



CENTER FOR APPLIED
COMMUNICATIONS AND NETWORKS

NG9-1-1 Conformance & Interoperability Testing Program Status Update

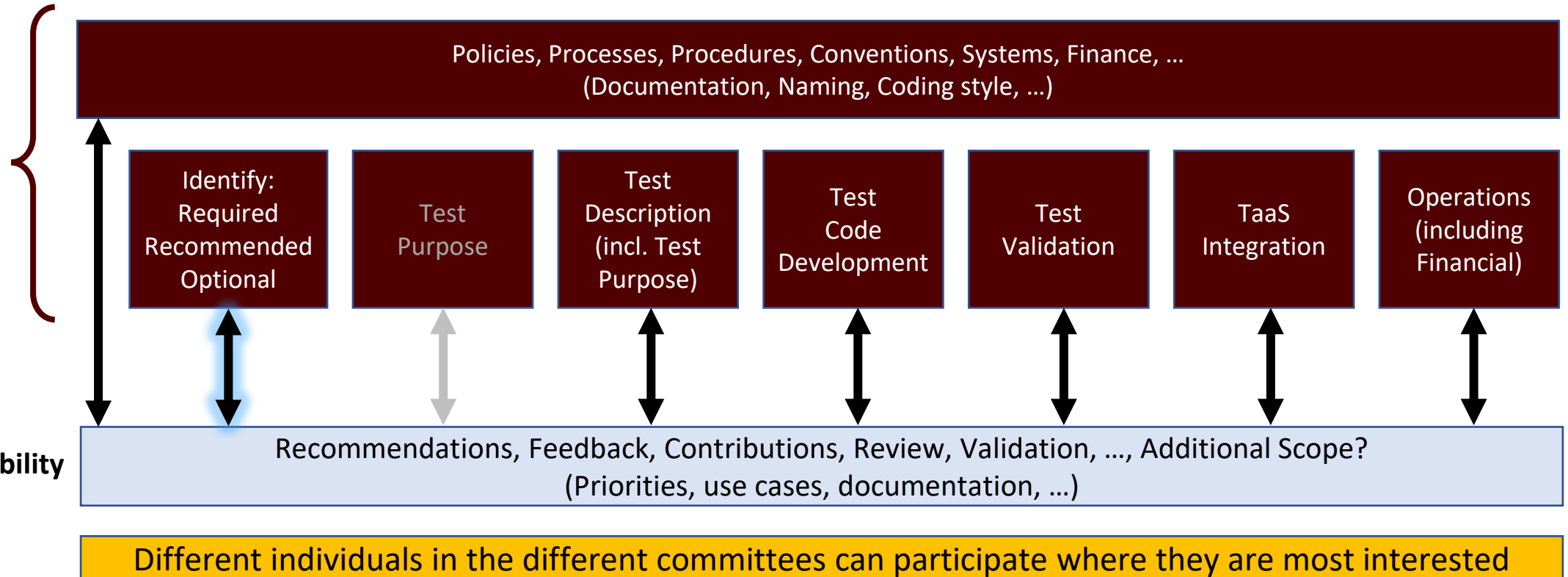
Aug 20, 2025


Michael E Fox – michael.fox@tamu.edu

Initial Scope of ITF Involvement



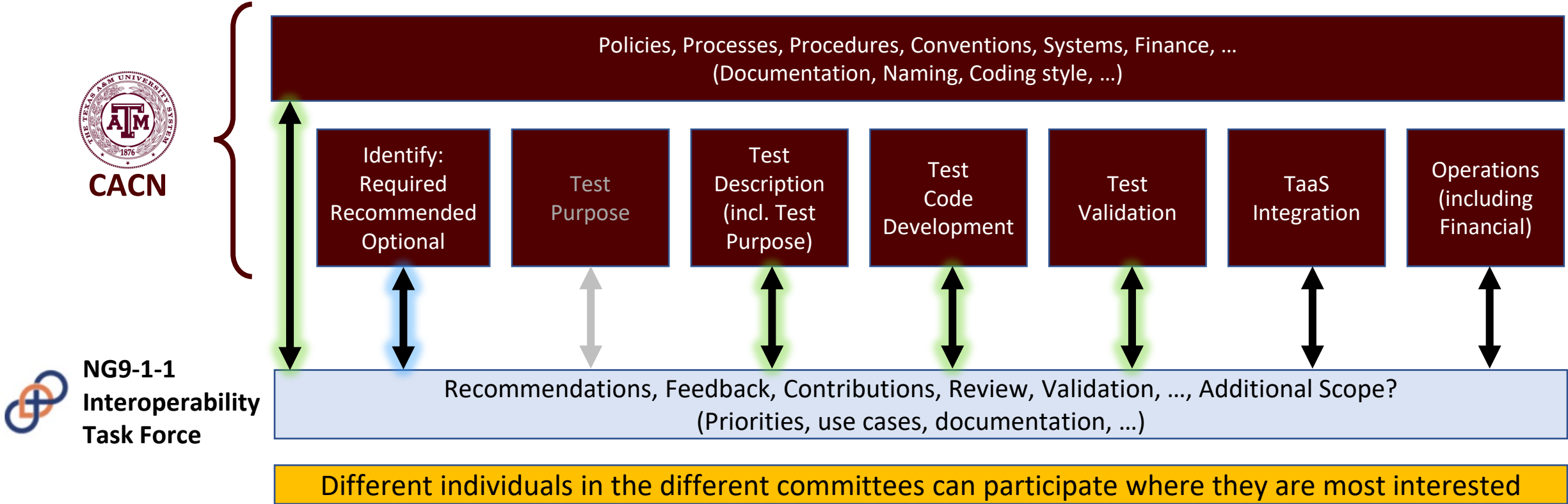
 **NG9-1-1
Interoperability
Task Force**



