

# Oracle SBC Embedded Header Configuration Guide

## Revision History

Revision	Date of Issue	Changes
1.0.0	May 12, 2020	Initial draft
1.0.1	May 13, 2020	Update diagram to show SIP messages Add Limitations of Using Embedded Headers with Routing Add Example SIP Messages from test call logs

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# 1 Introduction

This documentation provides instructions on how to configure an Oracle Acme Packet Session Border Controller (Oracle SBC) with embedded header option to pass SIP headers from a SIP 3xx into an outbound SIP INVITE leaving the Oracle SBC.

This documentation does not include Oracle SBC installation instructions, such as installing Oracle SBC VMware image, configuring network interfaces, etc. This work should be done by Oracle technical support.

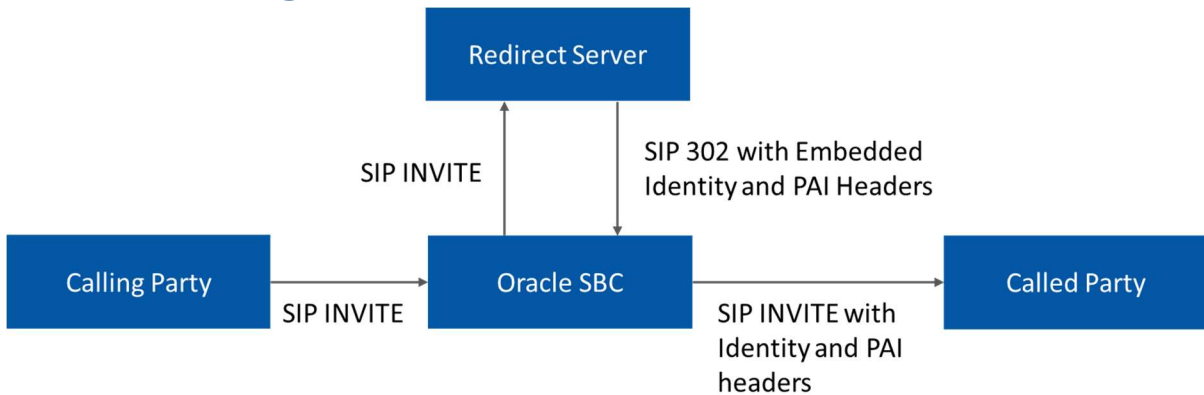
# 2 Embedded Header Mechanism

The SIP URI in the SIP 3xx response from the TransNexus Redirect Server (OSPRey/ClearIP) may contain embedded headers. For example, in the following SIP URI, the highlighted in yellow part is an embedded header.

```
sip:atlanta.com;method=REGISTER?to=alice%40atlanta.com
```

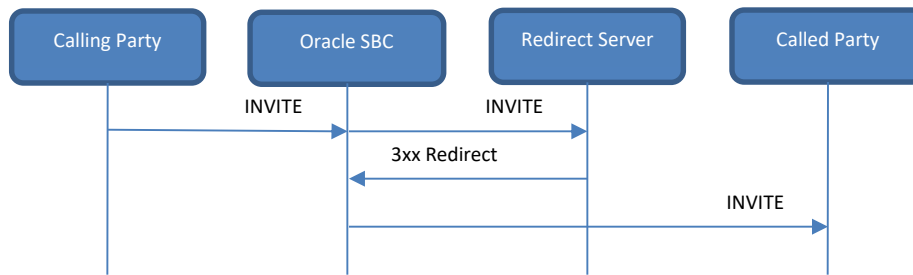
The mechanism described in this document can be used to pass embedded SIP headers within the SIP 3xx into the outbound SIP INVITE.

# 3 Network Diagram and Call Scenario



1. The calling party sends a call to Oracle SBC.
2. Oracle SBC forwards the call to the Redirect Server for services, such as LCR, STIR/SHAKEN, CNAM, etc.
3. The Redirect Server responds with a SIP 3xx that includes headers embedded in the Contact header URI, such as STIR/SHAKEN Identity, P-Asserted-Identity with CNAM, etc.
4. Oracle SBC copies the embedded headers into the SIP INVITE sent to the called party.

## 4 Call Flow Diagram



### Note:

1. SIP 3xx Redirect from the Redirect Server contains Contact header, which includes embedded headers. The values of the embedded headers must be URL encoded.
2. SIP INVITE from Oracle SBC to the called party contains the embedded headers as normal SIP headers.

