations support systems (OSS), to provide the documentation and support necessary for competitive local exchange carriers (CLECs) to access and use these systems, and to demonstrate that Qwest's systems are operationally ready. Deleted: *1*

Compliance with these requirements should allow competitors to obtain pre-ordering information, submit service orders for resold services, UNE Platform and unbundled network elements (UNEs), submit trouble reports and obtain billing information pursuant to interconnection agreements and regulatory requirements at a level deemed to be nondiscriminatory when compared with Qwest's retail operations.

Qwest offers various systems, including both application-to-application interfaces and terminal-type/Web-based systems, which CLECs can use to access Qwest's OSS in order to perform these tasks. The ROC has retained KPMG Consulting to assist it with assessing whether Qwest is meeting these requirements.

The overall objective of this document is to provide a description of a comprehensive plan to test Qwest's OSSs, interfaces and processes. This MTP shall be the basis by which individual tests are developed and executed. The test results should help the ROC to determine whether Qwest's provision of access to OSS functionality enables and supports CLEC entry in the local market. To meet these objectives, KPMG Consulting developed a test plan that is intended to provide adequate breadth and depth to evaluate the entire CLEC/ILEC relationship under real world conditions.

2.2 Principles and Scope

Twenty principles dealing with the 3rd Party OSS Test and its scope were agreed upon in the ROC's Testing and Scoping Principles Workshop held in St. Paul, MN on December 2nd and 3rd, 1999. These principles (which can be found in section 3 of this document) are the guiding principles used to plan, conduct, evaluate and report on the ROC 3rd Party Test of Qwest's OSS. These principles are incorporated into the MTP and the test participants shall be guided by these principles in the development, execution, analysis and report of the test.

Following this philosophy and guided by these principles, this document describes the plan to evaluate Qwest's OSSs, interfaces and processes that enable CLECs to compete with Qwest for customers' local telephone service. In determining the breadth and depth of the test, all stages of the CLEC-ILEC relationship were considered. These include the following:

- Establishing the relationship
- Performing daily operations
- Maintaining the relationship

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Further, each of the standard service delivery methods that Qwest makes available to CLECs in the ROC states – resale, interconnection, UNE Platform (UNE-P), and unbundled network elements (UNE) – are included in the scope of the test.

This plan is divided into five key dimensions to organize and facilitate testing: Test Domains, Test Types, Test Processes, Test Scenarios and Evaluation Techniques. Within each of the test types, the methods and processes to be applied to measure Qwest's performance are described along with the specific points in the systems and processes where Qwest performance will be evaluated. The results of the test will be compared against service quality measures identified by the ROC for the purpose of this test, and other measures and criteria as deemed appropriate by the ROC.

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This plan also describes the development and application of scenarios used in the test types to evaluate Qwest's OSS and related support services. KPMG Consulting developed these scenarios to test the functionality of Qwest's pre-ordering, ordering and provisioning (POP); maintenance and repair (M&R); and billing systems. The scenarios were designed to depict real world situations that CLECs currently face or may face in the near future. The scenarios will be used to develop test cases that provide a detailed description of the transactions and introduce additional variables such as errors and supplements to further simulate real world transactions.

Military Style Test

This plan will adopt the military-style test philosophy, which suggests a "test until you pass" approach. This is to be in the best interest of all parties seeking an open, competitive market for all local services in the ROC states. An Observation and Exception process will be utilized to identify and manage resolution of potentially negative test findings. Details of these processes are discussed under separate cover.

2.3 Test Administration

Section 4 defines the organization, processes and communication framework that will govern the test activities outlined in this MTP. It describes the ROC approach to the testing effort, organizational entities, and their respective roles and responsibilities. It also outlines the communications processes for written communications, documents and meetings, both open and closed. Scheduling and tracking requirements are specified along with the issue resolution process.

2.4 Test Framework and Test Elements

In order to develop a comprehensive test of Qwest's OSS, interfaces, and processes, the test framework is defined in terms of a set of elements including the following:

- Qwest's OSS System Architecture
- Test Domains
- Parity standards, Benchmarks, Qualitative Evaluations and Comparisons
- Test Data
- Entrance and Exit Criteria
- Test Process Types and Individual Tests
- Inputs, Activities and Outputs for Specific Tests

2.5 OSS System Architecture

Section 6 provides an overview of Qwest's OSS System Architecture throughout the 13-state area covered by this test. By its nature, the ROC test is somewhat unique because it is the first independent 3rd party testing effort initiated by multiple jurisdictions that will oversee the effort from its formative stage through completion. The broad geographical reach of the test expands the OSS architecture breadth as well. Qwest's current operating territory, and therefore much of

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its OSS legacy architecture, is the result of the merging of three predecessor Bell Operating Companies into the Qwest Regional Bell Operating Company (RBOC), including:

- Pacific Northwest Bell (PNB) covering Washington and Oregon now referred to as the Western Region
- Mountain Bell (MB) covering Arizona, Colorado, Idaho, Montana, New Mexico, Utah and Wyoming, now the Central Region
- Northwestern Bell (NWB) covering Iowa, Minnesota, Nebraska, North Dakota, and South Dakota, now the Eastern Region

2.6 Performance Measures

The performance measures to be used in the 3rd party OSS test have been collaboratively developed by the TAG. Issue resolution activities resulting from the test may result in changes to the performance measures which will be agreed upon by the TAG.

2.6.1 Performance Measurement Components

OSS performance measurement plans designed to evaluate Incumbent Local Exchange Carrier (ILEC) performance include definitions of performance measures, success criteria, other standards, and reporting requirements. The performance measures quantify the ILEC's performance of wholesale and retail processes. They are defined in terms of purpose, rules used in collecting raw data required, reporting dimensions, calculation formula, etc. Success criteria are defined as either a benchmark or a retail parity standard. A benchmark is established to identify the point at which the ILEC's performance for a wholesale process is deemed adequate for those wholesale processes for which there is no appropriate retail analog. For those wholesale processes for which there is an analogous retail process, parity standards will be used. Parity standards indicate that the wholesale performance of a process should be compared to the ILEC's performance of retail processes. Parity standards require that the ILEC's retail or internal performance is compared to analogous wholesale performance measures to determine if there is nondiscriminatory treatment of wholesale services as required by the Act and orders of state commissions and the FCC.

2.6.2 Performance Measurements in the Context of the ROC's 3rd Party Test

Performance measurements will be a key element of the ROC test of Qwest's OSS. Since the ROC test is the first effort involving multiple state commissions and jurisdictions, it presents some unique challenges. Through a collaborative process, the ROC TAG has developed a comprehensive set of measurement definitions, called the "Qwest Service Performance Indicator Definitions (PID) ROC 271 Working PID" (Appendix B). This collaboration has included an unprecedented breadth and depth of participation from commission staff, CLEC, and Qwest representatives, with the purpose of achieving a beneficial and efficient degree of consistency across Qwest's local exchange operating region. When finalized, this PID will be the document that defines what is measured and how it is to be measured, for purposes of this OSS test.

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2.6.3 ROC's Planned Approach to Performance Measurements in its Qwest OSS Test

To support a comprehensive test of Qwest's OSS in a timely manner that includes a pre-determined performance measurement system, the ROC Steering Committee has developed the following consensus:

- The performance measurements, parity comparisons, benchmarks and statistical evaluation methods should be established in advance for use during the ROC test.
- This set of performance measurements and associated parity comparisons and benchmarks has been established for the 3rd party test vendor(s) to test and evaluate the outcomes as required to meet the needs of the ROC states for testing purposes.
- The ROC states will use the test results and evaluation as part of the record in their individual 271 proceedings.
- The ROC states are free to modify the performance measurements (either the set of measurements or the parities/benchmarks) on a going forward basis (irrespective of the 3rd party test) as required to meet their specific needs.
- The ROC has requested and Qwest has agreed that all performance measures agreed upon for the ROC test will be collected not only during the period of the OSS test, but post testing for individual state use until a 271 application for the individual state is submitted to the FCC, or unless otherwise noted in the PID.
- The measurements taken after completion of the ROC test will not be used to re-open military-style testing but may be used to support future filings. This does not preclude looking at such data to help review and/or close exceptions identified during the test.

2.7 Entrance and Exit Criteria

Entrance criteria are those requirements that must be met before individual tests can commence. Exit criteria are those requirements that must be met before the test can be concluded. Global exit criteria apply to every individual test except where noted otherwise. Individual tests each have individual entrance and exit criteria. Entrance and exit criteria link the test plan with Performance Measures. Entrance criteria generally require that Performance Measures are completely defined, available and operational, and audited by Liberty Consulting.

2.8 Test Processes and Test Types

The major test types are Transaction Driven Systems Analysis and Operational Analysis. The first introduces various types of transaction-oriented test data from various sources into Qwest OSS processes and observes the results. Operational analysis assesses aspects of the trading partnership business process that are not transaction driven.

3. Test Principles and Scope

The twenty principles agreed to by the TAG and used as the guide for the development of the MTP are:

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1. This test is intended to evaluate whether Qwest provides nondiscriminatory access to its OSS for associated resale, unbundled network elements (UNEs), and interconnection services in order to demonstrate the operational readiness of these OSSs to support sustained commercial operation. As part of nondiscriminatory access, the test will evaluate whether Qwest has deployed the necessary systems and personnel to provide sufficient access to each of the required OSS functions including pre-order, order, provisioning, maintenance and repair, and billing. The test will include an evaluation of Qwest's adherence to telecom industry guidelines for OSS interfaces. It will also evaluate whether Qwest is adequately assisting competitive local exchange carriers (CLECs) to understand how to implement and use all of the OSS functions available to them.
2. An independent test administrator (KPMG Consulting), an independent pseudo-CLEC (Hewlett-Packard [HP]) and a performance measure auditor (Liberty Consulting), performing three separate and distinct roles, under the oversight of the ROC, will conduct this test.
3. The scope of this test will be designed and scaled to represent the environment of the 13 states to ensure their ability to use the results in individual state proceedings. Once regional and state differences in Qwest OSSs are fully understood, a determination will be made on what testing will most appropriately address the impact of the differences. The MTP will be modified as appropriate to address these regional and state differences.
4. The goal of all parties for the ROC test of Qwest's OSS is an open, above-board test environment where all information relating to the test is available to all parties, except information that is commercially sensitive, proprietary, or information that will impact the blindness of the test. To that end, KPMG Consulting will establish procedures concerning communications affecting the planning, execution and evaluation of the test. These procedures will include regular, open meetings between KPMG Consulting, HP, the CLEC community and ROC representatives in a manner similar to the meetings held in the Bell Atlantic-New York test. Issue identification, research, resolution decisions, and other relevant items critical to the transparency of the test will be discussed and documented.
5. The ROC test will use guidelines established by the FCC and DOJ, and will draw on input from the ROC Steering Committee (ROCSC), individual state commissions, CLECs, Qwest, and other TAG members. The CLECs and Qwest should play an active role in developing performance measurements and success criteria. The ROC will ensure that the performance measurements and success criteria are reasonably complete prior to the start of the test.
6. The OSS access that Qwest provides for itself and to CLECs will be evaluated using both qualitative and quantitative methods.
7. This MTP has been developed with input from all ROC participants and will be approved by the ROC prior to any testing activity. The MTP has been designed to maintain adequate blindness with respect to Qwest. The performance measures will be developed in a document separate from this MTP and in a timeframe consistent with principle 5 above.

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8. All documentation and assistance made available to HP by Qwest for use by HP in building and/or setting up the required OSS interfaces will be made available to all participants to verify that HP is not beinggiven special treatment.
9. This test will include a thorough and well-documented independent assessment of data collection and calculation processes for performance measurement data – both qualitative verification and against business rules.
10. The test will include an independent review of the Change Management processes and procedures used by Qwest to communicate with CLECs regarding OSS system performance and system updates. This review will include an evaluation of how CLEC suggestions and requests for system corrections, enhancements or new functionalities are handled. The test will evaluate at least one significant software release implementation. Any testing fixes applicable to production will be introduced into the Qwest/CLEC Change Management process, unless otherwise determined by the ROC.
11. This test will include normal, high and stress volume testing using a replicate mix of expected flow through transactions that includes normal transactions and transactions with errors, changes and supplements. Scalability of manual processes and supporting hardware and software is to be evaluated in lieu of volume testing for manual processes.
12. The test will include an evaluation of the adequacy of documentation and assistance provided by Qwest to CLECs for establishin g, maintaining and using OSS interfaces. HP will be used to evaluate the ability of building, maintaining and using an EDI interface and setting up, maintaining and using a GUI interface. If a CLEC has built an Electronic Bonding Trouble Administration (EB-TA) interface for M&R and is willing to make it available[1] to HP, that interface can be used to evaluate Maintenance and Repair interface maintenance and use. If no CLEC has built an interface or none is willing to make it available, KPMG Consulting should use a HP–built EB-TA interface to test business rules and ability to process transactions. Regardless of whether a new or existing EB-TA interface will be used, the documentation and assistance provided by Qwest for EB-TA will be evaluated.
13. The test can be conducted using transactions (e.g. pre-orders, orders and trouble reports) from a combination of existing CLECs and HP. Similar test cases will be run by both HP and a production CLEC that has completed interface verification with Qwest in order to validate the process under the oversight of KPMG Consulting.
14. The test process will include a formal, predictable and public mechanism to communicate with CLECs and Qwest on issues related to the test. This mechanism will be managed by KPMG Consulting and overseen by the ROC.
15. The test scope will include functional testing of pre-ordering, ordering, provisioning, maintenance and repair, and billing. The functionalities will include a replicate mix of manual requests, electronic transactions, errors, changes, and supplements in both flow through and non-flow through provisioning, as appropriate, with CLECs consulted on the

1. MCI WorldCom has built an EB-TA interface for M&R and is willing to make it available to Hewlett-Packard and KPMG Consulting. It is expected that MCI WorldCom's interface will be used for the test.

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determination of the mix. Functional testing will be conducted on an end-to-end basis that results in orders actually being provisioned, as applicable, as determined by the ROC.

16. The 3rd party test will test significant volumes of transactions for xDSL-capable loops and include a qualitative evaluation of pre-ordering functions including loop qualification.
17. Where possible, Qwest wholesale performance measurements will be compared with analogous performance measurements of Qwest's retail performance. Where this retail parity comparison is not possible, Qwest wholesale services will be compared to a fixed benchmark.
18. Testing will also include both qualitative and quantitative evaluation of the usability, capability and accessibility of Qwest wholesale OSS interfaces compared to Qwest retail OSS interfaces.
19. As testing progresses, the need to test or evaluate new products/services or delivery methods will be determined on an individual case basis as they are identified. Based on the associated facts, the new products/services or delivery methods will either be incorporated in the test or handled separately.
20. The ROC test will use military-style testing. This approach ensures that all significant exceptions will be tested until they are corrected and the relevant success criteria are met.

4. Test Administration

The audience for this document falls into two main categories:

1. Readers using this document during the testing process
2. Interested parties who have some stake in the result of the Qwest OSS evaluation and wish to have insight into the evaluation effort.

4.1 Organization and Responsibilities

The primary user of this document is KPMG Consulting in its role as test administrator. Others are the ROC state commissions, Qwest, the CLECs, HP, Liberty Consulting, Maxim Telecom Consulting Group (MTG), the Department of Justice (DOJ) and the Federal Communications Commission (FCC).

4.1.1 Regional Oversight Committee

The Regional Oversight Committee (ROC) membership is comprised of the 14 state public utility commissions serving the states in Qwest's operating territory. These include Arizona, Colorado, Iowa, Idaho, Minnesota, Montana, North Dakota, Nebraska, New Mexico, Oregon, South Dakota, Utah, Washington and Wyoming.

State commission participation in the collaborative test will be provided through four organizational entities established for this purpose: the Executive Committee, Steering Committee, Administrative Coordinator and Project Manager, MTG. The ROC is responsible for:

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- Providing overall project management of the end-to-end test planning, execution and evaluation effort
- Overseeing the overall test development and testing process
- Determining the overall testing scope and timeline
- Managing and resolving issues escalated from the testing process as required
- Reviewing any interim reports prepared by KPMG Consulting, HP or Liberty Consulting
- Reviewing and approving the Final Report(s) prepared by KPMG Consulting and HP
- Reviewing and approving the final audit report prepared by Liberty Consulting
- Communicating progress, status and issues to all interested parties.

4.1.2 Qwest

Qwest will use the MTP in conjunction with other documents to understand the testing framework in order to prepare its test bed. The MTP describes the requirements Qwest must satisfy to prepare for and execute the tests.

4.1.3 TAG

The ROC Technical Advisory Group (TAG) consists of state commission staff, competitive local exchange carrier (CLEC) representatives, Qwest and other industry members. The Technical Advisory Group will conduct regular meetings, generally weekly, either in-person or via teleconference call to inform all members of testing progress, review current status and identify and resolve issues. Additional special-purpose TAG meetings will also be held as needed to support the test planning, execution and evaluation process. The TAG will initially be chaired by the ROC Project Manager, MTG; however, that may change during the course of the testing effort as deemed appropriate by the ROC Steering Committee and TAG membership. TAG member responsibilities include:

- Providing inputs on order volume, interface usage, product information and test process
- Assisting with scenario definition
- Assisting with issue identification, resolution and, when necessary, escalation to the ROC
- Advising ROC on technical issues

4.1.4 CLECs

The CLECs will use this document to understand the breadth and depth of the test. In addition, this document describes the elements required of the CLECs to prepare for their role in the tests.

4.1.5 Test Administrator – KPMG Consulting

KPMG Consulting has overall responsibility for the management of the testing process described in this document. This document will be used by KPMG Consulting to guide the various parties involved in this testing effort.

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4.1.6 Pseudo-CLEC – HP

HP will establish the capabilities, install facilities and connectivity for the EDI, GUI, EB-TA and manual OSS interfaces to Qwest as required to process the volume and mix of transactions for tests specified in the MTP and test specifications prepared by KPMG Consulting. The test activities of HP are primarily delineated in HP Consulting's Statement of Work for the Regional Oversight Committee and Qwest Corporation (see **http://www.nrri.ohio-state.edu/oss/newdocs/hp_sow.pdf**). Various other documents produced in connection with the ROC's OSS Testing effort support definition of the test activities of HP, in particular the ROC's Request for Proposal, TRD and clarification issued to vendor finalists dated 4-24-00. The descriptions of the testing and evaluation activities of HP as contained in these specified documents are hereby incorporated by reference. In general, the goal is to replicate as realistically as practical the responsibilities, behavior and experiences of a true CLEC attempting to do wholesale business with Qwest in the portion of its operating territory represented by the thirteen participating states of the ROC. HP will attempt to re-create the CLEC experience to the fullest extent feasible as described in the TRD.

4.1.7 Performance Measure Auditor (PMA) – Liberty Consulting

Liberty Consulting will use this document to develop and perform an audit to insure that all aspects of Qwest's wholesale performance measures and retail parity standards are sound and in compliance with the collaboratively developed ROC PID.

4.1.8 Federal Communications Commission (FCC)

The Federal Communications Commission may observe the process of developing, conducting and evaluating the tests.

4.1.9 Department of Justice (DOJ)

The Department of Justice may observe the process of developing, conducting and evaluating the tests.

4.2 Assumptions

This section describes the assumptions made in the development of this Test Plan.

- Qwest, KPMG Consulting, HP and Liberty Consulting will provide suitable resources in sufficient numbers to assist with the evaluation effort.
- Qwest will provide access to appropriate documentation.
- Qwest will provide the necessary resources, facilities and support to set up the work environment and the test bed required to execute the tests (i.e., office space, equipment, IDs, security access, customer accounts and addresses, and appropriate company codes).
- Qwest will process test transactions as part of normal processing including the provisioning of some scenarios/test cases.
- Qwest will provide the test bed facilities required to establish the working lines needed for portions of this test. Deleted: *1*

- One or more CLECs will volunteer to participate and provide facilities required to execute those scenarios necessitating CLEC participation.
- Qwest and the CLECs will allow KPMG Consulting to observe retail and wholesale processes on-site during the evaluation effort.
- Qwest and the CLECs will give KPMG Consulting access to historical data and current operational reports, as needed, to complete the evaluation.
- Qwest will allow KPMG Consulting to inspect algorithms that may have a bearing on parity access, such as the algorithm used to manage trouble reports.
- KPMG Consulting, HP, Liberty Consulting and any subcontractors will use documentation generally available to the CLECs and support mechanisms to develop its interfaces.
- Regulatory, legal and confidentiality issues or concerns can be resolved without significant impact to either the intent of the tests, the ability to execute the tests, or the schedules for their execution.
- The test will be designed to not impair or impede service to customers during its planning and execution stages.

4.3 Limitations

The purpose of this section is to describe some limitations of the testing effort. These limitations are described in terms of what is to be tested and what conclusions can be drawn from the results.

- In some cases, certain order types, troubles and processes may not be practically tested by submitting transactions during a test of reasonable duration. Examples include orders with very long interval periods (such as the establishment of collocation arrangements) and high volumes of test provisioning transactions. Accordingly, the test may take the form of an interview, inspection, live orders review, review of historical performance or operational reports, or some other method that will capture the performance of Qwest with respect to the order types and processes in question. Detail Test Plans will identify the tests that can be executed live and those that must be executed by other means. Long interval tests that prove to have no alternative test methods that foreshorten the test will be referred, with a recommendation for disposition, to the ROC. The ROC will make the final decision regarding the disposition of such tests.
- Operational, time and resource constraints make it impossible to construct a completely exhaustive test suite. Significant effort has been expended to clearly portray the scope of the proposed suite, and it is believed this suite provides both extensive and sufficient coverage. Provision has been made in the plan to amend or extend the test if, in the judgment of the ROC, an amendment or extension is deemed justifiable.
- It is neither practical, nor desirable to execute certain live tests that would disrupt service to Qwest or CLEC customers. An example would be a Maintenance and Repair test that requires an equipment failure. Qwest performance for these test cases will be evaluated

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by other means. The Test Type Evaluation Plans will identify the tests that can be executed live and those that must be executed by other means.

- Limitations to the volume tests as described in section 15.

4.4 Written Communications and Documents

KPMG Consulting shall be responsible for:

- Providing overall communications management within the testing period
- Maintaining daily contact with HP and other participants
- Maintaining close contact with the ROC and the TAG
- Responding to test-related issues and concerns raised by individual state Commissioners or state Staff Members
- Maintaining an electronic contact list (e.g., subject matter experts, escalation) for each test participant, the TAG, and the ROC
- Posting material on the ROC OSS Web site
- Distributing exception reports and soliciting comments on the exceptions from Qwest and the CLECs
- Distributing test management jeopardy reports, as defined in section 4. 12, to the appropriate audience as determined by KPMG Consulting
- Maintaining data used to execute the test of Qwest's OSS including the test data base provided at the beginning of the test, the transaction files generated and used during the tests to convey CLEC-to-Qwest and Qwest-to-CLEC transactions over the interfaces, and printed documents related to test processing not otherwise retained in electronic form.

4.5 Principles Governing Written Communications

There are competing forces that must be balanced in determining the principles governing written communications. On one hand, an open communications process is important to maintain both the perception and actuality of a credible test. On the other hand, there are instances where the blindness of Qwest with regard to some aspects of the tests is also critical.

4.6 Formal Documents

Formal documents shall be assumed to be open and available unless:

- They are internal to an entity;
- They contain un-redacted proprietary information; or
- Their distribution would compromise the blindness of the test

Documents that were not made public during the test in order to preserve blindness shall be made available to all participants at the conclusion of the test, and prior to KPMG Consulting's drafting of the Final Report. Documents not made public during the test because they were internal documents or contained proprietary information need not be made available at the

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conclusion of the test. Disputes regarding whether or not a document should be considered proprietary will be settled by the ROC.

4.7 ROC Web Site

The ROC has established a Web site for this test (http://www.nrri.ohio -state.edu/oss.htm). Formal written communications shall be placed on this Web site unless they meet one or more of the previously agreed to criteria. A posting procedure is in place and will be followed by the vendors.

4.8 Informal Communications

Informal communications, such as emails between subject matter experts discussing technical details of an aspect of the test, shall not be posted or otherwise made available unless they become germane to a dispute and are requested by the ROC Executive Committee. KPMG Consulting, Liberty Consulting and HP shall maintain electronic versions of informal communications for a period of one year after the conclusion of the test.

4.9 Management and Administration of the MTP

Once the MTP and PID have been approved by the ROC, the management and administration of the MTP and the PID shall be the responsibility of KPMG Consulting. The ROC Project Manager will work with the TAG and KPMG Consulting to establish a Change Control Process that governs how changes to the MTP are proposed, discussed and implemented. Changes to the MTP and the PID shall be communicated in a timely and open manner to all parties concerned unless the changes contain information that might compromise the blindness of the test. In this case, the changes shall be communicated to all concerned parties except for Qwest. KPMG Consulting shall also establish, publish, and adhere to a rigorous version control process for the MTP, the PID and associated documentation. For relevant documentation, all vendors will use a document control section similar to that shown in Appendix A.

4.10 Meetings

4.10.1 Purpose

Beginning with the 3rd party test of Bell Atlantic-New York's OSS, striking the appropriate balance between an open and transparent testing process and blindness to preserve the realism and integrity of the test has been an important consideration in the conduct of 3rd party tests.

Blindness, for the purpose of this Test, extends beyond keeping the identity of the P-CLEC from Qwest. Blindness is the withholding from certain parties to the test of specific test information in order to protect vendor property, to maintain fairness in reporting test results, or to preserve the veracity of the test. This may result in CLECs and/or Qwest being excluded from meetings or other communications.

The following figure provides a structure that can foster openness except where blindness is required.

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Figure 4.10.1.1

	Qwest	CLECs	KPMG Consulting	HP
ROC/ MTG (May monitor any meeting or call)	Generally Open Announced Open Conference Bridge Notes on Web	Generally Open Announced Open Conference Bridge Notes on Web Closed to Qwest as Appropriate for Blindness Openly Announced Restricted Conference Bridge Notes to ROC Published after Project	Generally Open Announced Open Conference Bridge Notes on Web Closed to Qwest as Appropriate for Blindness Openly Announced Restricted Conference Bridge Notes to ROC Published after Project	Generally Open Announced Open Conference Bridge Notes on Web Closed to Qwest as Appropriate for Blindness Openly Announced Restricted Conference Bridge Notes to ROC Published after Project
Qwest CLECs		Generally Open Announced Open Conference Bridge Notes on Web	Generally Open Announced Open Conference Bridge Notes on Web Generally Open Announced Open Conference Bridge Notes on Web Closed to Qwest as Appropriate for Blindness Openly Announced Restricted Conference Bridge Notes to ROC Published after Project	Generally Open Announced Open Conference Bridge Notes on Web Generally Open Announced Open Conference Bridge Notes on Web Closed to Qwest as Appropriate for Blindness Openly Announced Restricted Conference Bridge Notes to ROC Published after Project
KPMG Consulting				Generally Open Announced Closed to Qwest as Appropriate for Blindness Restricted Conference Bridge Notes to ROC Published after Project

Liberty Consulting is not included in the above table because openness/blindness principles do not apply to Liberty Consulting. Liberty Consulting is required to exercise its independent judgment in conducting its audit of the performance measures and inform the ROC and TAG of progress and findings.

4.10.2 General Principles

Meetings will be open unless specifically closed for purposes of blindness.

