

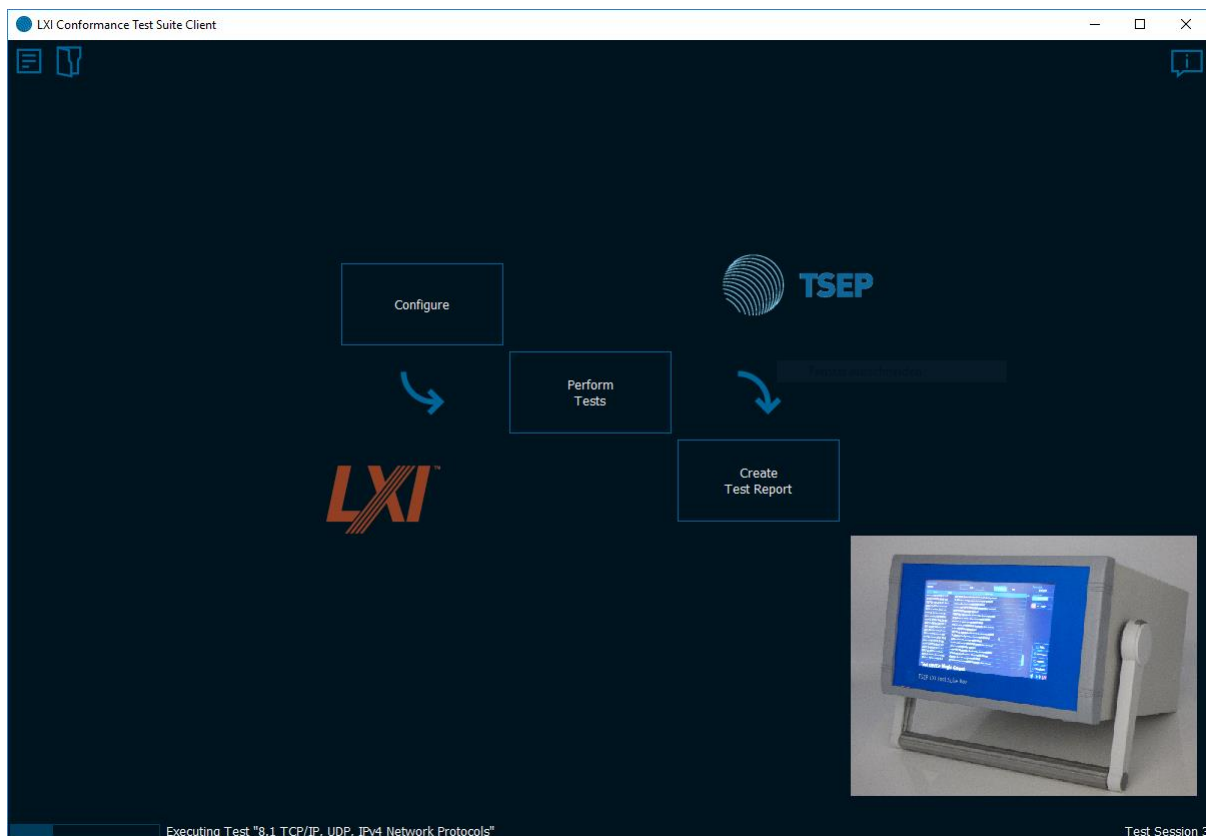


**TSEP**

Technical  
Software  
Engineering  
Plazotta

# Product Description

## TSEP Kerberos



*TSEP Kerberos is a hardware and software solution for verification of the LXI functionality of measurement and test devices. TSEP Kerberos combines all the necessary components and hardware elements to perform a LXI Conformance Test. TSEP Kerberos can also be used to validate existing compliant products (regression tests) in addition to the conformance test.*

## Overview:



TSEP Kerberos is a hardware and software solution for the verification of the LXI functionality of measurement and testing devices. TSEP has been working on the LXI standard for over 10 years and is also an active member of the LXI consortium. In addition, TSEP was also certified as an LXI test house in 2014 and performs LXI certification

tests for various LXI member companies.

The current certification test for LXI instruments is based on the LXI Conformance Test Suite of the LXI consortium. This test suite is a pure software solution, i.e. all necessary hardware for the test environment must be provided by the LXI test house or the LXI member, which can be quite problematic. In the short life of consumer hardware, the question of choosing the "right router" is a burning and recurring theme.