## 5 Example SIP Messages

### SIP Invite sent from Oracle SBC to TransNexus Redirect Server

```
07:40.539 On [3:0]172.16.4.157:5060 sent to 10.0.11.108:5060
INVITE sip:14040000001@redirect.transnexus.com:5060 SIP/2.0
Via: SIP/2.0/UDP 172.16.4.157:5060;branch=z9hG4bK6glgad00b09h71olh411.1
From: sipp <sip:16780000001@172.16.4.113:5050>;tag=SD51qc601-32136SIPpTag001
To: sut <sip:14040000001@172.16.4.157:5060>
Call-ID: SD51qc601-52943f2a548ac1c7f74dd448e0130c5b-c5480f2
CSeq: 1 INVITE
Contact: <sip:16780000001@172.16.4.157:5060;transport=udp>
Max-Forwards: 69
Subject: Performance Test
Content-Type: application/sdp
Content-Length: 135
P-Source-Device: 172.16.4.113
```

```
v=0
o=user1 53655765 2353687637 IN IP4 172.16.4.113
s=-
c=IN IP4 172.16.4.113
t=0 0
m=audio 6000 RTP/AVP 0
a=rtpmap:0 PCMU/8000
```

### SIP 3xx with Embedded Headers sent from TransNexus Redirect Server to Oracle SBC

```
07:41.566 On [3:0]172.16.4.157:5060 received from 10.0.11.108:5060
SIP/2.0 302 Moved Temporarily
Via: SIP/2.0/UDP 172.16.4.157:5060;branch=z9hG4bK6glgad00b09h71olh411.1
From: sipp <sip:16780000001@172.16.4.113:5050>;tag=SD51qc601-32136SIPpTag001
To: sut <sip:14040000001@172.16.4.157:5060>;tag=24325SIPpTag012
Call-ID: SD51qc601-52943f2a548ac1c7f74dd448e0130c5b-c5480f2
CSeq: 1 INVITE
```

Contact: <sip:1678000000@10.0.11.108:5070;transport=udp?P-Asserted-Identity=%22%5B%5D%5BTxNx%20Test%22%3C%3A%2B16780000001%3B%3D%3DTN-Validation-Passed%40transnexus.com%3E&Identity=eyJhbGciOiJFUzI1NiIsInBwdCI6InNoYWtlbiIsInR5cCI6InBhc3Nwb3J0IiwieDV1IjoiaHR0cHM6Ly9jZXJ0aWZpY2F0ZXMuZmVudHJhbnNuZXh1cy5jb20vOTk0VC81ZTE1ODI0OS0yYTFkLTQxYWMtYmE1NC1hNjM4ZjM5NThtMjM0Y3J0In0.eyJhdHRlc3QiOiJBIiwizGVzdCI6eyJ0biI6WyI4NjEwODIwNzYyOTIiXX0sImldCI6MTU4MDkyNjc4MCwib3JpZyI6eyJ0biI6IjE0MDQ1MjY2MDYwIn0sIm9yaWdpZCI6Ijk4ZDA5NjM5LWZiYWYtMTFlNy05ZjU0LTAwMGMyOWIxYjM5ZS99.Iac\_OyIOHy2yBOX5WNRDuVATp4KAc-p9lLtDrT-9z\_BZXQVT2ItIdGmG0619XeT20IqGlaLOCETjsZAD\_NlOXw%3Binfo%3D%3Chttps%3A%2F%2Fcertificates.transnexus.com%2F994T%2F5e158249-2ald-41ac-ba54-a638f3958f63.crt%3E%3Balg%3DES256%3Bppt%3Dshaken>;q=0.9  
Content-Length: 0

## SIP Invite sent from Oracle SBC to Called Party

07:41.569 On [3:0]172.16.4.157:5060 sent to 10.0.11.108:5070  
INVITE sip:1678000000@10.0.11.108:5070;transport=udp SIP/2.0  
Via: SIP/2.0/UDP 172.16.4.157:5060;branch=z9hG4bK608jms00c850clo17510.2  
From: sipp <sip:1678000000@172.16.4.113:5050>;tag=SD51qc601-32136SIPpTag001  
To: sut <sip:1404000000@172.16.4.157:5060>  
Call-ID: SD51qc601-52943f2a548ac1c7f74dd448e0130c5b-c5480f2  
CSeq: 1 INVITE  
Contact: <sip:1678000000@172.16.4.157:5060;transport=udp>  
Max-Forwards: 69  
Subject: Performance Test  
Content-Type: application/sdp  
Content-Length: 135  
P-Source-Device: 172.16.4.113  
P-Asserted-Identity: "[V]TxNx Test"<sip:+16780000001;verstat=TN-Validation-Passed@transnexus.com>  
Identity:  
eyJhbGciOiJFUzI1NiIsInBwdCI6InNoYWtlbiIsInR5cCI6InBhc3Nwb3J0IiwieDV1IjoiaHR0cHM6Ly9jZXJ0aWZpY2F0ZXMuZmVudHJhbnNuZXh1cy5jb20vOTk0VC81ZTE1ODI0OS0yYTFkLTQxYWMtYmE1NC1hNjM4ZjM5NThtMjM0Y3J0In0.eyJhdHRlc3QiOiJBIiwizGVzdCI6eyJ0biI6WyI4NjEwODIwNzYyOTIiXX0sImldCI6MTU4MDkyNjc4MCwib3JpZyI6eyJ0biI6IjE0MDQ1MjY2MDYwIn0sIm9yaWdpZCI6Ijk4ZDA5NjM5LWZiYWYtMTFlNy05ZjU0LTAwMGMyOWIxYjM5ZS99.Iac\_OyIOHy2yBOX5WNRDuVATp4KAc-p9lLtDrT-9z\_BZXQVT2ItIdGmG0619XeT20IqGlaLOCETjsZAD\_NlOXw;info=<https://certificates.transnexus.com/994T/5e158249-2ald-41ac-ba54-a638f3958f63.crt>;alg=ES256;ppt=shaken  
  
