

A. Test Results: Maintenance and Repair (M&R) Process Evaluation (M&R11)

1.0 Description

The objective of the M&R Process Evaluation (M&R11) was to evaluate the trouble report maintenance and repair process for wholesale xDSL line type service. The test is comprised of two major elements. The first element (Sub-Test 1) evaluated BellSouth's processes for trouble reporting, maintenance and repair of wholesale xDSL Unbundled Network Element- (UNE-) capable loops. The process flows for wholesale trouble management were reviewed and evaluated along with technician methods and procedures (M&Ps) and job aids for wholesale xDSL trouble repair. The second element (Sub-Test 2) involved the execution and observation of selected M&R test scenarios to evaluate BellSouth's adherence to existing processes and procedures for making repairs to xDSL-capable UNE loops.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

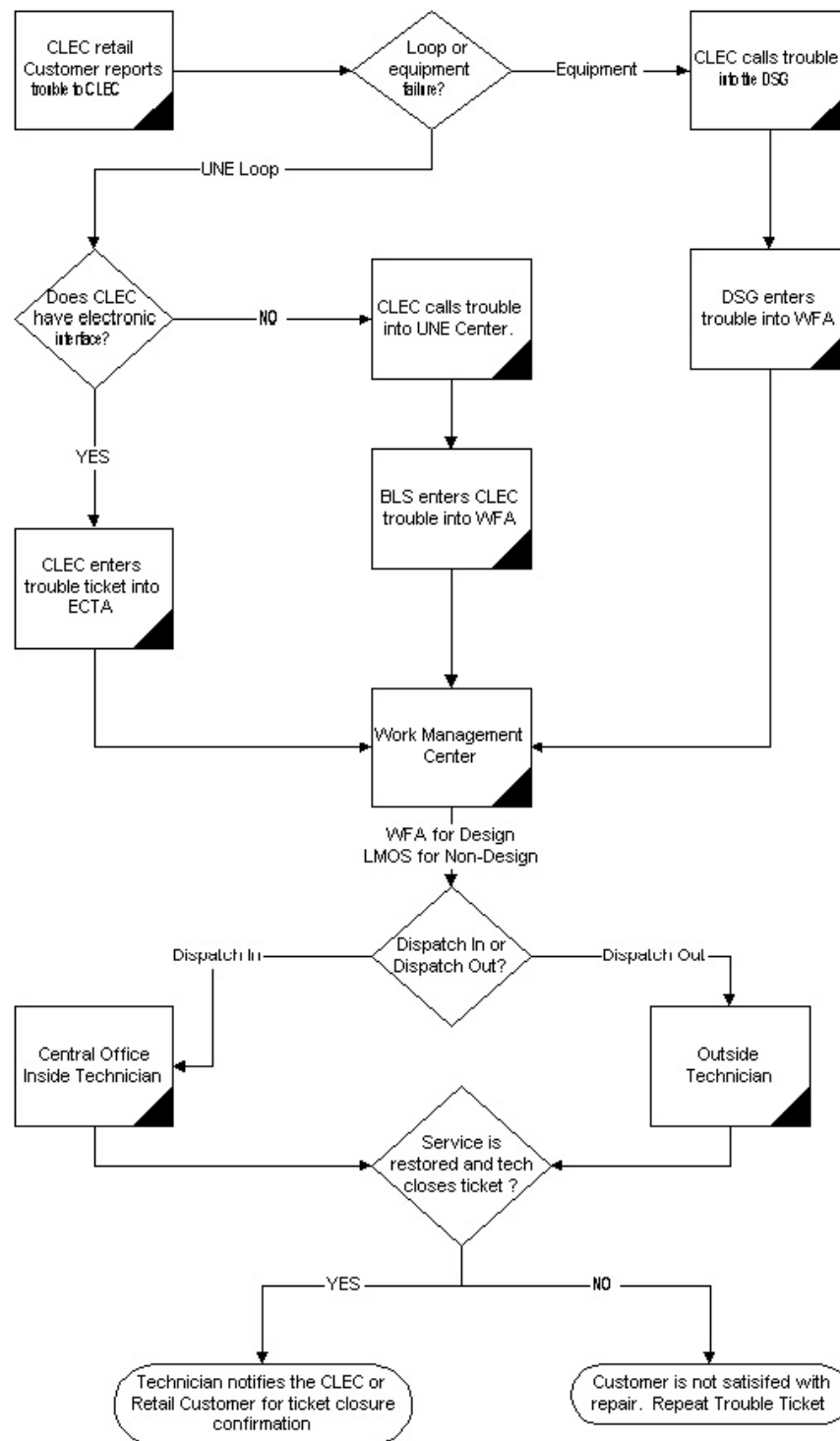
BellSouth's M&R administration and trouble repair process flows are described at a high level below and are depicted in Figure VI-1.1. See Section VI, "Overview" for a detailed description of the BellSouth M&R processes.

