

R&S®CRTU / R&S®CMU 200

Test cases for “Push to talk over Cellular”

The new “Push to talk over Cellular” (PoC) service as an application in mobile phones permits half-duplex communication with several users. It is thus the modern version of a walkie-talkie system. For testing this service, Rohde & Schwarz has added a comprehensive test package to its product portfolio.

Mobile phone used as walkie-talkie

Now that the PoC V1.0 standard based on the IP multimedia subsystem (IMS) has been finalized by the Open Mobile Alliance (OMA), cross-provider communication is possible, even across borders. Current limits of other standards, such as those requiring the identical type of mobile phone, are thus a thing of the past. So there is nothing that stands in the way of a thorough penetration of the market. The new service will not be of interest to end users unless enough PoC-capable mobile phones are on the market.

In addition to a pure voice transmission (“1–1” or “1–Many”), the new PoC service offers various ways of influencing the transmission: In the manual answer mode, for example, every voice message is first confirmed before it is played by the PoC client.

Comprehensive protocol tests for PoC

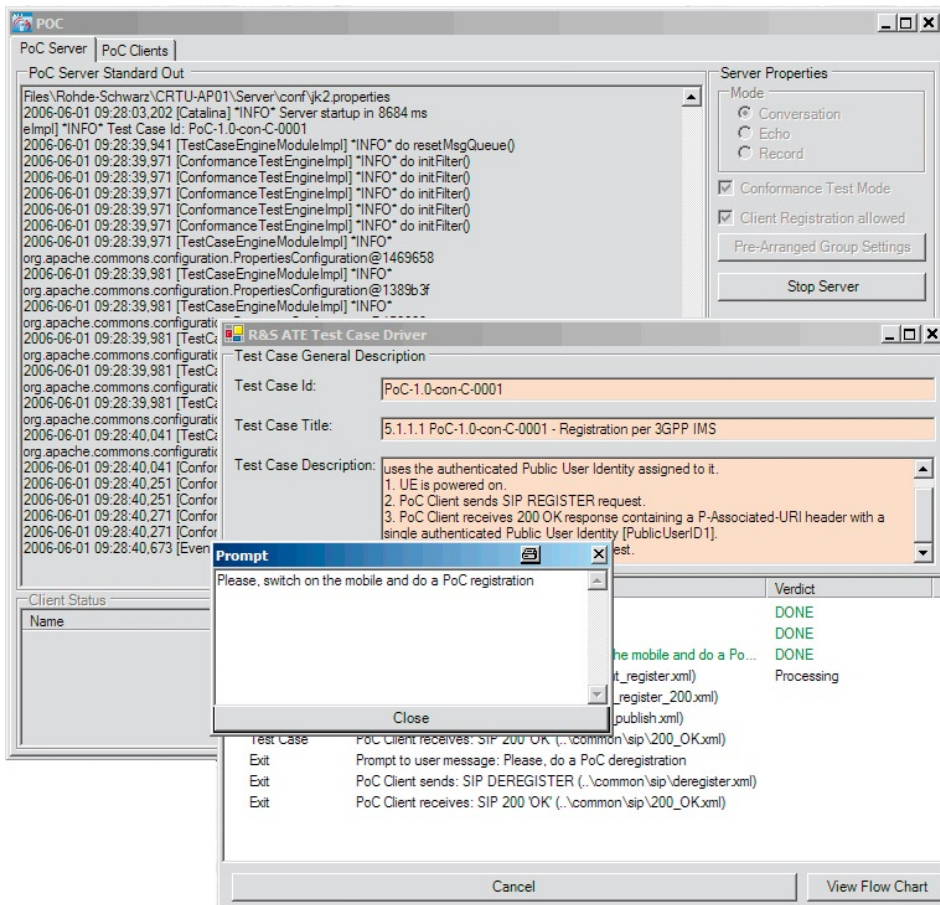
PoC relies largely on tried-and-tested IP-based protocols, such as the Session Initiation Protocol (SIP), Realtime Transport Protocol (RTP), RTP Control Protocol (RTCP) and Session Description Protocol (SDP). For this reason, PoC-specific parameters have been added to these protocols.

These additions and the interaction of the protocols used can be checked with the test cases classified by the Global Certification Forum (GCF). The test cases are first defined by OMA and will then be adopted by GCF.

Using the R&S®CRTU-ATE (Application Test Environment) (FIG 1), Rohde & Schwarz now offers the comprehensive R&S®CA-AC02 test package for PoC V1.0. It is based on the test cases classified by GCF and also permits you to easily define your own tests.

Similar to MMS [1], a special R&S®CA-AA02 PoC test server is required for the PoC test cases. The server not only forms the basis for the test cases, but also supports the functional test of PoC-capable mobile phones.

