IPv6 READY Logo Phase 2

Session Initiation Protocol

Policy Document

Version 2.0.0

IPv6 Forum
Converged Test Specification
IPv6 Ready Logo Committee
IPv6 Promotion Council (Japan)

http://www.ipv6forum.org
http://www.ipv6ready.org

Modification Record

Version 0.1	Jan. 16, 2007	- First release
Ver.0.1.01	Jan. 25, 2007	Changed the ADVANCED function of UA. - Forking -> Processing of multiple response. - Deleted Tel-URI because its profile is not found. - Added Time stamp header field. - Added Processing of message with RFC2543 syntax. - Added Processing of INVITE with Expires header field. Changed BASIC function of server. - Message forwarding -> Message forwarding (except REGISTER request) Changed the ADVANCED function of server. - Added Process of forwarded REGISTER request. - Added REGISTER request forwarding. - Added Processing of OPTIONS request.
Ver.0.1.02	Feb. 23, 2007	Modified as follows. NOT COVERED -> NOT REQUIRED NOT AVAILABLE -> OUT OF SCOPE Modified Figure.5-1.
Ver.0.1.03	Feb. 23, 2007	Corrected the parts that are pointed out in internal review. Corrected misspellings and grammatical mistakes.
Ver.0.1.04	Feb. 26, 2007	Corrected the parts that are pointed out in internal review. Corrected misspellings and grammatical mistakes.
Ver.1.0.0	Apr. 27, 2007	Corrected misspellings and grammatical mistakes. Modified Section 4.
Ver.1.0.1	Jul. 31, 2007	Version 1.0.1 release.
Ver.1.0.2	May. 30, 2008	Version 1.0.2 release.
Ver.1.1.0	Dec. 12 2008	Major revision up. Requirements for the SIP IPv6-Ready Logo are changed.
Ver.2.0.0	Nov. 27, 2009	-Modified contents for the new test categories.

Acknowledgements

IPv6 Forum would like to acknowledge the efforts of the following organizations and commentators in the development of this test specification.

- IPv6 Promotion Council
  Certification Working Group
  SIP IPv6 Sub Working Group

- Commentators:

  Marc Blanchet
  Viagenie Co., Ltd.

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Table of Contents

[I] Phase 2 Policy
(for SIP IPv6-Ready Logo Program)

1. Introduction of the IPv6 Ready Logo Program

The IPv6 forum plays a major role to bring together industrial actors, to develop and deploy the next generation of IP protocols. Contrary to IPv4, which started with a small closed group of implementers, the universality of IPv6 leads to a huge number of implementations. Interoperability has always been considered as a critical feature in the Internet community. Due to the large number of IPv6 implementations, it is important to provide the market a strong signal proving the level of interoperability across various products. To avoid confusion in the mind of customers, a globally unique logo program should be defined. The IPv6 logo will give confidence to users that IPv6 is currently operational. It will also be a clear indication that the technology will still be used in the future. To summarize, this logo program will contribute to the feeling that IPv6 is available and ready to be used.

The IPv6 Logo Program consists of three phases:

Phase 1 :
In a first stage, the Logo will indicate that the product includes IPv6 mandatory core protocols and can interoperate with other IPv6 implementations.

Phase 2 :
The "IPv6 ready" step implies a proper care, technical consensus and clear technical references. The IPv6 ready logo will indicate that a product has successfully satisfied strong requirements stated by the IPv6 Logo Committee (v6LC).

To avoid confusion, the logo "IPv6 Ready" will be generic. The v6LC will define the test profiles with associated requirements for specific functionalities.

Phase 3 :
Same as Phase 2 with IPsec mandated.

2. Related standards

Refer to the following RFC documents.

