



## SIP Compliance

---

This appendix describes Cisco SIP proxy server (Cisco SPS) compliance with the Internet Engineering Task Force (IETF) definition of Session Initiation Protocol (SIP) as described in the following RFCs.

RFC <sup>1</sup>	Title
2543	<i>SIP: Session Initiation Protocol (March 1999)</i>
3261	<i>SIP: Session Initiation Protocol (June 2002)</i>
3263	<i>SIP: Locating SIP Servers (June 2002)</i>

1. Not all supported RFCs are listed.

## Contents

- [RFC 2543 and RFC 3261](#)
  - [SIP Functions, page A-2](#)
  - [SIP Methods, page A-2](#)
  - [SIP Responses, page A-2](#)
  - [SIP Header Fields, page A-6](#)
  - [SIP Transport Layer Protocols, page A-7](#)
  - [SIP Security, page A-8](#)
- [RFC 3263](#)
  - [SIP DNS Records Usage, page A-8](#)

# RFC 2543 and RFC 3261

## SIP Functions

**Table A-1** SIP Functions

Function	Supported?
Proxy server	Yes (transaction stateful, parallel forking, and recursive)
Redirect server	Yes
Registrar server	Yes

## SIP Methods

Cisco SPS supports five of the six methods used by SIP. It handles unknown methods such as NEWMETHOD in the same manner as known methods such as OPTIONS and REFER.

**Table A-2** SIP Methods

Method	Supported?	Cisco SPS Action
ACK	Yes	Forwards ACK requests. <sup>1</sup>
BYE	Yes	Forwards BYE requests.
CANCEL	Yes	Forwards CANCEL requests. <sup>2</sup>
INFO	Yes	Forwards INFO requests.
INVITE	Yes	Forwards INVITE requests.
NOTIFY	Yes	Forwards NOTIFY requests.
OPTIONS	Yes	Responds to OPTIONS requests.
REFER	Yes	Forwards REFER requests.
REGISTER	Yes	Supports both user and device registration.
SUBSCRIBE	Yes	Forwards SUBSCRIBE requests.
UPDATE	Yes	Forwards UPDATE requests.

1. The SPS can generate a local ACK for a non-200 OK final response to an INVITE request.

2. The SPS can generate a local CANCEL for a pending branch when it receives a 200 OK or 6xx response from the branch.

## SIP Responses

Cisco SPS supports the following SIP responses:

- [1xx Response—Information Responses](#)
- [2xx Response—Successful Responses](#)
- [3xx Response—Redirection Responses](#)
- [4xx Response—Request Failure Responses](#)

- [5xx Response—Server Failure Responses](#)
- [6xx Response—Global Responses](#)

**Table A-3 SIP Responses**

SIP Response	Meaning	Supported?	Cisco SPS Action
<b>1xx Response—Information Responses</b>			
100 Trying	Action is being taken on behalf of the caller, but the called party is not yet located.	Yes	Generates and forwards this response for an incoming INVITE. Upon receiving this response, waits for a 180 Ringing, 183 Session progress, or 200 OK response.
180 Ringing	Called party is located and is being notified of the call.	Yes	Forwards this response.
181 Call is being forwarded	Call is being rerouted to another destination.	Yes	
182 Queued	Called party is not currently available or elects to queue the call rather than reject it.	Yes	
183 Session progress	System performs inband alerting for the caller.	Yes	
<b>2xx Response—Successful Responses</b>			
200 OK	Request has been successfully processed. The action taken depends on the request made.	Yes	Generates this response to a REGISTER or CANCEL request. Otherwise forwards this response.
<b>3xx Response—Redirection Responses</b>			
300 Multiple choices	Address resolves to more than one location. All locations are provided and the user or UA can select which location to use.	Yes	Does not generate this response. If recursive is enabled, recurses on all contacts; otherwise forwards this response.
301 Moved permanently	User is no longer available at the specified location. An alternate location is included in the header.	Yes	
302 Moved temporarily	User is temporarily unavailable at the specified location. An alternate location is included in the header.	Yes	In redirect mode, generates this response when it locates one or more contacts. In proxy mode, if recursive is enabled, recurses on all contacts; otherwise forwards this response.
305 Use proxy	Caller must use a proxy to contact the called party.	Yes	Does not generate this response. If recursive is enabled, recurses on all contacts; otherwise forwards this response.
380 Alternative service	Call is unsuccessful, but alternative services are available.	Yes	

Table A-3 SIP Responses (continued)

SIP Response	Meaning	Supported?	Cisco SPS Action
<b>4xx Response—Request Failure Responses</b>			
400 Bad Request	Request can not be understood because of an illegal format.	Yes	Generates and forwards this response.
401 Unauthorized	Request requires user authentication.	Yes	Forwards this response. If it is configured as a registrar and authentication is enabled, generates this response.
402 Payment required	Payment is required for server to complete the call.	See Cisco SPS action	In registrar mode and if proxied by the proxy server, generates this response.
403 Forbidden	Server has received and understood the request but will not provide the service.		
404 Not found	Server has definite information that the user does not exist in the specified domain.	Yes	Generates and forwards this response.
405 Method not allowed	Method specified in the request is not allowed. The response contains a list of allowed methods.	See Cisco SPS action	Forwards this response.
406 Not acceptable	Requested resource can generate only responses that have unacceptable content as specified in the accept header of the request.		
407 Proxy authentication required	Similar to the 401 Unauthorized response, but client must first authenticate itself with the proxy.	Yes	Forwards this response. If authentication is enabled, generates this response.
408 Request timeout	Server could not produce a response before the expiration timeout.	See Cisco SPS action	Generates and forwards this response.
409 Conflict	Request cannot be processed because of a conflict with the current state of the resource.		
410 Gone	A resource is no longer available at the server and no forwarding address is known.	See Cisco SPS action	Forwards this response.
411 Length required	User refuses to accept the request without a defined content length.	Yes	
413 Request entity too large	Server refuses to process the request because it is larger than the server is willing or able to process. If a retry after header field is contained in this response, the user can attempt the call once again in the retry time provided.	See Cisco SPS action	
414 Request-URI too long	Server refuses to process the request because the Request-URI is too long for the server to interpret.	Yes	Generates and forwards this response.