The Work Force Administration Interface (WFA) is used to capture wholesale trouble tickets for designed UNE-capable xDSL loops. The WFA trouble system also provides trouble management and escalation information relating to trouble tickets passed to outside technicians. Work Management Center (WMC) staff schedule technicians and allocate outstanding trouble tickets to a Dispatch In (DI) or Dispatch Out (DO) status depending upon the repair action required to restore service.

This test concentrated on the BellSouth repair procedures for designed UNE-capable xDSL loops, as well as the consistent application of those procedures, for M&R support of wholesale customers.

Figure VI-1.1 illustrates the BellSouth M&R process flow.

Figure VI-1.1: M&R11 Business Process Flow



2.2 Scenarios

Multiple M&R scenarios were used to evaluate the M&R trouble repair performance process. Table VI-1.1 summarizes the scenarios used for the end-to-end process evaluation in Sub-Test 2. The “end-to-end process” is defined as the process that occurs from the time a trouble is first reported to the point service is restored by a technician and the trouble ticket is closed by the CLEC.

Table VI-1.1: M&R Trouble Repair Performance Process Scenarios

Scenario No.	Scenario Title and Description
xDSL8h, 10e, 10f	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC business customer who cannot receive data.
xDSL8j, 8b, 8i, 10g	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC business customer who cannot transmit data.
xDSL9a, 8f, 9e	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC business customer who cannot transmit or receive data.
xDSL9b	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC residential customer who cannot transmit data.
xDSL9c	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC residential customer who cannot receive data.
xDSL9d, 9f, 10h	CLEC reports xDSL capable UNE loop trouble to BLS on behalf of CLEC residential customer who cannot transmit or receive data.

2.3 Test Targets & Measures

The test target was the wholesale UNE xDSL maintenance and repair end-to-end processes, procedures, and performance. Processes, sub-processes, and evaluation measures are summarized in the following table. The last column “Test Cross-Reference” indicates where the particular measures are addressed in section 3.1 “Results & Analysis.”

Table VI-1.2: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
End-to-End M&R Process xDSL	Process Flow Documentation	Completeness	M&R-11-1-1
End-to-end Trouble Report process	Process Evaluation	Completeness, consistency, and timeliness of the process	M&R-11-1-2

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
M&R Test Scenarios	Commitment date and time given when logging trouble	Accuracy Timeliness	M&R-11-1-3
	Trouble ticket closure process followed	Accuracy Timeliness	M&R-11-1-4
	Closure notification given when technician closes ticket	Completeness Timeliness	M&R-11-1-5
	Escalation process followed for xDSL services	Completeness	M&R-11-1-6
	Trouble ticket logging, tracking, and reporting process is followed	Completeness	M&R-11-1-7

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table VI-1.3: Data Sources for M&R Process Evaluation