[SIP/SDP]

(1) RFC3261: SIP: Session Initiation Protocol
(http://www.ietf.org/rfc/rfc3261.txt)

(2) RFC3264: An Offer/Answer Model with Session Description Protocol
(http://www.ietf.org/rfc/rfc3264.txt)

(3) RFC4566: SDP: Session Description Protocol
(http://www.ietf.org/rfc/rfc4566.txt)

[Digest authentication]

(4) RFC2617: HTTP Authentication: Basic and Digest Access Authentication
(http://www.ietf.org/rfc/rfc2617.txt)

[Call Flow Examples]

(5) RFC3665: SIP Basic Call Flow Examples
(http://www.ietf.org/rfc/rfc3665.txt)

3. Objective of the SIP IPv6-Ready Logo

The SIP IPv6 Ready Logo:

- aims to ensure interoperability between SIP IPv6 nodes, i.e. User Agent, , Endpoint (such as IP-Phone), B2BUA, Proxy server and Registrar server;
- provides scope for this logo and the classification of the functions from the viewpoint of the basic functionality common to various SIP IPv6 equipment.

4. Requirements for the SIP IPv6-Ready Logo

- To be given the right to bear the logo indicating SIP-IPv6-capability, the equipment must satisfy each logo program for both the IPv6 Core Protocols and SIP IPv6 Ready Logo. Obtaining the Phase-2 IPv6 Ready Core Logo is a prerequisite before obtaining SIP IPv6-Ready Logo Phase-2. It is excepted that the SIP implementation uses an operating system which already obtained the Phase-2 IPv6 Core Protocols. In this case, the operating system must not be changed.. SIP IPv6-Ready Logo can be divided into 5 types of Logo categories as follows;

  (1) **User Agent (UA):** SIP IPv6 Use Agent Logo aims at validating a User Agent which act as both user agent client and user agent server (which is not required to register with a registrar server).Gateways and application servers may be included in this category. As the requirement for obtaining the SIP IPv6 User Agent Logo, the target device must pass SIP IPv6 UA test.

  (2) **Endpoint (EP):** SIP IPv6 Endpoint Logo aims at validating an endpoint which act as both user agent client and user agent server and is required to register with registrar server for using location service. Therefore, the implementation must choose Endpoint Logo such as a IP-phone. As the requirement for obtaining the SIP IPv6 Endpoint Logo, the target device must pass SIP IPv6Endpoint test.

  (3) **Back-to-Back User Agent (B2BUA):** SIP IPv6 Back-to-Back User Agent Logo aims at validating a back-to-back user agent that can

receive a request and process it as a user agent server and it act as a user agent client for determining how the request should be answered. Session border controllers and IP-Private branch exchanges may be included in this category. As the requirement for obtaining the SIP IPv6 Back-to-Back User Agent Logo, the target device must pass SIP IPv6 B2BUA test.

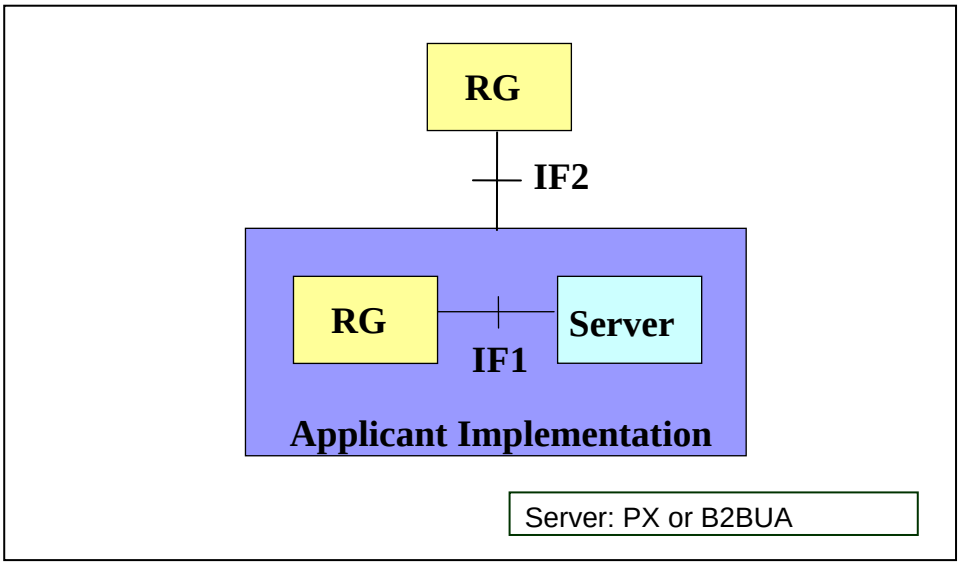
(4) **Registrar (RG):** SIP IPv6 Registrar Logo aims at validating a server that can accept REGISTER requests and places the information it receives in those requests into the location service for the domain it handles. As the requirement for obtaining the SIP IPv6 Registrar Logo, the target device must pass SIP IPv6 Registrar test.

