



**Verizon Technology Organization
Systems Integration and Testing**

<Department Name>

Lab Entry Criteria

For:

Technology Area: < >

Vendor Name: < >

Vendor Product: < >

Vendor Release: < >

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Prepared by:

Reviewed by:

.....
Name, Title, Telephone Number Name, Title, Telephone Number

Approval:

.....
Name, Title, Telephone Number

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1 Introduction

This document contains requirements for Vendor equipment entry into Verizon's Systems Integration and Testing labs. Acceptance is defined at various levels as described in the document.

1.1 DOCUMENT ORGANIZATION

This document is organized into 4 sections:

- Section 1 is the introduction, explaining terms and usage of this document.
- Section 2 contains requirements for delivery and acceptance of production – Generally Available (GA) -- releases into the Verizon's Systems Integration and Testing labs.
- Appendix A is a Lab Entry Checklist to be completed by Verizon's test team to determine the Vendor's compliance with Verizon's Lab Entry requirements.
- Appendix B is an example of the Requirements Traceability Matrix to be completed by the Vendor to demonstrate compliance with Verizon requirements.

1.2 REQUIREMENTS TERMINOLOGY

This document presents lab entry requirements in a standardized format. Each requirement is clearly identifiable and is assigned a *priority* and *number* that is followed by the actual requirement text. These requirements must be met in order in order for a product to be accepted for testing.

- Priority Codes:
 - “M” - Indicates the requirement is mandatory and essential for product acceptance into the Verizon labs.
 - “D” - Indicates the requirement is desired, and would enhance testing and evaluation of the product, but not mandatory.
- Requirement Number:
 - These are unique integers (e.g., 1, 2, 3 . . .) that are assigned sequentially throughout the document as requirement identification numbers.

1.3 GENERAL NOTES

- This document provides a generic list of requirements for all laboratory deliveries. This document will be amended and submitted to the Vendor as appropriate, prior to lab delivery for each new release of a Vendor product. For all Major and Minor Releases of a Vendor product, as defined hereunder in Section 2.2, completion of the Lab Entry Checklist (found in **Appendix A: Lab Entry Checklist**), is required. Maintenance and Patch Releases may, at the discretion of the testing team, be exempt from the Lab Entry Checklist requirement.
- The Vendor shall complete the Requirements Traceability Matrix, found in *Appendix B: Requirements Traceability Matrix*.
- During Verizon's testing of a Vendor product, SIT will assign a severity level for all troubles found. Verizon's expectations are that prior to the end of the testing cycle, the Vendor should address each Critical and Major trouble uncovered. Failure to address the Critical troubles may result in the suspension of testing.
 - ❖ **Critical** – a trouble whose impact either (1) results in the platform consistently violating a mandatory system requirement and the violation is detectable by an end user, or (2) severely affects Verizon's ability to operate, maintain, and administer the network element or other network elements interoperating with the element under test. "Severely" is defined as a condition without an acceptable workaround.
 - ❖ **Major** – a trouble whose impact (1) results in the platform violating a mandatory system requirement, but that violation is not detectable by an end user, or (2) results in the platform violating a mandatory system requirement under specific circumstances that can be controlled, or (3) significantly affects Verizon's ability to operate, maintain, and administer the network.
 - ❖ **Minor** – a trouble whose impact results in some undesirable behavior but does not affect the end user or Verizon's ability to administer the system under test, and does not violate a mandatory system requirement.
- Lab Entry Criteria are defined for production (i.e., GA or Generally Available) products. For pre-production or prototype equipment, some criteria may not be applicable, and should be marked as "N/A" (Not Applicable) with an explanation. Updated versions of this document may be released from time to time. Unless otherwise specified, the most recent version of the document shall be used.
- Additional requirements may be added to this document to cover future additions or upgrades where this is considered to be appropriate.
- Vendors shall not supply or submit any "Proprietary" or "Confidential" information, whether in the form of documentation, e-mail, or other forms of media, to Verizon labs.

2 Lab Entry

2.1 SYSTEM UNDER TEST (SUT)

2.1.1 Testing Agreement

M-1 — Vendors shall sign a testing agreement prior to Lab Entry into the Verizon labs. The testing agreement applies to testing, consulting, and facilities services provided by Verizon labs including NEBS compliance, RFP Support, and new or amended Sourcing contracts.

