Spirent **UpperTester**

Implementing a Client for Testing TCP Stacks on a Device Under Test

Overview

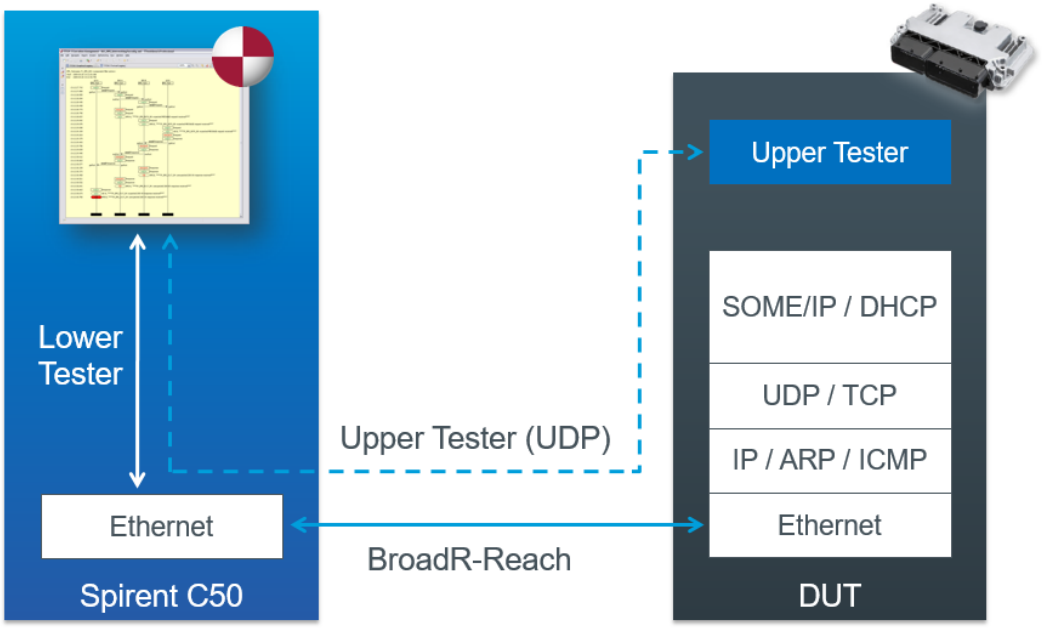
The UpperTester (UT) enables the implementation of a simple client for testing TCP stacks on a Device Under Test (DUT).

After implementation, it provides several functionalities (like opening and closing communication sockets) that can be triggered by the user via UDP commands called ServicePrimitives (SP).

Adapting the UpperTester

Sources of the UpperTester consist of clearly structured C89. For controlling network functionalities of the stack to be tested, the BSD Sockets API (published 1983) is used. This API is supported by common UNIX systems, by Windows systems (slightly modified), and by most TCP/IP stacks for the embedded domain.

In case the Sockets API is not available, it usually can be recreated quite easily. The UpperTester generally spares threads to simplify the porting, and it does not allocate cache dynamically if requested.



ServicePrimitives (SPs)

The SPs are implemented according to the following AUTOSAR document available at https://www.autosar.org/fileadmin/user_upload/standards/tests/1-1/AUTOSAR_PRS_TestabilityProtocolAndServicePrimitives.pdf

Enhancements

GET_VERSION
Queries the version of the UpperTester

START_TEST
Used for logging purposes only, not for test relevant actions

END_TEST
Used for logging purposes only, not for test relevant actions

CLOSE_SOCKET
Closes a socket (usually when ending a test)

CREATE_AND_BIND
Creates a socket and possibly attaches it to a local port or a local IP address

SEND_DATA
Causes the UpperTester to send data to a permitted address

RECEIVE_AND_FORWARD
Sets the UpperTester to a certain mode to forward incoming telegrams to the test system

LISTEN_AND_ACCEPT
Prepares the UpperTester to accept incoming connection requests

CONNECT
Performs the typical TCP handshake

CONFIGURE_SOCKET
Sets diverse parameters in the TCP stack (for instance the TTL)
Please note: Since the access to such low level parameters may be cause problems, this SP has not been implemented yet.

SHUTDOWN
Performs a shutdown with the given socket

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

For more information, visit: www.spirent.com

AMERICAS 1-800-SPIRENT
+1-800-774-7368
sales@spirent.com

US Government & Defense
info@spirentfederal.com
spirentfederal.com

EUROPE AND THE MIDDLE EAST
+44 (0) 1293 767979
emeainfo@spirent.com

ASIA AND THE PACIFIC
+86-10-8518-2539
salesasia@spirent.com

Rev E | 11/18