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4.10.3 Open Meetings

The following guidelines will apply to open meetings:

- A meeting announcement and agenda will be posted on the ROC web site
- An open conference bridge will be made available, with the dial in number and pass code provided in the meeting announcement
- Meeting notes will be posted on the ROC web site

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These guidelines are generally intended to apply to all contacts between Qwest and KPMG Consulting, and Qwest and HP. At the same time, it is expected that Qwest will have incidental contact with KPMG Consulting and/or HP before and during the testing process. These guidelines are not intended to be rigidly applied to incidental contacts between Qwest and KPMG Consulting, or Qwest and HP.

4.10.4 Meetings Closed to Qwest to Preserve Blindness

The following guidelines will apply to meetings closed for purposes of blindness:

- A meeting announcement will be posted on the ROC web site
- A restricted conference bridge line will be made available, with the dial in number and pass code provided via email
- Meeting notes will be archived
- ROC/MTG may monitor any meeting
- Meeting notes will be published following the completion of testing and prior to the drafting of the Final Report

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4.11 Scheduling and Tracking

The ROC Project Manager, MTG, will maintain a high-level project plan for the ROC's overall 3rd party testing endeavor that covers the initial formation of the ROC 3rd Party Testing Organization through the delivery of KPMG Consulting's Final Report to the ROC.

4.12 Operational Reporting

KPMG Consulting will prepare and deliver operational reports of five types to the ROC Project Manager (MTG) and the TAG. These include:

- **Weekly Operational Report** - Overall progress reports will be provided weekly that describe the status on all major milestones and identify new issues requiring resolution.
- **Daily Report** - Detailed status reports on specific transaction tests including potential areas of concern and technical issues.
- **Issue Tracking Report** – Description of the nature of an issue, issue status, action items, responsibility and schedule for resolution.
- **Jeopardy Reports** – Issued when an event causes impact on the project's goals and expectations (such as the schedule) as defined in this MTP.

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- **Observation and Exception Reports** – Description of observation and exceptions to the expected outcomes and other conditions encountered during testing are documented by KPMG Consulting, HP, or Liberty Consulting in exception and observation reports which are posted on the web site.

4.13 Issue Resolution

The Issue Resolution process handles any issues which are not addressed in the Observation and Exception process. The Issue Resolution process consists of five steps designed to embrace the open and collaborative spirit of the test, promote timely and reasonable remedies and provide a final decision on contested issues, as required. The steps are:

1. Test participants refer all testing issues to KPMG Consulting for inclusion in the issue resolution process.
2. KPMG Consulting provides the first level of issue management for all testing related issues including the assignment of accountabilities, action plan, tracking, reporting and escalation. KPMG Consulting will enlist the assistance of Qwest, CLECs, HP, and the TAG as required to resolve the issue.
3. If the issue is not resolved in the collaborative process, it may be decided by MTG on behalf of the ROC Steering Committee.
4. If an issue is of sufficient magnitude and/or contention as to warrant broader debate and decision participation to ensure the results are compatible with ROC goals, it will be referred by MTG to the ROC Steering Committee for consideration. The referral will include a description of the issue, alternative positions regarding the issue and a preliminary recommendation. Other test participants may participate in the discussion/debate as deemed appropriate by the ROC Steering Committee.
5. If the issue is not resolved by a decision at the Steering Committee level, it will be referred to the ROC Executive Committee for final resolution. Once a resolution is determined, it will be communicated to all testing participants, included in the issues report and implemented in the testing process.

5. Test Plan Framework and Test Elements

The overall test of Qwest's OSS is designed to be multi-faceted and provide end-to-end coverage of the systems, interfaces, and processes that fall within the scope of the testing effort. In constructing this MTP, many factors were considered, including the systems and processes to be tested, the measurement points and respective evaluation criteria, and the necessary conditions required to stage a successful, efficient, and objective test.

In order to develop a comprehensive, complete, and thorough test of Qwest's OSS systems, interfaces, and processes, the MTP framework is defined in terms of a set of elements including the following:

- Parity Standards, Benchmarks, Qualitative Evaluations and Comparisons
- Test Domains
- Test Types

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- Test Processes
- Evaluation Techniques

The *test domains* provide a functional classification of the systems and processes to be tested. The *test types* organize the types of tests to be performed on the systems and processes. The *test processes* define the techniques, measures, inputs, activities and outputs of each component test. The *test scenarios* provide the contextual basis for testing by defining the transactions, products and other variables that must be considered and included during portions of the testing. *Evaluation techniques* serve as the basis for evaluation by defining the norms against which test results are compared.

The test framework and test elements are introduced at a high level in this section. In the remainder of the document, each test element will be described to the extent required to form a comprehensive and detailed set of testing requirements that will govern the conduct of the test. Based on these requirements, KPMG Consulting will create detailed test specifications.

5.1 Parity Standards, Benchmarks, Qualitative Evaluations and Comparisons

The specific parity standards, benchmarks and other performance indicators used in this test have been developed in detail and agreed upon through a collaborative process including performance measurement workshops. Parity standards and benchmarks have been established consistent with those generally accepted within the Telecom industry and are designed to ensure compliance. When appropriate, actual performance measurement data will be taken during the test and compared to the parity standards and benchmarks.

5.2 Test Domains

The areas subject to testing exist in four domains that correspond to major business functions performed by a telecommunications carrier:

- Pre-order, Order, and Provisioning (POP)
- Maintenance and Repair (M&R)
- Billing
- Relationship Management and Infrastructure

These four domains correspond to four respective business functions that comprise the Qwest/CLEC relationship. The domains are useful in defining the areas to be tested and the specific tests to be conducted.

5.2.1 Pre-order, Order, and Provisioning Domain

This domain is comprised of the systems, processes, and other operational elements associated with Qwest's support for pre-ordering, ordering, and provisioning activities for resale, interconnection, and UNE-Platform services and unbundled network elements. The purposes of the POP tests are to evaluate the functionality and performance of Qwest's wholesale systems and procedures; to evaluate compliance with prescribed performance measures, and to provide a basis for comparing this operational area to parallel systems and processes supporting Qwest's retail operations. Deleted: *1*

5.2.2 Maintenance and Repair Domain

This domain is comprised of the systems, processes, and other operational elements associated with Qwest's support for wholesale maintenance and repair activities. Tests associated with this domain provide a basis for comparing this operational area to parallel systems and processes supporting Qwest's retail operations.

5.2.3 Billing Domain

This domain is comprised of the systems, processes and other operational elements associated with Qwest's support for wholesale billing. Tests associated with this domain are designed to evaluate Qwest's compliance to measurement agreements and to ensure adherence to sound management practices.

5.2.4 Relationship Management & Infrastructure Domain

This domain is comprised of the systems, processes and other operational support elements associated with establishing and maintaining business relationships with the CLECs. Included in this domain are the network provisioning activities that must be jointly performed by Qwest and the CLEC in order to build the CLEC network that supports the CLECs business.

5.3 Test Types and Test Processes

5.3.1 Transa ction Driven System Analysis

Tests utilizing transaction-driven system analysis rely on initiation of transactions, tracking of transaction progress, and analysis of transaction completion results to evaluate a system under test. Transaction-driven system analysis requires defining several key facets of testing, including the data sources (e.g., CLEC live data, Qwest historical data), the system components under test (e.g., application-to-application interfaces, graphical user interfaces), and volumes (e.g., normal, stress) and related performance measures.

One element of transaction driven systems analysis is a structured assessment of the overall quality of the results of the execution of test scenarios.

The transactions, or test instances, used in each transaction-driven system analysis test will be derived from higher level sets of transaction templates called test cases, which in turn have been developed from test scenarios.

Tests that employ Transaction Driven Systems Analysis as the primary test process include, but are not limited to, the following:

- Section 12: Evaluation of POP Functionality and Performance Versus Parity standards and Benchmarks
- Section 13: Order Flow Through Evaluation
- Section 14: Provisioning Evaluation
- Section 15: POP Volume Performance Test
- Section 16: CEMR Trouble Functional Evaluation

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- Section 17: MEDIACC (EB-TA) M&R Trouble Functional & Performance Evaluation
- Section 18: M&R End to End Trouble Report Processing
- Section 19: Billing Usage Functional Evaluation
- Section 20: Carrier Bill Functional Evaluation

5.3.2 Operational Analysis

Tests utilizing operational analysis focus on the form, structure, and content of the business process under study. This test method will be used to evaluate day-to-day operations and operational management practices, including procedural development and procedural change management. Operational analysis validates and verifies the results of a process to determine that the process functions correctly according to documentation and expectations. Tests that employ Operational Analysis as the primary test process include, but are not limited to, the following:

- Section 8: Evaluation of Qwest's Wholesale Performance Measurement Process
- Section 9: Evaluation of Qwest's Parity Standards Calculation Process
- Section 10: Evaluation of Qwest's Order and Transaction Creation Documentation
- Section 22: CLEC Network Provisioning Test
- Section 23: Change Management Test
- Section 24: Qwest CLEC Support Processes & Procedures Review

5.3.3 HP Transaction Genera tor

HP provides the capability to generate the full suite of real world test instances by submitting transactions via Qwest's wholesale transaction interfaces and collecting information about the response times, intervals and other compliance measures.

HP will also generate and submit the required number of transactions to test the expected normal and stress volumes, ensure the processing of the full breadth of transactions during the test period and repeat test cases in the required volumes in a controlled test environment. A work center will be assembled to provide for interactive processing, such as handling errors, exceptions and re-submittals. This work center will also submit manual transactions to Qwest and await responses.

Further, HP will be required to document its ability to build, test and place in operation the functionality required to successfully process transactions utilizing Qwest's documentation, account management, help desk and training support.

5.3.4 CLEC Involvement in Transaction Testing

CLECs operating in the ROC states will be asked to volunteer to participate in certain portions of this test. The inclusion of selected CLEC live transactions provides an alternative test method for transactions which may not be practical to provide through HP, and further facilitates a more realistic depiction of real world production. CLEC participation will also be solicited to execute real test cases (e.g. EB-TA) during the test period.

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Use of CLEC live transactions allows for an element of blind testing and tracking performance in a real world environment. It also provides a means to help control for "test bias." Use of these transactions will require extensive participation by KPMG Consulting to observe the execution of the transactions in order to measure, audit, inspect and monitor progress and report results or otherwise verify and validate the observed results.

Additionally, some of the transaction types submitted by HP can only be properly executed with direct involvement from the CLECs. One category of such tests is those that include complex transactions involving physical CLEC facilities. For example, UNE orders involving LNP require a physical switch and an operational CLEC in order to be fully completed.

Further, there are scenarios where in-progress transactions cannot be obtained, or are not practical to execute, in a test environment. These will be evaluated utilizing observations of CLEC commercial activity where possible.

The successful execution of those portions of the test requiring CLEC participation is dependent on the extent of that participation. KPMG Consulting will meet with those CLECs who volunteer to participate to mutually agree on the nature and extent of the participation.

5.4 Evaluation Techniques

Each test relies on one or more techniques to collect and record measurements and analyze the results. The five types of techniques defined for this test are described in the chart below.

Table 5.4.1 Evaluation Techniques

Technique	Description
Transaction Generation	Transaction generation is the use of live, historical and/or generated data that is executed through the system under review. The results of this test are evaluated for quality.
Report Review	Review and analysis of historical data, reports, metrics and other information in order to assess the effectiveness of a particular system or business function. This includes performance measurement reports and other management reports.
Inspection	Physical review of process activities and products including site visits, walk-throughs, read-throughs and work center observations.
Logging	Monitoring activities and collecting information by logging process events and products as they happen. Logging can be mechanized or manual.
Document Review	Compilation and review of books, manuals and other publications related to the process and system under study.

6. Qwest OSS System Architecture

6.1 Overview

Qwest asserts that it has developed uniform CLEC-facing OSS interfaces in support of its wholesale services business line. These uniform interfaces support Pre-Ordering, Ordering and Maintenance and Repair transactions initiated by CLECs across all of the 13 states participating in the ROC 3rd Party Test. Behind the uniform CLEC-facing interfaces are downstream OSS applications that may vary somewhat by region and state, depending on the specific application. Deleted: *1*

An overview of the uniform CLEC-facing interfaces, and known regional and state variations in downstream OSS applications, can be found in Appendix F.

7. Global Exit Criteria

Exit criteria are the requirements that must be met before the tests defined in the Test Plan can be concluded. Exit criteria pertaining to specific tests are listed in respective test sections.

1. **All required test activities have been completed.**

   For each test, all fact finding and analysis activities must be completed to the satisfaction of the ROC. All results and test methodologies have been documented.

2. **Military testing has been successfully completed.**

   Tests have met success criteria. Tests not meeting success criteria have been retested in accordance with the Observation and Exception processes detailed in a separate document.

3. **All change control, verification and confirmation steps have been completed.**

   The results of test activities must be documented and reviewed for accuracy. Any results that require clarification or follow-up are confirmed.

4. **All specific test issues have been closed/resolved or declared at impasse for referral to the ROC.**

   Issues that have been recorded and tracked throughout the conduct of a specific test must be closed or resolved with sufficient documentation that describes the means employed to close or resolve each issue. Any issues that are identified as being at impasse between the parties will be referred to the ROC by KPMG Consulting.

In addition to these global exit criteria, test-specific exit criteria, where applicable, are defined within each test. Participants may elect to escalate test issues declared at impasse to the ROC issues resolution process described in Section 4.7.

Table 7.1 Global Exit Criteria

Criteria	Responsible Party
All required test activities have been completed.	KPMG Consulting
Military testing has been completed.	KPMG Consulting
All change control, verification, and confirmation steps have been completed.	KPMG Consulting
All specific test issues have been closed/resolved or declared at impasse.	KPMG Consulting

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8. Evaluation of Qwest's Wholesale Performance Measurement Processes

8.1 Description

Performance measurements are the yardsticks or standards to which Qwest OSS *performance* is compared. There are four primary types of quantitative performance measures:

- Parity measurements
- Benchmarks measurements
- Diagnostic measurements
- Parity-by-design measurements

A parity measurement is a yardstick that is calculated through measurement of a particular aspect of access to, functionality and performance of Qwest's OSS in support of its wholesale CLEC and retail operations. Parity measurements are identified in the PID with the word, "parity," in the "standard" box of the definitions of the measurements. Where analogous processes (or agreed-upon proxies) exist between Qwest's retail operations and their wholesale CLEC operations the two processes are compared to the parity of treatment between the two. A typical example where parity measurements are defined is the comparison of performance between Qwest's installation of a new retail customer and Qwest's "installation" of a CLEC's resale customer. The calculation of parity measurements results is accomplished through a formalized and controlled process (See Section 9). Because natural randomness is inherent in any performance, statistical methods (defined in Appendix G) are used to distinguish differences that are significant enough to not be explained merely by randomness. Parity measurements are the only category in which statistical methods are used.

A benchmark measurement is a yardstick that is calculated and compared directly with a fixed level of performance (percentage or interval). In setting the benchmarks, the parties took into account the agreement that statistical methods would not be employed in comparing performance to benchmarks. Generally, benchmark measurements are used where there are no analogous operations that can be compared between Qwest's retail and wholesale operations. For example, there is currently no identifiable retail analog for the Firm Order Confirmation (FOC) interval measurement. In these cases, a quantitative benchmark is used to set a threshold for performance where a numerical range of values is possible.

Quantitative performance measurements, both parity measurements and fixed benchmark measurements, to be used in the 3rd party OSS test have been collaboratively developed. The process began with a straw-man proposal provided to the TAG for comment in December, 1999. The comments were discussed in the ROC's Performance Measurements Workshop held in Salt Lake City, UT on January 19-21, 2000. Issue resolution activities resulting from the workshop along with amendments, additions and deletions to the performance measurement plan continue in subsequent collaborative forums. The primary document that describes quantitative performance measurements, the retail analog (for parity measurements), the numeric value (for fixed benchmarks), the calculation method, scope, restrictions, etc. is the ROC OSS Test PID. (See Appendix B.)

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Once quantitative performance measurements are finalized via the collaborative process referenced above, and the quantitative performance measurement process has been validated, the measurements will be used to judge the performance levels resulting from the conduct of the various tests. Quantitative performance measurements are used predominantly, but not exclusively, in judging the results of transaction driven tests. The Qwest systems and processes comprising the validated process will be identified by release and version.

While benchmark and parity measurements both have the same basic function—they are yardsticks to measure the performance of Qwest OSS during the test—they are calculated differently. Fixed benchmarks, as established in the PID, are static throughout the test. Parity measurements use retail operations performance as the standard to be met. In order to provide a valid yardstick for the wholesale operations performance that they are to measure, wholesale and retail performance measurements must be derived contemporaneously.

In addition to parity and benchmark measurements, there are also diagnostic and parity-by-design measurements, for which no standards are set. These are designed primarily for data gathering only. Diagnostic measurements are identified in the PID with the word "diagnostic" in the "standard" box of applicable measurement definitions. Results from diagnostic measurements are used, where useful, in understanding the context of parity or benchmark measurements. Parity-by-design measurements are identified in the "standard" box of applicable measurement definitions with the words, "parity by design." Validation that parity does or does not exist in the processes underlying parity-by-design measurements is one of the objectives of the test, and issues therewith will be handled through the observation and exception processes discussed under separate cover.

Qualitative benchmarks set a threshold for performance where a range of qualitative values is possible. For example, an evaluation of the scalability of a process or evaluation of a support organization is qualitative by nature, and such an evaluation would be based on whether the process or organization contributes to a meaningful opportunity to compete.

Existence criteria are those where only two possible test results exist. For example documentation defining daily billing feeds either exists or does not exist.

8.2 Objectives

Rigorous, scientific measurement of any process, quantity, etc. requires that the measurement processes, standards and yardsticks themselves be validated in a rigorous, scientific manner. The objectives of the Performance Measurement Audit are to:

- Validate that all aspects of Qwest's processes, procedures, business rules, calculation methods, etc. used in measuring wholesale operations processes are valid and that Qwest personnel adhere to those processes
- Provide a qualitative assessment of the process for developing wholesale and retail measurements
- Provide a verification that parity-by-design measurements are indeed at parity due to the design of the data or traffic delivery process – including DB-1, DB-2, DA-1, DA-2, OS-1, OS-2, and others as identified in the final PID agreed upon for use in testing

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- Verify that the Interconnect Mediated Access Response Time Measurement (IRTM) application that is used by Qwest to measure pre-order query response times (ROC PID PO-1) for both CLEC and retail queries produces results that are accurate and consistent with results seen by actual CLEC and Qwest customer service representatives.

8.3 Entrance Criteria

Table 8.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist *Pass/retest criteria have been identified*	*ROC, Qwest* *ROC, Liberty Consulting*
Performance measurement documentation (PID) has been approved	*ROC*
Qwest wholesale performance measurement processes, systems and software are complete and available for inspection and testing	*Qwest*
Product descriptions and business rules for all performance measurements to be evaluated are available *Interview guides are available*	*Qwest* *Liberty Consulting*
Qwest subject matter experts to be interviewed are projected to be available	*Qwest*

8.4 Test Scope

All aspects of the wholesale performance measurement process, and all of the performance measurements described in the PID are within the scope of this test.

8.5 Test Scenarios

None

8.6 Test Approach

8.6.1 Inputs

1. Performance measurement definitions / PID
2. Product descriptions and business rules for all performance measurements to be evaluated
3. Description of wholesale performance measurement architecture, processes, systems, reports, etc.
4. Interview Guides
5. At least two months raw performance data (transaction specific results data before any exceptions or exclusions are applied by Qwest)
6. Qwest performance results reports

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8.6.2 Activities

1. Prepare performance measurement process and system evaluation framework and plan
2. Validate framework and plan with TAG
3. Identify subject matter experts and schedule interviews
4. Conduct interviews
5. Evaluate the process design for measurements identified as "parity by design"
6. Conduct the Evaluation, to include:
   - Assess data collection process and system architecture
   - Evaluate data collection operations
   - Review calculation of performance measurements
   - Independently calculate results, using data provided by Qwest
   - Analyze interview results
   - Independently calculate the appropriate statistics for the performance measurement evaluation
   - Comparison with the same statistics as computed by Qwest
7. Identify observations and exceptions in accordance with established guidelines
8. Recommend approach to clearing exceptions
9. Verify that exceptions are cleared
10. Define monitoring plan
11. Write Final Report

8.6.3 Outputs

1. Performance measurement evaluation framework and plan
2. Observation and Exception reports
3. Monitoring plan
4. Final report

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8.7 Exit Criteria

Table 8.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied *All Observations and Exceptions cleared*	*See Section 7* *ROC, Liberty Consulting*
Monitoring plan is complete	*Liberty Consulting, TAG*
Final report is complete	*Liberty Consulting, TAG*

9.0 Evaluation of Qwest's Retail Parity Measurements Calculation Process

9.1 Description

Unlike fixed benchmarks, which are numerical values that are set by collaborative agreement, parity measurements are derived through Qwest's measurement of its own retail processes, for comparison with the same measurement applied to its wholesale processes. This section describes a process whereby Liberty Consulting verifies that the retail analogues established in the PID for parity measurements do, in fact, represent the actual access, functionality and performance characteristics of Qwest's OSS in support of its own retail operation.

9.2 Objectives

Parity standards are measures or yardsticks that are established through Qwest's measurement of its own retail processes. The objective of this test is to validate that all aspects of Qwest's process procedures, business rules, calculation methods, etc. used to establish the numerical values of the retail analogues established for parity measurements, as defined in the PID, are valid and that Qwest personnel are following those processes.

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9.3 Entrance Criteria

Table 9.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, Liberty Consulting*
Performance measurement documentation (PID) has been approved	*ROC*
Qwest retail performance measurement processes, systems and software are complete and available for inspection and testing	*Qwest*
Product descriptions and business rules for all retail measures to be evaluated are available	*Qwest*
Interview guides are available	*Liberty Consulting*
Qwest subject matter experts to be interviewed are projected to be available	*Qwest*

9.4 Test Scope

All aspects of the retail and wholesale performance measurement process and all of the parity measurements described in the PID are within the scope of this test.

9.5 Scenarios

None.

9.6 Test Approach

9.6.1 Inputs

1. Performance measurements / PID and associated documents
2. Product descriptions and business rules for all parity measurements to be evaluated
3. Description of retail performance measurement architecture, processes, systems, reports, etc.
4. Interview guides
5. Raw performance data (transaction specific results data before any exceptions or exclusions are applied by Qwest)
6. Qwest performance results reports

9.6.2 Activities

1. Prepare parity measurements calculation process and system evaluation framework and plan
2. Validate framework and plan with TAG
3. Identify subject matter experts and schedule interviews
4. Conduct interviews

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5. Conduct the Evaluation, to include:
   - Assess data collection process and system architecture
   - Evaluate data collection operations
   - Review the calculation of performance measurements
   - Validate that consistency exists between the business rules for calculation and the actual processes the systems use to perform the calculations
   - Analyze interview results
   - Independently calculate results, using data provided by Qwest
   - Independently calculate the appropriate statistics for parity measurements evaluation
   - Compare with the same statistics as computed by Qwest
6. Identify Observations and Exceptions in accordance with the established guidelines
7. Recommend approach to clearing Exceptions
8. Verify that Observations and Exceptions are cleared
9. Define monitoring plan
10. Write final report

9.6.3 Outputs

1. Parity measurement evaluation framework and plan
2. Observation and Exception reports
3. Monitoring plan
4. Final report

9.7 Exit Criteria

Table 9.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*
All Observations and Exceptions cleared	*Liberty Consulting, TAG*
Monitoring plan is complete	*Liberty Consulting, TAG*
Final report is complete	*Liberty Consulting, TAG*

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10. Evaluation of Qwest's Order and Transaction Creation Documentation and Maintenance

10.1 Description

This evaluation is designed to evaluate the guidelines and business rules documentation available to the CLEC community to instruct them on how to prepare the forms and other documents required to submit orders and other transactions to Qwest's OSSs. Principles 8 and 12 will be applied in the evaluation of documentation available to CLECs for the creation of orders and transactions.

It evaluates the documentation created for manual as well as electronic transactions. This documentation is used by CLECs to prepare the necessary forms and other documents to submit/receive transactions via interfaces such as Qwest's IMA GUI interfaces, application-to-application interfaces and data transfer interfaces for the following activities:

- Pre-ordering
- Ordering
- Provisioning

This test will rely on checklists and inspections.

10.2 Objectives

The objectives of this test are:

- To verify that all orders and transactions to be submitted to Qwest via GUI and EDI interfaces, and those capabilities provided via manual interfaces rather than electronically, can be created using documentation and assistance provided by Qwest.

10.3 Entrance Criteria

Table 10.3.1 Entrance Criteria

Criteria	***Responsible Party***
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Pre-ordering, ordering and provisioning transactions and related transaction documentation available	*Qwest*
Process evaluation checklist is available	*HP*

10.4 Approach

This test will be a qualitative test of methods and procedures, practices, and documentation available to CLECs to develop orders and transactions to be sent to Qwest's OSS across GUI and EDI, as well as manual, interfaces.

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10.4.1 Inputs

1. Qwest order and transaction documentation
2. Industry standards documentation
3. Other procedural and technical documentation
4. Evaluation checklists

10.4.2 Activities

1. Determine areas that require validation or retest
2. Gather information
3. Perform documentation reviews as required for validation or retest
4. Complete evaluation checklists
5. Develop and document findings

10.4.3 Outputs

1. Completed evaluation checklists
2. Comparison of actual versus expected results for order and transaction creation deliverables
3. Observation and Exception reports
4. Final report

10.5 Exit Criteria

Table 10.5.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*
All Observations and Exceptions cleared	*HP*
Final report is complete	*HP*

11. Transaction Processing Test Data

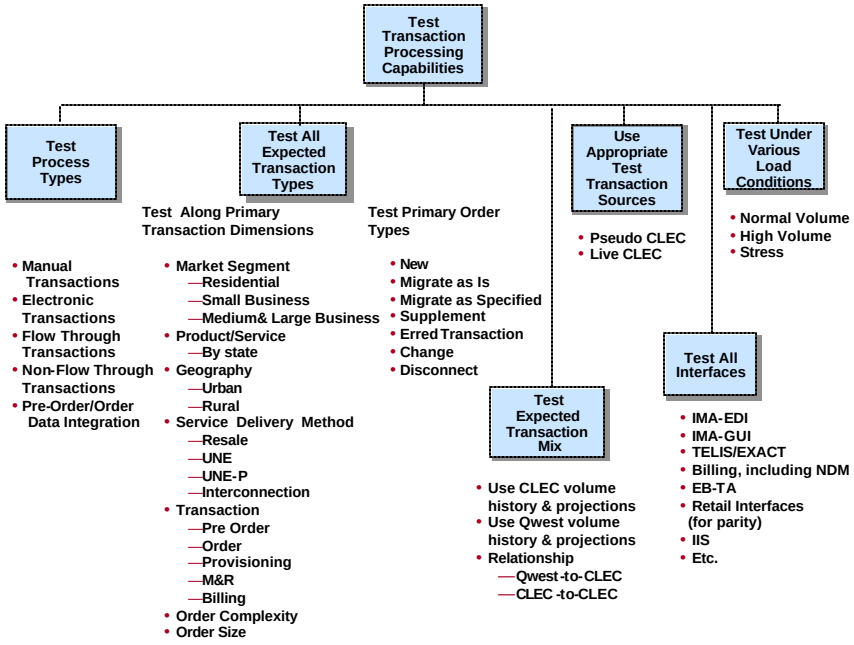
Test data provides the input or stimuli to systems and processes so that functionality and performance can be observed by means of transaction driven system analysis.