**Table A-3** SIP Responses (continued)

SIP Response	Meaning	Supported?	Cisco SPS Action
415 Unsupported media	Server refuses to process the request because the format of the body is not supported by the destination endpoint.	Yes	Forwards this response.
420 Bad extension	Server cannot understand the protocol extension indicated in the Require header.	Yes	Generates and forwards this response.
480 Temporarily unavailable	Called party was contacted but is temporarily unavailable.	Yes	Forwards this response. If preauthentication is enabled and fails, generates this response.
481 Call leg/transaction does not exist	Server ignores the request because it is either a BYE for which there is no matching leg ID or a CANCEL for which there is no matching transaction.	Yes	Generates and forwards this response.
482 Loop detected	Server received a request that includes itself in the path.		
483 Too many hops	Server received a request that requires more hops than allowed by the Max-Forwards header.		
484 Address incomplete	Server received a request that contains an incomplete address.	See Cisco SPS action	Forwards this response.
485 Ambiguous	Server received a request that contains an ambiguous called-party address. It can provide possible alternative addresses.		
486 Busy here	Called party was contacted but his or her system is unable to take additional calls.		
487 Busy here; request cancelled	Request was terminated by a BYE or CANCEL request.	Yes	
488 Not acceptable media	An error in handling the request occurred.	See Cisco SPS action	

Table A-3 SIP Responses (continued)

SIP Response	Meaning	Supported?	Cisco SPS Action
<b>5xx Response—Server Failure Responses</b>			
500 Server internal error	Server or gateway encountered an unexpected error that prevents it from processing the request.	Yes	Generates and forwards this response.
501 Not implemented	Server or gateway does not support the functions required to complete the request.		
502 Bad gateway	Server or gateway received an invalid response from a downstream server.	See Cisco SPS action	Forwards this response.
503 Service unavailable	Server or gateway is unable to process the request due to an overload or maintenance problem.	Yes	Generates and forwards this response.
504 Gateway timeout	Server or gateway did not receive a timely response from another server (such as a location server).	See Cisco SPS action	Forwards this response.
505 Version not supported	Server or gateway does not support the version of the SIP protocol used in the request.	Yes	
<b>6xx Response—Global Responses</b>			
600 Busy everywhere	Called party was contacted but is busy and cannot take the call at this time.	See Cisco SPS action	Forwards this response.
603 Decline	Called party was contacted but cannot or does not want to participate in the call.		
604 Does not exist anywhere	Server has authoritative information that the called party does not exist in the network.		
606 Not acceptable	Called party was contacted, but some aspect of the session description was unacceptable.		

## SIP Header Fields



### Note

All SIP header fields that concern the Cisco SPS are correctly handled and parsed except for the Hide and Encryption header fields. Header fields that do not directly affect the Cisco SPS or that are unknown to it are passed unaltered in the SIP request.

**Table A-4** SIP Header Fields

Header Field	Supported?	Header Field	Supported?
Accept	Yes	Organization	Yes
Accept-Encoding	Yes	MIME-Version	Yes
Accept-Language	Yes	Priority	Yes
Alert-Info	Yes	Proxy-Authenticate	Yes
Allow	Yes	Proxy Authorization	Yes
Also	Yes	Proxy-Require	Yes
Authorization	Yes	Record-Route	Yes
Call-ID	Yes	Require	Yes
Call-Info	Yes	Response-Key	Yes
Contact	Yes	Retry-After	Yes
Content-Disposition	Yes	Route	Yes
Content-Encoding	Yes	Server	Yes
Content-Length	Yes	Subject	Yes
Content-Type	Yes	Supported	Yes
Cseq	Yes	Timestamp	Yes
Date	Yes	To	Yes
Encryption <sup>1</sup>	No	Unsupported	Yes
Error-Info	Yes	User-Agent	Yes
Expires	Yes	Via	Yes
From	Yes	Warning	Yes
In-Reply-To	Yes	WWW-Authenticate	Yes
Max-Forwards	Yes		

1. When a SIP message is received that contains this header field, the message is processed with the field ignored.

## SIP Transport Layer Protocols

**Table A-5** SIP Transport Layer Protocols

Transport Layer Protocol	Supported?
Unicast UDP	Yes
Multicast UDP	No
TCP	Yes
TLS	Yes

## SIP Security

**Table A-6**      *SIP Security*

<b>Mode</b>	<b>Supported?</b>
<b>Encryption Mode</b>	
End-to-end	No
Hop-by-Hop	Yes
<b>Authentication Mode</b>	
Basic <sup>1</sup>	Yes
Digest	Yes
Proxy	Yes

1. Due to its weak security, basic authentication has been deprecated. This is a change from RFC 2543. It is not disabled or removed from Cisco SPS, but will no longer be supported or extended to interwork with new or modified functionality. We strongly discourage the use of basic authentication.

## RFC 3263

### SIP DNS Records Usage

**Table A-7**      *SIP DNS Records Usage*

<b>DNS Resource Record Type</b>	<b>Supported?</b>
A	Yes
NAPTR	Yes
SRV	Yes