

**STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION**

DOCKET NO. DT 07-011

**DIRECT TESTIMONY
OF
KATH MULLHOLAND**

**ON BEHALF OF
segTEL, INC.**

NOVEMBER 20, 2008

1 Q. Please state your name, place of employment and position..

2 A. My name is Kath Mullholand. I am currently employed by segTEL, Inc. (segTEL) as
3 Director of Operations at 325 Mount Support Road in Lebanon, NH.

4 Q. What are your duties at segTEL relevant to this proceeding?

5 A. At segTEL, I have broad responsibility for customer ordering, provisioning and
6 billing. I also am segTEL's regulatory liaison. In my official capacity, among other
7 things, I oversee and am familiar with the provisioning of wholesale services from
8 Northern New England Telephone Operations LLC d/b/a FairPoint Communications-
9 NNE (FairPoint) through the current Local Service Ordering Guidelines version 9
10 (LSOG9) of Verizon's graphical user interface (GUI), as well as other ordering and
11 ticketing processes.

12 Q. What other experience do you have this is relevant to this proceeding.

13 A. I have been employed in the telecommunications industry for 23 years, in a variety of
14 operations positions with responsibility for the provisioning of telecom services,
15 systems inventory, trouble ticketing, billing, and software development and
16 deployment. While I am neither a programmer nor a developer of software myself, I
17 have tested, selected, written algorithms for the development of, and deployed more
18 than a dozen different telecommunications software modules. With the help of user
19 interfaces, I have also personally developed numerous complex databases that were
20 later incorporated into more complex software systems.

21 At the University of New Hampshire (UNH), I was the Coordinator of
22 Telecommunications Business Operations and, later, the Director of
23 Telecommunications Operations. In my most recent position at UNH, I was the
24 Director of Information Technology, responsible for overseeing software and
25 hardware support. In that capacity I was the executive responsible for final

1 recommendations regarding all hardware and software recommended for general
2 deployment throughout the University community. In each of the foregoing
3 positions, however, I was directly responsible for developing design, testing and
4 acceptance criteria for software that the University either developed in-house, hired
5 firms to specifically develop for it, or was considering purchasing.

6 At BayRing Communications, as Director of Operations, I was directly responsible
7 for using the Bell Atlantic Operational Systems Support (OSS) interfaces to transact
8 business. I remember very well what the early CLEC OSS interfaces were like, and
9 the range of functionality that was offered. In addition, I designed and maintained
10 interim inventory and billing software that the company used to transition from one
11 billing system to another.

12 Most recently, at the New Hampshire Public Utilities Commission, as a Utilities
13 Analyst, I became familiar with the legal and regulatory requirements that a regional
14 Bell operating company such as FairPoint must meet.

15 Q. What have you reviewed in preparation for your testimony?

16 A. I have read and am familiar with the Assessment of FairPoint's Cutover Readiness
17 Verification Plan dated August 15, 2008 (Assessment Report), the Monthly Cutover
18 Monitoring Status Report (Status Report) dated November 12, 2008, of the Liberty
19 Consulting Group (Liberty). I have likewise read and am familiar with the
20 Provisional Notice of Readiness and Rebuttal (Notice of Readiness) filed on
21 November 12, 2008, by FairPoint.

22 I have also attended many of the Wholesale User Forums, either in person or by
23 teleconference. In addition I reviewed the testing materials that are maintained by
24 Capgemini in its "testing tracker", a program that provides a description of each
25 available testing scenario, the documentation that is available for each scenario, and,
26 in my case, segTEL's pass/fail assessment of each test.

1 Q. Please summarize why you are providing testimony.

2 A. In its Status Report, Liberty analyzes FairPoint's readiness for cutover and states that
3 "FairPoint may also be able to demonstrate sufficient satisfaction of the CLEC testing
4 cutover criteria in a few more weeks, with continued diligence by FairPoint and full
5 cooperation from the wholesale customers." FairPoint, in its Notice of Readiness
6 states that it "will be ready by November 30, 2008 to file an irrevocable notice of
7 cutover readiness with Verizon."