Document	File Name	Location in Work Papers	Source
ADSL/HDSL Capable Loop CLEC Information Package	DSLPKG.DOC	M&R-11-A-1	BLS
JA-ASYM-001 “ADSL”	No Electronic Copy	M&R-11-A-2	BLS
RL-MOS-001 “LMOS codes”	No Electronic Copy	M&R-11-A-3	BLS
RMQIR001 “Quality Maintenance”	No Electronic Copy	M&R-11-A-4	BLS
UG-EPUE-001 “Escalation Procedures”	No Electronic Copy	M&R-11-A-5	BLS
UNE Center May 2 Meeting Summary	No Electronic Copy	M&R-11-A-6	KCI
xDSL Test Bed	No Electronic Copy	M&R-11-A-7	KCI
ADSL NMS Login Process JA-01	No Electronic Copy	M&R-11-A-8	BLS
WFA Processor Login JA-02	No Electronic Copy	M&R-11-A-9	BLS
BOCRIS Login JA-03	No Electronic Copy	M&R-11-A-10	BLS
Service Order Confirmation JA-04	No Electronic Copy	M&R-11-A-11	BLS

Document	File Name	Location in Work Papers	Source
Opening WFA Ticket with NSP/ISP for ADSL trouble JA-05	No Electronic Copy	M&R-11-A-12	BLS
Closing WFA tickets to NSP/ISP via DSG ticketmaster JA-06	No Electronic Copy	M&R-11-A-13	BLS
VPI/VCI and/or RVPI/RVCI Changes with installer on site JA-07	No Electronic Copy	M&R-11-A-14	BLS
SCCS Login JA-08	No Electronic Copy	M&R-11-A-15	BLS
MOBI Login JA-09	No Electronic Copy	M&R-11-A-16	BLS
DSG WFA Pending Lists JA-10	No Electronic Copy	M&R-11-A-17	BLS
ADSL Service Restoral/Denial JA-11	No Electronic Copy	M&R-11-A-18	BLS
ADSL CPE Maintenance Ticket process JA-12	No Electronic Copy	M&R-11-A-19	BLS
Cancelling ADSL Service Order's JA-13	No Electronic Copy	M&R-11-A-20	BLS
MLT Test JA-14	No Electronic Copy	M&R-11-A-21	BLS
SOEG Login JA-15	No Electronic Copy	M&R-11-A-22	BLS
Exceed Login JA-16	No Electronic Copy	M&R-11-A-23	BLS
Remote Solutions Verification JA-17	No Electronic Copy	M&R-11-A-24	BLS
Cancelling ADSL Service Order's (WFA) JA-18	No Electronic Copy	M&R-11-A-25	BLS
Creating a LT Board in Feature Group 4 AWS's JA-19	No Electronic Copy	M&R-11-A-26	BLS
LCS Login	No Electronic Copy	M&R-11-A-27	BLS
How to distinguish between one or more MiniRams JA-21	No Electronic Copy	M&R-11-A-28	BLS
How to plan the ADNT software for ADSL Ports JA-22	No Electronic Copy	M&R-11-A-29	BLS
ADSL DSLAM to Mini-Ram Conversion JA-23	No Electronic Copy	M&R-11-A-30	BLS
Alerts to be worked by loaners JA-24	No Electronic Copy	M&R-11-A-31	BLS
How to Push a Service order through JA-25	No Electronic Copy	M&R-11-A-32	BLS
How to Deny / Restore ADSL Service JA-27	No Electronic Copy	M&R-11-A-33	BLS
NAS Form JA-29	No Electronic Copy	M&R-11-A-34	BLS
Trouble Shooting Guide	No Electronic Copy	M&R-11-A-35	BLS
DSG Visit summary	No Electronic Copy	M&R-11-A-36	BLS

Document	File Name	Location in Work Papers	Source
UNE Center Visit summary	No Electronic Copy	M&R-11-A-37	BLS
WFA/C OSSLOG Trouble Ticket Reports	No Electronic Copy	M&R-11-A-38	BLS
WFA/C Work and Force Administration/Control Field Definitions JA-283	No Electronic Copy	M&R-11-A-39	BLS

2.4.1 Data Generation/Volumes

Trouble tickets were created on KCI test bed¹ accounts and tracked using the WFA trouble ticketing interfaces. Calls were placed to the UNE Center to initiate the repair process with BellSouth. No volume testing was required for this evaluation.

