SIP IPv6 Conformance Test Tool

Reference Manual

Ver. 2.0.2

IPv6 Promotion Council
Certification WG
SIP SWG

Modification Record

Version	Date	Content
Ver. 1.0.0	Mar. 30, 2004	Initial version (Reference Manual for UA)
Ver. 1.0.1	May. 10, 2004	- 4.7/4.8.1/4.8.2 : Modified example of “config.txt”. - Modified some typographical errors and omissions. (Reference Manual for UA)
Ver. 1.0.2	Jul. 12, 2004	- Added parameters about authentication for “config.txt”. - 4.9/4.10 : Added example of “config.txt” about Authentication mechanism non-support setting. (Reference Manual for UA)
Ver. 1.1.0	Oct. 7, 2004	- 4.2 : Modified example of “config.txt”. - 5.2 : Added category “torture-test” - fixed some typographical errors and omissions. (Reference Manual for UA)
Ver. 1.2.0	Apr. 30, 2005	- 5.2 : Add timer-test and 100rel-test (Reference Manual for UA)
Beta Release		First beta version. (Reference Manual for Server)
Beta Release 2	Jun. 3, 2005	Second beta version. (Reference Manual for Server)
Ver. 1.2.1		(Reference Manual for UA)
Ver. 1.0.0	Oct. 7, 2005	First official release (Reference Manual for Server)
Ver. 1.2.2	Oct. 11, 2005	- 1.2: Added “Notice: for IPv4 test” (Reference Manual for UA)
Ver. 1.3.0	Mar. 20, 2006	Renew the whole construction. (Reference Manual for UA)
Ver. 1.1.0		Second official release. Add RFC3262, RFC4028, TTC test. Support TCP and TLS. (Reference Manual for Server)
Ver. 1.4.0	Mar. 16, 2007	-Added the function of auto-configuration :BIND, rtadvd (Reference Manual for UA)
Ver. 1.2.0		Added the function of auto-configuration. (Reference Manual for Server)
Ver. 1.4.1	Apr. 27, 2007	-Modified Setup section. -Corrected the title of Table 4. - Corrected misspellings. (Reference Manual for UA)
Ver.1.2.1		Modified Commands for Conformance test section. Modified Setup section. Modified Table of Contents Changed the list of Test category. (Reference Manual for Server)
Ver. 1.4.2	Jul. 31, 2007	-Remove UA-4-2-4 from Table 3. (Reference Manual for UA)

Ver.1.2.2		Modified Setup section. (Reference Manual for Server)
Ver. 1.4.3	May. 30,2008	-Remove UA-2-2-5 form Table 3. (Reference Manual for UA)
Ver. 1.2.3		Removed TS-3-1-3 and modified Table3. Fixed some bugs. (Reference Manual for Server)
Ver. 1.4.4	June. 27,2008	- Modified about requirements software. (removed "koi-sip", and added "koi") (Reference Manual for UA)
Ver. 1.2.4		Modified about requirements software. (removed "koi-sip", and added "koi") (Reference Manual for Server)
Ver. 2.0.0	Nov. 27,2009	-Merged UA and Server Reference Manual. -Modified contents for the new test categories. - Modified Appendix.
Ver. 2.0.1	Jan. 15,2009	- Modified PX Test categories(4.3.5).
Ver. 2.0.2	Jul. 22, 2010	- Remove UA-12-2-1 and modified Table 6,7,8. - Modified about requirements software. FreeBSD (OS), v6eval, koi, Tester tools(UA,EP,B2BUA)

Table of Contents

1. Introduction

1.1. About this document

This document describes installation and operation procedure for “SIP Conformance Test Tool for SIP UA / Endpoint / B2BUA / Registrar / Proxy”. SIP Conformance Test Tool checks SIP equipment based on RFC3261: Session Initiation Protocol (SIP).

Previously please read “INSTALL” file that describes the additional information.

1.2. Definition of terms

Tester Node (TN)	:	PC which SIP Conformance Test Tool is installed in.
Node Under Test (NUT)	:	Target SIP equipment that the SIP conformance is checked.
UA	:	User Agent
EP	:	Endpoint
B2BUA	:	Back-to-back User Agent
RG	:	Registrar
PX	:	Proxy

2. Setup

2.1. Preparing for equipments

You have to prepare the following equipments:

- a PC for TN
- a PC/equipment for NUT
- a LAN cable (crossover)

2.2. Requirements (Software)

You need to install the software below in TN. SIP-CT shall run properly on the following software requirements:

2.2.1. UA/EP/B2BUA

Table 1. The requirements to get Conformance Tester to work properly

Software	Version	URL
FreeBSD (OS)	7.3 or higher (release 7.x)	-
BIND	9.3.0 or higher	-
Perl	5.8.7 or higher	-
v6eval	3.3.0 or higher	http://www.tahi.org/release/
koi	2.1.8 or higher	http://www.tahi.org/release/
ortp	0.12.0 or higher	http://freshmeat.net/projects/ortp/
Tester tool	UA: 2.0.2 EP: 2.0.2 B2BUA: 2.0.2	http://cert.v6pc.jp/sip-ipv6/

2.2.2. RG/ PX

Table 2. The requirements to get Conformance Tester to work properly

Software	Version	URL
FreeBSD (OS)	7.3 or higher (release 7.x)	-
BIND	9.3.0 or higher	-
Perl	5.8.7 or higher	-
v6eval	3.3.0 or higher	http://www.tahi.org/release/
koi	2.1.8 or higher	http://www.tahi.org/release/

Tester tool	RG: 2.0.0 PX: 2.0.1	http://cert.v6pc.jp/sip-ipv6/

< v6eval >
"v6eval" is the IPv6 Conformance Test Tool released by TAHI project. For detailed information on "v6eval", such as how to install it, please refer to the documents (ex. *INSTALL.v6eval*) included in "v6eval" package.
You also need to make "tn.def" and "nut.def" for installing "koi" package into TN. Please refer to "INSTALL.v6eval" included in "v6eval" package, before install "koi" package.

< koi >
You also need to install "koi" package into TN. "koi" is an extended package for v6eval. For detailed information on "koi", such as how to install it, please refer to the documents (ex. *README*) included in "koi" package.

2.3. Network Architecture

2.3.1. UA / EP / B2BUA

Test network consists of two nodes, TN and NUT. Although a physical network consists of two nodes, TN provides SIP server (Proxy/Registrar), DNS Server (BIND9), SIP-UA, etc., as follows:

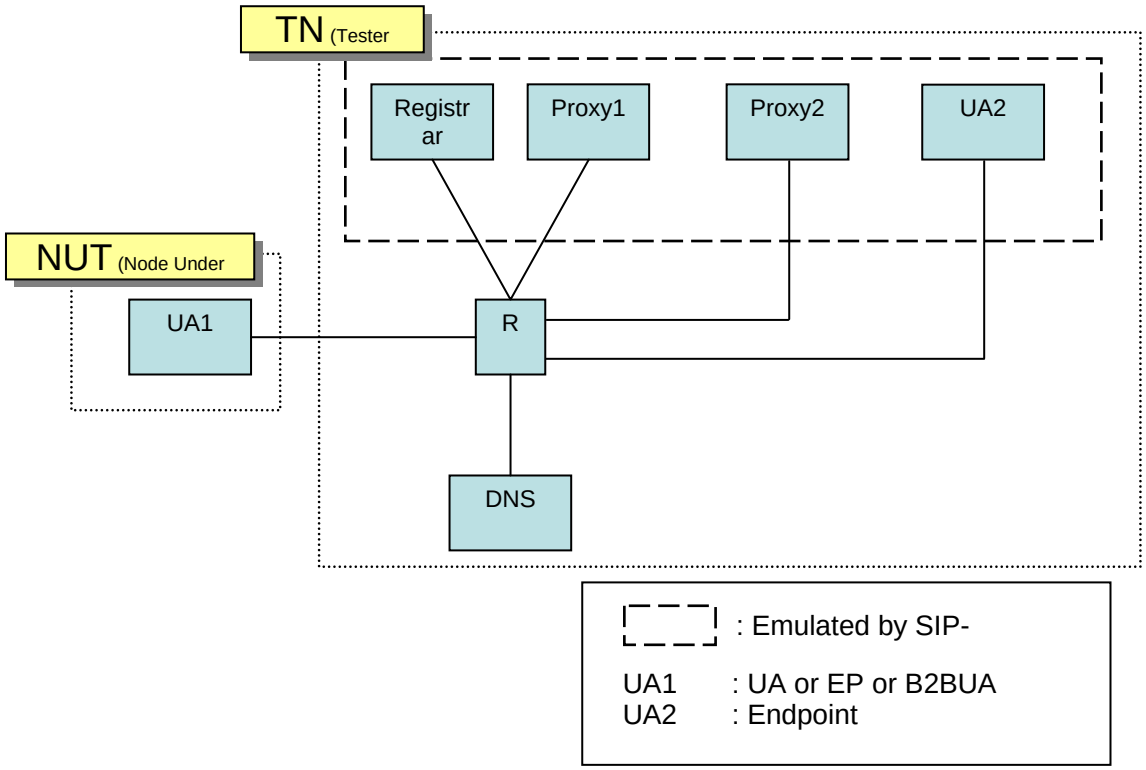
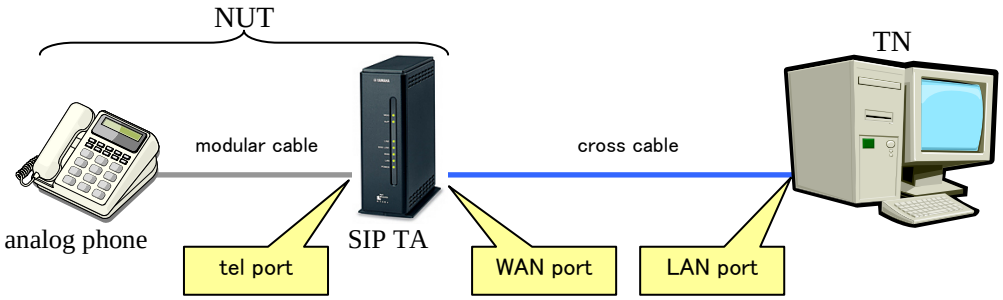


Figure 1 The example of virtual network construction

The following is two examples of the Test network. As described section 1.5., it is assumed that Test network consists of TN and NUT.

Case A) NUT consists of analog phone and SIP-TA (Terminal Adapter)



Case B) NUT is a PC (SIP-UA is a software)

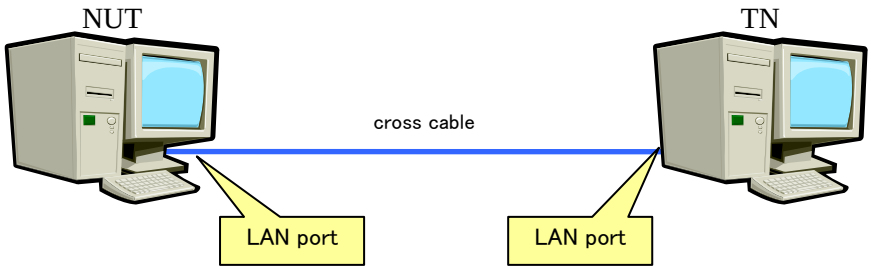


Figure 2 The example of physical network construction

The test network must be formed by connecting NUT and TN directly in order not to make TN receive packets from nodes except NUT that aren't related to the test.

This document provides an example of configuration on Case B. In this case, a SIP soft-phone (ex. ekiga) needs to be installed in NUT in advance.