8 Both the Liberty Status Report and the FairPoint Notice of Readiness provide
9 information regarding the readiness of FairPoint's systems, and the Staffs of the
10 Commissions in New Hampshire and Maine have indicated that the upcoming
11 hearings are to assess the readiness of FairPoint's Operations Support System and
12 Liberty's evaluation thereof.

13 While I am not in a position to make an assessment of FairPoint's OSS that it will use
14 for its retail services (herein collectively FairPoint's OSS), it is my considered
15 opinion that FairPoint's Wholesale Customer OSS (herein referred to as the CLEC
16 OSS) is ready, and it is my belief that the CLEC OSS is not at parity with FairPoint's
17 OSS.

18 Q. In reaching that conclusion, did you test the FairPoint Wholesale Customer OSS?

19 A. Yes, I did, and I have also reviewed the body of testing documents available on the
20 Capgemini Testing Tracker system

21 FairPoint issued its Wholesale Customer OSS Test Plan (Test Plan) on December 21,
22 2007. The Test Plan indicated that there would be three phases of CLEC testing: an
23 internal Phase I testing, an external Phase II testing that would not include all CLECs,
24 and an external Phase III readiness testing, which also did not anticipate including all
25 CLECs.

1 Signup for Phase II testing initially expired on April 18. I recognized that this early
2 phase of testing was not appropriate for segTEL as it would be very time-consuming
3 due to inevitable programming errors and design changes. It was my understanding
4 that there would be a separate opportunity to sign up for Phase III testing and for
5 access during the pre-cutover acceptance period.

6 Instead, additional Phase II test windows were announced at the Wholesale User
7 Forum in September, and the level of CLEC discussion regarding CLEC OSS
8 readiness increased markedly. I wanted to make my own assessment, so I requested
9 credentials and testing information on September 24. Despite repeated requests to
10 FairPoint for status on a login and password for segTEL, I did not receive a password
11 until November 4, 2008, and did not have a working login and password until
12 November 12, 2008.

13 At the time when I am preparing this testimony, I have taken part in two hours of
14 testing, and am scheduled for additional testing later this week.

15 Q. What is the testing environment like?

16 A. A time, or test window, is established for testing. Prior to that time, I tested my
17 logins and passwords, and reviewed the various items that I would be able to test to
18 determine which items I would test during the test window. About an hour before my
19 test window, FairPoint's testing coordinator called me to make sure I had everything
20 necessary to take part in the testing. Rich Murtha, FairPoint Associate Vice President
21 for Wholesale Customer Support, called to ensure I had everything I needed as well.

22 Fifteen minutes before the test window, a conference call is established. On my call
23 were representatives from FairPoint, Capgemini, and, at least for a short period of
24 time, Liberty. I had some difficulty with my Capgemini password, but ultimately I
25 was able to log onto the Capgemini testing tracker and the FairPoint Wisor GUI.

1 I had selected Trouble Administration to test, and the team on the call recommended
2 four tests to start on.

3 Each test requires a “data sheet” that documents how the test will be conducted. In
4 each case, I opened the proper transaction type on the GUI, and then follow the data
5 sheet, entering into the highlighted fields the exact information that was indicated on
6 the data sheet.

7 After entering the information I would process the request, and receive back a screen
8 shot that summarized what I had entered. Within a few minutes, I would then be able
9 to see a response indicating whether my entry was successful or not.

10 Q. What were the results of the testing?

11 A. I tested seven scenarios in all, and each passed as designed.

12 Q. Were there any difficulties in testing?

13 A. Yes.

14 At one point, I could not view the trouble tickets in the work list.

15 While the team on the phone and I discussed troubleshooting my computer to fix the
16 problem, ultimately I opted to move on with testing. Later in the call, Capgemini
17 determined that the problem was a filter setting in the WISOR GUI which they
18 cleared behind the scenes.