Legend:  Meetings; discussions; reviewing documentation and code; testing; logging issues; submitting code; ...

Current ITF Involvement Needs

- Policy, Process, Procedure Requirements (continued)
- Test Descriptions
- Test Code
- Test Validation



Public GitHub

<https://github.com/tamu-edu/ng911-dev/wiki>

- Program Info
 - Conformance
 - Interoperability
 - End-to-End
- Conformance Testing System
 - Requirements
 - Test Descriptions
 - Test Software
- ISO Lab Info
 - Process
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[https://github.com/tamu-edu/ng911-de](https://github.com/tamu-edu/ng911-dev)

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Policy, Process, Procedure, ...

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Policy, Process, Procedure, ... Validation

- Documentation
 - Quality Manual (guide to everything else)
 - 7 Normative References
 - 4 Policies
 - 19 SOPs
 - 25 Forms
 - 11 Records
 - 3 Lists
 - 19 Miscellaneous
- Training
 - General ISO
 - Lab Manager
 - Center Management

ISO 17025 Lab Documentation

wetrone edited this page 3 weeks ago · [10 revisions](#)

The following documentation is used by the Texas A&M Center for Applied Communications and Networks for ISO/IEC 17025 accredited lab operations.

To Get Started: Please refer to the [Quality Manual](#) which provides direction and guidelines for the relevant resources.

Forms

- [F-001 Complaint Processing Form.docx](#)
- [F-002 Information Disclosure Justification.docx](#)
- [F-003 Confidentiality Acknowledgement.docx](#)
- [F-004 Impartiality Acknowledgement.docx](#)
- [F-005 Conflict of Interest Disclosure.docx](#)
- [F-006 Annual Impartiality Risk Assessment.docx](#)
- [F-007 Project Impartiality Risk Assessment.docx](#)
- [F-008 Impartiality Incident Assessment.docx](#)
- [F-009 Laboratory Concern Reporting Form.docx](#)
- [F-010 New Document Template.docx](#)
- [F-011 New Document Initiation Request.docx](#)
- [F-012 Document Change Request.docx](#)
- [F-013 Peer Review of New or Revised Document.docx](#)
- [F-014 Request for External Document.docx](#)
- [F-015 Annual Document Review.docx](#)
- [F-016 New SOP Template.docx](#)

ISO 17025 Lab Training

wetrone edited this page 3 weeks ago · [2 revisions](#)

All personnel involved in the ISO Lab operations need to be trained on how to perform their duties according to the policies and procedures defined for the lab. The following training courses provide the foundation for that training.

- [General ISO Training.pptx](#)
- [Role-based Training Lab Manager.pptx](#)
- [Role-based Training Mgmt.pptx](#)

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Requirements

- Info about NENA i3 and normative language
- Copies of existing ITF spreadsheets
- New Req/SCS/ICS spreadsheet

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Requirements Validation (Continued)

- ITF Spreadsheets
 - Same as we've been working on
- SCS/ICS
 - Individual ITF spreadsheets become a workbook tab
 - Nothing deleted; columns rearrange for consistency, ICS
 - System Conformance Statement tab (1/system)
 - New form; identifies system, company, etc.
 - Implementation Conformance Statement tabs (1/FE type)
 - Requirements that apply to multiple FEs are copied to appropriate tab
 - Updated: testability (yes/no), basic/adv, notes
 - Includes Static (untestable) and Dynamic (testable)
 - Single source of truth
 - Track requirements going forward (after a little more work)
 - Lab client will submit prior to testing
 - Can also be used independently

NG9-1-1 Functional Element (FE) Conformance Requirements

This project will initially focus on conformance testing of the following nine Functional Elements (FEs).