FIG 1 ATE desktop: a PoC test case is started.



The R&S®CA-AA02 PoC test server offers the following test modes [2]:

- ◆ **Conversation** Several PoC clients can communicate with each other
- ◆ **Echo** A PoC client gets its own voice messages back
- ◆ **Record** The voice messages are saved as a file

Separating the test cases from the functional elements in the test server has made the various protocols less complex.

You can therefore easily compile the desired messages and parameters without having to know the protocol in detail.

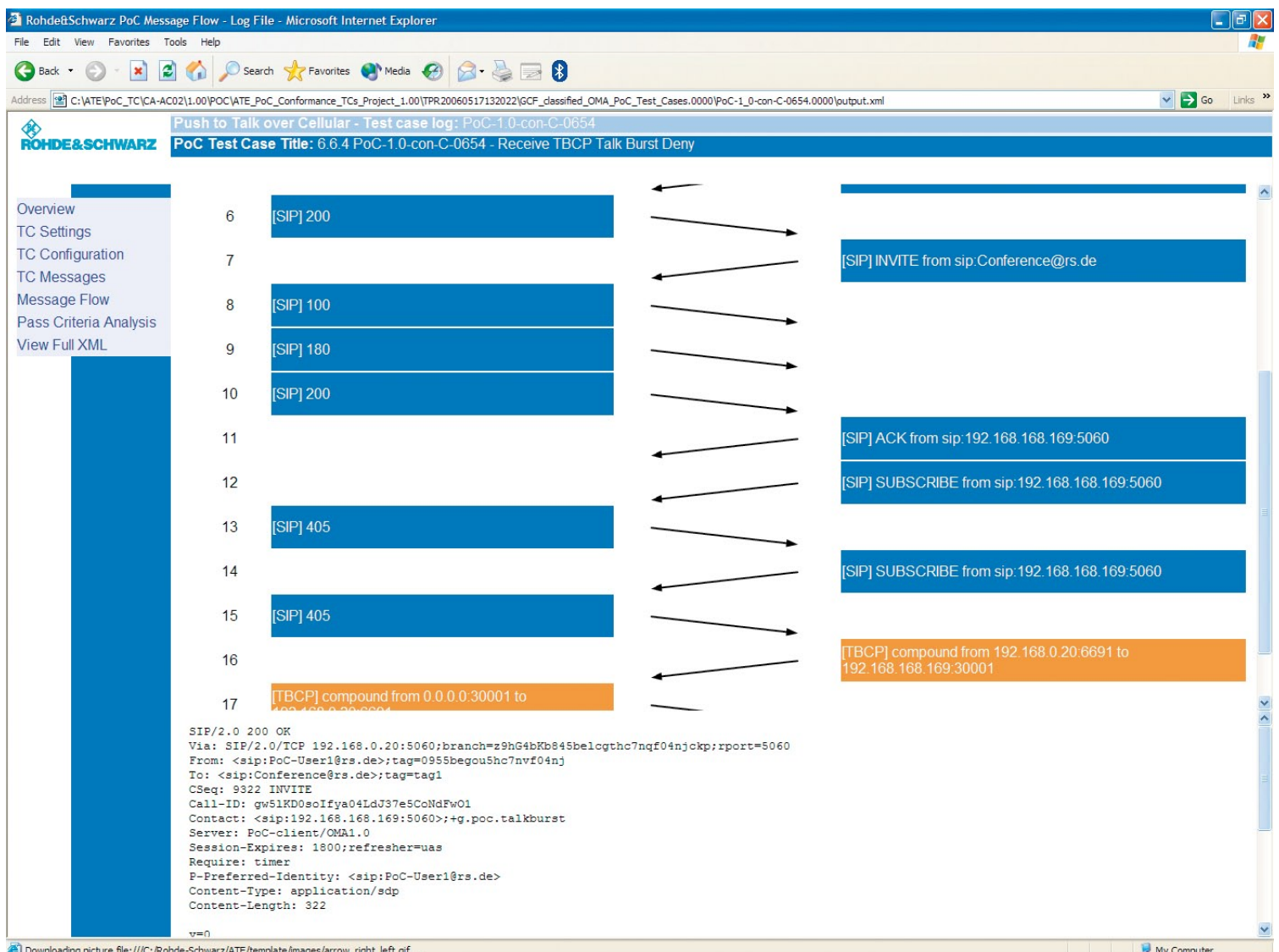
As with MMS, the test cases are defined in the eXtensible Markup Language (XML) and can thus be expanded or modified without any complex tools. A simple text or XML editor is sufficient.