Principles numbered 11, 13 and 14 apply to test data.

11.1 Test Data Dimensions

Figure 11.1.1 reflects a testing framework agreed to at the St. Paul workshop that describes the major dimensions and attributes to be incorporated in test data transactions. Deleted: *1*

Figure 11.1.1 Test Data Dimensions



11.2 Scenarios

Based on industry experience, the knowledge gained from 3rd party testing in other jurisdictions, a review of other OSS tests, as well as a review of the available offerings in the thirteen participating ROC states, KPMG Consulting has developed a representative set of test scenarios. Each test scenario describes a real world situation that will be used to create realistic test cases in which CLECs purchase wholesale services and network elements from Qwest to be resold or repackaged to the CLEC's end-user customer on a retail basis.

Scenarios serve several key purposes. Scenarios help define the products, services, and transactions that should be included for testing. In this regard, test scenarios provide the guidance and framework for developing real world test cases to simulate live production in a controlled test environment. The test cases provide actual detailed instructions required to build individual transaction test instances.

These scenarios will be used to test functionality, performance, and other attributes associated with the ability of CLECs to access information from Qwest business processes and associated systems. Scenarios provide a way to bridge across test domains and families, thereby facilitating both point-specific and end-to-end testing of various systems and processes and providing the breadth and depth of coverage of products and services to be tested. Deleted: *1*

11.3 Test Cases

Variables will be introduced into the scenarios to create a number of test cases. Types of variables include errors such as invalid USOCs, order entries that "violate" Qwest's business rules (which is a higher class of error than a typographical error), supplements (changes to an order), expedites (end user requested due dates earlier than the standard interval) and Maintenance and Repair (M&R) test situations. Test cases may also vary by the type of features that are requested and the characteristics of the customer. For example, one test case may specify call waiting as a feature but another may use caller ID instead of call waiting. Similarly, for the same scenario, one test case may specify a single-line residence customer and another may specify a five-line business customer. The test cases may also vary the timing and sequence of the transactions.

11.4 Detailed Test Instances

Detailed test instances will be generated from these test cases. A test instance represents a set of transactions described by a test case for a specific customer account. For example, a test case might specify "migrate a two-line business customer from Qwest to a CLEC and add call waiting on the primary line". A test instance would perform the necessary pre-ordering inquiries and send an order to accomplish this activity for a specific two-line business customer account.

11.4.1 Functionality Test

For functionality testing, volumes of test instances will be assigned to each of the test cases based, in part, on a determination of the sufficiency of sample sizes to determine compliance with appropriate Performance Measures. However, for practical reasons it is expected that transactions of greater complexity will tend to be executed in smaller volumes. Other considerations that will be taken into account in determining test volumes will be assurance of sufficient samples by customer type (residence vs. business) and by service delivery method. In addition, KPMG Consulting may determine, based on experience in other jurisdictions, and further analysis of CLEC forecasts and experience in the ROC states, to add additional volumes to certain scenarios.

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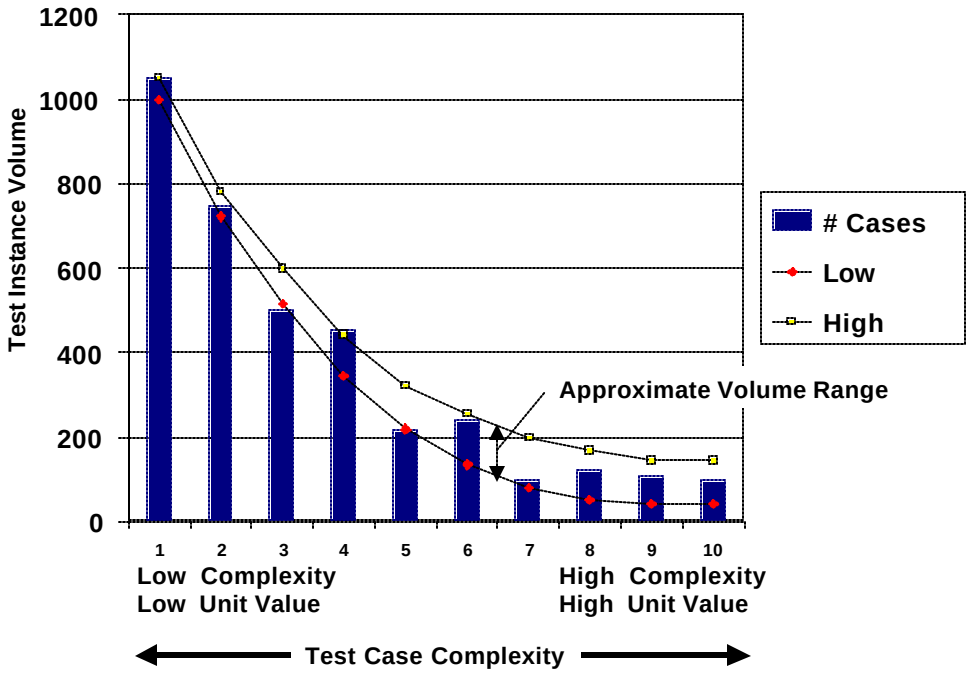
Figure 11.4.1.1 Volume Distribution by Complexity



11.4.2 Volume Test

For volume testing, normal expected volumes will then be assigned to a selected set of the test cases based on expected future real world production. Volume testing conducted as part of this test will be based on level of demand projections that are reasonably foreseeable in a competitive market which may include regional volumes if appropriate. Individual test instances that match the test cases will be generated based on the volume that has been assigned. In addition, for pre-ordering and ordering, a stress volume test will be conducted to test the capacity and identify potential choke points of the interfaces. Peak and Stress volumes will be assigned to a subset of the test case types based on agreed upon mu ltiples of the normal expected volumes.

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12. Evaluation of POP Functionality and Performance Versus Parity Standards and Benchmarks

12.1 Description

The POP Functional Evaluation is a comprehensive review of the functional elements of Pre-Ordering, Ordering, Provisioning, Pre-Order/Order Data Integration; the achievement of the prescribed measures; and an analysis of performance in comparison to Qwest's Retail systems.

The test will consist of live transactions submitted over the Qwest supported interfaces, both interactively via a graphical user interface (IMA GUI) and computer-to-computer interfaces. Current plans call for testing the following Qwest interfaces: IMA GUI and IMA EDI for LSRs, and EXACT/TELUS for ASRs. The following table depicts the functionality with which each interface will be tested:

Table 12.1.1 Functionality and Interfaces

Functionality	*IMA GUI*	*IMA EDI*	*EXACT/TELUS*
Pre-order	*X*	*X*	
Order	*X*	*X*	*X*
Pre-order/Order Data Integration	*X*	*X*	

The master interface list will be finalized during the actual testing to allow for any corrections/additions to be made as interfaces change.

The EDI interface will be tested using an interface built by HP according to specifications and processes provided to CLECs by Qwest. The GUI will be tested through transactions entered directly into the appropriate GUI interface. The ASR interface will be tested through transactions entered into TELUS or an existing CLEC's EXACT interface. Where appropriate, manual transactions will be submitted as well.

Data on the POP processes will be collected, analyzed and used to produce the output reports. The POP functional and performance evaluation will examine an end-to-end view of the pre-ordering through provisioning process. It will include a mix of stand-alone pre-ordering and ordering transactions, along with pre-order transactions followed by orders, supplements, and cancels. KPMG Consulting will collect data provided by HP on transaction submissions and responses, and on Qwest provisioning activities. Where possible and appropriate, this information will be collected and maintained electronically. Both ASR and LSR orders will be tested. Erred as well as error free transactions will be tested. Not all orders will go through the physical provisioning process. Some will be future dated, and others will be canceled before provisioning activities commence. Verification and validation of provisioning activities will be performed in Section 14.

As part of the POP Functional Evaluation, KPMG Consulting will also seek both qualitative and quantitative data on the real world experience of CLECs operating in the thirteen participating Deleted: *1*

ROC states. CLECs willing to participate in this test will be interviewed and their experiences will be incorporated into the test results after validation by KPMG Consulting. In addition, for some types of transactions, involvement will be sought from willing CLECs to participate in some aspects of the live transaction testing. This will be done for two principal purposes.

First, CLEC participation will be important for complex orders that cannot be simulated adequately in the test environment. Examples include complex facilities-based orders and orders, like those for unbundled loops with LNP, which require an actual CLEC switch to fully complete. Second, it is important to attempt to incorporate information to help control for "experiment bias" of the results. Therefore, KPMG Consulting will ask CLECs to execute live orders that replicate those sent over the test systems.

Successful completion of all of these aspects of the test requires active participation of one or more CLECs. However, CLEC participation is voluntary, and the scope of that participation is up to each individual CLEC.

12.2 Objective

The objective of this test is to validate the existence, functionality, and behavior of the interfaces and processes required by Qwest for pre-ordering, ordering, and provisioning transaction requests and responses. The POP functions tested will also be validated against the Qwest documentation that specifies which functions are and are not available within the Qwest OSS.

12.3 Entrance Criteria

Table 12.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*Qwest, ROC*
The ROC has verified measu rements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interface capabilities must be operationally ready	*Qwest, HP*
HP is operationally ready	*HP*
The statistical plan is in place	*ROC, TAG, KPMG Consulting*
The pass/retest criteria have been identified	*ROC, KPMG Consulting*
Interfaces are built and tested	*KPMG Consulting, HP*
EDI interface is "certified" by transaction/product type	*Qwest*
Inventory of all Qwest relevant (company-wide and regional) systems and interfaces identifying release number and version has been documented	*KPMG Consulting, HP, Qwest*
Wholesale and retail measurement processes evaluated	*ROC, KPMG Consulting, Liberty Consulting*
Measurement collection process is defined	*KPMG Consulting, HP*
Dial-up connectivity to GUI interface established	*Qwest, KPMG Consulting, HP*

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Criteria	*Responsible Party*
Business rules for all transactions to be tested are available	*Qwest*
Test bed accounts and facilities in place	*Qwest*
Test bed provisioned and validated	*Qwest, KPMG Consulting*
CLEC test volunteers identified *Test cases developed*	*KPMG Consulting* *KPMG Consulting*
Specific test cases to test in conjunction with CLEC volunteers have been identified *Specific evaluation techniques developed*	*KPMG Consulting* *KPMG Consulting*
Evaluation criteria defined *Help Desk log and contact checklists created*	*KPMG Consulting* *KPMG Consulting, HP*

12.4 Test Scope

Ordering transactions consists of three distinct, but related, processes:

- Pre-order Processing—submission of requests for information required to complete orders;
- Order Processing—submission of orders required to add/delete/change a customer's service;
- Provisioning—physical work performed by Qwest as a result of the submitted orders and software changes accomplished via submitted orders into Qwest switches and network elements.

The ordering transactions test suite will be comprised of real life, end-to-end test cases that cover the entire spectrum of pre-order, order, and provisioning. The following order types will be tested:

- Migrate "as is"
- Migrate "as specified"
- New customer
- Feature Change
- Directory Change
- Number Change
- Add lines
- Suspend/Restore
- Disconnect (full/partial)
- Move (inside/outside)
- Number Portability (LNP)

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- Change to New Local Service Provider
- UNE Loop Cut Over
- Change of service delivery method

The order types identified above will be ordered using the available and applicable Qwest service delivery methods. The following service delivery methods will be tested:

- Resale
- Unbundled Loops, including xDSL capable loops
- UNE Platform, residential and business
- Other UNE Combinations such as EELs
- Other Unbundled Network Elements such as UDIT
- Any other service delivery methods that may become available at the time of the test which are approved by the ROC for inclusion in the test

The orders will be placed using Qwest's existing interfaces: GUI, computer-to-computer, and manual. The following assumptions pertain to ordering interfaces:

- Qwest electronic interfaces, both GUI and computer-to-computer, will be tested during the Volume Performance Test
- Orders will be issued using both ASR and LSR forms, as appropriate
- The GUI will be tested from multiple terminals at the same time
- If a scenario calls for an order type that can not be submitted electronically, the request will be submitted manually.

Other important aspects of ordering will be tested:

- Flow through order types, as stated and agreed-to by Qwest, will be tested to ensure that they do not require manual handling. The complete set of identified flow through order types will be evaluated to ensure that they actually do flow through (See Section 13).
- Integration of pre-order and order data functionality which transfers values from pre-order responses to ordering documents
- Supplemental orders (changes to orders in process), including cancels, will be tested
- Multiple products and features will be tested; the tests will cover a broad range of the options available to CLECs and resellers
- Multiple switch-types, end-offices, states and cities will be included in the test
- A portion of the orders sent will be physically provisioned (See Section 14). Some orders will be future dated, allowing them to be canceled prior to work scheduling and provisioning

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- CLECs will be solicited for involvement in some aspects of the test, especially for assistance in the testing complex services, services with long lead times, and services that require network resources (e.g. loop hot-cuts)
- Timeliness of methods employed by Qwest to process UDIT ASRs
- In addition to normal orders, orders with planned errors will be sent to Qwest to check the accuracy of its system edits and service representatives
- Service locations supported by different Qwest ordering, provisioning, and CO switching and transmission configurations will be tested

As indicated by testing principle number 13, similar test cases may be run by both HP and a production CLEC that has completed interface verification with Qwest in order to validate the processes under the oversight of KPMG Consulting. This validation process is not intended to double-test every scenario by both HP and a production CLEC, and will include no more iterations than are required for validation.

The test will be conducted using the most current release of the Qwest business rules, system releases and versions, interface versions and process/procedure documentation at the time of the test. Should multiple releases be available during the course of the test, KPMG Consulting will work with the ROC to determine which releases to test, and to what extent.

HP will build a pre-order EDI interface using Qwest specifications and evaluate the results for adequacy. The data from this pre-order interface will be integrated with LSRs for ordering on a real time or near real time basis to ensure that the two interfaces can be integrated.

The following chart contains the processes and sub-processes that will be used in evaluating Qwest's pre-ordering, ordering, and provisioning functionality and performance.

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Table 12.4.1

Process Area	Sub-Process
Pre-ordering	Retrieve customer CSR
	Validate Customer Address
	Perform Loop Qualification
	Perform Facility Check
	Reserve telephone numbers
	Request information about services, features, and PIC/LPIC choices available to customers
	Determine due date/appointment availability
	Acquire Directory Listing information
Ordering	Submit order for migration of a customer from Qwest to a CLEC "as is"
	Submit order for migration of a customer from Qwest to a customer "as specified"
	Submit order for partial migration of a customer from Qwest to a CLEC
	Submit order for establishing service for a new customer of a CLEC
	Submit order for feature changes to an existing CLEC customer
	Submit order for adding lines/circuits to an existing CLEC customer
	Submit order for a telephone number change for an existing CLEC customer
	Submit order for a directory change for an existing CLEC customer
	Submit order for the outside move of an existing CLEC customer
	Submit order for suspending service of an existing CLEC customer
	Submit order for restoring service to an existing CLEC customer
	Submit order for disconnecting service from an existing CLEC customer
	Submit order for disconnecting some lines/circuits for an existing CLEC customer
	Submit order for migration of a customer from another CLEC
	Submit order for a CLEC to Qwest win-back
	Change service delivery method for an existing CLEC customer
	Order interoffice facilities
	Receive order confirmation
Provisioning	Receive notification of jeopardy or delay
	Receive completion notification

The following table contains the evaluation measures that will be used in evaluating Qwest's pre-ordering and ordering functionality and performance.

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Table 12.4.2 Pre-Ordering and Ordering Evaluation Measures

Evaluation Measure	Evaluation Technique	Criteria Type
Accessibility of GUI (excluding Interoffice facilities)	Transaction Generation	Quantitative
Accessibility of computer-to-computer interface (excluding Interoffice Facilities)	Transaction Generation	Quantitative
Accuracy and completeness of functionality	Transaction Generation	Quantitative
Timeliness of response	Logging	Quantitative
Completeness of response	Transaction Generation, Inspection	Qualitative Quantitative
Clarity and accuracy of error messages	Transaction Generation, Inspection, Document Review	Qualitative
Usability of information	Transaction Generation, Inspection	Qualitative
Consistency with retail capability	Inspection	Qualitative Quantitative

Table 12.4.3 Provisioning Evaluation Measures

Evaluation Measure	Evaluation Technique	Criteria Type
Timeliness of pr ovisioning	Transaction Generation, Inspection, Logging	Quantitative
Frequency of delay or rescheduling of provisioning	Transaction Generation, Inspection, Logging	Quantitative
Accuracy and completeness of provisioning	Transaction Generation, Inspection, Logging	Quantitative
Completeness and consistency of process	Inspection, Document Review	Qualitative

12.5 Scenarios

The specific scenarios to be used in this test can be found in Appendix D.

12.6 Test Approach

12.6.1 Inputs

1. Test scenarios and test cases
2. Validated test bed
3. Certified interfaces
4. Documentation (ordering guides, order/pre-order business rules, etc.)

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5. Trained personnel to execute test cases
6. Help Desk log and contact checklists

12.6.2 Activities

1. Use test cases to develop transactions and transaction content based upon instructions provided in the appropriate handbook(s).
2. Interview CLEC volunteers and coordinate joint testing activities.
3. Submit transactions. Submittal date and time and appropriate transaction information logged.
4. Receive transaction responses. Receipt date, time, response transaction type, and response condition (valid vs. reject) logged.
5. Report on missing transactions (e.g. missing confirmations and completion notices).
6. Match transaction response to original transaction.
7. Verify transaction response contains expected data and flags unplanned errors.
8. Verify that pre-order data are integrated into ordering documents/processes as appropriate.
9. Manually review unexpected errors. Identify error source (KPMG Consulting, HP or Qwest). Identify and log reason for the error. Determine if test should be suspended or repeated.
10. Contact help desk for support as indicated in test cases and for unexpected errors following the appropriate resolution procedures. Log response time, availability, and other behavior of functions as identified on the help desk checklist.
11. Correct expected errors and resubmit. Re-submittal date, time, and appropriate information logged.
12. Verify receipt of appropriate responses, where multiple responses are expected for the same request.
13. Identify transactions for which duplicate or multiple responses were received in error.
14. Record missing responses.
15. Review status of pending orders. Verify and record accuracy of response.
16. Generate HP reports.
17. Generate Qwest measurement report for test date range.
18. Obtain from Qwest measurement reports for HP, aggregate CLECs and Qwest retail for the test data range.
19. Compare KPMG Consulting-produced HP measures to Qwest-produced HP measures to ensure there is no problem with the data being collected for test reporting purposes.
20. Report CLEC aggregate measures as a data point to check for consistency.
21. Assess quality of business processes and compare, where information is available, with equivalent retail processes.

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12.6.3 Outputs

1. Reports that provide the measures to support the standards of performance defined in Appendix C
2. Variance between actual performance and the standards of performance defined in Appendix C
3. Unplanned error count by reason code and percentage of total
4. Reports of missing transactions, e.g., confirmations and completion notices
5. Rejects received after confirmation notification and percentage of total
6. Transaction counts, error ratio, response time, etc., by transaction type, product family, and delivery method
7. Minimum, maximum, mean, average, and aggregate response time/interval per transaction set
8. Transaction counts per response time/interval range per transaction set
9. Orders erred after initial confirmation
10. Completed help desk logs and checklists
11. Help desk accuracy and timeliness report
12. HP measurement reports produced by both KPMG Consulting and Qwest
13. KPMG Consulting-produced, HP data to Qwest-HP data comparison
14. Qwest-produced, HP data to Qwest retail, adjusted[2] retail or benchmark data comparison
15. Measure of parity performance between retail and wholesale
16. Observation and Exception reports
17. Final report

12.7 Loop Qualification Process "Parity by Design" Evaluation

In addition to the above elements of this POP Functionality test, KPMG Consulting will perform an evaluation of the Loop Qualification process Qwest provides to wholesale customers compared to the Loop Qualification process it provides to its own retail customers to determine if parity exists in the design, implementation and use thereof. This evaluation will examine the wholesale and retail end-to-end processes, the results of the same queries made to the two processes, and all additional avenues of follow-up or recourse available to either wholesale or retail operations or both. This evaluation should answer the following questions:

[2] Qwest's retail data for 2 wire non-loaded loops, DS-1-capable loops, and UNE-P POTS is normally disaggregated to MSA/non-MSA and interval zone 1/interval zone 2 and compared at this disaggregated level. Because the TAG has decided not to require statistically significant sample sizes at this level of disaggregation, Qwest's retail data must be adjusted in order to provide for an apples to apples comparison to the data generated by the pseudo-CLEC. Accordingly, Qwest will adjust its retail data to reflect the percentage of MSA/non-MSA and zone 1/zone 2 transactions generated by the pseudo-CLEC. For example, if the pseudo-CLEC's UNE-P transactions are spread across 70% MSA and 30% non-MSA wire centers, Qwest's actual retail comparative results will be adjusted so that the MSA results will be weighted 70% and the non-MSA results will be weighted 30% to arrive at the result for comparison. Deleted: *1*

- Does a wholesale loop qualification transaction result in the same information as a retail transaction for the same loop?
- Does the loop qualification information come from the same database (directly or indirectly) with the same frequency of update?
- Are the wholesale responses returned in accordance with benchmarks set?
- Are any differences in the sub-processes or remedial options available in the retail loop qualification process versus the wholesale process?

12.7.1 Description

The Loop Qualification Process "Parity by Design" Evaluation is a review of the loop qualification processes and procedures developed by Qwest to support both retail and wholesale customers. Operational analysis techniques will be used to determine if parity exists in the design, implementation and use of the qualification process. Additionally, this evaluation will assess remedial options available in the retail process versus the wholesale process.

12.7.2 Objective

The objective of this evaluation is to determine whether the loop qualification process Qwest provides to its wholesale customers is equivalent to the process Qwest uses for its own retail customers. This will be accomplished through an examination and analysis of Qwest's internal processes and a comparison to the processes available to Qwest's wholesale customers.

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12.7.3 Entrance Criteria

Table 12.7.3.1 Loop Qualification Process Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist.	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Loop Qualification procedures and documentation are available	*Qwest*
Interview guide, questionnaire and process review checklist developed	*KPMG Consulting*
Interviewees identified and schedule developed	*Qwest, KPMG Consulting*

12.7.4 Test Scope

Table 12.7.4.1 Loop Qualification Process Evaluation Measures

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Loop Qualification Pre-Order query process	Pre-Order Receipt and Logging	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
Assemble Pre-Order Response	Delivery of error messages and queries	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
	Delivery of response	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
Escalation Process	User-initiated escalation	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
Process Management	General management practices	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
	Performance measurement process	Consistency between wholesale and retail processes	Inspection Document review Interview	Parity
Capacity Management	Capacity Management processes and procedures	Consistency between wholesale and retail processes	Inspection Document Review Interview	Parity

12.7.5 Test Scenarios

Deleted: *1*

Not applicable.

12.7.6 Test Approach

12.7.6.1 Inputs

1. Inquiry handling procedures
2. System technical documentation
3. Interview Guides
4. Process review checklist
5. Personnel to conduct interviews with Qwest
6. Personnel to conduct interviews with CLECs

12.7.6.2 Activities

1. Gather background information
2. Review procedure documents
3. Interview Qwest personnel
4. Interview CLEC personnel
5. Complete process reviews through interviews and observations
6. Create interview summaries

12.7.6.3 Outputs

1. Completed loop qualification process review
2. Completed loop qualification document review
3. Completed interview summaries
4. Observation and Exception reports
5. Final Report

12.7.7 Exit Criteria

Table 12.7.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

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12.8 POP Manual Order Processing Evaluation

12.8.1 Description

The POP Manual Order Processing Evaluation is a comprehensive review of the methods and procedures used to handle orders that have been manually submitted or require manual intervention by Qwest during order processing. Operational analysis techniques will be used to conduct this test. This test will include a review of the procedures in place to plan for and manage projected growth in order processing.

12.8.2 Objective

The objective of this test is to validate the processes and procedures used to support manual submission of orders for service and to ensure that these procedures are being uniformly followed by Qwest's personnel across the three regions.

12.8.3 Entrance Criteria

Table 12.8.3.1 Manual Order Process Entrance Criteria

Criteria	***Responsible Party***
No legally effective orders or injunctions preventing the test exist.	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
HP is operationally ready	*HP*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Manual orders procedures and documentation are available	*Qwest*
Interview guide, questionnaire and process review checklist developed	*KPMG Consulting*
Interviewees identified and schedule developed.	*Qwest, KPMG Consulting*

12.8.4 Test Scope

Table 12.8.4.1 Manual Order Processes

Process Area	**Sub-Process**	**Evaluation Measure**	**Evaluation Technique**	**Criteria Type**
Receive Orders for Manual Processing	Order Receipt and Logging	Completeness and consistency of process	Inspection Document review	Qualitative
Process Orders Manually	Entry of Order into SOP	Completeness and consistency of process	Inspection	Qualitative
Send Order Response	Delivery of error messages and queries	Completeness and consistency of reporting process	Inspection Document Review	Qualitative

Deleted: *1*

Table 12.8.4.1 Manual Order Processes

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Delivery of confirmations, completions and acknowledgements.	Completeness and consistency of reporting process	Inspection Document Review	Qualitative
Status Tracking and Reporting	Status tracking and reporting	Completeness and consistency of reporting process	Inspection Document review	Qualitative
Problem Escalation	User-initiated escalation	Completeness and consistency of process	Inspection Document review	Qualitative
Process Management	General management practices	Adequacy and completeness of processing management practices	Inspection Document review	Qualitative
	Performance measurement process	Adequacy and completeness of and adherence to manual order processing performance management practices	Inspection	Qualitative
Capacity Management	Capacity management processes and procedures	Adequacy and completeness of capacity management process	Inspection Document review Interview	Qualitative

12.8.5 Inputs

1. Order handling procedures
2. System technical documentation
3. Interview checklist
4. Process review checklist
5. Personnel to conduct interviews

12.8.6 Activities

1. Review procedure documents
2. Interview Qwest personnel
3. Complete process reviews
4. Perform adequacy study of manual order processing performance measures
5. Create evaluation summary

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12.8.7 Outputs

1. Completed process review checklists
2. Completed interview checklists
3. Evaluation summary

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4. White paper regarding manual order processing performance measures Formatted: Bulletsand Numbering

12.9 Exit Criteria

Table 12.9.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

13. Order Flow Through Evaluation

13.1 Description

The Order Flow Through Evaluation tests the Qwest systems capability to flow orders through from the CLEC through the application-to-application interface into the backend Qwest service ordering processing systems without any human intervention. Orders that qualify as flow through, i.e., orders not needing manual action, will be tested to determine compliance with eligibility to flow through with actual results.

Qwest will update the list of flow through ordering scenarios and USOC flow through indicators eligible during the testing period if changes in the Qwest business rules or systems warrant. Changes to the list will be incorporated into the test and will be noticed to the industry through the Co-Provider Interface Change Management Process ("CICMP").

Flow through orders will be submitted through both the GUI and the computer-to-computer interfaces. Any supplements and cancels that are considered to be flow through will also be submitted. The order transactions will be monitored to verify that they do not "fall out" for manual handling in the Qwest Interconnect Service Center (ISC) and are accepted by Qwest's Service Order Processor (SOP) without manual intervention.

This test will be conducted as a part of the POP functional testing (See Section 12).