2.1.2 Hardware

M-2 – Equipment shall be fully installed in the Verizon lab per specific Telephone Equipment Order (TEO); or in accordance with the customer requirements, and the specific Test Plan provided by the SIT test team.

M-3 — All equipment, e.g., plug-in units, shall be final production units (FOA-First Office Application).

NOTE: This requirement is optional if the equipment under test is pre-production equipment; however, acceptance into the lab is dependent upon the ability to do productive testing. For any “green wire” on circuit boards:

- Hardware implementation must conform to GR-78-CORE.
- A manufacturing plan must exist to implement such changes in on-board design for production versions.
- If “green wired” boards are accepted for preliminary testing, then production grade boards produced subsequently shall be resubmitted for regression testing.
- Verizon must approve “green wire” modifications.

M-4 — All Vendors shall meet a subset of Verizon Safety and Emissions requirements for lab entry, which include:

- ❖ GR-63-CORE:
 - Section 4.2, Fire Resistance
- ❖ GR-1089-CORE:
 - Section 3.2, Emissions
 - Section 7, Electrical Safety Criteria
 - Section 9, Bonding and Grounding
- ❖ SIT.NEBS.TM.NPI.2005.030:
 - Labeling Requirements for Light Emitting Products
(See www.verizonnebs.com for latest version.)
- ❖ GR-326-CORE:
 - All optical connectors that interface directly with the Verizon network must be compliant to the applicable requirements of GR326 before lab entry

- The Vendor shall provide a completed Telecommunications Carrier Group NEBS checklist as defined in the document VZ.NEBS.TE.NPI.2004.015 or latest version.
(See www.verizonnebs.com for latest version.)
 - If safety and emission tests required for Lab Entry are met, but the balance of the NEBS tests are not completed, the Vendor shall provide a schedule from an independent testing lab outlining the timeline for completion of remaining NEBS tests.
 - Any hardware changes/modifications resulting from Verizon lab testing could result in additional testing at an independent lab for NEBS compliance.
- M-5 — The power consumed by the system under test shall be less than or equal to the Vendor's specification for the chosen test configuration and usage conditions (circuits/cards provisioned, services activate, lines ringing, fans, data ports active, optical ports active, etc.).
- M-6 — The steady-state AC current draw of any associated PC, monitor, modem, etc., shall be less than or equal to the Vendor's specification for the chosen test configuration and usage conditions.
- M-7 — Failure of either the A or B power feed shall not interrupt the bay's or shelf's ability to process system traffic (voice, data, or video as applicable).
- M-8 — The traffic shall continue to be processed at the expected quality level when the input voltage to the bay or shelf is changed anywhere within the voltage range of -40.0 to -57.5 VDC.
- M-9 — The bay or shelf and all seated circuit pack equipment shall not be damaged when the input voltage is lowered below -40.0 VDC.
- M-10 — Polarity reversal should not be damaging to the system under test.

2.1.3 Software

- M-11 — All delivered software (or software required for hardware delivered, including any 3rd party software) shall be loaded on appropriate systems.
- M-12 — A copy of the software on "bootable" media shall be given to Verizon lab personnel.
- M-13 — All software shall be accompanied by appropriate documentation that pertains to the system under test, and delivered in soft copy and/or CD-Format, (e.g., Software Release Notes, Installation Guide, System Administration Guide, User's Manual, Vendor Test Plans/Test Cases/Test Results).
- D-1 — The Vendor shall supply data regarding software development according to Bellcore GR-1315-CORE, "In-Process Quality Metrics (IPQM)".

2.1.4 General Requirements

- M-14 — Communication appropriate to the function of the delivered System shall be established (e.g., to an HDT or Switch, assuming such Systems exist at the time), and the delivered System (hardware and/or software) shall operate in a stable manner.
- No standing alarms are present.

- The System remains in a functional state for at least 48 hours.

M-15 — Known Troubles shall be documented and disclosed to Verizon. Known troubles should not inhibit effective testing.

M-16 — New Releases shall not diminish previously delivered and tested functionality unless agreed to by Verizon.