19 Later on in the scenarios, the drop down tables stopped working. At that point my
20 computer would not respond to mouse-button or keyboard input. I decided to end
21 testing and troubleshoot the issue with my computer, which resolved on restart. I was
22 unable to determine whether the WISOR GUI created that problem or not.

23 Q. As it was designed, is the testing adequate?

1 A. No, it is not, because the tests are not at the appropriate level of software design
2 testing, as described by Liberty.

3 Q. Please explain what you mean by “levels of software design testing”.

4 A. Software testing is done in several stages.

5 During the design phase, the programmer who wrote the software will test it to make
6 sure it works according to the specifications the programmer was given. The design
7 team will then test the code using specific examples, often provided by the customer,
8 to ensure that the program works as anticipated in the design plan. This is what
9 Liberty calls “Unit” testing in its Assessment Report. (See page 5.)

10 Next, the program module will be integrated with one or more other modules and
11 tested to show that it interacts properly. All of this testing is internal to the
12 development group. When the modules are completely integrated, they are tested for
13 functionality as a group. Liberty refers to this as Product Testing. *Ibid.*

14 Once the modules are integrated into a complete business function, the business
15 functions can be integrated together and tested again. Liberty documents three phases
16 of testing what is now a software system: Shakeout, Integration and System testing.
17 *Ibid.*

18 Shakeout testing is basic testing to ensure that modules can talk to one another.

19 Integration testing more thoroughly ensures that there is complete functionality
20 between the modules.

21 System testing is the final phase where all parts of the system are tested to ensure that
22 they work not just as designed, but as expected and needed. It includes “end to end”
23 testing which follows specific input data from where it enters the system through all

1 of its interactions as it flows through the system, and verifies that the ultimate output
2 data is exactly what it should be.

3 As Liberty states in its Assessment Report, “The system functional tests ... are of
4 crucial importance.” *Ibid.*

5 Q. Were the tests you performed “system functional” tests?

6 A. Not in my view. In fact, I believe it would be exaggerating to describe these tests as
7 Integration testing. The testing I took part in for Trouble Administration most closely
8 resembles Unit or Product testing, with a simple template for data entry instead of a
9 fully-functioning user interface, and with pre-determined scenarios and test data.

10 Q. Please explain why this is not a system functional test.

11 A. Liberty’s Assessment Report defines System Tests on page 5:

12 These are tests of transaction flows across multiple systems and interfaces; for
13 example, ordering to work force management to provisioning to billing. The
14 system tests includes the all important end-to-end (“E2E”) tests, which trace a
15 transaction from the initiation through all the downstream systems affected; for
16 example, beginning with order entry and ending with all the affected systems,
17 such as inventory management, billing, finance, and database updates (including
18 operator services, E911, etc.).

19 The testing I participated in did not have any of these characteristics. To explain why
20 this is so, I’m going to use the first test I completed as an example. It was test TA-7,
21 “Create a trouble ticket”.

22 On the first screen, the interface requires four pieces of data: a) TRFD; b) Account
23 Name; c) Network ID; d) Service ID

24 The datasheet supplies the information to be entered into these fields, which includes
25 an Account Name of VZE, and a Service ID of 81/ARDU/30007//ME/. This test data
26 provides first indication that this is not a system functional test.

1 Q. Why is that?

2 A. There are three reasons.

3 First, if this were a system functional test, I, as a segTEL user, would not be able to
4 enter any Account Name but that of my own company.

5 Second, the field for Service ID is a text field, which allows the entry of any data at
6 all. According to the information I was provided during the training call, I could
7 enter "purple" in that field and, at this point in the transaction, the ticket would not
8 fail.

9 Third, Service ID is a single field for the capture of what should be, and what actually
10 is in every OSS system I have seen or used, at least seven separate fields.

11 Q. Explain what you mean about entering an Account Name for another company.

12 A. The FCC has passed strict rules regarding the privacy of information that all
13 telephone companies keep in the ordinary course of business. Information that is
14 designated as either "carrier proprietary network information" or "customer
15 proprietary network information" must be kept secure and only shared between
16 telephone companies under very specific circumstances.