13.2 Objective

The objective of the Order Flow Through Test is to verify the ability of Qwest to flow through their front end systems, without manual intervention, all order types that at the time the transactions are to be submitted are designated by Qwest to be flow through. This test will also assess that the flow through capabilities of Qwest's systems are uniform across the three regions.

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13.3 Entrance Criteria

Table 13.3.1 Entrance Criteria

Criteria	*Responsible Party*
All Section 12 entrance criteria satisfied *Documentation available specifying which orders are expected to flow through by service delivery type and product including any specific parameters that cause an order to not flow through that should otherwise flow through*	*See Section 12.3* *Qwest*
Test scenarios selected	*KPMG Consulting*
Specific test cases developed	*KPMG Consulting*

13.4 Test Scope

Flow through only pertains to the ordering process.

Table 13.4.1 Test Scope

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Submit "Flow Through" Orders	Determine if order should "flow through"	Applicability as "flow through" based on existing publicly available documentation.	Inspection	Qualitative
	Submit "flow through" order through GUI	Accessibility of interface	Transaction Generation	Quantitative
	Submit "flow through" order through EDI	Accessibility of interface	Transaction Generation	Quantitative
Monitor "Flow Through" Order	Identify orders that did "flow through"	Compliance with "flow through" standards	Transaction Generation Inspection Logging	Quantitative
	Identify orders that did not "flow through"	Compliance with "flow through" standards	Transaction Generation Inspection Logging	Quantitative
	Identify causes of order "fall out" to manual processing	Compliance with documentation	Inspection	Qualitative

13.5 Test Scenarios

The specific scenarios to be used in this test will be chosen from those that can be found in Appendix D. Deleted: *1*

13.6 Test Approach

13.6.1 Inputs

1. Test cases and expected results
2. Validated test bed
3. Test case execution schedule
4. Interfaces built and certified
5. Failure reasons
6. Trained personnel to execute test cases

13.6.2 Activities

1. Submit order transactions via computer-to-computer and the GUI interfaces. Log submittal date, time and appropriate transaction information.
2. Receive transaction responses. Log receipt date, time, response transaction type, and response condition (valid vs. reject).
3. Verify transaction response contains expected data and flags unplanned errors.
4. Identify orders that had manual handling. Identify reason for manual handling. Record manual handling and order attributes.
5. If there was an error that caused the order not to flow through, identify error source (HP or Qwest). Identify and log reason for the error. Qwest errors will not be corrected.
6. Correct any HP errors and re-submit. Verify whether order flows through or not based on Qwest systems processing.
7. Verify that all orders submitted are accounted for. Log any orders that are submitted but do not appear as processed or erred by Qwest.
8. Generate reports based on Qwest manual handling report and KPMG Consulting data.

13.6.3 Outputs

1. Percentage and number of orders that flowed through by order type, product family, etc.
2. Percentage and number of orders that did not flow through by order type, product family, etc.
3. Variance between actual performance and the standards of performance defined in the PID
4. Report of expected results versus actual results by reason code
5. Observation and Exception reports
6. Final report

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13.7 Exit Criteria

Table 13.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

14. Provisioning Evaluation

14.1 Description

The Provisioning Evaluation test is a comprehensive review of Qwest's ability to accurately and expeditiously complete the provisioning of CLEC orders. This test will be conducted as a part of the POP functional testing (See Section 12). It will incorporate orders submitted by both the computer-to-computer and GUI interfaces, and manually where appropriate. While most types of orders will be included, the test will concentrate on those orders that require physical provisioning and/or switch software changes.

This test will involve verifying that orders submitted have been properly provisioned and that the provisioning has been completed on time. Included in the test will be orders that have been supplemented and canceled, as well as those submitted with anticipated errors, to test the impact on provisioning.

For some orders, particularly the more complex ones, the involvement of CLECs operating in the thirteen participating ROC states will be solicited to volunteer use of their facilities to enhance the real world nature of the test and to test those transactions that cannot be accomplished in a test environment without access to actual network facilities (e.g. LNP, Line splitting).

14.2 Objective

The objective of this test is to evaluate the ability of Qwest to accurately provision orders submitted by CLECs and to do so on time.

14.3 Entrance Criteria

Table 14.3.1 Provisioning Entrance Criteria

Criteria	*Responsible Party*
All Section 12 entrance criteria satisfied	*See Section 12.3*
Test scenarios selected	*KPMG Consulting*
Specific test cases developed *CLEC volunteers identified*	*KPMG Consulting* *KPMG Consulting*
Provisioning log and activity checklists created	*KPMG Consulting*

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14.4 Test Scope

The scope for this test includes the following processes:

1. UNE-Platform and Resale and associated feature provisioning
2. Loop Hot Cuts and Loop Conversions without LNP
3. New unbundled loop installations
4. Local Number Portability provisioning
5. Enhanced Extended Loops (EELs) Installation
6. xDSL Installations
7. Directory Listings provisioning

Table 14.4.1 Provisioning Functional Evaluation

Process	Sub-process	Evaluation measure
Provisioning functional evaluation	Directory Listing Provisioning	Timeliness, accuracy and completeness of provisioning
	Switch Feature Provisioning	Timeliness, accuracy and completeness of provisioning and timeliness of notifications
	Loop hot-cuts	Timeliness of provisioning and notifications. Accuracy and completeness of provisioning.
	New service adds	Timeliness, accuracy and completeness of provisioning and notifications.
	Local Number Portability	Timeliness, accuracy and completeness of provisioning and notifications
	Inter-office facilities provisioning	Timeliness, accuracy and completeness of provisioning and notifications
	Provisioning completion notices	Timeliness, accuracy and completeness of notices.

14.5 Test Scenarios

The specific scenarios to be used in this test will be chosen from those that can be found in Appendix D.

14.6 Test Approach

14.6.1 Inputs

1. Test cases and expected results
2. Provisioning documentation
3. Provisioning log and activity checklists
4. Participation from CLECs through voluntary, coordinated testing

14.6.2 Activities

1. Use test cases to develop transactions and transaction content based upon instructions provided in the appropriate documentation.
2. Submit computer-to-computer transactions.
3. Submit GUI and manual transactions.
4. Receive confirmations of transactions.
5. Log notification of provisioning jeopardies and delays.
6. Perform joint provisioning activities and record provisioning interactions.
7. Perform testing on provisioned services.
8. Test completion of orders. Record results in appropriate provisioning log and activity checklist.
9. Obtain from Qwest measurement reports for HP, aggregate CLECs and Qwest retail for the test date range.
10. Compare KPMG Consulting-produced HP measures with Qwest-produced HP measures.
11. Measure parity performance between retail and wholesale.

14.6.3 Outputs

1. Reports that provide the measurements to support standards of performance listed in Appendix C.
2. Variance between actual performance and standards of performance listed in Appendix C.
3. Report of expected results versus actual test case results.
4. Completed provisioning logs and checklists.
5. Provisioning accuracy and timeliness report.
6. Report CLEC aggregate measures as a data point to check for consistency.
7. KPMG Consulting-produced HP data to Qwest-HP performance results data comparison.
8. Qwest-produced HP data to Qwest retail or benchmark data comparison.
9. Measure of parity performance between Qwest retail and CLEC aggregate results.
10. Observation and Exception reports

14.7 Provisioning Process Parity Evaluation

The evaluation measures for the provisioning processes are consistency and repeatability as compared to retail. The provisioning processes will be inspected and compared to retail.

14.7.1 Description

The Provisioning Process Parity Evaluation is a review of the processes, systems and interfaces that provide provisioning for CLEC and Reseller orders compared to the equivalent Qwest retail processes. The review will focus on these areas:

- Order interfaces
- Workflow definitions
- Workforce scheduling
- Memory administration
- Service activation
- Test and acceptance
- Exception handling
- Completio n notices
- Jeopardy notifications
- Capacity management

The focus of the evaluation will be "downstream" interfaces from manual processing and the gateway systems that serves as the interface to all order processing.

As appropriate, provisioning processes for different products and services will be evaluated separately. This will be required in those cases where the process and/or systems used for provisioning are different by product.

14.7.2 Objective

The objective of this evaluation is to determine the degree to which the provisioning environment supporting CLEC orders is at parity with internal Qwest provisioning for its own retail customers.

14.7.3 Entrance Criteria

Table 14.7.3.1 Provisioning Process Parity Evaluation Entrance Criteria

Criteria	*ResponsibleParty*
All Section 12 entrance criteria satisfied	*See Section 12.3*
Detailed Provisioning Process Parity Evaluation Checklist developed	*KPMG Consulting*
Required system documentation available	*Qwest*

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Criteria	*ResponsibleParty*
Provisioning process documentation available	*Qwest*
Interview guide/questionnaire developed	*KPMG Consulting*
Interviewees identified and schedule developed	*Qwest, KPMG Consulting*

14.7.4 Test Scope

The table below outlines the processes and sub-processes involved in evaluating the level of parity provided by the Qwest provisioning systems and processes to the CLECs.

Table 14.7.4.1 Provisioning Process Parity

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Provisioning Process Parity	Workflow management	Consistency and repeatability as compared to Retail	Inspection	Parity
	Workforce management	Consistency and repeatability as compared to Retail	Inspection	Parity
	Jeopardy notification	Consistency and repeatability as compared to Retail	Inspection	Parity
	Service activation process	Consistency and repeatability as compared to Retail	Inspection	Parity
	Service design process	Consistency and repeatability as compared to Retail	Inspection	Parity
	Assignment process	Consistency and repeatability as compared to Retail	Inspection	Parity
	Capacity management	Consistency and repeatability as compared to Retail	Inspection	Parity

14.7.5 Test Scenarios

Not applicable.

14.7.6 Test Approach

14.7.6.1 Inputs

1. Product and Service Process Flow Understanding (provides for understanding of complex versus simple services but does not conflict with traditional Qwest definition of products and services)
2. Applicable Qwest provisioning process documentation
3. Interview guide/questionnaire
4. Interviewees (per process area)

- Provisioning process owners
- Provisioning process staff
- User requirements project leader

5. Interview schedule
6. Detailed Provisioning Process Parity Evaluation Checklist
7. Appropriate System Documentation
8. Appropriate Methods and Procedures (determined via interviews)

14.7.6.2 Activities

1. Identify all process documentation needed for review
2. Identify relevant systems and interfaces
3. Identify all system documentation available for review
4. Conduct structured review of documentation using Provisioning Process Parity Evaluation Checklist
5. Conduct interviews using the interview guides and questionnaires
6. Inspect physical systems and communications environments
7. Document findings

14.7.6.3 Outputs

1. Completed Provisioning Process Parity Evaluation Checklist
2. Completed interview questionnaires
3. Interview Summaries
4. Summary Findings, Conclusions

14.8 Provisioning Coordination Process

14.8.1 Description

The POP Provisioning Coordination Process Evaluation is a review of the procedures, processes and operational environment used to support coordinated provisioning with CLECs.

The evaluation will address products and situations that require coordinated provisioning to minimize customer disruption. The requirement for coordination may come from either Qwest policy or a CLEC request. An operational analysis test appro ach supplemented by case studies will be used to evaluate Qwest 's Provisioning Coordination Processes.

14.8.2 Objectives

The objectives of this evaluation are to:

- Determine completeness and consistency of provisioning coordination processes
- Determine whether the provisioning coordination processes are correctly documented, maintained and published

- Determine the accuracy, completeness and functionality of procedures for measuring, tracking, projecting and maintaining provisioning coordination processes performance
- Ensure the provisioning coordination processes have effective management oversight and Qwest's personnel is adhering to the documented process
- Ensure responsibilities for provisioning coordination processes performance improvement are defined and assigned

14.8.3 Entrance Criteria

Table 14.8.3.1 Provisioning Coordination Process Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*Qwest, ROC*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
CLEC Case Study Request completed	*KPMG Consulting*
CLEC Case Study Monitoring Form completed	*KPMG Consulting*
Detailed Provisioning Coordination Process Checklist developed	*KPMG Consulting*
Interview guide/questionnaire developed	*KPMG Consulting*
Interviewees identified and schedule developed	*Qwest, KPMG Consulting*

14.8.4 Test Scope

The table below outlines the tests to evaluate the procedures and processes in place to support for joint provisioning of services by the CLEC and Qwest.

Table 14.8.4.1 Provisioning Coordination Process

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Support Provisioning Coordination Process	Provision orders requiring coordination with CLECs	Availability of personnel, procedures and methods	Document Review	Existence
		Completeness and consistency of processes	Document Review, Inspection	Qualitative
	Request coordination	Completeness and consistency of processes	Document Review, Inspection	Qualitative
	Notification of provisioning schedule	Completeness and consistency of processes	Document Review, Inspection	Qualitative
		Timeliness of notification	Document Review, Inspection	Qualitative
	Jeopardy notification	Completeness and consistency of processes	Document Review, Inspection	Qualitative
		Timeliness of notification	Document Review, Inspection	Qualitative

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Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Coordinate provisioning	Completeness and consistency of operating management practice	Inspection	Qualitative
		Controllability, efficiency and reliability of process	Inspection	Qualitative
		Completeness of process improvement practices	Inspection	Qualitative
		Compliance with documented practices	Inspection	Qualitative

14.8.5 Test Scenarios

Not applicable.

14.8.6 Test Approach

14.8.6.1 Inputs

1. CLEC Case Study Request
2. CLEC Case Study Monitoring Form
3. Provisioning Coordination Process Checklist
4. Interview Guide/Questionnaire

14.8.6.2 Activities

1. Send CLEC Case Study Requests to CLECs
2. Receive and compile CLEC case study input suggestions
3. Select and record case studies to monitor
4. Monitor case studies and record results on monitoring form
5. Conduct structured review of documentation using provisioning Coordination Process Checklist.
6. Conduct interviews with key process personnel using interview guide and questionnaire
7. Review coordinated provisioning case studies
8. Document findings

14.8.6.3 Outputs

1. CLEC Case Study submission and selection matrix
2. Completed CLEC Case Study Monitoring Forms
3. Completed Provisioning Coordination Process Checklist
4. Completed Interview Questionnaires
5. Interview Summaries
6. Summary Findings, Conclusions

14.9 Exit Criteria

Table 14.9.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

15. POP Volume Performance Test

15.1 Description

The Volume Performance Test will identify the capacity and potential choke points, at projected future transaction volumes, of the Qwest GUI and computer-to-computer interfaces and Qwest front end systems made available to HP at the time of the test. The Volume Performance Test will evaluate the processing of pre-ordering queries and flow through orders. The test will consist of three parts: (1) a "normal volume" test using anticipated transaction volumes during the life cycle of the system interfaces tested, (2) a "peak" test using volumes at 150% of the normal volume test, and (3) a "stress" test using volumes at 250% of the normal volume test. (Note: Per the July MTP Design Workshop, the TAG will collaborate to finalize the normal volumes, percentages and time horizons to be used for the volume test. KPMG Consulting will provide different volume projections based on Qwest and CLEC forecasts.)

The Volume Performance Test will examine the performance of Qwest's production pre-ordering and ordering systems and processes from the submission of queries to the creation of internal service orders and the return of an order confirmation. The orders submitted in the Volume Performance Test will not be physically provisioned. Transactions will be submitted via both the GUI and computer-to-computer interfaces.

The test will include a mix of stand alone pre-ordering and ordering transactions. The mix will include planned business rule errors and flow through orders. The vast majority of transactions submitted to Qwest as part of this test will be designed to flow through; those that fall out to the workcenter will be identified to KPMG Consulting by Qwest but do not need to be worked by a representative in the workcenter.

Volume testing will be conducted on certain days during the POP Functional Evaluation testing period. Volume testing will be conducted on certain days during the POP Functional Evaluation testing period. There will be one initial normal volume test, one initial peak test and one 4 hour, non-busy, production hours stress test. If test results require it, additional volume tests will be

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conducted. The normal and peak volume tests will be conducted over the course of Qwest's published production hours in a calendar day. The stress test will be run during non-busy, production hours to limit the test's impact on real customers. The attributes and activities that apply to the POP Functional Evaluation (see Section 12) for pre-ordering and ordering also apply to this test. The dates of volume testing will be withheld from CLECs and Qwest to promote blindness. The ROC Project Manager and KPMG Consulting will consider the need for additional volume days if Qwest executes major system software changes during the course of the test.

15.2 Objective

The objective of the Volume Performance Test is to measure Qwest's capability and identify potential choke points of the GUI and computer-to-computer interfaces and systems made available to HP to access pre-ordering information and submit orders to Qwest at projected future volumes. The success criteria for normal volumes will be determined by the appropriate PID.

15.3 Entrance Criteria

Table 15.3.1 Entrance Criteria

Criteria	*Responsible Party*
All Section 12 entrance criteria satisfied	*See Section 12.3*
Agreement on volumes and distribution by scenario and entry mode	*ROC, KPMG Consulting*
Test scenarios selected	*KPMG Consulting*
Specific test cases developed	*KPMG Consulting*
Performance standards for peak/stress tests developed	*TAG*

15.4 Test Scope

The scope of this test includes the processes, sub-processes and measurements listed in the Table 15.4.1 below.

Deleted: The scope for this test includes the following test processes: ¶ <#>Pre-ordering¶ Order processing¶

Table 15.4.1 POP Volume Performance Test

Process	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Submit Pre-order Transactions	Submit Pre-orders via IMA EDI	Accessibility of IMA EDI	Transaction generation	Quantitative
	Submit Pre-orders via IMA GUI	Accessibility of IMA GUI	Transaction generation	Quantitative
	Receive Pre-order Response	Timeliness of response	Transaction generation Logging	Quantitative
	Verify that Pre-orders were Processed	Completeness of responses	Transaction generation Inspection	Qualitative
Submit Order Transactions	Submit Orders through IMA EDI	Accessibility of IMA EDI	Transaction generation	Quantitative
	Submit Orders through IMA GUI	Accessibility of IMA GUI	Transaction generation	Quantitative

	Process	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
		Receive Acknowledgement	Timeliness of response	Transaction generation Logging	Quantitative
		Verify that Orders were Processed	Completeness of responses (FOCs)	Transaction generation Inspection	Qualitative
	Submit Error Transactions	Receive Order Error Responses	Timeliness of response	Transaction generation Logging	Quantitative
		Verify that Orders were Processed and Errors were Received	Completeness of response	Transaction generation Inspection	Qualitative

15.5 Test Scenarios

The specific scenarios to be used in this test will be chosen from those found in Appendix D.

15.6 Test Approach

15.6.1 Inputs

1. Test cases
2. Documentation (all ordering documentation, pre-ordering/ordering business rules, etc.)
3. Validated test bed
4. Personnel to execute test cases
5. Certified interfaces

15.6.2 Activities

1. Use test cases to develop transactions and transaction content based upon instructions provided in the appropriate handbook(s).
2. Submit GUI and computer-to-computer transactions. Submittal date, time and appropriate transaction information are logged.
3. Receive transaction responses. Receipt date, time, response transaction type, and response condition (valid vs. reject) are logged.
4. Match transaction response to original transaction. Verify matching transaction can be found and record mismatches.
5. Verify transaction response contains expecteddata and flag unplanned errors.
6. Manually review unplanned errors. Identify error source (HP or Qwest). Identify and log reason for the error. Determine if test should be discontinued.
7. Identify transactions for which responses have not been received. Where multiple responses are expected for the same request, the receipt of each response will be monitored. Record missing responses.
8. Identify transactions for which duplicate or multiple responses were received in error.
9. Review status of pending orders. Verify and record accuracy of response.

10. Generate HP reports.
11. Report CLEC aggregate measures as a data point to check for consistency.

15.6.3 Outputs

1. Reports that provide performance measurements
2. Variance between actual performance and standards of performance
3. Report of expected results versus actual results
4. Unplanned error count by type and percentage of total
5. Report of unplanned errors as the result of documentation problems
6. Transaction counts, error ratio, response time, etc. by transaction type, product family and delivery method
7. Minimum, maximum, mean, average, and aggregate response time/interval per transaction set
8. Transaction counts per response time/interval range per transaction set
9. Observation and Exception reports
10. Final report

15.7 Exit Criteria

Table 15.7.1 Exit Criteria

Criteria	*Responsible Party*
All activities completed	*KPMG Consulting*
Checklists and reports completed	*KPMG Consulting*
Global exit criteria satisfied	*See Section 7*

16. CEMR Functional and Performance Evaluation

16.1 Description

The Customer Electronic Maintenance and Repair (CEMR) functional and performance evaluation is a comprehensive review of the trouble administration functional elements of the IMA GUI, conformance to documented specifications, and an analysis of its functionality in comparison to Qwest's Retail front end systems for trouble management. The test has three major phases, Phase 1 — a basic functional evaluation, Phase 2 — a comparative functional evaluation, Phase 3 — a performance evaluation. The performance evaluation is a transaction driven test designed to evaluate the CEMR system used for M&R under load conditions. Transaction sets will be based on the level of demand projections that are reasonably foreseeable during the life cycle of the system being tested.

16.2 Objective

The objective of this test is to validate the existence and behavior of CEMR functional elements as documented in CEMR Training Guides and other applicable documents, and to evaluate, based on both quantitative and qualitative approaches, the equivalence of CEMR functionality to Qwest's Retail front end systems for trouble management. The behavior of CEMR will be evaluated under load conditions to determine system performance in terms of response time and operability, and to identify potential future performance bottlenecks and whether that performance is consistent with specifications.

16.3 Entrance Criteria

Table 16.3.1 Basic Functional (Phases 1 & 2) Evaluation Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*
HP is operationally ready	*HP*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Detailed test plan completed	*KPMG Consulting*
Test scenarios selected	*KPMG Consulting*
Documentation provided	*Qwest*
Interview guides created	*KPMG Consulting*
Specific test cases and transaction sets developed	*KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available.	*Qwest*
Basic documentation review completed	*KPMG Consulting*
Detailed functional checklist created	*KPMG Consulting*
Test bed provisioned and validated	*Qwest, KPMG Consulting*
Specific evaluation techniques developed	*KPMG Consulting*
Physical access to the CEMR established	*Qwest*
Security access to CEMR established	*Qwest*
Evaluation criteria defined and approved	*ROC*

Table 16.3.2 CEMR Performance Evaluation (Phase 3) Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*
HP is operationally ready	*HP*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Test transaction sets have been built and validated	*KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available.	*Qwest*
Test bed provisioned and validated	*Qwest, KPMG Consulting*
CEMR test coordination details have been worked out	*KPMG Consulting*

16.4 Test Scope

CEMR functionality will be reviewed within the context of specific documentation addressing its use and in comparison to Qwest's Retail front-end systems for trouble management. The following table contains the processes, sub-processes, and methods for evaluating the functionality of Qwest's IMA GUI.

Table 16.4.1 Test Scope: M&R CEMR Functional Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Trouble Reporting	Create/Enter Trouble Report (TR)	Functionality exists as documented	Inspection	Existence Qualitative Parity
	Modify TR	Functionality exists as documented	Inspection	Existence Qualitative Parity
	Close/Cancel TR	Functionality exists as documented	Inspection	Existence Qualitative Parity
	Retrieve TR Status	Functionality exists as documented	Inspection	Existence Qualitative Parity
Trouble History Access	Retrieve Trouble History	Functionality exists as documented	Inspection	Existence Qualitative Parity
Access To Test Capability	Initiate MLT Test	Functionality exists as documented	Inspection	Existence Qualitative Parity
	Receive MLT Test Results	*Functionality exists as documented*	*Inspection*	*Existence Qualitative Parity*

The CEMR performance evaluation is a transaction driven test designed to evaluate the CEMR system used for M&R under load conditions. The following table contains the processes, sub-processes, and methods for evaluating the performance of Qwest's CEMR system.

Table 16.4.2 Test Scope: CEMR Performance Evaluation

Process Area	Sub – Process	Evaluation Measure	Evaluation Technique	Criteria Type
Trouble Reporting	Create/Enter Trouble Report (TR)	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative
	Modify TR	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative
	Close/Cancel TR	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative
	Retrieve TR Status	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative
Trouble History Access	Retrieve Trouble History Status	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative

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Process Area	Sub – Process	Evaluation Measure	Evaluation Technique	Criteria Type
Access to Test Capability	Initiate MLT Test	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative
	Receive MLT Test Results	Timeliness, Accuracy	Transaction Generation	Quantitative, Qualitative

16.5 Test Scenarios

A subset of the Appendix D Table D5 scenarios will be used in this test. Scenarios selected for trouble reporting will include both post provisioning activity and trouble reports on existing HP service.

16.6 Test Approach

This test is broken down into three phases:

- **Phase 1** involves the use of test cases created for this test and observation of processes to evaluate CEMR functionality and to determine if the system behaves as documented.
- **Phase 2** involves observation of similar retail transactions and interviews of Retail Maintenance Administrators (MA) processing trouble calls and entering trouble reports into Qwest's Retail front end systems to assess functionality in comparison to IMA GUI.
- **Phase 3** involves load testing of CEMR by sending transaction sets structured to provide a transaction mix consistent with current system usage, projected normal volumes and stress/load volumes. Included in this mix will be planned errors. The quantity of transactions will be known as the "normal volume". A second execution known as "peak" will use a multiple of 125-150% the "normal" volumes. Finally, the "stress" execution will use transaction volumes that are 150-250% the volumes used for the "normal" test.

The number of observations and period of time over which the observations are taken for both wholesale and retail processes will be sufficient to provide a statistically valid basis for evaluation.

16.6.1 Inputs

1. Test cases
2. Documentation (CEMR Learning Guide, etc.)
3. Functionality checklists
4. Interview guide
5. CEMR systems and validated test bed
6. Personnel to interview Wholesale user and Retail Maintenance Administrators and observe their use of CEMR and retail front-end systems for Trouble Management, respectively.

16.6.2 Activities – Phase I

1. Use test cases created for this test and appropriate Qwest documentation to perform each of the functions listed on the checklist provided via the CEMR interface. Observe and interview HP as they execute the test cases to determine usability.
2. Verify that each system function behaves as documented.
3. Note any anomalies in the space provided on the checklist.
4. Note any discrepancies between CEMR documentation and behavior.
5. Ensure that all trouble reports entered in IMA have been canceled.

16.6.3 Activities – Phase II

1. Use the checklist and interview guide to conduct interviews with MA's selected from the Residence and Business M&R work centers.
2. Observe MA trouble report activities similar to those test cases used in Phase I as identified on the checklist provided.
3. Note the presence and behavior of functions identified on the checklist.
4. Identify any anomalies relative to the functions being observed.
5. Note any additional relevant information from the MA interview (e.g., additional capabilities, performance, etc.).
6. Determine and document any M&R functions that can be performed from a Retail trouble management workstation that are not available in CEMR and vice versa.
7. Perform a detailed evaluation of relative functionality and capabilities between CEMR and retail front-end systems for trouble management.

16.6.4 Activities – Phase III

1. Feed transaction sets to IMA GUI.
2. Periodically exercise CEMR functionality manually during test execution.
3. Observe and capture observations from (2) above in terms of performance and operability.
4. Capture transaction performance statistics via data test generator. (automatic)
5. Capture transaction performance statistics via IMA GUI. (automatic)
6. Monitor CEMR system interfaces to identify any bottleneck conditions. (Qwest personnel)
7. Ensure all generated trouble reports have been canceled/closed.
8. Reset test bed for next test (if required) or clean up production databases. (Qwest)
9. Execute test once with normal, projected transaction volumes and once with peak/stress volumes.
10. Analyze performance reports.
11. Review execution and observation reports.

