

[ION] SIP

2003. 1

(VoIP) &

TTA IT

1.

▣ : RFC 3261 RFC 2543 bis

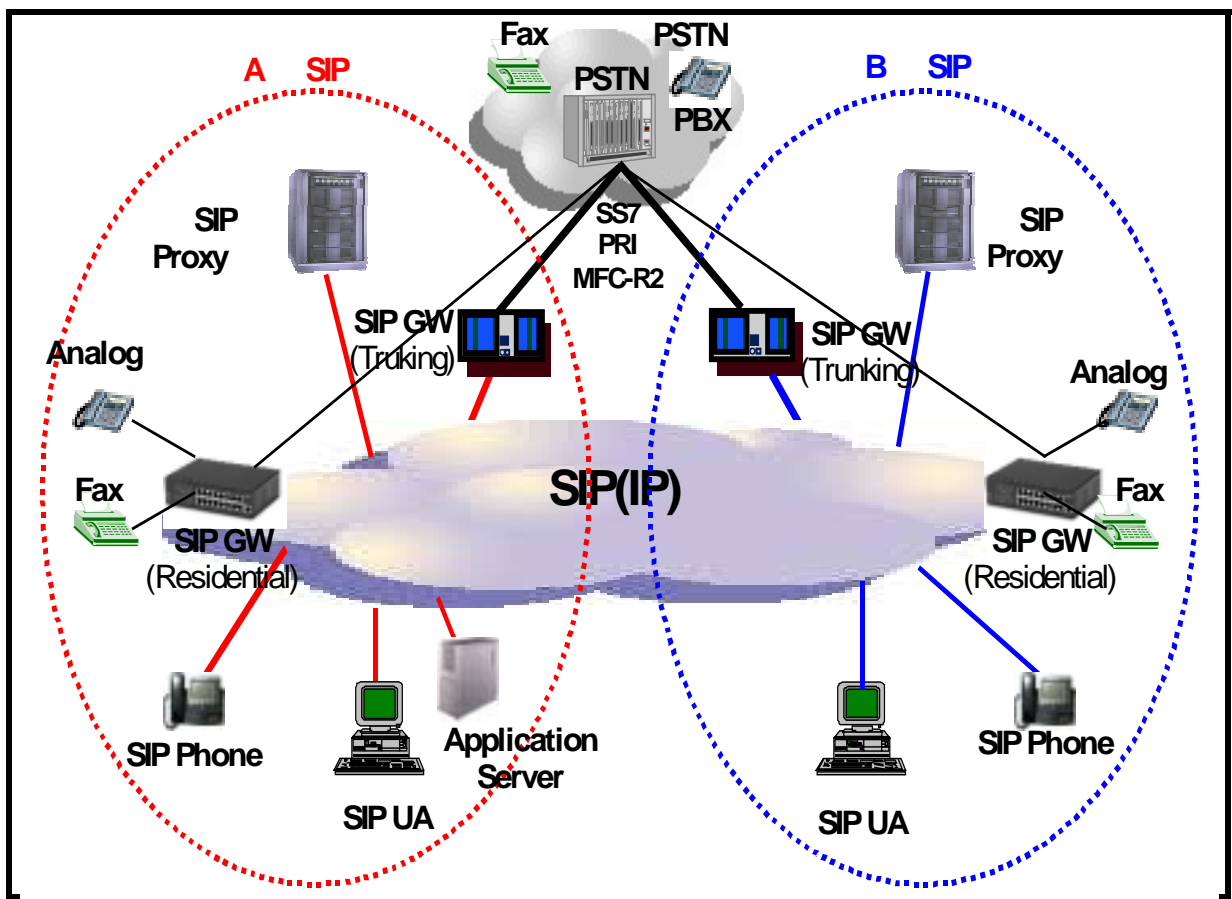
◆ SIP

- ✓ RFC 2543 bis04~09(RFC 3261 Backward Compatibility)
- ✓ RFC 3262 : Reliability of Provisional Responses in SIP
- ✓ RFC 3263 : Locating SIP Servers
- ✓ RFC 3264 : An Offer/Answer Model with Session Description Protocol(SDP)
- ✓ RFC 3265 : SIP Specific Event Notification

▣

◆

- ✓ Matrix (A SIP [Proxy, Gateway, UA] B SIP [Proxy, Gateway, UA])



■

SIP Interoperability Test RFC 3261 SIP (RFC 2543 bis)
 Proxy (Registrar), UA(User Agent), Gateway, SIP Application
 SIP Entity SIP Entity .
 , Scenario .