17 For that reason alone (although there are other reasons as well), segTEL must not
18 have access to the records FairPoint keeps in its systems by virtue of its role as a
19 wholesale provider. No functional system could maintain such security and still
20 allow segTEL to enter VZE (which is not segTEL's Account Name) as its company
21 name. Therefore, either that level of security does not exist in the CLEC OSS, or
22 there must be settings in the software that have been manipulated to allow this to
23 happen.

24 If the security does not exist, the software is not properly designed.

1 If the software has been manipulated to remove, disable or avoid that functionality,
2 then, by definition, I was not testing a functional version of the software.

3 In either event, the CLEC OSS does not meet the criteria for readiness set out by
4 Liberty, despite the fact that this test works as it was designed to work.

5 Q. Explain your concerns about the Service ID field being a text field.

6 A. On this preliminary screen, the Service ID is the only data that would vary from one
7 trouble report to another. According to the testing documents and information
8 provided by the personnel on the conference call while I was testing, I would use that
9 same field to enter a telephone trouble ticket. Since telephone numbers are ten digit
10 numbers and circuit IDs comprise 19 characters, this means that the field must be able
11 to accept virtually any data, in any format.

12 If the field can accept any data, in any format, then it is not validating the format or
13 content of that data.

14 Q. Why is it important to validate the format and content of this data.

15 A. It's important to validate format and content of fields to ensure that individual
16 preferences and company standards are suppressed in favor of a single method of
17 designation to ensure that everywhere a telephone number or circuit ID appears it is
18 recognizable by the OSS as a valid telephone number or circuit ID.

19 Circuit IDs are an excellent example of how varied data can be. In a circuit database
20 I created recently, I took data that several users had been keeping and combined it
21 into a functional database that will allow all of the users to access a comprehensive
22 inventory of circuits.

1 Circuit IDs have four components, which, on the datasheet, are separated by a virgule
2 (/). In the user data from which I compiled my database, circuit IDs were written in a
3 variety of ways, all legitimate, and all understandable to the human eye:

4	81/ARDU/30007//ME/	81.ARDU.30007..ME
5	81/ardu/30007/	81.ardu.30007
6	81/ARDU/30007//ME	81,ARDU,30007
7	81/ARDU/30007	81,ardu,30007,,ME
8	81 ARDU 30007...ME	81ardu30007
9	81ARDU30007	

11 Yet, if I were to submit these various formats to most software applications for
12 comparison, only the first -- 81/ARDU/30007//ME/ -- would match the format that
13 the datasheet requires me to use.

14 Q. Explain your concerns about the Service ID field being a single field.

15 A. Circuit IDs and telephone numbers are the primary identifiers for the network
16 elements that CLECs use. Each segment of these identifiers is important, and
17 provides definitive information. For instance, most of us are familiar with telephone
18 number segmentation into Area Code or NPA; Exchange or NXX; and Number.
19 Likewise, we are familiar with the meaning of the first of those segments: An area
20 code of 207 is in Maine, 603 is in New Hampshire, and 802 is in Vermont.

21 Likewise, in our circuit example, 81 is the circuit prefix, which varies by type of
22 circuit and from state to state in New England. ARDU is the service code and
23 modifier which indicates that the circuit is a DSL qualified circuit provided as an
24 unbundled network element. 30007 is this circuit's serial number. ME is the CO (for
25 company, not central office) code which, in New England, identifies the circuit's
26 market region.

27 Software designers use meanings such as this to do validation of user inputs to ensure
28 that users are entering data in the proper format and to provided user feedback. This

1 saves time for the user, reduces frustration with the software, improves the user
2 experience, and reduces processing time for the system.

3 In every circuit database I have worked with, meaningful components such as these
4 are entered in four separate fields, allowing validation and indexing of the individual
5 components, as well as validation of one component against another. In a text field
6 such as that in the test environment, none of that segment validation can occur.