2.5 Evaluation Methods

Sub-Test 1 activities were developed based on KCI's understanding of BellSouth's wholesale M&R end-to-end processes. In addition, interviews were conducted at the BellSouth Digital Service Group (DSG) and Resale/UNE Work Centers to evaluate the working knowledge of existing processes and procedures specifically relating to the trouble ticket process, tracking system process, back-end analysis performance, use of test systems, and the utilization of repair technicians.

M&R documentation and information was gathered and interviews were conducted at the following BellSouth work centers:

- The BellSouth Unbundled Network Element Center (UNEC) provides a single point of contact and accountability for the provisioning and maintenance of xDSL UNE services for all registered facility-based CLECs. The UNE Center is responsible for responding to all CLEC informational inquiries. The center also controls, tests, coordinates, and analyzes the installation of xDSL UNEs, and provides control, testing, analysis, and fault isolation functions for all CLEC xDSL UNE trouble reports.
- The Work Management Center (WMC) provides a pool of technicians who are assigned trouble tickets that require a Dispatch In (DI) or Dispatch Out (DO). Trouble tickets entered into WFA are sent to the WMC, which enters a date and time stamp for the trouble ticket. Technicians are given assignments based on their geographical area. The workload is further allocated based on distance to job, distance to residence, and time commitment.

¹ See Section VI, "M & R Overview" for a description of the M&R test bed.

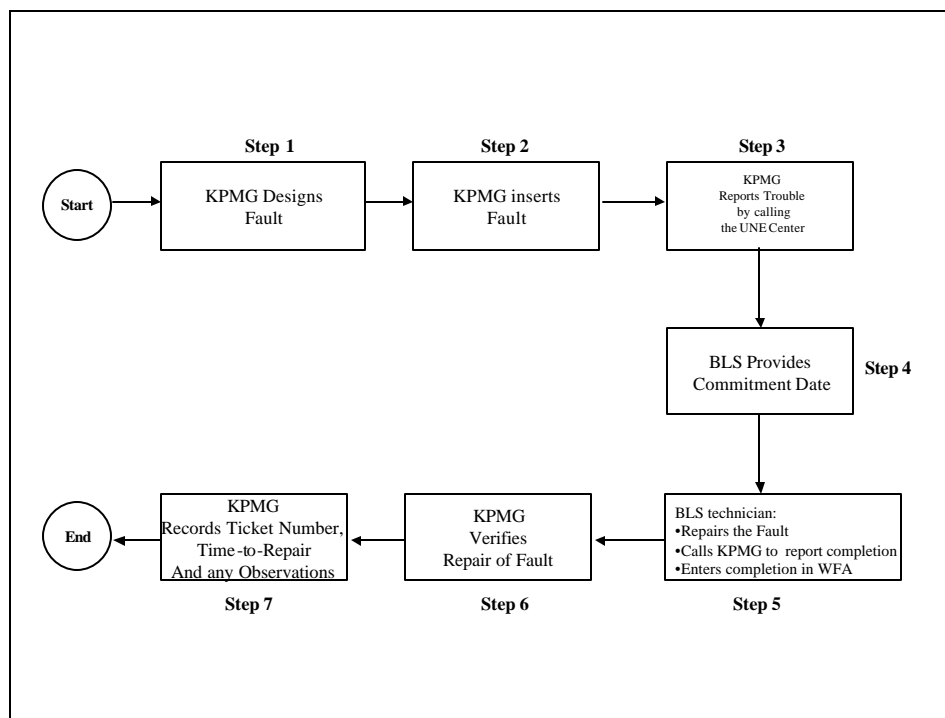
- The Digital Service Group (DSG) provides a pool of technicians who manage the provisioning, configuration, and fault isolation of the Digital Subscriber Line Access Multiplexer (DSLAM) and Asynchronous Transfer Mode (ATM) switches, which carry the xDSL traffic.

Sub-Test 2 evaluated BellSouth's performance in isolating and repairing faults inserted in a working test bed of provisioned telephone lines. The fault insertions were placed in the Powers Ferry, Toco Hills, and Macon BellSouth Central Offices (COs). KCI conducted this test during the week of June 12, 2000 and called the BellSouth UNE Center to report the troubles on the lines.