(5) **Proxy (PX):** SIP IPv6 Proxy Logo aims at validating a server that can maintain the client and server transaction state machines during the processing of a request. As the requirement for obtaining the SIP IPv6 Proxy Logo, the target device must pass SIP IPv6 Proxy test.

As functions for obtaining the SIP IPv6 Ready Logo, Basic functions and Advanced functions. The testing of BASIC functions is mandatory for ensuring interoperability and must be passed. Also, the testing of ADVANCED functions can be optional; if a piece of candidate equipment supports an ADVANCED function which is applied for the logo, the related tests to the function must be passed. For more detail on the classifications of the functions, refer to Section 6.5.

Proxy server and B2BUA may support Registrar function. If the applicant implementation supports two categories, it can obtain each Logo by passing the both category tests individually (i.e. applicant implementation can obtain "PX Logo and RG Logo", or "B2BUA Logo and RG Logo"). In this case, the interface between the two categories is not the test target. As the Figure4-1, IF2 is a test target (BASIC for Proxy server, ADVANCED for B2BUA), but IF1 is not the test target.

Figure 4-1 The case of applicant implementation supporting two categories



In addition, the documents for the IPv6 Ready Logo Program Phase 2 for SIP compose of the following seven documents in Table 4-1.

Table 4-1 the documents for the SIP IPv6 Ready Logo Program Phase 2

No	Document	Contents
1	Policy Document	The policy of the SIP IPv6 Ready Logo.
2	Test Profile (User Agent / Endpoint / Back-to-Back User Agent)	The details of the Conformance Test for SIP User Agent, SIP Endpoint and SIP Back-to-Back User Agent.
3	Test Profile (Registrar)	The details of the Conformance Test for SIP Registrar Server
4	Test Profile (Proxy)	The details of the Conformance Test for SIP Proxy Server
5	SIP Interoperability Test Scenario	The guideline for the interoperability test for SIP.
6	Test item priority for UA	This document links each item to be checked in the test profiles for UA to proper description of the relevant RFCs.
7	Test item priority for EP	This document links each item to be checked in the test profiles for EP to proper description of the relevant RFCs.
8	Test item priority for B2BUA	This document links each item to be checked in the test profiles for B2BUA to proper description of the relevant RFCs.
9	Test item priority for Registrar	This document links each item to be checked in the test profiles for Registrar to proper description of the relevant RFCs.
10	Test item priority for Proxy	This document links each item to be checked in the test profiles for Proxy to proper description of the relevant RFCs.
11	The explanation of the submission for the SIP IPv6 Ready Logo	The document describes required tests and submission to obtain the SIP IPv6 Ready Logo.

5. The Policy of Scope for SIP "IPv6-Ready" Logo

5.1. The procedure of classification

Functions for the SIP IPv6 Ready Logo are selected in the following way.

1. Classified the functions in the RFCs of Section 2.
   [a] The functions related to SIP connection.
   [b] The other functions in the RFCs.
2. In **[a]**, named the minimum necessary functions for SIP connection "BASIC" and the other functions "ADVANCED".
   In **[b]**, named the other functions "NOT REQUIRED".
3. Picked up sentences in the relevant RFCs that include one of the key terms (MUST/SHOULD/RECOMMENDED), and made lists of test items. For more detail on the test items, refer to Section 5.2.