2.3.2. RG / PX

Test network consists of two nodes, TN and NUT. Although a physical network consists of two nodes, TN provides SIP User Agent, DNS Server (BIND9), SIP-Proxy server, etc., as follows:

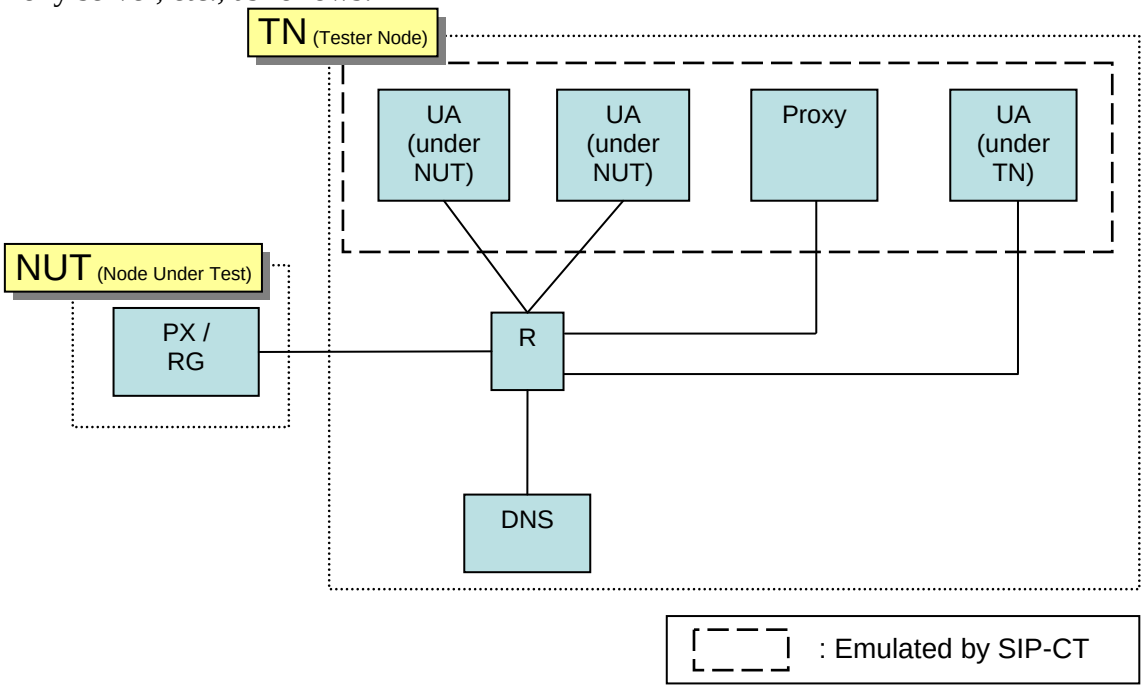
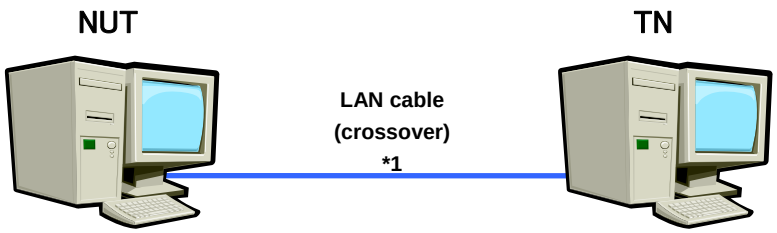


Figure 3. Virtual Network Construction

The following is an example of the Test network.



***1: HUB and two LAN cables (straight) can be substituted.**

TN : Tester Node
NUT : Node Under Test

Figure 4. connective TN and NUT

2.4. Limitation

SIP-CT is based on the following requirements:

- the path MTU is 1500 Byte.
- support only "application/sdp" as a media type.
- not support multipart MIME type.
- not support S/MIME.
- not support multicast stream.
- not support IPsec as secure communication scheme.
- not support DNS NAPTR record.
- not support media stream creation. (ex. RTP/RTCP packets)
- not support RFC3041. (Privacy Extensions for Stateless Address Autoconfiguration in IPv6)
- not support MD5-Sess as Digest Authentication Algorithm. (support only MD5.)
- not support package fragmentation.
- not support the change of the port number (SIP and media) in a test.
- not support the change of the transport protocol in a test.
- not support the Mutual TLS Authentication. (support only Server Authentication.)

- all SIP packets go through proxies. (ACK and BYE also go through proxies according to loose source route.)
- unless otherwise stated, all proxies are stateful proxies.

3. Configuration process

This section describes how to connect between nodes and configure on each node generally.

3.1. Connect NUT and TN

Connect TN and NUT with a crossover cable as Figure 2 in Section 2.3.1 or Figure 4 in Section 2.3.2. You can replace the crossover cable with two straight cables and a HUB.

3.1.1. IP addresses and parameters

Check IP address and MAC address in each node to configure for conformance test.

3.2. Configuration in TN

3.2.1. v6eval

To get SIP-CT to work properly, you have to configure v6eval correctly. If you have already finished configuring v6eval when it is installed, you can skip this section.

(1) tn.def
Edit the following line ("Link0" parameter) in /usr/local/v6eval/etc/tn.def as follows. If there is no tn.def, you have to make a tn.def file by copying tn.def.sample in the same directory.

```
Link0:          em0         AA:AA:AA:AA:AA:AA
```

The syntax is :

LinkX <interface name of the TN> <MAC address of the TN>

Please DO NOT CHANGE OTHER parameters in tn.def. Tester couldn't work properly if you do. For detailed information, please refer to the documents included in v6eval.

(2) nut.def
Edit the following line ("Link0" parameter) in /usr/local/v6eval/etc/nut.def as follows. If there is no nut.def, you have to make a nut.def file by copying nut.def.sample in the directory.

```
Link0:          em0         BB:BB:BB:BB:BB:BB
```

The syntax is :

LinkX <interface name of the NUT> <MAC address of the NUT>

Both interface name in nut.def and one in tn.def should be same and the interface name on TN.

Please DO NOT CHANGE OTHER parameters in nut.def. Tester couldn't work properly if you do. For detailed information, please refer to the documents included in v6eval.

3.2.2. koi

To get SIP-CT to work properly, you have to configure "koi" correctly. If you have already finished configuring v6eval when it is installed, you can skip this section.

(1) tn.def

Edit the following line ("Link0" parameter) in /usr/local/koi/etc/tn.def as follows. If there is no tn.def, you have to make a tn.def file by copying tn.def.sample in the same directory.

```
Link0:        em0
```

The syntax is :

LinkX <interface name of the TN>

Please DO NOT CHANGE OTHER parameters in tn.def. Tester couldn't work properly if you do. For detailed information, please refer to the documents included in "koi".

(2) nut.def

Edit the following line ("Link0" parameter) in /usr/local/koi/etc/nut.def as follows. If there is no nut.def, you have to make a nut.def file by copying nut.def.sample in the directory.

```
Link0:        em0
```

The syntax is :

LinkX <interface name of the NUT>

Both interface name in nut.def and one in tn.def should be same and the interface name on TN.

Please DO NOT CHANGE OTHER parameters in nut.def. Tester couldn't work properly if you do. For detailed information, please refer to the documents included in "koi".

3.2.3. SIP-CT parameters (TN)

3.2.3.1. UA / EP / B2BUA

Please **DO NOT CHANGE** SIP-CT parameters in the configuration file ("config.txt"), except when configuring a fixed address for NUT.
Only when configuring a fixed address for NUT, you can change only the parameter ("UA-ADDRESS"). You can find the file in the following directory:

UA: $SOMEWHERE/ct-sip-ipv6-ua/sip-ipv6-ua/config.txt

EP: $SOMEWHERE/ct-sip-ipv6-ep/sip-ipv6-ep/config.txt

B2BUA: $SOMEWHERE/ct-sip-ipv6-b2bua/sip-ipv6-b2bua/config.txt

$SOMEWHERE is the directory where SIP-CT package was copied when installed (See INSTALL file).

The following is the parameters in config.txt:

Table 3. SIP-CT parameters

Item	Description
UA: your SIP applicant implementation (NUT)	
UA-ADDRESS	IP address of NUT. ※ This value is used as IPv6 address of NUT. If "UA-ADDRESS" is commented out, the IPv6 address of NUT is automatically assigned by receiving RA. (The "ROUTER-PREFIX-ADDRESS" which is specified in config.txt and the "MAC address" witch is specified in nut.def are required for this auto-configuration using EUI64.)
UA (emulated by TN)	
PUA-USER	Username of UA emulated by TN.
PUA-ADDRESS	IP address of UA emulated by TN.
PUA-HOSTNAME	AoR-URI of UA emulated by TN.
PUA-HOSTNAME-FOR-1PX	AoR-URI of UA for 1 proxy, emulated by TN.
PUA-CONTACT-HOSTNAME	Contact-URI of UA emulated by TN.

PUA-CONTACT-HOSTNAME-FOR-1PX	Contact-URI of UA for 1 proxy, emulated by TN.
Registrar (emulated by TN)	
REG-ADDRESS	IP address of Registrar emulated by TN.
REG-HOSTNAME	Hostname of Registrar emulated by TN.
SIP Proxy1 (emulated by TN)	
PX1-ADDRESS	IP address of a SIP Proxy1 emulated by TN.
PX1-HOSTNAME	Hostname (FQDN) of a SIP Proxy1 emulated by TN.
OT1-ADDRESS	IP address of a secondary DNS server emulated by TN.
SIP Proxy2 (emulated by TN)	
PX2-ADDRESS	IP address of a SIP Proxy2 emulated by TN.
PX2-HOSTNAME	Hostname (FQDN) of a SIP Proxy2 emulated by TN.
Authentication	
AUTH-USERNAME	Authentication username of NUT.
AUTH-PASSWD	Authentication password of NUT.
AUTH-REALM-RG	Authentication realm of registration emulated by TN.
AUTH-REALM-PX1	Authentication realm of SIP Proxy1 emulated by TN.
AUTH-REALM-PX2	Authentication realm of SIP Proxy2 emulated by TN.
UA (NUT)	
UA-USER	Username of NUT.
UA-HOSTNAME	AoR-URI of NUT.
UA-CONTACT-HOSTNAME	Contact-URI of NUT.
Default Router (emulated by TN)	
ROUTER-PREFIX-ADDRESS	IPv6 prefix which is provided in RA (Router Advertisement). **※ This item is valid only in IPv6.**
DNS server (emulated by TN)	
DNS-ADDRESS	IP address of a primary DNS server emulated by TN.
Other setting	
PLATFORM	Protocols to use. V6:UDP:UA
UA-PORT	Port number which NUT open for receiving SIP messages. (TN sends SIP messages to this port number.)
TIMER-T1	The value of T1. (sec.)
TIMER-T2	The value of T2. (sec.)
TIMER-MAGIN	The timer check margin for TN. (sec.)
HOLD-MEDIA	The number of hold media of TN.
MAX-FORWARDS	The initial value of "Max-Forwards" header field which UA emulated by TN use.

EXPIRES	The value of "Expires" header field which Registrar emulated by TN returns.
TIME-STAMP	The value of "Timestamp" header field which nodes emulated by TN use.
AUTH-SUPPORT	If you set "F" (False), no authentication mode. (Set "T" (True) or "F" (False).)
AUTH-SUPPORT-AFTER-DIALOG	If you set "F" (False), no authentication in dialog. (Set "T" (True) or "F" (False).)
DNS-TTL	The ttl value of DNS. (sec.)
INITIALIZE	In IPv6, if you set "NO", no IPv6 address autoconfiguration.
SPECIFICATION	If you set "RFC", judgments of conformance tests are based on only RFC. If you set "TTC", they are based on RFC and TTC (the Telecommunication Technology Committee) specification. About TTC, please refer to http://www.ttc.or.jp/e/index.html. If you set "IG", they are based on RFC and Implementation Guideline specified by IPv6 Promotion Council. About IPv6 Promotion Council, please refer to http://www.v6pc.jp/en/index.phtml. (Set "RFC" or "TTC" or "IG".)