2.2 CONFIGURATION MANAGEMENT

M-17 — The System, including components, circuit packs, and software, shall be under configuration management, such that each configurable item has an assigned version number (or CLEI codes for hardware) that can be used for tracking purposes.

M-18 — The Vendor shall provide configuration information specific to the system under test, including NE/EMS configuration (with appropriate release levels, 3rd Party Software, Patch Releases), server platform, database release, open systems and interface feature sets.

M-19 — The Vendor shall keep up-to-date and readily available records of system releases including all fixes/changes, and document such in the Vendor's Software Release Notes.

Release numbering shall be in the form of **Major [Digit(s) 1], Minor [Digit(s) 2], Maintenance [Digit(s) 3], and Patch [Digit(s) 4]**.

Example: Release 1.2.3.4

- **Digit(s) 1** designates a **Major** Release and increases by an integer when new functionality is added. New functionality is defined as a system feature or capability that did not exist in the previous release.
- **Digit(s) 2** designates a **Minor** Release and increases by an integer when enhancements to existing functionality are added.
- **Digit(s) 3** designates a **Maintenance** Release and increases by an integer when two (2) or more patches or fixes are added to the previous release. Such patch or fix may include hardware, software, or both. A Maintenance Release shall not contain any new functionality.
- **Digit(s) 4** designates a **Patch** Release and increases by an integer when an immediate emergency change is required to address a single maintenance issue.

M-20 — When the system under test uses the SNMP stack, the Vendor shall fully test it against the Codenomicon suite, and Oulu University's PROTOS test suite (for further details see CERT advisory CA-2002-03 and CERT Summary CS-2002-01, February 28, 2002) and assure its compliance.

2.3 RELEASE NOTES

M-21 — The Vendor shall provide Release Notes, covering both hardware and software, prior to or at the time of equipment delivery to the lab. At a minimum, the Release Notes shall contain the following:

- The version number for each item delivered and controlled under configuration management.

- A listing of all 3rd Party Software, including any patches necessary to run the application under test.
- A listing and description of the features and functions added with this release.
- A listing and description of the known nonconformance's and troubles, including previously known troubles that remain open.
- A listing and description of the nonconformances that have been corrected in this release.
- A listing and description of all precautions and/or warnings related to this release.

M-22 — Prior to lab delivery, a Requirements Traceability Matrix (see *Appendix B: Requirements Traceability Matrix*) shall be completed by the Vendor demonstrating that each Verizon requirement has been met in the delivered product. The test results shall provide reference to the appropriate notes in the Vendor's release documentation accompanying the delivery to Verizon for those specific systems under test when indicated by SIT.

2.4 DOCUMENTATION

M-23 — All documents supplied to the Verizon labs (Release Notes, Test Plans, Test Results, etc.) shall be under version control.

M-24 — The Vendor shall provide current hard copy and soft copy (CD-ROM or file download) versions of appropriate element or system documentation including a general description, build/installation procedures, operating procedures, system administration/maintenance procedures, and trouble shooting procedures. It is expected that the system or service will be fully functional following the instructions provided. OPTIONAL for pre-production releases.

M-25 — The Vendor shall provide a Test Summary package that shall contain the following:

- A description of the test cases and results that Vendor has performed on the Release that the Vendor uses as a basis to qualify the release for General Availability (GA) status. These test cases should include standard interface conformance, functionality relevant to the release (enhancements and corrections), product documentation tests, and craft management tests.
- A description of the test environment used during execution of the test plan including configuration information – including release levels and patch releases – specific to the system under test.
- A description of any functionality that has not been tested prior to GA delivery (e.g., software that is included but not operational or active).
- A listing of all 3rd Party Software including any patches that are necessary to run the application under test.

2.5 TRAINING

- M-26 — The Vendor shall provide the Verizon test team (up to 12 people) a comprehensive mid-level overview of the functionality and interoperability of the software and hardware associated with the lab delivery.
- M-27 — The Vendor shall provide on-site Technical Support for installation and testing of the system under test.

2.6 VENDOR CONTACT AND ESCALATION PROCEDURES

- M-28 — The Vendor shall establish a defined trouble escalation procedure and appropriate technical point of contact for support to the Verizon labs for the duration of the testing cycle.