7 Moreover, no mature telecommunications software would use the same field for
8 telephone number and circuit ID when telephone number or circuit ID is the primary
9 piece of information that uniquely identifies the record being created.

10 Q. Did this particular test raise other issues of concern?

11 A. Yes. After entering these initial required fields, this information is submitted and a
12 complete trouble ticket request form is presented to the user. One of the tabs is for
13 “location access address,” and it is here that I entered the address information I was
14 provided:

15 City: Atlanta; State: NH; Zip: 30039

16 Q. What does this information indicate to you?

17 A. This information indicates that the trouble ticket I entered is not being validated
18 against real information.

19 Q. How can you tell?

20 There are a number of ways. First of all, ARDU circuits in New Hampshire follow a
21 particular numbering scheme, which is 73, ARDU, nnnnnn,,NE,

22 Every New Hampshire ARDU circuit that I have seen is identified with a 73 in the
23 first segment, and an NE in the final segment. Therefore, the circuit ID I entered on

1 page 1, 81/ARDU/30007//ME/, is not a New Hampshire circuit, but the service
2 address I have been instructed to use says that it is located in New Hampshire.

3 Second, there is no city of “Atlanta” in New Hampshire.

4 Third, there are no zip codes beginning with a ‘3’ in New Hampshire.

5 Q. What conclusion do you draw from this?

6 A. I conclude that no effort has been made to ensure that the test trouble ticket
7 information resembles real circuit information in any respect.

8 Q. Why is this important?

9 A. It’s important because of what it says about the “readiness” of the CLEC OSS.

10 If, according to Liberty, a system cannot be ready without integration testing and
11 system functionality testing, then this system is not ready, because the tests the
12 CLECs have been running are not integrated and do not test system functionality. If
13 the system were functional and operational, it would reject contradictory data such as
14 a circuit that is identified as being in one state, but with a service address in another
15 state.

16 Q. Are there other concerns regarding this particular test?

17 A. Yes. I am concerned that the overall format and design of the system represent a
18 “time sink” for CLECs.

19 Q. What do you mean?

20 A. I mean that there are many ways in which this system will cost the data entry person
21 more time than it should.

1 First, the lack immediate feedback regarding field format verification and basic error
2 checking means that the user will have no opportunity in real time to fix inadvertent
3 errors such as replacing a zero with the letter O.

4 Second, the system is not integrated with FairPoint's systems, so there is no data
5 being pulled out for the user's convenience, such as pulling and displaying the service
6 address associated with the telephone number or circuit ID that the data entry person
7 has provided. In addition to being extremely inconvenient, the repeated typing of
8 information that is already available electronically increases the likelihood of human
9 error.

10 Third, the wait for basic verification of Service ID means that all other data will be
11 validated in a later round, costing the CLEC more time. By this I mean that if the
12 Service ID is incorrect, the trouble ticket will fail. Once the Service ID is corrected,
13 if the Service Address also has an error, the ticket will fail again until that is
14 corrected. Depending on the interrelationship of the various pieces of data, there
15 could be three rounds or more of ticket submission and response for the CLEC until a
16 valid ticket is entered.

17 Q. How much time would that take?

18 A. During testing, it took at least a minute for the ticket to cycle through the system and
19 return a response, and about four minutes for me to edit a ticket. I was going very
20 slowly, however, but even if someone did it in half the time, getting a valid ticket
21 entered could take 15 minutes or more. Given that it doesn't appear that there is any
22 multi-line functionality on trouble tickets, if segTEL had a 5-line business out of
23 service, it could take a poor typist more than an hour to enter the necessary trouble
24 tickets.