The following is the default configuration of config.txt file. You can change UA-ADDRESS parameter ONLY WHEN you configure a fixed address for NUT.

<For IPv6 (config.txt)>

```
# $CopyrightSIPv6$
#

#### general setting ####

#================================================================#
# Your SIP Applicant implementation (UA / EP / B2BUA)            #
# IPv6 address (NUT)                                             #
# (if using auto-configuration, comment out this line with "#".) #
#================================================================#

UA-ADDRESS                3ffe:501:ffff:5:2a0:deff:fe1d:c29e

#****************************************************************#
#        DO NOT CHANGE THE FOLLOWING CONFIGURATION               #
#****************************************************************#
#=======================================#
#  UA (emulated by TN)                  #
```

```
#=========================================#

## SIP UA(Tester emulating) username
PUA-USER                      1111

## SIP UA(Tester emulating) IPv6 address
PUA-ADDRESS                   3ffe:501:ffff:1::1

## SIP UA(Tester emulating) hostname
PUA-HOSTNAME                  atlanta.example.com
PUA-HOSTNAME-FOR-1PX          under.test.com

## SIP UA(Tester emulating) Contact hostpart
PUA-CONTACT-HOSTNAME          client.atlanta.example.com
PUA-CONTACT-HOSTNAME-FOR-1PX client.under.test.com


#=========================================#
#  Registrar (emulated by Tester)         #
#=========================================#

## Registrar(Tester emulating) IPv6 address
REG-ADDRESS                   3ffe:501:ffff:50::50

## Registrar(Tester emulating) hostname
REG-HOSTNAME                  reg.under.test.com


#=========================================#
#  SIP Proxy1 (emulated by Tester)        #
#=========================================#

## Outbound Proxy(Tester emulating) IPv6 address
PX1-ADDRESS                   3ffe:501:ffff:50::50

## Outbound Proxy(Tester emulating) hostname
PX1-HOSTNAME                  ss.under.test.com

OT1-ADDRESS                   3ffe:501:ffff:50::51
#=========================================#
#  SIP Proxy2 (emulated by Tester)        #
#=========================================#

## Second Proxy(Tester emulating) IPv6 address
PX2-ADDRESS                   3ffe:501:ffff:20::20

## Second Proxy(Tester emulating) hostname
PX2-HOSTNAME                  ss1.atlanta.example.com
```

```
#=========================================#
#  Authentication                         #
#=========================================#

## username for Authentication
AUTH-USERNAME                NUT

## password for Authentication
AUTH-PASSWD                  nutsip

## Authorization realm about Registrar(Tester emulating)
AUTH-REALM-RG                under.test.com

## Authorization realm about Outbound Proxy(Tester emulating)
AUTH-REALM-PX1               under.test.com

## Authorization realm about second Proxy(Tester emulating)
AUTH-REALM-PX2               atlanta.example.com


#=========================================#
#  UA: your SIP applicant implementation  #
#      param (NUT)                        #
#=========================================#

## Your SIP UA username

UA-USER              NUT

## Your SIP UA hostname
UA-HOSTNAME                  under.test.com

## Your SIP UA Contact hostpart
UA-CONTACT-HOSTNAME          node.under.test.com


#=============================================#
#  Router(Tester emulating) IPv6 Address Prefix  #
#=============================================#

## Router(Tester emulating) IPv6 Address Prefix
ROUTER-PREFIX-ADDRESS        3ffe:501:ffff:5::


#=============================================#
#  DNS Server settings                        #
#==============-----==========================#
```

```
## IPv6 DNS Server(Tester emulating) IPv6 address
DNS_ADDRESS                 3ffe:501:ffff:4::1

#===================================#
#  Other settings                   #
#===================================#

PLATFORM  V6:UDP:UA

## your SIP applicant implementation message send port No
UA-PORT                     5060

## Timer T1 value(second) defined in RFC3261
TIMER-T1                    0.5

## Timer T2 value(second) defined in RFC3261
TIMER-T2                    4

## Tester check margin value(second)
TIMER-MAGIN                 0.2

## The number of media which Tester checks re-INVITE(hold)
HOLD-MEDIA                  1

## Initial Max-Forwards header value which Tester sends
MAX-FORWARDS                70

## Expires header value which Tester sends
EXPIRES                     3600

## Timestamp header value(Tester sends)
TIME-STAMP                  1000

## Whether your SIP applicant implementation supports Authentication mechanism
(T) or not(F)
AUTH-SUPPORT                T

## Whether your SIP applicant implementaion supports Authentication mechanism
## after dialog established (T) or not(F)
AUTH-SUPPORT-AFTER-DIALOG   F

## DNS TTL(second)
DNS-TTL                     30

## INITIALIZE v6ADDR
INITIALIZE                  F

SPECIFICATION               RFC
```

3.2.3.2. RG

Please **DO NOT CHANGE** any SIP-CT parameters in the configuration file ("config.txt").

Following the configuration in "config.txt", configure each node.
You can find the file in the following directory:

RG : $SOMEWHERE/ct-sip-ipv6-rg/sip-ipv6-rg/config.txt

$SOMEWHERE is the directory where SIP-CT package was copied when installed (See INSTALL file).

The following is the parameters in config.txt:

Table 4. SIP-CT parameters

Item	Description
[model] :platform	
ip	IP version specified on platform :v6
Transport	Transport protocol specified on platform :UDP
Target	Tester type :PX
[target] :Target server	
uri	URI of a target server.
address	IP address of a target server.
port	Port number of a target server.
prefix	Prefix of a target server.
[target.user1] :UA in the same domain as NUT's (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[target.user2] :UA (UA2) for 1 proxy (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.

[target.user3] :UA (UA3) for forking (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[target.user4] : UA (UA4) for forking (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[proxy] :proxy (emulated by TN)	
uri	URI of proxy emulated by TN.
address	IP address of proxy emulated by TN.
authorization_realm	Authorization realm of proxy emulated by TN.
[proxy2] :proxy2 (emulated by TN)	
uri	URI of proxy emulated by TN.
address	IP address of proxy emulated by TN.
authorization_realm	Authorization realm of proxy emulated by TN.
[proxy.user1] :UA in other domain for 2-proxy (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[dns] :DNS server (emulated by TN)	
address	DNS address emulated by TN.
[others] :Other settings	
use_authorization	Whether to execute authorization :yes
supported_extension	Value in Supported header of a request. :none
expires	Expired time of registration. :default
specification	Specification that Tester bases on. :RFC

The following is the default configuration of config.txt file.

<For IPv6 (config.txt)>

```
 [model]
ip            V6
```

```
transport      UDP
target         PX

[target]
uri                                 sip:ss.under.test.com
address                             3ffe:501:ffff:50::50
port                                5060
prefix                              3ffe:501:ffff:50::

#
# user for test (exist in test-suites)
#
[target.user1]
aor-uri                             sip:UA11@under.test.com
contact-uri                         sip:UA11@node.under.test.com
address                             3ffe:501:ffff:1::1
authorization_user                  UA11
authorization_password              nutsip
authorization_realm                 under.test.com

[target.user2]
aor-uri                             sip:UA12@under.test.com
contact-uri                         sip:UA12@node11.under.test.com
address                             3ffe:501:ffff:2::2
authorization_user                  UA12
authorization_password              nutsip
authorization_realm                 under.test.com

[target.user3]
aor-uri                             sip:UA13@under.test.com
contact-uri                         sip:UA13@node12.under.test.com
address                             3ffe:501:ffff:3::3
authorization_user                  UA13
authorization_password              nutsip
authorization_realm                 under.test.com

[target.user4]
aor-uri                             sip:UA14@under.test.com
contact-uri                         sip:UA14@node13.under.test.com
address                             3ffe:501:ffff:4::4
authorization_user                  UA14
authorization_password              nutsip
authorization_realm                 under.test.com

#
# proxy-server for test (exist in test-suites)
#
[proxy]
uri                                 sip:ss.biloxi.example.com
```

```
address                                 3ffe:501:ffff:20::20
authorization_realm                     under.test.com

[proxy2]
uri                                     sip: ss.biloxi.example.com
address                                 3ffe:501:ffff:20::21
authorization_realm                     under.test.com

#
# user for test (exist in test-suites)
#
[proxy.user1]
aor-uri                                 sip:UA21@biloxi.example.com
contact-uri                             sip:UA21@client.biloxi.example.com
address                                 3ffe:501:ffff:2::2
authorization_realm                     biloxi.example.com

[dns]
address                                 3ffe:501:ffff:4::1

#
# don't change followings
#
[others]
use_authorization           yes
supported_extension         none
expires                     default

specification               RFC
```

3.2.3.3. PX

Please **DO NOT CHANGE** any SIP-CT parameters in the configuration file ("config.txt"), except when NUT needs to use a registrar server.
Only when NUT needs to use a registrar server, you can change only the parameter (“[registrar]-address”).
Following the configuration in "config.txt", configure each node.
You can find the file in the following directory:

PX : $SOMEWHERE/ct-sip-ipv6-px/sip-ipv6-px/config.txt

$SOMEWHERE is the directory where SIP-CT package was copied when installed (See INSTALL file).

The following is the parameters in config.txt:

Table 5. SIP-CT parameters

Item	Description
[model] :platform	
ip	IP version specified on platform :v6
Transport	Transport protocol specified on platform :UDP
Target	Tester type :PX
[target] :Target server	
uri	URI of a target server.
address	IP address of a target server.
port	Port number of a target server.
prefix	Prefix of a target server.
[target.user1] :UA in the same domain as NUT's (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[target.user2] :UA (UA2) for 1 proxy (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[target.user3] :UA (UA3) for forking (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.
authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[target.user4] : UA (UA4) for forking (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
port	Port number of UA emulated by TN.
authorization_user	User name for authorization of UA emulated by TN.

authorization_password	Password for authorization of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[proxy] :proxy (emulated by TN)	
uri	URI of proxy emulated by TN.
address	IP address of proxy emulated by TN.
authorization_realm	Authorization realm of proxy emulated by TN.
[proxy2] :proxy2 (emulated by TN)	
uri	URI of proxy emulated by TN.
address	IP address of proxy emulated by TN.
authorization_realm	Authorization realm of proxy emulated by TN.
[proxy.user1] :UA in other domain for 2-proxy (emulated by TN)	
aor-uri	URI of UA emulated by TN.
conract-uri	Contact-URI of UA emulated by TN.
address	IP address of UA emulated by TN.
authorization_realm	Authorization realm of UA emulated by TN.
[registrar] :registrar server (emulated by TN or connected RG)	
uri	URI emulated by TN when 2-proxy.
address	IP address of registrar server. **※ This value is used for registrar server address. Only when NUT needs to use a registrar server, you can change this parameter.**
authorization_realm	Authorization realm emulated by TN when 2-proxy.
[dns] :DNS server (emulated by TN)	
address	DNS address emulated by TN.
[others] :Other settings	
use_authorization	Whether to execute authorization :yes
supported_extension	Value in Supported header of a request. :none
expires	Expired time of registration. :default
specification	Specification that Tester bases on. :RFC

The following is the default configuration of config.txt file.