After BellSouth repaired a trouble, they called the KCI CLEC to report that the service had been restored, and to provide ticket closure confirmation. KCI then physically verified that each trouble had been repaired within each of the central offices (COs). For each trouble ticket that was restored to service by a BellSouth technician, KCI obtained test-specific WFA reports to document each test result.

Figure VI-1.2 depicts the test approach used by KCI for each test performed in Sub-Test 2.

Figure VI-1.2: Sub-Test 2 Approach



The following steps were used in executing Sub-Test 2:

- Step 1: KCI designed faults to be inserted based on the *Supplemental Test Plan* requirements
- Step 2: KCI inserted faults at designated COs.
- Step 3: KCI reported troubles by calling the UNE Center.
- Step 4: BellSouth provided a commitment date and time for repair activities and a log number for tracking purposes.
- Step 5: BellSouth technician repaired the fault and called the KCI CLEC to close call.
- Step 6: KCI verified repair of the fault.
- Step 7: KCI documented the time to repair and observations of end-to-end repair activities.

Sub-Test 2 consisted of 15 xDSL Capable UNE Loop fault insertions for the M&R performance test.

2.6 Analysis Methods

The M&R11 test included a checklist of evaluation criteria developed by KCI during the initial phase of the BellSouth - Georgia OSS Evaluation. These evaluation criteria provided the framework of norms, standards, and guidelines for the M&R-11 test. The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table shown below. Definitions of evaluation criteria, possible results, and exceptions are provided in Section II.

Table VI-1.4: Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
End-to-End M&R Process			
M&R-11-1-1	BLS has documented M&R process flows for handling xDSL troubles tickets.	Satisfied	The BLS ADSL – Basic Maintenance Flows document provides a clear and complete description of trouble ticket flows for wholesale problem management.

Test Cross-Reference	Evaluation Criteria	Result	Comments
M&R-11-1-2	BLS M&R process flows for xDSL trouble management operate as documented.	Satisfied	The process flows described in the BLS ADSL – <i>Basic Maintenance Flows</i> document are accurate. KCI interviewed BLS employees involved in fulfilling trouble management functions and verified that their descriptions of the actual processes mapped to those documented in the BLS ADSL – <i>Basic Maintenance Flows</i> . Interviews were conducted with representatives from the DSG & UNE Centers.
M&R-11-1-3	BLS provides commitment date and time when logging a trouble call.	Satisfied	The BLS <i>Unbundled ADSL/HD SL Capable Loops under Maintenance & Repair Procedures (DSLPKG.DOC 3/92000)</i> provides a 24 hour resolution time for all xDSL Capable Loop troubles reported to the UNE Center. The BLS UNE Center provided a 24 hour commitment time for each of KCI's 15 trouble calls.
M&R-11-1-4	Technicians close the trouble ticket using correct codes.	Satisfied	The BLS <i>WFA/C Work and Force Administration Control Field Definitions JA-283</i> provides a clear and complete description of closing codes. The 15 xDSL WFA/C OSSLOG reports denote proper use of BLS closure codes for each trouble ticket.
M&R-11-1-5	Closed trouble tickets are called in by technicians.	Satisfied	BLS notified KCI for each of the 15 trouble tickets logged and closed.
M&R-11-1-6	BLS has a documented escalation process for xDSL service.	Satisfied	BLS has a documented process for escalations and followed the process consistently when requested. The escalation process was tested and verified by reporting three xDSL troubles exceeding the 24 hour commitment time.
M&R-11-1-7	BLS follows documented processes for logging, tracking, and reporting of trouble tickets.	Satisfied	BLS followed their documented processes for logging, tracking, and reporting KCI generated trouble tickets within the xDSL testing. The repeat trouble ticket process was tested and verified on one trouble

Test Cross-Reference	Evaluation Criteria	Result	Comments
			ticket. The one repeat trouble was logged and tracked until closure.