SIP SIP Entity (UA), Proxy
 , PSTN 가 Service

Sipping WG
 ETSI TIPHON DTS03018 “Interface Protocol Requirements Definition : Implementation of
 TIPHON architecture using SIP” (VoIP) SIP
 Profile .

Registrar Redirect Proxy Authentication, Registration, Routing
 , Method/Response Processing .

PSTN SIP SIP Gateway PSTN (ISUP,
 PRI MFC-R2) Gateway PBX

SIP 가 Service Sipping WG ,
 FAX DTMF SIP Interoperability

Service REFER, NOTIFY, SUBSCRIBE, PRACK 가
 Message Event 가 .

Application , SIP H.323
 Interworking Conference 가가 .

1 SIP (2002 7)
 SIP Entity 가
 . RFC 3261 Backward
 Compatibilty .

◆ **UA(User Agent) Test : Gateway**

- Authentication
- Registration(Home/Visited)
- Session Establishment/Clearing : Generating Requests/Responses
- Modifying an Existing Session : Offer/Answer Model(SDP , re-INVITE)
- Offer/Answer Model
- Locating SIP Server
- Transaction (RFC 3261)
- TCP, UDP, SCTP Transport
- Service (REFER, SUBSCRIBE, NOTIFY)
- Timer
- SDP Codec(G.711/G.729a/G.723.1, Video Codec)
- DTMF(RFC 2833 In-Band, Out of Band)
- Security(S/MIME, TLS)
- Fax (T.38, Fax pass through)
- SIP/Non-SIP/SIPS URL
- Extension Request (INFO,PRACK,UPDATE,NOTIFY,SUBSCRIBE)
- Extension (Supported, Require)
- Headers & Tags
- Event Package (Specific, MWI, Conference, Dialog)
- RFC 3261 Mandotary(Via branch, Tag, Offer/Answer...)

◆ **Proxy(Registrar/Redirect Server) Test**

- Authentication
- Registration(Home/Visited)
- Session Establishment/Clearing : Processing Requests/Restponses
- Locating SIP Server(SRV,NAPTR)
- UDP TCP Conversion
- Forking(serial,parallel)
- Routing(static,loose)
- Transaction (RFC 3261)
- DNS(A,SRV,NAPTR)
- Redirection
- Timer
- Determination destination(Address,port,transport)

- Processing Requests/Responses
- Loop detection/Max-Forwards
- Extension Request (INFO,PRACK,UPDATE,NOTIFY,SUBSCRIBE)
- Extension (Supported, Require)
- Headers & Tags
- Security(TLS, IPsec)

◆ **SIP Entity Call Test**

- UA-UA call Establish/Clearing
- UA-Proxy-UA call Establish/Clearing
- Fax call
 - T.38 Fax call Establish/Clearing
 - Fax pass-through call Establish/Clearing
- UA-Multi Proxies-UA call Establish/Clearing
- Trunking Gateway(FXS,MFC-R2, ISDN, SS7) call
 - SIP to PSTN call
 - PSTN to SIP call
 - DTMF (SIP PSTN Announcement)

◆ **Service Test(UA or Proxy)**

- Call Hold/Consultation Hold/Music on Hold
- Unattended Transfer/Attended Transfer
- Call Forwarding-Unconditional/Busy/No Answer
- 3-way Conference
- Find-Me
- Incoming/ Outgoing Call Screening
- Call Park
- Call Pickup
- Automatic Redial