<For IPv6 (config.txt)>

```
 [model]
ip              V6
transport       UDP
target          PX

[target]
uri                                 sip:ss.under.test.com
address                             3ffe:501:ffff:50::50
port                                5060
prefix                              3ffe:501:ffff:50::
```

```
#
# user for test (exist in test-suites)
#
[target.user1]
aor-uri                         sip:UA11@under.test.com
contact-uri                     sip:UA11@node.under.test.com
address                         3ffe:501:ffff:1::1
authorization_user              UA11
authorization_password          nutsip
authorization_realm             under.test.com

[target.user2]
aor-uri                         sip:UA12@under.test.com
contact-uri                     sip:UA12@node11.under.test.com
address                         3ffe:501:ffff:2::2
authorization_user              UA12
authorization_password          nutsip
authorization_realm             under.test.com

[target.user3]
aor-uri                         sip:UA13@under.test.com
contact-uri                     sip:UA13@node12.under.test.com
address                         3ffe:501:ffff:3::3
authorization_user              UA13
authorization_password          nutsip
authorization_realm             under.test.com

[target.user4]
aor-uri                         sip:UA14@under.test.com
contact-uri                     sip:UA14@node13.under.test.com
address                         3ffe:501:ffff:4::4
authorization_user              UA14
authorization_password          nutsip
authorization_realm             under.test.com

#
# proxy-server for test (exist in test-suites)
#
[proxy]
uri                             sip:ss2.biloxi.example.com
address                         3ffe:501:ffff:20::20
authorization_realm             under.test.com

[proxy2]
uri                             sip:ss2.biloxi.example.com
address                         3ffe:501:ffff:20::21
authorization_realm             under.test.com
```

```
#
# user for test (exist in test-suites)
#
[proxy.user1]
aor-uri                             sip:UA21@biloxi.example.com
contact-uri                         sip:UA21@client.biloxi.example.com
address                             3ffe:501:ffff:2::2
authorization_realm                 biloxi.example.com

[registrar]
uri                                 sip:reg.under.test.com
address                             3ffe:501:ffff:50::50
authorization_realm                 under.test.com

[dns]
address                             3ffe:501:ffff:4::1

#
# don't change followings
#
[others]
use_authorization           yes
supported_extension         none
expires                     default

specification               RFC
```

3.3. Configuration in NUT

3.3.1. Check Interface name and MAC address

Check whether or not MAC address in NUT is the same as MAC address configured in nut.def in TN. If that is different, please correct the addresses in nut.def.

3.3.2. Default route (NUT)

Set a default route the value that is put “1” to the last of ROUTER-PREFIX-ADDRESS in config.txt in TN.

For example;

UA / EP / B2BUA

If ROUTER-PREFIX-ADDRESS is “3ffe:501:ffff:5::”, the default route should be “3ffe:501:ffff:5::1”.

RG / PX

If prefix of [target] is “3ffe:501:ffff:50::”, the default route should be “3ffe:501:ffff:50::1”.

The default route of NUT is set by receiving RA (router advertisement). However, when a fixed default route is used, you can also set it manually.

3.3.3. DNS server (NUT)

Because a DNS server is provided by TN in the test network, only NUT needs to set a DNS server.

DNS server address provided by TN is described as "DNS-ADDRESS" in a configuration file of SIP-CT (config.txt). For details of config.txt, see Section 3.2.3.

3.3.4. SIP parameters (NUT)

Depending on what kind of SIP applicant implementation that you use, setting methods and naming of a parameter are different.

4. How to run the SIP Conformance test

In the section, the explanation of how to run SIP-CT goes on based on completing the configuration properly.

<NOTE! About Log Files>
Test log files are created after each single test. And then if you execute the same test again, you need to delete these log files. If necessary, make back-up files of them. How to delete log files is described in Section 4.4 (1).

Before running tests, change your current directory to the directory that you run the tests.

UA:
```
$ cd $SOMEWHERE/ct-sip-ipv6-ua/sip-ipv6-ua/
```

EP:
```
$ cd $SOMEWHERE/ct-sip-ipv6-ep/sip-ipv6-ep/
```

B2BUA:
```
$ cd $SOMEWHERE/ct-sip-ipv6-b2bua/sip-ipv6-b2bua/
```

RG:
```
$ cd $SOMEWHERE/ct-sip-ipv6-rg/sip-ipv6-rg/
```

PX:
```
$ cd $SOMEWHERE/ct-sip-ipv6-px/sip-ipv6-px/
```

$SOMEWHERE is the directory which SIP-CT package was copied to during installation phase (See INSTALL file).

4.1. Run Auto-configuration Tool

In the same directory, run the auto-configuration tool by hitting the following command.

```
$ make init
```

By this tool, the following processes are executed automatically.

- Check if OS, BIND, and Perl are recommended software and version or not.
- Configure OS settings for IPv6
- Configure from values in Configuration file (config.txt)
- Configure from interface names and MAC addresses in nut.def and tn.def

- Run rtadvd
- Run BIND
- [UA / EP / B2BUA]
  - Refer to UA address in config.txt (ONLY WHEN a fixed address is specified in config.txt); or
  - Auto-configuration of IPv6 Address of NUT (ONLY WHEN no fixed address is specified in config.txt)
- Connection check by ping
- Check by dig

If there are some errors, the tool displays the error message and quit the processing. In this case, please check the configuration of NUT or TN according to the message. If it is done, you can see the results of ping and dig on the screen. If there is "[NG]", please check the connection or configuration and fix it, and then run the Auto-configuration again. If all check items are "[OK]", you can start SIP-CT.

4.2. Run koi

Execute koi to work Tester properly. Hit the following command.

```
$ /usr/local/koi/bin/koid
```

4.3. Test categories

4.3.1. UA

Using the current version of SIP-CT, you can test the following test categories (The total number of test scenarios is 107.) In Table 6, test numbers 1 to 81 are BASIC, mandatory tests, and numbers 82 to 107 are ADVANCED, executed depending on the function a NUT supports.

Table 6 Test category and number

Test rank	Test category	No	Profile No	Profile title
BASIC	Session Establishment	1	UA-2-1-1	Session Establishment Through Two Proxies (Caller hung up by Callee)
		2	UA-2-1-2	Session Establishment Through Two Proxies (Callee hung up by Caller)
		3	UA-2-1-3	Session Establishment Through Two Proxies (Caller hanging up)
		4	UA-2-1-4	Session Establishment Through Two Proxies (Callee hanging up)
		5	UA-2-1-5	Session Establishment Through One Proxy (Caller hung up by Callee)

Test rank	Test category	No	Profile No	Profile title
		6	UA-2-1-6	Session Establishment Through One Proxy (Callee hung up by Caller)
		7	UA-2-1-7	Unsuccessful No Answer [CANCEL] (Caller)
		8	UA-2-1-8	Unsuccessful No Answer [CANCEL] (Callee)
		9	UA-2-2-1	Unsuccessful Busy (Caller)
		10	UA-2-2-2	Unsuccessful Busy (Callee)
		11	UA-2-2-3	Unsuccessful No Response from User Agent (Caller)
		12	UA-2-2-4	Unsuccessful Temporarily Unavailable (Caller)
	Transaction	13	UA-4-1-1	INVITE Client Transaction (retransmission)
		14	UA-4-1-2	INVITE Client Transaction (Receipt of 180 Ringing and Stop of retransmission)
		15	UA-4-1-3	INVITE Client Transaction (Stop of ACK upon Timer D fired)
		16	UA-4-1-4	Non-INVITE Client Transaction (Stop of retransmission of CANCEL upon Timer F fired)
		17	UA-4-1-5	Non-INVITE Client Transaction (Stop of retransmission of BYE upon Timer F fired)
		18	UA-4-1-7	Non-INVITE Client Transaction (receipt of 100 response to CANCEL and reset of Timer E with T2)
		19	UA-4-1-8	Non-INVITE Client Transaction (receipt of 100 response to BYE and reset of Timer E with T2)
		20	UA-4-1-10	INVITE Server Transaction (Stop retransmission after Timer H fired)
		21	UA-4-1-11	INVITE Server Transaction (Response after Timer H fired)
		22	UA-4-1-12	INVITE Server Transaction (Stop of retransmission of 4xx-6xx response upon receipt of ACK)
		23	UA-4-1-13	Non-INVITE Server Transaction (stop of retransmission of CANCEL after Timer J fired)
		24	UA-4-1-14	Non-INVITE Server Transaction (Stop of retransmission of BYE)
		25	UA-4-2-1	487 to CANCEL for INVITE request after 64*T1 fired
		26	UA-4-2-6	BYE for no response to retransmitted 200 (UAS)
		27	UA-4-2-7	No Record-Route in negative replies (caller)
		28	UA-4-2-8	No Record-Route in negative replies (callee)
	Mid-dialog control	29	UA-5-1-1	Session with re-INVITE (Receiving re-INVITE for Hold) (Caller)
		30	UA-5-2-1	Receipt of re-INVITE before sending the final response to the first INVITE
		31	UA-5-2-3	Unacceptable re-INVITE (Caller)
		32	UA-5-2-4	Unacceptable re-INVITE (Callee)
		33	UA-5-2-5	No ACK is received for re-INVITE (Caller)
		34	UA-5-2-6	No ACK is received for re-INVITE (Callee)
		35	UA-5-2-7	re-INVITE without offer (Caller)
		36	UA-5-2-8	re-INVITE without offer (Callee)
	Authenticati	37	UA-6-1-8	INVITE with Digest Authentication without qop

Test rank	Test category	No	Profile No	Profile title
	on	38	UA-6-1-9	BYE with Digest Authentication without qop
	Header parameter	39	UA-7-1-2	URI including a comma, question mark or semicolon
		40	UA-7-2-1	Receipt of BYE with an unacceptable header field
		41	UA-7-2-2	Receipt of CANCEL with an unacceptable header field
		42	UA-7-2-3	Receipt of 200 with an unacceptable header field
	Routing	43	UA-8-1-2	Detection of Merged Requests
		44	UA-8-1-3	sent-by of Via in response not inserted into request
		45	UA-8-1-4	sent-by in Via with IP address that differs from the packet source address and port
		46	UA-8-1-5	Via with "maddr" parameter and port in the "sent-by"
		47	UA-8-1-6	Via with "maddr" parameter and without port in "sent-by"
		48	UA-8-1-7	sent-by in Via with a domain name and a port
		49	UA-8-1-8	sent-by in Via with a domain name and without a port
	Request message	50	UA-9-2-1	Unrecognized type of body
		51	UA-9-2-2	Unrecognized encoding of body
		52	UA-9-2-3	Body in unrecognized language
		53	UA-9-2-4	Request with a tag in To header field
		54	UA-9-2-5	BYE with value of the lower CSeq
		55	UA-9-2-6	Rejection of an offer
	Response message	56	UA-10-1-1	Session Progress response
		57	UA-10-2-1	Non-Forwarding of request upon receipt of 503
		58	UA-10-2-2	Receipt of SDP answer in a provisional response
		59	UA-10-2-3	Unrecognized response code (2xx)
		60	UA-10-2-4	Unrecognized response code (4xx)
		61	UA-10-2-5	Unrecognized response code (5xx)
		62	UA-10-2-6	Unrecognized response code (6xx)
		63	UA-10-2-7	Provisional response other than a 100 response
		64	UA-10-2-8	Omission or abbriviation of body upon receipt of 413(Request Entity Too Large) response
		65	UA-10-2-9	Processing request without credencials after receipt of 403 (Forbidden) response
		66	UA-10-2-10	Unsupported Require header field
	Dialog	67	UA-11-1-1	CANCEL for unmatched requests
		68	UA-11-1-2	Request without a tag in a From header field
		69	UA-11-1-3	Response without a tag in a To header field
		70	UA-11-1-5	Provisional response for the need to ask for an "extension"
		71	UA-11-1-6	BYE not matching an existing dialog
		72	UA-11-1-7	Write-once Record-routing
		73	UA-11-1-8	Returning of correct Record-Route parameter
		74	UA-11-1-10	Failed re-INVITE not changing the dialog
		75	UA-11-1-11	Construction of a correct Route set