12. Compare HP vs. performance metric results.

16.6.5 Activities – Common

Document the results and findings from the activities conducted in Phases 1, 2 and 3.

16.6.6 Outputs

1. Completed checklists from Phases 1, 2 and 3 activities
2. Completed interview summaries
3. Summary reports of findings from each phase, including a discussion of anomalies and relevant observations relating to usability and timeliness of each system interface
4. Reports that provide the measurements to support the standards of performance defined in Appendix C
5. Variance between actual performance and the standards of performance defined in Appendix C
6. Test execution and observation reports
7. HP performance reports
8. CEMR performance reports
9. A Summary report comparing relative functionality in CEMR and Retail front end systems for Trouble Management highlighting differences and contrasting ease of use of the two systems in performing the functions observed
10. Observation and Exception reports

16.7 Exit Criteria

Table 16.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*
All activities completed	*KPMG Consulting*
Checklists and reports completed by personnel participating in the test.	*KPMG Consulting*

17. MEDIACC (EB-TA) M&R Trouble Functional Evaluation

17.1 Description

The Electronic Bonding Trouble Administration (MEDIACC EB-TA) Functional Evaluation is a comprehensive review of all of the functional elements of the MEDIACC EB-TA System and their conformance to documented interface specifications.

17.2 Objective

The objective of this test is to validate the existence and behavior of MEDIACC EB-TA functional elements as documented for CLEC trouble entry and other applicable documents.

17.3 Entrance Criteria

Table 17.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test. *All required Qwest interfaces are operationally ready*	*ROC, Liberty Consulting* *Qwest*
Pass/retest criteria have been identified *Detailed Test Plan completed*	*ROC, KPMG Consulting* *KPMG Consulting*
Test Scenarios selected	*KPMG Consulting*
Specific Test Cases and Transaction Sets developed	*KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available	*Qwest*
Basic documentation review completed	*KPMG Consulting*
Detailed Functional Checklist created	*KPMG Consulting*
Test bed provisioned and validated *Specific Evaluation techniques developed*	*Qwest, KPMG Consulting* *KPMG Consulting*
Physical access to Qwest Trouble entry site established	*Qwest*
Security access to MEDIACC EB-TA established	*Qwest*
Evaluation Criteria defined and approved	*ROC*
Checklists created	*KPMG Consulting*

17.4 Test Scope

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Trouble Reporting	Create/Enter Trouble Report (TR)	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity
	Add TR	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity
	Modify TR	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Close/Cancel TR	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity
	Request TR Status	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity
	MLT Functionality	Functionality exists as documented	Transaction Generation Documentation Review	Existence Qualitative Parity

17.5 Test Scenarios

A subset of the Appendix D Table D5 scenarios will be used in this test. Scenarios selected for trouble reporting will include both post provisioning activity and trouble reports on existing HP service.

17.6 Test Approach

This test will use test cases specifically created for this test to evaluate MEDIACC EB-TA functionality and to determine if the system behaves as documented.

17.6.1 Inputs

1. Test cases
2. Documentation
3. Functionality checklists
4. Validated test bed

17.6.2 Activities

1. Use test cases created for this test and appropriate Qwest documentation to perform each of the functions listed on the checklist provided via the MEDIACC EB-TA interface.
2. Verify that each system function behaves as documented.
3. Note any anomalies in the space p rovided on the checklist.
4. Note any discrepancies between M&R Trouble Entry documentation and behavior of the MEDIACC EB-TA interface.
5. Ensure that all trouble reports entered via the MEDIACC EB-TA interface have been canceled.

17.6.3 Outputs

1. Completed checklists from activities
2. Summary reports of findings including a discussion of anomalies relating to usability and timeliness of each system function.
3. Observation and Exception reports

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17.7 Exit Criteria

Table 17.7.1 Exit Criteria

Criteria	*Responsible Party*
All global exit criteria satisfied	*See Section 7*
All activities completed	*KPMG Consulting*
Checklists and reports completed by personnel participating in the test.	*KPMG Consulting*

18. M&R End to End Trouble Report Processing

18.1 Description

This test involves the execution of selected M&R test scenarios to evaluate Qwest's performance in making repairs under the conditions of various wholesale maintenance scenarios.

18.2 Objective

The objective of this test is to evaluate Qwest's performance in making repairs under the conditions of various wholesale maintenance scenarios. The quality of the repair process is to be assessed, and compared with retail operations where the data is available.

18.3 Entrance Criteria

Table 18.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*
HP is operationally ready	*HP*
The statistical plan is in place	*TAG, KPMG Consulting*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Test scenarios selected	*KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available.	*Qwest*
Techniques & instrumentation available	*Qwest, KPMG Consulting*
Test bed circuits provisioned and validated	*Qwest, KPMG Consulting*
Faults inserted into test-bed circuits as required by the test scenarios	*Qwest, KPMG Consulting*

18.4 Test Scope

Selected M&R test scenarios will be executed to evaluate Qwest's performance in making repairs under the conditions of various wholesale maintenance scenarios. The following chart contains the processes, sub-processes, and methods for evaluating the End-to-End Trouble Report Processing test:

Table 18.4.1 Test Target: Execution of M&R Test Scenarios

Process Area	**Sub-Process**	**Evaluation Measure**	**Evaluation Technique**	**Criteria Type**
End-to-End Trouble Report Processing – Resale	M&R Test Scenarios	Accuracy Timeliness	Inspection	Quantitative
End-to-End Trouble Report Processing – UNE/UNE Combinations	M&R Test Scenarios	Accuracy Timeliness	Inspection	Quantitative

18.5 Test Scenarios

This test involves the execution of selected M&R test scenarios.

18.6 Test Approach

18.6.1 Inputs

1. Test-bed circuits with embedded faults

18.6.2 Activities

1. Conduct circuit test if applicable for each test scenario.
2. Note test results.
3. Create and submit trouble ticket via IMA.
4. Periodically monitor each trouble report throughout its life using trouble report status transactions in IMA.
5. Note significant events in the trouble report life cycle (error occurrences, corrections, trouble ticket submission time, time cleared, etc.).
6. Calculate time to repair measurements for each test scenario fault repaired.
7. Document observations.

18.6.3 Outputs

1. Reports that provide performance measurements
2. A time to repair measurement for each fault repaired
3. Summary report of observations
4. Observation and Exception reports
5. Variance between actual performance and standards of performance

18.7 M&R Work Center Support Process Evaluation

18.7.1 Description

The M&R work center support evaluation is an operational analysis of the work center/help desk processes developed by Qwest to provide support to CLECs with questions, problems and issues related to wholesale trouble reporting and repair operations.

18.7.2 Objectives

The objective of this test is to evaluate the effectiveness of M&R work center support operations and adherence to common support center/help desk procedures. An additional objective is to analyze the nature and frequency of problems referred to the work center to determine if they indicate potential problems in other M&R Domain.

Specifically, this evaluation is designed to:

- Determine completeness and consistency of work center/help desk processes and procedures
- Determine whether expedite and escalation procedures are correctly documented and work effectively
- Ensure existence of reasonable security measures to ensure integrity of work center/help desk data and the ability to restrict access to parties with specific access permissions
- Determine the timeliness and accuracy in identifying and resolving problems

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- Determine the existence and functionality of procedures for measuring, tracking, projecting and maintaining work center/help desk performance
- Determine the existence of a capacity management process which addresses Qwest's ability to scale up for future growth
- Determine the existence of Maintenance and Repair coordination processes and procedures, and other operational elements associated with M&R coordination activities between Qwest and CLEC operations organizations.

18.7.3 Entrance Criteria

Table 18.7.3.1 Work Center Support Process Evaluation Entrance Criteria

Criteria	*Responsible Party*
Detailed test plan completed	*KPMG Consulting*
Techniques and instrumentation developed and approved	*KPMG Consulting and Qwest*
Process Evaluation Checklist	*KPMG Consulting*
Interview Guides	*KPMG Consulting*
Required data and documentation provided	*Qwest*

18.7.4 Test Scope

Table 18.7.4.1 Work Center Support Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Call Processing	Call Answer	Timeliness	Inspections Logging Interviews	Qualitative
	Call Logging	Accuracy Completeness Consistency	Inspections Logging Interviews	Qualitative
	Prioritization	Existence Effectiveness	Inspections Logging Interviews	Qualitative
Problem Tracking and Resolution	Documentation	Clarity Accuracy	Document Review Interviews	Qualitative
	Identify and Resolve	Timeliness Accuracy Completeness Consistency	Inspections Logging Interviews	Qualitative
	Track Problem	Existence Accuracy	Inspections Logging Interviews	Qualitative

Table 18.7.4.1 Work Center Support Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Log Status and Close	Accuracy Completeness Consistency	Inspections Logging Interviews	Qualitative
	Notify Customer	Timeliness	Inspections Logging Interviews	Qualitative
Expedite/ Escalation Procedures	Documentation	Existence Clarity Accuracy	Document Review Interviews	Qualitative
	Call Answer	Accessibility Timeliness	Inspections Logging Interviews	Qualitative
	Escalation Logging	Accuracy	Inspections Logging Interviews	Qualitative
	Identify and Resolve	Timeliness	Inspections Logging Interviews	Qualitative
	Log Status and Close	Accuracy	Inspections Logging Interviews	Qualitative
	Notify Customer	Timeliness	Inspections Logging Interviews	Qualitative
Work Center Procedures		Accuracy Completeness	Inspections Logging Interviews	Qualitative
Joint Meet Procedures	Process Documentation	Accuracy Completeness	Interviews Document Review	Qualitative
	Notification Procedures	Timeliness Accuracy	Interviews	Qualitative
Coordinated Testing	Process Documentation	Accuracy Completeness	Interviews Document Review	Qualitative
	Notification Procedures	Timeliness Accuracy	Interviews	Qualitative
Manual Handling — Resale		Accuracy Timeliness Consistency	Observation Logging Interviews	Qualitative
Manual Handling — UNE/UNE-P		Accuracy Timeliness Consistency	Observation Logging Interviews	Qualitative
Capacity Management	Capacity management processes and procedures	Adequacy and completeness of and adherence to capacity management process	Inspection Document review Interview	Qualitative

18.7.5 Test Scenarios

Not applicable.

18.7.6 Test Approach

18.7.6.1 Inputs

1. Interview guides
2. Observation checklists
3. Work center/help desk evaluation checklists
4. Work center contact logs
5. Process and procedure documentation
6. Qwest notification procedures for coordinated meets and coordinated testing

18.7.6.2 Test Activities

1. Conduct Maintenance and Repair center visits
2. Conduct work center/help desk evaluations
3. Establish work center contact logs
4. Analyze and collate contacts by type
5. Report negative observations via the Observation/Exception process as appropriate

18.7.6.3 Outputs

1. Completed checklists from the work center/help desk evaluations
2. Summary report
3. Contact analysis results report
4. Observation and Exception reports

18.8 End-to-End Maintenance and Repair (M&R) Process Evaluation

18.8.1 Description

The End-to-End M&R Process Evaluation test evaluates the functional equivalence of Qwest's End-to-End M&R Process for retail and wholesale trouble reports. The test encompasses all activities from the moment a trouble ticket is captured in Qwest's systems until the same trouble ticket is closed and the customer is notified of the resolution.

18.8.2 Objectives

The objectives of this test are to evaluate Qwest's wholesale M&R trouble reporting process and the equivalence of Qwest's end-to-end processes for trouble reporting and repair of retail and wholesale services.

Additional objectives are to (1) evaluate the comparability of M&R retail and wholesale work center support operations and adherence to common work center procedures, and (2) analyze the

nature and frequency of problems referred to the work centers to assess the level of parity between retail and wholesale trouble reporting activities.

18.8.3 Entrance Criteria

Table 18.8.3.1 M&R Process Evaluation Entrance Criteria

Criteria	*Responsible Party*
Detailed test plan completed	*KPMG Consulting*
Techniques and instrumentation developed and approved *Process Evaluation Checklist*	*KPMG Consulting and Qwest* *KPMG Consulting*
Interview Guides	*KPMG Consulting*
Required data and documentation provided	*Qwest*

18.8.4 Test Scope

Table 18.8.4.1 M&R Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
End-to-End M&R Process: Resale and UNE/UNE-P	Process flow	Comparison with retail Completeness, consistency, and timeliness of the trouble reporting process	Interview Inspection Document review	Parity Qualitative
Document Management	Document management processes	Completeness of document management process	Interview Inspection Document review	Parity Qualitative
Capacity Management	Capacity management processes and procedures	Adequacy and completeness of capacity management process	Inspection Document review Interview	Parity Qualitative

18.8.5 Test Scenarios

Not applicable.

18.8.6 Test Approach

18.8.6.1 Inputs

1. Retail and wholesale M&R process flow documentation
2. Other procedural documentation
3. Evaluation checklists
4. Interview Guides
5. Retail analogs (as applicable)

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18.8.6.2 Test Activities

1. Conduct M&R center visits
2. Review and compare wholesale and retail process flows
3. Identify differences between the two processes
4. Analyze process
5. Assess the potential impact of each difference (as applicable)
6. Document process flow analysis results

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18.8.6.3 Outputs

1. Completed checklists and interview summaries
2. Summary report
3. Contact analysis results report
4. Observation and Exception reports (as applicable)

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18.9 Exit Criteria

Table 18.9.1 Exit Criteria

Criteria	*Responsible Party*
All global exit criteria satisfied	*See Section 7*
Time to repair measurements for repaired faults	*KPMG Consulting*
Summary report of observations	*KPMG Consulting*

19. Billing Usage Functional Evaluation

19.1 Description

The Functional Usage Evaluation is an analysis of Qwest's daily message processing to ensure usage record types including access records (when appropriate), rated records, un-rated records and credit records appear accurately on the Daily Usage Feed (DUF) according to the defined schedule.

19.2 Objective

The objective of this test is to evaluate the following:

- Accuracy and completeness of all usage record types on the DUF including access records that should appear, not receiving records that should not appear, and not receiving empty set files
- Timeliness of the DUF and access records delivery

19.3 Entrance Criteria

Table 19.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist *The ROC has verified measurements to be used in the test*	*ROC, Qwest* *ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Test bed provisioned and validated	*Qwest, KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available.	*Qwest*
Techniques and instrumentation developed	*KPMG Consulting*
Qwest resources are available to participate in the test	*Qwest*
Detailed Test Plan completed	*KPMG Consulting*
All call scripts that reflect the types, durations, terminating numbers, etc. of call that test callers are to make are provided	*KPMG Consulting*

19.4 Test Scenarios

Test calling is dependent on the provisioning process, which is dependent on scenarios. Test calls and service changes will occur simultaneously.

A subset of the Appendix D scenarios will be used in this test.

19.5 Test Approach

This test will use operational analysis to evaluate the accuracy and completeness of records contained in the DUF. This analysis will also examine the age of calls on the DUF. The evaluations will be accomplished by dispatching testers to various locations within the states participating in the test. These testers will place test calls and will record information about these calls including the "call from" number, "call to" number, "bill to" number, call time and duration. The data contained in these Daily Usage Feeds will then be compared to the call logs and relevant billing media. The Test Team will also record information about the contents of DUFs received by KPMG Consulting.

Test calls will be made using some customer accounts that will migrate during the test period. Migration refers to the conversion of account ownership from one LEC to another. Test calls will be made from migrating accounts before and after the migration date to ensure accurate guiding of data in the Daily Usage Feed.

For example, a Qwest retail customer migrates to a CLEC during the test. Calls made by the customer prior to migration should be guided to Qwest. Calls made by the customer after migration should be guided to the new CLEC.

Test calls should be placed from within the Qwest calling region. Test calls will be made throughout the workday. Test calls will include a variety of call types with the exception of 911, and will be placed from various locations in order to test various switch technologies. Local and toll test calls terminating on the test lines will also be made. These calls will be subject to evaluation.

19.5.1 Inputs

1. Detailed Test Plan
2. Validated test bed, including lines, telephones and facilities

19.5.2 Activities

1. Test Team will develop Test Call Matrices, which include test call logs for each location, on each day, for each originating phone number.
2. Test Team will assemble tester resources, provide instructions and dispatch testers to calling locations.
3. Testers will complete calls and log results.
4. HP will receive DUF files from Qwest and provide to Test Team.
5. Test Team will verify that appropriate data is on the DUF.
6. Test Team will verify that calls that do not belong on the DUF are not on the DUF.
7. Test Team will verify that appropriate calls present in the DUF match the testers call log.
8. Test Team will identify DUF files that contain no billable records.
9. Using records received in the DUF files, Test Team will validate the age of calls by determining the number of business days between the call date and the day the DUF file was created.
10. Test Team will compile results.

19.5.3 Outputs

1. Call Logs Report – A report of the testers logs.
2. DUF Accuracy and Completeness Report – A report showing the validation of calls made during the test.
3. Empty DUF Files Report – A Report showing the number of empty DUF files sent by Qwest
4. Observation and Exception reports
5. Final report

19.6 Daily Usage Feed Returns, Production and Distribution Processes Evaluation

19.6.1 Description

The Daily Usage Feed Returns, Production and Distribution Process Evaluation is an operational analysis of the processes and related documentation used by Qwest to create, transmit and investigate, where necessary, to correct Daily Usage Feed (DUF) return requests from CLECs by

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issuing adjustments and/or credits. This test also includes an evaluation of Qwest's capacity management process.

The test may also include soliciting CLEC participation to gather data to help with the evaluation of the usage return process. The tester will observe the interactions of Qwest and CLECs submitting returns to verify that the procedures described by Qwest during the process evaluation are followed in practice. Inclusion of this segment of the test will be dependent on the availability of relevant CLEC data and examples.

19.6.2 Objective

The objective of this test is to determine the accuracy, completeness and timeliness of processes used to produce and distribute the DUF and to process and respond to Daily Usage Feed Return requests.

19.6.3 Entrance Criteria

Table 19.6.3.1 DUF Returns, Production and Distribution Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
All required Qwest interfaces are operationally ready	*Qwest*
HP is operationally ready	*HP*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Documentation on DUF Returns, Production and Distribution processes available	*Qwest*
Interview and walk-through arrangements finalized	*Qwest*

19.6.4 Test Scope

The scope of this test includes the processes, sub-processes and measurements listed in the Table 19.6.4.1 below.

Table 19.6.4.1 Daily Usage Production and Distribution Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Produce Daily Usage File	Production of DUF files	Completeness and timeliness	Inspection	Qualitative
	Balancing and reconciliation of Daily Usage feed	Completeness of balancing and reconciliation procedures	Inspection	Qualitative
	Route Daily Usage	Controllability of usage	Inspection	Qualitative

Table 19.6.4.1 Daily Usage Production and Distribution Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Transmit Daily Usage File	Data transmission and/or cartridge tape delivery to CLEC	Completeness, consistency and timeliness of the process	Inspection	Qualitative
Maintain and Re-transmit Usage History	Create Daily Usage backup	Reliability of repeatable process	Inspection	Qualitative
	Retrieve and re-transmit Daily Usage backup data	Availability and timeliness of prior period usage data to CLEC	Inspection	Qualitative
Capacity Management	Capacity management process	Adequacy, completeness of, and adherence of the capacity management process	Inspection Document review Interview	Qualitative

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19.6.5 Test Scenarios

Not applicable.

19.6.6 Test Approach

19.6.6.1 Inputs

1. Detailed operational test plan
2. Qwest personnel to review procedures, systems and tools
3. Process documentation
4. Availability of HP DUF re-transmissions

19.6.6.2 Activities

1 Develop Daily Usage Production and Distribution Process Evaluation checklist

2 Prepare CLEC assistance solicitation materials

3 Select CLEC participants and arrange for observations

4 Observe DUF Returns process from CLEC perspective

5 Conduct process walk-throughs and interviews

6 Compile findings

19.6.6.3 Outputs

1. Completed test package for the Daily Usage Feed Returns, Production and Distribution Processes
2. Observation and Exception reports
3. Completed final report from the Daily Usage Feed Returns, Production and Distribution Processes Evaluation

19.7 Exit Criteria

Table 19.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

20. Carrier Bill Functional Evaluation

20.1 Description

The Carrier Bill Functional Evaluation is an analysis of Qwest's ability to accurately bill usage plus monthly recurring charges (MRC), fractional MRCs, and non-recurring charges (NRC) on the appropriate type of bill. An accurately billed item will contain the correct price and correct supporting information, such as start/end dates, duration, standard amounts, and discount amounts. This test will also evaluate the timeliness of bill delivery to the CLECs.

Monthly charges will be examined for both Resale and UNE billing on Integrated Access Billing System (IABS), Billing and Receivable Tracking System (BARTS), and Customer Record Information System (CRIS) bills. The verification of prices will consider prices charged based on Qwest tariffs, Qwest-CLEC Interconnection Agreements and Statements of Generally Available Terms and Conditions (SGATs), as appropriate. End user bills will be produced by Qwest's systems and validated by KPMG Consulting in this test. Validation of a sample of the end user bills will help verify that double billing of the end user (by Qwest and CLEC) does not occur. Table 20.1 reflects a number of key characteristics of Resale and UNE billing information that will be used in the design of test cases. Information includes the various charge components and their destination bill.

Table 20.1.1 Key Characteristics of Billing Information for Resale and UNE Customers

	Billing Component	*Rating*	*Usage*	*Billing*
Resale	*Usage*	*CRIS*	*DUF*	*CRIS*
Resale	*MRC/NRC*	*CRIS*	*N/A*	*CRIS*
UNE loop	*MRC/NRC*	*CRIS*	*N/A*	*CRIS*
UNE-P	*MRC/NRC; usage*	*CRIS*	*DUF*	*CRIS*
UNE-UDIT	*MRC/NRC*	*IABS*	*N/A*	*IABS*
Directory Listings	*MRC/NRC*	*CRIS*	*N/A*	*CRIS*
Line Sharing	*MRC*	*CRIS*	*N/A*	*CRIS*
Line Splitting	*MRC*	*CRIS*	*N/A*	*CRIS*
Dark Fiber	*NRC/MRC*	*BARTS*	*N/A*	*BARTS*

20.2 Objectives

This test evaluates the timely delivery of the bill and the accurate and timely appearance of charges on the appropriate bill. Appearance of charges will depend on the type of products ordered and/or class of service changes for resale and UNE. Details to be evaluated include:

- Fractional charges are accurate.
- Recurring and non-recurring charges are accurate.
- Discounts are applied correctly.
- Totals are accurate.
- Late charges are applied correctly.
- Service establishment dates are accurate.
- Adjustments appear on the bill.
- Bills are delivered to HP in a timely manner.
- All usage charges are billed accurately.

20.3 Entrance Criteria

Table 20.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*
HP is operationally ready	*HP*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
All CRIS and IABS baseline bills produced from the initial test bed	*Qwest*
Techniques and instrumentation developed	*KPMG Consulting*
Product descriptions and business rules for all transactions to be tested are available	*Qwest*
Pricing sections of Qwest tariffs, Qwest-CLEC Interconnection Agreements and SGATs are provided	*Qwest*
Test bed provisioned and validated	*Qwest, KPMG Consulting*
Calls made during Functional Usage Evaluation processed through to the DUF and available for billing	*Qwest*
Availability of Qwest resources to test and produce CRIS and IABS bills	*Qwest*

20.4 Test Scope

Table 20.4.1 Test Scope for Carrier Bill Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Techniques	Criteria Type
Maintain Bill Balance	Carry balance forward	Accuracy of bill balance	Inspection	Quantitative
Verify Billing Accounts	Verify Billing Accounts	Completeness and accuracy of data	Inspection	Quantitative
Bills and Delivery	Verify recurring charges	Completeness and accuracy of data	Inspection	Quantitative
	Verify non-recurring charges	Completeness and accuracy of data	Inspection	Quantitative
	Verify fractional charges	Completeness and accuracy of data	Inspection	Quantitative
	Verify Usage Charges	Completeness and accuracy of data	Inspection	Quantitative
	Verify discounts	Completeness and accuracy of data	Inspection	Quantitative
	Verify adjustments (debits and credits)	Completeness and accuracy of data	Inspection	Quantitative
	Verify late charges	Completeness and accuracy of data	Inspection	Quantitative
	Receive bill copy	Timeliness of media delivery	Logging	Quantitative

As part of this test, a variety of products and services will be ordered. This may result in many variations in billing presentation from the Qwest billing systems (CRIS, BARTS, and IABS). Relevant bill types will be selected for review based upon the product mix and anticipated charges as defined in the expected test results.

20.5 Scenarios

A subset of the Appendix D scenarios will be utilized for billing and usage testing purposes. The set selected will include:

- Test cases for 'migration/conversion' of customers
- Test cases for disconnects, new service (add/delete), and partial disconnects
- Test cases for changes to services (modify)
- Test cases for changes to service delivery method
- All migration situations should be adequately represented, including:
  - Qwest to CLEC
  - CLEC to Qwest
  - CLEC to CLEC

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The scenarios utilized for billing and usage testing will be applied across all service delivery methods available in Qwest at the time of the test(s).

20.6 Test Approach

This test will use systems and operational analysis to evaluate the completeness and accuracy of charges that should appear on the bill based on usage information from the Functional Usage Evaluation and selected scenarios. Expected results will be defined for each test case.

Three bill periods will be processed for the same set of customers.

The first bill period consists of the baseline bills where customers created for this test are billed for the first time directly from the initial test bed. These bills are produced prior to the execution of any transaction scenarios that affect selected customers.

The second and third bill periods consist of bills produced after selected scenarios have been executed. This second set of bills will include items such as prorates, disconnects, migrations, adjustments, etc. Some customers will be created during the test execution, and will only receive second or third period bills.

The following list shows inputs, activities and outputs of the process needed to validate the full range of test cases.

20.6.1 Inputs

1. Detailed Test Plan
2. Verified Baseline Bills and CSRs
3. Selected usage from the Billing Functional Usage Evaluation
4. CSRs and completions from relevant orders

20.6.2 Activities

1. Begin first bill period by receiving baseline bills
2. Record invoice bill date and actual date received
3. Develop expected results for each test case
4. Validate test results for each applicable test case
5. Identify and resolve discrepancies on baseline bills
6. Process service order changes
7. Receive CSRs for second bill cycle
8. Receive bills for second bill period
9. Record invoice bill date and actual date received
10. Develop expected results for test cases
11. Validate test results for each applicable test case
12. Identify discrepancies

13. Complete second bill period
14. Repeat 7-12 until third bill period is complete
15. Compile results

20.6.3 Outputs

1. An analysis of discrepancies to be included in the Final Report
2. Apply applicable performance measures to test data
3. Observation and Exception reports
4. Final report

20.7 Bill Production and Distribution Process Evaluation

20.7.1 Description

The Bill Production Process Evaluation is an operational analysis of the processes employed by Qwest to produce and distribute carrier bills.

This test will use operational analysis techniques. It will rely on the development of various evaluation checklists to facilitate a structured walk-through of the bill production and delivery processes

20.7.2 Objectives

The objective of this test is to determine whether the processes employed by Qwest to produce and distribute carrier bills result in bills that are accurate and are distributed to CLECs on a timely basis. The processes that enable a CLEC to request and obtain copies of previously received bills are also reviewed.