The message flow, the parameters to be tested and the response messages can

be flexibly defined. The PoC test suite from Rohde&Schwarz is thus not only of interest for conformance tests but – owing to its flexibility – also offers a wide range of applications in development:

- ◆ Regression testing
- ◆ Stability tests
- ◆ Testing the insensitivity to errored messages (robust implementation)
- ◆ Testing the behavior of compliant protocol variants

FIG 2 Analysis following a PoC test – the message flow is displayed here.



- The generated analyses of the tested scenario (message flow, log file) are crucial for protocol tests. The PoC test suite not only offers straightforward error analysis but also a graphically processed message flow between the DUT and the test server. Potential errors in the implementation can thus be determined fast and accurately (FIG 2).

Connection

The R&S®CRTU-ATE runs on any commercial PC with Windows XP or 2000. This PC needs an IP connection to a Universal Radio Communication Tes-

ter R&S®CMU 200 or to a Protocol Tester R&S®CRTU-G / -W with the corresponding software (FIG 3). Since PoC is a purely IP-based service, it can be utilized independent of the radio access network (RAN) used. Standards such as WCDMA, GSM/GPRS or CDMA2000® can thus be used as RAN.

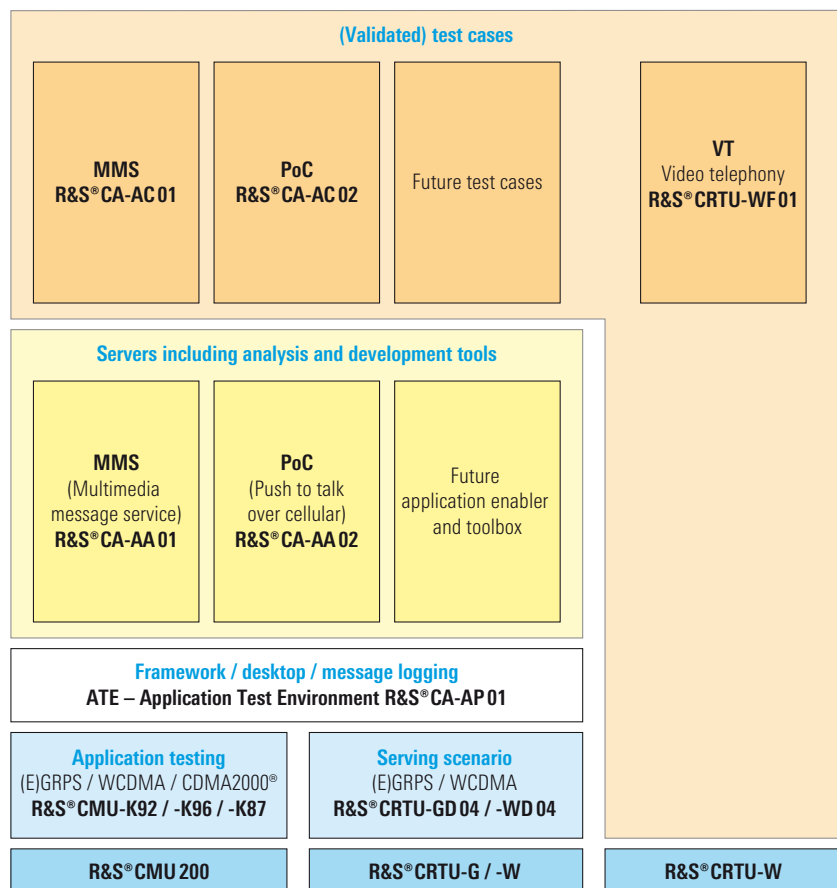
Owing to the flexibility of IP and the PoC test suite from Rohde&Schwarz, you can not only operate the test suite via a system simulator but also connect a DUT – e.g. via a test or live network – for development purposes. The only prerequisite is a direct IP connection between PoC client and test server.

Summary

The integrated PoC test solution from Rohde&Schwarz allows you to easily and conveniently test PoC implementations in compliance with GCF criteria. The available test cases are based on the OMA specifications. The structure of the test cases lets you define your own test cases and scenarios fast and easily. For this reason, the R&S®CA-AA 02 and R&S®CA-AC 02 PoC test suites are not only of interest for conformance tests but also for the development of PoC-capable user equipment.

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FIG 3 Test software program for the R&S®CMU 200 and the R&S®CRTU-G / -W.



More information and data sheet on the R&S®CMU 200 and the R&S®CRTU-G / -W at www.rohde-schwarz.com (search term: type designation)

REFERENCES

- [1] R&S®CRTU-G / -W: MMS tests on multimedia mobile phones. News from Rohde&Schwarz (2005) No. 185, pp 4–6
- [2] R&S®CMU 200 / CRTU-G / -W: Standardized test solutions for PoC mobile phones. News from Rohde&Schwarz (2005) No. 188, pp 14–16