5.2. Test Priority

Based on the above classification, Test Priority consists of four categories (Table 5-1). The test items in *Test item priority* are classified in the following way.

- Classify test items that is related to BASIC function into "BASIC"
- Classify test items that is related to ADVANCED function into "ADVENCED"
- Classify test items that is not coverage for the logo into "NOT REQUIRED"
- Classify test items that is related to BASIC or ADVENCED function but no way to test into "NOT AVALABLE"

Table 5-1 gives the explanation of Test Priority.

Table 5-1 Explanation of Test Priority

	Explanation of Test Priority
BASIC (Required Test)	Minimum necessary function for basic SIP connection.
ADVANCED (Optional Test)	Necessary function depending on the application to be used.
NOT REQUIRED	Function classified as NOT REQUIRED is not the coverage for the SIP IPv6 Ready Logo.
OUT OF SCOPE	Function classified as OUT OF SCOPE cannot execute the test although that is BASIC or ADVANCED.

Figure 5-1 shows relationships among the classifications of functions, test items and coverage of the SIP IPv6 Conformance Test.

Refer to Table 6-1 and Table 6-2 in section 6.5 for the details of each classified function.

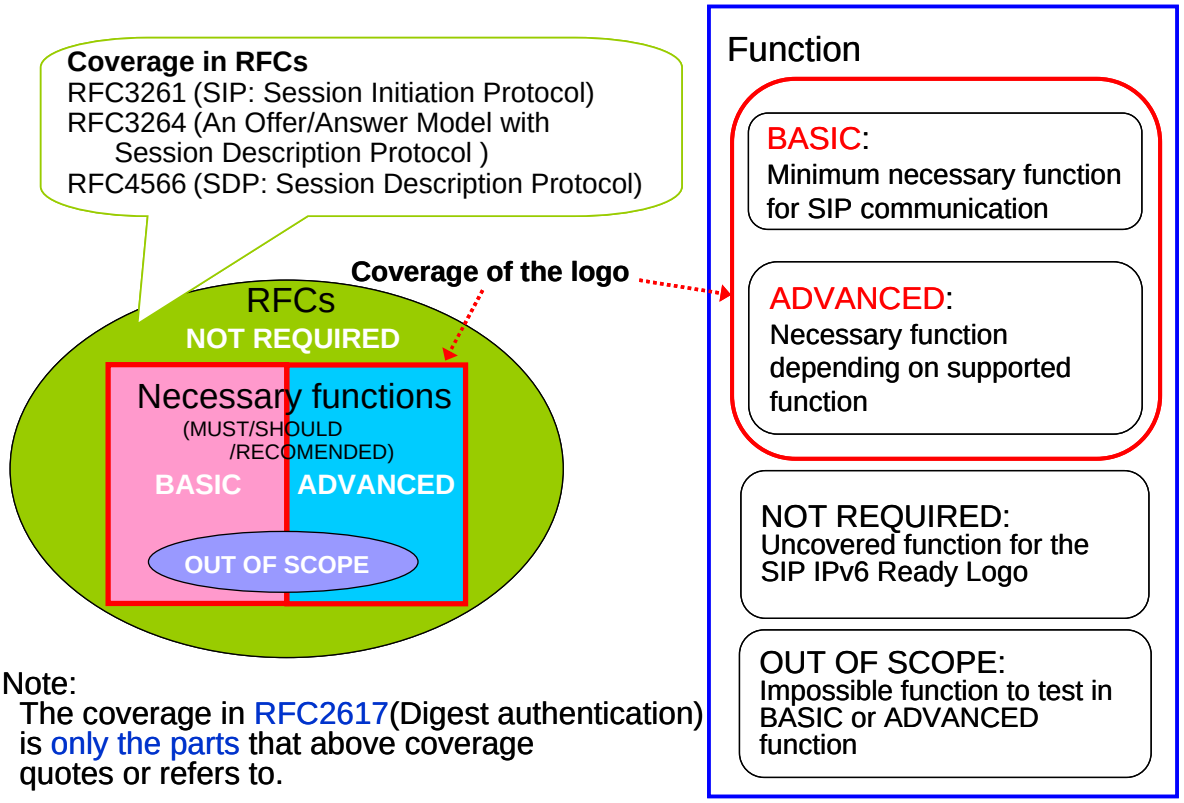


Figure 5-1 Classifications of function for the Conformance Test

6. Scope of the SIP IPv6 Conformance Test

6.1 Reference Network Architecture

Figure 6-1, 6-2, 6-3, 6-4 and 6-5 show the network architecture that is covered in the SIP IPv6 Conformance Test.

- The network architecture for UA : Figure 6-1, 6-2, 6-5
- The network architecture for EP : Figure 6-1, 6-2, 6-5
- The network architecture for B2BUA : Figure 6-1, 6-3, 6-4
- The network architecture for Registrar : Figure 6-1
- The network architecture for Proxy : Figure 6-2, 6-5, 6-6

IF2 (NNI) is ADVENCED interface for the SIP Proxy IPv6 Ready Logo. If an applicant proxy supports 2-proxy architecture, the proxy must pass all relevant ADVENCED tests for the architecture.

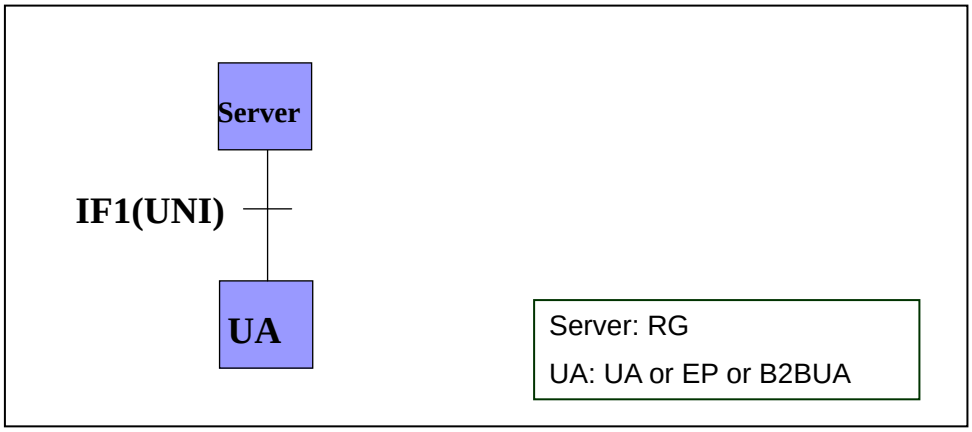


Figure 6-1 Reference Network Architecture(1 UA and 1 Proxy server)

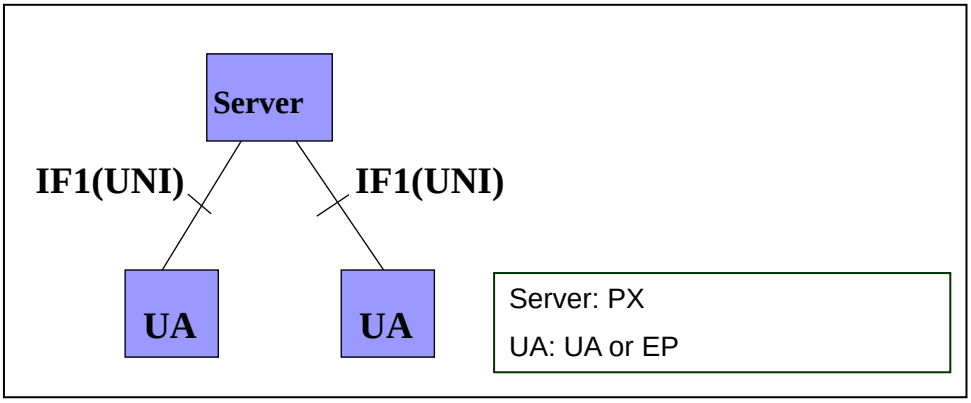


Figure 6-2 Reference Network Architecture (2 UAs and 1 Server)