20.7.3 Entrance Criteria

Table 20.7.3.1 Bill Production and Distribution Process Evaluation Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Wholesale billing process flow documentation available	*Qwest*
Process Evaluation Checklist developed	*KPMG Consulting*
Interview Guides/questionnaire developed	*KPMG Consulting*
Interviewees identified and scheduled	*Qwest, KPMG Consulting*

20.7.4 Test Scope

Table 20.7.4.1 Bill Production and Distribution – Process Evaluation

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Balance Cycle	Define balancing and reconciliation procedures	Completeness and effectiveness of bill balancing and reconciliation procedures	Inspection	Qualitative
	Produce Control Reports	Completeness and accuracy in generation of control elements	Inspection	Qualitative
	Release cycle	Compliance to balancing and reconciliation procedures	Inspection	Qualitative
Deliver Bill	Delivery of bill media	Timeliness and controls of media delivery	Inspection	Qualitative
Maintain Bill History	Maintain billing information	Timeliness and controllability of billing information	Inspection	Qualitative
	Access billing information	Accessibility and availability of billing information	Inspection	Qualitative
Request Re-send		Timeliness and accuracy of the delivery	Inspection	Qualitative

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20.7.5 Test Scenarios

Not applicable.

20.7.6 Test Approach

20.7.6.1 Inputs

1. Detailed operational test plan
2. Qwest personnel to review procedures, systems and tools
3. Process documentation

20.7.6.2 Activities

1. Develop Bill Production and Distribution Process Evaluation checklist
2. Conduct process walk-throughs and interviews
3. Compile findings

20.7.6.3 Outputs

1. Completed test package for the Bill Production and Distribution Process Evaluation
2. Observation and Exception reports
3. Completed final report from the Bill Production and Distribution Process Evaluation

20.8 Exit Criteria

Table 20.8.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

21. Scalability Test

Per agreement reached during the July 18-20 MTP Design Workshop in Salt Lake City, this section has been removed. This test's objective will be covered within the other functional test areas.

22. CLEC Network Provisioning Test

22.1 NDR

22.1.1 Description

Part of the evaluation of the interaction between Qwest and a CLEC will include a review of the processes for fulfilling network design requests (NDRs). This test evaluates Qwest's methods and procedures and practices for network design requests related to establishing and maintaining a CLEC's ability to access unbundled network elements, including customized routing to Directory Assistance and Operator Services.

This test will not require test scenarios, data generation, or volume testing. This test will rely on, among other things, checklists, interviews, and inspections with both CLEC and Qwest parties. A key element of this test will be observing and evaluating ongoing, in production NDR processes.

22.1.2 Objectives

The objectives of this qualitative test are to:

- Determine whether CLECs have sufficient information, documentation, and technical support from Qwest to adequately prepare for and implement network designs, including those required for customized routing for Directory Assistance and Operator Services
- Determine whether network design processes are well-structured and managed to produce the intended results and to evaluate Qwest's compliance with those processes
- Evaluate the usability and completeness of NDR forecast forms and procedures
- Assess the quality of the NDR business process

22.1.3 Entrance Criteria

Table 22.1.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

22.1.4 Test Scope

The evaluation will examine the following with respect to network design request-related processes:

Process Area	Sub Process	Evaluation Measure	Evaluation Technique	Criteria Type
Network Design Requests	Network Design Planning Process	Adequacy and completeness of the process. Adherence to the planning process	Inspection Document review Report review Interview	Qualitative
	Network Design Request Testing Process	Adequacy and completeness of the process. Adherence to the testing process	Inspection Document review Report review Interview	Qualitative
	Procedures for handling CLEC Network Design Confidential Information	Adequacy and completeness of the process. Adherence to the established process	Document review Report Review Interview	Qualitative
	NDR Provisioning & Notification Process	Adequacy and completeness of the process. Adherence to the communications and notification process	Document review Inspection Interview	Qualitative

22.1.5 Test Scenarios

This test does not rely upon scenarios.

22.1.6 Test Approach

22.1.6.1 Inputs

1. Procedural and technical documentation
2. Qwest instructions to CLECs for planning and implementing network designs, including those required for customized routing for Directory Assistance and Operator Services

3. Evaluation checklists
4. Interview guides
5. CLEC data

22.1.6.2 Activities

1. Gather information
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

22.1.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

22.1.7 Exit Criteria

Table 22.1.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

22.2 Collocation

22.2.1 Description

Part of the evaluation of the interaction between Qwest and a CLEC will include a review of the processes for fulfilling collocation requests. This test evaluates Qwest's methods and procedures and practices for collocation-related requests for establishing and maintaining a CLEC's ability to access unbundled network elements.

This test will not require test scenarios, data generation, or volume testing. This test will rely on, among other things, checklists, interviews, and inspections with both CLEC and Qwest parties. A key element of this test will be to observe and to evaluate ongoing, in production, collocation processes.

22.2.2 Objectives

The objectives of this qualitative test are to:

- Determine whether CLECs have sufficient information and technical support from Qwest to adequately prepare for and implement collocation facilities
- Determine whether collocation processes are well-structured and managed to produce the intended results and to evaluate Qwest's compliance with those processes
- Evaluate the usability and completeness of collocation forecast forms and procedures

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- Assess the quality of the collocation business process

22.2.3 Entrance Criteria

Table 22.2.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

22.2.4 Test Scope

The evaluation will examine the following with respect to collocation -related processes:

Process Area	Sub Process	Evaluation Measure	Evaluation Technique	Criteria Type
Collocation	Collocation Planning Process	Adequacy and completeness of the process. Adherence to the planning process	Inspection Document review Report review Interview	Qualitative
	Collocation Project Management Procedures	Adequacy and completeness of the process. Adherence to the project optimization, schedule, cost and authorization procedure and process	Document review Report Review Interview	Qualitative
	Procedures for handling CLEC Collocation Confidential Information	Adequacy and completeness of the process. Adherence to the established process	Document review Report Review Interview	Qualitative
	Collocation project activities technical Support	Adequacy and completeness of the process. Adherence to the established procedures and process	Document review Report Review Interview	Qualitative
	Collocation Testing	Adequacy and completeness of the process. Adherence to the established test structures and action steps	Document review Report Review Interview	Qualitative

Process Area	Sub Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Collocation Provisioning & Notification Process	Adequacy and completeness of the process. Adherence to the communications and notifi cation process	Document review Inspection Interview	Qualitative

22.2.5 Test Scenarios

This test does not rely upon scenarios.

22.2.6 Test Approach

22.2.6.1 Inputs

1. Procedural and technical documentation
2. Qwest instructions to CLECs for planning and imple menting collocations
3. Evaluation checklists
4. Interview guides
5. CLEC data

22.2.6.2 Activities

1. Gather information
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings
5. Review production collocation performance data

22.2.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

22.2.7 Exit Criteria

Table 22.2.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

22.3 Interconnection Trunks

22.3.1 Description

Part of the evaluation of the interaction between Qwest and a CLEC will include a review of the processes for providing interconnection trunks. This test evaluates Qwest's methods and procedures and practices for the provision of interconnection trunks related to establishing and maintaining a CLEC's ability to access unbundled network elements.

This test will not require test scenarios, data generation, or volume testing. This test will rely on, among other things, checklists, interviews, and inspections with both CLEC and Qwest parties. (This test is not intended to examine interconnection for other purposes, such as inter-exchange carrier's network to network interconnection.)

22.3.2 Objectives

The objectives of this qualitative test are to:

- Determine whether CLECs have sufficient information and technical support from Qwest to adequately prepare for and implement interconnection trunks.
- Determine whether interconnection processes are well-structured and managed to produce the intended results and to evaluate Qwest's compliance with those processes
- Determine the existence and functionality of procedures for developing, publicizing, conducting, and monitoring trunk forecasting efforts with CLECs
- Verify the integration of trunk forecasting procedures with Qwest's facilities planning procedures
- Ensure the trunk forecasting effort has effective management oversight
- Assess the quality of the interconnection trunk forecasting process

22.3.3 Entrance Criteria

Table 22.3.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
The ROC has verified measurements to be used in the test	*ROC, Liberty Consulting*
All required Qwest interfaces are operationally ready	*Qwest*

Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

22.3.4 Test Scope

The evaluation will examine the following with respect to interconnection trunk-related processes:

Process Area	Sub Process	Evaluation Measure	Evaluation Technique	Criteria Type
Interconnection Trunks	Trunk Forecasting Procedures	Adequacy and completeness of the process. Adherence to the trunk forecasting process	Document review Report Review Interview	Existence
	Procedures for handling CLEC Trunk Forecast Confidential Information	Adequacy and completeness of the process. Adherence to the established process	Document review Report Review Interview	Qualitative
	Integration of Trunk forecasts in facility planning process	Existence of standard planning process Adherence to the established planning procedures and process	Document review Interview Inspection	Qualitative
	Interconnection Trunk Provisioning & Notification Process	Adequacy and completeness of the process. Adherence to the communications and notification process	Document review Interview Inspection	Qualitative
	Process for managing & addressing trunk order due date issues	Adequacy and completeness of the process. Existence of escalation process Adherence to the communications and notification process	Document review Report Review Interview	Qualitative

22.3.5 Test Scenarios

This test does not rely upon scenarios.

22.3.6 Test Approach

22.3.6.1 Inputs

1. Procedural and technical documentation

2. Qwest instructions to CLECs for forecasting, planning and implementing interconnection trunks
3. Evaluation checklists
4. Interview guides
5. CLEC data

22.3.6.2 Activities

1. Gather information
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

22.3.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

22.3.7 Exit Criteria

Table 22.3.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

23. Change Management Test

23.1 Description

This test evaluates Qwest's methods and procedures for managing changes to and change requests for OSS interfaces and business processes utilized by CLECs. This test will review Qwest's co-provided industry change management process (CICMP). The test will rely on inspection and review of Qwest documentation and on CLEC interviews.

23.2 Objective

The objective of this test is to determine the adequacy and completeness of procedures for developing, publicizing, conducting, and monitoring change management.

23.3 Entrance Criteria

Table 23.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist *Pass/retest criteria have been identified*	*ROC, Qwest* *ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

23.4 Test Scope

Table 23.4.1 Change Management Evaluation Scope

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Change Management	Change Request Implementation	Completeness and consistency of change request process	Inspection Document review Report review Interview	Qualitative
	Prioritization and Escalation Process	Completeness and consistency of prioritization and escalation guidelines and process	Inspection Document review Report review Interview	Qualitative
	Developing Change Proposals	Completeness and consistency of change development process	Inspection Document review Report review Interview	Qualitative
	Evaluating Change Proposals	Completeness and consistency of change evaluation process	Inspection Document review Report review Interview	Qualitative
	Severity levels	Completeness and reasonableness of levels and process	Inspection Document review Report review	Qualitative
	Notification Schedules	Reasonableness of notification schedules and completeness of process	Inspection Document review Report review Interview	Qualitative
	Implementing Change	Completeness and consistency of change implementation process	Inspection Document review Report review Interview	Qualitative
	Intervals	Reasonableness of change interval	Inspection Document review Report review Interview	Qualitative

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
	Documentation	Timeliness of documentation and notification updates	Inspection Document review Report review Interview	Qualitative
	Tracking Change Proposals	Adequacy and completeness of change management tracking process	Inspection Document review Report review Interview	Qualitative

23.5 Scenarios

This test does not rely on scenarios.

23.6 Test Approach

23.6.1 Inputs

1. Qwest change management process documentation
2. Other procedural and technical documentation
3. Qwest instructions to CLECs for interacting with change management functions and interpreting change management activities
4. One significant software release that has been recently implemented
5. Evaluation checklists
6. Interview guides
7. CLEC data
8. Change management p rocess artifacts, such as notifications and updated specifications

23.6.2 Activities

1. Gather documentation and other relevant data
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

23.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

23.7 Exit Criteria

Table 23.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24. Qwest CLEC Support Processes and Procedures Review

24.1 Description

These tests are designed to evaluate the systems, processes and documentation provided by Qwest for the establishment and maintenance of business relationships with the CLECs. Areas to be evaluated include a determination of whether Qwest is adequately assisting CLECs to understand how to implement and use all of the OSS functions available to them.

24.2 Objectives

The processes and procedures review includes evaluation of the following areas of support provided by Qwest to CLECs in the establishment and on-going maintenance of their wholesale services business relationship:

- Account Establishment & Management
- CLEC Forecasting
- CLEC Training
- Interface Development
- OSS Interface (IMA) Help Desk Support
- Interconnect Service Center Support
- Account Maintenance Support Center (M&R)
- Network Surveillance and Outage Notification

24.3 Account Establishment & Management Review

24.3.1 Description

This test evaluates Qwest's methods and procedures, processes and practices for establishing and managing CLEC account relationships.

24.3.2 Objectives

The objectives of this test are to determine the adequacy, completeness, and compliance with procedures for developing, publicizing, conducting, and monitoring account management.

24.3.3 Entrance Criteria

Table 24.3.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*
Provision of relevant historical data	*Qwest*
Access to CLEC account management calls	*CLEC*

24.3.4 Test Scope

Table 24.3.4.1 Account Establishment & Management Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Establishing an Account Relationship	Staffing	Appropriate roles and responsibilities	Inspection Document review	Qualitative
		Capacity, coverage, and account allocation	Inspection Document review	Qualitative
Maintaining an Account Relationship	Customer contact	Adequacy and completeness of procedures for responding to customer requests	Interviews Logging Report Review	Quantitative
	Escalation	Adequacy and completeness of escalation procedures	Inspection Document review Interviews	Qualitative
	Routine and urgent customer communications	Adequacy and completeness of communication and notification procedures	Inspection Document review Interviews	Qualitative
	Customer documentation	Adequacy and completeness of procedures for developing, distributing, and maintaining customer documentation	Inspection Document review Interviews	Qualitative

24.3.5 Scenarios

This test does not rely on scenarios.

24.3.6 Test Approach

24.3.6.1 Inputs

1. Qwest account management procedural documentation

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2. Qwest instructions to CLECs for interacting with account managers
3. Other procedural, technical, and customer documentation
4. Evaluation checklists
5. Interview guides
6. CLEC data

24.3.6.2 Activities

1. Gather documentation and other relevant data
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

24.3.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

24.3.7 Exit Criteria

Table 24.3.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.4 CLEC Forecasting Review

24.4.1 Description

This test evaluates Qwest's methods and procedures, processes and practices for requesting and managing CLEC facility and service forecasts for wholesale services.

24.4.2 Objective

The objective of this test is to determine the adequacy, completeness, and compliance with procedures for requesting, receiving, refining and utilizing forecasts from CLECs. The utilization portion of this test will include an assessment of Qwest's capacity management process for scaling the growth of its systems and staff based on projected demand.

24.4.3 Entrance Criteria

Table 24.4.31 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing	*ROC, Qwest*

Criteria	*Responsible Party*
the test exist	
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Forecast process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*
Provision of relevant historical data	*Qwest*
Access to CLEC account management calls	*CLEC*

24.4.4 Test Scope

Table 24.4.4.1 Forecasting Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Forecast Procedures	Request process	Existence Completeness	Inspection	Existence Qualitative
	Receipt and Refinement	Existence Completeness	Inspection	Existence Qualitative
Forecast Utilization	Process Documentation	Existence Completeness	Inspection	Existence Qualitative
	Compliance	Timeliness Accuracy	Inspection	Qualitative

24.4.5 Scenarios

This test does not rely on scenarios.

24.4.6 Test Approach

24.4.6.1 Inputs

1. Qwest forecasting procedural documentation
2. Qwest instructions to CLECs for providing forecasts
3. Other procedural, technical, and customer documentation
4. Evaluation checklists
5. Interview guides
6. CLEC forecast data

24.4.6.2 Activities

1. Gather information
2. Perform interviews and documentation review
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

24.4.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

24.4.7 Exit Criteria

Table 24.4.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.5 CLEC Training

24.5.1 Description

This test evaluates Qwest's training documentation and practices for CLEC representatives engaged in the establishment and maintenance of the Qwest-CLEC business relationship.

24.5.2 Objective

The objective of this test is to determine the existence and adequacy of procedures for developing, announcing, conducting, and monitoring Qwest training for CLECs.

24.5.3 Entrance Criteria

Table 24.5.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

24.5.4 Test Scope

Table 24.5.4.1 CLEC Training Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Training Program Development	Develop curriculum	Completeness of training curriculum and forums	Document review Inspection	Qualitative
		Adequacy of procedures to respond to information about training quality and utilization	Document review Inspection	Qualitative
		Adequacy of procedures to accept CLEC input regarding training curriculum	Document review Inspection	Qualitative
	Publicize training opportunities	Availability of information about training opportunities	Document review Inspection	Qualitative
Training Program Quality Assurance	Attendance/ utilization tracking	Adequacy of process to track utilization and attendance of various training tools and forums	Document review Inspection	Qualitative
	Session effectiveness tracking	Adequacy of process to survey training recipients on effectiveness of training	Document review Inspection	Qualitative
	Instructor oversight	Adequacy of procedures to monitor instructor performance	Document review Inspection	Qualitative
Process Management	Performance measurement process	Controllability, efficiency and reliability of process	Inspection Document review	Qualitative
	Process improvement	Completeness of process improvement practices	Inspection Document review	Qualitative

24.5.5 Scenarios

This test does not rely on scenarios.

24.5.6 Test Approach

24.5.6.1 Inputs

1. Qwest training procedural documentation
2. Qwest instructions to CLECs for participating in training
3. Training material – manuals and handouts
4. Evaluation checklists
5. Interview guides

24.5.6.2 Activities

1. Gather information

2. Perform interviews and documentation review
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

24.5.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

24.5.7 Exit Criteria

Table 24.5.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.6 OSS Interface Development Review

24.6.1 Description

This test evaluates Qwest's documentation, specifications and support provided to CLECs in developing, providing, and maintaining OSS interfaces for pre-ordering, ordering, billing and maintenance & repair. This test also includes an assessment of Qwest's capacity management and growth planning processes. Deleted: 911 database updates,

24.6.2 Objective

The objective of this test is to determine the adequacy, consistency and completeness of Qwest's specifications, documentation and technical assistance provided to the CLECs for developing, testing and operating OSS interfaces for pre-ordering, ordering, billing and maintenance and repair. Deleted: 911 database updates,

24.6.3 Entrance Criteria

Table 24.6.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

24.6.4 Test Scope

Table 24.6.4.1 OSS Interface Development Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Developing Interfaces	Interface development methodology	Adequacy and completeness of interface development methodology	Inspection Document review Report review	Qualitative
	Provision of interface specifications and related documentation	Adequacy and completeness of interface documentation distribution procedures	Inspection Document review Report review	Qualitative
Enabling and Testing Interfaces	Interface enabling and testing methodology	Adequacy and completeness of carrier-to-carrier interface enabling and testing procedures	Inspection Document review Report review	Qualitative
	Availability of test environments and technical support to CLECs	Availability and adequacy of functioning test environments, testing protocols, production cutover protocols and technical support for all supported interfaces	Inspection Document review Report review	Qualitative
	Interface enabling and testing support	Adequacy and completeness of interface enabling and testing procedural documentation	Inspection Document review Report review	Qualitative
Maintaining Interfaces	Release management	Adequacy and completeness of interface enhancement software release management and regression testing protocols	Inspection Document review Report review	Qualitative
	Capacity management	Adequacy and completeness of capacity and growth planning process	Inspection Document review	Qualitative

24.6.5 Scenarios

This test does not rely on scenarios.

24.6.6 Test Approach

24.6.6.1 Inputs

1. Procedural and technical documentation
2. Qwest instructions to CLECs for enabling, testing, and maintaining compatibility with interfaces

3. Evaluation checklists
4. Interview guides
5. CLEC data

24.6.6.2 Activities

1. Gather information
2. Perform interviews and documentation reviews
3. Complete evaluation checklists and interview summaries
4. Develop and document findings

24.6.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. HP comments on its interface development process
3. Observation and Exception reports
4. Final report

24.6.7 Exit Criteria

Table 24.6.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.7 Wholesale Systems Help Desk Review

24.7.1 Description

This review is an evaluation of Qwest's IMA help desk functions that provide technical support for its OSS interfaces.

24.7.2 Objectives

The objectives of this review are to:

- Determine adequacy, completeness and consistency of IMA help desk processes
- Ensure IMA help desk functions have effective management oversight
- Determine whether IMA help desk escalation procedures are correctly maintained, documented and published
- Determine the existence and functionality of procedures for measuring, tracking, projecting and maintaining IMA help desk performance
- Ensure existence of reasonable security measures to ensure integrity of IMA help desk data and the ability to restrict access to parties with specific access permissions

- Determine whether IMA help desk procedures are followed as a matter of routine by Qwest personnel
- Determine whether IMA help desk procedures are subject to periodic review and amendment to assure currency and consisten cy with product and service deployments and changes in the IMA capabilities

24.7.3 Entrance Criteria

Table 24.7.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
Interview guides developed	*KPMG Consulting*

24.7.4 Test Scope

Figure 24.7.4.1 Wholesale Systems Help Desk Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Process IMA Help Desk Call	Resolution of user question, problem or issue	Completeness and consistency of process	Inspection Document review	Qualitative
Close IMA Help Desk Call	Closure posting	Completeness and consistency of process	Inspection Document review	Qualitative
Status Tracking and Reporting	Status tracking and reporting	Completeness and consistency of reporting process	Inspection Document review	Qualitative
Problem Escalation	User and Qwest initiated escalation	Completeness and consistency of process	Inspection Document review	Qualitative
Capacity Management	Capacity planning process	Completeness and consistency of and adherence to process	Inspection Document review	Qualitative
Security and Integrity	Data access controls	Security of process	Inspection Document review	Qualitative
Process Management	General management practices	Completeness and consistency of operating management practices	Inspection Document review	Qualitative
	Performance measurement process	Controllability, efficiency and reliability of process	Inspection Document review	Qualitative
	Process improvement	Completeness of process improvement practices	Inspection Document review	Qualitative

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Capacity Management	Capacity management processes and procedures	Adequacy and completeness of and adherence to capacity management process	Inspection Document Review Interview	Qualitative

24.7.5 Scenarios

This test does not rely on scenarios.

24.7.6 Test Approach

24.7.6.1 Inputs

1. Procedural documentation such as internal help desk procedure manuals
2. Qwest instructions to CLECs for interacting with help desk functions
3. Evaluation checklists
4. Interview guides
5. CLEC data

24.7.6.2 Activities

1. Gather information
2. Perform walk-throughs, observations and documentation reviews
3. Complete evaluation checklists
4. Develop and document findings

24.7.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

24.7.7 Exit Criteria

Table 24.7.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.8 Interconnect Service Center (ISC) Support Review

24.8.1 Description

The Interconnect Service Center (ISC) Support Review is a comprehensive operational analysis of the service center processes developed by Qwest to support Resellers and CLECs with OSS questions, escalations, problems, and issues related to pre-ordering, ordering and provisioning of

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its wholesale services. Basic functionality, performance and escalation procedures will be evaluated.

24.8.2 Objectives

The objectives of this review are to:

- Determine completeness and consistency of ISC processes and responses
- Determine whether the escalation procedure is documented and known to ISC representatives and management
- Determine the accuracy and completeness of procedures for measuring ISC performance

24.8.3 Entrance Criteria

Table 24.8.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*
CLEC problem feedback survey completed	*KPMG Consulting*
ISC problem response standard survey completed	*KPMG Consulting*

24.8.4 Test Scope

Table 24.8.4.1 ISC Support Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Respond to ISC Call	Answer call	Completeness and consistency of process Timeliness of answer	Inspection Performance	Qualitative Quantitative
	Interface with user	Availability of user interface	Inspection	Qualitative
	Response to call	Completeness and accuracy of response	Inspection	Qualitative
	Log call	Completeness of logged information Log is kept in appropriate media for appropriate interval	Document Review Inspection	Qualitative
Process ISC Call	Access to systems to observe user problems	Ability to access user records and transactions	Inspection	Qualitative
	Resolve user question, problem or issue	Completeness and consistency of process	Documentation Review	Qualitative
Close ISC Call	Log closure information	Completeness, consistency, and timeliness of process	Inspection	Qualitative

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Monitor Status	Track status	Accuracy and completeness of status tracking capability Availability of jeopardy notification	Inspection Document Review	Qualitative
	Report status	Completeness and consistency of reporting process Accessibility of status report	Inspection Document Review	Qualitative
Request Escalation	Manage escalations	Consistency and completeness of procedure	Document Review Inspection	Qualitative
Manage the ISC Process	Provide management oversight	Completeness and consistency of operating management practices	Inspection	Qualitative
Capacity Management	Workforce capacity management processes and procedures	Adequacy and completeness of and adherence to workforce capacity management procedures	Inspection Document review Interview	Qualitative

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24.8.5 Scenarios

This test does not rely on scenarios.

24.8.6 Test Approach

24.8.6.1 Inputs

1. ISC Evaluation Checklist
2. ISC procedural documentation

24.8.6.2 Activities

1. Gather information
2. Perform ISC walk-throughs, observations and documentation reviews
3. Complete evaluation checklists
4. Develop and document findings

24.8.6.3 Outputs

1. Completed ISC evaluation checklists and interview summaries
2. Observation and Exception reports
3. Final report

24.8.7 Exit Criteria

Table 24.8.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.9 Network Surveillance & Outage Support Review

24.9.1 Description

The network surveillance and outage support evaluation is a review of the processes, procedures, and other operational elements associated with Qwest's network surveillance as it relates to wholesale and retail operations. Additionally, this evaluation will review Qwest's network outage notification processes and procedures as they relate to wholesale operations.

24.9.2 Objectives

The objective of this test is to assess the functionality of Qwest's network surveillance activities and its application to the wholesale and retail customers they support. Test targets for the evaluation include the network surveillance systems and processes employed by the following Qwest operations centers: 1) Network Management Center (NMC), and 2) Network Operations Center (NOC). In addition, a review of the network blockage and outage notification procedures used by Qwest to alert affected wholesale customers of alarms and outage events will be conducted.

24.9.3 Entrance Criteria

Table 24.9.3.1 Entrance Criteria

Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Network surveillance and outage evaluation checklist developed	*KPMG Consulting*
NMC/NOC interview guide developed	*KPMG Consulting*

24.9.4 Test Scope

Table 24.9.4 Network Surveillance & Outage Support Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Network Surveillance	Inter Office Facility (IOF) Surveillance	Existence Completeness	Interview Inspection Document Review	Existence Qualitative
	Advanced Intelligent Network (AIN) Interconnect Surveillance	Existence Completeness	Interview Inspection Document Review	Existence Qualitative
Outage Notification	Process Documentation	Accuracy Completeness	Interview Inspection Document Review	Existence Qualitative
	Notification Procedures	Timeliness Accuracy Completeness	Interview Inspection Document Review	Existence Qualitative
	Notification Observations	Accuracy Completeness	Interview Inspection Document Review	Existence Qualitative

24.9.5 Scenarios

This test does not rely on scenarios.

24.9.6 Test Approach

24.9.6.1 Inputs

1. Network surveillance operational analysis plan and task checklist
2. Network outage operational analysis plan and task checklist
3. Evaluation guides
4. Interview Guides
5. Documentation of all network surveillance for wholesale and retail operations
6. Documentation of outage notification procedures for wholesale operations
7. Designated NMC/NOC personnel for interviews
8. Observation schedule

24.9.6.2 Activities

1. Using the operational analysis plan, conduct process analysis at the NMC and NOC
2. Conduct documentation review

3. Conduct procedure interviews
4. Conduct notification observations
5. Develop and document findings

24.9.6.3 Outputs

1. Completed network surveillance and outage evaluation checklists and interview/observation summaries
2. Observation and Exception reports
3. Final report

24.9.7 Exit Criteria

Table 24.9.7.1 Exit Criteria

Criteria	*Responsible Party*
Global exit criteria satisfied	*See Section 7*

24.10 Test 24.10: ISC/Billing and Collection Center Support Review

24.10.1 Description

The ISC/Billing and Collection Center Support Review is an operational analysis of the processes and documentation developed by Qwest to provide support to Resellers and CLECs with usage and/or billing related claims, questions, problems and issues. Basic functionality, performance, escalation procedures, and security will be evaluated.