2. Reference

- ▣ RFC 3311(UPDATE Method)
- ▣ RFC 3326(The Reason Header Field for the Session Initiation Protocol (SIP))
- ▣ RFC 3428(Session Initiation Protocol (SIP) Extension for Instant Messaging)
- ▣ draft-ietf-sipping-call-flows-01
- ▣ draft-ietf-sipping-service-examples-02
- ▣ draft-ietf-sip-refer-07
- ▣ draft-ietf-sipping-mwi-00
- ▣ draft-ietf-sipping-dialog-package-00
- ▣ draft-ietf-conference-package-00
- ▣ ETSI TIPHON Technology Compliance Specifications ; Test Suite Structure(TSS) and Test Purpose(TP)(DTS/TIPHON-060621-2)
- ▣ ETSI TIPHON DTS03018 “Interface Protocol Requirements Definition : Implementation of TIPHON architecture using SIP”
- ▣ SIP - ()
- ▣ draft-ietf-sipping-realtimefax-00
- ▣ draft-sinnreich-sipping-device-requirements-00
- ▣ draft-ietf-sipping-e164-01
- ▣ draft-ietf-simple-im-session-00
- ▣ draft-ietf-agrawal-sip-h323-interworking-01
- ▣ Interoperability Testing for SIP(June,1999, Rosenberg/Schulzrinne)
- ▣ SIP Interoperability Scenarios Test Plan-Draft(IMTC, June,2000)
- ▣ SIP/H.323 Inter-Working Requirements for VoIP Applications(IMTC, Oct.2000)

3.

▣ UA(User Agent, SIP , Gateway) Test

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A() : , B() :

		A UA B (UA or Proxy- UA)	B (UA or Proxy- UA) A UA
	send INVITE over UDP		
	receive INVITE over UDP		
	generate ACK properly		
	can accept or reject calls		
	SDP with single m and c line, one codec		
	To, From, Call-ID, CSeq, Via, Content-Length, Content-Type headers handled properly		
*(New)	generate tags in From field		
	generate tags in To field		
	send basic call termination with BYE via UDP		
	receive BYE over UDP		
	compact form for headers		
	reject unknown request methods with 501 response		
	send/receive RTP media, possibly without RTCP		
	support TCP for all messages		
	Require, Proxy-Require		
	handle packet loss for INVITE and BYE (with exponential backoff)		
	pays attention to Contact header in INVITE and in 2xx response to INVITE (i.e., goes directly to peer for following requests)		
	process CANCEL for INVITE		
	authentication for registrations: digest		
	allow redirection to web pages or email		
	receive text or HTML in 3xx or 4xx responses		
	Accept headers without SDP		
	DNS SRV records		
	non-gateways: register with periodic refresh to unicast address, paying attention to Expires header in REGISTER response		
*	Home/Visited Registration		

	understands redirection		
	multiple codecs listed in SDP m line, finds common one with peer		
	multiple SDP m= lines handled correctly		
	unknown SDP m= media types handled correctly (i.e., rejected with port 0)		
*	SIPS-URL		
*	S/MIME		
*	T.38 Fax		
*	Fax pass-through		
*Trunking GW	SIP to PSTN call		
*Trunking GW	PSTN to SIP call		
	Request OPTIONS		
	PRACK		
	Domain name as well as IP address accepted in SDP c= line		
	generate RTCP packets		
	respond to OPTIONS request		
	allows non-SIP URLs in REGISTER		
	copy Record-Route from response into Route of request and route appropriately		
	checks equality of action parameters on REGISTER		
	can retrieve current registrations		
*	can update registration contacts		
	can clear registrations with Contact: * and Expires: 0		
	automatically tries redirections (recurring UA) : Redirection		
	generate multicast REGISTER		
	re- INVITE : suspending a stream		
	re- INVITE : resuming a stream		
	re- INVITE : closing single stream		
	re- INVITE : changing codecs		
	re- INVITE : add a stream		
	re- INVITE : change media address to different address or port (mobility)		
	send text or HTML in 3xx and 4xx responses		
	Expires for INVITE		
	third party registration		
	generate tel: URL request and proxy them to designated server		