In addition, the existing LXI Test Suite was designed for manual testing. However, regression testing and developer support are important features that are not currently covered by the LXI Consortium's existing LXI Test Suite.

Because of these facts, TSEP decided to launch a new product that supports all these additional requirements. It was clear from the beginning that the solution to be developed also needed to be equipped with hardware. Only thus the question could be solved for the correct router, namely the built-in router! In addition, the new solution should enable LXI members to process regression testing LXI features in their development labs. Improved error analysis and a step-by-step process of testing and its sub steps are also important to help developers debug existing problems with LXI implementations or enhance support for integrating LXI functionality into new developments.

TSEP worked closely with the LXI consortium to develop TSEP Kerberos. The goal with the TSEP Kerberos solution was to achieve a 100% coverage of the existing solution of the LXI consortium. To do this, several devices from LXI members were tested with both versions of the test software, and both versions were tested for a 100% match. Disagreements and issues were then agreed with the Consortium's Technical Working Group and then flowed into TSEP Kerberos. The current TSEP Kerberos version 1.12 now provides identical results as the current LXI Conformance test suite of the LXI consortium. TSEP will continue to review the current releases of TSEP Kerberos for compatibility with the Test Suite of the LXI consortium and will be careful to provide the same results for both versions.

As current developments for TSEP Kerberos the topics "LXI Security" and the self-certification of devices by LXI members are in the foreground. TSEP is actively involved in both topics and works in the various LXI working groups. Thus, TSEP ensures that the future enhancements to the LXI standard are supported by the TSEP Kerberos Test Suite.

Customers who have a TSEP Kerberos support contract can download these enhancements directly from the TSEP SFTP server for free and use them on their devices!

## **Hardware**



The TSEP Kerberos hardware includes a stand-alone core and various hardware components to perform each test. In addition, TSEP Kerberos hardware has been integrated with hardware auto-disconnect hardware (network plug-on/off), IEEE 1588 testing and transmission speed detection hardware.

The measuring device (DUT) to be examined runs in its own separate network and is thus completely sealed off from interfering influences from the outside. All necessary network settings are made via an integrated router (Open-WRT). This ensures that all necessary network protocols and settings for IPv4 and IPv6 can be performed.

Within the TSEP Kerberos hardware runs a Linux operating system with the actual Test Suite software. All test-specific data is stored directly on the hardware. Signing the test-relevant data ensures, that only data records generated by the test suite can be recognized and processed as such. Since all data is generated directly on the TSEP Kerberos hardware, it is not possible to manipulate the test results.

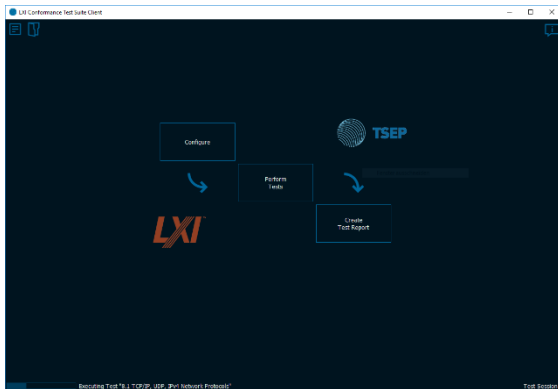
The communication with the TSEP Kerberos hardware takes place via TCP / IP, for this the hardware has its own network interface, which is used for this communication. The network interface for the DUT and the network interface for communication with the hardware are physically separate.

The touch screen is actually only used to visualize the running tests. The user has several options for intervening in the ongoing test process. The different tests can be stopped, the box can be shut down or restarted. A direct manipulation of the test procedures or a change of the test cycles is not possible directly on the hardware.

The update of the TSEP Kerberos software is carried out via an update software from an external USB stick. Existing test data and settings are not deleted here.

To back up the existing test data and settings, the TSEP Kerberos has the ability to replicate data to an external device. The data can then be transferred to the TSEP Kerberos at any time.

## ***TSEP Kerberos Software***



The TSEP Kerberos software is designed as client / server software. On the TSEP Kerberos hardware runs the server, which is responsible for the execution of the tests and the reporting (i.e. the generation of the test report).

