

SIP 协议一致性验证方案

SIP 协议一致性验证方案分析互联网系统组件, Voice-over-IP, SIP, 以及 3G 信令协议对 SIP 标准的符合性。该测试方案测试套件采用测试标准语言 [TTCN-3](#) 开发, 由 ETSI 认证发布。SIP 协议一致性验证[测试套件](#)在自动化测试平台 [TTworkbench](#) 上自动化执行, 判定测试结果并对测试结果进行分析。该测试方案适用于 SIP 设备认证测试、VoIP 设备入网及验收测试, SIP 协议开发测试。

SIP 协议一致性测试方案特点

- 采用 ETSI 官方发布、验证的标准测试集
- 608 个全功能测试例
 - User Agent behaving as a client or server
 - Proxy - outbound and simple proxy
 - Redirect server
 - Registrar
- 测试有效、无效以及不合时宜的 SIP 协议行为, 测试 SIP 消息的语法变化
- 针对 SIP 测试适配灵活参数配置
- 完全自动化测试执行
- 平台独立
- 不同级别详细的日志
- 测试结果总结
- 基于 TTCN-3 的测试定义测试文档

应用

- Softswitches
- Gateways
- Application servers
- Conference bridges

- Interactive Voice Response Systems (IVR)
- SIP-Enabled FW/NAT
- SIP multimedia servers
- 2.5G/3G cellular devices
- IP phones
- Connected PDAs
- Video terminals
- Soft phones
- Voice enabled Web and e-commerce solutions

SIP 协议一致性验证方案优势

- 基于标准的测试
- 快速简单的测试执行和测试分析
- 可重复的完全自动化测试
- 平台独立，可容易的集成了到现有的测试环境中
- 基于不断演进的测试标准语言 TTCN-3

The screenshot displays the TTCN-3 Execution Management - TTworkbench Professional interface. It features a menu bar (File, Edit, Navigate, Search, Project, Run, Window, Help), a toolbar, and several panes:

- Test Case View:** Lists test cases with columns for Name, Runs, and Pass/Fail status. A summary shows 12 total tests, 3 executed, 2 passed, and 1 failed.
- Expected TTCN-3 Template:** A table listing expected data points:

User Type	Name	Value
Response	Response	
StatusLine	statusLine	
charstring	sipVersion	SIP/2.0
integer	statusCode	487
charstring	reasonPhrase	?
MessageHeader	msgHeader	
Accept	accept	*
AcceptEncoding	acceptEncoding	*
AcceptLanguage	acceptLanguage	*
AlertInfo	alertInfo	*
Allow	allow	*
AuthenticationInfo	authenticationInfo	*
- Data:** A table listing actual data points:

User Type	Name	Value
Response	Response	
StatusLine	statusLine	
charstring	sipVersion	SIP/2.0
integer	statusCode	487
charstring	reasonPhrase	Request Terminated
MessageHeader	msgHeader	
Accept	accept	omit
AcceptEncoding	acceptEncoding	omit
AcceptLanguage	acceptLanguage	omit
AlertInfo	alertInfo	omit
Allow	allow	omit
AuthenticationInfo	authenticationInfo	omit
- Graphical Logging:** A timeline diagram showing test execution steps: match, match, match, send CANCEL_Request, receive, receive, mismatch, match, mismatch, mismatch, mismatch, match, send ACK_Request, pass. It also shows SIP messages and UDP1 connections.
- Properties View:** A table of parameters:

Parameter	Value	Default
PICS_Items	true	true
PX_UDP	false	false
PX_TLS	true	true
PC_UAS	true	true
PC_UAC	true	true
PC_UA	true	true
PC_PROXY	true	true
PC_STATELESS	true	true
PC_SENDER_TFC	true	true

Test Management, Execution and Analysis for SIP

符合标准(Conformance Tests and TTCN-3)

- RFC 3261 SIP: Session Initiation Protocol, 2002-06
- ETSI TS 102 027-2 Ver. 4.1.1 IETF SIP RFC 3261; Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification, 2006-07
- ETSI ES 201 873-1 TTCN-3 Core Language V4.1.1, 2009-06

Standards (Test Framework Support for IMS) - 23 RFCs

- RFC 2327 SDP: Session Description Protocol, 1998-04
- RFC 2976 The SIP INFO Method, 2000-10
- RFC 3262 Reliability of Provisional Responses in the SIP, 2002-06
- RFC 3263 Session Initiation Protocol (SIP): Locating SIP Servers, 2002-06
- RFC 3264 Offer/Answer Model with the Session Description Protocol (SDP), 2002-06
- RFC 3265 Session Initiation Protocol (SIP)-Specific Event Notification, 2002-06
- RFC 3311 The Session Initiation Protocol (SIP) UPDATE Method, 2002-09
- RFC 3313 Private SIP Extensions for Media Authorization, 2003-01
- RFC 3323 A Privacy Mechanism for the Session Initiation Protocol (SIP), 2002-11
- RFC 3326 The Reason Header Field for the Session Initiation Protocol (SIP), 2002-12
- RFC 3327 SIP Extension Header Field for Registering Non-Adjacent Contacts, 2002-12
- RFC 3329 Security Mechanism, 2003-11
- RFC 3428 SIP Extension for Instant Messaging, 2002-12
- RFC 3455 Private Header (P-Header) Extensions to the SIP for the 3rd-Generation Partnership Project (3GPP), 2003-01
- RFC 3515 The Session Initiation Protocol (SIP) Refer Method, 2003-04
- RFC 3608 SIP Extension Header Field for Service Route Discovery During Registration, 2003-10
- RFC 3680 Session Initiation Protocol (SIP) Event Package for Registrations, 2004-03
- RFC 3841 Caller Preferences, 2004-08
- RFC 3891 Replaces Header, 2004-09
- RFC 3892 Referred By, 2004-09
- RFC 3903 SIP Extension for Event State Publication, 2004-10
- RFC 3911 Join Header, 2004-10
- RFC 4028 Session Timers, 2005-04

Standards (On request)

- RFC 2617 HTTP Authentication: Basic and Digest Access Authentication, 1999-06
- RFC 2833 RTP Payload for DTMF Digits, Telephony Tones and Signals, 2000-05
- RFC 3312 Integration of Resource Management and SIP, 2002-10
- RFC 3320 Signaling Compression (SigComp), 2003-01
- RFC 3420 Internet Media Type message/sipfrag, 2002-11

- RFC 3485 The SIP and SDP Static-Dictionary for Signaling Compression (SigComp), 2003-02
- RFC 3325 Private Extensions to the SIP for Asserted Identity within Trusted Networks, 2002-11

参考运行环境

- Java
- Microsoft Windows XP, Vista, Windows 7, Windows 8
- Red Hat Enterprise Linux (GTK, x86-32, x86-64)
- Fedora (GTK, x86-32, x86-64)
- SUSE Linux (GTK, x86-32, x86-64)