Validated with the NG9-1-1 Interoperability Task Force

The following lists of Requirements, Recommendations, and Options for each of the FEs was developed in conjunction with the [NG9-1-1 Interoperability Task Force](#). The files for each FE are listed below:

- LIS - Location Information Server
 - [LIS_Requirements_v20250813.xlsx](#)
- BCF - Border Control Function
 - [BCF_Requirements_v20250813.xlsx](#)
- ESRP - Emergency Services Routing Proxy
 - [ESRP_Requirements_v20250813.xlsx](#)
- ECRF - Emergency Communications Routing Function
 - [ECRF-LVF_Requirements_v20250813.xlsx](#)
- LVF - Location Verification Function
 - [ECRF-LVF_Requirements_v20250813.xlsx](#)
- PS - Policy Store
 - [PS_Requirements_v20250813.xlsx](#)
- BRG - Conference Bridge
 - [BRG_Requirements_v20250813.xlsx](#)
- LOG - Logger
 - [LOG_Requirements_v20250813.xlsx](#)
- CHE - Call Handling Equipment
 - [CHE_Requirements_v20250813.xlsx](#)

The initial focus of testing will be on Normative Requirements for these functional elements. Additional FEs, as well as Recommended and Optional behaviors, will be considered if time and budget permit.

SCS/ICS (Work In Progress)

The following version of the requirements is currently a work in progress and has not yet been validated by the NG9-1-1 ITF. This document converts the requirements spreadsheets into a combined System Conformance Statement (SCS) and Implementation Conformance Statements (ICS). It includes the following enhancements:

- Consolidates the mandatory requirements from the above separate spreadsheets into a single workbook, with separate tabs/spreadsheets for each functional element
 - Recommendations, options, and requests for clarification are not yet included
- Reformats all spreadsheets to have the same columns, in the same order
- Reorganizes the columns so that the same spreadsheet can serve as the requirements list *and* the SCS/ICS form, simply by hiding some columns
- Identifies the discrete FE types where FE categories were previously listed
 - For example, "all SIP FEs" is converted to a discrete list
- Copies or moves the requirements to their correct tab/spreadsheet
- Clarifies and corrects some categorizations of Testable/Dynamic vs Non-testable/Static
- Clarifies and corrects some categorizations of Basic vs Advanced
- Identifies how testing could be accomplished for some requirements (more to follow)
- Tallies some statistics about numbers of requirements for each FE and overall

This document is actively being updated. New versions will be posted as major changes are completed.

SCS/ICS

- [SCS_ICS_v250814-1628.xlsx](#)

Example ICS Form

- ICS uses same spreadsheets but with only the following columns showing:
 - Requirement ID, Requirement Text, Source (NENA-STA-010...), Section, Conform? (Y, N, N/A)

NG9-1-1 Implementation Conformance Statement (ICS) for: Border Control Function (BCF)				
Req id	Text	Source	Section	Conform?
Static				
Mandatory				
Answer "Y" or "N" for each requirement.				
RQ_BCF_002	NG9-1-1 elements that process 9-1-1 calls MUST accept calls that do not strictly follow the SIP standards. As long as the messages can be parsed, and the method discerned, at least the first SIP element (the BCF) MUST be able to accept the call and forward the call onward (see Section 4.1) Support for the following SIP Methods is summarized and specified in the following table: (See underlying table)	NENA-STA-010.3d-2021	3.1.1	
RQ_BCF_011	The BCF MUST support the following security related techniques: Prevention, Detection, Reaction.	NENA-STA-010.3d-2021	4.1.1	

Test Descriptions

- Overview
 - WHAT and HOW the FE will be tested
 - Requirement(s) tested
 - Test Case
- Configuration
 - Test System, FE Under Test
- Pre-Test Conditions
- Test Sequence
 - Preamble, body, postamble
- Post-Test Conditions
- Packet Sequence Diagrams
- Comments / Footnotes

