Working with large SIP packets

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How do I deal with large SIP packet sizes?

Networks will segment UDP packets with a payload larger than 1480 Bytes to ensure the over packet will not exceed the MTU.

It is common router policy to block segmented UDP packets. Routers must hold each segment of the UDP message in memory until the last segment is received before forwarding the message on. This can be exploited by sending incomplete messages to the router until its memory is full causing the router to fail. For this reason routers that do not contain a fix for this condition often disallow segmented UDP packets.

A workaround to routers that do not (or cannot) handle UDP segmentation is to convert to SIP over TCP. BroadWorks can be set at various locations to send and/or to expect to receive on UDP, TCP or either (unspecified). Below are various locations where these settings are made:

```
AS_CLI/Interface/SIP> get
[…]
supportTcp = true

AS_CLI/System/Device/NetworkServers/Routing> get
Net Address Port Transport Poll OpState Description
=====================================================================
ns1.ihs.broadsoft.com tcp false enabled ns1
ns2.ihs.broadsoft.com tcp false enabled ns2


AS_CLI/System/CallP/Routing/MediaServerSelection/MediaServerDevice> get
Net Address Port Transport Description
=================================================
ms1.ihs.broadsoft.com 5060 tcp ms1
ms2.ihs.broadsoft.com 5060 tcp ms2


NS_CLI/System/Device/RoutingNE/Address> get
About to access 22 entries. Continue?

Please confirm (Yes, Y, No, N): y
Retrieving data... Please wait...
Routing NE Address Cost Weight Port Transport
=============================================================================
[…]
test3 10.2.2.2 1 99 5060 tcp
test1 10.6.6.6 1 90 5060 tcp
test2 10.1.1.1 1 90 5060 tcp

22 entries found.
```

Many SBCs also support both UDP and TCP. Some SBCs can even convert UDP to TCP. Here is an example configuration from an ACME SD (various locations where protocol can be specified.

```
sip-interface
state enabled
realm-id access
description Public to IHS ACCESS SIP Interface
sip-port
address 64.212.220.94
port 5060
transport-protocol UDP
tls-profile
allow-anonymous all
sip-port
address 64.212.220.94
port 5060
transport-protocol TCP
tls-profile
allow-anonymous all


session-agent
hostname 10.48.7.56
ip-address 10.48.7.56
port 5060
state enabled
app-protocol SIP
app-type
transport-method TCP
```

Devices can also be set to specify protocol. For example, Polycom can be set to TCPonly, TCPpreffered or even allow the DNS response to specify the protocol (DNSnaptr)

Example of a large SIP UDP message

```
2010.08.17 08:22:44:815 EDT | Info       | Sip | +12403645153 | callhalf-171159287:1
udp 1580 Bytes OUT to 10.10.10.1:5060

INVITE sip:2403640001@10.10.10.1:5060;user=phone;transport=udp SIP/2.0
Via:SIP/2.0/UDP 10.10.10.2;branch=z9hG4bKBroadWorks.11l7pom-10.10.10.1V5060-0-13480-1064780560-
1282047764815-
From:\"test-cc1 travis\";tag=1064780560-1282047764815-
To:\"Mike - Test Acct Inmon\"
Call-ID:BW082244815170810-243190739@10.10.10.2
CSeq:13480 INVITE
Contact:
Remote-Party-ID:\"test-cc1 travis\";screen=yes;party=calling;privacy=off;id-type=subscriber
RPID-Privacy:party=calling;privacy=off;id-type=subscriber
Proxy-Require:privacy
Diversion:\"Mike - Test Acct Inmon\";privacy=off;diversion-inhibited;reason=follow-
me;counter=5,\"Mike - Test Acct Inmon\";privacy=off;reason=follow-me;counter=1,\"test-cc1
travis\";privacy=off;hg-cc;delay-ccm;reason=unknown;counter=1
Supported: Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE
Accept:multipart/mixed,application/dtmf-
relay,application/media_control+xml,application/sdp,application/x-broadworks-call-center+xml
Max-Forwards:5
Content-Type:application/sdp
Content-Length:283

v=0
o=BroadWorks 1618137 1 IN IP4 10.10.10.2
s=-
c=IN IP4 10.10.10.2
t=0 0
```

```
m=audio 16580 RTP/AVP 0 8 18 101
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=rtpmap:18 G729/8000
a=rtpmap:101 telephone-event/8000
a=silenceSupp:on - - - -
a=fmtp:101 0-15
a=ptime:20
a=sendrecv
```