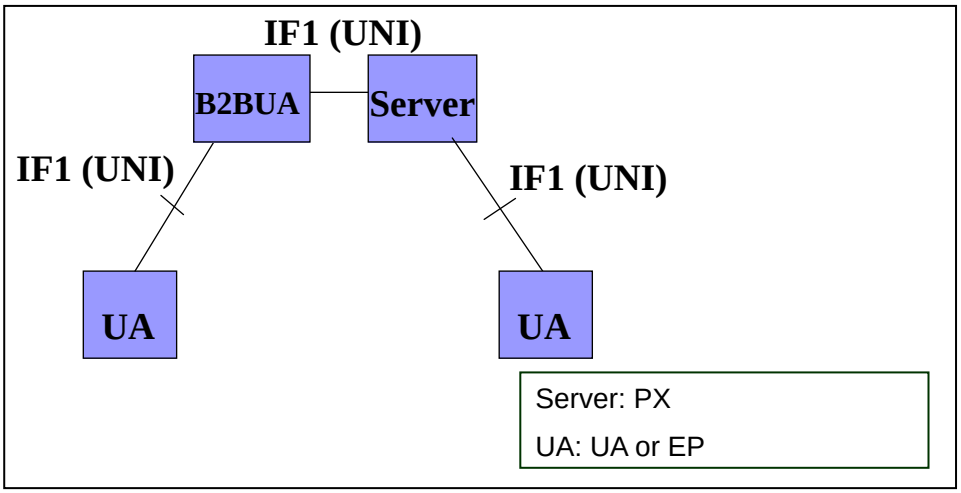


Figure 6-3 Reference Network Architecture (2 UAs , 1 B2BUA and 1 Server)

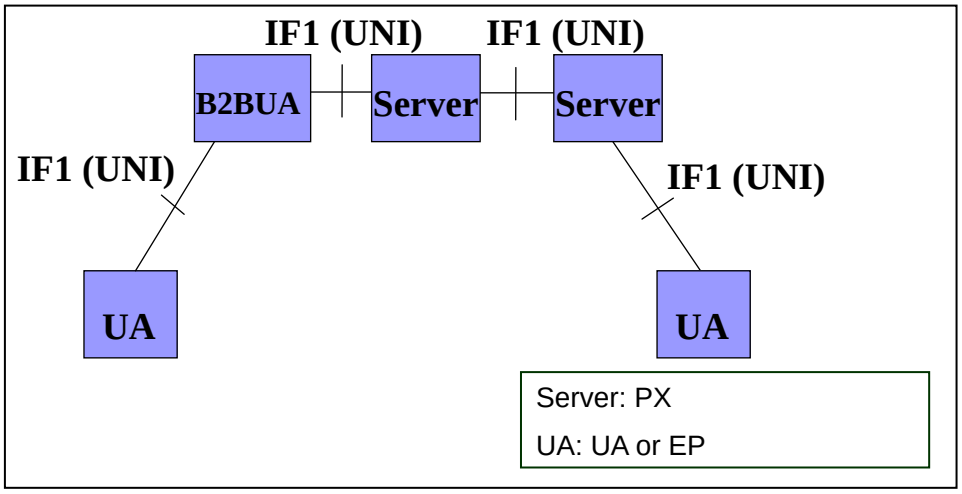


Figure 6-4 Reference Network Architecture (2 UAs , 1 B2BUA and 2 Servers)