The TSEP Kerberos Client is used to define the DUT, define the test parameters, select the tests, and finally control the process. The client software is available for both Windows (Windows 7 and 10) and Linux (Ubuntu).

There are three variants of the TSEP Kerberos:

- TSEP Kerberos Base**
- TSEP Kerberos regression test**
- TSEP Kerberos Ultimate**

### **TSEP Kerberos Base:**

This variant of the TSEP Kerberos solution is intended primarily for test houses or for LXI members who wish to maintain existing LXI implementations. This variant of the TSEP Kerberos solution allows you to run the test and log it accordingly.

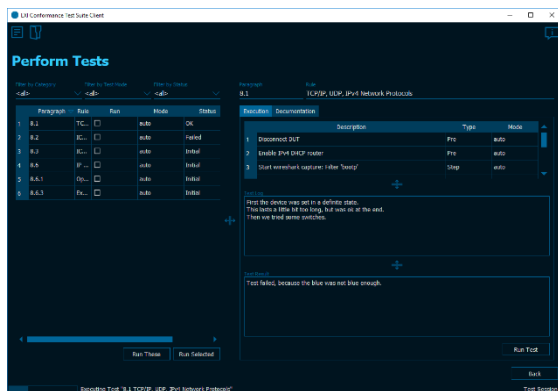
**TSEP Kerberos regression test:**

This variant of the TSEP Kerberos solution contains all functionalities of the "TSEP Kerberos Base" variant. In addition, this variant contains functionalities that allow an automated regression test. For this purpose, a client software is provided which can be used in batch or script mode. Thus, this solution can be easily integrated into automated testing. In addition, this variant can be used to generate a result file (Jason format), which can then be processed by the test automation. This version is intended for members who want to create current and new devices and check their compliance during the development and maintenance cycle.

**TSEP Kerberos Ultimate:**

This variant of the TSEP Kerberos solution contains all the functionalities of the "TSEP Kerberos Regression Test" variant. In addition, this variant contains functionalities that include improved troubleshooting support. This version is for software developers who want to re-integrate the LXI standard into their meter or want to search for errors in existing software.

## TSEP Kerberos Client



The TSEP Kerberos client software is used to control and visualize the results of the TSEP Kerberos hardware.

The client has the possibility to identify all TSEP Kerberos hardware in the network and to connect to one of them after the selection.

If an existing session on the hardware is already being tested, it will be reloaded immediately by the Test Suite. Otherwise it is possible to create a new test session. In the following, the DUT is defined with its properties. These include which "Extended Functions" are supported, as well as some device-specific information. (e.g., whether mDNS can be disabled or the ICMP Ping Responder can be disabled).

As soon as the DUT configuration has been completed, the tests determined from the configuration are loaded for this session.

The client offers three different filters to filter the list of tests. The "Category" filter filters according to the "Extended Functions" or subareas in the Core Standard. The "Test Mode" filter limits the selection to manual or automated tests, the "Status" filter to the current state of the test (Successful, Failed or not yet tested).

Furthermore, the client visualizes a detailed procedure in the form of test steps and their documentation. Since the documentation of the standard is included for each rule and in addition the individual test steps are described in detail, the user is always clearly visualized which test procedures of TSEP Kerberos are necessary for a particular test. In addition to the description, a test protocol is created during the runtime of each test, so that the test process can be followed at any time. At the end of a test, a detailed result output is displayed to the user.

There are several ways to run groups or individual tests. Either the filters can be adjusted, or you can select and start specific tests. Of course you can also run only a single test.

**Price:**

All prices below are for a TSEP Kerberos plus VAT (country-specific).

▪ TSEP Kerberos „Base“		<b>4,199.-- €</b>
▪ TSEP Kerberos „Regression Test“		<b>4,699.-- €</b>
▪ TSEP Kerberos „Ultimate“		<b>5,299.-- €</b>
▪ Option „Extended Function LAN Events“		<b>549.-- €</b>
▪ Option „Extended Function IEEE 1588“		<b>549.-- €</b>
▪ TSEP Kerberos Support	<b>per year</b>	<b>649.-- €</b>

**Company Bundles:**

Bundles always include the TSEP Kerberos variant "Ultimate" and all available options. Bundles contain three or more devices and are specially discounted. Please request an individual offer from us.