2.7 TEST PLANS AND SIMULATORS

- M-29 — The Vendor shall schedule reviews of its detailed test cases and test results. The Vendor's test results will be a key input to Verizon's acceptance of a new Release. These reviews shall occur at least 2 weeks before the expected system delivery to the Verizon lab.

NOTE: Verizon will, under written agreement, share its test plans with the Vendor in the spirit of mutually improving test efficiencies.

- M-30 — 100% of the test cases defined in the Vendor's Test Plan(s) shall be executed – OPTIONAL for pre-production releases.
- M-31 — 95% of the test cases shall pass – (**OPTIONAL** for pre-production releases.)
- M-32 — The Vendor shall provide to Verizon a copy of any simulators and any automated test scripts they have developed for use in testing their system. This will assist Verizon in evaluating system functionality if other components are not available. These simulators shall be delivered at least 2 weeks before the expected system delivery to the Verizon Labs. It is the responsibility of the Vendor to validate all simulators.
- M-33 — The Vendor shall complete a root cause analysis of all previously identified critical and major troubles. Fixes and patches that are based on root cause analysis of previously identified troubles shall be provided and agreed to by Verizon.

2.8 SPECIFIC RELEASE CRITERIA

In the weeks preceding any delivery to Verizon's Systems Integration and Testing labs, SIT will update its Lab Entry Criteria with a release-specific version. This version shall include both a description of the lab environment that SIT will use for testing, and any release-specific tests appropriate to the lab entry process.

Upon successful completion of these tests and satisfaction of the Lab Entry Criteria, Verizon will accept the release for testing. Otherwise, Verizon will reject the release, at

which time testing will stop. Alternatively, Verizon may conditionally accept the release, provided that any troubles are corrected prior to lab exit.

D-2 — The Vendor is encouraged to duplicate the SIT test environment/topology during its final integration or verification test cycle to minimize differences in test results due to differences in the test environment. With publication of the Lab Entry Criteria, SIT will identify its lab environment/topology including all Verizon test equipment to be used during the anticipated test cycle.

M-34 — *< Acceptance criteria specific to each release will be included here. These may include tests that are representative of the system's promised functionality, as well as tests to assure a level of stability essential to productive testing. These tests may include:*

- *New Feature 1*
- *New Feature 2*
- *Power Cycle*
- *Bulk Call Stability Run*
- *Other Tests >*

Appendix A: Lab Entry Checklist

Vendor: _____
 SUT: _____
 Release: _____

Completed by: _____
 Date: _____

Lab Entry Requirement #	Vendor Compliance		Comments
	Yes	No	
M-1 Testing Agreement			
M-2 Equipment Installation			
M-3 Production Equipment			
M-4 Safety and Emissions/FOC			
M-5 Power			
M-6 AC Current			
M-7 Power Redundancy			
M-8 Reduced Voltage Processing			
M-9 Low Voltage Processing			
M-10 Polarity Reversal			
M-11 Bootable Software Installation			
M-12 Software Copy			
M-13 Software Documentation			
M-14 System Stability			
M-15 Known Troubles			
M-16 New Releases			
M-17 Configuration Management			
M-18 Specific Product Config.			
M-19 Vendor Records			
M-20 PROTUS Test Suite			
M-21 Release Notes			
M-22 Requirements Traceability			
M-23 Document Version Control			
M-24 System Documentation			
M-25 Test Summary Package			
M-26 Training			
M-27 Technical Support			
M-28 Escalation Procedure			
M-29 Test Results Review			
M-30 Test Case Execution			
M-31 Test Cases Passed			
M-32 Simulators/Automated Scripts			
M-33 Root Cause Analysis			
M-34 Vendor Specific Rqmts.			
D-1 In-Process Quality Metrics			
D-2 Duplication of SIT Envrmt.			

Appendix B: Requirements Traceability Matrix

Verizon Rqmt. Number	Verizon Rqmt. Description	Vendor Software Rel & Version Number	Vendor Component Names	Vendor Component Rqmt. Description & Reference	Vendor Test Case Number	Tester Name & Date	Test Results (Pass/Fail)

{End-of-document}