25 Q. Were there other tests that raised similar concerns?

1 A. Yes. Here are a few examples.

2 In test TA-10, Create Services with Premises Address Trouble, one of the fields to be
3 entered is a date and time field. This field is also an open text field that accepts any
4 information the user enters. I inadvertently left off a letter (typing P instead of PM)
5 on one of the fields, yet the test passed, and created an acceptable modified trouble
6 ticket. While not as critical as circuit ID validation or telephone number validation, if
7 these dates are actually used to, for instance, age a trouble ticket, or determine
8 priority for scheduling, variations in how the date and time are entered will result in
9 variations in how those entries are sorted, causing tickets to rise higher or fall lower
10 in the queue than those tickets would if the dates were consistently formatted. We
11 need look no further than “Y2K” to understand the importance of consistent
12 formatting when it comes to dates.

13 In test PO-01, Address Verification, which is a “Pre-Order” function, the telephone
14 number field appears to be a single field. This raises the same issues I described
15 above for test TA-07 regarding the Service ID field.

16 Looking at two preorder tests together, test PO-14, Request for CSR (Customer
17 Service Record) and PO-20, Directory Listing Request by TN, indicate that data is
18 either not being validated, or is not managed to maintain the division between
19 residential and business customers. In PO 14 the telephone number used for the test,
20 207 378-7470, returns a CST that indicates it is for RESIDENTIAL service. But in
21 PO20, the same telephone number returns a yellow page heading, indicating that the
22 directory listing is for a business line.

23 In test OR-16, Move Business Lines, which is an “Order” function, the (ATN)
24 telephone number and (BTN) billing telephone number field appear to be a single
25 field. This raises the same issues I described above for test TA-07 regarding the
26 Service ID field.

1 Q. Are there other concerns?

2 A. Yes. Another aspect of system functionality testing that is only briefly touched on in
3 Liberty's Assessment Report is the concept of interoperability. Despite several years
4 of innovation and development, complex web-based interfaces, such as the CLEC
5 OSS web GUI, still suffer from problems that arise due to variations in end-user
6 equipment and software. During my testing two issues arose that could have been
7 created or exacerbated by the software or hardware I was using to test.

8 Failures of interoperability can cause an enormous drain on resources as users exit
9 their web browser, clear their cache, shut down their computer, and perform other
10 basic troubleshooting in order to get things back in working order. As was mentioned
11 on my testing call, stopping to troubleshoot a computer or web browser issue can take
12 hours. Often developers will impose limitations on end users to avoid such issues,
13 such as requiring only certain browsers, limiting operating systems to particular
14 versions.

15 During my test, there was some indication that interoperability issues had arisen, but
16 Liberty does not mention this as an issue, and estimates of support personnel that
17 might be needed in the event of interoperability failure are not provided, despite the
18 evidence that at least some possible interoperability issues exist.

19 Q. What is your recommendation?

20 A. First of all, I recommend that this Commission deny FairPoint's request to issue its
21 irrevocable notice of readiness.

22 Next, I recommend that the Commission ask Liberty to determine whether the CLEC
23 OSS as it has been designed is in parity with the interfaces that FairPoint employees
24 will have available to them for entering orders, trouble tickets and pre-order requests.

25 Q. How would you recommend that Liberty make that determination?

- 1 A. For each function in the CLEC OSS, Liberty should compare that function to the
2 retail analog in the FairPoint OSS, and ask the following types of questions:
- 3 a. When a user enters critical data, such as an address or telephone number, is the
4 format of the data managed and the user provided feedback if the format of the
5 data is incorrect?
- 6 b. When a user enters index information with existing data in the core system, such
7 as a telephone number that has a service address associated with it, is data pulled
8 into the user interface to save the user time?
- 9 c. How long does it take for the same user to enter the same process in each of the
10 OSS systems?
- 11 d. How long does the user have to wait for acknowledgement?
- 12 This is not intended to be a comprehensive list of questions; these are examples of the
13 types of questions that would permit an evaluation of how the two systems function.
- 14 Q. Is this the end of your testimony?
- 15 A. Yes, however I would like to reserve the opportunity to reasonably supplement this
16 testimony, if necessary, with additional results of my testing experiences as they
17 become available.