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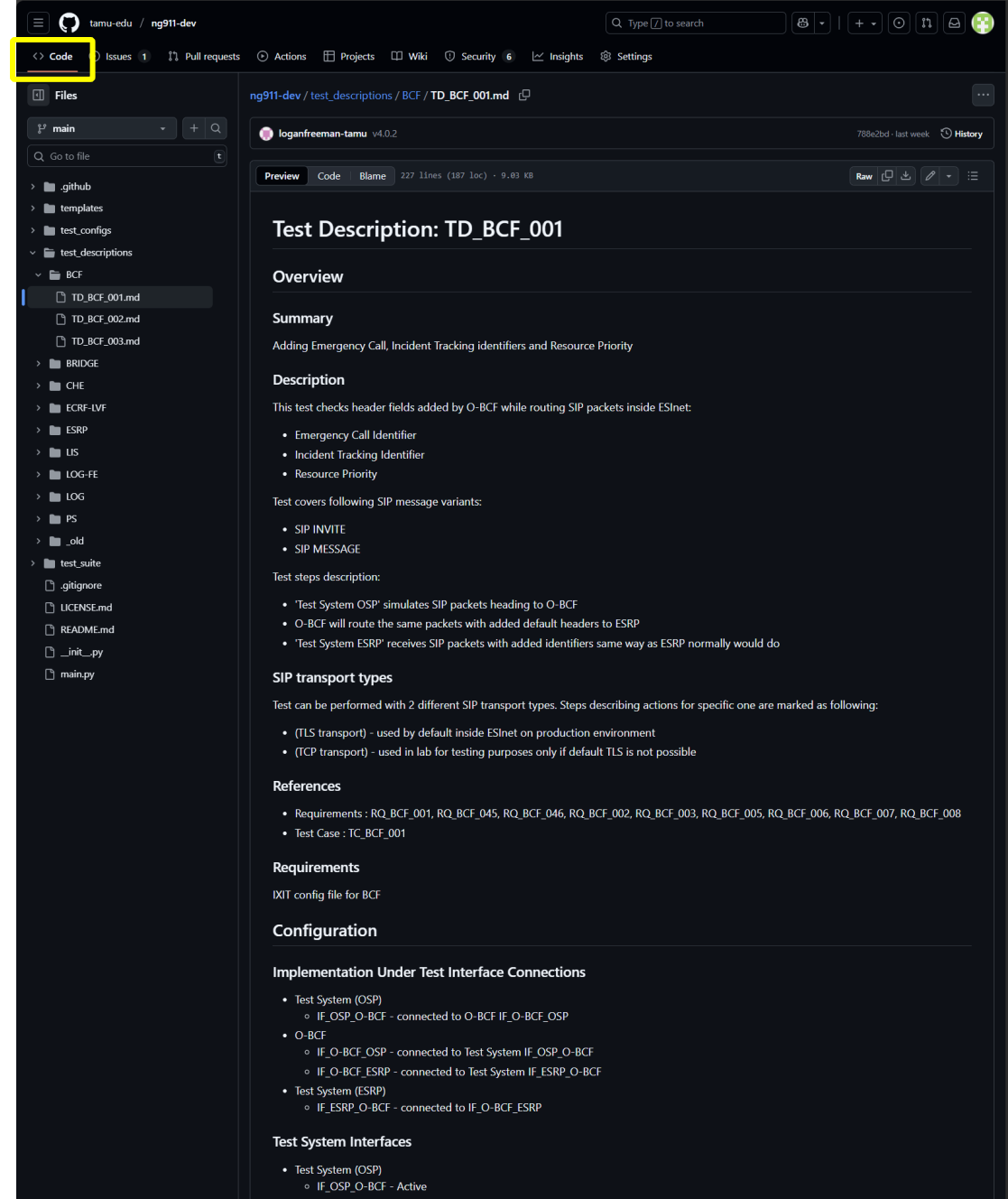
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Test Description Validation

- What is being tested
- Network configuration
- How it is being tested
 - Checks
 - Variations/scenario files (XML)
- How a verdict is declared



Test System Software

- Operating Envi

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Test System Software Validation

- Clone the repo and run it
- What needs better documentation?
 - Installation
 - Configuration
 - Operations
 - Output
- What needs fixing/improving?

Conformance Testing Software

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Location

The test suite can be found in the "Code" section of the repository.

Operating Environment

Hardware/Virtual Machine

- 2 CPU/vCPU
- Minimum 2GB recommended
- Minimum 50GB storage (dependent on expected log level, report volume, and retention policy)

Operating System

- Ubuntu 24.04 LTS is recommended.
- Other versions of Linux should also work, but have not been tested.

Installation

- [Prerequisites](#)
- [Test Suite](#)

Configuration

- [Test Configuration](#)
- [Lab Configuration](#)
- [Launch Configuration](#)
- [Run Configuration \(Optional\)](#)

Man Pages

- [validate](#)
 - The validate command is used before running the test suite to validate the various info and config files used as input by the test suite.
- [main](#)
 - The main command is used to execute the test suite.
- [gen-report](#)
 - The gen-report command can be used after a test campaign to generate an additional report, such as in a different format, or with more or less detail.

Output

The launch_config file specifies the directory path where all output from the test campaign will be stored. This output includes everything needed to audit the test campaign at a later date:

- all info files used: lab_info.yaml, test_info.yaml
- all config files used: launch_config.yaml, lab_config.yaml, test_config.yaml, run_config.yaml
- all logs
- all packet capture files
- all console output
- all report files in the configured format(s):
 - PDF and DOCX: summary or detailed reports for humans
 - XML/UnitXML: for CI/CD integration
 - JSON & CSV: for data analysis

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<https://github.com/tamu-edu/ng911-dev/wiki>

CACN Web Site: <https://cacn.tamus.edu>