v=0  
o=user1 53655765 2353687637 IN IP4 172.16.4.113  
s=-  
c=IN IP4 172.16.4.113  
t=0 0  
m=audio 6000 RTP/AVP 0  
a=rtpmap:0 PCMU/8000

## 6 Oracle SBC Embedded Header Configuration

Oracle SBC supports embedded header on the session agent level. This should be configured for the SIP Redirect Server session agent.

For request-uri-headers, you should enter a list of embedded headers extracted from the Contact header URI that will be inserted in the outbound SIP INVITE message.

```
acmesystem2(session-agent)# request-uri-headers (P-Asserted-Identity Identity)
```

## 7 Oracle SBC configuration Example

```
session-agent
  hostname                redirect.transnexus.com
  ip-address              10.0.11.108
  port                    5060
  state                   enabled
  app-protocol            SIP
  app-type
  transport-method        UDP
  realm-id                access
  egress-realm-id
  description
  carriers
  allow-next-hop-lp       enabled
  constraints              disabled
  max-sessions             0
  max-inbound-sessions    0
  max-outbound-sessions   0
  max-burst-rate          0
  max-inbound-burst-rate  0
  max-outbound-burst-rate 0
  max-sustain-rate        0
  max-inbound-sustain-rate 0
  max-outbound-sustain-rate 0
  min-seizures            5
  min-asr                  0
  time-to-resume          0
  ttr-no-response         0
  in-service-period       0
  burst-rate-window       0
  sustain-rate-window     0
  req-uri-carrier-mode    None
  proxy-mode
  redirect-action       Recurse
  loose-routing           enabled
  send-media-session      enabled
  response-map
  ping-method
  ping-interval           0
  ping-send-mode          keep-alive
  ping-all-addresses     disabled
  ping-in-service-response-codes
  out-service-response-codes
  load-balance-dns-query  hunt
  media-profiles
  in-translationid
  out-translationid
  trust-me                 disabled
  request-uri-headers  P-Asserted-Identity Identity
  stop-recurse
  local-response-map
  ping-to-user-part
  ping-from-user-part
  li-trust-me             disabled
  in-manipulationid
  out-manipulationid
  manipulation-string
  manipulation-pattern
  p-asserted-id
  trunk-group
  max-register-sustain-rate 0
```

early-media-allow	
invalidate-registrations	disabled
rfc2833-mode	none
rfc2833-payload	0
codec-policy	
enforcement-profile	
refer-call-transfer	disabled
refer-notify-provisional	none
reuse-connections	NONE
tcp-keepalive	none
tcp-reconn-interval	0
max-register-burst-rate	0
register-burst-window	0
sip-profile	
sip-isup-profile	
kpml-interworking	inherit

**Note:**

1. `redirect-action` must be set to `recurse`.
2. `request-uri-headers` must be set to include all embedded headers that will be passed to outbound INVITE to the called party. In the above example, P-Asserted-Identity header for CNAM and Identity header for STIR/SHAKEN are configured for embedded headers.

## 8 Limitations of Using Embedded Headers with Routing

In general, the method described for implementing embedded headers is recommended when using the CNAM or Identity header provided by the Redirect Server SIP 3xx response because it allows the configuration to be simpler.

Embedded headers with only the P-Asserted-Identity header with CNAM and not including the Identity header work well even with multiple routing destinations because the additional size of the headers is small.

However, there are some limitations to using embedded headers for the Identity header when the Redirect Server is simultaneously used to return multiple routing destinations in the SIP 3xx Contact header such as for least cost routing (LCR). In these cases, the SIP message becomes too large for the UDP or TCP packet.

For UDP transport between the Oracle SBC and the Redirect Server, the SIP 3xx can only have 1 routing destination with the embedded Identity header.

For TCP transport between the Oracle SBC and the Redirect Server, the SIP 3xx can have at most 4 routing destinations with the embedded Identity header. Having more than 4 routing destinations with the embedded Identity header can cause the call to fail.

If you would like to receive the Identity header from the Redirect Server in addition to getting multiple destinations for LCR, you cannot use the embedded header approach. You must use a separate approach to add a header manipulation rule (HMR) to copy the standard, non-embedded Identity header from the Redirect Server SIP 3xx response into the outbound SIP

Invite to the called party. Using the HMR approach allows the Identity header to be passed in the 3xx response along with up to 12 routing destinations with UDP and TCP.