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24.10.2 Objectives

The objectives of this evaluation are to:

- Determine completeness of the Billing Center processes, documentation and responses.
- Determine whether the escalation procedure is documented, maintained, published and followed.
- Determine the completeness, and functionality of procedures for measuring and tracking the Billing Center performance.
- Determine the existence and functionality of procedures for projecting resource needs.
- Determine the existence of reasonable security measures to ensure integrity of the Reseller and CLEC data and the ability to restrict access to parties with specific access permissions.
- Determine the level of management oversight to ensure adequacy of performance results.

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24.10.3 Entrance Criteria

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Criteria	*Responsible Party*
No legally effective orders or injunctions preventing the test exist	*ROC, Qwest*
Pass/retest criteria have been identified	*ROC, KPMG Consulting*
Process evaluation checklist developed	*KPMG Consulting*

24.10.4 Test Scope

Table 24.10.4.1: ISC/Billing and Collection Center Review

Process Area	Sub-Process	Evaluation Measure	Evaluation Technique	Criteria Type
Respond to Billing Center Call	Interface with user	Availability of user interface	Inspection	Qualitative
	Log call	Existence of call logs to track call statistics such as call volume, average handling time, speed of answer.	Document Review Inspection	Existence
Process Billing Center Calls	Accessibility of information	Ability to access Reseller and CLEC records and transactions	Inspection	Qualitative
	Resolve user question, problem or issue	Completeness and consistency of process	Inspection	Qualitative
Claims	Resolve claim	Completeness and consistency of process	Document Review	Qualitative
Monitor Status	Track Status	Existence of status tracking capability	Inspection Document Review	Existence
	Report Status	Consistency and accessibility of status reporting	Inspection Document Review	Qualitative
Manage the Billing Center Process	Provide management oversight	Consistency of operating management practices.	Inspection	Qualitative
	Provide security measures to ensure integrity of the Reseller and CLEC data	Existence of security measures to restrict access to Reseller and CLEC data	Inspection	Existence
Capacity Management	Work Force Planning	Existence of work force staffing model	Inspection Document Review Interview	Qualitative

24.10.5 Scenarios

Scenarios are not applicable to this test.

24.10.6 Test Approach

24.10.6.1 Inputs

1. Evaluation Checklist
2. Applicable documentation
3. Interview guides
4. Data from Test 20 (this data will be the source for the Billing Center calls)

24.10.6.2 Activities

1. Gather information
2. Perform walk-through, observations and documentation reviews
3. Place and log Billing Center calls
4. Complete evaluation checklists and interview summaries
5. Develop and document findings

24.10.6.3 Outputs

1. Completed evaluation checklists and interview summaries
2. Summary report

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24.10.7 Exit Criteria

Criteria	*Responsible Party*
All Global Exit Criteria satisfied	*See Section 7*

25. Interim and Final Reports

25.1 Interim Report

KPMG Consulting will develop and submit to the ROC at least one interim report at approximately the mid-point of the test process, and possibly others. This report(s) will describe the test for each major test. Draft interim report(s) will be provided to the TAG for review. The resulting comments will be taken into consideration by KPMG Consulting, HP and ROC in preparing final versions of the report(s).

25.2 Final Report

KPMG Consulting will develop and submit to the ROC a final report at the completion of testing. The final report will be released in draft form to the TAG for review and comment. Changes recommended by the TAG will be reviewed by KPMG Consulting and the ROC Steering Committee prior to submittal of a final report to the ROC Executive Committee.

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26. Test Wrap Up

At the conclusion of the test HP shall dismantle all datastores created for the test, return any telephone numbers used, decommission physical facilities used for establishing connectivity, and return CIC and other industry-standard codes used in the establishment of HP.

KPMG Consulting will be responsible for responding to inquiries about the final test report and, possibly, providing tes timony or support for testimony in various venues.

Appendix A: Version Control

Version	Date	Reason	Distribution
TRD 1.0	January 21, 2000	Initial TRD Draft Release	TAG and web site
TRD 1.1	January 27, 2000	Added Appendix A, D and F Added Section 6.7 Edits and cosmetic changes	TAG and web site
TRD 2.0	February 28, 2000	Name change from MTP to TRD Integrated changes from TAG comments and 2/9-2/11 workshop	TAG and web site
TRD 3.0	March 9, 2000	Integrated changes from TAG comments on V 2.0, added appendices E and G	Attachment 1 to RFP TAG and web site
MTP 1.0	July 27, 2000	Initial Draft Release	TAG and web site
MTP 2.0	August 25, 2000	Second Draft Release	TAG and web site
MTP 3.0	October 25, 2000	Draft Final Release	TAG and web site
MTP 3.1	November 17, 2000	Final Release	TAG and web site
MTP 4.0	October 3, 2001	Revised Release	TAG and web site
MTP 5.0	December 28, 2001	Revised Release	TAG and web site
MTP 5.1	February 15, 2002	Revised Release	TAG and web site
MTP 5.2	April 9, 2002	Revised Release	TAG and web site

Appendix B: Qwest Service Performance Indicator Definitions (PID) ROC 271 Working PID v 2.0 dated 9/13/00

Available at www.nrri.ohio -state.edu/oss

Appendix C: Performance Measures

Placeholder

Appendix D: Scenarios

Table D1 – Stand alone Pre-order

Basic Scenario		Residence/ Business
A	Obtain CSRs	**X**
B	Validate customer address	**X**
C	Reserve telephone numbers	**X**
D	Determine Product and Feature Availability	**X**
E	Facility check	**X**
F	Schedule appointment	**X**
G	Loop qualification information	**X**
H	CFA Validation	**X**
I	Obtain directory listings information for an existing UNE-L customer	**X**

Note: All sub-functions of the above-listed preorder basic scenarios will be included in the test.

Table D2 – UNE

	Basic Scenario	2-wire. Analog Loop	ADSL Qualified Loop	2-wire non-loaded Loop	ISDN Capable Loop	DS1 Capable Loop	Stand-Alone LNP	UDIT	EEL (see notes)	Dark Fiber	Sub Loop	Line Sharing	Stand-Alone DL
A	Migrate lines from Qwest without LNP	X	X	X	X	X			X			X	
B	Migrate lines from Qwest with LNP	X		X	X	X			X				
C	Migrate from CLEC to CLEC	X	X	X	X								
D	Purchase lines for a new customer	X	X	X	X	X			X				
E	Add new lines to existing customer	X	X	X	X	X			X				
F	Add new interoffice DS1/DS3 facilities							X		X			
G	Convert from Resale to UNE loop without LNP	X	X	X	X								
H	Convert from Resale to UNE loop with LNP	X			X								
I	Convert from UNE-P to UNE loop without LNP	X		X	X								
J	Convert from UNE-P to UNE loop with LNP	X			X								
K	Moves (outside)	X		X	X								
L	Disconnect (full)	X		X	X	X			X				
M	Add a new directory listing on existing account												X
N	Convert from line sharing arrangement to UNE-loop		X	X									
O	Obtain loop distribution at FDI										X		
P	Port number from Qwest to CLEC without facilities						X						

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Note 1: For selected test instances, post order LSR status and DLR queries will be conducted.

Note 2: All directory listing offerings will be tested, including complex listings.

Note 3: Currently, Qwest does not have a business process for coordinating EEL migrations with number portability.

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Table D3– Resale

	Basic Scenario	Res. POTS	Bus. POTS	Centrex*	Private Line	PBX
A	Migration from Qwest "as is"	X	X	X	X	X
B	Migration from Qwest "as specified"	X	X	X		
C	CLEC to CLEC migration	X	X	X		
D	New customer	X	X	X		
E	Add lines (L)/trunks (T)/ circuits (C)	X L	X L	X L		X T
F	Feature changes to existing customer	X	X	X		
G	Telephone number change	X	X	X		
H	Directory change	X	X	X		
I	Migrate customer with voice mail	X	X			
J	Moves	X	X	X		
K	Suspend/restore service	X	X			
L	Disconnect (full and partial)	X	X	X	X	X
M	PIC/LPIC changes	X	X	X		X

* Includes 1) Centrex 21 and 2) Centrex as used by McLeod USA (observations).

Note 1: For selected test instances, post order LSR status and DLR queries will be conducted.

Note 2: All directory listing offerings will be tested, including complex listings.

Table D4 – UNE – P

	Basic Scenario	Res. POTS	Bus. POTS
A	Migration from Qwest "as specified"	**X**	**X**
B	Migrate from CLEC to CLEC	**X**	**X**
C	New customer	**X**	**X**
D	Add lines (L)/trunks (T)/ circuits (C)	**X (L)**	**X (L)**
E	Feature changes to existing customer	**X**	**X**
F	Telephone number change	**X**	**X**
G	Directory change	**X**	**X**
H	Full and partial migration with DL changes	**X**	**X**
I	Convert from Resale products to UNE-P products	**X**	**X**
J	Migrate an account with Qwest initiated blocking	**X**	**X**
K	Migrate an account with pending service order	**X**	**X**
L	Establish new user with vanity TN	**X**	**X**
M	Moves	**X**	**X**
N	Suspend/restore service	**X**	**X**
O	Disconnect (full and partial)	**X**	**X**
P	Change PIC/LPIC	**X**	**X**
Q	Migrate service to a line splitting arrangement	**X**	**X**
R	Line splitting customer disconnects high speed data but maintains voice service	**X**	**X**

Note 1: For selected test instances, post-order LSR status and DLR queries will be conducted.

Note 2: All directory listing offerings will be tested, including complex listings.

Table D5– Maintenance and Repair

	Conditions to be Tested Across Basic Scenario	Res. Lines	Bus. Lines	UNE loops	Centrex*	Private Line	PBX
A	Short on outside plant facility	X	X	X	X	X	X
B	Open on outside plant facility	X	X	X	X	X	X
C	Short on the line within the central office	X	X	X	X	X	
D	Open on the line within the central office	X	X	X	X	X	X
E	Noise on line	X	X	X			
F	Echo on line	X	X				
G	Customer w/ LNP not receiving incoming calls	X	X				
H	Customer receiving incoming calls intended for another customer's number	X					
I	Call waiting not working	X	X				
J	Repeat dialing not working	X					
K	Customer cannot call 900 numbers	X					
L	Calls do not roll-over for customer w/ multiline hunt group		X		X		
M	Call forwarding not working	X	X				
N	Caller ID not working	X	X				
O	No dial tone on multiple lines				X		
P	DS1 loop MUXed to DS3 IOF not functioning			X			
Q	Submit trouble ticket against new loop	X	X				
R	Conduct MLT on new CLEC service	X	X				

*Includes Centrex 21 only.

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Appendix E: Acronyms and Glossary

271 Application		An RBOC's application to offer long distance services submitted to a state or federal regulatory agency. In order to grant this application, the agency must find the applicant is in compliance with the 14 point competitive checklist described in the 1996 Telecommunications Act.
ALI	Automatic Line Information (for 911/E911 systems)	
ASR	Access Service Request	Form used to order interoffice facilities such as dedicated trunk ports
BAN	Billing Account Number	
Benchmark		A benchmark is established for a performance measure to serve as a standard when there is no appropriate retail analog.
Billing Domain		Tests related to creation of correct carrier bills.
BRI	Basic Rate Interface	A type of ISDN service
Capacity Testing		Look for evidence that sound management practices are in place to monitor performance and manage the capacity associated with a resource or pool thereof.
CARE	Customer Account Record Exchange	Industry standard for formatting exchange of subscription information.
Centrex		A business telephone service offered from a local CO that offers PBX-like functionality to the end user without the end user having to purchase CPE.
Change Management		The process by which changes are introduced at Qwest. Important steps include: 1) Advance notification that a change will occur; 2) CLEC input is considered when making changes; and 3) Smooth roll-out of the change.
CLEC	Competitive Local Exchange Carrier	A communications company which sells/re-sells communications services in direct competition with the Incumbent Local Exchange Carrier (ILEC)
CLEC Live Data		Production data delivered through interfaces that are already operational for real CLEC customers.

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CLLI	Common Language Location Identifier	An 8 to b11 digit alphanumeric code used as a method of identifying physical locations and equipment.
CO	Central Office	Facility where subscribers' lines connect to switching equipment
Completion Notice		A notification the ILEC provides to the CLEC to inform the CLEC that the requested service activity is complete.
CPE	Customer Premise Equipment	Customer-owned equipment
CSR	Customer Service Record	A record of customer specific information such as name, address, telephone number, telecommunication services subscribed to and certain other data relating to the services provided. The CSR also details a customer's fixed monthly charges billed by the local telephone company
Coordinated customer conversion DA	 Directory Assistance	Orders that have a due date negotiated between the ILEC, the CLEC, and the customer so that work activities can be performed on a coordinated basis under the direction of the receiving carrier.
DOJ	Department of Justice	
DUF	Daily Usage Feed	A daily download of usage data from the switch which is delivered to Qwest's message processing system and directly to the CLEC
EB-TA	Electronic Bonding – Trouble Administration	
EDI	Electronic Data Interchange	Interface protocol that provides for mechanized order processing. Both the CLECs and Qwest will have systems (EDI Interface) to support the EDI functionality
End-to-End Testing Entrance and Exit Criteria		For the purposes of this test, end-to-end is defined as testing which demonstrates that the pre-order, order, provisioning, billing and M&R life cycle can be executed for a single customer. The necessary conditions for starting or completing individual tests described in the Test Plan.
EXACT/TELUS		Interface used by CLECs to order wholesale services requiring Access Service Requests (ASRs).

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Existence Criteria Type		These are criteria where only two possible test results can exist (e.g., true/false, presence/absence), such as whether a document exists ordoes not exist
FCC	Federal Communications Commission	
FID	Field Identifier	A code used when administering usage limits on residence and business end users. Also refers to fields of information used in the service order
Flow through		The term used to describe whether an LSR is passed electronically from the OSS interface to the ILEC legacy system to automatically create a service order. LSRs that do not flow through require manual intervention for the service order to be created in the ILEC legacy system.
FOC	Firm Order Confirmation	Notice the ILEC sends the CLEC to notify the CLEC that it has received the CLEC service order, created a service request, and assigned it a due date.
Functional Testing	Functionality Test	A documented set of instructions designed to test and/or validate specific functions of a process or system.
GUI	Graphical User Interface	A simplified method of accessing programs within a computer by using a mouse to point to icons, which in turn cause the programs to perform a specific function.
IABS	Interconnect Access Billing System	
ILEC	Incumbent Local Exchange Carrier	
IMA	Interconnect Mediated Access	
ISDN	Integrated Services Digital Network	Digital services designed for use with desktop applications, telephone switches, computer telephony and voice processing systems
Jeopardy		With regard to provisioning, a condition experienced in the service provisioning process which results potentially in the inability of a carrier to meet the committed due date on a service order. With regard to the OSS test, a notice that is issued whenever a key project milestone and/or commitment is at risk according to the MTP.

LERG	Local Exchange Routing Guide	
LIDB	Line Information Data Base	Database used primarily for residential customers.
LIS	Local Interconnection Service Trunks	
LNP	Local Number Portability	
Loop LSR	 Local Service Request	A transmission path that connects an end-user's premises to a Qwest Central Office A form prepared by the CLEC to request Qwest to provide the services as specified in the specific tariffs/contracts agreements. Information required for administration, billing and contact details is provided for in the various fields within the LSR.
M&R	Maintenance and Repair	Ability to provide for requests, status and resolution of potential troubles
M&R Domain		Tests related to processing and management of trouble-related reports.
MDF	Main Distribution Frame	The primary point at which outside plant facilities terminate within a Wire Center for interconnection to other telecommunications facilities within the Wire Center
Migration		Refers to "conversion as is" or "conversion as specified."
MLT	Mechanized Loop Test	A mechanized test used to determine loop situations
MTP	Master Test Plan	
OBF/TCIF	Ordering and Billing Forum/ Telecommunications Interface Forum	Industry Standards Organizations dedicated to resolving critical issues such as billing format issues between competing local exchange carriers, etc.
OCN	Operating Company Number	A four-digit number assigned to uniquely identify CLECs.
Operational Analysis		Operational analysis focuses on the form, structure, and content of the business process under study. This method is used to evaluate day-to-day operations and operational management practices.
OSS	Operations Support Systems	For purposes of this test OSS refers to systems that provide for processing orders, maintenance and repair activities, and billing activities

Parity Criteria Type Parity measures		These are criteria that require two measurements to be developed and compared, such as whether external response time is at least as good as internal response time. Parity measures are compared to analogous wholesale performance measures to determine if there is nondiscriminatory treatment of wholesale services.
PBX	Private Branch Exchange	
Physical Resources PIC	 Primary Inter-exchange Carrier	Test bed accounts that have a physical appearance in the central office. These resources are used for unbundled loop test activities. Primary inter-exchange carrier selected by end-user.
PID	Performance Indicator Definitions	
PM	Performance Measures	
POTS	Plain Old Telephone Service	
POP	Pre-Ordering, Ordering, and Provisioning Domain	Tests related to CLEC's acquisition of customer information, placing orders, and ensuring correct and timely provision and notification of order status.
Qualitative Criteria Type RMI	 Relationship Management and Infrastructure Domain	These criteria set a threshold for performance where a range of quality values is possible, such as level of customer satisfaction Tests relating to activities, processes and documents that are focused on the establishment and maintenance of the CLEC/ILEC relationship.
Resale		Service that allows a CLEC to purchase ILEC retail services in order to resell these services to their own end-user.
Scenario		A unique business use of the system, e.g. migrate as-is of single line residential POTS account
SOP	Service Order Processor	

Standard Interval		The interval that the ILEC publishes as a guideline for establishing due dates for provisioning a service request. Typically, due dates will not be assigned with intervals shorter that the standard. These intervals are specified by service type and type of service modification requested. ILECs publish these standard intervals in documents used by their own service representatives as well as ordering instructions provided to CLECs in the Qwest Standard Interval Guidelines
SUPP	Supplement	A change to an order taken after the original order was submitted, but before the order has been executed, such as a date change.
Test Bed		A set of fictitious customer accounts that are designed to assist with testing. The test bed consists of working lines and provisioned products, although the owning customer is fictitious.
Test Call Matrix		A list of call types and the quantity of calls for each type that should be included in a particular test
Test Case Test Domain		Variation of a Scenario, e.g. migrate as specified with a different feature set A specific testing area with d efined targets, measures, scenarios, evaluation methods, and test processes.
Test Instance		Executing a specific Test Case using the information for a specific customer in the Test Bed
Test Scenario		A specifically defined request and activity as it relates to 3rd Party Testing. These Test Scenarios include both Functionality Testing and Capacity Testing.
TN	Telephone Number	A number associated with a telephone service
Transaction - Driven System Analysis		Transaction driven system analysis relies upon initiation of transactions, tracking of transaction progress, and analysis of transaction completion results to evaluate the automated system under test.
Transaction Generation		Transaction generation is the use of live, historical, and/or generated data and data processing capability to evaluate an automated and/or manual system under test

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TRD	Test Requirements Document	
UDIT	Unbundled Dedicated Interoffice Transport	
UNE	Unbundled Network Elements	
UNE-C	UNE-Combination	A pre-existing combination of legally binding and effective UNEs.
UNE-L UNE-P	UNE Loop UNE-Platform	A transmission path that connects an end-user's premises to a Qwest Central Office UNE Platforms are available as for existing POTS, PBX trunks and ISDN service
USOC	Universal Service Order Codes	
Verification and Validation Virtual Resources		Methods used in the evaluation of activities and processes not amenable to transaction-driven testing, but which require verification and validation. Test bed accounts that have no physical appearance. These accounts are used for Resale and UNE-P test activities where provisioning verification can be checking translations in the switch.
Volume Test		Test ability of systems to support expected future workloads.
Working Resources		Test bed accounts that have an appearance outside the central office. These accounts have dial tone and are used for billing usage testing, M&R testing and some provisioning tests.
xDSL	"x" Digital Subscriber Line	A general name for an evolving high speed transmission technology which uses existing copper wire from the telephone company central office to the subscriber's premise and has electronic equipment at the central office and at the subscriber's premises, and transmits and receives high speed digital signals

Appendix F: Qwest OSS System Architecture Overview

1. Interfaces

Qwest provides four uniform interfaces to CLECs for their use in pre-ordering, ordering and maintaining/repairing wholesale services. Other interfaces are provided for billing of wholesale services. A brief description of each follows.
1.1 IMA-GUI

The Interconnect Mediated Access–Graphical User Interface (IMA-GUI) is used by CLECs to perform pre-order inquiries, place orders, report troubles and obtain status via a workstation to Qwest's IMA Gateway. This human-to-computer IMA-GUI is used across all states in Qwest's territory.

1.2 IMA-EDI

The Interconnect Mediated Access – Electronic Data Interchange (IMA-EDI) is used by CLECs to perform pre-order inquiries, place orders and obtain status via a computer-to-computer interface that extends from the CLECs OSS application to the Qwest IMA-EDI Gateway. This IMA-EDI is used across all states in Qwest's territory.

1.3 MEDIACC (or EB-TA)

The Mediated Access (MEDIACC) interface is Qwest's implementation of an Electronic Bonding for Trouble Administration (EB-TA) interface for CLECs to use in maintenance and repair activities for Qwest's wholesale services. It is a computer-to-computer interface that supports trouble ticket administration and status, line record information viewing and mechanized loop testing results viewing. The MEDIACC interface is used across all states in Qwest's territory.

1.4 EXACT

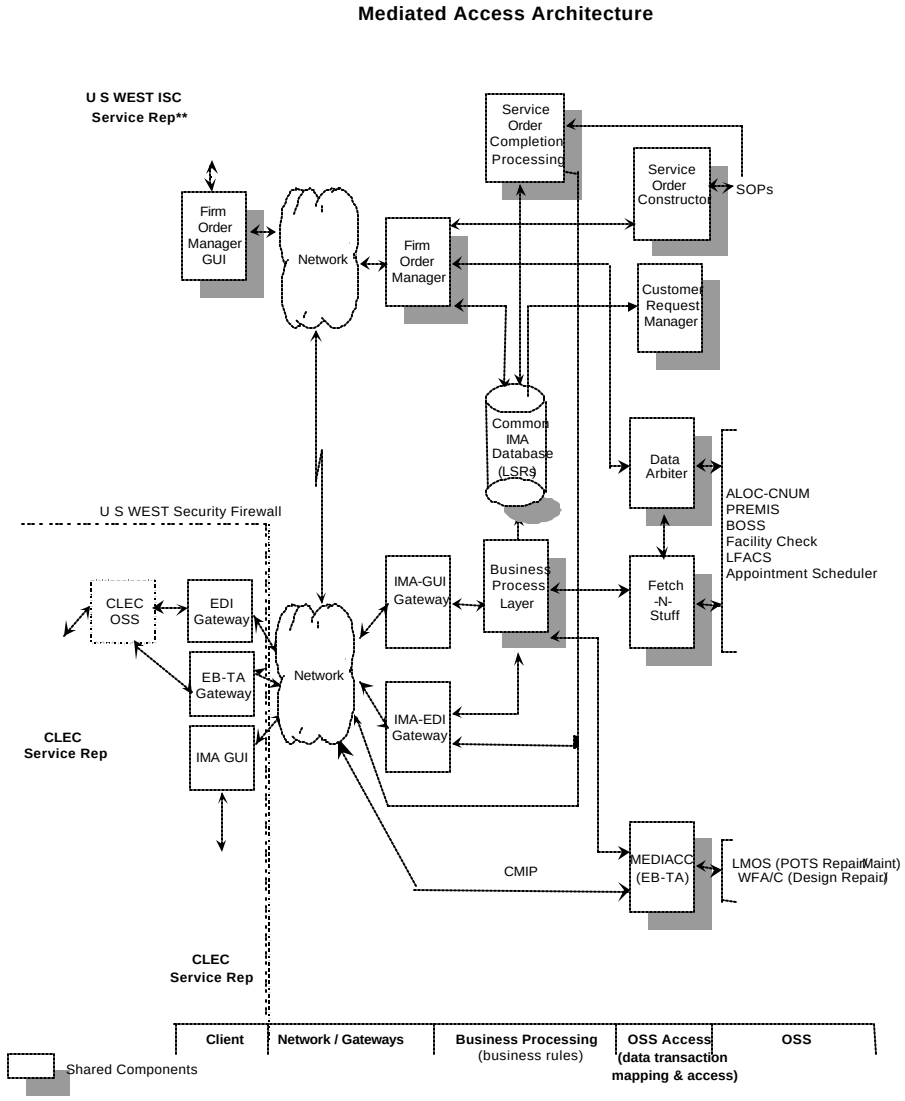
The EXACT interface is used by CLECs to order wholesale services requiring Access Services Requests (ASRs).

1.5 IIS

The Interconnect Image System (IIS) interface is a facsimile receipt and distribution system that facilitates the handling of orders and other transactions faxed from CLECs to Qwest. These faxed, or manual transactions, must be input to Qwest's OSS by personnel at the Interconnect Service Center.

Please refer to Figure F1 for an overview of the Mediated Access Architecture.

Figure F1 Mediated Access Architecture



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2. Initial Transaction Processing

2.1 Pre-Ordering and Ordering

Once the transaction is received by the Qwest gateway, a set of business rules is applied to determine how to process the request. To obtain information from Qwest's OSS or pass information to them, the OSS Access Layer (Data Arbiter, Fetch and Stuff, and MEDIACC) communicates with the downstream OSSs to send or retrieve the data. Regardless of whether a transaction is received by the Qwest gateway through the IMA GUI or EDI, it will be processed through the same set of business rules and travel through the same OSS Access Layer to reach the downstream OSSs.

If the transaction is the submission of an LSR, the LSR is placed in the Common IMA database regardless of whether the LSR is transmitted through the IMA or the EDI gateway. This database is updated with LSR status as the Interconnect Service Center processes the request.

2.2 Maintenance and Repair

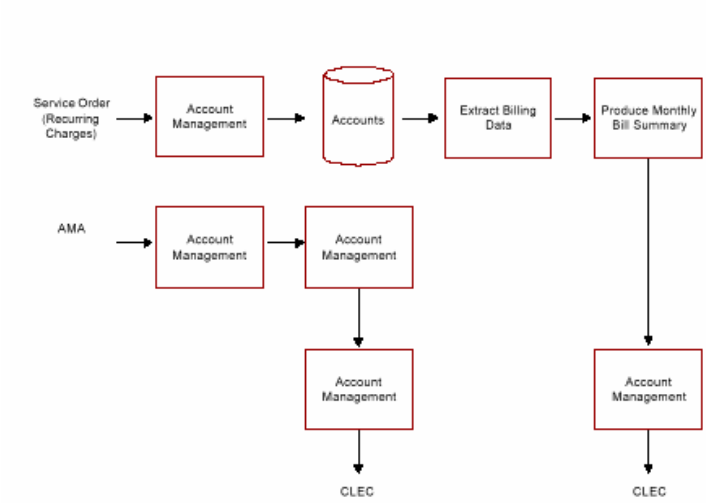
Maintenance and repair transactions are processed through IMA and MEDIACC and routed to the appropriate downstream repair OSS.