	designated server		
	process MIME multipart responses		
	INFO		
*	PRACK		
*	183 Response		
*	DTMF (RFC2833)		
*	DTMF (Out of Band)		
*	INVITE(with Refer-To)		
*	REFER & 202 Accepted		
*	NOTIFY		
*	Replace Header		
*	Reason Header		
*	SUBSCRIBE(Event Package)		
*	UPDATE		
*	100rel(early media)		
*	Support Timer A, B, C, D		
*	Extention:SIMPLE		
*	Extension:CPL		
*	Request merging		
*	Insert Via "branch"(RFC3261)		
*	Session Expire & 422 Response (MIN-Session Expire)		
*	Audio Codec Support : G.711, G.729a, G.723.1		
*	Video Codec Support		
*	UDP(Request, Response)		
*	TCP(Request, Response)		
	Call preference(Accept-Contact, Reject- Contact, Request-Preposition)		
*	Support Unicast(Offer/Answer)		
*	Support Muticast(Offer/Answer)		
*	Modify the session(Offer/Answer)		
*	Add/remove a media stream(Offer/Answer)		
*	Modify a media stream(Offer/Answer)		
*	Change media types(Offer/Answer)		
*	Change attributes(Offer/Answer)		

▣ Proxy Test(Registrar/Redirect)

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A():

B():

		A Proxy B (UA or Proxy-UA)	B (UA or UA-Proxy) A Proxy
	receive unicast REGISTER over UDP		
	receive unicast REGISTER over TCP		
*(New)	receive Visited REGISTER		
*	receive Home REGISTER		
	process INVITE and BYE over UDP		
	process INVITE and BYE over TCP		
	can act as local outbound proxy (i.e., forward to URL in request URI when domain is not its own)		
	generate ACK properly		
	Compact form for headers		
	new request methods(proxyed or redirected)		
*	UDP(Request, Response)		
*	TCP(Request, Response)		
	UDP to TCP conversion		
	TCP to UDP conversion		
	DNS SRV records		
*	DNS NAPTR Record		
*	Support Redirecting		
	Authentication for registrations:digest		
	forking proxies: parallel		
	can receive and propagate CANCEL		
	obeys Route header		
	generates CANCEL on 200 OK when forking		
	forwards all provisional responses upstream		
	understands Proxy-Require		
	receive multicast REGISTER		
	supports non-SIP URLs in REGISTER		
	forking proxies: sequential		
	forking proxies with multiple 200 OK responses		
	recursion on forking (fork response of 3xx triggers new branch)		

	legal fork looping (with different request URIs)		
	forking for non-INVITE		
	digest authentication for INVITE		
	can detect loops		
	can insert Record-Route		
*	Support Loose Routing(lr)		
	drop request when Max-Forwards is zero		
	obeys Expires in INVITE		
	third party registration		
	registration proxying		
	process multicast REGISTER		
	multicast INVITE		
	received parameter in Via field		
	can always redirect(configurable)		
	IPsec support		
*	TLS support(Authetication)		
	Authentication SIMPLE		
*	Extension : CPL		
*	SIPS URL support		
*	Proxying Via "branch"(RFC3261)		
	handling request merging due to an upstream forking proxy		
	tel: URL handling (can send a request somewhere when one arrives with a tel URL in request URI)		
*	Support Timer A(), C(final response)		
	INFO method		
	caller preferences		
*	Reasons Header		
*	Response to OPTION Request		
*	PRACK		
*	Proxy Proxy Call		
*	3pcc as a controller		

▣ Service Test(UA or Proxy)

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A(): , B():

	A (UA/ Proxy) B (UA/Proxy)	B (UA/Proxy) A (UA/Proxy)
Call Hold		
Consultation Hold		
Music on Hold		
Unattended Transfer		
Attended Transfer		
Call Forwarding Unconditional		
Call Forwarding-Busy		
Call Forwarding-No Answer		
3-way Conference		
Find-Me		
Incoming Call Screening		
Outgoing Call Screening		
Call Park		
Call Pickup		
Automatic Redial		