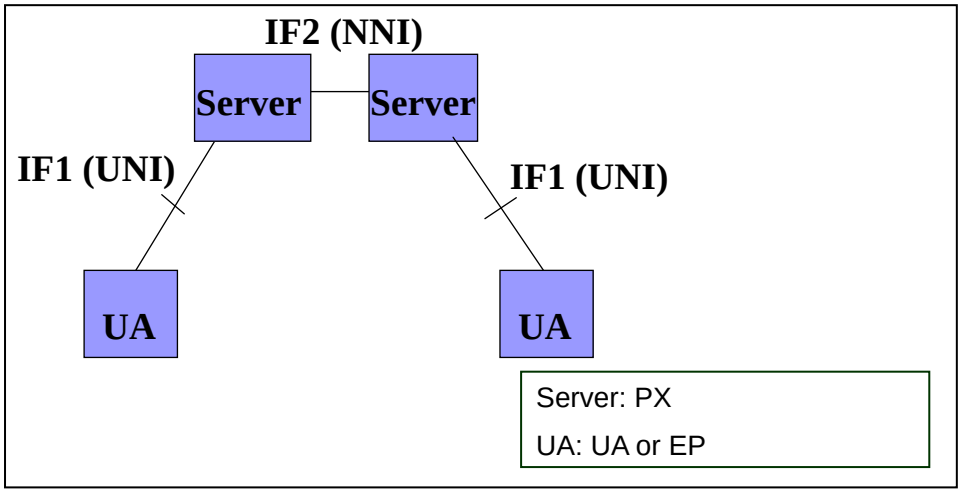


Figure 6-5 Reference Network Architecture (2 UAs and 2 Servers)

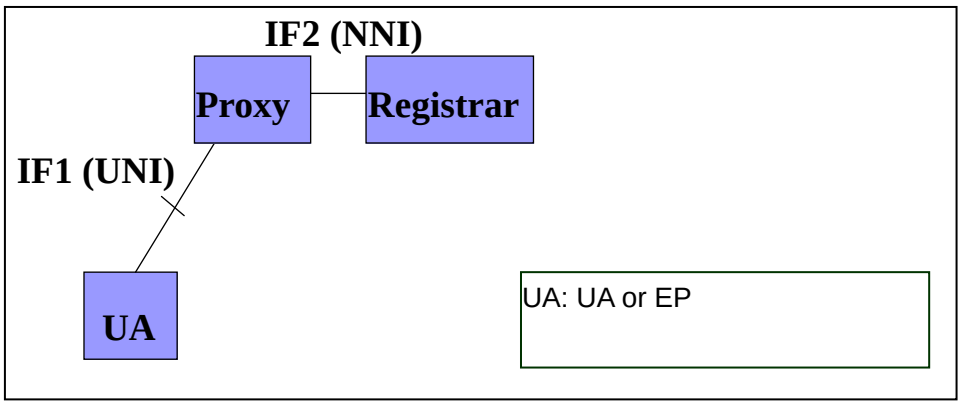


Figure 6-6 Reference Network Architecture (1 UA, 1 Proxy and 1 Registrar)

6.2 Transport Protocol

- Only UDP is covered.
- TCP/TLS is not covered.

6.3 Security

- Only digest authentication is covered.
- S/MIME, multiple authentication, and mutual authentication are not covered.

6.4 media

Media is not covered for the IPv6 Ready Logo Phase 2 for SIP, except needing to execute G.711 audio transmission as a tester. Also, grammatical test of Media is coverage for the logo.

6.5 Classification of functions

This section describes ways to classify the SIP IPv6 functions needed for interoperability and provided as test functions in the SIP IPv6 Conformance Test.

As reference, the classification of BASIC and ADVANCED is described for every node about a typical SIP IPv6 function to the following table 6-1. Moreover, the table 6-2 describes the uncovered functions for the logo.