2.3 Billing

When an end-user customer's account is resold to a CLEC, the resulting service order updates the account to reflect that change. As the end-user customer generates toll usage, it is sent from the AMA system into the CRIS billing system, where it is associated with the CLEC's account. The toll usage is then forwarded to the CLEC in a daily usage feed file. Qwest produces a billing summary file with all recurring and non-recurring charges and sends it to the CLEC on a monthly basis. Figure F2 describes the billing components that produce daily usage and monthly bill information.

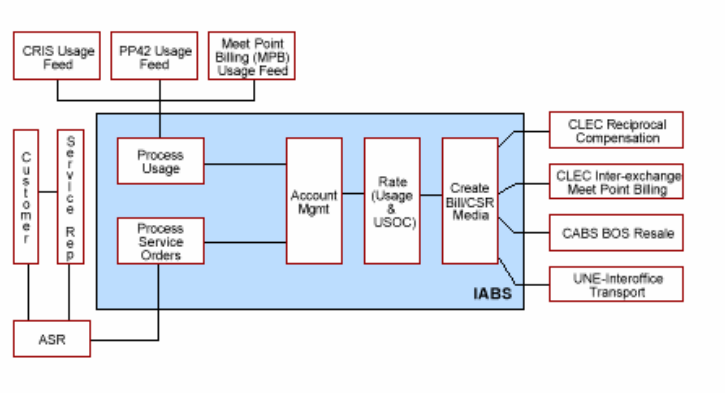
Figure F2 Billing Architecture

2.4 IABS



There are three usage feeds to the usage-processing module. Another entry point is the ASR submitted by the customer service representative. These ASRs go to the service order-processing module. Both usage and service orders are sent to the account management module to associate the usage and service order detail to accounts. After usage and service order details are associated to accounts, the accounts are rated, and bills and CSRs are produced. Outputs for reciprocal compensation, inter-exchange meet point billing, resale and UNEs are then provided to the CLECs. Figure F3 provides an overview of the billing for trunk-side UNEs and interconnection services using IABS.

Figure F3 IABS Billing Architecture



3. Systems

Qwest's downstream OSS can be categorized into four types of systems as follows:

- One OSS that is functionally and physically the same is used across all 14 states such as IMA GUI and Integrated Access Billing Systems (IABS)
- One OSS application that is used across all 14 states via multiple instances of the same application, such as Facilities Assignment and Control System (FACS)
- An OSS with the same name and basic origin that has been implemented differently across different states– for example Customer Records Information System (CRIS) East, West, and Central are all called CRIS but are actually different applications functionally
- Different applications with different names and similar functionality that are used in different states. The service order processors (SOPs) are an example of this type – SOPAD, SOLAR and R-SOLAR in Central, East and West respectively.

Figure F4 provides a summary of the systems and their usage across states.

System	AZ	CO	IA	ID	MN	MT	ND	NE	NM	OR	SD	UT	WA	WY
IMA GUI GW	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1	IMA-1
IMA EDI GW	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1	EDI-1
MediAcc EB-TA	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1	EB-TA1
BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1	BPL-1
IMA LSR DB	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1	IMA LSRDB-1
FOM	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1	FOM-1
ICADS	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1	ICADS-1
Data Arbiter	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1	Data Arbiter-1
Fetch-N-Stuff	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1	Fetch-N-Stuff-1
SOP	SOPAD (SLC)	SOPAD (Denver)	SOLAR (Omaha)	SOPAD (SLC)	SOLAR (Omaha)	SOPAD (SLC)	SOLAR (Omaha)	SOLAR (Omaha)	SOPAD (SLC)	R-SOLAR Bellevue	SOLAR (Omaha)	SOPAD (SLC)	R-SOLAR (Bellevue)	SOPAD (Denver)
CSR Retrieval	BOSS-C (SLC)	BOSS-C (Denver)	BOSS-E (Omaha)	BOSS-C (SLC)	BOSS-E (Omaha)	BOSS-C (SLC)	BOSS-E (Omaha)	BOSS-E (Omaha)	BOSS-C (SLC)	CARS Bellevue	BOSS-E (Omaha)	BOSS-C (SLC)	CARS (Bellevue)	BOSS-C (Denver)
SOAC	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1	SOAC-1
Premis	Premis-1 (ALB)	Premis-1 (ALB)	Premis-1 (Omaha)	Premis-1 (ALB)	Premis-1 (Omaha)	Premis-1 (ALB)	Premis-1 (Omaha)	Premis-1 (Omaha)	Premis-1 (ALB)	Premis-1 (ALB)	Premis-1 (Omaha)	Premis-1 (ALB)	Premis-1 (ALB)	Premis-1 (ALB)
FACS	FACS-1 (SLC)	FACS-1 (SLC)	FACS-1 (Omaha)	FACS-1 (SLC)	FACS-1 (Omaha)	FACS-1 (SLC)	FACS-1 (Omaha)	FACS-1 (Omaha)	FACS-1 (SLC)	FACS-1 (Omaha)	FACS-1 (Omaha)	FACS-1 (SLC)	FACS-1 (Omaha)	FACS-1 (SLC)
LMOS	LMOS-1 (SLC)	LMOS-1 (SLC)	LMOS-1 (Omaha)	LMOS-1 (SLC)	LMOS-1 (Omaha)	LMOS-1 (SLC)	LMOS-1 (Omaha)	LMOS-1 (Omaha)	LMOS-1 (SLC)	LMOS-1 Bellevue	LMOS-1 (Omaha)	LMOS-1 (SLC)	LMOS-1 (Bellevue)	LMOS-1 (SLC)
WFA	WFA-1 (SLC)	WFA-1 (SLC)	WFA-1 (Omaha)	WFA-1 (SLC)	WFA-1 (Omaha)	WFA-1 (SLC)	WFA-1 (Omaha)	WFA-1 (Omaha)	WFA-1 (SLC)	WFA-1 Bellevue	WFA-1 (Omaha)	WFA-1 (SLC)	WFA-1 (Bellevue)	WFA-1 (SLC)
Billing	CRIS-C	CRIS-C	CRIS-E	CRIS-C	CRIS-E	CRIS-C	CRIS-E	CRIS-E	CRIS-C	CRIS-W	CRIS-E	CRIS-C	CRIS-W	CRIS-C
IABS TIRKS Facility	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (Omaha) FC-1	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (Omaha FC-1	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (Omaha) FC-1	IABS-1 TIRKS-1 (Omaha) FC-1	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (Bellevue) FC-1	IABS-1 TIRKS-1 (Omaha) FC-1	IABS-1 TIRKS-1 (SLC) FC-1	IABS-1 TIRKS-1 (Bellevue) FC-1	IABS-1 TIRKS-1 (SLC) FC-1

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System	AZ	CO	IA	ID	MN	MT	ND	NE	NM	OR	SD	UT	WA	WY
Check *	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)	(SLC, DNVR, Omaha)
Appt. Scheduler	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1	Appt Sched-1

* Facility Check is not differentiated geographically – i.e., even though it is run in 2 data centers, each server accesses the same data & can fulfill requests throughout Qwest

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F4.1 Table F4 Interpretation Notes

1. When an OSS has a –1 suffix it means there is only one version of that application. For example, IMA GUI is the same application across all states.
2. There may be multiple instances of an application that are all identical. For example three instances of FACS serve three different regions but are all the same application.
3. There may be applications of the same name that have different functionality – i.e. CRIS – C (Central), CRIS – E (EAST) and CRIS – W (West)
4. Multiple copies of the same application can be run at different data centers (shown in parentheses in the matrix) to serve different areas that may or may not coincide with a region – i.e. An identical application of BOSS-C is run at 2 data centers to handle the total Central Region.

F4.2 Table F4 List of Abbreviations

IMA GUI – Interconnect Mediated Access Graphical User Interface Gateway
IMA EDI – IMA Electronic Data Interchange
EB-TA – Electronic bonding for Trouble Administration – Qwest's version is MEDIACC, it interacts with LMOS for POTS repair & WFA/C for Designed services repair
BPL-1 – Business Process Layer does edits against State tarriffed products and services
IMA LSR DB – Common IMA database for Local Service Requests
FOM – Firm Order Manager
ICADS – Service order constructor that translates order information to the specific service order processor
Data Arbiter – Data access layer application between IMA gateway and downstream OSS
Fetch-N-Stuff – Data access layer application between IMA gateway and downstream OSS
CSR Retrieval – Customer Service Record retrieval
Service Order Processor – Directs/processes service orders
SOAC – Service Order Analysis and Control
Premis – Premises Information System
FACS – Facility Assignment and Control System
LMOS – Loop Maintenance Operations Systems
WFA – Work Force Administration
CRIS – Customer Record Information System
CABS – Carrier Access Billing System
IABS – Integrated Access Billing System

F4.3 Table F4 Data Center Locations

ALB – Albuquerque, NM
BLV – Bellevue, WA
DVR – Denver, CO
OMA – Omaha, NE
SLC – Salt Lake City, UT

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4. Regional Differences

Qwest's current operating territory, and therefore much if its OSS legacy architecture, is the result of the merging of three predecessor Bell Operating Companies into the Qwest Regional Bell Operating Company RBOC, including:

- Pacific Northwest Bell (PNB) covering Washington and Oregon, now referred to as the Western Region
- Mountain Bell (MB) covering Arizona, Colorado, Idaho, Montana, New Mexico, Utah and Wyoming, now Central Region
- Northwestern Bell (NWB) covering Iowa, Minnesota, Nebraska, North Dakota, and South Dakota, now Eastern Region

As Table F4 indicates, all CLEC-facing interfaces and most downstream OSSs are the same across the three sub-regions. The three major areas of difference are:

1. Different service order processors are used in each region with SOLAR in the East, R-SOLAR in the West and SOPAD in Central.
2. Customer Service Record (CSR) retrieval is handled by BOSS in East and Central regions and by CARS in Western region.
3. Billing systems across the regions are different. Despite the fact that the three systems are all named CRIS and perform similar processes, they differ functionally.

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5. State Differences

State level differences in downstream OSS are generally confined to the use of different instances of the same applications housed at different data center locations. Please see Figure F4.

6. Product Differences

In general, Qwest offers the same products across its 14 state operating area. However, there are a few variations resulting from various factors such as state regulatory requirements. Table F5 provides a high-level overview of these differences. These differences were further investigated by KPMG Consulting with the assistance of the TAG and reflected appropriately in the test scenarios and testing mix. KPMG Consulting issued a Regional Differences Assessment Report summarizing the results of their investigation.

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Table F5 Wholesale Products by State

Product	AZ	CO	IA	ID	MN	MT	ND	NE	NM	OR	SD	UT	WA	WY
Residence	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Business	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Features	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PLT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CTX[2]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ACS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
DA/OPS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
LST	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OCP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PAL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VM	NA	NA	Y	NA	Y	Y	Y	NA	NA	Y	NA	NA	NA	NA
WIRE	NA	NA	NA	NA	Y	NA	NA	NA	NA	Y	NA	NA	NA	NA
Lifeline	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
ISDN	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
UNE-P* POTS PBX ISDN BRI ISDN PRI	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
UNE-C PrivateLine	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
UNE-C PrivateLine	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

*Existing combinations only (i.e. not new)

[2]*In states where Centrex is grandfathered, conversion to resale is only allowed for existing Centrex Customers.*

The following provides additional definition for the products shown in the table.

Residence – basic residential line including 911/E911 service and special needs service
Business – Basic business line including 911/E911 service
Features – Central office features such as custom calling, CLASS, etc
MTS – Intra-LATA toll (message toll service)
PLT – Private line, DS1, DS3
CTX – Centrex, which includes Centrex 21, Centrex Plus, Centrex Prime
ACS – Advanced Communications Services which includes Frame Relay, ATM Cell Relay, LAN Switching Service
DA/OPS – Directory Assistance/Operator Services
Listings – Directory Listing, Joint User Listings
OCP – Optional Calling Plans

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PAL – Public Access Lines
VM – Voice Messaging, Enhanced Service
Wire – Inside Wire and Wire Maintenance Plan
Lifeline – Services such as Link-up, Telephone Assistance Plan (TAP)
ISDN – Integrated Switched Digital Network – basic and primary
UNE-P – Unbundled Network Elements – Platform
UNE-C – Unbundled Network Elements - Combinations
NA – Not available
Y - Yes

Appendix G: Statistical Approach

1. Introduction and purpose

This appendix describes the statistical approach for designing, implementing and evaluating the ROC transaction test. The statistical analyses described in this appendix assume a set of performance standards, upon which the test will be evaluated. The assumption is also that the test will be a military style test. As such, Qwest failures will be addressed by re-testing until the standards are met or the ROC declares that no further testing is necessary.

There are two types of performance standards which will be used to evaluate the performance of the P-CLEC in the ROC test:

- Parity standards
- Benchmark standards

Parity standards are used where there is a Qwest retail analog to the particular wholesale OSS process being considered. The idea of a parity standard is that the wholesale process should be completed in an equivalent fashion to a retail analog (e.g., in the same amount of time or with the same level of accuracy as the retail analog). A benchmark standard is used when no comparable Qwest retail analog exists. The benchmark is an absolute standard, determined by the ROC, that must be achieved during the test.

The next section describes ROC's policy for defining the sample sizes and evaluating test results. These statistical methods and standards will govern the design and conduct of the test, including establishing a stopping point for the test, and facilitate evaluation of the results. However, states are free to depart from the critical values or benchmarks adopted for the test when they evaluate test results submitted by Qwest as part of state Section 271 applications.

2. Statistical Policy

2.1 The null and alternative hypotheses

In statistical testing it is often convenient to set up two mutually exclusive hypotheses representing possible test outcomes. In the context of the dual null hypothesis testing that will be employed, the hypotheses and related actions will be as follows:

First Test:

- Null Hypothesis: The P-CLEC mean minus the Qwest mean is less than or equal to zero.
- Alternative Hypothesis: The P-CLEC mean minus the Qwest mean is greater than zero.

Second Test:

- Dual Null Hypothesis: The P-CLEC mean minus the Qwest mean, is greater than or equal to a material difference factor of 0.28 Qwest standard deviations.

- Dual Alternative Hypothesis: The P-CLEC mean minus the Qwest mean, is less than a material difference factor of 0.28 Qwest standard deviations.

Table G1 Possible Outcomes and Actions from Dual Testing

		First Test (Null Hypothesis is Parity or better)	
	Outcomes	**Fail to Reject**	**Reject**
Second (Dual) Test (Dual Null Hypothesis is Disparity ≥ 0.28 Qwest Standard Deviations)	**Fail to Reject**	Qwest passes the test conditionally, but the issue is referred to the TAG for final determination.[3]	Qwest fails the test and the issue is referred to the TAG for resolution.
	Reject	Qwest passes the test unconditionally.	Significance levels are reduced until the test results move to the cell immediately above or to the left.

2.2 Level of Significance and Error Levels

In making the test comparisons involving parity tests, there are two possible types of error:

- Difference in service quality is detected where none exists (Type I error)
- Difference in service quality exists but is not detected (Type II error)
-

The level of significance is typically defined as the probability of rejecting the null hypothesis, conditioned on the assumption that it is true. It is often called the Type I error level or "α" in statistics. The level of significance is generally set at $\alpha = 0.05$ for the ROC test, and assumes the null hypothesis above.

A Type II error is the chance of failing to reject the null hypothesis when in fact it should be rejected. It is typically referred to as "β." We use the Type II error to determine sample sizes, as described below. In addition, we test the alternative hypothesis at a 5% significance level, rather than calculate the Type II error after the test.

2.3 Statistical Evaluation Method

In order to evaluate benchmark standards, a "stare and compare" method will be used. This means that if the test result exceeds the standard, Qwest passes. If it does not exceed the standard Qwest fails. No statistical analysis is involved for this evaluation method.

[3] The determination will be based on further analysis of the power of the test of the null hypothesis at various levels of material difference and an analysis of the reasonableness of the material difference used for the alternative hypothesis.

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In order to evaluate parity standards, permutation tests will be used. In the permutation test, the test P-CLEC average will be compared to all possible averages (permuted means) of the same size, using both Qwest and test P-CLEC data.[4] The first null hypothesis is rejected if the P-CLEC mean is greater than at least 95% of the permuted means. For the second null hypothesis, the P-CLEC is first transformed using a scale parameter (which will be less than 1) such that, assuming the second null hypothesis is true, the Qwest and P-CLEC data could be considered drawn from the same distribution. Then, the second null hypothesis is rejected if the transformed P-CLEC mean is less than at least 95% of the permuted means.

2.4 How to account for non-normal distribution

Since permutation tests will be used, and the permutation test does not require an assumption of a normal distribution for the data, non-normal distributions are less of a concern. Instead, the permutation test assumes that, for the first null hypothesis, labeling of the CLEC and Qwest observations can be considered random. In other words, the time to complete an order, for example, gives no information about whether an order is a Qwest retail order or a P-CLEC wholesale order. Implicitly, the null hypothesis in the permutation test assumes no differences in variability between Qwest and P-CLEC orders. While the permutation test described above has some ability to detect greater variability in the P-CLEC orders, the test is not particularly useful for testing variability differences.[5]

2.5 Sample size determination

Sample size is determined using the following proposal by Qwest, given at the ROC Statistical Workshop:

- The sample size for each product/disaggregation level specified in the table below will be 140, on average, for a total sample volume of 1,820 for the test (per 13 product/disaggregation levels shown in the table).[6] The total sample size will be adjusted proportionately upward or downward if the parties agree to additional or fewer levels, respectively.
- KPMG Consulting will allocate the total sample volume to the individual product/disaggregation levels in a manner that optimizes the "power" of the test. In the context of numerous possible materiality assumptions, the parties have agreed that the following assumptions will be used for this purpose:

1. Type I error (alpha) and Type II error (Beta) each will be kept at .05 or less.
2. The materiality assumption applied to each product/disaggregation level will use the greater of the following:
    a. A "twice as bad" rule calibrated at the 90 percent retail performance level (using the "arc sine square root" transformation) applied to proportions (results reported as percentages); or

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[4] Because of practical considerations, this is done through simulations.
[5] A separate permutation test could easily be done to test variability, but the parties have agreed this is not necessary.
[6] For practical reasons, and because the table has changed since the Statistical workshop, the table is not included here.

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b. A ".28 standard deviations" rule applied to means (results reported as intervals or numbers).

3. If KPMG Consulting finds that more than the total sample volume defined above is exceeded to implement materiality assumptions, it will bring the issue before the TAG.

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This approach is adopted for the purpose of setting sample sizes. It sets no requirement for, nor constraints on, the analytical approach applied to the data.

The parties have basically agreed upon the determination of sample size, as described above, though some question about the precise wording remains. The null hypothesis used for this purpose is the one above. For the purposes of determining sample sizes for benchmark estimates, the exact Binomial distribution will be used, and a 90% retail performance level will be assumed.[7] For the purposes of determining sample size for interval estimates, a modified Z test will be used. This avoids the difficulties of determining the sample size for a permutation test, with little or no relevant data available. Further clarification is needed as to what assumptions should be made for the case of percentage or proportion metrics with parity standards.

For $\alpha=\beta=5\%$ for benchmark measures, with the standard at 90% and the alternative at 80% (this is the twice as bad standard above), the sample cell size is 134. The sample cell size for interval estimates, calculated based on assumptions above, is $138n_{ILEC}/(n_{ILEC}-138)$ where n_{ILEC} is the number observations in the ILEC. This means that the sample size is about 140, when ILEC observations are 10,000. It is 138 when ILEC observations are 100,000. For ILEC observations at 1000 and below, the sample cell size grows considerably. When the ILEC observations dip below 138, Qwest's proposal cannot be implemented at any sample size. Below is a table showing sample cell size as a function of ILEC observations:

ILEC Size	Cell Size
150	1,725
200	445
400	211
600	179
800	167
1,200	156
2,000	148
10,000	140

Below are the technical calculations involved in determining these sample sizes. They provide the mathematical support for the numbers given above.

Sample sizes for benchmark standards. Sample sizes for benchmark standards can be identified using standard software, without any formal derivations needed. First consider the case of

[7] In this case, when an exact test can be done, there is no need for any variance stabilizing transformation.

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β=α=5%. We assume the benchmark standard is 90% on-time and the alternative hypothesis is 80% on-time. A sample size of 134 would allow for a test at this level (it should be noted, however, that the benchmark tests are subject to stare and compare only, so that actual type I error depends on the Null hypothesis, and for a Null hypothesis of 90%, it would be close to 50%).

Sample Size calculations for interval standards. As described above, we assume β=α=5%. We assume the null hypothesis described above. For this scenario, we use the modified Z, assume normality, and calculate β at .28 standard deviations from the ILEC mean. The modified Z test statistic is defined as

$$z = \frac{\overline{\overline{X}}_{CLEC} - \overline{\overline{X}}_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}} + \frac{1}{n_{ILEC}}\right]}}$$

In a one-sided test with α=5%, we reject when z>1.645 and accept the Null when z<=1.645. Since we want to find the sample size where β=5%, this translates to finding the sample size where the P(z<=1.645)=.05.
Thus, we have

$$P_{(m_{CLEC} - m_{ILEC} - .28s = 0)}\left(\frac{\overline{\overline{X}}_{CLEC} - \overline{\overline{X}}_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}} + \frac{1}{n_{ILEC}}\right]}} < 1.645\right) = .05$$, where the subscript to the P

indicates the conditioning. Adding and subtracting a term, we get

$$P_{(m_{CLEC} - m_{ILEC} - .28s_{ILEC} = 0)}\left(\frac{\overline{\overline{X}}_{CLEC} - \overline{\overline{X}}_{ILEC} - .28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}} + \frac{1}{n_{ILEC}}\right]}} + \frac{.28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}} + \frac{1}{n_{ILEC}}\right]}} < 1.645\right) = .05$$

Now, the first term is a standard Normal variable, because we have assumed Normality of the data, the Alternative hypothesis, and that the variance is the ILEC variance. Thus, substituting Z for a N(0,1) variable, we get

$$P\left(Z+\frac{.28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}}+\frac{1}{n_{ILEC}}\right]}}<1.645\right)=.05 \qquad (1)$$

- More algebra gives us

$$P\left(Z<1.645-\frac{.28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}}+\frac{1}{n_{ILEC}}\right]}}\right)=.05 \qquad (2)$$

Now we know (from a standard Normal distribution) that P(Z<-1.645)=.05, so we can set the right hand side of the equation equal to –1.645 and solve. The equation becomes

$$3.290=\frac{.28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}}+\frac{1}{n_{ILEC}}\right]}}\Rightarrow \qquad (3)$$

$$10.8241\left(\frac{1}{n_{CLEC}}+\frac{1}{n_{ILEC}}\right)=.0784\Rightarrow$$

$$138=\frac{n_{ILEC}n_{CLEC}}{n_{ILEC}+n_{CLEC}}\Rightarrow$$

$$n_{CLEC}=\frac{138n_{ILEC}}{n_{ILEC}-138} \qquad (4)$$

Next, consider the case where β=50% and α=5%. The calculations are the same as above, except that the right hand side is .5. Since P(Z<0)=.5, equation (3) becomes

$$1.645=\frac{.28s_{ILEC}}{\sqrt{s^2_{ILEC}\left[\frac{1}{n_{CLEC}}+\frac{1}{n_{ILEC}}\right]}}$$

After some algebra, we get

$$n_{CLEC}=\frac{35n_{ILEC}}{n_{ILEC}-35}$$

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2.6 Other Statistical Issues

Based on a number of factors, including KPMG Consulting's regional differences analysis and decisions made by the Steering Committee, the products reflected on Appendix K will have 140 instances either at a regional level or at a 13 state level. This breakdown is reflected in a document titled "ROC Production Bed Test Mix." The test cases and test bed will be designed based on this document, which was the result of direct Steering Committee input.

Appendix H: Test Overview Matrix

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Appendix I

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Appendix J: Mapping of MTP Tests to PID

MTP Section	Test Description	Relevant Service Performance Indicator	
		Release from Audit Required Before Testing Begins	Release from Audit NOT Required Before Testing Begins
12 & 14	Evaluation of POP Functionality and Performance Versus Parity Standards and Benchmarks Versus Parity Standards and Benchmark	GA-1, GA-2, PO-1, PO-3 , PO-5, PO-8, PO-9, OP-3, OP-4, OP-5, OP-6, OP-7, OP-8, OP-13,	PO-4, PO-6, PO-7, PO-10, PO-15, OP-15
13 15	Order Flow Through Evaluation POP Volume Performance Test	PO-2 PO-1, PO-5	
16	CEMR Functional Evaluation	GA-1	
17	MEDIACC (EB-TA) M&R Trouble Functional and Performance Evaluation	GA-3	
18	M&R End to End Trouble Report Processing	MR-2, MR-3, MR-4, MR-5, MR-6, MR-9	
19	Billing Usage Functional Evaluation	BI-1	
20	Carrier Bill Functional Evaluation	BI-2, BI-3, BI-4A	
22 23	CLEC Network Provisioning Test Change Management Test	NI-1 n/a	
24	Qwest CLEC Support Processes and Procedures Review	OP-2	

The following PIDs are only relevant to the Performance Measurements Audit:

- Electronic Gateway Availability GA-4, GA-6
- Maintenance and Repair MR-7, MR-8, MR-10
- Directory Assistance DA-1
- Operator Services OS-1
- Network Performance NP-1
- Collocation CP-1, CP-2, CP-3, CP-4
- Databases DB1, DB2
- Billing BI-4B

Appendix K: Product Samples

Products Requiring Statistically Significant Samples

	Statewide	Dispatch MSA	Dispatch non-MSA	No Dispatch
Analog loop	X-R	N/A	N/A	N/A
Business POTS	N/A	X-S	-	X-R
DS1 Loop	X-S	N/A	N/A	N/A
Non-loaded 2W loop	X-R	N/A	N/A	N/A
Residential POTS	N/A	X-S	-	X-R
UNE-P Loop w/portability	N/A X-R	X-R -	X-R -	X-R -
Centrex resale	N/A	1/2X-S	-	1/2X-S

The table shown above was originally developed during the MTP Design Workshop in Salt Lake City. Products marked with an X are those products that require the minimum of 140 samples for statistical significance across either the 13 states or across each of the three regions. Those products marked with an X-S will receive the 140 samples across the 13 states and those marked with an X-R will have 140 samples per region for each of the three regions. Products with a dash will be tested at a much smaller sample size. The ½ X in the Centrex row indicates that the sample size to be used in the two columns involved will add up to the target sample size of 140. However, there is no requirement that the sample in the two different columns be equal.

As part of the test bed construction, KPMG Consulting made a proposal to the TAG and the Steering Committee on the mix of the test bed resources across the states to achieve these test sample objectives. This proposal was modified by the Steering Committee on 10/16/00 and the final test bed mix was approved on 10/19/00. This decision by the Steering Committee was the basis of whether a given product would be tested at a regional level or at a thirteen-state level.

The original table was also modified on 11/13/00 to eliminate the distinction between high and low density for the unbundled loop products. These products are now shown in the column labeled "Statewide." This modification was prompted by Qwest's decision to use the same provisioning intervals statewide for these products regardless of the density zone the customer was located in.

The 140 samples for UNE-P MSA and non-MSA will be split within each region in proportion to data provided by Qwest on the actual commercial split of resale accounts across the MSA and non-MSA areas. Resale data is being used as a surrogate for UNE-P data being there is not enough UNE-P data available yet to make this determination.

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