Test rank	Test category	No	Profile No	Profile title
	Transport	76	UA-14-2-1	Receipt of INVITE with additional bytes in the transport packet
		77	UA-14-2-2	Transport packet of a response ending before the end of the message body
		78	UA-14-2-3	Transport packet of request ending before the end of the message body
	ICMP	79	UA-15-2-1	Receipt of "ICMP destination unreachable" for a previously sent request
		80	UA-15-2-2	Receipt of "ICMP time exceeded" for a previously sent request
		81	UA-15-2-3	Receipt of "ICMP time exceeded" for a previously sent response
ADVANCED	Registration	82	UA-1-1-1	Successful New Registration
		83	UA-1-1-2	Update of Contact List (Refresh)
		84	UA-1-1-4	Cancellation of Registration
		85	UA-1-1-5	Unsuccessful Registration
		86	UA-1-2-1	Record-Route in REGISTER response
		87	UA-4-1-6	Non-INVITE Client Transaction (Stop of retransmission of REGISTER upon Timer F fired)
		88	UA-4-1-9	Non-INVITE Client Transaction (receipt of 100 response to REGISTER and reset of Timer E with T2)
		89	UA-6-1-7	REGISTER with Digest Authentication without qop
	Authentication	90	UA-6-1-5	BYE request with user authentication
		91	UA-6-1-6	re-INVITE with user authentication
	Mid-dialog control	92	UA-5-1-2	Session with re-INVITE (Sending re-INVITE for Hold) (Callee)
		93	UA-5-2-2	Receipt of re-INVITE before receiving the final response to another re-INVITE
		94	UA-5-2-9	Receipt of 491 response to re-INVITE (Caller)
		95	UA-5-2-10	Receipt of 491 response for re-INVITE (Callee)
	DNS	96	UA-13-2-1	Successful Session with Proxy Failure (Caller)
		97	UA-13-2-2	Forwarding of INVITE to an alternative server upon receipt of 503
	Transaction	98	UA-4-2-5	Time in Expires in INVITE is up (UAS)
	Request message	99	UA-9-2-7	INVITE with RFC2543 syntax
	Dialog	100	UA-11-1-4	Multiple 2xx responses
		101	UA-11-1-9	Proper processing upon receipt of multiple 18x from multiple downstream branches
	OPTIONS method	102	UA-12-1-1	Receipt of OPTIONS when the UAS is ready to accept a call
		103	UA-12-1-2	Receipt of OPTIONS within a dialog
	Routing	104	UA-8-1-1	Proxy performing strict routing
		105	UA-8-1-9	Correct Strict Routing
	Header parameter	106	UA-7-1-1	Timestamp header in 100 response

4.3.2. EP

Using the current version of SIP-CT, you can test the following test categories (The total number of test scenarios is 107.) In Table 7, test numbers 1 to 89 are BASIC, mandatory tests, and numbers 90 to 107 are ADVANCED, executed depending on the function a NUT supports.

Table 7 Test category and number

Test rank	Test category	No	Profile No	Profile title
BASIC	Registration	1	UA-1-1-1	Successful New Registration
		2	UA-1-1-2	Update of Contact List (Refresh)
		3	UA-1-1-4	Cancellation of Registration
		4	UA-1-1-5	Unsuccessful Registration
		5	UA-1-2-1	Record-Route in REGISTER response
		6	UA-4-1-6	Non-INVITE Client Transaction (Stop of retransmission of REGISTER upon Timer F fired)
		7	UA-4-1-9	Non-INVITE Client Transaction (receipt of 100 response to REGISTER and reset of Timer E with T2)
		8	UA-6-1-7	REGISTER with Digest Authentication without qop
	Session Establishment	9	UA-2-1-1	Session Establishment Through Two Proxies (Caller hung up by Callee)
		10	UA-2-1-2	Session Establishment Through Two Proxies (Callee hung up by Caller)
		11	UA-2-1-3	Session Establishment Through Two Proxies (Caller hanging up)
		12	UA-2-1-4	Session Establishment Through Two Proxies (Callee hanging up)
		13	UA-2-1-5	Session Establishment Through One Proxy (Caller hung up by Callee)
		14	UA-2-1-6	Session Establishment Through One Proxy (Callee hung up by Caller)
		15	UA-2-1-7	Unsuccessful No Answer [CANCEL] (Caller)
		16	UA-2-1-8	Unsuccessful No Answer [CANCEL] (Callee)
		17	UA-2-2-1	Unsuccessful Busy (Caller)
		18	UA-2-2-2	Unsuccessful Busy (Callee)
		19	UA-2-2-3	Unsuccessful No Response from User Agent (Caller)
		20	UA-2-2-4	Unsuccessful Temporarily Unavailable (Caller)
	Transaction	21	UA-4-1-1	INVITE Client Transaction (retransmission)
		22	UA-4-1-2	INVITE Client Transaction (Receipt of 180 Ringing and Stop of retransmission)
		23	UA-4-1-3	INVITE Client Transaction (Stop of ACK upon Timer D fired)

Test rank	Test category	No	Profile No	Profile title
		24	UA-4-1-4	Non-INVITE Client Transaction (Stop of retransmission of CANCEL upon Timer F fired)
		25	UA-4-1-5	Non-INVITE Client Transaction (Stop of retransmission of BYE upon Timer F fired)
		26	UA-4-1-7	Non-INVITE Client Transaction (receipt of 100 response to CANCEL and reset of Timer E with T2)
		27	UA-4-1-8	Non-INVITE Client Transaction (receipt of 100 response to BYE and reset of Timer E with T2)
		28	UA-4-1-10	INVITE Server Transaction (Stop retransmission after Timer H fired)
		29	UA-4-1-11	INVITE Server Transaction (Response after Timer H fired)
		30	UA-4-1-12	INVITE Server Transaction (Stop of retransmission of 4xx-6xx response upon receipt of ACK)
		31	UA-4-1-13	Non-INVITE Server Transaction (stop of retransmission of CANCEL after Timer J fired)
		32	UA-4-1-14	Non-INVITE Server Transaction (Stop of retransmission of BYE)
		33	UA-4-2-1	487 to CANCEL for INVITE request after 64*T1 fired
		34	UA-4-2-6	BYE for no response to retransmitted 200 (UAS)
		35	UA-4-2-7	No Record-Route in negative replies (caller)
		36	UA-4-2-8	No Record-Route in negative replies (callee)
	Mid-dialog control	37	UA-5-1-1	Session with re-INVITE (Receiving re-INVITE for Hold) (Caller)
		38	UA-5-2-1	Receipt of re-INVITE before sending the final response to the first INVITE
		39	UA-5-2-3	Unacceptable re-INVITE (Caller)
		40	UA-5-2-4	Unacceptable re-INVITE (Callee)
		41	UA-5-2-5	No ACK is received for re-INVITE (Caller)
		42	UA-5-2-6	No ACK is received for re-INVITE (Callee)
		43	UA-5-2-7	re-INVITE without offer (Caller)
		44	UA-5-2-8	re-INVITE without offer (Callee)
	Authentication	45	UA-6-1-8	INVITE with Digest Authentication without qop
		46	UA-6-1-9	BYE with Digest Authentication without qop
	Header parameter	47	UA-7-1-2	URI including a comma, question mark or semicolon
		48	UA-7-2-1	Receipt of BYE with an unacceptable header field
		49	UA-7-2-2	Receipt of CANCEL with an unacceptable header field
		50	UA-7-2-3	Receipt of 200 with an unacceptable header field
	Routing	51	UA-8-1-2	Detection of Merged Requests
		52	UA-8-1-3	sent-by of Via in response not inserted into request

Test rank	Test category	No	Profile No	Profile title
		53	UA-8-1-4	sent-by in Via with IP address that differs from the packet source address and port
		54	UA-8-1-5	Via with "maddr" parameter and port in the "sent-by"
		55	UA-8-1-6	Via with "maddr" parameter and without port in "sent-by"
		56	UA-8-1-7	sent-by in Via with a domain name and a port
		57	UA-8-1-8	sent-by in Via with a domain name and without a port
	Request message	58	UA-9-2-1	Unrecognized type of body
		59	UA-9-2-2	Unrecognized encoding of body
		60	UA-9-2-3	Body in unrecognized language
		61	UA-9-2-4	Request with a tag in To header field
		62	UA-9-2-5	BYE with value of the lower CSeq
		63	UA-9-2-6	Rejection of an offer
	Response message	64	UA-10-1-1	Session Progress response
		65	UA-10-2-1	Non-Forwarding of request upon receipt of 503
		66	UA-10-2-2	Receipt of SDP answer in a provisional response
		67	UA-10-2-3	Unrecognized response code (2xx)
		68	UA-10-2-4	Unrecognized response code (4xx)
		69	UA-10-2-5	Unrecognized response code (5xx)
		70	UA-10-2-6	Unrecognized response code (6xx)
		71	UA-10-2-7	Provisional response other than a 100 response
		72	UA-10-2-8	Omission or abbriviation of body upon receipt of 413(Request Entity Too Large) response
		73	UA-10-2-9	Processing request without credencials after receipt of 403 (Forbidden) response
		74	UA-10-2-10	Unsupported Require header field
	Dialog	75	UA-11-1-1	CANCEL for unmatched requests
		76	UA-11-1-2	Request without a tag in a From header field
		77	UA-11-1-3	Response without a tag in a To header field
		78	UA-11-1-5	Provisional response for the need to ask for an "extension"
		79	UA-11-1-6	BYE not matching an existing dialog
		80	UA-11-1-7	Write-once Record-routing
		81	UA-11-1-8	Returning of correct Record-Route parameter
		82	UA-11-1-10	Failed re-INVITE not changing the dialog
		83	UA-11-1-11	Construction of a correct Route set
	Transport	84	UA-14-2-1	Receipt of INVITE with additional bytes in the transport packet
		85	UA-14-2-2	Transport packet of a response ending before the end of the message body
		86	UA-14-2-3	Transport packet of request ending before the end of the message body

Test rank	Test category	No	Profile No	Profile title
	ICMP	87	UA-15-2-1	Receipt of "ICMP destination unreachable" for a previously sent request
		88	UA-15-2-2	Receipt of "ICMP time exceeded" for a previously sent request
		89	UA-15-2-3	Receipt of "ICMP time exceeded" for a previously sent response
ADVANCED	Authentication	90	UA-6-1-5	BYE request with user authentication
		91	UA-6-1-6	re-INVITE with user authentication
	Mid-dialog control	92	UA-5-1-2	Session with re-INVITE (Sending re-INVITE for Hold) (Callee)
		93	UA-5-2-2	Receipt of re-INVITE before receiving the final response to another re-INVITE
		94	UA-5-2-9	Receipt of 491 response to re-INVITE (Caller)
		95	UA-5-2-10	Receipt of 491 response for re-INVITE (Callee)
	DNS	96	UA-13-2-1	Successful Session with Proxy Failure (Caller)
		97	UA-13-2-2	Forwarding of INVITE to an alternative server upon receipt of 503
	Transaction	98	UA-4-2-5	Time in Expires in INVITE is up (UAS)
	Request message	99	UA-9-2-7	INVITE with RFC2543 syntax
	Dialog	100	UA-11-1-4	Multiple 2xx responses
		101	UA-11-1-9	Proper processing upon receipt of multiple 18x from multiple downstream branches
	OPTIONS method	102	UA-12-1-1	Receipt of OPTIONS when the UAS is ready to accept a call
		103	UA-12-1-2	Receipt of OPTIONS within a dialog
	Routing	104	UA-8-1-1	Proxy performing strict routing
		105	UA-8-1-9	Correct Strict Routing
	Header parameter	106	UA-7-1-1	Timestamp header in 100 response

4.3.3. B2BUA

Using the current version of SIP-CT, you can test the following test categories (The total number of test scenarios is 107.) In Table 8, test numbers 1 to 85 are BASIC, mandatory tests, and numbers 86 to 108 are ADVANCED, executed depending on the function a NUT supports.