Table 6-1 SIP IPv6 functions of BASIC and ADVANCED for every node

Node	Function	
	BASIC	ADVANCED
UA	- Establishment, disconnection, and cancellation of Session - SDP Offer/Answer (INVITE-200) - Digest authentication (initial INVITE) - Processing of re-INVITE	- Registration and Digest authentication for REGISTER - Processing of Strict routing - Processing of multiple response - Processing of OPTIONS request - Digest authentication (except REGISTER, initial INVITE) - Configuration of an alternate server - Hold (only using re-INVITE) - Timestamp header field - Processing of message with RFC2543 syntax - Processing of INVITE with Expires header field
Endpoint	- Registration - Establishment, disconnection, and cancellation of Session - SDP Offer/Answer (INVITE-200) - Digest authentication (REGISTER, initial INVITE) - Processing of re-INVITE	- Processing of Strict routing - Processing of multiple response - Processing of OPTIONS request - Digest authentication (except REGISTER, initial INVITE) - Configuration of an alternate server - Hold (only using re-INVITE) - Timestamp header field - Processing of message with RFC2543 syntax - Processing of INVITE with Expires header field
B2BUA	- Establishment, disconnection, and cancellation of Session - SDP Offer/Answer (INVITE-200) - Digest authentication (initial INVITE) - Processing of re-INVITE	- Registration and Digest authentication for REGISTER - Processing of Strict routing - Processing of multiple response - Processing of OPTIONS request - Digest authentication (except

	- Hold (only using re-INVITE)	REGISTER, initial INVITE) - Configuration of an alternate server - Timestamp header field - Processing of message with RFC2543 syntax - Processing of INVITE with Expires header field
Registrar	- Digest authentication (REGISTER) - Registration	- Processing of forwarded REGISTER request
Proxy	- Digest authentication (initial INVITE) - Message forwarding (except REGISTER request) - Cancellation of Session	- Forking - Processing of Strict routing - Processing of DNS (only AAAA record) - Configuration of an alternate server - Digest authentication (except REGISTER, initial INVITE) - Tel URL - Timestamp header field - REGISTER request forwarding - Processing of OPTIONS request

* When an applicant implementation obtains Proxy Logo and Registrar Logo, REGISTER request forwarding is BASIC

Table 6-2 SIP IPv6 functions of "NOT REQUIRED"

NOT REQUIRED
- pre-existing Route Set - SDP Offer/Answer procedure by 2xx-ACK - Multipart MIME body - Redirection - Stateless proxy server - Multicast - Message segmentation - DNS (NAPTR, SRV) - Any other extension for SIP

7. Procedures for obtaining the SIP "IPv6-Ready" Logo

The following is the procedure for obtaining the SIP "IPv6-Ready" Logo.

(1)Obtain the IPv6-Ready Logo for the IPv6 Core Protocols. For details, refer to the documents about the IPv6 Core Protocols.
(http://www.ipv6ready.org)

(2)Pass a Conformity inspection for SIP in which a Self Tester (e.g. SIP IPv6 Conformance Test Tool (http://cert.v6pc.jp/sip-ipv6/)) is used. For details, refer to the documents about *the SIP IPv6 Conformance Test Tool Reference Manual of the Test Suite.*

(3) Pass the interoperability test. Execute the test between two different types (different vendors) of SIP equipments which passed each Conformity inspection. For details, refer to the documents about the *SIP Interoperability Test Scenario.*

(4) Submit required documents for acquisition of the Phase 2 Logo. The submitted documents are described in *The explanation of the submission for the SIP IPv6 Ready logo program.* Please refer to the document.

8. Acknowledgement for RFC Authors

The following descriptions include the copyright documents. We thank authors of RFCs.

[1] Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston, A., Peterson, J., Sparks, R., Handley, M. and E. Schooler, "SIP: Session Initiation Protocol", RFC 3261, June 2002.

[2] Rosenberg, J. and H. Schulzrinne, "An Offer/Answer Model with SDP", RFC 3264, June 2002.

[3] Handley, M, V. Jacobson, and C. Perkins, " SDP: Session Description Protocol ", RFC4566, July 2006

[4] Franks, J., Hallam-Baker, P., Hostetler, J., Lawrence, S., Leach, P., Luotonen, A. and L. Stewart, "HTTP authentication: Basic and Digest Access Authentication", RFC 2617, June 1999.

[5] Johnston, A., Donovan, S., Sparks, R., Cunningham, C. and K. Summers, "Session Initiation Protocol (SIP) Basic Call Flow Examples", RFC 3665, December 2003.

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