Table 8 Test category and number

Test rank	Test category	No	Profile No	Profile title
BASIC	Session Establishment	1	UA-2-1-1	Session Establishment Through Two Proxies (Caller hung up by Callee)
		2	UA-2-1-2	Session Establishment Through Two Proxies (Callee hung up by Caller)

Test rank	Test category	No	Profile No	Profile title
		3	UA-2-1-3	Session Establishment Through Two Proxies (Caller hanging up)
		4	UA-2-1-4	Session Establishment Through Two Proxies (Callee hanging up)
		5	UA-2-1-5	Session Establishment Through One Proxy (Caller hung up by Callee)
		6	UA-2-1-6	Session Establishment Through One Proxy (Callee hung up by Caller)
		7	UA-2-1-7	Unsuccessful No Answer [CANCEL] (Caller)
		8	UA-2-1-8	Unsuccessful No Answer [CANCEL] (Callee)
		9	UA-2-2-1	Unsuccessful Busy (Caller)
		10	UA-2-2-2	Unsuccessful Busy (Callee)
		11	UA-2-2-3	Unsuccessful No Response from User Agent (Caller)
		12	UA-2-2-4	Unsuccessful Temporarily Unavailable (Caller)
	Transaction	13	UA-4-1-1	INVITE Client Transaction (retransmission)
		14	UA-4-1-2	INVITE Client Transaction (Receipt of 180 Ringing and Stop of retransmission)
		15	UA-4-1-3	INVITE Client Transaction (Stop of ACK upon Timer D fired)
		16	UA-4-1-4	Non-INVITE Client Transaction (Stop of retransmission of CANCEL upon Timer F fired)
		17	UA-4-1-5	Non-INVITE Client Transaction (Stop of retransmission of BYE upon Timer F fired)
		18	UA-4-1-7	Non-INVITE Client Transaction (receipt of 100 response to CANCEL and reset of Timer E with T2)
		19	UA-4-1-8	Non-INVITE Client Transaction (receipt of 100 response to BYE and reset of Timer E with T2)
		20	UA-4-1-10	INVITE Server Transaction (Stop retransmission after Timer H fired)
		21	UA-4-1-11	INVITE Server Transaction (Response after Timer H fired)
		22	UA-4-1-12	INVITE Server Transaction (Stop of retransmission of 4xx-6xx response upon receipt of ACK)
		23	UA-4-1-13	Non-INVITE Server Transaction (stop of retransmission of CANCEL after Timer J fired)
		24	UA-4-1-14	Non-INVITE Server Transaction (Stop of retransmission of BYE)
		25	UA-4-2-1	487 to CANCEL for INVITE request after 64*T1 fired
		26	UA-4-2-6	BYE for no response to retransmitted 200 (UAS)
		27	UA-4-2-7	No Record-Route in negative replies (caller)
		28	UA-4-2-8	No Record-Route in negative replies (callee)
	Mid-dialog control	29	UA-5-1-1	Session with re-INVITE (Receiving re-INVITE for Hold) (Caller)
		30	UA-5-1-2	Session with re-INVITE (Sending re-INVITE for Hold) (Callee)

Test rank	Test category	No	Profile No	Profile title
		31	UA-5-2-1	Receipt of re-INVITE before sending the final response to the first INVITE
		32	UA-5-2-2	Receipt of re-INVITE before receiving the final response to another re-INVITE
		33	UA-5-2-3	Unacceptable re-INVITE (Caller)
		34	UA-5-2-4	Unacceptable re-INVITE (Callee)
		35	UA-5-2-5	No ACK is received for re-INVITE (Caller)
		36	UA-5-2-6	No ACK is received for re-INVITE (Callee)
		37	UA-5-2-7	re-INVITE without offer (Caller)
		38	UA-5-2-8	re-INVITE without offer (Callee)
		39	UA-5-2-9	Receipt of 491 response to re-INVITE (Caller)
		40	UA-5-2-10	Receipt of 491 response for re-INVITE (Callee)
	Authentication	41	UA-6-1-8	INVITE with Digest Authentication without qop
		42	UA-6-1-9	BYE with Digest Authentication without qop
	Header parameter	43	UA-7-1-2	URI including a comma, question mark or semicolon
		44	UA-7-2-1	Receipt of BYE with an unacceptable header field
		45	UA-7-2-2	Receipt of CANCEL with an unacceptable header field
		46	UA-7-2-3	Receipt of 200 with an unacceptable header field
	Routing	47	UA-8-1-2	Detection of Merged Requests
		48	UA-8-1-3	sent-by of Via in response not inserted into request
		49	UA-8-1-4	sent-by in Via with IP address that differs from the packet source address and port
		50	UA-8-1-5	Via with "maddr" parameter and port in the "sent-by"
		51	UA-8-1-6	Via with "maddr" parameter and without port in "sent-by"
		52	UA-8-1-7	sent-by in Via with a domain name and a port
		53	UA-8-1-8	sent-by in Via with a domain name and without a port
	Request message	54	UA-9-2-1	Unrecognized type of body
		55	UA-9-2-2	Unrecognized encoding of body
		56	UA-9-2-3	Body in unrecognized language
		57	UA-9-2-4	Request with a tag in To header field
		58	UA-9-2-5	BYE with value of the lower CSeq
		59	UA-9-2-6	Rejection of an offer
	Response message	60	UA-10-1-1	Session Progress response
		61	UA-10-2-1	Non-Forwarding of request upon receipt of 503
		62	UA-10-2-2	Receipt of SDP answer in a provisional response
		63	UA-10-2-3	Unrecognized response code (2xx)
		64	UA-10-2-4	Unrecognized response code (4xx)

Test rank	Test category	No	Profile No	Profile title
		65	UA-10-2-5	Unrecognized response code (5xx)
		66	UA-10-2-6	Unrecognized response code (6xx)
		67	UA-10-2-7	Provisional response other than a 100 response
		68	UA-10-2-8	Omission or abbriviation of body upon receipt of 413(Request Entity Too Large) response
		69	UA-10-2-9	Processing request without credencials after receipt of 403 (Forbidden) response
		70	UA-10-2-10	Unsupported Require header field
	Dialog	71	UA-11-1-1	CANCEL for unmatched requests
		72	UA-11-1-2	Request without a tag in a From header field
		73	UA-11-1-3	Response without a tag in a To header field
		74	UA-11-1-5	Provisional response for the need to ask for an "extension"
		75	UA-11-1-6	BYE not matching an existing dialog
		76	UA-11-1-7	Write-once Record-routing
		77	UA-11-1-8	Returning of correct Record-Route parameter
		78	UA-11-1-10	Failed re-INVITE not changing the dialog
		79	UA-11-1-11	Construction of a correct Route set
	Transport	80	UA-14-2-1	Receipt of INVITE with additional bytes in the transport packet
		81	UA-14-2-2	Transport packet of a response ending before the end of the message body
		82	UA-14-2-3	Transport packet of request ending before the end of the message body
	ICMP	83	UA-15-2-1	Receipt of “ICMP destination unreachable” for a previously sent request
		84	UA-15-2-2	Receipt of “ICMP time exceeded” for a previously sent request
		85	UA-15-2-3	Receipt of “ICMP time exceeded” for a previously sent response
ADVANCED	Registration	86	UA-1-1-1	Successful New Registration
		87	UA-1-1-2	Update of Contact List (Refresh)
		88	UA-1-1-4	Cancellation of Registration
		89	UA-1-1-5	Unsuccessful Registration

Test rank	Test category	No	Profile No	Profile title
		90	UA-1-2-1	Record-Route in REGISTER response
		91	UA-4-1-6	Non-INVITE Client Transaction (Stop of retransmission of REGISTER upon Timer F fired)
		92	UA-4-1-9	Non-INVITE Client Transaction (receipt of 100 response to REGISTER and reset of Timer E with T2)
		93	UA-6-1-7	REGISTER with Digest Authentication without qop
	Authentication	94	UA-6-1-5	BYE request with user authentication
		95	UA-6-1-6	re-INVITE with user authentication
	DNS	96	UA-13-2-1	Successful Session with Proxy Failure (Caller)
		97	UA-13-2-2	Forwarding of INVITE to an alternative server upon receipt of 503
	Transaction	98	UA-4-2-5	Time in Expires in INVITE is up (UAS)
	Request message	99	UA-9-2-7	INVITE with RFC2543 syntax
	Dialog	100	UA-11-1-4	Multiple 2xx responses
		101	UA-11-1-9	Proper processing upon receipt of multiple 18x from multiple downstream branches
	OPTIONS method	102	UA-12-1-1	Receipt of OPTIONS when the UAS is ready to accept a call
		103	UA-12-1-2	Receipt of OPTIONS within a dialog
	Routing	104	UA-8-1-1	Proxy performing strict routing
		105	UA-8-1-9	Correct Strict Routing
	Header parameter	106	UA-7-1-1	Timestamp header in 100 response

4.3.4. RG

Using the current version of SIP-CT, you can test the following test categories (The total number of test scenarios is 107.) In Table 9, test numbers 1 to 21 are BASIC, mandatory tests, and number 22 is ADVANCED, executed depending on the function a NUT supports.

Table 9 Test category and number

Test rank	Test category	No	Profile No	Profile title
BASIC	Registration	1	RG-1-1-1	SIP Registrar- Successful New Registration
		2	RG-1-1-2	SIP Registrar- Update of Contact List
		3	RG-1-1-3	SIP Registrar- Request for Current Contact List

Test rank	Test category	No	Profile No	Profile title
		4	RG-1-1-4	SIP Registrar- Cancellation of Registration
		5	RG-1-1-5	SIP Registrar- REGISTER without Expires header field
		6	RG-1-1-6	SIP Registrar- processing of REGISTER requests in the correct order.
		7	RG-1-1-7	SIP Registrar- REGISTER with two Contact header fields with separate expires parameters
		8	RG-1-2-1	SIP Registrar- Unsuccessful Registration (wrong user ID / password)
		9	RG-1-2-2	SIP Registrar- Expiration of REGISTER less than a registrar-configured minimum
		10	RG-1-2-3	SIP Registrar- REGISTER with the equal CSeq value to or lower than the last value of CSeq
		11	RG-1-2-4	SIP Registrar- Sending of 400 upon CSeq value of "*" in Contact header field
		12	RG-2-1-1	SIP Registrar- Record-Route in REGISTER request
		13	RG-2-1-2	SIP Registrar- REGISTER with the different Call-ID value
		14	RG-2-1-3	SIP Registrar- Sequence Number is not Incremented
		15	RG-2-1-4	SIP Registrar- URI with user-param in To header in REGISTER
		16	RG-2-1-5	SIP Registrar- URI with escaped characters in To header in REGISTER
		17	RG-2-2-1	SIP Registrar- REGISTER with an invalid AoR
		18	RG-2-2-2	SIP Registrar- Illegal parameter value in Contact header field
		19	RG-2-2-3	SIP Registrar- REGISTER request with two Contact header values and update failure
		20	RG-4-1-1	SIP Registrar- Future extension about new header field
		21	RG-4-1-2	SIP Registrar- Non-supported option-tag in Require field
ADVANCED	Registration	22	RG-3-1-1	SIP Registrar- Forwarded REGISTER request

4.3.5. PX

Using the current version of SIP-CT, you can test the following test categories (The total number of test scenarios is 87.) In Table 10, test numbers 1 to 59 are BASIC, mandatory tests, and numbers 60 to 87 are ADVANCED, executed depending on the function a NUT supports.

Table 10 Test category and number

Test rank	Test category	No	Profile No	Profile title
BASIC	Session Establishment on One Proxy	1	PX-1-1-1	SIP Proxy- Session Establishment Through One Proxy in the same domain
		2	PX-1-1-2	SIP Proxy- Unsuccessful No Answer [CANCEL]
		3	PX-1-1-3	SIP Proxy- Session establishment and holding with re-INVITE
		4	PX-1-2-1	SIP Proxy- Unsuccessful Busy
		5	PX-1-2-2	SIP Proxy- Unsuccessful No Response from User Agent
		6	PX-1-2-3	SIP Proxy- Unsuccessful Temporarily Unavailable
	Routing	7	FW-1-1-1	SIP Proxy- Request-URI with escaped characters
		8	FW-1-1-2	SIP Proxy- Non-allowed parameters in Request-URI
		9	FW-1-2-1	SIP Proxy- Request-URI with an unknown scheme
		10	FW-1-2-2	SIP Proxy- Request with an inexistent entity at the proxy
		11	FW-1-2-3	SIP Proxy- An unsupported option-tag in a Proxy-Require
		12	FW-1-2-4	SIP Proxy- Max-Forwards header field with a value of zero(0)
		13	FW-1-2-5	SIP Proxy- Request without Max-Forwards header field
		14	FW-1-2-6	SIP Proxy- Timestamp header field in a 100 response
		15	FW-2-1-1	SIP Proxy- "sent-by" in Via with a domain name and a port
		16	FW-2-1-2	SIP Proxy- "sent-by" in Via with a domain name and without a port
		17	FW-2-2-1	SIP Proxy- Receipt of 503 (Service Unavailable) response
		18	FW-2-2-2	SIP Proxy- Receipt of 503 (Service Unavailable) response without Retry-After
		19	FW-4-1-1	SIP Proxy- Unsuccessful No Answer with Proxy-Require [CANCEL]
		20	FW-4-1-2	SIP Proxy- processing of CANCEL upon no provisional response
	Forwarding Request	21	RQ-2-1-1	SIP Proxy- Future extension about new header fields
		22	RQ-2-1-2	SIP Proxy- Request without a tag in From field
		23	RQ-2-1-3	SIP Proxy- Response without a tag in To field
		24	RQ-2-1-4	SIP Proxy- Unrecognized type of body

Test rank	Test category	No	Profile No	Profile title
		25	RQ-2-1-5	SIP Proxy- Unrecognized encoding of body
		26	RQ-2-1-6	SIP Proxy- Unrecognized language of body
		27	RQ-3-1-1	SIP Proxy- Receipt of BYE with an unacceptable header field
		28	RQ-3-1-2	SIP Proxy- BYE not matching an existing dialog
		29	RS-1-1-1	SIP Proxy- Unrecognized response code (2xx)
		30	RS-1-1-2	SIP Proxy- Unrecognized response code (4xx)
		31	RS-1-1-3	SIP Proxy- Unrecognized response code (5xx)
		32	RS-1-1-4	SIP Proxy- Unrecognized response code (6xx)
		33	RS-1-1-5	SIP Proxy- Provisional response other than 100 response
		34	RS-1-1-6	SIP Proxy- Receipt of 200 with an unacceptable header field
	Transaction	35	TS-1-1-1	SIP Proxy- INVITE client transaction (Stop of retransmission of INVITE upon Timer B fired)
		36	TS-1-1-2	SIP Proxy- INVITE client transaction (Stop of retransmission upon Receipt of 180 Ringing)
		37	TS-1-1-3	SIP Proxy- INVITE client transaction (Stop of ACK upon Timer D fired)
		38	TS-2-1-1	SIP Proxy- Non-INVITE Client Transaction (Stop of retransmission of CANCEL upon Timer F fired)
		39	TS-2-1-2	SIP Proxy- Non-INVITE Client Transaction (Stop of retransmission of BYE upon Timer F fired)
		40	TS-2-1-3	SIP Proxy- Non-INVITE Client Transaction (receipt of 100 response to CANCEL and reset of Timer E with T2)
		41	TS-2-1-4	SIP Proxy- Non-INVITE Client Transaction (receipt of 100 response to BYE and reset of Timer E with T2)
		42	TS-3-1-1	SIP Proxy- INVITE Server Transaction (Response after Timer H fired)
		43	TS-3-1-2	SIP Proxy- INVITE Server Transaction (Stop of retransmission after Timer H fired)
		44	TS-3-1-4	SIP Proxy- INVITE Server Transaction (Stop of retransmission of 4xx-6xx response upon receipt of ACK)
		45	TS-3-1-5	SIP Proxy- 487 to CANCEL for INVITE request after 64*T1 fired
		46	TS-4-1-1	SIP Proxy- Non-INVITE Server Transaction (response for CANCEL after Timer J fired)
		47	TS-4-1-2	SIP Proxy- Non-INVITE Server Transaction (forwarding of BYE upon Timer J fired)
		48	TS-5-1-1	SIP Proxy- Session Establishment Through One Proxy without Provisional Response in the same domain
		49	TS-5-1-2	SIP Proxy- Session Establishment Through One Proxy with Multiple Provisional Responses in the same domain

Test rank	Test category	No	Profile No	Profile title
		50	TS-5-1-3	SIP Proxy- Retransmission of INVITE Request Before Session Establishment Through One Proxy
	Session Progress	51	PG-1-1-1	SIP Proxy- Session Progress response
		52	PG-1-1-2	SIP Proxy- INVITE Client Transaction (extension of Timer C)
		53	PG-1-2-1	SIP Proxy- INVITE Client Transaction (Reset of Timer C)
		54	PG-1-2-2	SIP Proxy- INVITE Client Transaction (no provisional response after Timer C fired)
	Transport	55	TP-1-1-1	SIP Proxy- Receiving INVITE with additional bytes in a transport packet
		56	TP-1-2-1	SIP Proxy- Transport packet of response ending before the end of the message body
		57	TP-1-2-2	SIP Proxy- Transport packet of request ending before the end of the message body
		58	TP-2-1-1	SIP Proxy- Receipt of “ICMP time exceeded” for a sent request
		59	TP-2-1-2	SIP Proxy- Receipt of “ICMP time exceeded” for a sent response
		60	TP-2-2-1	SIP Proxy- Receiving the “ICMP destination unreachable” message for a sent request
ADVANCED	Authentication	61	AU-1-1-1	SIP Proxy- BYE request with user authentication
		62	AU-1-1-2	SIP Proxy- re-INVITE with user authentication
	Forking	63	FK-1-1-1	SIP Proxy- Forked request with different Via branch parameters
		64	FK-1-1-2	SIP Proxy- Choice of response to forked request (6xx response)
		65	FK-1-1-3	SIP Proxy- Choice of response to forked request (The lowest response class)
		66	FK-1-1-4	SIP Proxy- Stateful proxy receiving a CANCEL request
		67	FK-1-1-5	SIP Proxy- Forked request
	Routing	68	FW-2-2-3	SIP Proxy- Forwarding of INVITE to an alternate server upon receipt of 503 response
	Forwarding Request	69	RQ-1-1-1	SIP Proxy- Receipt of OPTIONS from UAC
		70	RQ-1-1-2	SIP Proxy- Receipt of OPTIONS when a UAS is ready to accept a call
	Registration	71	RQ-4-1-2	SIP Registrar- Forwarding REGISTER request
	Session Establishment on Two Proxies	72	PX-2-1-1	SIP Proxy- Session Establishment Through Two Proxies - Callee hanging up [another domain] (Caller)
		73	PX-2-1-2	SIP Proxy- Session Establishment Through Two Proxies - Callee hanging up [another domain] (Callee)
		74	PX-2-1-3	SIP Proxy- Unsuccessful No Answer [CANCEL] (Caller)
		75	PX-2-1-4	SIP Proxy- Unsuccessful No Answer [CANCEL]

Test rank	Test category	No	Profile No	Profile title
				(Callee)
		76	PX-2-1-5	SIP Proxy- Session establishment and call hold by re-INVITE (Caller)
		77	PX-2-1-6	SIP Proxy- Session establishment and call hold by re-INVITE (Callee)
		78	PX-2-2-1	SIP Proxy- Unsuccessful Busy (Caller)
		79	PX-2-2-2	SIP Proxy- Unsuccessful Busy (Callee)
		80	PX-2-2-3	SIP Proxy- Unsuccessful No Response from the UA through the other proxy
		81	PX-2-2-4	SIP Proxy- Unsuccessful No Response from UA (Callee)
		82	PX-2-2-5	SIP Proxy- Unsuccessful Temporarily Unavailable (Callee)
	Routing	83	FW-2-2-4	SIP Proxy- Forwarding of INVITE to an alternate server upon receipt of 503 response
		84	FW-3-1-1	SIP Proxy- Session Establishment Through Two Proxies with a strict router in separate domains (Callee)
		85	FW-3-1-2	SIP Proxy- Session Establishment Through Two Proxies with strict router in separate domains (Caller)
		86	FW-1-1-3	SIP Proxy- Update of a Request-URI scheme
		87	FW-2-1-3	SIP Proxy- Multiple 2xx responses

4.4. Test Profiles

A test profile is a document that title, purpose, addresses and parameters, procedure, judgment and reference of a test are described. Please check them, especially the test title, the test procedure, sample packets, and judgments, before starting tests.

Please refer to the document, *IPv6 Ready Logo Phase 2 for SIP Conformance Test Profile (UA EP B2BUA / RG / PX)*:

http://cert.v6pc.jp/sip-ipv6/ipv6ready/

4.5. Commands for Conformance test

The test procedure is as follows:

(1) Remove the existing HTML logs
You need to delete log files in order to execute a test.

There are two ways to delete log files.

(a) Delete all log files

```
$ make clean
```

NOTE!
This command (“make clean”) deletes all log files in the directory. That means that it deletes all results of tests you executed. If necessary, make back-up files of them.

(b) Delete “index.html”, “report.html”, and “summary.html”
You can execute a test by deleting “index.html”, “report.html”, and “summary.html”.

```
$ rm index.html
```

```
$ rm report.html
```

```
$ rm summary.html
```

If you run a test even though there are any HTML logs, the following message is displayed and the test is canceled. Delete log files according to the above indication, and run the test again.

```
Error : Already exist index.html
        please run after delete index.html or run with -f option.
*** Error code 2
```

(2) Run tests
If you need to run the tests by number, you execute the following command:

make simple

For example, when executing test number from 51 to 52, hit the following command:

```
$ make simple
```

```
$ start: 51
```

```
$ end: 52
```

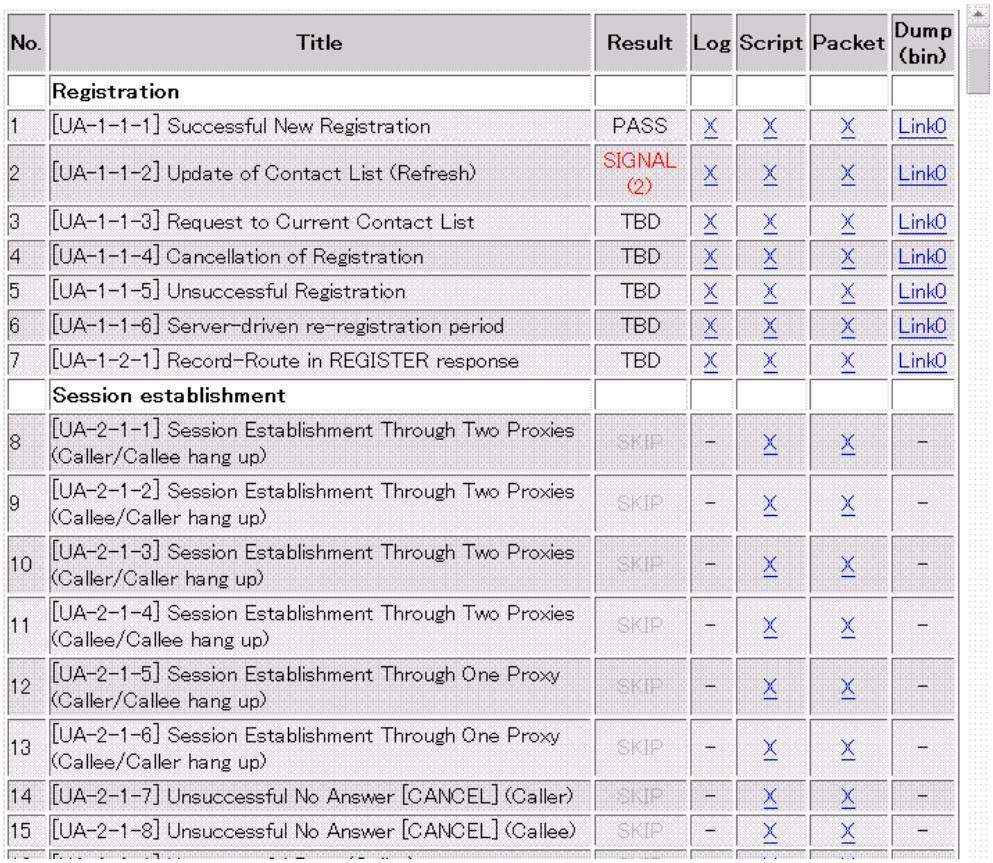
Operate the test following the instructions on the screen.

(3) Confirm the results with HTML logs

After all the tests finish, you can make a list of the test results outputted as HTML files ("results.html"), and follow the list to each test results.

```
$ make result
```

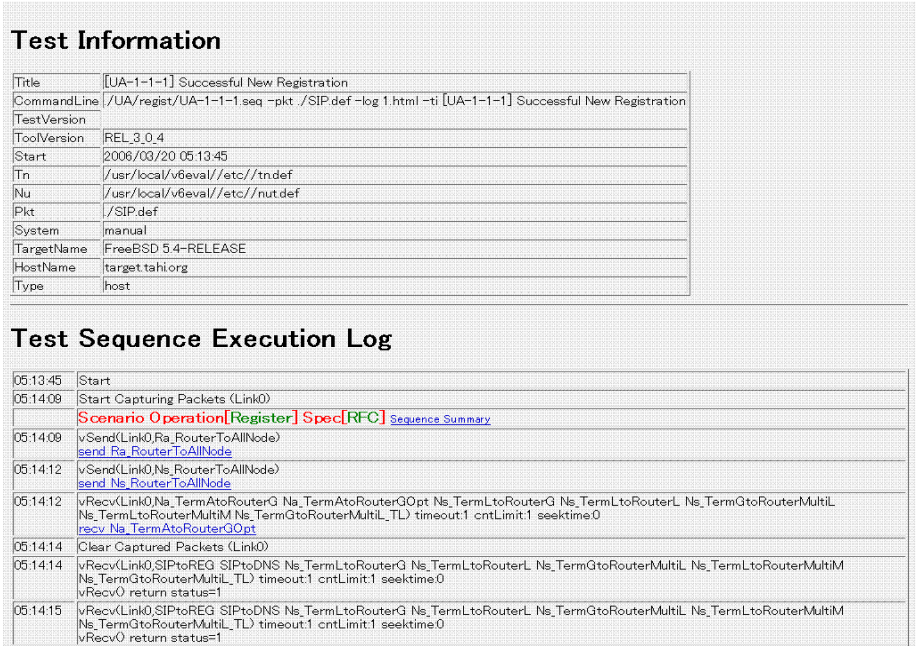
With a web browser, you can see the following table.



No.	Title	Result	Log	Script	Packet	Dump (bin)
	Registration					
1	[UA-1-1-1] Successful New Registration	PASS	X	X	X	Link0
2	[UA-1-1-2] Update of Contact List (Refresh)	SIGNAL (2)	X	X	X	Link0
3	[UA-1-1-3] Request to Current Contact List	TBD	X	X	X	Link0
4	[UA-1-1-4] Cancellation of Registration	TBD	X	X	X	Link0
5	[UA-1-1-5] Unsuccessful Registration	TBD	X	X	X	Link0
6	[UA-1-1-6] Server-driven re-registration period	TBD	X	X	X	Link0
7	[UA-1-2-1] Record-Route in REGISTER response	TBD	X	X	X	Link0
	Session establishment					
8	[UA-2-1-1] Session Establishment Through Two Proxies (Caller/Callee hang up)	SKIP	-	X	X	-
9	[UA-2-1-2] Session Establishment Through Two Proxies (Callee/Caller hang up)	SKIP	-	X	X	-
10	[UA-2-1-3] Session Establishment Through Two Proxies (Caller/Caller hang up)	SKIP	-	X	X	-
11	[UA-2-1-4] Session Establishment Through Two Proxies (Callee/Callee hang up)	SKIP	-	X	X	-
12	[UA-2-1-5] Session Establishment Through One Proxy (Caller/Callee hang up)	SKIP	-	X	X	-
13	[UA-2-1-6] Session Establishment Through One Proxy (Callee/Caller hang up)	SKIP	-	X	X	-
14	[UA-2-1-7] Unsuccessful No Answer [CANCEL] (Caller)	SKIP	-	X	X	-
15	[UA-2-1-8] Unsuccessful No Answer [CANCEL] (Callee)	SKIP	-	X	X	-

Figure 5. HTML log (results.html)

If you click "X" of the "Log" column in the test you executed above, you can see the detailed information about the test result.



Test Information

Title	[UA-1-1-1] Successful New Registration
CommandLine	/UA/regist/UA-1-1-1.seq -pkt ./SIP.def -log 1.html -ti [UA-1-1-1] Successful New Registration
TestVersion	
ToolVersion	REL_3_0_4
Start	2006/03/20 05:13:45
Tn	/usr/local/v6eval//etc//tn.def
Nu	/usr/local/v6eval//etc//nut.def
Pkt	./SIP.def
System	manual
TargetName	FreeBSD 5.4-RELEASE
HostName	target.tahi.org
Type	host

Test Sequence Execution Log

05:13:45	Start
05:14:09	Start Capturing Packets (Link0)
	Scenario Operation[Register] Spec[RFC] Sequence Summary
05:14:09	vSend(Link0,Ra_RouterToAllNode) send_Ra_RouterToAllNode
05:14:12	vSend(Link0,Ns_RouterToAllNode) send_Ns_RouterToAllNode
05:14:12	vRecv(Link0,Na_TermAtoRouterG Na_TermAtoRouterGOpt Ns_TermLtoRouterG Ns_TermLtoRouterL Ns_TermGtoRouterMultiL Ns_TermLtoRouterMultiM Ns_TermGtoRouterMultiL_TL) timeout:1 cntLimit:1 seektime:0 recv_Na_TermAtoRouterGOpt
05:14:14	Clear Captured Packets (Link0)
05:14:14	vRecv(Link0,SIPtoREG SIPtoDNS Ns_TermLtoRouterG Ns_TermLtoRouterL Ns_TermGtoRouterMultiL Ns_TermLtoRouterMultiM Ns_TermGtoRouterMultiL_TL) timeout:1 cntLimit:1 seektime:0 vRecv() return status=1
05:14:15	vRecv(Link0,SIPtoREG SIPtoDNS Ns_TermLtoRouterG Ns_TermLtoRouterL Ns_TermGtoRouterMultiL Ns_TermLtoRouterMultiM Ns_TermGtoRouterMultiL_TL) timeout:1 cntLimit:1 seektime:0 vRecv() return status=1

Figure 6. The detailed information about the test result (1)

Scroll down and please check the details of packets and judgments.

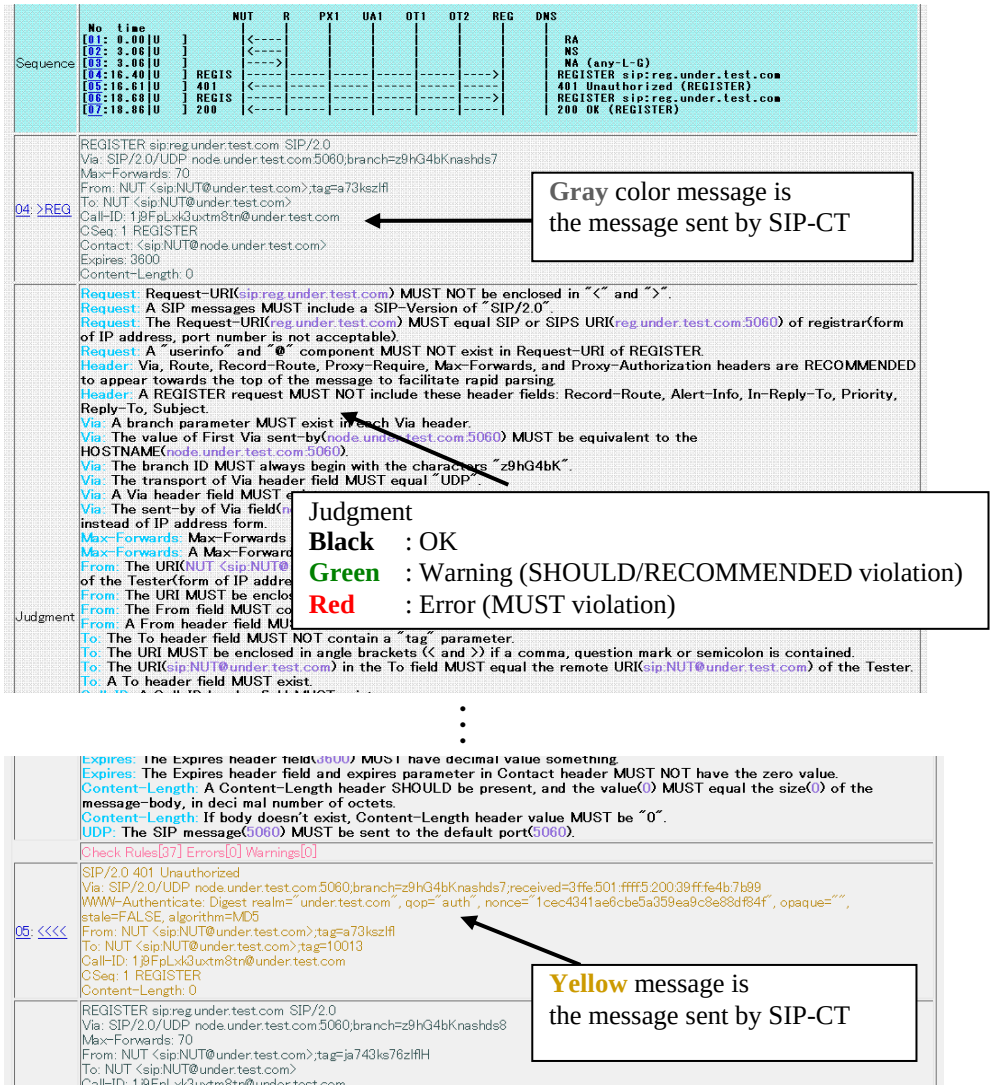


Figure 7. The detailed information about the test results (2)

Appendix: ortp

If you mind to get many logs that are generated during session establishment test, you can change the ortp libraryaccording to the following indication.

- Open the following library:

  ortp-x-x-x/src/posixtimer.c

- Comment out two lines as follows:

```
        :
void posixtimer_do()
        :
        :
//      ortp_warning ( "……" );      /* comment out */
        :
        :
        :

void win_timer_do(void)
        :
        :
//      ortp_warning ( "……" );      /* comment out */
        :
        :
        :
```

****

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